MITSUBISHI ELECTRIC

Changes for the Better

Numerical Control (CNC)

Parameter Manual

M800V/M80V Series

IB-1501809(ENG)-C

Introduction

This manual describes the parameters of Mitsubishi Electric CNC.
Improper handling can cause unexpected malfunctions. To use this device correctly, be sure to read this manual before use.

Supported models of this manual are as follows:

Supported models	Abbreviations in this manual
M800VW Series	M850VW, M830VW
M800VS Series	M850VS, M830VS
M80VW Series	M80VW
M80V Series	M80V TypeA, M80V TypeB

Abbreviations for model names used in this manual are as follows:

Abbreviations	Supported models
M800V, M800V Series	M800VW Series/M800VS Series
M80V, M80V Series	M80VW Series/M80V Series
M800V/M80V, M800V/M80V Series	M800VW Series/M800VS Series/M80VW Series/M80V Series
M8V, M8V Series	

To safely use this CNC unit, thoroughly study the "Precautions for Safety" before use.
Be sure to keep this manual on hand so that users can refer to it at any time.
Also refer to the manuals on "Manual List" as necessary.

Notes on reading this manual

(1) This manual explains general parameters which are operated on the CNC side.
For information about each machine tool, refer to manuals issued by the machine tool builder.
If the descriptions relating to "restrictions" and "allowable conditions" conflict between this manual and the machine tool builder's manual, the later has priority over the former.
(2) This manual is intended to contain as much descriptions as possible even about special operations.
The operations to which no reference is made in this manual should be considered "impossible".

Details described in this manual

- In this manual, the following abbreviations might be used.
  L system: Lathe system
  M system: Machining center system
  MTB: Machine tool builder
- In this manual, some "auxiliary axis" indicates PLC axis where axis indexing is performed by index position command.

Manual List

Manuals related to M800V/M80V Series are listed as follows.
These manuals are written on the assumption that all optional functions are added to the targeted model.
Some functions or screens may not be available depending on the machine or specifications set by MTB. (Confirm the specifications before use.)
The manuals issued by MTB take precedence over these manuals.

Manual	IB No.	Purpose and Contents
M800V/M80V Series Instruction Manual (1/2)	IB-1501806	♦ Explanation for display unit and screen operation ♦ Settings before machining, setup, etc.
M800V/M80V Series Instruction Manual (2/2)	IB-1501807	♦ Explanation for settings at machining, operation status, etc. ♦ Explanation for other functions
M800V/M80V Series Programming Manual (Lathe System) (1/2)	IB-1501619	♦ G code programming for lathe system ♦ Basic functions, etc.
M800V/M80V Series Programming Manual (Lathe System) (2/2)	IB-1501620	♦ G code programming for lathe system ♦ Functions for multi-part system, high-accuracy function, etc.
M800V/M80V Series Programming Manual (Machining Center System) (1/2)	IB-1501621	♦ G code programming for machining center system ♦ Basic functions, etc.
M800V/M80V Series Programming Manual (Machining Center System) (2/2)	IB-1501622	♦ G code programming for machining center system ♦ Functions for multi-part system, high-accuracy function, etc.
M800V/M80V Series Alarm Manual	IB-1501808	♦ Alarms
M800V/M80V Series Parameter Manual	IB-1501809	♦ Parameters

Manuals for MTBs (NC)

Manual	IB No.	Purpose and Contents
M800V/M80V Series Specifications Manual (Function)	IB-1501610	• Model selection • Outline of various functions
M800V/M80V Series Specifications Manual (Hardware)	IB-1501611	• Model selection • Specifications of hardware unit
M800VW/M80VW Series Connection and Setup Manual	IB-1501612	• Detailed specifications of hardware unit • Installation, connection, wiring, setup (startup/adjustment)
M800VS/M80V Series Connection and Setup Manual	IB-1501613	• Detailed specifications of hardware unit • Installation, connection, wiring, setup (startup/adjustment)
M800V/M80V Series PLC Development Manual	IB-1501614	• Electrical design • I/O relation (assignment, setting, connection), field network • Development environment (PLC on-board, peripheral development environment), etc.
M800V/M80V Series PLC Programming Manual (1/2)	IB-1501667	• Electrical design • Sequence programming • Explanation for instructions, functions, and parameters
M800V/M80V Series PLC Programming Manual (2/2)	IB-1501668	• Electrical design • Sequence programming • Usage examples of instructions
M800V/M80V Series PLC Interface Manual (1/2)	IB-1501804	• Electrical design • List of interface signals between NC and PLC
M800V/M80V Series PLC Interface Manual (2/2)	IB-1501805	• Electrical design • Details of interface signals between NC and PLC
M800V/M80V Series Maintenance Manual	IB-1501617	• Cleaning and replacement for each unit • Other items related to maintenance
NC Designer2 Instruction Manual	IB-1501250	• Explanation for handling NC NC Designer2
High Speed Processing Unit User's Manual	IB-1501714	• Specifications for high speed processing unit (HPU)
NC Machining AI Diagnosis NC MachiningAID Instruction Manual	IB-1501762	• Explanation for handling NC MachiningAID

Manuals for MTBs (drive section)

Manual	IB No.	Contents
MDS-E/EH Series Specifications Manual	IB-1501226	• Specifications for power supply regeneration type
MDS-E/EH Series Instruction Manual	IB-1501229	• Instruction for power supply regeneration type
MDS-EJ/EJH Series Specifications Manual	IB-1501232	• Specifications for regenerative resistor type
MDS-EJ/EJH Series Instruction Manual	IB-1501235	• Instruction for regenerative resistor type
MDS-EM/EMH Series Specifications Manual	IB-1501238	• Specifications for multi-hybrid, power supply regeneration type
MDS-EM/EMH Series Instruction Manual	IB-1501241	• Instruction for multi-hybrid, power supply regeneration type
DATA BOOK	IB-1501252	• Specifications of servo drive unit, spindle drive unit, motor, etc.
MDS-EX-CVP Series Specifications and Instruction Manual	IB-1501587	• Specifications and instruction for the power supply unit with large capacity

Manuals for MTBs (Others)

Manual	No.	Purpose and Contents
GOT2000 Series User's Manual (Hardware)	SH-081194ENG	• Outline of hardware such as part names, external dimensions, installation, wiring, maintenance, etc. of GOTs
GOT2000 Series User's Manual (Utility)	SH-081195ENG	• Outline of utilities such as screen display setting, operation method, etc. of GOTs
GOT2000 Series User's Manual (Monitor)	SH-081196ENG	• Outline of each monitor function of GOTs
GOT2000 Series Connection Manual (Mitsubishi Electric Products)	SH-081197ENG	• Outline of connection types and connection method between GOT and Mitsubishi Electric connection devices
GOT2000 Series Connection Manual (Non-Mitsubishi Electric Products 1)	SH-081198ENG	• Explanation for connection types and connection method between GOT and other company's devices
GOT2000 Series Connection Manual (Non-Mitsubishi Electric Products 2)	SH-081199ENG	
GOT2000 Series Connection Manual (Microcomputers, MODBUS/Fieldbus Products, Peripherals)	SH-081200ENG	• Explanation for connection types and connection method between GOT and microcomputers, MODBUS/fieldbus products, peripherals
GT SoftGOT2000 Version1 Operating Manual	SH-081201ENG	• Explanation for system configuration, screen configuration and operation method of monitoring software GT SoftGOT2000
GT Designer3 (GOT2000) Screen Design Manual	SH-081220ENG	• Outline of screen design method using screen creation software GT Designer3
GOT2000/GOT1000 Series CC-Link Communication Unit User's Manual	IB-0800351	• Explanation for handling CC-Link communication unit (for GOT2000 series/GOT1000 series)
GX Developer Version 8 Operating Manual (Startup)	SH-080372E	• Explanation for system configuration, installation, etc. of PLC development tool GX Developer
GX Developer Version 8 Operating Manual	SH-080373E	• Explanation for operations using PLC development tool GX Developer
GX Converter Version 1 Operating Manual	IB-0800004	• Explanation for operations using data conversion tool GX Converter
GX Works2 Installation Instructions	BCN-P5999-0944	• Explanation for the operating environment and installation method of GX Works2
GX Works2 Version 1 Operating Manual (Common)	SH-080779ENG	• Explanation for the system configuration of GX Works2 and the functions common to Simple project and Structured project such as parameter setting, operation method for the online function
GX Works2 Version 1 Operating Manual (Simple Project)	SH-080780ENG	• Explanation for methods for such as creating and monitoring programs in Simple project of GX Works2
GX Works2 Version 1 Operating Manual (Simple Project, Function Block)	SH-080984ENG	• Explanation for methods for such as creating function blocks, pasting function blocks to sequence programs, and operating FB library in Simple project of GX Works2
GX Works2 Version 1 Operating Manual (Structured Project)	SH-080781ENG	• Explanation for methods for such as creating and monitoring programs in Structured project of GX Works2
GX Works3 Installation Instructions	BCN-P5999-0391	• Explanation for the operating environment and installation method of GX Works3
MELSEC-Q/L/F Structured Programming Manual (Fundamentals)	SH-080782ENG	• Explanation for programming methods, types of programming languages, etc. required to create structured programs
MELSEC-Q/L Structured Programming Manual (Application Functions)	SH-080784ENG	• Explanation for specifications and functions related to application functions which can be used in structured programs
MELSEC-Q CC-Link System Master/ Local Module User's Manual	SH-080394E	• Explanation for system configuration, installation, wiring, etc. of master/local modules for CC-Link system
MELSEC iQ-R Programming Manual (CPU Module Instructions, Standard Functions/Function Blocks)	SH-081266ENG	• Explanation for instructions, general-purpose functions, and general-purpose function blocks required for programming the sequencer MELSEC iQ-R series

Precautions for Safety

Always read the specifications issued by the machine tool builder, this manual, related manuals and attached documents before installation, operation, programming, maintenance or inspection to ensure correct use.
Understand this numerical controller, safety items and cautions before using the unit.
This manual ranks the safety precautions into "DANGER", "WARNING" and "CAUTION".

⚠ DANGER
When the user may be subject to imminent fatalities or major injuries if handling is mistaken.

⚠ WARNING
When the user may be subject to fatalities or major injuries if handling is mistaken.

⚠ CAUTION
When the user may be subject to medium or minor injuries or when only property damage may occur, if handling is mistaken.

Note that even items ranked as " ⚠ CAUTION" may lead to serious consequences depending on the situation. All the items are important and must always be observed.
The following signs indicate prohibition and compulsory.

	This sign indicates prohibited behavior (must not do). For example, indicates "Keep fire away".
	This sign indicated a thing that is pompously (must do). For example,  indicates "it must be grounded".

The meaning of each pictorial sign is as follows.

 CAUTION	 CAUTION rotated object	 CAUTION HOT	 Danger Electric shock risk	 Danger explosive
 Prohibited	 Disassembly is prohibited	 KEEP FIRE AWAY	 General instruction	 Earth ground

For Safe Use

Mitsubishi Electric CNC is designed and manufactured solely for applications to machine tools to be used for industrial purposes.
Do not use this product in any applications other than those specified above, especially those which are substantially influential on the public interest or which are expected to have significant influence on human lives or properties.

⚠ DANGER

Not applicable in this manual.

⚠ WARNING

Not applicable in this manual.

⚠ CAUTION

(1) Product and manual

⚠ For items described as "Restrictions" or "Usable State" in this manual, the instruction manual issued by the machine tool builder takes precedence over this manual.

⚠ Items not described in this manual must be interpreted as "not possible".

⚠ This manual is written on the assumption that all the applicable functions are included. Some of them, however, may not be available for your NC system. Refer to the specifications issued by the machine tool builder before use.

⚠ Refer to the Instruction Manual issued by each machine tool builder for details on each machine tool.

⚠ Some screens and functions may differ depending on the NC system (or its version), and some functions may not be possible. Please confirm the specifications before use.

⚠ To protect the availability, integrity and confidentiality of the NC system against cyber-attacks including unauthorized access, denial-of-service (DoS) (*1) attack, and computer virus from external sources via a network, take security measures such as firewall, VPN, and anti-virus software.
(*1) Denial-of-service (DoS) refers to a type of cyber-attack that disrupts services by overloading the system or by exploiting a vulnerability of the system.

⚠ Mitsubishi Electric assumes no responsibility for any problems caused to the NC system by any type of cyber-attacks including DoS attack, unauthorized access and computer virus.

(2) Adjustments

⚠ Do not adjust or change the parameter settings greatly as operation could become unstable.

⚠ In the explanation on bits, set all bits not used, including blank bits, to "0".

(3) Troubleshooting

❗ If the battery low warning is issued in the controller side, save the machining programs, tool data and parameters in an input/output device, and then replace the battery. When the battery alarm is issued, the machining programs, tool data and parameters may have been destroyed. Replace the battery and then reload the data.

⚠ If the battery low warning is issued in the drive unit side, immediately replace the battery. Replace the batteries while applying the drive unit's control power.

(4) Maintenance, inspection and part replacement

⚠ Do not short-circuit, charge, heat, incinerate or disassemble the battery.

⚠ Dispose of the spent battery according to local laws.

Disposal



(Note) This symbol mark is for EU countries only.
This symbol mark is according to the directive 2006/66/EC Article 20 Information for end-users and Annex II.

Your MITSUBISHI ELECTRIC product is designed and manufactured with high quality materials and components which can be recycled and/or reused.
This symbol means that batteries and accumulators, at their end-of-life, should be disposed of separately from your household waste.
If a chemical symbol is printed beneath the symbol shown above, this chemical symbol means that the battery or accumulator contains a heavy metal at a certain concentration. This will be indicated as follows:
Hg: mercury (0.0005%), Cd: cadmium (0.002%), Pb: lead (0.004%)
In the European Union there are separate collection systems for used batteries and accumulators.
Please, dispose of batteries and accumulators correctly at your local community waste collection/recycling centre.

Please, help us to conserve the environment we live in!

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Handling of our product

(English)
This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

본 제품의 취급에 대해서

(한국어 /Korean)
이 기기는 업무용 (A 급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며 가정외의 지역에 서 사용하는 것을 목적으로 합니다 .

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1

User Parameters

The parameters with "(PR)" requires the CNC to be turned OFF after the settings. Turn the power OFF and ON to enable the parameter settings.

1.1 Machining Parameters

#1026 base_I Base axis I

Set the names of the basic axes that compose the plane.

Set the axis name set in "#1013 axname".

If all three items ("base_I", "base_J" and "base_K") do not need to be set, such as for 2-axis specifications, input "0", and the parameter will be blank.

Normally, when X, Y and Z are specified respectively for base_I, _J, _K, the following relation will be established:

G17: X-Y

G18: Z-X

G19: Y-Z

Or specify any other axis name desired.

---Setting range---

Axis names such as X, Y or Z

#1027 base_J Base axis J

Set the names of the basic axes that compose the plane.

Set the axis name set in "#1013 axname".

If all three items ("base_I", "base_J" and "base_K") do not need to be set, such as for 2-axis specifications, input "0", and the parameter will be blank.

Normally, when X, Y and Z are specified respectively for base_I, _J, _K, the following relation will be established:

G17: X-Y

G18: Z-X

G19: Y-Z

Or specify any other axis name desired.

---Setting range---

Axis names such as X, Y or Z

#1028 base_K Base axis K

Set the names of the basic axes that compose the plane.

Set the axis name set in "#1013 axname".

If all three items ("base_I", "base_J" and "base_K") do not need to be set, such as for 2-axis specifications, input "0", and the parameter will be blank.

Normally, when X, Y and Z are specified respectively for base_I, _J, _K, the following relation will be established:

G17: X-Y

G18: Z-X

G19: Y-Z

Or specify any other axis name desired.

---Setting range---

Axis names such as X, Y or Z

#1029 aux_I Flat axis I

Set the axis name when there is an axis parallel to "#1026 base_I".

---Setting range---

Axis names such as X, Y or Z

#1030	aux_J	Flat axis J

Set the axis name when there is an axis parallel to "#1027 base_J".

---Setting range---

Axis names such as X, Y or Z

#1031	aux_K	Flat axis K

Set the axis name when there is an axis parallel to "#1028 base_K".

---Setting range---

Axis names such as X, Y or Z

#1084	RadErr	Arc error

Set the tolerable error range when the end point deviates from the center coordinate in the circular command.

---Setting range---

0 to 1.000 (mm)

#1171	taprov	Tap return override

Set the tap return override value for the synchronous tapping.

When "0" is set, it will be regarded as 100%.

---Setting range---

0 to 100 (%)

#1185	spd_F1	F1 digit feedrate F1

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").

Feedrate when F1 is issued (mm/min).

When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---

0 to 1000000 (mm/min)

#1186	spd_F2	F1 digit feedrate F2

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").

Feedrate when F2 is issued (mm/min).

When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---

0 to 1000000 (mm/min)

#1187	spd_F3	F1 digit feedrate F3

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").

Feedrate when F3 is issued (mm/min).

When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---

0 to 1000000 (mm/min)

#1188	spd_F4	F1 digit feedrate F4

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").

Feedrate when F4 is issued (mm/min).

When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---

0 to 1000000 (mm/min)

#1189	spd_F5	F1 digit feedrate F5

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").

Feedrate when F5 is issued (mm/min).

When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---

0 to 1000000 (mm/min)

#1506	F1_FM	Upper limit of F 1-digit feedrate

Set the maximum value up to which the F 1-digit feedrate can be changed.

---Setting range---

0 to 1000000 (mm/min)

#1507	F1_K	F 1-digit feedrate change constant

Set the constant that determines the speed change rate per manual handle graduation in F 1-digit feedrate change mode.

---Setting range---

0 to 32767

#8001	WRK COUNT M

Set the M code for counting the number of the workpiece repeated machining.

The number of the M-codes set by this parameter is counted.

The No. will not be counted when set to "0".

---Setting range---

0 to 999

#8002	WRK COUNT

Set the initial value of the number of workpiece machining. The number of current workpiece machining is displayed.

---Setting range---

0 to 999999

#8003	WRK COUNT LIMIT

Set the maximum number of workpiece machining.

A signal will be output to PLC when the number of machining times is counted to this limit.

---Setting range---

0 to 999999

#8004	SPEED

Set the feedrate during automatic tool length measurement.

---Setting range---

1 to 1000000 (mm/min)

#8005	ZONE r

Set the distance between the measurement point and deceleration start point.

---Setting range---

0 to 99999.999 (mm)

#8006	ZONE d

Set the tolerable range of the measurement point.

An alarm will occur when the sensor signal turns ON before the range, set by this parameter, has not been reached from the measurement point, or when the signal does not turn ON after the range is passed.

---Setting range---

0 to 99999.999 (mm)

#8007 OVERRIDE

Set the override value for automatic corner override.

---Setting range---

0 to 100 (%)

#8008 MAX ANGLE

Set the maximum corner opening angle where deceleration should start automatically.

When the angle is larger than this value, deceleration will not start.

---Setting range---

0 to 180 (°)

#8009 DSC. ZONE

Set the position where deceleration starts at the corner.

Designate at which length point before the corner deceleration should start.

---Setting range---

0 to 99999.999 (mm)

#8010 ABS. MAX.

Set the maximum value when inputting the tool compensation amount.

A value exceeding this setting value cannot be set.

Absolute value of the input value is set.

(If a negative value is input, it is treated and set as a positive value.)

When "0" is set, this parameter is disabled.

---Setting range---

0 to 9999.999 (mm)

(Input setting increment applies)

#8011 INC. MAX.

Set the maximum value for when inputting the tool compensation amount in the incremental mode.

A value exceeding this setting value cannot be set.

Absolute value of the input value is set.

(If a negative value is input, it is treated and set as a positive value.)

When "0" is set, this parameter is disabled.

---Setting range---

0 to 9999.999 (mm)

(Input setting increment applies)

#8038 Path recog. range

Path recognition range

Specify the range to recognize the tool paths adjoining to the command position when the smooth fairing function is ON.

If "0" is set, the range will be 1.000 (mm).

---Setting range---

0 to 100.000 (mm)

#8039 Comp. range limit

Compensation distance tolerance

Specify the upper limit of the distance between the command position and compensation position when the smooth fairing function is ON.

If you specify a negative value, operation is conducted with no tolerance limit.

If "0" is set, the tolerance will be 0.005 (mm).

---Setting range---

-1.000 to 100.000 (mm)

#8041 C-rot.R

Set the length from the center of the normal line control axis to the tool tip. This is used to calculate the turning speed at the block joint.

This is enabled during the normal line control type II.

---Setting range---

0.000 to 99999.999 (mm)

#8042 C-ins.R

Set the radius of the arc to be automatically inserted into the corner during normal line control.

This is enabled during the normal line control type I.

---Setting range---

0.000 to 99999.999 (mm)

#8043 Tool HDL FD OFS

Set the length from the tool holder to the tool tip.

---Setting range---

0.000 to 99999.999 (mm)

#8044 UNIT*10

Set the command increment scale.

The scale will be "1" when "0" is set.

---Setting range---

0 to 10000 (fold)

0: One fold

#8045 Varying spd thread

Select whether to enable the variable speed thread cutting function.

0: Disable

1: Enable

#8046 Ecc_rotax

Specify the number of rotary axis used for Eccentric turning.

---Setting range---

0 to 32

#8047 Ecc_Up-to-speed

This parameter determines whether the control turns on the "Spindle up-to-speed" signal (X188D) or not during Eccentric turning.

0: No. Do not turn on.

1: Yes. Turn on the signal.

#8061 G76 THICK

Set the minimum cutting amount for compound type thread cutting cycle (G76).

The value set in this parameter will be applied when the cutting amount in compound thread cutting cycle (G76) without Q command is smaller than that in this parameter.

This parameter is valid only when "#1222 aux06/bit4" is set to "1".

---Setting range---

0.000 to 99999.999 (mm)

#8069 G76G78in-posn wdt.

Not used. Set to "0.000".

#8070 Turning cycle mode

1: If a zero-travel distance block is given during turning cycle mode (G90, G92 or G94), the turning cycle is executed again.

0: If a zero-travel distance block is given during turning cycle mode (G90, G92 or G94), the turning cycle is not executed.

#8071 3-D CMP (for M system only)

Set the value of the denominator constants for 3-dimensional tool radius compensation.

Set the value of "p" in the following formula.

Vx = i x r/p, Vy = j x r/p, Vz = k x r/p

Vx, Vy, Vz: X, Y, and Z axes or vectors of horizontal axes

i, j, k: Program command value

r: Offset

$p = \sqrt{(i^2 + j^2 + k^2)}$ when the set value is "0".

---Setting range---

0 to 99999.999

#8072 SCALING P (for M system only)

Set the scale factor for reduction or magnification in the machining program specified by G50 or G51 command.

This parameter will be valid when the program specifies no scale factor.

---Setting range---

-99.999999 to 99.999999

#8075 SpiralEndErr (for M system only)

Set the tolerable error range (absolute value) when the end point position, commanded by the spiral or conical interpolation command with the command format type 2, differs from the end point position obtained from the speed and increment/decrement amount.

---Setting range---

0 to 99999.999 (mm)

#8077 Invlute error

Set the tolerable error between the involute curve through the start point and the involute curve through the end point.

---Setting range---

0.000 to 99999.999 (mm)

#8078 Screen Saver Timer

Set the period of time before turn-OFF of the display unit backlight.

When "0" is set, the backlight is not turned OFF.

It is possible to turn OFF the backlight of the monitor screen as well by using the [SHIFT] + [C.B] keys, unless its window is displayed.

---Setting range---

1 to 60 (min)

0: The backlight is not turned OFF

#8081 Gcode Rotat (for L system only)

Set the rotation angle when the coordinate rotation by program is commanded.

This parameter is enabled when "1" is set in "#1270 ext06/bit5" (Coordinate rotation angle without command).

This parameter is set as absolute command regardless of the "#8082 G68.1 R INC" setting. If the rotation angle is designated by an address R in G68.1 command, the designation by program will be applied.

---Setting range---

-360.000 to +360.000 (°)

#8082 G68.1 R INC (for L system only)

Select absolute command or incremental command to use for the rotation angle command R at L-system coordinate rotation.

0: Use absolute command in G90 modal, incremental command in G91 modal

1: Always use incremental command

(Note) If G91 does not exist in the G code system, the command type is decided by this parameter only.

#8100 Chip removal speed

Specify the reverse speed of chip removal operation.

When "0" is set, this setting is disabled.

The reverse speed will be limited with the parameters "the maximum spindle rotation speed" "#3005 smax1" to "#3008 smax4" of the selected gear.

---Setting range---

0 to 999999 (r/min)

#8621 Coord rot plane (H)

Set the plane (horizontal axis) for coordinate rotation control.

Usually, set the name of the 1st axis.

When this parameter is not set, the coordinate rotation function will not work.

---Setting range---

Axis name

#8622 Coord rot plane (V)

Set the plane (vertical axis) for coordinate rotation control.

Usually, set the name of the 2nd axis.

When this parameter is not set, the coordinate rotation function will not work.

---Setting range---

Axis name

#8623 Coord rot centr (H)

Set the center coordinates (horizontal axis) for coordinate rotation control.

---Setting range---

-99999.999 to 99999.999 (mm)

#8624 Coord rot centr (V)

Set the center coordinates (vertical axis) for coordinate rotation control.

---Setting range---

-99999.999 to 99999.999 (mm)

#8625 Coord rot vctr (H)

Set the vector components (horizontal axis) for coordinate rotation control.

When this parameter is set, the coordinate rotation control angle (#8627) will be automatically calculated.

---Setting range---

-99999.999 to 99999.999 (mm)

#8626 Coord rot vctr (V)

Set the vector components (vertical axis) for coordinate rotation control.

When this parameter is set, the coordinate rotation control angle (#8627) will be automatically calculated.

---Setting range---

-99999.999 to 99999.999 (mm)

#8627 Coord rot angle

Set the rotation angle for coordinate rotation control.

When this parameter is set, the coordinate rotation vector (#8625, #8626) will be "0".

---Setting range---

-360.000 to 360.000 (°)

#8631 GraphicsBaseAxis_I

Specify the name of base axis for the graphics.

Select an alphabetical letter from A to Z.

When there is no need to set all three parameters (GraphicsBaseAxis_I, GraphicsBaseAxis_J and GraphicsBaseAxis_K) (e.g. for two-axis specifications), enter "0" to leave the parameter blank.

Normally, when X, Y and Z are specified in "GraphicsBaseAxis_I", "GraphicsBaseAxis_J" and "GraphicsBaseAxis_K" respectively, the following relationship will be established:

G17: X-Y

G18: Z-X

G19: Y-Z

Or specify any other axis name desired.

---Setting range---

0 or from A to Z

#8632 GraphicsBaseAxis_J

Specify the name of base axis for the graphics.

Select an alphabetical letter from A to Z.

When there is no need to set all three parameters (GraphicsBaseAxis_I, GraphicsBaseAxis_J and GraphicsBaseAxis_K) (e.g. for two-axis specifications), enter "0" to leave the parameter blank.

Normally, when X, Y and Z are specified in "GraphicsBaseAxis_I", "GraphicsBaseAxis_J" and "GraphicsBaseAxis_K" respectively, the following relationship will be established:

G17: X-Y

G18: Z-X

G19: Y-Z

Or specify any other axis name desired.

---Setting range---

0 or from A to Z

#8633 GraphicsBaseAxis_K

Specify the name of base axis for the graphics.

Select an alphabetical letter from A to Z.

When there is no need to set all three parameters ("GraphicsBaseAxis_I", "GraphicsBaseAxis_J" and "GraphicsBaseAxis_K") (e.g. for two-axis specifications), enter "0" to leave the parameter blank.

Normally, when X, Y and Z are specified in "GraphicsBaseAxis_I", "GraphicsBaseAxis_J" and "GraphicsBaseAxis_K" respectively, the following relationship will be established:

G17: X-Y

G18: Z-X

G19: Y-Z

Or specify any other axis name desired.

---Setting range---

0 or from A to Z

#8701 Tool length

Set the length to the touch tool tip.

---Setting range---

-99999.999 to 99999.999 (mm)

#8702 Tool Dia

Set the diameter of the sphere at the touch tool tip.

---Setting range---

-99999.999 to 99999.999 (mm)

#8703 OFFSET X

This sets the deviation amount (X direction) from the touch tool center to the spindle center.

---Setting range---

-99999.999 to 99999.999 (mm)

#8704 OFFSET Y

Set the deviation amount (Y direction) from the touch tool center to the spindle center.

---Setting range---

-99999.999 to 99999.999 (mm)

#8705 RETURN

Set the one-time return distance for contacting again.

---Setting range---

0 to 99999.999 (mm)

#8706 FEED

Set the feedrate when contacting again.

---Setting range---

1 to 60000 (mm/min)

#8707 Skip past amout (H)

Set the difference (horizontal axis direction) between the skip read value and actual skip position.

---Setting range---

-99999.999 to 99999.999 (mm)

#8708 Skip past amout (V)

Set the difference (vertical axis direction) between the skip read value and actual skip position.

---Setting range---

-99999.999 to 99999.999 (mm)

#8709 EXT work sign rvs

Reverse the sign of external workpiece coordinate.

Select when using the external workpiece coordinate system with Z shift.

0: External workpiece offset (Z shift) no sign reversal

1: External workpiece offset (Z shift) sign reversal

#8710 EXT work ofs invld

Set whether to enable external workpiece offset subtraction when setting the workpiece coordinate offset.

0: Not subtract the external workpiece offset. (Conventional specification)

1: Subtract the external workpiece offset.

#8711 TLM L meas axis

Set the tool length measurement axis.

Set the "#1022 axname2" axis name.

---Setting range---

Axis name

(Note) If the axis name is illegal or not set, the 3rd axis name will be set as default.

#8712 TLM D meas axis

Set the tool diameter measurement axis.

Set the "#1022 axname2" axis name.

---Setting range---

Axis name

(Note) If the axis name is illegal or not set, the 1st axis name will be set as default.

#8713 Skip coord. Switch (For M system only)

Select the coordinate system for reading skip coordinate value.
Select whether to read the skip coordinate in the workpiece coordinate system or in the feature coordinate system during inclined surface machining command.
Select whether to read the skip coordinate in the workpiece coordinate system or in the workpiece installation coordinate system during workpiece installation error compensation.

0: Workpiece coordinate system

1: Feature coordinate system/Workpiece installation coordinate system

#8714 Thrdrecut lead ax

Specify the name of lead axis that performs thread recutting.
If any nonexistent axis name is specified, the 1st axis of the part system is used as a lead axis for thread recutting.
If the parameter "#8714 Thrdrecut lead ax" is unspecified, Z axis is set as the parameter value at power ON.

---Setting range---

A,B,C,H,U,V,W,X,Y,Z

#8715 Thread recut SP#

Specify the No. or name of spindle that performs thread recutting.
If 0 or any nonexistent spindle No. or name is specified, the 1st spindle is used for thread recutting.

---Setting range---

Spindle No. method: 0 to 8

Spindle name method: 0 to 9

(Default: 0)

(PR) #8716 EXT/Wrksft Share (for L system only)

Set this parameter to "1" if you wish to disable the external workpiece coordinate system offset.
This parameter is enabled when "#11056 Workshift invalid" (Workpiece coordinate system shift OFF) is "0".

0: Use the external work coordinate offset (EXT) to implement compensation

1: Implement compensation without using the external work coordinate offset (EXT)

#8717 WE measure wk zero

Specify the workpiece zero position that is used for measuring the workpiece installation error.

0: Workpiece center

1: Apex in X-, Y- direction

2: Apex in X+, Y- direction

3: Apex in X+, Y+ direction

4: Apex in X-, Y+ direction

#8718 WE meas. wk coord

Specify the workpiece coordinate system in which you input the workpiece coordinates for workpiece installation error measurement.

Set the number part of the coordinate system modal. (54, 54.1, 55, 56, 57, 58 or 59)

---Setting range---

0, 54 to 59

#8719 WE meas. ext wk No

If workpiece installation error measurement is performed in the extended workpiece coordinate system, specify the address P value of G54.1.

If "#8718 WE meas. wk coord" is not 54.1, there is no need for setting this parameter.

---Setting range---

0 to 300

#8720 WE mea. wk X-width

Specify the X direction width of the rectangular workpiece for which workpiece installation error measurement is performed.

If the sensor's accessible range is small due to jig etc., specify the width of the portion that is stuck out of the jig.

---Setting range---

0.000 to 99999.999 (mm)

#8721 WE mea. wk Y-width

Specify the Y direction width of the rectangular workpiece for which workpiece installation error measurement is performed.

If the sensor's accessible range is small due to jig etc., specify the width of the portion that is stuck out of the jig.

---Setting range---

0.000 to 99999.999 (mm)

#8722 WE mea. wk Z-width

Specify the Z direction width of the rectangular workpiece for which workpiece installation error measurement is performed.

If the sensor's accessible range is small due to jig etc., specify the width of the portion that is stuck out of the jig.

---Setting range---

0.000 to 99999.999 (mm)

#8723 WK inst. err comp#

Specify the workpiece installation error No. for write during the workpiece installation error measurement.

Set "1" for G54.4 P1.

---Setting range---

0 to 7

#8724 Sensor T L comp No

Specify the tool length compensation No. of the touch probe to be used for measurement of rotation center error and workpiece installation error.

Set the touch probe offset in the said number before measurement.

If the specified offset is significantly large, the probe may be damaged.

---Setting range---

0 to 999

#12066 Tolerance ctrl ON

Select whether to enable the tolerance control.

0: Disable

1: Enable

(Note) Tolerance control is available only under SSS control.
To enable this function, set "#8090 SSS ON" to "1".

#12067 Tolerance spd coef

Set the compensation coefficient to adjust a path error or clamp speed in the corner while tolerance control is ON.

This parameter is enabled during tolerance control. Thus set this parameter if you wish to use different clamp speed according to ON/OFF of tolerance control.

When "0" is set in this parameter, the standard value (100%) is applied.

---Setting range---

0 to 2000 (%)

#12068 Smoothing range

Spline interpolation 2: Smoothing range

Normally set "0" in this parameter.
If you run a program with micro segments and its reciprocating paths are uneven, set the parameter to about 3 to 5 times the length of the programmed segments.

---Setting range---

0.000 to 10.000 (mm)

#12069 Corner angle

Tolerance control: Corner recognition angle

Specify the corner recognition angle. Normally set to "0".

---Setting range---

0.000 to 180.000 (°)

#19001 Syn.tap(,S)cancel

0: Retain the spindle speed (,S) in synchronous tap return

1: Cancel the spindle speed (,S) in synchronous tap return with G80

The same value as "#1223 aux07/bit6" will be reflected. When either setting changes, the other will change accordingly.

#19002 Zero-point mark

Select the position for displaying the zero point mark in the graphic trace and 2D check.

0: Machine coordinates zero point (same as conventional method)

1: Workpiece coordinate zero point

The same value as "#1231 set03/bit4" will be reflected. When either setting changes, the other will change accordingly.

#19003 PRG coord rot type

Select the start point of the first travel command after coordinate rotation by program is commanded.

0: The start point of the travel command is the current position at the time of the coordinate rotation command.
When the travel command is an incremental command, the axes move by the amount corresponding to the commanded rotation.
When the travel command is an absolute command, only the command axis moves to the commanded position in the rotated coordinate system.

1: The start point of the travel command is the position where the current position at the time of the coordinate rotation command is rotated by the command angle.
The axis moves to the commanded position in the rotated coordinate system.

#19004 Tap feedrate limit

Set the upper limit of the cutting feed rate in synchronous tapping.

---Setting range---

0 to 1000 (mm/rev)

(Note) Setting "0" disables this parameter.
When the commanded cutting feed rate in synchronous tapping exceeds this setting, a program error (P184) will occur.

#19005 manual Fcmd2 clamp

Set a clamp speed coefficient (%) for manual speed command 2.
The feed rate is clamped at the command feed rate or rapid traverse rate for automatic operation, which was multiplied by this parameter's value.

(Note) This setting is valid only for manual speed command 2.

---Setting range---

0 to 1000 (%)

0: 100% (Default value)

(PR) #19006 EOR Disable

Set whether to handle an EOR(%) in machining program as the end of program in automatic operation, graphic check, program transfer to NC memory/NC memory2, program editing, and buffer correction.

Tape operation, Computer Link B, and serial input/output are not included.

0: An EOR(%) is handled as the end of machining program.

1: An EOR(%) is not handled as the end of machining program. The program will be read to the end of file.

#19007 Prg check constant

Set the speed constant to be used for the program check operation function.

---Setting range---

0 to 60000

#19008 PRM coord rot type

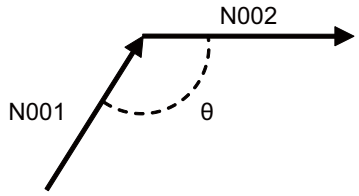
Select the start point of the initial travel command after parameter coordinate rotation.

0: Calculate the end position, assuming that the start point rotates in accordance with the coordinates rotation.

1: Calculate the end position using the current position on the local coordinate system before rotating, without rotating the start point in accordance with the coordinates rotation.

#19009 Corner check angle

Corner deceleration check angle
Specify the internal angle formed by two blocks, at or below which the block joint is determined as a corner and the latter block's start timing is controlled accordingly while the automatic error detect is ON.

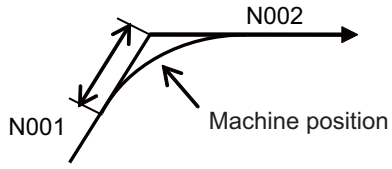


---Setting range---

0 to 180 (°)

#19010 Corner check width

Corner deceleration check width
When deceleration of the currently executed block has started and a position error width between the programmed end point and machine position has reduced to this parameter or less, the control starts execution of the next block.



---Setting range---

0 to 99.999 (mm)

#19012 Ana-Tap-Voltage1

Analog spindle synch tap: Voltage output magnification (at cutting)

Specify the spindle speed magnification to be applied during cutting in analog spindle synchronous tapping.

When 0 is set, the magnification is taken as 100%.

If the spindle fails to rotate as commanded due to such as cutting load, set this parameter to correct the speed.

---Setting range---

0 to 200 (%)

#19013 Ana-Tap-Voltage2

Analog spindle synch tap: Voltage output magnification (at retract)

Specify the spindle speed magnification to be applied during retract in analog spindle synchronous tapping.

When 0 is set, the magnification is taken as 100%.

If the spindle fails to rotate as commanded due to such as cutting load, set this parameter to correct the speed.

---Setting range---

0 to 200 (%)

#19014 G04 P factor

The value of address P of G04 with no decimals is multiplied by the value determined by this parameter. This parameter is only relevant only when "#8112 DECIMAL PNT-P" is "0", or when "#1078 Decpt2" is "0".

The value is determined as 10^n (n = -3 to 3).

-3: 1/1000

-2: 1/100

-1: 1/10

0: 1

1: 10

2: 100

3: 1000

#19019 fixpro G04P factor **Fixed cycle G04 P factor valid**

Select whether to enable the setting of "#19014 G04 P factor" for G04 commands in a fixed cycle subprogram.

0: Disable

1: Enable

#19101 Stylus sphere dia.

Specify the diameter of stylus sphere that is used for measurement of rotation center error or workpiece installation error.

If the set value is significantly different from the actual diameter, the sensor may be damaged.

---Setting range---

0.000, 0.100 to 10.000 (mm)

#19102 Stylus length

Specify the length of stylus that is used for workpiece installation error measurement.

If the set value is significantly different from the actual length, the sensor may be damaged.

---Setting range---

0.000 to 99999.999 (mm)

#19103 Sensor over-travel

Specify the over-travel distance of the sensor that is used for measurement of rotation center error or workpiece installation error. (allowable excess of sensor, over-stroke)

Set the smallest over-travel distance among all the axes.

The initial approaching speed to the reference sphere is determined according to the over-travel distance.

If the set over-travel distance is greater than the actual distance, the sensor may be damaged.

---Setting range---

0.000 to 100.000 (mm)

#19104 G12.1 no reversal

Select whether to retain the rotation direction of C axis when circular interpolation takes place near the workpiece zero during milling interpolation or during polar coordinate interpolation.

0: Not retain (the direction requiring the smaller amount of rotation)

1: Retain the rotation direction

#19105 G12.1 zero range

Specify the range to be determined as workpiece zero when #19104 is set to "1".

---Setting range---

0 to 1.000 (mm)

#19200+5(n-1) CLC desired load n

Specify the desired load during the cutting load control. (n = 1 to 8)
During the cutting load control, feedrate is controlled so that the cutting load becomes the set value.

---Setting range---

0 to 327 (%)

#19201+5(n-1) CLC detect.load n

Specify the minimum load to be treated as in cutting state. (n = 1 to 8)
When the spindle load value is equal to or greater than the setting value, cutting load control is executed.

---Setting range---

0 to 327 (%)

#19202+5(n-1) CLC max.feedrate n

Specify the maximum feedrate during the cutting load control as a percentage (%) of the command speed. (n = 1 to 8)
When "0" is set, it is assumed that 120% is set.

---Setting range---

0 to 300 (%)
0: 120% (default value)

#19203+5(n-1) CLC min.feedrate n

Specify the minimum feedrate during the cutting load control as a percentage (%) of the command speed. (n = 1 to 8)
When "0" is set, it is assumed that 90% is set.

---Setting range---

0 to 300 (%)
0: 90% (default value)

(PR) #19250 NCAID con. valid

Specify whether to enable the connection with NC MachiningAID.

0: Disable

1: Enable (Notification on Tool wear warning)

2: Enable (Stop on Tool wear warning)

#19251 NCAID tool warning

Specify whether the NC MachiningAID output tool exchange warning.

0: Does not output warning

1: Only outputs alarm No.5

2: Outputs both alarm No.4 and alarm No.5

(Note) The control stops on alarm with generating warning when the parameter "#19250 NCAID con. valid" is "2".

#19252 NCAID ABN stop

Specify the behavior when the NC MachiningAID alarm for "Machining diagnostics error detected" occurs.

0: Does not stop by alarm

1: Stops by alarm

#19253 NCAID ilg stop

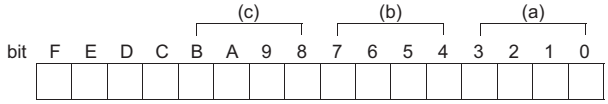
Specify the behavior when the NC MachiningAID alarm for "Machining diagnostics invalid" occurs.

0: Does not stop by alarm

1: Stops by alarm

#19256 NCAID STP-on-ALM

This parameter specifies when the CNC automatic operation stops at the time of the NC MachiningAID alarm. Set in HEX format.
This parameter is valid when "#19250 NCAID con. valid" is "2".



(a) For "Machining diagn error detected" alarm (#19252 must be "1")

0000: At the end of G00 block

0001: At the beginning of G00 block

0010: Immediately

(b) For "Machining diagnostics invalid" alarm (#19253 must be "1")

0000: At the end of G00 block

0001: At the beginning of G00 block

0010: Immediately

(c) For "Tool wear warning" alarm (#19251 must be other than "0")

0000: At the end of G00 block

0001: At the beginning of G00 block

0010: Immediately

(Note 1) When the setting value is "0000" or "0001", the CNC operation stops even in the G60 block and zero point return related blocks (G27, G28, G29, G30, G30.n) in addition to the G00 block.

(Note 2) Even if the setting value is "0000" or "0001", the CNC operation does not stop in the G00 block while the fixed cycle modal or M code macro is in progress.

(Note 3) If the setting value is outside the range, it is handled as "0000".

---Setting range---

For cases (a), (b), and (c), set any one of the following values.

0000, 0001, 0010

#19401 G33.n chamfer spd

Not used.

#19405 Rotary ax drawing

Specify this parameter to draw a path of C axis (rotary axis) according to its rotation in the graphic trace and 2D graphic trace.
When "#1013 axname" is set to "C", the axis is handled as a rotary axis.
By setting this parameter to "C", a rotation path around the Z axis on actual workpiece can be expressed.
When the Graphic check rotary axis drawing option or Graphic trace rotary axis drawing option is disabled, this parameter is ignored.

C: Enable this function

0: Disable this function

(Setting is cleared when "0" is set)

#19406 Hob retract ON at alarm

Select whether to enable the retract at an alarm during hobbing.

0: Disable

1: Enable

(Standard value: 0)

#19407 Hob retract acceleration deceleration OFF

Select whether to disable the acceleration/deceleration of a retract.

0: Enable

1: Disable

(Standard value: 0)

#19417 Hole dec check 2

This is enabled when #1253 set25 bit2 is 1.
The operation at the hole bottom and the hole drilling stop position is as below.

0: Perform no deceleration check.

1: Perform command deceleration check.

2: Perform in-position check.

<Target fixed cycles>

Machining center: G81, G82, G83, G73

Lathe: G83, G87, G83.2

#19418 Arc inside min ovr (for M system only)

Set the minimum value of arc inside override.
R1/R2 come close to zero and the tool feed stops when the radius of tool center path(R1) is very smaller than the radius of program path (R2).
When this parameter is set and R1/R2<=(parameter setting value), tool feed is F* (parameter setting value).
When this parameter is "0" or "100", the arc inside override is disabled.

---Setting range---

0 to 100 (%)

#19419 Timing sync system

Specify the counterpart part system for timing synchronization or for balance cut when the part system No. is omitted.

Set the part system No. in a way that reflects the combination of two part systems as follows.

(Example) Timing synchronization between Part systems 1 and 3

Enter 3 for the 1st part system, and enter 1 for the 3rd part system.

(Note) When 0 is set, timing synchronization is carried out between Part systems 1 and 2.

---Setting range---

0 to 8

#19420 Arc inside ovr ON (for M system only)

Select the enable conditions for the arc inside override.

0: Enable during tool radius compensation

1: Enable during tool radius compensation and automatic corner override

(Note) When M2 format is in use, the arc inside override enables during tool radius compensation, regardless of the setting value of this parameter.

#19421 Arc inside ovr typ (for M system only)

Specify the type of arc inside override.

0: Type 1

Arc inside override during circular cutting is invalid.

1: Type 2

Arc inside override during circular cutting is valid.

#19424 G185 factor

This parameter specifies the factor (%) for calculating the pick feed amount that is used when address A (pick feed amount) and address E (number of chamfering cycles) are omitted from G185 (hole edge chamfering cycle).

The pick feed amount is calculated through the following formula.

Tool radius (mm) * G185 factor (%)

---Setting range---

0 to 100 (%)

0: 20% (default value)

#19425 ManualB Std R1

Set a radius used as standard for the rotary axis speed.

When the setting value of #19425 is larger than that of "#19427 ManualB Std R2", #19425 setting will be used as surface speed control standard radius 2: #19427 setting will be used as surface speed control standard radius 1.

---Setting range---

0 to 99999.999 (mm)

#19426 ManualB Std F1

This sets the rotary axis speed for surface speed control standard radius 1 (ManualB Std R1).

When the setting value of #19426 is larger than that of "#19428 ManualB Std F2", #19426 setting will be used as surface speed control standard speed 2: #19427 setting will be used as surface speed control standard speed 1.

---Setting range---

1 to 1000000 (°/min)

#19427 ManualB Std R2

Set a radius used as standard for the rotary axis speed.

When the same value is set as "#19425 ManualB Std R1", the surface speed control standard speed 1 (ManualB Std F1) will be selected as the rotary axis speed if the radius is less than that value. The surface speed control standard speed 2 (ManualB Std F2) is selected if larger than the set value.

---Setting range---

0 to 99999.999 (mm)

#19428 ManualB Std F2

Set the rotary axis speed for surface speed control standard radius 2 (ManualB Std R2).

---Setting range---

1 to 1000000 (°/min)

#19431 Num display in prg

Select whether to switch the display of numeric part that follows each address in the currently executed program.

0: Display the program as originally programmed.

1: Replace the numeric part (variable, operation or function) that follows each address with the calculated value.

#19437 Skip fin in rough1

Specify whether to execute roughing along finishing shape in roughing cycle (G71, G72) when pocket machining is OFF.

0: Execute roughing along finishing shape

1: Not execute roughing along finishing shape

#19438 Skip fin in rough2

Specify whether to execute roughing along finishing shape in roughing cycle (G71, G72) when pocket machining is ON.

0: Not execute roughing along finishing shape

1: Execute roughing along finishing shape

#19442 Path at G71 comp.

When roughing along finishing shape is enabled in roughing cycle (G71,G72), select the path to move to the cycle command point after the completion of roughing along finishing shape.

0: Move to the cycle command point without passing through the start point of roughing.

1: Move to the cycle command point via the start point of roughing.

For ZX plane, the move to the start point of roughing is performed with one axis at a time in the following order:

G71: in the order of Z axis and X axis

G72: in the order of X axis and Z axis

#19443 Retract aft rough

Specify whether to retract after roughing along finishing shape when roughing along finishing shape is enabled in rough cutting cycle (G71, G72).

0: Not retract

1: Retract

This parameter is valid when "#19442 Path at G71 comp." is set to "1".

#19444 Drill cut reduce

Specify the cutting reduction amount in Fixed cycle for drilling using the cutting reduction amount specification method.

This parameter is enabled when address J is omitted.

When "0" is set, the cutting amount reduction method is disabled.

---Setting range---

0 to 99999.999 (mm)

#19445 Drill cut min.amt

Specify the minimum cutting amount in Fixed cycle for drilling using the cutting reduction amount specification method.

This parameter is enabled when address ,K is omitted.

When "0" is set, the cutting amount specification method is disabled.

---Setting range---

0 to 99999.999 (mm)

#19446 Chatter Supp Ampl

Set the variation amplitude for chatter suppression control.

If "0" is specified, chatter is not suppressed.

This parameter is for L system only.

---Setting range---

0 to 50 (%)

#19447 Chatter Supp Cycle

Set the variation cycle for chatter suppression control.

If "0.0" is specified, chatter is not suppressed.

This parameter is for L system only.

---Setting range---

0.0 to 5.0 (s)

#19448 Index speed_Orbit

This is the indexing speed at which the tool moves to stop the circular motion in the Orbit machining.

(Note) When this parameter is set to "0", the tool decelerates from the current circular motion speed and then stops when it reaches the stop position. The cutter edge directs the positive direction of the first circular motion axis when it reaches the stop position.

---Setting range---

0 to 999999 (r/min)

#19601 TCPC sing pt agl

Specify the threshold angle to determin whether the tool is near a singular point in tool cutting point control.

(Note) When "0" is specified, the behavior is the same as when 0.001 (deg) is set.

---Setting range---

0.000 to 5.000 (deg)

#19602 TCPC sing pt posn

Select which point is treated as the cutting point during singular orientation in tool cutting point control.

0: Type 1
The tool center point

1: Type 2
The point on the end face of the tool nearest the cutting point before the singular point.

#19603 TCPC corner R

Specify the corner R of the end mill tool used in tool cutting point control.

(Note) When a square end mill is used, set "0".

---Setting range---

0.000 to 99999.999 (mm)
0.000 to 9999.9999 (inch)

#79601 Safety clrn: O.D.

This parameter specifies the clearance from the outer diameter of the workpiece using the radius value.

---Setting range---

0 to 65535 (0.001 mm/0.0001 inch)

#79602 Safety clrn: I.D.

This parameter specifies the clearance from the inner diameter of the workpiece using the radius value.

---Setting range---

0 to 65535 (0.001 mm/0.0001 inch)

#79603 Safety clrn: front

This parameter specifies the clearance from the front face of the workpiece.

---Setting range---

0 to 65535 (0.001 mm/0.0001 inch)

#79604 Safety clrn: rear

This parameter specifies the clearance from the rear face of the workpiece.

---Setting range---

0 to 65535 (0.001 mm/0.0001 inch)

1.2 Fixed Cycle Parameters

#8012 G73n (for M system only)

Set the return amount for G73 (step cycle).

---Setting range---

0 to 99999.999 (mm)

#8013 G83 n

Set the return amount for G83 (deep hole drilling cycle).

---Setting range---

0 to 99999.999 (mm)

#8014 CDZ-VALE (for L system only)

Set the chamfering amount for G76, G78 (thread cutting cycle).

---Setting range---

0 to 127 (0.1 lead)

#8015 CDZ-ANGLE (for L system only)

Set the chamfering angle for G76, G78 (thread cutting cycle).

---Setting range---

0 to 89 (°)

#8016 G71 MINIMUM (for L system only)

Set the minimum value of the last cutting amount by the rough cutting cycle (G71, G72).

The cutting amount of the last cutting will be the remainder. When the remainder is smaller than this parameter setting, the last cycle will not be executed.

---Setting range---

0 to 999.999 (mm)

#8017 G71 DELTA-D (for L system only)

Set the change amount of the rough cutting cycle.

The rough cutting cycle (G71, G72) cutting amount repeats x+dx, x, x-dx using the value (x) commanded with D as a reference. Set the change amount dx.

---Setting range---

0 to 999.999 (mm)

#8018 G84/G74 n

Set the retract amount m in a G84/G74/G88 pecking tapping cycle.

(Note) In the case of a normal tapping cycle, set to "0".

---Setting range---

0 to 999.999 (mm)

#8051 G71 THICK

Set the amount of cut-in by the rough cutting cycle (G71, G72)

---Setting range---

0 to 99999.999 (mm)

#8052 G71 PULL UP

Set the amount of pull-up when returning to the cutting start point for the rough cutting cycle (G71. G72).

---Setting range---

0 to 99999.999 (mm)

#8053 G73 U

Set the X-axis cutting margin of the forming rough cutting cycle (G73).

---Setting range---

-99999.999 to 99999.999 (mm)

#8054 G73 W

Set the Z-axis cutting margin of the forming rough cutting cycle (G73).

---Setting range---

-99999.999 to 99999.999 (mm)

#8055 G73 R

Set how many times cutting will be performed in the forming rough cutting cycle (G73).

---Setting range---

0 to 99999 (times)

#8056 G74 RETRACT

Set the amount of retract in the cut-off cycle (G74, G75).

---Setting range---

0 to 999.999 (mm)

#8057 G76 LAST-D

Set the amount of final cut-in by the compound type thread cutting (G76).

---Setting range---

0 to 999.999 (mm)

#8058 G76 TIMES

Set how many times the amount of final cut-in cycle (G76 finish margin) will be divided in the compound type thread cutting (G76).

---Setting range---

0 to 99 (times)

#8059 G76 ANGLE

Set the angle (thread angle) of the tool nose in the compound type thread cutting (G76).

---Setting range---

0 to 99 (°)

#8083 G83S modeM (for M system only)

Set the M command code for changing to the small diameter deep hole drilling cycle mode.

---Setting range---

1 to 99999999

#8084 G83S Clearance (for M system only)

Set the clearance amount for the small diameter deep hole drilling cycle (G83).

---Setting range---

0 to 999.999 (mm)

#8085 G83S Forward F (for M system only)

Set the feedrate from the R point to the cutting start position in the small diameter deep hole drilling cycle (G83).

---Setting range---

0 to 99999 (mm/min)

#8086 G83S Back F (for M system only)

Set the speed for returning from the hole bottom during the small diameter deep hole drilling cycle (G83).

---Setting range---

0 to 99999 (mm/min)

1.3 Control Parameters 1

(PR)	#1041	I_inch	Initial state (inch)

Select the unit system for the program travel amount when the power is turned ON or reset and for position display.

0: Metric system

1: Inch system

(Note) The units of the following data are converted by "#1041 I_inch".

- Command unit at power ON and reset (Inch/metric command mode)
  But under the following conditions, the unit will follow G20/G21 command modal even at reset.
  When reset modal is retained ("#1151 rstint"="0")
  When G code group 06 reset modal is retained ("#1210 RstGmd/bit5" ON)
- Unit system for position display (counter, user parameter, tool, work offset)
- User parameter I/O unit
- Parameter unit of user parameters concerning length and speed
- Arc error parameter (#1084 RadErr)

	#1078	Decpt2	Decimal point type 2

Select the increment of position commands that do not have a decimal point.

0: Minimum input command unit (follows "#1015 cunit")

1: 1mm (or 1inch) unit (For the dwell time, 1s unit is used.)

	#1080	Dril_Z	Drilling Z fixed

Select a fixed cycle hole drilling axis.

0: Use an axis vertical to the selected plane as hole drilling axis.

1: Use the Z axis as the hole drilling axis regardless of the selected plane.

	#1091	Mpoint	Ignore middle point

Select how to handle the middle point during G28 and G30 reference position return.

0: Pass the middle point designated in the program and move to the reference position.

1: Ignore the middle point designated in the program and move straight to the reference position.

	#1103	T_Life	Validate life management

Select whether to use the tool life management.

0: Not use tool life management.

1: Use tool life management.

	#1104	T_Com2	Tool command method 2

Select how to handle the tool command in the program when "#1103 T_Life" is set to "1".

0: Handle the command as group No.

1: Handle the command as tool No.

(Note) In the case of the tool life management III, the program tool command will be handled as the tool No. regardless of the setting.

	#1105	T_sel2	Tool selection method 2

Select the tool selection method when "#1103 T_Life" is set to "1".

0: Select in order of registered No. from the tools used in the same group.

1: Select the tool with the longest remaining life from the tools used or unused in the same group.

	#1106	Tcount	Life management (for L system only)

Select the input method when address N is omitted in inputting the data (G10 L3 command) for tool life management function II.

0: Time specified input

1: Number of times specified input

#1126 PB_G90 Playback G90

Select the method to command the playback travel amount in the playback editing.

0: Incremental value

1: Absolute value

#1128 RstVCl Clear variables by resetting

Select how to handle the common variables when resetting.

0: Common variables won't change after resetting.

1: Common variables will be cleared #100 to #199 by resetting.

#1129 PwrVCl Clear variables by power-ON

Select how to handle the common variables when the power is turned ON.

0: The common variables are in the same state as before turning the power OFF.

1: Common variables will be cleared #100 to #199 when the power is turned ON.

#1302 AutoRP Automatic return by program restart

Select the method to move to the restart position when restarting the program.

0: Move the system to the restart position manually.

1: For program restarting, the first activation automatically moves the system to the restart position.

#8101 MACRO SINGLE

Select how to control the consecutive blocks of user macro commands.

With the setting of this parameter, the control of macro blocks changes regardless of whether the operation is continuous or single-block.
When checking the program, set this parameter to "1" to perform a single block operation so that each macro block can be checked individually.
However, set this parameter to "0" to execute the macro blocks collectively during normal machining. Adjust the setting according to your needs.

0: Execute consecutive macro blocks collectively.

1: Execute consecutive macro blocks one at a time.

#8102 COLL. ALM OFF

Select the interference control to the workpiece from the tool diameter during tool radius compensation and nose R compensation.

0: An alarm will be output and operation stops when an interference is judged.

1: Changes the path to avoid interference.

#8103 COLL. CHK OFF

Select the interference control to the workpiece from the tool diameter during tool radius compensation and nose R compensation.

0: Performs interference check.

1: Does not perform interference check.

#8105 EDIT LOCK B

Select the edit lock for program Nos. 8000 to 9999 in the memory.

0: Editing possible

1: Prohibit the editing of above programs.

When "1" is set, the file cannot be opened.

#8106 G46 NO REV-ERR (for L system only)

Select the control for the compensation direction reversal in G46 (nose R compensation).

0: An alarm will be output and operation will stop when the compensation direction is reversed (G41 -> G42' G42 -> G41).

1: An alarm won't occur when the compensation direction is reversed, and the current compensation direction will be maintained.

#8107 R COMPENSATION

Select whether to move to the inside because of a delay in servo response to a command during arc cutting mode.

0: Move to the inside, making the arc smaller than the command value.

1: Compensate the movement to the inside.

#8108 R COMP Select

Select the arc radius error compensation target.

0: Perform compensation over all axes.

1: Perform compensation axis by axis.

(Note) This parameter is effective only when "#8107 R COMPENSATION" is "1".

#8109 HOST LINK

Select whether to enable computer link B instead of the RS-232C port.

0: Disable (Enable normal RS-232C communication.)

1: Enable (Disable normal RS-232C communication.)

#8110 G71/G72 POCKET

Select whether to enable the pocket machining when there is a dimple (pocket) in the rough cutting cycle (G71, G72) finishing program.

0: OFF

1: ON

#8111 Milling Radius

Select the diameter or radius command of the linear axis for milling (cylindrical/polar coordinate) interpolation.

0: All axes radius command

1: Each axis setting (follows "#1019 dia")

(Note) This parameter is valid only in the milling (cylindrical/polar coordinate) interpolation mode.

#8112 DECIMAL PNT-P

Select whether to enable the decimal point command for G04 address P.

0: Disable

1: Enable

#8113 Milling Init G16

Set which plane to execute for milling machining after the power is turned ON or reset.

#8113: 0, #8114: 0 ---> G17 plane
#8113: 0, #8114: 1 ---> G19 plane
#8113: 1, #8114: 0 ---> G16 plane
#8113: 1, #8114: 1 ---> G16 plane

0: Not G16 plane

1: G16 plane

(Note) This parameter is valid for the G code system 2, 3, 4 or 5 ("#1037 cmdtyp"="3", "4", "5" or "6").

#8114 Milling Init G19

Set which plane to execute for milling machining after the power is turned ON or reset.

#8113: 0, #8114: 0 ---> G17 plane
#8113: 0, #8114: 1 ---> G19 plane
#8113: 1, #8114: 0 ---> G16 plane
#8113: 1, #8114: 1 ---> G16 plane

0: Not G19 plane
1: G19 plane

(Note) This parameter is valid for the G code system 2, 3, 4 or 5 ("#1037 cmdtyp"="3", "4", "5" or "6").

#8115 G83/87 RAPID

Select the operation upon the completion of each step in deep hole drilling cycle (G83, G87).
0: Returns to R point before performing next step.
1: Returns by the amount of d (parameter setting) setting value before performing next step.

#8116 CoordRotPara invd

Select whether to enable the coordinate rotation by the parameters.
0: Enable
1: Disable

#8117 OFS Diam DESIGN

Select tool radius or tool diameter compensation amount to be specified.
0: Tool radius compensation amount
1: Tool diameter compensation amount

#8119 Comp. unit switch

Select the setting unit of compensation amount that has no decimal point.
0: 1mm (or 1inch) unit
1: The minimum command unit (follows "#1003 iunit")

(PR) #8120 FONT SELECTION

Select the font when Simplified Chinese is selected for "#1043 lang".
0: MITSUBISHI CNC GOTHIC font
1: Standard Windows font
2: GB18030 font
(Note) This parameter is enabled for M800VW/M80VW with Windows-based display.

#8121 Screen Capture

Select whether to enable the screen capture function.
0: Invalid
1: Valid (Screenshots are saved on USB memory or on front-side SD card)
2: Valid (Screenshots are saved on back-side SD card)
(Note 1) By setting this parameter to "1" or "2", and by keeping pushing the [SHIFT] key, screen capture will be executed.
(Note 2) This parameter is valid for M800VS and M80V.
(Note 3) If an USB memory is inserted, it takes precedence over other devices.
(*) This parameter is reset to "0" (Invalid) when the power is turned ON again.

#8122 Keep G43 MDL M-REF

Select whether to keep the tool length offset by high speed manual reference position return during tool length offset.
0: Will not be kept (Cancel)
1: Hold

#8123 H-spd retract ON

Select whether to enable high-speed retract while fixed cycle for drilling is running.

0: Disable

1: Enable

#8124 Mirr img at reset

Select the operation type of the mirror image by parameter setting and the mirror image by external input.

0: The current mirror image is canceled, and new mirror image will start with the machine position at reset as the mirror center.

1: The mirror center is kept to continue the mirror image.

#8125 Check Scode in G84

Select how to operate when there is no S command in synchronous tapping block.

0: Use the spindle function modal value as S-command value.

1: Output a program error (P181).

#8126 Disable op tone

Disable operation tones when operating the keyboard/touch panel.

0: Enable the operation tones

1: Disable the operation tones

(Note) This parameter is enabled for M800VS, M80V, non-Windows-based display of M800VW/M80VW.

#8127 R-Navi manu F coor

Select the initial value of the coordinate system for a manual feed while a machining surface is selected in the R-Navi function.

0: Feature coordinate system

1: Machine coordinate system

#8129 Subpro No. select

Select the subprogram No. to be called preferentially in subprogram control.

0: Commanded program No.

1: Four-digit program No. beginning with O No.

2: Eight-digit program No. beginning with O No.

(Note) The program to be called in user macro, figure rotation, macro interruption and compound type fixed cycle also follows this setting.

#8130 Dwell in rev.

Select the type of dwell for G04.

0: Dwell time is specified in seconds, irrespective of the synchronous feed mode (G95) or the asynchronous feed mode (G94). For G04D, the dwell specified in spindle revolutions is applied.

1: Dwell time is specified in spindle revolutions while the synchronous feed mode (G95) is ON, whereas it is specified in seconds while the asynchronous feed mode (G94) is ON.

#8131 High speed/accu 3

Select how to treat high-speed high-accuracy II and III commands.

0: As specified in G05P command

1: Treat G05 P2 during high-accuracy mode or G05P10000 as high-speed high-accuracy control III command (G05P20000).

2: Treat G05P20000 as high-speed high-accuracy control II command (G05P10000).

#8132 G53.6 block stop

Select whether to execute a single block stop at the completion of rotation of each axis when G53.6 is given with the number of simultaneous contour control axes limited to 4.

0: Not execute a single block stop

1: Execute a single block stop

#8133 Intrctv macro call

Specify the interactive macro to call from the cycle of interactive cycle insertion.

0: Call standard interactive macro

1: Call interactive macro in the machining program area

When a program, whose name is same as standard interactive macro, exists in the machining program area, the program in the machining program area is called preferentially if "1" is set to this parameter.
When a program, whose name is same as standard interactive macro, does not exist in the machining program area, standard interactive macro is called even if "1" is set to this parameter.

#8134 Email send disable

E-mail sending by the email notification to operator can be disabled.

0: Enable

1: Disable

#8135 G5P4 single block

Single block stop is disabled during direct command mode.

0: Not disable single block stop

1: Disable single block stop

#8137 T. tool shape comp

Select whether to enable the turning-tool shape compensation in compound type fixed cycle for turning machining I.

0: Disable

1: Enable

#8138 Pre-compens. shape

Select whether to display the pre-compensation finish shape of the turning-tool shape compensation for compound type fixed cycle for turning machining I in 2D graphic check.

0: Display

1: Not display

#8139 TCP G0 temp.cancel

Select whether to temporarily cancel the interpolation of linear axes that results from the rotation of the table for a G0 command during tool center point control/tool cutting point control.

0: Not temporarily cancel the interpolation

1: Temporarily cancel the interpolation

(Note 1) This parameter is valid for a machine with a rotary axis on the table side.

(Note 2) This parameter is valid when "#7908 SLCT_PRG_COORD" = 1 (when programming is done with respect to the workpiece coordinate system).

(PR) #8140 Reserve T wear com

This parameter enables the tool wear compensation amounts to be reserved with the machining being performed.
The reserved tool wear compensation values can be written and executed using the PLC signal.
With this function, the following five types of tool wear compensation amounts can be reserved:

- Tool nose wear compensation amount for the 1st axis (normally X axis)
- Tool nose wear compensation amount for the 2nd axis (normally Z axis)
- Tool wear compensation amount for the additional axis
- Tool wear compensation amount for the 2nd additional axis
- Tool nose radius wear compensation amount

0: Disable the reserved memory for tool wear compensation.

1: Enable the reserved memory for tool wear compensation.

#8141 Restart srch ONBP

Select the type of Restart search to be performed when Restart search is executed with specified ONBP No. in the multi-part system program management.

0: Restart search through a program individually for each part system.

1: Restart search through a program for all part systems at once.
(Program No., sequence No., block No. and number of repetitions will be common to all part systems.)

(Note) This parameter is only valid when "#1285 ext21/bit0" (Multi-part system program management) is set to "1" and "#1285 ext21/bit1" (program search is performed for all part systems) is set to "1".

#8142 PLC timer unit

Select the time unit for the value specified for PLC timer.

0: The time unit is determined by the PLC program instruction.

1: 1 ms units

#8143 PLC int.timer unit

Select the time unit for the value specified for PLC integrated timer.

0: The time unit is determined by the PLC program instruction.

1: 1 ms units

2: 10 ms units

#8144 OP srch NB all Operation/check search with specified NB No. for all part systems at once

Select whether to search only the displayed part systems or search through for all part systems at once when operation/check search is executed with specified NB No. in the Multi-part system program management.

0: Search through NB No. only for displayed part systems.

1: Search through NB No. for all part systems at once.

(Note) This parameter is enabled only when "#1285 ext21/bit0" (Multi-part system program management) and "#1285 ext21/bit1" (Switching of program search type) are set to "1".

#8145 Validate F1 digit

Select whether to execute the F command with a 1-digit code command or with a direct numerical command. (The same value as "#1079 F1digt" will be reflected. When either setting changes, the other will change accordingly.)

0: Direct numerical command (command feedrate during feed per minute or rotation)

1: 1-digit code command (with the feedrate specified by the parameters "#1185 spd_F1" to "#1189 spd_F5")

(PR) #8146 RTDS IP address

Specify the IP address of the PC to which the sampling data is sent in Real-time data sampling.

---Setting range---

0.0.0.0 to 255.255.255.255

#8150 Arb AxExch Ret Inv

Specify whether to temporarily cancel the retention of the axis exchange by arbitrary axis exchange control at power off.

0: Not temporarily cancel.

1: Temporarily cancel (start up with the basic axis configuration).

(Note) This parameter is for recovery.
If the axis exchange by arbitrary axis exchange control cannot be cancelled by normal operation, set this parameter to "1" and turn the power off and on again.
Normally, set it to "0".

#8153 Arc calc method

Switch the method of calculating the intersection of an arc and a connecting movement block in the machining path after Tool radius compensation or Tool nose radius compensation is applied. (For M system)

0: Calculate the intersection assuming the angle formed is near 180 degrees.

1: Calculate the intersection regardless of the angle formed.

#8155 Sub-pro interrupt

Select the type of the user macro interrupt.
(The same value as "#1229 set01/bit0" will be reflected. When either setting changes, the other will change accordingly.)

0: The user macro interrupt of macro type

1: The user macro interrupt of sub-program type

#8156 Fine thread cut E

Select what is to be specified with the address E.
(The same value as "#1229 set01/bit1" will be reflected. When either setting changes, the other will change accordingly.)

0: Specify the number of threads per inch for inch screw cutting.

1: Specify the precision lead for inch screw cutting.

#8157 Radius comp type B (M system) / Nose R comp type B (L system)

For M system

Select the method of the arithmetic processing for the intersection point when the start-up or cancel command is operated during radius compensation.
(The same value as "#1229 set01/bit2" will be reflected. When either setting changes, the other will change accordingly.)

0: The processing does not handle the start-up or cancel command block: handle the offset vector in the direction vertical to that of the command instead.

1: The processing is executed for the intersection point between the command block and the next block.

For L system

Select the method of the arithmetic processing for the intersection point when the start-up or cancel commands are operated during nose R or radius compensation.
(The same value as "#1229 set01/bit2" will be reflected. When either setting changes, the other will change accordingly.)

0: The processing does not handle the start-up or cancel command block: handle the offset vector in the direction vertical to that of the command instead.

1: The processing is executed for the intersection point between the command block and the next block.

#8158 Init const sur spd

Select the initial state after the power-ON.
(The same value as "#1229 set01/bit3" will be reflected. When either setting changes, the other will change accordingly.)

0: Constant surface speed control cancel mode

1: Constant surface speed control mode

#8159 Synchronous tap

Select whether to use the floating tap chuck in G74 and G84 tap cycles.
(The same value as "#1229 set01/bit4" will be reflected. When either setting changes, the other will change accordingly.)

0: With a floating tapping chuck

1: Without a floating tapping chuck

#8160 Start point alarm

Select an operation when the operation start point cannot be found while moving to the next block of G117.
(The same value as "#1229 set01/bit5" will be reflected. When either setting changes, the other will change accordingly.)

0: The auxiliary function is enabled after the block for the movement has finished.

1: The program error (P33) occurs.

#8161 Vibe cut F value

Select how the F command value is treated during the vibration cutting mode.

0: The F command value is a resultant speed that does not include the vibration component.

1: The F command value is the resultant speed that includes the vibration component.

(PR) #8165 Tlife_DrillCnt

Select how to count a fixed cycle for drilling when the tool is managed based on the number of uses in tool life management.

0: Add one when the change from rapid traverse to cutting feed takes place

1: Add the number of drilled holes

#8166 operation mode 1

bit0: Tool Radius Compensation during Coordinate Rotation by Parameter

This parameter specifies whether to perform Coordinate Rotation by Parameter and Tool Radius Compensation at the same time.
Parameter "#19008 PRM coord rot type" must be set to "1" to activate this parameter setting.

0: No

1: Yes

#8167 operation mode 2

Not used. Set to "0".

#8168 operation mode 3

Not used. Set to "0".

#8169 operation mode 4

Not used. Set to "0".

(PR) #8170 Remote Service

Select whether to enable the Remote service function.

0: Disable

1: Enable

(PR) #8171 Diag Report Enable

Select whether to enable the Diagnosis report function of Remote service.

0: Disable

1: Enable

(PR) #8172 Enable Cond Report

Select whether to enable Machine condition monitoring report for the remote service gateway function.

0: Disable

1: Enable

#11801 SPRINT ON SPRINT ON

Specify whether to enable or disable SPRINT.

0: Disable

1: Enable

When SPRINT is enabled

♦M codes for SPRINT control are executable.
♦SKIP8 is assigned to the SPRINT connector of the expansion unit FCU8-EX543.

1.4 Control Parameters 2

	#1025	l_plane	Initial plane selection

Select the plane to be selected when the power is turned ON or reset.
When 0 is specified, 1 is assumed (X-Y plane).e model and specifications.

1: X-Y plane (G17 command state)

2: Z-X plane (G18 command state)

3: Y-Z plane (G19 command state)

(PR)	#1037	cmdtyp	Command type

Set the G code list and compensation type for programs.

1: List1 (for M) Type I (one compensation amount for one compensation No.)

2: List1 (for M) Type II (shape and wear compensation amounts for one comp. No.)

3: List2 (for L) Type III (shape and wear compensation amounts for one comp. No.)

4: List3 (for L) Ditto

5: List4 (for special L) Ditto

6: List5 (for special L) Ditto

7: List6 (for special L) Ditto

8: List7 (for special L) Ditto

9: List8 (for M) M2 form at type Type I
(one compensation amount for one compensation No.)

10: List8 (for M) M2 form at type Type II
(shape and wear compensation amounts for one compensation No.)

There are some items in the specifications that can be used or cannot be used according to the value set in this parameter.

The file structure may also change depending on the compensation data type.

(Note) When this parameter is changed, the file system will be changed after the power is turned ON.
So always execute format.
The new format will be enabled after turning the power ON again.

Setting order

(1) cmdtyp changeover -> (2) Turn power ON again -> (3) Format -> (4) Turn power ON again

(Note) Compensation type III can be selected for M system by setting #1046.

	#1073	l_Absm	Initial absolute setting

Select the mode (absolute or incremental) at turning ON the power or reset.

0: Incremental setting

1: Absolute setting

	#1074	l_Sync	Initial synchronous feed

Select the feedrate mode at turning ON the power or reset.

0: Asynchronous feed (feed per minute)

1: Synchronous feed (feed per revolution)

	#1075	l_G00	Initial G00

Select the linear command mode at turning ON the power or reset.

0: Linear interpolation (G01 command state)

1: Positioning (G00 command state)

	#1076	AbsInc	ABS/INC address (for L system only)

Select the command method for the absolute and incremental commands.
The absolute command/incremental command can be issued by using the absolute command address and incremental command address for the same axis.

0: Use G command for the absolute and incremental commands.

1: Use axis name for the absolute and incremental commands.

(The axis name in "#1013 axname" will be the absolute command, "#1014 incax" will be the incremental command.)

#1085 G00Drn G00 dry run

Select whether to apply dry run (feed at manual setting speed instead of command feedrate) to the G00 command.

0: Not apply to G00. (move at rapid traverse rate)

1: Apply to G00. (move at manual setting speed)

#1086 G0Intp G00 non-interpolation

Select the G00 travel path type.

0: Move linearly toward the end point. (interpolation type)

1: Move to the end point of each axis at the rapid traverse feedrate for each axis. (non-interpolation)

(Note) If this parameter is set to "1", neither of the following functions will be available: rapid traverse constant-gradient acceleration/deceleration and rapid traverse constant-gradient multi-step acceleration/deceleration.

#1148 I_G611 Initial hi-precis

Select the modal state at power ON from among the following: high-accuracy control mode, high-speed high-accuracy control I mode, high-speed high-accuracy control II mode or high-speed high-accuracy control III mode.

0: G08P0/G64 (cutting) mode

1: G08P1/G61.1 (high-accuracy control) mode

2: G05.1Q1 (high-speed high-accuracy control I) mode

3: G05P10000 (high-speed high-accuracy control II) mode

4: G05P20000 (high-speed high-accuracy control III) mode

#8173 Hold intr amount

Select whether to clear or hold the interruption amount after the "NC reset 1 (or 2)" signal is ON when the manual ABS switch is OFF.

0: Clear (Reset the coordinate deviation due to the interruption)

1: Hold

#8174 T meas. in mirror

Select the measurement operation for mirror-imaged axes during the manual tool length measurement 1 or 2.

0: Set the measurement result as the tool length.

1: Measure the length from the position that allows for the mirrored axis' status, and set the result as the tool length.

#8179 Stroke_prechkTYPE

Select when the stroke limit before travel function should determine a command as entering the forbidden area set by the stored stroke limit.

0: Operation stops by the stroke check before travel function only when the end point of the command is in the forbidden area.

1: Operation stops by the stroke check before travel function when the command path passes through the forbidden area. For a command other than given below, the operation stops only when the end point is in the forbidden area.
Corresponding commands: G00, G01, G02, G03, G28, G30, G33 and G53

#8180 Ini spline intrpl2

Set the modal state to Spline interpolation2 when power is turned ON.

0: Disable

1: Enable

(Note) This function is only valid while SSS control and Tolerance control are enabled.
To enable the setting, set "#8090 SSS ON" and "#12066 Tolerance ctrl ON" to "1".

(PR) #8183 Orbit_Spindle No.

This is the spindle number or name of the spindle to be used for Orbit machining.

By spindle number:

Specify with the spindle number from 1 through 8.
If the specified spindle number is out of range, the control regards it as the first spindle.

By spindle name:

Specify with the spindle name from 1 through 9.
If the specified spindle name is out of range, the control regards it as the first spindle.

(Note) When the names of all axes are defined by the "#3077 Sname" (Spindle command name), use "By spindle name".

---Setting range---

0 to 9

(PR) #8184 Orbit_Up-to-speed

This parameter determines whether the control turns on the "Spindle up-to-speed" signal (X188D) or not when moving the axis in a circular path with Orbit machining.

0: No. Do not turn on.

1: Yes. Turn on the signal.

(PR) #8185 Contin circ motion

This parameter determines whether the control continues a circular motion in Orbit machining or not when the operation is stopped by feed hold or single block stop.

0: No. The control stops circular motion.

1: Yes. The control continues circular motion.

#79801 Tool turn posn

This parameter specifies the position where the tool change command is issued.

0: X: clearance, Z: clearance

1: X: machine zero, Z: clearance

2: X: clearance, Z: machine zero

3: X: machine zero, Z: machine zero

4: X: 2nd reference position, Z: 2nd reference position

5: X: clearance, Z: end point of previous process

6: X: machine zero, Z: end point of previous process

7: X: end point of previous process, Z: clearance

8: X: end point of previous process, Z: machine zero

#79802 Tool turn clrn X

This parameter specifies the clearance in X axis direction using the radius value. This clearance is used to avoid interference with the workpiece while the tool is turning.

---Setting range---

0 to 65535 (0.001 mm/0.0001 inch)

#79803 Tool turn clrn Z

This parameter specifies the clearance in Z axis direction. This clearance is used to avoid interference with the workpiece while the tool is turning.

---Setting range---

0 to 65535 (0.001 mm/0.0001 inch)

1.5 I/O Parameters

#9001 DATA IN PORT

Select the port for inputting the data such as machine program and parameters.

1: ch1

2: ch2

#9002 DATA IN DEV.

Select the device No. for inputting the data. (The device Nos. correspond to the input/output device parameters.)

---Setting range---

0 to 4

#9003 DATA OUT PORT

Select the port for outputting the data such as machine program and parameters.

1: ch1

2: ch2

#9004 DATA OUT DEV.

Select the device No. for outputting the data. (The device Nos. correspond to the input/output device parameters.)

---Setting range---

0 to 4

#9005 TAPE MODE PORT

Select the input port for running with the tape mode.

1: ch1

2: ch2

#9006 TAPE MODE DEV.

Select the device No. to be run with the tape mode. (The device Nos. correspond to the input/output device parameters.)

---Setting range---

0 to 4

#9007 MACRO PRINT PORT

Select the output port used for the user macro DPRINT command.

1: ch1

2: ch2

9: Memory card

#9008 MACRO PRINT DEV.

Select the device No. used for the DPRINT command. (The device Nos. correspond to the input/output device parameters.)

---Setting range---

0 to 4

#9009 PLC IN/OUT PORT

Select the port for inputting/outputting various data with PLC.

1: ch1

2: ch2

#9010 PLC IN/OUT DEV.

Select the device No. used for the PLC input/output. (The device Nos. correspond to the input/output device parameters.)

---Setting range---

0 to 4

#9011 REMOTE PRG IN PORT

Select the port for inputting remote programs.

1: ch1

2: ch2

#9012 REMOTE PRG IN DEV.

Select the device No. used to input remote programs. (The device Nos. correspond to the input/output device parameters.)

---Setting range---

0 to 4

#9013 EXT UNIT PORT

Select the port for communication with an external unit.

1: ch1

2: ch2

#9014 EXT UNIT DEV.

Select the unit No. used for communication with an external unit (The device Nos. correspond to the input/output device parameters.)

---Setting range---

0 to 4

#9017 HANDY TERMINAL PORT

Select the port for communication with a handy terminal.

1: ch1

2: ch2

#9018 HANDY TERMINAL DEV.

Select the device No. used for communication with a handy terminal. (The device Nos. correspond to the input/output device parameters.)

---Setting range---

0 to 4

#9053 M2 macro converter

Not used.

#9054 MACRO PRINT FILE

Set the file name to save the output data to a memory card with the DRPNT command for the user macro. If this parameter is not set, the data will be output under the following name.
dprt$-MMDDhhmmssff
$ is the part system No. in which DPRNT is commanded, MMDDhhmmssff is the current date. (MM: month, DD: day, hh: hour, mm: minute, ss: second, ff: millisecond)

(Note) This parameter is enabled when "#9007 Macro print directory" is set to "9".

---Setting range---

Program name or file name (up to 32 characters)

#9101 DEV0 DEVICE NAME

Set the device name corresponding to the device No.

Set a simple name for quick identification.

---Setting range---

Use three or less characters consisting of alphabet characters, numerals and symbols.

#9102 DEV0 BAUD RATE

Select the serial communication speed.

0: 19200 (bps)

1: 9600

2: 4800

3: 2400

4: 1200

5: 600

6: 300

7: 110

#9103 DEV0 STOP BIT

Select the stop bit length used in the start-stop system.

Refer to "#9104 DEV0 PARITY CHECK". At the output of data, the number of characters is always adjusted for the parity check.

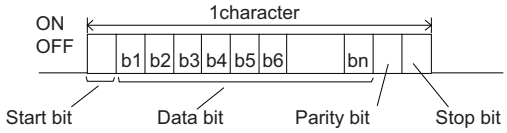
1: 1 (bit)

2: 1.5

3: 2

#9104 DEV0 PARITY CHECK

Select whether to add a parity check bit to the data.



Set this parameter in accordance with the I/O device specifications.

0: Not add a parity bit at the input/output

1: Add a parity bit at the input/output

#9105 DEV0 EVEN PARITY

Select odd or even when parity is added to the data. This parameter is ignored when no parity is added.

0: Odd parity

1: Even parity

#9106 DEV0 CHR. LENGTH

Set the length of the data bit.

Refer to "#9104 DEV0 PARITY CHECK".

0: 5 (bit)

1: 6

2: 7 (NC connection not supported)

3: 8

#9107 DEV0 TERMINATR TYP

Select the code to terminate data reading.

0, 3: EOR

1, 2: EOB or EOR

(*) When M800VW display side serial port is selected

0: No terminator

1: EOR

2: EOB

3: EOB or EOR

#9108 DEV0 HAND SHAKE

Select the transmission control method.

No handshaking will be used when a value except 1 to 3 is set.

1: RTS/CTS method

2: No handshaking

3: DC code method

#9109 DEV0 DC CODE PRTY

Select the DC code type when the DC code method is selected.

0: Not add parity to DC code. (DC3 = 13H)

1: Add parity to DC code. (DC3 = 93H)

#9111 DEV0 DC2/4 OUTPUT

Select the DC code handling when outputting data to the output device.

DC2 / DC4

0: None / None

1: Yes / None

2: None / Yes

3: Yes / Yes

#9112 DEV0 CR OUTPUT

Select whether to add the (CR) code just before the EOB (L/F) code during output.

0: Not add

1: Add

#9113 DEV0 EIA OUTPUT

Select ISO or EIA code for data output.

In data input mode, the ISO and EIA codes are identified automatically.

0: ISO code output

1: EIA code output

#9114 DEV0 FEED CHR.

Set the length of the tape feed to be output at the start and end of the data during tape output.

---Setting range---

0 to 999 (characters)

#9115 DEV0 PARITY V

Select whether to perform the parity check for the number of characters in a block at the input of data.

At the output of data, the number of characters is always adjusted for the parity check.

0: Not perform parity V check

1: Perform parity V check

#9116 DEV0 TIME-OUT (sec)

Set the time out time to detect an interruption in communication.

Time out check will not be executed when set to "0".

---Setting range---

0 to 30 (s)

#9117 DEV0 DR OFF

Select whether to enable the DR data check in data I/O mode.

0: Enable

1: Disable

#9118 DEV0 DATA ASCII

Select the code of the output data.

0: ISO/EIA code
(Depends on whether #9113, #9213, #9313, #9413 or #9513 EIA output parameter is set up.)

1: ASCII code

#9119 DEV0 INPUT TYPE

Select the mode for input (verification).

0: Standard input (Data from the very first EOB is handled as significant information.)

1: EOBs following the first EOB of the input data are skipped until data other than EOB is input.

#9120 DEV0 OUT BUFFER

Select the buffer size of the output data which is output to output device using NC side serial port.

If the output device has a transmission error (overrun error), decrease the buffer size with this parameter.

If the buffer size is decreased, output time will prolong according to the size.

0: 250 bytes (default)

1: 1 byte

2: 4 bytes

3: 8 bytes

4: 16 bytes

5: 64 bytes

#9121 DEV0 EIA CODE [

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " [".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9122 DEV0 EIA CODE]

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "] ".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9123 DEV0 EIA CODE #

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "#".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9124 DEV0 EIA CODE *

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "*".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9125 DEV0 EIA CODE =

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "=".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9126 DEV0 EIA CODE:

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code ":".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9127 DEV0 EIA CODE $

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "$".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9128 DEV0 EIA CODE !

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "!".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9201 DEV1 DEVICE NAME

Set the device name corresponding to the device No.

Set a simple name for quick identification.

---Setting range---

Use three or less characters consisting of alphabet characters, numerals and symbols.

#9202 DEV1 BAUD RATE

Select the serial communication speed.

0: 19200 (bps)

1: 9600

2: 4800

3: 2400

4: 1200

5: 600

6: 300

7: 110

#9203 DEV1 STOP BIT

Select the stop bit length used in the start-stop system.

Refer to "#9204 DEV1 PARITY CHECK". At the output of data, the number of characters is always adjusted for the parity check.

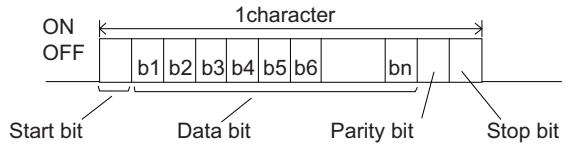
1: 1 (bit)

2: 1.5

3: 2

#9204 DEV1 PARITY CHECK

Select whether to add a parity check bit to the data.



Set this parameter in accordance with the I/O device specifications.

0: Not add a parity bit at the input/output

1: Add a parity bit at the input/output

#9205 DEV1 EVEN PARITY

Select odd or even when parity is added to the data. This parameter is ignored when no parity is added.

0: Odd parity

1: Even parity

#9206 DEV1 CHR. LENGTH

Set the length of the data bit.

Refer to "#9204 DEV1 PARITY CHECK".

0: 5 (bit)

1: 6

2: 7 (NC connection not supported)

3: 8

#9207 DEV1 TERMINATR TYP

Select the code to terminate data reading.

0, 3: EOR

1, 2: EOB or EOR

(*) When M800VW display side serial port is selected

0: No terminator

1: EOR

2: EOB

3: EOB or EOR

#9208 DEV1 HAND SHAKE

Select the transmission control method.

No handshaking will be used when a value except 1 to 3 is set.

1: RTS/CTS method

2: No handshaking

3: DC code method

#9209 DEV1 DC CODE PRTY

Select the DC code type when the DC code method is selected.

0: Not add parity to DC code. (DC3 = 13H)

1: Add parity to DC code. (DC3 = 93H)

#9211 DEV1 DC2/4 OUTPUT

Select the DC code handling when outputting data to the output device.

DC2 / DC4

0: None / None

1: Yes / None

2: None / Yes

3: Yes / Yes

#9212 DEV1 CR OUTPUT

Select whether to add the (CR) code just before the EOB (L/F) code during output.

0: Not add

1: Add

#9213 DEV1 EIA OUTPUT

Select ISO or EIA code for data output.

In data input mode, the ISO and EIA codes are identified automatically.

0: ISO code output

1: EIA code output

#9214 DEV1 FEED CHR.

Set the length of the tape feed to be output at the start and end of the data during tape output.

---Setting range---

0 to 999 (characters)

#9215 DEV1 PARITY V

Select whether to perform the parity check for the number of characters in a block at the input of data.

At the output of data, the number of characters is always adjusted for the parity check.

0: Not perform parity V check

1: Perform parity V check

#9216 DEV1 TIME-OUT (sec)

Set the time out time to detect an interruption in communication.

Time out check will not be executed when set to "0".

---Setting range---

0 to 30 (s)

#9217 DEV1 DR OFF

Select whether to enable the DR data check in data I/O mode.

0: Enable

1: Disable

#9218 DEV1 DATA ASCII

Select the code of the output data.

0: ISO/EIA code

(Depends on whether #9113, #9213, #9313, #9413 or #9513 EIA output parameter is set up.)

1: ASCII code

#9219 DEV1 INPUT TYPE

Select the mode for input (verification).

0: Standard input (Data from the very first EOB is handled as significant information.)

1: EOBs following the first EOB of the input data are skipped until data other than EOB is input.

#9220 DEV1 OUT BUFFER

Select the buffer size of the output data which is output to output device using NC side serial port.

If the output device has a transmission error (overrun error), decrease the buffer size with this parameter.

If the buffer size is decreased, output time will prolong according to the size.

0: 250 bytes (default)

1: 1 byte

2: 4 bytes

3: 8 bytes

4: 16 bytes

5: 64 bytes

#9221 DEV1 EIA CODE [

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " [".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9222 DEV1 EIA CODE]

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "] ".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9223 DEV1 EIA CODE #

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "#".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9224 DEV1 EIA CODE *

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "*".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9225 DEV1 EIA CODE =

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "=".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9226 DEV1 EIA CODE:

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code ":".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9227 DEV1 EIA CODE $

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "$".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9228 DEV1 EIA CODE !

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "!".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9301 DEV2 DEVICE NAME

Set the device name corresponding to the device No.

Set a simple name for quick identification.

---Setting range---

Use three or less characters consisting of alphabet characters, numerals and symbols.

#9302 DEV2 BAUD RATE

Select the serial communication speed.

0: 19200 (bps)

1: 9600

2: 4800

3: 2400

4: 1200

5: 600

6: 300

7: 110

#9303 DEV2 STOP BIT

Select the stop bit length used in the start-stop system.

Refer to "#9304 DEV2 PARITY CHECK". At the output of data, the number of characters is always adjusted for the parity check.

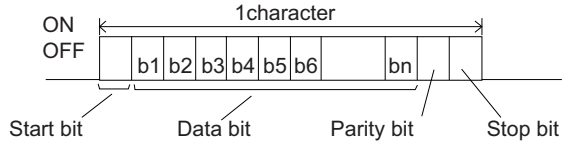
1: 1 (bit)

2: 1.5

3: 2

#9304 DEV2 PARITY CHECK

Select whether to add a parity check bit to the data.



Set this parameter in accordance with the I/O device specifications.

0: Not add a parity bit at the input/output

1: Add a parity bit at the input/output

#9305 DEV2 EVEN PARITY

Select odd or even when parity is added to the data. This parameter is ignored when no parity is added.

0: Odd parity

1: Even parity

#9306 DEV2 CHR. LENGTH

Set the length of the data bit.

Refer to "#9304 DEV2 PARITY CHECK".

0: 5 (bit)

1: 6

2: 7 (NC connection not supported)

3: 8

#9307 DEV2 TERMINATR TYP

Select the code to terminate data reading.

0, 3: EOR

1, 2: EOB or EOR

(*) When M800VW display side serial port is selected

0: No terminator

1: EOR

2: EOB

3: EOB or EOR

#9308 DEV2 HAND SHAKE

Select the transmission control method.

No handshaking will be used when a value except 1 to 3 is set.

1: RTS/CTS method

2: No handshaking

3: DC code method

#9309 DEV2 DC CODE PRTY

Select the DC code type when the DC code method is selected.

0: Not add parity to DC code. (DC3 = 13H)

1: Add parity to DC code. (DC3 = 93H)

#9311 DEV2 DC2/4 OUTPUT

Select the DC code handling when outputting data to the output device.

DC2 / DC4

0: None / None

1: Yes / None

2: None / Yes

3: Yes / Yes

#9312 DEV2 CR OUTPUT

Select whether to add the (CR) code just before the EOB (L/F) code during output.

0: Not add

1: Add

#9313 DEV2 EIA OUTPUT

Select ISO or EIA code for data output.

In data input mode, the ISO and EIA codes are identified automatically.

0: ISO code output

1: EIA code output

#9314 DEV2 FEED CHR.

Set the length of the tape feed to be output at the start and end of the data during tape output.

---Setting range---

0 to 999 (characters)

#9315 DEV2 PARITY V

Select whether to perform the parity check for the number of characters in a block at the input of data.

At the output of data, the number of characters is always adjusted for the parity check.

0: Not perform parity V check

1: Perform parity V check

#9316 DEV2 TIME-OUT (sec)

Set the time out time to detect an interruption in communication.

Time out check will not be executed when set to "0".

---Setting range---

0 to 30 (s)

#9317 DEV2 DR OFF

Select whether to enable the DR data check in data I/O mode.

0: Enable

1: Disable

#9318 DEV2 DATA ASCII

Select the code of the output data.

0: ISO/EIA code

(Depends on whether #9113, #9213, #9313, #9413 or #9513 EIA output parameter is set up.)

1: ASCII code

#9319 DEV2 INPUT TYPE

Select the mode for input (verification).

0: Standard input (Data from the very first EOB is handled as significant information.)

1: EOBs following the first EOB of the input data are skipped until data other than EOB is input.

#9320 DEV2 OUT BUFFER

Select the buffer size of the output data which is output to output device using NC side serial port.

If the output device has a transmission error (overrun error), decrease the buffer size with this parameter.

If the buffer size is decreased, output time will prolong according to the size.

0: 250 bytes (default)

1: 1 byte

2: 4 bytes

3: 8 bytes

4: 16 bytes

5: 64 bytes

#9321 DEV2 EIA CODE [

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " [".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9322 DEV2 EIA CODE]

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "] ".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9323 DEV2 EIA CODE #

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "#".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9324 DEV2 EIA CODE *

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "*".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9325 DEV2 EIA CODE =

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "=".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9326 DEV2 EIA CODE:

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code ":".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9327 DEV2 EIA CODE $

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "$".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9328 DEV2 EIA CODE !

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "!".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9401 DEV3 DEVICE NAME

Set the device name corresponding to the device No.

Set a simple name for quick identification.

---Setting range---

Use three or less characters consisting of alphabet characters, numerals and symbols.

#9402 DEV3 BAUD RATE

Select the serial communication speed.

0: 19200 (bps)

1: 9600

2: 4800

3: 2400

4: 1200

5: 600

6: 300

7: 110

#9403 DEV3 STOP BIT

Select the stop bit length used in the start-stop system.

Refer to "#9404 DEV3 PARITY CHECK". At the output of data, the number of characters is always adjusted for the parity check.

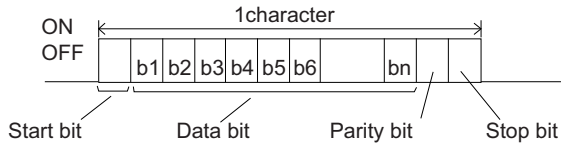
1: 1 (bit)

2: 1.5

3: 2

#9404 DEV3 PARITY CHECK

Select whether to add a parity check bit to the data.



Set this parameter in accordance with the I/O device specifications.

0: Not add a parity bit at the input/output

1: Add a parity bit at the input/output

#9405 DEV3 EVEN PARITY

Select odd or even when parity is added to the data. This parameter is ignored when no parity is added.

0: Odd parity

1: Even parity

#9406 DEV3 CHR. LENGTH

Set the length of the data bit.

Refer to "#9404 DEV3 PARITY CHECK".

0: 5 (bit)

1: 6

2: 7 (NC connection not supported)

3: 8

#9407 DEV3 TERMINATR TYP

Select the code to terminate data reading.

0, 3: EOR

1, 2: EOB or EOR

(*) When M800VW display side serial port is selected

0: No terminator

1: EOR

2: EOB

3: EOB or EOR

#9408 DEV3 HAND SHAKE

Select the transmission control method.

No handshaking will be used when a value except 1 to 3 is set.

1: RTS/CTS method

2: No handshaking

3: DC code method

#9409 DEV3 DC CODE PRTY

Select the DC code type when the DC code method is selected.

0: Not add parity to DC code. (DC3 = 13H)

1: Add parity to DC code. (DC3 = 93H)

#9411 DEV3 DC2/4 OUTPUT

Select the DC code handling when outputting data to the output device.

DC2 / DC4

0: None / None

1: Yes / None

2: None / Yes

3: Yes / Yes

#9412 DEV3 CR OUTPUT

Select whether to add the (CR) code just before the EOB (L/F) code during output.

0: Not add

1: Add

#9413 DEV3 EIA OUTPUT

Select ISO or EIA code for data output.

In data input mode, the ISO and EIA codes are identified automatically.

0: ISO code output

1: EIA code output

#9414 DEV3 FEED CHR.

Set the length of the tape feed to be output at the start and end of the data during tape output.

---Setting range---

0 to 999 (characters)

#9415 DEV3 PARITY V

Select whether to perform the parity check for the number of characters in a block at the input of data.

At the output of data, the number of characters is always adjusted for the parity check.

0: Not perform parity V check

1: Perform parity V check

#9416 DEV3 TIME-OUT (sec)

Set the time out time to detect an interruption in communication.

Time out check will not be executed when set to "0".

---Setting range---

0 to 30 (s)

#9417 DEV3 DR OFF

Select whether to enable the DR data check in data I/O mode.

0: Enable

1: Disable

#9418 DEV3 DATA ASCII

Select the code of the output data.

0: ISO/EIA code

(Depends on whether #9113, #9213, #9313, #9413 or #9513 EIA output parameter is set up.)

1: ASCII code

#9419 DEV3 INPUT TYPE

Select the mode for input (verification).

0: Standard input (Data from the very first EOB is handled as significant information.)

1: EOBs following the first EOB of the input data are skipped until data other than EOB is input.

#9420 DEV3 OUT BUFFER

Select the buffer size of the output data which is output to output device using NC side serial port.

If the output device has a transmission error (overrun error), decrease the buffer size with this parameter.

If the buffer size is decreased, output time will prolong according to the size.

0: 250 bytes (default)

1: 1 byte

2: 4 bytes

3: 8 bytes

4: 16 bytes

5: 64 bytes

#9421 DEV3 EIA CODE [

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " [".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9422 DEV3 EIA CODE]

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "] ".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9423 DEV3 EIA CODE #

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "#".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9424 DEV3 EIA CODE *

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "*".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9425 DEV3 EIA CODE =

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "=".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9426 DEV3 EIA CODE:

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code ":".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9427 DEV3 EIA CODE $

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "$".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9428 DEV3 EIA CODE !

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "!".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9501 DEV4 DEVICE NAME

Set the device name corresponding to the device No.

Set a simple name for quick identification.

---Setting range---

Use three or less characters consisting of alphabet characters, numerals and symbols.

#9502 DEV4 BAUD RATE

Select the serial communication speed.

0: 19200 (bps)

1: 9600

2: 4800

3: 2400

4: 1200

5: 600

6: 300

7: 110

#9503 DEV4 STOP BIT

Select the stop bit length used in the start-stop system.

Refer to "#9504 DEV4 PARITY CHECK". At the output of data, the number of characters is always adjusted for the parity check.

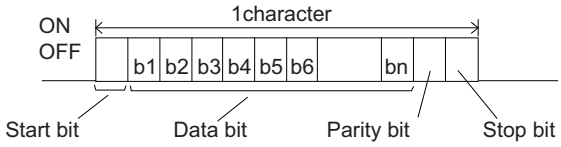
1: 1 (bit)

2: 1.5

3: 2

#9504 DEV4 PARITY CHECK

Select whether to add a parity check bit to the data.



Set this parameter in accordance with the I/O device specifications.

0: Not add a parity bit at the input/output

1: Add a parity bit at the input/output

#9505 DEV4 EVEN PARITY

Select odd or even when parity is added to the data. This parameter is ignored when no parity is added.

0: Odd parity

1: Even parity

#9506 DEV4 CHR. LENGTH

Set the length of the data bit.

Refer to "#9504 DEV4 PARITY CHECK".

0: 5 (bit)

1: 6

2: 7 (NC connection not supported)

3: 8

#9507 DEV4 TERMINATR TYP

Select the code to terminate data reading.

0, 3: EOR

1, 2: EOB or EOR

(*) When M800VW display side serial port is selected

0: No terminator

1: EOR

2: EOB

3: EOB or EOR

#9508 DEV4 HAND SHAKE

Select the transmission control method.

No handshaking will be used when a value except 1 to 3 is set.

1: RTS/CTS method

2: No handshaking

3: DC code method

#9509 DEV4 DC CODE PRTY

Select the DC code type when the DC code method is selected.

0: Not add parity to DC code. (DC3 = 13H)

1: Add parity to DC code. (DC3 = 93H)

#9511 DEV4 DC2/4 OUTPUT

Select the DC code handling when outputting data to the output device.

DC2 / DC4

0: None / None

1: Yes / None

2: None / Yes

3: Yes / Yes

#9512 DEV4 CR OUTPUT

Select whether to add the (CR) code just before the EOB (L/F) code during output.

0: Not add

1: Add

#9513 DEV4 EIA OUTPUT

Select ISO or EIA code for data output.

In data input mode, the ISO and EIA codes are identified automatically.

0: ISO code output

1: EIA code output

#9514 DEV4 FEED CHR.

Set the length of the tape feed to be output at the start and end of the data during tape output.

---Setting range---

0 to 999 (characters)

#9515 DEV4 PARITY V

Select whether to perform the parity check for the number of characters in a block at the input of data.

At the output of data, the number of characters is always adjusted for the parity check.

0: Not perform parity V check

1: Perform parity V check

#9516 DEV4 TIME-OUT (sec)

Set the time out time to detect an interruption in communication.

Time out check will not be executed when set to "0".

---Setting range---

0 to 30 (s)

#9517 DEV4 DR OFF

Select whether to enable the DR data check in data I/O mode.

0: Enable

1: Disable

#9518 DEV4 DATA ASCII

Select the code of the output data.

0: ISO/EIA code

(Depends on whether #9113, #9213, #9313, #9413 or #9513 EIA output parameter is set up.)

1: ASCII code

#9519 DEV4 INPUT TYPE

Select the mode for input (verification).

0: Standard input (Data from the very first EOB is handled as significant information.)

1: EOBs following the first EOB of the input data are skipped until data other than EOB is input.

#9520 DEV4 OUT BUFFER

Select the buffer size of the output data which is output to output device using NC side serial port.

If the output device has a transmission error (overrun error), decrease the buffer size with this parameter.

If the buffer size is decreased, output time will prolong according to the size.

0: 250 bytes (default)

1: 1 byte

2: 4 bytes

3: 8 bytes

4: 16 bytes

5: 64 bytes

#9521 DEV4 EIA CODE [

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " [".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9522 DEV4 EIA CODE]

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "] ".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9523 DEV4 EIA CODE #

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "#".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9524 DEV4 EIA CODE *

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "*".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9525 DEV4 EIA CODE =

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "=".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9526 DEV4 EIA CODE:

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code ":".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9527 DEV4 EIA CODE $

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "$".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

#9528 DEV4 EIA CODE !

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "!".

When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---

0 to FF (hexadecimal)

1.6 Axis Parameters

#1063 mandog Manual dog-type

Select the manual reference position return method for the second return (after the coordinate system is established) and later.

The initial reference position return after the power ON is performed with dog-type return, and the coordinate system will be established.

(This setting is not required when the absolute position detection is used.)

0: High speed return

1: Dog-type

#8201 AX. RELEASE

Select the function to remove the control axis from the control target.

0: Control as normal.

1: Remove from control target.

#8202 OT-CHECK OFF

Select whether to enable or disable the stored stroke limit II function set with #8204 and #8205.

0: Enable

1: Disable

#8203 OT-CHECK-CANCEL

Select whether or not the stored stroke limit (I, II, IIB, IB and IC) is enabled for the axis for which the simple absolute position method is selected ("#2049 type" is "9") until the first reference position return after power on is completed.

0: Enable (determined by #8202 and #8230 for II and IIB)

1: Disable

#8204 OT-CHECK-N

Set the coordinates of the (-) direction in the movable range of the stored stroke limit II or the lower limit coordinates of the prohibited range of stored stroke limit IIB.

If the sign and value are the same as #8205, the stored stroke limit II (or IIB) set with #8204 and #8205 will be invalid.

If the stored stroke limit IIB function is selected, the prohibited range will be between two points even when #8204 and #8205 are set in reverse.

When II is selected, the entire range will be prohibited if #8204 and #8205 are set in reverse.

---Setting range---

-99999.999 to 99999.999 (mm)

#8205 OT-CHECK-P

Set the coordinates of the (+) direction in the movable range of the stored stroke limit II or the upper limit coordinates of the prohibited range of stored stroke limit IIB.

---Setting range---

-99999.999 to 99999.999 (mm)

#8206 TOOL CHG. P

Set the coordinates of the tool change position for G30. n (tool change position return).

Set with coordinates in the basic machine coordinate system.

---Setting range---

-99999.999 to 99999.999 (mm)

#8207 G76/87 IGNR (for M system only)

Select whether to enable the shift operation at G76 (fine boring) and G87 (back boring).

0: Shift effective

1: No shift

#8208 G76/87 (-) (for M system only)

Select the shift direction at G76 and G87.

0: Shift to (+) direction

1: Shift to (-) direction

#8209 G60 SHIFT (for M system only)

Set the last positioning direction and distance for a G60 (unidirectional positioning) command.

---Setting range---

-99999.999 to 99999.999 (mm)

#8210 OT INSIDE

Select whether the stored stoke limit function set by #8204 and #8205 prevents the machine from moving to the inside or outside of the specified range.

0: Inhibits outside area (Select stored stroke limit II.)

1: Inhibits inside area (Select stored stroke limit IIB.)

#8211 MIRR. IMAGE

Select whether to enable the parameter mirror image function.

0: Disable

1: Enable

(PR) #8213 Rotation axis type

Select the rotation type (short-cut valid/invalid) or linear type (workpiece coordinate linear type/all coordinate linear type).

This parameter is enabled only when "#1017 rot" is set to "1". (Note)

0: Short-cut invalid

1: Short-cut valid

2: Workpiece coordinate linear type

3: All coordinate linear type

(Note) The movement method is as follows by the specified rotation axis type.

<Workpiece coordinate value>
0, 1: Display range 0° to 359.999°
2, 3: Display range 0° to ±99999.999°

<Machine coordinate value/relative position>
0, 1, 2: Display range 0° to 359.999°
3: Display range 0° to ±99999.999°

<ABS command>
0: The incremental amount from the end point to the current position is divided by 360, and the axis moves by the remainder amount according to the sign.
1: Moves with a short-cut to the end point.
2, 3: In the same manner as the normal linear axis, moves according to the sign by the amount obtained by subtracting the current position from the end point.

<INC command>
0, 1, 2, 3: Moves in the direction of the commanded sign by the commanded incremental amount starting at the current position.

<Reference position return>
0, 1, 2: The movement to the middle point applies to the ABS command or the INC command.
Returns with movement within 360 degrees from the middle point to reference position.
3: The movement to the middle point applies to the ABS command or the INC command.
Moves and returns in the reference position direction for the difference from the current position to the reference position.

#8215 TLM std length

Set the TLM standard length.

TLM standard length is the distance from a tool replacement point (reference position) to the measurement basic point (surface) which is used to measure the tool length.
(The same value as "#2016 tlml+" will be reflected. When either setting changes, the other will change accordingly.)

---Setting range---

-99999.999 to 99999.999 (mm)

#8216 Type in G28 return

Select the performance after establishing the reference position in reference position return command.

0: Moves to the reference position.

1: Won't move to the reference position.

#8217 Check start point

Set a drawing start position in graphic check of each axis.

Set a distance from actual machine position by an incremental value.

When "0" is set, an actual machine position will be regarded as a start point in graphic check.

---Setting range---

-99999.999 to 99999.999 (mm)

#8218 Dir cmd retrct amt

Set in which direction and how much the tool escapes when the operation is halted during direct command mode. (Radius value)

The tool does not escape when "0" is set.

---Setting range---

-99999.999 to 99999.999 (mm)

#8219 Hob retract amount 1

Set the retract amount using the radius value when the Hob retract amount selection signal is OFF. (Radius value)

Retract is carried out in the negative direction if a negative value is set.

---Setting range---

-99999.999 to 99999.999 (mm)

#8220 Hob retract amount 2

Set the retract amount using the radius value when the Hob retract amount selection signal is ON. (Radius value)

Retract is carried out in the negative direction if a negative value is set.

---Setting range---

-99999.999 to 99999.999 (mm)

#8221 Hob retract speed

Set the retract speed during hobbing.

---Setting range---

1 to 1000000 (mm/min)

(PR) #8224 Posn display range

Current position display range
Select the display range of the current position.

0: 0 to 359.999 deg

1: -99999.999 to 99999.999 deg

(PR) #8225 Wk coord at R ret.

Workpiece coordinate position displayed right after automatic reference position return
Select whether to apply a range of 0 to 360 degrees to the workpiece coordinate position displayed right after automatic reference position return if the said position is out of the range of 0 to 360 degrees.

0: Display the position in a range of 0 to 360 degrees

1: Not display the position in a range of 0 to 360 degrees

#8226 Wk position check

Workpiece position check
Select whether to check a difference of workpiece coordinate position between when NC is reset and when program operation is started, when both High-speed simple program check mode ON (X712) and High-speed simple program check: Coordinate position check ON (X713) are set to ON.

0: Disable the check

1: Enable the check

#8227 Machine posn check

Machine position check
Select whether to check a difference of machine coordinate command position between when NC is reset and when program operation is started, when both High-speed simple program check mode ON (X712) and High-speed simple program check: Coordinate position check ON (X713) are set to ON.

0: Disable the check

1: Enable the check

#8230 OT-CHECK[2] OFF

Select whether to enable or disable the stored stroke limit IIB function set with #8231 and #8232.

0: Enable

1: Disable

(Note) This parameter is valid when "#8210 OT INSIDE" is "1".

#8231 OT-CHECK[2]-N

Set the coordinates of the lower limit of the prohibited area of the stored stroke limit IIB.

If the same value is set for both the sign and numeral value as #8232, the stored stroke limit IIB function set with #8231 and #8232 will be disabled.

If #8231 and #8232 are set in reverse, the area between the two points is still a prohibited area.

(Note) This parameter is valid when "#8210 OT INSIDE" is "1" and "#8230 OT-CHECK[2] OFF" is "0".

---Setting range---

-99999.999 to 99999.999 (mm)

#8232 OT-CHECK[2]-P

Set the coordinates of the upper limit of the prohibited area of the stored stroke limit IIB.

(Note) This parameter is valid when "#8210 OT INSIDE" is "1" and "#8230 OT-CHECK[2] OFF" is "0".

---Setting range---

-99999.999 to 99999.999 (mm)

1.7 Ethernet Parameters

(PR)	#1926	Global IP address	IP address

Set the main CPU's IP address.
Set the NC IP address seen from an external source.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1927	Global Subnet mask	Subnet mask

Set the subnet mask for the IP address.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1928	Global Gateway	Gateway

Set the IP address for the gateway.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1934	Local IP address

Set the HMI side CPU's IP address.
(Note) This parameter is dedicated to M800VW/M80VW with Windows-based display.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1935	Local Subnet mask

Set the HMI side CPU's subnet mask.
(Note) This parameter is dedicated to M800VW/M80VW with Windows-based display.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1937	NET1 IP Address	NET1 IP address

Specify the IP address of the file server (NFS server).
If "0.0.0.0" is set in this parameter, network drive (NET1) cannot be used (disabled).

---Setting range---

0.0.0.0 to 255.255.255.255

(PR)	#1938	NET2 IP Address	NET2 IP address

Specify the IP address of the file server (NFS server).
If "0.0.0.0" is set in this parameter, network drive (NET2) cannot be used (disabled).

---Setting range---

0.0.0.0 to 255.255.255.255

(PR)	#1939	NET3 IP Address	NET3 IP address

Specify the IP address of the file server (NFS server).
If "0.0.0.0" is set in this parameter, network drive (NET3) cannot be used (disabled).

---Setting range---

0.0.0.0 to 255.255.255.255

(PR)	#1940	NET4 IP Address	NET4 IP address

Specify the IP address of the file server (NFS server).
If "0.0.0.0" is set in this parameter, network drive (NET4) cannot be used (disabled).

---Setting range---

0.0.0.0 to 255.255.255.255

	#1941	Local time compen	Local time correction

Files stored on file server are managed based on the system time (GMT: Greenwich Mean Time).

This parameter is used to specify the correction time for converting the time obtained through custom API library from the system time basis to local time basis.

When this parameter is set to 0, the NC determines the correction time based on the language selected by "#1043 lang".

---Setting range---

-12 to 12 [hour]

(PR)	#1942	Local IP address2	Local IP address2

This is the IP address 2, which is an IP address of the display unit CPU.

The client (PC) communicates with the device that has the IP address 2 specified in this parameter.

The subnet mask is "#1935 Local Subnet mask".

(Note1) This parameter is enabled for M800VW/M80VW Series.

(Note2) This parameter is effective when parameter "#1766 cfgPR16/bit5" is set to "1".

---Setting range---

Set the IP address in accordance with your network administrator.

(PR)	#1953	Intra IP address	IP address on non-Windows-based display unit (LAN1) side

Specify the IP address on the non-Windows-based display unit (LAN1) side.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1954	Intra Subnet mask	Subnet mask on non-Windows-based display unit (LAN1) side

Specify the IP address of subnet mask on the non-Windows-based display unit (LAN1) side.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1955	Intra Gateway	Gateway on non-Windows-based display unit (LAN1) side

Specify the gateway IP address on the non-Windows-based display unit (LAN1) side.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1956	Global IP address3	IP address 3

This parameter specifies the IP address of LAN3.
The specified address serves as the external IP address of the CNC.

(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

Set the parameter in accordance with the network requirements.

(PR)	#1957	Global Subnetmask3	Subnet mask 3

This parameter specifies the subnet mask of LAN3.

(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

Set the parameter in accordance with the network requirements.

(PR)	#9701	IP addr auto set

The IP address is automatically assigned from the server.

0: Manual setting

1: Automatic setting

(Note) When the automatic setting is selected, "#11005 PC IP address, PC Subnet, PC Gateway" will be invalid.

#9706 Host No.

Select the No. of the host to be used from host 1 to host 4.

---Setting range---

1 to 4: Host No.

#9711 Host1 host name

Set the host computer name.

This parameter allows the NC to easily recognize the host computer on the network. Set the host computer's name (name registered in C:\windows\hosts) or the IP address.

<Setting example>

For host name: mspc160

For IP address: 150.40.0.111

(Note) Set the host computer's TCP/IP address if communication is not carried out correctly.

---Setting range---

15 characters (alphanumeric) or less

#9712 Host1 user name

Set the user name when logging into the host computer.

---Setting range---

15 characters (alphanumeric) or less

#9713 Host1 password

Set the password when logging into the host computer.

---Setting range---

15 characters (alphanumeric) or less

#9714 Host1 directory

Set the directory name of the host computer.

The directory released to the client (NC unit) with the host computer's server is handled as the root directory by the NC unit.

---Setting range---

31 characters (alphanumeric) or less

#9715 Host1 host type

Select the type of the host computer.

0: UNIX/PC automatic judgment

1: UNIX

2: PC (DOS)

(Note) When "0" is set, the settings for the parameters #9716 to #9720 will be invalid.

#9716 Host1 Wrd pos:name

Set the file name display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---

0 to 100

0: Default value

#9717 Host1 Wrd pos:size

Set the size display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---

0 to 100

0: Default value

#9718 Host1 Wrd pos:Dir

Set the <DIR> display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---

0 to 100

0: Default value

#9719 Host1 Wrd pos:cmnt

Set the comment (date, time, etc.) display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---

0 to 100

0: Default value

#9720 Host1 Wrd num:cmnt

Set the number of words to be displayed as a comment.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---

0 to 100

0: Default value

#9721 Host1 no total siz

Set whether to display the total number of characters registered in the machining programs of host1 when displaying the file list.

If there are many files in the directory to be referred to, the list can be updated quickly by setting "1".

0: Display

1: Not display

#9722 Host1 Port No.

This is the port number of the host computer.

(Note 1) Set a port number that does not conflict with other applications.

(Note 2) When this parameter is set to "0", it is treated as "21" (port number = 21).

---Setting range---

0 to 65535

#9731 Host2 host name

The setting method is same as "#9711 Host1 host name".

#9732 Host2 user name

The setting method is same as "#9712 Host1 user name".

#9733 Host2 password

The setting method is same as "#9713 Host1 password".

#9734 Host2 directory

The setting method is same as "#9714 Host1 directory".

#9735 Host2 host type

The setting method is same as "#9715 Host1 host type".

#9736 Host2 Wrd pos:name

The setting method is same as "#9716 Host1 Wrd pos:name".

#9737 Host2 Wrd pos:size

The setting method is same as "#9717 Host1 Wrd pos:size".

#9738 Host2 Wrd pos:Dir

The setting method is same as "#9718 Host1 Wrd pos:Dir".

#9739 Host2 Wrd pos:cmnt

The setting method is same as "#9719 Host1 Wrd pos:cmnt".

#9740 Host2 Wrd num:cmnt

The setting method is same as "#9720 Host1 Wrd num:cmnt".

#9741 Host2 no total siz

The setting method is same as "#9721 Host1 no total siz".

#9742 Host2 Port No.

The setting method is same as "#9722 Host1 Port No.".

#9751 Host3 host name

The setting method is same as "#9711 Host1 host name".

#9752 Host3 user name

The setting method is same as "#9712 Host1 user name".

#9753 Host3 password

The setting method is same as "#9713 Host1 password".

#9754 Host3 directory

The setting method is same as "#9714 Host1 directory".

#9755 Host3 host type

The setting method is same as "#9715 Host1 host type".

#9756 Host3 Wrd pos:name

The setting method is same as "#9716 Host1 Wrd pos:name".

#9757 Host3 Wrd pos:size

The setting method is same as "#9717 Host1 Wrd pos:size".

#9758 Host3 Wrd pos:Dir

The setting method is same as "#9718 Host1 Wrd pos:Dir".

#9759 Host3 Wrd pos:cmnt

The setting method is same as "#9719 Host1 Wrd pos:cmnt".

#9760 Host3 Wrd num:cmnt

The setting method is same as "#9720 Host1 Wrd num:cmnt".

#9761 Host3 no total siz

The setting method is same as "#9721 Host1 no total siz".

#9762 Host3 Port No.

The setting method is same as "#9722 Host1 Port No.".

#9771 Host4 host name

The setting method is same as "#9711 Host1 host name".

#9772 Host4 user name

The setting method is same as "#9712 Host1 user name".

#9773 Host4 password

The setting method is same as "#9713 Host1 password".

#9774 Host4 directory

The setting method is same as "#9714 Host1 directory".

#9775 Host4 host type

The setting method is same as "#9715 Host1 host type".

#9776 Host4 Wrd pos:name

The setting method is same as "#9716 Host1 Wrd pos:name".

#9777 Host4 Wrd pos:size

The setting method is same as "#9717 Host1 Wrd pos:size".

#9778 Host4 Wrd pos:Dir

The setting method is same as "#9718 Host1 Wrd pos:Dir".

#9779 Host4 Wrd pos:cmnt

The setting method is same as "#9719 Host1 Wrd pos:cmnt".

#9780 Host4 Wrd num:cmnt

The setting method is same as "#9720 Host1 Wrd num:cmnt".

#9781 Host4 no total siz

The setting method is same as "#9721 Host1 no total siz".

#9782 Host4 Port No.

The setting method is same as "#9722 Host1 Port No.".

(PR) #9800 MES-IF DB IP addr DB IP address

Set the IP address of the connection destination database.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9801 MES-IF DB Port No DB PORT No.

Set the service port No. of the connection destination database connector.

---Setting range---

1024 to 65535

(PR) #9802 MES-IF DB timeout DB communication time-out (sec)

Set the communication timeout time (in seconds) with the connection destination database. When "0" is set, the time will be regarded as 60 seconds.

---Setting range---

0 to 3600

(PR) #9803 MES-IF DB Type DB type

Select the type of the connection destination database.

0: Oracle or none specified

1: Microsoft SQL Server

2: Microsoft Access

---Setting range---

0 to 2

(PR) #9804 MES-IF DB Name Database name

Set the name of the connection destination database.

---Setting range---

Up to 15 characters including alphanumeric characters and '_' (underscore)

(PR) #9805 MES-IF DB User User name

Set the user name for connecting the database.
(The omission of the user name is possible in MS Access. Enter "0" if omitted.)

---Setting range---

Up to 15 characters including alphanumeric characters and '_' (underscore)

(PR) #9806 MES-IF DB Password Password

Set the password for the user name.
(The omission of the user name is possible in MS Access. Enter "0" if omitted.)

---Setting range---

Up to 15 characters including alphanumeric characters and '_' (underscore)

(PR) #9807 MES-IF DB Table DB table name

Set the table name registered by the registration function of each database. Register the table name to which the following suffix is added in the database.

_FIN: Machining information database registration

_ALM: Alarm information database registration

_USR: User arbitrary information database registration

---Setting range---

Up to 15 characters including alphanumeric characters and '_' (underscore)

(PR) #9810 IP Filter for LAN1

This parameter specifies whether to allow or block access from IP addresses within the specified range for the LAN1 network.

When IP filter setting is not used, enter "0".

0: Disable IP filter setting

1: Allow

2: Block

(PR) #9811 StartFiltIP LAN1-1

This parameter specifies the IP address of the beginning of the 1st IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9812 EndFilterIP LAN1-1

This parameter specifies the IP address of the end of the 1st IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9813 StartFiltIP LAN1-2

This parameter specifies the IP address of the beginning of the 2nd IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9814 EndFilterIP LAN1-2

This parameter specifies the IP address of the end of the 2nd IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9815 StartFiltIP LAN1-3

This parameter specifies the IP address of the beginning of the 3rd IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9816 EndFilterIP LAN1-3

This parameter specifies the IP address of the end of the 3rd IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9817 StartFiltIP LAN1-4

This parameter specifies the IP address of the beginning of the 4th IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9818 EndFilterIP LAN1-4

This parameter specifies the IP address of the end of the 4th IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9819 StartFiltIP LAN1-5

This parameter specifies the IP address of the beginning of the 5th IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9820 EndFilterIP LAN1-5

This parameter specifies the IP address of the end of the 5th IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9821 StartFiltIP LAN1-6

This parameter specifies the IP address of the beginning of the 6th IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9822 EndFilterIP LAN1-6

This parameter specifies the IP address of the end of the 6th IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9823 StartFiltIP LAN1-7

This parameter specifies the IP address of the beginning of the 7th IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9824 EndFilterIP LAN1-7

This parameter specifies the IP address of the end of the 7th IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9825 StartFiltIP LAN1-8

This parameter specifies the IP address of the beginning of the 8th IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9826 EndFilterIP LAN1-8

This parameter specifies the IP address of the end of the 8th IP address range to be filtered on LAN1.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9830 IP Filter for LAN2

This parameter specifies whether to allow or block access from IP addresses within the specified range for the LAN2/GDI network.

When IP filter setting is not used, enter "0".

0: Disable IP filter setting

1: Allow

2: Block

(PR) #9831 StartFiltIP LAN2-1

This parameter specifies the IP address of the beginning of the 1st IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9832 EndFilterIP LAN2-1

This parameter specifies the IP address of the end of the 1st IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9833 StartFiltIP LAN2-2

This parameter specifies the IP address of the beginning of the 2nd IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9834 EndFilterIP LAN2-2

This parameter specifies the IP address of the end of the 2nd IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9835 StartFiltIP LAN2-3

This parameter specifies the IP address of the beginning of the 3rd IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9836 EndFilterIP LAN2-3

This parameter specifies the IP address of the end of the 3rd IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9837 StartFiltIP LAN2-4

This parameter specifies the IP address of the beginning of the 4th IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9838 EndFilterIP LAN2-4

This parameter specifies the IP address of the end of the 4th IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9839 StartFiltIP LAN2-5

This parameter specifies the IP address of the beginning of the 5th IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9840 EndFilterIP LAN2-5

This parameter specifies the IP address of the end of the 5th IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9841 StartFiltIP LAN2-6

This parameter specifies the IP address of the beginning of the 6th IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9842 EndFilterIP LAN2-6

This parameter specifies the IP address of the end of the 6th IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9843 StartFiltIP LAN2-7

This parameter specifies the IP address of the beginning of the 7th IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9844 EndFilterIP LAN2-7

This parameter specifies the IP address of the end of the 7th IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9845 StartFiltIP LAN2-8

This parameter specifies the IP address of the beginning of the 8th IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9846 EndFilterIP LAN2-8

This parameter specifies the IP address of the end of the 8th IP address range to be filtered on LAN2/GDI.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9850 IP Filter for LAN3

This parameter specifies whether to allow or block access from IP addresses within the specified range for the LAN3 network.
When IP filter setting is not used, enter "0".

0: Disable IP filter setting

1: Allow

2: Block

(Note) This parameter is enabled for M800VW/M80VW Series.

(PR) #9851 StartFiltIP LAN3-1

This parameter specifies the IP address of the beginning of the 1st IP address range to be filtered on LAN3.

(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9852 EndFilterIP LAN3-1

This parameter specifies the IP address of the end of the 1st IP address range to be filtered on LAN3.

(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9853 StartFiltIP LAN3-2

This parameter specifies the IP address of the beginning of the 2nd IP address range to be filtered on LAN3.

(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9854 EndFilterIP LAN3-2

This parameter specifies the IP address of the end of the 2nd IP address range to be filtered on LAN3.

(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9855 StartFiltIP LAN3-3

This parameter specifies the IP address of the beginning of the 3rd IP address range to be filtered on LAN3.

(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9856 EndFilterIP LAN3-3

This parameter specifies the IP address of the end of the 3rd IP address range to be filtered on LAN3.
(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9857 StartFiltIP LAN3-4

This parameter specifies the IP address of the beginning of the 4th IP address range to be filtered on LAN3.
(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9858 EndFilterIP LAN3-4

This parameter specifies the IP address of the end of the 4th IP address range to be filtered on LAN3.
(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9859 StartFiltIP LAN3-5

This parameter specifies the IP address of the beginning of the 5th IP address range to be filtered on LAN3.
(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9860 EndFilterIP LAN3-5

This parameter specifies the IP address of the end of the 5th IP address range to be filtered on LAN3.
(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9861 StartFiltIP LAN3-6

This parameter specifies the IP address of the beginning of the 6th IP address range to be filtered on LAN3.
(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9862 EndFilterIP LAN3-6

This parameter specifies the IP address of the end of the 6th IP address range to be filtered on LAN3.
(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9863 StartFiltIP LAN3-7

This parameter specifies the IP address of the beginning of the 7th IP address range to be filtered on LAN3.
(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9864 EndFilterIP LAN3-7

This parameter specifies the IP address of the end of the 7th IP address range to be filtered on LAN3.
(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9865 StartFiltIP LAN3-8

This parameter specifies the IP address of the beginning of the 8th IP address range to be filtered on LAN3.

(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9866 EndFilterIP LAN3-8

This parameter specifies the IP address of the end of the 8th IP address range to be filtered on LAN3.

(Note) This parameter is enabled for M800VW/M80VW Series.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9903 Time Diff(UTC)

Specify the offset from the Coordinated Universal Time (UTC).

When a leading minus sign (-) is added, the offset is negative.

When a leading plus sign (+) or no sign is added, the offset is positive.

Set the offset in "hh:mm" format.

---Setting range---

-11:00 to +14:00

(PR) #9904 Preferred DNS

Set the IP address of the primary DNS server.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9905 Alternate DNS

Set the IP address of the secondary DNS server.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #9906 Proxy Address

Set the proxy server name or the IP address of the proxy server.

If the server name is longer than 63 characters, set the IP address.

---Setting range---

A string of up to 63 characters, which can contain letters, numbers and symbols

(PR) #9907 Proxy Port

Specify the proxy server port number.

---Setting range---

0 to 65535

(PR) #11005 PC IP address IP address setting

Set the IP address of the display unit or the PC in which machining programs are stored (or the IP address of the IPC for M80V).

Set the IP address of the display unit which is powered OFF with the Auto power OFF function.

When the 3D machine interference check function is enabled, set the IP address of the display unit to be used for the 3D machine interference check (for M800VW only).

(Note) When "0.0.0.0" is entered, "192.168.100.2" is automatically assigned.

PC Subnet

Set the subnet mask for the display unit or PC in which machining programs are stored.

PC Gateway

Set the gateway for the display unit or PC in which machining programs are stored.

---Setting range---

0.0.0.0 to 255.255.255.255

1.8 Computer Link Parameters

#9601 BAUD RATE

Select the rate at which data is transferred.

0: 19200 (bps)
1: 9600
2: 4800
3: 2400
4: 1200
5: 600
6: 300
7: 110
8: 38400

#9602 STOP BIT

Select the stop bit length used in the start-stop system.

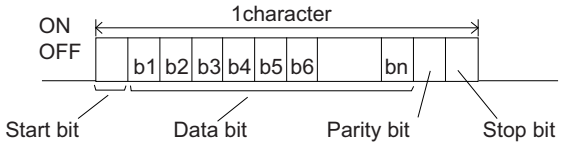
Refer to "#9603 PARITY EFFECTIVE". At the output of data, the number of characters is always adjusted for the parity check.

1: 1 (bit)
2: 1.5
3: 2

#9603 PARITY EFFECTIVE

Select whether to add the parity bit to the data.

The parameter is set when using a parity bit separately from the data bit.



Set this parameter in accordance with the I/O device specifications.

0: Not add a parity bit at the input/output
1: Add a parity bit at the input/output

#9604 EVEN PARITY

Select odd or even when parity is added to the data. This parameter is ignored when no parity is added.

0: Odd parity
1: Even parity

#9605 CHR. LENGTH

Set the length of the data bit.

Refer to "#9603 PARITY EFFECTIVE".

0: 5 (bit)
1: 6
2: 7 (NC connection not supported)
3: 8

#9606 HAND SHAKE

Select the transmission control method.

"3" (DC code method) should be set for computer link B.

0: No control
1: RTS/CTS method
2: No handshaking
3: DC code method

#9607 TIME-OUT SET

Set the time-out time at which an interruption of data transfer during data input/output should be detected.
"0" means infinite time-out.

---Setting range---

0 to 999 (1/10s)

#9608 DATA CODE

Set the code to be used for the data description.
Refer to "#9603 PARITY EFFECTIVE".

0: ASCII code
1: ISO code

#9609 LINK PARAM. 1

bit1: DC1 output after NAK or SYN

Select whether to output the DC1 code after the NAK or SYN code is output.

0: Not output the DC1 code.
1: Output the DC1 code.

bit7: Enable/disable resetting

Select whether to enable the resetting in the computer link.

0: Enable
1: Disable

#9610 LINK PARAM. 2

bit2: Specify the control code parity (even parity for the control code).

Select whether to add an even parity to the control code, in accordance with the I/O device specifications.

0: Not add a parity bit to the control code
1: Add a parity bit to the control code

bit3: Parity V

Select whether to enable checking of parity V in one block at the input of the data.

0: Disable
1: Enable

#9611 Link PARAM. 3

Not used. Set to "0".

#9612 Link PARAM. 4

Not used. Set to "0".

#9613 Link PARAM. 5

Not used. Set to "0".

#9614 START CODE

Select the code used to command the first transfer of file data.
This parameter is used for a specific user. Normally set "0".

0: DC1 (11H)
1: BEL (07H)

#9615 CTRL. CODE OUT

bit0: NAK output

Select whether to send the NAK code to the host if a communication error occurs in computer link B.

0: Not output the NAK code

1: Output the NAK code.

bit1: SYN output

Select whether to send the SYN code to the host if NC resetting or an emergency stop occurs in computer link B.

0: Not output the SYN code.

1: Output the SYN code.

bit3: DC3 output

Select whether to send the DC3 code to the host when the communication ends in computer link B.

0: Not output the DC3 code.

1: Output the DC3 code.

#9616 CTRL. INTERVAL

Not used. Set to "0".

#9617 WAIT TIME

Not used. Set to "0".

#9618 PACKET LENGTH

Not used. Set to "0".

#9619 BUFFER SIZE

Not used. Set to "0".

#9620 START SIZE

Not used. Set to "0".

#9621 DC1 OUT SIZE

Not used. Set to "0".

#9622 POLLING TIMER

Not used. Set to "0".

#9623 TRANS. WAIT TMR

Not used. Set to "0".

#9624 RETRY COUNTER

Not used. Set to "0".

1.9 Subprogram Storage Location Parameters

#8876 M198 pro stor: dev

When calling a subprogram using M198, the subprogram to be called will be searched from the storage (device and directory) designated with this parameter.

(Example) M198 P (program No.)

[Device] "#8876 M198 pro stor: dev"

[Directory] "#8877 M198 pro stor: dir"

(Note 1) If the called subprogram is not found, a program error will occur.

(Note 2) If a device is not designated, the subprogram is searched for from the first directory of the memory card for M800VS/M80V, and from the first directory of the data server for M800VW/M80VW.

(Note 3) The setting of G (HD) is available for M800VW/M80VW equipped with the Windows-based display unit. The setting of G (HD) is available for M80V when a program stored in the IPC is run on the NC connected to the same network.

---Setting range---

G: HD

R: Memory card

D: Data server

N: USB Memory

#8877 M198 pro stor: dir

Specify the storage location (directory) for the subprogram.

When calling a subprogram, the subprogram to be called will be searched from the directory designated with this parameter.

Refer to the description of "#8876 M198 pro stor:dev".

---Setting range---

Directory 48 characters

#8880 Subpro stor D0: dev

If ",D1" to ",D4" is designated in a subprogram call, the called program will be searched from the storage (device and directory) set by this parameter.

(Example) When "M98 P (program No.), D0" is commanded, the device and directory below will be searched.

[Device] "#8880 Subpro stor D0: dev"

[Directory] "#8881 Subpro stor D0: dir"

(Note 1) If the called subprogram is not found, a program error will occur.

(Note 2) If there is no designation of D0 to D4, search is done according to the settings #8890 to #8894.

(Note 3) The setting of G (HD) is available for M800VW/M80VW equipped with the Windows-based display unit, or for M80V when a program stored in the IPC is run on the NC connected to the same network.

---Setting range---

M: Memory

E: Memory2

G: HD

R: Memory card

D: Data server

N: USB Memory

#8881 Subpro stor D0: dir

Select the storage destination (directory) for the subprogram.

When D0 is designated at a subprogram call, the subprogram to be called will be searched from the directory selected with this parameter.

Refer to "#8880 Subpro stor D0: dev".

---Setting range---

Directory 48 characters

#8882 Subpro stor D1: dev

If ",D1" to ",D4" is designated in a subprogram call, the called program will be searched from the storage (device and directory) set by this parameter.

(Example) When "M98 P (program No.), D0" is commanded, the device and directory below will be searched.

[Device] "#8880 Subpro stor D0: dev"

[Directory] "#8881 Subpro stor D0: dir"

(Note 1) If the called subprogram is not found, a program error will occur.

(Note 2) If there is no designation of D0 to D4, search is done according to the settings #8890 to #8894.

(Note 3) The setting of G (HD) is available for M800VW/M80VW equipped with the Windows-based display unit, or for M80V when a program stored in the IPC is run on the NC connected to the same network.

---Setting range---

M: Memory

E: Memory2

G: HD

R: Memory card

D: Data server

N: USB Memory

#8883 Subpro stor D1: dir

Select the storage destination (directory) for the subprogram.

When D1 is designated at a subprogram call, the subprogram to be called will be searched from the directory selected with this parameter.

Refer to "#8882 Subpro stor D1: dev".

---Setting range---

Directory 48 characters

#8884 Subpro stor D2: dev

If ",D1" to ",D4" is designated in a subprogram call, the called program will be searched from the storage (device and directory) set by this parameter.

(Example) When "M98 P (program No.), D0" is commanded, the device and directory below will be searched.

[Device] "#8880 Subpro stor D0: dev"

[Directory] "#8881 Subpro stor D0: dir"

(Note 1) If the called subprogram is not found, a program error will occur.

(Note 2) If there is no designation of D0 to D4, search is done according to the settings #8890 to #8894.

(Note 3) The setting of G (HD) is available for M800VW/M80VW equipped with the Windows-based display unit, or for M80V when a program stored in the IPC is run on the NC connected to the same network.

---Setting range---

M: Memory

E: Memory2

G: HD

R: Memory card

D: Data server

N: USB Memory

#8885 Subpro stor D2: dir

Select the storage destination (directory) for the subprogram.

When D2 is designated at a subprogram call, the subprogram to be called will be searched from the directory selected with this parameter.

Refer to "#8884 Subpro stor D2: dev".

---Setting range---

Directory 48 characters

#8886 Subpro stor D3: dev

If ",D1" to ",D4" is designated in a subprogram call, the called program will be searched from the storage (device and directory) set by this parameter.

(Example) When "M98 P (program No.), D0" is commanded, the device and directory below will be searched.

[Device] "#8880 Subpro stor D0: dev"

[Directory] "#8881 Subpro stor D0: dir"

(Note 1) If the called subprogram is not found, a program error will occur.

(Note 2) If there is no designation of D0 to D4, search is done according to the settings #8890 to #8894.

(Note 3) The setting of G (HD) is available for M800VW/M80VW equipped with the Windows-based display unit, or for M80V when a program stored in the IPC is run on the NC connected to the same network.

---Setting range---

M: Memory

E: Memory2

G: HD

R: Memory card

D: Data server

N: USB Memory

#8887 Subpro stor D3: dir

Select the storage destination (directory) for the subprogram.

When D3 is designated at a subprogram call, the subprogram to be called will be searched from the directory selected with this parameter.

Refer to "#8886 Subpro stor D3: dev".

---Setting range---

Directory 48 characters

#8888 Subpro stor D4: dev

If ",D1" to ",D4" is designated in a subprogram call, the called program will be searched from the storage (device and directory) set by this parameter.

(Example) When "M98 P (program No.), D0" is commanded, the device and directory below will be searched.

[Device] "#8880 Subpro stor D0: dev"

[Directory] "#8881 Subpro stor D0: dir"

(Note 1) If the called subprogram is not found, a program error will occur.

(Note 2) If there is no designation of D0 to D4, search is done according to the settings #8890 to #8894.

(Note 3) The setting of G (HD) is available for M800VW/M80VW equipped with the Windows-based display unit, or for M80V when a program stored in the IPC is run on the NC connected to the same network.

---Setting range---

M: Memory

E: Memory2

G: HD

R: Memory card

D: Data server

N: USB Memory

#8889 Subpro stor D4: dir

Select the storage destination (directory) for the subprogram.

When D4 is designated at a subprogram call, the subprogram to be called will be searched from the directory selected with this parameter.

Refer to "#8888 Subpro stor D4: dev".

---Setting range---

Directory 48 characters

#8890-8894 Subpro srch odr D0 to D4

Specify the search order of D0 to D4 (devices and directories storing subprograms) when ",D0" to ",D4" are omitted from subprogram call.
Search is performed in the order from 1 to 5. When "0" is set, the device is excluded from search.
If the same value is set for more than one device, search is carried out in the order from the one with a smaller parameter number.
If "0" is set for all the devices, the memory is searched.

---Setting range---

0 to 5

1.10 Barrier Data (for L system only)

#8300 P0 (for L system only)

Set the reference X-coordinates of the chuck and the tail stock barrier.

Set the center coordinate of workpiece by the basic machine coordinate system. (radius value)

---Setting range---

-99999.999 to 99999.999 (mm)

#8301 P1 (for L system only)

Set the area of the chuck and tail stock barrier.

X axis: Set the coordinate from the workpiece center (P0). (radius value)

Z axis: Set the coordinates in the basic machine coordinate system.

---Setting range---

-99999.999 to 99999.999 (mm)

#8302 P2 (for L system only)

Set the area of the chuck and tail stock barrier.

X axis: Set the coordinate from the workpiece center (P0). (radius value)

Z axis: Set the coordinates in the basic machine coordinate system.

---Setting range---

-99999.999 to 99999.999 (mm)

#8303 P3 (for L system only)

Set the area of the chuck and tail stock barrier.

X axis: Set the coordinate from the workpiece center (P0). (radius value)

Z axis: Set the coordinates in the basic machine coordinate system.

---Setting range---

-99999.999 to 99999.999 (mm)

#8304 P4 (for L system only)

Set the area of the chuck and tail stock barrier.

X axis: Set the coordinate from the workpiece center (P0). (radius value)

Z axis: Set the coordinates in the basic machine coordinate system.

---Setting range---

-99999.999 to 99999.999 (mm)

#8305 P5 (for L system only)

Set the area of the chuck and tail stock barrier.

X axis: Set the coordinate from the workpiece center (P0). (radius value)

Z axis: Set the coordinates in the basic machine coordinate system.

---Setting range---

-99999.999 to 99999.999 (mm)

#8306 P6 (for L system only)

Set the area of the chuck and tail stock barrier.

X axis: Set the coordinate from the workpiece center (P0). (radius value)

Z axis: Set the coordinates in the basic machine coordinate system.

---Setting range---

-99999.999 to 99999.999 (mm)

#8310 Barrier ON (for L system only)

Select whether to enable the chuck and tailstock barrier.

0: Disable (Setting from special display unit will be enabled)

1: Enable

#8311 P7 (for L system only)

Set the area of the left spindle section.

X axis: Set the coordinate from the workpiece center (P0). (radius value)

Z axis: Set the coordinates in the basic machine coordinate system.

---Setting range---

-99999.999 to 99999.999 (mm)

#8312 P8 (for L system only)

Set the area of the left spindle section.

X axis: Set the coordinate from the workpiece center (P0). (radius value)

Z axis: Set the coordinates in the basic machine coordinate system.

---Setting range---

-99999.999 to 99999.999 (mm)

#8313 P9 (for L system only)

Set the area of the right spindle section.

X axis: Set the coordinate from the workpiece center (P0). (radius value)

Z axis: Set the coordinates in the basic machine coordinate system.

---Setting range---

-99999.999 to 99999.999 (mm)

#8314 P10 (for L system only)

Set the area of the right spindle section.

X axis: Set the coordinate from the workpiece center (P0). (radius value)

Z axis: Set the coordinates in the basic machine coordinate system.

---Setting range---

-99999.999 to 99999.999 (mm)

#8315 Barrier Type (L) (for L system only)

Select the shape of the left chuck and tailstock barrier.

0: No area

1: Chuck

2: Tailstock

#8316 Barrier Type (R) (for L system only)

Select the shape of the right chuck and tailstock barrier.

0: No area

1: Chuck

2: Tailstock

#8317 ELIV. AX. Name (for L system only)

Set the name of the delivery axis when the right chuck and tailstock barrier is movable.

When using the multi-part system method and the delivery axis is an axis in the other part system, designate the axis including the part system as 1A, 1B or 2A, 2B. If the part system is not designated as A and B, the set part system will be used.

---Setting range---

A/B/.. (axis name)

1A/1B/..

2A/2B/.. (with part system designated)

0: Cancel

#8318 Stock Angle (L) (for L system only)

Set the angle for the left tailstock end section.

The angle will be interpreted as 90° if there is no setting (when "0" is set).

---Setting range---

0 to 180 (°)

0: 90° (default)

#8319 Stock Angle (R) (for L system only)

Set the angle for the right tailstock end section.

The angle will be interpreted as 90° if there is no setting (when "0" is set).

---Setting range---

0 to 180 (°)

0: 90° (default)

1.11 High-accuracy Control Parameters

#1149	cireft	Arc deceleration speed change

Select whether to decelerate at the arc entrance or exit.

0: Not decelerate

1: Decelerate

#1205	G0bdcc	Acceleration and deceleration before G0 interpolation

0: Post-interpolation acceleration/deceleration is applied to G00.

1: Pre-interpolation acceleration/deceleration is applied to G00 even in the high accuracy control mode.

2: Rapid traverse constant-gradient multi-step acceleration/deceleration is enabled.

When the multi-part system simultaneous high-accuracy control option is enabled, "1" can be set for the 2nd part system and the following.

#1206	G1bF	Maximum speed

Set a cutting feedrate when applying pre-interpolation acceleration/deceleration.

When high-accuracy control time constant expansion is valid, set the maximum of cutting feed clamp speed of each axis.

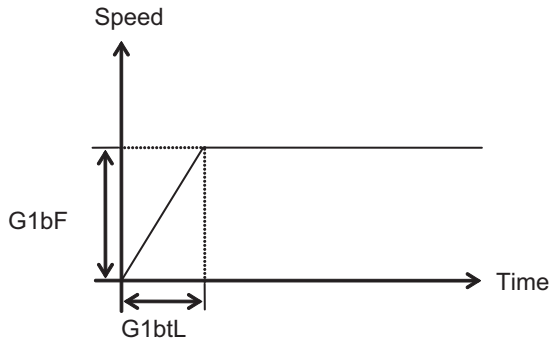
---Setting range---

1 to 999999 (mm/min)

#1207	G1btL	Time constant

Set a cutting feed time constant when applying pre-interpolation acceleration/deceleration.

When set to "0", the time constant will be clamped at 1ms.



---Setting range---

Without high-accuracy control time constant expansion: 1 to 5000 (ms)

With high-accuracy control time constant expansion: 1 to 30000 (ms)

Cutting feed Acc Cutting feed acceleration

Displays cutting feed acceleration.

#1209	cirdcc	Arc deceleration speed

Set the deceleration speed at the arc entrance or exit.

---Setting range---

1 to 999999 (mm/min)

#1568	SfiltG1	G01 soft acceleration/deceleration filter

Set the filter time constant for smoothly changing the acceleration rate for the cutting feed acceleration/deceleration in pre-interpolation acceleration/deceleration.

- Notch frequency Hz
Displays the notch frequency (Hz) for the S-pattern filter set in "#1568 SfiltG1" (G01 soft acceleration/deceleration filter).

---Setting range---

0 to 200 (ms)

#1569	SfiltG0	G00 soft acceleration/deceleration filter

Set the filter time constant for smoothly changing the acceleration rate for the rapid traverse acceleration/deceleration in pre-interpolation acceleration/deceleration.

---Setting range---

0 to 200 (ms)

#1570	Sfilt2	Soft acceleration/deceleration filter 2

Set the filter time constant for smoothly changing the acceleration rate in pre-interpolation acceleration/deceleration.

This will be disabled when "0" or "1" is set.

- Notch frequency Hz
Displays the notch frequency (Hz) for the S-shape filter set in "#1570 Sfilt2" (Soft acceleration/deceleration filter 2).

---Setting range---

0 to 200 (ms)

#1571	SSSdis	SSS control adjustment coefficient fixed value selection

Fix the shape recognition range for SSS control.

---Setting range---

0/1

#7914	ROT_PREFILT	Rotary axis prefilter time constant

Set the time constant for rotary axis prefilter.

By setting this time constant, the orientation change of the tool (rotary axis motion) during tool center point control/tool cutting point control becomes smoother.

This parameter can also be set from [Setup] screen ([User] - [Hi-prec param]).

When "0" is specified, the rotary axis prefiltering function is disabled.

---Setting range---

0 to 200 (ms)

#8019 R COMP

Set a compensation coefficient for reducing a control error in the reduction of a corner roundness and arc radius.

The larger the set value is, the smaller the theoretical error will be. However, since the speed at the corner goes down, the cycle time will be extended.

Coefficient = 100 - setting value

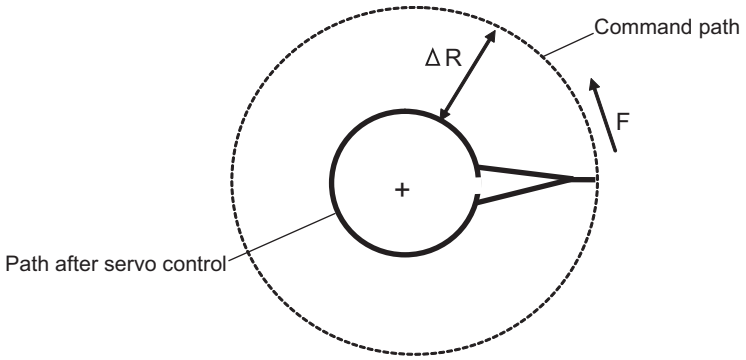
(Note) This function will be enabled when "#8021 COMP_CHANGE" is set to "0".

---Setting range---

0 to 99 (%)

Theoretical radius decrease error amount

Displays the theoretical radius decrease error amount, ΔR(mm), from the automatic calculation by NC.



Theoretical radius decrease amount in arc

R5mm arc deceleration speed

Displays a deceleration speed (mm/min) along an arc of 5 (mm) radius.

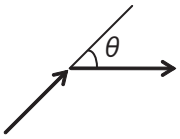
R1mm arc deceleration speed

Displays a deceleration speed(mm/min) along an arc of 1 (mm) radius.

#8020 DCC ANGLE

Set the minimum value of an angle (external angle) that should be assumed to be a corner.

When an inter-block angle (external angle) in high-accuracy mode is larger than the set value, it will be determined as a corner and the speed will go down to sharpen the edge.



If the set value is smaller than θ, the speed goes down to optimize the corner.

(Note) If "0" is set, it will be handled as "5" degrees.

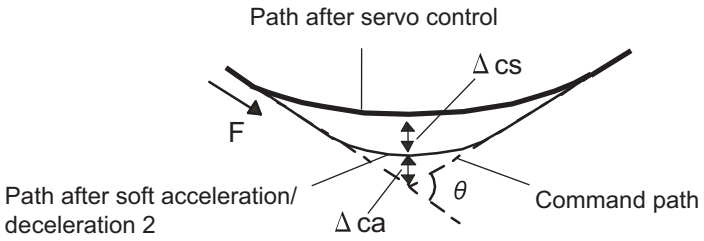
---Setting range---

0 to 89 (°)

0: 5 degree (Equals to setting "5")

Theoretical corner dull amount

Displays the corner dull amount Δc(mm) in respect to the corner's angle (external angle) θ(°).



Theoretical roundness amount at corner

ca(mm): Error (Δ) caused by the soft acceleration/deceleration 2

cs(mm): Error (Δ) caused by the servo system

Corner deceleration speed

Display corner deceleration speed c (mm/min) for the corner of the angle (external angle) with θ(°).

Theoretical dull amount at 90 degree

Display corner dull amount when the angle is 90 degree.

Corner deceleration speed at 90 degree

Display corner deceleration speed when the angle is 90 degree.

#8021 COMP_CHANGE

Select whether to share or separate the compensation coefficient at the corner/curve during the high-accuracy control mode.

0: Share ("#8019 R COMP" is applied.)

1: Separate

* Corner: #8022 CORNER COMP

* Curve: #8023 CURVE COMP

(Note) Set "1" when using SSS/EasySSS control.

#8022 CORNER COMP

Set the compensation coefficient to further reduce or increase the roundness at the corner during the high-accuracy control mode.

Coefficient = 100 - setting value

(Note) This is valid when "#8021 COMP CHANGE" is set to "1".

Reference to "#8020 Corner decreasing speed "for theoretical corner roundness amount, corner decreasing speed, theoretical 90 degree dull amount, 90 degree corner decreasing speed.

---Setting range---

-1000 to 99 (%)

#8023 CURVE COMP

Set the compensation coefficient to further reduce or increase the radius reduction amount at the curve (arc, involute, spline) during the high-accuracy control mode.

Coefficient = 100 - setting value

(Note) This is valid when "#8021 COMP CHANGE" is set to "1".

For theoretical radius reduction error amount, R5mm arc deceleration speed and R1mm arc deceleration speed, refer to "#8019 R COMP".

---Setting range---

-1000 to 99 (%)

#8025 SPLINE ON

For M system only.

Specify whether to enable the fine spline function.

0: Disable the fine spline function.

1: Enable the fine spline function.

Spline interpolation will be valid during G61.2 modal regardless of this setting.

#8026 CANCEL ANG. (for M system only)

Set the angle where the spline interpolation is temporarily canceled.

When the angle made by blocks exceeds this parameter setting value, spline interpolation will be canceled temporarily. In consideration of the pick feed, set a value a little smaller than the pick feed angle.

---Setting range---

0 to 180 (°)

0: 180 (°)

#8027 Toler-1 (for M system only)

Set the maximum chord error (tolerance) in a block that includes an inflection point. Set the tolerance applicable when the applicable block is developed to fine segments by CAM. (normally about 10 μm)

When "0.000" is set, the applicable block will be linear.

---Setting range---

0.000 to 100.000 (mm)

#8028 Toler-2 (for M system only)

Set the maximum chord error (tolerance) in a block that includes no inflection point. Set the tolerance applicable when the applicable block is developed to fine segments by CAM. (normally about 10 μm)

When "0.000" is set, the applicable block will be linear.

---Setting range---

0.000 to 100.000 (mm)

#8029 FairingL (for M system only)

Set the length of the block subject to fairing.

(Enabled when "#8033 Fairing ON" is set to "1".)

---Setting range---

0 to 100.000 (mm)

#8030 MINUTE LENGS (for M system only)

Set the fine-segment length where the spline interpolation is temporarily canceled.

When the length of one block exceeds this parameter setting value, spline interpolation is canceled temporarily and linear interpolation is performed. Set a value a little smaller than one block length of the program.

If "-1" is set, spline interpolation will be performed regardless of block length.

---Setting range---

-1 to 127 (mm)

0: 1 (mm)

#8033 Fairing ON (for M system only)

Select whether or not to use the fairing or smooth fairing function.

0: Use neither of them

1: Use the fairing function

2: Use the smooth fairing function

#8034 AccClamp ON (for M system only)

Select the method for clamping the cutting speed.

0: Clamp with parameter "#2002 clamp" or the corner deceleration function.

1: Clamp the cutting speed with acceleration judgment. (Enabled when "#8033 Fairing ON" is set to "1".)

#8036 CordecJudge (for M system only)

Select the condition to decide a corner.

0: A corner is decided from the angle of the neighboring block.

1: A corner is decided from the angle of the neighboring block, excluding minute blocks. (Enabled when "#8033 Fairing ON" is set to "1".)

#8037 CorJudgeL (for M system only)

Set the length of the block to be excluded when deciding a corner.

(Enabled when "#8036 CordecJudge" is set to "1".)

---Setting range---

0 to 99999.999 (mm)

#8038 Path recog. range

Path recognition range

Specify the range to recognize the tool paths adjoining to the command position when the smooth fairing function is ON.

If "0" is set, the range will be 1.000 (mm).

---Setting range---

0 to 100.000 (mm)

#8039 Comp. range limit

Compensation distance tolerance

Specify the upper limit of the distance between the command position and compensation position when the smooth fairing function is ON.

If you specify a negative value, operation is conducted with no tolerance limit.

If "0" is set, the tolerance will be 0.005 (mm).

---Setting range---

-1.000 to 100.000 (mm)

(PR) #8040 High-SpeedAcc

High-speed high-accuracy control-enabled part system

Select whether to enable the simultaneous use of the high-accuracy control and high-speed machining mode (including the high-speed high-accuracy control I, II and III) for each part system.

0: Not enable

1: Enable

"1" can be set for up to three part systems. If you set "1" for four or more part systems, the alarm (Y51 0032) will result.

#8090 SSS ON (for M system only)

Set whether to enable the SSS control with G05 P10000.

0: Disable

1: Enable

#8091 StdLength (for M system only)

Set the maximum value of the range for recognizing the shape.

To eliminate the effect of steps or errors, etc., set a large value. To enable sufficient deceleration, set a small value.

If "0.000" is set, the standard value (1.000mm) will be applied.

---Setting range---

0 to 100.000 (mm)

#8092 ClampCoeff (for M system only)

Set the clamp speed at the curved section configured of fine segments.

Coefficient = √setting value

---Setting range---

1 to 100

#8093 StepLeng (for M system only)

Set the width of the step at which the speed is not to be decelerated. (Approximately the same as the CAM path difference [Tolerance].)

If "0" is set, the standard value (5μm) will be applied.

If a minus value is set, the speed will decelerate at all minute steps.

---Setting range---

-1.000 to 0.100 (mm)

#8094 DccWaitAdd (for M system only)

Set the time to wait for deceleration when the speed FB does not drop to the clamp speed.

---Setting range---

0 to 100 (ms)

#8096 Deceler. coeff. ON

Deceleration coefficient for SSS control ON

Select whether to enable the speed coefficients ("#8097 Corner deceleration coefficient for SSS control", "#8098 Arc clamp speed coefficient for SSS control") that are used for compensating for a path error and clamp speed under SSS control.

0: Disable

1: Enable

#8097 Corner decel coeff

Corner deceleration coefficient for SSS control

Specify the compensation coefficient to be used for adjusting a path error and clamp speed at a corner under SSS control. This parameter is enabled during SSS control. Thus set this parameter if you wish to use different compensation coefficients according to ON/OFF of SSS control (If you wish to adjust a path error and clamp speed at a corner, use "#8022 CORNER COMP").

If the setting value is smaller, the theoretical path error will decrease, but the cycle time may be longer because the corner deceleration speed will slow down.

Note that this parameter is enabled when "#8096 Deceleration coefficient for SSS control ON" is "1".

When "0" is set in this parameter, the standard value (300%) is applied.

---Setting range---

0 to 2000 (%)

#8098 Arc clamp spd coef

Arc clamp speed coefficient for SSS control

Specify the compensation coefficient to be used for adjusting a path error and clamp speed on an arc under SSS control. This parameter is enabled during SSS control. Thus set this parameter if you wish to use different compensation coefficients according to ON/OFF of SSS control (If you wish to adjust a path error and clamp speed on an arc, use "#8023 CURVE COMP").

If the setting value is smaller, the theoretical path error will decrease, but the cycle time may be longer because the arc clamp speed will slow down.

Note that this parameter is enabled when "#8096 Deceleration coefficient for SSS control ON" is "1".

When "0" is set in this parameter, the standard value (100%) is applied.

---Setting range---

0 to 2000 (%)

#12051 Jerk_filtG1 G01 jerk filter

Specify the time constant of filter that is used for smoothing the change of jerk when pre-interpolation acceleration/deceleration is performed in cutting feed.

This filter causes no path error, as the filter is applied to the resultant speed calculated before interpolation.

If you specify the jerk filter time constant, the time constants of each filter will be as follows:

- S-shape filter time constant

"#1568 SfiltG1" - "Jerk_filtG1"

- Jerk filter time constant

"Jerk_filtG1"

---Setting range---

0 to 50 (ms)

#12052 Jerk_filtG0 G00 jerk filter

Specify the time constant of filter that is used for smoothing the change of jerk when pre-interpolation acceleration/deceleration is performed in cutting feed.

This filter causes no path error, as the filter is applied to the resultant speed calculated before interpolation.

If you specify the jerk filter time constant, the time constants of each filter will be as follows:

- S-shape filter time constant

"#1569 SfiltG0" - "Jerk_filtG0"

- Jerk filter time constant

"Jerk_filtG0"

---Setting range---

0 to 50 (ms)

#12053 EachAxAccCntrl Enable axis-specific acceleration tolerance control

Select how to calculate the deceleration speed for a corner between the blocks where the high-accuracy control is enabled.

0: Optimal corner deceleration

(calculate the deceleration speed using the acceleration tolerance common for all the axes determined by G1bF and G1btL)

1: Axis-specific acceleration tolerance control

(calculate the deceleration speed using acceleration tolerances of each axis determined by G1bFx and G1btLx)

#12060 VblAccPreInt Variable-acceleration pre-interpolation acceleration/deceleration ON

Select whether to enable variable-acceleration pre-interpolation acceleration/deceleration control while high-accuracy control is ON.

0: Pre-interpolation acceleration/deceleration
(Apply the acceleration rate that is determined by G1bF and G1btL and is common for all the axes)

1: Variable-acceleration pre-interpolation acceleration/deceleration

(Apply the acceleration rate that is determined by G1bFx and G1btLx for each axis)
(Note) Variable-acceleration pre-interpolation acceleration/deceleration is a function available under SSS control. To enable this function, set "#8090 SSS ON" to "1".

#12066 Tolerance ctrl ON

Select whether to enable the tolerance control.

0: Disable

1: Enable

(Note) Tolerance control is available only under SSS control.
To enable this function, set "#8090 SSS ON" to "1".

#12067 Tolerance spd coef

Set the compensation coefficient to adjust a path error or clamp speed in the corner while tolerance control is ON.

This parameter is enabled during tolerance control. Thus set this parameter if you wish to use different clamp speed according to ON/OFF of tolerance control.

When "0" is set in this parameter, the standard value (100%) is applied.

---Setting range---

0 to 2000 (%)

#12068 Smoothing range

Spline interpolation 2: Smoothing range

Normally set "0" in this parameter.
If you run a program with micro segments and its reciprocating paths are uneven, set the parameter to about 3 to 5 times the length of the programmed segments.

---Setting range---

0.000 to 10.000 (mm)

#12069 Corner angle

Tolerance control: Corner recognition angle

Specify the corner recognition angle. Normally set to "0".

---Setting range---

0.000 to 180.000 (°)

#12070 Sfilt2_tol Tolerance control: Soft acceleration/deceleration filter 2

Specify the time constant of the filter that smoothes out fluctuations in acceleration under the tolerance control.
Basically set to 0.

---Setting range---

0 to 200 (ms)

1.12 High-accuracy Control Axis Parameters

#2001	rapid	Rapid traverse rate

Set the rapid traverse feedrate for each axis.

(Note) The maximum value to be set depends on the machine specifications.

---Setting range---

When other than Spindle/C axis is used: 1 to 1000000 (mm/min)

When Spindle/C axis is used: 1 to 2000000 (mm/min)

#2002	clamp	Cutting feedrate for clamp function

Set the maximum cutting feedrate for each axis.

Even if the feedrate in G01 exceeds this value, the clamp will be applied at this feedrate.

---Setting range---

When other than Spindle/C axis is used: 1 to 1000000 (mm/min)

When Spindle/C axis is used: 1 to 2000000 (mm/min)

#2010	fwd_g	Feed forward gain

Set a feed forward gain for pre-interpolation acceleration/deceleration.

The larger the set value, the smaller the theoretical control error will be. However, if a machine vibration occurs, set the smaller value.

---Setting range---

0 to 200 (%)

#2068	G0fwdg	G00 feed forward gain

Set a feed forward gain for G00 pre-interpolation acceleration/deceleration.

The larger the setting value, the shorter the positioning time during in-position checking.

If a machine vibration occurs, set the smaller value.

---Setting range---

0 to 200 (%)

#2096	crncsp	Minimum corner deceleration speed

Set the minimum clamp speed for corner deceleration in the high-accuracy control mode. Normally set "0".

(Note) This parameter is invalid during SSS control.

---Setting range---

0 to 1000000 (mm/min)

#2109	Rapid (H-precision)	Rapid traverse rate for high-accuracy control mode

Set the rapid traverse rate for each axis in the high-accuracy control mode. When "0" is set, "#2001 rapid" is used.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

#2110	Clamp (H-precision)	Cutting feed clamp speed for high-accuracy control mode

Set the cutting feed maximum speed for each axis in the high-accuracy control mode. When "0" is set, "#2002 clamp" is used.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

#2157	G1bFx	Maximum axis-specific pre-interpolation cutting feed rate

When axis-specific acceleration tolerance control is ON:

Specify the maximum speed to be used for calculating each axis' acceleration tolerance. When "0" is set, "#2001 rapid" is used.

When variable-acceleration pre-interpolation acceleration/deceleration is ON:

Specify the maximum speed to be used for calculating each axis' acceleration. When "0" is set, "#1206 G1bF" is used.

When both axis-specific acceleration tolerance control and variable-acceleration pre-interpolation acceleration/deceleration are ON:

Specify the maximum speed to be used for calculating each axis' acceleration. When "0" is set, "#1206 G1bF" is used.

When neither axis-specific acceleration tolerance control nor variable-acceleration pre-interpolation acceleration/deceleration is ON:

This parameter is disabled.

---Setting range---

0 to 999999 (mm/min)

#2158	G1btLx	Axis-specific pre-interpolation cutting feed time constant

When axis-specific acceleration tolerance control is ON:

Specify the time constant (a time to be taken until reaching the maximum speed) to be used for calculating each axis' acceleration tolerance. When "0" is set, "#2004 G0tL" is used.

When variable-acceleration pre-interpolation acceleration/deceleration is ON:

Specify the time constant (a time to be taken until reaching the maximum speed) to be used for calculating each axis' acceleration. When "0" is set, "#1207 G1btL" is used.

When both axis-specific acceleration tolerance control and variable-acceleration pre-interpolation acceleration/deceleration are ON:

Specify the time constant (a time to be taken until reaching the maximum speed) to be used for calculating each axis' acceleration. When "0" is set, "#1207 G1btL" is used.

When neither axis-specific acceleration tolerance control nor variable-acceleration pre-interpolation acceleration/deceleration is ON:

This parameter is disabled.

---Setting range---

0 to 5000 (ms)

#2159	compx	Accuracy coefficient for each axis

Specify the compensation coefficient to be used for adjusting a path error and clamp speed at a corner for each axis during the high-accuracy control mode. If the setting value is larger, the edge accuracy will improve, but the cycle time may be longer because the corner speed will slow down.

This parameter is disabled when the axis-specific acceleration tolerance control is OFF.

---Setting range---

-1000 to 99 (%)

1.13 Operation Parameters

#8901	Counter type 1

Select the type of the following counters on the Monitor screen.

- Normal display: Upper-left counter
- 2-, 3- or 4-part system simultaneous display (four counters): Upper-left counter
- 2-, 3- or 4-part system simultaneous display (two counters): Upper counter
- 2-, 3- or 4-part system simultaneous display (one counter): Counter

Either relative position or tip work position is displayed by default.

(Note 1) 3- or 4-part system simultaneous display is enabled for a 15- or 19-type display unit only.

(Note 2) Tip work position is displayed when 5-axis-related option is ON.

(Note 3) PLC axis position is displayed when "#11091 PLC counter valid" is "1".

1: Current position
2: Workpiece coordinate position
3: Machine position
4: Program position
8: Remain command
9: Manual interrupt amount
10: Next command
11: Restart position
12: Remain distance
16: Tip workpiece coordinate position
18: Tool axis movement
19: Tip machine position
20: Relative position
21: Table coordinate position
22: Workpiece installation position
23: Inclined surface coordinate position
27: PLC axis position

---Setting range---

1 to 27

#8902 Counter type 2

Select the type of the following counters on the Monitor screen.

- Normal display: Lower-left counter
- 2-, 3- or 4-part system simultaneous display (four counters): Lower-left counter
- 2-, 3- or 4-part system simultaneous display (two counters): Lower counter

Programmed position is displayed by default.

(Note 1) 3- or 4-part system simultaneous display is enabled for a 15- or 19-type display unit only.

(Note 2) PLC axis position is displayed when "#11091 PLC counter valid" is "1".

1: Current position
2: Workpiece coordinate position
3: Machine position
4: Program position
8: Remain command
9: Manual interrupt amount
10: Next command
11: Restart position
12: Remain distance
16: Tip workpiece coordinate position
18: Tool axis movement
19: Tip machine position
20: Relative position
21: Table coordinate position
22: Workpiece installation position
23: Inclined surface coordinate position
27: PLC axis position

---Setting range---

1 to 27

#8903 Counter type 3

Select the type of the following counters on the Monitor screen.

♦Normal display: Upper-right counter
♦2-, 3- or 4-part system simultaneous display (four counters): Upper-right counter

Remaining command is displayed by default.

(Note 1) 3- or 4-part system simultaneous display is enabled for a 15- or 19-type display unit only.

(Note 2) PLC axis position is displayed when "#11091 PLC counter valid" is "1".

1: Current position
2: Workpiece coordinate position
3: Machine position
4: Program position
8: Remain command
9: Manual interrupt amount
10: Next command
11: Restart position
12: Remain distance
16: Tip workpiece coordinate position
18: Tool axis movement
19: Tip machine position
20: Relative position
21: Table coordinate position
22: Workpiece installation position
23: Inclined surface coordinate position
27: PLC axis position

---Setting range---

1 to 27

#8904 Counter type 4

Select the type of the following counters on the Monitor screen.

♦Normal display: Lower-right counter
♦2-, 3- or 4-part system simultaneous display (four counters): Lower-right counter

Next command is displayed by default.

(Note 1) 3- or 4-part system simultaneous display is enabled for a 15- or 19-type display unit only.

(Note 2) PLC axis position is displayed when "#11091 PLC counter valid" is "1".

1: Current position
2: Workpiece coordinate position
3: Machine position
4: Program position
8: Remain command
9: Manual interrupt amount
10: Next command
11: Restart position
12: Remain distance
16: Tip workpiece coordinate position
18: Tool axis movement
19: Tip machine position
20: Relative position
21: Table coordinate position
22: Workpiece installation position
23: Inclined surface coordinate position
27: PLC axis position

---Setting range---

1 to 27

#8905 Counter type 5

Select the type of counter on the Monitor screen (Simple display).
Either relative position or tip work position is displayed by default.
(Note 1) Tip work position is displayed when 5-axis-related option or program format switch option is ON.
(Note 2) PLC axis position is displayed when "#11091 PLC counter valid" is "1".

1: Current position
2: Workpiece coordinate position
3: Machine position
4: Program position
8: Remain command
9: Manual interrupt amount
10: Next command
11: Restart position
12: Remain distance
16: Tip workpiece coordinate position
18: Tool axis movement
19: Tip machine position
20: Relative position
21: Table coordinate position
22: Workpiece installation position
23: Inclined surface coordinate position
27: PLC axis position

---Setting range---

1 to 27

#8906 Counter type 6

Not used. Set to "0".

#8910 Edit undo

Set whether to enable the Undo function during program edit on the Monitor screen or Edit screen.

0: Disable
1: Enable

(Note) This parameter is enabled for M800VW/M800VS/M80VW Series.

#8911 NAVI-Message ON

Select whether or not to display a confirmation message upon rewrite of common variable in NAVI operation.

0: Not display a confirming message
1: Display a confirming message

#8912 NAVI operate type

Select the NAVI operation during automatic operation.

0: NAVI is unable to start during automatic operation.
1: NAVI is able to start during automatic operation. (An operation involving common variable rewrite is disabled.)

#8913 Touch panel sense

Set the sensibility of the touch panel.
The smaller the setting value is, the more sensitive the panel will be. (1: sensitive, 4: insensitive)
When set to "0", the sensibility will be the same as when the standard setting of 2 is applied.

---Setting range---

0 to 4

#8914 Auto Top search

Select the operation method for restart search type 2.

0: It is necessary to set the top search position arbitrarily.
1: The restart search is executed from O No. that is designated as head.

#8915 Auto backup day 1

The automatic backup is executed when the CNC power is turned ON for the first time after the designated date of the month.

When "-1" is set in this parameter, the automatic backup is executed every time the CNC power is turned ON (a maximum of once per day).

---Setting range---

-1: Everyday

0: Disabled

1 to 31: Designated date of a month

#8916 Auto backup day 2

The automatic backup is executed when the CNC power is turned ON for the first time after the designated date of the month.

---Setting range---

0: Disabled

1 to 31: Designated date of a month

#8917 Auto backup day 3

The automatic backup is executed when the CNC power is turned ON for the first time after the designated date of the month.

---Setting range---

0: Disabled

1 to 31: Designated date of a month

#8918 Auto backup day 4

The automatic backup is executed when the CNC power is turned ON for the first time after the designated date of the month.

---Setting range---

0: Disabled

1 to 31: Designated date of a month

#8919 Auto backup device

Select the automatic backup target device.

[M800VW/M80VW with Windows-based display]

0: DS

1: HD

2: Memory card

3: USB Memory

[M800VS/M80V Series]

0: DS

2: Memory card

3: USB Memory

(Note 1) The setting range differs according to the CNC model.

(Note 2) Any value outside the setting range is treated as "0".

#8920 3D tool ofs select

Select the method to calculate the drawing position when drawing a solid.

With 3D drawing, the drawing position (tool tip position) is calculated with the method designated with this parameter, and the image is drawn.

0: For tool radius compensation, use the tool compensation amount set in tool compensation screen. For tool length, use the value in tool set window. (for tool length measurement type I)

1: Use the tool compensation amount set in tool compensation screen for both tool radius and tool length compensation. (for tool length measurement type II)

2: Use the value set in tool set window for both tool radius and tool length compensation. (for tool length measurement type I)

3: Use the value set in tool set window for both tool radius and tool length compensation. (for tool length measurement type II)

	#8921	Mass Edit select

Select the editing mode for the machining programs saved in HD, memory card, DS or USB memory.

0: Regular editing mode
If the program size is 1.0 MB (When "#8910 Edit undo" is invalid, 2.0 MB) or more, mass-editing will be applied.
(For M80V Series, mass-editing is applied to 0.5 MB or greater capacity.)

1: Mass-editing mode

	#8922	T-reg-dup check

Set whether to enable the duplication check in registering tools to magazine pots, and in setting tool Nos. for spindle/standby.

0: Duplication check valid for all valid magazines

1: Duplication check invalid

2: Duplication check valid only for the selected magazine

(PR)	#8923	Hide Edit-IO menu

Set whether to enable the edit-in/out menu.
When disabled, the edit-input/output menu won't appear.
However, the maintenance-in/out menu is always enabled regardless of this parameter setting.

0: Enable

1: Disable

	#8924	Meas. confirm msg

Select whether to display a confirming message when attempting to write compensation data for tool measurement, or coordinate system data for workpiece measurement.

However, the confirmation message will not appear in L system tool measurement simple mode "#8957 T meas (L)-Simple".

0: Not display a confirming message

1: Display a confirming message

	#8925	SP on 1st part sys

Select which spindle to display in the 1st part system window for the 2-, 3- or 4-part system simultaneous display.

(Note 1) If you select "00" for the 2-, 3- or 4-part system simultaneous display, the default display is used (1st spindle on the upper side and 2nd spindle on the lower side).

(Note 2) If you set the same number as, or a greater number than the setting of "#1039 spinno", or if the high- or low-order setting is "0", the 1st spindle is displayed.

(Note 3) If you set the low-order to F, the screen shows the actual rotation speed, command speed and load meter of the high-order spindle.
Note that for the 4-counter display in 4-part system simultaneous display, even if the low-order is not F, the screen shows the actual rotation speed, command speed and load meter of the high-order and low-order spindles.

(Note 4) 3- or 4-part system simultaneous display is enabled for a 15- or 19-type display unit only.

---Setting range---

High-order (Select an upper side spindle.) : 0 to 8

Low-order (Select a lower side spindle.) : 0 to 8, F

#8926 SP on 2nd part sys

Select which spindle to display in the 2nd part system window for the 2-, 3- or 4-part system simultaneous display.

(Note 1) If you select "00" for the 2-, 3- or 4-part system simultaneous display, the default display is used (1st spindle on the upper side and 2nd spindle on the lower side).

(Note 2) If you set the same number as, or a greater number than the setting of "#1039 spinno", or if the high- or low-order setting is "0", the 1st spindle is displayed.

(Note 3) If you set the low-order to F, the screen shows the actual rotation speed, command speed and load meter of the high-order spindle.
Note that for the 4-counter display in 4-part system simultaneous display, even if the low-order is not F, the screen shows the actual rotation speed, command speed and load meter of the high-order and low-order spindles.

(Note 4) 3- or 4-part system simultaneous display is enabled for a 15- or 19-type display unit only.

---Setting range---

High-order (Select an upper side spindle.) : 0 to 8

Low-order (Select a lower side spindle.) : 0 to 8, F

#8927 SP on 3rd part sys

Select which spindle to display in the 3rd part system window for the 2-, 3- or 4-part system simultaneous display.

(Note 1) If you select "00" for the 2-, 3- or 4-part system simultaneous display, the default display is used (1st spindle on the upper side and 2nd spindle on the lower side).

(Note 2) If you set the same number as, or a greater number than the setting of "#1039 spinno", or if the high- or low-order setting is "0", the 1st spindle is displayed.

(Note 3) If you set the low-order to F, the screen shows the actual rotation speed, command speed and load meter of the high-order spindle.
Note that for the 4-counter display in 4-part system simultaneous display, even if the low-order is not F, the screen shows the actual rotation speed, command speed and load meter of the high-order and low-order spindles.

(Note 4) 3- or 4-part system simultaneous display is enabled for a 15- or 19-type display unit only.

---Setting range---

High-order (Select an upper side spindle.) : 0 to 8

Low-order (Select a lower side spindle.) : 0 to 8, F

#8928 SP on 4th part sys

Select which spindle to display in the 4th part system window for the 2-, 3- or 4-part system simultaneous display.

(Note 1) If you select "00" for the 2-, 3- or 4-part system simultaneous display, the default display is used (1st spindle on the upper side and 2nd spindle on the lower side).

(Note 2) If you set the same number as, or a greater number than the setting of "#1039 spinno", or if the high- or low-order setting is "0", the 1st spindle is displayed.

(Note 3) If you set the low-order to F, the screen shows the actual rotation speed, command speed and load meter of the high-order spindle.
Note that for the 4-counter display in 4-part system simultaneous display, even if the low-order is not F, the screen shows the actual rotation speed, command speed and load meter of the high-order and low-order spindles.

(Note 4) 3- or 4-part system simultaneous display is enabled for a 15- or 19-type display unit only.

---Setting range---

High-order (Select an upper side spindle.) : 0 to 8

Low-order (Select a lower side spindle.) : 0 to 8, F

#8929 Disable=INPUT:comp

Disable [=INPUT] menu for tool compensation and workpiece coordinate offset values. Fix the setting method to the incremental value input.

0: Enable

1: Disable

#8930 Disable=INPUT:var

Disable [=INPUT] menu for common variables.

0: Enable

1: Disable

#8931 Display/Set limit

Select the restriction of the connected NC's screen display/settings on/from the remote control tool (NC Monitor2).

0: Permit the screen display/settings

1: Permit the screen display only

2: Restrict the connection

(PR) #8932 Hide measure scrn

Select whether to display the tool measurement screen and workpiece measurement screen.

0: Display

1: Not display

(Note) If the "#11056 Workshift invalid" (Workpiece coordinate system shift OFF) is "0" for the L system, the screen is displayed as the workpiece coordinate system shift screen even when this parameter is set to "1".

#8933 Disable lngth comp

Set whether to disable the setting of tool shape compensation amount.

0: Enable the setting

1: Disable the setting

The shape compensation amount covers the following data according to the tool compensation type.

- Compensation type I ("1" in "#1037 cmdtyp(command type)")
  ... Compensation amount (the sum of shape compensation and wear compensation amount)
- Compensation type II ("2" in "#1037 cmdtyp(command type)")
  ... Length dimension and radius dimension
- Compensation type III ("3" in "#1037 cmdtyp(command type)")
  ... Tool length and tool nose R

#8934 Disable wear comp

Select whether to disable the setting of tool wear compensation amount.

0: Enable the setting

1: Disable the setting

The wear compensation amount covers the following data according to the tool compensation type.

- Compensation type I ("1" in "#1037 cmdtyp(command type)")
  ... This parameter is disabled.
- Compensation type II ("2" in "#1037 cmdtyp(command type)")
  ... Length wear and radius wear
- Compensation type III ("3" in "#1037 cmdtyp(command type)")
  ... Tool wear and tool nose wear

#8935 W COORD CONFIRM

Select whether to display confirmation message when setting workpiece coordinate system offset in [Easy setting] menu.

0: Not display

1: Display

#8936 Delete leading 0

In creating a file, or in transferring a file, if the file name of the new file, or the file name of the transfer destination consists only of numerical figures, 0 of the file name head will be deleted from the name.

0: Designated file name (0 remains in the file name)

1: 0 will be deleted from the file name

#8937 File sort volume

Set the maximum number of files to sort in the memory card, USB memory and DS lists.

If the setting is large, update of the list may take longer.

---Setting range---

64 to 1000: (M800VW/M80VW with Windows-based display)

64 to 250: (M800VS)

64 to 128: (M80V)

Standard: 128

#8938 Edit-Not show Prg

Select whether to enable the automatic display on the Edit screen, when selected, of the programs searched by operation/check search or the MDI programs in MDI mode.

0: Enable the automatic display

1: Disable the automatic display

#8939 Undo confirm msg

Display a confirming message when operating the [Undo] menu.

0: Not display a confirming message

1: Display a confirming message

#8940 Set select display

Set what to display in the selectable display area.

0: Common variable

1: Local variable

2: Workpiece coordinate system offset

3: All spindles' rotation speeds

4: Common variable

5: Tool center coordinate display (*1)

6: Tool offset

7 to 10: (Unused)

11: Custom display 1 (*2)

12: Custom display 2 (*2)

13: Custom display 3 (*2)

(*1) Tool center coordinate display is available only when any of the 5-axis related options is enabled.

(*2) Custom display varies for each machine tool builder.

(PR) #8941 ABS/INC for T-ofs

Enable switching the method to set tool compensation data (absolute/incremental value) with INPUT key.

0: Fix it to the absolute value input.

1: Enable to switch between absolute and incremental value input.

(PR) #8942 $1 color

Set the color to be shown on the top-left of screen for the 1st part system. This enables you to change the color patterns for each part system.

When set to "0", the settings between #8943(#8962) and #8945(#8965) are disabled and the screen is shown by the default color pattern for all the part systems.

(Note) When set to "0" or "1", the color is determined by the setting of "#11060 Screen theme color".

0: Theme color (default)

1: Theme color

2: Pink

3: Light blue

4: Orange

5: Green

6: Fuchsia

7: YellowGreen

8: Brown

(PR) #8943 $2 color

Set the color to be shown on the top-left of screen for the 2nd part system. This enables you to change the color patterns for each part system.

(Note 1) This parameter is enabled when "#8942 $1 color" is set to the values "1" to "8".

(Note 2) When set to "1", the color is determined by the setting of "#11060 Screen theme color".

1: Theme color (default)
2: Pink
3: Light blue
4: Orange
5: Green
6: Fuchsia
7: YellowGreen
8: Brown

(PR) #8944 $3 color

Set the color to be shown on the top-left of screen for the 3rd part system. This enables you to change the color patterns for each part system.

(Note 1) This parameter is enabled when "#8942 $1 color" is set to the values "1" to "8".

(Note 2) When set to "1", the color is determined by the setting of "#11060 Screen theme color".

1: Theme color (default)
2: Pink
3: Light blue
4: Orange
5: Green
6: Fuchsia
7: YellowGreen
8: Brown

(PR) #8945 $4 color

Set the color to be shown on the top-left of screen for the 4th part system. This enables you to change the color patterns for each part system.

(Note 1) This parameter is enabled when "#8942 $1 color" is set to the values "1" to "8".

(Note 2) When set to "1", the color is determined by the setting of "#11060 Screen theme color".

1: Theme color (default)
2: Pink
3: Light blue
4: Orange
5: Green
6: Fuchsia
7: YellowGreen
8: Brown

#8952 Edit-win $ switch

Select whether to enable switching of program displayed in the edit window on Monitor screen according to the displayed part system when part system switch is performed.

0: Not switch
1: Switch

(PR) #8953 2$ disp switch typ

Select how to switch the part system to display when the 2-, 3- or 4-part system simultaneous display is enabled.

0, 1: The No. of part system to display is incremented by one. The operation target is switched when the part system displayed in the non-active area is selected.

2: The operation target on the left side is fixed to $1. When $1 is selected for the part system switch, the left side is the operation target. When $2 or after is selected, the displayed part system on the right side is incremented by one.

(Note) 3- or 4-part system simultaneous display is enabled for a 15- or 19-type display unit only.

	#8954	Initial type

Select the default setting of the coordinate axis direction designation method to be displayed on the [Surface detail] screen of R-Navi.

0,1: Point (+) on the axis

2: Latitude/Longitude

3: Latitude/Projection angle

4: Start point/End point

5: Index angle

	#8955	Init axis pair

Select the default coordinate axis combination to be displayed on the [Surface detail] screen of R-Navi.

0,1: Z/X

2: Z/Y

3: X/Y

(PR)	#8956	User key type

Select the definition type of the user-defined keys.

There are two user-defined keys.

♦Type 1:
It is the same as the conventional specification. A line feed between "[ ]" is not dealt as ";".
It is dealt as an upper case/lower case letter depending on the CapsLock status.
A symbolic character may be converted into a specific character.

♦Type 2:
A line break inside square brackets "[ ]" is dealt as ";".
Regardless of the CapsLock status, the defined character is input.
A symbolic character is also input as defined.

0: Type 1 (conventional specification)

1: Type 2

(PR)	#8957	T meas (L)-Simple

Select the operation mode of the manual tool length measurement 1 for L system.

0: Normal operation mode (Conventional specification)
Select an axis to measure using the cursor position.

1: Simple operation mode
Select an axis to measure using an axis address key or menu. More than one axis can be selected.

	#8958	SP on 5th part sys

Select which spindle to display in the 5th part system window for the 2-, 3- or 4-part system simultaneous display.

(Note 1) If you select "00" for the 2-, 3- or 4-part system simultaneous display, the default display is used (1st spindle on the upper side and 2nd spindle on the lower side).

(Note 2) If you set the same number as, or a greater number than the setting of "#1039 spinno", or if the high- or low-order setting is "0", the 1st spindle is displayed.

(Note 3) If you set the low-order to F, the screen shows the actual rotation speed, command speed and load meter of the high-order spindle.
Note that for the 4-counter display in 4-part system simultaneous display, even if the low-order is not F, the screen shows the actual rotation speed, command speed and load meter of the high-order and low-order spindles.

(Note 4) 3- or 4-part system simultaneous display is enabled for a 15- or 19-type display unit only.

---Setting range---

High-order (Select an upper side spindle.) : 0 to 8

Low-order (Select a lower side spindle.) : 0 to 8, F

#8959 SP on 6th part sys

Select which spindle to display in the 6th part system window for the 2-, 3- or 4-part system simultaneous display.

(Note 1) If you select "00" for the 2-, 3- or 4-part system simultaneous display, the default display is used (1st spindle on the upper side and 2nd spindle on the lower side).

(Note 2) If you set the same number as, or a greater number than the setting of "#1039 spinno", or if the high- or low-order setting is "0", the 1st spindle is displayed.

(Note 3) If you set the low-order to F, the screen shows the actual rotation speed, command speed and load meter of the high-order spindle.
Note that for the 4-counter display in 4-part system simultaneous display, even if the low-order is not F, the screen shows the actual rotation speed, command speed and load meter of the high-order and low-order spindles.

(Note 4) 3- or 4-part system simultaneous display is enabled for a 15- or 19-type display unit only.

---Setting range---

High-order (Select an upper side spindle.) : 0 to 8

Low-order (Select a lower side spindle.) : 0 to 8, F

#8960 SP on 7th part sys

Select which spindle to display in the 7th part system window for the 2-, 3- or 4-part system simultaneous display.

(Note 1) If you select "00" for the 2-, 3- or 4-part system simultaneous display, the default display is used (1st spindle on the upper side and 2nd spindle on the lower side).

(Note 2) If you set the same number as, or a greater number than the setting of "#1039 spinno", or if the high- or low-order setting is "0", the 1st spindle is displayed.

(Note 3) If you set the low-order to F, the screen shows the actual rotation speed, command speed and load meter of the high-order spindle.
Note that for the 4-counter display in 4-part system simultaneous display, even if the low-order is not F, the screen shows the actual rotation speed, command speed and load meter of the high-order and low-order spindles.

(Note 4) 3- or 4-part system simultaneous display is enabled for a 15- or 19-type display unit only.

---Setting range---

High-order (Select an upper side spindle.) : 0 to 8

Low-order (Select a lower side spindle.) : 0 to 8, F

#8961 SP on 8th part sys

Select which spindle to display in the 8th part system window for the 2-, 3- or 4-part system simultaneous display.

(Note 1) If you select "00" for the 2-, 3- or 4-part system simultaneous display, the default display is used (1st spindle on the upper side and 2nd spindle on the lower side).

(Note 2) If you set the same number as, or a greater number than the setting of "#1039 spinno", or if the high- or low-order setting is "0", the 1st spindle is displayed.

(Note 3) If you set the low-order to F, the screen shows the actual rotation speed, command speed and load meter of the high-order spindle.
Note that for the 4-counter display in 4-part system simultaneous display, even if the low-order is not F, the screen shows the actual rotation speed, command speed and load meter of the high-order and low-order spindles.

(Note 4) 3- or 4-part system simultaneous display is enabled for a 15- or 19-type display unit only.

---Setting range---

High-order (Select an upper side spindle.) : 0 to 8

Low-order (Select a lower side spindle.) : 0 to 8, F

(PR) #8962 $5 color

Set the color to be shown on the top-left of screen for the 5th part system. This enables you to change the color patterns for each part system.

(Note 1) This parameter is enabled when "#8942 $1 color" is set to the values "1" to "8".

(Note 2) When set to "1", the color is determined by the setting of "#11060 Screen theme color".

---Setting range---

1: Theme color (default)
2: Pink
3: Light blue
4: Orange
5: Green
6: Fuchsia
7: YellowGreen
8: Brown

(PR) #8963 $6 color

Set the color to be shown on the top-left of screen for the 6th part system. This enables you to change the color patterns for each part system.

(Note 1) This parameter is enabled when "#8942 $1 color" is set to the values "1" to "8".

(Note 2) When set to "1", the color is determined by the setting of "#11060 Screen theme color".

---Setting range---

1: Theme color (default)
2: Pink
3: Light blue
4: Orange
5: Green
6: Fuchsia
7: YellowGreen
8: Brown

(PR) #8964 $7 color

Set the color to be shown on the top-left of screen for the 7th part system. This enables you to change the color patterns for each part system.

(Note 1) This parameter is enabled when "#8942 $1 color" is set to the values "1" to "8".

(Note 2) When set to "1", the color is determined by the setting of "#11060 Screen theme color".

---Setting range---

1: Theme color (default)
2: Pink
3: Light blue
4: Orange
5: Green
6: Fuchsia
7: YellowGreen
8: Brown

(PR) #8965 $8 color

Set the color to be shown on the top-left of screen for the 8th part system. This enables you to change the color patterns for each part system.

(Note 1) This parameter is enabled when "#8942 $1 color" is set to the values "1" to "8".

(Note 2) When set to "1", the color is determined by the setting of "#11060 Screen theme color".

---Setting range---

1: Theme color (default)

2: Pink

3: Light blue

4: Orange

5: Green

6: Fuchsia

7: YellowGreen

8: Brown

(PR) #8966 Edit: INS or OVR

Select whether to insert or overwrite during edit. Insert or overwrite mode can also be changed temporarily using the INS key.

0: Overwrite mode

1: Insert mode

(PR) #8967 Delete key action

Select the [DELETE] key operation during edit.

0: The key serves as a Delete key. (erases the character after the cursor)

1: The key serves as a Back Space key. (erases the character before the cursor)

#8968 Tool shape radius

Tool shape radius designation

Select the tool shape designation method.

0: Diameter designation

1: Radius designation

#8969	Tool offset type 1

Specify the display item for the 1st column (type) and 2nd column (compensation amount) on the right side of the tool management screen list display.

The setting value and display item are specified as follows.

(Setting value): (1st column) / (2nd column)

· Tool compensation type I

0-11: H (Compensation No.) / Length compensation

· Tool compensation type II

0, 5-11: H (Compensation No.) / Length compensation

1: H (Compensation No.) / Length compensation

2: D (Compensation No.) / Radius compensation

3: +H (Compensation No.) / Length wear

4: +D (Compensation No.) / Radius wear

· Tool compensation type III

0: (Axis name (1st axis))(Compensation No.) / 1st axis tool length

1: (Axis name (1st axis))(Compensation No.) / 1st axis tool length

2: (Axis name (2nd axis))(Compensation No.) / 2nd axis tool length

3: (Axis name (Additional axis))(Compensation No.) / Additional axis tool length

4: +(Axis name (1st axis))(Compensation No.) / 1st axis wear

5: +(Axis name (2nd axis))(Compensation No.) / 2nd axis wear

6: +(Axis name (Additional axis))(Compensation No.) / Additional axis wear

7: R / Nose R

8: +R / R wear

9: P / Point

10: (Axis name (2nd additional axis))(Compensation No.) / 2nd additional axis tool length

11: +(Axis name (2nd additional axis))(Compensation No.) / 2nd additional axis wear

---Setting range---

0 to 11

#8970 Tool offset type 2

Specify the display item for the 3rd column (type) and 4th column (compensation amount) on the right side of the tool management screen list display.

The setting value and display item are specified as follows.

(Setting value): (3rd column) / (4th column)

· Tool compensation type I

0-11: Set to blank / Set to blank

· Tool compensation type II

0, 5-11: D (Compensation No.) / Radius compensation

1: H (Compensation No.) / Length compensation

2: D (Compensation No.) / Radius compensation

3: +H (Compensation No.) / Length wear

4: +D (Compensation No.) / Radius wear

· Tool compensation type III

0: (Axis name (2nd axis))(Compensation No.) / 2nd axis tool length

1: (Axis name (1st axis))(Compensation No.) / 1st axis tool length

2: (Axis name (2nd axis))(Compensation No.) / 2nd axis tool length

3: (Axis name (Additional axis))(Compensation No.) / Additional axis tool length

4: +(Axis name (1st axis))(Compensation No.) / 1st axis wear

5: +(Axis name (2nd axis))(Compensation No.) / 2nd axis wear

6: +(Axis name (Additional axis))(Compensation No.) / Additional axis wear

7: R / Nose R

8: +R / R wear

9: P / Point

10: (Axis name (2nd additional axis))(Compensation No.) / 2nd additional axis tool length

11: +(Axis name (2nd additional axis))(Compensation No.) / 2nd additional axis wear

---Setting range---

0 to 11

#8971 Alarm window ON

Select whether to enable the alarm display window.

0: Disable the alarm display window

1: Enable the alarm display window

#8972 T code offset disp

For L system only

Select whether to display tool offset data with the address T's offset No. at the head when the tool offset screen is opened after a manual value command.

<Monitor screen>

* Open the tool offset screen (window)

<Setup screen>

* Display the tool offset screen

(Note) The display is unchanged if you change a tool offset No. with the tool offset screen displayed.

0: Not display tool offset data with the address T's offset No. at the head

1: Display tool offset data with the address T's offset No. at the head

(PR) #8973 Selective display

Select whether to enable selective display on an 8.4- or 10.4-type display terminal.

0: Disable selective display

1: Enable selective display. Select what to display using the parameter "#8940 Set select display".

#8974 Simple PLC switch

Select whether to enable ON/OFF of PLC switch without a press of the [Setting valid] menu.

0: Enable ON/OFF of PLC switch after a press of the [Setting valid] menu.

1: Enable ON/OFF of PLC switch without a press of the [Setting valid] menu.

#8975 No. search process

Select how the [XXX No search] menu works on screens including the parameter and tool offset screens.

0: When you press [No search], enter the No. to display and then press [INPUT], the data on the display is ordered to start from the designated No.

1: When you enter the No. to display and then press [No. search], the data on the display is ordered to start from the designated No.

#8976 Menu animation OFF

Select whether to disable animated graphics of the menus.

0: Enable the animation

1: Disable the animation

#8977 Multi-$ simul edit

Select whether to open the same named programs of different part systems simultaneously for each editing area upon a press of Open on Edit screen while Multi-part system program management is enabled.

0: Disable (Not open the programs simultaneously for each editing area)

1: Enable (Open the programs simultaneously for each editing area)

#8979 Touch op noise res

Set the noise tolerance of touch operation.
The larger setting value gives the higher noise tolerance, but the operation response becomes dull.

0: Select this when the motions are normal at one and two points in the stable environment of the power supply.

1 to 4: If the touch detection position is unstable, increase the setting value according to the cursor blur level.

(Note) Do not execute touch operation for two seconds after changing this parameter.

#8980 R-Navi graphic dir

Specify the coordinate system direction of the workpiece graphics (machining surface graphics) to be displayed on the R-Navi surface list screen or surface selection screen.

(Note) The angle (degrees) is a CCW rotation when viewed from the positive end of the height axis.

---Setting range---

0: XYZ 0°

1: YZX 0°

2: ZXY 0°

3: XYZ 90°

4: YZX 90°

5: ZXY 90°

6: XYZ 180°

7: YZX 180°

8: ZXY 180°

9: XYZ 270°

10: YZX 270°

11: ZXY 270°

#8981 NCmemory date disp

Specify the display items when displaying the updated time and date of the file on the "Date / Comment" if NC memory/NC memory2 is selected on the program list display.

0: Displays the program comment. (Conventional operation)

1: Displays the updated time and date.

(Note) When multi-part system program management is valid, program comment display is specified, regardless of this setting.

	#8982	CheckSmltns$1Invld

In the check method 2 of graphic check, checking for 1st part system is invalid.
0: Enable the check. (The part system is the check target)
1: Disable the check. (The part system is not the check target)

	#8983	CheckSmltns$2Invld

In the check method 2 of graphic check, checking for 2nd part system is invalid.
0: Enable the check. (The part system is the check target)
1: Disable the check. (The part system is not the check target)

	#8984	CheckSmltns$3Invld

In the check method 2 of graphic check, checking for 3rd part system is invalid.
0: Enable the check. (The part system is the check target)
1: Disable the check. (The part system is not the check target)

	#8985	CheckSmltns$4Invld

In the check method 2 of graphic check, checking for 4th part system is invalid.
0: Enable the check. (The part system is the check target)
1: Disable the check. (The part system is not the check target)

	#8986	CheckSmltns$5Invld

In the check method 2 of graphic check, checking for 5th part system is invalid.
0: Enable the check. (The part system is the check target)
1: Disable the check. (The part system is not the check target)

	#8987	CheckSmltns$6Invld

In the check method 2 of graphic check, checking for 6th part system is invalid.
0: Enable the check. (The part system is the check target)
1: Disable the check. (The part system is not the check target)

	#8988	CheckSmltns$7Invld

In the check method 2 of graphic check, checking for 7th part system is invalid.
0: Enable the check. (The part system is the check target)
1: Disable the check. (The part system is not the check target)

	#8989	CheckSmltns$8Invld

In the check method 2 of graphic check, checking for 8th part system is invalid.
0: Enable the check. (The part system is the check target)
1: Disable the check. (The part system is not the check target)

(PR)	#8990	Edit-up/down keys

At the time of normal edit, specify the operation with up and down cursor keys in the block on the several lines.
0: Moves by line number
1: Moves by line on display
(Note) For mass-editing, the operation is always as "1" setting.

	#8991	Interactive cycle

Select whether to enable the interactive cycle insertion function.
0: Disable
1: Enable

(PR)	#8992	Cycle switch

Switch the selectable cycle type.
0: Standard/Extended cycle
1: Not used
2: Not used

#8993 Cycle highlight

Select whether to highlight the program cycle (from the cycle header to the footer) inserted through the interactive cycle insertion.

0: Not highlight

1: Highlight

#8994 =InputOFF:Interact

Select whether to disable the [=Input] menu for interactive cycle insertion.
Fix the setting method to the incremental value input.

0: Enable [=Input] menu

1: Disable [=Input] menu

#8995 Touchop longtaptim

Set the time until recognized as long press (long tap).
When releasing a finger within the set time, it is recognized as tap.

0: 800 (ms)

1: 1000

2: 1500

3: 2000

(PR) #8996 Simple program ON

Select whether to enable the simple programming function.

0: Disable

1: Enable

#8997 Hi-speed grph chck

Select whether to increase the graphic check speed.

When you select 1 to 3, graphic check becomes faster.

Note however that the workpiece shape is drawn more inward than the programmed path.

The greater the setting value, the faster the graphic check will be.

0: Disable

1: Level 1

2: Level 2

3: Level 3

High-speed graphic check is enabled for the check method 1 only.

#8998 Finish shape view

Select whether to enable the finished shape display.

0: Disable

1: Enable

(PR) #8999 Simul edit - View

Select the display format for simultaneous program edit (3 or 4 Edit), which can be selected with the [Display setting] menu.

0: [2 Edit] and [3 Edit] are selectable.

1: [2 Edit] and [4 Edit] are selectable.

(PR) #19701 Restrain VNCserver

Select whether to restrain the VNC client from connecting to the NC, displaying the NC screen or performing setting to the NC.

Menu selection may be disabled depending on the set value.

0: Disable the VNC server function.

1: Enable the VNC server function, and allow the VNC client to display the NC screen and to perform setting operation.

2: Enable the VNC server function, and allow the VNC client to display the NC screen, but the available setting operation is INPUT key only.

#19702 VNC password

Specify the password for connecting to the VNC server.

The password is needed for VNC client of an external PC to connect to the server.

---Setting range---

Up to 8 characters including alphanumeric characters and '_' (underscore)

(PR) #19703 VNC server port

Specify the port number for connecting to the VNC server.

The recommended value is "5901".

(Note) If you use the remote desktop function, do not set "5900".

---Setting range---

0 to 65535

#19704 VNC color depth

Specify the color depth of the screen displayed by the VNC client via VNC server connection.

0: 16-bit color depth

1: 8-bit color depth

#19705 VNC transmit cycle

Specify the transmission cycle for the VNC server to send screen data to the VNC client.

0: Standard transmission cycle

1: Increase the cycle two-fold.

2: Increase the cycle four-fold.

(Note) If you increase the transmission cycle, the NC screen refresh may be delayed.

#19710 Edit-Upward search

Enable upward search for the text search function in the edit window and edit screen.

0: Search downward from the cursor position.

1: Enable upward and downward search from the cursor position.

#19711 Unit of feed disp

Switch the unit of feedrate display for Feedrate per revolution.

0: Display the feedrate in mm/rev unit.

1: Display the feedrate in mm/min unit.

#19712 Sys var pre-read

Switch the behavior of the system variables (position data) that cannot be read during travel.

0: A program error is generated

1: Read the system variables after the execution of the block performing travel is completed

#19715 Cycle output dest.

Select where to output a cycle created with the interactive cycle insertion.

0: Output to the main program

1: Output to a subprogram stored in NC memory

2: Output to a subprogram stored in the directory "#8880/8881 Subpro stor D0"

3: Output to a subprogram stored in the directory "#8882/8883 Subpro stor D1"

4: Output to a subprogram stored in the directory "#8884/8885 Subpro stor D2"

5: Output to a subprogram stored in the directory "#8886/8887 Subpro stor D3"

6: Output to a subprogram stored in the directory "#8888/8889 Subpro stor D4"

#19717 W coord: cursor

Select where the cursor is located after data entry on the workpiece coordinate system offset screen.

0: Cursor moves to the next line. If the original cursor position is in the last line, it moves to the top of the next data.

1: Cursor moves to the next line. If the original cursor position is in the last line, the position is unchanged.

2: Unchanged from the original position.

(Note) When base common parameter "#1759 cfgPR09/bit1" is set to "1", the cursor does not move regardless of this parameter setting.

#19721 3Dmac.simu.inval

Disable 3D machining simulation in Graphic check (3D).

0: Enable 3D machining simulation.

1: Disable 3D machining simulation.

(*) This parameter is for M800VW series only.

#19723 3D intrf tooltype

Select the method for calculating the shape of the tool model in the 3D machine interference check.

The method specified with this parameter is used to calculate and draw the shape of the tool model.

0: Use the tool data set in Tool management screen for both tool radius and tool length.

1: Use the tool compensation amount set in Tool compensation screen for both tool radius and tool length.

(Note) When Tool compensation type I is used, the tool data set in Tool management screen is used for tool radius regardless of the setting value of this parameter.

#19724 Repeat key switch

Switch the behavior of the repeat key (page switch key/cursor key).

0: Screen stop time depends on the length of time the button is pressed

1: The screen stops as soon as the button is released

(Note) This parameter is only valid for M800VS and M80V.

#19725 Prgcnv-output:dev

Specify the device to output the converted machining program on the Optimum program conversion screen.

(Note 1) When "0" to "2" is set, the parameter "#19726 Prgcnv-output:dir" is ignored.

(Note 2) For M800VW/M80VW Windows-based display unit, the "3: HD" setting is valid.
When running the program in the IPC that is connected to network via M80V, the "3: HD" setting is valid.
When the "3: HD" setting is invalid, it will be regarded as "0".

---Setting range---

0: Same as the original program

1: Memory

2: Memory2

3: HD

4: Memory card

5: DS

6: USB memory

#19726 Prgcnv-output:dir

Specify the directory to output the converted machining program on the Optimum program conversion screen.

(Note) When "0" to "2" is set to "#19725 Prgcnv-output:dev", this parameter is ignored.

---Setting range---

Directory 37 characters

#19730 WebAccess

Specify whether to enable WebAccess (NC screen remote browsing) function. Also set restrictions on screen operations when the function is enabled.

0: Disable the function.

1: Enable the function.
Touch, click and key input are possible.

2: Enable the function.
Touch, click and key input are possible. Input via [INPUT] key is not possible.

3: Enable the function.
Touch, click and key input are not possible. Only the NC screen can be displayed.

(Note 1) This parameter is enabled for M800VS/M80V Series.

(Note 2) This parameter is enabled while the parameter "#1766 cfgPR16/bit7" is "1".

#19731 WebAccess USER

Specify the user name when logging in from a Web browser using WebAccess (NC screen remote browsing) function.

(Note) This parameter is enabled for M800VS/M80V Series.

---Setting range---

31 characters (alphanumeric) or less

#19732 WebAccess PSWD

Specify the password when logging in from a Web browser using WebAccess (NC screen remote browsing) function.

(Note) This parameter is enabled for M800VS/M80V Series.

---Setting range---

Up to 31 characters in length, containing alphanumeric characters and symbols

1.14 Machining Condition Selection Parameters

(Note) The machining condition parameter groups which can be set through the machining condition setting screen are stored according to the application. The guidance display and parameter input/output on the screen follow the machining condition parameter numbers in the following table. These parameters can only be set through the machining condition setting screen.

Nos. on the machining condition setting screen	Machining Condition Parameters (Application 1)	Machining Condition Parameters (Application 2)	Machining Condition Parameters (Application 3)
#1207	#42001	#42301	#42601
#1568	#42002	#42302	#42602
#1570	#42003	#42303	#42603
#8019	#42004	#42304	#42604
#8022	#42005	#42305	#42605
#8023	#42006	#42306	#42606
#2010	#42007	#42307	#42607
#8020	#42008	#42308	#42608
#8026	#42009	#42309	#42609
#8027	#42010	#42310	#42610
#8028	#42011	#42311	#42611
#8030	#42012	#42312	#42612
#8033	#42013	#42313	#42613
#8029	#42014	#42314	#42614
#8037	#42015	#42315	#42615
#8090	#42016	#42316	#42616
#8091	#42017	#42317	#42617
#8093	#42018	#42318	#42618
#2659	#42019	#42319	#42619
#1206	#42020	#42320	#42620
#12070	#42021	#42321	#42621
#12051	#42022	#42322	#42622

#1206 G1bF Maximum speed

Set a cutting feedrate when applying pre-interpolation acceleration/deceleration.

When high-accuracy control time constant expansion is valid, set the maximum of cutting feed clamp speed of each axis.

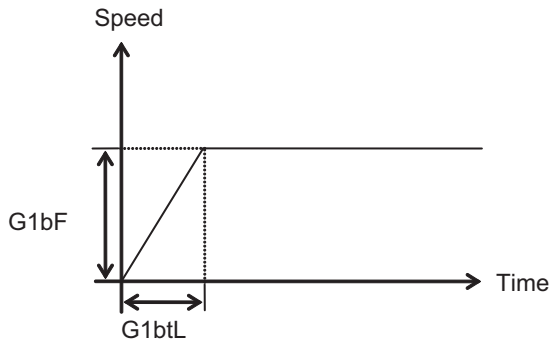
---Setting range---

1 to 999999 (mm/min)

#1207	G1btL	Time constant

Set a cutting feed time constant when applying pre-interpolation acceleration/deceleration.

When set to "0", the time constant will be clamped at 1ms.



---Setting range---

Without high-accuracy control time constant expansion: 1 to 5000 (ms)

With high-accuracy control time constant expansion: 1 to 30000 (ms)

Cutting feed Acc Cutting feed acceleration

Displays cutting feed acceleration.

#1568	SfiltG1	G01 soft acceleration/deceleration filter

Set the filter time constant for smoothly changing the acceleration rate for the cutting feed acceleration/deceleration in pre-interpolation acceleration/deceleration.

- Notch frequency Hz
Displays the notch frequency (Hz) for the S-pattern filter set in "#1568 SfiltG1" (G01 soft acceleration/deceleration filter).

---Setting range---

0 to 200 (ms)

#1570	Sfilt2	Soft acceleration/deceleration filter 2

Set the filter time constant for smoothly changing the acceleration rate in pre-interpolation acceleration/deceleration.

This will be disabled when "0" or "1" is set.

- Notch frequency Hz
Displays the notch frequency (Hz) for the S-shape filter set in "#1570 Sfilt2" (Soft acceleration/deceleration filter 2).

---Setting range---

0 to 200 (ms)

#2010	fwd_g	Feed forward gain

Set a feed forward gain for pre-interpolation acceleration/deceleration.

The larger the set value, the smaller the theoretical control error will be. However, if a machine vibration occurs, set the smaller value.

---Setting range---

0 to 200 (%)

#2659	tolerance	Tolerance

Specify a tolerance (tolerable error) to be used under tolerance control.
Set a tolerable error for fine segment program created by CAM. (Usually around 0.01(mm))
If 0.000 is set, it is operated with the tolerance of 0.01(mm).
When designating the tolerance amount with the ", K address", this parameter is not used.

---Setting range---

0.000 to 100.000 (mm)

#8019 R COMP

Set a compensation coefficient for reducing a control error in the reduction of a corner roundness and arc radius.

The larger the set value is, the smaller the theoretical error will be. However, since the speed at the corner goes down, the cycle time will be extended.

Coefficient = 100 - setting value

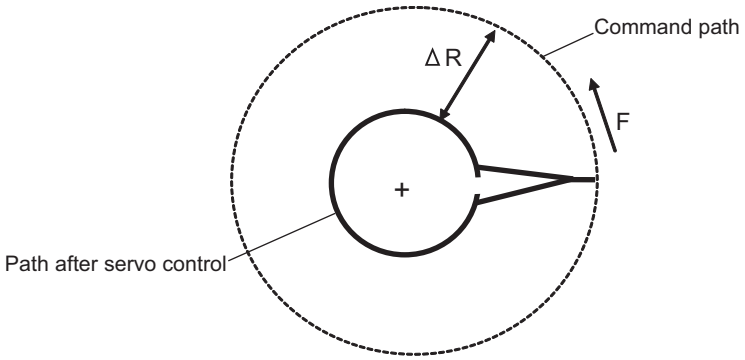
(Note) This function will be enabled when "#8021 COMP_CHANGE" is set to "0".

---Setting range---

0 to 99 (%)

Theoretical radius decrease error amount

Displays the theoretical radius decrease error amount, ΔR(mm), from the automatic calculation by NC.



Theoretical radius decrease amount in arc

R5mm arc deceleration speed

Displays a deceleration speed (mm/min) along an arc of 5 (mm) radius.

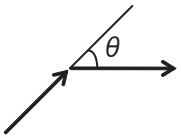
R1mm arc deceleration speed

Displays a deceleration speed(mm/min) along an arc of 1 (mm) radius.

#8020 DCC ANGLE

Set the minimum value of an angle (external angle) that should be assumed to be a corner.

When an inter-block angle (external angle) in high-accuracy mode is larger than the set value, it will be determined as a corner and the speed will go down to sharpen the edge.



If the set value is smaller than θ, the speed goes down to optimize the corner.

(Note) If "0" is set, it will be handled as "5" degrees.

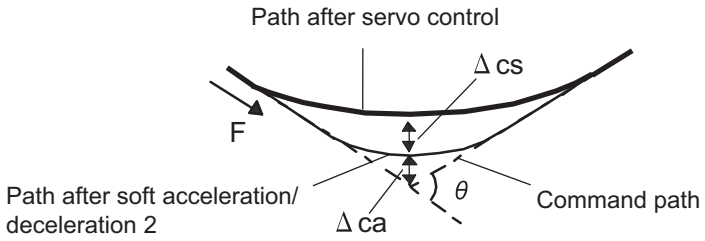
---Setting range---

0 to 89 (°)

0: 5 degree (Equals to setting "5")

Theoretical corner dull amount

Displays the corner dull amount Δc(mm) in respect to the corner's angle (external angle) θ(°).



Theoretical roundness amount at corner

ca(mm): Error (Δ) caused by the soft acceleration/deceleration 2

cs(mm): Error (Δ) caused by the servo system

Corner deceleration speed

Display corner deceleration speed c (mm/min) for the corner of the angle (external angle) with θ(°).

Theoretical dull amount at 90 degree

Display corner dull amount when the angle is 90 degree.

Corner deceleration speed at 90 degree

Display corner deceleration speed when the angle is 90 degree.

#8021 COMP_CHANGE

Select whether to share or separate the compensation coefficient at the corner/curve during the high-accuracy control mode.

0: Share ("#8019 R COMP" is applied.)

1: Separate

* Corner: #8022 CORNER COMP

* Curve: #8023 CURVE COMP

(Note) Set "1" when using SSS/EasySSS control.

#8022 CORNER COMP

Set the compensation coefficient to further reduce or increase the roundness at the corner during the high-accuracy control mode.

Coefficient = 100 - setting value

(Note) This is valid when "#8021 COMP CHANGE" is set to "1".

Reference to "#8020 Corner decreasing speed "for theoretical corner roundness amount, corner decreasing speed, theoretical 90 degree dull amount, 90 degree corner decreasing speed.

---Setting range---

-1000 to 99 (%)

#8023 CURVE COMP

Set the compensation coefficient to further reduce or increase the radius reduction amount at the curve (arc, involute, spline) during the high-accuracy control mode.

Coefficient = 100 - setting value

(Note) This is valid when "#8021 COMP CHANGE" is set to "1".

For theoretical radius reduction error amount, R5mm arc deceleration speed and R1mm arc deceleration speed, refer to "#8019 R COMP".

---Setting range---

-1000 to 99 (%)

#8025 SPLINE ON

For M system only.

Specify whether to enable the fine spline function.

0: Disable the fine spline function.

1: Enable the fine spline function.

Spline interpolation will be valid during G61.2 modal regardless of this setting.

#8026 CANCEL ANG. (for M system only)

Set the angle where the spline interpolation is temporarily canceled.

When the angle made by blocks exceeds this parameter setting value, spline interpolation will be canceled temporarily. In consideration of the pick feed, set a value a little smaller than the pick feed angle.

---Setting range---

0 to 180 (°)

0: 180 (°)

#8027 Toler-1 (for M system only)

Set the maximum chord error (tolerance) in a block that includes an inflection point. Set the tolerance applicable when the applicable block is developed to fine segments by CAM. (normally about 10 μm)

When "0.000" is set, the applicable block will be linear.

---Setting range---

0.000 to 100.000 (mm)

#8028 Toler-2 (for M system only)

Set the maximum chord error (tolerance) in a block that includes no inflection point. Set the tolerance applicable when the applicable block is developed to fine segments by CAM. (normally about 10 μm)

When "0.000" is set, the applicable block will be linear.

---Setting range---

0.000 to 100.000 (mm)

#8029 FairingL (for M system only)

Set the length of the block subject to fairing.

(Enabled when "#8033 Fairing ON" is set to "1".)

---Setting range---

0 to 100.000 (mm)

#8030 MINUTE LENGS (for M system only)

Set the fine-segment length where the spline interpolation is temporarily canceled.

When the length of one block exceeds this parameter setting value, spline interpolation is canceled temporarily and linear interpolation is performed. Set a value a little smaller than one block length of the program.

If "-1" is set, spline interpolation will be performed regardless of block length.

---Setting range---

-1 to 127 (mm)

0: 1 (mm)

#8033 Fairing ON (for M system only)

Select whether or not to use the fairing or smooth fairing function.

0: Use neither of them

1: Use the fairing function

2: Use the smooth fairing function

#8037 CorJudgeL (for M system only)

Set the length of the block to be excluded when deciding a corner.

(Enabled when "#8036 CordecJudge" is set to "1".)

---Setting range---

0 to 99999.999 (mm)

#8090 SSS ON (for M system only)

Set whether to enable the SSS control with G05 P10000.

0: Disable

1: Enable

#8091 StdLength (for M system only)

Set the maximum value of the range for recognizing the shape.

To eliminate the effect of steps or errors, etc., set a large value. To enable sufficient deceleration, set a small value.

If "0.000" is set, the standard value (1.000mm) will be applied.

---Setting range---

0 to 100.000 (mm)

#8093 StepLeng (for M system only)

Set the width of the step at which the speed is not to be decelerated. (Approximately the same as the CAM path difference [Tolerance].)

If "0" is set, the standard value (5μm) will be applied.

If a minus value is set, the speed will decelerate at all minute steps.

---Setting range---

-1.000 to 0.100 (mm)

#12070 Sfilt2_tol Tolerance control: Soft acceleration/deceleration filter 2

Specify the time constant of the filter that smoothes out fluctuations in acceleration under the tolerance control.
Basically set to 0.

---Setting range---

0 to 200 (ms)

#42001 P1-G1btL Time constant for machining condition selection I

Time constant for machining condition selection I

Set the time constant for the machining condition selection I function. This is equivalent to the parameter "#1207 G1btL".

---Setting range---

Without high-accuracy control time constant expansion: 0 to 5000 (ms)

With high-accuracy control time constant expansion: 0 to 30000 (ms)

#42002	P1-SfiltG1	G01soft acceleration/deceleration filter for machining condition selection I

G01soft acceleration/deceleration filter for machining condition selection I

Set the G01 soft acceleration/deceleration filter's time constant for the machining condition selection I function. This is equivalent to the parameter "#1568 SfiltG1".

---Setting range---

0 to 200 (ms)

#42003	P1-Sfilt2	Soft acceleration/deceleration filter 2 for machining condition selection I

Soft acceleration/deceleration filter 2 for machining condition selection I

Set the soft acceleration/deceleration filter 2's time constant for the machining condition selection I function. This is equivalent to the parameter "#1570 Sfilt2".

---Setting range---

0 to 50 (ms)

#42004	P1-rcomp	Accuracy coefficient for machining condition selection I

Accuracy coefficient for machining condition selection I
Set the accuracy coefficient for the machining condition selection I function. This is equivalent to the parameter "#8019 R COMP".

* This setting is enabled when "#8021 COMP_CHANGE" is set to "0".

---Setting range---

0 to 99 (%)

#42005	P1-cor_comp	Corner accuracy coefficient for machining condition selection I

Corner accuracy coefficient for machining condition selection I
Set the corner accuracy coefficient for the machining condition selection I function. This is equivalent to the parameter "#8022 CORNER COMP".

* This setting is enabled when "#8021 COMP_CHANGE" is set to "1".

---Setting range---

-1000 to 99 (%)

#42006	P1-cur_comp	Curve accuracy coefficient for machining condition selection I

Curve accuracy coefficient for machining condition selection I
Set the curve accuracy coefficient for the machining condition selection I function. This is equivalent to the parameter "#8023 CURVE COMP".

* This setting is enabled when "#8021 COMP_CHANGE" is set to "1".

---Setting range---

-1000 to 99 (%)

#42007	P1-fwd_g	Feed forward gain for machining condition selection I

Feed forward gain for machining condition selection I
Set the feed forward gain for the machining condition selection I function. This is equivalent to the parameter "#2010 fwd_g".

---Setting range---

0 to 200 (%)

#42008	P1-fcorn	Corner deceleration angle for machining condition selection I

Corner deceleration angle for machining condition selection I
Set the corner deceleration angle for the machining condition selection I function. This is equivalent to the parameter "#8020 DCC ANGLE".

---Setting range---

0 to 89 (°)

#42009	P1-spcanag	Cancel angle for machining condition selection I

Cancel angle for machining condition selection I
Set the cancel angle for the machining condition selection I function. This is equivalent to the parameter "#8026 CANCEL ANG".

---Setting range---

0 to 180 (°)

#42010	P1-distth1	Chord error 1 for machining condition selection I

Chord error 1 for machining condition selection I
Set the chord error 1 for the machining condition selection I function. This is equivalent to the parameter "#8027 Toler-1".

---Setting range---

0.000 to 100.000 (mm)

#42011	P1-distth2	Chord error 2 for machining condition selection I

Chord error 2 for machining condition selection I
Set the chord error 2 for the machining condition selection I function. This is equivalent to the parameter "#8028 Toler-2".

---Setting range---

0.000 to 100.000 (mm)

#42012	P1-minute	Fine segment length for machining condition selection I

Fine segment length for machining condition selection I
Set the fine segment length for the machining condition selection I function. This is equivalent to the parameter "#8030 MINUTE LENGS".

---Setting range---

-1 to 127 (mm)

#42013	P1-fairing	Fairing ON for machining condition selection I

Fairing ON for machining condition selection I
Set whether to enable the fairing function for the machining condition selection I function. This is equivalent to the parameter "#8033 Fairing ON".

---Setting range---

0/1

#42014	P1-minleng	Fairing L for machining condition selection I

Fairing L for machining condition selection I

Set the fairing length for the machining condition selection I function. This is equivalent to the parameter "#8029 FairingL".

---Setting range---

0 to 100.000 (mm)

#42015	P1-cordeclen	Corner judgment length for machining condition selection I

Corner judgment length for machining condition selection I

Set the corner judgment length for the machining condition selection I function. This is equivalent to the parameter "#8037 CorJudgeL".

---Setting range---

0 to 99999.999 (mm)

#42016	P1-sss_prcm	SSS/EasySSS control ON for machining condition selection I

SSS/EasySSS control ON for machining condition selection I

Set whether to enable the SSS/EasySSS control for the machining condition selection I function. This is equivalent to the parameter "#8090 SSS ON".

---Setting range---

0/1

#42017	P1-std_length	Standard length for machining condition selection I

Standard length for machining condition selection I

Set the standard length for the machining condition selection I function. This is equivalent to the parameter "#8091 StdLength".

---Setting range---

0 to 100.000 (mm)

#42018	P1-step_length	Step width for machining condition selection I

Step width for machining condition selection I

Set the width of the step for the machining condition selection I function. This is equivalent to the parameter "#8093 StepLeng".

---Setting range---

-1.000 to 0.100 (mm)

#42019	P1-tolerance	Tolerance for machining condition selection I

Set the tolerance for machining condition selection parameter group for machining condition selection I function. This is equivalent to the parameter "#2659 tolerance".

---Setting range---

0 to 100.000 (mm)

#42020	P1-G1bF	Machining condition selection I: maximum speed

Specify the maximum speed for the machining condition parameters of the machining condition selection I function (equivalent to "#1206 G1bF").

---Setting range---

1 to 1000000 (mm/min)

#42021	P1-Sfilt2_tol	Machining condition selection I: tolerance control soft accel/decel filter 2

Specify the tolerance control soft acceleration/deceleration filter 2 for the machining condition parameters of the machining condition selection I function (equivalent to "#12070 Sfilt2_tol").

---Setting range---

0 to 200 (ms)

#42022	P1-Jerk_filtG1	G01 jerk filter for Machining condition selection I

Set "G01 jerk filter (equivalent to "#12051 Jerk_filtG1")" in the machining condition parameter groups in the Machining condition selection I function.

---Setting range---

0 to 50 (ms)

#42301	P2-G1btL	Time constant for machining condition selection I

Time constant for machining condition selection I

Set the time constant for the machining condition selection I function. This is equivalent to the parameter "#1207 G1btL".

---Setting range---

Without high-accuracy control time constant expansion: 0 to 5000 (ms)

With high-accuracy control time constant expansion: 0 to 30000 (ms)

#42302	P2-SfiltG1	G01soft acceleration/deceleration filter for machining condition selection I

G01soft acceleration/deceleration filter for machining condition selection I

Set the G01 soft acceleration/deceleration filter's time constant for the machining condition selection I function. This is equivalent to the parameter "#1568 SfiltG1".

---Setting range---

0 to 200 (ms)

#42303	P2-Sfilt2	Soft acceleration/deceleration filter 2 for machining condition selection I

Soft acceleration/deceleration filter 2 for machining condition selection I

Set the soft acceleration/deceleration filter 2's time constant for the machining condition selection I function. This is equivalent to the parameter "#1570 Sfilt2".

---Setting range---

0 to 50 (ms)

#42304	P2-rcomp	Accuracy coefficient for machining condition selection I

Accuracy coefficient for machining condition selection I

Set the accuracy coefficient for the machining condition selection I function. This is equivalent to the parameter "#8019 R COMP".

* This setting is enabled when "#8021 COMP_CHANGE" is set to "0".

---Setting range---

0 to 99 (%)

#42305	P2-cor_comp	Corner accuracy coefficient for machining condition selection I

Corner accuracy coefficient for machining condition selection I

Set the corner accuracy coefficient for the machining condition selection I function. This is equivalent to the parameter "#8022 CORNER COMP".

* This setting is enabled when "#8021 COMP_CHANGE" is set to "1".

---Setting range---

-1000 to 99 (%)

#42306	P2-cur_comp	Curve accuracy coefficient for machining condition selection I

Curve accuracy coefficient for machining condition selection I

Set the curve accuracy coefficient for the machining condition selection I function. This is equivalent to the parameter "#8023 CURVE COMP".

* This setting is enabled when "#8021 COMP_CHANGE" is set to "1".

---Setting range---

-1000 to 99 (%)

#42307	P2-fwd_g	Feed forward gain for machining condition selection I

Feed forward gain for machining condition selection I

Set the feed forward gain for the machining condition selection I function. This is equivalent to the parameter "#2010 fwd_g".

---Setting range---

0 to 200 (%)

#42308	P2-fcorn	Corner deceleration angle for machining condition selection I

Corner deceleration angle for machining condition selection I

Set the corner deceleration angle for the machining condition selection I function. This is equivalent to the parameter "#8020 DCC ANGLE".

---Setting range---

0 to 89 (°)

#42309	P2-spcanag	Cancel angle for machining condition selection I

Cancel angle for machining condition selection I

Set the cancel angle for the machining condition selection I function. This is equivalent to the parameter "#8026 CANCEL ANG".

---Setting range---

0 to 180 (°)

#42310	P2-distth1	Chord error 1 for machining condition selection I

Chord error 1 for machining condition selection I

Set the chord error 1 for the machining condition selection I function. This is equivalent to the parameter "#8027 Toler-1".

---Setting range---

0.000 to 100.000 (mm)

#42311	P2-distth2	Chord error 2 for machining condition selection I

Chord error 2 for machining condition selection I

Set the chord error 2 for the machining condition selection I function. This is equivalent to the parameter "#8028 Toler-2".

---Setting range---

0.000 to 100.000 (mm)

#42312	P2-minute	Fine segment length for machining condition selection I

Fine segment length for machining condition selection I

Set the fine segment length for the machining condition selection I function. This is equivalent to the parameter "#8030 MINUTE LENGS".

---Setting range---

-1 to 127 (mm)

#42313	P2-fairing	Fairing ON for machining condition selection I

Fairing ON for machining condition selection I

Set whether to enable the fairing function for the machining condition selection I function. This is equivalent to the parameter "#8033 Fairing ON".

---Setting range---

0/1

#42314	P2-minleng	Fairing L for machining condition selection I

Fairing L for machining condition selection I

Set the fairing length for the machining condition selection I function. This is equivalent to the parameter "#8029 FairingL".

---Setting range---

0 to 100.000 (mm)

#42315	P2-cordeclen	Corner judgment length for machining condition selection I

Corner judgment length for machining condition selection I

Set the corner judgment length for the machining condition selection I function. This is equivalent to the parameter "#8037 CorJudgeL".

---Setting range---

0 to 99999.999 (mm)

#42316	P2-sss_prcm	SSS/EasySSS control ON for machining condition selection I

SSS/EasySSS control ON for machining condition selection I

Set whether to enable the SSS/EasySSS control for the machining condition selection I function. This is equivalent to the parameter "#8090 SSS ON".

---Setting range---

0/1

#42317	P2-std_length	Standard length for machining condition selection I

Standard length for machining condition selection I

Set the standard length for the machining condition selection I function. This is equivalent to the parameter "#8091 StdLength".

---Setting range---

0 to 100.000 (mm)

#42318	P2-step_length	Step width for machining condition selection I

Step width for machining condition selection I

Set the width of the step for the machining condition selection I function. This is equivalent to the parameter "#8093 StepLeng".

---Setting range---

-1.000 to 0.100 (mm)

#42319	P2-tolerance	Tolerance for machining condition selection I

Set the tolerance for machining condition selection parameter group for machining condition selection I function. This is equivalent to the parameter "#2659 tolerance".

---Setting range---

0 to 100.000 (mm)

#42320	P2-G1bF	Machining condition selection I: maximum speed

Specify the maximum speed for the machining condition parameters of the machining condition selection I function (equivalent to "#1206 G1bF").

---Setting range---

1 to 1000000 (mm/min)

#42321	P2-Sfilt2_tol	Machining condition selection I: tolerance control soft accel/decel filter 2

Specify the tolerance control soft acceleration/deceleration filter 2 for the machining condition parameters of the machining condition selection I function (equivalent to "#12070 Sfilt2_tol").

---Setting range---

0 to 200 (ms)

#42322	P2-Jerk_filtG1	G01 jerk filter for Machining condition selection I

Set "G01 jerk filter (equivalent to "#12051 Jerk_filtG1")" in the machining condition parameter groups in the Machining condition selection I function.

---Setting range---

0 to 50 (ms)

#42601	P3-G1btL	Time constant for machining condition selection I

Time constant for machining condition selection I

Set the time constant for the machining condition selection I function. This is equivalent to the parameter "#1207 G1btL".

---Setting range---

Without high-accuracy control time constant expansion: 0 to 5000 (ms)

With high-accuracy control time constant expansion: 0 to 30000 (ms)

#42602	P3-SfiltG1	G01soft acceleration/deceleration filter for machining condition selection I

G01soft acceleration/deceleration filter for machining condition selection I

Set the G01 soft acceleration/deceleration filter's time constant for the machining condition selection I function. This is equivalent to the parameter "#1568 SfiltG1".

---Setting range---

0 to 200 (ms)

#42603	P3-Sfilt2	Soft acceleration/deceleration filter 2 for machining condition selection I

Soft acceleration/deceleration filter 2 for machining condition selection I

Set the soft acceleration/deceleration filter 2's time constant for the machining condition selection I function. This is equivalent to the parameter "#1570 Sfilt2".

---Setting range---

0 to 50 (ms)

#42604	P3-rcomp	Accuracy coefficient for machining condition selection I

Accuracy coefficient for machining condition selection I

Set the accuracy coefficient for the machining condition selection I function. This is equivalent to the parameter "#8019 R COMP".

* This setting is enabled when "#8021 COMP_CHANGE" is set to "0".

---Setting range---

0 to 99 (%)

#42605	P3-cor_comp	Corner accuracy coefficient for machining condition selection I

Corner accuracy coefficient for machining condition selection I

Set the corner accuracy coefficient for the machining condition selection I function. This is equivalent to the parameter "#8022 CORNER COMP".

* This setting is enabled when "#8021 COMP_CHANGE" is set to "1".

---Setting range---

-1000 to 99 (%)

#42606	P3-cur_comp	Curve accuracy coefficient for machining condition selection I

Curve accuracy coefficient for machining condition selection I

Set the curve accuracy coefficient for the machining condition selection I function. This is equivalent to the parameter "#8023 CURVE COMP".

* This setting is enabled when "#8021 COMP_CHANGE" is set to "1".

---Setting range---

-1000 to 99 (%)

#42607	P3-fwd_g	Feed forward gain for machining condition selection I

Feed forward gain for machining condition selection I

Set the feed forward gain for the machining condition selection I function. This is equivalent to the parameter "#2010 fwd_g".

---Setting range---

0 to 200 (%)

#42608	P3-fcorn	Corner deceleration angle for machining condition selection I

Corner deceleration angle for machining condition selection I

Set the corner deceleration angle for the machining condition selection I function. This is equivalent to the parameter "#8020 DCC ANGLE".

---Setting range---

0 to 89 (°)

#42609	P3-spcanag	Cancel angle for machining condition selection I

Cancel angle for machining condition selection I
Set the cancel angle for the machining condition selection I function. This is equivalent to the parameter "#8026 CANCEL ANG".

---Setting range---

0 to 180 (°)

#42610	P3-distth1	Chord error 1 for machining condition selection I

Chord error 1 for machining condition selection I

Set the chord error 1 for the machining condition selection I function. This is equivalent to the parameter "#8027 Toler-1".

---Setting range---

0.000 to 100.000 (mm)

#42611	P3-distth2	Chord error 2 for machining condition selection I

Chord error 2 for machining condition selection I

Set the chord error 2 for the machining condition selection I function. This is equivalent to the parameter "#8028 Toler-2".

---Setting range---

0.000 to 100.000 (mm)

#42612	P3-minute	Fine segment length for machining condition selection I

Fine segment length for machining condition selection I

Set the fine segment length for the machining condition selection I function. This is equivalent to the parameter "#8030 MINUTE LENGS".

---Setting range---

-1 to 127 (mm)

#42613	P3-fairing	Fairing ON for machining condition selection I

Fairing ON for machining condition selection I

Set whether to enable the fairing function for the machining condition selection I function. This is equivalent to the parameter "#8033 Fairing ON".

---Setting range---

0/1

#42614	P3-minleng	Fairing L for machining condition selection I

Fairing L for machining condition selection I

Set the fairing length for the machining condition selection I function. This is equivalent to the parameter "#8029 FairingL".

---Setting range---

0 to 100.000 (mm)

#42615	P3-cordeclen	Corner judgment length for machining condition selection I

Corner judgment length for machining condition selection I

Set the corner judgment length for the machining condition selection I function. This is equivalent to the parameter "#8037 CorJudgeL".

---Setting range---

0 to 99999.999 (mm)

#42616	P3-sss_prcm	SSS/EasySSS control ON for machining condition selection I

SSS/EasySSS control ON for machining condition selection I

Set whether to enable the SSS/EasySSS control for the machining condition selection I function. This is equivalent to the parameter "#8090 SSS ON".

---Setting range---

0/1

#42617	P3-std_length	Standard length for machining condition selection I

Standard length for machining condition selection I

Set the standard length for the machining condition selection I function. This is equivalent to the parameter "#8091 StdLength".

---Setting range---

0 to 100.000 (mm)

#42618	P3-step_length	Step width for machining condition selection I

Step width for machining condition selection I

Set the width of the step for the machining condition selection I function. This is equivalent to the parameter "#8093 StepLeng".

---Setting range---

-1.000 to 0.100 (mm)

#42619	P3-tolerance	Tolerance for machining condition selection I

Set the tolerance for machining condition selection parameter group for machining condition selection I function. This is equivalent to the parameter "#2659 tolerance".

---Setting range---

0 to 100.000 (mm)

#42620	P3-G1bF	Machining condition selection I: maximum speed

Specify the maximum speed for the machining condition parameters of the machining condition selection I function (equivalent to "#1206 G1bF").

---Setting range---

1 to 1000000 (mm/min)

#42621	P3-Sfilt2_tol	Machining condition selection I: tolerance control soft accel/decel filter 2

Specify the tolerance control soft acceleration/deceleration filter 2 for the machining condition parameters of the machining condition selection I function (equivalent to "#12070 Sfilt2_tol").

---Setting range---

0 to 200 (ms)

#42622	P3-Jerk_filtG1	G01 jerk filter for Machining condition selection I

Set "G01 jerk filter (equivalent to "#12051 Jerk_filtG1")" in the machining condition parameter groups in the Machining condition selection I function.

---Setting range---

0 to 50 (ms)

1.15 Menu Selection Parameters

(PR)	#10501-10540	Monitr main menu 1 to 40

Select the menu Nos. to be displayed on Monitor screen's main menus.

Set the menu No. (numbered in the initial order) which you wish to set first from the left of Monitor's main menus in #10501, second in the next parameter and likewise afterwards.

(E.g.) When you set the parameter #10501 to 11, the menu initially displayed at the left end of Monitor main menu's 2nd page is displayed at the left end of the 1st page.

(Note) If you set the No. of menu which is not displayed in the initial state (without setting the menu selection parameters), the menu won't be displayed after this parameter setting.

-- Menu No. --

-1: Not display
0: Default
1: Search
2: Restart
3: Edit
4: Trace
5: Check
6: Offset
7: Coord
8: W-shift
10: Dsp.Chg
11: Modal
12: Tree
13: Time
14: Com var
15: Loc var
16: P corr
17: PLC SW
18: G92 set
19: Col stp
20: LdMeter
21: Sp-stby
22: TipDisp
23: All sp
26: S-sel
27: Next Ax
28: Cnt exp
29: Cnt set
30: MST
32: Laser

(PR) #10551-10580 Setup main menu 1 to 30

Select the menu Nos. to be displayed on Setup screen's main menus.

Set the menu No. (numbered in the initial order) which you wish to set first from the left of Setup's main menus in #10551, second in the next parameter and likewise afterwards.

(E.g.) When you set the parameter #10551 to 11, the menu initially displayed at the left end of Setup main menu's 2nd page is displayed at the left end of the 1st page.

(Note) If you set the No. of menu which is not displayed in the initial state (without setting the menu selection parameters), the menu won't be displayed after this parameter setting.

-- Menu No. --

-1: Not display
0: Default
1: T-ofs
2: T-meas
3: T-reg
4: T-life
5: Coord
6: W-meas
7: T-Mng.
8: MDI
9: Cnt set
10: MST
11: T-list
12: Pallet
13: User
15: Storage
16: Surf
17: MacCond
22: Barrier
23: WE mea.
26: E-mail
27: Range
28: History
29: LsrCond

(PR) #10601-10630 Edit main menu 1 to 30

Select the menu Nos. to be displayed on Edit screen's main menus.

Set the menu No. (numbered in the initial order) which you wish to set first from the left of Edit's main menus in #10601, second in the next parameter and likewise afterwards.

(E.g.) When you set the parameter #10601 to 11, the menu initially displayed at the left end of Edit main menu's 2nd page is displayed at the left end of the 1st page.

(Note) If you set the No. of menu which is not displayed in the initial state (without setting the menu selection parameters), the menu won't be displayed after this parameter setting.

-- Menu No. --

-1: Not display
0: Default
1: Edit
2: Check
3: NAVI (NAVI MILL)
4: NAVI (NAVI LATHE)
5: I/O

1.16 Tolerance Parameters

#2659	tolerance	Tolerance

Specify a tolerance (tolerable error) to be used under tolerance control.
Set a tolerable error for fine segment program created by CAM. (Usually around 0.01(mm))
If 0.000 is set, it is operated with the tolerance of 0.01(mm).
When designating the tolerance amount with the ", K address", this parameter is not used.

---Setting range---

0.000 to 100.000 (mm)

#1206	G1bF	Maximum speed

Set a cutting feedrate when applying pre-interpolation acceleration/deceleration.

When high-accuracy control time constant expansion is valid, set the maximum of cutting feed clamp speed of each axis.

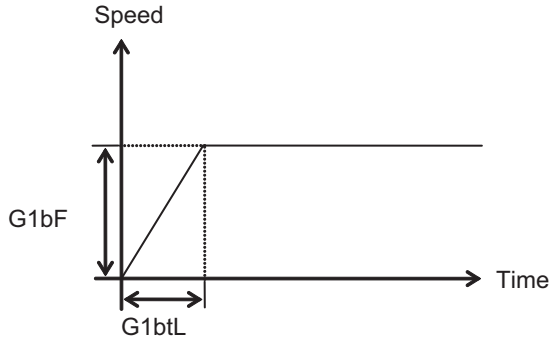
---Setting range---

1 to 999999 (mm/min)

#1207	G1btL	Time constant

Set a cutting feed time constant when applying pre-interpolation acceleration/deceleration.

When set to "0", the time constant will be clamped at 1ms.



---Setting range---

Without high-accuracy control time constant expansion: 1 to 5000 (ms)

With high-accuracy control time constant expansion: 1 to 30000 (ms)

Cutting feed Acc Cutting feed acceleration

Displays cutting feed acceleration.

#1568	SfiltG1	G01 soft acceleration/deceleration filter

Set the filter time constant for smoothly changing the acceleration rate for the cutting feed acceleration/deceleration in pre-interpolation acceleration/deceleration.

- Notch frequency Hz
Displays the notch frequency (Hz) for the S-pattern filter set in "#1568 SfiltG1" (G01 soft acceleration/deceleration filter).

---Setting range---

0 to 200 (ms)

#12051	Jerk_filtG1	G01 jerk filter

Specify the time constant of filter that is used for smoothing the change of jerk when pre-interpolation acceleration/deceleration is performed in cutting feed.

This filter causes no path error, as the filter is applied to the resultant speed calculated before interpolation.

If you specify the jerk filter time constant, the time constants of each filter will be as follows:

- S-shape filter time constant

"#1568 SfiltG1" - "Jerk_filtG1"

- Jerk filter time constant

"Jerk_filtG1"

---Setting range---

0 to 50 (ms)

#12066	Tolerance ctrl ON

Select whether to enable the tolerance control.

0: Disable

1: Enable

(Note) Tolerance control is available only under SSS control.
To enable this function, set "#8090 SSS ON" to "1".

#12070	Sfilt2_tol	Tolerance control: Soft acceleration/deceleration filter 2

Specify the time constant of the filter that smoothes out fluctuations in acceleration under the tolerance control.
Basically set to 0.

---Setting range---

0 to 200 (ms)

1.17 Wireless LAN Parameters

(PR) #75000 WLAN STA/AP mode

Specify the operation mode of wireless LAN.

0: No mode (Wireless LAN function invalid)

1: Station (STA) mode

2: Access point (AP) mode

(PR) #75001 WLAN IP address

Set the IP address for the wireless LAN.

(Note) This parameter is ignored when "#75050 DHCP client" is enabled.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75002 WLAN Subnet mask

Set the subnet mask for the wireless LAN.

(Note) In Station (STA) mode, this parameter is ignored when "#75050 DHCP client" is enabled.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75003 connect SSID

For Station (STA) mode
Specify the SSID of the access point to be connected.

(Note) Spaces cannot be set.

---Setting range---

Up to 32 characters in length, containing alphanumeric characters and symbols

(PR) #75004 connect BSSID

For Station (STA) mode
Specify the BSSID of the access point to be connected.
When this parameter is not set, the access point that has the strongest radio wave intensity is connected.

---Setting range---

00:00:00:00:00:00 to FF:FF:FF:FF:FF:FF

0: No setting

(PR) #75005 SSID

For Access Point (AP) mode
Specify the SSID used when a station connects to the CNC.

(Note) Spaces cannot be set.

---Setting range---

Up to 32 characters in length, containing alphanumeric characters and symbols

(PR) #75006 Encryption mode

For Access Point (AP) mode
Specify the data encryption and authentication method for the wireless communications.

0: WPA-PSK TKIP

1: WPA2-PSK AES

(PR) #75007 Encryption key

In Access point (AP) mode, specify the encryption key to be used when the station is connecting to CNC.
In Station (STA) mode, specify the encryption key of the access point to be connected.

---Setting range---

8 or more to 32 characters in alphanumeric characters or symbols

(PR) #75008 WLAN channel

For Access Point (AP) mode
Specify the channel (frequency band) to be used for the wireless communication.

0: Automatic

1 to 13: Channel for 2.4 GHz

36, 40, 44 and 48: Channel for 5 GHz (W52)

149, 153, 157, 161 and 165: Channel for 5 GHz (W58)

(Note) Only channels that correspond to the country/region code are enabled.

JP, CH, GB, IS, LI, NO, TR and EU countries:
1 to 13, 36, 40, 44 and 48

CN, KR and TH:
1 to 13, 36, 40, 44, 48, 149, 153, 157, 161 and 165

IN, TW and US:
1 to 11, 36, 40, 44, 48, 149, 153, 157, 161 and 165

---Setting range---

0,1 to 13, 36, 40, 44, 48, 149, 153, 157, 161, 165

(PR) #75009 Frequency band

For Access Point (AP) mode
Specify the operation frequency band for the wireless communication.

0: 2.4 (GHz)

1: 5 (GHz)

(PR) #75010 ESSID stealth

For Access Point (AP) mode
Specify whether to enable ESSID stealth.

0: Disable

1: Enable

(PR) #75011 AP isolation OFF

For Access Point (AP) mode
Specify whether to disable AP isolation.

0: Enable

1: Disable

(PR) #75012 abg mode

For Access Point (AP) mode
Specify whether to enable abg mode.

0: Disable

1: Enable (not communicate with IEEE802.11n)

(Note) Set this parameter if the station to be communicated malfunctions when communicating with IEEE802.11n.

(PR) #75050 DHCP client

Specify whether to enable DHCP client.

0: Disable

1: Enable

(Note) This parameter is enabled when station (STA) mode is valid.

(PR) #75051 DHCP server

Specify whether to enable DHCP server.

0: Disable

1: Enable

(Note) This parameter is enabled when access point (AP) mode is valid.

(PR) #75052 StartIP DHCPserver

Specify the beginning of the IP addresses to be allocated to devices in the LAN by DHCP.

(Note) If the IP addresses used by the CNC are included in the allocatable IP addresses, they are not allocated.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75053 IP num DHCPserver

Specify the number of IP addresses to be allocated to devices in the LAN by DHCP.
When "0" is set, the IP num DHCPserver is "20".

(Note) If the IP addresses used by the CNC are included in the allocatable IP addresses, they are not allocated.

---Setting range---

0 to 20

(PR) #75100 IP Filter for WLAN

Select whether to allow or block access from IP addresses within the specified range for the wireless LAN network.
When not using IP address filtering, enter "0".

0: Disable the filtering function

1: Allow

2: Block

(PR) #75101 StartFiltIP WLAN-1

Specify the IP address of the beginning of the 1st IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75102 EndFiltIP WLAN-1

Specify the IP address of the end of the 1st IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75103 StartFiltIP WLAN-2

Specify the IP address of the beginning of the 2nd IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75104 EndFiltIP WLAN-2

Specify the IP address of the end of the 2nd IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75105 StartFiltIP WLAN-3

Specify the IP address of the beginning of the 3rd IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75106 EndFiltIP WLAN-3

Specify the IP address of the end of the 3rd IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75107 StartFiltIP WLAN-4

Specify the IP address of the beginning of the 4th IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75108 EndFiltIP WLAN-4

Specify the IP address of the end of the 4th IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75109 StartFiltIP WLAN-5

Specify the IP address of the beginning of the 5th IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75110 EndFiltIP WLAN-5

Specify the IP address of the end of the 5th IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75111 StartFiltIP WLAN-6

Specify the IP address of the beginning of the 6th IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75112 EndFiltIP WLAN-6

Specify the IP address of the end of the 6th IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75113 StartFiltIP WLAN-7

Specify the IP address of the beginning of the 7th IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75114 EndFiltIP WLAN-7

Specify the IP address of the end of the 7th IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75115 StartFiltIP WLAN-8

Specify the IP address of the beginning of the 8th IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

(PR) #75116 EndFiltIP WLAN-8

Specify the IP address of the end of the 8th IP address range to be filtered on the wireless LAN.

---Setting range---

0.0.0.0 to 255.255.255.255

2

Machine Parameters

The parameters with "(PR)" requires the CNC to be turned OFF after the settings. Turn the power OFF and ON to enable the parameter settings.

2.1 Base System Parameters

(PR)	#1001	SYS_ON	System validation setup

Select the existence of PLC axes and part systems.

0: Not exist

1: Exist

(PR)	#1002	axisno	Number of axes

Set the number of control axes and PLC axes.

A total of 32 axes can be set.

Control axis: 0 to 16

PLC axis: 0 to 8

When set to "0", the number of control axes in the part system will be "0". Do not set the number of control axes of the first part system to "0".

(Note) The setting range differs according to the model.

(PR)	#1003	iunit	Input setup unit

Select the input setting value for each part system and the PLC axis.

Increments in parameters will follow this selection.

B: 1 μm

C: 0.1 μm

D: 0.01 μm (10 nm)

E: 0.001 μm (1 nm)

(PR)	#1004	ctrl_unit	Control unit

Set the unit for the NC internal position data, data communicated between the NC and drive unit, and the servo movement data.
Some parameter units, such as the pitch error and backlash, follow this specification.
The standard value is "E"; however, set the optimum value according to the machine model and specifications.

B: 1 μm

C: 0.1 μm

D: 0.01 μm (10 nm)

E: 0.001 μm (1 nm)

F: 0.0001 μm (0.1 nm)

(PR)	#1005	plcunit	PLC unit

Select the PLC interface setting and display increment.

The PLC interface setting and display increment will follow this specification. Note that the PLC axis will follow "#1003 iunit".

B: 1 μm

C: 0.1 μm

D: 0.01 μm (10 nm)

E: 0.001 μm (1 nm)

F: 0.0001 μm (0.1 nm)

(PR)	#1006	mcmpunit	Machine error compensation unit

Select the machine error compensation setting and display increment.

The parameters related to machine error compensation (backlash, pitch error compensation, etc.) and PLC interface (external machine coordinate system compensation) will follow this selection.

B: 1 μm

C: 0.1 μm

D: 0.01 μm (10 nm)

E: 0.001 μm (1 nm)

F: 0.0001 μm (0.1 nm)

(PR)	#1007	System type select	System type select

Select the NC system type.

0: Machining center system (M system)

1: Lathe system (L system)

(Note 1) If the setting value is out of range, M system will be selected.

	#1025	l_plane	Initial plane selection

Select the plane to be selected when the power is turned ON or reset.
When 0 is specified, 1 is assumed (X-Y plane).e model and specifications.

1: X-Y plane (G17 command state)

2: Z-X plane (G18 command state)

3: Y-Z plane (G19 command state)

	#1026	base_I	Base axis I

Set the names of the basic axes that compose the plane.

Set the axis name set in "#1013 axname".

If all three items ("base_I", "base_J" and "base_K") do not need to be set, such as for 2-axis specifications, input "0", and the parameter will be blank.

Normally, when X, Y and Z are specified respectively for base_I, _J, _K, the following relation will be established:

G17: X-Y

G18: Z-X

G19: Y-Z

Or specify any other axis name desired.

---Setting range---

Axis names such as X, Y or Z

	#1027	base_J	Base axis J

Set the names of the basic axes that compose the plane.

Set the axis name set in "#1013 axname".

If all three items ("base_I", "base_J" and "base_K") do not need to be set, such as for 2-axis specifications, input "0", and the parameter will be blank.

Normally, when X, Y and Z are specified respectively for base_I, _J, _K, the following relation will be established:

G17: X-Y

G18: Z-X

G19: Y-Z

Or specify any other axis name desired.

---Setting range---

Axis names such as X, Y or Z

	#1028	base_K	Base axis K

Set the names of the basic axes that compose the plane.

Set the axis name set in "#1013 axname".

If all three items ("base_I", "base_J" and "base_K") do not need to be set, such as for 2-axis specifications, input "0", and the parameter will be blank.

Normally, when X, Y and Z are specified respectively for base_I, _J, _K, the following relation will be established:

G17: X-Y

G18: Z-X

G19: Y-Z

Or specify any other axis name desired.

---Setting range---

Axis names such as X, Y or Z

	#1029	aux_I	Flat axis I

Set the axis name when there is an axis parallel to "#1026 base_I".

---Setting range---

Axis names such as X, Y or Z

	#1030	aux_J	Flat axis J

Set the axis name when there is an axis parallel to "#1027 base_J".

---Setting range---

Axis names such as X, Y or Z

	#1031	aux_K	Flat axis K

Set the axis name when there is an axis parallel to "#1028 base_K".

---Setting range---

Axis names such as X, Y or Z

(PR)	#1037	cmdtyp	Command type

Set the G code list and compensation type for programs.

1: List1 (for M) Type I (one compensation amount for one compensation No.)

2: List1 (for M) Type II (shape and wear compensation amounts for one comp. No.)

3: List2 (for L) Type III (shape and wear compensation amounts for one comp. No.)

4: List3 (for L) Ditto

5: List4 (for special L) Ditto

6: List5 (for special L) Ditto

7: List6 (for special L) Ditto

8: List7 (for special L) Ditto

9: List8 (for M) M2 form at type Type I
(one compensation amount for one compensation No.)

10: List8 (for M) M2 form at type Type II
(shape and wear compensation amounts for one compensation No.)

There are some items in the specifications that can be used or cannot be used according to the value set in this parameter.

The file structure may also change depending on the compensation data type.

(Note) When this parameter is changed, the file system will be changed after the power is turned ON. So always execute format.
The new format will be enabled after turning the power ON again.

Setting order

(1) cmdtyp changeover -> (2) Turn power ON again -> (3) Format -> (4) Turn power ON again

(Note) Compensation type III can be selected for M system by setting #1046.

#1073	I_Absm	Initial absolute setting

Select the mode (absolute or incremental) at turning ON the power or reset.

0: Incremental setting

1: Absolute setting

#1074	I_Sync	Initial synchronous feed

Select the feedrate mode at turning ON the power or reset.

0: Asynchronous feed (feed per minute)

1: Synchronous feed (feed per revolution)

#1075	I_G00	Initial G00

Select the linear command mode at turning ON the power or reset.

0: Linear interpolation (G01 command state)

1: Positioning (G00 command state)

#1076	AbsInc	ABS/INC address (for L system only)

Select the command method for the absolute and incremental commands.
The absolute command/incremental command can be issued by using the absolute command address and incremental command address for the same axis.

0: Use G command for the absolute and incremental commands.

1: Use axis name for the absolute and incremental commands.

(The axis name in "#1013 axname" will be the absolute command, "#1014 incax" will be the incremental command.)

#1085	G00Drn	G00 dry run

Select whether to apply dry run (feed at manual setting speed instead of command feedrate) to the G00 command.

0: Not apply to G00. (move at rapid traverse rate)

1: Apply to G00. (move at manual setting speed)

#1086	G0Intp	G00 non-interpolation

Select the G00 travel path type.

0: Move linearly toward the end point. (interpolation type)

1: Move to the end point of each axis at the rapid traverse feedrate for each axis. (non-interpolation)

(Note) If this parameter is set to "1", neither of the following functions will be available: rapid traverse constant-gradient acceleration/deceleration and rapid traverse constant-gradient multi-step acceleration/deceleration.

#1109	subs_M	Validate substitute M code

Select the user macro interrupt with the substitute M code.

0: Disable substitute M code

1: Enable substitute M code

#1110	M96_M	M96 substitute M code

Set an M code to replace M96 when "#1109 subs_M" is set to "1".

---Setting range---

3 to 97 (excluding 30)

#1111	M97_M	M97 substitute M code

Specify an M code to replace M97 when "#1109 subs_M" is set to "1".

---Setting range---

3 to 97 (excluding 30)

#1148	I_G611	Initial hi-precis

Select the modal state at power ON from among the following: high-accuracy control mode, high-speed high-accuracy control I mode, high-speed high-accuracy control II mode or high-speed high-accuracy control III mode.

0: G08P0/G64 (cutting) mode

1: G08P1/G61.1 (high-accuracy control) mode

2: G05.1Q1 (high-speed high-accuracy control I) mode

3: G05P10000 (high-speed high-accuracy control II) mode

4: G05P20000 (high-speed high-accuracy control III) mode

#1151	rstint	Reset initial

Select whether to initialize (power ON state) the modals by resetting.

0: Not initialize modal state

1: Initialize modal state

For details of resetting, refer to "Precautions" in "3.4 G Code" of "M800V/M80V Series Programming Manual (Lathe System)" or "M800V/M80V Series Programming Manual (Machining Center System)".

#1152	I_G20	Initial measurement system mode

This parameter specifies the Imperial or Metric system mode to be applied at power-up and reset.

0: Metric system mode (G21)

1: Imperial system mode (G20)

The Reset key must be pressed in order for the setting to take effect.

(Note) This parameter is valid only when the "#1041 I_inch" (Initial state (inch)) is "0" and the "#1226 aux10/ bit6" (Measurement system on screens) is "1".

#1169	system name	Part system name

Set the name of each part system.

This setting is only relevant if the system has multiple part systems.

This name appears on the screen when the part systems need to be differentiated.

The name must be a combination of alphanumeric characters. It can be up to 4 characters long.

---Setting range---

4 or less characters consisting of both alphabets and numbers

#1170	M2name	Second miscellaneous code

Set this address code when using the 2nd miscellaneous command. Set an address with A, B or C that is not used for "#1013 axname" or "#1014 incax".

---Setting range---

A, B, C

#1171	taprov	Tap return override

Set the tap return override value for the synchronous tapping.

When "0" is set, it will be regarded as 100%.

---Setting range---

0 to 100 (%)

#1172	tapovr	Tap return override

Set the override value applied during a retract operation in synchronous tapping.

When set to "0", 100% is applied.

---Setting range---

0 to 999 (%)

#1173 dwlskp G04 skip condition

Set the skip signal for ending the G04 (dwell) command.

PLC interface input signal

	Skip3	Skip2	Skip1
0:	-	-	-
1:	-	-	*
2:	-	*	-
3:	-	*	*
4:	*	-	-
5:	*	-	*
6:	*	*	-
7:	*	*	*

(*: Enable, -: Disable)

#1174 skip_F G31 skip speed

Set the feedrate when there is no F command in the program at G31 (skip) command.

---Setting range---

1 to 999999 (mm/min)

#1175 skip1 G31.1 skip condition

Designate the skip signal in multi-step skip G31.1.

The setting method is same as "#1173 dwlskp".

#1176 skip1f G31.1 skip speed

Set the skip feedrate in multi-step skip G31.1.

---Setting range---

1 to 999999 (mm/min)

#1177 skip2 G31.2 skip condition

Set the skip signal in multi-step skip G31.2.

The setting method is same as "#1173 dwlskp".

#1178 skip2f G31.2 skip speed

Set the skip feedrate in multi-step skip G31.2.

---Setting range---

1 to 999999 (mm/min)

#1179 skip3 G31.3 skip condition

Set the skip signal in multi-step skip G31.3.

The setting method is same as "#1173 dwlskp".

#1180 skip3f G31.3 skip speed

Set the skip feedrate in multi-step skip G31.3.

---Setting range---

1 to 999999 (mm/min)

#1181 G96_ax Constant surface speed axis

Select the axis to be targeted for constant surface speed control.

0: Program setting will be disabled, and the axis will always be fixed to the 1st axis

1: 1st axis

2: 2nd axis

3: 3rd axis

:

16: 16th axis

However, when set to other than "0", the priority will be on the program setting.

#1182	thr_F	Thread cutting speed

Set the retract speed when not using chamfering in the thread cutting cycle.

0: Cutting feed clamp feedrate

1 to 60000 mm/min: Setting feedrate

---Setting range---

0 to 60000 (mm/min)

#1183	clmp_M	M code for clamp

Set the M code for C axis clamp in hole drilling cycle.

---Setting range---

0 to 99999999

#1184	clmp_D	Dwelling time after outputting M code for unclamp

Set the dwell time after outputting the M code for C axis unclamp in hole drilling cycle.

---Setting range---

0.000 to 99999.999 (s)

#1185	spd_F1	F1 digit feedrate F1

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").

Feedrate when F1 is issued (mm/min).

When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---

0 to 1000000 (mm/min)

#1186	spd_F2	F1 digit feedrate F2

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").

Feedrate when F2 is issued (mm/min).

When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---

0 to 1000000 (mm/min)

#1187	spd_F3	F1 digit feedrate F3

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").

Feedrate when F3 is issued (mm/min).

When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---

0 to 1000000 (mm/min)

#1188	spd_F4	F1 digit feedrate F4

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").

Feedrate when F4 is issued (mm/min).

When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---

0 to 1000000 (mm/min)

#1189	spd_F5	F1 digit feedrate F5

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").

Feedrate when F5 is issued (mm/min).

When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---

0 to 1000000 (mm/min)

(PR)	#1190	s_xcnt	Validate inclined axis control (for L system only)

Select whether to enable or disable inclined axis control.

0: Disable inclined axis control

1: Enable inclined axis control

(PR)	#1191	s_angl	Inclination angle (for L system only)

Set the inclination angle (θ).

(Note) When set to "0", the angle determined by three-side setting will be applied.

---Setting range---

-80.000 to 80.000 (°)

(PR)	#1192	s_zrmv	Compensation at reference position return (for L system only)

Select whether to perform compensation for the basic axis corresponding to the inclined axis at reference position return.

0: Perform compensation

1: Not perform compensation

	#1193	inpos	Deceleration check method 1

The setting is selected with the parameter "#1306 InpsTyp".
0: Deceleration check method 1

Select the deceleration check method for G0.

0: Command deceleration check

1: In-position check

2: Smoothing check

1: Validate in-position check

Specify the deceleration confirmation method for the positioning or cutting command.

0: G0, G1+G9 Command deceleration check

1: G0, G1+G9 In-position check

2: G0, G1+G9 Smoothing check

	#1194	H_acdc	Time constant 0 for handle feed

Select the time constant for manual handle feed.

0: Use time constant for G01

1: Time constant 0 (step)

	#1195	Mmac	Macro call for M command

Select whether to enable or disable M command macro call of user macro.

0: Disable

1: Enable

	#1196	Smac	Macro call for S command

Select whether to enable or disable S command macro call of user macro.

0: Disable

1: Enable

	#1197	Tmac	Macro call by command T

Select whether to enable a call of user macro using command T.

0: Disable macro call

1: Enable macro call, irrespective of the number of command T digits

2: Enable macro call when a tool No. (excluding 0) is given to the upper digit of command T

3: Enable macro call when a tool No. (including 0) is given to the upper digit of command T.

	#1198	M2mac	Macro call with 2nd miscellaneous code

Select whether to enable or disable 2nd miscellaneous command macro call of user macro.

0: Disable

1: Enable

	#1199	Sselect	Select initial spindle control

Select the initial condition of spindle control after power is turned ON.

0: 1st spindle control mode (G43.1)

1: 2nd spindle control mode (G44.1)

2: All spindle simultaneously control mode (G47.1)

(Note) While G43.1 or G44.1 command is given, the spindle No. is selected with "#12090 SnG43.1" or "#1534 SnG44.1".

(PR)	#1200	G0_acc	Validate acceleration and deceleration with constant-gradient G0

Select the acceleration and deceleration type when a rapid traverse command is issued.

0: Acceleration and deceleration with constant time (conventional)

1: Acceleration and deceleration with constant gradient

(Note) When rapid traverse constant-gradient multi-step acceleration/deceleration is valid, this parameter will be invalid.

(PR)	#1201	G1_acc	Validate acceleration and deceleration with constant-gradient G1

Select the acceleration and deceleration type when a linear interpolation command is issued.

0: Acceleration and deceleration with constant time (conventional)

1: Acceleration and deceleration with constant gradient

	#1202	mirofs	Distance between facing turrets (for L system only)

Set the distance between tools (edges) (between facing turrets).

---Setting range---

0 to 99999.999 (mm)

	#1203	TmirS1	Select turrets as facing turrets with T command (for L system only)

Select the turrets, which correspond to the tool Nos. 1 to 32, as facing turrets for T code mirror image.

---Setting range---

0 to FFFFFFFF

	#1204	TmirS2	Select turrets as facing turrets with T command (for L system only)

Select the turrets, which correspond to the tool Nos. 33 to 64, as facing turrets for T code mirror image.

---Setting range---

0 to FFFFFFFF

	#1205	G0bdcc	Acceleration and deceleration before G0 interpolation

0: Post-interpolation acceleration/deceleration is applied to G00.

1: Pre-interpolation acceleration/deceleration is applied to G00 even in the high accuracy control mode.

2: Rapid traverse constant-gradient multi-step acceleration/deceleration is enabled.

When the multi-part system simultaneous high-accuracy control option is enabled, "1" can be set for the 2nd part system and the following.

	#1206	G1bF	Maximum speed

Set a cutting feedrate when applying pre-interpolation acceleration/deceleration.

When high-accuracy control time constant expansion is valid, set the maximum of cutting feed clamp speed of each axis.

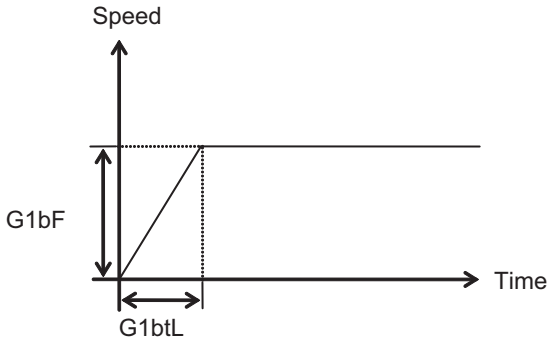
---Setting range---

1 to 999999 (mm/min)

#1207	G1btL	Time constant

Set a cutting feed time constant when applying pre-interpolation acceleration/deceleration.

When set to "0", the time constant will be clamped at 1ms.



---Setting range---

Without high-accuracy control time constant expansion: 1 to 5000 (ms)

With high-accuracy control time constant expansion: 1 to 30000 (ms)

Cutting feed Acc Cutting feed acceleration

Displays cutting feed acceleration.

#1208	RCK	Arc radius error compensation factor

Set a coefficient for arc radius error compensation.

An arc radius error compensation amount can be increased or decreased between -60.0 and +20.0%.

---Setting range---

-60.0 to +20.0 (%)

#1209	cirdcc	Arc deceleration speed

Set the deceleration speed at the arc entrance or exit.

---Setting range---

1 to 999999 (mm/min)

#1210	RstGmd	Modal G code reset

Select whether to initialize G code group modals and H and D codes, which corresponds to bits as follows, when the system is reset.

0: Initialize.

1: Not initialize.

<Description of bits for M system>

1F	1E	1D	1C	1B	1A	19	18	17	16	15	14	13	12	11	10
0	0	0	0	0	0	*	*	0	*	0	0	*	*	*	*

F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
*	*	0	*	*	0	*	0	*	*	*	*	0	*	*	*

bit 1F: (Not used)

bit 1E: (Not used)

bit 1D: (Not used)

bit 1C: (Not used)

bit 1B: (Not used)

bit 1A: (Not used)

bit 19: Spindle clamp rotation speed initialization

bit 18: H, D codes initialization

bit 17: (Not used)

bit 16: Group23

bit 15: (Not used)

bit 14: (Not used)

bit 13: Group 20 2nd spindle control modal initialization

bit 12: Group 19 G command mirror modal initialization

bit 11: Group 18 Polar coordinate command modal initialization

bit 10: Group 17 Constant surface speed control command modal initialization

bit F: Group 16 Retains inclined surface machining modal

bit E: Group 15 Normal line control modal initialization

bit D: (Not used)

bit C: Group 13 Cutting modal initialization

bit B: Group 12 Workpiece coordinate system modal initialization

bit A: (Not used)

bit 9: Group 10 Fixed cycle return command modal initialization

bit 8: (Not used)

bit 7: Group 8 Length compensation modal initialization

bit 6: Group 7 Radius compensation modal initialization

bit 5: Group 6 Inch/metric modal initialization

bit 4: Group 5 Feed G modal initialization

bit 3: (Not used)

bit 2: Group 3 Absolute/incremental command modal initialization

bit 1: Group 2 Plane selection modal initialization

bit 0: Group 1 Move G modal initialization

The H code indicates the tool length offset number, and the D code indicates the tool radius compensation number.

When bit 18 is set to ON, the H and D codes and group 8 G modal are retained.

When bit 7 is set to ON, the H code and group 8 G modal are retained.

<Description of bits for L system>

1F	1E	1D	1C	1B	1A	19	18	17	16	15	14	13	12	11	10
0	0	0	0	0	0	*	0	0	0	0	0	*	0	*	*

F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
*	*	0	*	*	0	*	0	0	*	*	*	*	*	*	*

bit 1F: (Not used)

bit 1E: (Not used)

bit 1D: (Not used)

bit 1C: (Not used)

bit 1B: (Not used)

bit 1A: (Not used)

bit 19: Spindle clamp rotation speed initialization

bit 18: (Not used)

bit 17: (Not used)

bit 16: (Not used)

bit 15: (Not used)

bit 14: (Not used)

bit 13: Group 20 2nd spindle control modal initialization

bit 12: (Not used)

bit 11: Group 18 Balance cut initialization

bit 10: Group 17 Constant surface speed control command modal initialization

bit F: Group 16 Retains inclined surface machining modal

bit E: Group 15 Facing turret mirror image initialization

bit D: (Not used)

bit C: Group 13 Cutting modal initialization

bit B: Group 12 Workpiece coordinate system modal initialization

bit A: (Not used)

bit 9: Group 10 Fixed cycle return command modal initialization

bit 8: (Not used)

bit 7: (Not used)

bit 6: Group 7 Nose R compensation modal initialization

bit 5: Group 6 Inch/metric modal initialization

bit 4: Group 5 Feed G modal initialization

bit 3: Group 4 Barrier check modal initialization

bit 2: Group 3 Absolute/incremental command modal initialization

bit 1: Group 2 Plane selection modal initialization

bit 0: Group 1 Move G modal initialization

(PR) #1213 proaxy Side 1 of inclination angle (for L system only)

Specify the length of the side of the triangle formed by the tilt angle in line with the rectangular coordinate system of the inclined axis.

---Setting range---

-9999.999 to 9999.999

(PR) #1214 macaxy Side 2 of inclination angle (for L system only)

Specify the length of the side of the triangle formed by the tilt angle in line with the actual axis of the inclined axis.

---Setting range---

-9999.999 to 9999.999

(PR) #1215 macaxx Side 3 of inclination angle (for L system only)

Specify the length of the side of the triangle formed by the tilt angle in line with the actual axis of the base axis corresponding to the inclined axis.

---Setting range---

-9999.999 to 9999.999

#1216 extdcc External deceleration speed

Set the upper limit value of the feedrate when the external deceleration signals are enabled.

---Setting range---

1 to 999999 (mm/min)

#1501 polyax Rotational tool axis number

Specify the number of the rotational tool axis (servo axis) used for polygon machining (G51.2).

Set "0" when not using polygon machining (spindle-servo axis), or when using spindle-spindle polygon machining.

A value exceeding the base specification parameter "#1002 axisno" cannot be specified.

This parameter is valid when the G code system is 1, 6 or 7 ("1", "2", "7" or "8" is set in the parameter "#1037 cmdtyp").

---Setting range---

0 to controlled axis number

#1502 G0lpfg G1 -> G0 deceleration check

Select whether to perform a deceleration check when the travel direction is changed from G1 to G0.

0: Not perform

1: Perform

#1503 G1lpfg G1 -> G1 deceleration check

Select whether to perform a deceleration check when the travel direction is changed from G1 to G1.

0: Not perform

1: Perform

#1505 ckref2 Second reference position return check

Select whether the check is carried out at the specified position in manual second reference position return mode upon completion of spindle orientation or at second reference position return interlock signal.

0: Upon completion of spindle orientation

1: At second reference position return interlock signal

#1506 F1_FM Upper limit of F 1-digit feedrate

Set the maximum value up to which the F 1-digit feedrate can be changed.

---Setting range---

0 to 1000000 (mm/min)

#1507 F1_K F 1-digit feedrate change constant

Set the constant that determines the speed change rate per manual handle graduation in F 1-digit feedrate change mode.

---Setting range---

0 to 32767

#1508	TLM_Fmin	Minimum speed at which the tool is pressed into the tool setter

This is the minimum speed at which the tool is pressed into the tool setter sensor.

If the tool tip is pressed into the sensor at a speed lower than this value, the control will generate an error. If the machine has a tilting axis, set this value in the machine coordinate system (orthogonal coordinate system).
If this parameter is set to "0", the default value (4.0 (mm/min)) is used.

---Setting range---

0.0 to 9999.9 (mm/min)

#1509	TLM_Fmax	Maximum speed at which the tool is pressed into the tool setter

This is the maximum speed at which the tool is pressed into the tool setter sensor.

If the tool tip is pressed into the sensor at a speed higher than this value, the control will generate an error. If the machine has a tilting axis, set this value in the machine coordinate system (orthogonal coordinate system).
If this parameter is set to "0", the default value (1000.0 (mm/min)) is used.

---Setting range---

0.0 to 9999.9 (mm/min)

#1510	DOOR_H	Shorten door interlock II axis stop time

Select whether to shorten the time during which the axis is stopped when the door is opened.

0: Use the conventional axis stop time.

1: Shorten the axis stop time.

(Note) When the door interlock II signal is input via a ladder, the conventional axis stop time will be used.

#1511	DOORPm	Signal input device 1 for door interlock II: for each part system

Set the fixed device number for door interlock II signal input for each part system.

A device number from X001 to X3FF can be specified. (Except X100.)

Device number "000" is invalid.

Set device number "100" when using no fixed device number for door interlock II signal input.

Related parameter: "#1154 pdoor" (Door interlock II for each part system)

---Setting range---

000 to 3FF (hexadecimal)

#1512	DOORPs	Signal input device 2 for door interlock II: for each part system

Set the fixed device number for door interlock II signal input for each part system.

(Set the same value as that of "#1155 DOOR_m".)

Related parameter: "#1154 pdoor" (Door interlock II for each part system)

---Setting range---

000 to 3FF (hexadecimal)

#1513	stapM	M code for synchronous tap selection

Set the M code for the synchronous tapping selection.

Select the synchronous tapping mode using the miscellaneous function code of the value set in this parameter. The M function command can be issued immediately before the tap command or in the same block. This function is valid only when "1" is set in "#1272 ext08/bit1" (M-function synchronous tap cycle).

(Note) Do not use M00, 01 02, 30, 98, and 99.

---Setting range---

0 to 99999999

#1514	expLinax	Exponential function interpolation linear axis

Set the axis name for the linear axis used in exponential function interpolation.

---Setting range---

A to Z

	#1515	expRotax	Exponential function interpolation rotary axis

Set the axis name for the rotary axis used in exponential function interpolation.

---Setting range---

A to Z

	#1516	mill_ax	Milling axis name

Set the name of the rotary axis used in milling interpolation. Only one rotary axis can be set.

When there is no E command in issuing the G12.1 command, this parameter will be followed.

For the axis name of the rotary axis, set the axis name of "#1013 axname", or the name extension axis (2-letter axis) combining "#1013 axname" and "#1601 axnameEX".

The incremental command axis name in "#1014 incax" cannot be used.

---Setting range---

A to Z, or AA to ZZ

	#1517	mill_C	Milling interpolation hypothetical axis name

Select the hypothetical axis command name for milling interpolation.

When there is no D command in issuing the milling interpolation command, this parameter will be followed.

(Note) The setting value "2" cannot be used for Milling interpolation.

0: Y axis command (Fixed)

1: Command rotary axis name

2: Base axis corresponding to hypothetical axis

	#1518	polm	Spindle-spindle polygon Workpiece spindle No.

Set the name or No. of the spindle which controls the workpiece used in spindle-spindle polygon machining.

(Note 1) The 1st spindle will be selected when "0" is set.

(Note 2) There are 2 spindle designation methods: spindle No. method and spindle name method. When names (any of 1 to 9) are set by the parameter "#3077 Sname" (Spindle command name) for all spindles, spindle name method is applied. Otherwise, spindle No. method is applied.

---Setting range---

0 to 9

	#1519	pols	Spindle-spindle polygon Tool spindle No.

Set the name or No. of the spindle which controls the rotary tool used in spindle-spindle polygon machining.

(Note 1) The 2nd spindle will be selected when "0" is set.

(Note 2) There are 2 spindle designation methods: spindle No. method and spindle name method. When names (any of 1 to 9) are set by the parameter "#3077 Sname" (Spindle command name) for all spindles, spindle name method is applied. Otherwise, spindle No. method is applied.

---Setting range---

0 to 9

(PR)	#1520	Tchg34	Additional axis tool compensation operation (for L system only)

Select axis to carry out the additional axis' tool compensation function.

0: 3rd axis.

1: 4th axis.

	#1521	C_min	Minimum turning angle

Set the minimum turning angle of the normal line control axis at the block joint during normal line control.

---Setting range---

0.000 to 360.000 (°) (Input setting increment applies)

(PR)	#1522	C_axis	Normal line control axis

Set the number of the axis for normal line control.

Set a rotary axis No.

0: Normal line control disabled

1 to 16: Axis No. (number of control axes)

	#1523	C_feed	Normal line control axis turning speed

Set the turning speed of the normal line control axis at the block joint during normal line control.

Set a value that does not exceed the normal line control axis' clamp speed ("#2002 clamp").

This is enabled during the normal line control type I.

---Setting range---

0 to 100000 (°/min)

	#1524	C_type	Normal line control type

Select the normal line control type.

0: Normal line control type I

1: Normal line control type II

	#1533	millPax	Polar coordinate linear axis name

Set the linear axis name used for polar coordinate interpolation.

---Setting range---

Axis names such as X, Y or Z

(PR)	#1534	SnG44.1	Spindle No. for G44.1 command

Specify which spindle to be selected when G44.1 is commanded.

<Spindle No. type>

Specify by the spindle No. 1 to 8.

The 2nd spindle is selected if you specify a nonexistent spindle No.

<Spindle name type>

Specify by the spindle name 1 to 9.

The 2nd spindle is selected if you specify a nonexistent spindle name.

(Note) When names (any of 1 to 9) are for all spindles by the parameter "#3077 Sname" (Spindle command name), "Spindle name type" is applied.

---Setting range---

0 to 9

	#1535	C_leng	Minimum turning movement amount

Set the minimum turning movement amount of the normal line control axis at the block joint during normal line control.

---Setting range---

0.000 to 99999.999 (mm) (Input setting increment applies)

	#1537	crsax[1]	Mixed control (cross axis control) axis

Set the axis to be interchanged during the mixed control (cross axis control).

Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---

Two digits between A to Z and 1 to 9

(Setting is cleared when "0" is set)

	#1538	crsax[2]	Mixed control (cross axis control) axis

Set the axis to be interchanged during the mixed control (cross axis control).

Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---

Two digits between A to Z and 1 to 9

(Setting is cleared when "0" is set)

#1539	crsax[3]	Mixed control (cross axis control) axis

Set the axis to be interchanged during the mixed control (cross axis control).

Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---

Two digits between A to Z and 1 to 9

(Setting is cleared when "0" is set)

#1540	crsax[4]	Mixed control (cross axis control) axis

Set the axis to be interchanged during the mixed control (cross axis control).

Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---

Two digits between A to Z and 1 to 9

(Setting is cleared when "0" is set)

#1541	crsax[5]	Mixed control (cross axis control) axis

Set the axis to be interchanged during the mixed control (cross axis control).

Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---

Two digits between A to Z and 1 to 9

(Setting is cleared when "0" is set)

#1542	crsax[6]	Mixed control (cross axis control) axis

Set the axis to be interchanged during the mixed control (cross axis control).

Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---

Two digits between A to Z and 1 to 9

(Setting is cleared when "0" is set)

#1543	crsax[7]	Mixed control (cross axis control) axis

Set the axis to be interchanged during the mixed control (cross axis control).

Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---

Two digits between A to Z and 1 to 9

(Setting is cleared when "0" is set)

#1544	crsax[8]	Mixed control (cross axis control) axis

Set the axis to be interchanged during the mixed control (cross axis control).

Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---

Two digits between A to Z and 1 to 9

(Setting is cleared when "0" is set)

#1558	lvOMin	Involute interpolation override lower limit value

Set the lower limit of the override for involute interpolation override.

---Setting range---

0 to 100 (%)

#1559	lvAMax	Involute interpolation allowable acceleration speed

Set the maximum acceleration (time constant) for the acceleration clamping during involute interpolation.

---Setting range---

0 to 32767 (ms)

#1560	lvFMin	Involute interpolation minimum feedrate

Set the minimum feedrate for the acceleration clamping during involute interpolation.

---Setting range---

0 to 999999 (mm/min)

#1561	3Dcdc	Switch workpiece coordinate display during 3D coordinate conversion

The workpiece coordinate display during 3D coordinate conversion is switched to the workpiece coordinate system or G68 program coordinate system.

0: Workpiece coordinate system

1: G68 program coordinate system

(Note) The special display unit's absolute coordinates also follow this parameter setting.

#1562	3Dremc	Switch remaining command display during 3D coordinate conversion

The remaining command display during 3D coordinate conversion is switched to the workpiece coordinate system or G68 program coordinate system.

0: Workpiece coordinate system

1: G68 program coordinate system

#1563	3Dcdrc	Switch coordinate reading during 3D coordinate conversion

The coordinate system of the workpiece/skip coordinate read value in the 3D coordinate conversion modal is switched.

0: Workpiece (local) coordinate system

1: G68/G68.1 program coordinate system

#1564	3Dspd	Hole drilling speed during 3D coordinate conversion

Set the rapid traverse rate for the hole drilling cycle during 3D coordinate conversion.

0: The cutting feed clamp speed is used.

Other than 0: The set speed is used.

Note that if the rapid traverse rate is exceeded, the speed will be clamped at the rapid traverse rate.

---Setting range---

0 to 1000000mm/min

#1565	helgear	Helical machining base axis

Set the base axis for helix angle calculation in helical machining. If no setting, Z axis will be used.

---Setting range---

Axis address such as X, Y, Z, U, V, W, A, B, C or H

#1566	3DSelctDrillaxMode	Switch drill axis's mode from rapid traverse during 3D coordinate conversion

Switch the rapid traverse mode in non-drilling blocks among a drilling cycle to the cutting feed mode during 3-dimensional coordinate conversion.

0: Rapid traverse mode. The speed follows the setting of "#2001 rapid".

1: Cutting feed mode. The speed follows the setting of "#1564 3Dspd".

#1568	SfiltG1	G01 soft acceleration/deceleration filter

Set the filter time constant for smoothly changing the acceleration rate for the cutting feed acceleration/deceleration in pre-interpolation acceleration/deceleration.

- Notch frequency Hz
Displays the notch frequency (Hz) for the S-pattern filter set in "#1568 SfiltG1" (G01 soft acceleration/deceleration filter).

---Setting range---

0 to 200 (ms)

#1569	SfiltG0	G00 soft acceleration/deceleration filter

Set the filter time constant for smoothly changing the acceleration rate for the rapid traverse acceleration/deceleration in pre-interpolation acceleration/deceleration.

---Setting range---

0 to 200 (ms)

#1570	Sfilt2	Soft acceleration/deceleration filter 2

Set the filter time constant for smoothly changing the acceleration rate in pre-interpolation acceleration/deceleration.

This will be disabled when "0" or "1" is set.

- Notch frequency Hz
Displays the notch frequency (Hz) for the S-shape filter set in "#1570 Sfilt2" (Soft acceleration/deceleration filter 2).

---Setting range---

0 to 200 (ms)

#1571	SSSdis	SSS control adjustment coefficient fixed value selection

Fix the shape recognition range for SSS control.

---Setting range---

0/1

#1572	Cirorp	Arc command overlap

This eliminates speed fluctuations at the joint of the arc and straight line and arc and arc.

Set as a bit unit.

0: Do not overlap the arc command blocks

1: Overlap the arc command blocks

bit0: Arc command during high-speed high-accuracy control II

bit1: Arc command during high-speed machining mode II

bit2: Arc command during high-accuracy control (G61.1)

bit3: Arc command during cutting mode (G64)

The line command block and arc command block won't be overlapped during G61.2 modal regardless of this setting.

(Note) This parameter is invalid during SSS control.

---Setting range---

0 to F (HEX)

#1573	Ret1	Return type 1

Select the axis to be moved later after tool return.

This is referred to with the movement path (transit point #1 -> interrupt point).

Up to eight axes can be specified by expressing one axis with one bit.

bit0: Transit point #1 1st axis

bit1: Transit point #1 2nd axis

bit2: Transit point #1 3rd axis

bit3: Transit point #1 4th axis

bit4: Transit point #1 5th axis

bit5: Transit point #1 6th axis

bit6: Transit point #1 7th axis

bit7: Transit point #1 8th axis

---Setting range---

00000000 to 11111111 (Binary)

#1574	Ret2	Return type 2

Select the axis to be moved later after tool return.

This is referred to with the movement path (return start point -> transit point #2).

Up to eight axes can be specified by expressing one axis with one bit.

bit0: Transit point #2 1st axis

bit1: Transit point #2 2nd axis

bit2: Transit point #2 3rd axis

bit3: Transit point #2 4th axis

bit4: Transit point #2 5th axis

bit5: Transit point #2 6th axis

bit6: Transit point #2 7th axis

bit7: Transit point #2 8th axis

---Setting range---

00000000 to 11111111 (Binary)

#1595	hobm	Hobbing rotary tool axis No.

Specify the spindle No. or spindle name of rotary tool in "MITSUBISHI CNC Special Format (G81.4)" of hobbing command.

(Note) There are 2 spindle designation methods: spindle No. method and spindle name method. When names (any of 1 to 9) are set by the parameter "#3077 Sname" (Spindle command name) for all spindles, spindle name method is applied. Otherwise, spindle No. method is applied.

---Setting range---

0 to 9

#1596	hobs	Hobbing workpiece axis No.

Specify the NC axis No. of workpiece axis (in a part system) in "MITSUBISHI CNC Special Format (G81.4)" of hobbing command.
This parameter is valid when "#1292 ext28/bit4" (Hobbing workpiece axis selection switch) is "0".

---Setting range---

1 to the number of NC axes (in a part system)

#1597	rpcNoMove	No axis travel with compensation amount change for rotary axis workpiece position

Set wether to enable the axis travel for the compensation change when the compensation amount of rotary axis workpiece position is changed.

0: Enable

1: Disable

* Regardless of the parameter setting, the axis travel is not enabled at reset.

#1599	3DEndPointErr	End point error in 3D coordinate conversion

Specify the tolerable range for an error of the end point of travel command which is deviated from the tool path direction during the G68.1 ,E1 command.

---Setting range---

0.000 to 100.000 (mm)

#12001	ManualB RectanA xH	Manual feed rate B constant surface control intersecting part system axis name (horizontal)

Set the part system axis name ("#1013 axname") for the two axes that intersect with the rotary axis direction. When one of the two axes is blank, a constant speed will be applied without using constant surface speed control.

---Setting range---

Axis addresses such as X, Y, Z, U, V, W, A, B, and C

	#12002	ManualB RectanA xV	Manual feed rate B constant surface control intersecting part system axis name (vertical)

Set the part system axis name ("#1013 axname") for the two axes that intersect with the rotary axis direction. When one of the two axes is blank, a constant speed will be applied without using constant surface speed control.

---Setting range---

Axis addresses such as X, Y, Z, U, V, W, A, B, and C

	#12003	ManualB RotCent erH	Manual feed rate B constant surface control rotation center machine position (horizontal)

Set the machine coordinate position (horizontal axis) at the center of the rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

	#12004	ManualB RotCent erV	Manual feed rate B constant surface control rotation center machine position (vertical)

Set the machine coordinate position (vertical axis) at the center of the rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

(PR)	#12005	Mfig	Number of M

Set the number of M codes that can be specified within the same block.

---Setting range---

1 to 4

(PR)	#12006	Mbin	M binary

Data type 0: BCD

Data type 1: Unsigned binary

Data type -1: Singed binary

<For unsigned binary>

The absolute value "1" is output for "-1".

<For singed binary>

"-1" is output as "0xFFFFFFFF".

---Setting range---

Data type

(-1,0,1)

(PR)	#12007	Sfig	Number of S

Set the number of spindles.

(Note 1) The setting range differs according to the model.

(Note 2) "Sfig" is set in the range of 1 to 8. However, the number of outputs by "Sfig" cannot be controlled. Thus, only one S command is output regardless of the Sfig setting value.

---Setting range---

1 to 8

(PR)	#12008	Sbin	S binary

Data type 0: BCD
Data type 1: Unsigned binary
Data type -1: Singed binary

<For unsigned binary>
The absolute value "1" is output for "-1".
<For singed binary>
"-1" is output as "0xFFFFFFFF".
(Note 1) Sbin can be set with "-1", "0" and "1", but the S command cannot be BCD output.
If BCD (0) is selected for Sbin, it will be handled as a singed binary (-1).

---Setting range---

Data type
(-1,0,1)

(PR)	#12009	Tfig	Number of T

Set the number of T codes that can be specified within the same block.

---Setting range---

1 to 4

(PR)	#12010	Tbin	T binary

Data type 0: BCD
Data type 1: Unsigned binary
Data type -1: Singed binary

<For unsigned binary>
The absolute value "1" is output for "-1".
<For singed binary>
"-1" is output as "0xFFFFFFFF".

---Setting range---

Data type
(-1,0,1)

(PR)	#12011	Bfig	Number of B

Set the number of B codes that can be specified within the same block.

---Setting range---

1 to 4

(PR)	#12012	Bbin	B binary

Data type 0: BCD
Data type 1: Unsigned binary
Data type -1: Singed binary

<For unsigned binary>
The absolute value "1" is output for "-1".

<For singed binary>
"-1" is output as "0xFFFFFFFF".

---Setting range---

Data type
(-1,0,1)

	#12013	G33.n rot	G33.n rotary axis name

Select the axis to use as C axis with its axis name.

---Setting range---

A to Z

	#12014	G33.n ovr	G33.n override

Not used.

	#12022	skipF_spec	

bit0: Skip speed spec: Cutting feed override ON

Select whether to enable cutting feed override for a skip command.

0: Disable cutting feed override

1: Enable cutting feed override

bit1: Skip speed spec: Dry run ON

Select whether to enable dry run for a skip command.

0: Disable dry run

1: Enable dry run

bit2: Skip speed spec: Feed rate selection

Select the feed rate for a skip command.

0: A feed rate given to address F of the G31 block. If the G31 block has no address F, the value specified by "#1174 skip_F" is applied. In either case the F modal status is unchanged.

1: A feed rate programmed as an F modal value. F modal status is updated by the address F given to the G31 block.

(PR)	#12023	Mblkstp1	Pre-read prohibited M code 1

Set M codes to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12024	Mblkstp2	Pre-read prohibited M code 2

Set M codes to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12025	Mblkstp3	Pre-read prohibited M code 3

Set M codes to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12026	Mblkstp4	Pre-read prohibited M code 4

Set M codes to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12027	Mblkstp5	Pre-read prohibited M code 5

Set M codes to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12028	Mblkstp6	Pre-read prohibited M code 6

Set M codes to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12029	Mblkstp7	Pre-read prohibited M code 7

Set M codes to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12030	Mblkstp8	Pre-read prohibited M code 8

Set M codes to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12031	Mblkstp9	Pre-read prohibited M code 9

Set M codes to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12032	Mblkstp10	Pre-read prohibited M code 10

Set M codes to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12033	MblkstpMin1	Minimum value of the pre-read prohibited M code range setting 1

Set the minimum value of the M code to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12034	MblkstpMax1	Maximum value of the pre-read prohibited M code range setting 1

Set the maximum value of the M code to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12035	MblkstpMin2	Minimum value of the pre-read prohibited M code range setting 2

Set the minimum value of the M code to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12036	MblkstpMax2	Maximum value of the pre-read prohibited M code range setting 2

Set the maximum value of the M code to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12037	MblkstpMin3	Minimum value of the pre-read prohibited M code range setting 3

Set the minimum value of the M code to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12038	MblkstpMax3	Maximum value of the pre-read prohibited M code range setting 3

Set the maximum value of the M code to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12039	MblkstpMin4	Minimum value of the pre-read prohibited M code range setting 4

Set the minimum value of the M code to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12040	MblkstpMax4	Maximum value of the pre-read prohibited M code range setting 4

Set the maximum value of the M code to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12041	MblkstpMin5	Minimum value of the pre-read prohibited M code range setting 5

Set the minimum value of the M code to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12042	MblkstpMax5	Maximum value of the pre-read prohibited M code range setting 5

Set the maximum value of the M code to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12043	MblkstpMin6	Minimum value of the pre-read prohibited M code range setting 6

Set the minimum value of the M code to which pre-read will not be applied.

---Setting range---

0 to 99999999

(PR)	#12044	MblkstpMax6	Maximum value of the pre-read prohibited M code range setting 6

Set the maximum value of the M code to which pre-read will not be applied.

---Setting range---

0 to 99999999

	#12049	SBS_no	Sub part system I identification No.

Specify the ID number (address B value) to be used when activating this part system as a sub part system during G122 command. Set to "0" when this part system is not used as a sub part system.

---Setting range---

0 to 7

	#12050	SBS_pro	Sub part system I standard program No.

Specify the No. of program to be called when activating this part system as a sub part system during G122 command. This parameter setting is used when a program designation (address A value/<file name>) is omitted.

---Setting range---

0 to 99999999

	#12051	Jerk_filtG1	G01 jerk filter

Specify the time constant of filter that is used for smoothing the change of jerk when pre-interpolation acceleration/deceleration is performed in cutting feed.

This filter causes no path error, as the filter is applied to the resultant speed calculated before interpolation.

If you specify the jerk filter time constant, the time constants of each filter will be as follows:

- S-shape filter time constant

"#1568 SfiltG1" - "Jerk_filtG1"

- Jerk filter time constant

"Jerk_filtG1"

---Setting range---

0 to 50 (ms)

	#12052	Jerk_filtG0	G00 jerk filter

Specify the time constant of filter that is used for smoothing the change of jerk when pre-interpolation acceleration/deceleration is performed in cutting feed.

This filter causes no path error, as the filter is applied to the resultant speed calculated before interpolation.

If you specify the jerk filter time constant, the time constants of each filter will be as follows:

- S-shape filter time constant

"#1569 SfiltG0" - "Jerk_filtG0"

- Jerk filter time constant

"Jerk_filtG0"

---Setting range---

0 to 50 (ms)

	#12053	EachAxAccCntrl	Enable axis-specific acceleration tolerance control

Select how to calculate the deceleration speed for a corner between the blocks where the high-accuracy control is enabled.

0: Optimal corner deceleration

(calculate the deceleration speed using the acceleration tolerance common for all the axes determined by G1bF and G1btL)

1: Axis-specific acceleration tolerance control

(calculate the deceleration speed using acceleration tolerances of each axis determined by G1bFx and G1btLx)

(PR)	#12054	Tol-Ofsnum	Number of tool offset sets for allocation

Specify the number of offset sets to be allocated when the arbitrary allocation method is selected for offset sets.

---Setting range---

0 to 999

(PR)	#12055	Tol-lifenum	Number of life management tools for allocation

Specify the number of life management tools to be allocated when the arbitrary allocation method is selected for life management tools.

---Setting range---

0 to 1000

	#12056	I_G0ol	Initial rapid traverse block overlap for G00

Select whether to enable the rapid traverse block overlap function at power ON or at reset.

0: Disabled

1: Enabled

	#12057	OT_prechkON	Enabling stroke check before travel for stored stroke limit

Select the entry inhibition area for stroke check before travel.

0: Perform stroke check before travel for the area specified by G22.

1: Perform stroke check before travel for the area set by the stored stroke limit function, with or without G22.

	#12058	OT_prechkTYPE	Stroke check before travel for skip and automatic tool length measurement

Select whether to enable or disable the stroke check before travel for skip (G31 or G31.n) and automatic tool length measurement (G37).

0: Disable

1: Enable

(Note) This parameter is enabled when #12057=1 and the option "Stroke check before travel" is ON.

	#12059	SBS_name	Sub part system name

Specify each sub part system name.

This name is displayed when the part system acts as a sub part system.

---Setting range---

4 or less characters consisting of both alphabets and numbers

	#12060	VblAccPreInt	Variable-acceleration pre-interpolation acceleration/deceleration ON

Select whether to enable variable-acceleration pre-interpolation acceleration/deceleration control while high-accuracy control is ON.

0: Pre-interpolation acceleration/deceleration
(Apply the acceleration rate that is determined by G1bF and G1btL and is common for all the axes)

1: Variable-acceleration pre-interpolation acceleration/deceleration

(Apply the acceleration rate that is determined by G1bFx and G1btLx for each axis)
(Note) Variable-acceleration pre-interpolation acceleration/deceleration is a function available under SSS control. To enable this function, set "#8090 SSS ON" to "1".

(PR)	#12064	Tol-PLCdevice	TLM device allocation for use by other part systems

This parameter determines whether to use the unused tool life management device(s) for the part system that you are setting up, which has more than one tool.
Bit0 to bit7 correspond to the tool life management devices of the first to eighth part systems, respectively. Setting a bit (bits) to "1" that corresponds to an unused device(s) allows the part system you are setting up to use it as a tool life management device.

(Example)
For example, on a three-head (Z-W-U) machine with main ($1) and sub ($2) part systems, if you want to perform Tool Life Management on the three heads of the Z, W, and U axes, set this parameter for $1 to "00001100". This means that the devices for the $3 and $4 can be allocated to the devices of $1.

(Note 1) Allowed up to fourth part system when your control is M80V or M80VW.
Allowed up to eighth part system when your control is M800VS or M800VW.

(Note 2) When the part system is in use (i.e., when "System validation setup" is set to "1: Exist"), the device(s) of the part system(s) cannot be allocated.

---Setting range---

00000000 to 11111111

	#12070	Sfilt2_tol	Tolerance control: Soft acceleration/deceleration filter 2

Specify the time constant of the filter that smoothes out fluctuations in acceleration under the tolerance control.
Basically set to 0.

---Setting range---

0 to 200 (ms)

(PR)	#12071-12078	adr_abs[1]-[8]	Command address for arbitrary axis exchange

Specify the axis address to be given in an arbitrary axis exchange command for the part system.

(Note 1) This parameter is disabled when the arbitrary axis exchange function is unused.

(Note 2) Do not give an identical name to two or more of the parameters adr_abs[1] to adr_abs[8].

(Note 3) Do not leave any unspecified parameter in the middle between adr_abs[1] and [8].

(Note 4) Set the addresses of adr_abs[ ] in the same order as of the axis names (#1013 axname). Note that you can set a nonexistent axis name in the middle.

(Note 5) If there are 9 or more control axes per part system, specify the axis address that is programmed based on the basic axis configuration.

---Setting range---

Axis address such as X, Y, Z, U, V, W, A, B, C or H

(PR)	#12079-12086	adr_inc[1]-[8]	Incremental command address for arbitrary axis exchange

Specify the incremental command address for each of the axes to be used in an arbitrary axis exchange command.

(Note 1) This parameter is disabled when the arbitrary axis exchange function is unused.

(Note 2) There is no need to set this parameter when command type (absolute or incremental) is not distinguished by the axis address (when "#1076 AbsInc" = "0").

(Note 3) Do not give an identical name to two or more of the parameters adr_inc[1] to adr_inc[8]. If there is any overlap, priority is given in the ascending order (adr_inc[1] to adr_inc[8]).

---Setting range---

Axis address such as X, Y, Z, U, V, W, A, B, C or H

(PR)	#12087	I_spCode	Initial spindle selection code when spindle selection by address P is valid

Specify the spindle selection code to be applied when spindle selection by address P has never been made after power ON under Multiple-spindle control I.

(Note) This parameter is valid when "#1300 ext36/bit4" is specified to "1". (Spindle selection by address P is valid)

---Setting range---

0 to 65535

	#12088	Drn_F	Dry run speed

Specify a dry run speed for each part system.

When "0" is set, the manual feed rate selected by Manual feedrate method selection (JVS) signal is applied.

---Setting range---

0 to 1000000 (mm/min)

	#12089	M2adr	2nd miscellaneous function address type

Select the address type of the 2nd miscellaneous function.

0: One-letter command for the 2nd miscellaneous function

1: Two-letter command for the 2nd miscellaneous function

(PR)	#12090	SnG43.1	Spindle designation for G43.1

Specify which spindle to be selected when G43.1 is commanded.

<Spindle No. type>

Specify by the spindle No. 1 to 8.

The 1st spindle is selected if you specify a nonexistent spindle No.

<Spindle name type>

Specify by the spindle name 1 to 9.

The 1st spindle is selected if you specify a nonexistent spindle name.

(Note) When names (any of 1 to 9) are for all spindles by the parameter "#3077 Sname" (Spindle command name), "Spindle name type" is applied.

---Setting range---

0 to 9

(PR)	#12103	2nd add T-ofs ON	2nd additional axis tool offset ON (for L system only)

Select whether to enable tool offset on the 2nd additional axis.

0: Disable

1: Enable

(PR)	#12104	2nd add T-ofs set	2nd additional axis tool offset setting (for L system only)

Select on which axis to perform the 2nd additional axis tool offset.
Specify the axis address set in "#1013 axname".

---Setting range---

A to Z

	#12105	C_minTyp	Operation selection of minimum turning angle or less

Specify the operation when the turning angle is set the minimum turning angle (#1521 C_min) or less and the turning operation is not inserted, in the seams of the arc blocks during normal line control.

0: Interpolate before reaching arc end point.

1: Do not interpolate.

(PR)	#12107	Teaching-DataNum	Number of teaching data points to be allocated to each part system

Specify the number of teaching data points to be allocated to each part system for load monitor.

This parameter is enabled when "#1491 Teaching-SysAssign" (Load monitor: Teaching data allocation method) is "1".

(Note 1) Load monitor is disabled for the part system to which no teaching data is assigned.

(Note 2) Total number of data points allocated to each part system must not exceed 1024.
If the number of total data points exceeds the maximum, Initial parameter error (Y05 12107) occurs.

---Setting range---

0 to 1024

	#12110	Ret3	Return type

Specify the axis to be moved later after tool return.

This is referred to with the movement path (transit point #2 to transit point #1).

One bit represents one axis. Up to eight axes can be specified.

---Setting range---

00000000 to 11111111 (Binary)

	#12111	Var protect Top1	Common variable setting protection - Top variable No. (1st group)

Specify the head of the common variables which are protected from setting operation.

(Note 1) If #12111 or #12112 is 0 or is greater than the bottom No. (#12112), this setting is disabled.

(Note 2) For the common variables shared by part systems, the protection takes effect in a part system set by this parameter.

(Note 3) It is possible to set an unspecified variable, but the protection covers the specified variables only.

---Setting range---

0: Disabled

100 to 199, 400 to 999

	#12112	Var protect Btm1	Common variable setting protection - Bottom variable No. (1st group)

Specify the end of the common variables which are protected from setting operation.

(Note 1) If #12111 or #12112 is 0 or is smaller than the top No. (#12111), this setting is disabled.

(Note 2) For the common variables shared by part systems, the protection takes effect in a part system set by this parameter.

(Note 3) It is possible to set an unspecified variable, but the protection covers the specified variables only.

---Setting range---

0: Disabled

100 to 199, 400 to 999

	#12113	Var protect Top2	Common variable setting protection - Top variable No. (2nd group)

Specify the head of the common variables which are protected from setting operation.

(Note 1) If #12113 or #12114 is 0 or is greater than the bottom No. (#12114), this setting is disabled.

(Note 2) For the common variables shared by part systems, the protection takes effect in a part system set by this parameter.

(Note 3) It is possible to set an unspecified variable, but the protection covers the specified variables only.

---Setting range---

0: Disabled

100 to 199, 400 to 999

	#12114	Var protect Btm2	Common variable setting protection - Bottom variable No. (2nd group)

Specify the end of the common variables which are protected from setting operation.

(Note 1) If #12113 or #12114 is 0 or is smaller than the top No. (#12113), this setting is disabled.

(Note 2) For the common variables shared by part systems, the protection takes effect in a part system set by this parameter.

(Note 3) It is possible to set an unspecified variable, but the protection covers the specified variables only.

---Setting range---

0: Disabled

100 to 199, 400 to 999

	#12116	CutOvrZeroMovRap	Rapid traverse operation when cutting feedrate override is 0%

Select whether to stop rapid traverse when the cutting feedrate override is 0% during rapid traverse.

0: Stop rapid traverse

1: Not stop rapid traverse

(Note) This parameter is invalid when the code method for rapid traverse override is selected.

(PR)	#12117	T-ofs hide axis	Hiding tool compensation data of specific axis

Specify whether to show or hide the tool compensation data for each axis.

0: Show

1: Hide

Specify the setting individually for each axis assigned to the hexadecimal bits.

bit0: axis in the 1st column

bit1: axis in the 2nd column

bit2: axis in the 3rd column

bit3: axis in the 4th column

(Note 1) The setting of bit3 is enabled for L system when "#12103 2nd add T-ofs ON" is "1".

(Note 2) This parameter is invalid for the tool compensation type I or II.

---Setting range---

0 to F (hexadecimal)

	#12121	REM Mcr No	Macro No. for rotation center error measurement

Specify the name of macro program for the rotation center error measurement.

The macro program name is input at initialization of rotation center error measurement macro.

If 0 is set, the macro program for the measurement is not input to the part system.

The macro program is used for execution of the measurement.

---Setting range---

0, 9000 to 9099, 9300 to 9999,

100010000 to 100018999,

100030000 to 199999998

	#12122	REM PrimAx Rot Dir	Primary axis rotation direction for rotation center error measurement

Rotation direction of primary axis for rotation center error measurement.

Select the direction, allowing for the rotary axis stroke limit, etc.

0: Positive direction

1: Negative direction

	#12131	FrqClmpSys_VCC	Upper limit of frequency (per part system)

Set the upper frequency limit.

If "#11686 Spec_VCC/bit5" is set to "0", the setting unit is 1 (Hz).

If "#11686 Spec_VCC/bit5" is set to "1", the setting unit is 0.01 (Hz).

(Example) If the frequency limit of the machine is 29.5 (Hz), set as follow:

- #11686/bit5 = 0, #12131 = 29 -> Upper limit is 29 (Hz)
- #11686/bit5 = 1, #12131 = 2950 -> Upper limit is 29.5 (Hz)

If this parameter is set to "0", the upper limit is 40 (Hz) regardless of "#11686 Spec_VCC/bit5".

---Setting range---

0 to 30000 (Hz)

	#12139	SrvAdjst_Tconst	Time constant for servo adjustment

This setting value is used as a reference value to determine the adjustment range of "#1207 G1btL" in the High-accuracy parameter adjustment screen.
Enter the value of "#1207 G1btL" for servo adjustment.

When "0" is set, the parameter adjustment mode cannot be selected from the High-accuracy parameter adjustment screen.

---Setting range---

Without extension of high-accuracy control time constant: 1 to 5000 (ms)
With extension of high-accuracy control time constant: 1 to 30000 (ms)

	#12140	MacVib_Tconst	Machine vibration filter time constant

This setting value is used as a reference value to determine the adjustment range of "#1568 SfiltG1" and "#12070 Sfilt2_tol" in the High-accuracy parameter adjustment screen.
Specify the filter time constant according to the machine vibration frequency.

When "0" is set, the parameter adjustment mode cannot be selected from the High-accuracy parameter adjustment screen.

---Setting range---

1 to 200 (ms)

	#12144	system name2	part system name 2

Set the name of each part system.

This setting is only relevant if the system has multiple part systems.

This name appears on the screen when the part systems need to be differentiated.

The name must be a combination of alphanumeric characters. It can be up to 6 characters long.

(*) This name is displayed with priority over the name that is set in #1169 system name.

(*) Even if this parameter is set, the name that is set in #1169 system name is displayed in some cases.

---Setting range---

A combination of alphanumeric characters up to 6 characters in length

	#12145	SBS_name2	Sub part system name 2

Set the name of each sub part system.

This name appears when it serves as a sub part system.

(*) This name is displayed with priority over the name that is set in "#12059 SBS_name".

(*) Even if this parameter is set, the name that is set in "#12059 SBS_name" is displayed in some cases.

---Setting range---

A combination of alphanumeric characters up to 6 characters in length

(PR)	#12146	I_Ax_Dsp_Name	Axis counter: Display axis name selection_Initial axis name

Select the axis name to be displayed in axis counter at power-on and reset.

0: Display the axis name set in parameter "#1022 axname2".

1-5: Display the axis name set in parameter "#1611, #1613, #1615, #1617, #1619 Ax_Dsp_Name[1]-[5]".

(Note 1) This parameter is valid when "#1753 cfgPR03/bit5" is "1".

(Note 2) If "#1753 cfgPR03/bit6" is "1", the axis name at reset is retained.

(Note 3) If "#1753 cfgPR03/bit7" is "1", the axis name at emergency stop or power-off is retained.

	#12147	SpecErr_Avd	Prevention of program error under specified conditions

This parameter is used to avoid program errors under the specified conditions.

0: Not avoid program errors

1: Avoid program errors

Specify the conditions by bit, and set the parameter in hexadecimal format.

bit0: Program error (P45) that occurs when G49 is used in the same block as G28 or G30.

(Note) The only difference from "#1241 set13/bit0" is the error avoidance condition.

---Setting range---

00000000 to FFFFFFFF (HEX)

(PR)	#12149	Ecc_specs	Eccentric turning specification switch

bit0: Eccentric turning without Y axis

Specify whether or not Eccentric turning without Y axis is performed.

0: Eccentric turning with Y axis

1: Eccentric turning without Y axis

bit1: Compensation for servo response during Eccentric turning

Specify whether or not compensation is performed for position deviations caused by delayed servo response during Eccentric turning.

0: Disable

1: Enable

(PR)	#12150	MCR Coord Tr	Motion control release (coordinate transformation function) valid

Select whether to enable the motion control release (coordinate transformation function).

0: Disable

1: Enable

(PR)	#12163	NCAID TWDTN_Reg	NC MachiningAID tool wear diagnostics: tool No. R register No.

Specify the R register No. in the user area to be used as "NC MachiningAID tool wear diagnostics: tool No.".

(Note 1) This parameter is enabled only when "#11858 NCAID Diagn method" is set to "1" and the R register No. is within the user area.

(Note 2) The specified R register No. and the next number are used.
When the specified number is an odd number, the operation message "Setting error" appears.

---Setting range---

0, 8300 to 9799, 9800 to 9899,

18300 to 19799, 19800 to 19899,

28300 to 29799, 29800 to 29899

(PR)	#12164	NCAID TWDTSREQ_Reg	NC MachiningAID tool wear diagn.: tool status update request R register No.

Specify the R register No. of the user area to be used as "NC MachiningAID tool wear diagnostics: tool status update request".

(Note) This parameter is enabled only when "#11858 NCAID Diagn method" is set to "1" and the R register No. is within the user area.

---Setting range---

0, 8300 to 9799, 9800 to 9899,

18300 to 19799, 19800 to 19899,

28300 to 29799, 29800 to 29899

(PR)	#12165	NCAID TWDTSACK_Reg	NC MachiningAID tool wear diagn.: tool status update response R register No.

Specify the R register No. in the user area to be used as "NC MachiningAID tool wear diagnostics: tool status update response".

(Note) This parameter is enabled only when "#11858 NCAID Diagn method" is set to "1" and the R register No. is within the user area.

---Setting range---

0, 8300 to 9799, 9800 to 9899,

18300 to 19799, 19800 to 19899,

28300 to 29799, 29800 to 29899

	#12166	orbit_F	Orbit machining: Maximum allowable acceleration (feed rate)

This parameter is used to set the maximum allowable acceleration to the resultant feed rate in the Orbit machining by specifying its feed rate component.

(Note) The control does not apply maximum allowable acceleration if the value of "#12167 orbit_tL" is "0".

---Setting range---

0 to 999999 (mm/min)

	#12167	orbit_tL	Orbit machining: Maximum allowable acceleration (time constant)

This parameter is used to set the maximum allowable acceleration to the resultant feed rate in the Orbit machining by specifying its time constant component.

(Note) The control does not apply maximum allowable acceleration if the value of "#12166 orbit_F" is "0".

---Setting range---

0 to 4000 (ms)

(PR)	#12391	ref_wk0pt_x	Base workpiece zero point X

Specify the offset amount from the machine coordinate zero point to the base workpiece zero point X.

---Setting range---

-99999.999 to 99999.999 (mm)

2.2 Base Axis Specification Parameters

(PR)	#1010	srvunit	Output unit (servo)

Specify the unit for data communicated with the servo drive unit.
The data communicated between the NC and servo drive unit, and the servo movement data unit follow this specification.
The standard value is "E"; however, set the optimum value according to the machine model and specifications.

B: 1 μm

C: 0.1 μm

D: 0.01 μm (10 nm)

E: 0.001 μm (1 nm)

F: 0.0001 μm (0.1 nm)

(PR)	#1013	axname	Axis name

Set each axis' name with an alphabetic character.

Use the characters X, Y, Z, U, V, W, A, B or C.

(Note 1) Do not set the same name twice in one part system.
The same name which is used in another part system can be set.

(Note 2) The PLC name does not need to be set. (Numbers 1 to 8 are shown as the axis names.)

(Note 3) "H" can be specified only with L system.

---Setting range---

X, Y, Z, U, V, W, A, B, C or H

(PR)	#1014	incax	Incremental command axis name

Set the axis name when commanding an incremental value for the axis travel amount.

(Note 1) Set an alphabet that is different from that of "#1013 axname".

(Note 2) Setting is not required if absolute/incremental specification with axis names is not performed ("#1076 AbsInc" = "0").

---Setting range---

X, Y, Z, U, V, W, A, B, C or H

(PR)	#1015	cunit	Program command unit

Set the minimum increment of program travel command.

<Travel amount for travel command 1>

0: Follow "#1003 iunit"

1: 0.0001 mm (0.1 μm)

10: 0.001 mm (1 μm)

100: 0.01 mm (10 μm)

1000: 0.1 mm (100 μm)

10000: 1.0 mm

If there is a decimal point in travel command, the decimal point position will be handled as 1 (mm) regardless of this setting.

(PR)	#1017	rot	Rotational axis

Select whether the axis is a rotary axis or linear axis.

When rotary axis is set, the axis will be controlled with the rotary axis's coordinate system. Set the rotary axis type with "#8213 Rotation axis type".

0: Linear axis

1: Rotary axis

(PR)	#1018	ccw	Motor CCW

Select the direction of the motor rotation to the command direction.

0: Clockwise (looking from motor shaft) with the forward rotation command

1: Counterclockwise (looking from motor shaft) with the forward rotation command

(PR)	#1019	dia	Diameter specification axis

Select the command method of program travel amount.

When the travel amount is commanded with the diameter dimensions, the travel distance will be 5mm when the command is 10mm of travel distance.

The travel amount per pulse will also be halved during manual pulse feed.

If diameter is selected, tool length, the wear compensation amount, and the workpiece coordinate offset will be displayed in diameter value. Other parameters concerning length will always be displayed in radius value.

0: Command with travel amount

1: Command with diameter dimension

(PR)	#1020	sp_ax	Spindle interpolation

Select "1" when using the spindle for contour control of NC axis (C-axis).

Select "2" to implement the spindle-mode rotary axis control.

0: Servo axis is used for contour control.

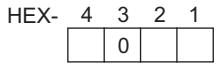
1: Spindle is used for contour control.

2: Spindle-mode rotary axis control.

(PR)	#1021	mcp_no	Drive unit I/F channel No. (servo)

This parameter specifies the drive unit interface channel number on the CNC control unit and the axis number.

Set this parameter in 4-digit (hexadecimal) format.



HEX-4: Drive unit interface channel No.

HEX-3: Not used. Set to "0".

HEX-2, 1: Axis No.

---Setting range---

1001 to 1020, 2001 to 2020

(PR)	#1022	axname2	2nd axis name

Set the name of the axis displayed on the screen with two characters. (X1, Z2, etc.)

Always use an alphabetic character (A to Z) for the first character.

---Setting range---

A to Z and 1 to 9 (Two digits)

(Setting is cleared when "0" is set)

(PR)	#1023	crsadr	Command address during mixed control (cross axis control)

Set the axis name for issuing a command to this axis during mixed control (cross axis control).

---Setting range---

A to Z

(Setting is cleared when "0" is set)

(PR)	#1024	crsinc	Incremental command address during mixed control (cross axis control)

Set the axis name for issuing an incremental command to this axis during mixed control (cross axis control).

---Setting range---

A to Z

(Setting is cleared when "0" is set)

(PR)	#1061	intabs	Manual ABS updating

Select whether to update the absolute position data during automatic handle interrupt.

This parameter is enabled only when "#1145 I_abs" is set to "1".

0: Do not update (coordinate system shifted the amount of the interruption)

1: Update (same coordinates as when interrupt did not occur will be applied)

	#1062	T_cmp	Tool compensation function

Select whether the tool length compensation and wear compensation are enabled during T command execution.

0: Tool length compensation enable Wear compensation enable
1: Tool length compensation enable Wear compensation disable
2: Tool length compensation disable Wear compensation enable
3: Tool length compensation disable Wear compensation disable

	#1063	mandog	Manual dog-type

Select the manual reference position return method for the second return (after the coordinate system is established) and later.

The initial reference position return after the power ON is performed with dog-type return, and the coordinate system will be established.

(This setting is not required when the absolute position detection is used.)

0: High speed return
1: Dog-type

(PR)	#1064	svof	Error correction

Select whether to correct the error when the servo is OFF.

0: Not correct the error
The command value will not change during servo OFF, and the movement amount during servo OFF will be handled as droop. When the servo is turned ON the next time, the axis will move to the command position where it used to be when the servo was turned OFF.

1: Correct the error
The command value and the current position will follow the feedback position. When the servo is turned ON the next time, the axis will not move.

During servo READY OFF, the operation will be always the same as of "Correct the error". (The current position will follow the position of the axis.)

(PR)	#1068	slavno	Slave axis number

Set the axis number of the slave axis in synchronous control.

The axis number is an NC axis number excluding the spindle and PLC axis.

Two or more slave axis cannot be set for one master axis.

This parameter cannot be set for a slave axis.

When using the multi-part system, the relation of the master axis and slave axis cannot extend over part systems.

You cannot set the No. of the axis targeted for the multiple axis synchronization control.

You cannot set this parameter for the axis targeted for the multiple axis synchronization control.

0: No slave axis
1 to 32: 1st to 32nd axis

	#1069	no_dsp	Axis with no counter display

Select whether to display the axis counter or not.

This setting is enabled on the counter display screen (relative position counter, etc.).

0: Display
1: Not display

	#1070	axoff	Axis removal

Select whether to enable or disable axis removal control.

0: Disable
1: Enable

	#1072	chop_ax	Chopping axis

Select the chopping axis.

0: Non-chopping axis
1: Chopping axis

(PR)	#1493	ref_syn	Synchronization at zero point initialization

0: Master axis and slave axis determine their zero points individually.

1: The zero points of both master and slave axes are determined by initializing the master axis' zero point.

The slave axis moves in perfect synchronization with the master axis.

Set this to "1" for speed/current command synchronization control.

(PR)	#1494	dsp_ax_change	Axis order of counter display

Set this in order to change the axis order of counter display.

If this is set, the axes will be displayed in ascending order.

However, axis whose setting is "0" will be displayed after axes whose settings are between "1" and "16" are displayed.

(Note 1) When the same value is set for more than one axis, axis that is displayed on the left side on the parameter screen will be first displayed.

(Note 2) When both of the mixed control (cross axis control) and interchange coordinate position display ("1280 ext16/bit2" OFF) are valid, and when there are two or more valid part systems, this parameter will be ignored.

(Note 3) When the arbitrary axis exchange control (option) is ON, and when there are two or more valid part systems, this parameter will be ignored.

---Setting range---

0: The axis is displayed after the axes whose settings are between "1" and "16" are displayed.

1 to 16: Axes are displayed in ascending order.

If the number other than "1" to "16" is set, it is dealt as "0" setting.

(PR)	#1495	grf_ax_direction	Axis travel direction in 2D graphic

Select the axis travel direction in the 2D graphic drawing (trace, check).
If set to 1, the positive/negative directions are reversed.

---Setting range---

0/1

(PR)	#1497	sync_sub	Sub axis number

Specify the sub axis for the simple synchronous control using its NC axis number.
This parameter can be set for the master axis and the slave axis of the synchronous control, because the axes act as main axis of the simple synchronous control.
Before setting this parameter, set the synchronous control parameter (#1068 slavno) first, and then turn OFF and ON the power.
The sub axis number must be greater than that of the main axis of the same part system.
Neither a spindle C-axis nor a PLC indexing axis can be designated as main or sub axis.

---Setting range---

0: No sub axis

1 to 32: 1st axis to 32nd axis

(PR)	#1601	axnameEx	Axis name extension letter

Specify the second letter of command axis name when the axis name extension parameter is valid (#1266 ext02/bit0 = 1).
The command axis name is not extended if this parameter is unspecified, and the only one letter set in "#1013 axname" or "#1014 incax" respectively is the absolute command axis name or incremental command axis name.
Axis configuration should not be as the non-name extension axis (1-letter axis) after the name extension axis (2-letter axis) in the part system.
(Configure the 2-letter axis after the 1-letter axis)

---Setting range---

A to Z (Setting is cleared when "0" is set)

(PR)	#1603	PLCdev_no	Axis device assignment No.

Specify the PLC I/F device assignment No. for the axis.

---Setting range---

0: No designation for assignment

1 to 32: Axis device assignment No.

(PR)	#1604	HypotheticalAxis	Hypothetical axis

This parameter switches whether to activate hypothetical axis.

0: Not active

1: Active

Hypothetical axis is an axis to which a servo motor is not connected.

♦By turning ON this parameter, axis parameters can be set for NC and PLC axes to which servo motors are not connected.

(Note) This parameter is valid for M80VW and M80V TypeA.
For models other than M80VW and M80V TypeA, it is considered to be set to "0" regardless of the setting value.

(PR)	#1605	mgrnum	Machine group No.

Specify the machine group No. to which each axis belongs.

---Setting range---

0 to 32

(PR)	#1611	Ax_Dsp_Name[1]	Axis counter: Display axis name

Set the axis name to be displayed in axis counter when display axis name selection is used.

Set the axis name for all axes.

If display axis name selection is not used, enter "0" to make the parameter blank for all axes.

(Note 1) This parameter is valid when "#1753 cfgPR03/bit5" is "1".

(Note 2) Setting for a PLC axis is invalid.

(Note 3) This parameter sets the axis name for axis counter display.
The axis name displayed in alarms, etc. is the axis name set in parameter "#1022 axname2".
When using the axis name for other functions or other parameters, use "#1022 axname2".

(Note 4) Axis names using only numbers (e.g., 1, 99) cannot be set.
Be sure to include at least one alphabetic character (A to Z).

---Setting range---

Two characters (A-Z and 1-9)

(PR)	#1613	Ax_Dsp_Name[2]	Axis counter: Display axis name

The setting method is same as "#1611".

(PR)	#1615	Ax_Dsp_Name[3]	Axis counter: Display axis name

The setting method is same as "#1611".

(PR)	#1617	Ax_Dsp_Name[4]	Axis counter: Display axis name

The setting method is same as "#1611".

(PR)	#1619	Ax_Dsp_Name[5]	Axis counter: Display axis name

The setting method is same as "#1611".

2.3 Base Common Parameters

	#1038	plcsel	Ladder selection

Not used. Set to "0".

(PR)	#1039	spinno	Number of spindles

Select the number of spindles.

0: No spindle

1 to 8: One to eight spindles

(Note) The setting range differs according to the model.

(PR)	#1040	M_inch	Constant input (inch)

Select the unit system for setting and display regarding machine parameter and PLC interface's position, length and speed.

0: Metric system

1: Inch system

(PR)	#1041	I_inch	Initial state (inch)

Select the unit system for the program travel amount when the power is turned ON or reset and for position display.

0: Metric system

1: Inch system

(Note) The units of the following data are converted by "#1041 I_inch".

- Command unit at power ON and reset (Inch/metric command mode)
  But under the following conditions, the unit will follow G20/G21 command modal even at reset.
  When reset modal is retained ("#1151 rstint"="0")
  When G code group 06 reset modal is retained ("#1210 RstGmd/bit5" ON)
- Unit system for position display (counter, user parameter, tool, work offset)
- User parameter I/O unit
- Parameter unit of user parameters concerning length and speed
- Arc error parameter (#1084 RadErr)

(PR)	#1042	pcinch	PLC axis command (inch)

Select the unit system for the commands to the PLC axis.

0: Metric system

1: Inch system

	#1043	lang	Select language displayed

Select the display language.

0: English
1: Japanese
11: German
12: French
13: Italian
14: Spanish
15: Traditional Chinese
16: Korean
17: Portuguese
18: Dutch
19: Swedish
20: Hungarian
21: Polish
22: Simplified Chinese
23: Russian
24: Turkish
25: Czech
31: Indonesian
32: Vietnamese

(Note) NC displays in English, when it doesn't equip language option.

(PR)	#1044	auxno	MR-J2-CT Connections

Set the number of MR-J2-CTs connected.

(Note) The number of MR-J2-CTs possible to connect and setting range are different according to the model. Check the specifications of each series.

(PR)	#1045	nskno	Megatorgue motor connections

Specify the number of NSK megatorque motors connected. When a value other than 0 is specified, 2nd miscellaneous function data is output as signed binary data.

---Setting range---

0 to 16

(PR)	#1046	T-ofs disp type	Tool compensation display type switch (for M system only)

Set this parameter to 1 when you use the L system's tool compensation type (e.g. when using a turning tool) in the M system.

0: Use the compensation type specified by "#1037 cmdtyp"
1: Use the tool compensation type III, irrespective of "#1037 cmdtyp"
(Note that the type is not switched to III on the tool measurement screen.)

(PR)	#1047	G_Chg_En_Sno	Select program format switch-enabled part system

Select the part system for which you enable the program format switch.

0: Part system 1 (default)
1: Part system 1
2: Part system 2

If G188 is given to any other part system, a program error (P29) occurs. If PFCHR is turned ON in any other part system, it is ignored.

(PR)	#1049	mmac_R	Machine tool builder macro SRAM/ROM switch

Select for the machine tool builder macro program storage area.

0: SRAM area
1: ROM area

(PR)	#1051	MemTol	Tool compensation memory common for part systems

0: Tool compensation memory separate for part systems

1: Tool compensation memory common for part systems

(PR)	#1052	MemVal	No. of common variables shared in part system designation

0: Common variables common for part systems (number fixed)

#100 -: Per part system

#500 -: Common for part systems

1: Common variables common for part systems (number designation)

#100 -: Designate with V1comN

#500 -: Designate with V0comN

(Note 1) When this parameter is changed, the file system will be changed after the power is turned ON. So always execute format.
The new format will be enabled after turning the power ON again.

Setting order

(1) MemVal changeover -> (2) Turn power ON again -> (3) Format -> (4) Turn power ON again

(Note 2) When this parameter is set to "1", #900000 to #907399 are not available even if the number of common variables is 8000.

(PR)	#1057	disp_input	Selection of screen for Image input I/F

Select which screen should be displayed while the image input expansion card is connected.
When no image expansion card is connected, the Mitsubishi Electric standard screen will be displayed regardless of the setting of this parameter.

0: Always displays the Mitsubishi Electric standard screen

1: Always displays the screen sent from IPC

2: Screen can be switched with a PLC signal (displays the Mitsubishi Electric standard screen at power up)

3: Screen can be switched with a PLC signal (displays the screen sent from IPC at power up)

4: Screen can be switched with a PLC signal (partial display of either the screen sent from IPC or the video from the camera at power up)

	#1077	radius	Incremental command for diameter specification axis

Select whether the incremental command of the diameter specification axis ("#1019 dia" is set to "1") uses the diameter value or radius value.

0: Diameter value

1: Radius value

	#1078	Decpt2	Decimal point type 2

Select the increment of position commands that do not have a decimal point.

0: Minimum input command unit (follows "#1015 cunit")

1: 1mm (or 1inch) unit (For the dwell time, 1s unit is used.)

	#1079	F1digt	Validate F1 digit

Select the F command method.

0: Direct numerical command (command feedrate during feed per minute or rotation)

1: 1-digit code command (feedrate set with "#1185 spd_F1" to "#1189 spd_F5")

	#1080	Dril_Z	Drilling Z fixed

Select a fixed cycle hole drilling axis.

0: Use an axis vertical to the selected plane as hole drilling axis.

1: Use the Z axis as the hole drilling axis regardless of the selected plane.

	#1081	Gmac_P	Give priority to G code parameter

Select the G code priority relationship during the macro call with G command.

0: Priority is on G code used in the system

1: Priority is on registered G code for call

#1082	Geomet	Geometric

Select the type of geometric to use.

0: Not use

1: Use only geometric I

2: Use geometric I and IB

With geometric, specific address codes are used for exclusive meanings. Thus, if A or C is used for the axis name or 2nd miscellaneous command code, the A used for the axis name may function as the geometric's angle designation. Pay special attention to axis names, etc., when using this function.

#1084	RadErr	Arc error

Set the tolerable error range when the end point deviates from the center coordinate in the circular command.

---Setting range---

0 to 1.000 (mm)

#1087	G96_G0	Constant surface speed control by rapid traverse feed command

Select how to handle the surface speed for the G00 command when using the constant surface speed control function.

0: Calculate the surface speed constantly even during G00 movement

1: Calculate the surface speed at the block end point in the G00 command

#1088	G30SL	Disable G30 soft limit

Select how to handle the soft limit during G30 (2nd reference position return).

0: Enable

1: Disable

#1091	Mpoint	Ignore middle point

Select how to handle the middle point during G28 and G30 reference position return.

0: Pass the middle point designated in the program and move to the reference position.

1: Ignore the middle point designated in the program and move straight to the reference position.

#1092	Tchg _A	Replace tools for additional axis

Select the movement of the additional axis at the tool change position return command.

0: The additional axis will not move

1: After the standard axis returns, the additional axis will also return to the tool change position

#1093	Wmvfin	Synchronization between part systems method

Select the timing of synchronization between part systems when using the multi-part system.

When the travel command is found in the synchronization command (!, M) block:

0: Synchronize before executing travel command

1: Synchronize after executing travel command

#1094	Tl_SBK	Select life count for single block (for L system only)

Select whether to count the data units to be used for single block operation when using the tool life management II function (L system).

0: Not count

1: Count

#1095	T0tfof	TF output (for L system only)

Select how to handle TF for T00 command.

0: TF will be output

1: TF wont be output

(PR)	#1096	T_Ltyp	Tool life management type

Select the tool life management type.

1: Life management I

The cutting hours or number of cuttings of the tool that is commanded in the program is accumulated to monitor the usage state.

2: Life management II

The same as tool life management I, but with the spare tool selection function.
A spare tool is selected from a group of tool commands commanded in the program.
Tool compensations (tool length and radius compensations) are carried out for the selected tool.

3: Life management III (for M system only)

The cutting hours or number of cuttings of the tool that is commanded in the program is accumulated to monitor the usage state.
The group No. is not used to manage the tool life.

(Note) When "3" is set for the L system, the tool life management I is selected.

#1097	TIdigt	Tool offset No. digits selection

Select the number of digits for an offset No. in command T.

0: Lower two digits of command T serve as an offset No.; the remaining upper digits as a tool No.

1: Lower one digit of command T serves as an offset No.; the remaining upper digits as a tool No.

2: Lower two digits of command T serve as an offset No., the remaining upper digits as a tool No.

3: Lower three digits of command T serve as an offset No.; the remaining upper digits as a tool No.

#1098	TIno.	Tool length offset number

Select the number of digits of the tool length compensation No. in the T command.

0: Lower 3 digits in T code serve as a tool length and wear offset Nos.; the remaining upper digits as a tool No.

1: Lower 3 digits in T code serve as a tool wear offset No.; the remaining upper digits as a tool No. and tool length offset No.

#1099	Treset	Cancel tool compensation amount

Select how to handle the tool compensation vector when resetting the system.

0: Clear the tool length and wear compensation vectors when resetting

1: Hold the tool length and wear compensation vectors when resetting

When the values are cleared, the compensation will not be applied. So the axis will be shifted by the compensation amount in the next compensation operation.

When the values are kept, the compensation will be applied, so the axis will shift the differential amount of the compensation amount in the next compensation operation.

#1100	Tmove	Tool compensation

Select when to perform tool length compensation and wear compensation.

0: Compensate when T command is executed.

1: Superimpose and compensate with the travel command in the block where the T command is located. If there is no travel command in the same block, compensation will be executed after the travel command is superimposed in the next travel command block.

2: Compensate the wear amount when the T command is executed. Superimpose and compensate the tool length compensation amount with the travel command in the same block. If there is no travel command in the same block, compensation will be executed after the travel command is superimposed in the next travel command block.

#1101	Tabsmv	Tool compensation method

Select the type of travel command when "#1100 Tmove" is set to "1" or "2".

0: Compensate regardless of the travel command type (absolute or incremental)

1: Compensate only at the travel command in the absolute command

#1103	T_Life	Validate life management

Select whether to use the tool life management.

0: Not use tool life management.

1: Use tool life management.

	#1104	T_Com2	Tool command method 2

Select how to handle the tool command in the program when "#1103 T_Life" is set to "1".

0: Handle the command as group No.

1: Handle the command as tool No.

(Note) In the case of the tool life management III, the program tool command will be handled as the tool No. regardless of the setting.

	#1105	T_sel2	Tool selection method 2

Select the tool selection method when "#1103 T_Life" is set to "1".

0: Select in order of registered No. from the tools used in the same group.

1: Select the tool with the longest remaining life from the tools used or unused in the same group.

	#1106	Tcount	Life management (for L system only)

Select the input method when address N is omitted in inputting the data (G10 L3 command) for tool life management function II.

0: Time specified input

1: Number of times specified input

	#1107	TIlfsc	Split life management display screen (for L system only)

Set the number of groups to be displayed on the tool life management II (L system) screen.

0: Displayed group count 1, maximum number of registered tools: 16

1: Displayed group count 2, maximum number of registered tools: 8

2: Displayed group count 4, maximum number of registered tools: 4

	#1108	TIrectM	Life management re-count M code (for L system only)

Set the M code for tool life management II (L system) re-count.

---Setting range---

0 to 99

(PR)	#1112	S_TRG	Validate status trigger method

Select the enable conditions for the user macro interrupt signal (UIT).

0: Enable when interrupt signal (UIT) turns ON

1: Enable when interrupt signal (UIT) is ON

(PR)	#1113	INT_2	Validate interrupt method type 2

Select the performance after user macro interrupt signal (UIT) input.

0: Execute interrupt program without waiting for block being executed to end

1: Execute interrupt program after completing block being executed

	#1114	mcrint	Macro argument initialization

Select whether to clear statements other than specified arguments by macro call.

Also select whether to clear local variables by power-ON and resetting.

0: Clear the non-specified arguments by macro call.

1: Hold non-specified arguments by macro call

2: Hold non-specified arguments by macro call, and clear local variables by power-ON and resetting

	#1115	thwait	Waiting for retract

Set the number of waits for retract when chamfering is OFF in thread cutting.

---Setting range---

0 to 99 (Approx. 4 ms)

Standard setting value: 4

	#1116	G30SLM	Invalidate soft limit (manual operation)

Enable this function when disabling the soft limit check function at the second to fourth reference position return.

0: Enable soft limit function

1: Disable soft limit function

(PR)	#1117	H_sens	

Not used.

	#1118	mirr_A	Select how to set up the length of tools on cutter tables (opposed tables) (for L system only)

Select one of the following two methods:
- Set the current length of tools on each facing turret.
- Set a value, assuming that the tools on each facing turret are in the same direction as that of those on the base turret.

0: Current length of the tools on each facing turret

1: Value, assuming that the tools on each facing turret are in the same direction as that of those on the base turret

	#1119	Tmiron	Select the mirror image of each facing turret with T command (for L system only)

Select whether to enable the mirror image of each facing turret with the T command.

0: Disable

1: Enable

(PR)	#1120	TofVal	Change macro variable

Select whether to change the macro variable (tool offset) numbers for shape compensation and wear compensation.

0: Not change (Conventional specification)

1: Change the shape and wear compensation variable numbers each for X, Z, and R

	#1121	edlk_c	Edit lock C

Specify whether to prohibit editing of program Nos. 9000 to 9999.

0: Editing possible

1: Editing prohibited

(Note) If "#1122 pglk_c" is set to "1" or "2", "1" will be set in "#1121 edlk_c" when the power is turned ON.

(PR)	#1122	pglk_c	Program display lock C

The display and search of program Nos. 9000 to 9999 can be prohibited.
Specify whether to prohibit display and search.

0: Display and search is possible.

1: Program details are not displayed.

2: Program details are not displayed, and operation/restart search is prohibited.

The program details will not be displayed, but the program No. and sequence No. will display in the prohibited state.

(Note) If "#1122 pglk_c" is set to "1" or "2", "1" will be set in "#1121 edlk_c" when the power is turned ON.

	#1123	origin	Origin set prohibit

Select whether to use the origin set function.

0: Use

1: Not use

	#1124	ofsfix	Fix tool compensation No.

Select how to handle the compensation No. when the input key is pressed on the tool compensation screen.

0: Increment the compensation No. by 1 (Same as general parameters)

1: # compensation No. does not change

When setting in sequence, "0" is handier.

When changing and setting repeatedly while adjusting one compensation value, "1" is handier.

(Note) When base common parameter "#1759 cfgPR09/bit1" is set to "1", the cursor does not move regardless of this parameter setting.

	#1125	real_f	Actual feedrate display

Select the feedrate display on the monitor screen.

0: Command speed

1: Actual travel feedrate

#1126	PB_G90	Playback G90

Select the method to command the playback travel amount in the playback editing.
0: Incremental value
1: Absolute value

#1127	DPRINT	DPRINT alignment

Select the alignment for printing out with the DPRINT function.
0: No alignment, output s printed with left justification
1: Align the minimum digit and output

#1128	RstVCl	Clear variables by resetting

Select how to handle the common variables when resetting.
0: Common variables won't change after resetting.
1: Common variables will be cleared #100 to #199 by resetting.

#1129	PwrVCl	Clear variables by power-ON

Select how to handle the common variables when the power is turned ON.
0: The common variables are in the same state as before turning the power OFF.
1: Common variables will be cleared #100 to #199 when the power is turned ON.

#1130	set_t	Display selected tool number

Select the tool command value display on the monitor screen.
0: Display T-modal value of program command
1: Display Tool No. sent from PLC

#1132	brightness	Brightness control

Select the brightness of display unit.
1: High brightness (in bright state)
0: Medium brightness
-1: Low brightness (in dim state)
(*) This parameter is enabled for M800VW/M80VW/M800VS/M80V Series.

#1133	ofsmem

Not used. Set to "0".

#1134	LCDneg

Not used. Set to "0".

#1135	unt_nm	Unit name

Set the unit name.
Use 4 or less characters consisting of both alphabets and numbers.
If "0" is set, the unit name won't be displayed.

---Setting range---

4 or less characters consisting of both alphabets and numbers

#1136	optype

Not used. Set to "0".

#1137	Cntsel

Not used. Set to "0".

#1138	Pnosel

Not used. Set to "0".

#1139	edtype

Not used. Set to "0".

#1140	Mn100	M code number

Set the first number of M code that corresponds to the setup Nos. from 100 to 199.

---Setting range---

0 to 99999999

	#1141	**Mn200**	**M code number**

Set the first number of M code that corresponds to the setup Nos. from 200 to 299.

---Setting range---

0 to 99999999

	#1142	**Mn300**	**M code number**

Set the first number of M code that corresponds to the setup Nos. from 300 to 399.

---Setting range---

0 to 99999999

	#1143	**Mn400**	**M code number**

Set the first number of M code that corresponds to the setup Nos. from 400 to 499.

---Setting range---

0 to 99999999

	#1144	**mdlkof**	**MDI setup lock**

Select whether to enable MDI setting in non-MDI mode.

0: Disable MDI setting

1: Enable MDI setting

	#1145	**I_abs**	**Manual ABS parameter**

Select how to handle the absolute position data during automatic handle interrupt.

0: Absolute position data will be renewed if manual ABS switch is ON. If it is OFF, data won't be renewed.

1: Follow the "intabs" state when "#1061 intabs" is enabled

	#1146	**Sclamp**	**Spindle rotation speed clamp function**

Select how to handle the spindle rotation speed clamp function with the G92/G50S command.

0: G92/G50S command is handled as a clamp command only in the G96 state (during constant surface speed control).
G92S will be handled as normal S command in G97 state (constant surface speed OFF).

1: The S command in the same block as G92/G50 is constantly handled as a clamp command

	#1147	**smin_V**	**Minimum spindle rotation speed clamp type**

Specify the type of spindle min. rotation speed clamp value.

0: Rotation speed setting

1: Output voltage coefficient setting

Set "#3023 smini" according to this type setting.

	#1149	**cireft**	**Arc deceleration speed change**

Select whether to decelerate at the arc entrance or exit.

0: Not decelerate

1: Decelerate

	#1153	**FixbDc**	**Hole bottom deceleration check**

Select whether to perform a deceleration check or in-position check at the hole bottom in a hole drilling cycle. This parameter is enabled only for a hole drilling cycle in which no dwell command can be issued at the hole bottom.

0: Perform no deceleration check and in-position check

1: Perform deceleration check

2: Perform in-position check

(PR)	**#1154**	**pdoor**	

Not used. Set to "0".

	#1155	**DOOR_m**	

Not used. Set to "100".

	#1156	**DOOR_s**	

Not used. Set to "100".

	#1157	**F0atrn**	

Not used. Set to "0".

	#1158	**F0atno**	

Not used. Set to "0".

(PR)	**#1163**	**No rio**	**RIO connection detection invalid**

Select whether to enable or disable RIO connection detection.

0: Enable

1: Disable

If your I/O consists of only cards such as CC-LINK, setting this parameter to "1" will avoid the RIO communication cutoff alarm.

(PR)	**#1164**	**ATS**	**Automatic tuning function**

Select whether to enable or disable the automatic tuning function.

0: Disable

1: Enable

(Note 1) Enable this parameter when using MS Configurator.

(Note 2) Disable this parameter during normal operation.

(Note 3) Search & start function is disabled for safety when this parameter is set to "1".

	#1166	**fixpro**	**Fixed cycle editing**

Select the type of programs handled on the Edit/Program list/Data in/out screen from the following: general programs, fixed cycles, or machine tool builder macro programs.

♦When Machine tool builder macro password management method type 1 is selected ("#1761 cfgPR11/bit6" = 0)

0: General programs can be edited, etc.

1: Fixed cycles can be edited, etc.

Password No.: The machine tool builder macro programs can be edited, etc.

♦When Machine tool builder macro password management method type 2 is selected ("#1761 cfgPR11/bit6" = 1)

0: General programs can be edited, etc.

1: Fixed cycles can be edited, etc.

2: Machine tool builder macro programs can be edited, etc.

(*) "2" can be set only when a password is authenticated in "#11796 mmacpro".

---Setting range---

0 to 99999999

	#1167	**e2rom**	

Not used. Set to "0".

	#1168	**test**	**Simulation test**

Select the test mode for the control unit.

In the test mode, test is performed with a hypothetical reference position return complete even though the real reference position return hasn't been completed. This is limited to test operation of the control unit itself, and must not be used when the machine is connected.

0: Normal operation mode

1: Test mode

	#1217	**aux01**	

Not used. Set to "0".

#1218 aux02

bit3: Parameter input/output format

Select the parameter input/output format.

0: Type I

Displayed on one line per parameter.

(Example)
N1001T1P1
N1001T2P1
N1001T3P0

1: Type II

Data with the same parameter number is displayed on the same line.

(Example)
N1001 T1 P1 T2 P1 T3 P0

bit4: External workpiece coordinate offset tool number selection

Select the R register that contains the tool number used for automatic calculation when measuring the coordinate offset of an external workpiece.

0: Follow the setting of "#1130 set_t".

1: Use the tool number indicated by user PLC.

bit5: Parameter I/O II spindle specification address

Select the spindle specification address of parameter I/O type II.

0: C

1: T

This parameter is also applied to the spindle specification address for input and verification.

(Note) This parameter is valid only for parameter I/O type II (when "#1218 aux02/bit3" is set to "1").

#1219 aux03

bit1: Stop high-speed PC monitoring function

Set "1" to disable the function that triggers the emergency stop when the PC high-speed processing time is extended.

Disable the monitoring function only as a temporary measure.

bit5: Dog-type intermediate point

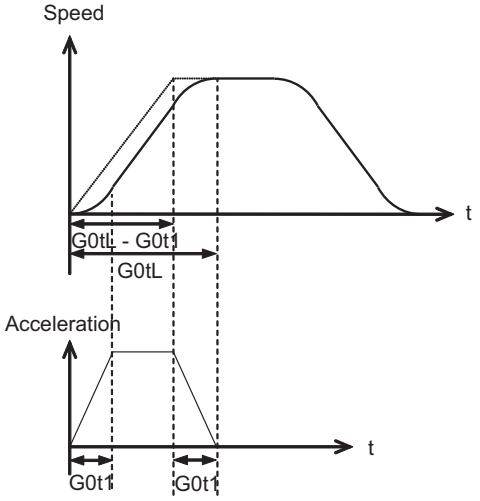
Select whether to move to the intermediate point during automatic dog-type reference position return.

0: Not move.

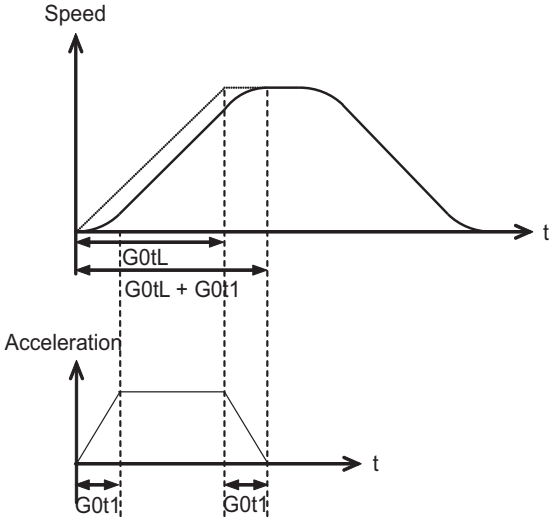
1: Move.

bit7: Time constant setting changeover for soft acceleration/deceleration

0: Accelerating time is G0tL(G1tL).
When the G00 pre-interpolation acceleration/deceleration and the soft acceleration/deceleration are used together, the inclination of soft acceleration/deceleration will be steeper by setting a time to the soft acceleration/deceleration 2nd step time constant (#2005 G0t1). Consequently, the acceleration for G28/G30 will be larger than that for G00.
(1) Total accelerating time is "G0tL".
(2) The time for curve part is "G0t1".
(3) The time for linear part is obtained by "G0tL-(2 x G0t1)".



1: Accelerating time is obtained by G0tL+G0t1 (G1tL+G1t1).
When the G00 pre-interpolation acceleration/deceleration and the soft acceleration/deceleration are used together, you can attain the G28/G30 acceleration that is equal to G00, by setting the same value to G00 soft acceleration/deceleration filter (#1569 SfiltG0) as well as to the soft acceleration/deceleration 2nd step time constant (#2005 G0t1).
(1) Total accelerating time is obtained by "G0tL+G0t1".
(2) The time for curve part is "G0t1".
(3) The time for linear part is obtained by "G0tL-G0t1".



#1220 aux04 (for L system only)

bit0: Tool life check timing selection

Select the criterion to judge the end of tool life when the cumulative number of cuttings is incremented in tool life management II.

0: Determine the tool life end when the incremented cumulative number of cuttings has exceeded the estimated number of cuttings. (Default)
(cumulative number of cuttings > estimated number of cuttings)

1: Determine the tool life end when the incremented cumulative number of cuttings has reached the estimated number of cuttings.
(cumulative number of cuttings >= estimated number of cuttings)

#1221 aux05

bit0: Workpiece coordinate/ Absolute coordinate display switching (for L system only)

Select the coordinate to display when workpiece coordinate position counter is selected for the Monitor screen counter display.

0: Workpiece coordinate

1: Absolute coordinate

#1222 aux06

bit3: Enable setup parameter lock

Select whether to enable the setup parameter lock.

0: Disable

1: Enable

bit4: Minimum cut-in amount selection

Select the minimum cut-in amount command value for the compound thread cutting cycle (G76 command).

0: The minimum cut-in amount (Q) will be "0".

1: The minimum cut-in amount (Q) will be set in the last command value (it is retained even after the NC power has been turned off).

bit5: Fixed cycle for compound lathe command format check selection

Select the operation when the 1st block of the fixed cycle for compound lathe is omitted while the conventional format is selected ("#1265 ext01/bit0" is set to "0").

0: Program error (P33) will occur.

1: Parameter setting value will be used.

bit7: Reference position return deceleration check method

Select the deceleration check method to be used during automatic reference position return.

0: In-position check

1: Commanded deceleration check

#1223 aux07

bit1: Deceleration check method 2

Select the deceleration check method in G1+G9.

0: Command deceleration check in G1+G9

1: In-position check in G1+G9

The deceleration check is not performed for the commands except G1+G9.

When "#1306 InpsTyp deceleration check specification type" is set to "1" (Deceleration check specification type 2), this parameter will be invalid.

bit2: Synchronous tap R-point in-position check

Select whether to enable the synchronous tap I-point -> R-point in-position check.

0: Disable

1: Enable

(Note) This parameter is valid only when "1" (Enable in-position check) is set for "#1223 aux07/bit3 Synchronous tap in-position check improvement".

bit3: Synchronous tap in-position check improvement

Select whether to enable the synchronous tap in-position check improvement.

0: Disable

1: Enable

Related parameters:

#1223/bit2 Synchronous tap R-point in-position check

#1223/bit4 Synchronous tap hole bottom in-position check

#1223/bit5 Synchronous tap R-point in-position check 2

bit4: Synchronous tap hole bottom in-position check

Select whether to enable the synchronous tap hole bottom in-position check.

0: Disable

1: Enable

(Note) This parameter is valid only when "1" (Enable in-position check) is set for "#1223 aux07/bit3 Synchronous tap in-position check improvement".

bit5: Synchronous tap R-point in-position check 2

Select whether to enable the synchronous tap R-point in-position check.

0: Disable

1: Enable

(Note) This parameter is valid only when "1" (Enable in-position check) is set for "#1223 aux07/bit3 Synchronous tap in-position check improvement".

bit6: Cancel synchronous tap (, S) return

0: Retain the spindle speed (,S) in synchronous tap return

1: Cancel the spindle speed (,S) in synchronous tap return with G80

bit7: Synchronous tap method

Specify a synchronous tap method.

0: Synchronous tap with multi-step acceleration deceleration

1: Conventional type synchronous tap

#1224 aux08

bit0: Sampling data output

Select whether to enable the sampling data output.

0: Disable

1: Enable

#1225	aux09

bit7: Enable/disable spindle rotation speed clamp

Select whether to enable the spindle rotation speed clamp by the G92 S or Q command for the spindle command rotation speed (R7000) set with the user ladder.

0: Enable

1: Disable

#1226 aux10

bit0: Tool compensation data for external workpiece coordinate offset measurement

Select the tool compensation data to be used for external workpiece coordinate offset measurement.

0: Tool length data and tool nose wear data

1: Tool length data

bit1: Optional block skip type

Select whether to enable the optional block skip in the middle of a block.

0: Enable only at the beginning of a block.

1: Enable in the middle of a block, as well as at the beginning of the block.

Note that a slash "/" in an equation between [ ] is handled as division operator.

(Note) This parameter is enabled when "#1274 ext10/bit4" is "0".

bit2: Single block stop timing

Select the timing at which the "Single block" signal is activated.

0: When the signal goes ON while automatic operation is starting, the block will stop after finished.

1: When the signal is ON at the end of the block, the block will stop.

bit3: C-axis reference position return type

Select the C-axis reference position return type.

0: Basic position return is performed by the G28 reference position return command or by activating the manual reference position return. The basic point dog is used.

1: When the first C-axis command is issued after the C-axis mode is entered in automatic mode, reference position return is performed before the execution of the block. The reference position return is also performed by the G28 reference position return command or by activating the manual reference position return. The Z phase of the encoder is used.

bit4: S command during constant surface speed

Select whether to output a strobe signal when the S command is issued in constant surface speed mode.

0: Not output any strobe signal in constant surface speed mode.

1: Output strobe signals in constant surface speed mode.

bit5: Arbitrary allocation of dog signal

Select whether to enable the arbitrary allocation parameter for "Reference position return near-point detection" signal and "Stroke end" signal.

0: Disable (Fixed device is used.)

1: Enable (Device is specified by the parameter.)

bit6: Measurement system on screens

This parameter specifies the measurement system on screens.

0: As specified in "#1041 I_inch"

1: The system mode of the G20/G21 only when "#1041 I_inch" = 0 (Metric)

This parameter setting affects the measurement system mode shown below:

- Coordinate counter (readings);
- Feedrate (readings);
- Workpiece offset amount, tool offset amount (settings, readings);
- Manual handle feed, incremental feed (readings);
- User parameter setting (settings, readings)

This parameter does not affect the machine parameter metric systems.

When "#1041 I_inch" is set to "0 (Metric)" and this parameter is set to "1", the machine can be controlled in the Inch system while maintaining the machine parameters set in Metric system.

(Note 1) When this parameter is set to "1", the part systems in multiple-part system control obey the mode specified by G20/G21.

(Note 2) This parameter does not affect the system of PLC-axis controls.

bit7: Shorten JOG stop time

Specify whether to shorten the JOG stop time.

0: Do not shorten the JOG stop time. (Same as before)

1: Shorten the JOG stop time.

#1227 aux11

bit0: Select PLC signal or spindle feedrate attained

Set up this option when disabling the cutting start interlock by spindle feedrate attained.

0: Cutting start interlock by PLC signal

1: Cutting start interlock by spindle feedrate attained

bit1: Select H or D code

Set up this option to validate the data that is set up on the tool life management screen when issuing the H99 or D99 command.

0: The H and D codes validate the data that is set up on the management setup screen.

1: Validates the data that is set up on the management setup screen when issuing the H99 or D99 command.

bit2: Measures against tool setter chattering

Select a condition where a relieving operation completes after measurement with tools.

0: Sensor signals have stopped for 500 (ms) or longer.

1: 100 (μm) or longer has passed after sensor signals stopped.

bit4: Word command check

Select whether to output an error when no numeric value follows a program address during execution of a machining program.

0: Not check

1: Check

bit5: Spindle rotation speed clamp

Specify whether to clamp the rotation speed in constant surface speed mode when the spindle rotation clamp command is issued.

0: Clamps the rotation regardless of the constant surface speed mode.

1: Clamps the rotation only in constant surface speed mode.

bit7: Switch the range of tool life data to be input

Set up the range of tool life data to be input or compared.

0: Inputs or compares all of the data output.

1: Inputs or compares part of the data output

(1) Tool life management I data to be input or compared
Tool number (D), lifetime (E), life count (F), and auxiliary data (B).

(2) Tool life management II data to be input or compared
Group number (G), method (M), life (E/F), tool number (D), and compensation number (H)

#1228 aux12

bit0:

When not using, set to "0".

bit1: Switch "offset and parameter" screen

Select to switch the "offset and parameter" screen to the parameter screen.

0: Display the "offset and parameter" screen.

1: Display the "parameter" screen.

bit2: Switch data protection in data transmission mode

Select the range of data protection in data transmission mode.

0: Enable the protection for both send and receive data.

1: Enable the protection for receive data only.

bit3: Nose R specification

Select whether to specify the nose R compensation by shape or wear number.

0: Specifies the nose R compensation by shape number.

1: Specifies the nose R compensation by wear number.

bit4: Select operation error or stop code

Select operation error or stop code to provide for both block start and cutting start interlocks.

0: Operation error

1: Stop code

bit5: Select constant surface speed coordinates (for L system only)

Select the constant surface speed coordinate.

0: Workpiece coordinate

1: Absolute value coordinate

bit6: Switch relative values displayed

Select whether to preset the relative coordinates with workpiece coordinate preset (G92.1) or counter preset (G92).

0: Preset the relative coordinates.

1: Not preset the relative coordinates.

bit7: Protection with manual value command

Select whether to protect a manual value command.

0: Not protect. (Conventional specification)

1: Protect.

#1229 set01

bit0: Subprogram interrupt

Select the type of the user macro interrupt.

0: Macro type user macro interrupt

1: Sub-program type user macro interrupt

bit1: Accurate thread cutting E

Select what the address E specifies in inch screw cutting.

0: Number of threads per inch

1: Precision lead

bit2: Radius compensation type B (for M system only)

Select the method of the arithmetic processing for the intersection point when the start-up or cancel command is operated during radius compensation.

0: The processing does not handle the start-up or cancel command block: handle the offset vector in the direction vertical to that of the command instead.

1: The processing is executed for the intersection point between the command block and the next block.

bit2: Nose R compensation type B (for L system only)

Select the method of the arithmetic processing for the intersection point when the start-up or cancel commands are operated during nose R or radius compensation.

0: The processing does not handle the start-up or cancel command block: handle the offset vector in the direction vertical to that of the command instead.

1: The processing is executed for the intersection point between the command block and the next block.

bit3: Initial constant surface speed

Select the initial state after the power-ON.

0: Constant surface speed control cancel mode

1: Constant surface speed control mode

bit4: Synchronous tap

Select the operation when ",R" is omitted in G74/G84 tapping cycle.

0: Asynchronous tap

1: Synchronous tap

bit5: Start point alarm

Select the operation when the operation start point cannot be found while executing the next block of G115, G116 or G117.

0: (G115/G116)Starts after the block has been moved.
(G117)Enables an auxiliary function after the block has been moved.

1: (G115)Waits until reaching start point at the movement after next block when the operation start point is not found.
(G116/G117)Outputs an program error (P33) when the operation start point is not found.

bit6: Grid display selection

Select the grid display type on the servo monitor screen during the dog type reference position return.

0: Distance between dog OFF and basic point (including a grid mask amount)

1: A value given by reducing a grid mask amount from the distance between dog OFF and basic point

bit7: Command switch during fixed cycle with label O

Select the condition to handle the address E or P given during fixed cycle mode as a command of fixed cycle.

0: When a G-code from group 0, 1, 4, 8 or 11 is not given

1: When a G-code from group 0, 1, 4, 8, 11 or 12 is not given

* This parameter is enabled when "#11009 M2 label O" (Program number label for M2-format) is "1" (Label O).

#1230	set02

bit2: Proximity switch spindle orientation: Z phase re-detection request type

Select when to request Z phase re-detection for proximity switch type spindle orientation.

0: After confirming the spindle has reached the Z phase detection speed.

1: Right after Servo ON of the spindle.

bit4: Tolerance control mode selection

Select the tolerance control mode. When you give higher priority to the tolerable acceleration rate in the speed control, set "0". When giving priority to the tolerance, set "1".

0: Give priority to the speed for the tolerable acceleration rate

1: Give priority to the speed for the tolerance

bit7: Macro interface input/output for each part system

Select the specification of the macro interface input/output.

0: Shared by all part systems.

1: Used independently by the part systems.

#1231 set03

bit0: Graphic check compatibility parameter

Select whether to return the data to the pre-starting data after having checked a machining program that re-writes the common variables, workpiece offsets and tool offsets.

0: Return the data.

1: Not return the data.

bit1: Switch graphic coordinates

Select whether to use machine coordinate value or tool position coordinate value (position being machined, obtained by subtracting the tool compensation amount from machine coordinate values) for drawing with trace display.

0: Machine coordinates zero point (same as conventional method)

1: Tool position coordinate value

bit2: Switch graphic check trace

Select the coordinates to draw at program check: both machine coordinate value (tool center path) and tool position coordinate value (program path) simultaneously, or only the coordinates selected with "#1231 set03/bit1" (Switch graphic trace coordinates).

0: Both machine coordinates and tool position coordinates (conventional method)

1: Only coordinates designated with switch graphic coordinates

bit4: Switch zero point mark display position

Select the position for displaying the zero point mark in the graphic display.

0: Machine coordinates zero point (same as conventional method)

1: Workpiece coordinate zero point

bit5: Switch graphic check counter display

Select the type of counter displayed on the Graphic Check screen with the combination of "#1231 set03/bit1". If the drawing coordinate system is other than "all workpiece coordinates", the counter displayed is workpiece coordinate position counter or tool position (workpiece coordinate) regardless of this setting.

0: (When "#1231 set03/bit1" is set to "0") Machine position counter
(When "#1231 set03/bit1" is set to "1") Tool position (machine coordinate) counter

1: (When "#1231 set03/bit1" is set to "0") Workpiece coordinate counter
(When "#1231 set03/bit1" is set to "1") Tool position (workpiece coordinate) counter

bit6: Initialization of drawing in graphic check

Select whether to initialize the workpiece drawing automatically when you change any data in the 3D check workpiece setup screen.

0: Initialize the workpiece drawing (conventional specifications)

1: Not initialize the workpiece drawing

Note that if you change the workpiece shape or dimensions, the workpiece drawing is automatically reset, irrespective of this parameter.

bit7: Disable switching of graphic check method

Select whether to enable or disable switching of the 3D check method.

0: Enable

1: Disable

If you choose Disable, the last selected check method remains selected.

#1232 set04

bit0: Exclude acceleration/deceleration in load monitor

Select whether or not to exclude acceleration/deceleration when detecting the load in load monitoring.

0: Acceleration/Deceleration is included

1: Acceleration/Deceleration is excluded

(Note) When "Exclude acceleration/deceleration in load monitor" ("#1232 set04/bit0") is enabled, "Spindle function 8" ("#13228 SP228/bit2") needs to be set to "1" (load display, high-cycle motor output effective value).

Not used. Set to "0".

bit4: Load monitor: Enabled part system selection

Select whether to use the load monitor function in two part systems or in a single part system.

This parameter is enabled when "#1491 Teaching-SysAssign" (Load monitor: Teaching data allocation method) is "0".

0: Use load monitor in the 1st and 2nd part systems.
(Teaching data are equally allocated to the 1st and 2nd part systems)

1: Use load monitor in the 1st part system only.
(All the teaching data are allocated to the 1st part system)

(Note) Load monitor is disabled for the part system to which no teaching data is assigned.

bit5: Actual load selection

Load fluctuation due to speed change is excluded from the actual load.

0: Disable

1: Enable

(Note) When "Actual load selection" ("#1232 set04/bit5") is enabled, "Spindle function 8" ("#13228 SP228/bit2") needs to be set to "1" (load display, high-cycle motor output effective value).

bit7: Spindle unit disturbance torque display selection

Select display contents on "estimated disturbance torque" and "MAX disturbance torque" of the drive unit (spindle unit).

0: Estimated disturbance torque

1: Cutting torque

#1233 set05

When not using, set to "0".

#1234 set06

bit3: Interlock when tap retract enabled

Select whether to enable automatic/manual interlock for the part system with "Tap retract enable" signal ON.

0: Interlock all the axes

1: Disable the interlock

bit4: Tap retract possible state cancel signal operation selection

Specify the behavior after "Tap retract possible" signal (TRVE) is turned OFF with "Tap retract possible state cancel" signal (TRVEC).

0: After reset, "Tap retract possible" signal (TRVE) is turned ON.

1: "Tap retract possible" signal (TRVE) remains OFF state after reset.

#1235 set07

bit0: Helical interpolation/Helical involute interpolation speed 2

0: Designated with the resultant velocity of all programmed axes

1: Designated with the velocity component in the plane of the circle/involute

bit2: Fixed type chopping compensation valid only at start

When the fixed type compensation value is selected, the method can be changed to the compensation value sequential update type after the first four cycles.

0: Disable the method changeover

1: Enable the method changeover

bit4: Condition to select multi-step acceleration/deceleration synch tap gear step

Select the parameters that determine the gear step for multi-step acceleration/deceleration synchronous tapping ("#1223 aux07/bit7" = 0).

0: #3005 to #3008 (smax1 to 4) when "#1245 set17/bit2" = 0
#43046 to #43049 (smax_tap1 to 4) when "#1245 set17/bit2" = 1

1: #3013 to #3016 (stap1 to 4), #3037 to #3040 (taps21 to 24) and #43046 to #43049 (smax_tap1 to 4)

bit5: Tool wear data clear on tool length measurement (For L system only)

Select whether to clear tool wear data to zero when the tool length is set using [Measure] menu on the [T-ofs] screen.

0: Not clear tool wear data to zero

1: Clear tool wear data to zero

(Note) This parameter is invalid for the tool compensation type I or II.

#1236 set08

bit0: Manual rotary axis feedrate unit

Select the unit of manual rotary axis feedrate.

0: Fixed to [°/min]

1: Same speed as before (When inch command, the speed is the command speed divided by 25.4.)

bit1: Spindle speed detection

Select the pulse input source of actual spindle rotation speed (R6506/R6507) when the spindle encoder serial connection is selected ("#3025 enc-on" is set to "2").

0: Serial input

1: Encoder input connector

bit2: Current limit droop cancel invalid

Select whether to cancel the position droop when the current limit changeover signal is canceled.

0: Cancel the droop.

1: Not cancel the droop.

bit3: Rotary axis command speed scale

Select to multiply the rotary axis command speed by 10 times.

0: Invalid

1: During initial inching, the rotary axis command speed is multiplied by 10.
In other words, if "F100" is commanded, the speed will be the same as when 1000°/min is commanded.
The rotary axis speed display unit will be 10°/min.

bit4: Ignore minimum speed (Handle mode)

This parameter defines whether the control will ignore the minimum speed at which the tool is pressed into the tool setter sensor.

0: No, the control checks the minimum speed when moving the axis in handle mode.

1: Yes, the control ignores the minimum speed when moving the axis in handle mode.

(PR) #1237 set09

bit7: Reading accuracy of system variables #3001 and #3002

Switch the accuracy of reading the system variables #3001 (Power ON time) and #3002 (Cycle operation time).

0: Standard

1: High accuracy

(PR) #1238 set10

bit0: Switch G36 function

Select the function, the automatic tool length measurement or arc thread cutting (CCW), to be applied to G36 when the G code system 6 or 7 is selected.

0: Automatic tool length measurement

1: Arc thread cutting (CCW)

bit3: Ignoring input from RIO

Select whether to ignore the input from RIO.

0: Output the input from RIO to X or ZR device.

1: Ignore the input from RIO, and not output it to X or ZR device.

(*) Normally set this parameter to "0".

(*) The devices corresponding to the system-occupied stations of RIO3 or operation panel connection channel are used exclusively by the NC system. These devices are excluded from the target.

bit6: Switch absolute position detection alarm

Select the output destination of the absolute position detection alarm.

0: NC alarm 4 (AL4)

1: NC alarm 5 (AL5)

(Note) The absolute position detection alarm is listed in the alarm history regardless of this parameter setting.

bit7: Switch operation alarm

Select whether to enable the NC alarm 5 (AL5) signal output.

0: Disable NC alarm 5 (AL5)

All operation alarms will be output to NC alarm 4 (AL4).

1: Enable NC alarm 5 (AL5)

The following operation alarms will be output to NC alarm 5 (AL5), not to NC alarm 4 (AL4).

- ♦External interlock axis exists (M01 0004)
- ♦Cutting override zero (M01 0102)
- ♦External feedrate zero (M01 0103)
- ♦Block start interlock (M01 0109)
- ♦Cutting block start interlock (M01 0110)
- ♦Interference check disabled (M01 0200)
- ♦Cutting interlock for spindle-spindle polygon (G51.2) (M01 1033)

The above alarms are not recorded in the alarm history regardless of the setting value of this parameter.

(PR) #1239 set11

bit0: Coil switching method

Select the coil switching method.

0: Via PLC. (Y189F)

1: NC internal processing. (Y189F is invalid.)

bit1: Handle I/F selection

Select the handle connection destination.

0: Use the handle connected to the encoder communication connector.

1: Use the remote I/O unit as a priority.

(Note) When the operation panel I/O unit is mounted, the handle connected to the unit will be used regardless of this parameter setting.

bit3: Polygon machining mode at reset

Select whether to cancel the polygon machining mode when reset is applied.

0: Not cancel.

1: Cancel.

bit4: Invalidate G51.1 phase command

Select whether to enable the phase control with the spindle-spindle polygon function.

0: Always enable. (When R is not commanded, it will be handled as R0.)

1: Enable only at the R command.

bit5: Door interlock spindle speed clamp valid

Select whether to enable the spindle clamp speed changeover by the PLC signal.

0: Disabled

1: Enabled

bit6: External deceleration axis compliance valid

Designate the method for setting the external deceleration speed.

0: Set speed common for all axes ("#1216 extdcc" (external deceleration speed))

1: Set speed for each axis ("#2086 exdcax" (external deceleration speed))

(PR) #1240 set12

bit0: Handle input pulse

Select the handle input pulse.

0: MITSUBISHI CNC standard handle pulse (25 pulse/rev)

1: Handle 400 pulse (100 pulse/rev)

bit2:Zero point shift amount magnification

If "1" is set, the following magnification will be applied on the #2027 G28sft reference point shift amount, #2057 zero point proximity + and #2058 zero point proximity - settings.

For 0.1μm: 10-fold

For 0.01μm: 100-fold

bit4: Optical communication automatic channel detection invalid

Select whether to enable the optical communication automatic channel detection.

0: Enable

1: Disable

#1241 set13

bit0: Prevention of program error due to incorrect G code combination

When a G code from some modal groups is commanded in the same block as an unmodal G code, a program error due to incorrect G code combination occurs. This parameter is used to avoid this program error.

0: The program error (P45) will occur.

1: The program error is avoided, however, a G code from an uncombinable modal group is ignored.

bit1: Interference check at starting up radius compensation (for M system only)

Interference check at starting up nose R compensation (for L system only)

0: In a start-up block, an interference check is not carried out.

1: An error occurs even at a start-up block if an interference occurs.
The error occurs even when the interference avoidance is set to ON (#8102="1"). However, an interference check is not carried out when it is set to OFF (#8103="1").

bit4: Plane axis check invalid in fixed cycle for turning machining

Select whether to raise a program error when a fixed cycle for turning machining is commanded in either of the following conditions:
* The commanded axis does not coincide with the selected plane
* One or both of the selected plane axes have no movement

0: Raise a program error

1: Not raise a program error

bit5: Macro argument L/P valid

Select whether to enable L and P to be used as argument of G(MSTB) macro command or ASCII code macro command.

0: L and P commands cannot be used.

1: L and P commands can be used as argument.

bit7: Spindle rotation speed during synchronous tap return

Specify how to operate in a sync tap command block if the tap return spindle rotation speed (,S) is lower than the tap spindle rotation speed (S).

0: Operate at the tap return spindle rotation speed (,S)

1: Operate at the tap spindle rotation speed (S)

#1242 set14

bit0: Ignoring timing sync in multi-system simultaneous thread cut cycle I (G76.1)

Select whether to execute timing synchronization during multi-part system simultaneous thread cut cycle I (G76.1).

0: Execute timing synchronization at the start and end of thread cutting.

1: Ignore the timing synchronization given during the cycle.

bit1: G92.1 single command error check ON

Select whether to enable the error check when G92.1 (G50.3) is given alone in a block.

0: Disable the error check

1: Enable the error check

bit2: Spindle rotation speed fluctuation alarm selection

Select whether to output an operation error upon detection of spindle speed fluctuation (G162).

0: Output an operation error

1: Not output an operation error

bit6: G113 command type when multiple spindle synchronization set valid

Specify the G113 command type of when multiple spindle synchronization set is valid.

0: Cancels all the spindle synchronization by issuing G113H0 or G113D0.

1: Cancels all the spindle synchronization by issuing G113.

#1243 set15

Not used. Set to "0".

#1244 set16

bit0: No superimposition of timing synchronization block onto subsequent block

0: Superimpose a block, where timing synchronization command is given as a single command, onto the subsequent block, and treat the blocks as one block

1: Treat a block, where timing synchronization command is given as a single command, as one block.

bit1: Enable automatic re-calculation after timing synchronization

0: Look-ahead a block next to the timing synchronization command block

1: Automatically re-calculate a block next to the timing synchronization command block after the synchronization has been completed.

bit2: Balance cut in all the blocks

Select in which block(s) to execute synchronization between part systems when a balance cut command is given.

0: Execute synchronization in cutting feed command block(s)

1: Execute synchronization in all the blocks

bit3: Enable tool offset at start/stop of arbitrary axis superimposition

Select whether or not to apply tool offset to a travel at workpiece coordinate system switch or a travel toward the superimposition start/end position when the arbitrary axis superimposition control start/stop command is issued.

0: Not apply

1: Apply

bit4: Speed clamp method under superimposition control

0: Apply a fixed superimposition clamp speed to the superimposition-related axes. This clamp speed takes effect irrespective of the feed status (feed direction and mode) of the superimposition-related axes. When this method is chosen, the clamp speed is unchanged during block execution.

1: Apply the optimal clamp speed according to the real-time monitored feed status of the superimposition-related axes (feed direction and mode). When this method is chosen, the clamp speed is changed even during block execution. This method helps reduce the cycle time.

bit5: Read of position info with superimposing travel distance taken into account

Select whether to take into account the superimposing travel distance (travel distance of the reference axis) when reading position info (machine coordinates/skip coordinates) using a variable under control axis superimposition or arbitrary axis superimposition control.

0: Not take the distance into account

1: Take the distance into account

bit6: Axis address check ON

Select whether to output a program error (P32) when any address other than those specified by "#1013 axname" and "#1014 incax" is given as an axis address.

If the arbitrary axis exchange function is ON, select whether to output a program error (P32) when any address other than those specified by "#12071-12078 adr_abs[1]-[8]" and "#12079-12086 adr_inc[1]-[8]" is given as an axis address.

0: Not output a program error (P32). (Ignore the axis address.)

1: Output a program error (P32)

#1245 set17

bit2: Speed to select multi-step acceleration/deceleration synch tap gear step

Specify the rotation speeds that determine the gear step for multi-step acceleration/deceleration synchronous tapping ("#1223 aux07/bit7" = 0).

0: #3005 to #3008 (smax1 to 4)

1: #43046 to #43049 (smax_tap1 to 4)

(Note) This parameter is enabled when "#1235 set07/bit4" = 0.

bit7: Synchronous tap spindle rotation direction type

Select whether the spindle's rotation direction is determined by the synchronous tapping axis' travel direction.

0: The spindle's rotation direction is determined by the synchronous tapping axis' travel direction.
When the travel direction is negative, the spindle rotates forward.
When the travel direction is positive, the spindle rotates in reverse.

1: The spindle always rotates forward regardless of the synchronous tapping axis' travel direction.

(Note) When a reverse tap is commanded, the spindle rotates in an opposite direction to that mentioned above.

#1246 set18

bit0: Thread cut override ON

Select whether to enable spindle override during thread cutting.

0: Disabled

1: Enabled

bit1: Thread cut override feed hold

Select whether to perform feed hold when spindle override is changed during thread cutting.

0: Not perform feed hold

1: Perform feed hold

bit2: Switch coordinate systems for radius compensation

Select the coordinate system for radius compensation.

0: Type 1 (conventional specification)

Perform radius compensation with reference to a position on the workpiece coordinate system.

1: Type 2

Perform radius compensation with reference to a position on the program coordinate system.

bit3: Change repetition final return position at M2L

Select the final return position after repetition, when in G99 modal and in M2 format with the label L.

0: Initial point

1: R point

bit4: T-lifeover signal output

Select the timing at which the "Tool life over" signal is output when using the M system tool life management I/III.

0: Turn the signal ON when a selected tool has reached the lifetime.

1: Turn the signal ON when any of tools (in the case of the tool life management III, all the registered tools) in a selected group has reached the lifetime.

bit5: Tool status update type

Select whether to update tool status automatically when estimated tool life data/cumulative usage data is changed on the screen in the M system tool life management I/II/III.

0: Do not update

1: Update.

(Note) When "1" is selected, tool status will be updated as follows.

- When usage data is "0", tool status will be "0".
- When usage data is smaller than lifetime data, tool status will be "1".
- When usage data is the same as or larger than lifetime data, tool status will be "2".

bit6: Switch F 1-digit feedrate change method

Set whether to enable feedrate change with handle until power OFF, or change the parameters #1185 to #1189 with change of speed.

0: Enabled until power OFF

1: Change "#1185 spd_F1" to "#1189 spd_F5"

bit7: PLC axis random device assignment

Select whether to enable PLC axis random device assignment for "Reference position return near-point detection" signal and "Stroke end" signal.

0: Disable (Fixed device is used.)

1: Enable (Device is specified by the parameter.)

#1247 set19

bit0: Movement by tool length compensation command (for M system only)

Select whether or not to move the axis by the compensation amount when tool length compensation/cancel is independently commanded.

0: Move

1: Not move

bit1: Thread cutting operation when manual speed command enabled

Select the thread cutting operation in manual speed command.

0: The axis travels at the handle feed rate, jog feed rate, or manual rapid traverse rate

1: The axis travels following the program command

bit2: Inclined surface machining mode hold

Select whether to hold or cancel the inclined surface machining mode at an emergency stop or power OFF.

0: Cancel the inclined surface machining mode.

1: Hold the inclined surface machining mode.

#1248 set20

Not used. Set to "0".

#1249 set21

bit2: Encryption key setting

Select whether to enable the encryption key for System lock to be entered.

0: Disable the encryption key entry

1: Enable the encryption key entry

bit5: Warning on 24Hr continuous ON display

Select whether to show or hide the alarm (V53 0001).

0: Not display

1: Display

#1250 set22

bit0: Enable cycle operation after turning OFF manual arbitrary reverse run mode

Select whether to enable automatic cycle operation after turning OFF the manual arbitrary reverse run mode.

0: Disable

1: Enable

bit3: Switch acceleration rate for rapid traverse

Select how to determine the acceleration rate for rapid traverse (G0) in high-accuracy control.

This parameter is enabled during tool center point control, tool cutting point control, workpiece installation error compensation or inclined surface machining command.

0: The acceleration/deceleration determined by "#1206 G1bF Maximum speed" and "#1207 G1btL Time constant" is applied. The acceleration/deceleration is common to all axes.

1: The acceleration/deceleration determined by "#2001 Rapid traverse rate" and "#2004 G0tL G0 time constant (linear)" is applied. The acceleration/deceleration is specific to each axis.

bit7: Movement at command of workpiece position offset for rotary axis

Select whether to move the machine by the workpiece position offset when the workpiece position offset for rotary axis is started or cancelled.

0: Move

1: Not move

#1251 set23

bit0: Load inertia ratio display

Select whether to show the load inertia ratio of servo and spindle units on the drive monitor screen.

0: Display

1: Not display (Show zero)

bit1: Spindle temperature display

Select whether or not to display the spindle unit temperature on the drive monitor screen.

0: Display according to "#13225 SP225/bit2"

1: Not display (Show zero)

(Note) Regardless of the setting of this parameter, the temperature of the spindle for which "1" is set in "#43105 sp_temp_hide" is hidden (blank).

bit2: Warning of "WCS offset not reflected"

This parameter specifies whether to enable the warning that informs that any of the following items being selected has not been reflected in the workpiece position counter or in the program position counter:

- Workpiece coordinate system offset
- Extended workpiece coordinate system offset
- External workpiece coordinate system offset
- Workpiece coordinate system shift
- Workpiece base point offset

0: Disable

1: Enable

bit4: Speed indication when selection of axis for feedrate command is valid

Select which speed is to be displayed on the screen when the axis (axes) for feedrate command is (are) being selected with G130.

0: Display the resultant speed of the axis (axes) designated with G130

1: Display the resultant speed of all the axes

bit5: Warning "Continuous write of parameter" invalid

Select whether to indicate the warning when write of parameter is being continuously executed through a "write window" of the PLC window function.

0: Indicate the warning

1: Not indicate the warning

bit6: Retention of directory path invalid

Select whether to enable/disable the function of retaining the previous directory path.

0: Enable

1: Disable

(Note) The function supports the following screens: Operation search, Collation and stop, T-list search and Check search.

bit7: 3D machine interference check: pinch gesture

Switch the pinch-to-zoom gesture on the model for 3D machine interference check.

0: Pinch in to zoom in on the model, and pinch out to zoom out on the model.

1: Pinch in to zoom out on the model, and pinch out to zoom in on the model.

#1252 set24

bit3: Number of file input/output points for PLC constant (extension)

Specify the number of file I/O points for the PLC constant (extension) at the time of parameter input/output (ALL.PRM).

0: All the points of file input/output (ALL.PRM) for the PLC constant (extension)

1: The number of points specified by #1326 (PLC Const Ext. Num) for the PLC constant (extension)

(PR) #1253 set25

bit0: Number of machine tool builder macro definition files

Select the number of definition files for machine tool builder macro.

0: One (O199999999)

1: Ten (O199999990 to O199999999)

bit1: Changing metric system mode by G20/G21 not allowed

This parameter specifies whether or not the control prohibits the mode change and generates an error (P34) if an attempt is made to change the current system mode with another G20/G21.

0: Allows the change.

1: System mode change is NOT allowed.

(Note) This parameter affects the MTB macro and the user macro as well.

bit2: Acceleration/Deceleration mode change in hole drilling cycle

Change the acceleration/deceleration mode of hole drilling cycle.

0: The operation follows the parameter setting.
The setting of #1153 is enabled.

1: A constant-gradient acceleration/deceleration and an acceleration/deceleration after interpolation are applied to the hole drilling cycle.
The setting of #19417 is enabled.

bit4: Clearing data at fixed cycle mode switch

Select whether to zero clear the argument data at the time of fixed cycle mode switch.

0: Do not zero clear the argument data

1: Zero clear the argument data

bit5: G53 motion type

Change the motion type for G53 command.

0: Cutting feed or rapid traverse is determined by the active modal status.

1: Fixed to rapid traverse.

bit6: Switch G68/G69 function

Select whether to use G68/G69 as tool post mirror image function or balance cut function when the selected G code system is 6 or 7.

0: Facing turret mirror image

1: Balance cut

(PR) #1254 set26

bit0: Reducing processing time of zero-travel-distance block

Select whether to reduce the processing time of a zero-travel-distance block.

0: Disable the reduction of non-travel block processing time.

1: Enable the reduction of non-travel block processing time.

bit1: Program format switch

Enable the program format switch function.

0: Disable the function

1: Enable the function

bit3: Select timing for updating axis parameter

Select the timing for when to update axis parameter.

0: Update after All axes smoothing zero turns ON for all the part systems.

1: Update after All axes smoothing zero turns ON for each part system.

bit4: Reference of zero point shift distance for spindle C axis

Select the reference method for zero point shift distance when C axis returns to zero under spindle C axis control.

0: Use "#2027 G28sft" as the zero point shift distance.

1: Use "#3113 cax_sft" as the zero point shift distance.

(PR) #1255 set27

bit0: High-accuracy calculation during constant surface speed control

Enable the high-accuracy spindle speed calculation under constant surface speed control.

0: Calculate the speed with the tolerance of plus or minus 10r/min (same as conventional specifications).

1: Calculate the speed with the tolerance of plus or minus 1r/min.

bit1: MTB macro M99 command single block stop

For M99 command during MTB macro, select whether to execute single block stop or not.

0: Not execute single block stop in the M99 command

1: Execute single block stop in M99 command

(Note 1) During Suppression of single block stop (#3003/bit0 = 1) of system variable, single block stop is not applied in the M99 command even if this parameter is valid.

(Note 2) While single block is suppressed by the A1 command of macro definition program (O199999999), single block stop is applied if this parameter is valid.

bit3: Holding diameter/radius designation after NC reset

Select whether to hold the diameter/radius designation of each axis selected in G10.9 after NC reset.

0: Diameter/radius designation is initialized by NC reset.

1: Diameter/radius designation is held after NC reset.

bit4:Tool retraction from hole bottom in boring cycle

0: Move at the rapid traverse rate (G0 interpolation feed).

1: Move with linear interpolation (at the feedrate commanded with F).

bit5: Tool length offset for multiple axis synchronization control

Select whether to enable the tool length offset dedicated to the multiple axis synchronization control.

0: Disable

1: Enable

bit6: Acc/Dec pattern applied until rotation sync when sync SP start signal is OFF

Select the acceleration/deceleration pattern to be applied until the synchronized spindle attains rotation synchronization, when spindle synchronization command is given with the spindle start signal of the synchronized spindle OFF (servo OFF).

0: Linear acceleration/deceleration

1: Spindle synchronization multi-step acceleration/deceleration

(PR) #1256 set28

bit0: Switch to C axis mode at cancel of EMG stop/door open under spindle C axis

Select whether to switch the control to C axis mode when you execute and cancel emergency stop, or turn ON and OFF the door open signal under spindle C axis control mode.
(This takes effect when spindle/C axis switch method is PLC signal type.)

0: Not switch to C axis mode.
Control is switched to C axis mode when C axis' Servo OFF signal is turned OFF and ON after cancel of emergency stop or door open.

1: Switch to C axis mode when emergency stop or door open is cancelled.

bit1: Position loop gain in C axis zero return/orientation/synch tap zero return

Select the position loop gain to be applied when the interpolation mode is selected for the spindle C axis, spindle orientation or synchronous tap zero return that is executed when the spindle stops (when "#3106 zrn_typ/bitE"="0").

0: SP003 PGS

1: SP002 PGN

bit2: Change current FB (load) output unit

Select the units in which the current FB (load) is output to a register.
When output in units of 0.01%, the output range is from 0 to 327.67%.

0: Default (Output in units of 1%).

1: Output in units of 0.01%.

bit3: Tool shape compensation in 3D coordinate conversion mode (For L system only)

Select whether to apply tool shape compensation before or after executing 3D coordinate conversion.

0: Apply tool shape compensation before 3D coordinate conversion

1: Apply tool shape compensation after 3D coordinate conversion

#1257 set29

Not used. Set to "0".

(PR) #1258 set30

bit0: Skip I/F switch

Select A or B contact for the skip interface.

0: A contact (Skip operation starts at rising edge of a signal)

1: B contact (Skip operation starts at falling edge of a signal)

(Note) This parameter is not applied to PLC skip.

bit3: System lock warning selection

Set this parameter to "1" if you choose to have the system alarm message (Z64) cleared by NC reset.

0: Not clear the message by NC reset

1: Clear the message by NC reset

bit4: Thread recut command

Specify through which interface to give a thread recut command.

0: Through HMI screen

1: Through PLC I/F

bit5: Addition of command Q to thread recut

Select whether to add the command Q's data to the spindle angle to be compensated during thread recut of a stored thread section.

0: Not add the command Q's data

1: Add the command Q's data

bit6: Spindle compensation angle in thread recut mode

Select whether to calculate the spindle compensation angle when a thread cut command is given during the thread recut mode.

0: Calculate the angle for the initial thread cut command in automatic operation. (The initially calculated angle is used for the 2nd and subsequent thread cut commands.)

1: Calculate the angle every time a thread cut command is given.

(PR) #1259 set31

bit0: Enable normal life tool's data count (for M system only)

Select whether to enable or disable too use data counting when the tool status is 2 (normal life tool).

0: Not count the use data of normal life tool.

1: Count the use data of normal life tool.

bit2: Disabling decimal point for PLC window

Select the input/output specifications of fraction data for PLC window.

0: Enable decimal point
Fraction data is output as the fixed fraction information.
(The numbers of digits in the integer and fraction parts are the same as of the on-screen specifications.)

1: Disable decimal point (cut off all digits after decimal point)
Only the integer part is input/output.

bit4: Manual Tool Length Measurement 2: Allow measurement in Inclined Axis Control

This parameter determines whether the measurement by Manual Tool Length Measurement 2 is allowed in Inclined Axis Control.

0: No, the measurement is not allowed.

1: Yes, the measurement is allowed.

bit7: Macro processing method

Select the macro processing method.

0: High speed

1: Compatible with conventional models

(*) Remarks

Select whether to refresh the display data at regular intervals of a certain number of macro blocks when processing successive macro blocks.
Selecting "0" enables high-speed macro processing, because it creates no data for refreshing display.
Selecting "1" enables most of the blocks under processing to be viewed, because it creates display refresh data at regular intervals even for successive macro blocks.
When "1" is selected, the operation is the same as of M700 Series control.

(PR)	#1260	set32

bit0: Switching to actual cutting mode during automatic operation

0: Unable to switch to actual cutting mode or no-load operation mode during automatic operation.
Block stop is executed before a speed change-disabled command (thread cut or tap).

1: Able to switch to actual cutting mode or no-load operation mode during automatic operation.
Block stop is not executed before a speed change-disabled command (thread cut or tap).

bit1: Speed selection for other part systems during actual cutting mode

0: Other part systems operate at the programmed speed in the same manner as the part system where a speed change-disabled command (thread cut or tap) is given.

1: Other part systems operate at the program check speed.

bit2: Prohibit reverse run of fixed cycle

Select whether to prohibit reverse run of a fixed cycle during manual arbitrary reverse run.

0: Permit reverse run

1: Prohibit reverse run

(Note) Even when the parameter is "1", reverse run is enabled during fixed cycle operation.

bit3: Prohibit MSTB reverse run

Select whether to prohibit reverse run of MSTB during the manual arbitrary reverse run.

0: Enable MSTB reverse run

1: Disable MSTB reverse run

(Note) Even when the parameter is "0", MSTB reverse run is disabled while the MSTB reverse run prohibit signal (MRPSG) is ON.

bit4:Thread cut start shift angle operation

Select the operation to be performed at the start of thread cutting when a thread cut start shift angle command is issued.

0: Start thread cut from the thread cut start shift angle after phase Z has been detected once.

1: Start thread cut from the thread cut start shift angle, independently of phase Z detection.

bit7: Storage of spindle C axis coordinate system

Select whether to automatically insert zero return to spindle/C axis control at the initial servo ON or at every servo ON.

This parameter is enabled when spindle/C axis deceleration stop type (#3106 zrn_typ/bit8=1) and zero point return automatic insertion (#1226 aux10/bit3=1) are selected.

0: Execute automatic zero return before C axis rotation for the first C axis command given after every servo ON.

1: Execute automatic zero return before C axis rotation for the first C axis command given after the initial servo ON.
For the 2nd and subsequent servo ON, the coordinate system is retained after servo OFF, and zero return is not automatically inserted.

(PR) #1261 set33

bit1: Operation panel I/O emergency stop function OFF

Select whether to disable the emergency stop function when an operation panel I/O unit is disconnected. (This setting is enabled for separated-type NC only)

0: Enable the emergency stop function

1: Disable the emergency stop function

(*) While the operation panel I/O unit is connected to the NC unit, the emergency stop function is enabled irrespective of this parameter.

bit2: Synchronized turning ON/OFF of NC and display

Select whether to synchronize the turning ON/OFF of the M800VW/M80VW Series NC controller and display.

0: NC and display turn ON/OFF independently.

1: NC and display turn ON/OFF in synchronization with each other.

(*) If no operation panel I/O unit is connected, the NC and display turn ON/OFF independently, irrespective of this parameter.

bit3: PLC high-speed process start timing selection

Select the type of PLC high-speed process start timing.

0: Type 1 (default)

1: Type 2

bit4: High-speed ladder execution cycle

Specify the high-speed ladder execution cycle. (Standard value: 0)

0: Default (equivalent to Mitsubishi Electric M700V Series)

1: Twice the default

(Note) When the parameter "#1261 set33/bit4" is set to its default value, the high-speed ladder execution cycle differs according to the model and the number of part systems.

bit5: Operation switch at OT and soft limit in synchronous operation method

This parameter switches the axis operation at stoke end and soft limit for slave axis in the synchronous operation method.
When independent operation method or correction mode is set, the operation will be the same as #1261=0 (disable).

0: When "Stroke end" signal is turned ON for only slave axis by stroke end or soft limit, the slave axis stops but master axis does not stop.

1: When one of master axis or slave axis is in the stroke end or soft limit, both master and slave axes stop.

(PR) #1262 set34

bit2: Disable warning for coordinate system selection without 3D manual feed spec.

Select whether to display a warning when hypothetical coordinate system has been selected although 3D manual feed is not included in the specifications.

0: Display

1: Not display

bit3: Condition of turning OFF Tool life end signal (for L system only)

Select when to turn OFF the tool life end signal in the tool life management 1 for L system.

0: When M function finish signal (FIN) is turned ON

1: When a tool that has not reached the end of life is selected

(PR) #1263 set35

bit1: Show/Hide history clear menus

Show/Hide operation menus for data clear of collection setting screen, history clear of alarm history screen, history start, and history stop.

0: Show history clearing operation menus

1: Hide history clearing operation menus

bit2: Hide the alarm category of PLC message

Select whether to hide the alarm category of PLC message (alarm or operator message).

0: Display the alarm category

1: Hide the alarm category

bit3: Overvoltage alarm switch

Select the alarm for overvoltage.

0: Display the warning upon occurrence of overvoltage alarm.

1: Execute emergency stop upon occurrence of overvoltage alarm.

(PR) #1264 set36

bit2: Disabling manual numerical value command during automatic operation

Specify whether manual numerical commands should be disabled during automatic operation.

0: Enable manual numerical command during automatic operation

1: Disable manual numerical command during automatic operation

(PR) #1265 ext01

bit0: Command format 1

Select the command format for the fixed cycle for compound lathe.

0: Conventional format

1: MITSUBISHI CNC special format
(1 block command method)

bit1: Command format 2

Select the command format for the lathe fixed cycle.

0: Conventional format

1: MITSUBISHI CNC special format

bit2: Command format 3

Select the command format for the fixed cycle for drilling.

0: Conventional format

1: MITSUBISHI CNC special format

bit3: F-command unit 2 (for L system only)

Specify the unit to be used if a synchronous feed or thread cutting lead command contains no decimal point.

0: Type 1 (conventional specifications) or Type 2
Type 1 or Type 2 is selected by the parameter "#1271 ext07/bit2".

1: Type 3
F command 0.01 mm/rev, 0.0001 inch/rev
E command
Sync feed (corner chamfer/corner R feedrate) 0.01 mm/rev, 0.0001 inch/rev
Thread cut (fine thread cut lead) 0.0001 mm/rev, 0.000001 inch/rev

(Note) Type 3 is independent of the input unit.

(PR) #1266 ext02

bit0: Axis name extension valid

0: "Axis name extension" invalid

1: "Axis name extension" valid

(PR) #1267 ext03

bit0:

Not used.

(PR) #1268 ext04

bit2: Enable synchronous tapping per minute

Select whether to enable feed per minute with the F command of synchronous tapping cycle.

0: Disable (Command in pitch regardless of "G group 5" modal)

1: Enable (Follow "G group 5" modal)

bit4: Enable address K to specify the repetition count in G76/G87

Select whether to enable address K to be used for specifying the repetition count in G76/G87 command.

0: Disable

1: Enable

When "1" is set in this parameter with "#1271 ext07/bit1" (Specifying repetition count with address K) set to "1", the address K given to G76/G87 is treated as the number of repetitions.

bit5: Compensation type for tool offset changing value (M system only)

Set the compensation operation when changing the tool offset amount during tool offset compensation (G43/G44) of the tool length offset by coordinate shift.

0: Compensation by axis movement

1: Compensation by coordinate shift

(Note) This parameter is enabled only when "1268 ext04/bit6" is "1".

bit6: Tool length compensation behavior (for M system only)

Select how tool length offset is performed when a tool length offset command is issued.

0: Axis movement

1: Coordinate shift

bit7: Retain tool L offset at auto ref. position return (for M system only)

Select whether to retain the G43/G44 modal when G28, G30 or G30.1 is commanded.

0: Not retain (Cancel)

1: Retain

(PR) #1269 ext05

bit0: Inverse tangent (ATAN) command format

Select the command format of ATAN operation.

0: Format 1

Either the ratio of two sides or the whole expression is enclosed in square brackets "[ ]".

ATAN[#k] or ATAN[#j/#k]

1: Format 2

Two sides are enclosed in "[ ]" respectively and also divided by a slash "/".

ATAN[#j]/[#k]

bit1: Range of inverse tangent (ATAN) calculation result

Select the range of calculation result for inverse tangent (ATAN) to be applied when Format 2 is selected for inverse tangent (ATAN) command (when #1269/bit0 = 1).

0: -180 to 180°

1: 0 to 360°

(PR)	#1270	ext06

bit2: Select finished shape program search method

Select how to search a finished shape program to be called by G70, G71, G72 or G73 command.

0: Search from the top of the currently executed program or from the top of the program specified with the address A.

1: <G71, G72, G73>

Search from a block following G71, G72 or G73.

<G70>

Search from the same start sequence No., if it exists, as that of the finished shape program where G71, G72 or G73 has been executed.
In the other cases, search from the top of the currently executed program or from the top of the program specified with the address A.

bit4: Switch chamfering operation

Select the operation to be performed when the cycle start point is exceeded as a result of chamfering in a thread cutting cycle.

0: Output a program error (P192).

1: Stop chamfering upon arrival at the cycle start point, and then move to the end point of the thread cutting block at a rapid traverse rate.

bit5: Coordinate rotation angle without command (for L system only)

Select the operation when there is no rotation angle command R for the coordinate rotation.

0: Use the previously commanded value (modal value). If the command is the first issued command, the rotation angle will be 0°.

1: Use the set value in "#8081 Gcode Rotat".

bit6: Switch continuous thread cutting Z phase wait operation

Select when to start the 2nd block thread cutting when there is a command with no movement (MST command, etc.) between the thread cutting blocks.

0: Wait for the spindle's single rotation synchronization signal before starting the movement.

1: Start movement without waiting for the spindle's single rotation synchronization signal.

bit7: Handle C axis coordinate during cylindrical interpolation

Specify whether to keep the rotary axis coordinate as before the cylindrical interpolation start command is issued during the cylindrical interpolation.

0: Not keep

1: Keep

(PR) #1271 ext07

bit0: Mirror image operation

Select the type of mirror image operation.

0: Type 1

- The program mirror image, external mirror image, and parameter mirror image are exclusive to each other.
- An incremental command moves the image to the position indicated by the travel amount with the sign inverted.

1: Type 2

- Mirror image operation is enabled when the program mirror image (G51.1) command is issued or when the external signal or parameter is ON.
- An incremental command moves the image to the position determined by applying the mirror image to the absolute program coordinates.

bit1: Address specifying fixed cycle repetition count (for M system only)

Select the address that specifies the fixed cycle repetition count.

0: Address L only (Default)

1: Addresses K and L

If addresses K and L are specified simultaneously, the data at address K will be used for operation.

bit2: F-command unit

(M system)

Specify the unit to be used if a thread cutting lead command contains no decimal point.

* This setting is independent of the input unit.

0: Type 1 (conventional specifications)

F1: 1 mm/rev, 1 inch/rev

1: Type 2

F1: 0.01 mm/rev, 0.0001 inch/rev

(L system)

Specify the unit to be used if a synchronous feed or thread cutting lead command contains no decimal point.

0: Type 1 (conventional specifications)

[Input unit B] F1: 0.0001 mm/rev, 0.000001 inch/rev

[Input unit C] F1: 0.00001 mm/rev, 0.0000001 inch/rev

1: Type 2

F1: 0.0001 mm/rev, 0.000001 inch/rev

* Type 2 is independent of the input unit.

bit3: G-code group for unidirectional positioning (for M system only)

Select the G-code group for unidirectional positioning.

0: Unmodal G code (group 00)

1: Modal G code (group 01)
Related parameter: "#8209 G60 Shift" (Set the last positioning direction and distance for each axis applicable when the unidirectional positioning command is issued.)

bit4: Operation by independent G40 command

Select whether the radius compensation vector is canceled by the independent G40 command.

0: Type 1 (conventional specification) (Default)
The radius compensation vector will be canceled by the independent G40 command.

1: Type 2
The radius compensation vector won't be canceled by the independent G40 command: it will be canceled by the next travel command for the radius compensation plane.

bit5: Cut start position (for L system only)

Select the position from where cutting begins in a fixed cycle for compound lathe.

0: Conventional specification (Default)
The cut start position will be determined by the final shaping program.

1: Extended specifications
Determined from the cycle start point.

bit6: Nose R compensation (for L system only)

Select whether to apply nose R compensation for shapes in a rough cutting cycle.

0: Conventional specification (Default)
The shape after nose R compensation in the final shaping program will be used as rough cutting shape. (when the nose R compensation for the final shaping program).

1: Extended specifications
The shape without nose R compensation in the final shaping program will be used as rough cutting shape.

bit7: Cut amount (for L system only)

Select the operation to be performed when the program-specified cut amount exceeds the cut amount of the final shaping program.

0: Conventional specification (Default)
A program error will occur when the program-specified cut amount exceeds the cut amount of the final shaping program.

1: Extended specifications
Rough cutting will be performed by one cut when the program-specified cut amount exceeds the cut amount of the final shaping program.

(PR) #1272 ext08

bit0: Switch pocket machining operation

Select the pocket machining specification.

0: Conventional specification
Pocket machining will be selected with the H designation.
The pull direction when pocket machining is ON will be the Z direction.

1: Extended specifications
Pocket machining will start only when both X and Z axes are specified in the first travel block after the finished shape start block.
The pull direction when pocket machining is ON will be the X direction.

bit1: M function synchronous tap cycle

Specify whether to enable the M function synchronous tapping cycle.

0: Disable

1: Enable

bit2: Spiral/conical interpolation command format 2

Select the command format for spiral and conical interpolation.

0: Type 1 (conventional specification)

1: Type 2 (with the number of spiral rotation L designation and the increment designation)

bit3: Switch macro call function

Select whether to shift the argument to the subprogram if nests are overlapped when per block call (G66.1) is commanded.

0: Shift

1: Not shift (Conventional specification)

bit4: Tap cycle selection

Select the tapping cycle.

0: Pecking tapping cycle

1: Deep hole tapping cycle

bit5: Deep hole tap cycle override selection

Select whether to enable override on the pulling operation during synchronized tapping with the deep hole tapping cycle.

0: Disable

1: Enable

bit6: Switch corner chamfering/ corner R command format

Select the command format of the corner chamfering/corner R.

0: Command format I (conventional format)
Issue a command with comma (,C and ,R).

1: Command format II
In addition to command format I, addresses without comma can be used to command. I/K or C can be used for corner chamfering, while R can be used for corner R.

bit7: Return position after macro interrupt in fixed cycle selection

Select the destination to return to after a macro interrupt in the fixed cycle.

0: Return to the block in the fixed cycle.

1: Return to the block next to the fixed cycle.

(PR) #1273 ext09

bit0: Switch ASIN calculation results range

Select the notation system for operation result of ASIN.

0: Do not switch minus figures to positive figures. (-90° to 90°)

1: Switch minus figures to positive figures. (270° to 90°)

bit1: Switch system variable unit

Select the unit for the system variable #3002 (cycle start operation time).

0: 1 ms unit

1: 1 hour unit

bit2: Switch G71, G72, G73 cutting direction judgment

Select the cutting direction when the longitudinal rough cutting cycle (G71), face rough cutting cycle (G72) or closed loop cutting cycle (G73) is commanded.

0: Conventional specification
Determined according to the finished shape program.

1: Extended specifications
Determined according to the finishing allowance and cutting allowance commanded in the program.

bit3: Facing turret mirror image coordinate value type

Select how to show the workpiece coordinate values of the axis for which the facing turret mirror image is valid.

0: Movements in the workpiece coordinate system are in the same direction as those in the workpiece machine coordinate system.

1: Movements in the workpiece coordinate system are in the opposite direction to those in the workpiece machine coordinate system.

bit4: Facing turret mirror image valid axis selection

Select the axis for which the facing turret mirror image is valid.

0: Fixed to 1st axis.

1: Determined according to the plane selected when the facing turret mirror image is commanded.

(PR) #1274 ext10

bit0: Decimal point command valid address

Select the designation of the addresses which enable decimal point commands.

0: Follows the standard specifications

1: Whether to enable or not depends on each address (not on the function)

<L system>

Valid address: X, Y, Z, U, V, W, A, B, C, E, F, G, H, I, J, K, R

Invalid address: D, L, M, N, O, P, Q, S, T

<M system>

Valid address: X, Y, Z, U, V, W, A, B, C, F, G, I, J, K, Q, R

Invalid address: D, E, H, L, M, N, O, P, S, T

bit2: M98 sequence No. address selection

Select which address to use for calling a sequence No. in a sub program under sub program control (M98/M198).

0: Address H is used for specifying the sequence No.

1: Address Q is used for specifying the sequence No.

bit3: Tool offset number H stand-alone command (for M system only)

Select the command format of the compensation No. for tool length compensation (for M system).

This setting also switches how to read the tool length compensation No. H by variable.

0: Disable single command of tool length compensation No. H.
Variable of tool length compensation No. H can be read only during G43/G44 modal. It is fixed to "0" in other situations.

1: Enable single command of tool length compensation No. H.
Variable of tool length compensation No. H can be read regardless of G43/G44 modal.

bit4: Optional block skip operation changeover

Select the optional block skip operation.

0: Enable or disable optional block skipping in the middle of a block according to the setting of "#1226 aux10/bit1".

1: Enable optional block skipping at the top and in the middle of a block.
Note that a slash "/" on the right-hand side of equation or that in an equation between [ ] is handled as division operator.

bit5: Use of G54Pn for selecting extended workpiece coordinate system

Select whether to use G54Pn as a command for selecting an extended workpiece coordinate system.

0: Not use G54Pn as a command for selecting an extended workpiece coordinate system

1: Use G54Pn as a command for selecting an extended workpiece coordinate system

When "1" is set in this parameter, G54Pn is treated in the same manner as G54.1Pn.

bit7: Word range check

Select whether to check that the operation expression of the word data in the program is enclosed in brackets [ ] when the machine program is executed.

This check is also applied to the 08000 to 09999 and the machine tool builder macro program.

0: Not check

1: Check

(PR) #1275 ext11

Not used. Set to "0".

(PR) #1276 ext12

Not used. Set to "0".

(PR) #1277 ext13

bit0: Tool life management II count type 2 (default: 0)

Select how and when cumulative number of mountings or cuttings will be incremented in tool life management II. The condition to output "tool group life over (TGLO)" signal will be changed accordingly.

0: Type 1 (default)
Counts up when the spindle tool is used for cutting. TGLO signal will be output when the last tool in selected group is judged as expired.

1: Type 2
Counts up by one for a tool used or mounted in a program at the time of resetting. TGLO signal will be output when any of tool groups has reached its lifetime limit.

bit1: Tool life management II life prediction

Select whether to enable tool life prediction function in tool life management II.

0: Disabled

1: Enabled

bit2: Tool life management II life end signal timing

Select the timing in which tool life prediction signal is output in tool life management II.

0: Output only when the ["tool life data" - "tool usage data"] matches the remaining tool life prediction setting.

1: Output when the ["tool life data" - "tool usage data"] is less than the remaining tool life prediction setting.

bit3: Tool life management II life end signal tool

Select the tool for which the tool life prediction signal is output in tool life management II.

0: Output the signal tool by tool.

1: Output the signal at the last tool in the group.

bit4: Tool life management II count changeover (For M system only)

Select the tool life count method and its timing.

0: Conforms to "#1227 ext13/bit0" setting.

1: When "#1227 ext13/bit0" is set to "0":
Counts up by one for a tool used or mounted in a program at the time of resetting.
When "#1227 ext13/bit0" is set to "1":
Follow the setting of "Method (Mthd)" on Tool life screen.

The output condition of "tool group life over" signal conforms to "#1227 ext13/bit0".

(PR) #1278 ext14

bit0: Program restart method selection

Select the program restart type.

0: Restart type A

1: Restart type B

bit1: Change miscellaneous command completion method

Select the complete signal and completion condition.

0: Normal method
Complete at the falling edge of M function finish 1 signal (FIN1) or rising edge of M function finish 2 (FIN2).

1: High-speed method
Complete when High-speed M finish signal (MFIN1 to 4, SFIN1 to 6, TFIN1 to 4 or BFIN1 to 4) reaches the same logical level as the strobe signal.

bit2: Change areas for stored stroke limit I

Enable/Disable change of the areas for stored stroke limit I.

0: Disable

1: Enable

bit3: Select M30 rewinding operation

Select the operation when the miscellaneous function completed signal (FIN) is returned to M30.

0: Not carry out automatic rewinding

1: Carry out automatic rewinding

bit4: Select M02 rewinding operation

Select the operation when the miscellaneous function completed signal (FIN) is returned to M02.

0: Not carry out automatic rewinding

1: Carry out automatic rewinding

bit5: M code output during high-speed simple program check

Select whether to enable M code output during high-speed simple program check.
The M codes to be output are those specified by "#1451 M[M031-000](SMLK)" to "#1466 M[M511-480](SMLK)".

0: Disable

1: Enable

bit7: Operation for circular radius error at perfect circle command

Select the operation to be performed when a perfect circle command is given and there is a difference between the start point and end point radii, but no difference between the start point and end point angles.

0: Linear interpolation from the start to the end point

1: Spiral interpolation from the start to the end point

(PR) #1279 ext15

bit0: Part system synchronization method

Select the part system synchronization method.

0: If one part system is not in the automatic operation, the synchronization command will be ignored and the next block will be executed.

1: Operate according to the "waiting ignore" signal.
If the "waiting ignore" signal is set to "1", the synchronization command will be ignored. When set to "0", synchronization will be applied.

bit1: Interrupt amount during machine lock

Select when to cancel the interruption amount during machine lock.

0: Canceled when resetting

1: Canceled during manual reference position return (not when resetting)

bit2: Selection of cutting start interlock target block

Select whether to enable the cutting start interlock for successive cutting blocks.

0: Enable

1: Disable

bit4: Dry run OFF during thread cutting

Select whether to enable or disable dry run during thread cutting.

0: Enable dry run

1: Disable dry run

bit5: Cancel G92 shift distance

Select whether to clear the G92 (coordinate system setting) shift distance when the manual reference position is reached.

0: Not clear

1: Clear

bit6: Enable single block stop at middle point

Set whether to enable/disable single block stop at the middle point of G28/G29/G30.

0: Disable single block stop

1: Enable single block stop

bit7: Retain G52 at manual reference position return

Select whether to retain the local coordinate system setting (G52) at the time of manual reference position arrival. This parameter is enabled when #1279 ext15/bit5 is 1.

0: Not retain (Cancel)

1: Retain

(PR) #1280 ext16

bit0: I/F per axis during mixed control (cross axis control)

Select how to handle the following PLC interface for axes interchanged with the mixed control (cross axis control).

- Mirror image
- Manual/automatic interlock
- Manual/automatic machine lock

0: Follows axis configuration before the mixed control (cross axis control).

1: Follows axis configuration after the mixed control (cross axis control).

(Example)

The device No. of automatic interlock (+) for X1 will be as follows when the mixed control (cross axis control) is executed with the 1st axis (X1) in the 1st part system and 1st axis (X2) in the 2nd part system.

When "0" is set: YA60 (interface for 1st axis in 1st part system)

When "1" is set: YA68 (interface for 1st axis in 2nd part system)

(Note) If the number of axes in the part system changes with the mixed control (cross axis control), the interface of the target axis may change when this parameter is set to "1".

bit1: Mixed control (cross axis control) cancel with reset

Select whether to cancel the mixed control (cross axis control) when reset is applied.

0: Cancel.

1: Not cancel.

bit2: Interchange coordinate position display

Select whether to display interchanged (or moved) coordinate positions in the mixed control (cross axis control).

This setting will be followed not only when the axes are interchanged but also when the axes are moved.

0: Display interchanged (or moved) coordinate positions.

1: Display coordinate positions without being interchanged (nor moved).

(Example)

When 1st part system's C axis is moved to 2nd part system with a 1st part system (X, Z, C, Y) and 2nd part system (X, Z) configuration:

1st part system: X, Z and Y coordinate positions are displayed.

2nd part system: X, Z and C coordinate positions are displayed.

bit3: Reset operation for synchronization/superimposition control

Select whether to cancel synchronization/superimposition control when reset is applied.

0: Cancel.

1: Not cancel.

bit4: Mixed control (cross axis control) command method

Select how to command mixed control (cross axis control).

0: Use PLC interface signal for mixed control

1: Use G command for mixed control

bit5: Command method of control axis synchronization between part systems

Select how to command the control axis synchronization between part systems.

0: Use PLC I/F.

1: Use G command.

bit6: Interchange machine position display

Select whether to display interchanged (or moved) machine positions in the mixed control (cross axis control).

This setting will be followed not only when the axes are interchanged but also when the axes are moved.

(Note 1) This parameter is enabled when "#1280 ext16/bit2 (Interchange coordinate position display)" is "0".

0: Display interchanged (or moved) machine positions.

1: Display machine positions without being interchanged (nor moved).

bit7: Control axis superimposition command method

Select how to command control axis superimposition.

0: Use PLC interface signal for control axis superimposition

1: Use G command for control axis superimposition

(PR) #1281 ext17

bit0: Switch manual high-speed reference position return in synchronous control

Select the movement of synchronized axes in manual high-speed reference position return.

0: Master and slave axes start the return synchronizing. Even when one axis stops at its reference position, the other axis continues moving until it reaches its reference position.

1: Master and slave axes start the return synchronizing, and when the master axis stops at the reference position, the slave axis also stops. Thus, the relative position of the master and slave is kept.

bit1: Selection of additional tool offset axis (for L system only)

Select axis to carry out the additional axis' tool compensation function.

0: Follow the setting of "#1520 Tchg34".

1: The axis specified by "#1027 base_J" is used as the 3rd compensation axis.

bit3: Synchronous control operation setting

Select whether or not the positioning of slave axis automatically aligns with that of master axis when the axis subject to synchronous control is changed from servo OFF to servo ON.

0: The positioning does not automatically align.

1: The positioning automatically aligns.

bit5: High-speed synchronous tapping valid

Select whether to enable the high-speed synchronous tapping.

0: Disable

1: Enable

bit6: Compensation method for external machine coordinate system/ball screw thermal expansion during synchronization

Select the method of how to compensate the slave axis when compensating external machine coordinate system or ball screw thermal expansion during synchronization control. The setting of this parameter will be validated when you select synchronous operation method by the synchronization control operation method signal.

0: Master axis and slave axis are independently compensated.

1: Master axis' compensation amount is applied to slave axis.

bit7: Switch automatic high-speed reference position return in synchronous control

Select the movement of synchronized axes in automatic high-speed reference position return.

0: Master and slave axes start the return synchronizing, and when the master axis stops at the reference position, the slave also stops. Thus, the relative position of the master and slave is kept.

1: Master and slave axes start the return synchronizing. Even when one axis stops at its reference position, the other axis continues moving until it reaches its reference position.

(PR) #1282 ext18

bit1: Condition of the reference position reached signal in synchronous control

This parameter switches only conditions of a master axis's reference position return reached signal in synchronous operation. A slave axis's signal is output when the slave axis reaches the reference position coordinate.

0: A master axis's reference position reached signal is output only when both of the master and slave axes reach the reference position coordinate by a reference position return.

1: A master axis's reference position reached signal is output when the master axis reaches the reference position coordinate.

bit3: Index table clamp type

Set the clamp type of the index table.

0: Type A

Clamped when an unclamp command turns OFF.

1: Type B

Clamped when a clamp command turns ON.

bit5: Automatic correction of synchronization offset at power ON

The slave axis position is automatically corrected so that the synchronization offset before having turned the power OFF the last time can be restored at power ON.

(Note) This parameter is enabled when the parameter "#1281 ext17/bit3" (Synchronous control operation setting) is set to "1".

0: Disable

1: Enable

bit6: Reset type at emergency stop cancel

Select the type of reset to be applied when emergency stop is cancelled.

0: Reset 1

1: Reset 2

bit7: Functional operation inhibition during write of servo parameters

Select whether to inhibit functional operation during write of servo parameters.

0: Inhibit functional operation with an alarm displayed

1: Give priority to functional operation with write of servo parameters suspended

(Note) This parameter can inhibit a start of the following four functions.

- Spindle/C axis changeover
- Speed observation mode signal ON
- High-speed synchronous tapping
- Start of PLC indexing axis

(PR) #1283 ext19

Not used. Set to "0".

(PR)	#1284	ext20

bit0: Spindle speed clamp check

Select whether to check the spindle speed clamp under the constant surface speed control.

0: Check the spindle speed clamp.

1: Not check the spindle speed clamp.

(Note) This parameter is enabled when the parameter "#1146 Sclamp" is set to "1".

bit1: Spindle control selected in response to Z83 (NC started during SP rotation)

Select whether to force-stop the spindle when the alarm (Z83 0001) occurs.

0: Not force-stop the spindle

1: Force-stop the spindle

bit2: Manual tool length measure 1: work coordinate system offset (for L sys only)

Select the operation to be performed in manual tool length measurement 1 (for L system) when the workpiece coordinate system offset is used for the measurement reference point.

0: Workpiece coordinate system offset in measurement is used for the measurement reference point. If measurement is carried out during automatic cycle operation, the external workpiece coordinate offset, G92 offset, local coordinate offset, workpiece coordinate system shift and workpiece base point offset are all included in the workpiece coordinate system offset.

1: Setting values of workpiece coordinate system offset, external workpiece coordinate system offset, workpiece coordinate shift and workpiece base point offset are used for the measurement reference point. G92 offset and local coordinate offset are excluded.

bit3: M code output during multi-system simultaneous simulation (Check type II)

Select whether to enable a miscellaneous function code output during execution of multi-part system simultaneous simulation (Check type II).

0: Not output a miscellaneous function

1: Output a miscellaneous function

(Note) When the output is enabled, the miscellaneous codes specified in "#1406 S_mode(SMLK)", "#1407 T_mode(SMLK)", "#1408 M2_mode(SMLK)" and "#1451 M[M031-000](SMLK)" to "#1466 M[M511-480](SMLK)" can be output.
M code output specification is determined by "#1405 M_mode(SMLK)".

bit4: Maximum life time/life count for tool life management I (for L system only)

Select the maximum life time and life count for tool life management I of L system.

0: Life time 0 to 99:59 (h:min)

Life count 0 to 65000 (times)

1: Life time 0 to 5000:00 (h:min)

Life count 0 to 99999999 (times)

bit6: Automatic operation handle interruption during inclined surface machining

Select whether to enable the automatic operation handle interruption function during inclined surface machining.

0: Disable

1: Enable

(PR) #1285 ext21

bit0: Multi-part system program management

Select whether to use multi-part system program management.

0: Not use

1: Use

(Note) When this parameter's value is changed, the power must be turned OFF and ON, and the system formatted. Two or more part systems from [1] to [4] need to be set to "1" in "#1001 SYS_ON". Otherwise this parameter will be disabled even though set to "1".

bit1: Switching of program search type

Select the type of search to be performed when Operation search, Check search or Restart search is executed in the NC memory/NC memory2 while the multi-part system program management is active.

0: Search through a program individually for each part system

1: Search through a program for all part systems at once
(Program number will be common to all part systems.)

bit2: Multi-part system program generation and operation

Select whether to perform the following processes for all the part systems or for each part system separately in multi-part system program management: newly create, delete or rename the machining programs in NC memory/NC memory2 or transfer, compare, merge the programs between NC memory/NC memory2 and other device.

0: Perform these processes for the programs in all the part systems.
If no subprogram contents are found by the subprogram call during automatic operation, the program will be searched for and executed from $1.

1: Perform these processes for the programs in the selected part system.

(PR) #1286 ext22

bit5: Selection of multi-part system program input/output method

Select whether to perform the transfer from NC memory/NC memory2 to other device for all the part systems or for each part system separately in multi-part system program management.

0: Output the designated programs for all the part systems.
(The programs output from NC memory/NC memory2 contain the system delimiter $ marks.)

1: Output the programs of only the selected part system.

(PR) #1287 ext23

bit1: Inclined surface coordinate display

0: Display the position which includes tool length offset.

1: Display the position on the program which excludes tool length offset.

bit2: Inclined surface coordinate display (for M system only)

0: Display the position which includes tool radius compensation.

1: Display the position on the program which excludes tool radius compensation.

bit4: Relative coordinate display

(M system)

0: Display the position which includes tool length offset.

1: Display the position on the program which excludes tool length offset.

(L system)

0: Display the position which includes tool shape compensation.

1: Display the position on the program which excludes tool shape compensation.

bit5: Relative coordinate display

(M system)

0: Display the position which includes tool radius compensation.

1: Display the position on the program which excludes tool radius compensation.

(L system)

0: Display the position which includes nose R compensation.

1: Display the position on the program which excludes nose R compensation.

bit6: Absolute coordinate display (for L system only)

Select how coordinate values are displayed when absolute coordinate display is selected ("#1221 aux05/ bit0"="1").

0: Display the position which includes tool shape compensation.

1: Display the position on the program which excludes tool shape compensation.

bit7: Absolute coordinate display (for L system only)

Select how coordinate values are displayed when absolute coordinate display is selected ("#1221 aux05/ bit0"="1").

0: Display the position which includes nose R compensation.

1: Display the position on the program which excludes nose R compensation.

(PR) #1288 ext24

bit0: MDI program clear

Select whether to clear the MDI programs when MDI operation ends, the power is turned ON again, reset is input, or emergency stop is canceled.

0: Not clear

1: Clear (save only % programs).

bit2: Restore previous program before external search by NC reset

Select whether to restore the previous program before external search when operation is finished, power is turned OFF and ON, NC reset is input or Emergency stop is cancelled.

0: Not restore the previous program before external search

1: Restore the previous program before external search

bit3: Restore previous program before external search by Program restore signal

Select whether to restore the previous program before external search when Program restore signal is input.

0: Not restore the previous program before external search

1: Restore the previous program before external search

bit7: Behavior of position counter at change in workpiece coordinate system offset

When a change is made to the workpiece coordinate system offset, extended workpiece coordinate system offset, external workpiece coordinate system offset, workpiece coordinate system shift or workpiece base point offset being selected, the position counter will be updated in accordance with the setting of this parameter.
The specified behavior applies to the following counters:

- Workpiece coordinate position
- Program position
- Tip workpiece position (*1)
- Table coordinate position (*1)
- Workpiece set position (*1)
- Inclined surface coordinate position (*1)

(*1) These counters are displayed when an optional function associated with 5-axis control is active.

0: The counter is updated when any of the following actions takes place after the change.

- Cycle start
- Reset
- Emergency stop

1: The counter is updated immediately upon the change.

(PR) #1289 ext25

bit0: Tool radius compensation switch corner judgment method (nose R compen.)

Select the criterion to execute the outer rounding at the small corner in tool radius compensation.

(L system)

0: The corner angle is 0°; linear-linear; G02-G03/G03-G02; the radius is the same. (Conventional method)

1: The corner angle is 1° or smaller; linear-linear; G02-G03/G03-G02; the radius is almost the same. (Method for rounding minute corner angle)

(M system)

0: The corner angle is 1° or smaller; linear-linear; G02-G03/G03-G02. (Conventional method)

1: The corner angle is 1° or smaller; linear-linear; G02-G03/G03-G02; the radius is almost the same. (Method for rounding minute corner angle)

(PR) #1290 ext26

Not used. Set to "0".

(PR) #1291 ext27

bit2: Variable command: Reset operation for tool function T code (#4120/#4320)

Select how reset operation affects the address T's modal information (#4120/#4320).

0: Clear the information

1: Retain the information

(PR) #1292 ext28

bit1: Address F given in sync tap cycle

Select the specification of address F given in synchronous tapping cycle.

0: The value given to address F in synchronous tapping cycle is treated as the feed rate. Feed command follows the setting of "#1268 ext04/bit2 Enable synchronous tapping per minute". F modal status is unchanged.

1: Follow the G code group 5 modal status, irrespective of the setting of "#1268 ext04/bit2 Enable synchronous tapping per minute". The F modal value given in the program is treated as the feed rate.

bit3: Operation at changing tool length compensation amount (M system only)

Select a compensation operation when changing the tool length compensation amount at returning from a temporary cancel of G53, G28, G30, G30.1 tool length compensation or during tool length compensation (G43/G44).

0: Compensation starts from a travel command to the compensation target axis

1: Compensation starts from the next block

bit5: Selection of sub program call operation in fixed cycle mode

Select the operation to be carried out when sub program call (M98/M198) and either an axis address or address R (for hole drilling cycle) are given in one block during fixed cycle for drilling or turning machining.

0: Not execute fixed cycle operation in the sub program call block.
Sub program call is executed after travelling to the position specified by the axis address in modal status of G code group 01. Neither the axis address nor address R affects the subsequent fixed cycle operation.

1: Execute fixed cycle operation in the sub program call block before executing the sub program call. The axis address or address R is treated as the fixed cycle argument.

(PR) #1293 ext29

bit0: Synchronous feed in milling

Select whether to enable synchronous feed in milling interpolation, cylindrical interpolation or polar coordinate interpolation mode.

0: Disable

1: Enable

bit1: Enabling N0 command

Select how to handle a command of sequence number zero (N0).

0: N0 causes an error.

1: N0 is ignored (causes no error).

bit7: Compensation at T length offset change in machine coord sys (G53) (M sys only)

Select the compensation operation to be performed when tool length offset is temporarily cancelled in the G53 block.

0: Not start compensation

1: If no command is given to the compensation target axis, the compensation starts with the coordinate shift type.
If the said command is present, the following operation is performed:
- For absolute command (e.g. G90G53Z10.): retain temporary cancel without starting compensation, and move to the command position.
- For incremental command (e.g. G91G53Z10.): start compensation with the coordinate shift type, and move by the incremental command value.

(Note) This parameter is enabled when "#1292 ext28/bit3" is "1".

(PR) #1294 ext30

Not used. Set to "0".

(PR) #1295 ext31

bit5: Timing of tool offset amount change (For L system only)

This parameter is only valid if "#1100 Tmove" = 1.

This parameter switches the timing of the change in the tool length offset amount or the wear offset amount when the currently selected amount is modified.

0: The new offset amount is applied when the T command is executed.

1: The new offset amount is applied when the movement command is read to the pre-read buffer.

bit6: Analog spindle synchronous tapping ON

Select whether to enable analog spindle synchronous tapping.

0: Disable

1: Enable

bit7: Synchronous tapping with analog I/F spindle: control switching method

This parameter specifies the control method for the synchronous tapping with analog I/F spindle function.

0: Not use the feedback from the encoder

1: The rotation speed command is compensated in accordance with the difference between the command position and the actual position of the analog I/F spindle.

(PR) #1296 ext32

bit1: Integration of local coordinate system offset in incremental mode

Select the operation when local coordinate system offset is set during incremental mode.

0: Integrate the local coordinate system offset.

1: Not integrate the local coordinate system offset.

bit3: Setting range for local coordinate system setting (G52)

Select the workpiece coordinate system (G54.1 and G54 to G59) for which G52 (Local coordinate system setting) defines a local coordinate system.

0: Define local coordinate system for the currently selected workpiece coordinate system

1: Define local coordinate system for all the workpiece coordinate systems

bit4: Behavior at the start of tool compensation (for L system only)

Select the behavior to be executed at the start of tool compensation.

The parameter is enabled when "#1100 Tmove" is "0".

0: Move the axis by the offset amount

1: Reflect the offset in the programmed position without axis travel

bit5: Subprogram calling/return block operation switching

Select whether the subprogram call block is interpreted as an executable statement or as a macro statement. When macro statement is selected, the block is batch processed with the adjacent macro statements.

This parameter changes the behavior at M98, M198, M99, G65 or G66.1 command.

0: Executable statement

1: Macro statement

(PR) #1297 ext33

bit0: Enable omission of address P for spindle selection

Select the behavior when address P is omitted from S command block under Multiple-spindle control I.

0: The program error "P135 Spindle select command illegal" is generated.

1: The S command value is applied for the last spindle selected by address P.
If spindle selection by address P has never been made after power ON, the value of "#12087 I_spCode" applies.

(Note) This parameter is valid when "#1300 ext36/bit4" is specified to "1" (Spindle selection by address P is valid).

bit1: Automatic change of feedback when spindle is selected by address P

Select the behavior of encoder selection when spindle is selected by address P under Multiple-spindle control I.

0: Automatically switched to the spindle selected by address P

1: Determined by the "Encoder selection (R2567)" signal

(Note) This parameter is valid when "#1300 ext36/bit4" is specified to "1" (Spindle selection by address P is valid).

bit2: Specify a spindle with address P after address M

This parameter is used to specify whether or not the address "P" can be used to specify a spindle after M3, M4 or M5 in an "M_P_" format block in Multiple-spindle Control I.

0: Address "P" cannot be used in combination with address "M" to specify a spindle.

1: Address "P" can be used in combination with address "M" to specify a spindle. (The format is "M_P_;".)

(Note) This parameter is valid when "#1300 ext36/bit4" is set to "1".

bit4: Switch arc speed clamp under temporary cancellation of normal line control

Specify the speed clamp method when the arc diameter is smaller than the minimum turning movement amount in normal line control, causing the turning to be temporarily canceled during the arc movement.

0: Not apply the clamp at the cutting feed clamp speed of the turning axis.

1: Apply the clamp at the cutting feed clamp speed of the turning axis, assuming that turning occurs.

bit5: Switch operation at G40 single command during circular mode

Select whether or not to issue an alarm when a G40 command is used alone with the circular or spiral interpolation mode (G02, G03, G02.1, G03.1) enabled.

0: A G40 command issued alone during the circular/spiral mode causes the alarm (P151).

1: A G40 command issued alone during the circular/spiral mode does not cause the alarm (P151).

(Note) When this parameter is set to "1", and a G40 command is issued alone with the circular/spiral interpolation mode enabled, the following travel command will cancel the radius compensation vector, regardless of the setting of "#1271 ext07/bit4" (Operation by independent G40 command).

(PR) #1298 ext34

Not used. Set to "0".

(PR) #1299 ext35

Not used. Set to "0".

(PR) #1300 ext36

bit0: Multiple spindle control II

Select multiple spindle control I or II.

0: Multiple spindle control I (L system only)

1: Multiple spindle control II (select from ladder)

bit1: Spindle control for each part system

Select whether to set spindle control command (S code/G96/G92) to be common in the part systems or to be separated by each part system when multiple spindle control II is enabled (#1300 ext36/bit0 = 1).

0: Common in the part systems

1: Separated by each part system

bit2: Part system-based spindle clamp speed management

Select how to manage the spindle clamp speed data.

0: Manage the data of all part systems collectively

1: Manage the data of each part system individually

bit3: Spindle command rotation speed input timing selection

When multiple-spindle control II is enabled (#1300 ext36/bit0 = 1), switch the timing to update the spindle command rotation speed input when performing the spindle selection(SWS) or spindle command selection(SLSP) with M command given in the same block as S command.

0: S command updates the spindle command rotation speed input for the spindle which is before the selection by the spindle selection(SWS) or spindle command selection(SLSP).

1: S command updates the spindle command rotation speed input for the spindle which is after the selection by the spindle selection(SWS) or spindle command selection(SLSP).

bit4: Enable/disable spindle selection by Address P

Switch the command method of spindle selection for Multi-spindle control 1 to the spindle selection by address P.

0: Select the spindle by G code or Sx=***** command.
(Spindle selection by address P is invalid)

1: Select the spindle by address P issued along with S command.
(Spindle selection by G code and Sx=***** command is invalid)

(Note) This parameter is valid when "#1300 ext36/bit0" is specified to "0" (Multi-spindle control 1).

bit5: Point of time to enable SP ctrl command during part system-specific SP ctrl

Determine at which time point to enable the last issued spindle control command (S code/G96/G92) of the specified part system while the part system-specific spindle control ("#1300 ext36/bit1" = 1) is valid.

0: The spindle control command is enabled:

- when the command is issued from the active part system; or
- when the status of Spindle command selection (SLSP) signal is changed.

1: The spindle control command is enabled:

- when the command is issued from the active part system;
- when the status of Spindle command selection (SLSP) signal is changed; or
- when the Spindle selection (SWS) signal is turned ON.

bit7: Spindle synchronization command method

Select the spindle synchronization command method.

0: Spindle synchronization with PLC I/F

1: Spindle synchronization with machining program

#1301 nrfchk Near reference position check method

Select the high-speed check method of the origin neighboring signal.

0: Do not check positions near the origin at high speeds. (Conventional specifications)

1: Check positions near the origin at high speeds using command machine positions.

2: Check positions near the origin at high speeds using encoder feedback positions.

#1302 AutoRP Automatic return by program restart

Select the method to move to the restart position when restarting the program.

0: Move the system to the restart position manually.

1: For program restarting, the first activation automatically moves the system to the restart position.

(PR)	#1303	V1comN	No. of #100 address part system common variables

Set the number of common variables, common for part systems, starting from address #100.

This is valid only when "#1052 MemVal" is set to "1".

---Setting range---

0 to 100

(PR)	#1304	V0comN	No. of #500 address part system common variables

Set the number of common variables, common for part systems, starting from address #500.

This is valid only when "#1052 MemVal" is set to "1".

---Setting range---

0 to 500

	#1306	InpsTyp	Deceleration check specification type

Select the parameter specification type for the G0 or G1 deceleration check.

0: Deceleration check specification type 1
G0 is specified with "#1193 inpos", and G1+G9 with "#1223 aux07/bit1".

1: Deceleration check specification type 2
G0 or G1+G9 is specified with "#1193 inpos".

(PR)	#1307	G0acc_plc	PLC axis G00 constant-gradient acceleration/deceleration valid

Set a type of acceleration/deceleration for the rapid traverse command.

0: Constant-time acceleration/deceleration (conventional method)

1: Constant-gradient acceleration/deceleration

(PR)	#1308	G1acc_plc	PLC axis G01 constant-gradient acceleration/deceleration valid

Select the type of acceleration/deceleration for a cutting feed command.

0: Constant-time acceleration/deceleration (conventional method)

1: Constant-gradient acceleration/deceleration

(PR)	#1309	GType	Switch command format

Select which is used to command the reverse tap.

0: G84.1/G88.1

1: D command with the value changed to negative

	#1310	WtMmin	Minimum value for synchronization M code

Set the minimum value for the M code. When "0" is set, the synchronization M code will be invalid.

---Setting range---

0, 100 to 99999999

	#1311	WtMmax	Maximum value for synchronization M code

Set the maximum value for the M code. When "0" is set, the synchronization M code will be invalid.

---Setting range---

0, 100 to 99999999

	#1312	T_base	Tool life management standard number

Set the standard No. for the tool life management.

When the value specified by the T code command exceeds the set value in this parameter, the set value will be subtracted from the command value, which will be used as tool group No. for tool life management.

When the value specified by the T code command is equal to or less than the set value, the T code will be handled as a normal T code and not subjected to tool life management.

When "0" is set in this parameter, the T code command will always specify a group No. (Valid for M-system tool life management II.)

---Setting range---

0 to 9999

	#1313	TapDw1	Synchronous tap hole bottom wait time

Set the hole bottom wait time for synchronous tapping.

When P address is specified, the greater value will be used as the hole bottom wait time. When an in-position check is performed at the hole bottom, the wait time will be provided after the completion of the in-position check.

(Note) This parameter is valid only when "1" is set in "#1223 aux07/bit3" (synchronous tap in-position check improvement) and "#1223 aux07/bit4" (synchronous tap hole bottom in-position check).

---Setting range---

0 to 999 (ms)

	#1314	TapInp	Synchronous tap in-position check width (tap axis)

Set the hole bottom in-position check width for synchronous tapping.

(Note) This parameter is valid only when "1" is set in "#1223 aux07/bit3" (synchronous tap in-position check improvement) and "#1223 aux07/bit4" (synchronous tap hole bottom in-position check).

---Setting range---

0.000 to 99.999

	#1315	RcmpBlk	Maximum number of pre-read blocks for Tool radius compensation

Specify the maximum number of pre-read blocks for Tool radius compensation.

(Note) When "0" or a value out of the setting range is set, the maximum number of pre-read blocks is "4".

---Setting range---

0, 2 to 4

(PR)	#1316	CrossCom	Reference of common variables common for part systems

Select whether to use the common variables from #100100 to #800199.

0: Not use

1: Use

This parameter is valid only when the number of variable sets is set to 600 or more.

When this parameter is set to "1", variables from #100100 to #100110 will not be available as the system variables for PLC data read function, and the setting of "#1052 MemVal" will be invalid.

(PR)	#1318	MacVcom	Machine tool builder macro variables for each part system

In a multi-part system configuration, select whether to use the machine tool builder macro variables (#450 to #499, #80000 to #80049 and #80500 to #80649) in common to all part systems or individually for each part system.

0: #450 to #499, #80000 to #80049 and #80500 to #80649 are used in common.

1: #450 to #499 are used in common to part systems. #80000 to #80049 and #80500 to #80649 are individual for each part system.

2: #450 to #499 are individual for each part system. #80000 to #80049 and #80500 to #80649 are common to part systems.

3: #450 to #499, #80000 to #80049 and #80500 to #80649 are used individually for each part system.

	#1319	Grp24_mdrst_off	G group 24 modal retention reset OFF

Select whether or not to retain the G group 24 modal state (G188/G189) after modal retention reset.

0: Not initialize the G group 24 modal state even when you turn OFF the program format change request signal (PFCHR) and press Cycle Start.

1: Determine the G group 24 modal state according to the program format change request signal (PFCHR) when Cycle Start is pressed.

(PR)	#1324	chop_R	Chopping compensation value fixing method

Set the head No. of the R register used as the compensation amount save area during fixed compensation amount method.

When the first number is an odd number, the operation message "Setting error" appears.

When the value overlaps with the chopping control data area, the operation message "Setting error" appears.

---Setting range---

8300 to 9782

(Only the even number)

(Within backup area)

(PR)	#1326	PLC Const Ext. Num	PLC constant extension number

Set the number of PLC constant extension points.

---Setting range---

0 to 750

	#1327	3D ATC type	Tool change method specification

Select the tool change method for determining the tool to draw solids.

With 3D drawing, the tool will be changed by the method designated with this parameter, and then the image will be drawn.

0: With one standby tool

1: With two standby tools

2: With no standby tool

	#1328	TLM type	Reference position for tool measurement

Select the reference position for tool measurement.

0: The machine position at the time when TLM is turned ON

1: The machine zero point

	#1329	Emgcnt	Emergency stop contactor shut-off time

Set the time taken for the drive section's main power to be shut-off when the confirmation of all the axes' stop failed after the emergency stop state.

The contactor shut-off signal is output as soon as all the axes are confirmed stopped if the confirmation is done prior to the set time.

When there is no safety observation option or "0" is set, the shut-off time will be 30 (s).

---Setting range---

0 to 60 (s)

(PR)	#1330	MC_dp1	Contactor weld detection device 1

When safety observation is executed, set the remote I/O device to input the contactor's auxiliary b contact signal used for the contactor weld detection.

If "0" is set, weld detection will not be executed.

Thus, "X0" cannot be used as contactor weld detection device.

---Setting range---

0000 to 03FF (hexadecimal)

(PR)	#1331	MC_dp2	Contactor weld detection device 2

When safety observation is executed, set the remote I/O device to input the contactor's auxiliary b contact signal used for the contactor weld detection.

If "0" is set, weld detection will not be executed.

Thus, "X0" cannot be used as contactor weld detection device.

---Setting range---

0000 to 03FF (hexadecimal)

(PR)	#1332	F-bus init delay	Fieldbus communication error invalid time

Specify a period of time during which the control does not detect a Fieldbus communication error of the Fieldbus expansion card mounted in the slot EXT3 (or EXT1 for M80V/M800VS), after startup of the NC is completed.

Set this in 0.1-second increments.

(Note) PROFIBUS-DP communication expansion card refers to this parameter, whichever slot (EXT3 or EXT4 (or EXT1 or EXT2 for M80V/M800VS)) the card is mounted in. It does not refer to the parameter #1490.

---Setting range---

0 to 60000 (0.1s)

	#1333	LMC restrain	Lost motion compensation restraint in handle mode

Select whether to restrain the lost motion compensation in handle mode.

0: Not restrain

1: Restrain

(PR)	#1334	DI/DO refresh cycl	DI/DO refresh cycle

Select the start cycle of PLC main processing program.
When wait time until the next start cycle from 1 scan end is long, the wait time can be shortened by adjusting the start cycle.

-1: Low-speed mode (2 fold)

0: Standard mode

1: High-speed mode 1 (1/2 fold)

2: High-speed mode 2 (1/4 fold)

(Note 1) The refresh cycle of M80V(typeB) is fixed regardless of the setting value of this parameter.

(Note 2) When the high-speed mode is selected, the fine segment processing performance may degrade due to the increased processing load of the system.

(Note 3) When the high-speed mode 2 is selected, the scan time should be 1/4 or less of the base interruption cycle as a standard. If the standard is exceeded, the update of all the DI/DOs in refresh cycle may not be able to be performed.

(Note 4) If the number of RIO stations connected is large, the update of all the RIO in refresh cycle may not be able to be performed. Make the setting according to the number of stations per RIO channel.

	#1335	man_smg	Manual feed acceleration/deceleration selection

Select the acceleration/deceleration mode in jog feed, incremental feed and manual reference position return (when rapid traverse signal OFF).

0: Acceleration/Deceleration for rapid traverse

1: Acceleration/Deceleration for cutting feed

(PR)	#1336	#400_Valtype	#400 address variable type

Select whether the #400-level variables are used as machine tool builder macro variables or as common variables.

0: #400 to #449 are not available;
#450 to #499 are used as machine tool builder macro variables.

1: #400 to #499 are used as common variables

(Note) 700 sets or more of common variables are required for using #400 to #499 as common variables. If this parameter is set to "1" while the number of common variables is set to less than 700, this parameter setting will be regarded as "0".

(PR)	#1338	rev data save trg	Trigger switching to save arbitrary reverse run data

Select the condition to start/stop saving reverse run data.

0: Starts when the reverse run control mode signal is turned ON, and stops when turned OFF.

1: Start when the reverse run control mode signal is ON and macro interrupt is valid (M96/ION). Stop when the reverse run control mode signal is OFF or macro interruption is finished (M97/IOF). (compatible with M500M)

(PR) #1339 MC_dp3 Contactor weld detection device 3

When safety observation is executed, set the remote I/O device to input the contactor's auxiliary b contact signal used for the contactor weld detection.

If "0" is set, weld detection will not be executed.

Thus, "X0" cannot be used as contactor weld detection device.

---Setting range---

0000 to 03FF (hexadecimal)

(PR) #1340 MC_dp4 Contactor weld detection device 4

When safety observation is executed, set the remote I/O device to input the contactor's auxiliary b contact signal used for the contactor weld detection.

If "0" is set, weld detection will not be executed.

Thus, "X0" cannot be used as contactor weld detection device.

---Setting range---

0000 to 03FF (hexadecimal)

#1342 AlmDly Alarm display delay time

Set a period of time by which alarm display is delayed.
Set a time between when an operation alarm occurs and when the alarm display and signal turn ON.
When set to "0", the alarm display and signal will turn ON immediately after the alarm occurrence.
When set to "-1", the alarm display and signal will not turn ON after the alarm occurrence.

Target alarms:
M01 External interlock axis exists 0004
M01 Internal interlock axis exists 0005
M01 Sensor signal illegal ON 0019
M01 No operation mode 0101

This parameter is disabled if "#1343 DlyReg" is set.

---Setting range---

-1 to 30000 (ms)

(PR) #1343 DlyReg R register for delayed alarm display setting

Set the head No. of the R register to be used for delayed display of an operation alarm.

If any R register outside the user area is specified, delayed alarm display is disabled.

If this parameter is set, the setting of #1342 AlmDly is disabled.

When not using, set to "0".

---Setting range---

0 to 29899

(PR) #1349 DOOR_1 Door 1 switch input device

Set a remote I/O device to input the door sensor signal to detect Door 1's status in safety observation.

When "0" is set, the door is always detected to be open.

Thus, "X0" cannot be used as Door 1 switch input device.

---Setting range---

0000 to 03FF (hexadecimal)

(PR) #1350 DOOR_2 Door 2 switch input device

Set a remote I/O device to input the door sensor signal to detect Door 2's status in safety observation.

When "0" is set, the door is always detected to be open.

Thus, "X0" cannot be used as Door 2 switch input device.

---Setting range---

0000 to 03FF (hexadecimal)

(PR) #1353 MC_ct1 Contactor shutoff output 1 device

Set a device of an output remote I/O device to control contactor in safety observation.

When set to "0", contactor shutoff output is disabled.

Thus, "Y0" cannot be used as contactor shutoff output device.

---Setting range---

0000 to 03FF (hexadecimal)

(PR)	#1357	mchkt1	Contactor operation check allowed time 1

Set a period of time until emergency stop is issued when a contactor does not operate even though contactor shutoff output 1 is output.

If the vertical axis drop prevention function is used, set a value bigger than the vertical axis drop prevention time (SV048 EMGrt).

When "0" is set, the contactor operation check will be disabled.

---Setting range---

0 to 30000 (ms)

(PR)	#1361	aux_acc	Auxiliary axis acceleration/deceleration type

Select the acceleration/deceleration type of auxiliary axis in PLC axis indexing.

0: Acceleration/deceleration with constant time

1: Acceleration/deceleration with constant gradient

	#1365	manualFtype	Manual speed command type

Select the manual speed command type.

0: Manual speed command
The axis travels at the handle/jog feed rate.
Reverse run is performed for each part system independently of the other ones.

1: Manual speed command 2
In a multi-part system configuration, the axis travels at the handle/jog feed rate multiplied by the ratio of each part system's program command speeds.
When the block start point is reached in reverse run in any of the part systems, the axes in the other part systems stop simultaneously.

	#1366	skipExTyp	Multi-system simultaneous skip command

Select the operation when G31 is commanded in more than one part system.

0: Carry out G31 command in one part system, while the G31 is kept in an interlocked state in the other systems.

1: Carry out G31 command simultaneously in more than one part system.

	#1367	G1AccOVRMax	Max. override value for cutting feed constant-gradient acc./dec.

Set the maximum override value to be applied to the cutting feed that is in constant-gradient acceleration/deceleration.
When the setting of this parameter is between 0 and 99, the override value is handled as 100% even though the specified cutting feed override is over 100%.

---Setting range---

0 to 300 (%)

(PR)	#1369	S_Sig1	Safety observation signal device 1

Set the remote I/O device to input the observation speed change signal 1 during executing the safety observation function.
When set to "0", there is no observation speed change signal input.
Therefore "X0" cannot be used as safety observation signal device.

---Setting range---

0000 to 03FF (hexadecimal)

(PR)	#1370	S_Sig2	Safety observation signal device 2

Set the remote I/O device to input the observation speed change signal 2 during executing the safety observation function.
When set to "0", there is no observation speed change signal input.
Therefore "X0" cannot be used as safety observation signal device.

---Setting range---

0000 to 03FF (hexadecimal)

(PR)	#1371	PwrIntegIntvl	Power consumption accumulation interval

Specify the intervals of accumulating power consumption to create the history.
The accumulated power consumption history can be obtained according to this parameter along with "#1392 StartTimeIPC" (Power consumption accumulation start time).
When 0 is set, power consumption is not accumulated.

---Setting range---

0 to 999 (hr)

	#1372	DrvBasePwr	Fixed drive system power consumption

Specify the fixed power consumption of the drive system.
This value is used for calculating the power consumption.

---Setting range---

0 to 99999999 (W)

(PR)	#1373	mstpssc	Multi-step speed monitor enabled

Enable the multi-step speed monitor.

0: Disable the multi-step speed monitor

1: Enable the multi-step speed monitor

* When enabling the multi-step speed monitor, setting values for SV238, SV239, SP238 and SP239 will be ignored.

(PR)	#1379	S_Sig3	Safety observation signal device 3

Set the remote I/O device to input the observation speed change signal 3 during executing the safety observation function.
When set to "0", there is no observation speed change signal input.
Therefore "X0" cannot be used as safety observation signal device.

---Setting range---

0000 to 03FF (hexadecimal)

(PR)	#1380	TolOfsVal_M	Tool compensation variable change

Not used. Set to "0".

(PR)	#1381	TolOfsCmdCheck_M	Tool offset command check (for M system only)

Specify the zero check type (either the compensation No. or compensation amount) of a compensation command (*1) for each bit.

bit0: Enable compensation No. zero check

bit1: Enable compensation amount zero check

(*1) Compensation command means the followings:

- Tool radius compensation (G41, G42, G41.2, G42.2, G43.8, G43.9), the address D
- Tool length compensation (G43, G44, G43.1, G43.4, G43.5, G43.7, G43.8, G43.9), the address H
- Tool position offset (G45, G46, G47, G48), the address D

---Setting range---

0000 to FFFF

	#1389	G1SmthChk	Smoothing check method in cutting block

Select whether to apply smoothing check method to a cutting block for deceleration check, when deceleration check method is selected individually for G0 and G1 (when "#1306 InpsTyp" = 0).

0: Follow the setting of "#1223 aux07/bit1"

1: Apply smoothing check method

(PR)	#1390	BackUSBUseNum	Number of backside USB ports occupied

Specify the number of the display's rear USB ports occupied by a machine tool builder. Using this setting the control determines the drive to be used for the front SD and USB memory.

(Note) This parameter is enabled for a Windows-based display of M800VW/M80VW.

---Setting range---

0 to 6

(PR)	#1391	User level protect	Enable Data protection by user's level

Enable the function of Data protection by user's level.

0: Use a machine user password to switch the protection of each operation (same as the conventional models)

1: Switch the protection according to the protective levels (0 to 7) specified for each operation through the protection setting screen

(Note) You are authorized to change this parameter from 1 to 0 only if your operation level is the same or higher than that of "Available level" on the protection setting screen.

(PR)	#1392	StartTimeIPC	Power consumption accumulation start time

Specify when to start accumulating power consumption to create the history.
The accumulated power consumption history can be obtained according to this parameter along with "#1371 PwrIntegIntvl" (Power consumption accumulation interval).

---Setting range---

0 to 23 (o'clock)

	#1393	Efficiency (PwrCal)	Efficiency for power consumption computation

Specify the efficiency for calculating power consumption.
This value is used for calculating the drive system power consumption.
When 0 is set, the efficiency is treated as 70 (%).
If the drive system power consumption computed by the NC is different from that measured by a measuring device, this parameter is used to adjust the drive system power consumption of the NC.

---Setting range---

0 to 100 (%)

(PR)	#1395	H1_pno	1st handle selection

Specify the connection destination of the 1st handle.

bit0 to bit3: Handle connection channel 1 to 4 ("3" is only valid for operation panel)

bit4 to bit7: Handle connection destination

0: CNC unit
1 to 4: Remote I/O unit
5: Expansion unit
D to F: Operation panel I/O unit (D: RIO1, E: RIO2, F: RIO3)

bit8 to bitF: Remote I/O unit station 1 to 40 (hexadecimal)

(Example)

0001: Handle 1 connected to the CNC unit

2421: Handle 1 of 36th station for remote I/O unit connected to RIO2

00D3: Handle 3 of operation panel I/O unit connected to RIO1

(Note 1) When the specified destination is not implemented, handle movement is not performed.

(Note 2) When all the "H1_pno" to "H3_pno"are set to "0000", handles are automatically allocated. Other than above, "0000" setting is the same connection as "0001" setting.

---Setting range---

0000 to FFFF (hexadecimal)

(PR)	#1396	H2_pno	2nd handle selection

Specify the connection destination of the 2nd handle.
Refer to "#1395 H1_pno" (1st handle selection) for further details.

(PR)	#1397	H3_pno	3rd handle selection

Specify the connection destination of the 3rd handle.
Refer to "#1395 H1_pno" (1st handle selection) for further details.

	#1399	sp_filt	Spindle's actual rotation speed filter

Specify the average filter scale factor for the spindle's actual rotation speed data.
If the scale factor increases, fluctuations in speed display are mitigated.

0: Standard setting

1: 0.5-fold

2: 1-fold

3: 2-fold

4: 4-fold

5: 8-fold

	#1401	M_mode	M command operation selection

Select the M command operation.

(Note) Register M codes in the special operation registration M codes (#1411 to #1426).

0: Not wait for the completion of registered M codes, but wait for the completion of the other M codes

1: Wait for the completion of registered M codes, but not wait for the completion of the other M code

#1402	S_mode	S command completion method selection

Select the S command completion method.

0: Wait for the complete signal from PLC

1: Not wait for the complete signal from PLC

#1403	T_mode	T command completion method selection

Select the T command completion method.

0: Wait for the complete signal from PLC

1: Not wait for the complete signal from PLC

#1404	M2_mode	2nd miscellaneous command completion method selection

Select the 2nd miscellaneous command completion method.

0: Wait for the complete signal from PLC

1: Not wait for the complete signal from PLC

#1405	M_mode(SMLK)	M code output (during high-speed simple program check)

Select the M code output method to be applied during high-speed simple program check.

0: Output the M codes registered in #1451 to #1466 M[M511-000](SMLK), but not output unregistered M codes.
M512 or subsequent M codes are not output.

1: Output the M codes unregistered in #1451 to #1466 M[M511-000](SMLK), but not output those registered.
M512 and subsequent M codes are all output.

#1406	S_mode(SMLK)	S code output (during high-speed simple program check)

Select the S code output method to be applied during high-speed simple program check.

0: Not output S code

1: Output S code

#1407	T_mode(SMLK)	T code output (during high-speed simple program check)

Select the T code output method to be applied during high-speed simple program check.

0: Not output T code

1: Output T code

#1408	M2_mode(SMLK)	2nd miscellaneous code output (during high-speed simple program check)

Select the 2nd M code output method to be applied during high-speed simple program check.

0: Not output 2nd M code

1: Output 2nd M code

#1411	M_wait[M031-000]	Special operation registration M code

Register an M code (00 to 31) that needs special operation.

Each bit of the set value corresponds to the M code number.

(Example) To register M05, set 00000020 in #1411.

(Note) Note that the registered M code operation varies according to "#1401 M_mode".

---Setting range---

0 to FFFFFFFF

Set this in hexadecimal format.

#1412	M_wait[M063-032]	Special operation registration M code

Register an M code (32 to 63) that needs special operation.

Refer to "#1411 M_wait[M031-000]" for details.

#1413	M_wait[M095-064]	Special operation registration M code

Register an M code (64 to 95) that needs special operation.

Refer to "#1411 M_wait[M031-000]" for details.

	#1414	**M_wait[M127-096]**	**Special operation registration M code**

Register an M code (96 to 127) that needs special operation.
Refer to "#1411 M_wait[M031-000]" for details.

	#1415	**M_wait[M159-128]**	**Special operation registration M code**

Register an M code (128 to 159) that needs special operation.
Refer to "#1411 M_wait[M031-000]" for details.

	#1416	**M_wait[M191-160]**	**Special operation registration M code**

Register an M code (160 to 191) that needs special operation.
Refer to "#1411 M_wait[M031-000]" for details.

	#1417	**M_wait[M223-192]**	**Special operation registration M code**

Register an M code (192 to 223) that needs special operation.
Refer to "#1411 M_wait[M031-000]" for details.

	#1418	**M_wait[M255-224]**	**Special operation registration M code**

Register an M code (224 to 255) that needs special operation.
Refer to "#1411 M_wait[M031-000]" for details.

	#1419	**M_wait[M287-256]**	**Special operation registration M code**

Register an M code (256 to 287) that needs special operation.
Refer to "#1411 M_wait[M031-000]" for details.

	#1420	**M_wait[M319-288]**	**Special operation registration M code**

Register an M code (288 to 319) that needs special operation.
Refer to "#1411 M_wait[M031-000]" for details.

	#1421	**M_wait[M351-320]**	**Special operation registration M code**

Register an M code (320 to 351) that needs special operation.
Refer to "#1411 M_wait[M031-000]" for details.

	#1422	**M_wait[M383-352]**	**Special operation registration M code**

Register an M code (352 to 383) that needs special operation.
Refer to "#1411 M_wait[M031-000]" for details.

	#1423	**M_wait[M415-384]**	**Special operation registration M code**

Register an M code (384 to 415) that needs special operation.
Refer to "#1411 M_wait[M031-000]" for details.

	#1424	**M_wait[M447-416]**	**Special operation registration M code**

Register an M code (416 to 447) that needs special operation.
Refer to "#1411 M_wait[M031-000]" for details.

	#1425	**M_wait[M479-448]**	**Special operation registration M code**

Register an M code (448 to 479) that needs special operation.
Refer to "#1411 M_wait[M031-000]" for details.

	#1426	**M_wait[M511-480]**	**Special operation registration M code**

Register an M code (480 to 511) that needs special operation.
Refer to "#1411 M_wait[M031-000]" for details.

(PR)	**#1427**	**RT2AftG1**	**RT2: Enable switching of acce/dece time constant after G1 interpolation**

Select whether to enable switching of acceleration/deceleration time constant after G1 interpolation.

0: Disable switching of acceleration/deceleration time constant after G1 interpolation.

1: Enable switching of acceleration/deceleration time constant after G1 interpolation.

(PR)	#1428	RT2rst	RT2: Enable changing acce/dece time constant back when NC is reset

Select whether to change acceleration/deceleration time constant back to parameter value when NC is reset.

0: Disable changing acceleration/deceleration time constant back when NC is reset.

1: Enable changing acceleration/deceleration time constant back when NC is reset.

(PR)	#1431	Ax_Chg	Selection of mixed control (cross axis control) or arbitrary axis exchange control

Choose which of the following controls to enable; Mixed control (Cross axis control) I, II or arbitrary axis exchange control.

Set this parameter to "1" to enable the arbitrary axis exchange control function with M80VtypeA (M system) and M80VW (M system).

0: Mixed control (Cross axis control) I or II

1: Arbitrary axis exchange control

	#1432	Ax_Chg_Spec	

bit0: Selection of alarm when axis exchange is disabled

Select whether to issue an alarm or wait until the axis becomes exchangeable when axis exchange is disabled.

0: Wait until the axis becomes exchangeable when the axis declared in an axis exchange command is incapable of being exchanged.

* The parameter #1433 (G140TimeOut) determines the operation to be carried out during the waiting time.

1: Output the alarm (M01 1101) when the axis declared in an axis exchange command is incapable of being exchanged.

bit1: Compensation cancel after arbitrary axis exchange

Select whether to enable canceling of compensation after an arbitrary axis exchange.

0: Not cancel compensation after arbitrary axis exchange

1: Cancel compensation after arbitrary axis exchange

	#1433	G140TimeOut	G140 timeout period

Specify a period of time to wait before outputting the alarm (M01 1101) when an axis declared in the axis exchange command is unexchangeable.

If the specified time elapses with the axis remaining unexchangeable, the alarm (M01 1101) is output. However this alarm is cancelled and axis exchange is carried out once the axis becomes capable of being exchanged.

0 to 254: Period of time to wait before timeout (sec)

255: Wait until the axis becomes exchangeable without executing timeout check

(Note) This parameter is enabled when the alarm is not caused by an axis' unexchangeable state (when #1432 Ax_Chg_Spec(bit0) = 0).

---Setting range---

0 to 254 (s)

255: No timeout

	#1434	G140Type2	G140 command type 2

Select which axis address(es) can be commanded under G140 (Arbitrary axis exchange) control.

0: The axis (or axes) specified in the G140 block can be commanded.

1: Not only the axis (or axes) specified in the G140 block but those unspecified in the block can also be commanded.

	#1435	crsman	Manual interruption during cross machining

Select whether to enable manual interruption for an axis being under cross machining control.

0: Disable

1: Enable

	#1436	mstsyn	Enable override for dwell and miscellaneous function time

Select whether to enable override for the dwell time and miscellaneous function time.

0: Disable (Override takes no effect.)

1: Enable (Override takes effect.)

	#1437	SBS2_Spec	Selection of alarm when sub part system II start is disabled

bit0: Selection of alarm when sub part system II start is disabled

Select the type of operation to be carried out when the sub part system specified by G144 is incapable of being activated.

0: Wait until the system becomes capable of being activated

1: Output an alarm

bit1: Sub part system control II: Reset type selection

Select how to reset the sub part system control II.

0: Reset sub part system at the same time as main part system reset.

1: Not reset sub part system at the time of main part system reset.

(PR)	#1438	Ofs-SysAssign	Enable part system allocation of tool offset sets

Select the allocation method of tool offset sets.

0: Automatic equal allocation

1: Arbitrary allocation

The setting of "1" is enabled for a system configured with two or more part systems.
When "1" is selected for a system configured with a single part system, all the offset sets of the system are allocated to the 1st part system.

(PR)	#1439	Tlife-SysAssign	Part system allocation of life management tools

Select the allocation method of the life management tools.

0: Automatic equal allocation

1: Arbitrary allocation

The setting of "1" is enabled for a system configured with two or more part systems.

When "1" is selected for a system configured with a single part system, all the life management tools of the system are allocated to the 1st part system.

(PR)	#1440	multi_sp_syn	Multiple spindle synchronization valid

Select whether to enable multiple spindle synchronization.

0: Disable multiple spindle synchronization.

1: Enable multiple spindle synchronization.

(PR)	#1441	Tcode_Method_Chg	T command method selection

Select the tool command method.

0: Tool life management II format

1: Tool function

	#1442	G0ol	Enable G00 rapid traverse block overlap

Select whether to enable the G00 rapid traverse block overlap function.

0: Disable

1: Enable

	#1443	G28ol	Enable G28 rapid traverse block overlap

Select whether to enable the G28 rapid traverse block overlap function.

0: Disable

1: Enable

	#1444	otsys	Stop all part systems at OT

Select whether to stop all the part systems or only the part system where H/W stroke end, soft limit or interference check alarm has occurred.

(Note) If H/W stroke end, soft limit or interference check alarm has occurred on an axis related to superimposition, synchronization, arbitrary axis superimposition, or synchronization during axis traveling, the part system to which the superimposition (synchronous) and reference axes belong is treated as the one where the alarm has occurred.

0: Stop each part system

1: Stop all the part systems

(PR)	#1445	Tol-Custom-nondisp	Non-display of additional info on tool management screen

Select whether to display or hide additional information on the tool management screen.

0: Display

1: Not display

	#1446	Tlno.hold	Tool length offset No. retention

Select the operation to be performed when command T has no tool length offset No.

0: Tool length offset No. is deemed as 0.

1: Last commanded tool length offset No.is applied.
(Tool length offset No. is unchanged.)

	#1447	G96_tmp_cancel	Temporary cancel of constant surface speed control

0: Disable a spindle rotation command given in another part system

1: Enable a spindle rotation command given in another part system

	#1448	Sclamp_err_cancel	Cancel of the error for absence of spindle speed clamp

0: Disable cancel of the error

1: Enable cancel of the error

	#1449	m_clamp_on	Manual feed rate clamp ON

0: Rapid traverse rate "#2001 rapid" serves as the maximum speed in jog, handle, incremental or manual reference position return (high-speed) mode. However you can use a PLC device to switch the maximum speed to the manual feed clamp speed "#2641 m_clamp".

1: Manual feed clamp speed "#2641 m_clamp" serves as the maximum speed in jog, handle, incremental, or manual reference position return (high-speed) mode.

(PR) #1450 5axis_Spec

bit0: Axis name setting method of rotary axis configuration parameter

Select the axis name setting method for rotary axis configuration parameter (#7900, #7901, #7902, #7922, #7932, #7942, #7952).

0: Set by axis name

1: Set by 2nd axis name

bit1: Using G174 tool axis rotation angle as compensation amount

0: Specify the compensation amount using the address R and R register.

1: Use the tool axis rotation angle of G174 as the compensation amount.

bit2: Application of rotary axis configuration parameters

Select the method of applying the rotary axis configuration parameters.

0: Automatic selection method

1: PLC signal method

(Note) This parameter is enabled when "#1450 5axis_Spec/bit0" (Axis name setting method of rotary axis configuration parameter) is "1".

bit3: Select specifications of rotation direction parameter

Select the specifications of rotation direction parameter (#7923, #7933, #7943, #7953).

0: The parameter specifications vary for each function.

1: The parameter specifications are common to the functions.

"#7923 DIR_T1", "#7933 DIR_T2", "#7943 DIR_W1", "#7953 DIR_W2"

0: When the tool motion viewed from the workpiece is in "right-hand screw direction", it is taken as the positive direction.

1: When the tool motion viewed from the workpiece is in "left-hand screw direction", it is taken as the positive direction.

(*) The following functions are applicable.

- Tool center point control
- Tool cutting point control
- Inclined surface machining
- 3-dimensional tool radius compensation
- Workpiece installation error compensation

etc.

bit5: Selection of axis configuration change prevention (Rotation center error compensation)

Specify whether to prevent the change of axis configuration due to functions listed below during rotation center error compensation.

- Arbitrary axis exchange control
- Mixed control I/II
- Control axis synchronization across part systems I/II
- Control axis superimposition
- Arbitrary axis superimposition

0: Disable the change of axis configuration.

- During rotation center error compensation, the change of axis configuration due to functions listed above is prevented.
- When reset is input or emergency stop is canceled, the axis configuration of each part system, axis synchronization due to functions listed above, and rotation center error compensation are held.

1: Enable the change of axis configuration.

- When reset is input or emergency stop is canceled, the axis configuration of each part system due to functions listed above is specified by "#1280 ext16/bit1, bit3" and "#1753 cfgPR03/bit3".
- There may be cases where rotation center error compensation is deactivated after the axis configuration has been changed.

(Note 1) This parameter is enabled when "#1450 5axis_Spec/bit0" (Axis name setting method of rotary axis configuration parameter) is "1".

(Note2) Please pay attention to the shift of the axis when changing the axis configuration due to functions like arbitrary axis exchange function during rotation center error compensation.

bit6: SSS control calculation mode selection under Tool center point control

Specify a method of calculating clamp speed at the point where the rotary axis command value changes when Tool center point control and SSS control are both used.

0: Calculate the clamp speed based on orthogonal and rotary axis command.

1: Calculate the clamp speed based on orthogonal axis command.

bit7: Selection of axis configuration change prevention (Spatial error compensation)

Specify whether to prevent the change of axis configuration due to functions listed below during spatial error compensation.

♦Arbitrary axis exchange control

0: Disable the change of axis configuration.

♦During spatial error compensation, the change of axis configuration due to functions listed above is prevented.
♦When reset is input or emergency stop is canceled, the axis configuration of each part system, axis synchronization due to functions listed above, and spatial error compensation are held.

1: Enable the change of axis configuration.

♦When reset is input or emergency stop is canceled, the axis configuration of each part system due to functions listed above is specified by "#1280 ext16/bit1" and "#1753 cfgPR03/bit3".
♦There may be cases where spatial error compensation is deactivated after the axis configuration has been changed.

(Note1) This parameter is valid only when "#1450 5axis_Spec/bit0" is set "1".

(Note2) Please pay attention to the shift of the axis when changing the axis configuration due to functions like arbitrary axis exchange function during spatial error compensation.

#1451	M[M031-000](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (00 to 31) to be output during high-speed simple program check.

Each bit of the set value corresponds to the M code number.

(Example) To register M05, set 00000020 in #1451.

(Note) Note that operation of the registered M code varies according to "#1405 M_mode(SMLK)".

---Setting range---

0 to FFFFFFFF

Set this in hexadecimal format.

#1452	M[M063-032](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (32 to 63) to be output during high-speed simple program check.

Refer to "#1451 M[M031-000](SMLK)" for details.

#1453	M[M095-064](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (64 to 95) to be output during high-speed simple program check.

Refer to "#1451 M[M031-000](SMLK)" for details.

#1454	M[M127-096](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (96 to 127) to be output during high-speed simple program check.

Refer to "#1451 M[M031-000](SMLK)" for details.

#1455	M[M159-128](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (128 to 159) to be output during high-speed simple program check.

Refer to "#1451 M[M031-000](SMLK)" for details.

#1456	M[M191-160](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (160 to 191) to be output during high-speed simple program check.

Refer to "#1451 M[M031-000](SMLK)" for details.

#1457	M[M223-192](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (192 to 223) to be output during high-speed simple program check.
Refer to "#1451 M[M031-000](SMLK)" for details.

#1458	M[M255-224](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (224 to 255) to be output during high-speed simple program check.
Refer to "#1451 M[M031-000](SMLK)" for details.

#1459	M[M287-256](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (256 to 287) to be output during high-speed simple program check.
Refer to "#1451 M[M031-000](SMLK)" for details.

#1460	M[M319-288](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (288 to 319) to be output during high-speed simple program check.
Refer to "#1451 M[M031-000](SMLK)" for details.

#1461	M[M351-320](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (320 to 351) to be output during high-speed simple program check.
Refer to "#1451 M[M031-000](SMLK)" for details.

#1462	M[M383-352](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (352 to 383) to be output during high-speed simple program check.
Refer to "#1451 M[M031-000](SMLK)" for details.

#1463	M[M415-384](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (384 to 415) to be output during high-speed simple program check.
Refer to "#1451 M[M031-000](SMLK)" for details.

#1464	M[M447-416](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (416 to 447) to be output during high-speed simple program check.
Refer to "#1451 M[M031-000](SMLK)" for details.

#1465	M[M479-448](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (448 to 479) to be output during high-speed simple program check.
Refer to "#1451 M[M031-000](SMLK)" for details.

#1466	M[M511-480](SMLK)	Special operation registration M code (High-speed simple program check)

Register an M code (480 to 511) to be output during high-speed simple program check.
Refer to "#1451 M[M031-000](SMLK)" for details.

#1467	Manual MSTB macro	MSTB macro call via manual numerical value command

Select whether to enable a miscellaneous command macro call through the manual numerical value command.

0: Disable

1: Enable

When Disable is selected, the commanded MSTB code and strobe are output.

#1468	ctrl period	Control period

Set the standard value "0".

(PR)	#1469	P-BUS dev assign	PROFIBUS device allocation method

Select how to allocate the PLC devices that are used for PROFIBUS-DP(DPV0): fixed allocation (512 points) or arbitrary allocation (8192 points).

0: Fixed

1: Arbitrary

(PR)	#1471	mgralmstp	Enable machine groupwise alarm stop

Select whether to enable the machine groupwise alarm stop function.

0: Disable

1: Enable

(PR)	#1472	mgralmrestart	Allowing automatic operation to start after machine groupwise alarm stop

Select whether to allow automatic operation to be activated after machine groupwise alarm stop.

0: Not allow automatic operation to start after machine groupwise alarm stop

1: Allow automatic operation to start after machine groupwise alarm stop

(PR)	#1473	mgralmcont	Allowing operation to continue after machine groupwise alarm stop

When any alarm causes an axis that is in the midst of program execution to stop, this parameter allows you to select the behavior of axes that belong to machine groups other than that of the said axis.

0: Feed hold

1: The operation is allowed to continue.

(PR)	#1474	SBS2_sys num	Number of sub systems to use in sub part system control II

Specify the number of sub part systems to use in sub part system control II.

The specified number of part systems counted from the end of the system's effective part systems are treated as sub part systems.

---Setting range---

0 to 7

(PR)	#1475	MES-IF_on	MES-IF ON

Set whether to enable the MES interface function.

0: Disable

1: Enable

	#1476	ComErrDly	Delayed display and storage of communication error

Specify a period of time by which to delay the error display and the storage to the alarm history, when the communication error (Y02 System error 0051) occurs.
Set this time when the communication error is stored in the history at the power OFF.
If it does not occur (if unused), set to "0".

---Setting range---

0 to 5000 (ms)

	#1477	SrvAlmDly	Delayed display and storage of servo/spindle alarm

Specify a period of time by which to delay the alarm display and the storage to the alarm history, when a servo/spindle alarm occurs.
Set this time when a servo/spindle alarm is stored in the history at the power OFF.
If it does not occur (if unused), set to "0".

---Setting range---

0 to 5000 (ms)

(PR)	#1478	F-bus Card 1 OFF	Fieldbus communication extension card 1 OFF

Select whether to enable or disable the Fieldbus communication expansion card mounted in the slot EXT3 (or EXT1 for M80V/M800VS).

0: Enable (default)

1: Disable

(Note) This parameter is enabled for all the communication expansion cards, except CC-Link expansion card.

(PR) #1479 F-bus Card 2 OFF — Fieldbus communication extension card 2 OFF

Select whether to enable or disable the Fieldbus communication expansion card mounted in the slot EXT4 (or EXT2 for M80V/M800VS).

0: Enable (default)

1: Disable

(Note) This parameter is enabled for all the communication expansion cards, except CC-Link expansion card.

#1480 tp_invalid — Disable touch panel operation

Select whether to disable input via touch panel.

0: Enable touch panel operation

1: Disable touch panel operation

(PR) #1481 Enable S-Safety — Enable smart safety observation

Select whether to enable smart safety observation.

0: Disable

1: Enable

(PR) #1483 SBS1_sys num — Number of sub systems to use in sub part system control I

Specify the number of sub part systems to be used for Sub part system control I in M80V or M80VW. The specified number of part systems counted from the end of the system's effective part systems are treated as sub part systems.

(Note) For M800V, this setting is ignored. (All the effective part systems can be used as main or sub part system.)

---Setting range---

0 to 7

#1487 ITF3_Spec — Interference check III specification

bit0: Speed clamp specifications at entering the interference warning area

In interference check III, select whether to perform speed clamp and torque limit in only the part systems relating to the interference warning or in all the part systems at entering the interference warning area.

0: Perform in only the part systems relating to the interference warning

1: Perform in all the part systems and axes

(PR) #1488 ITF3 valid — Interference check III valid

Interference check III is validated.

0: Interference check III invalid

1: Interference check III valid

(Note) When interference check III is invalid for L system, interference check between part systems is valid.

(PR) #1489 SLMP_on — SLMP_on

Select whether to enable or disable the SLMP server function.

0: Disable

1: Enable

(PR) #1490 F-bus init delay 2 — Field bus communication error invalid time 2

Specify a period of time during which the control does not detect a Fieldbus communication error of the Fieldbus expansion card mounted in the slot EXT4 (or EXT2 for M80V/M800VS), after startup of the NC is completed.

Set this in 0.1-second increments.

(Note 1) This parameter is enabled for all the communication expansion cards except PROFIBUS-DP communication expansion card.

(Note 2) PROFIBUS-DP communication expansion card does not refer to this parameter, whichever slot (EXT3 or EXT4 (or EXT1 or EXT2 for M80V/M800VS)) the card is mounted in. It refers to the parameter #1332.

---Setting range---

0 to 60000 (0.1s)

(PR)	#1491	Teaching-SysAssign	Load monitor: Teaching data allocation method

Select the method of how to allocate the teaching data for load monitor.

0: Allocate the data according to "#1232 set04/bit4"

1: Allocate the data arbitrarily using "#12107 Teaching-DataNum"

(Note) When "0" is set, the 1st and 2nd part systems are subject to load monitor. If you perform load monitor for the 3rd or subsequent part system, select "1".

	#1702	cfg02	In-position check for Punch Tap

Select whether to perform the in-position check for each block of the Punch Tap cycle.

bit0-5:

0: Not perform in-position check

1: Perform in-position check

	#1703	cfg03	

bit0: Manual Tool Length Measurement 2: Clear the nose R wear

This parameter determines whether the nose R wear data is cleared after the measurement by Manual Tool Length Measurement 2.

0: Not cleared

1: Cleared

bit3: Hobbing (phase alignment control) phase difference attainment level weight

Select the weight applied to the value of phase difference attainment level (parameter "#3051 spplv") for phase alignment control in hobbing.

0: Phase difference attainment level converted to the weight of the workpiece axis

1: Phase difference attainment level converted to the weight of either the hobbing axis or the workpiece axis, whichever has the larger rotation ratio

bit4: Check the speed of the tool being pressed into the sensor

This parameter defines whether the control checks the speed of the tool being pressed into the sensor when measuring in Manual Tool Length Measurement 2.

0: No

1: Yes

bit5: Check tool number vs. tool compensation number pairs

This parameter defines whether the control checks the tool number vs. tool compensation number pairs in Manual Tool Length Measurement 2.

0: No

1: Yes

bit6: Alarms by RESET during measurement

This parameter defines whether the control alarms when RESET is executed during the measurement in Manual Tool Length Measurement 2.

0: The control generates the error "Sensor signal illegal ON".

1: The control does NOT generate the error "Sensor signal illegal ON".

bit7: Measurement condition for Manual tool length measurement 2

Select the condition in which measurement is enabled in Manual tool length measurement 2.

0: Measurement is only possible when either the tool measurement or workpiece coordinate system offset screen is displayed.

1: Measurement is possible even when neither the tool measurement nor workpiece coordinate system offset screen is displayed.

#1710 cfg10

bit1: In-position check during High-speed synchronous tapping

Select the action to be taken when each step of High-speed synchronous tapping is completed.

0: Perform in-position check for all axes when the travel of each axis is completed.

1: Perform the same deceleration check as for normal synchronous tapping.

bit2: Program position display for Multiple-axis synchronization control

Switch the program position display of the secondary axis for Multiple-axis synchronization control.

0: The positional relationship of the primary and the secondary axes at the start of synchronization is maintained.

1: Display the same program position as the primary axis.

#1711 cfg11

bit1: Disabling movement in prohibited area of stored stroke limit IB/IIB

Specify whether axis movement is disabled or not when the tool is in the prohibited area of stored stroke limit IB/IIB.

0: Not disable movement.

1: Disable movement, except for movements towards the nearest permitted area.

bit2: Mode of rapid traverse block overlap for G00/G28

Select the mode of rapid traverse block overlap for G00 and G28.
When pre-interpolation acceleration/deceleration is used, Mode 2 is recommended.
This parameter is valid when rapid traverse block overlap for G00 is enabled ("#1442 G0ol" = 1) or rapid traverse block overlap for G28 is enabled ("#1443 G28ol" = 1).

0: Mode 1 (compatible with post-interpolation acceleration/deceleration)

1: Mode 2 (optimized for post-/pre-interpolation acceleration/deceleration)

bit3: Spindle position control: Program command method Zero point return spec

Specify the zero point return type of the program command method in Spindle position control.

0: Zero point return type

1: Follow the parameter setting in "#3106 zrn_typ/bit8" (Spindle/C axis zero point return)

bit4: Behavior of Optional block skip in high-speed mode

Select how the program blocks skipped with Optional block skip are handled while any of the following modes is enabled: High-speed machining mode II, High-speed high-accuracy control II or High-speed high-accuracy control III.

0: The blocks are handled as those with no motion.

1: The blocks are skipped.

bit7: Inactivate 3D machine interference check load excess alarm

Specify whether or not to issue "3D machine Interference check load excess" (Z82 0003) alarm when it takes excessive time to check interference during 3D machine interference check.

0: Issue the alarm.

1: Not issue the alarm.

#1712 cfg12

bit0: Rapid traverse rate: PR display

Specify whether to display PR when Command speed monitoring function is enabled and Rapid traverse rate is changed.

0: Not display

1: Display

bit1: Load monitoring I: torque output switch

Specify how torque is output in Load monitoring I

0: Only during automatic operation (the estimated disturbance torque of the servo axis is always output)

1: Always output

bit2: Multiple-axis sync. control: G43 secondary axis compensation method

Select the compensation method for the secondary axis when tool length compensation is performed during Multiple-axis synchronization control.

0: Compensates from the machine position of the secondary axis.

1: Compensates from the machine position of the primary axis.

This parameter is only valid when "#1255 set27/bit5" is set to "1".

bit3: Multiple-axis sync. control: G43 secondary axis work offset selection

Select the workpiece offset for the secondary axis when tool length compensation is performed during Multiple-axis synchronization control.

0: Activate the workpiece offset for the primary axis.

1: Activate the workpiece offset for the secondary axis.

This parameter is only valid when "#1255 set27/bit5" is set to "1".

bit5: Retain machining condition parameter group

Select whether to retain the current machining condition parameter group when an emergency stop or reset is executed.

0: Not retain (Switch to the machining condition parameter group selected on the machining condition selection screen)

1: Retain

bit6: Optimize the upper speed limit of small circular segment

During SSS control, this parameter can be used to optimize the upper speed limit of a small circular segment when either Inclined Surface Machining or Workpiece Installation Error Compensation is enabled.
With this parameter set to "1", the upper speed limit becomes higher, which may reduce the cycle time.

0: Minimize the upper speed limit of small circular segment

1: Optimize the upper speed limit of small circular segment

#1725 cfg25

bit0: Confirmation about formatting at edit of SRAM open parameter

Select whether to display a confirmation message at the setting of SRAM open parameter data, notifying that the NC memory needs to be formatted.

0: Not display the confirmation message

1: Display the confirmation message

bit1: Displaying of FIN in status field

Specify whether to display FIN that indicates Waiting for miscellaneous function.

0: Disable FIN display

1: Enable FIN display

bit2: Measurement coordinate system switch during inclined axis control

This parameter switches the coordinate system in which to perform measurement during inclined axis control.

0: Program coordinate system (orthogonal coordinate system)

1: Machine coordinate system (actual axis)

bit3: NCAID backup selection

Select whether to perform all backup/restoration for NC MachiningAID data.

0: Perform all backup/restoration

1: Not perform all backup/restoration

bit4: Displaying spindle number on Manual numerical value command screen

Select how the spindle rotation command value (S) is displayed on the Manual numerical value command screen.

0: Display S only

1: Display S and the spindle number

bit5: Applying Edit lock to deletion of all machining programs

Select whether to exclude the machining programs protected with Edit lock B or C when deleting all machining programs through the Maintenance screen.

0: Include the machining programs protected with Edit lock

1: Exclude the machining programs protected with Edit lock

(PR) #1751 cfgPR01

bit1: Selection of coordinate system for shift amount of G76/G87

Select in which coordinate system the tool-tip shift amount is interpreted for G76 fine boring cycle or G87 back boring cycle. The shift amount is specified with address Q or I/J/K.

(Note) When "Machine coordinate system" is selected, do not perform figure rotation.

0: Currently active coordinate system

1: Machine coordinate system

bit4: Behavior for G92 (G50) and G53 in the same block

Select the behavior for G92 (G50) and G53 commands in the same block specifying an axis address other than "0".

0: Output a program error (P35)

1: Process the commands by treating the axis address as "0"

bit6: Feedback machine position (R register) output switch

This parameter switches the "Feedback machine position" (NC axis: from R4628; PLC axis: from R20232) to the output value with the following position being zero when detecting an absolute position with a dog-less system (#2049 = 1, 2, 4).

0: Machine basic position or electrical basic position

1: Base machine coordinate zero point

(PR) #1752 cfgPR02

bit0: PLC window diameter specification valid

Enable input/output in diameter value for the data of "Diameter specification axis" ("#1019 dia" is set to "1") in PLC window.

0: Input/output is executed in radius value.

1: Input/output is executed in diameter value.

bit2: Constant-gradient acc/dec behavior switch when G0 non-interpolation is enabled

Switch how acceleration/deceleration works while the following modes are active when "#1086 G0Intp" = 1 (G0 non-interpolation) and "#1200 G0_acc" = 1 (G0 constant-gradient acceleration/deceleration).

- Inclined surface machining
- Tool center point control
- Simple inclined surface machining
- Simple tool center point control
- Workpiece installation error compensation
- Tool cutting point control
- L system and coordinate rotation by program

0: Constant-time acceleration/deceleration

1: Constant-gradient acceleration/deceleration

bit4: Prioritization of G0 constant-gradient acc/dec time constant

When "#1200 G0_acc" = 1 (G0 constant-gradient acceleration/deceleration), even if the time constant for G0 constant-gradient acceleration/deceleration is greater than the G0 time constant (axis specification parameter "#2004 G0tL"), acceleration/deceleration is performed based on the time constant for G0 constant-gradient acceleration/deceleration.
When this setting is used, the G0 time constant is limited to 2000 ms.

This setting is applied to the following parameters.

- #2004 G0tL
- #2005 G0t1
- #2092 plG0tL
- #2093 plG0t1
- #2598 G0tL_2
- #2599 G0t1_2
- #2622 pl3G0tL
- #2623 pl3G0t1

(Note) When "#1752 cfgPR02/bit4" = 1, even if "#1200 G0_acc" = 0 (G0 constant-gradient acceleration/deceleration invalid), the setting of these parameters is limited.

0: Perform acceleration/deceleration based on the shorter of the G0 constant-gradient acceleration/deceleration time constant and the G0 time constant

1: Perform acceleration/deceleration based on the G0 constant-gradient acceleration/deceleration time constant

bit5: System variable (feedrate F) value to be read

Select the value to be read from the system variables #4109 and #4309 (Feedrate F).

0: The programmed feed-per-minute F value is read, regardless of the feed mode.

1: Depending on the feed mode, either the programmed feed-per-minute or feed-per-revolution F value is read.

bit7: M98 device setting prohibited

Select whether to allow the setting of M98 subprogram storage location parameters (#8880 to #8894).

0: Allow the setting

1: Prohibit the setting of the above parameters.

(PR) #1753 cfgPR03

bit0: The enhanced surface quality mode for OMR-CC

Select whether to enable the enhanced surface quality mode for OMR-CC.

0: Disable

1: Enable

bit1: Manual arbitrary reverse run: part system-specific behavior

Select whether to enable part system-specific behavior for manual arbitrary reverse run.

0: Disable

1: Enable

bit2: Disable extension of encoder input frequency

Specify whether to disable the extension of encoder input frequency range.

0: Enable

1: Disable

bit3: Retention of arbitrary axis exchange control after emergency stop/power off

Select whether to retain the axis exchange status by arbitrary axis exchange control after emergency stop or power off.

0: Not retain (return to the basic axis configuration)

1: Retain

bit5: Axis counter: Display axis name selection

Select the axis name to be displayed in axis counter.

0: Display the axis name set in parameter "#1022 axname2".

1: Display the axis name set in parameter "#1022 axname2" or "#1611, #1613, #1615, #1617, #1619 Ax-_Dsp_Name[1]-[5]".

bit6: Axis counter: Display axis name retention at reset

Select whether to retain the axis name displayed in axis counter at reset.

0: Not retain.
(The axis name selected with parameter "#12146 I_Ax_Dsp_Name" is displayed.)

1: Retain.

(Note) This parameter is valid when "#1753 cfgPR03/bit5" is "1".

bit7: Axis counter: Display axis name retention at emergency stop/power off

Select whether to retain the axis name displayed in axis counter at emergency stop or power-off.

0: Not retain.
(The axis name selected with parameter "#12146 I_Ax_Dsp_Name" is displayed.)

1: Retain.

(Note) This parameter is valid when "#1753 cfgPR03/bit5" is "1".

(PR) #1754 cfgPR04

bit0: Show Control mode (temporary cancel)

Specifies whether or not to display the control mode in the control mode display field on the monitor screen.

0: "Temporary cancel" is not shown in the field

1: "Temporary cancel" is shown in the field

bit1: 3-dimensional Coordinate Conversion - Manual feed

This parameter specifies whether or not the coordinate system will be maintained at power-off while in 3-dimensional Coordinate Conversion or in Coordinate Rotation by Program.

0: Not maintained

1: Maintained

(Note) When this parameter is set to "1", the coordinate system to be used in manual feed can be specified after power-up.

bit2: M system tool life management II: tool error status priority

Select the tool status update operation by resetting after turning ON the tool error 1 signal (TAL1) or tool error 2 signal (TAL2).

0: The tool status changes depending on whether or not a cutting command was issued before the tool error signal was turned ON.

- With cutting command:
  (Used data is less than tool life data) : "1" (Tool in use)
  (Used data is greater than tool life data) : "2" (Normal life tool)
- Without cutting command: "3" (Tool error 1) or "4" (Tool error 2)

1: "3" (Tool error 1) or "4" (Tool error 2)

(Note) This parameter is valid only when "#1277 ext13/bit0" is set to "1" and M system tool life management II is used.

bit3: GOT Window ON

Select whether to enable GOT Window.

0: Disable

1: Enable

bit4: Coordinate rotation by program: manual feed function selection

This parameter specifies whether or not to allow manual feed in the local coordinate system while in Coordinate Rotation by Program.

0: Not allow

1: Allow

(Note) The coordinate system (local coordinate system/machine coordinate system) while manual feed is used is specified with the PLC signal (YD14).

bit5: Tool change target

Select which auxiliary data to use as the target of the exchange when the Tool Change or Arbitrary Position Tool Change instruction of the ATC exclusive instructions is executed.

0: Auxiliary data of the tool to be changed

1: Auxiliary data of the spindle tool on Magazine No. 1

bit6: Reduce processing time for block consisting only of sequence number/EOB

Specify whether or not to reduce the processing time for a program block consisting only of a sequence number, EOB, and/or comment during automatic operation.

0: Not reduce the processing time

1: Reduce the processing time

(PR) #1756 cfgPR06

bit1: Improvement of Compound type fixed cycle for turning machining I

0: Disable

1: Enable

bit5: Tool length offset by tool number allocated with #12064

This parameter defines whether to apply the tool offset to the secondary axis of the Multiple-axis Synchronization Control in Tool Life Management II, which differs from the offset of the primary axis.

0: No
(Apply the primary axis tool offset to the secondary axis)

1: Yes
(The "Spindle tool number" device, which is allocated by "#12064 Tol-PLCdevice" (TLM device allocation for use by other part systems), will be the tool number whose tool length is used for the tool offset.)

(PR) #1759 cfgPR09

bit0: Disable screen list display

Turn off the screen list display via multi-touch gesture (grab operation with four or more points).

0: Screen list display ON

1: Screen list display OFF

bit1: Fixed cursor position

Select where the cursor is located after data entry.

0: Cursor moves to the next data entry position.

1: Unchanged from the original position.

bit2: Operation search from Edit screen

Specify whether to enable the operation search from Edit screen function.

0: Disable

1: Enable

bit3: Individual NC data backup valid

Select whether to output the following NC data individually during backup.

- Program batch file in NC memory/NC memory 2
- Tool compensation amount data
- Common variable data
- Extended common variable data
- Workpiece offset data
- All tool data

0: Not output

1: Output

(Note) Not backed up by automatic backup/master backup.

bit4: Edit area change menu additional display

Enable/disable the additional display of the edit area change menu ([<--> change]).

0: Disable

1: Enable

(Note) This parameter is valid only when the operation search from Edit screen function is not used ("#1759 cfgPR09/bit2" is "0").

bit5: Increase display digits of M code for counting workpiece machining

Select the number of display digits of the M code for counting the number of repeated workpiece machining.

0: The first two digits

1: Three digits

(PR) #1760 cfgPR10

bit0: Machining condition selection screen - Disable setting of condition names

Select whether to allow setting of names for the machining conditions.

0: Enable the setting

1: Disable the setting

bit2: Enable HD mode on IPC

This parameter specifies whether the NC can run a program stored in the IPC which is connected to the same network.

0: A program stored in the IPC cannot be run.

1: A program stored in the IPC can be run.

(Note 1) This parameter is valid for M80V.

(Note 2) The parameter "#11005 PC IP address" needs to be set to enable program operations.

bit4: Hide motor temperature

Select whether to show/hide the item of the servo unit "Motor temp. (degC)" on the drive monitor screen.

0: Show

1: Hide

bit5: Whether to count a comment block in searching

Select whether to count a comment block as one block when searching is performed within a program, including Operation search and Cursor position search.

0: Count a comment block as one block

1: Not count a comment block

bit6: Wear compensation amount edit in Data protection ON

Specify whether to enable or disable editing of Wear compensation amount.

0: When the data protection key 1 (KEY1) is turned OFF (0), editing is disabled.

1: Editing is enabled regardless of whether the data protection key 1 (KEY1) is turned ON or OFF.

bit7: Interactive cycle insertion feedrate command selection

Specify the command method for the item "Feedrate" of Turning hole cycle and Turning cycle in Interactive cycle insertion.

0: Feed per revolution (mm/rev)

1: Feed per minute (mm/min)

(PR) #1761 cfgPR11

bit0: Plane selection method for Polar coordinate interpolation

Specify the selection method of Polar coordinate interpolation plane (G17 - G19).

0: The plane whose 1st plane axis is equal to the parameter "#1533 millPax" is specified as a command plane for Polar coordinate interpolation.
When the X axis is set, G17 (XY plane) is specified as the Polar coordinate interpolation plane.

1: The plane whose 2nd plane axis is equal to the parameter "#1533 millPax" is specified as a command plane for Polar coordinate interpolation.
When the Y axis is set, G17 (XY plane) is specified as the Polar coordinate interpolation plane.

bit1: Cogging torque compensation ON

Select whether to enable cogging torque compensation.

0: Disable

1: Enable

bit6: Machine tool builder macro password management method

0: MTB macro password management method type 1
Password authentication is set with "#1166 fixpro".

1: MTB macro password management method type 2
Password authentication is set with "#11796 mmacpro".

(PR) #1762 cfgPR12

bit0: NC-HPU optical communication: communication function valid

Specify whether to disable/enable communication function in the NC-HPU optical communication.

0: Disable (not communicate)

1: Enable (communicate)

bit1: NC-HPU optical communication: error type

Specify the error type of NC-HPU optical communication.

0: Z107 0001 "NC-HPU optical communication warning"

1: Z107 0002 "NC-HPU optical communication alarm"

bit2: NC-HPU optical communication: received data initialization at error

Specify whether to initialize the received data or not at the NC-HPU optical communication error.

0: Not initialize

1: Initialize

bit4-3: NC-HPU optical communication: send/receive data size selection

Specify the send/receive data size in the NC-HPU optical communication.

00: 512 Bytes

01: 1024 Bytes

10: 2048 Bytes

11: 512 Bytes

bit5: BiSS encoder I/F valid

Specify whether to enable/disable BiSS encoder I/F.

0: Disable

1: Enable

(Note) When "1" is set, external encoder I/F and external encoder position output I/F are invalid.

bit6: Z phase detection speed limit

Specify whether to limit the Z phase detection speed with S command speed in Spindle/C axis control for Z phase detection.

0: Z phase detection speed is not limited with S command speed (conventional operation).

1: Z phase detection speed is limited with S command speed.

(*) This setting is valid when "1" is set to the parameter "#3106 zrn_typ/bit3" (Z phase detection operation ON).

(PR) #1766 cfgPR16

bit0: HPU custom module: notification data invalid

Select whether to reflect the data notified from HPU custom module in NC.

When Disable is selected, all the data notified from HPU custom module will be invalid, and will not be reflected in NC.

0: Enable (default)

1: Disable

bit2: Suppression of recalculation after FH cancellation

Recalculation after feed-hold cancellation is suppressed during SSS control to improve response speed.

0: Do not suppress

1: Suppress

bit3: Workshift measurement tool offset No. obtain source selection (For L system only)

In workpiece coordinate system shift measurement, select the destination for obtaining the tool offset No. that the T command was issued to.

0: Tool offset No. set on the tool management screen

1: Tool offset No. set in the PLC device

(Note) If "#1766 cfgPR16/bit3" is "1" and the tool offset No. is not designated (if the contents are 0), the tool length and tool wear amount will follow the T command modal.

The T command modal will also be followed if the designated offset No.is not within the specified range.

If the T command modal value is "0", the compensation amount will be treated as "0".

bit4: Tool management screen custom data extension

Select whether to extend custom data of the tool management screen.

0: Not extend

1: Extend

bit5: Validate display unit CPU IP address 2

This parameter is used to invalidate or validate the "#1942 Local IP address2".

0: Invalidate (default)

1: Validate

(Note) This parameter is enabled for M800VW/M80VW Series.

bit6: Customized screen: write detailed screen number

Select whether to write the detailed screen number in the R register (R216) during a screen transition within one project.

0: Not write the detailed screen number

1: Write the detailed screen number

bit7: WebAccess

Specify whether to enable WebAccess (NC screen remote browsing) function.

0: Disable (default)

1: Enable

(Note) This parameter is enabled for M800VS/M80V Series.

#1925 EtherNet Start of service

Start or stop the Ethernet communication function.

0: Stop

1: Start

(PR) #1926 Global IP address IP address

Set the main CPU's IP address.

Set the NC IP address seen from an external source.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1927	Global Subnet mask	Subnet mask

Set the subnet mask for the IP address.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1928	Global Gateway	Gateway

Set the IP address for the gateway.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

#1929

Not used. Set to "0".

#1930

Not used. Set to "0".

(PR)	#1931	Host number	Host No.

Set the host's port No.

---Setting range---

1 to 9999

(PR)	#1934	Local IP address

Set the HMI side CPU's IP address.

(Note) This parameter is dedicated to M800VW/M80VW with Windows-based display.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1935	Local Subnet mask

Set the HMI side CPU's subnet mask.

(Note) This parameter is dedicated to M800VW/M80VW with Windows-based display.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1953	Intra IP address	IP address on non-Windows-based display unit (LAN1) side

Specify the IP address on the non-Windows-based display unit (LAN1) side.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1954	Intra Subnet mask	Subnet mask on non-Windows-based display unit (LAN1) side

Specify the IP address of subnet mask on the non-Windows-based display unit (LAN1) side.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1955	Intra Gateway	Gateway on non-Windows-based display unit (LAN1) side

Specify the gateway IP address on the non-Windows-based display unit (LAN1) side.

---Setting range---

Set these parameters in accordance with the network rules in the connection environment.

(PR)	#1958	Ext Unit1 IP Addr	Field network communication expansion unit: IP address 1

Specify the IP address of the field network communication expansion unit installed in the slot EXT3 (or EXT1 for M80V/M800VS).

---Setting range---

0.0.0.0 to 255.255.255.255

(PR)	#1959	Ext Unit1 Sub mask	Field network communication expansion unit: subnet mask 1

Specify the subnet mask of the field network communication expansion unit installed in the slot EXT3 (or EXT1 for M80V/M800VS).

---Setting range---

0.0.0.0 to 255.255.255.255

(PR)	#1960	Ext Unit1 Gateway	Field network communication expansion unit: gateway 1

Specify the gateway of the field network communication expansion unit installed in the slot EXT3 (or EXT1 for M80V/M800VS).

---Setting range---

0.0.0.0 to 255.255.255.255

(PR)	#1961	Ext Unit2 IP Addr	Field network communication expansion unit: IP address 2

Specify the IP address of the field network communication expansion unit installed in the slot EXT4 (or EXT2 for M80V/M800VS).

---Setting range---

0.0.0.0 to 255.255.255.255

(PR)	#1962	Ext Unit2 Sub mask	Field network communication expansion unit: subnet mask 2

Specify the subnet mask of the field network communication expansion unit installed in the slot EXT4 (or EXT2 for M80V/M800VS).

---Setting range---

0.0.0.0 to 255.255.255.255

(PR)	#1963	Ext Unit2 Gateway	Field network communication expansion unit: gateway 2

Specify the gateway of the field network communication expansion unit installed in the slot EXT4 (or EXT2 for M80V/M800VS).

---Setting range---

0.0.0.0 to 255.255.255.255

(PR)	#11001	APC type	APC screen display type selection

Set the type of screen displayed with the pallet program registration screen.

0: Standard pallet registration screen

1: Pallet 4-page registration screen

(PR)	#11002	Valid pallet num	Number of pallets setting

Set the number of pallets validated on the pallet program registration screen.

---Setting range---

2 to 12 (Interpreted as 2 when 0 is set.)

(PR)	#11003	APLC valid	APLC valid

Temporarily disable APLC.

Normally set "1".

0: Disable

1: Enable

(PR)	#11004	PLCauto-run enable	PLC automatic startup valid

Select starting condition of the built-in PLC.

0: Start PLC after NC screen startup

1: Start PLC at NC startup

(Note) When standard NC screen is not used, set "1".

(PR)	#11005	PC IP address	IP address setting

Set the IP address of the display unit or the PC in which machining programs are stored (or the IP address of the IPC for M80V).

Set the IP address of the display unit which is powered OFF with the Auto power OFF function.

When the 3D machine interference check function is enabled, set the IP address of the display unit to be used for the 3D machine interference check (for M800VW only).

(Note) When "0.0.0.0" is entered, "192.168.100.2" is automatically assigned.

PC Subnet

Set the subnet mask for the display unit or PC in which machining programs are stored.

PC Gateway

Set the gateway for the display unit or PC in which machining programs are stored.

---Setting range---

0.0.0.0 to 255.255.255.255

	#11006	PC Port number	Port No. setting

Set the port No. for the display unit or PC in which machining programs are stored.

(Note 1) When "0" is input, "55555" is automatically set.

(Note 2) When changing the parameter, set the same value in "PD_Control_Port" in the PC side environment setting file.

---Setting range---

0 to 65535

(PR)	#11007	PC Timeout	Communication timeout time setting

Set the NC side communication timeout time.

Set the timeout time for the display unit to be shut down upon automatic power OFF request.

(Note 1) When "0" is input, "120" is automatically set.

(Note 2) When the value greater than "300" is set, a setting error occurs.

(Note 3) When changing the parameter, set the same value in "PD_Time_out" in the PC side environment setting file.

---Setting range---

0 to 300 (s)

(PR)	#11009	M2 label O	M2 label O

Select the program number label when using the M2 format.

0: Label L

1: Label O

(PR)	#11010	Software keyboard	Software keyboard

Select whether or not to use a software keyboard on a touchscreen.

0: Not use (Note 1)

1: Use (no automatic display)

2: Use (The keyboard appears automatically on a specific screen or upon Y/N confirmation)

3: Use (The keyboard appears automatically upon Y/N confirmation)

(Note 1) If no NC keyboard is connected, the screen shows the software keyboard button.

	#11011	Handy TERM. PW.	Handy terminal password

Set the password used for the handy terminal customized downloading.

Blank (when "0" is set) and "0000" are regarded as no password.

Not the password of a new customizing file but the password of the customizing file downloaded to the last handy terminal is set.

Set blank or "0000" when initially downloading.

---Setting range---

0000 to 9999

(PR)	#11012	Max axes/channel	Maximum number of axes per channel

This parameter specifies the maximum number of axes that can be connected to a drive unit interface channel. These include the NC-axis, spindle, and PLC axis.

0: Up to 16 axes/channel.

1: Up to 16 axes/channel. (Same as #11012=0.)

2: Up to 32 axes/channel.

(Note) The setting with the value "2" is only valid for M80V/M80VW.

	#11013	3D_MChk	Invalidate 3D machine interference check

Select whether to enable the 3D machine interference check function.

0: Enable

1: Disable

	#11014	Chk_len1	1st-step interference check distance

Set the 1st-step check distance when in 3D machine interference check mode.
The standard value is "30.000".

---Setting range---

0.000 to 99999.999 (mm)

	#11015	Chk_len2	2nd-step interference check distance

Set the 2nd-step check distance when in 3D machine interference check mode.
The standard setting value is "5.000".

---Setting range---

0.000 to 99999.999 (mm)

	#11016	Expand_Rate	Shape expansion rate

Set the model shape expansion rate to be used for 3D machine interference check. This parameter is used for expanding a model shape to be used for 3D machine interference check. The interference check is performed using a shape expanded by the amount of [Check length (mm) x Shape expansion rate (%)].

---Setting range---

0 to 300 (%)

	#11017	T-ofs set at run	Tool compensation amount setting during automatic operation enabled

Select whether to enable the tool compensation amount setting and life value setting during automatic operation and operation pause.

0: Disable

1: Enable

	#11018	M password hold	Machine user password is held

When set to "1", the "Machine user" (operation level 6) password will be held even if the NC is restarted.

0: Do not hold

1: Machine user password is held

(PR)	#11019	2-system display	2-part system simultaneous display

Select whether to enable simultaneous display of multiple part systems on the monitor screen.

0: Display one part system on the monitor screen.

1, 2: Display two part systems simultaneously on the monitor screen.

3: Display three part systems simultaneously on the monitor screen. Note that this is enabled for a 15- or 19-type display unit only.

4: Display four part systems simultaneously on the monitor screen. Note that this is enabled for a 15- or 19-type display unit only.

(Note 1) If the number of part systems to display is smaller than that of the simultaneous display, a single part system display is selected.

(Note 2) If you select "3" or "4" for any display unit other than 15- or 19-type, a single part system display is selected.

	#11021	PLC mesg disp type	Format of PLC alarm and operator message

Select the format of PLC alarms and operator messages to be displayed on the bottom right of the screen.

0: Display up to the first 40 characters.

1: If text is longer than 40 characters, divide it into two and display separately. (Supplementary information is displayed together)

	#11022	SRAM Output Type

Not used. Set to "0".

	#11023	G33.n Drn

Not used. Set to "0".

	#11024	G33.n fhd

Not used. Set to "0".

	#11028	Tolerance Arc Cent	Tolerable correction value of arc center error

Set the tolerable correction value for the calculated coordinate value error of R-specified circular center.

When a difference between "a line between the start and end points" and "commanded radius x 2" is the tolerance or smaller, the error is corrected so that the middle of a line between the start and end points will be the arc center.

When [Setting value < 0]: 0 (Not correct arc center error)

When [Setting value = 0]: 0.002 mm

When [Setting value > 0]: Setting value

---Setting range---

<Metric system> -1 to 0.100 (mm)

<Inch system> -0.0393 to 0.0039 (inch)

	#11029	Arc to G1 no Cent	Change command from arc to linear when no arc center designation

When arc center or radius designation is omitted from arc command, change the arc command into linear without causing program error.

0: Program error

1: Change into linear command

	#11030	Man tap sync cancl	Synchronization cancel in manual synchronous tapping

Select whether handle feed of the tapping axis in manual synchronous tappingsynchronizes with the spindle or not.

0: Synchronize with the spindle

1: Not synchronize with the spindle

(PR)	#11031	Cursor pos search	Cursor position search

Select the cursor position searching method.

0: Disable

1: Pressing the INPUT key in [Monitr] - [Edit] menu starts the operation search for the block with the cursor.

2: Turning ON/OFF the "Edit/Search" signal in [Monitr] - [Edit] menu starts the operation search for the block with the cursor.

3: Turning ON/OFF the "Edit/Search" signal in [Monitr] - [Edit] menu starts the operation search for the block with the cursor.
Pressing the reset key shows the top of the program on the [Edit/Search] window.

(PR)	#11032	Menu sel para lkof	Validate menu selection parameter setting

Enable the setting of the menu selection parameters, with which the order of main menus on Monitor, Setup and Edit screens can be rearranged. And also select who is allowed to do this setting.

0: Disable

1: Enable (machine tool builder password is required)

2: Enable (users are allowed to set)

(PR)	#11033	skipB_no_sens	Unconnected sensor selection when skip is set to contact B

Select the contact of the sensor which you wish to set as unconnected, when the skip signal is set to contact B.
Set "1" for the contact to be unconnected.

bit0: Skip input 1

bit1: Skip input 2

bit2: Skip input 3

bit3: Skip input 4

bit4: Skip input 5

bit5: Skip input 6

bit6: Skip input 7

bit7: Skip input 8

(Note 1) This parameter is enabled when "#1258 set30/bit0" is set to "1".

(Note 2) This parameter is independent of PLC skip.

---Setting range---

00000000 to 11111111 (Binary)

#11034	G12AddrCheckType	Command address type to check in circular cutting

Select the type of command address to check in circular cutting.

0: Regard command addresses other than D, F, I as illegal.

1: Regard the command address H as illegal.
And commands other than D,F,I and M,S,T,B are disabled.

#11035	Sys. change limit	Part system switching restriction

This restricts switching the part systems displayed on screen.

0: Not restrict

1: Disable the part system switching by pressing [$<->$] key on touch panel.

2: Disable the part system switching by display switch signals(Y730 to Y733).

#11036	meas dir judge	Non-sensitive band for manual measurement direction judgment (for M system only)

Set the non-sensitive band to be used for judging the manual measurement direction.
If the feedback position fluctuates widely at the axis stop, set the fluctuation width or larger value in this set the parameter.
When set to "0", the band will be 1 (μm).

---Setting range---

0 to 1000 (μm)
0: 1 (μm)

#11037	R-Navi Index Type	R-Navi machining surface indexing type

Select the machining surface indexing type in the R-Navi function.

0: Indexing type 1 (Only rotary axes move to perform indexing)

1: Indexing type 2 (Indexing is performed with the tool center point fixed to the position seen from the workpiece)

#11038	T disp typ	T display (tool command value) type (For L system only)

Select the T display (tool command value) type on the monitor screen between displaying tool No. only or displaying tool No. and compensation No. (L system only)

0: Display tool No. only

1: Display the tool command value (the combined value consisting of the tool No. and compensation No.) last commanded by the program. Even in a manual value command, the program's tool command value is displayed.

	#11039	Cusr pos srch type	Cursor position search type

Set the availability of the cursor position search during single block stop when "#11031 Cursor pos search" is any of "1" to "3".

0: Disable cursor position search during single block stop.

1: Enable cursor position search during single block stop.
Sub-program is displayed when selecting menus [Monitr]-[Edit] while single block stop is carried out during sub-program with this parameter set to 1.

(PR)	#11051	Direct Socket ON	Direct Socket communication I/F ON

Select ON/OFF of the Direct Socket communication I/F.

0: OFF (Default)

1: ON

(Note) When the Direct Socket communication I/F is ON and when "#1766 cfgPR16/bit5" = 0, applications that uses "#1926 Global IP address" such as NC Analyzer2 and GX Developer cannot be used.

	#11052	LOG Sort Order	Log data sorting order

Select in which order to sort the operation log files (all logs) to be output.

0: Sort the data in chronologically ascending order separately for each log type.

1: Sort the data in chronologically ascending order for all the log types.
If the times and dates logged are identical, the log files are output in the order of key, touchscreen, alarm, PLC signal, tool offset change, workpiece offset change and AC power.

(PR)	#11053	UserProgramStorage	User program storage destination

Specify the device to store user programs.

When subprogram is called, the subprograms in the device specified by this parameter are searched.

Programs other than user programs (e.g., MTB macro programs, fixed cycle programs) are stored in fixed areas regardless of the setting of this parameter.

0: Memory

1: HD

(Example) M98 P (Program No.)
The device specified by "#11053 UserProgramStorage" is searched.

(Note) If the subprogram to be called does not exist in the specified device, a program error occurs.

	#11054	Sp-stby disp type	Spindle-standby display type

Specify which magazine to display when Sp-stby is selected on the Spindle standby or Tool registration screen.

0: Fixed to the magazine #1

1: The magazine selected by the menu (Magazine 1 to Magazine 5).

	#11055	Disp. sysno	Number of part systems to display

Specify how many part systems to display on a screen.

0: The same number as that of the enabled part systems

1 or greater: The number specified by this parameter serves as that of the part systems to display.

(Note) The setting range differs according to the NC model. For the number of part systems displaying in the operating state, follow this parameter setting.

---Setting range---

0 to 8

(PR)	#11056	Workshift invalid	Workpiece coordinate system shift OFF (For L system only)

Set this parameter to 1 if you wish to disable the workpiece coordinate system shift function.

0: Enable the workpiece coordinate shift function

1: Disable the workpiece coordinate shift function

(PR)	#11058	plc_opemsg0	Operator messages display device

Set the No. of F device to specify the displayed operator message.
Device specified with this parameter is treated as No.1, and displays up to 4 operator messages corresponding to F device that is ON.
This parameter is valid when #6455/bit3 is 0.

(Note 1) Use from F1024 when "0" is set.

(Note 2) Set the device No. to be a multiple of 32. When other value is input, a setting error occurs.

---Setting range---

0 to 2016

(PR)	#11059	Remote comm enable	Remote connect enabled

Select whether to enable the remote communication.

0: Disabled

1: Enabled

(PR)	#11060	Screen theme color	Select screen theme colors

Select the screen theme colors.
This selection affects the colors of the entire screen.

0: Standard colors (gray tone)

1: Blue tone

(PR)	#11061	Num of EcoMonitors	The Number of EcoMonitorLight connected to CNC

Specify how many EcoMonitorLight units (an energy meter made by Mitsubishi Electric for measuring the consumption and regeneration) are connected to the CNC.

---Setting range---

0: None

1 to 16: Number of connected modules

Default 0

(PR)	#11062	NoHistDevIn.1	History exclusion PLC input signal 1

Specify the PLC input signal (X) that is excluded from the PLC signal log.

Efficiency of the history analysis is improved by excluding the machine contact input/output signals or other frequently switched signals from the signal log.

When "0" is set, the history exclusion PLC input signal is disabled.
Thus X0 cannot be excluded from the signal log.

---Setting range---

0000 to 1FFF (hexadecimal)

(PR)	#11063	NoHistDevIn.2	History exclusion PLC input signal 2

Specify the PLC input signal (X) that is excluded from the PLC signal log.

Efficiency of the history analysis is improved by excluding the machine contact input/output signals or other frequently switched signals from the signal log.

When "0" is set, the history exclusion PLC input signal is disabled.
Thus X0 cannot be excluded from the signal log.

---Setting range---

0000 to 1FFF (hexadecimal)

(PR)	#11064	NoHistDevIn.3	History exclusion PLC input signal 3

Specify the PLC input signal (X) that is excluded from the PLC signal log.

Efficiency of the history analysis is improved by excluding the machine contact input/output signals or other frequently switched signals from the signal log.

When "0" is set, the history exclusion PLC input signal is disabled.
Thus X0 cannot be excluded from the signal log.

---Setting range---

0000 to 1FFF (hexadecimal)

(PR) #11065 NoHistDevIn.4 History exclusion PLC input signal 4

Specify the PLC input signal (X) that is excluded from the PLC signal log.

Efficiency of the history analysis is improved by excluding the machine contact input/output signals or other frequently switched signals from the signal log.

When "0" is set, the history exclusion PLC input signal is disabled.
Thus X0 cannot be excluded from the signal log.

---Setting range---

0000 to 1FFF (hexadecimal)

(PR) #11066 NoHistDevIn.5 History exclusion PLC input signal 5

Specify the PLC input signal (X) that is excluded from the PLC signal log.

Efficiency of the history analysis is improved by excluding the machine contact input/output signals or other frequently switched signals from the signal log.

When "0" is set, the history exclusion PLC input signal is disabled.
Thus X0 cannot be excluded from the signal log.

---Setting range---

0000 to 1FFF (hexadecimal)

(PR) #11067 NoHistDevOut.1 History exclusion PLC output signal 1

Specify the PLC output signal (Y) that is excluded from the PLC signal log.

Efficiency of the history analysis is improved by excluding the machine contact input/output signals or other frequently switched signals from the signal log.

When "0" is set, the history exclusion PLC output signal is disabled.
Thus Y0 cannot be excluded from the signal log.

---Setting range---

0000 to 1FFF (hexadecimal)

(PR) #11068 NoHistDevOut.2 History exclusion PLC output signal 2

Specify the PLC output signal (Y) that is excluded from the PLC signal log.

Efficiency of the history analysis is improved by excluding the machine contact input/output signals or other frequently switched signals from the signal log.

When "0" is set, the history exclusion PLC output signal is disabled.
Thus Y0 cannot be excluded from the signal log.

---Setting range---

0000 to 1FFF (hexadecimal)

(PR) #11069 NoHistDevOut.3 History exclusion PLC output signal 3

Specify the PLC output signal (Y) that is excluded from the PLC signal log.

Efficiency of the history analysis is improved by excluding the machine contact input/output signals or other frequently switched signals from the signal log.

When "0" is set, the history exclusion PLC output signal is disabled.
Thus Y0 cannot be excluded from the signal log.

---Setting range---

0000 to 1FFF (hexadecimal)

(PR) #11070 NoHistDevOut.4 History exclusion PLC output signal 4

Specify the PLC output signal (Y) that is excluded from the PLC signal log.

Efficiency of the history analysis is improved by excluding the machine contact input/output signals or other frequently switched signals from the signal log.

When "0" is set, the history exclusion PLC output signal is disabled.
Thus Y0 cannot be excluded from the signal log.

---Setting range---

0000 to 1FFF (hexadecimal)

(PR)	#11071	NoHistDevOut.5	History exclusion PLC output signal 5

Specify the PLC output signal (Y) that is excluded from the PLC signal log.

Efficiency of the history analysis is improved by excluding the machine contact input/output signals or other frequently switched signals from the signal log.

When "0" is set, the history exclusion PLC output signal is disabled.
Thus Y0 cannot be excluded from the signal log.

---Setting range---

0000 to 1FFF (hexadecimal)

(PR)	#11080	HomeScreen display	HomeScreen display

Select whether to display the home screen.

0: Not display

1: Display (display at power ON)

2: Display (not display at power ON)

(PR)	#11082	Lsys_change_Gtype	L system G code system after program format switch (for M system only)

When switching the program format from M system to L system with program format switch command (G188) or when switching G code guidance from M system to L system by the menu [Edit]-[Guide M/L], the G code systems after switching follow the setting of this parameter.

0: L system G code system 2

1: L system G code system 3

2: L system G code system 4

3: L system G code system 5

4: L system G code system 6

5: L system G code system 7

	#11085	ExtSBSPrgSelect	Sub part system program storage location in external device

Select the storage location (in an external device) of a machining program that is run in a sub part system under the sub part system control 1 or 2.

0: The location specified by #12091 and #12092

1: The location specified by #12093 and #12094

(Note) This parameter is enabled when #11053 is "1".

	#11086	rot_angle_dsp	Counter display during coordinate rotation

Select the type of counter display (workpiece coordinate position, relative position and absolute position) while #8116 is 0 (coordinate rotation by parameter is enabled).

0: Display the position relative to the orthogonal coordinate system.

1: Display the position relative to the coordinate system rotated through the coordinate rotation by parameter.
(with EXT [external workpiece coordinate offset] added during automatic operation)

2: Display the position relative to the coordinate system rotated through the coordinate rotation by parameter.
(with EXT [external workpiece coordinate offset] constantly added)

(PR)	#11087	Meas basic point	Tool length measurement 1 reference point (for L system only)

Select how to specify the measurement reference point coordinates for manual tool length measurement 1 (L system).

0: Use the machine zero point as the reference point

1: Use the coordinates of "#2015 tlml-" as the reference point (the same operation as when #1282 bit2 = 0 for M7)

2: Use the workpiece coordinate system offset (modal) as the reference point (the same operation as when #1282 bit2 = 1 for M7)

	#11091	PLC counter valid	Enable PLC axis counter

Select whether to have the monitor screen show a PLC axis position counter.

0: Monitor screen does not show a PLC axis position counter.

1: Depending on the selected counter type, monitor screen is able to show.

(PR)	**#11094**	**GX Restriction**	**Inhibiting GX Developer/GX Works2 connection**

Select whether to block the connection from GX Developer/GX Works2.

0: Allow the connection

1: Block the connection

	#11100	**3D_MChk_ToolAlm**	**Alarm when tool interference check is disabled**

Select whether the 3D machine interference check outputs an alarm or not when the tool is not mounted.

0: Not output an alarm when the tool check is disabled or the tool is not mounted.

1: Output an alarm when the tool check is disabled or the tool is not mounted.

(PR)	**#11101-11140**	**Monitr menu(MTB)1-40**	**Monitor main menu (MTB) 1 to 40**

Designate the destination menu Nos. to move monitor screen's main menus.

-1: Menu not displayed

0: No change

1 to 40: Destination menu No.

(PR)	**#11151-11180**	**Setup menu (MTB) 1-30**	**Setup main menu (MTB) 1 to 30**

Designate the destination menu Nos. to move setup screen's main menus.

-1: Menu not displayed

0: No change

1 to 30: Destination menu No.

(PR)	**#11201-11230**	**Edit menu(MTB) 1-30**	**Edit main menu (MTB) 1 to 30**

Designate the destination menu Nos. to move edit screen's main menus.

-1: Menu not displayed

0: No change

1 to 30: Destination menu No.

(PR)	**#11251-11280**	**Diagn menu(MTB)1-30**	**Diagn main menu (MTB) 1 to 30**

Designate the destination menu Nos. to move diagn screen's main menus.

-1 : Not display the menu

0: No change

1 to 30: Destination menu No.

(PR)	**#11301-11330**	**Mainte menu(MTB)1-30**	**Mainte main menu (MTB) 1 to 30**

Designate the destination menu Nos. to move mainte screen's main menus.

-1 : Not display the menu

0: No change

1 to 30: Destination menu No.

(PR)	#11351-11366	manasel_00-manasel_15	Multi-analog input data type ch0 to ch15

Select the type of data to be input to the multi-analog input unit.

0: Analog voltage

1: Analog current

2: Temperature (resistance thermometer bulb, normal, Pt100, 3-wire)

3: Temperature (resistance thermometer bulb, normal, Pt100, 4-wire)

4: Temperature (resistance thermometer bulb, normal, Pt1000, 3-wire)

5: Temperature (resistance thermometer bulb, normal, Pt1000, 4-wire)

6: Temperature (resistance thermometer bulb, high-accuracy, Pt100, 3-wire)

7: Temperature (resistance thermometer bulb, high-accuracy, Pt100, 4-wire)

8: Temperature (resistance thermometer bulb, high-accuracy, Pt1000, 3-wire)

9: Temperature (resistance thermometer bulb, high-accuracy, Pt1000, 4-wire)

10: Temperature (thermocouple (K))

11: Temperature (thermocouple (J))

(PR)	#11376	BiSS_enc_rate	BiSS encoder communication speed

Set the speed of communication with BiSS encoder.

0: 5MHz

1: 3.33MHz

2: 2.5MHz

3: 2MHz

4: 1.67MHz

5: 1.43MHz

6: 1.25MHz

7: 1.11MHz

8: 1MHz

9: 0.91MHz

10: 0.83MHz

11: 0.77MHz

12: 0.71MHz

13: 667kHz

14: 625kHz

(PR)	#11377	BiSS_enc1_dat_leng	BiSS encoder 1 data length

Set the data length (number of bits) for BiSS encoder.

(Note) When "0" is set, the data length defaults to 1 bit.

---Setting range---

0 to 64

(PR)	#11378	BiSS_enc1_CRC_slct	BiSS encoder 1 CRC selection

Select the CRC generating polynomial used for communication with BiSS encoder.

0: CRC generating polynomial = 0x43

1: CRC invalid

2: CRC generating polynomial = 0xB

3: CRC generating polynomial = 0x13

4: CRC generating polynomial = 0x25

5: CRC generating polynomial = 0x89

6: CRC generating polynomial = 0x12F

7: CRC generating polynomial = 0x190D9

8: Custom

(Note) When "8" is set, enter a CRC generating polynomial into parameter "#11379 BiSS_enc1_CRC_cstm".

(PR)	#11379	BiSS_enc1_CRC_cstm	BiSS encoder 1 CRC (custom)

Set a CRC generating polynomial in this parameter when parameter "#11378 BiSS_enc1_CRC_slct" is set to "8: Custom".

(Note) When "0" is set, the CRC generating polynomial defaults to "1".

---Setting range---

0 to FF (HEX)

(PR)	#11380	BiSS_enc1_CRC_init	BiSS encoder 1 CRC default value

Set the default value of CRC used in communication with BiSS encoder.

---Setting range---

0 to FFFF (HEX)

(PR)	#11386	BWD_INT	Brake wear diagnostics interval

Specify the period of time that the NC operates after the brake wear diagnosis is completed before the brake wear diagnostics incomplete signal (BWDNFm) is next turned on.

If set to "0", the interval is 8 hours.

---Setting range---

0 to 2500 hours

(PR)	#11387	BWD_INIT_NF	Brake wear diagnostics incomplete state at power-on

Select whether to activate the brake wear diagnostics incomplete state at power-on.

0: Activate the brake wear diagnostics incomplete state.

1: Not activate the brake wear diagnostics incomplete state.

(PR)	#11481	MCR valid	Motion control release valid

Select whether to enable motion control release.

0: Disable

1: Enable

	#11482	ValBlkStopSelect	System variable #3006 block stop switch

Specify the behavior when the system variable #3006 (message display and stop) is commanded during Suppression of single block stop (#3003/bit0 = 1) of system variable.

0: Block stop is not executed with #3006 command.

1: Block stop is executed with #3006 command.

(PR)	#11484	Spec_valid	Specification valid

bit0: Enable 3D machine interference check

Specify whether to enable 3D machine interference check.

0: Disable

1: Enable

(Note) This parameter is valid for M80VW.

bit1: Enable Spatial error compensation

Specify whether to enable Spatial error compensation.

0: Disable

1: Enable

(Note) This parameter is valid for M80VW/M80V TypeA.

#11669	EMG F_disp Filt	Actual feedrate detection cycle for displaying F during emergency stop

Adjust the axis travel detection cycle for displaying actual feedrate (F) during emergency stop.

Increasing the magnification leads to smaller fluctuations in the actual feedrate readout (F).

0: Standard setting (1-fold)

1: 0.25-fold

2: 0.5-fold

3: 1-fold

4: 2-fold

5: 4-fold

6: 8-fold

(Note) This parameter is enabled when "#1125 real_f (Actual feedrate display)" is "1" .

#11670	AmpFeedRate_VCC	Vibration amplitude-to-feed ratio

This parameter specifies the ratio of vibration amplitude to feed per spindle revolution.

(Vibration cutting control is conducted with the amplitude of feed per spindle revolution multiplied by the amplitude-feed ratio.)

If this parameter is set to "0", the ratio will be 2.00.

---Setting range---

0 to 9.99

#11671	AmpFeedRateMax_VCC	Maximum value of amplitude-to-feed ratio

This parameter specifies the maximum value of the vibration amplitude-to-feed ratio.

If this parameter is set to "0", the maximum value will be 9.99.

---Setting range---

0 to 9.99

#11673	VibType_VCC	Vibration waveform type

This parameter specifies the type of the vibration waveform.

0: Triangular wave

1: Sine wave

2: Rectangular wave

#11678	VibPerRevMax_VCC	Maximum number of vibrations per spindle revolution

This parameter specifies the maximum number of vibrations per spindle revolution.

If this parameter is set to "0", the maximum number will be 31.50.

The frequency range selected for the VCC mode is switched as follows according to this parameter:

When in the range of 0.10 to 6.50: 5.63 to 281.25 (Hz)

When "0" or in the range of 6.51 to 31.50: 28.13 to 281.25 (Hz)

---Setting range---

0, 0.10 to 31.50 (oscillations)

#11686	Spec_VCC

bit5: Unit for Upper limit of frequency

Select the unit for the upper frequency limit setting (#12131).

0: 1 Hz

1: 0.01 Hz

(Example) If "#12131 FrqClmpSys_VCC" is set to "300", the upper frequency limit is 300 (Hz) when this parameter is set to "0" and 3.00 (Hz) when this parameter is set to "1".

bit6: Spindle speed control method

Select the spindle speed control method to be used during the vibration cutting mode.

0: The control method is automatically switched according to the constant surface speed control status of the selected spindle at the start of the vibration cutting mode.

- When constant surface speed control is ON, the variable spindle speed method is in effect.
- When constant surface speed control is OFF, the fixed spindle speed selection method is in effect.

1: Variable spindle speed method is always in effect.

	#11687	AmpDspCorrRate_VCC	Vibration amplitude-to-feed ratio: screen display compensation magnification

Specify the screen display compensation magnification for vibration amplitude-to-feed ratio when tool path is computed on the vibration cutting control screen.

The vibration amplitude-to-feed ratio used to compute the tool path is the vibration amplitude-to-feed ratio entered on the vibration cutting control screen multiplied by this parameter.

When "0" is set, it is treated as 1.00.

---Setting range---

0, 0.10 to 1.00

	#11700	EM Cmn No	Starting common variable No. for storage of error measurement result

Specify the starting number of common variables that store the measurement result.

Eight common variables starting from the specified number are used.

Specify the No. of common variable that is common to part systems.

* Select the number so that eight common variables beginning with the selected number are all common to part systems.

---Setting range---

0, 100 to 142, 400 to 992, 100100 to 800192, 900000 to 907392

	#11701	WEM Mcr No	Macro No. for workpiece installation error measurement

Specify the name of macro program for the workpiece installation error measurement.

The macro program name is output at initialization of workpiece installation error measurement macro.

The macro program is used for execution of the measurement.

---Setting range---

0, 9000 to 9099, 9300 to 9999, 100010000 to 100018999, 100030000 to 199999998

	#11702	Ref Sphere Dia	Reference sphere diameter

Specify the diameter of reference sphere that is used for rotation center error measurement.

If the set value is significantly different from the actual diameter, the sensor may be damaged.

---Setting range---

0.000, 1.000 to 100.000 (mm)

	#11704	PrcssAnlysis	

Not used. Set to "0".

(PR)	#11708	F-bus 1 Err Switch	Fieldbus communication error switch 1

Select whether to activate emergency stop or display a warning if an error occurs on the Fieldbus expansion card mounted in the slot EXT3 (or EXT1 for M80V/M800VS).

(Note) The parameter does not apply to a CC-Link expansion card.

0: Emergency stop

1: Warning display

(PR)	#11709	F-bus 2 Err Switch	Fieldbus communication error switch 2

Select whether to activate emergency stop or display a warning if an error occurs on the Fieldbus expansion card mounted in the slot EXT4 (or EXT2 for M80V/M800VS).

(Note) The parameter does not apply to a CC-Link expansion card.

0: Emergency stop

1: Warning display

	#11716	CutEdgeAngleType	Turning tool shape compensation: setting method of cutting-edge angle

Select the method of specifying the cutting-edge angle that is used for turning-tool shape compensation in Compound type fixed cycle for turning machining I.

0: Tool shape method

1: Tool compensation method

(PR)	#11717	astap_sysno	Analog spindle synch tap: Part system selection

Select the part system to which the analog spindle synchronous tapping cycle is applied.

When 0 is set, the part system 1 is considered to be selected.

---Setting range---

0 to 8

	#11718	astap_timeadj	Analog spindle synch tap: Timing adjustment

This parameter enables you to adjust the motion start timing of the tap axis and the spindle in analog spindle synchronous tapping.

(1) When the setting = 0

Not adjust the timing.

(2) When the setting > 0

Delay the start of tap axis command by the specified length of time.

This is effective when the analog spindle lags behind the tap axis.

(3) When the setting < 0

Delay the start of analog spindle command by the specified length of time.

This is effective when the analog spindle runs ahead of the tap axis.

---Setting range---

-50 to 50 (ms)

	#11719	astap_Fbadj	Synchronous tapping with analog I/F spindle: compensation factor

When the synchronous tapping with analog I/F spindle is active, the compensation amount for the spindle rotation speed is calculated using the feedback. The compensation amount can be adjusted by the factor specified in this parameter.

---Setting range---

0 to 300 (%)

	#11720	astap_filt	Synchronous tapping with analog I/F spindle: filter time constant

When the synchronous tapping with analog I/F spindle is active, the first-order lag filter is applied to compensate the spindle rotation speed. The time constant of the filter is specified by this parameter.

---Setting range---

0 to 500 (ms)

	#11721	astap_Fbtime	Synchronous tapping with analog I/F spindle: feedback time lag

When the synchronous tapping with analog I/F spindle function is active, there may be a time lag between the command issued to the spindle and the feedback sent from the encoder. The time lag can be corrected by entering the length of time in this parameter.

---Setting range---

0 to 50 (ms)

(PR)	#11742	mmacVarEx	Machine Tool Builder Macro extended variables

This parameter specifies whether the Machine Tool Builder Macro extended variables (#80650 - #82999, retained on power-on) are valid or invalid.

0: Invalid

1: Valid

(PR)	#11761	PLC Security Mode	Enhanced PLC security mode

Select the type of the enhanced PLC security mode.

0: No mode (invalid)

1: Write-protection mode

2: Read/Write-protection mode

(PR)	#11762	E/U Project No.	End-user project number

Select the number of the project which can be used as "E/U project" by end users.

When "0" is set, the end-user mode is disabled.

When any number from 1 to 6 is selected, the end-user mode is enabled.

While the parameter "#11761 PLC Security Mode" is "0", the end-user mode is invalid irrespective of this parameter.

---Setting range---

1 to 6

0: No setting (End-user mode is invalid)

(PR)	#11763	E/U Y Dev No.	Initial number of Y device for end user

Specify the initial number of the Y devices that are free to use for end users.

The sum of this setting and "#11764 E/U Y Dev Size" cannot exceed 0600 (HEX).

---Setting range---

0000 to 05FF (HEX)

(PR)	#11764	E/U Y Dev Size	Quantity of Y devices for end user

Specify the quantity of the Y devices that are free to use for end users.

The sum of this setting and "#11763 E/U Y Dev No." cannot exceed 0600 (HEX).

---Setting range---

0000 to 0600 (HEX)

(PR)	#11765	E/U M Dev No.	Initial number of M device for end user

Specify the initial number of the M devices that are common to projects, and are free to use for end users.

The sum of this setting and "#11766 E/U M Dev Size" cannot exceed 61440.

---Setting range---

0 to 61439

(PR)	#11766	E/U M Dev Size	Quantity of M devices for end user

Specify the quantity of the M devices that are common to projects, and are free to use for end users.

The sum of this setting and "#11765 E/U M Dev No." cannot exceed 61440.

---Setting range---

0 to 61440

(PR)	#11767	E/U D Dev No.	Initial number of D device for end user

Specify the initial number of the D devices that are common to projects, and are free to use for end users.

The sum of this setting and "#11768 E/U D Dev Size" cannot exceed 8192.

---Setting range---

0 to 8191

(PR)	#11768	E/U D Dev Size	Quantity of D devices for end user

Specify the quantity of the D devices that are common to projects, and are free to use for end users.

The sum of this setting and "#11767 E/U D Dev No." cannot exceed 8192.

---Setting range---

0 to 8192

(PR)	#11769	Remote I/O Clear	Initialization of remote I/O

Select whether to clear the values of RIO output devices at PLC STOP.

0: Retain the outputs of RIO

1: Clear the outputs of RIO

	#11771	PTapInp	In-position range for Punch Tap (tap axis)

Specify the in-position range to be applied to the in-position check at the bottom of Punch Tap hole.

---Setting range---

0.000 to 99.999 (mm)

	#11772	ptapd	End point of deburring

Specify the end point of the deburring process for the pattern PT1.5 or PT2.0, using the distance from the bottom of the hole.

---Setting range---

0.000 to 32.767 (mm)

	#11773	ptapag	Rotation angle of Punch Tap

Specify the angle of the rotation of the Punch Tap tool to be applied in tapping.

An angle of 180 degrees is used commonly for a double-helix Punch Tap tool.

When "0" is set, the angle will be interpreted as 180 degrees.

---Setting range---

0 to 360 (deg)

(PR)	#11776	VDC_cntmax	Acceleration rate retaining time

Set this parameter when the workpiece has scratches during the machining that is switched from linear to circular when Variable torsion compensation function is used.

If the machined workpiece has scratches, set the larger value in the parameter setting.

When "0" is set, it is operated as "1".

---Setting range---

1 to 255

(PR)	#11788	PrcsOutput	Output Process Analysis result

Not used. Set to "0".

	#11790	astap_cmpmax	Factor for max speed after adjustment in sync tap w/ analog I/F spindle

This parameter determines the upper limit of output adjustment in synchronous tapping with analog I/F spindle.

Specify a limit on the adjustment of output rotation speed in terms of the percentage of commanded spindle speed.

If a value between 0 and 99 is specified, the system behaves as if "120" was specified.

---Setting range---

0 to 300 (%)

(PR)	#11791	Disp area1 sysno	Monitr-Area1 part system to display

Specify the part system to display on the [Monitr] screen after power on.

This parameter is valid only when "#11019 2-system display" is enabled (other than "0").

(*) When "0" is specified, the unassigned part system with the smallest part system number is set.

---Setting range---

0 to 8

(PR)	#11792	Disp area2 sysno	Monitr-Area2 part system to display

Specify the part system to display on the [Monitr] screen after power on.

This parameter is valid only when "#11019 2-system display" is enabled (other than "0").

(*) When "0" is specified, the unassigned part system with the smallest part system number is set.

---Setting range---

0 to 8

(PR)	#11793	Disp area3 sysno	Monitr-Area3 part system to display

Specify the part system to display on the [Monitr] screen after power on.

This parameter is valid only when "#11019 2-system display" is enabled (other than "0").

(*) When "0" is specified, the unassigned part system with the smallest part system number is set.

---Setting range---

0 to 8

(PR)	#11794	Disp area4 sysno	Monitr-Area4 part system to display

Specify the part system to display on the [Monitr] screen after power on.

This parameter is valid only when "#11019 2-system display" is enabled (other than "0").

(*) When "0" is specified, the unassigned part system with the smallest part system number is set.

---Setting range---

0 to 8

(PR)	#11795	aspect ratio	Image input I/F: Aspect ratio

Specify how to scale images when an image input expansion card is connected and the resolution of input from an IPC or a camera is different from that of the display.

0: Maintain aspect ratio

1: Not maintain aspect ratio

	#11796	mmacpro	Machine tool builder macro password

Register and authenticate a password to enable editing etc. of machine tool builder macro programs.

- If a password is unregistered, (blank display), a password consisting of one to eight alphanumeric characters can be set. (lower case letters and a password only consisting of one zero (0) cannot be set.)
- If a password has been registered (displays ****), when the registered password is entered, "---OK---" will be displayed and the protection will be canceled.
  If a wrong password is entered, "setting error" will occur.

(Note) This parameter can be set only when Machine tool builder macro password management method type 2 is selected. (#1761 cfgPR11/bit6=1)

---Setting range---

One to eight alphanumeric characters (except for lower case letters and a password consisting of only one zero (0))

(PR)	#11799	lsr_sys	Laser processing control-enabled part system (For M system only)

Specify the part system number for which laser processing control is enabled.

If "0" or a nonexistent part system is set, laser processing control is disabled for all part systems.

---Setting range---

0 to 8

	#11801	SPRINT ON	SPRINT ON

Specify whether to enable or disable SPRINT.

0: Disable

1: Enable

When SPRINT is enabled

- M codes for SPRINT control are executable.
- SKIP8 is assigned to the SPRINT connector of the expansion unit FCU8-EX543.

	#11802	SPRINT_Mcode	M codes for SPRINT control

Specify the first M code for SPRINT control.

0: default setting

600: Start signal ON

601: Start signal OFF

602: Enable signal ON

603: Enable signal OFF

604: Select signal ON

605: Select signal OFF

Other than 0: the six consecutive M codes starting from the set value are assigned as the M codes for SPRINT control.

Set value + 0: Start signal ON

Set value + 1: Start signal OFF

Set value + 2: Enable signal ON

Set value + 3: Enable signal OFF

Set value + 4: Select signal ON

Set value + 5: Select signal OFF

---Setting range---

0, 200 to 99999999

	#11803	SPRINT_mcmp	Removal of machine error compensation in SPRINT

Specify whether to remove the machine error compensation amount from the feedback position retrieved from the drive unit.

0: Not remove (when a machine end encoder is used)

1: Remove (when a motor end encoder is used)

	#11804	SPRINT_mcmpDly	Timing adjustment for removal of machine error compensation in SPRINT

Specify the time delay after which the machine error compensation amount is removed from the feedback position data when the parameter for removal of machine error compensation in SPRINT is set to "1" (Remove).

---Setting range---

0 to 500 (ms)

(PR)	#11805	Machine Simu Model

Select the machine model to be used in the 3D machining simulation.

0: Machine configuration file is not used, only execute work simulation.

1: Use the machine configuration file specified in the configuration file.
If the selected machine configuration file is not existed, the machine configuration file in the designated location will be used.

2 to 20: Use the machine configuration file specified in the configuration file.

(Note 1) 3D machining simulation is required (optional).

(Note 2) The setting range differs depending on machine tool builders.

(*) This parameter is for M800VW series only.

---Setting range---

0 to 20

	#11808	proc cnd protect 1	Machining condition protection 1

Specify the machining condition to be protected from parameter settings when the machine tool builder password is not entered in the High-accuracy parameter adjustment screen.

---Setting range---

0, 11 to 13, 21 to 23, 31 to 33

0: Not specified

11: Condition 1-1, 12: Condition 1-2, 13: Condition 1-3

21: Condition 2-1, 22: Condition 2-2, 23: Condition 2-3

31: Condition 3-1, 32: Condition 3-2, 33: Condition 3-3

	#11809	proc cnd protect 2	Machining condition protection 2

Specify the machining condition to be protected from parameter settings when the machine tool builder password is not entered in the High-accuracy parameter adjustment screen.

---Setting range---

0, 11 to 13, 21 to 23, 31 to 33

0: Not specified

11: Condition 1-1, 12: Condition 1-2, 13: Condition 1-3

21: Condition 2-1, 22: Condition 2-2, 23: Condition 2-3

31: Condition 3-1, 32: Condition 3-2, 33: Condition 3-3

	#11810	proc cnd protect 3	Machining condition protection 3

Specify the machining condition to be protected from parameter settings when the machine tool builder password is not entered in the High-accuracy parameter adjustment screen.

---Setting range---

0, 11 to 13, 21 to 23, 31 to 33

0: Not specified

11: Condition 1-1, 12: Condition 1-2, 13: Condition 1-3

21: Condition 2-1, 22: Condition 2-2, 23: Condition 2-3

31: Condition 3-1, 32: Condition 3-2, 33: Condition 3-3

(PR)	#11811	LDR Dedicated Sys	Loader-dedicated part system (For M system only)

Select the part system to be assigned for loader operation.

1 to 8: $1 to $8

When not using this parameter, set "0".

---Setting range---

0 to 8

(PR)	#11823	exComVar1DecN	Extended common variable I: number of real number data

Specify the number of real number data (8 bytes) for Extended common variable I.

---Setting range---

0 to 10000

(PR)	#11824	exComVar1IntN	Extended common variable I: number of integer data

Specify the number of integer data (2 bytes) for Extended common variable I.

---Setting range---

0 to 40000

(PR)	#11825	exComVar2SramOpen	Extended common variable II: SRAM open parameter No.

Specify the SRAM open parameter No. to be used for real number data of Extended common variable II.

---Setting range---

0, 41001 to 41100

(PR)	#11826	exComVar2DecN	Extended common variable II: number of real number data

Specify the number of real number data (8 bytes) for Extended common variable II.

---Setting range---

0 to 80000

(PR)	#11827	exComVar3DecN	Extended common variable III: number of real number data

Specify the number of real number data (8 bytes) for Extended common variable III.

---Setting range---

0 to 2000

(PR)	#11828	exComVar3IntN	Extended common variable III: number of integer data

Specify the number of integer data (2 bytes) for Extended common variable III.

---Setting range---

0 to 8000

(PR)	#11829	exComVar3FileN	Extended common variable III: number of data files

Specify the number of data files for Extended common variable III.

---Setting range---

0 to 1000

(PR)	#11858	NCAID Diagn method	NC MachiningAID tool wear diagnostics method

Select how the NC MachiningAID uses tool wear diagnostics.

0: Use the determined tool life to update the tool status. (The tool life determination of Tool life management is enabled.)

1: Notifies tool life determination to the PLC signal.

(PR)	#11863	PrcssAnlysisSelect	Process analysis selection

This parameter specifies whether to allow Process analysis.

0: Not allow

1: Allow

	#11864	ModelChangeMcode	M code for switching machine model

Specify the M code to be used for switching the machine model in Real-time 3D machine interference check. When "0" is set, the M code will be disabled.

(Note) Do not use the following M codes:
M00, M01, M02, M30, M96 to M99, M198 and
M codes for macro call (M codes set in #7001 and #7011 to #7091)

---Setting range---

0 to 99999999

	#11895	LC_KEY

Not used.

---Setting range---

0

2.4 Axis Specifications Parameters

#2001	rapid	Rapid traverse rate

Set the rapid traverse feedrate for each axis.

(Note) The maximum value to be set depends on the machine specifications.

---Setting range---

When other than Spindle/C axis is used: 1 to 1000000 (mm/min)

When Spindle/C axis is used: 1 to 2000000 (mm/min)

#2002	clamp	Cutting feedrate for clamp function

Set the maximum cutting feedrate for each axis.

Even if the feedrate in G01 exceeds this value, the clamp will be applied at this feedrate.

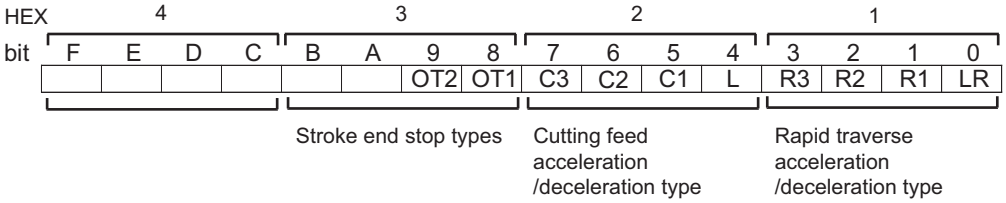
---Setting range---

When other than Spindle/C axis is used: 1 to 1000000 (mm/min)

When Spindle/C axis is used: 1 to 2000000 (mm/min)

(PR)	#2003	smgst	Acceleration and deceleration modes

Set acceleration and deceleration control modes.
Set value is in hexadecimal.



HEX-1 Rapid traverse acceleration/deceleration type

0(bit3,2,1,0 = 0000): Step

1(bit3,2,1,0 = 0001): Linear acceleration/deceleration

2(bit3,2,1,0 = 0010): Primary delay

8(bit3,2,1,0 = 1000): Exponential acceleration and linear deceleration

F(bit3,2,1,0 = 1111): Soft acceleration/deceleration

(Note) Primary delay is applied because R1 setting has priority over R3 setting when R1 and R3 are both set to "1".

HEX-2 Cutting feed acceleration/deceleration type

0 (bit7,6,5,4 = 0000): Step

1 (bit7,6,5,4 = 0001): Linear acceleration/deceleration

2 (bit7,6,5,4 = 0010): Primary delay

8 (bit7,6,5,4 = 1000): Exponential acceleration and linear deceleration

F (bit7,6,5,4 = 1111): Soft acceleration/deceleration

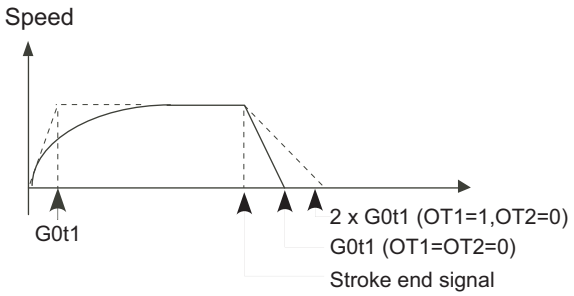
HEX-3 Stroke end stop types

0 (bit9,8 = 00): Linear deceleration (Decelerates at G0t1)

1 (bit9,8 = 01): Linear deceleration (Decelerates at 2×G0t1)

2 (bit9,8 = 10): Position loop step stop

3 (bit9,8 = 11): Position loop step stop



(Note) OT1(bit8) is valid under the following conditions (valid for dog type zero point return):
- Stop type: Linear deceleration
- Acceleration/deceleration mode: Exponential Acceleration and Linear deceleration

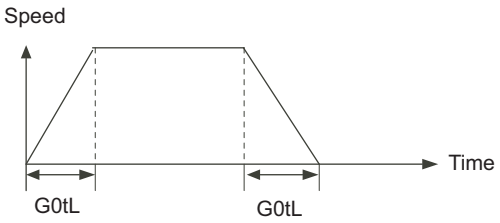
HEX-4

Not used. Set to "0".

#2004	G0tL	G0 time constant (linear)

Set a linear control time constant for rapid traverse acceleration and deceleration.

This time constant is enabled when LR (rapid traverse feed with linear acceleration/deceleration) or F (soft acceleration/deceleration) is selected in "#2003 smgst" (Acceleration and deceleration modes).



---Setting range---

1 to 4000 (ms)

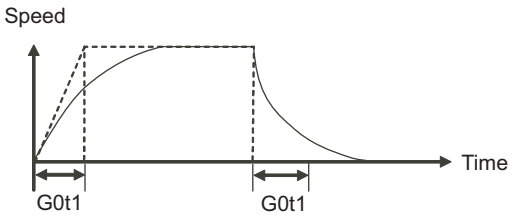
#2005	G0t1	G0 time constant(primary delay) / Second-step time constant for soft acceleration/deceleration

Set a primary-delay time constant for rapid traverse acceleration and deceleration.

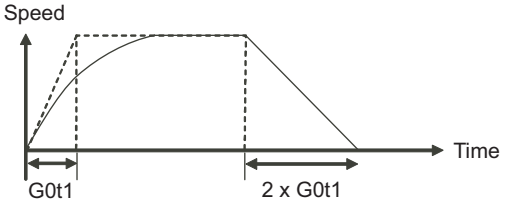
This time constant is enabled when R1 (rapid traverse feed with primary delay) or R3 (exponential acceleration and linear deceleration) is selected in "#2003 smgst" (Acceleration and deceleration modes).

When the soft acceleration/deceleration is selected, the second-step time constant will be used.

<Rapid traverse feed with primary delay>

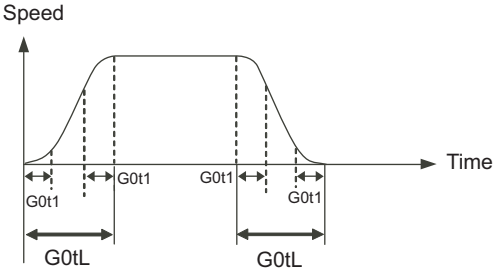


<Rapid traverse feed with exponential acceleration and linear deceleration>



<Soft acceleration/deceleration>

♦When "#1219 aux03/bit7" is set to "0"



(Note) The time constant setting for the soft acceleration/deceleration can be changed by the setting of "#1219 aux03/bit7"

---Setting range---

1 to 5000 (ms)

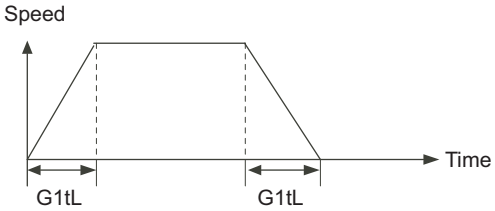
#2006	G0t2	

Not used. Set to "0".

#2007	G1tL	G1 time constant (linear)

Set a linear control time constant for cutting acceleration and deceleration.

The time constant will be enabled when LC (cutting feed with linear acceleration/deceleration) or F (soft acceleration/deceleration) is selected in "#2003 smgst" (Acceleration or deceleration modes).



---Setting range---

1 to 4000 (ms)

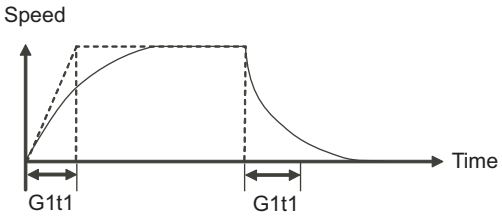
#2008	G1t1	G1 time constant (primary delay)/Second-step time constant for soft acceleration/deceleration

Set the primary delay time constant for cutting acceleration and deceleration.

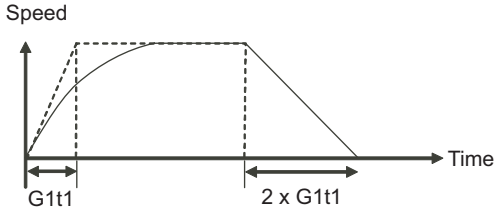
The time constant will be enabled when C1 (cutting feed with the primary delay) or C3 (cutting feed with exponential acceleration and linear deceleration) is selected in "#2003 smgst" (Acceleration/deceleration modes).

When the soft acceleration/deceleration is selected, the second-step time constant will be used.

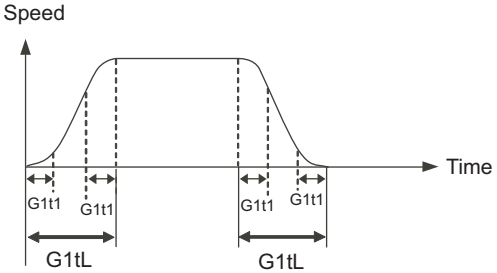
<Cutting feed with primary delay>



<Cutting feed with exponential acceleration and linear deceleration>



<Soft acceleration/deceleration>



---Setting range---

1 to 5000 (ms)

#2009	G1t2	

Not used. Set to "0".

#2010	fwd_g	Feed forward gain

Set a feed forward gain for pre-interpolation acceleration/deceleration.

The larger the set value, the smaller the theoretical control error will be. However, if a machine vibration occurs, set the smaller value.

---Setting range---

0 to 200 (%)

#2011	G0back	G0 backlash

Set up the backlash compensation amount when the direction is reversed with the movement command in rapid traverse feed mode or in manual mode (except for handle feed mode) .

---Setting range---

-9999999 to 9999999

#2012	G1back	G1 backlash

Set up the backlash compensation amount when the direction is reversed with the movement command in cutting mode.
G1 backlash is enabled in handle feed mode.

---Setting range---

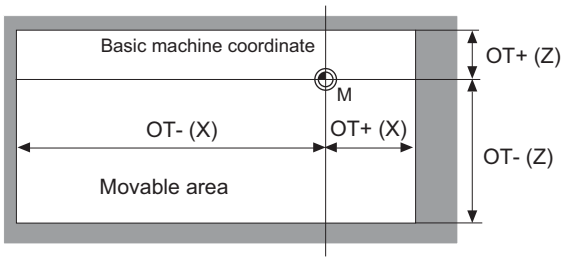
-9999999 to 9999999

#2013	OT -	Soft limit I -

Set a soft limit area with reference to the zero point of the basic machine coordinate. Set the coordinate in the negative direction for the movable area of stored stroke limit 1. The coordinate in the positive direction is set in "#2014 OT+".

To narrow the available range in actual use, use the parameters "#8204 OT-" and "#8205 OT+".

When the same value (other than "0") is set in this parameter and "#2014 OT+", this function will be disabled.



---Setting range---

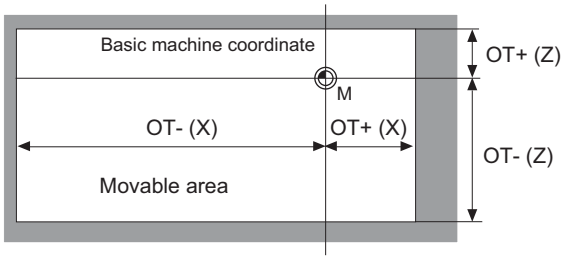
-99999.999 to 99999.999 (mm)

#2014	OT +	Soft limit I +

Set a soft limit area with reference to the zero point of the basic machine coordinate. Set the coordinate in the positive direction for the movable area of stored stroke limit 1. The coordinate in the negative direction is set in "#2013 OT-".

To narrow the available range in actual use, use the parameters "#8204 OT-" and "#8205 OT+".

When the same value (other than "0") is set in this parameter and "#2013 OT-", this function will be disabled.



---Setting range---

-99999.999 to 99999.999 (mm)

	#2015	tlml-	Negative direction sensor of tool setter

Set a sensor position in the negative direction when using the tool setter.

When the TLM is used, set up the distance of a tool replacement point (reference point) for measuring the tool length from the zero point to the measurement reference point (surface).

(Note) In the case of the basic axis and inclined axis of the inclined axis specifications, set the position on the orthogonal coordinate.

---Setting range---

-99999.999 to 99999.999 (mm)

	#2016	tlml+	Positive direction sensor of tool setter or TLM standard length

Set the sensor position in the positive direction when using the tool setter.

When the TLM is used, set the distance from a tool change point (reference position) to the measurement basic point (surface) in order to measure the tool length.

(Note) In the case of the basic axis and inclined axis of the inclined axis specifications, set the position on the orthogonal coordinate.

---Setting range---

-99999.999 to 99999.999 (mm)

	#2017	tap_g	Axis servo gain

Set the position loop gain for special operations (synchronized tapping, interpolation with spindle C axis, etc.).

Set the value in 0.25 increments.

The standard setting value is "10".

---Setting range---

0.25 to 200.00 (rad/s)

(PR)	#2018	no_srv	Operation with no servo control

Select when performing test operation without connecting the drive unit and motor.

0: Normal operation

1: Test operation

When "1" is set, the operation will be possible even if drive units and motor are not connected, because the drive system alarm will be ignored.

This parameter is used for test operation during start up: Do not use during normal operation. If "1" is set during normal operation, errors will not be detected even if they occur.

	#2019	revnum	Return steps

Set the steps required for reference position return for each axis.

0: Not execute reference position return.

1 to max. number of NC axes: Steps required for reference position return

	#2020	o_chkp	Spindle orientation completion check during second reference position return

Set the distance from the second reference position to the position for checking that the spindle orientation has completed during second reference position return.

When the set value is "0", the above check will be omitted.

---Setting range---

0 to 99999.999 (mm)

	#2021	out_f	Maximum speed outside soft limit range (For L system only)

Set the maximum speed outside the soft limit range.

---Setting range---

0 to 1000000 (mm/min)

	#2022	G30SLX	Validate soft limit (automatic and manual)

Select whether to disable a soft limit check during the second to the fourth reference position return in both automatic and manual operation modes.

0: Enable

1: Disable

	#2023	ozfmin	Set up ATC speed lower limit

Set the minimum speed outside the soft limit range during the second to the fourth reference position return.

---Setting range---

0 to 1000000 (mm/min)

	#2024	synerr	Allowable error

Set the maximum synchronization error, allowable at the synchronization error check, for the master axis.

When "0" is set, the error check will not be carried out.

---Setting range---

0 to 99999.999 (mm)

During simple C-axis synchronous control: 0 to 99999.999(°)

	#2061	OT_1B-	Soft limit IB-

Set the coordinate of the lower limit of the area where the stored stroke limit IB is inhibited.

Set a value from zero point in the basic machine coordinate system.

If the same value (non-zero) is set for both the sign and numeral value as "#2062 OT_IB+", the stored stroke limit IB function set with #2061 and #2062 will be disabled.

---Setting range---

-99999.999 to 99999.999 (mm)

	#2062	OT_1B+	Soft limit IB+

Set the coordinate of the upper limit of the area where the stored stroke limit IB is inhibited.

Set a value from zero point in the basic machine coordinate system.

---Setting range---

-99999.999 to 99999.999 (mm)

	#2063	OT_1B type	Soft limit IB type

Select the type that applies the settings of "#2062 OT_IB+" and "#2061 OT_IB-" in stored stroke limit I.

0: Soft limit IB

1: Disable

2: Soft limit IC

3: Soft limit is checked for the inclined axis control axis with the program coordinate system.

(Note) This is valid only for inclined axis' basic axis and inclined axis.

	#2068	G0fwdg	G00 feed forward gain

Set a feed forward gain for G00 pre-interpolation acceleration/deceleration.

The larger the setting value, the shorter the positioning time during in-position checking.

If a machine vibration occurs, set the smaller value.

---Setting range---

0 to 200 (%)

	#2069	Rcoeff	Axis arc radius error correction coefficient

Set the percentage to increase or decrease the arc radius error correction amount for each axis.

---Setting range---

-100.0 to +100.0 (%)

(PR)	#2070	div_RT	Rotational axis division count

Set the number of divisions of one turn of the rotary axis under control.

(Example)

When "36" is set, one turn is supposed to be 36.000.

(Note 1) When "0" is set, the normal rotary axis (360.000 degrees for one turn) is assumed.

(Note 2) If this parameter is changed when the absolute position detection specification is used, absolute position data will be lost. Initialization must be performed again.

---Setting range---

0 to 999

(PR)	#2071	s_axis	Inclined axis selection (for L system only)

Select whether the axis is to be under the inclined-axis control or to be the basic axis corresponding to the inclined axis.

0: Not to be under the inclined-axis control

1: Inclined axis

2: Basic axis corresponding to inclined axis

(Note) Each of "1" and "2" values must be set for only one axis. If either value is set for two or more axes, inclined-axis control does not work.

	#2072	rslimt	Restart limit

Set the most minus (-) side position where restart search is possible.

If the machine is positioned on the more minus (-) side than the set value in T-command restart mode, restart search in type 3 will be disabled.

---Setting range---

-99999.999 to 99999.999 (mm)

	#2073	zrn_dog	Origin dog Random assignment device

Under the standard specifications, the "Reference position return near-point detection" signal is assigned to a fixed device. Set the device in this parameter to assign this signal to a position other than the fixed device.

(Note1) This parameter is enabled in the following conditions.

NC axis: When "#1226 aux10/bit5" is set to "1".

PLC axis: When "#1246 set18/bit7" is set to "1".

(Note 2) When this parameter is valid, do not set the existing device number. If the existing device number is set, an emergency stop will occur. However, no device number check will be performed for an axis to which the "Near-point dog ignored" signal or the "PLC axis near-point dog ignored" signal is input.

(Note 3) The "Reference position return near-point detection" signal is required to be directly input to the operation panel I/O unit or the remote I/O unit. The device assigned to an expansion unit such as CC-Link, Profibus, etc, cannot be used. Signals which set in a sequence program cannot be used.

---Setting range---

0000 to 03FF (hexadecimal)

	#2074	H/W_OT+	H/W OT+ Random assignment device

Under the standard specifications, the "Stroke end (+)" signal is assigned to a fixed device. Set the device in this parameter to assign this signal to a position other than the fixed device.

(Note1) This parameter is enabled in the following conditions.

NC axis: When "#1226 aux10/bit5" is set to "1".

PLC axis: When "#1246 set18/bit7" is set to "1".

(Note 2) When this parameter is valid, do not set the existing device number. If the existing device number is set, an emergency stop will occur. However, no device number check will be performed for an axis to which the "OT ignored" signal or the "PLC axis OT ignored" signal is input.

(Note 3) The "Stroke end" signal is required to be directly input to the operation panel I/O unit or the remote I/O unit. The device assigned to an expansion unit such as CC-Link, Profibus, etc, cannot be used. Signals which set in a sequence program cannot be used.

---Setting range---

0000 to 03FF (hexadecimal)

	#2075	H/W_OT-	H/W OT- Random assignment device

Under the standard specifications, the "Stroke end (-)" signal is assigned to a fixed device. Set the device in this parameter to assign this signal to a position other than the fixed device.

(Note1) This parameter is enabled in the following conditions.

NC axis: When "#1226 aux10/bit5" is set to "1".

PLC axis: When "#1246 set18/bit7" is set to "1".

(Note 2) When this parameter is valid, do not set the existing device number. If the existing device number is set, an emergency stop will occur. However, no device number check will be performed for an axis to which the "OT ignored" signal or the "PLC axis OT ignored" signal is input.

(Note 3) The "Stroke end" signal is required to be directly input to the operation panel I/O unit or the remote I/O unit. The device assigned to an expansion unit such as CC-Link, Profibus, etc, cannot be used. Signals which set in a sequence program cannot be used.

---Setting range---

0000 to 03FF (hexadecimal)

	#2076	index_x	Index table indexing axis

Specify the index table indexing axis.

0: Normal axis

1: Index table indexing axis

(Note) This parameter is valid only for the NC axis. The parameter is invalid if set for the PLC axis.

	#2077	G0inps	G0 in-position width

Set the in-position width for G0.

Between SV024 and this parameter, the parameter with a larger value will be applied.

When "0" is set, this parameter will be invalid. Only SV024 will be available.

When "#1205 G0dbcc" is "1", SV024 is used as the G0 in-position width.

---Setting range---

0.000 to 99.999 (mm)

	#2078	G1inps	G1 in-position width

Set the in-position width for G1.

Between SV024 and this parameter, the parameter with a larger value will be applied.

When "0" is set, this parameter will be invalid. Only SV024 will be available.

---Setting range---

0.000 to 99.999 (mm)

(PR)	#2079	chcomp	Chopping compensation coefficient

Set the coefficient to be applied to the compensation amount for the insufficient amount caused by servo delay during chopping.

---Setting range---

0 to 10 (standard value: 8)

	#2080	chwid	Bottom dead center position width

Set the tolerance between the commanded stroke and actual stroke.

Compensation will be applied during chopping so that the result of [command width - maximum stroke of top or bottom dead point/ 2] will be within this tolerance.

---Setting range---

0 to 10.000 (mm)

	#2081	chclsp	Maximum chopping speed

Set the clamp speed in chopping operation.

When "0" is set, the clamp speed will be determined by "#2002 clamp".

---Setting range---

0 to 60000 (mm/min)

#2082	a_rstax	Restart position return order

Set the No. for each axis in order from the 1st automatically returning axis to the restart position.

When "0" is set, the axis will not return.

Note that when "0" is set for all axes, all of the axes will return simultaneously.

(Note) On the absolute position system, when performing the restart search just after power ON, and when the axis that is the order 0 is moved by the follow-up, an operation error(M01 0128) may occur.

---Setting range---

0 to 16

#2084	G60_ax	Unidirectional positioning operation selection

Select how to operate the unidirectional positioning when the positioning command (G00) is issued.

0: Carry out unidirectional positioning according to the command and modal.

1: Carry out unidirectional positioning regardless of the command and modal.

Set "1" for the axis to carry out the unidirectional positioning at every positioning command, regardless of whether the unidirectional positioning command and modal are issued.

<Related parameters>

"#8209 G60 SHIFT" and "#2076 index_x"

#2086	exdcax	External deceleration speed

Set the maximum feed rate for each axis when the external deceleration signal is ON.
This parameter is valid when "#1239 set11/bit6" is set to "1".

---Setting range---

0 to 1000000 (mm/min)

#2087	syncnt	Synchronization/superimposition control setting for each axis

Set the polarity of synchronized axis with respect to reference axis to the bit corresponding to each axis.

0: Relative to reference axis, polarity is positive

1: Relative to reference axis, polarity is negative

---Setting range---

0 to FF (hexadecimal)

#2088	bsax_sy	Reference axis for synchronous control

Set the reference axis for synchronous control with the 2nd axis name (axname2). A numerical character cannot be set as the 1st character.

---Setting range---

1st character: A to Z

2nd character: A to Z, 1 to 9

#2089	bsax_pl	Superimposition control reference axis

Set the reference axis of superimposition control using the 2nd axis name (axname2).

Always use an alphabetic character (A to Z) for the first character.

(Note) This parameter is enabled only when "#1280 ext16/bit7" (Control axis superimposition command method) is set to "0".

---Setting range---

Two digits between A to Z and 1 to 9
(Setting is cleared when "0" is set)

#2090	plrapid	Rapid traverse rate for superimposition control

Specify the rapid traverse rate to be applied under 2-axis superimposition control when the axis traverses in the same direction as the other axis that is travelling at a rapid traverse rate.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

#2091	plclamp	Cutting feed clamp speed for superimposition control

Specify the cutting feed clamp speed to be applied under 2-axis superimposition control when the axis is fed in the same direction as the other axis that is travelling at a cutting feed rate.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

#2092	plG0tL	G0 time constant (linear) for superimposition control

Specify the G0 time constant (linear) to be applied under 2-axis superimposition control.

---Setting range---

0 to 4000 (ms)

#2093	plG0t1	G0 time constant (primary delay) for superimposition control

Specify the G0 time constant (primary delay) to be applied under 2-axis superimposition control.

---Setting range---

0 to 5000 (ms)

#2094	plG1tL	G1 time constant (linear) for superimposition control

Specify the G1 time constant (linear) to be applied under 2-axis superimposition control.

---Setting range---

0 to 4000 (ms)

#2095	plG1t1	G1 time constant (primary delay) for superimposition control

Specify the G1 time constant (primary delay) to be applied under 2-axis superimposition control.

---Setting range---

0 to 5000 (ms)

#2096	crncsp	Minimum corner deceleration speed

Set the minimum clamp speed for corner deceleration in the high-accuracy control mode. Normally set "0".

(Note) This parameter is invalid during SSS control.

---Setting range---

0 to 1000000 (mm/min)

#2097	tlml2-	Sub side tool setter - direction sensor

Set the sensor position (on sub side) in the (-) direction when using the tool setter on the sub spindle side.

(Note) In the case of the basic axis and inclined axis of the inclined axis specifications, set the position on the orthogonal coordinate.

---Setting range---

-99999.999 to 99999.999 (mm)

#2098	tlml2+	Sub side tool setter + direction sensor

Set the sensor position (on sub side) in (+) direction when using the tool setter on the sub spindle side.

(Note) In the case of the basic axis and inclined axis of the inclined axis specifications, set the position on the orthogonal coordinate.

---Setting range---

-99999.999 to 99999.999 (mm)

#2100	rpcax	Rotary axis workpiece position compensation valid

Set the state of the compensation of the rotary axis workpiece position.

0: Disabled

1: Enabled

#2102	skip_tL	Skip time constant linear

Set a linear control time constant for variable speed skip acceleration and deceleration, or for an occasion where a skip command issues acceleration/deceleration time constant enabled (R1).

The time constant will be enabled when LC (cutting feed with linear acceleration/deceleration) or F (soft acceleration/deceleration) is selected in "#2003 smgst" (Acceleration or deceleration modes).

When set to "0", the time constant set by "#2007 G1tL" is used.

---Setting range---

0 to 4000 (ms)

#2103	skip_t1	Skip time constant primary delay / Second-step time constant for soft acceleration/deceleration

Set a primary-delay time constant for variable speed skip acceleration and deceleration, or for an occasion where a skip command issues acceleration/deceleration time constant enabled (R1).

The time constant will be enabled when C1 (cutting feed with the primary delay) or C3 (cutting feed with exponential acceleration and linear deceleration) is selected in "#2003 smgst" (Acceleration/deceleration modes). When the soft acceleration/deceleration is selected, the second-step time constant will be used.

When set to "0", the time constant set by "#2008 G1t1" is used.

---Setting range---

0 to 5000 (ms)

#2106	Index unit	Indexing unit

Set the indexing unit to which the rotary axis can be positioned.

---Setting range---

0 to 360 (°)

#2109	Rapid (H-precision)	Rapid traverse rate for high-accuracy control mode

Set the rapid traverse rate for each axis in the high-accuracy control mode. When "0" is set, "#2001 rapid" is used.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

#2110	Clamp (H-precision)	Cutting feed clamp speed for high-accuracy control mode

Set the cutting feed maximum speed for each axis in the high-accuracy control mode. When "0" is set, "#2002 clamp" is used.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

#2111	Blf valid	Quadrant protrusion compensation valid

Set whether to enable the quadrant protrusion compensation.

0: Disable

1: Enable

If either of "#2112 Blf motor inertia", "#2115 Blf motor stl trq" or "#2113 Blf visc friction" is set to "0", quadrant protrusion compensation will not work even if this parameter is set to "1".

#2112	Blf motor inertia	Motor inertia

Set the motor inertia for quadrant protrusion compensation.

Refer to the servo manual and input the value appropriate for the motor.

---Setting range---

1 to 32000 (10^{-6}kgm^2)

	#2113	Blf visc friction	Viscous friction

Set the viscous friction for quadrant protrusion compensation.

After setting the other parameters to the appropriate values, monitor the machine end and gradually adjust the value.

If this parameter setting is small, a recess will form on the inner side of the circle, and if large, a protrusion will form on the outer side of the circle. When the value is appropriate, a spike-shaped quadrant protrusion will form based on normal step-shaped backlash.

---Setting range---

1 to 32767 (1/16 Nm/(rad/s))

	#2114	Blf fwdg	Compensation FF gain

Set the feed forward gain for quadrant protrusion compensation.

After setting the other parameters to the appropriate values, monitor the machine end and gradually adjust the value.

If this parameter setting is small, a large quadrant protrusion will form, and if large, a recess will form on the inner side of the circle.

---Setting range---

0 to 1000 (%)

	#2115	Blf motor stl trq	Motor stall torque

Set the motor rated current for quadrant protrusion compensation.

Refer to the servo manual and input the value appropriate for the motor.

---Setting range---

1 to 16000 (1/256 Nm)

(PR)	#2118	SscDrSel	Speed monitor Door selection

Select which door group of the speed monitoring the spindle belongs to.

0000: Door 1 group.

0001: Door 1 group.

0002: Door 2 group.

0003: Door 1 and 2 group.

The speed monitoring will not be executed when "#2313 SV113 SSF8/bitF" is OFF regardless of this parameter.

The selected door group must be set when setting the synchronous control.

The spindle/C axis control enables the door selection in "#3071 SscDrSelSp" for the corresponding spindle.

	#2121	vbacklash valid	Variable backlash valid/continuous or Variable backlash II valid

Select whether the variable backlash is to be disabled/enabled/continuous, or variable backlash II enabled.

0: Disabled

1: Enable

2: Continuous

3: Enable variable backlash II

("#2011 G0back" and "#2012 G1back" will not work unless "0: Disable" is selected.)

	#2122	G0vback+	Variable G0 backlash +

Set the compensation amount for the range of each position during rapid traverse.

(+: B1, =: B2, -: B3 on the compensation amount table)

---Setting range---

-99999999 to 99999999 (Interpolation unit)

	#2123	G0vback=	Variable G0 backlash =

Set the compensation amount for the range of each position during rapid traverse.

(+: B1, =: B2, -: B3 on the compensation amount table)

---Setting range---

-99999999 to 99999999 (Interpolation unit)

#2124	G0vback-	Variable G0 backlash -

Set the compensation amount for the range of each position during rapid traverse.

(+: B1, =: B2, -: B3 on the compensation amount table)

---Setting range---

-99999999 to 99999999 (Interpolation unit)

#2125	G1vback+	Variable G1 backlash +

Set the compensation amount for the range of each position during cutting feed.

(+: A1, =: A2, -: A3 on the compensation amount table)

---Setting range---

-99999999 to 99999999 (Interpolation unit)

#2126	G1vback=	Variable G1 backlash =

Set the compensation amount for the range of each position during cutting feed.

(+: A1, =: A2, -: A3 on the compensation amount table)

---Setting range---

-99999999 to 99999999 (Interpolation unit)

#2127	G1vback-	Variable G1 backlash -

Set the compensation amount for the range of each position during cutting feed.

(+: A1, =: A2, -: A3 on the compensation amount table)

---Setting range---

-99999999 to 99999999 (Interpolation unit)

#2128	G1vback feed1	G1 variable backlash compensation amount change-over speed 1

Set the speed range during cutting feed.

(The speed less than 1 is the low speed, and the speed exceeding 2 is the high speed.)

Note that the speed range is identified in the order of low, high and medium speed. Consider whether the set value should be larger or smaller than other values.

---Setting range---

0 to 480000 (mm/min)

#2129	G1vback feed2	G1 variable backlash compensation amount change-over speed 2

Set the speed range during cutting feed.

(The speed less than 1 is the low speed, and the speed exceeding 2 is the high speed.)

Note that the speed range is identified in the order of low, high and medium speed. Consider whether the set value should be larger or smaller than other values.

---Setting range---

0 to 480000 (mm/min)

#2130	G1vback dist1	G1 variable backlash compensation amount change-over distance 1

Set the range of the distance during cutting feed.

(The distance less than 1 is the small distance, and the distance exceeding 2 is the large distance.)

Note that the distance range is identified in the order of small, large and medium. Consider whether the set value should be larger or smaller than other values.

---Setting range---

0 to 999999.999999 (mm)

#2131	G1vback dist2	G1 variable backlash compensation amount change-over distance 2

Set the range of the distance during cutting feed.

(The distance less than 1 is the small distance, and the distance exceeding 2 is the large distance.)

Note that the distance range is identified in the order of small, large and medium. Consider whether the set value should be larger or smaller than other values.

---Setting range---

0 to 999999.999999 (mm)

#2132	vback pos1	Variable backlash compensation amount changeover end point position 1

Set the range of the center of the end point position.

(The range less than position 1 is the - range, and the range exceeding position 2 is the + range.)

The end point position range is determined in the order of -, + , and center. Consider whether the set value should be larger or smaller than other values.

(Note 1) If continuous variable backlash is set with "#2121 vbacklash valid", position 1 will be set as the position - point and position 2 will be set as the position + point.

(Note 2) When the size relation of the compensation amount changeover speed and distance 1 and 2 is not appropriate while the variable backlash compensation is valid, the followings will be applied:If the backlash speed and distance are smaller than the compensation amount changeover speed and distance 1, both the speed and distance will be small; if larger than the compensation amount changeover speed and distance 2, both the speed and distance will be large.

---Setting range---

-999999.999999 to 999999.999999 (mm)

#2133	vback pos2	Variable backlash compensation amount changeover end point position 2

Set the range of the center of the end point position.

(The range less than position 1 is the - range, and the range exceeding position 2 is the + range.)

The end point position range is determined in the order of -, + , and center. Consider whether the set value should be larger or smaller than other values.

(Note 1) If continuous variable backlash is set with "#2121 vbacklash valid", position 1 will be set as the position - point and position 2 will be set as the position + point.

(Note 2) When the size relation of the compensation amount changeover speed and distance 1 and 2 is not appropriate while the variable backlash compensation is valid, the followings will be applied:If the backlash speed and distance are smaller than the compensation amount changeover speed and distance 1, both the speed and distance will be small; if larger than the compensation amount changeover speed and distance 2, both the speed and distance will be large.

---Setting range---

-999999.999999 to 999999.999999 (mm)

#2134	vback arc K	Variable backlash arc compensation coefficient

Set the arc compensation coefficient.

---Setting range---

0 to 300(%)

#2135	vback feed refpt	Variable backlash reference position selection (speed)

Select the speed range to be used as the reference position.

0: Low speed

1: Medium speed

2: High speed

#2136	vback pos refpt	Variable backlash reference position selection (end point position)

Select the end point range to be used as the reference position.

0: Position + range

1: Position center range

2: Position - range

	#2137	vback dir refpt	Variable backlash reference position selection (entry direction)

Select the entry direction to be used as the reference position.

0: Entry direction +

1: Entry direction -

	#2138	vback pos center	Continuous variable backlash position center point

Set the position center point. (This is used only when continuous variable backlash is set with "#2121 vbacklash valid".) Set a value between "#2132 vback pos1" and "#2133 vbackpos2" for the position center point.

(Note) When the size relation of the compensation amount changeover speed and distance 1 and 2 is not appropriate while the variable backlash compensation is valid, the followings will be applied: If the backlash speed and distance are smaller than the compensation amount changeover speed and distance 1, both the speed and distance will be small; if larger than the compensation amount changeover speed and distance 2, both the speed and distance will be large.

---Setting range---

-999999.999999 to 999999.999999 (mm)

	#2139	omrff_off	OMR-FF invalid

Select whether to enable or temporarily disable the OMR-FF control when OMR-FF is valid.

0: Enable

1: Temporarily disable

When "1" is selected while OMR-FF is valid, OMR-FF can be temporarily disabled and conventional feed forward control can be applied instead.

(PR)	#2140	Ssc Svof Filter	Speed monitor Error detection time during servo OFF

Set the error detection time for when an error of command speed monitoring or feedback speed monitoring is detected during servo OFF.

An alarm will occur if the time, for which the speed has been exceeding the safe speed or safe rotation speed, exceeds the error detection time set in this parameter.

If "0" is set, it will be handled as 200 (ms).

---Setting range---

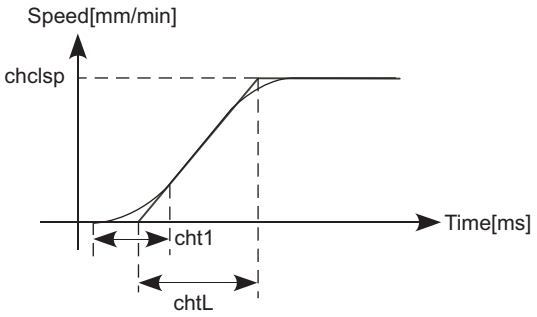
0 to 9999(ms)

	#2141	chtL	Chopping first-step time constant for soft acceleration/deceleration

Set the first-step time constant for the chopping axis when soft acceleration/deceleration is applied.

Note that, however, there may be cases where actual time constant is shorter than the set time constant, because the time constant is automatically calculated according to the feedrate so that the acceleration rate during acceleration/deceleration (clamp speed/chopping time constant) will be constant.

When "0" is set, "#2007 G1tL" will be valid.



---Setting range---

0 to 4000 (ms)

#2142	cht1	Chopping second-step time constant for soft acceleration/deceleration

Set the second-step time constant for the chopping axis when soft acceleration/deceleration is applied.

Note that, however, there may be cases where actual time constant is shorter than the set time constant, because the time constant is automatically calculated so that the ratio between first-step and second-step time constant will be constant.

When "0" is set, "#2008 G1t1" will be valid.

---Setting range---

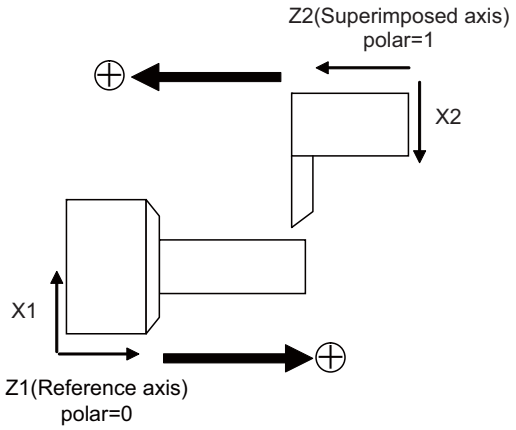
0 to 4000 (ms)

#2143	polar	Control axis relative polarity

Set "0" for the reference axis, and set the polarity of the superimposed axis relative to the reference axis.

0: Relative to reference axis, polarity is positive

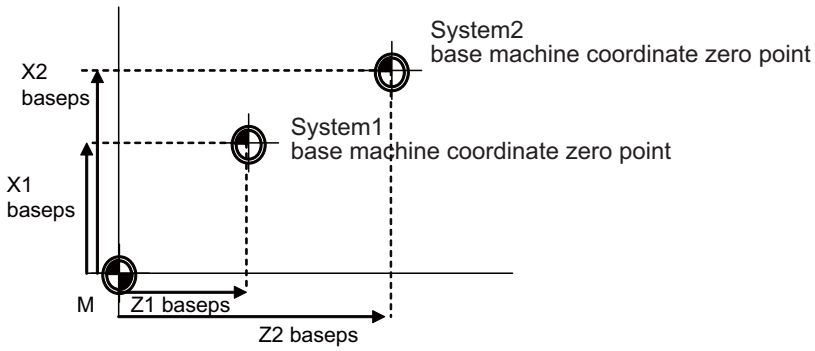
1: Relative to reference axis, polarity is negative



#2144	baseps	Base machine coordinate zero point relative distance

Set each axis's position of the base machine coordinate zero point when an arbitrary point M on the machine is regarded as a base point.
Unify the directions of all part systems' machine zero point positions with the direction of the machine coordinate system of the 1st part system.
If the 1st part system doesn't have a parallel axis, determine the direction arbitrarily.

Example: System1(X1, Z1), System2(X2, Z2)

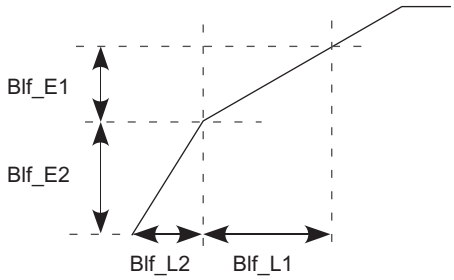


---Setting range---

-99999.999 to 99999.999 (mm)

#2146	Blf_L1	Reference distance for position-dependent increasing-type backlash compensation 1

Set the distance for specifying the compensation change rate in position-dependent increasing-type backlash compensation.



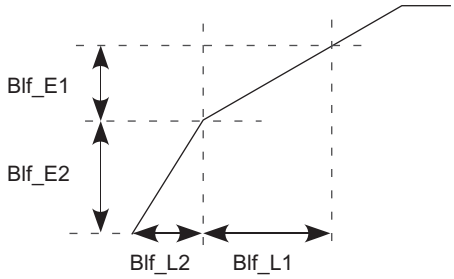
When "#2148 Blf_E1" is set to "0", the position-dependent increasing-type backlash compensation function will be disabled.

---Setting range---

0.000 to 99999.999 (mm)

#2147	Blf_L2	Reference distance for position-dependent increasing-type backlash compensation 2

Set the distance for specifying the compensation change rate in position-dependent increasing-type backlash compensation.



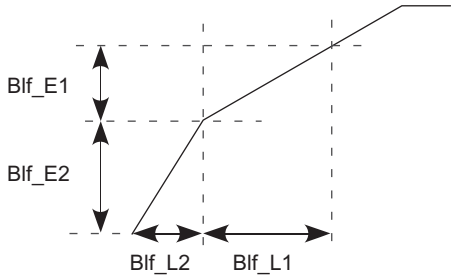
When "#2148 Blf_E1" is set to "0", the position-dependent increasing-type backlash compensation function will be disabled.

---Setting range---

0.000 to 99999.999 (mm)

#2148	Blf_E1	Reference amount of position-dependent increasing-type backlash compensation 1

Set the compensation amount for specifying the compensation change rate in position-dependent increasing-type backlash compensation.



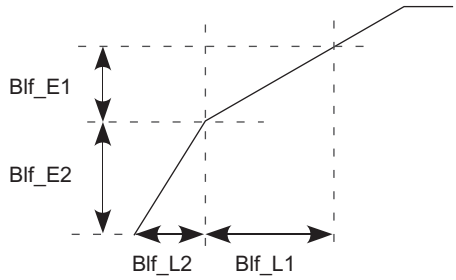
When "#2148 Blf_E1" is set to "0", the position-dependent increasing-type backlash compensation function will be disabled.

---Setting range---

0 to 9999999 (Machine error compensation unit)

#2149	Blf_E2	Reference amount of position-dependent increasing-type backlash compensation 2

Set the compensation amount for specifying the compensation change rate in position-dependent increasing-type backlash compensation.



When "#2148 Blf_E1" is set to "0", the position-dependent increasing-type backlash compensation function will be disabled.

---Setting range---

0 to 9999999 (Machine error compensation unit)

#2150	Rot_len	Farthest distance from rotary axis center

Set the farthest distance of the rotating part from the rotation center for executing the 3D machine interference check. When "0" is set, the speed depends on the rotary axis' commanded speed.

---Setting range---

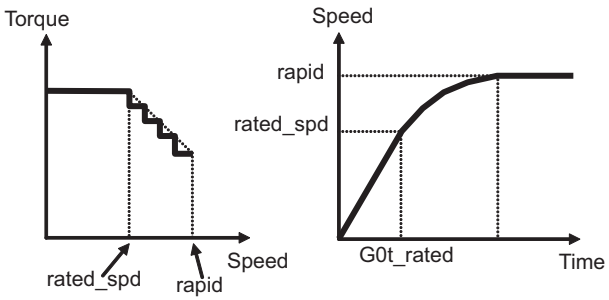
0.000 to 99999.999 (mm)

#2151	rated_spd	Rated speed

Set the maximum speed which can be driven with the motor's maximum torque.

(Note 1) This parameter's setting value must be smaller than "#2001 rapid Rapid traverse". If bigger, constant-gradient acceleration/deceleration will be applied.

(Note 2) If rapid traverse constant-gradient multi-step acceleration/deceleration is valid, and also if this parameter is set to "0", constant-gradient acceleration/deceleration will be applied.



---Setting range---

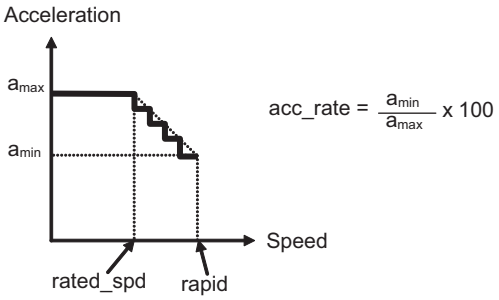
When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

#2152	acc_rate	Acceleration rate in proportion to the maximum acceleration rate

Set the rate in proportion to the maximum acceleration rate in rapid traverse.

(Note) If this parameter is set to "0" or "100", constant-gradient acceleration/deceleration will be applied.



---Setting range---

0 to 100 (%)

#2153	G0t_rated	G0 time constant up to rated speed (multi-step acceleration/deceleration)

Set the acceleration rate up to the rated speed of rapid traverse constant-gradient multi-step acceleration/deceleration.

(Note) If this parameter is set to "0", constant-gradient acceleration/deceleration will be applied.

---Setting range---

0 to 4000 (ms)

#2155	hob_fwd_g	Feed forward gain for hobbing machining

Set the feed forward gain when controlling as workpiece axis of tool spindle synchronization II (hobbing).

---Setting range---

0 to 200 (%)

#2157	G1bFx	Maximum axis-specific pre-interpolation cutting feed rate

When axis-specific acceleration tolerance control is ON:

Specify the maximum speed to be used for calculating each axis' acceleration tolerance. When "0" is set, "#2001 rapid" is used.

When variable-acceleration pre-interpolation acceleration/deceleration is ON:

Specify the maximum speed to be used for calculating each axis' acceleration. When "0" is set, "#1206 G1bF" is used.

When both axis-specific acceleration tolerance control and variable-acceleration pre-interpolation acceleration/deceleration are ON:

Specify the maximum speed to be used for calculating each axis' acceleration. When "0" is set, "#1206 G1bF" is used.

When neither axis-specific acceleration tolerance control nor variable-acceleration pre-interpolation acceleration/deceleration is ON:

This parameter is disabled.

---Setting range---

0 to 999999 (mm/min)

#2158	G1btLx	Axis-specific pre-interpolation cutting feed time constant

When axis-specific acceleration tolerance control is ON:

Specify the time constant (a time to be taken until reaching the maximum speed) to be used for calculating each axis' acceleration tolerance. When "0" is set, "#2004 G0tL" is used.

When variable-acceleration pre-interpolation acceleration/deceleration is ON:

Specify the time constant (a time to be taken until reaching the maximum speed) to be used for calculating each axis' acceleration. When "0" is set, "#1207 G1btL" is used.

When both axis-specific acceleration tolerance control and variable-acceleration pre-interpolation acceleration/deceleration are ON:

Specify the time constant (a time to be taken until reaching the maximum speed) to be used for calculating each axis' acceleration. When "0" is set, "#1207 G1btL" is used.

When neither axis-specific acceleration tolerance control nor variable-acceleration pre-interpolation acceleration/deceleration is ON:

This parameter is disabled.

---Setting range---

0 to 5000 (ms)

#2159	compx	Accuracy coefficient for each axis

Specify the compensation coefficient to be used for adjusting a path error and clamp speed at a corner for each axis during the high-accuracy control mode. If the setting value is larger, the edge accuracy will improve, but the cycle time may be longer because the corner speed will slow down.

This parameter is disabled when the axis-specific acceleration tolerance control is OFF.

---Setting range---

-1000 to 99 (%)

#2161	exdcax1	External deceleration speed 1

Set the upper limit value of feedrate for each axis when the external deceleration signal is enabled and external deceleration speed 1 is selected.
This parameter is valid when "#1239 set11/bit6" is set to "1".

---Setting range---

0 to 1000000 (mm/min)

#2162	exdcax2	External deceleration speed 2

Set the upper limit value of feedrate for each axis when the external deceleration signal is enabled and external deceleration speed 2 is selected.
This parameter is valid when "#1239 set11/bit6" is set to "1".

---Setting range---

0 to 1000000 (mm/min)

#2163	exdcax3	External deceleration speed 3

Set the upper limit value of feedrate for each axis when the external deceleration signal is enabled and external deceleration speed 3 is selected.
This parameter is valid when "#1239 set11/bit6" is set to "1".

---Setting range---

0 to 1000000 (mm/min)

#2164	exdcax4	External deceleration speed 4

Set the upper limit value of feedrate for each axis when the external deceleration signal is enabled and external deceleration speed 4 is selected.
This parameter is valid when "#1239 set11/bit6" is set to "1".

---Setting range---

0 to 1000000 (mm/min)

#2165	exdcax5	External deceleration speed 5

Set the upper limit value of feedrate for each axis when the external deceleration signal is enabled and external deceleration speed 5 is selected.
This parameter is valid when "#1239 set11/bit6" is set to "1".

---Setting range---

0 to 1000000 (mm/min)

#2169	Man meas rtrn dir	Return direction in manual measurement

Select the direction of return operation in manual measurement.

0: Opposite to the contact direction

1: Fixed to the + direction

Attempting return in the - direction will cause the operation alarm "0033 Rtn dir err in manual measure".

2: Fixed to the - direction

Attempting return in the + direction will cause the operation alarm "0033 Rtn dir err in manual measure".

#2170	Lmc1QR	Lost motion compensation gain 1 for high-speed retract

Set the lost motion compensation gain in drilling cycle at high-speed retract (CW: - to + direction, CCW: + to - direction).

Set "-1" when drilling cycle at high-speed retract is not performed.

When set to 0, the performance will follow the setting of "#2171 Lmc2QR (Lost motion compensation gain 2 for high-speed retract)".

---Setting range---

-1, 0 to 200(%)

#2171	Lmc2QR	Lost motion compensation gain 2 for high-speed retract

Set the lost motion compensation gain in drilling cycle at high-speed retract (CW: - to + direction, CCW: + to - direction).

Set "-1" when drilling cycle at high-speed retract is not performed.

When set to 0, the performance will follow the setting of "#2170 Lmc1QR (Lost motion compensation gain 1 for high-speed retract)".

---Setting range---

-1, 0 to 200(%)

#2172	LmcdQR	Lost motion compensation timing for high-speed retract

Set the timing of the lost motion compensation in drilling cycle at high-speed retract.

When set to 0, the performance will follow the setting of "#2239 SV039 LMCD (Lost motion compensation timing)".

---Setting range---

0 to 2000 (ms)

#2173	LmckQR	Lost motion compensation 3 spring constant for high-speed retract

Set the machine system's spring constant when using lost motion compensation type 3 in drilling cycle with high-speed retract.

When set to "0", the performance will follow the setting of "#2285 SV085 LMCk (Lost motion compensation 3 spring constant)".

---Setting range---

0 to 32767 (0.01%/μm)

#2174	LmccQR	Lost motion compensation 3 viscous coefficient for high-speed retract

Set the machine system's viscous coefficient when using lost motion compensation type 3 in drilling cycle at high-speed retract.

When set to "0", the performance will follow the setting of "#2286 SV086 LMCc (Lost motion compensation 3 viscous coefficient)".

---Setting range---

0 to 32767(0.01%/μm)

#2175	Special Ax Radius	Special diametral axis radius

Set the radius of the special diametral axis.

---Setting range---

0 to 99999.999 (mm)

	#2176	Special Ax Clamp	Special diametral axis clamp speed

Set a clamp speed for the special diametral axis control.

Set the limit speed of the drive system in this parameter.

---Setting range---

0 to 1000000 (°/min)

(Note) For "#2001 rapid" and "#2002 clamp", set speeds on a machining line.
When the value in "#2176 Special Ax Clamp" is smaller than that in "#2001 rapid", "Special Ax Clamp" value will be applied to the clamp speed.

	#2177	ManualFeedBtL	Time constant for manual feed rate B

Set the acceleration/deceleration time constant for manual feed rate B.

(Note) When set to "0", this parameter will not be used: conventional acceleration/deceleration will be performed.

---Setting range---

0 to 20000 (ms)

(PR)	#2180	S_DIN	Speed observation input door No.

Set the door signal input in the drive unit.
Use this parameter only when the axis with a door signal belongs to several door groups.
The correspondence between the door signals and bits are as follows.

bit0: Door1 signal
bit1: Door2 signal

If the axis does not receive any door signal, set to "0".
If 0 is set to the axis to which a door signal is input, the setting of #2118 is applied.
Do not turn ON more than one bit.
Only the door signals set in #2118 can be set.

---Setting range---

0000 to 0002 (HEX)

(PR)	#2181	sscfeed1	Observation speed 1

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note 1) When the setting value is larger than 18000, the last 2 digits will be ignored.
E.g.: 1234567 -> 1234500 (mm/min, °/min)

(Note 2) Observation speeds (#2181 to #2186 and #2191 to #2192) need to satisfy the following condition.
If not satisfied, the alarm (Y20 0007) will result.

$$\frac{\text{sscfeed1}\sim 8}{\text{SV018:PIT}} \times \frac{\text{SV002:PC2}}{\text{SV001:PC1}} \leq 32767$$

---Setting range---

0 to 6553500 (mm/min or °/min)

(PR)	#2182	sscfeed2	Observation speed 2

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note 1) When the setting value is larger than 18000, the last 2 digits will be ignored.
E.g.: 1234567 -> 1234500 (mm/min, °/min)

(Note 2) Observation speeds (#2181 to #2186 and #2191 to #2192) need to satisfy the following condition.
If not satisfied, the alarm (Y20 0007) will result.

$$\frac{\text{sscfeed1}\sim 8}{\text{SV018:PIT}} \times \frac{\text{SV002:PC2}}{\text{SV001:PC1}} \leq 32767$$

---Setting range---

0 to 6553500 (mm/min or °/min)

(PR)	#2183	sscfeed3	Observation speed 3

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note 1) When the setting value is larger than 18000, the last 2 digits will be ignored.
E.g.: 1234567 -> 1234500 (mm/min, °/min)

(Note 2) Observation speeds (#2181 to #2186 and #2191 to #2192) need to satisfy the following condition. If not satisfied, the alarm (Y20 0007) will result.

$$\frac{\text{sscfeed1}\sim8}{\text{SV018:PIT}} \times \frac{\text{SV002:PC2}}{\text{SV001:PC1}} \leq 32767$$

---Setting range---

0 to 6553500 (mm/min or °/min)

(PR)	#2184	sscfeed4	Observation speed 4

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note 1) When the setting value is larger than 18000, the last 2 digits will be ignored.
E.g.: 1234567 -> 1234500 (mm/min, °/min)

(Note 2) Observation speeds (#2181 to #2186 and #2191 to #2192) need to satisfy the following condition. If not satisfied, the alarm (Y20 0007) will result.

$$\frac{\text{sscfeed1}\sim8}{\text{SV018:PIT}} \times \frac{\text{SV002:PC2}}{\text{SV001:PC1}} \leq 32767$$

---Setting range---

0 to 6553500 (mm/min or °/min)

(PR)	#2185	sscfeed5	Observation speed 5

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note 1) When the setting value is larger than 18000, the last 2 digits will be ignored.
E.g.: 1234567 -> 1234500 (mm/min, °/min)

(Note 2) Observation speeds (#2181 to #2186 and #2191 to #2192) need to satisfy the following condition. If not satisfied, the alarm (Y20 0007) will result.

$$\frac{\text{sscfeed1}\sim8}{\text{SV018:PIT}} \times \frac{\text{SV002:PC2}}{\text{SV001:PC1}} \leq 32767$$

---Setting range---

0 to 6553500 (mm/min or °/min)

(PR)	#2186	sscfeed6	Observation speed 6

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note 1) When the setting value is larger than 18000, the last 2 digits will be ignored.
E.g.: 1234567 -> 1234500 (mm/min, °/min)

(Note 2) Observation speeds (#2181 to #2186 and #2191 to #2192) need to satisfy the following condition. If not satisfied, the alarm (Y20 0007) will result.

$$\frac{\text{sscfeed1}\sim8}{\text{SV018:PIT}} \times \frac{\text{SV002:PC2}}{\text{SV001:PC1}} \leq 32767$$

---Setting range---

0 to 6553500 (mm/min or °/min)

(PR)	#2187	chgPLCax	PLC axis switchover axis No.

Specify the I/F No. of the PLC axis to use when switching between NC axis and PLC axis. Set the I/F No. of a vacant PLC axis.

When not using, set to "0".

---Setting range---

0 to 8

(PR)	#2188	S_SigIn	Safety observation signal input

This parameter specifies which observation speed change signal is input in the drive unit.
The observation speed change signal corresponds to the following bits of the parameter.

bit0: Observation speed change signal 1 is connected.

bit1: Observation speed change signal 2 is connected.

bit2: Observation speed change signal 3 is connected.

If the axis receives no observation speed change signal, set to "0000".

(Note) When a same setting value is set to more than one axis, or when more than one bit is set to turn ON for one axis, the alarm (Y20 0027) will occur.

---Setting range---

0000 to 0004 (HEX)

	#2189	StlTrq (PwrCal)	Stall torque for power computation

Specify the stall torque of the servo motor.

This value is used for calculating the servo motor's power consumption.

---Setting range---

0.000 to 1000.000 (N•m)

(PR)	#2190	OT_Rreg	Designate R register for stored stroke limit I

Set the head R register No. to be used for setting/checking stored stroke limit I.

Eight consecutive R registers from the R register No. set here will be the area for stored stroke limit I.

Changing the areas for stored stroke limit I will be disabled if an R register that is not in the user area is set.

In addition, make sure to set an even number for the head R register No. Changing the areas for stored stroke limit I will be disabled if an odd number is set.

---Setting range---

0 to 29892

(PR)	#2191	sscfeed7	Observation speed 7

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note 1) When the setting value is larger than 18000, the last 2 digits will be ignored.
E.g.: 1234567 -> 1234500 (mm/min, °/min)

(Note 2) Observation speeds (#2181 to #2186 and #2191 to #2192) need to satisfy the following condition. If not satisfied, the alarm (Y20 0007) will result.

$$\frac{\text{sscfeed1}\sim 8}{\text{SV018:PIT}} \times \frac{\text{SV002:PC2}}{\text{SV001:PC1}} \leq 32767$$

---Setting range---

0 to 6553500 (mm/min or °/min)

(PR)	#2192	sscfeed8	Observation speed 8

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note 1) When the setting value is larger than 18000, the last 2 digits will be ignored.
E.g.: 1234567 -> 1234500 (mm/min, °/min)

(Note 2) Observation speeds (#2181 to #2186 and #2191 to #2192) need to satisfy the following condition. If not satisfied, the alarm (Y20 0007) will result.

$$\frac{\text{sscfeed1}\sim 8}{\text{SV018:PIT}} \times \frac{\text{SV002:PC2}}{\text{SV001:PC1}} \leq 32767$$

---Setting range---

0 to 6553500 (mm/min or °/min)

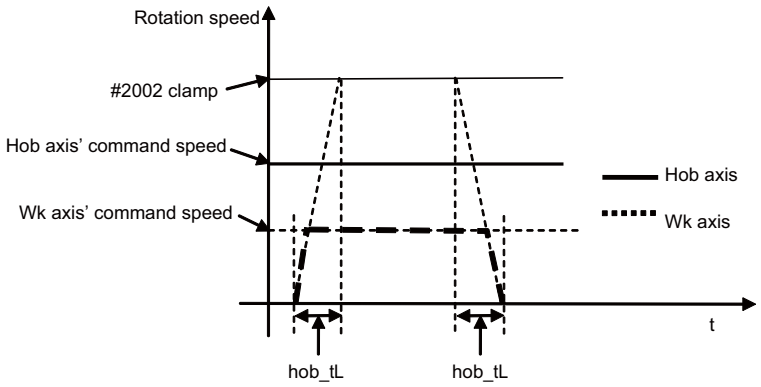
#2195	hob_tL	Hobbing workpiece axis time constant

Set the constant-gradient acceleration/deceleration time constant of the hobbing workpiece axis when issuing a hobbing command while the hobbing spindle is rotating. Hobbing workpiece axis time constant is the constant-gradient acceleration/deceleration time constant with respect to #2002 Cutting feed rate for clamp function.

If the setting value of hobbing workpiece axis time constant is out of setting range, the maximum value in the setting range is set.

---Setting range---

1 to 4000 (ms)



#2198	G0tMin	Minimum time constant for rapid traverse constant-gradient acc./dec.

Acceleration/Deceleration is carried out so that the acceleration/deceleration time will not become longer than this parameter's setting when the acceleration/deceleration type of rapid traverse command is constant-gradient type.
Set a value smaller than "#2004 G0tL".
This parameter is enabled when "#1200 G0_acc" is constant-gradient type.
This parameter is enabled only during fixed cycle if "#1253 set25/bit2" (Acceleration/Deceleration mode change in hole drilling cycle) is enabled even if "#1200 G0_acc" is constant time type.
This parameter is disabled if "0" or a value larger than "#2004 G0tL" is set.

---Setting range---

0 to 4000 (ms)

#2199	G1tMin	Minimum time constant for cutting feed constant-gradient acc./dec.

Acceleration/Deceleration is carried out so that the acceleration/deceleration time will not become longer than this parameter's setting when the acceleration/deceleration type of linear interpolation command is constant-gradient type.
Set a value smaller than "#2007 G1tL".
This parameter is enabled when "#1201 G1_acc" is constant-gradient type.
This parameter is enabled only during fixed cycle if "#1253 set25/bit2" (Acceleration/Deceleration mode change in hole drilling cycle) is enabled even if "#1201 G1_acc" is constant time type.
This parameter is disabled if "0" or a value larger than "#2007 G1tL" is set.

---Setting range---

0 to 4000 (ms)

#2561	VBL2 VG1	Variable backlash comp II Changeover speed 1

Set the changeover speed at speed normalization.
Set a value smaller than that in "#2562 VBL2 VG0".
Normally, the "#2561 VBL2 VG1" value corresponds to the cutting feedrate, the "#2562 VBL2 VG0" value to the rapid traverse rate.

---Setting range---

1 to 1000000 (mm/min)

#2562	VBL2 VG0	Variable backlash comp II Changeover speed 2

Set the changeover speed at speed normalization.
Set a value greater than that in "#2561 VBL2 VG1".
Normally, the "#2561 VBL2 VG1" value corresponds to the cutting feedrate, the "#2562 VBL2 VG0" value to the rapid traverse rate.

---Setting range---

1 to 1000000 (mm/min)

#2563	VBL2 P1	Variable backlash comp II Stroke position 1

Set the most plus (+) side stroke position among the three.
Set the parameters VBL2 P1 to P3 to be "VBL2 P1 > VBL2 P2 > VBL2 P3".
Normally, divide the axis's stroke by four, and set a dividing position (except for both ends) to be a stroke position.

---Setting range---

-99999.999 to 99999.999 (mm)

#2564	VBL2 P2	Variable backlash comp II Stroke position 2

Set the middle stroke position among the three.
Set the parameters VBL2 P1 to P3 to be "VBL2 P1 > VBL2 P2 > VBL2 P3".
Normally, divide the axis's stroke by four, and set a dividing position (except for both ends) to be a stroke position.

---Setting range---

-99999.999 to 99999.999 (mm)

#2565	VBL2 P3	Variable backlash comp II Stroke position 3

Set the most minus (-) side stroke position among the three.
Set the parameters VBL2 P1 to P3 to be "VBL2 P1 > VBL2 P2 > VBL2 P3".
Normally, divide the axis's stroke by four, and set a dividing position (except for both ends) to be a stroke position.

---Setting range---

-99999.999 to 99999.999 (mm)

#2566	VBL2 BL11	Variable backlash comp II Comp data at changeover spd 1 and stroke pos 1

Set the compensation data (backlash amount) at changeover speed 1 and stroke position 1.
Calculate the current compensation data according to the current speed and position.

---Setting range---

-99999999 to 99999999 (Machine error compensation unit)

#2567	VBL2 BL12	Variable backlash comp II Comp data at changeover spd 1 and stroke pos 2

Set the compensation data (backlash amount) at changeover speed 1 and stroke position 2.
Calculate the current compensation data according to the current speed and position.

---Setting range---

-99999999 to 99999999 (Machine error compensation unit)

#2568	VBL2 BL13	Variable backlash comp II Comp data at changeover spd 1 and stroke pos 3

Set the compensation data (backlash amount) at changeover speed 1 and stroke position 3.
Calculate the current compensation data according to the current speed and position.

---Setting range---

-99999999 to 99999999 (Machine error compensation unit)

#2569	VBL2 BL01	Variable backlash comp II Comp data at changeover spd 2 and stroke pos 1

Set the compensation data (backlash amount) at changeover speed 2 and stroke position 1.
Calculate the current compensation data according to the current speed and position.

---Setting range---

-99999999 to 99999999 (Machine error compensation unit)

#2570	VBL2 BL02	Variable backlash comp II Comp data at changeover spd 2 and stroke pos 2

Set the compensation data (backlash amount) at changeover speed 2 and stroke position 2.
Calculate the current compensation data according to the current speed and position.

---Setting range---

-99999999 to 99999999 (Machine error compensation unit)

#2571	VBL2 BL03	Variable backlash comp II Comp data at changeover spd 2 and stroke pos 3

Set the compensation data (backlash amount) at changeover speed 2 and stroke position 3.
Calculate the current compensation data according to the current speed and position.

---Setting range---

-99999999 to 99999999 (Machine error compensation unit)

#2572	VBL2 FloatTC	Variable backlash comp II Time constant in calculating float amt

Set the time constant in calculating the float amount. Set a value greater than the calculation cycle.

---Setting range---

0 to 10000 (ms)

#2573	VBL2 LMMul	Variable backlash comp II Multiplier in calculating lost motion amt

Set the multiplier in calculating the lost motion amount. When "1000" is set, the multiplier is "1".

---Setting range---

0 to 1000 (1/1000)

#2574	VBL2 VBound	Variable backlash comp II Speed boundary value

Set the boundary value of the speed in calculating the compensation amount.

---Setting range---

1 to 1000000 (mm/min)

#2575	VBL2 CompMag	Variable backlash comp II Compensation magnification

Set the compensation magnification in calculating the compensation amount. When "0" is set, the magnification is 100%.

---Setting range---

0 to 300(%)

#2576	VBL2 CompMul	Variable backlash comp II Multiplier in calculating compensation amount

Set the multiplier in calculating the compensation amount. When "1000" is set, the multiplier is "1".

---Setting range---

0 to 1000 (1/1000)

#2577	VBL2 BLE	Variable backlash comp II Gradually increase amount

Set the value to subtract from the compensation amount (CMP) at reversing the axis travel direction.

---Setting range---

-99999999 to 99999999 (Machine error compensation unit)

#2578	VBL2 BLL	Variable backlash comp II Gradually increase travel distance

Set the travel distance to return to the compensation amount (CMP) from the reverse point of the axis travel direction.

---Setting range---

0 to 99999.999 (mm)

	#2579	BLAT_feed	Feed rate for automatic backlash adjustment

Set the feed rate in adjusting the backlash amount.
It is possible to set this parameter also by carrying out a measurement condition adjustment on the backlash adjustment screen.

---Setting range---

0 to 1000000(mm/min)

(PR)	#2580	index_Gcmd	Indexing axis G command check

The commanded G code of the index table indexing axis is checked.

0: Check is not performed.

1: Cutting feed G command is prohibited.

	#2581	BLAT_pos	Measurement position for automatic backlash adjustment

Set the measurement position in measurement condition adjustment and backlash adjustment on the machine coordinate system.

(Note 1) Set the position so that a collision will not occur during adjustment.

(Note 2) Set this parameter for all the axes.

---Setting range---

-99999.999 to 99999.999 (mm)

	#2582	BLAT_syn	Synchronization setting for automatic backlash adjustment

0: Separate backlash adjustment for master axis and slave axis each.

1: Backlash adjustment is applied only to the master axis. The master axis's backlash amount is applied to the slave axis.

(Note 1) Set this parameter for the master axis.

(Note 2) In the case of synchronous control of speed/current command, set to "1".

	#2584	VBL2 Vlimit	Variable backlash compensation 2: Speed to reset compensation scale to 100%

Specify the speed at which compensation scale is reset to 100%.
When "0" is set, this parameter is disabled.
If a set speed is greater than "#2574 VBL2 VBound", the speed is clamped at "#2574 VBL2 VBound".

---Setting range---

0 to 1000000 (mm/min)

	#2585	Cyccmp	Enable cyclic error compensation

Specify whether to enable the cyclic error compensation.

0: Disable

1: Enable

	#2586	Cycstnum	Cyclic error compensation: initial number of compensation

Specify the initial number of the compensation amounts.
The compensation amounts to be applied will start from this number, and the number of compensation amounts to be applied is specified by "#2587 Cycdv" (Cyclic error compensation: number of divisions).

---Setting range---

4101 to 5999

	#2587	Cycdv	Cyclic error compensation: number of divisions

Specify the number of divisions per cycle of the cyclic error compensation.

---Setting range---

1 to 128

	#2588	Cycct	Cyclic error compensation: cycle constant

Specify the number of compensation cycles per revolution of the rotary axis.

---Setting range---

0 to 32767

	#2598	G0tL_2	G0 time constant 2 (linear)

Set a linear control time constant for rapid traverse acceleration/deceleration to be applied when the G0 time constant switchover request signal is ON.

This time constant is enabled when LR (rapid traverse feed with linear acceleration/deceleration) or F (soft acceleration/deceleration) is selected in "#2003 smgst" (Acceleration and deceleration modes).

If #2598 is 0, the time constant set in "#2004 G0tL (G0 time constant)" will be used.

---Setting range---

0 to 4000(ms)

	#2599	G0t1_2	G0 time constant 2 (primary delay)/2nd-step time constant for soft acceleration/deceleration

Set a primary-delay time constant for rapid traverse acceleration/deceleration to be applied when the G0 time constant switchover request signal is ON.

This time constant is enabled when R1 (rapid traverse feed with primary delay) or R3 (exponential acceleration and linear deceleration) is selected in "#2003 smgst" (Acceleration and deceleration modes).

When the soft acceleration/deceleration is selected, the second-step time constant will be used.

If #2599 is set to 0, the time constant set in "#2005 G0t1 (G0 time constant (primary delay)/2nd-step time constant for soft acceleration/deceleration)" will be used.

---Setting range---

0 to 5000 (ms)

(PR)	#2614	JH_smgSel	Jog/handle acceleration/deceleration selection

Switch jog/handle time constants. Set per axis.

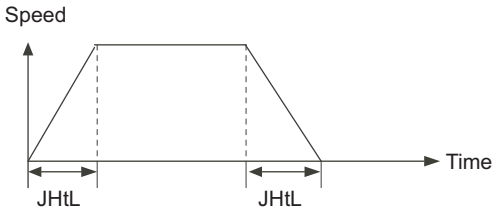
0: Not use

1: (Not used)

2: Enable for handle feed

	#2616	JHtL	Jog/handle time constant (linear)

Set a linear control time constant for jog/handle feed acceleration/deceleration.
When set to "0", the time constant will be clamped at 1 [ms].



---Setting range---

0 to 4000 (ms)

	#2619	thr_clamp	Thread cut clamp speed

Specify the maximum cutting feed rate to be applied to thread cutting for each axis.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

	#2620	thr_t	Thread cut time constant

Specify the primary delay time constant to be used in acceleration/deceleration of a thread cut axis.

* This parameter is enabled when either C1 (Primary delay cutting feed) or LC (Linear acceleration/deceleration cutting feed) is selected for the acceleration/deceleration mode (#2003 smgst).

---Setting range---

0 to 4000

#2621	plrapid2	Rapid traverse rate for superimposition control 2

Specify the rapid traverse rate to be applied under 2-axis superimposition control when the axis traverses in the same direction as the other axis that is travelling at a cutting feed rate.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

#2622	pl3G0tL	G0 time constant (linear) for 3-axis serial superimposition control

Specify the G0 time constant (linear) to be applied under 3-axis serial superimposition control.

---Setting range---

0 to 4000 (ms)

#2623	pl3G0t1	G0 time constant (primary delay) for 3-axis serial superimposition control

Specify the G0 time constant (primary delay) to be applied under 3-axis serial superimposition control.

---Setting range---

0 to 5000 (ms)

#2624	pl3G1tL	G1 time constant (linear) for 3-axis serial superimposition control

Specify the G1 time constant (linear) to be applied under 3-axis serial superimposition control.

---Setting range---

0 to 4000 (ms)

#2625	pl3G1t1	G1 time constant (primary delay) for 3-axis serial superimposition control

Specify the G1 time constant (primary delay) to be applied under 3-axis serial superimposition control.

---Setting range---

0 to 5000 (ms)

#2626	pl3rapid	Rapid traverse rate for 3-axis serial superimposition control

Specify the rapid traverse rate to be applied when all the three superimposed axes are rapid-traversing in a single direction under 3-axis serial superimposition control.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

#2627	pl3rapid2	Rapid traverse rate for 3-axis serial superimposition control 2

Specify the rapid traverse rate to be applied under 3-axis serial superimposition control when two of the three superimposed axes are rapid-traversing while the remaining one axis is fed at a cutting feed rate in a single direction.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

#2628	pl3rapid3	Rapid traverse rate for 3-axis serial superimposition control 3

Specify the rapid traverse rate to be applied under 3-axis serial superimposition control when one of the three superimposed axes is rapid-traversing while the remaining two axes are fed at a cutting feed rate in a single direction.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

	#2629	pl3clamp	Cutting feed clamp speed for 3-axis serial superimposition control

Specify the cutting feed clamp speed to be applied under 3-axis serial superimposition control when all the three superimposed axes are fed at a cutting feed rate in a single direction.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

	#2630	pl3clamp2	Cutting feed clamp speed for 3-axis serial superimposition control 2

Specify the cutting feed clamp speed to be applied under 3-axis serial superimposition control when one of the three superimposed axes is rapid-traversing while the other two are fed at a cutting feed rate in a single direction.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

	#2631	G0olinps	Rapid traverse block overlap G00 in-position width

Specify the in-position width for the rapid traverse block overlap at the joint of consecutively given G00 blocks.

---Setting range---

0.000 to 1000.000 (mm)

	#2632	G1olinps	Rapid traverse block overlap G01 in-position width

Specify the in-position width for the rapid traverse block overlap at the joint of two blocks where G01 is included.

---Setting range---

0.000 to 1000.000 (mm)

	#2633	G28olinps	Rapid traverse block overlap G28 in-position width

Specify the in-position width for the rapid traverse block overlap at the joint of two blocks where G28/G30 is included.

---Setting range---

0.000 to 1000.000 (mm)

(PR)	#2634	SrvFunc01

bit0: Change output units of servo axis cutting torue

Change the output units of the servo axis cutting torque.

0: Output unit 1%

1: Output unit 0.01%

bit1: Select stop method at collision detection

Set the operation when a collision is detected.

0: Emergency stop.

1: Servo alarm occurs to an axis that the collision was detected.

The axes in the part system that the collision was detected will be in an automatic interlocked state.

Related parameters: SV035/bitE-C, SV035/bitB, SV060, CrshStpSel

	#2639	tskip_T	Non-sensitive band for torque skip

Specify a period of time in which torque skip condition is disabled. This is effective when an improper skip is generated due to current flown during acceleration (when G160 is commanded).

---Setting range---

0 to 32767(ms)

	#2641	m_clamp	Manual feed clamp speed

Specify the maximum speed to be applied to each axis when manual speed clamp is enabled.

When "0" is set, the rapid traverse rate (#2001 rapid) is applied.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

	#2642	jogfeed	Jog feed rate

Specify a feed rate to be applied to each axis during jog mode.

When "0" is set, the manual feed rate selected by "Manual feedrate method selection" signal (JVS) is applied.

---Setting range---

0 to 1000000 (mm/min)

(PR)	#2643	LdMeter thresholdY	Loadmeter: Caution (Yellow) threshold

Specify the servo load current (%) at which the loadmeter displays a caution sign (yellow).

If servo load current exceeds the specified value, the loadmeter displays a caution (yellow).

If you wish to avoid showing the caution (yellow), set this parameter to be the same as "#2644 LdMeter thresholdR".

When "0" is set, the value becomes 100% (default).

---Setting range---

0 to 300(%)

(PR)	#2644	LdMeter thresholdR	Loadmeter: Warning (Red) threshold

Specify the servo load current (%) at which the loadmeter displays a warning sign (red).

If servo load current exceeds the specified value, the loadmeter displays a warning (red).

If you wish to avoid showing the warning (red), set this parameter to be the same as "#2645 LdMeter load max".

When "0" is set, the value becomes 150% (default).

---Setting range---

0 to 300(%)

(PR)	#2645	LdMeter load max	Loadmeter: Maximum servo load current

Specify the maximum servo load current (%) for loadmeter display.

When "0" is set, the value becomes 200% (default).

---Setting range---

0 to 300(%)

	#2646	distt	Load observation disturbance torque filter time constant

Set the responsiveness in detecting the disturbance torque.

---Setting range---

0 to 1000 (ms) (Default value: 0)

(PR)	#2651	RT2G0	RT2: Minimum value of G0 acce/dece time constant

Select whether to enable switching of G0 acceleration/deceleration time constant.

0: Disable switching of G0 acceleration/deceleration time constant.

1: Enable switching of G0 acceleration/deceleration time constant.

(PR)	#2652	RT2G1	RT2: Enable switching of G1 acce/dece time constant

Select whether to enable switching of G1 acceleration/deceleration time constant.

0: Disable switching of G1 acceleration/deceleration time constant.

1: Enable switching of G1 acceleration/deceleration time constant.

#2653	RT2G0tL	RT2: Minimum value of G0 acce/dece time constant

Set the minimum value of time constant when changing time constant during acceleration and deceleration of G0 command.
Set the time constant which is adjusted when workpiece is not attached.
Note that when 0 is set, the value will be 10 (default).

---Setting range---

0 to 4000 (ms)

#2654	RT2G1tLA	RT2: Minimum value of acce/dece time constant after G1 interpolation

Set the minimum value when changing time constant during acceleration and deceleration of G1 command after interpolation.
Set the time constant which is adjusted when workpiece is not attached.
Note that when 0 is set, the value will be 10 (default).

---Setting range---

0 to 4000 (ms)

#2655	RT2G1tLB	RT2: Minimum value of acce/dece time constant before G1 interpolation

Set the minimum value when changing time constant during acceleration and deceleration of G1 command before interpolation.
Set the time constant which is adjusted when workpiece is not attached.
Note that when 0 is set, the value will be 10 (default).

---Setting range---

0 to 4000 (ms)

#2656	RT2 G0rng	RT2: Changing amount of G0 acce/dece time constant

Set the changing amount of time constant when changing time constant during acceleration and deceleration of G0 command based on the estimated inertia ratio.
Note that when 0 is set, the value will be 10 (default).

---Setting range---

0 to 4000 (ms)

#2657	RT2G1rngA	RT2: Changing amount of acce/dece time constant after G1 interpolation

Set the changing amount of time constant when changing time constant during acceleration and deceleration of G1 command after interpolation based on the estimated inertia ratio.
Note that when 0 is set, the value will be 10 (default).

---Setting range---

0 to 4000 (ms)

#2658	RT2G1rngB	RT2: Changing amount of acce/dece time constant before G1 interpolation

Set the changing amount of time constant when changing time constant during acceleration and deceleration of G1 command before interpolation based on the estimated inertia ratio.
Note that when 0 is set, the value will be 10 (default).

---Setting range---

0 to 4000 (ms)

#2659	tolerance	Tolerance

Specify a tolerance (tolerable error) to be used under tolerance control.
Set a tolerable error for fine segment program created by CAM. (Usually around 0.01(mm))
If 0.000 is set, it is operated with the tolerance of 0.01(mm).
When designating the tolerance amount with the ", K address", this parameter is not used.

---Setting range---

0.000 to 100.000 (mm)

#2660	omrff_inps	OMR-FF in-position width

Specify the in-position width at which the standard model gain is switched under OMR-FF control.
When set to "0", command deceleration check is performed.

---Setting range---

0.000 to 99.999 (mm)

	#2661	ITF3_ILMT	Interference check III torque limit at entering interference warning area

In interference check III, select whether to limit the torque at entering the interference warning area.

0: No torque limit
(Use "#2213 SV013 (Current limit value)")

1: Limit the torque
(Use "#2214 SV014 (Current limit value in special control)")

(Note) This setting is invalid if spindle/C axis is the target axis. (Torque cannot be limited.)

	#2662	ITF3_Clamp	Interference check III clamp speed at entering interference warning area

In interference check III, if clamping the speed, the clamp speed is set at entering the interference warning area.

(Note) When "0" is set, the speed will not be clamped.

---Setting range---

0 to 1000000 (mm/min)

(PR)	#2674	primno	Multiple axis synchronization control: Master axis No.

This parameter is used for the multiple axis synchronization control.

Specify the master axis No. that corresponds to the axis.

- Enter the sequential NC axis No., with the 1st axis of the 1st part system set as "1".
- You cannot set the No. of the axis targeted for the multiple axis synchronization control in "#1068 slavno".
- You cannot set "#1068 slavno" for the axis targeted for the multiple axis synchronization control.
- The master axis for multiple axis synchronization control cannot be set in "#2674 primno".
- For a multi-part system configuration, you cannot set the axes across different part systems.

---Setting range---

0: No master axis

1 to 32: 1st axis to 32nd axis

(PR)	#2675	tcmp_top	Multiple axis synchronization control: starting tool offset No.

This parameter is used for the multiple axis synchronization control.

Specify the starting tool offset No. for the axis.

---Setting range---

0 to 999

	#2678	OMRCC_valid	OMR-CC ON

Specify whether to enable OMR-CC.

0: Disable OMR-CC

1: Enable OMR-CC

	#2679	OMRCC_CompMag	Factor for OMR-CC compensation amount

Adjust the compensation amount output by OMR-CC.
When "0" is specified, the compensation amount adjusted by the standard value (50%) is output.

---Setting range---

0 to 100 (%)

	#2680	TCMPG1	Cogging torque compensation gain 1 (fundamental wave component)

Specify the amplitude of compensation signal (fundamental wave component) in the unit of 0.01% of stall current.

When "0" is set, the compensation is disabled.

---Setting range---

0 to 10000 (0.01%)

#2681	TCMPT1	Cogging torque compensation timing 1 (fundamental wave component)

Set the timing of compensation signal (fundamental wave component). The signal timing is adjusted with one cycle of fundamental wave component taken as 100%.

When "50" is set, the compensation signal is inverted.

Setting it to "100" results in the same signal timing as when "0" is set.

---Setting range---

0 to 100 (%)

#2682	TCMPG2	Cogging torque compensation gain 2 (second-order component)

Specify the amplitude of compensation signal (second-order component) in the unit of 0.01% of stall current.

When "0" is set, the compensation is disabled.

---Setting range---

0 to 10000 (0.01%)

#2683	TCMPT2	Cogging torque compensation timing 2 (second-order component)

Set the timing of compensation signal (second-order component). The signal timing is adjusted with one cycle of fundamental wave component * 2 taken as 100%.

When "50" is set, the compensation signal is inverted.

Setting it to "100" results in the same signal timing as when "0" is set.

---Setting range---

0 to 100 (%)

#2684	TCMPG3	Cogging torque compensation gain 3 (third-order component)

Specify the amplitude of compensation signal (third-order component) in the unit of 0.01% of stall current.

When "0" is set, the compensation is disabled.

---Setting range---

0 to 10000 (0.01%)

#2685	TCMPT3	Cogging torque compensation timing 3 (third-order component)

Set the timing of compensation signal (third-order component). The signal timing is adjusted with one cycle of fundamental wave component * 3 taken as 100%.

When "50" is set, the compensation signal is inverted.

Setting it to "100" results in the same signal timing as when "0" is set.

---Setting range---

0 to 100 (%)

#2686	TCMPG4	Cogging torque compensation gain 4 (fourth-order component)

Specify the amplitude of compensation signal (fourth-order component) in the unit of 0.01% of stall current.

When "0" is set, the compensation is disabled.

---Setting range---

0 to 10000 (0.01%)

#2687	TCMPT4	Cogging torque compensation timing 4 (fourth-order component)

Specify the timing of compensation signal (fourth-order component). The signal timing is adjusted with one cycle of fundamental wave component * 4 taken as 100%.

When "50" is set, the compensation signal is inverted.

Setting it to "100" results in the same signal timing as when "0" is set.

---Setting range---

0 to 100 (%)

	#2695	TCMPP	Fundamental wave cycle of cogging torque

Set the fundamental wave frequency to be used for cogging torque compensation, using the electrical angle: 360[deg] * 1/N.

Setting it to "0" leads to the same fundamental wave frequency magnification as when "2" is set.

For a linear motor, set "0".

For a rotary motor, set the fundamental wave frequency magnification per electrical angle according to the motor to use.

---Setting range---

0 to 32

(PR)	#2699	mult syn polar	Relative polarity of secondary axis

Specify the travel direction of the secondary axis relative to the primary axis.

0: Secondary axis travels in the same direction as the primary axis.

1: Secondary axis travels in the opposite direction to the primary axis.

	#2701	Work base ofs	Workpiece base point offset (for L system only)

Set the offset amount to shift all workpiece coordinate systems.

Setting this parameter enables the base point for shifting the workpiece coordinate system to be offset to any position.

---Setting range---

-99999.999 to 99999.999 (mm)

	#2702	exencno	External encoder No. for servo axis

When external encoder is used to detect the FB position of the servo axis unit to be displayed on the Drive monitor screen, specify the external encoder No.

When external encoder is used, the position within one revolution from 0 to 360 degrees is displayed on the Machine end FB.

When you want to reverse the rotation direction of external encoder, specify the negative value of the external encoder No.

When external encoder is not used, set "0".

---Setting range---

-1 to 1

(PR)	#2703	manual_acc	Enable constant-gradient acceleration/deceleration in manual feed

Select the acceleration and deceleration type for jog feed and manual rapid traverse.

0: Acceleration and deceleration with constant time

1: Acceleration and deceleration with constant gradient

(PR)	#2704	MCR Coord Tr Axis	Motion control release (coordinate transformation) axis

Specify to which axis the coordinate transformation function applies in the motion control release (coordinate transformation).

0: Not apply

1: Apply

	#2706	OT_1B[2]-	Soft limit IB[2]-

Set the coordinates of the lower limit of the prohibited area of the stored stroke limit IB.

The coordinates should be based on the origin of the basic machine coordinate system.

If the same value is set for both the sign and numeral value as "#2707 OT_1B[2]+", the stored stroke limit IB function set with #2706 and #2707 will be disabled.

(Note) This parameter is valid when "#2063 OT_1Btype" is "0".

---Setting range---

-99999.999 to 99999.999 (mm)

	#2707	OT_1B[2]+	Soft limit IB[2]+

Set the coordinates of the upper limit of the prohibited area of the stored stroke limit IB.

The coordinates should be based on the origin of the basic machine coordinate system.

(Note) This parameter is valid when "#2063 OT_1Btype" is "0".

---Setting range---

-99999.999 to 99999.999 (mm)

	#2709	TLM_approach	Tool setter approach distance

Specify the minimum travel distance when approaching the sensor in Manual tool length measurement 2. (radius value)

Axis movement more or longer than the distance set in this parameter determines the direction of movement to the sensor and the contact surface.

(Note) When "0" is set, contact surface identification is not performed after reversing the axis feed direction.

---Setting range---

0 to 99999.999 (mm)

(PR)	#2712	Encodertype	Encoder type

Specify whether to use a multi-turn encoder or a single-turn encoder for a rotary axis for which "All coordinate linear type" is selected.

0: Multi-turn encoder

1: Single-turn encoder

	#2713	stap_slave_sp_no	Spindle No. for synchronous tapping slave axis

Set the spindle number that corresponds to the slave axis for synchronous tapping.

When "0" is set, no spindle corresponds to the slave axis.

---Setting range---

0 to the number of spindles

	#12561	orbit_clamp	Orbit machining: Cutting feedrate limit

This is the cutting feed rate limit of each axis when moving in a circular path with Orbit Machining.
When this parameter is set to "0", the control applies either "#2002 clamp" or "#2110 Clamp(H-precision)".

---Setting range---

0 to 999999 (mm/min)

	#12570	VibCutting_VCC	Vibration cutting control ON

This parameter specifies whether to enable the vibration cutting control.

0: Disable

1: Enable

(*) For a rotary axis or PLC axis, the vibration cutting control is disabled irrespective of this parameter.

	#12571	VibClamp_VCC	Cutting feedrate clamp in vibration cutting mode

This parameter specifies the maximum cutting feedrate to be applied to each axis during the vibration cutting mode.

If this parameter is set to "0" or a value greater than "#2002 clamp", the value of "#2002 clamp" will be applied.

---Setting range---

When other than Spindle/C axis is used: 0 to 1000000 (mm/min)

When Spindle/C axis is used: 0 to 2000000 (mm/min)

	#12583	VibPGMsp_VCC	VCC reference model gain

This parameter specifies the reference model gain (the position response during OMR-FF) to be applied to each axis during the vibration cutting mode.

If this parameter is set to "0", the value of SV197 (PGMsp) or SV106 (PGM) will be applied in this order.

---Setting range---

0 to 300 (rad/s)

	#12586	ActualClamp_VCC	Vibration axis feedrate limit in vibration cutting mode

Specify the maximum feedrate to be applied to each axis during the vibration cutting mode.

When not using this parameter, set "0".

---Setting range---

0 to 1000000 (mm/min)

(PR)	#12590	BWD_Enable	Brake wear diagnostics ON

Select whether to enable brake wear diagnostics.

0: Disable

1: Enable (External relay circuit method)

2: Enable (Drive unit internal control circuit method)

	#12591	BWD_ILIM	Brake wear diagnostics current limit value

Specify the current limit value during brake wear diagnostics as a percent of the stall current.

If "0" is set, an alarm is generated when an attempt is made to start brake wear diagnostics, which will not start.

---Setting range---

0 to 100 (%)

(PR)	#12592	BWD_CMDWT	Brake wear diagnostics command wait time

Specify the wait time between the receipt of the brake wear diagnostics start signal (BWDSTm) by the NC and the issuance of the movement command for brake wear diagnostics.

If set to "0", the command wait time is 400 [ms].

---Setting range---

0 to 30000 (ms)

(PR)	#12593	BWD_FD	Brake wear diagnostics command travel amount

Specify the amount of travel for the command given to the axis to be diagnosed during brake wear diagnostics.

If "0" is set, an alarm is generated when an attempt is made to start brake wear diagnostics, which will not start.

---Setting range---

-99999.999 to 99999.999 (mm or deg)

(PR)	#12594	BWD_FDRATE	Brake wear diagnostics feedrate

Specify the feedrate for the command given to the axis to be diagnosed during brake wear diagnostics.

If "0" is set, an alarm is generated when an attempt is made to start brake wear diagnostics, which will not start.

---Setting range---

0 to 1000000 (mm/min or deg/min)

(PR)	#12595	BWD_OBTIM	Brake wear diagnostics monitoring time

Specify the duration of the axis travel amount monitoring after the output of the movement command for diagnostics is completed during brake wear diagnostics.

If set to "0", the monitoring time is 1000 [ms].

---Setting range---

0 to 30000 (ms)

(PR)	#12596	BWD_TOL(Warning)	Brake wear diagnostics allowable travel amount (Warning)

Specify the allowable travel amount for the axis to be diagnosed during brake wear diagnostics. (If the travel amount during brake wear diagnostics exceeds the value of this parameter, "BrakeWearDiagnostics (Warning)" is generated.)

If set to "0", the allowable travel amount is 100 [mm].

---Setting range---

0 to 99999.999 (mm or deg)

(PR)	#12597	BWD_TOL(Caution)	Brake wear diagnostics allowable travel amount (Caution)

Specify the allowable travel amount for the axis to be diagnosed during brake wear diagnostics. (If the travel amount during brake wear diagnostics exceeds the value of this parameter, "BrakeWearDiagnostics (Caution)" is generated.)

If a value greater than or equal to "#12596 BWD_TOL(Warning)" or "0" is set, this parameter becomes invalid, and "BrakeWearDiagnostics (Caution)" is not generated.

Specify a value that satisfies "#12596 BWD_TOL(Warning)" > "#12597 BWD_TOL(Caution)".

---Setting range---

0 to 99999.999 (mm or deg)

#14301	valVDC	Variable full-closed torsion compensation ON

Select whether to enable or disable the variable full-closed torsion compensation.

0: Disable

1: Enable

#14302	VDCtex_sc	Variable full-closed torsion compensation: time constant magnification

Specify the magnification of time constant for variable full-closed torsion compensation (VDCtex1 to 8).

When not using, set to "0".

---Setting range---

0 to 9999 (%)

#14303	VDCpex_sc	Variable full-closed torsion compensation: compensation (+) magnification

Specify the magnification of variable full-closed torsion compensation value (+) (VDCpex1 to 8).

When not using, set to "0".

---Setting range---

0 to 32767 (%)

#14304	VDCnex_sc	Variable full-closed torsion compensation: compensation (-) magnification

Specify the magnification of variable full-closed torsion compensation value (-) (VDCnex1 to 8). When not using, set to "0".

---Setting range---

0 to 32767 (%)

#14305	VDCtex_sft	Variable full-closed torsion compensation: compensation time constant shift

Specify the shift amount for variable full-closed torsion compensation time constant (VDCtex1 to 8).

When not using, set to "0".

---Setting range---

-9999 to 9999(ms)

#14306	VDCpex_sft	Variable full-closed torsion compensation: compensation value (+) shift

Specify the shift amount for variable full-closed torsion compensation value (+) (VDCpex1 to 8).

When not using, set to "0".

---Setting range---

-32768 to 32767 (0.01 μm)

#14307	VDCnex_sft	Variable full-closed torsion compensation: compensation value (-) shift

Specify the shift amount for variable full-closed torsion compensation value (-) (VDCnex1 to 8).

When not using, set to "0".

---Setting range---

-32768 to 32767 (0.01 μm)

#14311+5(n-1)	VDCan	Variable full-closed torsion compensation acceleration n

Specify the acceleration at which variable full-closed torsion compensation is applied. (n=1 to 8)

Set the acceleration at reversal of machine travel direction.

When not using, set to "0".

---Setting range---

0 to 2147483647 (μm/s^2)

#14312+5(n-1)	VDCtexn	Variable full-closed torsion compensation: compensation time constant n

Specify the time constant for variable full-closed torsion compensation. (n=1 to 8)

This sets the timing of applying the variable full-closed torsion compensation.

When 0 is set, the compensation is applied at the timing when the speed reaches the acceleration set in Variable full-closed torsion compensation acceleration n.

---Setting range---

0 to 9999(ms)

#14313+5(n-1)	VDCpexn	Variable full-closed torsion compensation: compensation value n (+)

Specify the compensation value of variable full-closed torsion compensation in the positive (+) direction. (n=1 to 8)

Set the length of torsion (+) at reversal of machine travel direction.

When not using, set to "0".

---Setting range---

0 to 32767 (0.01 μm)

#14314+5(n-1)	VDCnexn	Variable full-closed torsion compensation: compensation value n (-)

Specify the compensation value of variable full-closed torsion compensation in the negative (-) direction. (n=1 to 8)

Set the length of torsion (-) at reversal of machine travel direction.

When not using, set to "0".

---Setting range---

0 to 32767 (0.01 μm)

#14360	valBL2	Backlash compensation II valid

Select whether to enable the backlash compensation II function.

0: Disable

1: Enabled

#14361	BL2_a1	Backlash compensation II acceleration rate 1

Specify the acceleration rate at which the backlash compensation II function should be applied.

Set the acceleration rate at reversal of machine's travel direction.

When not using, set to "0".

---Setting range---

0 to 2147483647 (μm/s^2)

#14362	BL2_c1	Backlash compensation II compensation amount 1

Specify the compensation amount to be used for backlash compensation II.

---Setting range---

-9999999 to 9999999 (Machine error compensation unit)

#14363	BL2_a2	Backlash compensation II acceleration rate 2

Specify the acceleration rate at which the backlash compensation II function should be applied.
Set the acceleration rate at reversal of machine's travel direction.
When not using, set to "0".

---Setting range---

0 to 2147483647 (μm/s^2)

#14364	BL2_c2	Backlash compensation II compensation amount 2

Specify the compensation amount to be used for backlash compensation II.

---Setting range---

-9999999 to 9999999 (Machine error compensation unit)

#14365	BL2_a3	Backlash compensation II acceleration rate 3

Specify the acceleration rate at which the backlash compensation II function should be applied.
Set the acceleration rate at reversal of machine's travel direction.
When not using, set to "0".

---Setting range---

0 to 2147483647 (μm/s^2)

#14366	BL2_c3	Backlash compensation II compensation amount 3

Specify the compensation amount to be used for backlash compensation II.

---Setting range---

-9999999 to 9999999 (Machine error compensation unit)

#14367	BL2_a4	Backlash compensation II acceleration rate 4

Specify the acceleration rate at which the backlash compensation II function should be applied.
Set the acceleration rate at reversal of machine's travel direction.
When not using, set to "0".

---Setting range---

0 to 2147483647 (μm/s^2)

#14368	BL2_c4	Backlash compensation II compensation amount 4

Specify the compensation amount to be used for backlash compensation II.

---Setting range---

-9999999 to 9999999 (Machine error compensation unit)

2.5 Zero Point Return Parameters

#2025	G28rap	G28 rapid traverse rate

Set a rapid traverse rate for the dog type reference position return command.

This is not used for the distance-coded reference position detection.

---Setting range---

1 to 1000000 (mm/min)

#2026	G28crp	G28 approach speed

Set up the speed of approach to the reference point in the reference point return command. This speed is attained after the system stops with deceleration by dog detection.

In the distance-coded reference position detection, the set value will be applied from the start of reference position establishment.

(Note) The G28 approach speed unit is (10°/min) only when using the Z-phase type encoder (#1226 aux10/bit3=1) for the spindle/C-axis reference position return type. The same unit is used for both the micrometric and sub-micrometric specifications.

---Setting range---

1 to 60000 (mm/min)

#2027	G28sft	Reference position shift distance

Set the distance from the electrical zero-point detection position to the reference position.

This is not used for the distance-coded reference position detection.

(Note 1) When "#1240 set12/bit2" is ON, a magnification (C: 10-fold, D: 100-fold and E: 1000-fold) corresponding to the input setting unit ("#1003 iunit") will be applied to the setting value.

(Note 2) The sign of setting value is: the direction of "#2030 dir (-)" (Reference position direction (-)) is plus, and the opposite direction is minus.

(Note 3) When set value is set to minus, the axis moves to electrical zero-point detection position at first and then moves in opposite direction.

---Setting range---

-99.999 to +99.999 (mm)

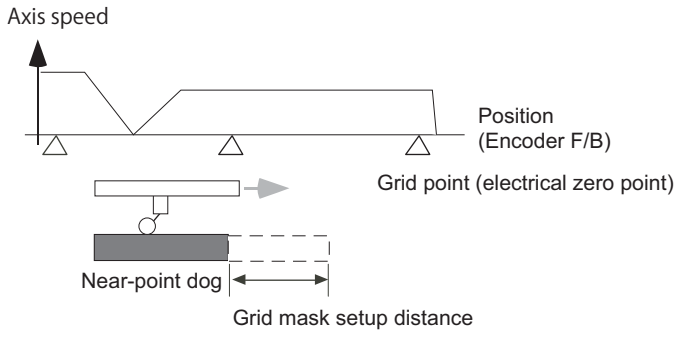
#2028	grmask	Grid mask amount

(1) For dog-type

Set the distance where the grid point will be ignored when near-point dog OFF signals are close to that grid point during reference position return.

The grid mask is valid for one grid.

This is not used for the distance-coded reference position detection.



(2) For dogless-type

Set the distance where the grid point will be ignored from the machine basic position during zero point initialization setting of the absolute position detection system of the following methods.

- Marked point alignment method I
- Machine end stopper method of when the parameter "#2059 zerbas" is "1"

For details, refer to the "Adjusting the Absolute Position Detection System" chapter of "Connection and Setup Manual".

---Setting range---

0.000 to 99.999 (mm)

	#2029	grspc	Grid interval

Set the distance between grids.

Generally, set up the value equal to the ball screw pitch. However, if the encoder grid interval is not equal to the screw pitch when measured with a linear scale, set up the encoder grid interval.

To make the grid space smaller, set a divisor of the grid space.

This is not used for the distance-coded reference position detection.

(Note) Set the grid interval "#2029 grspc" according to the reference encoder for grid interval "#2041 grspcref".

(1) Semi-closed loop control

If "#2041 grspcref" is set to "0" (grid interval by the motor-side), set "#2029 grspc" to the same value as the ball screw pitch.

If "#2041 grspcref" is set to "1" (grid interval by the machine-side), set "#2029 grspc" to the moving amount calculation value per a motor rotation ("#2201 SV001 PC1" / "#2202 SV002 PC2" x "#2218 SV018 PIT").

(2) Full-closed loop control

If "#2041 grspcref" is set to "1" (grid interval by the machine-side), set "#2029 grspc" to the same value as the Z phase pitch.

If "#2041 grspcref" is set to "0" (grid interval by the motor-side), set "#2029 grspc" to the moving amount calculation value per Z phase pitch ("#2202 SV002 PC2" / "#2201 SV001 PC1" x the Z phase pitch of the machine-side).

(*) If "#2029 grspc" is set to "0", the ball screw pitch "#2218 SV018 PIT" is used instead of the grid interval.

---Setting range---

0.000 to 999.999 (mm)

(PR)	#2030	dir (-)	Reference position direction (-)

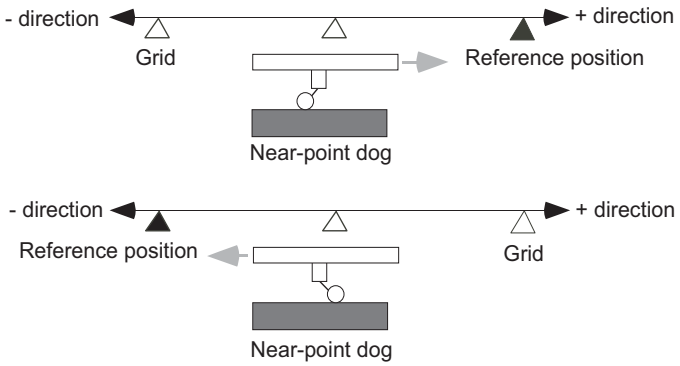
Select which side of the near-point dog the reference position is established.

For a rotary axis, select a direction that heads to the zero point from the intermediate point during automatic zero point return.

0: Positive direction

1: Negative direction

Directions in which reference position is established as viewed from the near-point dog



	#2031	noref	Axis without reference position

Select whether the reference position is provided for the axis.

0: Reference position is provided. (Normal controlled axis)

1: No reference position is provided.

When "1" is set, reference position return is not required before automatic operation starts.

	#2032	nochk	Whether reference position return is completed not checked

Select whether to check the reference position return completion.

0: Check the reference position return completion.

1: Not check the reference position return completion.

When "1" is set, the absolute and incremental commands can be executed even if dog type (or Z phase pulse system) reference position return is not completed.

Note that this setting is available for a rotary axis only.

(PR)	#2033	zp_no	Z phase pulse system reference position return spindle encoder No.

Not used. Set to "0".

(PR)	#2034	rfpofs	Distance-coded reference position detection offset

Set the offset value from the position for the initial reference position setting to the machine's actual zero point in reference position return in the distance-coded reference position detection.

Input the value of the machine value counter that is displayed immediately after the reference position is established.

When the power is turned ON and this parameter is set to "0", the manual reference position return is regarded as initial reference position setting.

If this parameter is set to "0", automatic operation won't be available.

---Setting range---

-99999.999 to 99999.999 (mm)

	#2035	srchmax	Distance-coded reference position detection scan distance

Set the maximum distance for scanning the reference marks when the reference position is not established in the distance-coded reference position detection.

For the scan distance, set the distance that fully covers the number of reference marks as you wish to detect.

(Example) When adding about 10% of additional coverage:

Scan distance = Base reference mark interval [mm] * 2 * 1.1

---Setting range---

0.000 to 99999.999 (mm)

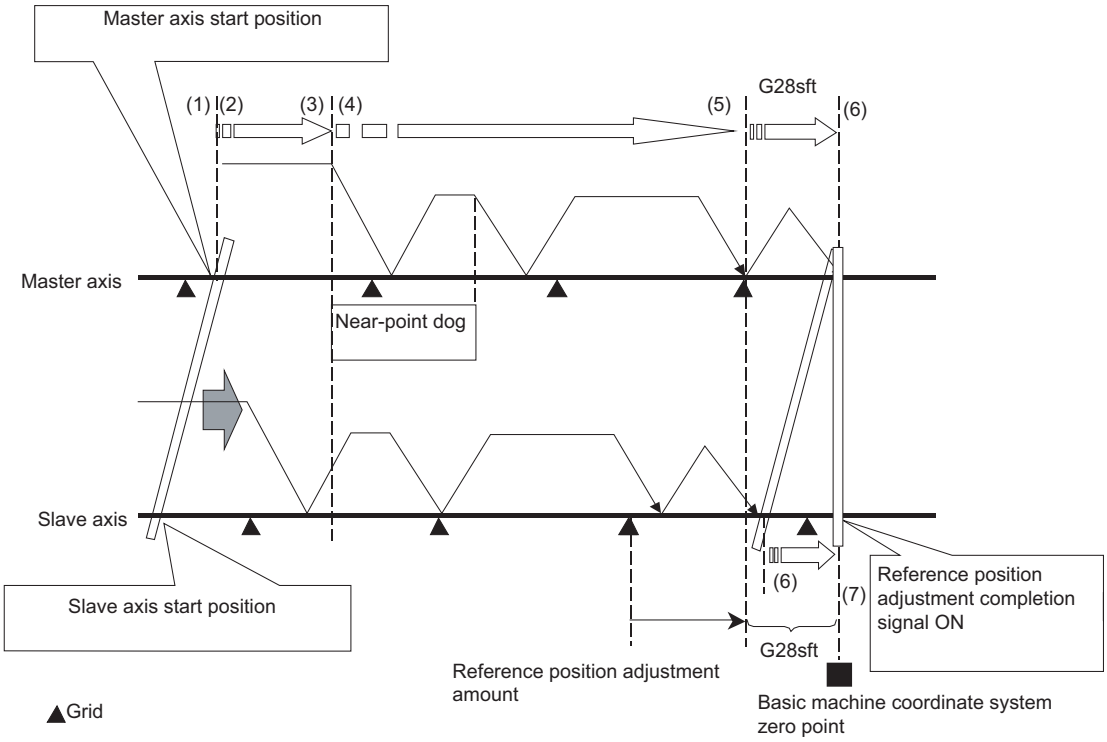
#2036	slv_adjust	Reference position adjustment value

Set the distance from the first grid point after leaving the near point dog on the slave axis to the position where the reference position is actually established in dog-type reference position return in synchronous control. (Reference position shift amount is not included.)

The adjustment value will be automatically set in the slave axis's parameter according to the reference position adjustment complete signal from PLC.

Fine adjustment is also available from the parameter screen.

In the distance-coded reference position detection, the reference position adjustment value will be invalid.



(Note 1) This parameter is enabled when the synchronization at zero point initialization ("#1493 ref_syn" = "1" of the master axis) is applied.

(Note 2) This parameter can be set when one of the following settings is applied.
- Relative position detection ("#2049 type" = "0")
- Dog-type absolute position detection ("#2049 type" = "3")
- Simple absolute position ("#2049 type" = "9")

(Note 3) Set "0" when using the speed/current command synchronization control.

(Note 4) A setting unit of this parameter is [mm]. It is not influenced by the content of the following parameters setting.
- "#1003 iunit"
- "#1004 ctrl_unit"
- "#1005 plcunit"
- "#1040 M_inch"
- "#1041 I_inch"
- "#1240 set12/bit2" (Zero point shift amount magnification)

(Note 5) The number of the significant digits after decimal point follows "#1004 ctrl_unit".

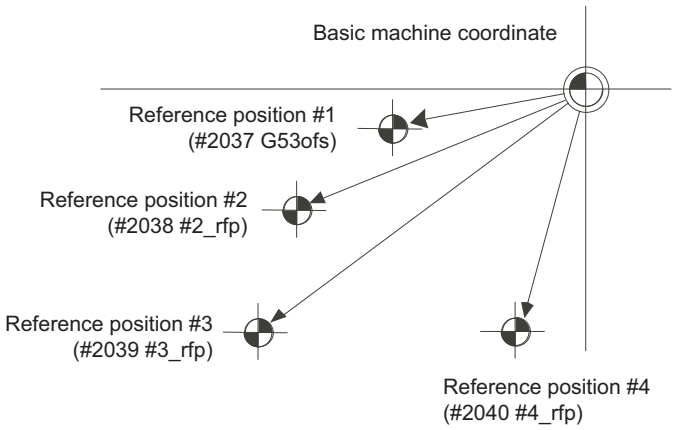
(Note 6) A change of this parameter requires reference position return. When the automatic operation starts without reference position return, an alarm will occur.

---Setting range---

0 to 99999.999999 (mm)

#2037	G53ofs	Reference position #1

Set the position of the first reference position from the zero point of the basic machine coordinate.

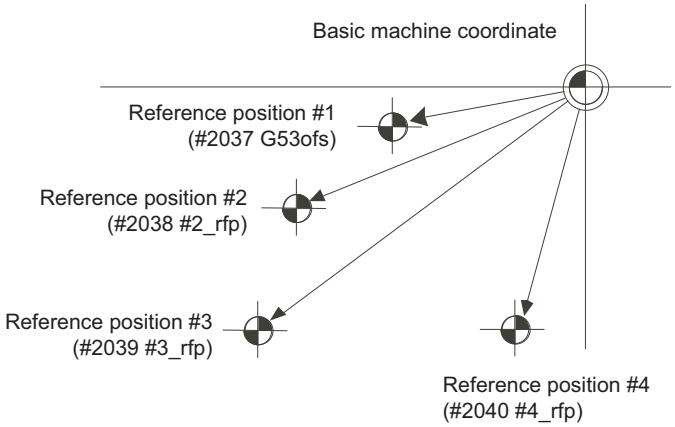


---Setting range---

-99999.999 to 99999.999 (mm)

#2038	#2_rfp	Reference position #2

Set the position of the second reference position from the zero point of the basic machine coordinate.

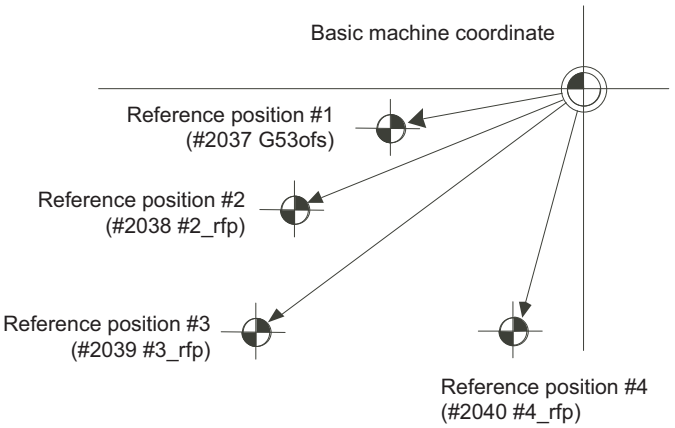


---Setting range---

-99999.999 to 99999.999 (mm)

#2039	#3_rfp	Reference position #3

Set the position of the third reference position from the zero point of the basic machine coordinate.

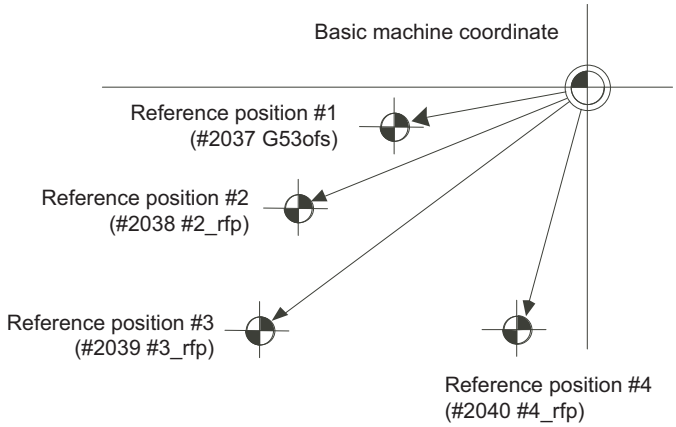


---Setting range---

-99999.999 to 99999.999 (mm)

#2040	#4_rfp	Reference position #4

Set the position of the fourth reference position from the zero point of the basic machine coordinate.



---Setting range---

-99999.999 to 99999.999 (mm)

#2041	grspcref	Reference encoder for grid interval

Select the reference encoder (motor-side or machine-side) based on which the grid interval "#2029 grspc" is set.

0: Motor-side

1: Machine-side

(Note) When an MPI scale made by Mitsubishi Heavy Industries Machine Tool Co., Ltd.is used, set the zero point return parameters so that Z phase of the MPI scale becomes the grid point (electric basic position), and then perform zero point initialization setting.

2.6 Absolute Position Detection Parameters

(PR)	#2049	type	Absolute position detection method

Select the absolute position zero point alignment method.

0: Not absolute position detection

1: Stopper method (push against mechanical stopper)

2: Marked point alignment method I (The grid point is the reference position.)

3: Dog-type (align with dog and near point detection switch)

4: Marked point alignment method II (The position with which the mark was aligned is the reference position.)

9: Simple absolute position (Not absolute position detection, but the position when the power is turned off is registered.)

	#2050	absdir	Basic point of Z direction

Select the direction of the grid point immediately before the machine basic position (basic point of encoder) in the marked point alignment.

0: Positive direction

1: Negative direction

	#2051	check	Check

Set the tolerable range of travel distance (deviation distance) while the power is turned OFF.

If the distance between the position when the power is turned OFF and when the power is turned ON again is larger than the set value, the information is notified to the PLC. (signal name: Absolute position warning)

Set "0" to omit the check.

---Setting range---

0 to 99999.999 (mm)

	#2054	clpush	Current limit (%)

Set the current limit value during the stopper operation in the dogless-type absolute position detection.

The setting value is the ratio of the current limit value to the rated current value.

---Setting range---

0 to 100 (%)

	#2055	pushf	Push speed

Set the feedrate for the automatic initial setting during stopper method.

---Setting range---

1 to 999 (mm/min)

	#2056	aproch	Approach

Set the approach distance of the stopper when deciding the absolute position basic point with the stopper method.

After using stopper once, the tool returns with this distance, and then use stopper again.

---Setting range---

0 to 999.999 (mm)

	#2057	nrefp	Near zero point +

Set the positive direction width where the near reference position signal is output.

When set to "0", the value is the same as #2218 SV018(PIT).

(Note) When "#1240 set12/bit2" is ON, a magnification (C: 10-fold, D: 100-fold, E: 1000-fold) corresponding to the input setting increment ("#1003 iunit") will be applied to the setting value.

---Setting range---

0 to 999.999 (mm)

(Input setting increment applied)

#2058	nrefn	Near zero point -

Set the negative direction width where the near reference position signal is output.

When set to "0", the value is the same as #2218 SV018(PIT).

(Note) When "#1240 set12/bit2" is ON, a magnification (C: 10-fold, D: 100-fold, E: 1000-fold) corresponding to the input setting increment ("#1003 iunit") will be applied to the setting value.

---Setting range---

0 to 999.999 (mm)

(Input setting increment applied)

#2059	zerbas	Select zero point parameter and basic point

Select which is to be the zero point coordinate position during absolute position initial setting.

0: Position where the axis was stopped.

1: Grid point just before stopper.

2.7 Servo Parameters

(PR)	#2201	SV001 PC1	Motor side gear ratio

Set the gear ratio in the motor side when there is the gear between the servo motor's shaft and machine (ball screw, etc.).
For the rotary axis, set the total deceleration (acceleration) ratio.
Even if the gear ratio is within the setting range, the electronic gears may overflow and an initial parameter error (servo alarm 37) may occur.

For linear servo system
Set to "1".

---Setting range---

1 to 32767

(PR)	#2202	SV002 PC2	Machine side gear ratio

Set the gear ratio in the machine side when there is the gear between the servo motor's shaft and machine (ball screw, etc.).
For the rotary axis, set the total deceleration (acceleration) ratio.
Even if the gear ratio is within the setting range, the electronic gears may overflow and an initial parameter error (servo alarm 37) may occur.

For linear servo system
Set to "1".

---Setting range---

1 to 32767

	#2203	SV003 PGN1	Position loop gain 1

Set the position loop gain. The standard setting is "33".
The higher the setting value is, the more accurately the command can be followed, and the shorter the settling time in positioning gets, however, note that a bigger shock will be applied to the machine during acceleration/deceleration.
When using the SHG control, also set SV004 (PGN2) and SV057 (SHGC).

When using the OMR-FF control, set the servo rigidity against quadrant projection or cutting load, etc. For the tracking ability to the command, set by SV106(PGM).

---Setting range---

1 to 200 (rad/s)

	#2204	SV004 PGN2	Position loop gain 2

When performing the SHG control, set the value of "SV003 x 8/3" to "SV004".
When not using the SHG control, set to "0".

Related parameters: SV003, SV057

---Setting range---

0 to 999 (rad/s)

	#2205	SV005 VGN1	Speed loop gain 1

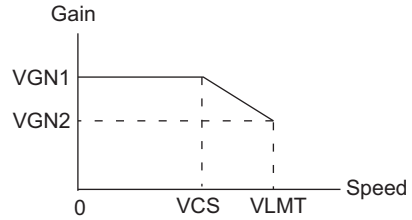
Set the speed loop gain.
The higher the setting value is, the more accurate the control will be, however, vibration tends to occur.
If vibration occurs, adjust by lowering by 20 to 30%.
The value should be determined to the 70 to 80% of the value at which the vibration stops.
The value differs depending on servo motors.
Aim at the standard value determined by the servo motor type and load inertia ratio to adjust.

---Setting range---

1 to 30000

#2206	SV006 VGN2	Speed loop gain 2

Set the speed loop gain at the motor limitation speed VLMT with "VCS(SV029: Speed at the change of speed loop gain)".
Use this to suppress noise at high speed rotation during rapid traverse, etc. Then, the speed loop gain decreases at faster speed than the setting value of VCS. When not using, set to "0".



---Setting range---

-1000 to 30000

#2207	SV007 VIL	Speed loop delay compensation

Set this when the limit cycle occurs in the full-closed loop, or overshooting occurs in positioning. The speed loop delay compensation method can be selected with SV027/bit1,0.
Normally, use "Changeover type 2". Changeover type 2 controls the occurrence of overshooting by lowering the speed loop lead compensation after the position droop gets 0.
When setting this parameter, make sure to set the torque offset (SV032).

---Setting range---

0 to 32767

#2208	SV008 VIA	Speed loop lead compensation

Set the gain of the speed loop integral control.
Standard setting: 1364
Standard setting in the SHG control: 1900
Adjust the value by increasing/decreasing this by about 100 at a time.
Raise this value to improve contour tracking accuracy in high-speed cutting.
Lower this value when the position droop does not stabilize (when the vibration of 10 to 20Hz occurs).

---Setting range---

1 to 9999

#2209	SV009 IQA	Current loop q axis lead compensation

Set the fixed value of each motor.
Set the standard value for each motor described in the standard parameter list.

---Setting range---

1 to 32767

#2210	SV010 IDA	Current loop d axis lead compensation

Set the fixed value of each motor.
Set the standard value for each motor described in the standard parameter list.

---Setting range---

1 to 32767

#2211	SV011 IQG	Current loop q axis gain

Set the fixed value of each motor.
Set the standard value for each motor described in the standard parameter list.

---Setting range---

1 to 32767

#2212	SV012 IDG	Current loop d axis gain

Set the fixed value of each motor.
Set the standard value for each motor described in the standard parameter list.

---Setting range---

1 to 32767

#2213	SV013 ILMT	Current limit value

Set the current (torque) limit value in a normal operation.
This is a limit value in forward run and reverse run (for linear motors: forward and reverse direction).
When the standard setting value is "800", the maximum torque is determined by the specification of the motor.
Set this parameter as a proportion (%) to the stall current.

---Setting range---

0 - 999 (Stall current %)

#2214	SV014 ILMTsp	Current limit value in special control

Set the current (torque) limit value in a special operation (absolute position initial setting, stopper control and etc.).
This is a limit value in forward and reverse directions.
Set to "800" when not using.
Set this parameter as a proportion (%) to the stall current.

---Setting range---

0 - 999 (Stall current %)
However, when SV084/bitB=1, the setting range is from 0 to 32767 (Stall current 0.01%).

#2215	SV015 FFC	Acceleration rate feed forward gain

When a relative error in synchronous control is too large, set this parameter to the axis that is delaying.
The standard setting is "0". The standard setting in the SHG control is "100".
To adjust a relative error in acceleration/deceleration, increase the value by 50 at a time.

---Setting range---

0 to 999 (%)

#2216	SV016 LMC1	Lost motion compensation 1

Set this parameter when the protrusion (that occurs due to the non-sensitive band by friction, torsion, backlash, etc.) at quadrant change is too large. This sets the compensation torque at quadrant change (when an axis feed direction is reversed) by the proportion (%) to the stall torque. Whether to enable the lost motion compensation and the method can be set with other parameters.

Type 2: When SV027/bit9, 8=10 (Compatible with obsolete type)
Set the type 2 method compensation torque. The standard setting is double the friction torque.
Related parameters: SV027/bit9,8, SV033/bitF, SV039, SV040, SV041, SV082/bit2

Type 3: When SV082/bit1=1
Set the compensation torque equivalent of dynamic friction amount of the type 3 method compensation amount. The standard setting is double the dynamic friction torque.
Related parameters: SV041, SV082/bit2,1, SV085, SV086

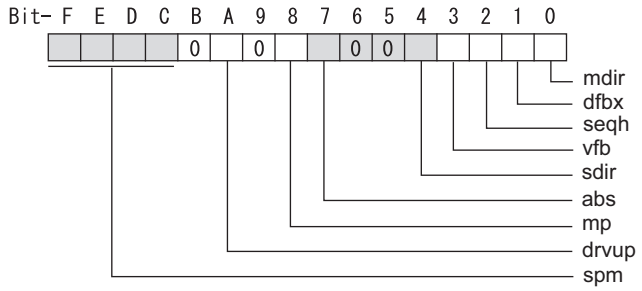
To vary compensation amount according to the direction.
When SV041 (LMC2) is "0", compensate with the value of SV016 (LMC1) in both +/-directions.
If you wish to change the compensation amount depending on the command direction, set this and SV041 (LMC2).
(SV016: + direction, SV041: - direction. However, the directions may be opposite depending on other settings.)
When "-1" is set, the compensation will not be performed in the direction of the command.

---Setting range---

-1 to 200 (Stall current %)
Note that when SV082/bit2 is "1", the setting range is between -1 and 20000 (Stall current 0.01%).

(PR)	#2217	SV017 SPEC1	Servo specification 1

Select the servo specifications.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F-C : spm Motor series selection

0: 200V HK motor (Standard)
1: 200V HG motor (Standard)
2: 400V HK-H motor (Standard)
3: 400V HG-H, HQ-H motor (Standard)
6: 200V LM-F linear motor
7: 200V direct-drive motor
8: 400V LM-F linear motor
9: 400V direct-drive motor

bit B :

Not used. Set to "0".

bit A : drvup Combined drive unit:

0: Normal setting (Combined drive unit: normal)
1: Combined drive unit: one upgrade

(Note) It is not available for MDS-EJ/EJH Series.

bit 9 :

Not used. Set to "0".

bit 8 : mp MPI scale pole number setting

0: 360 poles 1: 720 poles

bit 7 : abs Position control

These parameters are set automatically by the NC system.
0: Incremental 1: Absolute position control

bit 6-5 :

Not used. Set to "0".

bit 4 : sdir Sub side encoder feedback

Set the machine side encoder's installation polarity.
0: Forward polarity 1: Reverse polarity

bit 3 : vfb Speed feedback filter

0: Stop 1: Start (4500Hz)

bit 2 : seqh Ready on sequence

0: Normal 1: High-speed

bit 1 : dfbx Dual feedback control

Control the position FB signal in full closed control by the combination of a motor side encoder and machine side encoder.
0: Stop 1: Start

Related parameters: SV051, SV052

bit 0 : mdir Machine side encoder feedback (for Linear/direct-drive motor)

Set the encoder installation polarity in the linear servo and direct-drive motor control.
0: Forward polarity 1: Reverse polarity

(PR)	#2218	SV018 PIT	Ball screw pitch/Magnetic pole pitch

For servo motor:
Set the ball screw pitch. For the rotary axis, set to "360".

For direct-drive motor
Set to "360".

For linear motor
Set the ball screw pitch. (For LM-F series, set to "48")

---Setting range---

For general motor: 1 to 32767 (mm/rev)
- For linear motor 1 to 32767 (mm)

(PR)	#2219	SV019 RNG1	Sub side encoder resolution

For semi-closed loop control
Set the same value as SV020.

For full-closed loop control
Set the number of pulses per ball screw pitch.

For direct-drive motor
Set the same value as SV020.

For 1000 pulse unit resolution encoder, set the number of pulses in SV019 in increments of 1000 pulse (kp). The value must be input in increments of 10K pulses (the 1st digit of the setting value is "0").
In this case, make sure to set "0" to SV117.
For high-accuracy binary resolution encoder, set the number of pulses to four bite data of SV117 (high-order) and SV019 (low-order) in pulse (p) unit.
SV117 = number of pulses / 65536 (when =0, set "-1" to SV117)
SV019 = the remainder of number of "pulses / 65536"

---Setting range---

When SV117 = 0, the setting range is from 0 to 32767 (kp)
When SV117≠0, the setting range is from 0 to 65535 (p)

(PR)	#2220	SV020 RNG2	Main side encoder resolution

Normally, set to "0".

For linear motor
Set the number of pulses of the encoder per magnetic pole pitch with SV118.

For direct-drive motor
Set the number of pulses per revolution of the motor side encoder.

For 1000 pulse unit resolution encoder, set the number of pulses to SV020 in increments of 1000 pulse(kp). The value must be input in increments of 10K pulses (the 1st digit of the setting value is "0").
In this case, make sure to set SV118 to "0". For high-accuracy binary resolution encoder, set the number of pulses to four bite data of SV118 (high-order) and SV020 (low-order) in pulse(p) unit.
SV118 = number of pulses / 65536 (when =0, set "-1" to SV118)
SV020 = the remainder of "number of pulses / 65536"

---Setting range---

When SV118 = 0, the setting range is from 0 to 32767 (kp)
When SV118≠0, the setting range is from 0 to 65535 (p)

	#2221	SV021 OLT	Overload detection time constant

Normally, set to "60". (For Mitsubishi Electric adjustment.)

Related parameters: SV022

---Setting range---

1 to 999 (s)

	#2222	SV022 OLL	Overload detection level

Set the "Overload 1" (Alarm 50) current detection level as percentage to the stall current.
Normally set this parameter to "150". (For Mitsubishi Electric adjustment.)

Related parameters: SV021

---Setting range---

110 to 500 (Stall current %)

	#2223	SV023 OD1	Excessive error detection width during servo ON

Set the excessive error detection width in servo ON.
When set to "0", the excessive error alarm detection will be ignored, so do not set to "0".
<Standard setting value>
OD1=OD2= (Rapid traverse rate [mm/min]) / (60×PGN1) / 2 [mm]

Related parameters: SV026

---Setting range---

0 to 32767 (mm)
However, when SV084/bitC=1, the setting range is from 0 to 32767 (μm).

	#2224	SV024 INP	In-position detection width

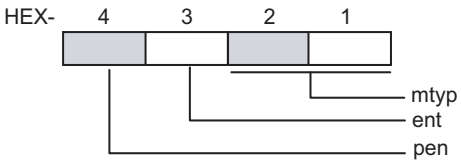
Set the in-position detection width.
Set the positioning accuracy required for the machine.
The lower the setting is, the higher the positioning accuracy will be. However the cycle time (settling time) becomes longer.
The standard setting value is "50".

---Setting range---

1 to 32767 (μm)

(PR)	#2225	SV025 MTYP	Motor/Encoder type

Set the position encoder type, speed encoder type and motor type.
The setting value is a four-digit hex (HEX).



bit F-C: pen(HEX-4) Position encoder

Semi-closed loop control by general motor
pen=2

Full-closed loop control by general motor
- Ball screw end encoder (OSA405ET2AS, OSA676ET2AS)
  pen=6
- For serial signal output rotary scale (including MDS-EX-HR)
  pen=6
- For rectangular wave signal output linear scale
  pen=8
- For serial signal output linear scale (including MDS-EX-HR and MPI scale)
  pen=A
- For speed command synchronization control
  Primary axis pen=A
  Secondary axis pen=D
- For common encoder current command synchronous control
  Primary axis pen=2 (Rotary motor)
  pen=A (Linear motor)
  Secondary axis pen=D

For a linear motor
pen=A

For a direct-drive motor
pen=2

bit B-8: ent(HEX-3) Speed encoder

For a general motor: ent=2
For common encoder current command synchronous control
Primary axis pen=2 (Rotary motor)
pen=A (Linear motor)
Secondary axis pen=D
For a linear motor: ent=A
For a direct-drive motor: ent=2

bit 7-0: mtyp(HEX-2,1) Motor type

Set the motor type. Set this with SV017/bitF-C.

For SV017/bitF-C = 0 (200V HK motor series)

HK76	: 51h	HK223	: 66h	HK603	: 69h
HK105	: 52h	HK224	: 56h	HK702	: 6Ah
HK55	: 53h	HK224 (E-V1/V2-160)	: 81h	HK703	: 5Ah
HK104	: 54h	HK204	: 57h	HK802	: 6Ch
HK123	: 64h	HK302	: 67h	HK903	: 5Bh
HK142	: 65h	HK303	: 68h		
HK154	: 55h	HK354	: 58h		
HK154 (E-V3-80)	: 91h	HK453	: 59h		
HK154 (E-V3-40)	: 98h	HK504	: 6Bh		

For SV017/bitF-C = 1 (200V HG motor series)

HG46	: BAh	HG154 (E-V3-40)	: 4Fh	HG603	: 69h
HG56	: BBh	HG224	: 46h	HG702	: 6Ah
HG96	: BCh	HG204	: 47h	HG703	: 4Ah
HG75	: 41h	HG354	: 48h	HG903	: 4Bh
HG105	: 42h	HG123	: 64h	HG1103	: 4Ch
HG54	: 43h	HG223	: 66h	HG142	: 65h
HG104	: 44h	HG303	: 68h	HG302	: 67h
HG154	: 45h	HG453	: 49h		

For SV017/bitF-C = 2 (400V HK-H motor series)

HK-H76	: 51h	HK-H224 (EH-V1/V2-80)	: 81h	HK-H703	: 5Ah
HK-H105	: 52h	HK-H204	: 57h	HK-H802	: 6Ch
HK-H55	: 53h	HK-H302	: 67h	HK-H903	: 5Bh
HK-H104	: 54h	HK-H303	: 68h		
HK-H123	: 64h	HK-H354	: 58h		
HK-H154	: 55h	HK-H453	: 59h		
HK-H154 (EH-V3-40)	: 91h	HK-H504	: 6Bh		
HK-H223	: 66h	HK-H603	: 69h		
HK-H224	: 56h	HK-H702	: 6Ah		

For SV017/bitF-C = 3 (400V HG-H, HQ-H motor series)

HG-H75	: 41h	HG-H224	: 46h	HG-H903	: 4Bh
HG-H105	: 42h	HG-H204	: 47h	HG-H1502	: 4Dh
HG-H54	: 43h	HG-H354	: 48h	HQ-H903	: 58h
HG-H104	: 44h	HG-H453	: 49h	HQ-H1103	: 59h
HG-H154	: 45h	HG-H703	: 4Ah		

For linear motor and direct-drive motor, follow the settings stated in respective materials.

#2226 SV026 OD2 Excessive error detection width during servo OFF

Set the excessive error detection width during servo OFF.
When set to "0", the excessive error alarm detection will be ignored, so do not set to "0".
<Standard setting value>
OD1=OD2= (Rapid traverse rate [mm/min]) / (60×PGN1) / 2 [mm]

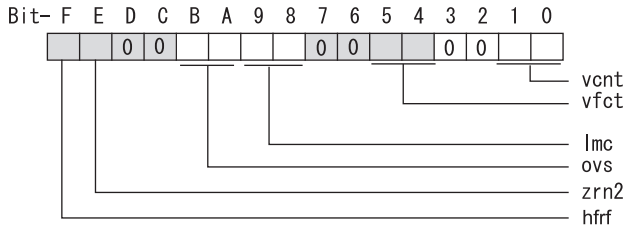
Related parameters: SV023

---Setting range---

0 to 32767 (mm)
However, when SV084/bitC=1, the setting range is from 0 to 32767 (μm).

#2227	SV027 SSF1	Servo function 1

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F : hfrf Higher harmonic suppression filter

0: Stop
1: Start

bit E : zrn2

Set to "1". (Fixed)

bit D :

Not used. Set to "0".

bit C :

Not used. Set to "0".

bit B-A : ovs Overshooting compensation

Set this if overshooting occurs during positioning.
bitB,A=
00: Compensation stop
01: Setting prohibited
10: Setting prohibited
11: Type 3
Set the compensation amount in SV031(OVS1) and SV042(OVS2).

Related parameters: SV031, SV042, SV034/bitF-C

bit 9-8 : lmc Lost motion compensation type

Set this parameter when the protrusion at quadrant change is too large.
Type 2 has an obsolete type compatible control.
bit9,8=
00: Compensation stop
01: Setting prohibited
10: Type 2
11: Setting prohibited
Set the compensation amount in SV016(LMC1) and SV041(LMC2).
(Note) When "SV082/bit1=1", the lost motion compensation type 3 will be selected regardless of this setting.

bit 7 :

Not used. Set to "0".

bit 6 :

Not used. Set to "0".

bit 5-4 : vfct Jitter compensation pulse number

Suppress vibration by machine backlash when axis stops.
bit5,4=
00: Disable
01: 1 pulse
10: 2 pulse
11: 3 pulses

bit 3 :

Not used. Set to "0".

bit 2 :

Not used. Set to "0".

bit 1-0 : vcnt Speed loop delay compensation changeover type selection

Normally, use "Changeover type 2".
bit1,0=
00: Disable
01: Changeover type 1
10: Changeover type 2
11: Setting prohibited

Related parameters: SV007

(PR)	#2228	SV028 MSFT	Magnetic pole shift amount (for linear/direct-drive motor)

Set this parameter to adjust the motor magnetic pole position and encoder's installation phase when using linear motors or direct-drive motors.
During the DC excitation of the initial setup (SV034/bit4=1), set the same value displayed in "AFLT gain" on the NC monitor screen.

Related parameters: SV034/bit4, SV061, SV062, SV063

For general motor:
Not used. Set to "0".

---Setting range---

-18000 to 18000 (electrical angle 0.01°)

	#2229	SV029 VCS	Speed at the change of speed loop gain

Noise at high speed rotation including rapid traverse can be reduced by lowering the speed loop gain at high speeds.
Set the speed at which the speed loop gain changes. Use this with SV006 (VGN2).
When not using, set to "0".

---Setting range---

0 to 9999 (r/min)

	#2230	SV030 IVC	Voltage non-sensitive band compensation

When 100% is set, the voltage reduction amount equivalent to the logical non-energization in the PWM control will be compensated.
When "0" is set, 100% compensation will be performed.
Adjust in increments of 10% from the default value of 100%.
If increased too much, vibration or vibration noise may be generated.

---Setting range---

0 to 255 (%)

	#2231	SV031 OVS1	Overshooting compensation 1

This compensates the motor torque when overshooting occurs during positioning. This is valid only when the overshooting compensation (SV027/bitB,A) is selected.

Type 3 SV027/bitB,A=11
Set the compensation amount based on the motor stall current. Observing positioning droop waveform, increase in increments of 1% and find the value where overshooting does not occur.

To vary compensation amount depending on the direction.
When SV042 (OVS2) is "0", change the SV031 (OVS1) value in both of the +/- directions to compensate.
To vary the compensation amount depending on the command direction, set this and SV042 (OVS2).
(SV031: + direction, SV042: - direction. However, the directions may be opposite depending on other settings.)
When "-1" is set, the compensation will not be performed in the direction of the command.

Related parameters: SV027/bitB,A, SV034/bitF-C, SV042, SV082/bit2

---Setting range---

-1 to 100 (Stall current %)
Note that the range will be "-1 - 10000" (Stall current 0.01%) when SV082/bit2 is "1".

#2232	SV032 TOF	Torque offset

Set the unbalance torque on vertical axis and inclined axis.
When the vertical axis pull up function is enabled, the pull up compensation direction is determined by this parameter's sign. When set to "0", and the pull up function is enabled (SV033/bitE=1), the alarm "S02 2233 Initial parameter error" occurs.
This can be used for speed loop delay compensation and collision detection function.
To use load inertia estimation function (drive monitor display), set this parameter, friction torque (SV045) and load inertia display enabling flag(SV035/bitF).

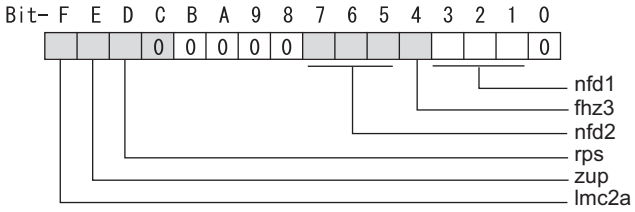
Related parameters: SV007, SV033/bitE, SV059

---Setting range---

-100 to 100 (Stall current %)

#2233	SV033 SSF2	Servo function 2

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F : lmc2a Lost motion compensation 2 timing

0: Normal 1: Change

bit E : zup Vertical axis pull up function

0: Stop 1: Enable

Related parameters: SV032, SV095

bit D : rps Safely limited speed setting increment

Change the setting units of the specified speed signal output speed (SV073).

0: mm/min 1: 100mm/min

Related parameters: SV073

bit C-8 :

Not used. Set to "0".

bit 7-5 : nfd2 Depth of Notch filter 2

Set the depth of Notch filter 2 (SV046).
bit7,6,5=
000: -∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

bit 4 : fhz3 Notch filter 3

0: Stop 1: Start (1125Hz)

bit 3-1 : nfd1 Depth of Notch filter 1

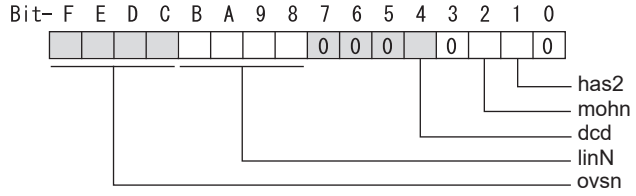
Set the depth of Notch filter 1 (SV038).
bit3,2,1=
000: -∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

bit 0 :

Not used. Set to "0".

#2234	SV034 SSF3	Servo function 3

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F-C: ovsn Overshooting compensation type 3 Non-sensitive band

Set the non-sensitive band of the model position droop overshooting amount in increments of 2μm.
In the feed forward control, set the non-sensitive band of the model position droop and ignore the overshooting of the model.
0 : 0 μm, 1: 2 μm, 2: 4μm,---, E : 28 μm, F: 30μm

bit B-8 : linN The number of parallel connections when using linear motors (for linear)

Set to"2" to perform 1 amplifier 2 motor control by linear servo.

bit 7-5 :

Not used. Set to "0".

bit 4 : dcd (linear/direct-drive motor)

0: Normal setting 1: DC excitation mode

Related parameters: SV061, SV062, SV063

bit 3 :

Not used. Set to "0".

bit 2 : mohn Thermistor temperature detection (linear/direct-drive motor)

0: Normal setting 1: Disable

bit 1 : has HAS control

This stabilizes the speed overshooting by torque saturation phenomenon.
0: Normal setting 1: Enable

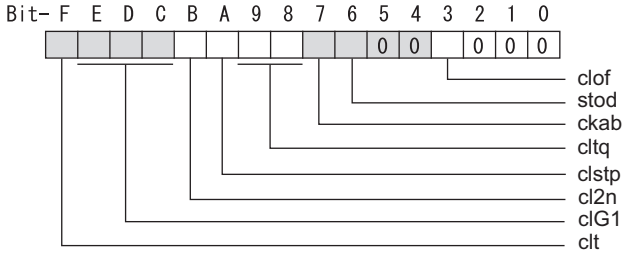
Related parameters: SV084/bitF

bit 0 :

Not used. Set to "0".

#2235	SV035 SSF4	Servo function 4

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F: clt Inertia ratio display

0: Setting for normal use

1: Display the total inertia ratio estimated at acceleration/deceleration at the inertia ratio on the servo monitor screen
To display it on the screen, set an imbalance torque and friction torque to both SV032 and SV045 and repeat acceleration/deceleration operations for several times.

bit E-C: clG1 G1 Collision detection level

Set the collision detection level in the collision detection method 1 during cutting feed (G1) in multiples of that of rapid traverse (G0). When set to "0", detection of collision detection method 1 during cutting feed will be ignored.
G1 Collision detection level = G0 collision detection level (SV060) × clG1

bit B: cl2n Collision detection method 2

0: Enable 1: Disable

bit A: clstp Collision detection method 1 disabled during stop

0: Collision detection method 1 enabled during stop

1: Collision detection method 1 disabled during stop

bit 9-8: cltq Retract torque in collision detection

Set the retract torque in collision detection using the ratio of motor's maximum torque.
bit9,8=
00: 100%
01: 90%
10: 80% (Standard)
11: 70%

bit 7: ckab No signal detection 2

Set this to use rectangular wave output linear scale.
This enables the detection of No signal 2 (alarm 21).
0: Disable 1: Enable

bit 6: stod Alarm 4D-2 detection disabled during deceleration and stop

0: Normal 1: Alarm 4D-2 detection disabled during deceleration and stop

bit 5-4:

Not used. Set to "0".

bit 3: clof Collision detection estimated disturbance torque offset

0: Disable 1: Enable

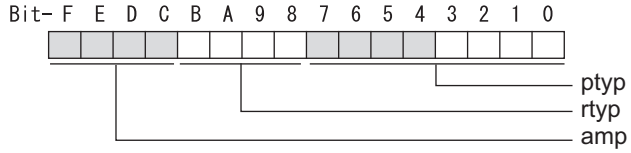
bit 2-0:

Not used. Set to "0".

(PR)	#2236	SV036 PTYP	Power supply type/ Regenerative resistor type

MDS-E/EH Series: Power supply type

When connecting a power supply unit, set a code for each power supply unit.



bit F-C : amp

Set the power backup function to be used.
No function used : 0
Deceleration and stop function at power failure : 8
Retraction function at power failure : C

bit B-8 : rtyp

Not used. Set to "0".

bit 7-0 : ptyp External emergency stop setting

When the emergency stop input signal of the power supply unit is "disabled"

Power supply unit is not connected	: 00
MDS-E-CV-37 / MDS-EH-CV-37	: 04
MDS-E-CV-75 / MDS-EH-CV-75	: 08
MDS-E-CV-110 / MDS-EH-CV-110	: 11
MDS-E-CV-185 / MDS-EH-CV-185	: 19
MDS-E-CV-300 / MDS-EH-CV-300	: 30
MDS-E-CV-370 / MDS-EH-CV-370	: 37
MDS-E-CV-450 / MDS-EH-CV-450	: 45
MDS-E-CV-550 / MDS-EH-CV-550	: 55
MDS-EH-CV-750	: 75

When the emergency stop input signal of the power supply unit is "enabled"
(Note) Set the power supply rotary switch to "4".

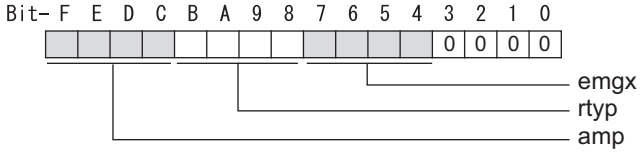
Power supply unit is not connected	: 00
MDS-E-CV-37 / MDS-EH-CV-37	: 44
MDS-E-CV-75 / MDS-EH-CV-75	: 48
MDS-E-CV-110 / MDS-EH-CV-110	: 51
MDS-E-CV-185 / MDS-EH-CV-185	: 59
MDS-E-CV-300 / MDS-EH-CV-300	: 70
MDS-E-CV-370 / MDS-EH-CV-370	: 77
MDS-E-CV-450 / MDS-EH-CV-450	: 85
MDS-E-CV-550 / MDS-EH-CV-550	: 95
MDS-EH-CV-750	: B5

MDS-EM/EMH Series

Not used. Set to "0000".
External emergency stop power supply type is set by spindle parameter (SP032).

MDS-EJ/EJH Series: Regenerative resistor type

Set the regenerative resistor type.



bit F-8 : amp(bit F-C) / rtyp(bit B-8)

Resistor built-in drive unit	: 10
Setting prohibited	: 11
MR-RB032	: 12
MR-RB12 or GZG200W39OHMK	: 13
MR-RB32 or GZG200W120OHMK 3 units connected in parallel	: 14
MR-RB30 or GZG200W39OHMK 3 units connected in parallel	: 15
MR-RB50 or GZG300W39OHMK 3 units connected in parallel	: 16
MR-RB31 or GZG200W20OHMK 3 units connected in parallel	: 17
MR-RB51 or GZG300W20OHMK 3 units connected in parallel	: 18
Setting prohibited	: 19-1F
Setting prohibited	: 20-23
FCUA-RB22	: 24
FCUA-RB37	: 25
FCUA-RB55	: 26
FCUA-RB75/2	: 27
Setting prohibited	: 28
R-UNIT2	: 29
Setting prohibited	: 2A-2C
FCUA-RB75/2 2 units connected in parallel	: 2D
FCUA-RB55 2 units connected in parallel	: 2E
Setting prohibited	: 2F
MR-RB1H-4	: 33
MR-RB3M-4	: 34
MR-RB3G-4	: 35
MR-RB5G-4	: 36

bit 7-4 : emgx External emergency stop function

Set the external emergency stop function.
0: Disable 4: Enable

bit 3-0 :

Not used. Set to "0".

#2237 SV037 JL Load inertia scale

Set the motor axis conversion total load inertia including motor itself in proportion to the motor inertia.
SV037(JL)=(Jm+Jl)/Jm×100
Jm: Motor inertia
Jl: Motor axis conversion load inertia

For linear motor, set the gross mass of the moving sections in kg unit.

<<Drive monitor load inertia ratio display>>
Set SV035/bitF=1 and imbalance torque and friction torque to both SV032 and SV045, and then repeat acceleration/deceleration for several times.

---Setting range---

For general motor: 0 to 5000 (%)
For linear motor 0 to 5000 (kg)

#2238 SV038 FHz1 Notch filter frequency 1

Set the vibration frequency to suppress when machine vibration occurs.
(Normally, do not set 80 or less.)
Set to "0" when not using.

Related parameters: SV033/bit3-1, SV115

---Setting range---

0 to 5000 (Hz)

#2239	SV039 LMCD	Lost motion compensation timing

Set this when the timing of lost motion compensation type 2 does not match.
Adjust increments of 10 at a time.

---Setting range---

0 to 2000 (ms)

#2240	SV040 LMCT	Lost motion compensation non-sensitive band

Set the non-sensitive band of the lost motion compensation in the feed forward control.
When "0" is set, 2μm is the actual value to be set. Adjust increments of 1μm.

---Setting range---

0 to 255 (μm)

#2241	SV041 LMC2	Lost motion compensation 2

Set this with SV016 (LMC1) only when you wish to vary the lost motion compensation amount depending on the command directions.
Normally, set to "0".

---Setting range---

-1 to 200 (Stall current %)
Note that when SV082/bit2 is "1", the setting range is between -1 and 20000 (Stall current 0.01%).

#2242	SV042 OVS2	Overshooting compensation 2

Set this with SV031 (OVS1) only when you wish to vary the overshooting compensation amount depending on the command directions.
Normally, set to "0".

---Setting range---

-1 to 100 (Stall current %)
Note that when SV082/bit2 is "1", the setting range is between -1 and 10000 (Stall current 0.01%).

#2243	SV043 OBS1	Disturbance observer filter frequency

Set the disturbance observer filter band.
Normally, set to "100". Setting values of 49 or less is equal to "0" setting.
To use the disturbance observer, also set SV037 (JL) and SV044 (OBS2).
When disturbance observer related parameters are changed, lost motion compensation needs to be readjusted.
Set to "0" when not using.

---Setting range---

0 to 1000 (rad/s)

#2244	SV044 OBS2	Disturbance observer gain

Set the disturbance observer gain. The standard setting is "100 to 300".
To use the disturbance observer, also set SV037 (JL) and SV043 (OBS1).
When disturbance observer related parameters are changed, lost motion compensation needs to be readjusted.
Set to "0" when not using.

---Setting range---

0 to 500 (%)

#2245	SV045 TRUB	Friction torque

Set the frictional torque when using the collision detection function.
To use load inertia estimation function (drive monitor display), set this parameter, imbalance torque (SV032) and load inertia display enabling flag (SV035/bitF).

---Setting range---

0 to 255 (Stall current %)

#2246	SV046 FHz2	Notch filter frequency 2

Set the vibration frequency to suppress when machine vibration occurs.
(Normally, do not set 80 or less.)
Set to "0" when not using.

Related parameters: SV033/bit7-5, SV115

---Setting range---

0 to 5000 (Hz)

#2247	SV047 EC	Inductive voltage compensation gain

Set the inductive voltage compensation gain. Standard setting value is "100".
If the current FB peak exceeds the current command peak, lower the gain.

---Setting range---

0 to 200 (%)

#2248	SV048 EMGrt	Vertical axis drop prevention time

Input the time required to prevent the vertical axis from dropping by delaying READY OFF until the brake works at an emergency stop.
Increase in increments of 100ms at a time, find and set the value where the axis does not drop.
When using a motor with a break of HG(-H) Series, HQ-H Series, and HK(-H) Series set to "200ms" as a standard.
When the pull up function is enabled (SV033/bitE=1), the pull up is established during the drop prevention time.

(Note) When not using the spindle drive unit, use the servo axis that controls vertical axis drop prevention control to control the power supply (connect with CN4).

Related parameters: SV033/bitE, SV055, SV056

---Setting range---

0 to 20000 (ms)
When set to "0", and the pull up function is enabled (SV033/bitE=1), the alarm "S02 2233 Initial parameter error" occurs.

#2249	SV049 PGN1sp	Position loop gain 1 in spindle synchronous control

Set the position loop gain during spindle synchronization control (synchronous tapping and synchronization control with spindle C-axis).
Set the same value as that of the position loop gain for spindle synchronous tapping control.
When performing the SHG control, set this parameter with SV050 (PGN2sp) and SV058 (SHGCsp).
When changing the value, change the value of "#2017 tap_g Axis servo gain".

---Setting range---

1 to 200 (rad/s)

#2250	SV050 PGN2sp	Position loop gain 2 in spindle synchronous control

When using SHG control during spindle synchronous control (synchronous tapping and synchronization control with spindle C-axis), set this parameter with SV049 (PGN1sp) and SV058 (SHGCsp).
Make sure to set the value 8/3 times that of SV049.
When not using the SHG control, set to "0".

---Setting range---

0 to 999 (rad/s)

#2251	SV051 DFBT	Dual feedback control time constant

Set the control time constant in dual feed back.
When "0" is set, it operates at 1ms.
The higher the time constant is, the closer it gets to the semi-closed control, so the limit of the position loop gain will be raised.

For linear servo/direct-drive motor system
Not used. Set to "0".

Related parameters: SV017/bit1, SV052

---Setting range---

0 to 9999 (ms)

#2252	SV052 DFBN	Dual feedback control non-sensitive band

Set the non-sensitive band in the dual feedback control.
Normally, set to "0".

For linear servo/direct-drive motor system
Not used. Set to "0".

Related parameters: SV017/bit1, SV052

---Setting range---

0 to 9999 (μm)

#2253	SV053 OD3	Excessive error detection width in special control

Set the excessive error detection width when servo ON in a special control (initial absolute position setting, stopper control and etc.).
When "0" is set, excessive error detection will not be performed when servo ON during a special control.

---Setting range---

0 to 32767 (mm)
However, when SV084/bitC=1, the setting range is from 0 to 32767 (μm).

#2254	SV054 ORE	Overrun detection width in closed loop control

Set the overrun detection width in the full-closed loop control.
When the gap between the motor side encoder and the linear scale (machine side encoder) exceeds the value set by this parameter, it will be judged as overrun and "Alarm 43" will be detected.
When "-1" is set, if the differential velocity between the motor side encoder and the machine side encoder exceeds the 30% of the maximum motor speed, it will be judged as overrun and "Alarm 43" will be detected.
When "0" is set, overrun will be detected with a 2mm width.

For linear servo/direct-drive motor system
Not used. Set to "0".

---Setting range---

-1 to 32767 (mm)
However, when SV084/bitD=1, the setting range is from -1 to 32767 (μm).

#2255	SV055 EMGx	Max. gate off delay time after emergency stop

Set the time required between an emergency stop and forced READY OFF.
Set the maximum value "+ 100ms" of the SV056 setting value of the servo drive unit electrified by the same power supply unit.
When executing the vertical axis drop prevention, the gate off will be delayed for the length of time set at SV048 even when SV055's is smaller than that of SV048.

Related parameters: SV048, SV056

---Setting range---

0 to 20000 (ms)

#2256	SV056 EMGt	Deceleration time constant at emergency stop

Set the time constant used for the deceleration control at emergency stop.
Set the time required to stop from rapid traverse rate (rapid).
The standard setting value is EMGt≤G0tL×0.9.
However, note that the standard setting value differs from the above-mentioned value when the setting value of "#2003:smgst Acceleration and deceleration modes bit 3-0:Rapid traverse acceleration/deceleration type" is 8 or F. Refer to Instruction Manual of the drive unit (section "5.5.1 Deceleration Control") for details.

Related parameters: SV048, SV055

---Setting range---

0 to 20000 (ms)

#2257	SV057 SHGC	SHG control gain

When performing the SHG control, set to SV003(PGN1)×6.
When not using the SHG control, set to "0".
When using the OMR-FF control, set to "0".

Related parameters: SV003, SV004

---Setting range---

0 to 1200 (rad/s)

#2258	SV058 SHGCsp	SHG control gain in spindle synchronous control

When using SHG control during spindle synchronization control (synchronous tapping and synchronous control with spindle C-axis), set this parameter with SV049 (PGN1sp) and SV050 (PGN2sp).
Make sure to set the value 6 times that of SV049.
When not using the SHG control, set to "0".

---Setting range---

0 to 1200 (rad/s)

#2259	SV059 TCNV	Collision detection torque estimated gain

Set the torque estimated gain when using the collision detection function.
The standard setting value is the same as the load inertia ratio (SV037 setting value) including motor inertia.
Set to "0" when not using the collision detection function.

Related parameters: SV032, SV035/bitF-8, SV037, SV045, SV060

<<Drive monitor load inertia ratio display>>
Set SV035/bitF=1 and imbalance torque and friction torque to both SV032 and SV045, and then repeat acceleration/deceleration for several times.

---Setting range---

For general motor: 0 to 5000 (%)
For linear motor: 0 to 5000 (kg)

#2260	SV060 TLMT	Collision detection level

When using the collision detection function, set the collision detection level at the G0 feeding.
When "0" is set, none of the collision detection function will work.

Related parameters: SV032, SV035/bitF-8, SV037, SV045, SV059

---Setting range---

0 to 999 (Stall current %)

#2261	SV061 DA1NO	D/A output ch1 data No. / Initial DC excitation level

Input the data number you wish to output to the D/A output channel 1.
When using the 2-axis drive unit, set "-1" to the axis that the data will not be output.

When the DC excitation is running (SV034/bit4=1):
Use this when the DC excitation is running (SV034/bit4=1) to adjust the initial magnetic pole position (when measuring the magnetic pole shift amount) for linear motor and direct-drive motor.
Set the initial excitation level in DC excitation control.
Set 10% as standard.
Related parameters: SV062, SV063

---Setting range---

-32768 to 32767
When the DC excitation is running (SV034/bit4=1): 0 to 100 (Stall current %)

#2262	SV062 DA2NO	D/A output ch2 data No. / Final DC excitation level

Input the data number you wish to output to the D/A output channel 2.
When using the 2-axis drive unit, set "-1" to the axis that the data will not be output.

When the DC excitation is running (SV034/bit4=1):
Use this when the DC excitation is running (SV034/bit4=1) to adjust the initial magnetic pole position (when measuring the magnetic pole shift amount) for linear motor and direct-drive motor.
Set the final excitation level in DC excitation control.
Set 10% as standard.
When the magnetic pole shift amount measurement value is unsteady, adjust the value in increments of 5%.
Related parameters: SV061, SV063

---Setting range---

-32768 to 32767
When the DC excitation is running (SV034/bit4=1): 0 to 100 (Stall current %)

#2263 SV063 DA1MPY D/A output ch1 output scale / Initial DC excitation time

Set output scale of the D/A output channel 1 in increment of 1/100.
When "0" is set, the magnification is the same as when "100" is set.

When the DC excitation is running (SV034/bit4=1):
Use this when the DC excitation is running (SV034/bit4=1) to adjust the initial magnetic pole position (when measuring the magnetic pole shift amount) for linear motor and direct-drive motor.
Set the initial excitation time in DC excitation control.
Set 1000ms as standard.
When the magnetic pole shift amount measurement value is unsteady, adjust the value in increments of 500ms.
Related parameters: SV061, SV062

---Setting range---

-32768 to 32767 (1/100-fold)
When the DC excitation is running (SV034/bit4=1): 0 to 10000 (ms)

#2264 SV064 DA2MPY D/A output ch2 output scale

Set output scale of the D/A output channel 2 in increment of 1/100.
When "0" is set, the magnification is the same as when "100" is set.

---Setting range---

-32768 to 32767 (1/100-fold)

#2265 SV065 TLC Machine end compensation gain

The shape of the machine end is compensated by compensating the spring effect from the machine end to the motor end.
Set the machine end compensation gain. Measure the error amount by roundness measurement and estimate the setting value by the following formula.

Compensation amount (μm) = Command speed F(mm/min)2 * SV065 / (Radius R(mm) * SV003 * 16,200,000)

Set to "0" when not using.

---Setting range---

-30000 to 30000 (Acceleration ratio 0.1%)

#2266-2272 SV066 - SV072

This parameter is set automatically by the NC system.

(PR) #2273 SV073 FEEDout Specified speed output speed

Set the specified speed.
Also set SV082/bit9,8 to output digital signal.

---Setting range---

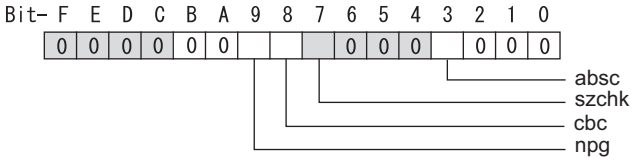
0 to 32767 (mm/min)
However, when SV033/bitD=1, the setting range is from 0 to 32767 (100mm/min).
(Only for MDS-E/EH and MDS-EM/EMH)

#2274-2280 SV074 - SV080

This parameter is set automatically by the NC system.

(PR)	#2281	SV081 SPEC2	Servo specification 2

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F-A:

Not used. Set to "0".

bit 9: npg Earth fault detection

0: Disable 1: Enable (standard)

Set "0" and it is constantly "Enable" for MDS-EJ/EJH Series.

bit 8: cbc motor brake axis selection control

0: Standard 1: Motor brake axis selection control enabled

(Only for MDS-EJ-V2)

bit 7: szchk Distance-coded reference scale reference mark

0: Check at 4 points (standard) 1: Check at 3 points

bit 6-4:

Not used. Set to "0".

bit 3: absc Distance-coded reference scale

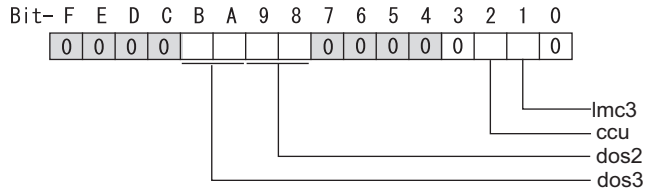
0: Disable 1: Enable

bit 2-0:

Not used. Set to "0".

#2282	SV082 SSF5	Servo function 5

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F-C:

Not used. Set to "0".

bit B-A: dos3 Digital signal output 3 selection

bitB,A=
00: Disable
01: Setting prohibited
10: Contactor control signal output (For MDS-EJ/EJH)
11: Setting prohibited

bit 9-8: dos2 Digital signal output 2 selection

bit9,8=
00: Disable
01: Specified speed output
10: Setting prohibited
11: Setting prohibited

bit 7-3:

Not used. Set to "0".

bit 2: ccu Lost motion overshoot compensation compensation amount setting increment

0: Stall current % 1: Stall current 0.01%

bit 1: lmc3 Lost motion compensation type 3

Set this when protrusion at a quadrant change is too big.

0: Stop 1: Start

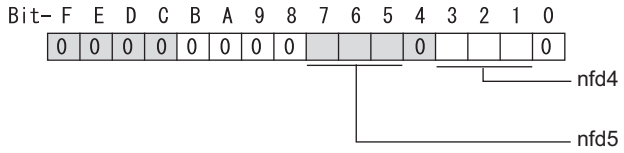
Related parameters: SV016, SV041, SV085, SV086

bit 0:

Not used. Set to "0".

#2283	SV083 SSF6	Servo function 6

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F-8 :

Not used. Set to "0".

bit 7-5 : nfd5 Depth of Notch filter 5

Set the depth of Notch filter 5 (SV088).
bit7,6,5=
000: -∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

bit 4 :

Not used. Set to "0".

bit 3-1 : nfd4 Depth of Notch filter 4

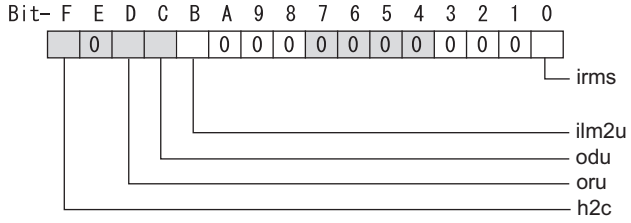
Set the depth of Notch filter 4 (SV087).
bit3,2,1=
000: -∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

bit 0 :

Not used. Set to "0".

#2284	SV084 SSF7	Servo function 7

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F : h2c HAS control cancel amount

0: 1/4 (standard) 1: 1/2

Related parameters: SV034/bit1

bit E :

Not used. Set to "0".

bit D : oru Overrun detection width unit

0: mm (normal setting) 1: μm

bit C : odu Excessive error detection width unit

0: mm (normal setting) 1: μm

bit B : ilm2u Current limit value (SV014) in special control setting unit

0: Stall current % (normal setting) 1: Stall current 0.01%

bit A-1 :

Not used. Set to "0".

bit 0 : irms Motor current display

0: Motor q axis current display (normal) 1: Motor effective current display

#2285	SV085 LMCk	Lost motion compensation 3 spring constant

Set the machine system's spring constant when selecting lost motion compensation type 3.
When not using, set to "0".

Related parameters: SV016, SV041, SV082/bit2,1, SV086

---Setting range---

0 to 32767 (0.01%/μm)

#2286	SV086 LMCc	Lost motion compensation 3 viscous coefficient

Set the machine system's viscous coefficient when selecting lost motion compensation type 3.
When not using, set to "0".

Related parameters: SV016, SV041, SV082/bit2,1, SV086

---Setting range---

0 to 32767 (0.01%•s/mm)

#2287	SV087 FHz4	Notch filter frequency 4

Set the vibration frequency to suppress when machine vibration occurs.
(Normally, do not set 80 or less.)
Set to "0" when not using.

Related parameters: SV083/bit3-1, SV115

---Setting range---

0 to 5000 (Hz)

#2288	SV088 FHz5	Notch filter frequency 5

Set the vibration frequency to suppress when machine vibration occurs.
(Normally, do not set 80 or less.)
Set to "0" when not using.

Related parameters: SV083/bit7-5, SV115

---Setting range---

0 to 5000 (Hz)

#2289	SV089

Not used. Set to "0".

#2290	SV090

Not used. Set to "0".

#2291	SV091 LMC4G	Lost motion compensation 4 gain

Use this with LMC compensation type 3. As the delay in path tracking is monitored and compensated, the delay in path tracking will be minimized even if machine friction amount changes by aging. Use the lost motion compensation amount (SV016) * 5 (10% of the dynamic friction torque) as the target. The higher the setting value is, the more accurate the quadrant change be; however, the more likely vibrations occur.

---Setting range---

0 to 20000 (Stall current 0.01%)

#2292	SV092

Not used. Set to "0".

#2293	SV093

Not used. Set to "0".

#2294	SV094 MPV	Magnetic pole position error detection speed

The magnetic pole position detection function monitors the command speed and motor speed at the position command stop and detects the magnetic pole position error alarm (3E) if any. Set the error detection level for the command speed and motor speed at the position command stop.
Be aware when setting the parameter as the setting units for general motors and linear motors are different.

<<For general motor>>
When the command speed error detection level is set to "0", the magnetic pole position error (3E) is detected at 10r/min.
Set "10" as standard.
This detects the magnetic pole position error (3E) when the motor rotation speed is 100r/min and more.

<<For linear motor>>
When the command motor speed level is set to "0", the magnetic pole position error (3E) is detected at 1mm/s.
Set "10" as standard.
This detects the magnetic pole position error (3E) when the motor speed is 10mm/s and more.

---Setting range---

0 to 31999

<<For general motor>>
Ten-thousands digit, Thousands digit ---------- Command speed error detection level (10r/min)
Hundreds digit, Tens digit, Ones digit ---------- Motor speed error detection level (10r/min)

<<For linear motor>>
Ten-thousands digit, Thousands digit ---------- Command speed error detection speed level (1mm/s)
Hundreds digit, Tens digit, Ones digit ---------- Motor speed error detection level (1mm/s)

#2295 SV095 ZUPD Vertical axis pull up distance

Set this parameter to adjust the pull up distance when the vertical axis pull up function is enabled. When the pull up function is enabled and this parameter is set to "0", for a rotary motor, 8/1000 of a rotation at the motor end is internally set as the pull up distance, and for a linear motor, 80[μm] is set.

Related parameters:
SV032 : The pull up direction is determined. When "0" is set, the alarm occurs.
SV033/bitE : Start-up of the pull up function
SV048 : Set the drop prevention time. When "0" is set, the alarm occurs.

---Setting range---

0 to 2000 (μm)

#2296-2305 SV096 - SV105

Not used. Set to "0".

#2306 SV106 PGM OMR-FF scale model gain

Set the scale model gain (position response) in OMR-FF control.
Set the same value as SV003(PGN1).
Increase the setting value to perform a high-speed machining such as a fine arc or to improve the path error.Lower the value when vibration occurs during acceleration/deceleration.
Set to "0" when not using OMR-FF control.

---Setting range---

0 to 300 (rad/s)

#2307-2311 SV107 - SV111

Not used. Set to "0".

#2312 SV112 IFF OMR-FF current feed forward gain

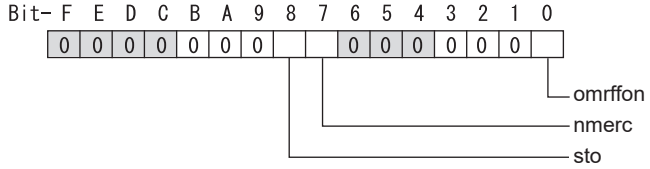
Set the current feed forward rate in OMR-FF control.
The standard setting is "10000".
Setting value of "0" is equal to "10000(100%)" setting.
Set to "0" when not using OMR-FF control.

---Setting range---

0 to 32767 (0.01%)

#2313 SV113 SSF8 Servo function 8

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F-9 :

Not used. Set to "0".

bit 8 : sto Dedicated wiring STO function

Set this parameter to use dedicated wiring STO function.
0: Dedicated wiring STO function unused 1: Dedicated wiring STO function used
(Only for MDS-E/EH and MDS-EJ/EJH)

bit 7 : nmerc Machine error compensation amount

(Note) Do not turn ON the NC power supply with the setting as disable (set to "1"). The initial parameter error alarm is detected.

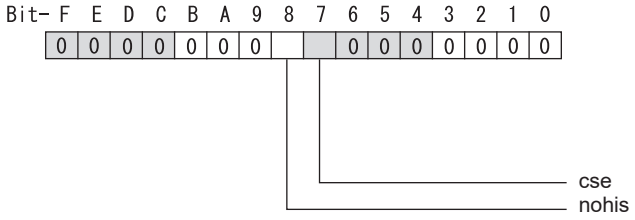
0: Enable (Normal setting) 1: Disable

bit 0 : omrffon OMR-FF control enabled

0: Disable 1: Enable

#2314	SV114 SSF9	Servo function 9

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F-9 :

Set to "8" when HG46, 56, 96 motors are driven by MDS-E-V3.
Set to "0" for other cases.

bit 8 : nohis History of communication error alarm between NC and DRV (34, 36, 38, 39)

0: Enable 1: Disable

bit 7 : cse Command speed monitoring function

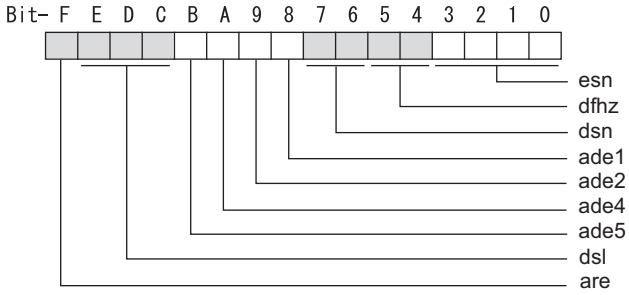
0: Disable 1: Enable (Normal setting)

bit 6-0 :

Not used. Set to "0".

#2315	SV115 SSF10	Servo function 10

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F : are Notch filter5 all frequencies adapted

When enabled, Notch filter5 all frequencies adaptive range is not limited regardless of SV115/bit4,5 setting.
0: Disable 1: Enable

bit E-C: dsl Notch filter frequency display

Switch the "AFLT frequency" display on drive monitor screen to check every notch filter frequency.
When the selected notch filter is not used, "0" is displayed.

bitE,D,C=
000 : Estimated resonance frequency (Normal display)
001 : Notch filter 1 frequency
010 : Notch filter 2 frequency
011 : Notch filter 3 frequency (always displays 1125Hz)
100 : Notch filter 4 frequency
101 : Notch filter 5 frequency
Other settings: setting prohibited

bit B : ade5 Notch filter 5 / Adaptive follow-up function

0: Disable 1: Enable

bit A : ade4 Notch filter 4 / Adaptive follow-up function

0: Disable 1: Enable

bit 9 : ade2 Notch filter 2 / Adaptive follow-up function

0: Disable 1: Enable

bit 8 : ade1 Notch filter 1 / Adaptive follow-up function

0: Disable 1: Enable

bit 7-6 : dsn Estimated resonance frequency display holding time

Set the estimated resonance frequency display holding time to the "AFLT frequency" display on drive monitor screen.

bit7,6=
00: 4 [s]
01: 8 [s]
10: 12 [s]
11: 16 [s]

bit 5-4 : dfhz Notch filter frequency range

Set the adaptive range of the notch filter frequency. When the adaptive follow-up function is enabled and if the estimated resonance frequency exists in the set range, the notch filter will be adapted. Normally set this parameter to "00".

bit5,4=
00: -10 to 10 [%]
01: -20 to 20 [%]
10: -30 to 30 [%]
11: -40 to 40 [%]

bit 3-0 : esn Sensitivity of estimated resonance frequency

Set the sensitivity of the estimated resonance frequency. When the notch filter adaptive follow-up function is enabled, smaller setting value enables to detect smaller vibration component, however, adaptive movement will be repeated frequently. Normally set this parameter to "0".

0 : Normal setting (same sensitivity as A) 1 : Sensitivity high to F : Sensitivity low

	#2316	SV116 SSF11	Servo function 11

bit1: fctcfw Full-closed torsion compensation function forward direction compensation enabled

Compensate the torsion amount in the forward direction with the full-closed torsion compensation function. When compensating the torsion amount in the reverse direction only, set to "0".

0: Stop 1: Start

(PR)	#2317	SV117 RNG1ex	Expansion sub side encoder resolution

For high-accuracy binary resolution encoder, set the number of pulses to four bite data of SV117 (high-order) and SV019 (low-order) by pulse (p).
When SV117=0, the setting unit of SV019 is (kp).
Refer to SV019 for details.

Related parameters: SV019, SV020, SV118

---Setting range---

-1 to 32767

(PR)	#2318	SV118 RNG2ex	Expansion main side encoder resolution

When using high-accuracy binary resolution encoder, set the number of pulses to four bite data of SV118 (high-order) and SV020 (low-order) by pulse (p).
When SV118=0, the setting unit of SV020 is (kp).
Refer to SV020 for details.

Related parameters: SV019, SV020, SV117

---Setting range---

-1 to 32767

	#2319-2328	SV119 - SV128

Not used. Set to "0".

	#2329	SV129 Kwf	Synchronous control feed forward filter frequency

Set the acceleration rate feed forward filter frequency in high-speed synchronous tapping control. The standard setting is "600".

Related parameters: SV244

---Setting range---

0 to 32767 (rad/s)

(PR)	#2330	SV130 RPITS	Base reference mark interval

Set the base reference mark intervals of distance-coded reference scale. When the distance-coded reference scale is not used, set to "0".
The interval of basic reference mark (SV130) and auxiliary interval (SV131) must be in the specified relationship. Other settings cause the initial parameter error (alarm 37).
Following is the specified relationship.

The quotient of (SV130×1000) / SV131 must be 4 or more and leaves no remainder.

Related parameters: SV081/bit7,3, SV131, SV134 to SV137

---Setting range---

0 to 32767 (mm)

(PR)	#2331	SV131 DPITS	Auxiliary reference mark interval

Set the auxiliary interval of reference mark in the distance-coded reference scale. When the distance-coded reference scale is not used, set to "0".
The interval of basic reference mark (SV130) and auxiliary interval (SV131) must be in the specified relationship. Other settings cause the initial parameter error (alarm 37).
Following is the specified relationship.

The quotient of (SV130×1000) / SV131 must be 4 or more and leaves no remainder.

Related parameters: SV081/bit7,3, SV130, SV134 to SV137

---Setting range---

0 to 32767 (μm)

#2332	SV132

Not used. Set to "0".

#2333	SV133

Not used. Set to "0".

#2334	SV134 RRn0	Distance-coded reference check / revolution counter

Set this parameter to operate distance-coded reference check when using distance-coded reference scale. During the distance-coded reference check initial setup (SV137:RAER=-1), set the following items on the NC drive monitor screen after the distance-coded reference check initial setup warning A3 turns OFF.

SV134=Rn, SV135=Pn, SV136=MPOS

When reference point is set, the warning A3 turns OFF.
To enable the distance-coded reference check function, SV081/bit3=1setting and a battery option are needed.

Related parameters: SV081/bit3,7, SV130, SV131, SV134 to SV137

---Setting range---

-32768 to 32767

#2335	SV135 RPn0H	Distance-coded reference check /position within one rotation High

Set this parameter to operate distance-coded reference check when using distance-coded reference scale. During the distance-coded reference check initial setup (SV137:RAER=-1), set the following items on the NC drive monitor screen after the distance-coded reference check initial setup warning A3 turns OFF.

SV134=Rn, SV135=Pn, SV136=MPOS

When reference point is set, the warning A3 turns OFF.
To enable the distance-coded reference check function, SV081/bit3=1setting and a battery option are needed.

Related parameters: SV081/bit3,7, SV130, SV131, SV134 to SV137

---Setting range---

-32768 to 32767

#2336	SV136 RPn0L	Distance-coded reference check / position within one rotation Low

Set this parameter to operate distance-coded reference check when using distance-coded reference scale. During the distance-coded reference check initial setup (SV137:RAER=-1), set the following items on the NC drive monitor screen after the distance-coded reference check initial setup warning A3 turns OFF.

SV134=Rn, SV135=Pn, SV136=MPOS

When reference point is set, the warning A3 turns OFF.
To enable the distance-coded reference check function, SV081/bit3=1setting and a battery option are needed.

Related parameters: SV081/bit3,7, SV130, SV131, SV134 to SV137

---Setting range---

-32768 to 32767

#2337 SV137 RAER Distance-coded reference check allowable width

For the distance-coded reference check function when using distance-coded reference scale, set the allowable gap from the reference point position data calculated by the main side encoder. When the gap exceeds the allowable range, reference point created by distance-code is judged as wrong and detects alarm 42.
The standard setting value is "basic reference mark interval (SV130) / 4".
SV137=0 setting carries out the same operation as the standard setting value.
SV137=-1 setting enables the distance-coded reference initial set up mode and displays setting values of SV134 to SV136 on NC drive monitor.
To enable the distance-coded reference check function, SV081/bit3=1setting and a battery option are needed.
When SV137=32767, the distance-coded reference check function is disabled.

Related parameters: SV081/bit3,7, SV130, SV131, SV134 to SV136

---Setting range---

-1 to 32767 (mm)

#2338-2397 SV138 - SV197

Not used. Set to "0".

#2398 SV198 NSE No signal 2 special detection width

Set the special detection width for the no signal 2 (alarm 21).
This detects no signal 2 (alarm 21) when machine side feedback is not invoked even if the motor side encoder feedback exceeds this setting in the rectangular wave signal output linear scale.
When "0" is set, the detection will be performed with a 15μm width.

---Setting range---

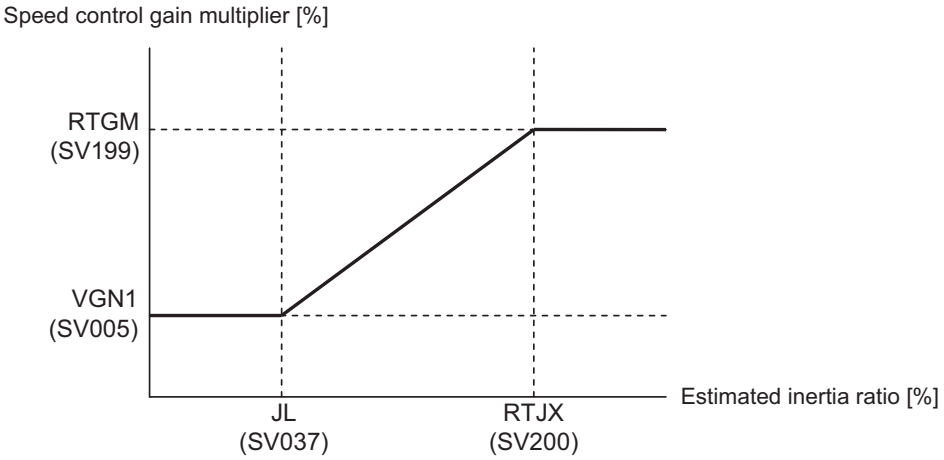
0 to 32767 (μm)

#2399 SV199 RTGM Real-time tuning: maximum adaptive gain multiplier

In case that machine resonance is induced when mounting a workpiece, the speed loop gain is switched automatically in response to inertia by setting the speed loop gain and workpiece inertia multiplier in advance.

The speed loop gain SV199(RTGM) changes in response to the estimated inertia ratio SV200(RTJX) based on the speed loop gain SV005(VGN1) and the inertia multiplier SV037(JL) which were adjusted when no workpiece was mounted.

When SV199 is set to "0", the adaptation of the speed loop gain will be disabled.



Related parameters: SV005, SV037, SV200

---Setting range---

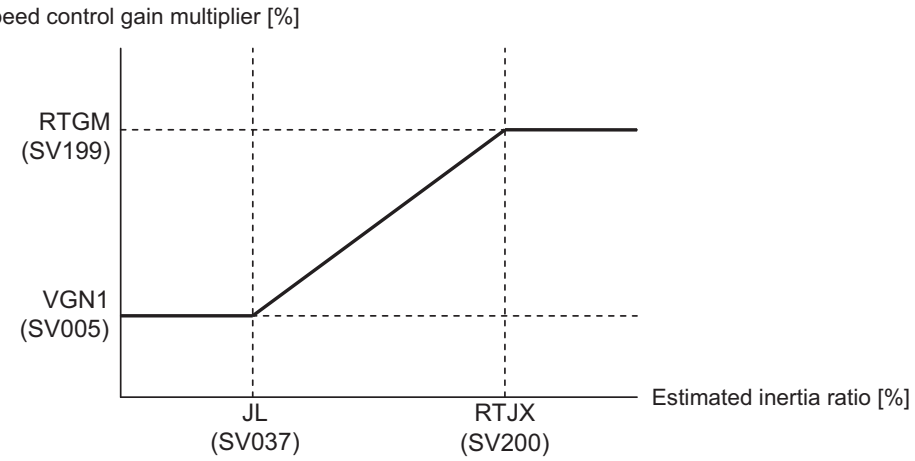
0 to 5000 (%)

#2400	SV200 RTJX	Real-time tuning: maximum adaptive inertia ratio

In case that machine resonance is induced when mounting a workpiece, the speed loop gain is switched automatically in response to inertia by setting the speed loop gain and workpiece inertia multiplier in advance.

The speed loop gain SV199(RTGM) changes in response to the estimated inertia ratio SV200(RTJX) based on the speed loop gain SV005(VGN1) and the inertia multiplier SV037(JL) which were adjusted when no workpiece was mounted.

When SV199 is set to "0", the adaptation of the speed loop gain will be disabled.



Related parameters: SV005, SV037, SV199

---Setting range---

0 to 32767 (%)

#2401-2405	SV201 - SV205	

Not used. Set to "0".

#2406	SV206 FCTC	Full-closed torsion compensation control torsion amount

Set the compensation amount of full-closed torsion compensation function.

Set the torsion amount between the motor-end position and the machine-end position right after the stop as a standard setting value.

When not using, set to "0".

---Setting range---

0 to 32767 (0.01μm)

#2407-2409	SV207 - SV209	

Not used. Set to "0".

#2410	SV210 GAPC	Height control (Analog input conversion factor)

Set the conversion factor to convert analog voltage into position data.

Specify the distance per volt in increments of 0.1 mm.

The sign (+/-) of the analog input conversion factor is used to specify the compensation direction.

Positive value: compensation in + direction

Negative value: compensation in - direction

---Setting range---

-32768 to 32767 (0.1mm/V)

#2411	SV211	

Not used. Set to "0".

#2412	SV212 GAPL	Height control (Compensation limit value)

Set the upper limit value for the compensation amount that is automatically applied by profiling control to the value after approach has completed.

This limitation prevents excessive compensation after completion of approach.

---Setting range---

0 to 32767 (0.1mm)

	#2413	SV213 HITMAG	Height control (Derivative gain scale factor)

Set the following accuracy with height change during profiling control.

Set "100" as the initial value.

---Setting range---

0 to 999 (%)

	#2414	SV214 HITT	Height control (Derivative filter time constant)

Set the time constant for filter cut-off for derivative gain.

When "0" is set, the value "100" applies.

---Setting range---

0 to 20000 (ms)

	#2415	SV215 HITGN	Height control (Integral gain)

Set the following accuracy with height change.

Set "10" as the initial value.

---Setting range---

0 to 300 (rad/s)

	#2416	SV216 SLL	Height control (Speed limit value)

Set the upper speed limit during approach/retraction.

Set the product of "SV018*100" as the initial value.

---Setting range---

0 to 32767 (mm/min)

	#2417	SV217	

Not used. Set to "0".

	#2418	SV218 HITA	Height control (Approach completion width)

Set the in-position width applied to the positioning up to the setpoint height in the approach motion upon activation of height control.

When "0" is set, the value "10" applies.

Approach completion width must be smaller than the setpoint height.

---Setting range---

0 to 10000 (0.1mm)

	#2419-2436	SV219 - SV236	

Not used. Set to "0".

(PR)	#2437	SV237 TCF	Torque command filter

Set the filter for the torque command.

The standard value is "3000" when using HG46, HG56, or HG96.

Resonance frequency may be changed after the settings. Set the speed gain and the filter again by frequency response.

---Setting range---

0 to 5000 (rad/s)

	#2438	SV238 SSCFEED	Safely limited speed

Set the machine's safely limited speed for the SLS (Safely Limited Speed) function.

Set this parameter within the following setting ranges.

For linear axis: 2000mm/min or less

For rotary axis: 18000°/min (50r/min) or less

When not using, set to "0".

---Setting range---

0 to 18000 (mm/min) or (°/min)

However, when SV033/bitD = 1, the setting range is from -32768 to 32767 (100mm/min) or (100°/min).

	#2439	SV239 SSCRPM	Safely limited motor speed

Set the motor's safely limited speed for the SLS (Safely Limited Speed) function.

Set a value to hold the following relationship.

Be aware when setting the parameter as the setting units for general motors and linear motors are different.

<<For general motor>>

SV239 = (SV238/SV018) × (SV002/SV001)

Only when the product is 0, set to "1".

<<For linear motor>>

SV239 = SV238/60

Only when the product is 0, set to "1".

When not using, set to "0".

---Setting range---

For general motor: 0 to 32767 (r/min)

For linear motor: 0 to 32767 (mm/s)

(Note) The value of the safely limited speed and safely limited motor speed must satisfy the above relation. If this relation is not satisfied, the parameter error (37 or E4) will occur. (Error parameter No. is 239.) Checking this relation is executed when the drive unit is turned ON and parameter is changed and speed observation mode (states when a speed observation command is turned ON) is entered.

$$\frac{\text{SV238 :SSCFEED}}{\text{SV018 :PIT}} \times \frac{\text{SV002 :PC2}}{\text{SV001 :PC1}} = \text{SV239 :SSCRPM}$$

Note that "1 (r/min)" is applied when the calculation result is "0 (r/min)"

	#2440-2443	SV240 - SV243	

Not used. Set to "0".

(PR)	#2444	SV244 DUNIT	Communication interpolation unit for communication among drive units

Set the communication interpolation unit among drive units in high-speed synchronous tapping control. When set to "0", it will be regarded as 20 (0.05μm) is set.

Related parameters: SV129

---Setting range---

0 to 2000 (1/μm)

	#2445-2456	SV245 - SV256	

Not used. Set to "0".

2.8 Spindle Specification Parameters

#3001	slimt1	Limit rotation speed (Gear: 00)

Set the spindle rotation speed for maximum motor speed when gear 00 is selected.

Set the spindle rotation speed for the S analog output=10V during analog spindle control.

---Setting range---

0 to 999999 (r/min)

#3002	slimt2	Limit rotation speed (Gear: 01)

Set the spindle rotation speed for maximum motor speed when gear 01 is selected.

Set the spindle rotation speed for the S analog output=10V during analog spindle control.

---Setting range---

0 to 999999 (r/min)

#3003	slimt3	Limit rotation speed (Gear: 10)

Set the spindle rotation speed for maximum motor speed when gear 10 is selected.

Set the spindle rotation speed for the S analog output=10V during analog spindle control.

---Setting range---

0 to 999999 (r/min)

#3004	slimt4	Limit rotation speed (Gear: 11)

Set the spindle rotation speed for maximum motor speed when gear 11 is selected.

Set the spindle rotation speed for the S analog output=10V during analog spindle control.

---Setting range---

0 to 999999 (r/min)

#3005	smax 1	Maximum rotation speed (Gear: 00)

Set the maximum spindle rotation speed which is actually commanded when gear 00 is selected.

Set this as smax1(#3005)<= slimt1(#3001).

By comparing the S command value and the values of gear 1 - 4, a spindle gear shift command will be output automatically.

---Setting range---

0 to 999999 (r/min)

#3006	smax 2	Maximum rotation speed (Gear: 01)

Set the maximum spindle rotation speed which is actually commanded when gear 01 is selected.

Set this as smax2(#3006)<= slimt2 (#3002).

By comparing the S command value and the values of gear 1 - 4, a spindle gear shift command will be output automatically.

---Setting range---

0 to 999999 (r/min)

#3007	smax 3	Maximum rotation speed (Gear: 10)

Set the maximum spindle rotation speed which is actually commanded when gear 10 is selected.

Set this as smax3(#3007)<= slimt3 (#3003).

By comparing the S command value and the values of gear 1 - 4, a spindle gear shift command will be output automatically.

---Setting range---

0 to 999999 (r/min)

#3008	smax 4	Maximum rotation speed (Gear: 11)

Set the maximum spindle rotation speed which is actually commanded when gear 11 is selected.

Set this as smax4(#3008)<= slimt4 (#3004).

By comparing the S command value and the values of gear 1 - 4, a spindle gear shift command will be output automatically.

---Setting range---

0 to 999999 (r/min)

#3009	ssift 1	Shift rotation speed (Gear: 00)

Set the spindle speed for gear shifting with gear 00.

(Note) Setting too large value may cause a gear nick when changing gears.

---Setting range---

0 to 32767 (r/min)

#3010	ssift 2	Shift rotation speed (Gear: 01)

Set the spindle speed for gear shifting with gear 01.

(Note) Setting too large value may cause a gear nick when changing gears.

---Setting range---

0 to 32767 (r/min)

#3011	ssift 3	Shift rotation speed (Gear: 10)

Set the spindle speed for gear shifting with gear 10.

(Note) Setting too large value may cause a gear nick when changing gears.

---Setting range---

0 to 32767 (r/min)

#3012	ssift 4	Shift rotation speed (Gear: 11)

Set the spindle speed for gear shifting with gear 11.

(Note) Setting too large value may cause a gear nick when changing gears.

---Setting range---

0 to 32767 (r/min)

#3013	stap 1	Synchronous tapping 1st step rotation speed (Gear: 00)

Set the speed which switches from 1st step to 2nd step in synchronous tapping multi-step acceleration/deceleration control when gear 00 is selected.
The inclination of linear acceleration/deceleration control for 1st step is determined by the ratio of "stap1"(#3013) to "stapt1"(#3017).
When the inclination is not set after 2nd step or it is higher than that of 1st step, the acceleration/deceleration control is executed with the same inclination as the 1st step for the rotation speed of "stap1" or higher.

---Setting range---

0 to 99999 (r/min)

#3014	stap 2	Synchronous tapping 1st step rotation speed (Gear: 01)

Set the speed which switches from 1st step to 2nd step in synchronous tapping multi-step acceleration/deceleration control when gear 01 is selected.
The inclination of linear acceleration/deceleration control for 1st step is determined by the ratio of "stap2" (#3014) to "stapt2" (#3018).
When the inclination is not set after 2nd step or it is higher than that of 1st step, the acceleration/deceleration control is executed with the same inclination as the 1st step for the rotation speed of "stap2" or higher.

---Setting range---

0 to 99999 (r/min)

#3015	stap 3	Synchronous tapping 1st step rotation speed (Gear: 10)

Set the speed which switches from 1st step to 2nd step in synchronous tapping multi-step acceleration/deceleration control when gear 10 is selected.
The inclination of linear acceleration/deceleration control for 1st step is determined by the ratio of "stap3" (#3015) to "stapt3" (#3019).
When the inclination is not set after 2nd step or it is higher than that of 1st step, the acceleration/deceleration control is executed with the same inclination as the 1st step for the rotation speed of "stap3" or higher.

---Setting range---

0 to 99999 (r/min)

#3016	stap 4	Synchronous tapping 1st step rotation speed (Gear: 11)

Set the speed which switches from 1st step to 2nd step in synchronous tapping multi-step acceleration/deceleration control when gear 11 is selected.
The inclination of linear acceleration/deceleration control for 1st step is determined by the ratio of "stap4" (#3016) to "stapt4" (#3020).
When the inclination is not set after 2nd step or it is higher than that of 1st step, the acceleration/deceleration control is executed with the same inclination as the 1st step for the rotation speed of "stap4" or higher.

---Setting range---

0 to 99999 (r/min)

#3017	stapt 1	Synchronous tapping 1st step acceleration/deceleration time constant (Gear: 00)

Set the time constant for synchronous tapping 1st step linear acceleration/deceleration control when gear 00 is selected. (linear acceleration/deceleration pattern)

---Setting range---

1 to 5000 (ms)

#3018	stapt 2	Synchronous tapping 1st step acceleration/deceleration time constant (Gear: 01)

Set the time constant for synchronous tapping 1st step linear acceleration/deceleration control when gear 01 is selected. (linear acceleration/deceleration pattern)

---Setting range---

1 to 5000 (ms)

#3019	stapt 3	Synchronous tapping 1st step acceleration/deceleration time constant (Gear: 10)

Set the time constant for synchronous tapping 1st step linear acceleration/deceleration control when gear 10 is selected. (linear acceleration/deceleration pattern)

---Setting range---

1 to 5000 (ms)

#3020	stapt 4	Synchronous tapping 1st step acceleration/deceleration time constant (Gear: 11)

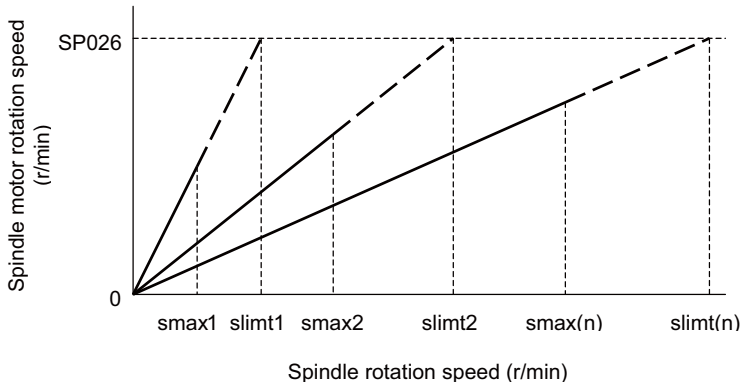
Set the time constant for synchronous tapping 1st step linear acceleration/deceleration control when gear 11 is selected. (linear acceleration/deceleration pattern)

---Setting range---

1 to 5000 (ms)

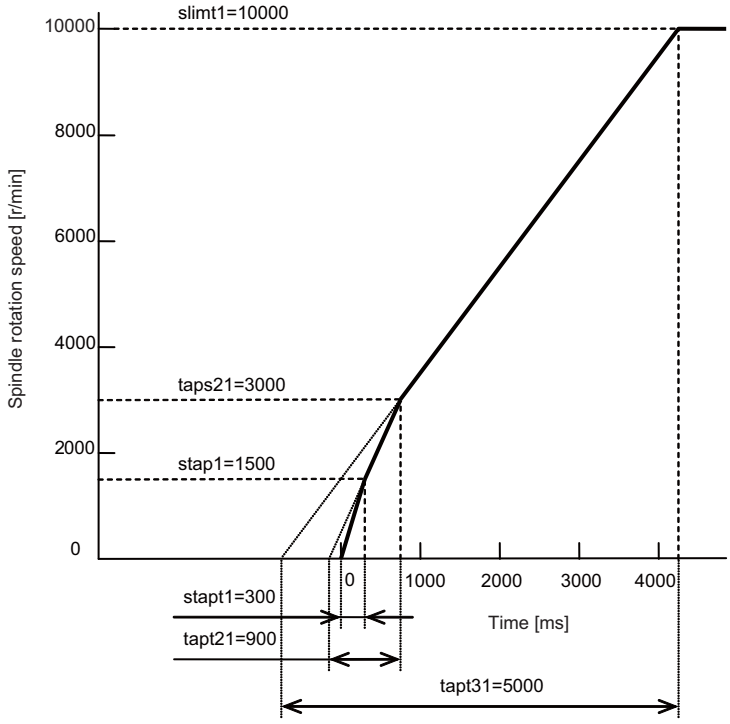
<Relation of spindle limit rotation speed and spindle maximum rotation speed>

The spindle rotation speed which can be attained at the spindle motor's maximum rotation speed is set for the limit rotation speed (slimt). This value is obtained by multiplying the gear ratio on the spindle motor maximum rotation speed (SP026). Set the maximum rotation speed (smax) when the rotation speed is to be limited according to the machine specifications, such as the spindle gear specifications. Up to four value can be set for gear changeover.



<Synchronous tapping multi-step acceleration/deceleration control parameter>

The acceleration/deceleration control can be set up to three steps in synchronous tapping control to carry out an optimal acceleration/deceleration control in accordance with the spindle motor characteristics whose output torque steps down when exceeding the base rotation speed.
Set the inclination for 2nd step or subsequent steps when the maximum rotation speed exceeds the base rotation speed during synchronous tapping control.
When the inclination is not set after 2nd step or it is higher than that of 1st step, the acceleration/deceleration control is executed with the same inclination as the 1st step for all the rotation speed.

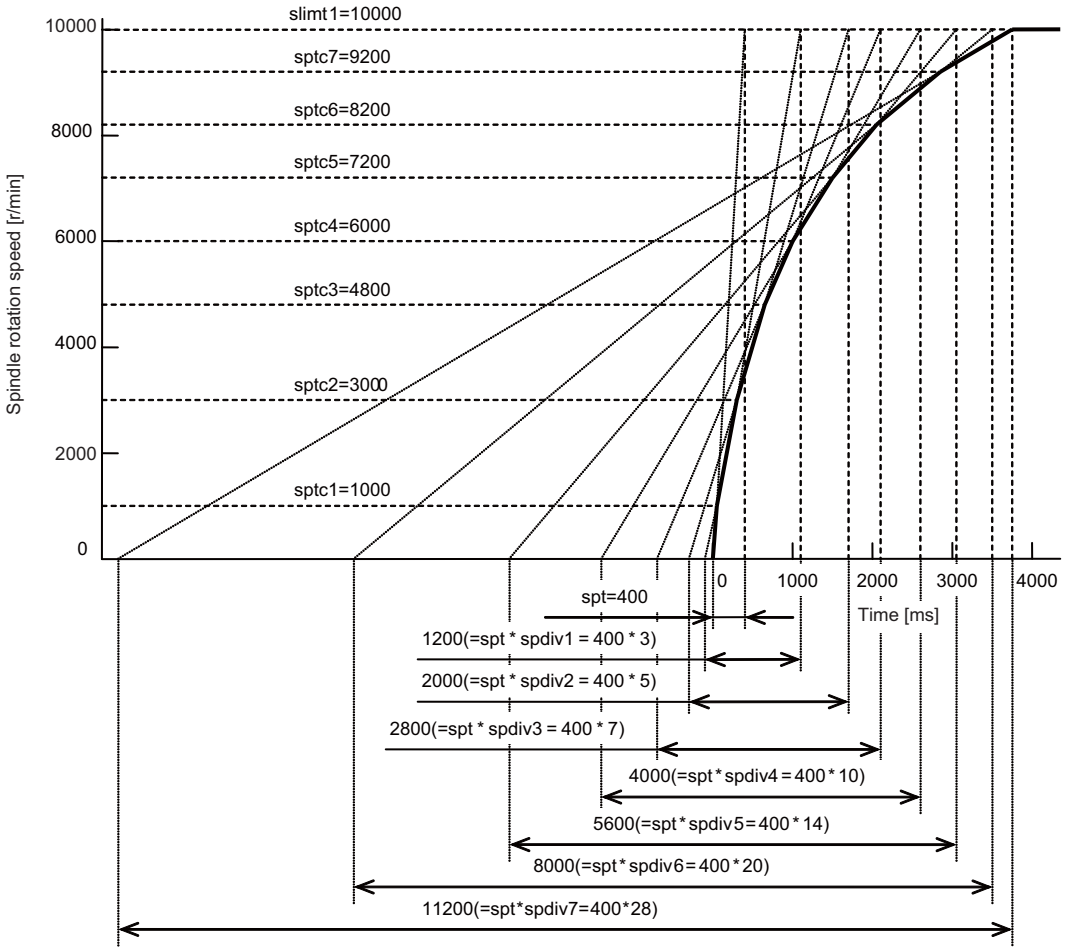


<Spindle synchronization multi-step acceleration/deceleration control parameter>

The acceleration/deceleration control can be set up to eight steps in spindle synchronization control to carry out an optimal acceleration/deceleration control in accordance with the spindle motor characteristics whose output torque steps down when exceeding the base rotation speed and further attenuate in output stepdown zone.

For 2nd step or subsequent steps, the specification allows to set the time constant magnification and changeover rotation speed based on the acceleration/deceleration setting of the 1st step.

Set the value of limit rotation speed or higher as the changeover rotation speed for the step not to be shifted when not carrying out a step shift.



	#3021		

Not used. Set to "0".

	#3022	sgear	Encoder gear ratio

Set the deceleration rate of the encoder to the spindle when inputting ABZ pulse output encoder feedback to NC during analog spindle control.

0: 1/1

1: 1/2

2: 1/4

3: 1/8

---Setting range---

0 to 3

	#3023	smini	Minimum rotation speed

Set the minimum spindle speed.

If an S command below this setting is issued, the spindle will rotate at the minimum speed set by this parameter.

---Setting range---

0 to 32767 (r/min)

(PR)	#3024	sout	Spindle connection interface

Select the connection interface with the spindle drive unit.

0: No unit to connect

1: Digital optical (Mitsubishi spindle drive unit)

2-5: S-analog (Analog I/F spindle drive unit)

10: Pulse train (Analog I/F spindle drive unit)

(PR)	#3025	enc-on	Spindle encoder

Set the connection specifications of a spindle's encoder.

0: Without encoder feedback when using analog spindle and connecting to NC

1: With encoder feedback when using analog spindle and connecting to NC

2: Mitsubishi spindle drive unit

	#3026	cs_ori	Selection of winding in orientation mode

Select the coil control in orientation mode for the spindle motor which performs coil changeover.

0: Perform coil changeover based on the command from NC. (depending on the setting of parameter #1239/bit0)

1: Use the coil L

	#3027	cs_syn	Selection of winding in spindle synchronization control mode

Select the coil control in spindle synchronization control mode for the spindle motor which performs coil changeover.

0: Perform coil changeover based on the command from NC. (depending on the setting of parameter #1239/bit0)

1: Use the coil H

	#3028	sprcmm	Tap cycle M command selection

Set the M codes for the spindle forward run/reverse run commands during tapping cycle.

High-order 3 digits: Set the M code for spindle forward run command.

Low-order 3 digits: Set the M code for spindle reverse run command.

When "0" is set, it is handled assuming that "3004" is set (the M code for spindle forward run command is "3" and the M code for spindle reverse run command is "4").

---Setting range---

0 to 999999

	#3029	tapsel	Asynchronous tap gear selection

Select the speed which is compared with S command at gear selection when using asynchronous tapping control with the spindle which performs gear changeover.

0: Synchronous tapping 1st step rotation speed (stap)--- Multi-step acceleration/deceleration is not used.

1: Maximum speed (smax)--- Multi-step acceleration/deceleration is used.

This parameter is enabled only when "#1272 ext08/bit1 is 1".

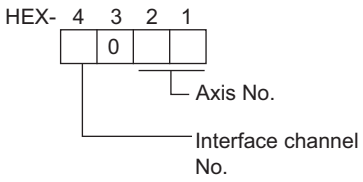
	#3030

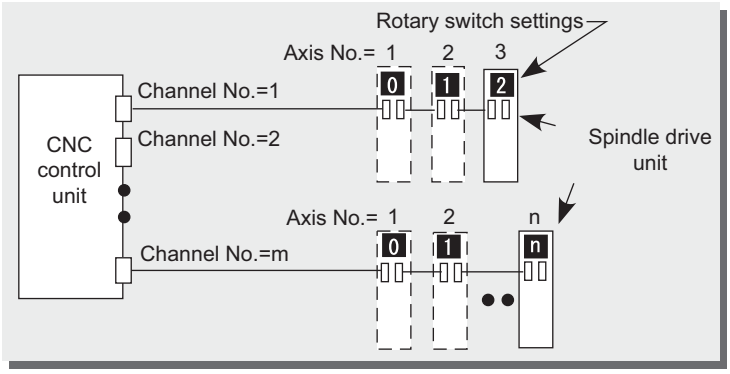
Not used. Set to "0".

(PR)	#3031	smcp_no	Drive unit I/F channel No. (spindle)

Set the interface channel No. of CNC control unit to which the spindle is connected and the axis No. within each channel.

Set this parameter in 4-digit (hexadecimal) format.





HEX-4: Drive unit interface channel No.

HEX-3: Not used. Set to "0".

HEX-2, 1: Axis No.

For an analog spindle, set to "0000".

---Setting range---

0000, 1001 to 1020, 2001 to 2020

	#3032

Not used. Set to "0".

(PR)	#3035	spunit	Output unit

Select the data unit for communication with the spindle drive unit.

This selection is applied to the data communicated between the NC and spindle drive unit as well as the spindle movement data. Although the standard setting is B (0.001deg), set the same value as "#1004 ctrl_unit" when using Spindle/C axis control.

B: 0.001deg (1μm)

C: 0.0001deg (0.1μm)

D: 0.00001deg (10nm)

E: 0.000001deg (1nm)

	#3037	taps21	Synchronous tapping 2nd step rotation speed (Gear: 00)

Set the speed which switches from 2nd step to 3rd step in synchronous tapping multi-step acceleration/deceleration control when gear 00 is selected.
The inclination of linear acceleration/deceleration control for 2nd step is determined by the ratio of "taps21" (#3037) to "tapt21" (#3041).
When the inclination is not set for 3rd step or it is higher than that of 2nd step, the acceleration/deceleration control is executed with the same inclination as the 2nd step for the rotation speed of "taps21" or higher.

---Setting range---

0 to 99999 (r/min)

#3038	taps22	Synchronous tapping 2nd step rotation speed (Gear: 01)

Set the speed which switches from 2nd step to 3rd step in synchronous tapping multi-step acceleration/deceleration control when gear 01 is selected.
The inclination of linear acceleration/deceleration control for 2nd step is determined by the ratio of "taps22" (#3038) to "tapt22" (#3042).
When the inclination is not set for 3rd step or it is higher than that of 2nd step, the acceleration/deceleration control is executed with the same inclination as the 2nd step for the rotation speed of "taps22" or higher.

---Setting range---

0 to 99999 (r/min)

#3039	taps23	Synchronous tapping 2nd step rotation speed (Gear: 10)

Set the speed which switches from 2nd step to 3rd step in synchronous tapping multi-step acceleration/deceleration control when gear 10 is selected.
The inclination of linear acceleration/deceleration control for 2nd step is determined by the ratio of "taps23" (#3039) to "tapt23" (#3043).
When the inclination is not set for 3rd step or it is higher than that of 2nd step, the acceleration/deceleration control is executed with the same inclination as the 2nd step for the rotation speed of "taps23" or higher.

---Setting range---

0 to 99999 (r/min)

#3040	taps24	Synchronous tapping 2nd step rotation speed (Gear: 11)

Set the speed which switches from 2nd step to 3rd step in synchronous tapping multi-step acceleration/deceleration control when gear 11 is selected.
The inclination of linear acceleration/deceleration control for 2nd step is determined by the ratio of "taps24" (#3040) to "tapt24" (#3044).
When the inclination is not set for 3rd step or it is higher than that of 2nd step, the acceleration/deceleration control is executed with the same inclination as the 2nd step for the rotation speed of "taps24" or higher.

---Setting range---

0 to 99999 (r/min)

#3041	tapt21	Synchronous tapping 2nd step acceleration/deceleration time constant (Gear: 00)

Set the time constant for synchronous tapping 2nd step linear acceleration/deceleration control when gear 00 is selected.

---Setting range---

1 to 5000 (ms)

#3042	tapt22	Synchronous tapping 2nd step acceleration/deceleration time constant (Gear: 01)

Set the time constant for synchronous tapping 2nd step linear acceleration/deceleration control when gear 01 is selected.

---Setting range---

1 to 5000 (ms)

#3043	tapt23	Synchronous tapping 2nd step acceleration/deceleration time constant (Gear: 10)

Set the time constant for synchronous tapping 2nd step linear acceleration/deceleration control when gear 10 is selected.

---Setting range---

1 to 5000 (ms)

#3044	tapt24	Synchronous tapping 2nd step acceleration/deceleration time constant (Gear: 11)

Set the time constant for synchronous tapping 2nd step linear acceleration/deceleration control when gear 11 is selected.

---Setting range---

1 to 5000 (ms)

#3045	tapt31	Synchronous tapping 3rd step acceleration/deceleration time constant (Gear: 00)

Set the time constant for synchronous tapping 3rd step linear acceleration/deceleration control when gear 00 is selected.

The inclination of linear acceleration/deceleration control for 3rd step is determined by the ratio of slimt1(#3001) to tapt31(#3045).

---Setting range---

1 to 5000 (ms)

#3046	tapt32	Synchronous tapping 3rd step acceleration/deceleration time constant (Gear: 01)

Set the time constant for synchronous tapping 3rd step linear acceleration/deceleration control when gear 01 is selected.

The inclination of linear acceleration/deceleration control for 3rd step is determined by the ratio of slimt2(#3002) to tapt32 (#3046).

---Setting range---

1 to 5000 (ms)

#3047	tapt33	Synchronous tapping 3rd step acceleration/deceleration time constant (Gear: 10)

Set the time constant for synchronous tapping 3rd step linear acceleration/deceleration control when gear 10 is selected.

The inclination of linear acceleration/deceleration control for 3rd step is determined by the ratio of slimt3(#3003) to tapt33(#3047).

---Setting range---

1 to 5000 (ms)

#3048	tapt34	Synchronous tapping 3rd step acceleration/deceleration time constant (Gear: 11)

Set the time constant for synchronous tapping 3rd step linear acceleration/deceleration control when gear 11 is selected.

The inclination of linear acceleration/deceleration control for 3rd step is determined by the ratio of slimt4(#3004) to tapt34(#3048).

---Setting range---

1 to 5000(ms)

#3049	spt	Spindle synchronization acceleration/deceleration time constant

Set the acceleration/deceleration time constant under spindle synchronization control.

The inclination of acceleration/deceleration control is determined by the ratio to limit rotation speed (slimt). Set the same value for the reference axis and synchronized axis.

The time constant for 2nd step or subsequent steps is the magnification setting on the basis of this setting value.

---Setting range---

0 to 9999 (ms)

#3050	sprlv	Spindle synchronization rotation speed attainment level

Set the level of speed difference between the reference and synchronized spindles during spindle synchronization control. Setting of the synchronized spindle side is enabled. When the difference becomes below the setting level, the spindle speed synchronization complete signal will turn ON.

---Setting range---

0 to 4095 (pulse) (1 pulse = 0.088°)

#3051	spplv	Spindle phase synchronization attainment level

Set the level of phase difference between the reference and synchronized spindles during spindle synchronization. Setting of the synchronized spindle side is enabled. When the difference becomes below the setting level, the spindle phase synchronization complete signal will go ON.

---Setting range---

0 to 4095 (pulse) (1 pulse = 0.088°)

#3052	spplr	Spindle synchronization relative polarity

Set the polarity to match the rotation direction between the spindles which perform synchronization control under spindle synchronization control.

0: Positive polarity (Spindle CW rotation at motor CW rotation)

1: Negative polarity (Spindle CCW rotation at motor CW rotation)

---Setting range---

0000/0001 (HEX)

#3053	sppst	Spindle encoder Z -phase position

Set the deviation amount from the spindle's basic point to the spindle encoder's Z phase.

Obtain the deviation amount, considering a clockwise direction as positive when viewed from the spindle's front side.

---Setting range---

0 to 359999 (1/1000°)

#3054	sptc1	Spindle synchronization multi-step acceleration/deceleration changeover speed 1

Set the speed which switches from 1st step to 2nd step in spindle synchronization multi-step acceleration/deceleration control.

Set the same value for the reference axis and synchronized axis.

Set the value of limit rotation speed (slimt) or higher not to carry out a step shift.

---Setting range---

0 to 99999 (r/min)

#3055	sptc2	Spindle synchronization multi-step acceleration/deceleration changeover speed 2

Set the speed which switches from 2nd step to 3rd step in spindle synchronization multi-step acceleration/deceleration control.

Set the same value for the reference axis and synchronized axis.

Set the value of limit rotation speed (slimt) or higher not to carry out a step shift.

---Setting range---

0 to 99999 (r/min)

#3056	sptc3	Spindle synchronization multi-step acceleration/deceleration changeover speed 3

Set the speed which switches from 3rd step to 4th step in spindle synchronization multi-step acceleration/deceleration control.

Set the same value for the reference axis and synchronized axis.

Set the value of limit rotation speed (slimt) or higher not to carry out a step shift.

---Setting range---

0 to 99999 (r/min)

#3057	sptc4	Spindle synchronization multi-step acceleration/deceleration changeover speed 4

Set the speed which switches from 4th step to 5th step in spindle synchronization multi-step acceleration/deceleration control.

Set the same value for the reference axis and synchronized axis.

Set the value of limit rotation speed (slimt) or higher not to carry out a step shift.

---Setting range---

0 to 99999 (r/min)

#3058	sptc5	Spindle synchronization multi-step acceleration/deceleration changeover speed 5

Set the speed which switches from 5th step to 6th step in spindle synchronization multi-step acceleration/deceleration control.

Set the same value for the reference axis and synchronized axis.

Set the value of limit rotation speed (slimt) or higher not to carry out a step shift.

---Setting range---

0 to 99999 (r/min)

#3059	sptc6	Spindle synchronization multi-step acceleration/deceleration changeover speed 6

Set the speed which switches from 6th step to 7th step in spindle synchronization multi-step acceleration/deceleration control.

Set the same value for the reference axis and synchronized axis.

Set the value of limit rotation speed (slimt) or higher not to carry out a step shift.

---Setting range---

0 to 99999 (r/min)

#3060	sptc7	Spindle synchronization multi-step acceleration/deceleration changeover speed 7

Set the speed which switches from 7th step to 8th step in spindle synchronization multi-step acceleration/deceleration control.

Set the same value for the reference axis and synchronized axis.

Set the value of limit rotation speed (slimt) or higher not to carry out a step shift.

---Setting range---

0 to 99999 (r/min)

#3061	spdiv1	Time constant magnification for changeover speed 1

Set the acceleration/deceleration time constant to be used at the speed of changeover speed 1 (sptc1) and higher in spindle synchronization multi-step acceleration/deceleration control. Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---

0 to 127

#3062	spdiv2	Time constant magnification for changeover speed 2

Set the acceleration/deceleration time constant to be used at the speed of changeover speed 2 (sptc2) and higher in spindle synchronization multi-step acceleration/deceleration control. Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---

0 to 127

#3063	spdiv3	Time constant magnification for changeover speed 3

Set the acceleration/deceleration time constant to be used at the speed of changeover speed 3 (sptc3) and higher in spindle synchronization multi-step acceleration/deceleration control. Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---

0 to 127

#3064	spdiv4	Time constant magnification for changeover speed 4

Set the acceleration/deceleration time constant to be used at the speed of changeover speed 4 (sptc4) and higher in spindle synchronization multi-step acceleration/deceleration control. Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---

0 to 127

#3065	spdiv5	Time constant magnification for changeover speed 5

Set the acceleration/deceleration time constant to be used at the speed of changeover speed 5 (sptc5) and higher in spindle synchronization multi-step acceleration/deceleration control. Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---

0 to 127

#3066	spdiv6	Time constant magnification for changeover speed 6

Set the acceleration/deceleration time constant to be used at the speed of changeover speed 6 (sptc6) and higher in spindle synchronization multi-step acceleration/deceleration control. Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---

0 to 127

	#3067	spdiv7	Time constant magnification for changeover speed 7

Set the acceleration/deceleration time constant to be used at the speed of changeover speed 7 (sptc7) and higher in spindle synchronization multi-step acceleration/deceleration control. Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---

0 to 127

	#3068	symtm1	Phase synchronization start confirmation time

Set the time to confirm that synchronization is attained before spindle phase synchronization control is started.

When "0" is set, the time will be 2000ms. When "100" or less is set, the time will be 100ms.

---Setting range---

0 to 9999 (ms)

	#3069	symtm2	Phase synchronization end confirmation time

Set a period of waiting time for spindle phase synchronization control's completion as a time in which the speed stays within the attainment range.

When "0" is set, the time will be 500ms. When "100" or less is set, the time will be 100ms.

---Setting range---

0 to 9999(ms)

	#3070	syprt	Phase synchronization alignment speed

Set the amount of speed fluctuation of synchronized spindle during spindle phase synchronization control. Set this as a proportion to commanded speed.

When "0" is set, the amount will be 5%.

---Setting range---

0 to 100 (%)

(PR)	#3071	SscDrSelSp	Speed monitor Door selection

Select which door group of the speed monitoring a spindle belongs to.

0000: Belong to the door 1 group.

0001: Belong to the door 1 group.

0002: Belong to the door 2 group.

0003: Belong to the door 1 and 2 groups.

(Note) Speed monitoring function is validated when "SP229/bitF=1".

---Setting range---

0000 to 0003 (HEX)

(PR)	#3072	Ssc Svof Filter Sp	Speed monitor Error detection time during servo OFF

Set the error detection time for when an error of command speed monitoring or feedback speed monitoring is detected during servo OFF.

The alarm will occur if actual speed exceeds safe speed or safe rotation speed for a period of time longer than this setting.

When "0" is set, the detection time will be 200 (ms).

(Note) Speed monitoring function is validated when "SP229/bitF=1".

---Setting range---

0 to 9999(ms)

	#3074	GBsp	Guide bushing spindle synchronization control

Set the reference spindle and G/B spindle.

1: Reference spindle

2: Guide bushing spindle

0: Other

(PR)	#3077	Sname	Spindle command name

Specify a spindle name to be used for giving a spindle command.
When spindle command name has been set for all the spindles, the spindle name type is used. If "0" is set to any spindle, the spindle No. type is selected.
(Note) Do not set an identical name to two or more of all the spindles.

---Setting range---

0 to 9

	#3101	sp_t 1	Acceleration/deceleration time constant with S command (Gear: 00)

Set the acceleration/deceleration time constant with S command (speed operation mode) when gear 00 is selected. Set the linear acceleration/deceleration time up to limit rotation speed (slimt1). Set the short time constant that the motor torque at acceleration is always saturated, however, when an abnormal noise or V-belt slip occurs, increase the time constant.

---Setting range---

0 to 30000(ms)

	#3102	sp_t 2	Acceleration/deceleration time constant with S command (Gear: 01)

Set the acceleration/deceleration time constant with S command (speed operation mode) when gear 01 is selected. Set the linear acceleration/deceleration time up to limit rotation speed (slimt2). Set the short time constant that the motor torque at acceleration is always saturated, however, when an abnormal noise or V-belt slip occurs, increase the time constant.

---Setting range---

0 to 30000 (ms)

	#3103	sp_t 3	Acceleration/deceleration time constant with S command (Gear: 10)

Set the acceleration/deceleration time constant with S command (speed operation mode) when gear 10 is selected. Set the linear acceleration/deceleration time up to limit rotation speed (slimt3). Set the short time constant that the motor torque at acceleration is always saturated, however, when an abnormal noise or V-belt slip occurs, increase the time constant.

---Setting range---

0 to 30000 (ms)

	#3104	sp_t 4	Acceleration/deceleration time constant with S command (Gear: 11)

Set the acceleration/deceleration time constant with S command (speed operation mode) when gear 11 is selected. Set the linear acceleration/deceleration time up to limit rotation speed (slimt4). Set the short time constant that the motor torque at acceleration is always saturated, however, when an abnormal noise or V-belt slip occurs, increase the time constant.

---Setting range---

0 to 30000 (ms)

	#3105	sut	Speed reach range

Set the speed deviation rate with respect to the commanded speed, at which the speed reach signal will be output.
It will be 15% when set to "0".
If the speed deviation is smaller than 45r/min, it will be set as 45r/min.

---Setting range---

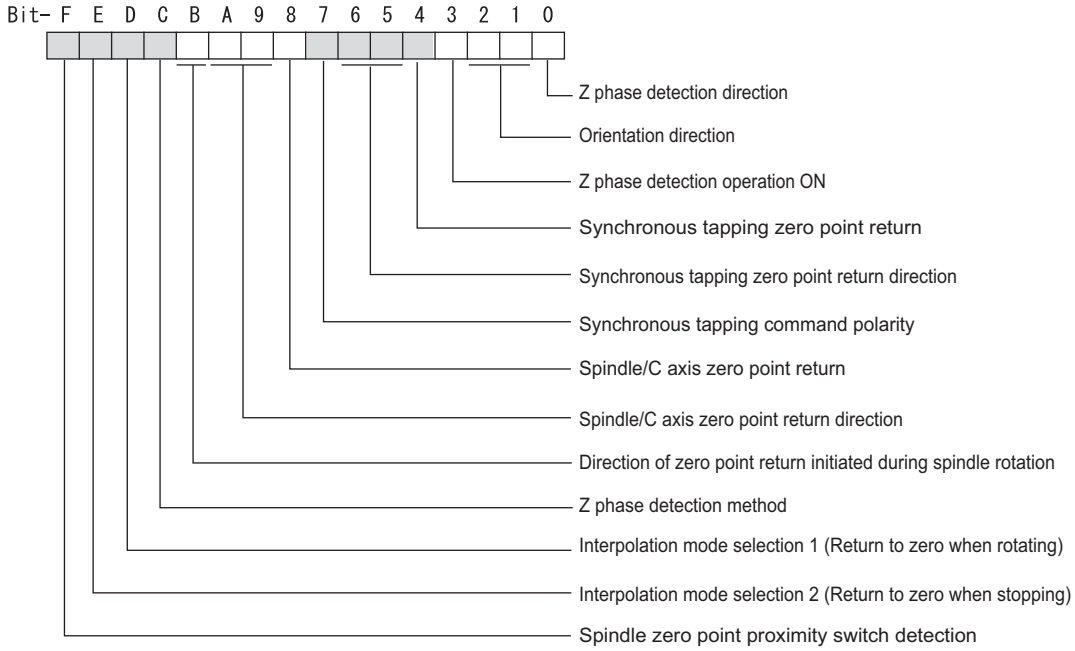
0 to 100 (%)

#3106	zrn_typ	Zero point return specifications

Select the zero point return specification.

Functions are allocated to each bit.

Set this in hexadecimal format.



bitF: Spindle zero point detection with proximity switch

0: Normal

1: Enable spindle zero point detection using proximity switch

bitE: Interpolation mode selection 2 (Return to zero when stopping)

0: Interpolation mode (Follow the setting of "#1256 set28/bit1")

1: Non-interpolation mode (Use "#13001 SP001 PGV")

bitD: Interpolation mode selection 1 (Return to zero when rotating)

0: Non-interpolation mode

1: Interpolation mode

bitC: Z phase detection method

0: Follows Z phase detection direction (bit0).

1: Rotates in the commanded direction at Z phase detection speed to detect Z phase.

(*) To enable Z phase detection operation, set the parameter "#3106 zrn_typ/bit3" (Z phase detection operation ON) to "1".

bitB: Direction of zero point return initiated during spindle rotation

0: Follow the setting of zero point return direction

- Follow the direction setting of orientation (bit2-1)
- Follow the setting of synch tap zero return (bit6-5)
- Follow the setting of spindle C axis zero return (bitA-9)

1: Follow the spindle rotation direction

bitA-9: Spindle/C axis zero point return direction

bitA,9=

00: Short-cut

01: Forward run

10: Reverse run

bit8: Spindle/C axis zero point return

0: Zero point return type

1: Deceleration stop type (standard setting)

(*) For Program command method, when "#1711 cfg11/bit3" is set to "0" (Zero point return type), Zero point return type is forcibly set.

bit7: Synchronous tapping command polarity

0: Forward direction

1: Reverse direction (The standard setting when spindle and motor are directly coupled)

bit6-5: Synchronous tapping zero point return direction

bit6,5=

00: Short-cut

01: Forward run

10: Reverse run

bit4: Synchronous tapping zero point return

0: Automatically return to zero point before synchronous tapping is started (tapping phase alignment)

1: Not return to zero point and immediately synchronous tapping is started

bit3: Z phase detection operation ON

0: When Z phase is not detected, detect Z phase during the rotation executed by a rotation command without performing the detection operation.

1: When Z phase is not detected, perform the detection operation according to the settings of bitC and bit0, and then rotate the motor according to a rotation command.

bit2-1: Orientation direction

bit2,1=

00: Short-cut

01: Forward run

10: Reverse run

bit0: Z phase detection direction

0: Forward direction

1: Reverse direction

#3107 ori_spd Orientation command speed

Set the spindle speed during orientation command.

When the spindle is not running or running to the different direction with the orientation, the orientation is carried out with this speed after a stop. When the spindle is running to the same direction with the orientation, this parameter does not have a meaning because it decelerates directly and the orientation is carried out.

---Setting range---

1 to 99999 (r/min)

#3108 ori_sft Position shift amount for orientation

The orientation stop position can be moved by this parameter setting although normally the position is Z-phase position.

During multi-point orientation control, the stop position is determined by the total value of this parameter and the position data for multi-point orientation of PLC input.

---Setting range---

-35999 to 35999 (0.01°)

#3109	zdetspd	Z phase detection speed

For the first S command after power is turned ON, the spindle rotates at the speed of setting value for this parameter until Z phase is detected twice.

When "#3106/bitF = 1" (Spindle zero point proximity switch detection enabled), also proximity switch is detected.

(Note) When spindle zero point proximity switch detection is enabled, the rotation direction of the orientation/zero point return (synchronous tapping, spindle/C axis) will follow Z phase detection direction. And the speed will follow Z phase detection speed.

---Setting range---

1 to 99999 (r/min)

#3110	tap_spd	Synchronous tapping zero point return speed

Set the zero point return speed during synchronous tapping control.

---Setting range---

1 to 99999 (r/min)

#3111	tap_sft	Synchronous tapping zero point return shift amount

Set the zero point return shift amount during synchronous tapping control. Zero point angle shifts from Z phase according to the setting angle.

---Setting range---

0 to 35999 (0.01°)

#3112	cax_spd	Spindle C axis zero point return speed

Set the zero point return speed during spindle C axis control.

---Setting range---

1 to 99999 (r/min)

#3113	cax_sft	Spindle C axis zero point return shift amount

Set the spindle C axis zero point return shift amount. Zero point angle shifts from Z phase according to the setting angle.

---Setting range---

0 to 359999 (0.001°)

#3114	cax_para_chg	Spindle/C axis parameter switch

Parameter switches when switching the encoder system between normal spindle control and C axis control, such as using spindle side encoder only for C axis control in spindle drive system. It is validated with replacing a certain servo parameter of the corresponding servo axis to a spindle parameter.

0: Not switch

1: Switch

---Setting range---

0/1 (Standard: 0)

#3115	sp2_t1	Time constant in orientation/interpolation mode automatic reference position return (Gear: 00)

Set the linear acceleration/deceleration time constant for zero point return control (#3106/bit4,8) which is automatically started at the time of switching orientation control, C axis control and synchronous tapping control when gear 00 is selected. The inclination is determined by the ratio to limit rotation speed (slimt1). Set the sufficiently large value compared to the acceleration/deceleration time constant with S command (sp_t1) so that the output torque is not saturated. When executing C axis zero point return manually, it depends on the axis specification parameter.

---Setting range---

0 to 30000 (ms)

#3116	sp2_t2	Time constant in orientation/interpolation mode automatic reference position return (Gear: 01)

Set the linear acceleration/deceleration time constant for zero point return control (#3106/bit4,8) which is automatically started at the time of switching orientation control, C axis control and synchronous tapping control when gear 01 is selected. The inclination is determined by the ratio to limit rotation speed (slimt2). Set the sufficiently large value compared to the acceleration/deceleration time constant with S command (sp_t2) so that the output torque is not saturated. When executing C axis zero point return manually, it depends on the axis specification parameter.

---Setting range---

0 to 30000 (ms)

#3117	sp2_t3	Time constant in orientation/interpolation mode automatic reference position return (Gear: 10)

Set the linear acceleration/deceleration time constant for zero point return control (#3106/bit4,8) which is automatically started at the time of switching orientation control, C axis control and synchronous tapping control when gear 10 is selected. The inclination is determined by the ratio to limit rotation speed (slimt3). Set the sufficiently large value compared to the acceleration/deceleration time constant with S command (sp_t3) so that the output torque is not saturated. When executing C axis zero point return manually, it depends on the axis specification parameter.

---Setting range---

0 to 30000 (ms)

#3118	sp2_t4	Time constant in orientation/interpolation mode automatic reference position return (Gear: 11)

Set the linear acceleration/deceleration time constant for zero point return control (#3106/bit4,8) which is automatically started at the time of switching orientation control, C axis control and synchronous tapping control when gear 11 is selected. The inclination is determined by the ratio to limit rotation speed (slimt4). Set the sufficiently large value compared to the acceleration/deceleration time constant with S command (sp_t4) so that the output torque is not saturated. When executing C axis zero point return manually, it depends on the axis specification parameter.

---Setting range---

0 to 30000 (ms)

#3120	staptr	Time constant reduction rate in high-speed synchronous tapping

When performing high-speed synchronous tapping control(#1281/bit5), set the reduction rate of the time constant compared to the time constant in normal synchronous tapping.

(Setting "0" or "100" will be regarded as reduction rate zero, so the time constant won't be reduced.)

E.g.) When set to "10", time constant in high-speed synchronous tapping will be 90% of that in normal synchronous tapping.

---Setting range---

0 to 100 (%)

#3121	tret	Turret indexing

Select the validity of turret indexing.

0: Disabled

1: Enable

#3122	GRC	Turret side gear ratio

Set the number of teeth on the turret side when the gear selection command (control input 4/bit6, 5) is set to 00. Set a value of GRC so that the ratio of GRC to the spindle side gear ratio (#13057 SP057) will be 1: N (an integer). If GRC is set to "0", it will be regarded as "1".

---Setting range---

0 to 32767

#3123	tret_spd	Turret indexing speed

Set the turret end indexing speed when in turret indexing.

When this parameter is set to 0, it follows the value set for Orientation command speed (#3107).

---Setting range---

0 to 32767(r/min)

#3124	tret_t	Turret indexing time constant

Set the acceleration/deceleration time constant to reach Limit rotation speed (slimt1) at gear 00 when in turret indexing. Set this parameter to a larger value than time constant in orientation (#3115).

---Setting range---

0 to 30000 (ms)

#3125	tret_inpos	Turret indexing in-position width

Set the position error range in which the index positioning complete signal is output when in turret indexing. When this parameter is set to 0, the value of In-position width (#13024 SP024) will be used for this width.

---Setting range---

0 to 32767(1°/1000)

#3126	tret_fin_off	Index positioning complete signal OFF time

Set the time to forcedly turn OFF the index positioning complete signal since the indexing start signal turns ON. If this period of time has not passed yet, the index positioning complete signal will not turn ON even at the completion of index positioning.

---Setting range---

0 to 10000 (ms)

#3127	SPECSP	Spindle specification

bit0: Select the gear changeover method.

0: Gear change type 1 (When the spindle stop signal is ON and the selected gear differs from the recommended gear of NC side, the gear changeover is performed.)

1: Gear change type 2 (When the spindle stop signal is ON and the spindle gear shift signal is ON, the gear changeover is performed.)

bit1: Spindle cycle counter direction

Select whether to count up or down the cycle counter when the spindle turns forward.

0: Count up in forward run

1: Count down in forward run

bit3: Spindle rotation direction

Define the relationship between the motor's actual direction of rotation and the spindle rotation signals (Spindle forward run start/Spindle reverse run start).

0: Forward

1: Reverse

bit4: Change the timing of thread cutting start

0: Start thread cutting after receiving the Z-phase signal from the encoder.

1: Start thread cutting after receiving an external signal.

---Setting range---

0x0000 to 0xffff (hexadecimal)

#3128	ori_spec	Orientation control specification

bit0: Orientation in-position advance output

Reduce the orientation time by detecting an in-position faster.

The in-position detection width is changed from SP024(#13024) to ori_inp2.

0: Disable

1: Enable

bit1: High-speed proximity-switch orientation

Select whether to enable high-speed proximity-switch orientation.

This orientation can be used when Proximity-switch spindle zero point detection (#3106 zrn_typ/bitF) is enabled.

0: Disable high-speed

1: Enable high-speed

---Setting range---

0x0000 to 0xffff (hexadecimal)

#3129	cax_spec	Spindle/C axis control specification

bit0: Spindle position control changeover method

Select the method of changing the mode between C axis and spindle.

0: PLC signal method

1: Program command method

bit1: Coordinate system setting when the deceleration stop type (no zero point return) is selected

Select the C axis coordinate system setting method when the deceleration stop type (no zero point return) is selected.

0: Establish the coordinates of the deceleration stop position by using the Z-phase position as the coordinate zero point.

1: The deceleration stop position is used as the coordinate zero point.

bit2: Mode selection at Power ON when the program command method is selected

0: Spindle mode

1: C axis mode

This parameter is enabled when the program command method is selected (#3129 cax_spec/bit0 = 1).

bit3: Mode selection at reset when the program command method is selected

0: Spindle mode

1: The mode at reset is retained.

This parameter is enabled when the program command method is selected (#3129 cax_spec/bit0 = 1).

bit4: Gain switchover for all the axes within the part system when C axis is selected

0: The gains of servo axes except C axis are not switched when C axis is selected.

1: The gains of servo axes except C axis are switched when C axis is selected.

#2203 (PGN1) SV003 --> #2249 (PGN1sp) SV049

#2204 (PGN2) SV004 --> #2250 (PGN2sp) SV050

#2257 (SHGC) SV057 --> #2258 (SHGCsp) SV058

bit5: Retention of coordinate system setting offset at switchover to C axis mode

Select whether to retain the offset for the coordinate system setting(G92/G50) or local coordinate system setting (G52) when the control is switched to C axis mode.

0: Not retain the offset for coordinate system setting

1: Retain the offset for coordinate system setting

---Setting range---

0x0000 to 0xffff (hexadecimal)

#3130	syn_spec	Spindle synchronization control specification

bit0: Tool spindle synchronization II (hobbing) automatic compensation selection

0: No compensation.

1: Compensate hobbing axis delay (advance) with workpiece axis.

bit1: Phase alignment method selection

0: Phase alignment method type 1 (step alignment method)

1: Phase alignment method type 2 (multi-step acceleration/deceleration method)

bit2: Error compensation between reference and synchronized spindles

0: Error compensation is performed.

1: Error compensation is not performed.

(*) Set this parameter for the synchronized spindle.

bit3: Tool spindle synch II (hob): phase alignment when shift value is omitted;

0: Not perform phase alignment

1: Perform phase alignment

bit6: Phase alignment position selection (hobbing)

0: Feedback position

1: Command position

bit7: Multi-step acceleration/deceleration in hobbing mode

0: Perform multi-step acceleration/deceleration based on the hobbing axis

1: Perform multi-step acceleration/deceleration based on the workpiece axis

bit8: acceleration/deceleration time reduction valid

0: Operates with normal multi_step acceleration/deceleration.

1: Operates with time-reduced acceleration/deceleration.

(*) This parameter should be set to the same value for the reference spindle and the synchronized spindle for "Guide bushing spindle synchronization control".

---Setting range---

0x0000 to 0xffff (hexadecimal)

#3131	tap_spec	Synchronous tapping control specification

bitF: Analog spindle encoder polarity

This parameter specifies the polarity of the encoder with respect to the spindle rotation.

0: Forward

1: Reverse

---Setting range---

0x0000 to 0xffff (hexadecimal)

#3132	ori_inp2	2nd in-position width for orientation

Set the in-position width when in-position advance output control (#3128/bit0) is valid. Reduce the orientation time by setting a bigger value than the value of conventional SP024 and detecting an in-position faster.

Conventional SP024 is used for 2nd in-position signal detection width.

---Setting range---

0 to 32767 (1deg/1000)

#3133	spherr	Hobbing axis delay (advance) allowable angle

Set the allowable angle between the commanded position and actual position of hobbing axis when it is in tool spindle synchronization II (hobbing) mode (X18AE ON), and also when hobbing axis and workpiece axis are synchronizing (X18A9 ON).

---Setting range---

0 to 32767 (1deg/1000)

	#3134	sphtc	Primary delay time constant for hobbing axis automatic compensation

Set the primary delay time constant of hobbing axis automatic compensation primary delay filter control in tool spindle synchronization II (hobbing).

When set to "0", primary delay filter control is invalid.

---Setting range---

0 to 32767 (ms)

	#3135	sfwd_g	Feed forward gain for hobbing axis

Set the feed forward gain for the hobbing axis in tool spindle synchronization II (hobbing) mode.

---Setting range---

0 to 200 (%)

	#3136	ptaptr	Reduction rate of time constant for high-speed Punch Tap cycle

Specify the rate of reduction for the time constant of Punch Tap cycle to be applied when Punch Tap cycle is executed with the high-speed synchronized tap being enabled (#1281 ext17/bit5 = 1).

When "0" or "100" is set, the reduction rate will be interpreted as "0" and the time constant will not be reduced.

(Example) When "10" is set, the time constant for normal Punch Tap cycle will be reduced to 90%.

---Setting range---

0 to 100 (%)

	#3137	stap_ax_off	High-speed synchronous tapping disabled axis

Not used. Set to "0".

	#3138	motor_type	Spindle motor type

Set the spindle motor type. The set type will be displayed on the drive monitor screen, and it will be also output to the system configuration data.

---Setting range---

Character string within 26 characters including A-Z, a-z, 0-9, "." (decimal point), "-" (hyphen), "/" (slash)
(Setting is cleared when "0" is set)

(PR)	#3139	sp_srvdrv	Spindle-mode servo control

Select whether to enable spindle control using a servo drive unit and servo motor (spindle-mode servo control).

0: Disable spindle-mode servo control
1: Enable spindle-mode servo control

(PR)	#3140	S_DINSp	Speed observation input door No.

Set the door signal input in the drive unit.
Use this parameter only when the axis with a door signal belongs to several door groups.
The correspondence between the door signals and bits are as follows.
bit0: Door1 signal
bit1: Door2 signal
If the axis does not receive any door signal, set to "0".
An error (Y20 0027) will occur in the following cases.
- Several bits are enabled.
- Any bit other than those set in "#3071 S_DSISp" is enabled.

---Setting range---

0000 to 0002 (HEX)

(PR)	#3141	spsscfeed1	Observation speed 1

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note) When the setting value is larger than 18000, the last 2 digits will be ignored.

E.g.: 1234567 -> 1234500 (deg/min)

---Setting range---

0 to 6553500 (deg/min)

(PR)	#3142	spsscfeed2	Observation speed 2

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note) When the setting value is larger than 18000, the last 2 digits will be ignored.
E.g.: 1234567 -> 1234500 (deg/min)

---Setting range---

0 to 6553500 (deg/min)

(PR)	#3143	spsscfeed3	Observation speed 3

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note) When the setting value is larger than 18000, the last 2 digits will be ignored.
E.g.: 1234567 -> 1234500 (deg/min)

---Setting range---

0 to 6553500 (deg/min)

(PR)	#3144	spsscfeed4	Observation speed 4

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note) When the setting value is larger than 18000, the last 2 digits will be ignored.
E.g.: 1234567 -> 1234500 (deg/min)

---Setting range---

0 to 6553500 (deg/min)

(PR)	#3145	S_SigInSP	Safety observation signal input

This parameter specifies which observation speed change signal is input in the drive unit. The observation speed change signal corresponds to the following bits of the parameter.

bit0: Observation speed change signal 1 is connected.

bit1: Observation speed change signal 2 is connected.

bit2: Observation speed change signal 3 is connected.

If the axis receives no observation speed change signal, set to "0000".

(Note) When a same setting value is set to more than one axis, or when more than one bit is set to turn ON for one axis, the alarm (Y20 0027) will occur.

---Setting range---

0000 to 0004 (HEX)

	#3146	RatedOutL(PwrCal)	Short-time rated output for power computation (L-coil)

Specify the short-time rated output of the spindle motor (for L-coil).
This value is used for calculating the power consumption of the spindle motor.

---Setting range---

0 to 99999999 (W)

	#3147	RatedOutH(PwrCal)	Short-time rated output for power computation (H-coil)

Specify the short-time rated output of the spindle motor (for H-coil).
This value is used for calculating the power consumption of the spindle motor.
This parameter is used also when the coil switch function is OFF.

---Setting range---

0 to 99999999 (W)

	#3148	sycmpctm	Temporary error cancel calculation delay time

When a period of time set in this parameter has elapsed after turning-ON of the spindle chuck close (SPC-MPC) signal, you can temporarily cancel spindle sync error by turning ON the spindle sync error temporary cancel (SPDRPO) signal.
If the specified time has not elapsed when the spindle sync error temporary cancel (SPDRPO) signal is turned ON, temporary cancel of spindle sync error is enabled first when the time of this parameter has elapsed.

When "0" is set in this parameter, the delay time will be 284 (ms).

---Setting range---

0 to 30000 (ms)

(PR)	#3149	spsscfeed5	Observation speed 5

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note) When the setting value is larger than 18000, the last 2 digits will be ignored.

E.g.: 1234567 -> 1234500 (deg/min)

---Setting range---

0 to 6553500 (deg/min)

(PR)	#3150	spsscfeed6	Observation speed 6

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note) When the setting value is larger than 18000, the last 2 digits will be ignored.

E.g.: 1234567 -> 1234500 (deg/min)

---Setting range---

0 to 6553500 (deg/min)

(PR)	#3151	spsscfeed7	Observation speed 7

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note) When the setting value is larger than 18000, the last 2 digits will be ignored.

E.g.: 1234567 -> 1234500 (deg/min)

---Setting range---

0 to 6553500 (deg/min)

(PR)	#3152	spsscfeed8	Observation speed 8

Set the observation speed, which is at the machine end, in the multi-step speed monitor.

(Note) When the setting value is larger than 18000, the last 2 digits will be ignored.

E.g.: 1234567 -> 1234500 (deg/min)

---Setting range---

0 to 6553500 (deg/min)

#3153-3156 cms1-cms4 Spindle viscosity friction coefficient 1 to 4

Set the spindle viscosity friction coefficient.
These parameters are used to estimate the estimated disturbance torque of spindle.

#13018 SP018/bit5 = 0 (Mechanical gear)

#3153 cms1: Coefficient for the mechanical gear 1

#3154 cms2: Coefficient for the mechanical gear 2

#3155 cms3: Coefficient for the mechanical gear 3

#3156 cms4: Coefficient for the mechanical gear 4

#13018 SP018/bit5 = 1 (Coil changeover)

#3153 cms1: Coefficient for the H coil

#3154 cms2: Coefficient for the L coil

#3155 cms3: Not used

#3156 cms4: Not used

---Setting range---

0 to ±9999999 (0.00001%/rpm)

#3157-3160 fms1-fms4 Spindle coulomb friction coefficient 1 to 4

Set the spindle viscosity friction coefficient.
These parameters are used to estimate the estimated disturbance torque of spindle.

#13018 SP018/bit5 = 0 (Mechanical gear)

#3157 fms1: Coefficient for the mechanical gear 1

#3158 fms2: Coefficient for the mechanical gear 2

#3159 fms3: Coefficient for the mechanical gear 3

#3160 fms4: Coefficient for the mechanical gear 4

#13018 SP018/bit5 = 1 (Coil changeover)

#3157 fms1: Coefficient for the H coil

#3158 fms2: Coefficient for the L coil

#3159 fms3: Not used

#3160 fms4: Not used

---Setting range---

0 to ±9999999 (0.0001%/Nm)

#3166 disttrq_t Disturbance torque detection filter time constant

Set the responsiveness in detecting the disturbance torque.

---Setting range---

0 to 1000 (ms) (Default value: 0)

#3167 spef Spindle motor efficency

Calculate the efficiency between the motor current value and the output torque, and compensate the disturbance torque detection at acceleration/deceleration.

When set to "0", it controls as 100%.

---Setting range---

0 to 100 (%)

(Default value: 0)

#3168 StlTrqSPSV(PwrCal) Stall torque of spindle-mode servo motor for power computation

Specify the stall torque of spindle-mode servo motor.
This value is used for calculating the power consumption of the spindle-mode servo motor.

---Setting range---

0.000 to 1000.000 (Nm)

	#3169	rotspzsp	Spindle-mode rotary axis Motor zero speed (For spindle-mode rotary axis only)

Set the motor rotation speed to which the zero speed detection is executed. When the motor speed goes below the set speed, the zero speed detection turns ON. The standard setting value is "50". When the setting value is "0", it is on the standard setting value.

---Setting range---

0 to 1000 (r/min)

	#3170	rotspsdts	Spindle-mode rotary axis Speed detection setting value (For spindle-mode rotary axis only)

Set the motor speed to which the speed detection is executed. When the motor speed goes below the set speed, the speed detection turns ON. The standard setting value is 10% of the "#3001 slimt1" setting value. When the setting value is "0", it is on the standard setting value.

---Setting range---

0 to 32767(r/min)

(PR)	#3192	LdMeter thresholdY	Loadmeter: Caution (Yellow) threshold

Specify the spindle load (%) at which the loadmeter displays a caution sign (yellow).
If spindle load exceeds the specified value, the loadmeter displays a caution (yellow).

If you wish to avoid showing the caution (yellow), set this parameter to be the same as "#3193 LdMeter thresholdR".

When "0" is set, the value becomes 100% (default).

---Setting range---

0 to 300(%)

(PR)	#3193	LdMeter thresholdR	Loadmeter: Warning (Red) threshold

Specify the spindle load (%) at which the loadmeter displays a warning sign (red).
If spindle load exceeds the specified value, the loadmeter displays a warning (red).
If you wish to avoid showing the warning (red), set this parameter to be the same as "#3194 LdMeter load max".

When "0" is set, the value becomes 150% (default).

---Setting range---

0 to 300(%)

(PR)	#3194	LdMeter load max	Loadmeter: Maximum spindle load

Specify the maximum spindle load (%) for loadmeter display.

When "0" is set, the value becomes 200% (default).

---Setting range---

0 to 300(%)

(PR)	#3195	mgrsptyp	Spindle's machine group setting type

Specify which of the spindle's machine group No. parameters to use for the machine groupwise alarm stop function.

0: "#3196 mgrspnum1" (Spindle's machine group No. 1)

1: "#3197 mgrspnum2" (Spindle's machine group No. 2)

(PR)	#3196	mgrspnum1	Spindle's machine group No. 1

Specify the machine group No. to which each spindle belongs. This parameter is enabled when the parameter "#3195 mgrsptyp" (Spindle's machine group setting type) is set to "0".

---Setting range---

0 to 32

(PR)	#3197	mgrspnum2	Spindle's machine group No. 2

Specify the machine group No. to which each spindle belongs, by setting the corresponding bit. This parameter is enabled when the parameter "#3195 mgrsptyp" (Spindle's machine group setting type) is set to "1".

---Setting range---

00 to FF

Set this in hexadecimal format.

(PR)	#3199	spCode	Spindle selection code

In Multi-spindle control1, specify the code to select the spindle.

The spindle whose code is same as the command value of address P will be selected.

Spindle whose setting value is "0" cannot apply the spindle selection by address P.

For different spindles, do not specify the same code.

(Note) This parameter is valid when "#1300 ext36/bit4" is specified to "1". (Spindle selection by address P is valid)

---Setting range---

0 to 65535

	#13501	vfths11	Variable speed thread multi-step accel/decel change-over speed 1 (Gear00)

Set the spindle speed for changing the 1st step's acceleration/deceleration time constant at gear 00.

---Setting range---

0 to 99999 (r/min)

	#13502	vfths12	Variable speed thread multi-step accel/decel change-over speed 1 (Gear01)

Set the spindle speed for changing the 1st step's acceleration/deceleration time constant at gear 01.

---Setting range---

0 to 99999 (r/min)

	#13503	vfths13	Variable speed thread multi-step accel/decel change-over speed 1 (Gear10)

Set the spindle speed for changing the 1st step's acceleration/deceleration time constant at gear 10.

---Setting range---

0 to 99999 (r/min)

	#13504	vfths14	Variable speed thread multi-step accel/decel change-over speed 1 (Gear11)

Set the spindle speed for changing the 1st step's acceleration/deceleration time constant at gear 11.

---Setting range---

0 to 99999 (r/min)

	#13505	vftht11	Variable speed thread multi-step accel/decel change time constant 1 (Gear00)

Set the time constant to reach the variable speed thread multi-step acceleration/deceleration changeover speed 1 at gear 00.

---Setting range---

0 to 30000 (10 ms)

	#13506	vftht12	Variable speed thread multi-step accel/decel change time constant 1 (Gear01)

Set the time constant to reach the variable speed thread multi-step acceleration/deceleration changeover speed 1 at gear 01.

---Setting range---

0 to 30000 (10 ms)

	#13507	vftht13	Variable speed thread multi-step accel/decel change time constant 1 (Gear10)

Set the time constant to reach the variable speed thread multi-step acceleration/deceleration changeover speed 1 at gear 10.

---Setting range---

0 to 30000 (10 ms)

#13508	vftht14	Variable speed thread multi-step accel/decel change time constant 1 (Gear11)

Set the time constant to reach the variable speed thread multi-step acceleration/deceleration changeover speed 1 at gear 11.

---Setting range---

0 to 30000 (10 ms)

#13509	vfths21	Variable speed thread multi-step accel/decel change-over speed 2 (Gear00)

Set the spindle speed for changing the 2nd step's acceleration/deceleration time constant at gear 00.

---Setting range---

0 to 99999 (r/min)

#13510	vfths22	Variable speed thread multi-step accel/decel change-over speed 2 (Gear01)

Set the spindle speed for changing the 2nd step's acceleration/deceleration time constant at gear 01.

---Setting range---

0 to 99999 (r/min)

#13511	vfths23	Variable speed thread multi-step accel/decel change-over speed 2 (Gear10)

Set the spindle speed for changing the 2nd step's acceleration/deceleration time constant at gear 10.

---Setting range---

0 to 99999 (r/min)

#13512	vfths24	Variable speed thread multi-step accel/decel change-over speed 2 (Gear11)

Set the spindle speed for changing the 2nd step's acceleration/deceleration time constant at gear 11.

---Setting range---

0 to 99999 (r/min)

#13513	vftht21	Variable speed thread multi-step accel/decel change time constant 2 (Gear00)

Set the time constant to reach the variable speed thread multi-step acceleration/deceleration changeover speed 2 at gear 00.

---Setting range---

0 to 30000 (10 ms)

#13514	vftht22	Variable speed thread multi-step accel/decel change time constant 2 (Gear01)

Set the time constant to reach the variable speed thread multi-step acceleration/deceleration changeover speed 2 at gear 01.

---Setting range---

0 to 30000 (10 ms)

#13515	vftht23	Variable speed thread multi-step accel/decel change time constant 2 (Gear10)

Set the time constant to reach the variable speed thread multi-step acceleration/deceleration changeover speed 2 at gear 10.

---Setting range---

0 to 30000 (10 ms)

#13516	vftht24	Variable speed thread multi-step accel/decel change time constant 2 (Gear11)

Set the time constant to reach the variable speed thread multi-step acceleration/deceleration changeover speed 2 at gear 11.

---Setting range---

0 to 30000 (10 ms)

#13517	vftht31	Variable speed thread multi-step accel/decel change time constant 3 (Gear00)

Set the time constant to reach the limit rotation speed at gear 00.

---Setting range---

0 to 30000 (10 ms)

#13518	vftht32	Variable speed thread multi-step accel/decel change time constant 3 (Gear01)

Set the time constant to reach the limit rotation speed at gear 01.

---Setting range---

0 to 30000 (10 ms)

#13519	vftht33	Variable speed thread multi-step accel/decel change time constant 3 (Gear10)

Set the time constant to reach the limit rotation speed at gear 10.

---Setting range---

0 to 30000 (10 ms)

#13520	vftht34	Variable speed thread multi-step accel/decel change time constant 3 (Gear11)

Set the time constant to reach the limit rotation speed at gear 11.

---Setting range---

0 to 30000 (10 ms)

#13521	spt2	Spindle synchronization acceleration/deceleration time constant (Gear: 01)

Spindle synchronization acceleration/deceleration time constant (Gear: 01)
Specify the acceleration/deceleration time constant to be used when the rotation speed of spindle synchronization command is changed with the 2nd gear selected under the spindle-mode servo control or spindle synchronization control.

---Setting range---

0 to 9999(ms)

#13522	sptc21	Spindle sync multistep acceleration/deceleration changeover speed 1 (Gear: 01)

Specify the spindle speed at which a changeover to the 1st step's acceleration/deceleration time constant is made when the 2nd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13523	sptc22	Spindle sync multistep acceleration/deceleration changeover speed 2 (Gear: 01)

Specify the spindle speed at which a changeover to the 2nd step's acceleration/deceleration time constant is made when the 2nd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13524	sptc23	Spindle sync multistep acceleration/deceleration changeover speed 3 (Gear: 01)

Specify the spindle speed at which a changeover to the 3rd step's acceleration/deceleration time constant is made when the 2nd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13525	sptc24	Spindle sync multistep acceleration/deceleration changeover speed 4 (Gear: 01)

Specify the spindle speed at which a changeover to the 4th step's acceleration/deceleration time constant is made when the 2nd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13526	sptc25	Spindle sync multistep acceleration/deceleration changeover speed 5 (Gear: 01)

Specify the spindle speed at which a changeover to the 5th step's acceleration/deceleration time constant is made when the 2nd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13527	sptc26	Spindle sync multistep acceleration/deceleration changeover speed 6 (Gear: 01)

Specify the spindle speed at which a changeover to the 6th step's acceleration/deceleration time constant is made when the 2nd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13528	sptc27	Spindle sync multistep acceleration/deceleration changeover speed 7 (Gear: 01)

Specify the spindle speed at which a changeover to the 7th step's acceleration/deceleration time constant is made when the 2nd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13529	spdiv21	Time constant magnification for changeover speed 1 (Gear: 01)

Time constant magnification for changeover speed 1 (Gear: 01)
Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 1 (sptc21) to the spindle sync multi-step acceleration/deceleration changeover speed 2 (sptc22) when the 2nd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt2).

---Setting range---

0 to 127

#13530	spdiv22	Time constant magnification for changeover speed 2 (Gear: 01)

Time constant magnification for changeover speed 2 (Gear: 01)
Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 2 (sptc22) to the spindle sync multi-step acceleration/deceleration changeover speed 3 (sptc23) when the 2nd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt2).

---Setting range---

0 to 127

#13531	spdiv23	Time constant magnification for changeover speed 3 (Gear: 01)

Time constant magnification for changeover speed 3 (Gear: 01)
Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 3 (sptc23) to the spindle sync multi-step acceleration/deceleration changeover speed 4 (sptc24) when the 2nd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt2).

---Setting range---

0 to 127

#13532	spdiv24	Time constant magnification for changeover speed 4 (Gear: 01)

Time constant magnification for changeover speed 4 (Gear: 01)
Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 4 (sptc24) to the spindle sync multi-step acceleration/deceleration changeover speed 5 (sptc25) when the 2nd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt2).

---Setting range---

0 to 127

#13533	spdiv25	Time constant magnification for changeover speed 5 (Gear: 01)

Time constant magnification for changeover speed 5 (Gear: 01)
Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 5 (sptc25) to the spindle sync multi-step acceleration/deceleration changeover speed 6 (sptc26) when the 2nd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt2).

---Setting range---

0 to 127

#13534	spdiv26	Time constant magnification for changeover speed 6 (Gear: 01)

Time constant magnification for changeover speed 6 (Gear: 01)
Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 6 (sptc26) to the spindle sync multi-step acceleration/deceleration changeover speed 7 (sptc27) when the 2nd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt2).

---Setting range---

0 to 127

#13535	spdiv27	Time constant magnification for changeover speed 7 (Gear: 01)

Time constant magnification for changeover speed 7 (Gear: 01)
Specify the acceleration/deceleration time constant to be used for the spindle-mode servo control/spindle synchronization multi-step acceleration/deceleration changeover speed 7 (sptc27) or a higher speed when the 2nd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt2).

---Setting range---

0 to 127

#13536	spt3	Spindle synchronization acceleration/deceleration time constant(Gear: 10)

Spindle synchronization acceleration/deceleration time constant(Gear: 10)
Specify the acceleration/deceleration time constant to be used when the commanded spindle synchronization rotation speed is changed with the 3rd gear selected during the spindle-mode servo control or spindle synchronization control.

---Setting range---

0 to 9999(ms)

#13537	sptc31	Spindle sync multistep acceleration/deceleration changeover speed 1 (Gear: 10)

Specify the spindle speed at which a changeover to the 1st step's acceleration/deceleration time constant is made when the 3rd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13538	sptc32	Spindle sync multistep acceleration/deceleration changeover speed 2 (Gear: 10)

Specify the spindle speed at which a changeover to the 2nd step's acceleration/deceleration time constant is made when the 3rd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13539	sptc33	Spindle sync multistep acceleration/deceleration changeover speed 3 (Gear: 10)

Specify the spindle speed at which a changeover to the 3rd step's acceleration/deceleration time constant is made when the 3rd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13540	sptc34	Spindle sync multistep acceleration/deceleration changeover speed 4 (Gear: 10)

Specify the spindle speed at which a changeover to the 4th step's acceleration/deceleration time constant is made when the 3rd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13541	sptc35	Spindle sync multistep acceleration/deceleration changeover speed 5 (Gear: 10)

Specify the spindle speed at which a changeover to the 5th step's acceleration/deceleration time constant is made when the 3rd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13542	sptc36	Spindle sync multistep acceleration/deceleration changeover speed 6 (Gear: 10)

Specify the spindle speed at which a changeover to the 6th step's acceleration/deceleration time constant is made when the 3rd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13543	sptc37	Spindle sync multistep acceleration/deceleration changeover speed 7 (Gear: 10)

Specify the spindle speed at which a changeover to the 7th step's acceleration/deceleration time constant is made when the 3rd step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13544	spdiv31	Time constant magnification for changeover speed 1 (Gear: 10)

Time constant magnification for changeover speed 1 (Gear: 10)
Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 1 (sptc31) to the spindle sync multi-step acceleration/deceleration changeover speed 2 (sptc32) when the 3rd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt3).

---Setting range---

0 to 127

#13545	spdiv32	Time constant magnification for changeover speed 2 (Gear: 10)

Time constant magnification for changeover speed 2 (Gear: 10)
Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 2 (sptc32) to the spindle sync multi-step acceleration/deceleration changeover speed 3 (sptc33) when the 3rd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt3).

---Setting range---

0 to 127

#13546	spdiv33	Time constant magnification for changeover speed 3 (Gear: 10)

Time constant magnification for changeover speed 3 (Gear: 10)
Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 3 (sptc33) to the spindle sync multi-step acceleration/deceleration changeover speed 4 (sptc34) when the 3rd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt3).

---Setting range---

0 to 127

#13547	spdiv34	Time constant magnification for changeover speed 4 (Gear: 10)

Time constant magnification for changeover speed 4 (Gear: 10)
Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 4 (sptc34) to the spindle sync multi-step acceleration/deceleration changeover speed 5 (sptc35) when the 3rd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt3).

---Setting range---

0 to 127

#13548	spdiv35	Time constant magnification for changeover speed 5 (Gear: 10)

Time constant magnification for changeover speed 5 (Gear: 10)
Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 5 (sptc35) to the spindle sync multi-step acceleration/deceleration changeover speed 6 (sptc36) when the 3rd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt3).

---Setting range---

0 to 127

#13549	spdiv36	Time constant magnification for changeover speed 6 (Gear: 10)

Time constant magnification for changeover speed 6 (Gear: 10)
Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 6 (sptc36) to the spindle sync multi-step acceleration/deceleration changeover speed 7 (sptc37) when the 3rd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt3).

---Setting range---

0 to 127

#13550	spdiv37	Time constant magnification for changeover speed 7 (Gear: 10)

Time constant magnification for changeover speed 7 (Gear: 10)
Specify the acceleration/deceleration time constant to be used for the spindle-mode servo control/spindle synchronization multi-step acceleration/deceleration changeover speed 7 (sptc37) or a higher speed when the 3rd step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt3).

---Setting range---

0 to 127

#13551	spt4	Spindle synchronization acceleration/deceleration time constant (Gear: 11)

Spindle synchronization acceleration/deceleration time constant (Gear: 11)
Specify the acceleration/deceleration time constant to be used when the commanded spindle synchronization rotation speed is changed with the 4th gear selected during the spindle-mode servo control or spindle synchronization control.

---Setting range---

0 to 9999(ms)

#13552	sptc41	Spindle sync multistep acceleration/deceleration changeover speed 1 (Gear: 11)

Specify the spindle speed at which a changeover to the 1st step's acceleration/deceleration time constant is made when the 4th step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13553	sptc42	Spindle sync multistep acceleration/deceleration changeover speed 2 (Gear: 11)

Specify the spindle speed at which a changeover to the 2nd step's acceleration/deceleration time constant is made when the 4th step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13554	sptc43	Spindle sync multistep acceleration/deceleration changeover speed 3 (Gear: 11)

Specify the spindle speed at which a changeover to the 3rd step's acceleration/deceleration time constant is made when the 4th step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13555	sptc44	Spindle sync multistep acceleration/deceleration changeover speed 4 (Gear: 11)

Specify the spindle speed at which a changeover to the 4th step's acceleration/deceleration time constant is made when the 4th step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13556	sptc45	Spindle sync multistep acceleration/deceleration changeover speed 5 (Gear: 11)

Specify the spindle speed at which a changeover to the 5th step's acceleration/deceleration time constant is made when the 4th step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13557	sptc46	Spindle sync multistep acceleration/deceleration changeover speed 6 (Gear: 11)

Specify the spindle speed at which a changeover to the 6th step's acceleration/deceleration time constant is made when the 4th step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13558	sptc47	Spindle sync multistep acceleration/deceleration changeover speed 7 (Gear: 11)

Specify the spindle speed at which a changeover to the 7th step's acceleration/deceleration time constant is made when the 4th step gear is selected.

---Setting range---

0 to 99999 (r/min)

#13559	spdiv41	Time constant magnification for changeover speed 1 (Gear: 11)

Time constant magnification for changeover speed 1 (Gear: 11)

Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/spindle synchronization multi-step acceleration/deceleration changeover speed 1 (sptc41) to the spindle sync multi-step acceleration/deceleration changeover speed 2 (sptc42) when the 4th step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt4).

---Setting range---

0 to 127

#13560	spdiv42	Time constant magnification for changeover speed 2 (Gear: 11)

Time constant magnification for changeover speed 2 (Gear: 11)

Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 2 (sptc42) to the spindle sync multi-step acceleration/deceleration changeover speed 3 (sptc43) when the 4th step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt4).

---Setting range---

0 to 127

#13561	spdiv43	Time constant magnification for changeover speed 3 (Gear: 11)

Time constant magnification for changeover speed 3 (Gear: 11)

Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 3 (sptc43) to the spindle sync multi-step acceleration/deceleration changeover speed 4 (sptc44) when the 4th step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt4).

---Setting range---

0 to 127

#13562	spdiv44	Time constant magnification for changeover speed 4 (Gear: 11)

Time constant magnification for changeover speed 4 (Gear: 11)

Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 4 (sptc44) to the spindle sync multi-step acceleration/deceleration changeover speed 5 (sptc45) when the 4th step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt4).

---Setting range---

0 to 127

#13563	spdiv45	Time constant magnification for changeover speed 5 (Gear: 11)

Time constant magnification for changeover speed 5 (Gear: 11)
Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 5 (sptc45) to the spindle sync multi-step acceleration/deceleration changeover speed 6 (sptc46) when the 4th step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt4).

---Setting range---

0 to 127

#13564	spdiv46	Time constant magnification for changeover speed 6 (Gear: 11)

Time constant magnification for changeover speed 6 (Gear: 11)

Specify the acceleration/deceleration time constant to be used in a range of the spindle-mode servo control/ spindle synchronization multi-step acceleration/deceleration changeover speed 6 (sptc46) to the spindle sync multi-step acceleration/deceleration changeover speed 7 (sptc47) when the 4th step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt4).

---Setting range---

0 to 127

	#13565	spdiv47	Time constant magnification for changeover speed 7 (Gear: 11)

Time constant magnification for changeover speed 7 (Gear: 11)

Specify the acceleration/deceleration time constant to be used for the spindle-mode servo control/spindle synchronization multi-step acceleration/deceleration changeover speed 7 (sptc47) or a higher speed when the 4th step gear is selected. Set this as a magnification with respect to the spindle-mode servo control/spindle synchronization acceleration/deceleration time constant (spt4).

---Setting range---

0 to 127

	#13678	OMRCC_valid_sp	OMR-CC valid

Select whether to enable OMR-CC when Spindle position control function is used together.

0: Disable OMR-CC

1: Enable OMR-CC

(PR)	#43001	sgear_tret	Turret gear change ON

Select whether to enable turret gear change control (gear change at the spindle gear ratios SGRA1 to SGRB4) for a spindle that is under semi-closed loop control.

0: Disable

1: Enable

	#43002	SGRA1	Spindle-side gear ratio 1

This ratio is enabled under turret gear change control.

Specify the number of spindle-side gear teeth for gear selection command GI1=0/GI2=0.

When 0 is set, the operation will be the same as when 1 is set.

---Setting range---

0 to 32767

	#43003	SGRA2	Spindle-side gear ratio 2

This ratio is enabled under turret gear change control.

Specify the number of spindle-side gear teeth for gear selection command GI1=1/GI2=0.

When 0 is set, the operation will be the same as when 1 is set.

---Setting range---

0 to 32767

	#43004	SGRA3	Spindle-side gear ratio 3

This ratio is enabled under turret gear change control.

Specify the number of spindle-side gear teeth for gear selection command GI1=0/GI2=1.

When 0 is set, the operation will be the same as when 1 is set.

---Setting range---

0 to 32767

	#43005	SGRA4	Spindle-side gear ratio 4

This ratio is enabled under turret gear change control.

Specify the number of spindle-side gear teeth for gear selection command GI1=1/GI2=1.

When 0 is set, the operation will be the same as when 1 is set.

---Setting range---

0 to 32767

	#43006	SGRB1	Motor shaft-side gear ratio 1

This ratio is enabled under turret gear change control.

Specify the number of teeth of the motor shaft side gear 1 for gear selection command GI1=0/GI2=0.

When 0 is set, the operation will be the same as when 1 is set.

---Setting range---

0 to 32767

#43007	SGRB2	Motor shaft-side gear ratio 2

This ratio is enabled under turret gear change control.

Specify the number of teeth of the motor shaft side gear 1 for gear selection command GI1=1/GI2=0.

When 0 is set, the operation will be the same as when 1 is set.

---Setting range---

0 to 32767

#43008	SGRB3	Motor shaft-side gear ratio 3

This ratio is enabled under turret gear change control.

Specify the number of teeth of the motor shaft side gear 1 for gear selection command GI1=0/GI2=1.

When 0 is set, the operation will be the same as when 1 is set.

---Setting range---

0 to 32767

#43009	SGRB4	Motor shaft-side gear ratio 4

This ratio is enabled under turret gear change control.

Specify the number of teeth of the motor shaft side gear 1 for gear selection command GI1=1/GI2=1.

When 0 is set, the operation will be the same as when 1 is set.

---Setting range---

0 to 32767

#43046	smax_tap1	Synchro tapping spindle Max rotation speed (Gear: 00)

Specify the maximum rotation speed in synchronous tapping multi-step acceleration/deceleration control when gear 00 is selected.
Inclination of 3rd linear acceleration/deceleration control is determined by the ratio of smax_tap1(#43046) and tapt31(#3045).
When "0" is set to smax_tap1, use smax1(#3005).
When smax_tap1 is smax1 or more, use smax1.

---Setting range---

0 to 99999 (r/min)

#43047	smax_tap2	Synchro tapping spindle Max rotation speed (Gear: 01)

Specify the maximum rotation speed in synchronous tapping multi-step acceleration/deceleration control when gear 01 is selected.
Inclination of 3rd linear acceleration/deceleration control is determined by the ratio of smax_tap2(#43047) and tapt32(#3046).
When "0" is set to smax_tap2, use smax2 (#3006).
When smax_tap2 is smax2 or more, use smax2.

---Setting range---

0 to 99999 (r/min)

#43048	smax_tap3	Synchro tapping spindle Max rotation speed (Gear: 10)

Specify the maximum rotation speed in synchronous tapping multi-step acceleration/deceleration control when gear 10 is selected.
Inclination of 3rd linear acceleration/deceleration control is determined by the ratio of smax_tap3(#43048) and tapt33(#3047).
When "0" is set to smax_tap3, use smax3 (#3007).
When smax_tap3 is smax3 or more, use smax3.

---Setting range---

0 to 99999 (r/min)

#43049	smax_tap4	Synchro tapping spindle Max rotation speed (Gear: 11)

Specify the maximum rotation speed in synchronous tapping multi-step acceleration/deceleration control when gear 11 is selected.
Inclination of 3rd linear acceleration/deceleration control is determined by the ratio of smax_tap4(#43049) and tapt34(#3048).
When 0 is set to smax_tap4, use smax4(#3008).
When smax_tap4 is smax4 or more, use smax4.

---Setting range---

0 to 99999 (r/min)

	#43070	loadrate_warn	Spindle motor equivalent load factor excess warning

Specify the equivalent load factor of the spindle motor that causes the warning at the start of automatic operation.
The warning appears when the equivalent load factor has exceeded the specified value.

0: Disable the warning

1 to 200: Warning display threshold [%]

	#43071	sp_spd_flc_dtc_p	Delay time for starting spindle speed fluctuation detection

This parameter is used when address P is omitted from the spindle speed fluctuation detection command (G162). Specify a length of delay time from when G162 command is given to when the control detects a fluctuation.
This delay time is also applied to a change in spindle speed command. A change in spindle speed command means a difference in the final command given to the spindle drive unit.

---Setting range---

0 to 99.999 (s)

	#43072	sp_spd_flc_dtc_r	Allowable spindle speed fluctuation rate

Specify the allowable spindle speed fluctuation rate to be applied to the spindle speed fluctuation detection command (G162) from which address R is omitted.
When "0" is set, the allowable rate is 15%.
If a speed deviation with respect to the command speed is smaller than 45 r/min, the speed deviation is treated as 45 r/min.

---Setting range---

0 to 100 (%)

	#43073	sp_spd_flc_dtc_i	Allowable spindle speed fluctuation range

Specify the allowable spindle speed fluctuation range to be applied to the spindle speed fluctuation detection command (G162) from which address I is omitted.
When "0" is set, the allowable range is treated as 45 r/min.

---Setting range---

0 to 999999 (r/min)

	#43074	zdet_num	Maximum number of revolutions for Z phase detection

Specify the maximum number of revolutions for the Z phase detection of proximity-switch orientation.
If Z phase is not yet detected when the spindle has reached the specified number of revolutions, the operation error (M01 0301) occurs.
When this parameter is "0", the maximum number of revolutions is treated as 2.

---Setting range---

0 to 255 (revolutions)

(PR)	#43076	GRA1ex	Spindle-side extended gear ratio 1

Specify the number of spindle-side gear teeth for "Gear selection command (Control input 4/bit6, 5) = 00".

When 0 is set, extended gear ratio is disabled.

When not using, set to "0".

---Setting range---

0 to 2147483647

(PR)	#43077	GRA2ex	Spindle-side extended gear ratio 2

Specify the number of spindle-side gear teeth for "Gear selection command (Control input 4/bit6, 5) = 01".

When 0 is set, extended gear ratio is disabled.

When not using, set to "0".

---Setting range---

0 to 2147483647

(PR)	#43078	GRA3ex	Spindle-side extended gear ratio 3

Specify the number of spindle-side gear teeth for "Gear selection command (Control input 4/bit6, 5) = 10".

When 0 is set, extended gear ratio is disabled.

When not using, set to "0".

---Setting range---

0 to 2147483647

(PR)	#43079	GRA4ex	Spindle-side extended gear ratio 4

Specify the number of spindle-side gear teeth for "Gear selection command (Control input 4/bit6, 5) = 11".

When 0 is set, extended gear ratio is disabled.

When not using, set to "0".

---Setting range---

0 to 2147483647

(PR)	#43080	GRB1ex	Motor-side extended gear ratio 1

Specify the number of motor-side gear teeth for "Gear selection command (Control input 4/bit6, 5) = 00".

When 0 is set, extended gear ratio is disabled.

When not using, set to "0".

---Setting range---

0 to 2147483647

(PR)	#43081	GRB2ex	Motor-side extended gear ratio 2

Specify the number of motor-side gear teeth for "Gear selection command (Control input 4/bit6, 5) = 01".

When 0 is set, extended gear ratio is disabled.

When not using, set to "0".

---Setting range---

0 to 2147483647

(PR)	#43082	GRB3ex	Motor-side extended gear ratio 3

Specify the number of motor-side gear teeth for "Gear selection command (Control input 4/bit6, 5) = 10".

When 0 is set, extended gear ratio is disabled.

When not using, set to "0".

---Setting range---

0 to 2147483647

(PR)	#43083	GRB4ex	Motor-side extended gear ratio 4

Specify the number of motor-side gear teeth for "Gear selection command (Control input 4/bit6, 5) = 11".

When 0 is set, extended gear ratio is disabled.

When not using, set to "0".

---Setting range---

0 to 2147483647

	#43084	protect_sp_st_tmp	Spindle protection start temperature

Specify the motor temperature at which spindle protection starts.

When the spindle motor temperature reaches the set temperature or higher, the acceleration/deceleration time constant is switched from that of S command to that for spindle protection.

Set a temperature that is the same as or higher than the spindle protection cancel temperature.

When 0 is set, the spindle acceleration/deceleration time constant is not switched according to the temperature.

---Setting range---

0 to 200 (°C)

	#43085	protect_sp_rls_tmp	Spindle protection cancel temperature

Specify the motor temperature at which spindle protection is cancelled.

When the spindle motor temperature drops below the set temperature, the acceleration/deceleration time constant is switched from that for spindle protection to that of S command.

Set a temperature that is the same as or lower than the spindle protection start temperature.

When the set temperature is 0 or higher than the spindle protection start temperature, the cancel temperature is set 10 degrees lower than the start temperature.

---Setting range---

0 to 200 (°C)

	#43086	protect_sp_t1	Acceleration/Deceleration time constant during spindle protection (Gear: 00)

Specify the acceleration/deceleration time constant for S command (speed operation mode) to be applied to the spindle motor (gear 00) that is being protected against increased temperature.

Set the linear acceleration/deceleration time up to limit rotation speed (slimt1).

When 0 or any value smaller than "#3101 sp_t1" is set, switchover of the time constant is disabled, and acceleration/deceleration is performed with the time constant "#3101 sp_t1".

---Setting range---

0 to 30000 (ms)

	#43087	protect_sp_t2	Acceleration/Deceleration time constant during spindle protection (Gear: 01)

Specify the acceleration/deceleration time constant for S command (speed operation mode) to be applied to the spindle motor (gear 01) that is being protected against increased temperature.

Set the linear acceleration/deceleration time up to limit rotation speed (slimt2).

When 0 or any value smaller than "#3102 sp_t2" is set, switchover of the time constant is disabled, and acceleration/deceleration is performed with the time constant "#3102 sp_t2".

---Setting range---

0 to 30000 (ms)

	#43088	protect_sp_t3	Acceleration/Deceleration time constant during spindle protection (Gear: 10)

Specify the acceleration/deceleration time constant for S command (speed operation mode) to be applied to the spindle motor (gear 10) that is being protected against increased temperature.

Set the linear acceleration/deceleration time up to limit rotation speed (slimt3).

When "0" or any value smaller than "#3103 sp_t3" is set, switchover of the time constant is disabled, and acceleration/deceleration is performed with the time constant "#3103 sp_t3".

---Setting range---

0 to 30000 (ms)

	#43089	protect_sp_t4	Acceleration/Deceleration time constant during spindle protection (Gear: 11)

Specify the acceleration/deceleration time constant for S command (speed operation mode) to be applied to the spindle motor (gear 11) that is being protected against increased temperature.

Set the linear acceleration/deceleration time up to limit rotation speed (slimt4).

When "0" or any value smaller than "#3104 sp_t4" is set, switchover of the time constant is disabled, and acceleration/deceleration is performed with the time constant "#3104 sp_t4".

---Setting range---

0 to 30000 (ms)

	#43095	SP002cax(PGNcax)	Position loop gain for C axis mode

This parameter specifies the position loop gain that is applied when the spindle is controlled in C axis mode. If the parameter is set to "0", the value of the spindle parameter "#13002 SP002 (PGN)" will be used.

---Setting range---

0 to 200 (rad/s)

(PR)	#43097	sprotpls	Number of pulses per motor revolution

When using the "Spindle control with pulse train output" function, subtract 1 from the number of pulses per revolution of the spindle motor, and enter the result in this parameter.

(Example) When the number of pulses per revolution of the motor connected is 4096, enter "4095" in this parameter.

---Setting range---

0 to 32767

(PR)	#43098	plsspec	Form of pulse train output

Specify the form of the pulse train to be output.

bit8: Output logic

Specify the logic of the pulse train to be output.

0: Positive logic (Active high)

1: Negative logic (Active low)

bit7-4: Multiplying factor

Specify the multiplying factor for the frequency of the pulse train.

0: 1-fold

1: 1/4-fold

bit3-0: Output mode

Specify the form of the pulse train for forward/reverse rotation.

0: A/B phase mode

1: PULSE/SIGN mode

2: CW/CCW mode

---Setting range---

0000 to FFFF (HEX)

(PR)	#43099	plsmot	Maximum rotation speed of spindle motor controlled with pulse train output

Specify the maximum rotation speed of the spindle motor that should be controlled with the pulse train output.

---Setting range---

0 to 999999 (r/min)

	#43100	plschk	Time to check spindle encoder output for control with pulse train output

Specify the time period to determine there is an error in feedback signal from the spindle encoder.

If the feedback signal from the spindle encoder does not change significantly when the parameterized time period has elapsed after start of output to the spindle, the system determines there is an error in the spindle encoder, and an alarm stop takes place.

If "0" is specified, the system behaves as if "200" was specified.

This parameter is only valid when "#3025 enc-on" (Spindle encoder) is "1".

---Setting range---

0 to 1000 (ms)

	#43101	loadrate_ratio	Spindle motor equivalent load factor rating ratio

Adjust the value to be displayed and output as the equivalent load factor of the spindle motor using this parameter.

(Example) When converting to continuous rating:
Continuous rating / short-time rating * 100

---Setting range---

0 to 150 (%)

Note that when set to "0", 100% applies.

	#43105	sp_temp_hide	Hide Spindle temperature

Hide (blank) the spindle unit temperature on the drive monitor screen.

0: Show

1: Hide

(Note) Regardless of the setting of "#1251 set23/bit1" (Spindle temperature display), the temperature of the spindle for which "1" is set in this parameter is hidden (blank).

(PR)	#43107	S_disp_name	Sp disp name

Specify the second character following the "S" in the spindle name to be displayed on the screen.

(Example) "SA" is displayed as the spindle name when "A" is set.

(Note) If even one spindle has a blank name, the spindle No. is displayed as the second character following the S in the name of all spindles.

---Setting range---

A to Z and 1 to 9
(Setting is cleared when "0" is set.)

	#43133	spt_reduct_rate	Spindle synchronization: acceleration/deceleration time reduction rate

When "Acceleration/deceleration time reduction valid" is enabled (parameter #3130/bit8 = 1), and Spindle synchronization is performed, set the time reduction rate relative to the normal acceleration/deceleration time constant (stp).

When "0" or "100" is set, the time reduction rate is considered to be zero and the time constant is not reduced.

(Example) When "10" is set, acceleration/deceleration is performed with a time constant of 90% of the normal acceleration/deceleration time constant.

---Setting range---

0 to 100 (%)

2.9 Spindle Parameters

#13001	SP001 PGV	Position loop gain non-interpolation mode

Set the position loop gain for "Non-interpolation" control mode.
When the setting value increases, the command tracking ability will enhance and the positioning settling time can be shorter. However, the impact on the machine during acceleration/deceleration will increase.
Use the selection command, the control mode "bit 2, 1, 0 = 000" in control input 4.
(Note) The control mode is commanded by NC.

---Setting range---

1 to 200 (rad/s)

#13002	SP002 PGN	Position loop gain interpolation mode

Set the position loop gain for "interpolation" control mode.
When the setting value increases, the command tracking ability will enhance and the positioning settling time can be shorter. However, the impact on the machine during acceleration/deceleration will increase.
Use the selection command, the control mode "bit 2, 1, 0 = 010 or 100" in control input 4.
(Note) The control mode is commanded by NC.
When carrying out the SHG control, set SP035/bitC to "1".

---Setting range---

1 to 200 (rad/s)

#13003	SP003 PGS	Position loop gain spindle synchronization

Set the position loop gain for "spindle synchronization" control mode.
When the setting value increases, the command tracking ability will enhance and the positioning settling time can be shorter. However, the impact on the machine during acceleration/deceleration will increase.
Use the selection command, the control mode "bit 2, 1, 0 = 001" in control input 4.

(Note 1) The control mode is commanded by NC.
When carrying out the SHG control, set SP036/bit4 to "1".

(Note 2) Set the same value for the basic and synchronous spindles in spindle synchronization.

---Setting range---

1 to 200 (rad/s)

#13004	SP004

Not used. Set to "0".

#13005	SP005 VGN1	Speed loop gain 1

Set the speed loop gain.
Set this according to the load inertia size.
The higher setting value will increase the accuracy of control, however, vibration tends to occur.
If vibration occurs, adjust by lowering by 20 to 30%.
The final value should be 70 to 80% of the value at which the vibration stops.

---Setting range---

1 to 9999

#13006	SP006 VIA1	Speed loop lead compensation 1

Set the speed loop integral control gain.
The standard setting is "1900". Adjust the value by increasing/decreasing the value by about 100.
Raise this value to improve the contour tracking accuracy in high-speed cutting.
Lower this value when the position droop does not stabilize (when the vibration of 10 to 20Hz occurs).

---Setting range---

1 to 9999

#13007	SP007 VIL1	Speed loop delay compensation 1

Set this parameter when the limit cycle occurs in the full-closed loop or overshooting occurs in positioning.
When setting this parameter, make sure to set the torque offset "SP050(TOF)".
When not using, set to "0".

---Setting range---

0 to 32767

#13008	SP008 VGN2	Speed loop gain 2

Normally SP005(VGN1) is used.
By setting "SP035/bit1, SP035/bit9 or SP036/bit1=1", gain 2 can be used according to the application.
Gain 2 can also be used by setting "Speed gain set 2 changeover request (control input 5/ bitC) = 1".
Refer to SP005(VGN1) for adjustment procedures.

---Setting range---

1 to 9999

#13009	SP009 VIA2	Speed loop lead compensation 2

Normally SP006(VIA1) is used.
By setting "SP035/bit1, SP035/bit9 or SP036/bit1=1", gain 2 can be used according to the application.
Gain 2 can also be used by setting "Speed gain set 2 changeover request (control input 5/ bitC) = 1".
Refer to SP006(VIA1) for adjustment procedures.

---Setting range---

1 to 9999

#13010	SP010 VIL2	Speed loop delay compensation 2

Normally SP007(VIL1) is used.
By setting "SP035/bit1, SP035/bit9 or SP036/bit1=1", gain 2 can be used according to the application.
Gain 2 can also be used by setting "Speed gain set 2 changeover request (control input 5/ bitC) = 1".
Refer to SP007(VIL1) for adjustment procedures.

---Setting range---

0 to 32767

#13011	SP011

Not used. Set to "0".

#13012	SP012

Not used. Set to "0".

#13013	SP013

Not used. Set to "0".

#13014	SP014 PY1	Minimum excitation rate 1

Set the minimum value for the variable excitation rate. The standard setting is "50".
Set to "0" when using an IPM spindle motor.
If noise including gear noise is loud, select a small value. However, a larger setting value is more effective for impact response.

(Note) When setting a value at "50 or more", check if there is no problem with gear noise, motor excitation noise, vibration during low-speed rotation or vibration when the servo is locked during orientation stop, etc. When setting a value at "less than 50", check if there is no problem with the impact load response or rigidity during servo lock.

---Setting range---

0 to 100 (%)

#13015	SP015 PY2	Minimum excitation rate 2

Normally, SP014(PY1) is used.
By setting "SP035/bit2, SP035/bitA or SP036/bit2=1", the excitation rate 2 can be used according to the application.
The excitation rate 2 can also be used by setting "the minimum excitation rate 2 changeover request (control input 5/ bitB) = 1". Refer to SP014(PY1) for adjustment procedures.
Set to "0" when using an IPM spindle motor.

---Setting range---

0 to 100 (%)

	#13016	SP016 DDT	Phase alignment deceleration rate

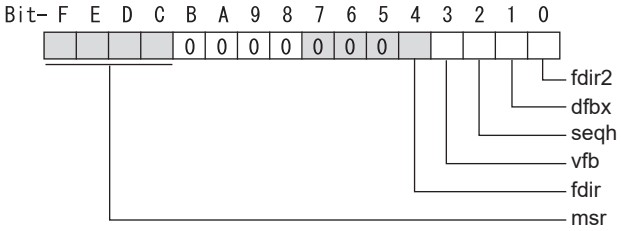
Set the single-rotation position alignment deceleration rate for orientation stopping, phase alignment while rotating and switching from non-interpolation mode to spindle synchronization mode while rotating.
When the load inertia is larger, the setting value should be smaller.
When the setting value is larger, the orientation in-position and single-rotation position alignment complete faster, but the impact applied on the machine will increase.
To change the deceleration rate only during rotation command (command F Δ T ≠ 0), set this parameter together with SP070 (KDDT).

---Setting range---

1 to 32767 (0.1(r/min)/ms)

	#13017	SP017 SPEC1	Spindle specification 1

Select the spindle specification.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F-C : msr Motor series selection

0: 200V specification IM spindle motor
1: 200V specification IPM spindle motor
2: 400V specification IM spindle motor
3: 400V specification IPM spindle motor
4: 200V specification Tool spindle motor

bit B-5 :

Not used. Set to "0".

bit 4 : fdir Position feedback

Set the machine side encoder's installation polarity.
0: Forward polarity 1: Reverse polarity

bit 3 : vfb Speed feedback filter

0: Disable 1: Enable (4500Hz)

bit 2 : seqh READY ON sequence

0: Normal 1: High-speed

bit 1 : dfbx Dual feedback control

Control the position FB signal in full closed control by the combination of a motor side encoder and machine side encoder.
0: Stop 1: Start

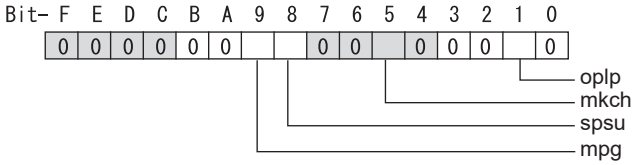
Related parameters: SP051, SP052

bit 0 : fdir2 Speed feedback polarity

Set the motor side encoder's installation polarity by a built-in motor.
0: Forward polarity 1: Reverse polarity

(PR) #13018 SP018 SPEC2 Spindle specification 2

Select the spindle specification.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F-A :

Not used. Set to "0".

bit 9 : mpg Earth fault detection

0: Disable 1: Enable (standard)

Set "0" and it is constantly "Enable" for MDS-EJ-SP Series.

bit 8 : spsu Command speed limit value

0: 33,750 r/min 1: 135,000 r/min

bit 7-6 :

Not used. Set to "0".

bit 5 : mkch Coil switch function

0: Disable 1: Enable

bit 4-2 :

Not used. Set to "0".

bit 1 : oplp Open loop control

This allows the operation in which no encoder feedback signals are used.
It is used when adjusting the encoder, etc.
0: Disable 1: Enable

bit 0 :

Not used. Set to "0".

(PR) #13019 SP019 RNG1 Sub side encoder resolution

[For semi-closed loop]
Set the same value as SP020 (RNG2). (Refer to the explanation of SP020.)

[For full-closed loop]
Set the number of pulses per revolution of the machine side encoder.

When using the encoder interface unit MDS-EX-HR, use this with SP097(RNG1ex).

Encoder
OSE-1024 (ABZ pulse): SP019=4096, SP097=-1

TS5690(64 teeth): SP019 = 2000, SP097=0
TS5690(90 teeth): SP019 = 2880, SP097=0
TS5690(128 teeth): SP019 = 4000, SP097=0
TS5690(192 teeth): SP019 = 6000, SP097=0
TS5690(256 teeth): SP019 = 8000, SP097=0
TS5690(384 teeth): SP019 =12000, SP097=0

ERM280(1200 teeth): SP019 = 4800, SP097=0
ERM280(2048 teeth): SP019 = 8000, SP097=0

MPCI : SP019 = 7200, SP097=0
MBE205: SP019 = 2000, SP097=0
GEL2449M(524,288(p/rev)): SP019=0, SP097=8
MHS-04B Series(1,048,576(p/rev)): SP019=0, SP097=16

---Setting range---

When SP097=0, the setting range is from 0 to 32767 (kp)
When SP097≠0, the setting range is from 0 to 65535 (p)

(PR)	#13020	SP020 RNG2	Main side encoder resolution

Set the number of pulses per revolution of the motor side encoder. Set the standard parameters for the motor with frame.

---Setting range---

When SP098=0, the setting range is from 0 to 32767 (kp)
When SP098≠0, the setting range is from 0 to 65535 (p)

(PR)	#13021	SP021 OLT	Overload detection time constant

Set the detection time constant of Overload 1 (Alarm 50). (For Mitsubishi Electric adjustment)
Normally, set to "60".
Set to "300" when using an IPM spindle motor.

---Setting range---

1 to 15300 (s)

	#13022	SP022 OLL	Overload detection level

Set the current detection level of "Overload 1" (Alarm 50) as a percentage against the motor short-time rated output current. (For Mitsubishi Electric adjustment)
Normally, set to "120".
Set to "100" when using an IPM spindle motor.

---Setting range---

1 to 200 (Short-time rated %)

	#13023	SP023 OD1	Excessive error detection width (interpolation mode - spindle synchronization)

Set the excessive error detection width for the interpolation mode and spindle synchronization.
The standard setting is "120".
When set to "0", the excessive error detection will be ignored, so do not set to "0".

---Setting range---

1 to 32767 (°)

	#13024	SP024 INP	In-position width

Set the in-position detection width.
Set the positioning accuracy required to the machine.
Lower setting value increases the positioning accuracy, but makes the cycle time (settling time) longer.
The standard setting is "875".

---Setting range---

0 to 32767 (1°/1000)

	#13025	SP025 INP2	2nd in-position width

Use this when detecting an in-position different from normal in-position width such as advancing the in-position signal. The adjustment procedure is the same as SP024 (INP).
The standard setting is "875".

---Setting range---

0 to 32767 (1°/1000)

(PR)	#13026	SP026 TSP	Maximum motor speed

Set the maximum motor speed.
If the motor speed exceeds the set maximum speed, an overspeed alarm will occur.

---Setting range---

1 to 32767 (r/min)

	#13027	SP027 ZSP	Motor zero speed

Set the motor speed for detecting zero speed.
If the motor speed drops below the set speed, the zero speed signal turns ON.
The standard setting is "50".

---Setting range---

1 to 1000 (r/min)

	#13028	SP028 SDTS	Speed detection set value

Set the motor speed for detecting the speed.
If the motor speed drops below the set speed, the speed detection signal turns ON.
The standard setting is 10% of the maximum motor speed.

---Setting range---

10 to 32767 (r/min)

	#13029	SP029 SDTR	Speed detection reset width

Set the hysteresis width in which the speed detection changes from ON to OFF.
If the setting value is small, the speed detection will chatter easily.
The standard setting is "30".

---Setting range---

10 to 1000 (r/min)

	#13030	SP030 SDT2	2nd speed detection setting value

Set the specified speed of the specified speed output.
When carrying out digital output of the specified speed output, set SP229/bitC to "1".
It is not available for MDS-EJ-SP Series.

---Setting range---

0 to 32767 (r/min)

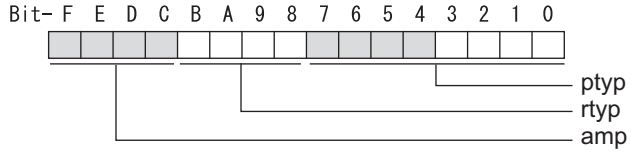
(PR)	#13031	SP031 MTYP	Motor type

Set the control system of the spindle drive unit.
2200: Semi closed loop control
4200: Full closed loop control by using spindle side ABZ pulse output encoder
6200: Full closed loop control by using spindle side serial output encoder

(PR)	#13032	SP032 PTYP	Power supply type/ Regenerative resistor type

MDS-E/EH Series: Power supply type

When connecting a power supply unit, set a code for each power supply unit.



bit F-C : amp

Set the power backup function to be used.
No function used : 0
Deceleration and stop function at power failure : 8
Retraction function at power failure: C

bit B-8 : rtyp

Not used. Set to "0".

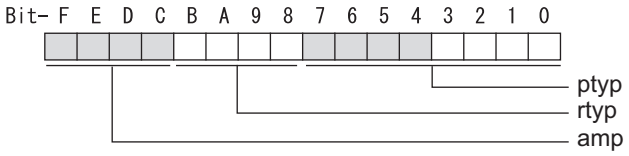
bit 7-0 : ptyp External emergency stop setting

When the emergency stop input signal of the power supply unit is "disabled"
Power supply unit is not connected : 00
MDS-E-CV-37 / MDS-EH-CV-37 : 04
MDS-E-CV-75 / MDS-EH-CV-75 : 08
MDS-E-CV-110 / MDS-EH-CV-110 : 11
MDS-E-CV-185 / MDS-EH-CV-185 : 19
MDS-E-CV-300 / MDS-EH-CV-300 : 30
MDS-E-CV-370 / MDS-EH-CV-370 : 37
MDS-E-CV-450 / MDS-EH-CV-450 : 45
MDS-E-CV-550 / MDS-EH-CV-550 : 55
MDS-EH-CV-750 : 75

When the emergency stop input signal of the power supply unit is "enabled"
(Note) Set the power supply rotary switch to "4".
Power supply unit is not connected : 00
MDS-E-CV-37 / MDS-EH-CV-37 : 44
MDS-E-CV-75 / MDS-EH-CV-75 : 48
MDS-E-CV-110 / MDS-EH-CV-110 : 51
MDS-E-CV-185 / MDS-EH-CV-185 : 59
MDS-E-CV-300 / MDS-EH-CV-300 : 70
MDS-E-CV-370 / MDS-EH-CV-370 : 77
MDS-E-CV-450 / MDS-EH-CV-450 : 85
MDS-E-CV-550 / MDS-EH-CV-550 : 95
MDS-EH-CV-750 : B5

MDS-EM/EMH Series: Power supply type

Set as follows for the spindle drive section of the MDS-EM/EMH-SPV3.



bit F-C : amp

Not used. Set to "0".

bit B-8 : rtyp

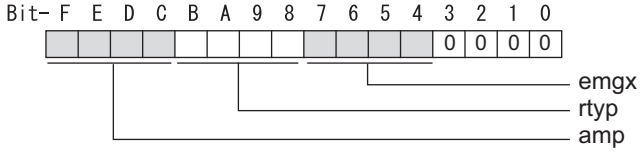
Not used. Set to "0".

bit 7-0 : ptyp External emergency stop setting

Normal
MDS-EM: 20, MDS-EMH: 22, MDS-EM-SPV3-16040S to 20080S: 16, MDS-EM-SPV3-320120: 37
External emergency stop function
MDS-EM: 60, MDS-EMH: 62, MDS-EM-SPV3-16040S to 20080S: 56, MDS-EM-SPV3-320120: 77

MDS-EJ-SP Series: Regenerative resistor type

Set the regenerative resistor type.



bit F-8 : amp(bit F-C) / rtyp(bit B-8)

Setting prohibited	: 10-12
MR-RB12 or GZG200W39OHMK	: 13
MR-RB32 or GZG200W120OHMK 3 units connected in parallel	: 14
MR-RB30 or GZG200W39OHMK 3 units connected in parallel	: 15
MR-RB50 or GZG300W39OHMK 3 units connected in parallel	: 16
Setting prohibited	: 17-1F
Setting prohibited	: 20-23
FCUA-RB22	: 24
FCUA-RB37	: 25
FCUA-RB55	: 26
FCUA-RB75/2 1 unit	: 27
R-UNIT1	: 28
R-UNIT2	: 29
R-UNIT3	: 2A
R-UNIT4	: 2B
R-UNIT5	: 2C
FCUA-RB75/2 2 units connected in parallel	: 2D
FCUA-RB55/2 2 units connected in parallel	: 2E
Setting prohibited	: 2F

bit 7-4 : emgx External emergency stop function

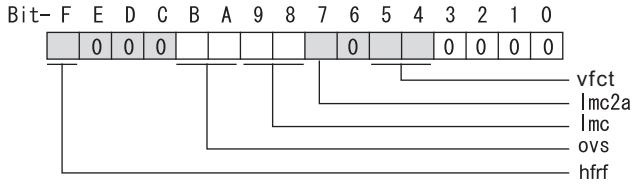
Set the external emergency stop function.
0: Disable 4: Enable

bit 3-0 :

Not used. Set to "0".

#13033	SP033 SFNC1	Spindle function 1

Select the spindle specification.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F : hfrf Higher harmonic suppression filter

0: Stop
1: Start

bit E-C :

Not used. Set to "0".

bit B-A : ovs Overshoot compensation

Set this parameter when overshooting occurs during positioning.
bitB,A=
00: Compensation stop
01: Setting prohibited
10: Setting prohibited
11: Compensation type 3

Set the compensation amount in SP043(OVS1) and SP042(OVS2).

bit 9-8 : lmc Lost motion compensation type2

Set this parameter when the protrusion at quadrant change is too large.
bit9,8=
00: Compensation stop
01: Setting prohibited
10: Compensation type 2
11: Setting prohibited
Set the compensation amount in SP048(LMC1) and SP041(LMC2).

bit 7 : lmc2a Lost motion compensation 2 timing

0: Normal 1: Change

bit 6 :

Not used. Set to "0".

bit 5-4 : vfct Jitter compensation pulse number

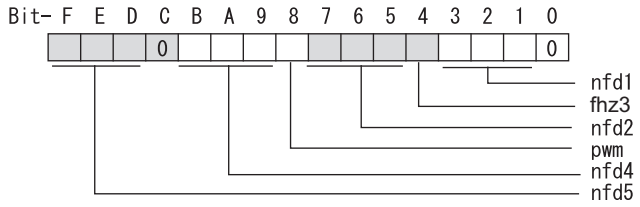
Suppress vibration by machine backlash when axis stops.
bit5,4=
00: Disable
01: 1 pulse
10: 2 pulse
11: 3 pulses

bit 3-0 :

Not used. Set to "0".

#13034	SP034 SFNC2	Spindle function 2

Select the spindle function.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F-D : nfd5 Depth of Notch filter 5

Set the depth of Notch filter 5 (SP088).
bit F,E,D=
000: -∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

bit C :

Not used. Set to "0".

bit B-9 : nfd4 Depth of Notch filter 4

Set the depth of Notch filter 4 (SP087).
bit B,A,9=
000: -∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

bit 8 : pwm Current control

0: Standard current control 1: High frequency current control

bit 7-5 : nfd2 Depth of Notch filter 2

Set the depth of Notch filter 2 (SP046).
bit7,6,5=
000: -∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

bit 4 : fhz3 Notch filter 3

0: Stop 1: Start (1125Hz)

bit 3-1 : nfd1 Depth of Notch filter 1

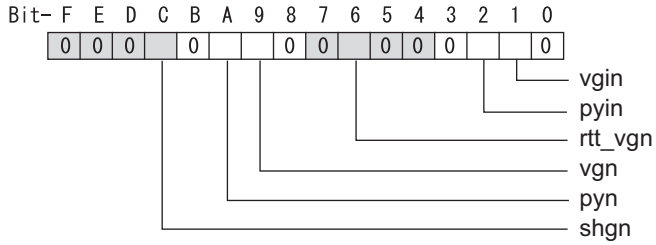
Set the depth of Notch filter 1 (SP038).
bit3,2,1=
000: -∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

bit 0 :

Not used. Set to "0".

(PR)	#13035	SP035 SFNC3	Spindle function 3

Select the spindle function.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F-D :

Not used. Set to "0".

bit C : shgn SHG control in interpolation mode

0: Stop 1: Start
When using the OMR-FF control, set to "0".

bit B :

Not used. Set to "0".

bit A : pyn Excitation rate selection in interpolation mode

0: Select Excitation rate 1 1: Select Excitation rate 2

bit 9 : vgn Speed loop gain set selection in interpolation mode

0: Select Set 1 1: Select Set 2

bit 8-7 :

Not used. Set to "0".

bit 6 : rtt_vgn Real-time tuning I in non-interpolation mode / speed gain adaptation stop

0: Stop 1: Start

bit 5-3 :

Not used. Set to "0".

bit 2 : pyin Excitation rate selection in non-interpolation mode

The excitation rate after the in-position can be selected.
0: Select Excitation rate 1 1: Select Excitation rate 2

bit 1 : vgin Speed loop gain set selection in non-interpolation mode

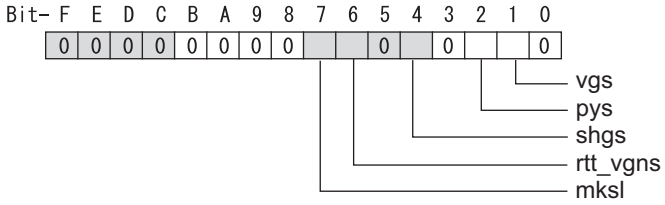
The speed loop gain set after the in-position can be selected.
0: Select Set 1 1: Select Set 2

bit 0 :

Not used. Set to "0".

(PR) #13036 SP036 SFNC4 Spindle function 4

Select the spindle function.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F-8 :

Not used. Set to "0".

bit 7 : mksl Coil selection in spindle synchronization mode

0: Select the coil commanded during synchronization 1: Select high-speed coil

bit 6 : rtt_vgns Real-time tuning I in spindle synchronization mode / speed gain adaptation stop

0: Stop 1: Start

bit 5 :

Not used. Set to "0".

bit 4 : shgs SHG control in spindle synchronization mode

0: Stop 1: Start
When using the OMR-FF control, set to "0".

bit 3 :

Not used. Set to "0".

bit 2 : pys Excitation rate selection in spindle synchronization mode

0: Select Excitation rate 1 1: Select Excitation rate 2

bit 1 : vgs Speed loop gain set selection in spindle synchronization mode

0: Select Set 1 (SP005,SP006,SP007) 1: Select Set 2 (SP008,SP009,SP010)

bit 0 :

Not used. Set to "0".

#13037 SP037 JL Load inertia scale

Set the motor axis conversion total load inertia including motor itself in proportion to the motor inertia.
SV037(JL)=(Jm+Jl)/Jm×100
Jm: Motor inertia
Jl: Motor axis conversion load inertia

---Setting range---

0 to 5000 (%)

#13038 SP038 FHz1 Notch filter frequency 1

Set the vibration frequency to suppress when machine vibration occurs.
(Enabled at 50 or more.)
When not using, set to "0".

Related parameters: SP034/bit3-1

---Setting range---

0 to 5000 (Hz)

#13039 SP039 LMCD Lost motion compensation timing

Set this parameter when the lost motion compensation type2 timing does not match.
Adjust by increasing the value by 10 at a time.

---Setting range---

0 to 2000 (ms)

#13040	SP040 LMCT	Lost motion compensation non-sensitive band

Set the non-sensitive band of the lost motion compensation in the feed forward control.
When "0" is set, 2°/1000 is set. Adjust by increasing the value by 1°/1000 at a time.

---Setting range---

-32768 to 32767 (1°/1000)

#13041	SP041 LMC2	Lost motion compensation 2

Set this parameter with SP048(LMC1) only to vary the lost motion compensation amount depending on the command directions.
Normally, set to "0".

---Setting range---

-1 to 200 (Short-time rated %)
Note that when SP227/bit2 is "1", the range will be -1 to 20000 (Short-time rated 0.01%).

#13042	SP042 OVS2	Overshooting compensation 2

Set this parameter with SP043(OVS1) only to vary the lost motion compensation amount depending on the command directions.
Normally, set to "0".

---Setting range---

-1 to 100 (Short-time rated %)
Note that when SP227/bit2 is "1", the range will be -1 to 10000 (Short-time rated 0.01%).

#13043	SP043 OVS1	Overshooting compensation 1

Set this parameter when overshooting occurs during positioning. This compensates the motor torque during positioning.
This is valid only when the overshooting compensation SP033 (SFNC1/ovs) is selected.

[Type 3 "When SP033/ bitB,A=11"]
Use this when performing overshoot compensation in the feed forward control during arc cutting mode.
Set the compensation amount based on the motor short-time rated current.
Increase the value in increments of 1% to find the value where overshooting ceases.

[To vary compensation amount depending on the direction]
When SV042 (OVS2) is "0", change the SP043 (OVS1) value in both +/- directions to compensate.
To change the compensation amount depending on the command direction, set this with SP042 (OVS2).
(SP043: + direction, SP042: - direction, However, the directions may be opposite depending on other settings.)
When "-1" is set, the compensation will not be performed in the command direction.

---Setting range---

-1 to 100 (Short-time rated %)
Note that when SP227/bit2 is "1", the range will be -1 to 10000 (Short-time rated 0.01%).

#13044	SP044 OBS2	Disturbance observer gain

Set the disturbance observer gain. The standard setting is "100".
To use the disturbance observer, also set SP037(JL), SP045(OBS1) and SP226/ bitE.
When not using, set to "0".

---Setting range---

0 to 500 (%)

#13045	SP045 OBS1	Disturbance observer filter frequency

Set the disturbance observer filter band.
Normally, set to "100".
To use the disturbance observer, also set SP037(JL), SP044(OBS2) and SP226/ bitE.
When not using, set to "0".

---Setting range---

0 to 1000 (rad/s)

#13046	SP046 FHz2	Notch filter frequency 2

Set the vibration frequency to suppress when machine vibration occurs.
(Enabled at 50 or more.)
When not using, set to "0".

Related parameters: SP034/bit7-5

---Setting range---

0 to 5000 (Hz)

#13047	SP047 EC	Inductive voltage compensation gain

Set the inductive voltage compensation gain. Normally, set to "100".
Lower the gain when the current FB peak exceeds the current command peak.

---Setting range---

0 to 200 (%)

#13048	SP048 LMC1	Lost motion compensation 1

Set this parameter when the protrusion (that occurs due to the non-sensitive band by friction, torsion, backlash, etc.) at quadrant change is too large.
This sets the compensation torque at quadrant change (when an axis feed direction is reversed) by Short-time rated %.
Whether to enable the lost motion compensation and the method can be set with other parameters.

[Type 2 "When SP033/bit9,8=10"]
Set the compensation amount based on the motor short-time rated current.
The standard setting is double of the friction torque. The compensation amount will be 0 when "0" is set.

Related parameters: SP033/bit9-8, SP039, SP040, SP041, SP227/bit2

[To vary compensation amount depending on the direction]
When SP041 (LMC2) is "0", change SP048 (LMC1) value in both of +/- directions to compensate.
To vary the compensation amount depending on the command direction, set this with SP041 (LMC2).
(SP048: + direction, SP041: - direction, However, the directions may be opposite depending on other settings.)
When "-1" is set, the compensation will not be performed in the command direction.

---Setting range---

-1 to 200 (Short-time rated %)
Note that when SP227/bit2 is "1", the range will be -1 to 20000 (Short-time rated 0.01%).

#13049	SP049 FFC	Acceleration rate feed forward gain

When a relative error in the synchronous control is too large, set this parameter to the axis that is delaying.
The standard setting is "0". The standard setting in the SHG control is "50".
Adjust relative errors in acceleration/deceleration by increasing the value by 50.

---Setting range---

0 to 999 (%)

#13050	SP050 TOF	Torque offset

Set the imbalance torque.

---Setting range---

-100 to 100 (Short-time rated %)

#13051	SP051 DFBT	Dual feed back control time constant

Set the control time constant in dual feed back.
When the function is valid, the standard setting is "100". When "0" is set, the value is 1 ms.
When the time constant is increased, the operation will get closer to the semi-closed control and the limit of the position loop gain will be raised.
However, this cannot be used when the spindle slip occurs in machine configuration such as V-belt drive.

Related parameters: SP017/bit1, SP052

---Setting range---

0 to 9999 (ms)

	#13052	SP052 DFBN	Dual feedback control non-sensitive band

Set the non-sensitive band in the dual feedback control.
Normally set to "0".

Related parameters: SP017/bit1, SP051

---Setting range---

0 to 9999 (1/1000°)

	#13053	SP053 ODS	Excessive error detection width (non-interpolation mode)

Set the excessive error detection width in non-interpolation mode.
Standard setting value: ODS = Maximum motor speed [r/min] × 6/PGV/2

When set to "0", the excessive error detection will not be performed.

---Setting range---

0 to 32767 (°)

	#13054	SP054 ORE	Overrun detection width in closed loop control

Set the overrun detection width in the full-closed loop control.
When the gap between the motor side encoder and the machine side encoder exceeds the set value, it is judged as an overrun and "Alarm 43" is detected.
When "-1" is set, if the differential velocity between the motor side encoder and the machine side encoder exceeds the 30% of the maximum motor speed, it will be judged as overrun and "Alarm 43" will be detected.
When "0" is set, overrun will be detected with 2°.
In the full-closed loop control, normally set this parameter to "360". During V-belt drive, set to "-1".

---Setting range---

-1 to 32767 (°)

	#13055	SP055 EMGx	Max. gate off delay time after emergency stop

Set the time required to forcibly execute READY OFF after the emergency stop is input.
Normally set to "5000".
When 5000ms or more is set for deceleration time constant at emergency stop(SP056), set the same value as SP056.
When using the power backup system (MDS-D/DH-PFU) and setting the value of this parameter to 5000ms or more, a communication error between NC and drive unit may occur when power restarts after a instantaneous power interrupt.
It is not a problem so turn the NC power ON again to start up.
When "0" is set, 7000ms is the actual value to be set.

Related parameters: SP056, SP230

---Setting range---

0 to 29900 (ms)

	#13056	SP056 EMGt	Deceleration time constant at emergency stop

Set the time constant used for the deceleration control at emergency stop. Set the time required to stop from the maximum motor speed (TSP).
When "0" is set, the deceleration control is executed with "7000ms".

Related parameters: SP055, SP230

---Setting range---

0 to 29900 (ms)

(PR)	#13057	SP057 GRA1	Spindle side gear ratio 1

Set the number of gear teeth on the spindle side when "the gear selection command (control input 4/bit6, 5)" is set to "00".

---Setting range---

1 to 32767

(PR)	#13058	SP058 GRA2	Spindle side gear ratio 2

Set the number of gear teeth on the spindle side when "the gear selection command (control input 4/bit6, 5)" is set to "01".

---Setting range---

1 to 32767

(PR)	#13059	SP059 GRA3	Spindle side gear ratio 3

Set the number of gear teeth on the spindle side when "the gear selection command (control input 4/bit6, 5)" is set to "10".

---Setting range---

1 to 32767

(PR)	#13060	SP060 GRA4	Spindle side gear ratio 4

Set the number of gear teeth on the spindle side when "the gear selection command (control input 4/bit6, 5)" is set to "11".

---Setting range---

1 to 32767

(PR)	#13061	SP061 GRB1	Motor side gear ratio 1

Set the number of gear teeth on the motor side when "the gear selection command (control input 4/bit6, 5)" is set to "00".

---Setting range---

1 to 32767

(PR)	#13062	SP062 GRB2	Motor side gear ratio 2

Set the number of gear teeth on the motor side when "the gear selection command (control input 4/bit6, 5)" is set to "01".

---Setting range---

1 to 32767

(PR)	#13063	SP063 GRB3	Motor side gear ratio 3

Set the number of gear teeth on the motor side when "the gear selection command (control input 4/bit6, 5)" is set to "10".

---Setting range---

1 to 32767

(PR)	#13064	SP064 GRB4	Motor side gear ratio 4

Set the number of gear teeth on the motor side when "the gear selection command (control input 4/bit6, 5)" is set to "11".

---Setting range---

1 to 32767

	#13065	SP065 TLM1	Torque limit 1

Set the torque limit value when the torque limit (spindle control input 1/bitA, 9, 8) is set to "001" (TL3, TL2, TL1 = 001).

---Setting range---

0 to 999 (Short-time rated %)

	#13066	SP066 TLM2	Torque limit 2

Set the torque limit value when the torque limit (spindle control input 1/bitA, 9, 8) is set to "010" (TL3, TL2, TL1 = 010).

---Setting range---

0 to 999 (Short-time rated %)

	#13067	SP067 TLM3	Torque limit 3

Set the torque limit value when the torque limit (spindle control input 1/bitA, 9, 8) is set to "011" (TL3, TL2, TL1 = 011).

---Setting range---

0 to 999 (Short-time rated %)

	#13068	SP068 TLM4	Torque limit 4

Set the torque limit value when the torque limit (spindle control input 1/bitA, 9, 8) is set to "100" (TL3, TL2, TL1 = 100).

---Setting range---

0 to 999 (Short-time rated %)

#13069	SP069 PCMP	Phase alignment completion width

Set the single-rotation position alignment completion width for phase alignment and changing from non-interpolation to spindle synchronization mode during rotation.
Set the rotation error that is required to the machine.
When the setting value decreases, the rotation error will decrease, but the cycle time (settling time) will get longer. The standard setting is "875".

---Setting range---

0 to 32767 (1°/1000)

#13070	SP070 KDDT	Phase alignment deceleration rate scale

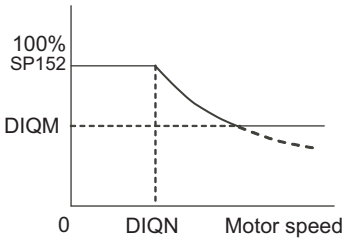
Set the scale for SP016 (DDT) to change the deceleration rate only during rotation command (command F $\Delta T \neq 0$).
When the setting value increases, the single-rotation position alignment will be completed faster, but the impact to the machine will also increase. When not using, set to "0".

---Setting range---

0 to 255 (1/16-fold)

#13071	SP071 DIQM	Variable current limit during deceleration, lower limit value

Set this parameter to adjust the deceleration time by changing the current limit value during deceleration depending on the motor speed.
As shown below, set the lower limit rate of the current limit in SP071 (DIQM), and use with SP072 (DIQN).
When DIQM is set to 100%, the standard current limit value in deceleration (SP152) is applied.

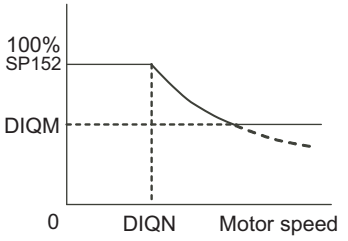


---Setting range---

0 to 999 (%)

#13072	SP072 DIQN	Variable current limit during deceleration, break point speed

Set this parameter to adjust the deceleration time by changing the current limit value during deceleration depending on the motor speed.
As shown below, set the lower limit rate of the current limit in SP071 (DIQM), and use with SP072 (DIQN).
When DIQM is set to 100%, the standard current limit value in deceleration (SP152) is applied.

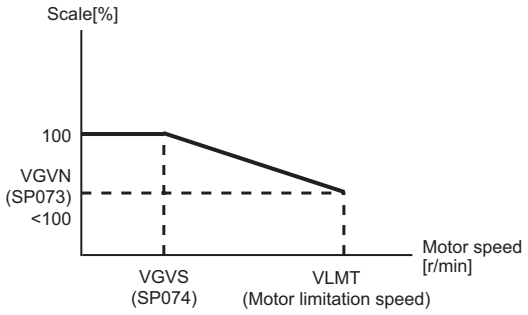


---Setting range---

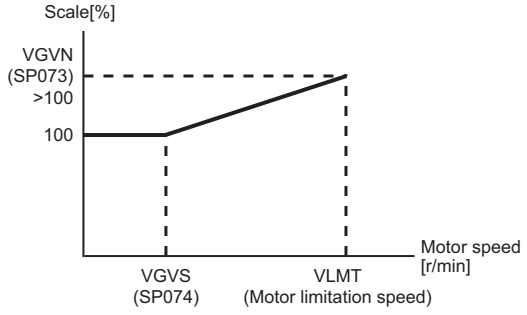
1 to 32767 (r/min)

#13073	SP073 VGVN	Variable speed gain target value

If noise is bothersome during high speed rotation, it may be reduced by lowering the speed loop gain at high speed.
Set this value to ensure the adequate response by suppressing noise and vibration at low speeds and increasing the speed loop gain at high speeds for a high-speed spindle of machining center, etc.
As shown below, set the speed loop gain rate for the overspeed detection speed in SP073 (VGVN), and use with SP074 (VGVS).
When not using, set to "0".
This function can be used when either Speed loop gain set 1 or Speed loop gain set 2 is selected.



When lowering the speed loop gain at high speed



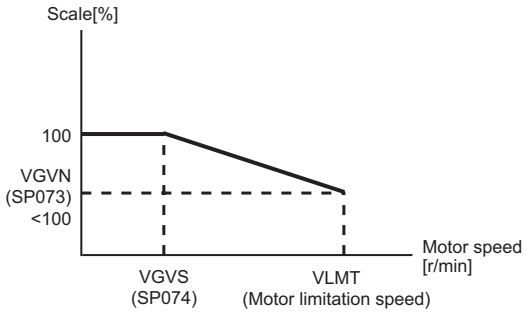
When increasing the speed loop gain at high speed

---Setting range---

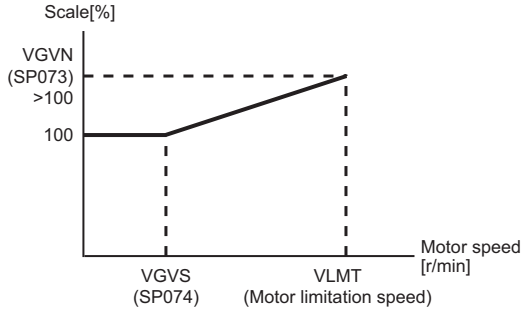
0 to 999 (%)

#13074	SP074 VGVS	Variable speed gain change start speed

If noise is bothersome during high speed rotation, it may be reduced by lowering the speed loop gain at high speed.
Set this value to ensure the adequate response by suppressing noise and vibration at low speeds and increasing the speed loop gain at high speeds for a high-speed spindle of machining center, etc.
As shown below, set the speed loop gain rate for the overspeed detection speed in SP073 (VGVN), and use with SP074 (VGVS).
When not using, set to "0".
This function can be used when either Speed loop gain set 1 or Speed loop gain set 2 is selected.



When lowering the speed loop gain at high speed



When increasing the speed loop gain at high speed

---Setting range---

0 to 32767 (r/min)

#13075	SP075 DWSH	Slip compensation scale during regeneration high-speed coil

Set the slip frequency scale during deceleration.
Normally, set to "0". (For Mitsubishi Electric adjustment)

---Setting range---

0 to 255 (1/16-fold)

#13076	SP076 DWSL	Slip compensation scale during regeneration low-speed coil

Set the slip frequency scale at deceleration when using the low-speed coil.
Normally, set to "0". (For Mitsubishi Electric adjustment)

---Setting range---

0 to 255 (1/16-fold)

#13077	SP077 IQA	Q axis current lead compensation

Set the current loop gain.
To use the coil switch function, set the current loop gain for when the high-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For Mitsubishi Electric adjustment)

---Setting range---

1 to 20480

#13078	SP078 IDA	D axis current lead compensation

Set the current loop gain.
To use the coil switch function, set the current loop gain for when the high-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For Mitsubishi Electric adjustment)

---Setting range---

1 to 20480

#13079	SP079 IQG	Q axis current gain

Set the current loop gain.
To use the coil switch function, set the current loop gain for when the high-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For Mitsubishi Electric adjustment)

---Setting range---

1 to 8192

#13080	SP080 IDG	D axis current gain

Set the current loop gain.
To use the coil switch function, set the current loop gain for when the high-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For Mitsubishi Electric adjustment)

---Setting range---

1 to 8192

#13081	SP081 IQAL	Q axis current lead compensation low-speed coil

When using coil switch function, set the current loop gain for when the low-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For Mitsubishi Electric adjustment)

---Setting range---

1 to 20480

#13082	SP082 IDAL	D axis current lead compensation low-speed coil

When using coil switch function, set the current loop gain for when the low-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For Mitsubishi Electric adjustment)

---Setting range---

1 to 20480

#13083 SP083 IQGL Q axis current gain low-speed coil

When using coil switch function, set the current loop gain for when the low-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For Mitsubishi Electric adjustment)

---Setting range---

1 to 8192

#13084 SP084 IDGL D axis current gain low-speed coil

When using coil switch function, set the current loop gain for when the low-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For Mitsubishi Electric adjustment)

---Setting range---

1 to 8192

#13085 SP085

Not used. Set to "0".

#13086 SP086

Not used. Set to "0".

#13087 SP087 FHz4 Notch filter frequency 4

Set the vibration frequency to suppress when machine vibration occurs.
(Enabled at 50 or more.)
When not using, set to "0".

Related parameters: SP034/bitB-9

---Setting range---

0 to 5000 (Hz)

#13088 SP088 FHz5 Notch filter frequency 5

Set the vibration frequency to suppress when machine vibration occurs.
(Enabled at 50 or more.)
When not using, set to "0".

Related parameters: SP034/bitF-D

---Setting range---

0 to 5000 (Hz)

#13089 SP089 TMKQ Spindle output stabilizing gain Q axis

Set the magnification of the torque current stabilizing gain. (For Mitsubishi Electric adjustment)
When set to "0", the torque current stabilization is disabled.
When not using, set to "0".

---Setting range---

0 to 32767

#13090 SP090 TMKD Spindle output stabilizing gain D axis

Set the magnification of the excitation current stabilizing gain. (For Mitsubishi Electric adjustment)
When set to "0", the excitation current stabilization is disabled.
When not using, set to "0".

---Setting range---

0 to 32767

#13091 SP091

Not used. Set to "0".

#13092 SP092

Not used. Set to "0".

#13093 SP093

Not used. Set to "0".

#13094	SP094 MPV	Magnetic pole error detection speed

In the magnetic pole position detection function, the command motor speed and motor speed during the position command stop are monitored.
Set the command motor speed level and motor speed level during the position command stop in "r/min" unit.
When the command motor speed level is set to "0", the magnetic pole position error is detected at 10r/min.
Set to "10" as a standard setting when the magnetic pole position error detection function is enabled.
This detects the magnetic pole position error when the motor speed is "100r/min".

Ten-thousands digit, Thousands digit ---------- Command motor speed level (10r/min)
Hundreds digit, Tens digit, Ones digit ---------- Motor speed level (10r/min)

---Setting range---

0 to 31999

#13095	SP095 VIAX	Lead compensation scale during high-response acceleration/deceleration

Set the magnification against delay/lead compensation (SP006) of the high-response acceleration/deceleration (valid when SP226/ bitD is set to "1").
Normally, set to "0". Set this parameter to suppress overshooting when the speed is reached.

---Setting range---

0 to 10000 (0.01%)

#13096	SP096 SDW	Speed slowdown allowable width

When the spindle slows down due to multiple cutting, set the processable speed as percentage against the NC command speed.

If the speed reduces below the tolerable range, the alarm 23 (Excessive speed error) will occur.

(E.g.) When set to 90 [%]

If S1000 is commanded, the speed reduced by 900r/min (=1000r/min × 90%) is the allowable lower limit. Thus if the spindle speed reduces to 100r/min or below, the alarm will occur.

When "0" is set, the magnification is the same as when "85" is set. When set to "-1", the allowable width will be disabled.

---Setting range---

-1,0 to 100 (%)

#13097	SP097 RNG1ex	Extension sub side encoder resolution

When setting the machine side encoder resolution in pulse (p) unit, set the number of pulses to four bite data of SP097 (high-order) and SP019 (low-order) in pulse (p) unit.

When SP097=0, the setting unit of SP019 is (kp).
Refer to SP019 for details.

Related parameters: SP019, SP020, SP098

---Setting range---

-1 to 32767

#13098	SP098 RNG2ex	Extension main side encoder resolution

When setting the motor side encoder resolution in pulse (p) unit, set the number of pulses to four bite data of SP098 (high-order) and SP020 (low-order) in pulse (p) unit.

When SP098=0, the setting unit of SP020 is (kp).
Refer to SP020 for details.

Related parameters: SP019, SP020, SP097

---Setting range---

-1 to 32767

#13099-13105	SP099-SP105	

Not used. Set to "0".

#13106	SP106 PGM	OMR-FF scale model gain

Set the scale model gain (position response) in OMR-FF control.
Set the same value as SV002(PGN).
Increase the setting value to perform a high-speed machining such as a fine arc or to improve the path error.
Lower the value when vibration occurs during acceleration/deceleration.
Set to "0" when not using OMR-FF control.

---Setting range---

0 to 300 (rad/s)

#13107-13111	SP107-SP111	

Not used. Set to "0".

#13112	SP112 IFF	OMR-FF current feed forward gain

Set the current feed forward rate in OMR-FF control.
The standard setting is "10000".
Setting value of 0 is equal to "10000(100%)" setting.
Set to "0" when not using OMR-FF control.

---Setting range---

0 to 32767 (0.01%)

#13113	SP113 OPLP	Current command value for open loop

Set the current command value for when the open loop control is enabled.
When "0" is set, the state will be the same as when "50" is set.
When not using, set to "0".
The open loop control is enabled when "SP018/bit1" is set to "1".

---Setting range---

0 to 999 (Short-time rated %)

#13114	SP114 MKT	Coil changeover gate cutoff timer

Set the time required to cut off the gate when turning OFF/ON the coil switch contactor.
The value should be longer than the coil switch contactor's OFF/ON time.
The standard setting is "150".

---Setting range---

0 to 3500 (ms)

#13115	SP115 MKT2	Coil changeover current limit timer

Set the time required to limit the current immediately after the coil switch contactor ON/OFF is completed and the gate is turned ON.
The standard setting is "250".

---Setting range---

0 to 3500 (ms)

#13116	SP116 MKIL	Coil changeover current limit value

Set the time required to limit the current immediately after the coil switch contactor ON/OFF is completed and the gate is turned ON.
The standard setting is "120".

---Setting range---

0 to 999 (Short-time rated %)

#13117	SP117 SETM	Excessive speed deviation timer

Set the time to detect the speed excessive error alarm.
Set the time required to the machine.
The standard setting is "12".

---Setting range---

0 to 60 (s)

(PR)	#13118	SP118 MSFT	Magnetic pole shift amount

Set the magnetic pole shift amount of IPM spindle motor.
During DC excitation of the initial setup: Set the same value displayed in the "AFLT gain" on the NC monitor screen in SP225/bit4=1.
When not using, set to "0".

---Setting range---

-18000 to 18000 (electrical angle 0.01°)

	#13119	SP119	

Not used. Set to "0".

	#13120	SP120	

Not used. Set to "0".

	#13121	SP121 MP Kpp	Magnetic pole detection position loop gain

Set the position loop gain in the magnetic polar detection loop.
This is used in the initial magnetic polar detection when the IPM spindle motor is turned ON.
Set to "0" when using an IM spindle motor.

---Setting range---

0 to 32767

	#13122	SP122 MP Kvp	Magnetic pole detection speed loop gain

Set the speed loop gain in the magnetic polar detection loop.
This is used in the initial magnetic polar detection when the IPM spindle motor is turned ON.
Set to "0" when using an IM spindle motor.

---Setting range---

0 to 32767

	#13123	SP123 MP Kvi	Magnetic pole detection speed loop lead compensation

Set the speed loop lead compensation in the magnetic polar detection loop.
This is used in the initial magnetic polar detection when the IPM spindle motor is turned ON.
Set to "0" when using an IM spindle motor.

---Setting range---

0 to 32767

	#13124	SP124 ILMTsp	Magnetic pole detection current limit value

Set the current limit value for the magnetic polar detection loop.
This is used in the initial magnetic polar detection when the IPM spindle motor is turned ON.
Set to "0" when using an IM spindle motor.

---Setting range---

0 to 999 (Short-time rated %)

	#13125	SP125 DA1NO	D/A output ch1 data No. / Initial DC excitation level

Input the desired data number to D/A output channel.
When using the 2-axis drive unit, set "-1" to the axis that the data will not be output.

When the DC excitation is running:
Use in the DC excitation function.
DC excitation: Set the initial excitation level when SP225/bit4=1.
When "0" is set, the state will be the same as when "20" is set.

---Setting range---

-32768 to 32767

	#13126	SP126 DA2NO	D/A output ch2 data No. / Final DC excitation level

Input the desired data number to D/A output channel.
When using the 2-axis drive unit, set "-1" to the axis that the data will not be output.

When the DC excitation is running:
Use in the DC excitation function.
DC excitation: Set the final excitation level when SP225/bit4=1.
When "0" is set, the state will be the same as when "50" is set.

---Setting range---

-32768 to 32767

	#13127	SP127 DA1MPY	D/A output ch1 output scale / Initial DC excitation time

Set the output scale in increments of 1/100.
When "0" is set, the scale is the same as when "100" is set.

When the DC excitation is running:
Use in the DC excitation function.
DC excitation: Set the initial excitation time when SP225/bit4=1.
When "0" is set, the state will be the same as when "10000" is set.

---Setting range---

-32768 to 32767 (1/100-fold)

	#13128	SP128 DA2MPY	D/A output ch2 output scale

Set the output scale in increments of 1/100.
When "0" is set, the scale is the same as when "100" is set.

---Setting range---

-32768 to 32767 (1/100-fold)

(PR)	#13129-13141	SP129-SP141

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

(PR)	#13142	SP142

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.
For IPM spindle motor
This parameter is used in initial magnetic pole detection of IPM spindle motor.
(1) Pulse application time: Set it in [μs] unit.(0 < application time < 350)
(2) Pulse application coil: To select a low-speed coil, add 1000 to the pulse application time.
(3) Polarity of estimated magnetic pole: When it is set to the reverse polarity, add "-" to the total of (1) and (2).
E.g.: When performing 333μs pulse-applied magnetic pole estimation in a low-speed coil and selecting the reverse polarity for the estimated polarity
SP142 = -(333+1000) = -1333

(PR)	#13143-13160	SP143-SP160

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

(PR)	#13161-13192	SP161-SP192

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

	#13193	SP193 LMR	Change magnification for load meter standard output (High-speed coil)

Set the standard output to be displayed as 100% in load meter using the short-time rated output ratio.
To display the continuous rated output as 100%, set as follows.
Continuous rated output/Short-time rated output × 100
When "0" is set, the standard output to be displayed as 100% in load meter will be the short-time rated output.

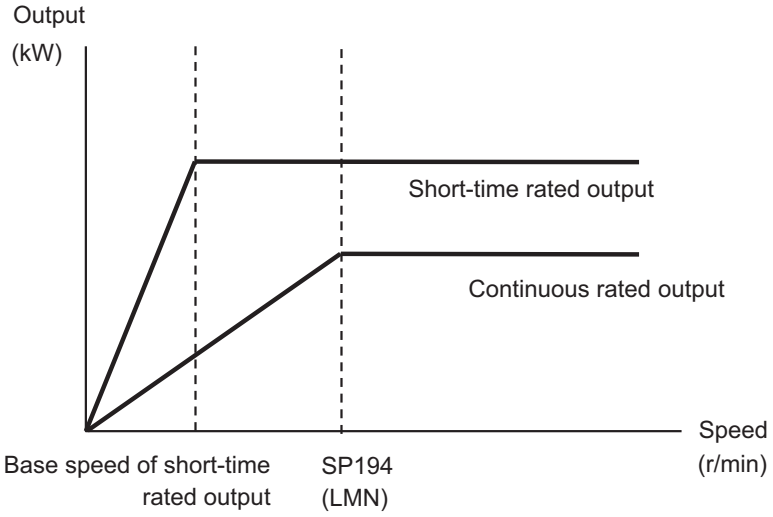
(Note) When several output characteristics such as 15-minute rating and 30-minute rating are plotted on the characteristics figure, set the change magnification for the characteristic with the highest rated output.

---Setting range---

0 to 100 (%)

#13194	SP194 LMN	Base speed for load meter standard output (High-speed coil)

Set the base speed of the standard output to be displayed as 100% in load meter.
To display the continuous rated output as 100%, set the base speed of the continuous rated output as follows.



When "0" is set, the base speed of the short-time rated output will be applied.

(Note) When the speed is less than the base speed, the standard output to be displayed as 100% in load meter changes with the motor speed.

---Setting range---

0 to 32767 (r/min)

#13195	SP195 LMRL	Change magnification for load meter standard output (Low-speed coil)

Set the standard output to be displayed as 100% in load meter using the short-time rated output ratio.
To display the continuous rated output as 100%, set as follows.
Continuous rated output/Short-time rated output × 100
When "0" is set, the standard output to be displayed as 100% in load meter will be the short-time rated output.

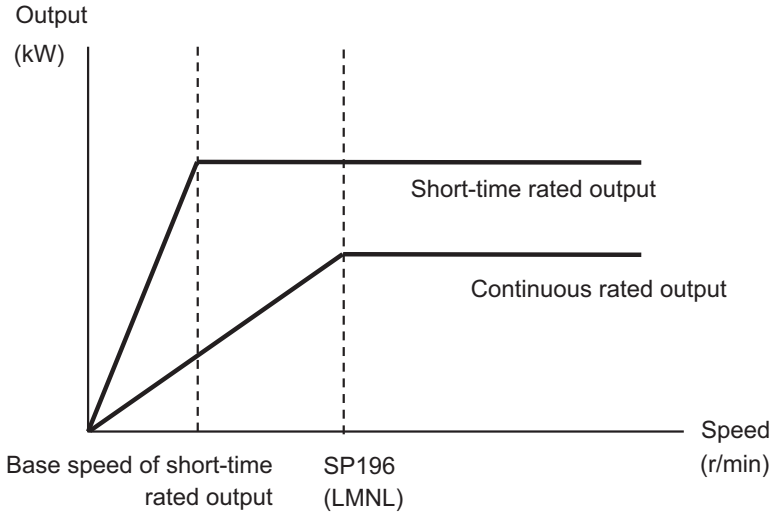
(Note) When several output characteristics such as 15-minute rating and 30-minute rating are plotted on the characteristics figure, set the change magnification for the characteristic with the highest rated output.

---Setting range---

0 to 100 (%)

#13196	SP196 LMNL	Base speed for load meter standard output (Low-speed coil)

Set the base speed of the standard output to be displayed as 100% in load meter.
To display the continuous rated output as 100%, set the base speed of the continuous rated output as follows.



When "0" is set, the base speed of the short-time rated output will be applied.

(Note) When the speed is less than the base speed, the standard output to be displayed as 100% in load meter changes with the motor speed.

---Setting range---

0 to 32767 (r/min)

#13197-13198	SP197-SP198

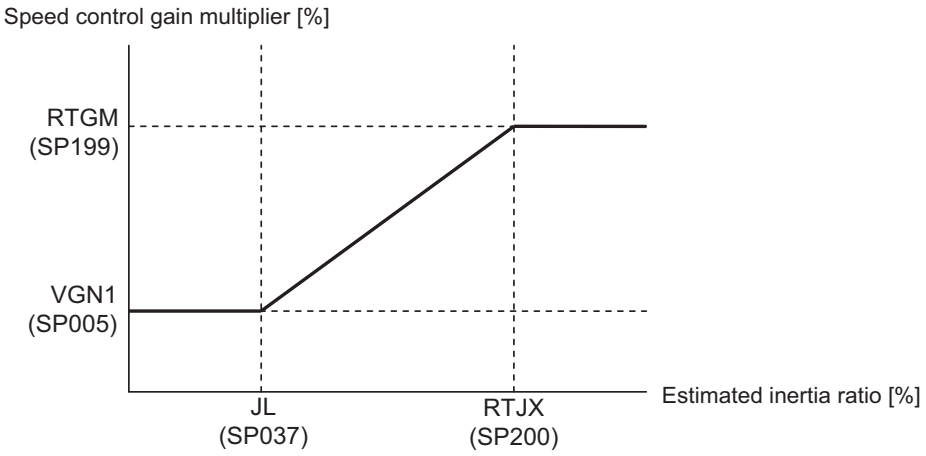
Not used. Set to "0".

#13199	SP199 RTGM	Real-time tuning: maximum adaptive gain multiplier

In case that machine resonance is induced when mounting a workpiece, the speed loop gain is switched automatically in response to inertia by setting the speed loop gain and workpiece inertia multiplier in advance.

The speed loop gain SP199(RTGM) changes in response to the estimated inertia ratio SP200(RTJX) based on the speed loop gain SP005(VGN1) and the inertia multiplier SP037(JL) which were adjusted when no workpiece was mounted.

When SP199 is set to "0", the adaptation of the speed loop gain will be disabled.



Related parameters: SP005, SP037, SP200

---Setting range---

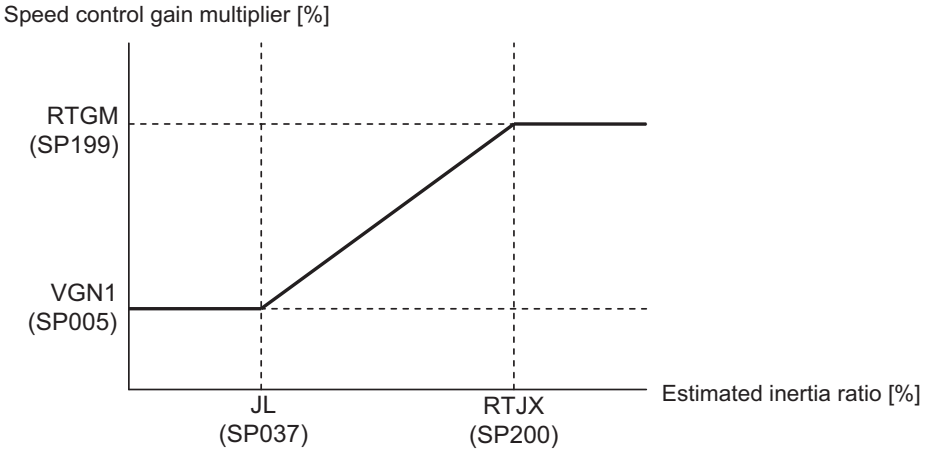
0 to 5000 (%)

#13200	SP200 RTJX	Real-time tuning: maximum adaptive inertia ratio

In case that machine resonance is induced when mounting a workpiece, the speed loop gain is switched automatically in response to inertia by setting the speed loop gain and workpiece inertia multiplier in advance.

The speed loop gain SP199(RTGM) changes in response to the estimated inertia ratio SP200(RTJX) based on the speed loop gain SP005(VGN1) and the inertia multiplier SP037(JL) which were adjusted when no workpiece was mounted.

When SP199 is set to "0", the adaptation of the speed loop gain will be disabled.



Related parameters: SP005, SP037, SP199

---Setting range---

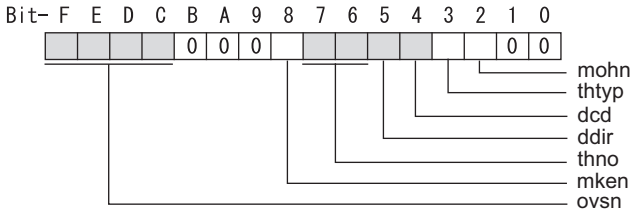
0 to 32767 (%)

#13201-13224	SP201-SP224	

Not used. Set to "0".

#13225	SP225 SFNC5	Spindle function 5

Select the spindle functions.
Functions are allocated to each bit.
Set this in hexadecimal format.



bit F-C: ovsn Overshooting compensation type 3 non-sensitive band

Set the non-sensitive band of the overshooting compensation type 3 in increments of 2°/1000.
In the feed forward control, set the non-sensitive band for the model position droop and ignore the model overshooting. Set to "2°/1000" as a standard.

bit B-9:

Not used. Set to "0".

bit 8: mken Coil switch allowance in deceleration control

This enables a coil changeover while decelerating after an emergency stop for a spindle motor with coil changeover specification. A coil changeover may enable an excessive load inertia to stop within the maximum delay time.

0: Normal (Disable)

1: Enable

bit 7-6: thno

Select the thermistor characteristics.
When SP225/bit3=0 (N type) is selected
bit7,6=
00: For Mitsubishi Electric spindle motor
01: For Mitsubishi Electric spindle motor
10: PT3-51F
11: Setting prohibited
When SP225/bit3=1 (P type) is selected
bit7,6=
00: KTY84-130 (Manufactured by Philips)
01: Setting prohibited
10: Pt1000 (Platinum resistance temperature detector)
11: Setting prohibited

bit 5: ddir Proximity switch signal enable edge

0: Falling edge 1: Rising edge

bit 4: dcd DC excitation mode

0: Normal 1: Start

bit 3: thtyp

Select the thermistor type.

0: Type N thermistor (Mitsubishi Electric standard)

1: Type P thermistor or platinum resistance temperature detector

bit 2: mohn Thermistor temperature detection

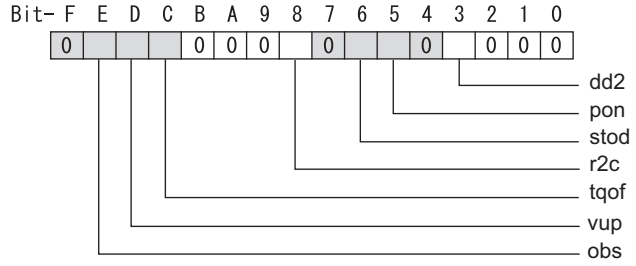
0: Normal 1: Disable

bit 1-0:

Not used. Set to "0".

#13226	SP226 SFNC6	Spindle function 6

Select the spindle functions.
Functions are allocated to each bit.
Set this in hexadecimal format.



bit F :

Not used. Set to "0".

bit E : obs Disturbance observer

0: Normal 1: Enable

bit D : vup High response acceleration / deceleration

This suppresses a temporal delay which occurs when the target speed is attained from acceleration and when the spindle stops from deceleration.
0: Normal acceleration/deceleration 1: High response acceleration/deceleration Enable

bit C : tqof Spindle output stabilization during acceleration

0: Normal 1: Disable

bit B-9 :

Not used. Set to "0".

bit 8 : r2c Temperature compensation adjustment indicator

0: Normal 1: Display

bit 7 :

Not used. Set to "0".

bit 6 : stod 4D-2 detection disabled during deceleration and stop

0: Normal 1: Alarm 4D-2 detection disabled during deceleration and stop

bit 5 : pon IPM spindle pulse application magnetic pole estimation

0: Normal 1: Enable

bit 4 :

Not used. Set to "0".

bit 3 : dd2 High-speed synchronous tapping 2

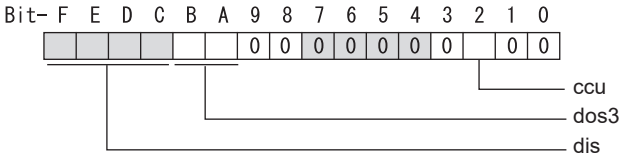
0: Normal 1: Enable

bit 2-0 :

Not used. Set to "0".

#13227	SP227 SFNC7	Spindle function 7

Select the spindle functions.
Functions are allocated to each bit.
Set this in hexadecimal format.



bit F-C : dis Digital signal input selection

0: No signal
4: Proximity switch signal detection
Other settings: setting prohibited

bit B-A : dos3 Digital signal output 3 selection (MDS-EJ-SP/SP2)

bitB,A=
00: Disable
01: Setting prohibited
10: Contactor control signal output
11: Setting prohibited

bit 9-3 :

Not used. Set to "0".

bit 2 : ccu Lost motion/overshoot compensation compensation amount setting unit

0: Short-time rated % 1: Short-time rated 0.01%

bit 1-0 :

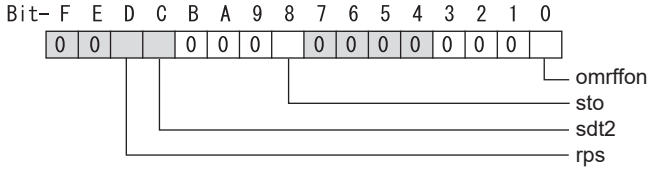
Not used. Set to "0".

#13228	SP228 SFNC8	Spindle function 8

Not used. Set to "0000".

#13229 SP229 SFNC9 Spindle function 9

Select the spindle functions.
Functions are allocated to each bit.
Set this in hexadecimal format.



bit F-E :

Not used. Set to "0".

bit D : rps Safely limited speed setting unit

0: Normal 1: 100°/min

bit C : sdt2 Specified speed output digital signal 2 output

0: Normal 1: Enable

bit B-9 :

Not used. Set to "0".

bit 8 : sto Dedicated wiring STO function

Set this parameter to use dedicated wiring STO function.
0: Dedicated wiring STO function unused 1: Dedicated wiring STO function used
(Only for MDS-E/EH and MDS-EJ/EJH)

bit 7-1 :

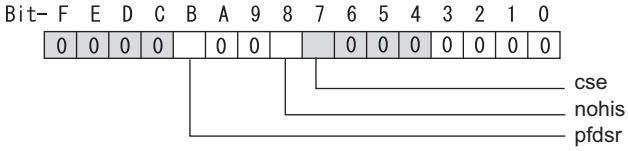
Not used. Set to "0".

bit 0 : omrffon OMR-FF control enabled

0: Disable 1: Enable

#13230 SP230 SFNC10 Spindle function 10

Select the spindle functions.
Functions are allocated to each bit.
Set this in hexadecimal format.



bit F-C :

Not used. Set to "0".

bit B : pfdsr

Set the spindle stop operation at a power failure when the deceleration and stop function at power failure is enabled.
Normal (Coast to a stop at power failure) : 0
Deceleration and stop at power failure : 1

bit A-9 :

Not used. Set to "0".

bit 8 : nohis History of communication error alarm between NC and DRV(34,36,38,39)

0: Enable 1: Disable

bit 7 : cse Spindle C axis command speed monitoring function

0: Normal setting (function disabled) 1: Function enabled

bit 6-0 :

Not used. Set to "0".

Related parameters: SP055, SP056

#13231 SP231

bit 3-0 : Sensitivity of estimated resonance frequency

Set the sensitivity of the estimated resonance frequency.
Smaller setting value enables to detect smaller vibration component
0: Normal setting 1: Sensitivity high to F: Sensitivity low.

#13232 SP232

Not used. Set to "0000".

#13233 SP233 IVC Voltage non-sensitive band compensation

When 100% is set, the voltage equivalent to the logical non-energized time will be compensated.
When "0" is set, 100% compensation will be performed.
Adjust in increments of 10% from the default value 100%.
If the value is too large, vibration or vibration noise may be generated.

---Setting range---

0 to 255 (%)

#13234 SP234

Not used. Set to "0".

(PR) #13235 SP235 R2H Temperature compensation gain

Set the magnification in converting the thermistor temperature to the control compensation amount.
When "0" is set, the temperature compensation function is disabled.
When not using, or when using an IPM spindle motor, set to "0".

---Setting range---

0 to 400 (%)

(PR) #13236 SP236 WIH Temperature compensation time constant

Set the delay time constant from the thermistor temperature to the control compensation amount.
When "0" is set, the delay time constant is disabled.
When not using, or when using an IPM spindle motor, set to "0".

---Setting range---

0 to 150 (min)

(PR) #13237 SP237 TCF Torque command filter

Set the filter for the torque command.
The standard value is "500".

---Setting range---

0 to 5000 (rad/s)

#13238 SP238 SSCFEED Safely limited speed

Set the safely limited speed at the spindle end for the SLS (Safely Limited Speed) function.
When not using, set to "0".

---Setting range---

0 to 18000 (°/min)

However, when SP229/bitD is set to "1", the setting range is from -32768 to 32767 (100°/min).

	#13239	SP239 SSCRPM	Safely limited motor speed

Set the motor's safely limited speed for the SLS (Safely Limited Speed) function.

When not using, set to "0".

---Setting range---

0 to 32767 (r/min)

(Note) The value of the safely limited speed and safely limited motor speed must satisfy the following relation. If this relation is not satisfied, the parameter error (37 or E4) will occur. (Error parameter No. is 239.) Checking this relation is executed when the drive unit is turned ON and parameter is changed and speed observation mode (states when a speed observation command is turned ON) is entered.

$$\frac{\text{SP238 :SSCFEED}}{360} \times \frac{\text{SP057 :GRA1}}{\text{SP061 :GRB1}} = \text{SP239 :SSCRPM}$$

Note that "1 (r/min)" is applied when the calculation result is "0 (r/min)"

(PR)	#13240	SP240

Not used. Set to "0".

(PR)	#13241-13256	SP241-SP256

This is automatically set by the NC system.

2.10 Spindle-type Servo Parameters

#52001 SVSPEC Spindle-mode servo: Specification

[Exclusive for spindle-mode servo motor]

bit0: Selection of position loop gain when C axis is selected

0: Use the position loop gain (#52203 SV003, #52204 SV004, #52257 SV057)

1: Use the spindle sync control position loop gain (#52249 SV049, #52250 SV050, #52258 SV058)

bit1: Selection of sync tap cycle position loop gain

0: Use the position loop gain (#52203 SV003, #52204 SV004, #52257 SV057)

1: Use the spindle sync control position loop gain (#52249 SV049, #52250 SV050, #52258 SV058)

---Setting range---

00 to FFFF (HEX)

#52002 svzsp Spindle-mode servo: Motor zero speed

[Exclusive for spindle-mode servo motor]

Specify the motor rotation speed at which zero speed detection is carried out. When the actual motor speed drops to the specified speed or below, the zero speed detection signal turns ON. The standard setting value is "50". When the setting value is "0", it is on the standard setting value.

---Setting range---

0 to 1000 (r/min)

#52003 svsdts Spindle-mode servo: Speed detection set value

[Exclusive for spindle-mode servo motor]

Specify the motor speed at which speed detection is carried out. When the actual motor speed drops to the specified speed or below, the speed detection signal turns ON. The standard setting value is 10% of the "#3001 slimt1" setting value. When the setting value is "0", it is on the standard setting value.

---Setting range---

0 to 32767(r/min)

#52004 svtlm1 Spindle-mode servo: Torque limit 1

[Exclusive for spindle-mode servo motor]

Specify the torque limit value to be applied when Torque limit (Control input 1/bitA,9,8)=001.

---Setting range---

0 to 999 (Short-time rated %)

#52005 svtlm2 Spindle-mode servo: Torque limit 2

[Exclusive for spindle-mode servo motor]

Specify the torque limit value to be applied when Torque limit (Control input 1/bitA,9,8)=010.

---Setting range---

0 to 999 (Short-time rated %)

#52006 svtlm3 Spindle-mode servo: Torque limit 3

[Exclusive for spindle-mode servo motor]

Specify the torque limit value to be applied when Torque limit (Control input 1/bitA,9,8)=011.

---Setting range---

0 to 999 (Short-time rated %)

#52201-52456 SV001-SV256 Spindle-type Servo Parameters

The description and setting range for these parameters are the same as Servo parameters "#2201 SV001" to "#2456 SV256". Refer to "2.7 Servo Parameters" for details.

(Note) Set the same value to "#52203 SV003(PGN)" for the reference and synchronized spindles in spindle synchronization.

2.11 Rotary Axis Configuration Parameters

(PR)	#7900	RCDAX_I	Orthogonal coordinate horizontal axis name

Set the name of the horizontal axis in the orthogonal coordinate system.

Set "0" when horizontal axis is not used.

---Setting range---

A,B,C,U,V,W,X,Y,Z
Two digits between A to Z and 1 to 9
0: Mechanical axis specifications

(PR)	#7901	RCDAX_J	Orthogonal coordinate vertical axis name

Set the name of the vertical axis in the orthogonal coordinate system.

Set "0" when vertical axis is not used.

---Setting range---

A,B,C,U,V,W,X,Y,Z
Two digits between A to Z and 1 to 9
0: Mechanical axis specifications

(PR)	#7902	RCDAX_K	Orthogonal coordinate height axis name

Set the name of the height axis in the orthogonal coordinate system.

Set "0" when height axis is not used.

---Setting range---

A,B,C,U,V,W,X,Y,Z
Two digits between A to Z and 1 to 9
0: Mechanical axis specifications

	#7903	G92_CRD	Origin zero set coordinate selection

Select the coordinate to preset when issuing an origin zero command (G92X_Y_Z_;).

0: Tool center coordinate

1: Holder center coordinate

	#7904	NO_TIP	Tool handle feed function selection

Select whether to enable the tool handle feed.

0: Enable (tool handle feed)

1: Disable (standard)

	#7905	NO_ABS	Selection of tool axis travel amount display at manual ABS switch ON/OFF

Select how to update the display of tool axis travel amount.

0: Update at ABS switch OFF

1: Update at every ON and OFF of ABS switch

	#7906	PASSTYP	Singular point passage type

Select the movement after passing through a singular point.

0: Type 1
The direction depends on the sign of the rotation angle of A axis or B axis at the start of tool center point control/tool cutting point control.

1: Type 2
The direction where the amount of rotation of C axis on the singular point is smaller.

	#7907	CHK_ANG	Near singular judgment angle

Set the angle for judging a position near the singular point.

When "0.000" is set, it will operate as 1.000 (°).

---Setting range---

0.000 to 5.000 (°)

	#7908	SLCT_PRG_COORD	Programming coordinate system selection

Select the coordinate system for the programming coordinate.

0: Table coordinate system (coordinate system that rotates together with workpiece)

1: Workpiece coordinate system

	#7909	IJK_VEC_MR	Posture vector mirror image selection

Select whether to enable the mirror image on the posture vector (IJK) when Type 2 is selected in "#7906 PASSTYP".

0: Disable

1: Enable

	#7910	SLCT_INT_MODE	Interpolation method selection

Select the interpolation method.
When combining spline interpolation 2 and tool center point control, only the joint interpolation method is valid.

0: Joint interpolation method

1: Single axis rotation interpolation method

	#7911	SLCT_STANDARD_POS	Reference position of rotary axis

Select the reference point of the rotary axis.

0: The origin of the workpiece coordinate system

1: The position at the time of tool center point control/tool cutting point control start command

	#7912	NO_MANUAL	Selection of 3-dimensional manual feed

Select whether to enable the 3-dimensional manual feed

0: Enable (3-dimensional manual feed)

1: Disable (standard manual feed)

	#7913	MCHN_SPEED_CTRL	Machine speed fluctuation suppression

Select whether to suppress the machine speed fluctuation due to rotary axis movement.

0: Not suppress

1: Suppress

(Note) This parameter is disabled when SSS control is enabled.

	#7914	ROT_PREFILT	Rotary axis prefilter time constant

Set the time constant for rotary axis prefilter.

By setting this time constant, the orientation change of the tool (rotary axis motion) during tool center point control/tool cutting point control becomes smoother.

This parameter can also be set from [Setup] screen ([User] - [Hi-prec param]).

When "0" is specified, the rotary axis prefiltering function is disabled.

---Setting range---

0 to 200 (ms)

	#7915	SLCT_SLOPE_CRD_MOD	Rotary axis basic position in inclined surface machining

Set the basic position of rotary axis to establish the feature coordinate system when inclined surface machining is commanded.
* The position will not change when inclined surface machining is running. It will change when the next inclined surface machining is commanded.

0: At zero degree

1: At the start position

	#7916	ROT_ERR_MODE	Rotation center error compensation method

Select the compensation method of rotation center error.

0: Compensation with orthogonal axis only.

1: Compensation with orthogonal and rotary axes.

(PR)	#7917	SLCT_G53_6_ROTAX	G53.6 rotary axes rotation order

Specify in which order to rotate the rotary axes when the address Q is unspecified in G53.6 and when the number of simultaneous contour control axes is limited to 4.

0: In the order of primary and secondary rotary axes

1: In the order of secondary and primary rotary axes

	#7918	SLCT_ROTAX_ANS	Selection of solution for defining primary rotary axis angle

Select the solution that defines the calculated angle of the primary rotary axis when address P is omitted from G53.1 or G53.6 command.

0: Default solution of each machine type

1: Solution that makes the primary rotary axis value positive

2: Solution that makes the primary rotary axis value negative

(PR)	#7920	SLCT_T1	Rotary axis selection

Select in which axis direction to rotate the base-side rotary axis of the rotary head. When the base-side rotary axis is tilting, use the tens place to select the axis around which the rotary axis is tilted.

0: Invalid

1: I axis

2: J axis

3: K axis

1x: Tilted around I axis

2x: Tilted around J axis

3x: Tilted around K axis

(Note) A value from 0 to 99 can be set from the screen. However when an invalid value is set, the operation error (M01 0127) occurs at the power ON.

---Setting range---

0 to 3

12, 13, 21, 23, 31, 32

(PR)	#7921	TIANGT1	Tilt angle

Set the tilt angle if the base-side rotary axis of the rotary head is tilted. Set the angle with the CCW direction of the tilted plane being defined as the positive direction.

---Setting range---

-89.999 to 89.999 (°)

(PR)	#7922	ROTAXT1	Rotary axis name

Set the name of the tool rotating type base-side rotary axis.

---Setting range---

A,B,C,U,V,W,X,Y,Z
Two digits between A to Z and 1 to 9
0: Mechanical axis specifications

	#7923	DIR_T1	Rotation direction

Set the rotation direction of the tool rotating type base-side rotary axis.

The rotation direction specifications vary according to the setting of "#1450 5axis_Spec/bit3" (Select specifications of rotation direction parameter).

- When "#1450 5axis_Spec/bit3" = "0"

  The specifications vary for each function.

- When "#1450 5axis_Spec/bit3" = "1"

  The specifications are common to the functions.

0: When the tool motion viewed from the workpiece is in "right-hand screw direction", it is taken as the positive direction.

1: When the tool motion viewed from the workpiece is in "left-hand screw direction", it is taken as the positive direction.

	#7924	COFST1H	Horizontal axis rotation center offset

Set the distance in the horizontal axis direction between the rotation centers of the tool-side rotary axis and the base-side rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

	#7925	COFST1V	Vertical axis rotation center offset

Set the distance in the vertical axis direction between the rotation centers of the tool-side rotary axis and the base-side rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

	#7926	COFST1T	Height axis rotation center offset

Set the distance in the height axis direction between the rotation centers of the tool-side rotary axis and the base-side rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

	#7927	CERRT1H	Horizontal axis rotation center position deviation

Set the position deviation in the horizontal axis direction of the tool rotating type base-side rotary axis rotation center. When tool rotating type base rotary axis is I axis rotation, set the position deviation of J axis rotation. When tool rotating type base rotary axis is J axis rotation, set the position deviation of K axis rotation. When tool rotating type base rotary axis is K axis rotation, set the position deviation of I axis rotation.

* Radius value is need to be set.

---Setting range---

-99999.999 to 99999.999 (mm)

(Follow as "#1006 mcmpunit" (Machine error compensation unit))

	#7928	CERRT1V	Vertical axis rotation center position deviation

Set the position deviation in the vertical axis direction of the tool rotating type base-side rotary axis rotation center. When tool rotating type base rotary axis is I axis rotation, set the position deviation of K axis rotation. When tool rotating type base rotary axis is J axis rotation, set the position deviation of I axis rotation. When tool rotating type base rotary axis is K axis rotation, set the position deviation of J axis rotation.

* Radius value is need to be set.

---Setting range---

-99999.999 to 99999.999 (mm)

(Follow as "#1006 mcmpunit" (Machine error compensation unit))

(PR)	#7930	LCT_T2	Rotary axis selection

Select in which axis direction to rotate the tool-side rotary axis of the rotary head. When the tool-side rotary axis is tilting, use the tens place to select the axis around which the rotary axis is tilted.

0: Invalid

1: I axis

2: J axis

3: K axis

1x: Tilted around I axis

2x: Tilted around J axis

3x: Tilted around K axis

(Note) A value from 0 to 99 can be set from the screen. However when an invalid value is set, the operation error (M01 0127) occurs at the power ON.

---Setting range---

0 to 3

12, 13, 21, 23, 31, 32

(PR)	#7931	TIANGT2	Tilt angle

Set the tilt angle if the tool-side rotary axis of the rotary head is tilted. Set the angle with the CCW direction of the tilted plane being defined as the positive direction.

---Setting range---

-89.999 to 89.999 (°)

(PR)	#7932	ROTAXT2	Rotary axis name

Set the name of the tool rotating type tool-side rotary axis.

---Setting range---

A,B,C,U,V,W,X,Y,Z
Two digits between A to Z and 1 to 9
0: Mechanical axis specifications

	#7933	DIR_T2	Rotation direction

Set the rotation direction of the tool rotating type tool-side rotary axis.

The rotation direction specifications vary according to the setting of "#1450 5axis_Spec/bit3" (Select specifications of rotation direction parameter).

- When "#1450 5axis_Spec/bit3" = "0"

The specifications vary for each function.

- When "#1450 5axis_Spec/bit3" = "1"

The specifications are common to the functions.

0: When the tool motion viewed from the workpiece is in "right-hand screw direction", it is taken as the positive direction.

1: When the tool motion viewed from the workpiece is in "left-hand screw direction", it is taken as the positive direction.

	#7934	COFST2H	Horizontal axis rotation center offset

Set the distance in the horizontal axis direction between the spindle holder center and the rotation center of the tool-side rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

	#7935	COFST2V	Vertical axis rotation center offset

Set the distance in the vertical axis direction between the spindle holder center and the rotation center of the tool-side rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

	#7936	COFST2T	Height axis rotation center offset

Set the distance in the height axis direction between the spindle holder center and the rotation center of the tool-side rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

	#7937	CERRT2H	Horizontal axis rotation center position deviation

Set the position deviation in the horizontal axis direction of the tool rotating type tool-side rotary axis rotation center. When tool rotating type tool rotary axis is I axis rotation, set the position deviation of J axis rotation. When tool rotating type tool rotary axis is J axis rotation, set the position deviation of K axis rotation. When tool rotating type tool rotary axis is K axis rotation, set the position deviation of I axis rotation.

* Radius value is need to be set.

---Setting range---

-99999.999 to 99999.999 (mm)

(Follow as "#1006 mcmpunit" (Machine error compensation unit))

	#7938	CERRT2V	Vertical axis rotation center position deviation

Set the position deviation in the vertical axis direction of the tool rotating type tool-side rotary axis rotation center. When tool rotating type tool rotary axis is I axis rotation, set the position deviation of K axis rotation. When tool rotating type tool rotary axis is J axis rotation, set the position deviation of I axis rotation. When tool rotating type tool rotary axis is K axis rotation, set the position deviation of J axis rotation.

* Radius value is need to be set.

---Setting range---

-99999.999 to 99999.999 (mm)

(Follow as "#1006 mcmpunit" (Machine error compensation unit))

(PR)	#7940	SLCT_W1	Rotary axis selection

Select in which axis direction to rotate the base-side rotary axis of the rotary table. When the base-side rotary axis is tilting, use the tens place to select the axis around which the rotary axis is tilted.

0: Invalid

1: I axis

2: J axis

3: K axis

1x: Tilted around I axis

2x: Tilted around J axis

3x: Tilted around K axis

(Note) A value from 0 to 99 can be set from the screen. However when an invalid value is set, the operation error (M01 0127) occurs at the power ON.

---Setting range---

0 to 3

12, 13, 21, 23, 31, 32

(PR)	#7941	TIANGW1	Tilt angle

Set the tilt angle if the base-side rotary axis of the rotary table is tilted. Set the angle with the CCW direction of the tilted plane being defined as the negative direction.

---Setting range---

-89.999 to 89.999 (°)

(PR)	#7942	ROTAXW1	Rotary axis name

Set the name of the table rotating type base-side rotary axis.

---Setting range---

A,B,C,U,V,W,X,Y,Z
Two digits between A to Z and 1 to 9
0: Mechanical axis specifications

	#7943	DIR_W1	Rotation direction

Set the rotation direction for the table rotating type base-side rotary axis.

The rotation direction specifications vary according to the setting of "#1450 5axis_Spec/bit3" (Select specifications of rotation direction parameter).

- When "#1450 5axis_Spec/bit3" = "0"

The specifications vary for each function.

- When "#1450 5axis_Spec/bit3" = "1"

The specifications are common to the functions.

0: When the tool motion viewed from the workpiece is in "right-hand screw direction", it is taken as the positive direction.

1: When the tool motion viewed from the workpiece is in "left-hand screw direction", it is taken as the positive direction.

(Note) Rotation center error compensation is not affected by the setting value of "Select specifications of rotation direction parameter" (#1450 5axis_Spec/bit3).

The operation is performed as follows.

♦The rotary axis rotates about the I-axis or K-axis.

0: When the tool motion viewed from the workpiece is in "right-hand screw direction", it is taken as the positive direction.

1: When the tool motion viewed from the workpiece is in "left-hand screw direction", it is taken as the positive direction.

♦The rotary axis rotates about the J-axis.

0: When the tool motion viewed from the workpiece is in "left-hand screw direction", it is taken as the positive direction.

1: When the tool motion viewed from the workpiece is in "right-hand screw direction", it is taken as the positive direction.

	#7944	COFSW1H	Horizontal axis rotation center offset

When all axes are at the machine zero point, set the distance in the horizontal axis direction from the machine zero point to the rotation center of the base-side rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

	#7945	COFSW1V	Vertical axis rotation center offset

When all axes are at the machine zero point, set the distance in the vertical axis direction from the machine zero point to the rotation center of the base-side rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

	#7946	COFSW1T	Height axis rotation center offset

When all axes are at the machine zero point, set the distance in the height axis direction from the machine zero point to the rotation center of the base-side rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

	#7947	CERRW1H	Horizontal axis rotation center position deviation

Set the position deviation in the horizontal axis direction of the table rotating type base-side rotary axis rotation center. When table rotating type base rotary axis is I axis rotation, set the position deviation of J axis rotation. When table rotating type base rotary axis is J axis rotation, set the position deviation of K axis rotation. When table rotating type base rotary axis is K axis rotation, set the position deviation of I axis rotation.

* Radius value is need to be set.

---Setting range---

-99999.999 to 99999.999 (mm)

(Follow as "#1006 mcmpunit" (Machine error compensation unit))

	#7948	CERRW1V	Vertical axis rotation center position deviation

Set the position deviation in the vertical axis direction of the table rotating type base-side rotary axis rotation center. When table rotating type base rotary axis is I axis rotation, set the position deviation of K axis rotation. When table rotating type base rotary axis is J axis rotation, set the position deviation of I axis rotation. When table rotating type base rotary axis is K axis rotation, set the position deviation of J axis rotation.

* Radius value is need to be set.

---Setting range---

-99999.999 to 99999.999 (mm)

(Follow as "#1006 mcmpunit" (Machine error compensation unit))

(PR)	#7950	SLCT_W2	Rotary axis selection

Select in which axis direction to rotate the workpiece-side rotary axis of the rotary table. When the workpiece-side rotary axis is tilting, use the tens place to select the axis around which the rotary axis is tilted.

0: Invalid

1: I axis

2: J axis

3: K axis

1x: Tilted around I axis

2x: Tilted around J axis

3x: Tilted around K axis

(Note) A value from 0 to 99 can be set from the screen. However when an invalid value is set, the operation error (M01 0127) occurs at the power ON.

---Setting range---

0 to 3

12, 13, 21, 23, 31, 32

(PR)	#7951	TIANGW2	Tilt angle

Set the tilt angle if the workpiece-side rotary axis of the rotary table is tilted. Set the angle with the CCW direction of the tilted plane being defined as the negative direction.

---Setting range---

-89.999 to 89.999 (°)

(PR)	#7952	ROTAXW2	Rotary axis name

Set the name of the table rotating type workpiece-side rotary axis.

---Setting range---

A,B,C,U,V,W,X,Y,Z
Two digits between A to Z and 1 to 9
0: Mechanical axis specifications

#7953	DIR_W2	Rotation direction

Set the rotation direction for the table rotating type workpiece-side rotary axis.

The rotation direction specifications vary according to the setting of "#1450 5axis_Spec/bit3" (Select specifications of rotation direction parameter).

- When "#1450 5axis_Spec/bit3" = "0"

The specifications vary for each function.

- When "#1450 5axis_Spec/bit3" = "1"

The specifications are common to the functions.

0: When the tool motion viewed from the workpiece is in "right-hand screw direction", it is taken as the positive direction.

1: When the tool motion viewed from the workpiece is in "left-hand screw direction", it is taken as the positive direction.

#7954	COFSW2H	Horizontal axis rotation center offset

When all axes are at the machine zero point, set the distance in the horizontal axis direction between rotation centers of the base-side rotary axis and the workpiece-side rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

#7955	COFSW2V	Vertical axis rotation center offset

When all axes are at the machine zero point, set the distance in the vertical axis direction between rotation centers of the base-side rotary axis and the workpiece-side rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

#7956	COFSW2T	Height axis rotation center offset

When all axes are at the machine zero point, set the distance in the height axis direction between rotation centers of the base-side rotary axis and the workpiece-side rotary axis.

---Setting range---

-99999.999 to 99999.999 (mm)

#7957	CERRW2H	Horizontal axis rotation center position deviation

Set the position deviation in the horizontal axis direction of the table rotating type workpiece-side rotary axis rotation center. When table rotating type workpiece side rotary axis is I axis rotation, set the position deviation of J axis rotation. When table rotating type workpiece side rotary axis is J axis rotation, set the position deviation of K axis rotation. When table rotating type workpiece side rotary axis is K axis rotation, set the position deviation of I axis rotation.

* Radius value is need to be set.

---Setting range---

-99999.999 to 99999.999 (mm)

(Follow as "#1006 mcmpunit" (Machine error compensation unit))

#7958	CERRW2V	Vertical axis rotation center position deviation

Set the position deviation in the vertical axis direction of the table rotating type workpiece-side rotary axis rotation center. When table rotating type workpiece side rotary axis is I axis rotation, set the position deviation of K axis rotation. When table rotating type workpiece side rotary axis is J axis rotation, set the position deviation of I axis rotation. When table rotating type workpiece side rotary axis is K axis rotation, set the position deviation of J axis rotation.

* Radius value is need to be set.

---Setting range---

-99999.999 to 99999.999 (mm)

(Follow as "#1006 mcmpunit" (Machine error compensation unit))

#7960	Rot1 Ang Geo Dev1	Angular deviation 1 of center line of 1st rotary axis

When 1st rotary axis is I axis rotation, set the angular deviation of J axis rotation. When 1st rotary axis is J axis rotation, set the angular deviation of K axis rotation. When 1st rotary axis is K axis rotation, set the angular deviation of I axis rotation.

---Setting range---

-1.000000 to 1.000000 (deg)

#7961	Rot1 Ang Geo Dev2	Angular deviation 2 of center line of 1st rotary axis

When 1st rotary axis is I axis rotation, set the angular deviation of K axis rotation. When 1st rotary axis is J axis rotation, set the angular deviation of I axis rotation. When 1st rotary axis is K axis rotation, set the angular deviation of J axis rotation.

---Setting range---

-1.000000 to 1.000000 (deg)

#7962	Rot2 Ang Geo Dev1	Angular deviation 1 of center line of 2nd rotary axis

When 2nd rotary axis is I axis rotation, set the angular deviation of J axis rotation. When 2nd rotary axis is J axis rotation, set the angular deviation of K axis rotation. When 2nd rotary axis is K axis rotation, set the angular deviation of I axis rotation.

---Setting range---

-1.000000 to 1.000000 (deg)

#7963	Rot2 Ang Geo Dev2	Angular deviation 2 of center line of 2nd rotary axis

When 2nd rotary axis is I axis rotation, set the angular deviation of K axis rotation. When 2nd rotary axis is J axis rotation, set the angular deviation of I axis rotation. When 2nd rotary axis is K axis rotation, set the angular deviation of J axis rotation.

---Setting range---

-1.000000 to 1.000000 (deg)

#7967	SPINDLE_END_OFS_H	Spindle end offset for horizontal axis

When all axes are at the machine zero point, set the distance in the horizontal axis direction from the machine zero point to the spindle end.

This parameter can be used only when Tool head hot swapping function is enabled.

---Setting range---

-99999.999 to 99999.999 (mm)

#7968	SPINDLE_END_OFS_V	Spindle end offset for vertical axis

When all axes are at the machine zero point, set the distance in the vertical axis direction from the machine zero point to the spindle end.

This parameter can be used only when Tool head hot swapping function is enabled.

---Setting range---

-99999.999 to 99999.999 (mm)

#7969	SPINDLE_END_OFS_T	Spindle end offset for height axis

When all axes are at the machine zero point, set the distance in the height axis direction from the machine zero point to the spindle end.

This parameter can be used only when Tool head hot swapping function is enabled.

---Setting range---

-99999.999 to 99999.999 (mm)

2.12 PLC Timer

#16000-16703	**T0 - T703**	**PLC timer <10ms/100ms>**

Set the time for the timer used in the PLC program (ladder).
The 10ms timer and 100ms timer are identified by the command used.
This setting value is valid when #6449/bit0 = 0.

The timer T setting method (variable/fixed) and No. of points can be set with #6454/bit3-bit0.

- When #6454/bit3-0 = 0000, variable T: None, Fixed T: #16000-#16703
- When #6454/bit3-0 = 0001, variable T: #16000-#16099, Fixed T: #16100-#16703
- When #6454/bit3-0 = 0010, variable T: #16000-#16199, Fixed T: #16200-#16703
- When #6454/bit3-0 = 0011, variable T: #16000-#16299, Fixed T: #16300-#16703

:

- When #6454/bit3-0=0111, variable T: #16000-#16703 Fixed T: None

The time unit of the time set by this parameter can be changed with the setting of "#8142 PLC timer unit".

- When #8142 = 0, the time unit of the timer (10 ms or 100 ms) is determined by the PLC program instruction.
- When #8142 = 1, the time unit of the timer is 1 ms.

---Setting range---

When #8142 = 0: 0 to 32767 (x 10 ms or x 100 ms)

When #8142 = 1, and 10 ms timer is used: 0 to 327670 (ms)

When #8142 = 1, and 100 ms timer is used: 0 to 3276700 (ms)

2.13 PLC Integrated Timer

#17000-17063	ST0 - ST63	PLC integrated timer <100ms INC.>

Set the time for the integrated timer used in the PLC program (ladder).
This setting value is valid when #6449/bit0 = 0.

The timer ST setting method (variable/fixed) and No. of points can be set with #6453/bit7-bit5.

- When #6453/bit7-5 = 000, variable ST: None, Fixed ST: #17000-#17063
- When #6453/bit7-5 = 001, variable ST: #17000-#17019, Fixed ST: #17020-#17063
- When #6453/bit7-5 = 010, variable ST: #17000-#17039, Fixed ST: #17040-#17063
- When #6453/bit7-5 = 011, variable ST: #17000-#17063, Fixed ST: None

The time unit of the time set by this parameter can be changed with the setting of "#8143 PLC int.timer unit".

- When #8143 = 0, the time unit of the timer is determined by the PLC program instruction.
- When #8143 = 1, the time unit of the timer is 1 ms.
- When #8143 = 2, the time unit of the timer is 10 ms.

---Setting range---

When #8143 = 0: 0 to 32767 (x 100 ms)

When #8143 = 1, and integrated timer is used: 0 to 3276700 (ms)

When #8143 = 2, and integrated timer is used: 0 to 327670 (x 10 ms)

2.14 PLC Counter

#17200-17455	**C000 - C255**	**Counter**

Set the counter used in the PLC program (ladder).
This setting value is valid when #6449/bit0 = 0.

The counter C setting method (variable/fixed) and No. of points can be set with #6454/bit7-bit4.

- When #6454/bit7-4 = 0000, variable C: None, Fixed C: #17200-#17455
- When #6454/bit7-4 = 0001, variable C: #17200-#17239, Fixed C: #17240-#17455
- When #6454/bit7-4 = 0010, variable C: #17200-#17279, Fixed C: #17280-#17455
- When #6454/bit7-4 = 0011, variable C: #17200-#17319, Fixed C: #17320-#17455

:

- When #6454/bit7-4 = 0111, variable C: #17200-#17455, Fixed C: None

---Setting range---

0 to 32767

2.15 PLC Constants

#18001-18150	**R7500,7501 - R7798,7799**	**PLC constant (Base area)**

Set the value to be set in the data type R register (R7500 to R7799) used in the PLC program (ladder).

---Setting range---

-2147483648 to 2147483647

#18151-18900	**R8300,8301 - R9798,9799**	**PLC constant (Extension area)**

Set the value to be set in the data type R register (R8300 to R9799) used in the PLC program (ladder).

#18151 to #18900 is used as the PLC constant extended area.
The area is valid for the number of PLC constant extension points ("#1326 PLC Const Ext. Num" setting value), starting with #18151.

---Setting range---

-2147483648 to 2147483647

#59301-59600	**R27500,27501 - R28098,28099**	**PLC constant (Extension area2)**

Set the value to be set in the data type R register (R27500 to R28099) used in the PLC program (ladder).

---Setting range---

-2147483648 to 2147483647

2.16 PLC Bit Selection

(Note) #6449 to #6496 are PLC operation parameters used by the machine tool builder and Mitsubishi Electric. Refer to "PLC Development Manual" and "PLC Programming Manual" for details.

#6401-6448 R7800-Low - R7823-High Bit selection

This is the bit type parameter used in the PLC program (ladder).

#6449 R7824-Low Bit selection

bit7: Control unit thermal alarm valid

bit6: Setting and display unit thermal management valid (This function may not be available for some NC models.)

bit5: Set to "0".

bit4: Battery alarm/warning detection disabled

(Note) When the parameter is set to "1", the "Battery alarm" signal and the "Battery warning" signal will not be turned ON, and the alarm messages will not be displayed.

bit3: Counter C retention

bit2: Integrated timer ST retention

bit1: PLC counter program valid

bit0: PLC timer program valid

#6450 R7824-High Bit selection

bit7: Set to "0".

bit6: External alarm message display (This function may not be available for some NC models.)

bit5: Alarm/operator change (This function may not be available for some NC models.)

bit4: Full screen display of message (This function may not be available for some NC models.)

bit3: Set to "0".

bit2: Operator message valid

bit1: Alarm message display interface

1: R method

0: F method

bit0: Alarm message valid

#6451 R7825-Low Bit selection

bit7-3: Set to "0".

bit2: Built-in edit function edit invalid (This function may not be available for some NC models.)

bit1: Set to "0".

bit0: Built-in edit function valid (This function may not be available for some NC models.)

#6452 R7825-High Bit selection

bit7: Set to "0".

bit6: Branch destination label check valid

bit5: Set to "0".

bit4: Serial handy terminal communication valid

bit3-0: Set to "0".

#6453 R7826-Low Bit selection

bit7-5: Integrated timer ST Variable/fixed Number of points setting

bit4: Set to "0".

bit3: Operation by the menu [Ladder Monitor]

0: Screen can transit to PLC on-board screen after MTB password is input.

1: Screen can transit to PLC on-board screen without MTB password input.

bit2-0: Message language change code

#6454 R7826-High Bit selection

bit7-4: Counter C Variable/fixed Number of points setting

bit3-0: Timer T Variable/fixed Number of points setting

#6455	R7827-Low	Bit selection

bit7: Enable ladder program writing during RUN
bit6: Enable ladder program writing during RUN (in high-speed processing)
bit5-4: Set to "0".
bit3: Display type switching for operator message
1: R method
0: F method
bit2-0: R device access variables decimal point valid region

#6456	R7827-High	Bit selection

bit7-5: Set to "0".
bit4: Motor insulation deterioration detection ON
bit3: Set to "0".
bit2: PLS/PLF instruction Holding PLC in STOP state valid
bit1-0: Set to "0".

#6457-6458	R7828-Low - R7828-High	Bit selection

High-speed input specification 1

#6459-6460	R7829-Low - R7829-High	Bit selection

High-speed input specification 2

#6461-6462	R7830-Low - R7830-High	Bit selection

High-speed output specification 1

#6463-6464	R7831-Low - R7831-High	Bit selection

High-speed output specification 2

#6465-6466	R7832-Low - R7832-High	Bit selection

High-speed input specification 3

#6467-6468	R7833-Low - R7833-High	Bit selection

High-speed input specification 4

#6469-6470	R7834-Low - R7834-High	Bit selection

Set to "0".

#6471	R7835-Low	Bit selection

bit7-6: Operation mode of the user safety sequence project
bit5-2: Set to "0".
bit1: Enable layout
bit0: Set to "0".

#6472	R7835-High	Bit selection

Operation mode of the machine sequence project

#6473-6474	R7836-Low - R7836-High	Bit selection

High-speed output specification 3

#6475-6476	R7837-Low - R7837-High	Bit selection

High-speed output specification 4

#6477-6480	R7838-Low - R7839-High	Bit selection

Set to "0".

#6481-6496	R7840-Low - R7847-High	Bit selection

This is reserved for debugging by Mitsubishi Electric. Set to "0".

#6497-6596	R7848-Low - R7897-High	Bit selection

This is the bit type parameter used in the PLC program (ladder).

#59001-59100	**R7898-Low - R7947-High**	**Bit selection expansion 2**

This is the bit type parameter used in the PLC program (ladder).

2.17 Machine Error Compensation Parameters

(PR)	#4000	Pinc	Machine error compensation increment method

Select the method to set the machine error compensation data.

0: Absolute amount method

1: Incremental amount method

	#4001	cmpax	Base axis <n-th axis>

Set the name of the base axis for machine error compensation.

(1) For the pitch error compensation, set the name (#1013 axname) of the axis to be compensated.

(2) For the relative position compensation, set the name (#1013 axname) of the axis to be used as the reference.

For a system configured with a single part system, set the axis name only.

For a system configured with multiple part systems, set the part system number and the axis name.

(Example) Z axis of the 2nd part system: 2Z

This parameter can also be set with the axis name and the serial number.

(Example) When $1: with C axis, $2: without C axis, and $3: with C axis, the C axis of the 3rd part system ($3) is set with "C2".

To set a PLC axis as the base axis, set it with P and the serial number of the PLC axis.

(Example) 3rd PLC axis: P3

---Setting range---

Axis name, e.g. X, Y, Z, U, V, W, A, B, C or H

Part system number + Axis name, e.g. 1X, 1Y, 1Z, 2X, 2Y and 2Z

Axis name + Serial number of the axis, e.g. X1, Y1, Z1, P1, P2 and P3

	#4002	drcax	Compensation axis <n-th axis>

Set the name of the compensation axis for machine error compensation.

(1) For the pitch error compensation, set the same axis name as in "#4001 cmpax".

(2) For the relative position compensation, set the name (#1013 axname) of the axis to be actually compensated.

For a system configured with a single part system, set the axis name only.

For a system configured with multiple part systems, set the part system number and the axis name.

(Example) Z axis of the 2nd part system: 2Z

This parameter can also be set with the axis name and the serial number.

(Example) When $1: with C axis, $2: without C axis, and $3: with C axis, the C axis of the 3rd part system ($3) is set with "C2".

To set a PLC axis as the compensation axis, set it with P and the serial number of the PLC axis.

(Example) 3rd PLC axis: P3

---Setting range---

Axis name, e.g. X, Y, Z, U, V, W, A, B, C or H

Part system number + Axis name, e.g. 1X, 1Y, 1Z, 2X, 2Y and 2Z

Axis name + Serial number of the axis, e.g. X1, Y1, Z1, P1, P2 and P3

	#4003	rdvno	Division point number at reference position <n-th axis>

Set the compensation data No. corresponding to the reference position. As the reference position is actually the base position, there is no compensation No. Therefore set the number that is decremented by 1.

(Note) When bidirectional pitch error compensation is enabled, set compensation data No. corresponding to reference point in shifting in plus direction.

---Setting range---

4101 to 5999

#4004	mdvno	Division point number at the most negative side <n-th axis>

Set the compensation data No. at the farthest end on the negative side.

(Note) When the axis moves in positive direction with bidirectional pitch error compensation enabled, set compensation data No. of which locates on the nearest point to negative side. The compensation point should be set with even number.

---Setting range---

4101 to 5999

#4005	pdvno	Division point number at the most positive side <n-th axis>

Set the compensation data No. at the farthest end on the positive side.

(Note) When the axis moves in negative direction with bidirectional pitch error compensation enabled, set compensation data No. of which locates on the nearest point to positive side. The compensation point should be set with even number.

---Setting range---

4101 to 5999

#4006	sc	Compensation scale factor <n-th axis>

Set the scale factor for the compensation amount.

---Setting range---

0 to 99

#4007	spcdv	Division interval <n-th axis>

Set the interval to divide the basic axis.

Each compensation data will be the compensation amount for each of these intervals.

---Setting range---

0.001 to 9999.999 (mm)

#4008	twopc	Bidirectional pitch error compensation <n-th axis>

Select whether to enable bidirectional pitch error compensation.

0: Disable

1: Enable

#4009	refcmp	Reference position compensation amount <n-th axis>

When bidirectional pitch error compensation is enabled, set the compensation amount of the reference position when the axis moves to the position from the opposite direction of the zero point return.

(Note) The actual compensation amount will be the value obtained by multiplying the setting value with the compensation scale.

---Setting range---

-32768 to 32767

#4101-5999

Set the compensation amount for each axis.

(Note) The actual compensation amount will be the value obtained by multiplying the setting value with the compensation scale.

---Setting range---

-32768 to 32767

2.18 Macro List

#7001 M[01] Code

Set the M code used for calling out the macro with the M command.

Select codes to be entered other than the codes basically required by the machine and M codes of M0, M1, M2, M30, M96 through M99, and M198.

This is valid when "#1195 Mmac" is set to "1".

---Setting range---

0 to 9999

#7002 M[01] TYPE

Specify the macro call type.

0: Equivalent to M98 P****;

1: Equivalent to G65 P****;

2: Equivalent to G66 P****;

3: Equivalent to G66.1 P****;

4: Equivalent to G144 D0 A****; (Sub part system control II complete wait method) (for L system only)

5: Equivalent to G144 D1 A****; (Sub part system control II parallel process method) (for L system only)

Others: Equivalent to M98 P****;

#7003 M[01] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---

Program name or file name (up to 32 characters)

#7011 M[02] Code

The setting method is same as "#7001".

#7012 M[02] Type

The setting method is same as "#7002".

#7013 M[02] Program No.

The setting method is same as "#7003".

#7021 M[03] Code

The setting method is same as "#7001".

#7022 M[03] Type

The setting method is same as "#7002".

#7023 M[03] Program No.

The setting method is same as "#7003".

#7031 M[04] Code

The setting method is same as "#7001".

#7032 M[04] Type

The setting method is same as "#7002".

#7033 M[04] Program No.

The setting method is same as "#7003".

#7041 M[05] Code

The setting method is same as "#7001".

#7042 M[05] Type

The setting method is same as "#7002".

#7043 M[05] Program No.

The setting method is same as "#7003".

#7051 M[06] Code

The setting method is same as "#7001".

#7052 M[06] Type

The setting method is same as "#7002".

#7053 M[06] Program No.

The setting method is same as "#7003".

#7061 M[07] Code

The setting method is same as "#7001".

#7062 M[07] Type

The setting method is same as "#7002".

#7063 M[07] Program No.

The setting method is same as "#7003".

#7071 M[08] Code

The setting method is same as "#7001".

#7072 M[08] Type

The setting method is same as "#7002".

#7073 M[08] Program No.

The setting method is same as "#7003".

#7081 M[09] Code

The setting method is same as "#7001".

#7082 M[09] Type

The setting method is same as "#7002".

#7083 M[09] Program No.

The setting method is same as "#7003".

#7091 M[10] Code

The setting method is same as "#7001".

#7092 M[10] Type

The setting method is same as "#7002".

#7093 M[10] Program No.

The setting method is same as "#7003".

#7102 M2mac Type

Set the type for when calling out the macro with the 2nd miscellaneous command.

The macro will be called out with the "#1170 M2name" address command when "#1198 M2mac" is set to "1".

The setting method is same as "M call macro".

---Setting range---

0 to 3

#7103 M2mac Program No.

Set the program No. for when calling out the macro with the 2nd miscellaneous command.

The macro will be called out with the "#1170 M2name" address command when "#1198 M2mac" is set to "1".

The setting method is same as "M call macro".

---Setting range---

Program name or file name (up to 32 characters)

#7201 G[01] Code

Set the G code to be used when calling the macro with a G command.

Do not set a G code used in the system.

G101 to G110 and G200 to G202 are user macro I codes. However, if a parameter is set for the G code call code, the G code call will have the priority, and these cannot be used as the user macro I.

---Setting range---

1 to 999

#7202 G[01] Type

Specify the macro call type.

0: Equivalent to M98 P****;

1: Equivalent to G65 P****;

2: Equivalent to G66 P****;

3: Equivalent to G66.1 P****;

#7203 G[01] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---

Program name or file name (up to 32 characters)

#7211 G[02] Code

The setting method is same as "#7201".

#7212 G[02] Type

The setting method is same as "#7202".

#7213 G[02] Program No.

The setting method is same as "#7203".

#7221 G[03] Code

The setting method is same as "#7201".

#7222 G[03] Type

The setting method is same as "#7202".

#7223 G[03] Program No.

The setting method is same as "#7203".

#7231 G[04] Code

The setting method is same as "#7201".

#7232 G[04] Type

The setting method is same as "#7202".

#7233 G[04] Program No.

The setting method is same as "#7203".

#7241 G[05] Code

The setting method is same as "#7201".

#7242 G[05] Type

The setting method is same as "#7202".

#7243 G[05] Program No.

The setting method is same as "#7203".

#7251 G[06] Code

The setting method is same as "#7201".

#7252 G[06] Type

The setting method is same as "#7202".

#7253 G[06] Program No.

The setting method is same as "#7203".

#7261 G[07] Code

The setting method is same as "#7201".

#7262 G[07] Type

The setting method is same as "#7202".

#7263 G[07] Program No.

The setting method is same as "#7203".

#7271 G[08] Code

The setting method is same as "#7201".

#7272 G[08] Type

The setting method is same as "#7202".

#7273 G[08] Program No.

The setting method is same as "#7203".

#7281 G[09] Code

The setting method is same as "#7201".

#7282 G[09] Type

The setting method is same as "#7202".

#7283 G[09] Program No.

The setting method is same as "#7203".

#7291 G[10] Code

The setting method is same as "#7201".

#7292 G[10] Type

The setting method is same as "#7202".

#7293 G[10] Program No.

The setting method is same as "#7203".

#7302 Smac Type

Set the type No. for when calling the macro with an S command.
This is valid when "#1196 Smac" is set to "1".
The setting method is same as "M call macro".

---Setting range---

0 to 3

#7303 Smac Program No.

Set the program No. for when calling the macro with an S command.
This is valid when "#1196 Smac" is set to "1".
The setting method is same as "M call macro".

---Setting range---

Program name or file name (up to 32 characters)

#7312 Tmac Type

Set the type for when calling the macro with a T command.
This is valid when "#1197 Tmac" is set to "1".
The setting method is same as "M call macro".

---Setting range---

0 to 3

#7313 Tmac Program No.

Set the program No. for when calling the macro with a T command.
This is valid when "#1197 Tmac" is set to "1".
The setting method is same as "M call macro".

---Setting range---

Program name or file name (up to 32 characters)

#7314 Man Tmac prg No.

Specify the macro program number to be called with the T code input through a manual numerical value command.

When a nonzero value is set in the parameter, macro call is executed irrespective of the setting of "#1197 Tmac".

---Setting range---

Program name or file name (up to 32 characters)

(Setting is cleared when "0" is set)

#7322 G200 type

Specify the macro call type.

0: Equivalent to M98 P****;

1: Equivalent to G65 P****;

2: Equivalent to G66 P****;

3: Equivalent to G66.1 P****;

#7323 G200 program No.

Specify the figures in the hundreds and higher places of the macro program No. to be called.

---Setting range---

90 to 99, or 1000100 to 1999999

(Note) To set the program No. to "1000100 to 1999999", set the macro call out type to 0 (M98) or 1 (G65).

#7332 G300 type

The setting method is same as "#7322".

#7333 G300 program No.

The setting method is same as "#7323".

#7342 G400 type

The setting method is same as "#7322".

#7343 G400 program No.

The setting method is same as "#7323".

#7352 G500 type

The setting method is same as "#7322".

#7353 G500 program No.

The setting method is same as "#7323".

#7362 G600 type

The setting method is same as "#7322".

#7363 G600 program No.

The setting method is same as "#7323".

#7372 G700 type

The setting method is same as "#7322".

#7373 G700 program No.

The setting method is same as "#7323".

#7382 G800 type

The setting method is same as "#7322".

#7383 G800 program No.

The setting method is same as "#7323".

#7392 G900 type

The setting method is same as "#7322".

#7393 G900 program No.

The setting method is same as "#7323".

#7401 ASCII[01] Valid

The ASCII code macro parameters (#7402 to 7405) are validated.

0: Disable

1: Enable

#7402 ASCII[01] Code

Set the ASCII code used to call macros with the ASCII code.

L system: A,B,D,F,H,I,J,K,M,Q,R,S,T

M system: A,B,F,H,I,K,M,Q,R,S,T

#7403 ASCII[01] Type

Set the macro call type.

0: M98

1: G65

2: G66

3: G66.1

#7404 ASCII[01] Program No.

Set the program No. called with macro call.

---Setting range---

Program name or file name (up to 32 characters)

#7405 ASCII[01] Variable

When the call type is "0", set the variable No. set after the ASCII code.

---Setting range---

100 to 149

#7411 ASCII[02] Valid

The ASCII code macro parameters (#7412 to 7415) are validated.

0: Disable

1: Enable

#7412 ASCII[02] Code

Set the ASCII code used to call macros with the ASCII code.

L system: A,B,D,F,H,I,J,K,M,Q,R,S,T

M system: A,B,F,H,I,K,M,Q,R,S,T

#7413 ASCII[02] Type

Set the macro call type.

0: M98

1: G65

2: G66

3: G66.1

#7414 ASCII[02] Program No.

Set the program No. called with macro call.

---Setting range---

Program name or file name (up to 32 characters)

#7415 ASCII[02] Variable

When the call type is "0", set the variable No. set after the ASCII code.

---Setting range---

100 to 149

#7421 Gmac initial Gcode

Specify the initial G code to be used when the macro call via G command is set all at once.

---Setting range---

0 to 9999

#7422 Gmac batch type

Select the type of the macro call.

0: equivalent to M98 P****;

1: equivalent to G65 P****;

2: equivalent to G66 P****;

3: equivalent to G66.1 P****;

Others: equivalent to M98 P****;

#7423 Gmac initial prog.

Specify the initial program No. to be used when the macro call via G command is set all at once.
This parameter cannot be specified with the file name.
When the parameter is set to "0", the batch settings of the macro call via G command will be invalid.

---Setting range---

0 to 99999999

#7424 Gmac qty of macros

Specify the number of sequential macro programs to be called when the macro call via G command is set all at once.
When the parameter is set to "0", the batch settings of the macro call via G command will be invalid.

---Setting range---

0 to 255

#7431 Gm.n initial Gcode

Specify the initial G code to be used when the macro call via G command with decimal point is set all at once.

---Setting range---

0.0 to 999.9

#7432 Gm.n batch type

Select the type of the macro call.

0: equivalent to M98 P****;

1: equivalent to G65 P****;

2: equivalent to G66 P****;

3: equivalent to G66.1 P****;

Others: equivalent to M98 P****;

#7433 Gm.n initial prog.

Specify the initial program No. to be used when the macro call via G command with decimal point is set all at once.
This parameter cannot be specified with the file name.
When the parameter is set to "0", the batch settings of the macro call via G command with decimal point will be invalid.

---Setting range---

0 to 99999999

#7434 Gm.n qty of macros

Specify the number of sequential macro programs to be called when the macro call via G command with decimal point is set all at once.
When the parameter is set to "0", the batch settings of the macro call via G command with decimal point will be invalid.

---Setting range---

0 to 255

#7441 Mmac[1] init Mcode

Specify the initial M code to be used when the macro call via M command is set all at once.

This is valid when "#1195 Mmac" is set to "1".

---Setting range---

0 to 9999

#7442 Mmac[1] batch type

Specify the macro call type.

0: Equivalent to M98 P****;

1: Equivalent to G65 P****;

2: Equivalent to G66 P****;

3: Equivalent to G66.1 P****;

4: Equivalent to G144 D0 A****; (Sub part system control II complete wait method) (for L system only)

5: Equivalent to G144 D1 A****; (Sub part system control II parallel process method) (for L system only)

Others: Equivalent to M98 P****;

#7443 Mmac[1] init prog.

Specify the initial program No. to be used when the macro call via M command is set all at once.

This parameter cannot be specified with the file name.

When the parameter is set to "0", the batch settings of the macro call via M command will be invalid.

---Setting range---

0 to 99999999

#7444 Mmac[1] qty macros

Specify the number of sequential macro programs to call when the macro call via M command is set all at once.

When the parameter is set to "0", the batch settings of the macro call via M command will be invalid.

---Setting range---

0 to 9999

#7451 Mmac[2] init Mcode

The setting method is same as "#7441".

#7452 Mmac[2] batch type

The setting method is same as "#7442".

#7453 Mmac[2] init prog.

The setting method is same as "#7443".

#7454 Mmac[2] qty macros

The setting method is same as "#7444".

#7461 Mmac[3] init Mcode

The setting method is same as "#7441".

#7462 Mmac[3] batch type

The setting method is same as "#7442".

#7463 Mmac[3] init prog.

The setting method is same as "#7443".

#7464 Mmac[3] qty macros

The setting method is same as "#7444".

#56501 Gm.n[01] code

Specify the G code to be used for the macro call via G command with decimal point. Specify it with one decimal place.
When the parameter is set to "0.0", the macro call via G command with decimal point will be invalid.

---Setting range---

0.0 to 999.9

#56502 Gm.n[01] type

Select the type of the macro call.

0: equivalent to M98 P****;

1: equivalent to G65 P****;

2: equivalent to G66 P****;

3: equivalent to G66.1 P****;

Others: equivalent to M98 P****;

#56503 Gm.n[01] prog. No.

Specify the number of the program or the name of the file to be called up.
The file name can be up to 32 characters long.

---Setting range---

Program name or file name (up to 32 characters long)

#56511 Gm.n[02] code

The setting method is same as "#56501".

#56512 Gm.n[02] type

The setting method is same as "#56502".

#56513 Gm.n[02] prog. No.

The setting method is same as "#56503".

#56521 Gm.n[03] code

The setting method is same as "#56501".

#56522 Gm.n[03] type

The setting method is same as "#56502".

#56523 Gm.n[03] prog. No.

The setting method is same as "#56503".

#56531 Gm.n[04] code

The setting method is same as "#56501".

#56532 Gm.n[04] type

The setting method is same as "#56502".

#56533 Gm.n[04] prog. No.

The setting method is same as "#56503".

#56541 Gm.n[05] code

The setting method is same as "#56501".

#56542 Gm.n[05] type

The setting method is same as "#56502".

#56543 Gm.n[05] prog. No.

The setting method is same as "#56503".

#56551 Gm.n[06] code

The setting method is same as "#56501".

#56552 Gm.n[06] type

The setting method is same as "#56502".

#56553 Gm.n[06] prog. No.

The setting method is same as "#56503".

#56561 Gm.n[07] code

The setting method is same as "#56501".

#56562 Gm.n[07] type

The setting method is same as "#56502".

#56563	**Gm.n[07] prog. No.**
The setting method is same as "#56503".	
#56571	**Gm.n[08] code**
The setting method is same as "#56501".	
#56572	**Gm.n[08] type**
The setting method is same as "#56502".	
#56573	**Gm.n[08] prog. No.**
The setting method is same as "#56503".	
#56581	**Gm.n[09] code**
The setting method is same as "#56501".	
#56582	**Gm.n[09] type**
The setting method is same as "#56502".	
#56583	**Gm.n[09] prog. No.**
The setting method is same as "#56503".	
#56591	**Gm.n[10] code**
The setting method is same as "#56501".	
#56592	**Gm.n[10] type**
The setting method is same as "#56502".	
#56593	**Gm.n[10] prog. No.**
The setting method is same as "#56503".	

2.19 Position Switches

#7500	Pcheck	High-speed switching of position switch

Specify whether to perform position switch area checking at high speeds.

0: Do not perform position switch area checking at high speed (do it the same as before).

1: Perform position switch area checking at high speed.

#7501+10(n-1)	PSWn axis	Axis name

"n" represents the position switch No. (n=1 to 24)

Specify the name of the axis for which a position switch is provided.

---Setting range---

Axis address such as X, Y, Z, U, V, W, A, B, C or H

#7502+10(n-1)	PSWn dog1	Imaginary dog position 1

"n" represents the position switch No. (n=1 to 24)

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.

For the device No., refer to "PLC Interface Manual".

---Setting range---

-99999.999 to 99999.999 (mm)

#7503+10(n-1)	PSWn dog2	Imaginary dog position 2

"n" represents the position switch No. (n=1 to 24)

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.

For the device No., refer to "PLC Interface Manual".

---Setting range---

-99999.999 to 99999.999 (mm)

#7504+10(n-1)	PSWn check	Selection of area check method

"n" represents the position switch No. (n=1 to 24)

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or encoder feedback position, for each position switch.

0: Use the command type machine position as the machine position for position switch area checking.

1: Use the encoder feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

2.20 RIO Device Allocation Parameters

(PR) #53001 RIO dev assign RIO device allocation method

Select whether the fixed allocation method or arbitrary allocation method is used to assign devices to each remote I/O unit station.

0: Fixed allocation

1: Arbitrary allocation

(PR) #53011 RIO CH No. #1 Remote I/O channel No. for allocation

Specify the channel No. of the 1st remote I/O unit station.

* When 0 is set, all the RIO allocation parameters of the 1st station will be disabled.

---Setting range---

0, 1 to 3

(PR) #53012 RIO Station No. #1 Remote I/O station No. for allocation

Specify the station No. of the 1st remote I/O unit station.

* Set this parameter to be the same as the rotary switch of the remote I/O unit to which PLC devices are assigned.

---Setting range---

0 to 63

(PR) #53013 DI dev name #1 DI device name #1

Specify the name of DI allocation devices for the 1st remote I/O unit station.

* When 0 is set, this will be left blank.

---Setting range---

0, X, R, ZR

(PR) #53014 DI dev No. #1 DI device number #1

Specify the head device No. of DI allocation devices for the 1st remote I/O unit station.

For device X: Hexadecimal

For others: Decimal

* This parameter changes to "0" if you change the device name "DI dev name #1".

* Specify "DI dev name #1" ahead of this parameter.

* The devices corresponding to the occupied station of the operation panel cannot be set.

---Setting range---

Decimal: 0 to 65535

Hexadecimal: 0 to FFFF

(PR) #53015 DO dev name #1 DO device name #1

Specify the name of DO allocation devices for the 1st remote I/O unit station.

* When 0 is set, this will be left blank.

---Setting range---

0, Y, R, ZR

(PR) #53016 DO dev No. #1 DO device number #1

Specify the head device No. of DO allocation devices for the 1st remote I/O unit station.

For device Y: Hexadecimal

For others: Decimal

* This parameter changes to "0" if you change the device name "DO dev name #1".

* Specify "DO dev name #1" ahead of this parameter.

* The devices corresponding to the occupied station of the operation panel cannot be set.

---Setting range---

Decimal: 0 to 65535

Hexadecimal: 0 to FFFF

(PR)	#53017	DI Hi-Spd #1	High-speed input designation #1

Select at which speed to input 32 points of input data to the 1st remote I/O unit station: PLC high-speed or PLC medium-speed.

0: PLC medium-speed

1: PLC high-speed

(PR)	#53018	DO Hi-Spd #1	High-speed output designation #1

Select at which speed to output 32 points of output data from the 1st remote I/O unit station: PLC high-speed or PLC medium-speed.

0: PLC medium-speed

1: PLC high-speed

Parameter list for RIO device 2nd and following stations

Parameter Nos and Names for the RIO device 2nd and following stations are shown below.

Refer to the description of RIO 1st station by replacing its station No. (or # No) for details of each parameter.

	RIO CH No.	RIO Sta. No.	DI dev name	DI dev No.	DO dev name	DO dev No.	DI Hi-Spd	DO Hi-Spd
#1 Station No.: 1	#53011 RIO CH No. #1	#53012 RIO Sta. No. #1	#53013 DI dev name #1	#53014 DI dev No. #1	#53015 DO dev name #1	#53016 DO dev No. #1	#53017 DI Hi-Spd #1	#53018 DO Hi-Spd #1
#2 Station No.: 2	#53021 RIO CH No. #2	#53022 RIO Sta. No. #2	#53023 DI dev name #2	#53024 DI dev No. #2	#53025 DO dev name #2	#53026 DO dev No. #2	#53027 DI Hi-Spd #2	#53028 DO Hi-Spd #2
#3 Station No.: 3	#53031 RIO CH No. #3	#53032 RIO Sta. No. #3	#53033 DI dev name #3	#53034 DI dev No. #3	#53035 DO dev name #3	#53036 DO dev No. #3	#53037 DI Hi-Spd #3	#53038 DO Hi-Spd #3
#4 Station No.: 4	#53041 RIO CH No. #4	#53042 RIO Sta. No. #4	#53043 DI dev name #4	#53044 DI dev No. #4	#53045 DO dev name #4	#53046 DO dev No. #4	#53047 DI Hi-Spd #4	#53048 DO Hi-Spd #4
#5 Station No.: 5	#53051 RIO CH No. #5	#53052 RIO Sta. No. #5	#53053 DI dev name #5	#53054 DI dev No. #5	#53055 DO dev name #5	#53056 DO dev No. #5	#53057 DI Hi-Spd #5	#53058 DO Hi-Spd #5
#6 Station No.: 6	#53061 RIO CH No. #6	#53062 RIO Sta. No. #6	#53063 DI dev name #6	#53064 DI dev No. #6	#53065 DO dev name #6	#53066 DO dev No. #6	#53067 DI Hi-Spd #6	#53068 DO Hi-Spd #6
#7 Station No.: 7	#53071 RIO CH No. #7	#53072 RIO Sta. No. #7	#53073 DI dev name #7	#53074 DI dev No. #7	#53075 DO dev name #7	#53076 DO dev No. #7	#53077 DI Hi-Spd #7	#53078 DO Hi-Spd #7
#8 Station No.: 8	#53081 RIO CH No. #8	#53082 RIO Sta. No. #8	#53083 DI dev name #8	#53084 DI dev No. #8	#53085 DO dev name #8	#53086 DO dev No. #8	#53087 DI Hi-Spd #8	#53088 DO Hi-Spd #8
#9 Station No.: 9	#53091 RIO CH No. #9	#53092 RIO Sta. No. #9	#53093 DI dev name #9	#53094 DI dev No. #9	#53095 DO dev name #9	#53096 DO dev No. #9	#53097 DI Hi-Spd #9	#53098 DO Hi-Spd #9
#10 Station No.: 10	#53101 RIO CH No. #10	#53102 RIO Sta. No. #10	#53103 DI dev name #10	#53104 DI dev No. #10	#53105 DO dev name #10	#53106 DO dev No. #10	#53107 DI Hi-Spd #10	#53108 DO Hi-Spd #10
#11 Station No.: 11	#53111 RIO CH No. #11	#53112 RIO Sta. No. #11	#53113 DI dev name #11	#53114 DI dev No. #11	#53115 DO dev name #11	#53116 DO dev No. #11	#53117 DI Hi-Spd #11	#53118 DO Hi-Spd #11
#12 Station No.: 12	#53121 RIO CH No. #12	#53122 RIO Sta. No. #12	#53123 DI dev name #12	#53124 DI dev No. #12	#53125 DO dev name #12	#53126 DO dev No. #12	#53127 DI Hi-Spd #12	#53128 DO Hi-Spd #12
#13 Station No.: 13	#53131 RIO CH No. #13	#53132 RIO Sta. No. #13	#53133 DI dev name #13	#53134 DI dev No. #13	#53135 DO dev name #13	#53136 DO dev No. #13	#53137 DI Hi-Spd #13	#53138 DO Hi-Spd #13
#14 Station No.: 14	#53141 RIO CH No. #14	#53142 RIO Sta. No. #14	#53143 DI dev name #14	#53144 DI dev No. #14	#53145 DO dev name #14	#53146 DO dev No. #14	#53147 DI Hi-Spd #14	#53148 DO Hi-Spd #14
#15 Station No.: 15	#53151 RIO CH No. #15	#53152 RIO Sta. No. #15	#53153 DI dev name #15	#53154 DI dev No. #15	#53155 DO dev name #15	#53156 DO dev No. #15	#53157 DI Hi-Spd #15	#53158 DO Hi-Spd #15
#16 Station No.: 16	#53161 RIO CH No. #16	#53162 RIO Sta. No. #16	#53163 DI dev name #16	#53164 DI dev No. #16	#53165 DO dev name #16	#53166 DO dev No. #16	#53167 DI Hi-Spd #16	#53168 DO Hi-Spd #16
#17 Station No.: 17	#53171 RIO CH No. #17	#53172 RIO Sta. No. #17	#53173 DI dev name #17	#53174 DI dev No. #17	#53175 DO dev name #17	#53176 DO dev No. #17	#53177 DI Hi-Spd #17	#53178 DO Hi-Spd #17

	RIO CH No.	RIO Sta. No.	DI dev name	DI dev No.	DO dev name	DO dev No.	DI Hi-Spd	DO Hi-Spd
#18 Station No.: 18	#53181 RIO CH No. #18	#53182 RIO Sta. No. #18	#53183 DI dev name #18	#53184 DI dev No. #18	#53185 DO dev name #18	#53186 DO dev No. #18	#53187 DI Hi-Spd #18	#53188 DO Hi-Spd #18
#19 Station No.: 19	#53191 RIO CH No. #19	#53192 RIO Sta. No. #19	#53193 DI dev name #19	#53194 DI dev No. #19	#53195 DO dev name #19	#53196 DO dev No. #19	#53197 DI Hi-Spd #19	#53198 DO Hi-Spd #19
#20 Station No.: 20	#53201 RIO CH No. #20	#53202 RIO Sta. No. #20	#53203 DI dev name #20	#53204 DI dev No. #20	#53205 DO dev name #20	#53206 DO dev No. #20	#53207 DI Hi-Spd #20	#53208 DO Hi-Spd #20
#21 Station No.: 21	#53211 RIO CH No. #21	#53212 RIO Sta. No. #21	#53213 DI dev name #21	#53214 DI dev No. #21	#53215 DO dev name #21	#53216 DO dev No. #21	#53217 DI Hi-Spd #21	#53218 DO Hi-Spd #21
#22 Station No.: 22	#53221 RIO CH No. #22	#53222 RIO Sta. No. #22	#53223 DI dev name #22	#53224 DI dev No. #22	#53225 DO dev name #22	#53226 DO dev No. #22	#53227 DI Hi-Spd #22	#53228 DO Hi-Spd #22
#23 Station No.: 23	#53231 RIO CH No. #23	#53232 RIO Sta. No. #23	#53233 DI dev name #23	#53234 DI dev No. #23	#53235 DO dev name #23	#53236 DO dev No. #23	#53237 DI Hi-Spd #23	#53238 DO Hi-Spd #23
#24 Station No.: 24	#53241 RIO CH No. #24	#53242 RIO Sta. No. #24	#53243 DI dev name #24	#53244 DI dev No. #24	#53245 DO dev name #24	#53246 DO dev No. #24	#53247 DI Hi-Spd #24	#53248 DO Hi-Spd #24
#25 Station No.: 25	#53251 RIO CH No. #25	#53252 RIO Sta. No. #25	#53253 DI dev name #25	#53254 DI dev No. #25	#53255 DO dev name #25	#53256 DO dev No. #25	#53257 DI Hi-Spd #25	#53258 DO Hi-Spd #25
#26 Station No.: 26	#53261 RIO CH No. #26	#53262 RIO Sta. No. #26	#53263 DI dev name #26	#53264 DI dev No. #26	#53265 DO dev name #26	#53266 DO dev No. #26	#53267 DI Hi-Spd #26	#53268 DO Hi-Spd #26
#27 Station No.: 27	#53271 RIO CH No. #27	#53272 RIO Sta. No. #27	#53273 DI dev name #27	#53274 DI dev No. #27	#53275 DO dev name #27	#53276 DO dev No. #27	#53277 DI Hi-Spd #27	#53278 DO Hi-Spd #27
#28 Station No.: 28	#53281 RIO CH No. #28	#53282 RIO Sta. No. #28	#53283 DI dev name #28	#53284 DI dev No. #28	#53285 DO dev name #28	#53286 DO dev No. #28	#53287 DI Hi-Spd #28	#53288 DO Hi-Spd #28
#29 Station No.: 29	#53291 RIO CH No. #29	#53292 RIO Sta. No. #29	#53293 DI dev name #29	#53294 DI dev No. #29	#53295 DO dev name #29	#53296 DO dev No. #29	#53297 DI Hi-Spd #29	#53298 DO Hi-Spd #29
#30 Station No.: 30	#53301 RIO CH No. #30	#53302 RIO Sta. No. #30	#53303 DI dev name #30	#53304 DI dev No. #30	#53305 DO dev name #30	#53306 DO dev No. #30	#53307 DI Hi-Spd #30	#53308 DO Hi-Spd #30
#31 Station No.: 31	#53311 RIO CH No. #31	#53312 RIO Sta. No. #31	#53313 DI dev name #31	#53314 DI dev No. #31	#53315 DO dev name #31	#53316 DO dev No. #31	#53317 DI Hi-Spd #31	#53318 DO Hi-Spd #31
#32 Station No.: 32	#53321 RIO CH No. #32	#53322 RIO Sta. No. #32	#53323 DI dev name #32	#53324 DI dev No. #32	#53325 DO dev name #32	#53326 DO dev No. #32	#53327 DI Hi-Spd #32	#53328 DO Hi-Spd #32
#33 Station No.: 33	#53331 RIO CH No. #33	#53332 RIO Sta. No. #33	#53333 DI dev name #33	#53334 DI dev No. #33	#53335 DO dev name #33	#53336 DO dev No. #33	#53337 DI Hi-Spd #33	#53338 DO Hi-Spd #33
#34 Station No.: 34	#53341 RIO CH No. #34	#53342 RIO Sta. No. #34	#53343 DI dev name #34	#53344 DI dev No. #34	#53345 DO dev name #34	#53346 DO dev No. #34	#53347 DI Hi-Spd #34	#53348 DO Hi-Spd #34
#35 Station No.: 35	#53351 RIO CH No. #35	#53352 RIO Sta. No. #35	#53353 DI dev name #35	#53354 DI dev No. #35	#53355 DO dev name #35	#53356 DO dev No. #35	#53357 DI Hi-Spd #35	#53358 DO Hi-Spd #35
#36 Station No.: 36	#53361 RIO CH No. #36	#53362 RIO Sta. No. #36	#53363 DI dev name #36	#53364 DI dev No. #36	#53365 DO dev name #36	#53366 DO dev No. #36	#53367 DI Hi-Spd #36	#53368 DO Hi-Spd #36

	RIO CH No.	RIO Sta. No.	DI dev name	DI dev No.	DO dev name	DO dev No.	DI Hi-Spd	DO Hi-Spd
#37 Station No.: 37	#53371 RIO CH No. #37	#53372 RIO Sta. No. #37	#53373 DI dev name #37	#53374 DI dev No. #37	#53375 DO dev name #37	#53376 DO dev No. #37	#53377 DI Hi-Spd #37	#53378 DO Hi-Spd #37
#38 Station No.: 38	#53381 RIO CH No. #38	#53382 RIO Sta. No. #38	#53383 DI dev name #38	#53384 DI dev No. #38	#53385 DO dev name #38	#53386 DO dev No. #38	#53387 DI Hi-Spd #38	#53388 DO Hi-Spd #38
#39 Station No.: 39	#53391 RIO CH No. #39	#53392 RIO Sta. No. #39	#53393 DI dev name #39	#53394 DI dev No. #39	#53395 DO dev name #39	#53396 DO dev No. #39	#53397 DI Hi-Spd #39	#53398 DO Hi-Spd #39
#40 Station No.: 40	#53401 RIO CH No. #40	#53402 RIO Sta. No. #40	#53403 DI dev name #40	#53404 DI dev No. #40	#53405 DO dev name #40	#53406 DO dev No. #40	#53407 DI Hi-Spd #40	#53408 DO Hi-Spd #40
#41 Station No.: 41	#53411 RIO CH No. #41	#53412 RIO Sta. No. #41	#53413 DI dev name #41	#53414 DI dev No. #41	#53415 DO dev name #41	#53416 DO dev No. #41	#53417 DI Hi-Spd #41	#53418 DO Hi-Spd #41
#42 Station No.: 42	#53421 RIO CH No. #42	#53422 RIO Sta. No. #42	#53423 DI dev name #42	#53424 DI dev No. #42	#53425 DO dev name #42	#53426 DO dev No. #42	#53427 DI Hi-Spd #42	#53428 DO Hi-Spd #42
#43 Station No.: 43	#53431 RIO CH No. #43	#53432 RIO Sta. No. #43	#53433 DI dev name #43	#53434 DI dev No. #43	#53435 DO dev name #43	#53436 DO dev No. #43	#53437 DI Hi-Spd #43	#53438 DO Hi-Spd #43
#44 Station No.: 44	#53441 RIO CH No. #44	#53442 RIO Sta. No. #44	#53443 DI dev name #44	#53444 DI dev No. #44	#53445 DO dev name #44	#53446 DO dev No. #44	#53447 DI Hi-Spd #44	#53448 DO Hi-Spd #44
#45 Station No.: 45	#53451 RIO CH No. #45	#53452 RIO Sta. No. #45	#53453 DI dev name #45	#53454 DI dev No. #45	#53455 DO dev name #45	#53456 DO dev No. #45	#53457 DI Hi-Spd #45	#53458 DO Hi-Spd #45
#46 Station No.: 46	#53461 RIO CH No. #46	#53462 RIO Sta. No. #46	#53463 DI dev name #46	#53464 DI dev No. #46	#53465 DO dev name #46	#53466 DO dev No. #46	#53467 DI Hi-Spd #46	#53468 DO Hi-Spd #46
#47 Station No.: 47	#53471 RIO CH No. #47	#53472 RIO Sta. No. #47	#53473 DI dev name #47	#53474 DI dev No. #47	#53475 DO dev name #47	#53476 DO dev No. #47	#53477 DI Hi-Spd #47	#53478 DO Hi-Spd #47
#48 Station No.: 48	#53481 RIO CH No. #48	#53482 RIO Sta. No. #48	#53483 DI dev name #48	#53484 DI dev No. #48	#53485 DO dev name #48	#53486 DO dev No. #48	#53487 DI Hi-Spd #48	#53488 DO Hi-Spd #48
#49 Station No.: 49	#53491 RIO CH No. #49	#53492 RIO Sta. No. #49	#53493 DI dev name #49	#53494 DI dev No. #49	#53495 DO dev name #49	#53496 DO dev No. #49	#53497 DI Hi-Spd #49	#53498 DO Hi-Spd #49
#50 Station No.: 50	#53501 RIO CH No. #50	#53502 RIO Sta. No. #50	#53503 DI dev name #50	#53504 DI dev No. #50	#53505 DO dev name #50	#53506 DO dev No. #50	#53507 DI Hi-Spd #50	#53508 DO Hi-Spd #50
#51 Station No.: 51	#53511 RIO CH No. #51	#53512 RIO Sta. No. #51	#53513 DI dev name #51	#53514 DI dev No. #51	#53515 DO dev name #51	#53516 DO dev No. #51	#53517 DI Hi-Spd #51	#53518 DO Hi-Spd #51
#52 Station No.: 52	#53521 RIO CH No. #52	#53522 RIO Sta. No. #52	#53523 DI dev name #52	#53524 DI dev No. #52	#53525 DO dev name #52	#53526 DO dev No. #52	#53527 DI Hi-Spd #52	#53528 DO Hi-Spd #52
#53 Station No.: 53	#53531 RIO CH No. #53	#53532 RIO Sta. No. #53	#53533 DI dev name #53	#53534 DI dev No. #53	#53535 DO dev name #53	#53536 DO dev No. #53	#53537 DI Hi-Spd #53	#53538 DO Hi-Spd #53
#54 Station No.: 54	#53541 RIO CH No. #54	#53542 RIO Sta. No. #54	#53543 DI dev name #54	#53544 DI dev No. #54	#53545 DO dev name #54	#53546 DO dev No. #54	#53547 DI Hi-Spd #54	#53548 DO Hi-Spd #54
#55 Station No.: 55	#53551 RIO CH No. #55	#53552 RIO Sta. No. #55	#53553 DI dev name #55	#53554 DI dev No. #55	#53555 DO dev name #55	#53556 DO dev No. #55	#53557 DI Hi-Spd #55	#53558 DO Hi-Spd #55

	RIO CH No.	RIO Sta. No.	DI dev name	DI dev No.	DO dev name	DO dev No.	DI Hi-Spd	DO Hi-Spd
#56 Station No.: 56	#53561 RIO CH No. #56	#53562 RIO Sta. No. #56	#53563 DI dev name #56	#53564 DI dev No. #56	#53565 DO dev name #56	#53566 DO dev No. #56	#53567 DI Hi-Spd #56	#53568 DO Hi-Spd #56
#57 Station No.: 57	#53571 RIO CH No. #57	#53572 RIO Sta. No. #57	#53573 DI dev name #57	#53574 DI dev No. #57	#53575 DO dev name #57	#53576 DO dev No. #57	#53577 DI Hi-Spd #57	#53578 DO Hi-Spd #57
#58 Station No.: 58	#53581 RIO CH No. #58	#53582 RIO Sta. No. #58	#53583 DI dev name #58	#53584 DI dev No. #58	#53585 DO dev name #58	#53586 DO dev No. #58	#53587 DI Hi-Spd #58	#53588 DO Hi-Spd #58
#59 Station No.: 59	#53591 RIO CH No. #59	#53592 RIO Sta. No. #59	#53593 DI dev name #59	#53594 DI dev No. #59	#53595 DO dev name #59	#53596 DO dev No. #59	#53597 DI Hi-Spd #59	#53598 DO Hi-Spd #59
#60 Station No.: 60	#53601 RIO CH No. #60	#53602 RIO Sta. No. #60	#53603 DI dev name #60	#53604 DI dev No. #60	#53605 DO dev name #60	#53606 DO dev No. #60	#53607 DI Hi-Spd #60	#53608 DO Hi-Spd #60
#61 Station No.: 61	#53611 RIO CH No. #61	#53612 RIO Sta. No. #61	#53613 DI dev name #61	#53614 DI dev No. #61	#53615 DO dev name #61	#53616 DO dev No. #61	#53617 DI Hi-Spd #61	#53618 DO Hi-Spd #61
#62 Station No.: 62	#53621 RIO CH No. #62	#53622 RIO Sta. No. #62	#53623 DI dev name #62	#53624 DI dev No. #62	#53625 DO dev name #62	#53626 DO dev No. #62	#53627 DI Hi-Spd #62	#53628 DO Hi-Spd #62
#63 Station No.: 63	#53631 RIO CH No. #63	#53632 RIO Sta. No. #63	#53633 DI dev name #63	#53634 DI dev No. #63	#53635 DO dev name #63	#53636 DO dev No. #63	#53637 DI Hi-Spd #63	#53638 DO Hi-Spd #63
#64 Station No.: 64	#53641 RIO CH No. #64	#53642 RIO Sta. No. #64	#53643 DI dev name #64	#53644 DI dev No. #64	#53645 DO dev name #64	#53646 DO dev No. #64	#53647 DI Hi-Spd #64	#53648 DO Hi-Spd #64
#65 Station No.: 65	#53651 RIO CH No. #65	#53652 RIO Sta. No. #65	#53653 DI dev name #65	#53654 DI dev No. #65	#53655 DO dev name #65	#53656 DO dev No. #65	#53657 DI Hi-Spd #65	#53658 DO Hi-Spd #65
#66 Station No.: 66	#53661 RIO CH No. #66	#53662 RIO Sta. No. #66	#53663 DI dev name #66	#53664 DI dev No. #66	#53665 DO dev name #66	#53666 DO dev No. #66	#53667 DI Hi-Spd #66	#53668 DO Hi-Spd #66
#67 Station No.: 67	#53671 RIO CH No. #67	#53672 RIO Sta. No. #67	#53673 DI dev name #67	#53674 DI dev No. #67	#53675 DO dev name #67	#53676 DO dev No. #67	#53677 DI Hi-Spd #67	#53678 DO Hi-Spd #67
#68 Station No.: 68	#53681 RIO CH No. #68	#53682 RIO Sta. No. #68	#53683 DI dev name #68	#53684 DI dev No. #68	#53685 DO dev name #68	#53686 DO dev No. #68	#53687 DI Hi-Spd #68	#53688 DO Hi-Spd #68
#69 Station No.: 69	#53691 RIO CH No. #69	#53692 RIO Sta. No. #69	#53693 DI dev name #69	#53694 DI dev No. #69	#53695 DO dev name #69	#53696 DO dev No. #69	#53697 DI Hi-Spd #69	#53698 DO Hi-Spd #69
#70 Station No.: 70	#53701 RIO CH No. #70	#53702 RIO Sta. No. #70	#53703 DI dev name #70	#53704 DI dev No. #70	#53705 DO dev name #70	#53706 DO dev No. #70	#53707 DI Hi-Spd #70	#53708 DO Hi-Spd #70
#71 Station No.: 71	#53711 RIO CH No. #71	#53712 RIO Sta. No. #71	#53713 DI dev name #71	#53714 DI dev No. #71	#53715 DO dev name #71	#53716 DO dev No. #71	#53717 DI Hi-Spd #71	#53718 DO Hi-Spd #71
#72 Station No.: 72	#53721 RIO CH No. #72	#53722 RIO Sta. No. #72	#53723 DI dev name #72	#53724 DI dev No. #72	#53725 DO dev name #72	#53726 DO dev No. #72	#53727 DI Hi-Spd #72	#53728 DO Hi-Spd #72
#73 Station No.: 73	#53731 RIO CH No. #73	#53732 RIO Sta. No. #73	#53733 DI dev name #73	#53734 DI dev No. #73	#53735 DO dev name #73	#53736 DO dev No. #73	#53737 DI Hi-Spd #73	#53738 DO Hi-Spd #73
#74 Station No.: 74	#53741 RIO CH No. #74	#53742 RIO Sta. No. #74	#53743 DI dev name #74	#53744 DI dev No. #74	#53745 DO dev name #74	#53746 DO dev No. #74	#53747 DI Hi-Spd #74	#53748 DO Hi-Spd #74

	RIO CH No.	RIO Sta. No.	DI dev name	DI dev No.	DO dev name	DO dev No.	DI Hi-Spd	DO Hi-Spd
#75 Station No.: 75	#53751 RIO CH No. #75	#53752 RIO Sta. No. #75	#53753 DI dev name #75	#53754 DI dev No. #75	#53755 DO dev name #75	#53756 DO dev No. #75	#53757 DI Hi-Spd #75	#53758 DO Hi-Spd #75
#76 Station No.: 76	#53761 RIO CH No. #76	#53762 RIO Sta. No. #76	#53763 DI dev name #76	#53764 DI dev No. #76	#53765 DO dev name #76	#53766 DO dev No. #76	#53767 DI Hi-Spd #76	#53768 DO Hi-Spd #76
#77 Station No.: 77	#53771 RIO CH No. #77	#53772 RIO Sta. No. #77	#53773 DI dev name #77	#53774 DI dev No. #77	#53775 DO dev name #77	#53776 DO dev No. #77	#53777 DI Hi-Spd #77	#53778 DO Hi-Spd #77
#78 Station No.: 78	#53781 RIO CH No. #78	#53782 RIO Sta. No. #78	#53783 DI dev name #78	#53784 DI dev No. #78	#53785 DO dev name #78	#53786 DO dev No. #78	#53787 DI Hi-Spd #78	#53788 DO Hi-Spd #78
#79 Station No.: 79	#53791 RIO CH No. #79	#53792 RIO Sta. No. #79	#53793 DI dev name #79	#53794 DI dev No. #79	#53795 DO dev name #79	#53796 DO dev No. #79	#53797 DI Hi-Spd #79	#53798 DO Hi-Spd #79
#80 Station No.: 80	#53801 RIO CH No. #80	#53802 RIO Sta. No. #80	#53803 DI dev name #80	#53804 DI dev No. #80	#53805 DO dev name #80	#53806 DO dev No. #80	#53807 DI Hi-Spd #80	#53808 DO Hi-Spd #80
#81 Station No.: 81	#53811 RIO CH No. #81	#53812 RIO Sta. No. #81	#53813 DI dev name #81	#53814 DI dev No. #81	#53815 DO dev name #81	#53816 DO dev No. #81	#53817 DI Hi-Spd #81	#53818 DO Hi-Spd #81
#82 Station No.: 82	#53821 RIO CH No. #82	#53822 RIO Sta. No. #82	#53823 DI dev name #82	#53824 DI dev No. #82	#53825 DO dev name #82	#53826 DO dev No. #82	#53827 DI Hi-Spd #82	#53828 DO Hi-Spd #82
#83 Station No.: 83	#53831 RIO CH No. #83	#53832 RIO Sta. No. #83	#53833 DI dev name #83	#53834 DI dev No. #83	#53835 DO dev name #83	#53836 DO dev No. #83	#53837 DI Hi-Spd #83	#53838 DO Hi-Spd #83
#84 Station No.: 84	#53841 RIO CH No. #84	#53842 RIO Sta. No. #84	#53843 DI dev name #84	#53844 DI dev No. #84	#53845 DO dev name #84	#53846 DO dev No. #84	#53847 DI Hi-Spd #84	#53848 DO Hi-Spd #84
#85 Station No.: 85	#53851 RIO CH No. #85	#53852 RIO Sta. No. #85	#53853 DI dev name #85	#53854 DI dev No. #85	#53855 DO dev name #85	#53856 DO dev No. #85	#53857 DI Hi-Spd #85	#53858 DO Hi-Spd #85
#86 Station No.: 86	#53861 RIO CH No. #86	#53862 RIO Sta. No. #86	#53863 DI dev name #86	#53864 DI dev No. #86	#53865 DO dev name #86	#53866 DO dev No. #86	#53867 DI Hi-Spd #86	#53868 DO Hi-Spd #86
#87 Station No.: 87	#53871 RIO CH No. #87	#53872 RIO Sta. No. #87	#53873 DI dev name #87	#53874 DI dev No. #87	#53875 DO dev name #87	#53876 DO dev No. #87	#53877 DI Hi-Spd #87	#53878 DO Hi-Spd #87
#88 Station No.: 88	#53881 RIO CH No. #88	#53882 RIO Sta. No. #88	#53883 DI dev name #88	#53884 DI dev No. #88	#53885 DO dev name #88	#53886 DO dev No. #88	#53887 DI Hi-Spd #88	#53888 DO Hi-Spd #88
#89 Station No.: 89	#53891 RIO CH No. #89	#53892 RIO Sta. No. #89	#53893 DI dev name #89	#53894 DI dev No. #89	#53895 DO dev name #89	#53896 DO dev No. #89	#53897 DI Hi-Spd #89	#53898 DO Hi-Spd #89
#90 Station No.: 90	#53901 RIO CH No. #90	#53902 RIO Sta. No. #90	#53903 DI dev name #90	#53904 DI dev No. #90	#53905 DO dev name #90	#53906 DO dev No. #90	#53907 DI Hi-Spd #90	#53908 DO Hi-Spd #90
#91 Station No.: 91	#53911 RIO CH No. #91	#53912 RIO Sta. No. #91	#53913 DI dev name #91	#53914 DI dev No. #91	#53915 DO dev name #91	#53916 DO dev No. #91	#53917 DI Hi-Spd #91	#53918 DO Hi-Spd #91
#92 Station No.: 92	#53921 RIO CH No. #92	#53922 RIO Sta. No. #92	#53923 DI dev name #92	#53924 DI dev No. #92	#53925 DO dev name #92	#53926 DO dev No. #92	#53927 DI Hi-Spd #92	#53928 DO Hi-Spd #92
#93 Station No.: 93	#53931 RIO CH No. #93	#53932 RIO Sta. No. #93	#53933 DI dev name #93	#53934 DI dev No. #93	#53935 DO dev name #93	#53936 DO dev No. #93	#53937 DI Hi-Spd #93	#53938 DO Hi-Spd #93

	RIO CH No.	RIO Sta. No.	DI dev name	DI dev No.	DO dev name	DO dev No.	DI Hi-Spd	DO Hi-Spd
#94 Station No.: 94	#53941 RIO CH No. #94	#53942 RIO Sta. No. #94	#53943 DI dev name #94	#53944 DI dev No. #94	#53945 DO dev name #94	#53946 DO dev No. #94	#53947 DI Hi-Spd #94	#53948 DO Hi-Spd #94
#95 Station No.: 95	#53951 RIO CH No. #95	#53952 RIO Sta. No. #95	#53953 DI dev name #95	#53954 DI dev No. #95	#53955 DO dev name #95	#53956 DO dev No. #95	#53957 DI Hi-Spd #95	#53958 DO Hi-Spd #95
#96 Station No.: 96	#53961 RIO CH No. #96	#53962 RIO Sta. No. #96	#53963 DI dev name #96	#53964 DI dev No. #96	#53965 DO dev name #96	#53966 DO dev No. #96	#53967 DI Hi-Spd #96	#53968 DO Hi-Spd #96
#97 Station No.: 97	#53971 RIO CH No. #97	#53972 RIO Sta. No. #97	#53973 DI dev name #97	#53974 DI dev No. #97	#53975 DO dev name #97	#53976 DO dev No. #97	#53977 DI Hi-Spd #97	#53978 DO Hi-Spd #97
#98 Station No.: 98	#53981 RIO CH No. #98	#53982 RIO Sta. No. #98	#53983 DI dev name #98	#53984 DI dev No. #98	#53985 DO dev name #98	#53986 DO dev No. #98	#53987 DI Hi-Spd #98	#53988 DO Hi-Spd #98
#99 Station No.: 99	#53991 RIO CH No. #99	#53992 RIO Sta. No. #99	#53993 DI dev name #99	#53994 DI dev No. #99	#53995 DO dev name #99	#53996 DO dev No. #99	#53997 DI Hi-Spd #99	#53998 DO Hi-Spd #99
#100 Station No.: 100	#54001 RIO CH No. #100	#54002 RIO Sta. No. #100	#54003 DI dev name #100	#54004 DI dev No. #100	#54005 DO dev name #100	#54006 DO dev No. #100	#54007 DI Hi-Spd #100	#54008 DO Hi-Spd #100
#101 Station No.: 101	#54011 RIO CH No. #101	#54012 RIO Sta. No. #101	#54013 DI dev name #101	#54014 DI dev No. #101	#54015 DO dev name #101	#54016 DO dev No. #101	#54017 DI Hi-Spd #101	#54018 DO Hi-Spd #101
#102 Station No.: 102	#54021 RIO CH No. #102	#54022 RIO Sta. No. #102	#54023 DI dev name #102	#54024 DI dev No. #102	#54025 DO dev name #102	#54026 DO dev No. #102	#54027 DI Hi-Spd #102	#54028 DO Hi-Spd #102
#103 Station No.: 103	#54031 RIO CH No. #103	#54032 RIO Sta. No. #103	#54033 DI dev name #103	#54034 DI dev No. #103	#54035 DO dev name #103	#54036 DO dev No. #103	#54037 DI Hi-Spd #103	#54038 DO Hi-Spd #103
#104 Station No.: 104	#54041 RIO CH No. #104	#54042 RIO Sta. No. #104	#54043 DI dev name #104	#54044 DI dev No. #104	#54045 DO dev name #104	#54046 DO dev No. #104	#54047 DI Hi-Spd #104	#54048 DO Hi-Spd #104
#105 Station No.:105	#54051 RIO CH No. #105	#54052 RIO Sta. No. #105	#54053 DI dev name #105	#54054 DI dev No. #105	#54055 DO dev name #105	#54056 DO dev No. #105	#54057 DI Hi-Spd #105	#54058 DO Hi-Spd #105
#106 Station No.:106	#54061 RIO CH No. #106	#54062 RIO Sta. No. #106	#54063 DI dev name #106	#54064 DI dev No. #106	#54065 DO dev name #106	#54066 DO dev No. #106	#54067 DI Hi-Spd #106	#54068 DO Hi-Spd #106
#107 Station No.:107	#54071 RIO CH No. #107	#54072 RIO Sta. No. #107	#54073 DI dev name #107	#54074 DI dev No. #107	#54075 DO dev name #107	#54076 DO dev No. #107	#54077 DI Hi-Spd #107	#54078 DO Hi-Spd #107
#108 Station No.:108	#54081 RIO CH No. #108	#54082 RIO Sta. No. #108	#54083 DI dev name #108	#54084 DI dev No. #108	#54085 DO dev name #108	#54086 DO dev No. #108	#54087 DI Hi-Spd #108	#54088 DO Hi-Spd #108
#109 Station No.: 109	#54091 RIO CH No. #109	#54092 RIO Sta. No. #109	#54093 DI dev name #109	#54094 DI dev No. #109	#54095 DO dev name #109	#54096 DO dev No. #109	#54097 DI Hi-Spd #109	#54098 DO Hi-Spd #109
#110 Station No.: 110	#54101 RIO CH No. #110	#54102 RIO Sta. No. #110	#54103 DI dev name #110	#54104 DI dev No. #110	#54105 DO dev name #110	#54106 DO dev No. #110	#54107 DI Hi-Spd #110	#54108 DO Hi-Spd #110
#111 Station No.: 111	#54111 RIO CH No. #111	#54112 RIO Sta. No. #111	#54113 DI dev name #111	#54114 DI dev No. #111	#54115 DO dev name #111	#54116 DO dev No. #111	#54117 DI Hi-Spd #111	#54118 DO Hi-Spd #111
#112 Station No.: 112	#54121 RIO CH No. #112	#54122 RIO Sta. No. #112	#54123 DI dev name #112	#54124 DI dev No. #112	#54125 DO dev name #112	#54126 DO dev No. #112	#54127 DI Hi-Spd #112	#54128 DO Hi-Spd #112

	RIO CH No.	RIO Sta. No.	DI dev name	DI dev No.	DO dev name	DO dev No.	DI Hi-Spd	DO Hi-Spd
#113 Station No.: 113	#54131 RIO CH No. #113	#54132 RIO Sta. No. #113	#54133 DI dev name #113	#54134 DI dev No. #113	#54135 DO dev name #113	#54136 DO dev No. #113	#54137 DI Hi-Spd #113	#54138 DO Hi-Spd #113
#114 Station No.: 114	#54141 RIO CH No. #114	#54142 RIO Sta. No. #114	#54143 DI dev name #114	#54144 DI dev No. #114	#54145 DO dev name #114	#54146 DO dev No. #114	#54147 DI Hi-Spd #114	#54148 DO Hi-Spd #114
#115 Station No.: 115	#54151 RIO CH No. #115	#54152 RIO Sta. No. #115	#54153 DI dev name #115	#54154 DI dev No. #115	#54155 DO dev name #115	#54156 DO dev No. #115	#54157 DI Hi-Spd #115	#54158 DO Hi-Spd #115
#116 Station No.: 116	#54161 RIO CH No. #116	#54162 RIO Sta. No. #116	#54163 DI dev name #116	#54164 DI dev No. #116	#54165 DO dev name #116	#54166 DO dev No. #116	#54167 DI Hi-Spd #116	#54168 DO Hi-Spd #116
#117 Station No.: 117	#54171 RIO CH No. #117	#54172 RIO Sta. No. #117	#54173 DI dev name #117	#54174 DI dev No. #117	#54175 DO dev name #117	#54176 DO dev No. #117	#54177 DI Hi-Spd #117	#54178 DO Hi-Spd #117
#118 Station No.: 118	#54181 RIO CH No. #118	#54182 RIO Sta. No. #118	#54183 DI dev name #118	#54184 DI dev No. #118	#54185 DO dev name #118	#54186 DO dev No. #118	#54187 DI Hi-Spd #118	#54188 DO Hi-Spd #118
#119 Station No.: 119	#54191 RIO CH No. #119	#54192 RIO Sta. No. #119	#54193 DI dev name #119	#54194 DI dev No. #119	#54195 DO dev name #119	#54196 DO dev No. #119	#54197 DI Hi-Spd #119	#54198 DO Hi-Spd #119
#120 Station No.: 120	#54201 RIO CH No. #120	#54202 RIO Sta. No. #120	#54203 DI dev name #120	#54204 DI dev No. #120	#54205 DO dev name #120	#54206 DO dev No. #120	#54207 DI Hi-Spd #120	#54208 DO Hi-Spd #120
#121 Station No.: 121	#54211 RIO CH No. #121	#54212 RIO Sta. No. #121	#54213 DI dev name #121	#54214 DI dev No. #121	#54215 DO dev name #121	#54216 DO dev No. #121	#54217 DI Hi-Spd #121	#54218 DO Hi-Spd #121
#122 Station No.: 122	#54221 RIO CH No. #122	#54222 RIO Sta. No. #122	#54223 DI dev name #122	#54224 DI dev No. #122	#54225 DO dev name #122	#54226 DO dev No. #122	#54227 DI Hi-Spd #122	#54228 DO Hi-Spd #122
#123 Station No.: 123	#54231 RIO CH No. #123	#54232 RIO Sta. No. #123	#54233 DI dev name #123	#54234 DI dev No. #123	#54235 DO dev name #123	#54236 DO dev No. #123	#54237 DI Hi-Spd #123	#54238 DO Hi-Spd #123
#124 Station No.: 124	#54241 RIO CH No. #124	#54242 RIO Sta. No. #124	#54243 DI dev name #124	#54244 DI dev No. #124	#54245 DO dev name #124	#54246 DO dev No. #124	#54247 DI Hi-Spd #124	#54248 DO Hi-Spd #124
#125 Station No.: 125	#54251 RIO CH No. #125	#54252 RIO Sta. No. #125	#54253 DI dev name #125	#54254 DI dev No. #125	#54255 DO dev name #125	#54256 DO dev No. #125	#54257 DI Hi-Spd #125	#54258 DO Hi-Spd #125
#126 Station No.: 126	#54261 RIO CH No. #126	#54262 RIO Sta. No. #126	#54263 DI dev name #126	#54264 DI dev No. #126	#54265 DO dev name #126	#54266 DO dev No. #126	#54267 DI Hi-Spd #126	#54268 DO Hi-Spd #126
#127 Station No.: 127	#54271 RIO CH No. #127	#54272 RIO Sta. No. #127	#54273 DI dev name #127	#54274 DI dev No. #127	#54275 DO dev name #127	#54276 DO dev No. #127	#54277 DI Hi-Spd #127	#54278 DO Hi-Spd #127
#128 Station No.: 128	#54281 RIO CH No. #128	#54282 RIO Sta. No. #128	#54283 DI dev name #128	#54284 DI dev No. #128	#54285 DO dev name #128	#54286 DO dev No. #128	#54287 DI Hi-Spd #128	#54288 DO Hi-Spd #128
#129 Station No.: 129	#54291 RIO CH No. #129	#54292 RIO Sta. No. #129	#54293 DI dev name #129	#54294 DI dev No. #129	#54295 DO dev name #129	#54296 DO dev No. #129	#54297 DI Hi-Spd #129	#54298 DO Hi-Spd #129
#130 Station No.: 130	#54301 RIO CH No. #130	#54302 RIO Sta. No. #130	#54303 DI dev name #130	#54304 DI dev No. #130	#54305 DO dev name #130	#54306 DO dev No. #130	#54307 DI Hi-Spd #130	#54308 DO Hi-Spd #130
#131 Station No.: 131	#54311 RIO CH No. #131	#54312 RIO Sta. No. #131	#54313 DI dev name #131	#54314 DI dev No. #131	#54315 DO dev name #131	#54316 DO dev No. #131	#54317 DI Hi-Spd #131	#54318 DO Hi-Spd #131

	RIO CH No.	RIO Sta. No.	DI dev name	DI dev No.	DO dev name	DO dev No.	DI Hi-Spd	DO Hi-Spd
#132 Station No.: 132	#54321 RIO CH No. #132	#54322 RIO Sta. No. #132	#54323 DI dev name #132	#54324 DI dev No. #132	#54325 DO dev name #132	#54326 DO dev No. #132	#54327 DI Hi-Spd #132	#54328 DO Hi-Spd #132
#133 Station No.: 133	#54331 RIO CH No. #133	#54332 RIO Sta. No. #133	#54333 DI dev name #133	#54334 DI dev No. #133	#54335 DO dev name #133	#54336 DO dev No. #133	#54337 DI Hi-Spd #133	#54338 DO Hi-Spd #133
#134 Station No.: 134	#54341 RIO CH No. #134	#54342 RIO Sta. No. #134	#54343 DI dev name #134	#54344 DI dev No. #134	#54345 DO dev name #134	#54346 DO dev No. #134	#54347 DI Hi-Spd #134	#54348 DO Hi-Spd #134
#135 Station No.: 135	#54351 RIO CH No. #135	#54352 RIO Sta. No. #135	#54353 DI dev name #135	#54354 DI dev No. #135	#54355 DO dev name #135	#54356 DO dev No. #135	#54357 DI Hi-Spd #135	#54358 DO Hi-Spd #135
#136 Station No.: 136	#54361 RIO CH No. #136	#54362 RIO Sta. No. #136	#54363 DI dev name #136	#54364 DI dev No. #136	#54365 DO dev name #136	#54366 DO dev No. #136	#54367 DI Hi-Spd #136	#54368 DO Hi-Spd #136
#137 Station No.: 137	#54371 RIO CH No. #137	#54372 RIO Sta. No. #137	#54373 DI dev name #137	#54374 DI dev No. #137	#54375 DO dev name #137	#54376 DO dev No. #137	#54377 DI Hi-Spd #137	#54378 DO Hi-Spd #137
#138 Station No.: 138	#54381 RIO CH No. #138	#54382 RIO Sta. No. #138	#54383 DI dev name #138	#54384 DI dev No. #138	#54385 DO dev name #138	#54386 DO dev No. #138	#54387 DI Hi-Spd #138	#54388 DO Hi-Spd #138
#139 Station No.: 139	#54391 RIO CH No. #139	#54392 RIO Sta. No. #139	#54393 DI dev name #139	#54394 DI dev No. #139	#54395 DO dev name #139	#54396 DO dev No. #139	#54397 DI Hi-Spd #139	#54398 DO Hi-Spd #139
#140 Station No.: 140	#54401 RIO CH No. #140	#54402 RIO Sta. No. #140	#54403 DI dev name #140	#54404 DI dev No. #140	#54405 DO dev name #140	#54406 DO dev No. #140	#54407 DI Hi-Spd #140	#54408 DO Hi-Spd #140
#141 Station No.: 141	#54411 RIO CH No. #141	#54412 RIO Sta. No. #141	#54413 DI dev name #141	#54414 DI dev No. #141	#54415 DO dev name #141	#54416 DO dev No. #141	#54417 DI Hi-Spd #141	#54418 DO Hi-Spd #141
#142 Station No.: 142	#54421 RIO CH No. #142	#54422 RIO Sta. No. #142	#54423 DI dev name #142	#54424 DI dev No. #142	#54425 DO dev name #142	#54426 DO dev No. #142	#54427 DI Hi-Spd #142	#54428 DO Hi-Spd #142
#143 Station No.: 143	#54431 RIO CH No. #143	#54432 RIO Sta. No. #143	#54433 DI dev name #143	#54434 DI dev No. #143	#54435 DO dev name #143	#54436 DO dev No. #143	#54437 DI Hi-Spd #143	#54438 DO Hi-Spd #143
#144 Station No.: 144	#54441 RIO CH No. #144	#54442 RIO Sta. No. #144	#54443 DI dev name #144	#54444 DI dev No. #144	#54445 DO dev name #144	#54446 DO dev No. #144	#54447 DI Hi-Spd #144	#54448 DO Hi-Spd #144
#145 Station No.: 145	#54451 RIO CH No. #145	#54452 RIO Sta. No. #145	#54453 DI dev name #145	#54454 DI dev No. #145	#54455 DO dev name #145	#54456 DO dev No. #145	#54457 DI Hi-Spd #145	#54458 DO Hi-Spd #145
#146 Station No.: 146	#54461 RIO CH No. #146	#54462 RIO Sta. No. #146	#54463 DI dev name #146	#54464 DI dev No. #146	#54465 DO dev name #146	#54466 DO dev No. #146	#54467 DI Hi-Spd #146	#54468 DO Hi-Spd #146
#147 Station No.: 147	#54471 RIO CH No. #147	#54472 RIO Sta. No. #147	#54473 DI dev name #147	#54474 DI dev No. #147	#54475 DO dev name #147	#54476 DO dev No. #147	#54477 DI Hi-Spd #147	#54478 DO Hi-Spd #147
#148 Station No.: 148	#54481 RIO CH No. #148	#54482 RIO Sta. No. #148	#54483 DI dev name #148	#54484 DI dev No. #148	#54485 DO dev name #148	#54486 DO dev No. #148	#54487 DI Hi-Spd #148	#54488 DO Hi-Spd #148
#149 Station No.: 149	#54491 RIO CH No. #149	#54492 RIO Sta. No. #149	#54493 DI dev name #149	#54494 DI dev No. #149	#54495 DO dev name #149	#54496 DO dev No. #149	#54497 DI Hi-Spd #149	#54498 DO Hi-Spd #149
#150 Station No.: 150	#54501 RIO CH No. #150	#54502 RIO Sta. No. #150	#54503 DI dev name #150	#54504 DI dev No. #150	#54505 DO dev name #150	#54506 DO dev No. #150	#54507 DI Hi-Spd #150	#54508 DO Hi-Spd #150

	RIO CH No.	RIO Sta. No.	DI dev name	DI dev No.	DO dev name	DO dev No.	DI Hi-Spd	DO Hi-Spd
#151 Station No.: 151	#54511 RIO CH No. #151	#54512 RIO Sta. No. #151	#54513 DI dev name #151	#54514 DI dev No. #151	#54515 DO dev name #151	#54516 DO dev No. #151	#54517 DI Hi-Spd #151	#54518 DO Hi-Spd #151
#152 Station No.: 152	#54521 RIO CH No. #152	#54522 RIO Sta. No. #152	#54523 DI dev name #152	#54524 DI dev No. #152	#54525 DO dev name #152	#54526 DO dev No. #152	#54527 DI Hi-Spd #152	#54528 DO Hi-Spd #152
#153 Station No.: 153	#54531 RIO CH No. #153	#54532 RIO Sta. No. #153	#54533 DI dev name #153	#54534 DI dev No. #153	#54535 DO dev name #153	#54536 DO dev No. #153	#54537 DI Hi-Spd #153	#54538 DO Hi-Spd #153
#154 Station No.: 154	#54541 RIO CH No. #154	#54542 RIO Sta. No. #154	#54543 DI dev name #154	#54544 DI dev No. #154	#54545 DO dev name #154	#54546 DO dev No. #154	#54547 DI Hi-Spd #154	#54548 DO Hi-Spd #154
#155 Station No.: 155	#54551 RIO CH No. #155	#54552 RIO Sta. No. #155	#54553 DI dev name #155	#54554 DI dev No. #155	#54555 DO dev name #155	#54556 DO dev No. #155	#54557 DI Hi-Spd #155	#54558 DO Hi-Spd #155
#156 Station No.: 156	#54561 RIO CH No. #156	#54562 RIO Sta. No. #156	#54563 DI dev name #156	#54564 DI dev No. #156	#54565 DO dev name #156	#54566 DO dev No. #156	#54567 DI Hi-Spd #156	#54568 DO Hi-Spd #156
#157 Station No.: 157	#54571 RIO CH No. #157	#54572 RIO Sta. No. #157	#54573 DI dev name #157	#54574 DI dev No. #157	#54575 DO dev name #157	#54576 DO dev No. #157	#54577 DI Hi-Spd #157	#54578 DO Hi-Spd #157
#158 Station No.: 158	#54581 RIO CH No. #158	#54582 RIO Sta. No. #158	#54583 DI dev name #158	#54584 DI dev No. #158	#54585 DO dev name #158	#54586 DO dev No. #158	#54587 DI Hi-Spd #158	#54588 DO Hi-Spd #158
#159 Station No.: 159	#54591 RIO CH No. #159	#54592 RIO Sta. No. #159	#54593 DI dev name #159	#54594 DI dev No. #159	#54595 DO dev name #159	#54596 DO dev No. #159	#54597 DI Hi-Spd #159	#54598 DO Hi-Spd #159
#160 Station No.: 160	#54601 RIO CH No. #160	#54602 RIO Sta. No. #160	#54603 DI dev name #160	#54604 DI dev No. #160	#54605 DO dev name #160	#54606 DO dev No. #160	#54607 DI Hi-Spd #160	#54608 DO Hi-Spd #160
#161 Station No.: 161	#54611 RIO CH No. #161	#54612 RIO Sta. No. #161	#54613 DI dev name #161	#54614 DI dev No. #161	#54615 DO dev name #161	#54616 DO dev No. #161	#54617 DI Hi-Spd #161	#54618 DO Hi-Spd #161
#162 Station No.: 162	#54621 RIO CH No. #162	#54622 RIO Sta. No. #162	#54623 DI dev name #162	#54624 DI dev No. #162	#54625 DO dev name #162	#54626 DO dev No. #162	#54627 DI Hi-Spd #162	#54628 DO Hi-Spd #162
#163 Station No.: 163	#54631 RIO CH No. #163	#54632 RIO Sta. No. #163	#54633 DI dev name #163	#54634 DI dev No. #163	#54635 DO dev name #163	#54636 DO dev No. #163	#54637 DI Hi-Spd #163	#54638 DO Hi-Spd #163
#164 Station No.: 164	#54641 RIO CH No. #164	#54642 RIO Sta. No. #164	#54643 DI dev name #164	#54644 DI dev No. #164	#54645 DO dev name #164	#54646 DO dev No. #164	#54647 DI Hi-Spd #164	#54648 DO Hi-Spd #164
#165 Station No.: 165	#54651 RIO CH No. #165	#54652 RIO Sta. No. #165	#54653 DI dev name #165	#54654 DI dev No. #165	#54655 DO dev name #165	#54656 DO dev No. #165	#54657 DI Hi-Spd #165	#54658 DO Hi-Spd #165
#166 Station No.: 166	#54661 RIO CH No. #166	#54662 RIO Sta. No. #166	#54663 DI dev name #166	#54664 DI dev No. #166	#54665 DO dev name #166	#54666 DO dev No. #166	#54667 DI Hi-Spd #166	#54668 DO Hi-Spd #166
#167 Station No.: 167	#54671 RIO CH No. #167	#54672 RIO Sta. No. #167	#54673 DI dev name #167	#54674 DI dev No. #167	#54675 DO dev name #167	#54676 DO dev No. #167	#54677 DI Hi-Spd #167	#54678 DO Hi-Spd #167
#168 Station No.: 168	#54681 RIO CH No. #168	#54682 RIO Sta. No. #168	#54683 DI dev name #168	#54684 DI dev No. #168	#54685 DO dev name #168	#54686 DO dev No. #168	#54687 DI Hi-Spd #168	#54688 DO Hi-Spd #168
#169 Station No.: 169	#54691 RIO CH No. #169	#54692 RIO Sta. No. #169	#54693 DI dev name #169	#54694 DI dev No. #169	#54695 DO dev name #169	#54696 DO dev No. #169	#54697 DI Hi-Spd #169	#54698 DO Hi-Spd #169

	RIO CH No.	RIO Sta. No.	DI dev name	DI dev No.	DO dev name	DO dev No.	DI Hi-Spd	DO Hi-Spd
#170 Station No.: 170	#54701 RIO CH No. #170	#54702 RIO Sta. No. #170	#54703 DI dev name #170	#54704 DI dev No. #170	#54705 DO dev name #170	#54706 DO dev No. #170	#54707 DI Hi-Spd #170	#54708 DO Hi-Spd #170
#171 Station No.: 171	#54711 RIO CH No. #171	#54712 RIO Sta. No. #171	#54713 DI dev name #171	#54714 DI dev No. #171	#54715 DO dev name #171	#54716 DO dev No. #171	#54717 DI Hi-Spd #171	#54718 DO Hi-Spd #171
#172 Station No.: 172	#54721 RIO CH No. #172	#54722 RIO Sta. No. #172	#54723 DI dev name #172	#54724 DI dev No. #172	#54725 DO dev name #172	#54726 DO dev No. #172	#54727 DI Hi-Spd #172	#54728 DO Hi-Spd #172
#173 Station No.: 173	#54731 RIO CH No. #173	#54732 RIO Sta. No. #173	#54733 DI dev name #173	#54734 DI dev No. #173	#54735 DO dev name #173	#54736 DO dev No. #173	#54737 DI Hi-Spd #173	#54738 DO Hi-Spd #173
#174 Station No.: 174	#54741 RIO CH No. #174	#54742 RIO Sta. No. #174	#54743 DI dev name #174	#54744 DI dev No. #174	#54745 DO dev name #174	#54746 DO dev No. #174	#54747 DI Hi-Spd #174	#54748 DO Hi-Spd #174
#175 Station No.: 175	#54751 RIO CH No. #175	#54752 RIO Sta. No. #175	#54753 DI dev name #175	#54754 DI dev No. #175	#54755 DO dev name #175	#54756 DO dev No. #175	#54757 DI Hi-Spd #175	#54758 DO Hi-Spd #175
#176 Station No.: 176	#54761 RIO CH No. #176	#54762 RIO Sta. No. #176	#54763 DI dev name #176	#54764 DI dev No. #176	#54765 DO dev name #176	#54766 DO dev No. #176	#54767 DI Hi-Spd #176	#54768 DO Hi-Spd #176
#177 Station No.: 177	#54771 RIO CH No. #177	#54772 RIO Sta. No. #177	#54773 DI dev name #177	#54774 DI dev No. #177	#54775 DO dev name #177	#54776 DO dev No. #177	#54777 DI Hi-Spd #177	#54778 DO Hi-Spd #177
#178 Station No.: 178	#54781 RIO CH No. #178	#54782 RIO Sta. No. #178	#54783 DI dev name #178	#54784 DI dev No. #178	#54785 DO dev name #178	#54786 DO dev No. #178	#54787 DI Hi-Spd #178	#54788 DO Hi-Spd #178
#179 Station No.: 179	#54791 RIO CH No. #179	#54792 RIO Sta. No. #179	#54793 DI dev name #179	#54794 DI dev No. #179	#54795 DO dev name #179	#54796 DO dev No. #179	#54797 DI Hi-Spd #179	#54798 DO Hi-Spd #179
#180 Station No.: 180	#54801 RIO CH No. #180	#54802 RIO Sta. No. #180	#54803 DI dev name #180	#54804 DI dev No. #180	#54805 DO dev name #180	#54806 DO dev No. #180	#54807 DI Hi-Spd #180	#54808 DO Hi-Spd #180
#181 Station No.: 181	#54811 RIO CH No. #181	#54812 RIO Sta. No. #181	#54813 DI dev name #181	#54814 DI dev No. #181	#54815 DO dev name #181	#54816 DO dev No. #181	#54817 DI Hi-Spd #181	#54818 DO Hi-Spd #181
#182 Station No.: 182	#54821 RIO CH No. #182	#54822 RIO Sta. No. #182	#54823 DI dev name #182	#54824 DI dev No. #182	#54825 DO dev name #182	#54826 DO dev No. #182	#54827 DI Hi-Spd #182	#54828 DO Hi-Spd #182
#183 Station No.: 183	#54831 RIO CH No. #183	#54832 RIO Sta. No. #183	#54833 DI dev name #183	#54834 DI dev No. #183	#54835 DO dev name #183	#54836 DO dev No. #183	#54837 DI Hi-Spd #183	#54838 DO Hi-Spd #183
#184 Station No.: 184	#54841 RIO CH No. #184	#54842 RIO Sta. No. #184	#54843 DI dev name #184	#54844 DI dev No. #184	#54845 DO dev name #184	#54846 DO dev No. #184	#54847 DI Hi-Spd #184	#54848 DO Hi-Spd #184
#185 Station No.: 185	#54851 RIO CH No. #185	#54852 RIO Sta. No. #185	#54853 DI dev name #185	#54854 DI dev No. #185	#54855 DO dev name #185	#54856 DO dev No. #185	#54857 DI Hi-Spd #185	#54858 DO Hi-Spd #185
#186 Station No.: 186	#54861 RIO CH No. #186	#54862 RIO Sta. No. #186	#54863 DI dev name #186	#54864 DI dev No. #186	#54865 DO dev name #186	#54866 DO dev No. #186	#54867 DI Hi-Spd #186	#54868 DO Hi-Spd #186

2.21 Open Parameters

#29001-29896	**Open param 1**

Set LONG data.

#29001 to #29896 are used as parameter range where C language modules can be used arbitrarily.

#29901-29996	**Open param 2**

Set DOUBLE data.

#29901 to #29996 are used as parameter range where C language modules can be used arbitrarily.

2.22 Device Open Parameters

#40001-40100	Device Open Parameters

<Data typ>
Set the data format (BYTE, WORD, DWORD, WORD(BIT)) of the assignment area.

0: WORD

1: DWORD

2: BYTE

3: WORD(BIT)

<Data no>
Set the number of data in the assignment area. The number to be designated varies depending on the unit designated by the data format.

0 to 3000
(Depends on the device assignment and data format.)

<Disp typ>
Designate the status of data display format, display restrictions and input protection.

bit0: Cancellation of protection for input

Select whether to check the input protection for the data protection key 2 on the group details screen.
(Note) The name of data protection key differs between machine tool builders. Refer to manuals issued by each machine tool builder for details.

0: Check

1: Not check

bit1: Cancellation of restriction on display

Select whether to display the group details screen even when a machine tool builder password is not entered.

0: Not display

1: Display

bit4: BCD format

Display the data of the group details screen in BCD format.

0: Disabled

1: Enabled

bit5: BIT format

Display the data of the group details screen in BIT format.

0: Disabled

1: Enabled

bit6: HEX format (Hexadecimal format)

Display the data of the group details screen in HEX format.

0: Disabled

1: Enabled

bit7: Sign (Decimal format only)

Select whether to display the data of the group details screen in a decimal format with/without a sign.

0: With sign

1: Without sign

2.23 SRAM Open Parameters

#41001-41100	SRAM Open Parameters

<Data typ>

Set the data type (CHAR, SHORT, LONG, DOUBLE) of the assignment area.

1: CHAR

2: SHORT

3: LONG

4: DOUBLE

<Data no>

Set the number of data in the assignment area. The number to be designated varies depending on the unit and free area designated by the data format.

0 to 9999999 (Depends on the data format and free area)

<Disp typ>

Designate the status of data display format, display restrictions and input protection.

bit0: Cancellation of protection for input

Select whether to check the input protection for the data protection key 2 on the group details screen.

(Note) The name of data protection key differs between machine tool builders. Refer to manuals issued by each machine tool builder for details.

0: Check

1: Not check

bit1: Cancellation of restriction on display

Select whether to display the group details screen even when a machine tool builder password is not entered.

0: Not display

1: Display

bit4: BCD format

Display the data of the group details screen in BCD format.

0: Disable

1: Enable

bit5: BIT format

Display the data of the group details screen in BIT format.

0: Disable

1: Enable

bit6: HEX format (Hexadecimal format)

Display the data of the group details screen in HEX format.

0: Disable

1: Enable

bit7: Sign (Decimal format only)

Select whether to display the data of the group details screen in a decimal format with/without a sign.

0: With sign

1: Without sign

2.24 CC-Link Parameters

(PR)	#24001+40(n-1)	SLn station No.	CC-Link station No.

Set the station No. of the CC-Link I/F unit.
"n" represents the expansion slot No. (n=1 to 3)
-1: Invalid
0: Master station
1 to 64: Device station
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---

-1 to 64

(PR)	#24002+40(n-1)	SLn line-spd&Mode	CC-Link transmission rate and mode

Select the transmission rate and operation mode of the CC-Link I/F unit.
"n" represents the expansion slot No. (n=1 to 3)
<Online mode>
0: 156Kbps
1: 625Kbps
2: 2.5Mbps
3: 5Mbps
4: 10Mbps
<Circuit test mode>
5: 156Kbps
6: 625Kbps
7: 2.5Mbps
8: 5Mbps
9: 10Mbps
<Hardware test mode>
10: 156Kbps
11: 625Kbps
12: 2.5Mbps
13: 5Mbps
14: 10Mbps
(Note) Perform hardware test after removing the CC-Link cable.
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---

0 to 14

(PR)	#24003+40(n-1)	SLn set fault sta	Setting of data link faulty station

Select whether to clear or hold the data input from the data link faulty station.

"n" represents the expansion slot No. (n=1 to 3)

0: Clear

1: Hold

(Note) Refer to "CC-Link System Master/Local Module User's Manual (SH-080394E)" for the details of the functions.

---Master station---

Set to "0" or "1".

---Local/standby master station---

Set to "0" or "1".

	#24004+40(n-1)	SLn PLC stop set	Setting at PLC STOP

Set whether to refresh or compulsorily clear the device stations at PLC STOP.

"n" represents the expansion slot No. (n=1 to 3)

0: Refresh

1: Compulsorily clear

(Note) Refer to "CC-Link System Master/Local Module User's Manual (SH-080394E)" for the details of the functions.

---Master station---

Set to "0" or "1".

---Local/standby master station---

Set to "0" or "1".

(PR)	#24005+40(n-1)	SLn occ stations	Number of occupied stations

Set the number of occupied local and standby master stations.

"n" represents the expansion slot No. (n=1 to 3)

---Master station---

Set to "0".

---Local/standby master station---

Set to either of "1" to "4".

---Setting range---

0 to 4

(PR)	#24006+40(n-1)	SLn extended cyc	Extended cyclic setting

Set the magnification for the extended cyclic operation of the local station whose type corresponds to Ver.2.

"n" represents the expansion slot No. (n=1 to 3)

Set "1" for the local station whose type corresponds to Ver.1.

This function is out of specifications when the protocol version is Ver.1. The setting for the local station is fixed to "1".

---Master station---

Set to "0".

---Local/standby master station---

Set to either of "1", "2", "4" or "8".

---Setting range---

0, 1, 2, 4, 8 (times)

	#24007+40(n-1)	SLn conn modules	Number of connected modules

Set the total number of remote stations, local stations, intelligent device stations, standby master station and reserved stations connected to the master station.

"n" represents the expansion slot No. (n=1 to 3)

---Master station---

Set to either of "1" to "64".

---Local/standby master station---

Set to "0".

---Setting range---

0 to 64 (modules)

	#24008+40(n-1)	SLn num of retries	Number of retries

Set the number of retries for when a communication error occurs.

"n" represents the expansion slot No. (n=1 to 3)

---Master station---

Set to either of "1" to "7".

---Local/standby master station---

Set to "0".

---Setting range---

0 to 7 (times)

	#24009+40(n-1)	SLn auto ret mdls	Number of automatic return modules

Set the total number of remote stations, local stations, intelligent device stations and standby master station that can be returned to system operation by a single link scan.

"n" represents the expansion slot No. (n=1 to 3)

(Note) Refer to "CC-Link System Master/Local Module User's Manual (SH-080394E)" for the details of the functions.

---Master station---

Set to either of "1" to "10".

---Local/standby master station---

Set to "0".

---Setting range---

0 to 10 (modules)

(PR)	#24010+40(n-1)	SLn STBY master st	Standby master station

Set the station No. of the standby master station.

"n" represents the expansion slot No. (n=1 to 3)

Set "0" when no standby master station is provided.

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set "0" (fixed) for the local station.

Set "1" (fixed) for the standby station.

---Setting range---

0 to 64

#24011+40(n-1)	SLn ope at NC down	Operation at NC down

Set the data link status for when the master station failure occurs.

"n" represents the expansion slot No. (n=1 to 3)

0: Fixed to stop

(Note) Refer to "CC-Link System Master/Local Module User's Manual (SH-080394E)" for the details of the functions.

---Master station---

Set to "0" (fixed).

---Local/standby master station---

Set to "0".

#24012+40(n-1)	SLn scan mode	Scan mode

Select whether to synchronize the link scan with one ladder scan.

"n" represents the expansion slot No. (n=1 to 3)

0: Fixed to synchronize

---Master station---

Set to "0" (fixed).

---Local/standby master station---

Set to "0".

#24013+40(n-1)	SLn delay time	Delay time

Set the delay time.

"n" represents the expansion slot No. (n=1 to 3)

0: (Fixed value)

---Master station---

Set to "0" (fixed).

---Local/standby master station---

Set to "0".

#24014+40(n-1)	SLn RX dev name	Remote input (RX) refresh device name

Set the refresh device name of the remote input (RX) to be automatically refreshed.

(Example) X

"n" represents the expansion slot No. (n=1 to 3)

Set "0" when no setting is required.

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set a value within the setting range.

---Setting range---

0, X, M, L, B, D, W, R

#24015+40(n-1)	SLn RX dev No.	Remote input (RX) refresh device No.

Set the refresh device No. of the remote input (RX) to be automatically refreshed.

"n" represents the expansion slot No. (n=1 to 3)

(Note 1) When setting parameters in ALL.PRM with using the parameter input/output function, input the device No. of decimal digit.

(Example) When setting "X400" for the remote input (RX) refresh device No., input as follows;
#24014+40(n-1): "X"
#24015+40(n-1): "1024"

(Note 2) When the refresh device name has been set, the refresh device No. will be "0".
Confirm the refresh device No. after changing the refresh device name.

If you specify bit devices, set them in increments of 16 points.

The operation will not be guaranteed unless the address is set in increments of 16 points.

(Example) 1000

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set a value within the setting range.

---Setting range---

X: 0 to 5FF

M: 0 to 10239

L: 0 to 511

B: 0 to 1FFF

D: 0 to 2047

W: 0 to 1FFF

R: 8300 to 9799, 9800 to 9899

#24016+40(n-1)	SLn RY dev name	Remote output (RY) refresh device name

Set the refresh device name of the remote output (RY) to be automatically refreshed.

(Example) Y

"n" represents the expansion slot No. (n=1 to 3)

Set "0" when no setting is required.

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set a value within the setting range.

---Setting range---

0, Y, M, L, B, D, W, R

#24017+40(n-1)	SLn RY dev No.	Remote output (RY) refresh device No.

Set the refresh device No. of the remote output (RY) to be automatically refreshed.

"n" represents the expansion slot No. (n=1 to 3)

(Note 1) When setting parameters in ALL.PRM with using the parameter input/output function, input the device No. of decimal digit.

(Example) When setting "X400" for the remote input (RX) refresh device No., input as follows;
#24014+40(n-1): "X"
#24015+40(n-1): "1024"

(Note 2) When the refresh device name has been set, the refresh device No. will be "0".
Confirm the refresh device No. after changing the refresh device name.

If you specify bit devices, set them in increments of 16 points.

The operation will not be guaranteed unless the address is set in increments of 16 points.

(Example) 1000

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set a value within the setting range.

---Setting range---

Y: 0 to 5FF

M: 0 to 10239

L: 0 to 511

B: 0 to 1FFF

D: 0 to 2047

W: 0 to 1FFF

R: 8300 to 9799, 9800 to 9899

#24018+40(n-1)	SLn RWr dev name	Remote register (RWr) refresh device name

Set the refresh device name of the remote register (RWr) to be automatically refreshed.

(Example) W

"n" represents the expansion slot No. (n=1 to 3)

Set "0" when no setting is required.

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set a value within the setting range.

---Setting range---

0, M, L, B, D, W, R

#24019+40(n-1)	SLn RWr dev No.	Remote register (RWr) refresh device No.

Set the refresh device No. of the remote register (RWr) to be automatically refreshed.

"n" represents the expansion slot No. (n=1 to 3)

(Note 1) When setting parameters in ALL.PRM with using the parameter input/output function, input the device No. of decimal digit.

(Example) When setting "X400" for the remote input (RX) refresh device No., input as follows;
#24014+40(n-1): "X"
#24015+40(n-1): "1024"

(Note 2) When the refresh device name has been set, the refresh device No. will be "0".
Confirm the refresh device No. after changing the refresh device name.

If you specify bit devices, set them in increments of 16 points.

The operation will not be guaranteed unless the address is set in increments of 16 points.

(Example) 1FF0

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set a value within the setting range.

---Setting range---

M: 0 to 10239

L: 0 to 511

B: 0 to 1FFF

D: 0 to 2047

W: 0 to 1FFF

R: 8300 to 9799, 9800 to 9899

#24020+40(n-1)	SLn RWw dev name	Remote register (RWw) refresh device name

Set the refresh device name of the remote register (RWw) to be automatically refreshed.

(Example) W

"n" represents the expansion slot No. (n=1 to 3)

Set "0" when no setting is required.

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set a value within the setting range.

---Setting range---

0, M, L, B, D, W, R

#24021+40(n-1)	SLn RWw dev No.	Remote register (RWw) refresh device No.

Set the refresh device No. of the remote register (RWw) to be automatically refreshed.

"n" represents the expansion slot No. (n=1 to 3)

(Note 1) When setting parameters in ALL.PRM with using the parameter input/output function, input the device No. of decimal digit.

(Example) When setting "X400" for the remote input (RX) refresh device No., input as follows;
#24014+40(n-1): "X"
#24015+40(n-1): "1024"

(Note 2) When the refresh device name has been set, the refresh device No. will be "0".
Confirm the refresh device No. after changing the refresh device name.

If you specify bit devices, set them in increments of 16 points.

The operation will not be guaranteed unless the address is set in increments of 16 points.

(Example) 1FF0

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set a value within the setting range.

---Setting range---

M: 0 to 10239

L: 0 to 511

B: 0 to 1FFF

D: 0 to 2047

W: 0 to 1FFF

R: 8300 to 9799, 9800 to 9899

#24022+40(n-1)	SLn SB dev name	Special relay (SB) refresh device name

Set the refresh device name of the special relay (SB) to be automatically refreshed.

(Example) SB

"n" represents the expansion slot No. (n=1 to 3)

Set "0" when no setting is required.

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set a value within the setting range.

---Setting range---

0, M, L, B, D, W, R, SB

#24023+40(n-1)	SLn SB dev No.	Special relay (SB) refresh device No.

Set the refresh device No. of the special relay (SB) to be automatically refreshed.

"n" represents the expansion slot No. (n=1 to 3)

(Note 1) When setting parameters in ALL.PRM with using the parameter input/output function, input the device No. of decimal digit.

(Example) When setting "X400" for the remote input (RX) refresh device No., input as follows;
#24014+40(n-1): "X"
#24015+40(n-1): "1024"

(Note 2) When the refresh device name has been set, the refresh device No. will be "0".
Confirm the refresh device No. after changing the refresh device name.

If you specify bit devices, set them in increments of 16 points.

The operation will not be guaranteed unless the address is set in increments of 16 points.

(Example) 1F0

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set a value within the setting range.

---Setting range---

M: 0 to 10239

L: 0 to 511

B: 0 to 1FFF

D: 0 to 2047

W: 0 to 1FFF

SB: 0 to 1FF

R: 8300 to 9799, 9800 to 9899

#24024+40(n-1)	SLn SW dev name	Special relay (SW) refresh device name

Set the refresh device name of the special relay (SW) to be automatically refreshed.

"n" represents the expansion slot No. (n=1 to 3)

(Example) SW

Set "0" when no setting is required.

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set a value within the setting range.

---Setting range---

0, M, L, B, D, W, R, SW

#24025+40(n-1)	SLn SW dev No.	Special relay (SW) refresh device No.

Set the refresh device No. of the special relay (SW) to be automatically refreshed.

"n" represents the expansion slot No. (n=1 to 3)

(Note 1) When setting parameters in ALL.PRM with using the parameter input/output function, input the device No. of decimal digit.
(Example) When setting "X400" for the remote input (RX) refresh device No., input as follows;
#24014+40(n-1): "X"
#24015+40(n-1): "1024"

(Note 2) When the refresh device name has been set, the refresh device No. will be "0".
Confirm the refresh device No. after changing the refresh device name.

If you specify bit devices, set them in increments of 16 points.

(Example) 1F0

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set a value within the setting range.

---Setting range---

M: 0 to 10239

L: 0 to 511

B: 0 to 1FFF

D: 0 to 2047

W: 0 to 1FFF

SW: 0 to 1FF

R: 8300 to 9799, 9800 to 9899

(PR)	#24026+40(n-1)	SLn Protocol Ver	Protocol version

Select the CC-Link version mode that has been set to the slide switch SW1-2 on the CC-Link unit (HN566/HN567).

"n" represents the expansion slot No. (n=1 to 3)

0: Ver.2

1: Ver.1

Ver.2 mode has been set to SW1-2 as default.

---Master station---

Set to "0" or "1".

---Local/standby master station---

Set to "0" or "1".

#24121+15(m-1)	CNm station type	Station type

Set the type of the connected remote station, local station, intelligent device station and standby master station.

0: No setting

1: Ver.1 remote I/O station

2: Ver.1 remote device station

3: Ver.1 intelligent device station

4: Ver.2 remote device station

5: Ver.2 intelligent device station

"m" means the m-th connected station in ascending order of station No. (m=1 to 64)

---Master station---

Set to either of "0" to "5".

---Local/standby master station---

Set to "0".

#24122+15(m-1)	CNm extended cyc	Extended cyclic setting

Select the magnification for the extended cycling operation of the connected remote, local and intelligent stations.

Set "1" when the protocol version is Ver.1.

Set "0" when no setting is required.

"m" means the m-th connected station in ascending order of station No. (m=1 to 64)

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set to "0".

---Setting range---

0, 1, 2, 4, 8 (times)

#24123+15(m-1)	CNm occ stations	Number of occupied stations

Set the number of the occupied stations by the connected remote, local and intelligent stations.

Set 1 for 8 points I/O and 16 points I/O.

Set "0" when no setting is required.

"m" means the m-th connected station in ascending order of station No. (m=1 to 64)

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set to "0".

---Setting range---

0 to 4 (stations occupied)

#24124+15(m-1)	CNm station No.	Station No.

Set the station No. of the connected remote, local and intelligent stations.

Set "0" when no setting is required.

"m" means the m-th connected station in ascending order of station No. (m=1 to 64)

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set to "0".

---Setting range---

0 to 64

#24125+15(m-1)	CNm remote sta pt	Remote station points

Select the number of points of the connected remote station.

"m" means the m-th connected station in ascending order of station No. (m=1 to 64)

The details of setting values differ with each protocol version and station type.

Protocol: Ver.2 (station type: Ver.1, remote I/O station)

0: 0 point (reserved station)

1: 8 points

2: 8 points + 8 points reserved

3: 16 points

4: 32 points

- Setting "0" is valid only for the reserved station. When "0" is set for the other stations, the number of points will be 32.
- Set the value so that the total number of points of remote I/O stations connected in series will be multiple of 16.

(Example 1) 2 units of 8 points I/O: Set "1" for each

(Example 2) 3 units of 8 points I/O: Set "1" for the first and the second I/O, "2" for the third.

Protocol: Ver.2 (station type: Ver.1 except remote I/O station)

0: 0 point (reserved station)

1 to 4: Automatically calculated

- Setting "0" is valid only for the reserved station. When "0" is set for the other stations, the number of points will be automatically calculated.
- Unless 0 is set, the number of points will be automatically calculated with the number of occupied stations and the setting value of the extended cycling.

Protocol: Ver.1 (for all station types)

0 to 4: Automatically calculated

- "0" cannot be set even for the reserved station.
- Automatically calculated with the setting value of the number of occupied stations.

---Master station---

Set a value corresponding to the protocol version and the station type.

---Local/standby master station---

Set to "0".

#24126+15(m-1)	CNm set rsvd sta	Reserved station

Set the reserved/error invalid station.

"m" means the m-th connected station in ascending order of station No. (m=1 to 64)

0: No setting

1: Reserved station

2: Error invalid station

(Note) Refer to "CC-Link System Master/Local Module User's Manual (SH-080394E)" for the details of the functions.

---Master station---

Set either of "0" to "2".

---Local/standby master station---

Set to "0".

#24131+15(m-1) CNm send size Send buffer size

Set the allocation of the buffer memory size to the local station, standby master station and intelligent device station when in transient transmission.

"m" means the m-th connected station in ascending order of station No. (m=1 to 64)

Set "0" when no setting is required.

(Note) The total size of the send/receive buffers must be 4096 (words) or less.

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set to "0".

---Setting range---

0, 64 to 4096 (words)

#24132+15(m-1) CNm receive size Receive buffer size

Set the allocation of the buffer memory size to the local station, standby master station and intelligent device station when in transient transmission.

"m" means the m-th connected station in ascending order of station No. (m=1 to 64)

Set "0" when no setting is required.

(Note) The total size of the send/receive buffers must be 4096 (words) or less.

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set to "0".

---Setting range---

0, 64 to 4096 (words)

#24133+15(m-1) CNm auto bfr size Automatic update buffer size

Set the allocation of the buffer memory size to the local station, standby master station and intelligent device station when in transient transmission.

"m" means the m-th connected station in ascending order of station No. (m=1 to 64)

Set "0" when no setting is required.

---Master station---

Set a value within the setting range.

---Local/standby master station---

Set to "0".

---Setting range---

0, 128 to 4096 (words)

2.25 PLC Axis Indexing Parameters

(PR)	#12800	chgauxno	Auxiliary axis number

Set the axis No. to be controlled as auxiliary axis using auxiliary axis interface.

When "0" is set, the axis will not operate as auxiliary axis.

---Setting range---

0 to 8: (M800VW/M800VS Series)

0 to 4: (M80V Series)

(PR)	#12801	aux_station	Number of indexing stations

Set the number of stations.
For linear axis, this value is expressed by: number of divisions = number of stations -1.
Setting "0" or "1" sets the number of stations to 2.

---Setting range---

0 to 360

(PR)	#12802	aux_Cont1	Control parameter 1

The bits that are not explained here must be set to "0".

bit3:

0: Automatic reach signal isn't interlocked with the start signal.

1: Automatic reach signal is interlocked with the start signal.

bit4:

0: Automatic reach signal is turned ON again.

1: Automatic reach signal isn't turned ON again.

bit5:

0: Station No. Output within fixed position.

1: Station No. Constantly output.

bit9:

0: Rotation direction determined by operation control signal (DIR)

1: Rotation direction in the shortcut direction

bitE:

0: Rotation direction in operation control signal (DIR) or in the shortcut direction

1: Rotation direction in the arbitrary position command sign direction

bitF:

0: Stopper direction is in the positioning direction.

1: Stopper direction is in the sign direction of the stopper amount.

(PR)	#12803	aux_Cont2	Control parameter 2

The bits that are not explained here must be set to "0".

bit4:

0: Uniform assignment

1: Arbitrary coordinate assignment

(PR)	#12804	aux_tleng	Linear axis stroke length

Set the movement stroke length for linear axes.

(Note 1) Setting "0.000" causes an MCP alarm at the power ON.

(Note 2) This parameter is meaningless at the non-uniform index or random position command.

---Setting range---

0.000 to 99999.999 (mm)

	#12805	aux_ST.offset	Station offset

Set the distance (offset) from the reference position to station 1.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12810+10(n-1)	aux_Aspeedn	Operation parameter group n Automatic operation speed

Set the feedrate during automatic operation when "operation parameter group n" is selected.

"#12810 aux_Aspeed1" is regarded as the clamp value for the automatic operation speeds and manual operation speeds of all operation groups.

A speed exceeding "aux_Aspeed1" cannot be commanded, even if it is set in a parameter.

(Note) Setting "0" causes an operation error at the "Operation start" signal's ON.

---Setting range---

0 to 100000 (°/min or mm/min)

#12811+10(n-1)	aux_Mspeedn	Operation parameter group n Manual operation speed

Set the feedrate during manual operation or JOG operation when "operation parameter group n" is selected.

(Note) Setting "0" causes an operation error at the "Operation start" signal's ON.

---Setting range---

0 to 100000 (°/min or mm/min)

#12812+10(n-1)	aux_timen.1	Operation parameter group n Acceleration/deceleration time constant 1

Set the linear acceleration/deceleration time for "Operation parameter group 1 automatic operation speed" (clamp speed) when "operation parameter group n" is selected.

When "#12818+10(n-1) aux_smgstn" is "F", S-shape acceleration/deceleration is carried out.

When operating at a speed less than the clamp speed, if "#1361 aux_acc" is set to "0", the axis will accelerate/decelerate with the time constant set in this parameter. If "#1361 aux_acc" is set to "1", the axis will accelerate/decelerate at the constant-gradient determined by this parameter and "aux_Aspeed1".

Setting "0" cancels acceleration/deceleration: The axis will move with the time constant "0".

---Setting range---

0 to 4000 (ms)

#12813+10(n-1)	aux_timen.2	Operation parameter group n Acceleration/deceleration time constant 2

Set the total time of the non-linear parts in the S-pattern acceleration/deceleration.
In the handle feed operation mode, this setting value is regarded as time constant for the linear acceleration/deceleration.

(Note) If this parameter is set to "0" while "#12818 aux_smgst1"is set to "F", an MCP alarm will occur.

---Setting range---

0 to 4000 (ms)

#12814+10(n-1)	aux_TLn	Operation parameter group n Torque limit value

Set the motor output torque limit value when "operation parameter group n" is selected.

When setting 500%, the torque is limited at the maximum torque of the motor specifications. Set 500%, when torque is not particularly needed to be limited.

In the stopper positioning operation mode, this will be regarded as torque limit value when positioning to the stopper starting coordinates.

---Setting range---

0 to 500 (%)

#12815+10(n-1)	aux_ODn	Operation parameter group n Excessive error detection width

Set the excessive error detection width when "operation parameter group n" is selected.

The excessive error alarm (S03 0052) will be detected when the position droop becomes larger than this setting value.

In the stopper positioning operation mode, this will be regarded as excessive error detection width when positioning to the stopper starting coordinates.

---Setting range---

0 to 32767(° or mm)

	#12816+10(n-1)	aux_justn	Operation parameter group n Set position output width

Set the tolerable value at which "set position reached" (JST) or "automatic set position reached" (JSTA) signal is output when "operation parameter group n" is selected.

"Set position reached" (JST) indicates that the machine position is at any station.

During automatic operation, "automatic set position reached" (JSTA) is also output under the same condition.

These signals will turn OFF when the machine position moves away from the station over this value.

---Setting range---

0.000 to 99999.999 (° or mm)

	#12817+10(n-1)	aux_nearn	Operation parameter group n Near set position output width

Set the tolerable value at which "near set position" (NEAR) signal is output when "operation parameter group n" is selected.

"Near set position" (NEAR) indicates that the machine position is near any station position. This value is generally set wider than the set position output width.

During operations, this is related to the special commands when the station selection is set to "0".

---Setting range---

0.000 to 99999.999 (° or mm)

(PR)	#12818+10(n-1)	aux_smgstn	Operation parameter group n Acceleration/Deceleration type

Select the acceleration/deceleration type when "operation parameter group n" is selected.

0, 1: Linear acceleration/deceleration

F: S-pattern acceleration/deceleration

	#12850	aux_stpos2	Station 2 coordinate

Set the station 2 coordinate value when arbitrary coordinate assignment is selected.

The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

	#12851	aux_stpos3	Station 3 coordinate

Set the station 3 coordinate value when arbitrary coordinate assignment is selected.

The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

	#12852	aux_stpos4	Station 4 coordinate

Set the station 4 coordinate value when arbitrary coordinate assignment is selected.

The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

	#12853	aux_stpos5	Station 5 coordinate

Set the station 5 coordinate value when arbitrary coordinate assignment is selected.

The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

	#12854	aux_stpos6	Station 6 coordinate

Set the station 6 coordinate value when arbitrary coordinate assignment is selected.

The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12855	aux_stpos7	Station 7 coordinate

Set the station 7 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12856	aux_stpos8	Station 8 coordinate

Set the station 8 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12857	aux_stpos9	Station 9 coordinate

Set the station 9 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12858	aux_stpos10	Station 10 coordinate

Set the station 10 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12859	aux_stpos11	Station 11 coordinate

Set the station 11 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12860	aux_stpos12	Station 12 coordinate

Set the station 12 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12861	aux_stpos13	Station 13 coordinate

Set the station 13 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12862	aux_stpos14	Station 14 coordinate

Set the station 14 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12863	aux_stpos15	Station 15 coordinate

Set the station 15 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12864	aux_stpos16	Station 16 coordinate

Set the station 16 coordinate value when arbitrary coordinate assignment is selected.

The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12865	aux_stpos17	Station 17 coordinate

Set the station 17 coordinate value when arbitrary coordinate assignment is selected.

The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12866	aux_stpos18	Station 18 coordinate

Set the station 18 coordinate value when arbitrary coordinate assignment is selected.

The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12867	aux_stpos19	Station 19 coordinate

Set the station 19 coordinate value when arbitrary coordinate assignment is selected.

The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12868	aux_stpos20	Station 20 coordinate

Set the station 20 coordinate value when arbitrary coordinate assignment is selected.

The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12870	aux_PSWcheck	PSW detection method

Select the criterion for the output of position switches 1 to 15.

bit0 to E correspond to position switches 1 to 15.

0: Judged by the machine position of the command system.

1: Judged by the machine FB position (actual position).

(Note) The bits that are not explained here must be set to "0".

#12871	aux_PSW1dog1	PSW1 area setting 1

Set "PSW1 area setting" 1 and 2 to specify the area where the position switch 1 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12872	aux_PSW1dog2	PSW1 area setting 2

Set "PSW1 area setting" 1 and 2 to specify the area where the position switch 1 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12873 aux_PSW2dog1 PSW2 area setting 1

Set "PSW2 area setting" 1 and 2 to specify the area where the position switch 2 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12874 aux_PSW2dog2 PSW2 area setting 2

Set "PSW2 area setting" 1 and 2 to specify the area where the position switch 2 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12875 aux_PSW3dog1 PSW3 area setting 1

Set "PSW3 area setting" 1 and 2 to specify the area where the position switch 3 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12876 aux_PSW3dog2 PSW3 area setting 2

Set "PSW3 area setting" 1 and 2 to specify the area where the position switch 3 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12877 aux_PSW4dog1 PSW4 area setting 1

Set "PSW4 area setting" 1 and 2 to specify the area where the position switch 4 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12878 aux_PSW4dog2 PSW4 area setting 2

Set "PSW4 area setting" 1 and 2 to specify the area where the position switch 4 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12879 aux_PSW5dog1 PSW5 area setting 1

Set "PSW5 area setting" 1 and 2 to specify the area where the position switch 5 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12880 aux_PSW5dog2 PSW5 area setting 2

Set "PSW5 area setting" 1 and 2 to specify the area where the position switch 5 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12881 aux_PSW6dog1 PSW6 area setting 1

Set "PSW6 area setting" 1 and 2 to specify the area where the position switch 6 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12882 aux_PSW6dog2 PSW6 area setting 2

Set "PSW6 area setting" 1 and 2 to specify the area where the position switch 6 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12883 aux_PSW7dog1 PSW7 area setting 1

Set "PSW7 area setting" 1 and 2 to specify the area where the position switch 7 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12884 aux_PSW7dog2 PSW7 area setting 2

Set "PSW7 area setting" 1 and 2 to specify the area where the position switch 7 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12885 aux_PSW8dog1 PSW8 area setting 1

Set "PSW8 area setting" 1 and 2 to specify the area where the position switch 8 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12886 aux_PSW8dog2 PSW8 area setting 2

Set "PSW8 area setting" 1 and 2 to specify the area where the position switch 8 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12887 aux_PSW9dog1 PSW9 area setting 1

Set "PSW9 area setting" 1 and 2 to specify the area where the position switch 9 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12888 aux_PSW9dog2 PSW9 area setting 2

Set "PSW9 area setting" 1 and 2 to specify the area where the position switch 9 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12889 aux_PSW10dog1 PSW10 area setting 1

Set "PSW10 area setting" 1 and 2 to specify the area where the position switch 10 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12890 aux_PSW10dog2 PSW10 area setting 2

Set "PSW10 area setting" 1 and 2 to specify the area where the position switch 10 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12891 aux_PSW11dog1 PSW11 area setting 1

Set "PSW11 area setting" 1 and 2 to specify the area where the position switch 11 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12892 aux_PSW11dog2 PSW11 area setting 2

Set "PSW11 area setting" 1 and 2 to specify the area where the position switch 11 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12893 aux_PSW12dog1 PSW12 area setting 1

Set "PSW12 area setting" 1 and 2 to specify the area where the position switch 12 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12894 aux_PSW12dog2 PSW12 area setting 2

Set "PSW12 area setting" 1 and 2 to specify the area where the position switch 12 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12895 aux_PSW13dog1 PSW13 area setting 1

Set "PSW13 area setting" 1 and 2 to specify the area where the position switch 13 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12896 aux_PSW13dog2 PSW13 area setting 2

Set "PSW13 area setting" 1 and 2 to specify the area where the position switch 13 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12897 aux_PSW14dog1 PSW14 area setting 1

Set "PSW14 area setting" 1 and 2 to specify the area where the position switch 14 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12898 aux_PSW14dog2 PSW14 area setting 2

Set "PSW14 area setting" 1 and 2 to specify the area where the position switch 14 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12899 aux_PSW15dog1 PSW15 area setting 1

Set "PSW15 area setting" 1 and 2 to specify the area where the position switch 15 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12900 aux_PSW15dog2 PSW15 area setting 2

Set "PSW15 area setting" 1 and 2 to specify the area where the position switch 15 will turn ON when the machine is positioned.

Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.

For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---

-99999.999 to 99999.999 (° or mm)

#12910 aux_push Stopper amount

Set the command stroke of the stopper operation in the stopper positioning.

---Setting range---

0.000 to 359.999(° or mm)

#12911 aux_pusht1 Stopper standby time

Set the standby time from the stopper starting coordinate positioning to the stopper operation start in the stopper positioning.

---Setting range---

0 to 9999 (ms)

#12912 aux_pusht2 Stopper torque release time

Set the time from the completion of the stopper operation to the changeover of the stopper torque in the stopper positioning.

---Setting range---

0 to 9999(ms)

#12913 aux_pusht3 Set position signal output delay time

Set the time from the completion of the stopper operation to the output of the "automatic set position reached" (JSTA), "set position reached" (JST) or "near set position" (NEAR) signal in the stopper positioning.

---Setting range---

0 to 9999(ms)

2.26 Machine Type Parameters

(PR)	#12621	machine type	Select machine type (For L system only)

Select the type of lathe: horizontal or vertical.

0: Horizontal-type lathe

1: Vertical-type lathe

(PR)	#12622	turret move dir	Select turret move direction (For L system only)

Select the linear axis direction to move the turret along for each part system.

♦Horizontal-type lathe (right-handed)

1: Front upper position

2: Front lower position

3: Rear upper position

4: Rear lower position

♦Horizontal-type lathe (left-handed)

11: Front upper position

12: Front lower position

13: Rear upper position

14: Rear lower position

♦Vertical-type lathe (right-handed)

21: Front left position

22: Front right position

♦Vertical-type lathe (left-handed)

31: Front left position

32: Front right position

(Note) Upper/lower position of horizontal-type lathe and right/left position of vertical-type lathe are the names indicating the turret position with general machine configuration.

Select a number corresponding to the actual machine configuration and the axis direction to this parameter.

Axis configuration follows the base axis I, J, K (parameters #1026 to #1028).

(PR)	#12623	tool rot ax para	Select tool rotation axis parameters (For L system only)

Select which of the following parameters to use as tool rotation axis-related parameters: Rotary axis configuration parameters or 3D check parameters.

0: Rotary axis configuration parameters

1: 3D check parameters

(PR)	#12624	tool rot ax name	Tool rotation axis name (For L system only)

Specify the name of tool rotation axis using the 2nd axis name.

---Setting range---

Two alphanumeric characters (A to Z and 1 to 9)

(PR)	#12625	tool rot ax type	Select tool rotation axis (For L system only)

Select about which axis the tool rotation axis rotates.

(Note) When "#12624 tool rot ax name" (Tool rotation axis name) is not set, this parameter is disabled. If "0: Disable" is selected when "#12624 tool rot ax name" is set, this parameter is treated as "2: J axis".

0: Disable

1: I axis

2: J axis

3: K axis

(PR)	#12626	tool rot dir	Tool rotation axis direction (For L system only)

Select the tool rotation axis direction.

(Note) When "#12624 tool rot ax name" is not set, this parameter is disabled.

0: Right-handed system

1: Left-handed system

(PR)	#12627	main sp no	Front spindle No. (For L system only)

Specify the spindle No. of the front side work spindle.
When this parameter is set to 0, the spindle No.is treated as 1.

---Setting range---

0 to the number of spindles

(PR)	#12628	sub sp no	Rear spindle No. (For L system only)

Specify the spindle No. of the rear side work spindle.
If there is no rear-side work spindle, set this parameter to 0.

---Setting range---

0 to the number of spindles

(PR)	#12629	main sp rot dir	Front spindle rotation direction (For L system only)

Specify the rotation direction of the front side work spindle.

0: Right-handed system

1: Left-handed system

(PR)	#12630	sub sp rot dir	Rear spindle rotation direction (For L system only)

Specify the rotation direction of the rear side work spindle.

0: Right-handed system

1: Left-handed system

(PR)	#12631	main chuck close M	Front chuck close M code (For L system only)

Specify the M code allocated to the front chuck closing.

---Setting range---

0 to 99999999

(PR)	#12632	sub chuck close M	Back chuck close M code(For L system only)

Specify the M code allocated to the back chuck closing.

---Setting range---

0 to 99999999

(PR)	#12633	main chuck pos X	Front chuck position X (For L system only)

Specify the position from the machine zero point in the X axis direction of front chuck.

---Setting range---

-99999.999 to 99999.999 (mm)

(PR)	#12634	main chuck pos Y	Front chuck position Y (For L system only)

Specify the position from the machine zero point in the Y axis direction of front chuck.

---Setting range---

-99999.999 to 99999.999 (mm)

(PR)	#12635	main chuck pos Z	Front chuck position Z (For L system only)

Specify the position from the machine zero point in the Z axis direction of front chuck.

---Setting range---

-99999.999 to 99999.999 (mm)

(PR)	#12636	sub chuck pos X	Back chuck position X (For L system only)

Specify the position from the machine zero point in the X axis direction of back chuck.

---Setting range---

-99999.999 to 99999.999 (mm)

(PR)	#12637	sub chuck pos Y	Back chuck position Y (For L system only)

Specify the position from the machine zero point in the Y axis direction of back chuck.

---Setting range---

-99999.999 to 99999.999 (mm)

(PR)	#12638	sub chuck pos Z	Back chuck position Z (For L system only)

Specify the position from the machine zero point in the Z axis direction of back chuck.

---Setting range---

-99999.999 to 99999.999 (mm)

(PR)	#12639	main chuck ax name	Front chuck moving axis name (For L system only)

Specify the name of the axis to move the front chuck with 2nd axis name.

---Setting range---

Two digits between A to Z and 1 to 9

(PR)	#12640	sub chuck ax name	Back chuck moving axis name (For L system only)

Specify the name of the axis to move the back chuck with 2nd axis name.

---Setting range---

Two digits between A to Z and 1 to 9

(PR)	#12650	table center posH	Horizontal axis table center position (For M system only)

Set the center position of the table in the horizontal axis direction using the machine position.

---Setting range---

-99999.999 to 99999.999 (mm)

(PR)	#12651	table center posV	Vertical axis table center position (For M system only)

Set the center position of the table in the vertical axis direction using the machine position.

---Setting range---

-99999.999 to 99999.999 (mm)

(PR)	#12652	table center posT	Height axis table center position (For M system only)

Set the center position of the table in the height axis direction using the machine position.

---Setting range---

-99999.999 to 99999.999 (mm)

2.27 Machining Time Parameters

#42801+2(n-1)	M[n] Code	M code for calculating machining time

Specify the M code for calculating the machining time. (n=1 to 50)

---Setting range---

0 to 99999999

#42802+2(n-1)	M[n] ExeTime	Execution time of M code for calculating machining time

Specify the execution time of the M code. (n=1 to 50)

---Setting range---

0 to 60000 (ms)

#42901+2(n-1)	M[50+n] Code	M code for calculating machining time (for each part system)

Specify the M code for calculating the machining time.

Set the M code that takes different time for each part system. (n=1 to 10)

---Setting range---

0 to 99999999

#42902+2(n-1)	M[50+n] ExeTime	Execution time of M code for calculating machine time (for each part system)

Specify the execution time of the M code.

Different values can be set for each part system. (n=1 to 10)

---Setting range---

0 to 60000 (ms)

#42931+2(n-1)	M2[n] Code	2nd miscellaneous function code for calculating machining time

Specify the 2nd miscellaneous function code for calculating the machining time. (n=1 to 10)

---Setting range---

0 to 99999999

#42932+2(n-1)	M2[n] ExeTime	Execution time of 2nd m. function code for calculating machining time

Specify the execution time of the 2nd miscellaneous function code. (n=1 to 10)

---Setting range---

0 to 60000 (ms)

#42951	T Code ExeTime	Execution time of T code for calculating machining time

Specify the execution time of the T code for each part system.

---Setting range---

0 to 60000 (ms)

#42952	M Code StdExeTime	Standard execution time of M code for calculating machining time

Specify the average execution time of the M code for which individual setting is not performed.

---Setting range---

0 to 60000 (ms)

#42953	M2 Code StdExeTime	Standard execution time of 2nd m. function code for calculating machine time

Specify the average execution time of the 2nd miscellaneous function code for which individual setting is not performed.

---Setting range---

0 to 60000 (ms)

#42961	S Code ExeTime 1	S code execution time for machining time calculation (1st spindle)

Specify the S code execution time of the 1st spindle.

---Setting range---

0 to 60000 (ms)

#42962	S Code ExeTime 2	S code execution time for machining time calculation (2nd spindle)

Specify the S code execution time of the 2nd spindle.

---Setting range---

0 to 60000 (ms)

#42963	S Code ExeTime 3	S code execution time for machining time calculation (3rd spindle)

Specify the S code execution time of the 3rd spindle.

---Setting range---

0 to 60000 (ms)

#42964	S Code ExeTime 4	S code execution time for machining time calculation (4th spindle)

Specify the S code execution time of the 4th spindle.

---Setting range---

0 to 60000 (ms)

#42965	S Code ExeTime 5	S code execution time for machining time calculation (5th spindle)

Specify the S code execution time of the 5th spindle.

---Setting range---

0 to 60000 (ms)

#42966	S Code ExeTime 6	S code execution time for machining time calculation (6th spindle)

Specify the S code execution time of the 6th spindle.

---Setting range---

0 to 60000 (ms)

#42967	S Code ExeTime 7	S code execution time for machining time calculation (7th spindle)

Specify the S code execution time of the 7th spindle.

---Setting range---

0 to 60000 (ms)

#42968	S Code ExeTime 8	S code execution time for machining time calculation (8th spindle)

Specify the S code execution time of the 8th spindle.

---Setting range---

0 to 60000 (ms)

2.28 Safety Common Parameters

(PR)	#51001	SIO_Enable	Enable safety related I/O observation

Select whether to enable the safety related I/O observation.

0: Disable

1: Enable

(PR)	#51002	SLS_Enable	Enable SLS observation

Select whether to enable the safely limited speed observation.

0: Disable

1: Enable

(PR)	#51003	SLP_Enable	Enable SLP observation

Select whether to enable the safely limited position observation.

0: Disable

1: Enable

(PR)	#51004	SSM_Enable	Enable Safe speed monitor

Select whether to enable the safe speed monitor.

0: Disable

1: Enable

(PR)	#51005	SCA_Enable	Enable safe cam

Select whether to enable the safe cam.

0: Disable

1: Enable

(PR)	#51006	SOS_Enable	Enable Safe operating stop

Select whether to enable the safe operating stop.

0: Disable

1: Enable

(*) When SS2 is executed, SOS is activated irrespective of this parameter.

(PR)	#51007	SS1_Enable	Enable Safe stop 1

Select whether to enable the safe stop 1.

0: Disable

1: Enable

(*) Irrespective of this parameter, when a smart safety observation error is detected, SS1 may be activated depending on the setting of "#51102 SF_Stoptype".

(PR)	#51008	SS2_Enable	Enable Safe stop 2

Select whether to enable the safe stop 2.

0: Disable

1: Enable

(PR)	#51009	STO_Enable	Enable Safe torque off

Select whether to enable the safe torque off.

0: Disable

1: Enable

(*) Irrespective of this parameter, when a smart safety observation error is detected, STO may be activated depending on the setting of "#51102 SF_Stoptype".

(PR)	#51010	SBC_Enable	Safe brake control enabled

Select whether to enable the safe brake control.

0: Disable

1: Enable

(PR)	#51011	SBT_INT	SBT interval

Set the time that elapses before the next SBT incomplete signal (SBTNFEXm / SBTNFMOm) turns ON after completing the brake test.

When set "0", the interval will be 8 hours.

---Setting range---

0 to 255 hours

(PR)	#51012	CRSCHK_TOL	Cross-check status inconsistency tolerable time

Set the tolerable time for inconsistency between CPUs status. (When the status is inconsistent for more than tolerable time, the alarm occurs and the motor power shuts OFF.)

When set "0", the inconsistency tolerable time is 100 ms.

---Setting range---

0 to 5000 (ms)

	#51013	SF_PSWD	Safe password

Set the safety password.

Setting: 7 or 8 uppercase alphanumeric characters

If no password is set, turn ON the machine parameter setup mode to set the safety parameters.

---Setting range---

7 or 8 uppercase alphanumeric characters

(PR)	#51015	safe_drv_test	Drive safety function easy test mode

Select whether to enable the simple test mode in which the drive safety function operation can be checked without connecting any smart safety observation-capable drive unit.

0: Disable the drive safety function simple test mode

1: Enable the drive safety function simple test mode

(PR)	#51017	SLAD_Step	Maximum number of steps in safety ladder

Specify the maximum number of storable steps for safety sequence.
The maximum number of executable steps will be double the maximum number of storable steps.

0: 6144 steps

1 to 32: (Setting value) K steps

---Setting range---

0 (default)

1 to 32 (K steps)

2.29 Safety Axis Parameters

(PR)	#51101	SF_Disable	Disable smart safety observation

Exclude the axis from the smart safety observation target.

0: Enable smart safety observation

1: Disable smart safety observation

(Note) The settings of "#51101 SF_Disable" and "#51301 SF_SDisable" must be the same within a multi-hybrid drive unit.

(PR)	#51102	SF_Stoptype	Stop method at error

Select which of the safe stop methods to use when an error is detected in the smart safety observation.

0: STO

1: SS1

(PR)	#51103-51106	SLS_Speed1-4	SLS speed tolerance 1-4

Specify the upper limits of machine-end speed determined as safe for each of SLS speed tolerances 1 to 4. If the SLS detection delay time has elapsed with the command/FB speed exceeding the safely-limited speed while SLS is ON, a safe stop (SS1 or STO) is executed. The safely-limited speed to be applied to SLS is calculated using the following equation.

Safely-limited speed = SLS speed tolerance x SLS speed override / 100

---Setting range---

0 to 999999 (mm/min or °/min)

(PR)	#51107-51122	SLS_Override1-16	SLS speed override 1-16

Specify the speed overrides 1 to 16 with respect to SLS speed tolerances 1 to 4. For details refer to SLS speed tolerances 1 to 4.

---Setting range---

0 to 100 (%)

(PR)	#51123	SLS_Clamp	SLS speed clamp ratio

Specify the speed clamp ratio that is applied while SLS is ON. Set the ratio to about 80 to 90%. While SLS is ON, the command speed is clamped at the following speed:

Clamp speed = Safely-limited speed x SLS speed clamp ratio / 100

(Safely-limited speed = SLS speed tolerance x SLS speed override / 100)

---Setting range---

0 to 100 (%)

	#51124	SLS_T1	SLS detection delay time

Specify a period of time to detect a speed error while SLS is ON. A safe stop (SS1 or STO) is executed if the period of time set in this parameter has elapsed with the command/FB speed exceeding the safely-limited speed.

---Setting range---

0 to 9999 (ms)

	#51125	SLS_T2	SLS deceleration observation time

Specify a period of time to detect a deceleration error that is caused due to change of the safely-limited speed at the start of or during SLS. If you have changed the safely-limited speed at the start of or during SLS, and the time set in this parameter has elapsed with the command/FB speed exceeding the safely-limited speed, a safe stop (SS1 or STO) is executed. When set to "0", the detection time is treated as 200(ms).

---Setting range---

0 to 99999 (ms)

(PR)	#51126+2(n-1)	SLP_PositionPn	SLP position tolerance n (+)

"n" represents the SLP position tolerance No. (n=1 to 4)

Specify the upper and lower limits of machine position, which is determined as safe, for each of SLP position tolerances 1(+) to 4(+). If the SLP detection delay time has elapsed while SLP is ON with the command/FB position outside the SLP position tolerance range, a safe stop (SS1 or STO) is executed.

*SLP is not available for a rotation-type rotary axis.

---Setting range---

-99999.999 to +99999.999 (mm)

(PR)	#51127+2(n-1)	SLP_PositionMn	SLP position tolerance n (-)

"n" represents the SLP position tolerance No. (n=1 to 4)

Specify the upper and lower limits of machine position, which is determined as safe, for each of SLP position tolerances 1(-) to 4(-). If the SLP detection delay time has elapsed while SLP is ON with the command/FB position outside the SLP position tolerance range, a safe stop (SS1 or STO) is executed.

*SLP is not available for a rotation-type rotary axis.

---Setting range---

-99999.999 to +99999.999 (mm)

	#51134	SLP_T1	SLP detection delay time

Specify a period of time to detect a machine position error while SLP is ON. If the time set in this parameter has elapsed with the command/FB position outside the SLP position tolerance range, a safe stop (SS1 or STO) is executed.

---Setting range---

0 to 9999 (ms)

(PR)	#51135-51138	SSM_Speed1-4	SSM speed 1-4

Specify the upper limits of machine-end speed determined as safe for each of SSM speeds 1 to 4. If the command/FB speed is at the safe speed or lower while SSM is ON, the Under SSM safe speed signal turns ON. If the command/FB speed exceeds the safe speed, the Under SSM safe speed signal turns OFF. The safe speed to be applied to SSM is calculated using the following equation.

(When the Under SSM safe speed signal is ON)
Safe speed = SSM speed

(When the Under SSM safe speed signal is OFF)
Safe speed = SSM speed - SSM hysteresis width

---Setting range---

0 to 999999 (mm/min or °/min)

	#51139-51142	SSM_Hysteresis1-4	SSM hysteresis width 1-4

Specify the hysteresis widths that correspond to SSM speeds 1 to 4. For details refer to SSM speeds 1 to 4.

---Setting range---

0 to 999999 (mm/min or °/min)

(PR)	#51143+2(n-1)	SCA_PositionPn	SCA position n (+)

"n" represents the SCA position No. (n=1 to 16)

Specify the upper and lower limits of machine position determined as safe for each of SCA positions 1(+) to 16(+). If the command/FB position is in the SCA safe position or smaller while SCA is ON, the Safe cam position signal turns OFF. If the position has exceeded the SCA safe position, the Safe cam position signal turns ON. The SCA safe position is calculated using the following equation.

(When the Safe cam position signal is ON)
SCA safe position = SCA position (+) – SCA hysteresis width

(When the Safe cam position signal is OFF)
SCA safe position = SCA position (+)

---Setting range---

-99999.999 to +99999.999 (mm)

(PR)	#51144+2(n-1)	SCA_PositionMn	SCA position n (-)

"n" represents the SCA position No. (n=1 to 16)

Specify the upper and lower limits of machine position determined as safe for each of SCA positions 1(-) to 16(-). If the command/FB position is in the SCA safe position or smaller while SCA is ON, the Safe cam position signal turns OFF. If the position has exceeded the SCA safe position, the Safe cam position signal turns ON. The SCA safe position is calculated using the following equation.

(When the Safe cam position signal is ON)
SCA safe position = SCA position (-) – SCA hysteresis width

(When the Safe cam position signal is OFF)
SCA safe position = SCA position (-)

---Setting range---

-99999.999 to +99999.999 (mm)

	#51175	SCA_Hysteresis	SCA hysteresis width

Specify the hysteresis widths that correspond to SCA positions 1 to 16. For details refer to SCA positions 1(+/-) to 16(+/-).

---Setting range---

0 to 99999.999 (mm)

(PR)	#51176	SOS_Speed	SOS stop speed

Specify the upper limit of machine-end speed determined as a safe operating stop.

- If the SOS_V detection delay time has elapsed with the command/FB speed exceeding the speed of this parameter while SOS is ON, a safe stop (SS1 or STO) is executed.
- The point of time at which the command/FB speed drops to that of this parameter or lower while SS1/SS2 is ON is treated as a standstill.

*When this parameter is set to 0, "SOS speed error" may occur even though the axis is at a standstill.

---Setting range---

0 to 9999 (mm/min or °/min)

	#51177	SOS_T1	SOS_V detection delay time

Specify a period of time to detect a speed error while SOS is ON. If the period of time set in this parameter has elapsed with the command/FB speed exceeding the SOS stop speed while SOS is ON, a safe stop (SS1 or STO) is executed.

---Setting range---

0 to 9999 (ms)

(PR)	#51178	SOS_Droop	SOS position deviation tolerance

Specify the upper limit of machine-end position deviation determined as a safe operating stop. If the SOS_PD detection delay time has elapsed with the position deviation (difference between the command and FB positions) exceeding that of this parameter while SOS is ON, a safe stop (SS1 or STO) is executed.

*When this parameter is set to 0, "SOS position deviation error" may occur even though the axis is at a standstill.

---Setting range---

0 to 9999.999 (mm or °)

	#51179	SOS_T2	SOS_PD detection delay time

Specify a period of time to detect a position deviation error while SOS is ON. If a period of time set in this parameter has elapsed with the position deviation (difference between the command and FB positions) exceeding the SOS position deviation tolerance while SOS is ON, a safe stop (SS1 or STO) is executed.

---Setting range---

0 to 9999 (ms)

(PR)	#51180	SOS_PositionM	SOS travel distance tolerance (-)

Specify the upper limit of machine-end travel distance (minus side) determined as a safe operating stop. If the SOS_P detection delay time has elapsed with the command/FB travel distance in the minus direction exceeding that of this parameter while SOS is ON, a safe stop (SS1 or STO) is executed.

*When this parameter is set to 0, "SOS travel distance error" may occur even though the axis is at a standstill.

---Setting range---

0 to 9999.999 (mm or °)

(PR)	#51181	SOS_PositionP	SOS travel distance tolerance (+)

Specify the upper limit of machine-end travel distance (plus side) determined as a safe operating stop. If the SOS_P detection delay time has elapsed with the command/FB travel distance in the plus direction exceeding that of this parameter while SOS is ON, a safe stop (SS1 or STO) is executed.

*When this parameter is set to 0, "SOS travel distance error" may occur even though the axis is at a standstill.

---Setting range---

0 to 9999.999 (mm or °)

	#51182	SOS_T3	SOS_P detection delay time

Specify a period of time to detect a travel distance error while SOS is ON. If the period of time set in this parameter has elapsed with the command/FB travel distance exceeding the SOS travel distance tolerance (+/-) while SOS is ON, a safe stop (SS1 or STO) is executed.

---Setting range---

0 to 9999 (ms)

	#51183	SS1_T1	SS1 deceleration observation time

Specify a period of time to detect a deceleration error while SS1 is ON. If the time set in this parameter has elapsed with the command/FB speed exceeding the SOS stop speed, STO is activated.

---Setting range---

0 to 99999 (ms)

	#51184	SS2_T1	SS2 deceleration observation time

Specify a period of time to detect a deceleration error while SS2 is ON. If the time set in this parameter has elapsed with the command/FB speed exceeding the SOS stop speed, STO is activated.

---Setting range---

0 to 99999 (ms)

(PR)	#51185	STO_EXEWT	Waiting time before STO execution

Specify a period of time to wait from when the drive unit receives an STO request from the NC until when STO is actually executed. Set this time so that the brake is activated within this period of time. When set to "0", the STO execution standby time is treated as 200 ms.

---Setting range---

0 to 20000 (ms)

(PR)	#51186	SBTEX_Enable	External brake SBT enabled

0: Disable

1: Enable

(PR)	#51187	SBTMO_Enable	Motor brake SBT enabled

0: Disable

1: Enable

	#51191	SBT_ILIM	SBT current limit value

Set the current limit value in the brake test in proportion to the stall current. When set to "0", the alarm occurs at the start of the brake test. (The test does not start.)

---Setting range---

0 to 100 (%)

(PR)	#51192	SBT_CMDWT	SBT command wait time

Set the wait time of output of movement command for brake test from NC since receiving SBT starting signal (SBTSTEXm / SBTSTMOm). When set to "0", the commanded wait time is 400 ms.

---Setting range---

0 to 30000 (ms)

(PR)	#51193	SBT_FD	SBT command movement amount

Set the movement amount to command to the test target axis at the time of brake test. When set to "0", the alarm occurs at the start of the brake test. (The test does not start.)

---Setting range---

-99999.999 to 99999.999 (mm or °)

(PR)	#51194	SBT_FDRATE	SBT command speed

Set the command speed to command to the test target axis at the time of brake test. When set to "0", the alarm occurs at the start of the brake test. (The test does not start.)

---Setting range---

0 to 1000000 (mm/min or °/min)

(PR)	#51195	SBT_OBTIM	SBT observation time

Set the time to continue the observation of axis movement amount after the output of movement command for test at the time of brake test. When set to "0", the observation time is 1000 ms.

---Setting range---

0 to 30000 (ms)

(PR)	#51196	SBT_TOL	SBT tolerable movement amount

Set the tolerable movement amount of the test target axis at the time of brake test. (The alarm occurs if the movement amount during the test exceeds this parameter value.) When set "0", the tolerable movement amount is 100 mm (or °).

---Setting range---

0 to 99999.999 (mm or °)

(PR)	#51197	SLP/SCA_FDTOL	SLP/SCA tolerable movement amount during power OFF

Sets the tolerable value of the difference (error amount) between [saved position at power shut OFF] and [restored position at power ON] in SLP/SCA encoder diagnosis during power OFF. When this above difference exceeds the tolerable value, the system starts in STO status. When set "0", the tolerable value is as in below formula.

Tolerable movement amount = SV018(PIT) * 0.9

---Setting range---

0 to 99999.999 (mm)

(PR)	#51198	MlRtAbsSEnc_FDChk	SLP/SCA encoder diagnosis during power OFF application for Multi revolution safety encoder

Enables the encoder diagnosis during power OFF to use SLP/SCA for the axes connected with Multi revolution safety encoder.

0: Disable the encoder diagnosis during power OFF to use SLP/SCA for the axes connected with Multi revolution safety encoder

1: Enable the encoder diagnosis during power OFF to use SLP/SCA for the axes connected with Multi revolution safety encoder

* As for the axes not connected with Multi revolution safety encoder, the above diagnosis will be enabled regardless of the setting value of this parameter.

* The above diagnosis will not be executed when SLP/SCA are disabled. (Both SLP_Enable and SCA_Enable are 0.)

	#51199	SF_PDCHK_TOL	Servo axis position deviation diagnosis tolerable value

Sets the tolerable value of the position deviation (the difference between the commanded position generated inside NC and the feedback position received from drive unit) in the position deviation diagnosis. When the position deviation exceeds the tolerable value, the Safe stop (SS1/STO) will be carried out. When "0" is set, the tolerable value is as in below formula.

Tolerable value = SV018(PIT) * 2.0

---Setting range---

0 to 32767 (mm or °)

(PR) #51200 SFSPEC1 Safety specification 1

Specify the Safety axis's specification by turning ON the corresponding bit. Input the hexadecimal value for this parameter.

bit0-2: Not used

bit3: Motor brake connection status

0: Motor brake connected

1: Motor brake not connected

bit4-F: Not used

* If the settings of encoder type (bit0, bit1) are different from the actually connected ones, the servo alarm 4D is output.

---Setting range---

0x0000 to 0xFFFF

(PR) #51201 SENCTYP Safety encoder type

For a safety encoder-connected axis, set the safety encoder type. When the Multi revolution part is connected to the safety encoder that is outside the certification of safety standards, and in SLP/SCA enabled, SLP/SCA encorder diagnosis during power OFF will be carried out regardless of the setting value of #51198 MlRtAbsSEnc_FDChk.

0: Safety encoder that is outside the safety certification for Multi revolution

1: Safety encoder that is certified with safety standards for Multi revolution

(PR) #51202 SEMG_STO_WT STO delay time for safety external emergency stop

Specify a length of time it takes to complete deceleration stop when safety external emergency stop is implemented.

When not executing deceleration stop, set the parameter to "0".

When executing deceleration stop, subtract "#51185 STO_EXEWT" from "#2256 SV056" and set the difference in the parameter.

---Setting range---

0 to 20000 (ms)

2.30 Safety Spindle Parameters

(PR)	#51301	SF_SDisable	Disable smart safety observation

Exclude the axis from the smart safety observation target.

0: Enable smart safety observation

1: Disable smart safety observation

(Note) The settings of "#51101 SF_Disable" and "#51301 SF_SDisable" must be the same within a multi-hybrid drive unit.

(PR)	#51302	SF_SStoptype	Stop method at error

Select which of the safe stop methods to use when an error is detected in the smart safety observation.

0: STO

1: SS1

(PR)	#51303-51306	SLS_SSpeed1-4	SLS speed tolerance 1-4

Specify the upper limits of machine-end speed determined as safe for each of SLS speed tolerances 1 to 4. If the SLS detection delay time has elapsed with the command/FB speed exceeding the safely-limited speed while SLS is ON, a safe stop (SS1 or STO) is executed. The safely-limited speed to be applied to SLS is calculated using the following equation.

Safely-limited speed = SLS speed tolerance x SLS speed override / 100

---Setting range---

0 to 999999.9 (r/min)

(PR)	#51307-51322	SLS_SOverride1-16	SLS speed override 1-16

Specify the speed overrides 1 to 16 with respect to SLS speed tolerances 1 to 4. For details refer to SLS speed tolerances 1 to 4.

---Setting range---

0 to 100 (%)

(PR)	#51323	SLS_Sclamp	SLS speed clamp ratio

Specify the speed clamp ratio that is applied while SLS is ON. Set the ratio to about 80 to 90%. While SLS is ON, the command speed is clamped at the following speed:

Clamp speed = Safely-limited speed x SLS speed clamp ratio / 100

(Safely-limited speed = SLS speed tolerance x SLS speed override / 100)

---Setting range---

0 to 100 (%)

	#51324	SLS_ST1	SLS detection delay time

Specify a period of time to detect a speed error while SLS is ON. A safe stop (SS1 or STO) is executed if the period of time set in this parameter has elapsed with the command/FB speed exceeding the safely-limited speed.

---Setting range---

0 to 9999 (ms)

	#51325	SLS_ST2	SLS deceleration observation time

Specify a period of time to detect a deceleration error that is caused due to change of the safely-limited speed at the start of or during SLS. If you have changed the safely-limited speed at the start of or during SLS, and the time set in this parameter has elapsed with the command/FB speed exceeding the safely-limited speed, a safe stop (SS1 or STO) is executed. When set to "0", the detection time is treated as 200(ms).

---Setting range---

0 to 99999 (ms)

(PR)	#51326-51329	SSM_SSpeed1-4	SSM speed 1-4

Specify the upper limits of machine-end speed determined as safe for each of SSM speeds 1 to 4. If the command/FB speed is at the safe speed or lower while SSM is ON, the Under SSM safe speed signal turns ON. If the command/FB speed exceeds the safe speed, the Under SSM safe speed signal turns OFF. The safe speed to be applied to SSM is calculated using the following equation.

(When the Under SSM safe speed signal is ON)
Safe speed = SSM speed

(When the Under SSM safe speed signal is OFF)
Safe speed = SSM speed - SSM hysteresis width

---Setting range---

0 to 999999.9 (r/min)

	#51330-51333	SSM_SHysteresis1-4	SSM hysteresis width 1-4

Specify the hysteresis widths that correspond to SSM speeds 1 to 4. For details refer to SSM speeds 1 to 4.

---Setting range---

0 to 999999.9 (r/min)

(PR)	#51334	SOS_SSpeed	SOS stop speed

Specify the upper limit of machine-end speed determined as a safe operating stop.

- If the SOS_V detection delay time has elapsed with the command/FB speed exceeding that of this parameter while SOS is ON, a safe stop (SS1 or STO) is executed.
- The point of time at which the command/FB speed drops to that of this parameter or lower while SS1/SS2 is ON is treated as a standstill.

*When this parameter is set to 0, "SOS speed error" may occur even though the spindle is at a standstill.

---Setting range---

0 to 9999.9 (r/min)

	#51335	SOS_ST1	SOS_V detection delay time

Specify a period of time to detect a speed error while SOS is ON. If the period of time set in this parameter has elapsed with the command/FB speed exceeding the SOS stop speed while SOS is ON, a safe stop (SS1 or STO) is executed.

---Setting range---

0 to 9999 (ms)

(PR)	#51336	SOS_SDroop	SOS position deviation tolerance

Specify the upper limit of machine-end position deviation determined as a safe operating stop. If the SOS_PD detection delay time has elapsed with the position deviation (difference between the command and FB positions) exceeding that of this parameter while SOS is ON, a safe stop (SS1 or STO) is executed.

*When this parameter is set to 0, "SOS position deviation error" may occur even though the spindle is at a standstill.

---Setting range---

0 to 9999 (°)

	#51337	SOS_ST2	SOS_PD detection delay time

Specify a period of time to detect a position deviation error while SOS is ON. If a period of time set in this parameter has elapsed with the position deviation (difference between the command and FB positions) exceeding the SOS position deviation tolerance while SOS is ON, a safe stop (SS1 or STO) is executed.

---Setting range---

0 to 9999 (ms)

(PR)	#51338	SOS_SPositionM	SOS travel distance tolerance (-)

Specify the upper limit of machine-end travel distance (minus side) determined as a safe operating stop. If the SOS_P detection delay time has elapsed with the command/FB travel distance in the minus direction exceeding that of this parameter while SOS is ON, a safe stop (SS1 or STO) is executed.

*When this parameter is set to 0, "SOS travel distance error" may occur even though the spindle is at a standstill.

---Setting range---

0 to 9999 (°)

(PR)	#51339	SOS_SPositionP	SOS travel distance tolerance (+)

Specify the upper limit of machine-end travel distance (plus side) determined as a safe operating stop. If the SOS_P detection delay time has elapsed with the command/FB travel distance in the plus direction exceeding that of this parameter while SOS is ON, a safe stop (SS1 or STO) is executed.

*When this parameter is set to 0, "SOS travel distance error" may occur even though the spindle is at a standstill.

---Setting range---

0 to 9999 (°)

	#51340	SOS_ST3	SOS_P detection delay time

Specify a period of time to detect a travel distance error while SOS is ON. If the period of time set in this parameter has elapsed with the command/FB travel distance exceeding the SOS travel distance tolerance (+/-) while SOS is ON, a safe stop (SS1 or STO) is executed.

---Setting range---

0 to 9999 (ms)

	#51341	SS1_ST1	SS1 deceleration observation time

Specify a period of time to detect a deceleration error while SS1 is ON. If the time set in this parameter has elapsed with the command/FB speed exceeding the SOS stop speed, STO is activated.

---Setting range---

0 to 99999 (ms)

	#51342	SS2_ST1	SS2 deceleration observation time

Specify a period of time to detect a deceleration error while SS2 is ON. If the time set in this parameter has elapsed with the command/FB speed exceeding the SOS stop speed, STO is activated.

---Setting range---

0 to 99999 (ms)

(PR)	#51343	STO_SEXEWT	Waiting time before STO execution

Specify a period of time to wait from when the drive unit receives an STO request from the NC until when STO is actually executed. Set this time so that the brake is activated within this period of time. When set to "0", the STO execution standby time is treated as 200 ms.

---Setting range---

0 to 20000 (ms)

	#51344	SF_PDCHK_ST1	Spindle position deviation diagnosis waiting time

Set the waiting time for starting the position deviation diagnosis at Spindle non-interpolation mode. The diagnosis of the position deviation at Spindle non-interpolation mode starts after the commanded speed becomes consistent and after the time set by this parameter passes. It stops while the command speed is changing. When set to "0", the Spindle position deviation diagnosis waiting time is 20000 ms.

---Setting range---

0 to 30000 (ms)

	#51345	SF_PDCHK_STOL	Spindle position deviation diagnosis tolerable value

Sets the tolerable value of the position deviation (the difference between the commanded position generated inside NC and the feedback position received from drive unit) in the position deviation diagnosis. When the position deviation exceeds the tolerable value, the Safe stop (SS1/STO) will be carried out. When set to "0", the tolerable value is 1080°.

---Setting range---

0 to 32767 (°)

(PR)	#51347	SEMG_STO_SWT	STO delay time for safety external emergency stop

Specify a length of time it takes to complete deceleration stop when safety external emergency stop is implemented.

When not executing deceleration stop, set the parameter to "0".

When executing deceleration stop, subtract "#51343 STO_SEXEWT" from "#13056 SP056" and set the difference in the parameter.

---Setting range---

0 to 29900 (ms)

2.31 Safety I/O Assignment Parameters

(PR) #51501+10(n-1) RIO CH No. #n Target channel number #n

Specify the channel No. to which the nth safety I/O unit is connected. (n = 1 to 8)

(*) When set to "0", the RIO assignment parameters of the nth station are all disabled.

---Setting range---

0 to 4

(PR) #51502+10(n-1) RIO Station No. #n Target station number #n

Specify the station No. of the nth safety I/O unit. (n=1 to 8)

* Set this parameter to the same value as of the rotary switch on the safety I/O unit to which the device is assigned.

---Setting range---

0 to 63

(PR) #51503+10(n-1) DI dev name #n DI device name #n

Specify the name of the DI assignment devices of the nth safety I/O unit. (n=1 to 8)

* When set to "0", the name is left blank.

---Setting range---

0, X, ZR

(PR) #51504+10(n-1) DI dev No. #n DI device number #n

Specify the head device No. of DI assignment devices of the nth safety I/O unit. (n=1 to 8)

Device X: hexadecimal and on a 32-point basis (a multiple of 32)

Device ZR: decimal and on a 2-point basis (an even number)

* This parameter changes to "0" if you change the device name "DI dev name #n".

* Specify "DI dev name #n" ahead of this parameter.

---Setting range---

X: 0 to 1E0 (hexadecimal)

ZR: 0 to 62 (decimal)

(PR) #51505+10(n-1) DO dev name #n DO device name #n

Specify the name of the DO assignment devices of the nth safety I/O unit. (n=1 to 8)

* When set to "0", the name is left blank.

---Setting range---

0, Y, ZR

(PR) #51506+10(n-1) DO dev No. #n DO device number #n

Specify the head device No. of the DO assignment devices of the nth safety I/O unit. (n=1 to 8)

Device Y: hexadecimal and on a 32-point basis (a multiple of 32)

Device ZR: decimal and on a 2-point basis (an even number)

* The setting of this parameter changes to "0" if you change the device name of "DO dev name #n".

* Specify "DO dev name #n" ahead of this parameter.

---Setting range---

Y: 0 to 1E0 (hexadecimal)

ZR: 64 to 126 (decimal)

(PR) #51582 EMG_Dev1_ch Emergency stop signal 1 channel No.

Specify the No. of I/O channel to connect the safety I/O unit that receives the emergency stop signal. When set to "0", the designation of emergency stop signal device by EMG_Dev1 is disabled, irrespective of the settings of EMG_Dev1_stn and EMG_Dev1_bit.

---Setting range---

0 to 4

(PR) #51583 EMG_Dev1_stn Emergency stop signal 1 station No.

Specify the No. of station to connect the safety I/O unit that receives the emergency stop signal.

---Setting range---

0 to 63

(PR) #51584 EMG_Dev1_bit Emergency stop signal 1 bit No.

Specify the bit No. of the safety I/O unit that receives the emergency stop signal.

---Setting range---

0 to 7

(PR) #51585 EMG_Dev2_ch Emergency stop signal 2 channel No.

Specify the No. of I/O channel to connect the safety I/O unit that receives the emergency stop signal. When set to "0", the designation of emergency stop signal device by EMG_Dev2 is disabled, irrespective of the settings of EMG_Dev2_stn and EMG_Dev2_bit.

---Setting range---

0 to 4

(PR) #51586 EMG_Dev2_stn Emergency stop signal 2 station No.

Specify the No. of station to connect the safety I/O unit that receives the emergency stop signal.

---Setting range---

0 to 63

(PR) #51587 EMG_Dev2_bit Emergency stop signal 2 bit No.

Specify the bit No. of the safety I/O unit that receives the emergency stop signal.

---Setting range---

0 to 7

(PR) #51591 SIO_DIDelay Allowed input signal compare time

Specify the allowed time of inconsistency between the PLC1 and PLC2 side input signals. Specify this in increments of 10 (ms). When set to "0", the allowed safety signal compare time is 300 (ms).

---Setting range---

0 to 500 (10 ms)

(PR) #51592 SIO_DODelay Allowed output signal compare time

Specify the allowed time of inconsistency between the PLC1 and PLC2 side output signals. Specify this in increments of 10 (ms). When set to "0", the allowed safety signal compare time is 300 (ms).

---Setting range---

0 to 50 (10 ms)

(PR) #51593 SIO_DOErrtype DO control method at diagnostic error

Select the DO control method and PLC status of when a safety signal observation error occurs.

0: PLC is set in RUN state and DO is controlled through user safety sequence

1: PLC is set in STOP state and all DOs are OFF.

(PR) #51594 SIO_DODelay2 Allowed output signal compare time 2

Specify the allowed time of inconsistency between the PLC1 and PLC2 side output signals. Specify this in increments of 10 (ms). When set to "0", the allowed safety signal compare time is 300 (ms).

Set tolerable time more than 300 (ms), when an output signal is controlled with 100 (ms) timer.

---Setting range---

0 to 500 (10 ms)

2.32 EtherNet/IP Parameters

2.32.1 EtherNet/IP Parameters Scanner 1

(Note) Numeric portion of "N001" included in each parameter name varies depending on the parameter No.

#80000+20(n-1)	N001 Device Number	Scanner function Implicit Message: device No.

Specify the No. of the device that is assigned to node. (n=1 to 64)

---Setting range---

1 to 128

#80001+20(n-1)	N001 Position No.	Scanner function Implicit Message: position No.

Specify the position No. that is assigned to node. (n=1 to 64)

---Setting range---

0 to 63

#80002+20(n-1)	N001 Project No.	Scanner function Implicit Message: PLC project No.

Specify the PLC project No. that is assigned to node. (n=1 to 64)

This number is set as the project No. of PLC device to which the node input/output/connection status is assigned.

---Setting range---

1 to 6

#80003+20(n-1)	N001 in dev name	Scanner function Implicit Message: PLC device name (IN (T->O))

Specify the name of PLC device to which Implicit Message input data is transferred. (n=1 to 64)

Example) X

---Setting range---

X, M, L, SB, B, SW, D, R, W

#80004+20(n-1)	N001 in dev No.	Scanner function Implicit Message: PLC device top No. (IN (T->O))

Specify the top No. of PLC device to which Implicit Message input data is transferred. (n=1 to 64)

If you specify bit devices, set them in increments of 16 points.

Example) 100

---Setting range---

X: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#80005+20(n-1)	N001 in dev size	Scanner function Implicit Message: PLC device size (IN (T->O))

Specify the size (bytes) of Implicit Message input data that is transferred to PLC device. (n=1 to 64)

Example) 1

---Setting range---

0 to 509 (bytes)

* Up to 5000 bytes in total for all nodes

#80006+20(n-1)	N001 out dev name	Scanner function Implicit Message: PLC device name (OUT (O->T))

Specify the name of PLC device to which Implicit Message output data is transferred. (n=1 to 64)

Example) Y

---Setting range---

Y, M, L, SB, B, SW, D, R, W

#80007+20(n-1)	N001 out dev No.	Scanner function Implicit Message: PLC device top No. (OUT (O->T))

Specify the top No. of PLC device to which Implicit Message output data is transferred. (n=1 to 64)

If you specify bit devices, set them in increments of 16 points.

Example) 100

---Setting range---

Y: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#80008+20(n-1)	N001 out dev size	Scanner function Implicit Message: PLC device size (OUT (O->T))

Specify the size (bytes) of Implicit Message output data that is transferred to PLC device. (n=1 to 64)

Example) 1

---Setting range---

0 to 505 (bytes)

* Up to 5000 bytes in total for all nodes

#80009+20(n-1)	N001 sts dev name	Scanner function Implicit Message: connection status assign PLC device name

Specify the name of PLC device to which connection status of the device assigned to node is transferred. (n=1 to 64)

Example) M

---Setting range---

M, L, SB, B, SW, D, R, W

#80010+20(n-1)	N001 sts dev No.	Scanner function Implicit Message: connection status assign PLC device No.

Specify the top No. of PLC device to which connection status of the device assigned to node is transferred. (n=1 to 64)

6 bytes of data starting from the specified device No. are occupied.

Example) 1024

---Setting range---

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#80011+20(n-1) N001 High in size High-speed refresh area size (IN (T->O))

This parameter specifies the high-speed refresh input area size for the node. (n = 1 to 64)

When the setting is greater than that of PLC device size (IN (T->O)) of the same node, an alarm will be issued.

When the total size of the high-speed refresh input areas for all the nodes and all the areas is greater than 8 (bytes), an alarm will be issued.

---Setting range---

0 to 8

(*) Up to 8 (bytes) in total for all nodes

#80012+20(n-1) N001 High out size High-speed refresh area size (OUT (O->T))

This parameter specifies the high-speed refresh output area size for the node. (n = 1 to 64)

When the setting is greater than that of PLC device size (OUT (O->T)) of the same node, an alarm will be issued.

When the total size of the high-speed refresh output areas for all the nodes and all the areas is greater than 8 (bytes), an alarm will be issued.

---Setting range---

0 to 8

(*) Up to 8 (bytes) in total for all nodes

#81565 PLC Stop Output Setting of output at PLC STOP

Select which data is sent to the hardware connected when the NC enters the PLC STOP mode, the set PLC device value or the cleared data (the data cleared to "0").

0: Send the PLC device value

1: Send the data cleared to "0"

2.32.2 EtherNet/IP Parameters Scanner 2

(Note) Numeric portion of "CH01" included in each parameter name varies depending on the parameter No.

#81280+10(c-1)	CH01 Project No.	Scanner function Explicit Message: PLC project No.

Specify the PLC project No. that is assigned to node. (c=1 to 16)

This number is set as the project No. of PLC device to which the node input/output/control structure is assigned.

---Setting range---

1 to 6

#81281+10(c-1)	CH01 ctrl dev name	Scanner function Explicit Message: control structure assign PLC device name

Specify the name of PLC device to which "Explicit Message control structure" is assigned. (c=1 to 16)

Example) M

---Setting range---

M, L, SB, B, SW, D, R, W

#81282+10(c-1)	CH01 ctrl dev No.	Scanner function Explicit Message: ctrl structure assign PLC device top No.

Specify the top No. of PLC device to which "Explicit Message control structure" is assigned. (c=1 to 16)

If you specify bit devices, set them in increments of 16 points.

Example) 2048

---Setting range---

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

2.32.3 EtherNet/IP Parameters Adapter 1

(Note) Numeric portion of "A1" included in each parameter name varies depending on the parameter No.

#81440+20(a-1) Imp A1 Proj No. Adapter function Implicit Message: PLC project No.

Specify the PLC project No. that is assigned to Adapter Implicit (IN/OUT) area. (a=1 to 6)
This number is set as the project No. of PLC device for input/output to/from Adapter Implicit (IN/OUT) area.

---Setting range---

1 to 6

#81441+20(a-1) Imp A1in offset Adapter function Implicit Message: IN area top offset

Specify the offset (bytes) from the head of Adapter Implicit (IN) area. (a=1 to 6)
The data starting from the specified offset is sent from Adapter Implicit (IN) area to PLC device.
Example) 100

---Setting range---

0 to 499 (bytes)

#81442+20(a-1) Imp A1in dev name Adapter function Implicit Message: PLC device name (IN)

Specify the name of PLC device to which Adapter Implicit (IN) area data is transferred. (a=1 to 6)
Example) X

---Setting range---

X, M, L, SB, B, SW, D, R, W

#81443+20(a-1) Imp A1in dev No. Adapter function Implicit Message: PLC device top No. (IN)

Specify the top No. of PLC device to which Adapter Implicit (IN) area data is transferred. (a=1 to 6)
If you specify bit devices, set them in increments of 16 points.
Example) 200

---Setting range---

X: 0 to 5F0
M: 0 to 61424
L: 0 to 32752
SB: 0 to 7FF0
B: 0 to EFF0
SW: 0 to 7FFF
D: 0 to 32767
W: 0 to 7FFF
R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#81444+20(a-1) Imp A1in dev size Adapter function Implicit Message: PLC device size (IN)

Specify the size (bytes) of Adapter Implicit (IN) area data that is transferred to PLC device. (a=1 to 6)
Example) 1

---Setting range---

0 to 500 (bytes)
* Up to 500 bytes in total for all areas

#81445+20(a-1) Imp A1out offset Adapter function Implicit Message: OUT area top offset

Specify the offset (bytes) from the head of Adapter Implicit (OUT) area. (a=1 to 6)
The PLC device data starting from the specified offset is sent to Adapter Implicit (OUT) area.
Example) 100

---Setting range---

0 to 499 (bytes)

#81446+20(a-1)	Imp A1out dev name	Adapter function Implicit Message: PLC device name (OUT)

Specify the name of PLC device that is sent to Adapter Implicit (OUT) area. (a=1 to 6)

Example) Y

---Setting range---

Y, M, L, SB, B, SW, D, R, W

#81447+20(a-1)	Imp A1out dev No.	Adapter function Implicit Message: PLC device top No. (OUT)

Specify the top No. of PLC device that is sent to Adapter Implicit (OUT) area. (a=1 to 6)

If you specify bit devices, set them in increments of 16 points.

Example) 200

---Setting range---

Y: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#81448+20(a-1)	Imp A1out dev size	Adapter function Implicit Message: PLC device size (OUT)

Specify the size (bytes) of PLC device that is sent to Adapter Implicit (OUT) area. (a=1 to 6)

Example) 1

---Setting range---

0 to 500 (bytes)

* Up to 500 bytes in total for all areas

#81449+20(a-1)	Imp A1High in size	High-speed refresh area size (IN)

This parameter specifies the size of the high-speed refresh area in the I/O (IN) area. (a = 1 to 6)

When the setting is greater than that of PLC device size (IN) of the same area, an alarm will be issued.

When the total size of the high-speed refresh input areas for all the nodes and all the areas is greater than 8 (bytes), an alarm will be issued.

---Setting range---

0 to 8

(*) Up to 8 (bytes) in total for all areas

#81450+20(a-1)	Imp A1High outsize	High-speed refresh area size (OUT)

This parameter specifies the size of the high-speed refresh area in the I/O (OUT) area. (a = 1 to 6)

When the setting is greater than that of PLC device size (OUT) of the same area, an alarm will be issued.

When the total size of the high-speed refresh output areas for all the nodes and all the areas is greater than 8 (bytes), an alarm will be issued.

---Setting range---

0 to 8

(*) Up to 8 (bytes) in total for all areas

#81560	Imp sts Proj No.	Connection status assigned PLC project No.

Specify the No. of PLC project to which connection status is transferred.

---Setting range---

1 to 6

#81561	Impsts dev name	Connection status assigned PLC device name

Specify the name of PLC device to which connection status is transferred.

Example) M

---Setting range---

M, L, SB, B, SW, D, R, W

#81562	Imp sts dev No.	Connection status assigned PLC device top No.

Specify the top No. of PLC device to which connection status is transferred.

6 bytes of data starting from the specified device No. are occupied.

---Setting range---

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

2.32.4 EtherNet/IP Parameters Adapter 2

(Note) Numeric portion of "A1" included in each parameter name varies depending on the parameter No.

#81570+20(a-1) Exp A1 Proj No. Adapter function Explicit Message: PLC project No.

Specify the PLC project No. that is assigned to Adapter Explicit (IN/OUT) area. (a=1 to 6)
This number is set as the project No. of PLC device for input/output to/from Adapter Explicit (IN/OUT) area.

---Setting range---

1 to 6

#81571+20(a-1) Exp A1in offset Adapter function Explicit Message: IN area top offset

Specify the offset (bytes) from the head of Adapter Explicit (IN) area. (a=1 to 6)
The data starting from the specified offset is sent from Adapter Explicit (IN) area to PLC device.
Example) 100

---Setting range---

0 to 1388

#81572+20(a-1) Exp A1in dev name Adapter function Explicit Message: PLC device name (IN)

Specify the name of PLC device to which Adapter Explicit (IN) area data is transferred. (a=1 to 6)
Example) M

---Setting range---

M, L, SB, B, SW, D, R, W

#81573+20(a-1) Exp A1in dev No. Adapter function Explicit Message: PLC device top No. (IN)

Specify the top No. of PLC device to which Adapter Explicit (IN) area data is transferred. (a=1 to 6)
If you specify bit devices, set them in increments of 16 points.
Example) 512

---Setting range---

M: 0 to 61424
L: 0 to 32752
SB: 0 to 7FF0
B: 0 to EFF0
SW: 0 to 7FFF
D: 0 to 32767
W: 0 to 7FFF
R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#81574+20(a-1) Exp A1in dev size Adapter function Explicit Message: PLC device size (IN)

Specify the size (bytes) of Adapter Explicit (IN) area data that is transferred to PLC device. (a=1 to 6)
Example) 1

---Setting range---

0 to 1389 (bytes)
* Up to 1389 bytes in total for all areas

#81575+20(a-1) Exp A1out offset Adapter function Explicit Message: OUT area top offset

Specify the offset (bytes) from the head of Adapter Explicit (OUT) area. (a=1 to 6)
The PLC device data starting from the specified offset is sent to Adapter Explicit (OUT) area.
Example) 100

---Setting range---

0 to 1388

#81576+20(a-1)	Exp A1out dev name	Adapter function Explicit Message: PLC device name (OUT)

Specify the name of PLC device that is sent to Adapter Explicit (OUT) area. (a=1 to 6)

Example) B

---Setting range---

M, L, SB, B, SW, D, R, W

#81577+20(a-1)	Exp A1out dev No.	Adapter function Explicit Message: PLC device top No. (OUT)

Specify the top No. of PLC device that is sent to Adapter Explicit (OUT) area. (a=1 to 6)

Example) 200

---Setting range---

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#81578+20(a-1)	Exp A1out dev size	Adapter function Explicit Message: PLC device size (OUT)

Specify the size (bytes) of PLC device that is sent to Adapter Explicit (OUT) area. (a=1 to 6)

Example) 1

---Setting range---

0 to 1389 (bytes)

* Up to 1389 bytes in total for all areas

2.33 CC-Link IE Field Parameters

2.33.1 CC-Link IE Field Network 1

(Note) Numeric portion of "N01" included in each parameter name varies depending on the parameter No.
Example: #82060+10(k-1) "#1 N01 Link-d name" (k = 1 to 64)

(PR) #82000 #1 Slot No. Selection of parameter application slot

Select the slot of the CC-Link IE field network expansion unit to which you apply the CCIEF common parameters #82000 to #82695.

(Note) If you select the same slot as of "#82700 #2 Slot No.", the parameters #82000 to #82695 are applied to the slot with higher priority.

---Setting range---

0: No setting (Disable)
1: EXT3
2: EXT4
(*) For M80V/M800VS
1: EXT1
2: EXT2

(PR) #82001 #1 Network Type Network type

Specify the station type of the CC-Link IE field network expansion unit.

0: Master station
1: Local station

(PR) #82002 #1 Network No. Network No.

Specify the network No. of the CC-Link IE field network expansion unit.

---Setting range---

0 to 239
0: No setting

#82003 #1 Total Stations Total number of device stations

Specify the number of stations other than master stations.

If the NC acts as a local station, set "0" in the parameter.

♦If you set a reserved station, include it in the count.
♦If you set a submaster station, include it in the count.

---Setting range---

0 to 64
0: No setting

(PR) #82004 #1 Station No. Station No. (local station)

Specify the station No. of the CC-Link IE field network expansion unit.

For a master station, the station No. is 0, irrespective of the parameter.

* If the NC acts as a master station, the maximum value of the station No. which can be set to the slave station is "64". If the NC acts as a master station and also the NC is connected as a local station, set "64" or less to the station No.

---Setting range---

0 to 120

(PR) #82005 #1 Mode Communication mode

Specify the communication mode.

0: Online mode
1: Offline mode
2: H/W test mode

	#82006	**#1 DLink Fault St.**	**Data link error station setting**

Select whether to hold or clear the input data from the device station where a data link error occurred.

0: Clear

1: Hold

	#82007	**#1 PLC Stop Output**	**Output setting at PLC STOP**

Select whether to hold or clear the cyclic data output when the PLC is put in STOP status.

0: Output

1: Clear

	#82008	**#1 Loopback Func**	**Loopback function setting**

Select whether or not to use the loopback function.

When ring topology is selected as the method of connecting with other stations, select "1" (Use).

For the other connection methods, select "0" (Not use).

If the NC acts as a local station, set "0" in the parameter.

If the NC acts as a local station, it operates according to the loopback function setting of master station.

0: Not use

1: Use

	#82009	**#1 Assure Blk Data**	**Block data assurance per station**

Select whether or not to assure data integrity on a station basis in link refresh of the CC-Link IE field network expansion unit.

If the NC acts as a local station, set "0" in the parameter.

If the NC acts as a local station, it operates according to the station-based block assurance setting of master station.

0: Not assure

1: Assure

(PR)	**#82011**	**#1 SubM sel para**	**Selection of submaster station's parameters**

Set this parameter for a submaster station.

This parameter allows you to select parameters to be applied to a device station for the number and allocation of link devices.
Select either the parameters of master station or those of local station.

0: Apply the parameters of master station

1: Apply the parameters of local station

	#82040	**#1 SB Link-d size**	**Number of SB link devices**

Specify the number of SB link devices for link refresh.

Set the number in increments of 16.

---Setting range---

0 to 512

	#82041	**#1 SB Link-d DNo.**	**Start device No. of SB link devices**

Specify the start device No. of SB link devices that perform link refresh.

Set the number in increments of 16.

---Setting range---

0 to 1F0 (hexadecimal)

	#82042	**#1 Refr-d PNo.(SB)**	**Refresh device project No. for SB link device**

Specify the project No. of PLC devices that perform link refresh with the SB link devices.

---Setting range---

0 to 6

0: No setting

#82043 #1 Refr-d name(SB) Refresh device name for SB link device

Specify the name of PLC devices that perform link refresh with the SB link devices.

---Setting range---

0, M, L, B, D, W, R, SB

0: No setting

#82044 #1 Refr-d DNo.(SB) Refresh device start device No. for SB link device

Specify the start device No. of PLC devices that perform link refresh with the SB link devices.

If you specify bit devices, set them in increments of 16 points.

---Setting range---

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

SB: 0 to 7FF0

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#82050 #1 SW Link-d size Number of SW link devices

Specify the number of SW link devices for link refresh.

Set the number in increments of 4.

---Setting range---

0 to 512

#82051 #1 SW Link-d DNo. Start device No. of SW link devices

Specify the start device No. of SW link devices that perform link refresh.

Set the number in increments of 4.

---Setting range---

0 to 1FC (hexadecimal)

#82052 #1 Refr-d PNo.(SW) Refresh device project No. for SW link device

Specify the project No. of PLC devices that perform link refresh with the SW link devices.

---Setting range---

0 to 6

0: No setting

#82053 #1 Refr-d name(SW) Refresh device name for SW link device

Specify the name of PLC devices that perform link refresh with the SW link devices.

---Setting range---

0, M, L, B, D, W, R, SW

0: No setting

#82054 #1 Refr-d DNo.(SW) Refresh device start device No. for SW link device

Specify the start device No. of PLC devices that perform link refresh with the SW link devices.

If you specify bit devices, set them in increments of 16 points.

---Setting range---

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

SW: 0 to 7FF0

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#82060+10(k-1) #1 N01 Link-d name Link device name

Specify the link device name. (k=1 to 64)

---Setting range---

0, RX, RY, RWr, RWw

0: No setting

#82061+10(k-1) #1 N01 Link-d size Number of link devices

Specify the number of link devices. (k=1 to 64)

If you designate RX/RY, set the number in increments of 16.

If you designate RWr/RWw, set the number in increments of 4.

---Setting range---

RX, RY: 0 to 16384

RWr, RWw: 0 to 8192

#82062+10(k-1) #1 N01 Link-d DNo. Link device start device No.

Specify the start device number of the link devices. (k=1 to 64)

If you designate RX/RY, set the number in increments of 16.

If you designate RWr/RWw, set the number in increments of 4.

---Setting range---

RX, RY: 0 to 3FF0

RWr, RWw: 0 to 1FFC (hexadecimal)

#82063+10(k-1) #1 N01 Refr-d PNo. Refresh device project No.

Specify the project No. of PLC devices that perform link refresh with the link devices. (k=1 to 64)

---Setting range---

0 to 6

0: No setting

#82064+10(k-1) #1 N01 Refr-d name Refresh device name

Specify the name of PLC devices that perform link refresh with the link devices. (k=1 to 64)

---Setting range---

RX: 0, X, M, L, B, D, W, R

RY: 0, Y, M, L, B, D, W, R

RWr, RWw: 0, M, L, B, D, W, R

0: No setting

#82065+10(k-1) #1 N01 Refr-d DNo. Refresh device start device No.

Specify the start device No. of PLC devices that perform link refresh with the link devices. (k=1 to 64)

If you specify bit devices, set them in increments of 16 points.

---Setting range---

X: 0 to 5F0

Y: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

2.33.2 CC-Link IE Field Network 2

(Note) Numeric portion of "N01" included in each parameter name varies depending on the parameter No.
Example: #82760+10(k-1) "#2 N01 Link-d name" (k = 1 to 64)

(PR)	#82700	#2 Slot No.	Selection of parameter application slot

Select the slot of the CC-Link IE field network expansion unit to which you apply the CCIEF common parameters #82700 to #83395.

(Note) If you select the same slot as of "#82000 #1 Slot No.", the parameters #82000 to #82695 are applied to the slot with higher priority.

---Setting range---

0: No setting (Disable)
1: EXT3
2: EXT4
(*) For M80V/M800VS
1: EXT1
2: EXT2

(PR)	#82701	#2 Network Type	Network type

Specify the station type of the CC-Link IE field network expansion unit.

---Setting range---

0: Master station
1: Local station

(PR)	#82702	#2 Network No.	Network No.

Specify the network No. of the CC-Link IE field network expansion unit.

---Setting range---

0 to 239
0: No setting

	#82703	#2 Total Stations	Total number of device stations

Specify the number of stations other than master stations.

If the NC acts as a local station, set "0" in the parameter.

- If you set a reserved station, include it in the count.
- If you set a submaster station, include it in the count.

---Setting range---

0 to 64
0: No setting

(PR)	#82704	#2 Station No.	Station No. (local station)

Specify the station No. of the CC-Link IE field network expansion unit.

For a master station, the station No. is 0, irrespective of the parameter.

* If the NC acts as a master station, the maximum value of the station No. which can be set to the slave station is "64". If the NC acts as a master station and also the NC is connected as a local station, set "64" or less to the station No.

---Setting range---

0 to 120

(PR)	#82705	#2 Mode	Communication mode

Specify the communication mode.

0: Online mode
1: Offline mode
2: H/W test mode

	#82706	**#2 DLink Fault St.**	**Data link error station setting**

Select whether to hold or clear the input data from the device station where a data link error occurred.

0: Clear

1: Hold

	#82707	**#2 PLC Stop Output**	**Output setting at PLC STOP**

Select whether to hold or clear the cyclic data output when the PLC is put in STOP status.

0: Clear

1: Hold

	#82708	**#2 Loopback Func**	**Loopback function setting**

Select whether or not to use the loopback function.

When ring topology is selected as the method of connecting with other stations, select "1" (Use).

For the other connection methods, select "0" (Not use).

If the NC acts as a local station, set "0" in the parameter.

If the NC acts as a local station, it operates according to the loopback function setting of master station.

0: Not use

1: Use

	#82709	**#2 Assure Blk Data**	**Block data assurance per station**

Select whether or not to assure data integrity on a station basis in link refresh of the CC-Link IE field network expansion unit.

If the NC acts as a local station, set "0" in the parameter.

If the NC acts as a local station, it operates according to the station-based block assurance setting of master station.

0: Not assure

1: Assure

(PR)	**#82711**	**#2 SubM sel para**	**Selection of submaster station's parameters**

Set this parameter for a submaster station.

This parameter allows you to select parameters to be applied to a device station for the number and allocation of link devices.
Select either the parameters of master station or those of local station.

0: Apply the parameters of master station

1: Apply the parameters of local station

	#82740	**#2 SB Link-d size**	**Number of SB link devices**

Specify the number of SB link devices for link refresh.

Set the number in increments of 16.

---Setting range---

0 to 512

	#82741	**#2 SB Link-d DNo.**	**Start device No. of SB link devices**

Specify the start device No. of SB link devices that perform link refresh.

Set the number in increments of 16.

---Setting range---

0 to 1F0 (hexadecimal)

	#82742	**#2 Refr-d PNo.(SB)**	**Refresh device project No. for SB link device**

Specify the project No. of PLC devices that perform link refresh with the SB link devices.

---Setting range---

0 to 6

0: No setting

#82743 #2 Refr-d name(SB) Refresh device name for SB link device

Specify the name of PLC devices that perform link refresh with the SB link devices.

---Setting range---

0, M, L, B, D, W, R, SB

0: No setting

#82744 #2 Refr-d DNo.(SB) Refresh device start device No. for SB link device

Specify the start device No. of PLC devices that perform link refresh with the SB link devices.

If you specify bit devices, set them in increments of 16 points.

---Setting range---

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

SB: 0 to 7FF0

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#82750 #2 SW Link-d size Number of SW link devices

Specify the number of SW link devices for link refresh.

Set the number in increments of 4.

---Setting range---

0 to 512

#82751 #2 SW Link-d DNo. Start device No. of SW link devices

Specify the start device No. of SW link devices that perform link refresh.

Set the number in increments of 4.

---Setting range---

0 to 1FC (hexadecimal)

#82752 #2 Refr-d PNo.(SW) Refresh device project No. for SW link device

Specify the project No. of PLC devices that perform link refresh with the SW link devices.

---Setting range---

0 to 6

0: No setting

#82753 #2 Refr-d name(SW) Refresh device name for SW link device

Specify the name of PLC devices that perform link refresh with the SW link devices.

---Setting range---

0, M, L, B, D, W, R, SW

0: No setting

#82754 #2 Refr-d DNo.(SW) Refresh device start device No. for SW link device

Specify the start device No. of PLC devices that perform link refresh with the SW link devices.

If you specify bit devices, set them in increments of 16 points.

---Setting range---

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

SW: 0 to 7FF0

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#82760+10(k-1) #2 N01 Link-d name Link device name

Specify the link device name. (k=1 to 64)

---Setting range---

0, RX, RY, RWr, RWw

0: No setting

#82761+10(k-1) #2 N01 Link-d size Number of link devices

Specify the number of link devices. (k=1 to 64)

If you designate RX/RY, set the number in increments of 16.

If you designate RWr/RWw, set the number in increments of 4.

---Setting range---

RX, RY: 0 to 16384

RWr, RWw: 0 to 8192

#82762+10(k-1) #2 N01 Link-d DNo. Link device start device No.

Specify the start device number of the link devices. (k=1 to 64)

If you designate RX/RY, set the number in increments of 16.

If you designate RWr/RWw, set the number in increments of 4.

---Setting range---

RX, RY: 0 to 3FF0

RWr, RWw: 0 to 1FFC (hexadecimal)

#82763+10(k-1) #2 N01 Refr-d PNo. Refresh device project No.

Specify the project No. of PLC devices that perform link refresh with the link devices. (k=1 to 64)

---Setting range---

0 to 6

0: No setting

#82764+10(k-1) #2 N01 Refr-d name Refresh device name

Specify the name of PLC devices that perform link refresh with the link devices. (k=1 to 64)

---Setting range---

RX: 0, X, M, L, B, D, W, R

RY: 0, Y, M, L, B, D, W, R

RWr, RWw: 0, M, L, B, D, W, R

0: No setting

#82765+10(k-1) #2 N01 Refr-d DNo. Refresh device start device No.

Specify the start device No. of PLC devices that perform link refresh with the link devices. (k=1 to 64)

If you specify bit devices, set them in increments of 16 points.

---Setting range---

X: 0 to 5F0

Y: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

2.33.3 CC-Link IE Field Master Parameters

(Note) Numeric portion of "CN01" included in each parameter name varies depending on the parameter No.
Example: #83400+10(n-1) "CN01 Station No." (n = 1 to 64)

#83400+10(n-1) CN01 Station No. Station No. (device station)

Specify the station No. of device or submaster station connected to the network. (n = 1 to 64)
There is no need to number the stations sequentially. (duplication is not acceptable)

---Setting range---

0 to 64
0: No setting

#83401+10(n-1) CN01 Station Type Station type (device station)

Specify the station type for device stations. (n=1 to 64)
Set the same station type as that of the units that are actually connected to the network.

---Setting range---

0: No setting
1: Remote I/O station
2: Remote device station
3: Intelligent device station
4: Local station
5: Submaster station

#83402+10(n-1) CN01 RX/RY size Number of RX/RY link devices

Specify the number of RX/RY link devices that perform link refresh with device stations. (n=1 to 64)
Set the number in increments of 16.

---Setting range---

Local, intelligent device or submaster station: 0 to 2048
Remote device station: 0 to 128
Remote I/O station: 0 to 64

#83403+10(n-1) CN01 RX/RY DNo. Start device No. of RX/RY link devices

Specify the start device No. of RX/RY link devices that perform link refresh with device stations. (n=1 to 64)
Set the number in increments of 16.

---Setting range---

0 to 3FF0 (hexadecimal)

#83404+10(n-1) CN01 RWr/RWw size Number of RWr/RWw link devices

Specify the number of RWr/RWw link devices that perform link refresh with device stations. (n=1 to 64)
Set the number in increments of 4.

---Setting range---

Local, intelligent device or submaster station: 0 to 1024
Remote device station: 0 to 64
Remote I/O station: Setting is disabled (fixed to 0)

#83405+10(n-1) CN01 RWr/RWw DNo. Start device No. of RWr/RWw link devices

Specify the start device No. of RWr/RWw link devices that perform link refresh with device stations. (n=1 to 64)
Set the number in increments of 4.

---Setting range---

0 to 1FFC (hexadecimal)

#83406+10(n-1)	CN01 Set rsvd sts	Reserved/Error invalid station setting

Designate the station as reserved station or error invalid station. (n=1 to 64)

---Setting range---

0: No setting

1: Reserved station

2: Error invalid station

2.33.4 CC-Link IE Field Network Basic

(Note) Numeric portion of "N01" included in each parameter name varies depending on the parameter No.
Example: #85020+20(n-1) "N01 Occupied St." (n = 1 to 4)

(PR) #85000 Enable CCIEF Basic — Enable the CC-Link IE Field Network Basic communication.

Select whether to enable the CC-Link IE Field Network Basic communication.

0: Disabled

1: Enabled

(PR) #85001 Station Type — CC-Link IE Field Network Basic communication: Station type

Select whether the local station acts as a master or a remote.

When operating it as a master station, set the parameters #85010 to #85092.

When operating it as a remote, set the parameters #85180 to #85189.

0: Master station

1: Remote station

(PR) #85002 Err Switch — Select the behavior when an error occurs in the CC-Link IE Field Network Basic communication.

Select whether to execute emergency stop or indicate a warning when an error occurs in the CC-Link IE Field Network Basic communication.

0: Emergency stop

1: Warning indication

#85003 DLink Fault St. — CC-Link IE Field Network Basic communication: Data link error station

Select whether to clear the input data (RX for master, RY for remote) or retain the last value when a data link error occurs.

0: Clear

1: Hold

#85004 PLC Stop Output — CC-Link IE Field Network Basic communication: Output at PLC STOP

Select whether to retain or clear the output data (RY for master, RX for remote) when the PLC is put in STOP status.

0: Output

1: Clear

#85010 Total Remotes — CC-Link IE Field Network Basic comm. (master): Number of connected devices

Specify the number of remote devices that are connected to the CC-Link IE Field Network Basic communication (master).

---Setting range---

0 to 4 (0: No setting)

#85012 Timeout Value — Timeout for the CC-Link IE Field Network Basic communication (master)

Specify the length of timeout for cyclic communication in milliseconds.

---Setting range---

0 or 20 to 65535 (0: 100ms)

#85013 Timeout Count — CC-Link IE Field Network Basic communication (master): Timeout count

Specify the number of timeouts for cyclic communication.

If the number of consecutive timeouts exceeds the setting, the remote is disconnected.

---Setting range---

0, 3, 5, 10 (0: 3 times)

#85020+20(n-1) N01 Occupied St. Number of occupied stations

Specify the number of stations occupied by the remote device. (n = 1 to 4)

Up to 4 stations can be occupied by one remote device.

Example: When the 1st device occupies four stations, stations occupied by the 2nd device start from the 5th station.

1st device occupying four stations (1st to 4th stations)

2nd device occupying one station (5th station)

---Setting range---

0 to 4 (0: No setting)

#85022+20(n-1) N01 Set rsvd St. Reserved station setting

Select whether to set the remote device as reserved station. (n = 1 to 4)

When set as reserved station, communication with the remote device is not performed.

This enables you to reserve the stations that are to be used in the future.

Example: When the 1st device occupies four reserved stations, stations occupied by the 2nd device start from the 5th station. Communication is not performed for the 1st to 4th stations.

1st device (reserved station) occupying four stations (1st to 4th stations) (Communication is not performed)

2nd device occupying one station (5th station)

---Setting range---

0: No setting

1: Reserved station

#85023+20(n-1) N01 IP Address IP address

Specify the IP address of the remote device. (n = 1 to 4)

Set the remote's IP address in the same network as the parameter "#1926 Global IP address". It is not possible to communication with a device on a different network.

---Setting range---

0.0.0.0,0.0.0.1 to 223.255.255.254 (0.0.0.0: No setting)

#85024+20(n-1) N01 Refr-d PNo. Refresh device project No.

Specify the project No. of PLC devices for which link refresh is performed with the link devices of the remote device. (n = 1 to 4)

---Setting range---

0 to 6 (0: No setting)

#85025+20(n-1) N01 Refr-d to RX Refresh device name (RX)

Specify the name of PLC devices for which link refresh is performed with the link devices "RX" of the remote device. (n = 1 to 4)

Link refresh-enabled devices

X, M, L, B, D, W and R

---Setting range---

0, X, M, L, B, D, W or R (0: No setting)

#85026+20(n-1) N01 Refr-No to RX Starting refresh device No. (RX)

Specify the starting device No. of PLC devices for which link refresh is performed with the link devices "RX" of the remote device. (n = 1 to 4)

If you specify bit devices, set them in increments of 16 points.

---Setting range---

X: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#85027+20(n-1) N01 Refr-d to RY Refresh device name (RY)

Specify the name of PLC devices for which link refresh is performed with the link devices "RY" of the remote device. (n = 1 to 4)

Link refresh-enabled devices

Y, M, L, B, D, W and R

---Setting range---

0, Y, M, L, B, D, W or R (0: No setting)

#85028+20(n-1) N01 Refr-No to RY Starting refresh device No. (RY)

Specify the starting device No. of PLC devices for which link refresh is performed with the link devices "RY" of the remote device. (n = 1 to 4)

If you specify bit devices, set them in increments of 16 points.

---Setting range---

Y: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#85029+20(n-1) N01 Refr-d to RWr Refresh device name (RWr)

Specify the name of PLC devices for which link refresh is performed with the link devices "RWr" of the remote device. (n = 1 to 4)

Link refresh-enabled devices

M, L, B, D, W and R

---Setting range---

0, M, L, B, D, W or R (0: No setting)

#85030+20(n-1) N01 Refr-No to RWr Starting refresh device No. (RWr)

Specify the starting device No. of PLC devices for which link refresh is performed with the link devices "RWr" of the remote device. (n = 1 to 4)

If you specify bit devices, set them in increments of 16 points.

---Setting range---

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#85031+20(n-1) N01 Refr-d to RWw Refresh device name (RWw)

Specify the name of PLC devices for which link refresh is performed with the link devices "RWw" of the remote device. (n = 1 to 4)

Link refresh-enabled devices

M, L, B, D, W and R

---Setting range---

0, M, L, B, D, W or R (0: No setting)

#85032+20(n-1) N01 Refr-No to RWw Starting refresh device No. (RWw)

Specify the starting device No. of PLC devices for which link refresh is performed with the link devices "RWw" of the remote device. (n = 1 to 4)

If you specify bit devices, set them in increments of 16 points.

---Setting range---

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#85180 R Occupied St. CC-Link IE Field Network Basic comm. (remote): Number of occupied stations

Specify the number of stations occupied for the CC-Link IE Field Network Basic communication (remote).

Up to 4 stations can be occupied.

---Setting range---

0 to 4 (0: No setting)

#85181 R Refr-d PNo. Remote function: Refresh device project No.

Specify the project No. of PLC devices for which link refresh is performed with the link devices of CC-Link IE Field Network Basic communication (remote).

---Setting range---

0 to 6 (0: No setting)

#85182 R Refr-d to RX Remote function: Refresh device name (RX)

Specify the name of PLC devices for which link refresh is performed with the link devices "RX" of CC-Link IE Field Network Basic communication (remote).

Link refresh-enabled devices

Y, M, L, B, D, W and R

---Setting range---

0, Y, M, L, B, D, W or R (0: No setting)

#85183 R Refr-No to RX Remote function: Starting refresh device No. (RX)

Specify the starting device No. of PLC devices for which link refresh is performed with the link devices "RX" of CC-Link IE Field Network Basic communication (remote).

If you specify bit devices, set them in increments of 16 points.

---Setting range---

Y: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#85184 R Refr-d to RY Remote function: Refresh device name (RY)

Specify the name of PLC devices for which link refresh is performed with the link devices "RY" of CC-Link IE Field Network Basic communication (remote).

Link refresh-enabled devices

X, M, L, B, D, W and R

---Setting range---

0, X, M, L, B, D, W or R (0: No setting)

#85185 R Refr-No to RY Remote function: Starting refresh device No. (RY)

Specify the starting device No. of PLC devices for which link refresh is performed with the link devices "RY" of CC-Link IE Field Network Basic communication (remote).

If you specify bit devices, set them in increments of 16 points.

---Setting range---

X: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#85186 R Refr-d to RWr Remote function: Refresh device name (RWr)

Specify the name of PLC devices for which link refresh is performed with the link devices "RWr" of CC-Link IE Field Network Basic communication (remote).

Link refresh-enabled devices

M, L, B, D, W and R

---Setting range---

0, M, L, B, D, W or R (0: No setting)

#85187 R Refr-No to RWr Remote function: Starting refresh device No. (RWr)

Specify the starting device No. of PLC devices for which link refresh is performed with the link devices "RWr" of CC-Link IE Field Network Basic communication (remote).

If you specify bit devices, set them in increments of 16 points.

---Setting range---

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#85188 R Refr-d to RWw Remote function: Refresh device name (RWw)

Specify the name of PLC devices for which link refresh is performed with the link devices "RWw" of CC-Link IE Field Network Basic communication (remote).

Link refresh-enabled devices

M, L, B, D, W and R

---Setting range---

0, M, L, B, D, W or R (0: No setting)

#85189 R Refr-No to RWw Remote function: Starting refresh device No. (RWw)

Specify the starting device No. of PLC devices for which link refresh is performed with the link devices "RWw" of CC-Link IE Field Network Basic communication (remote).

If you specify bit devices, set them in increments of 16 points.

---Setting range---

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

2.34 CC-Link IE TSN (Remote station) Parameters

(Note) These parameters are only valid for CC-Link IE TSN expansion units.

	#88300	DLink Fault	Data link setting at error

Select whether to hold or clear the cyclic data input of the CC-Link IE TSN expansion unit received from the master station when the data link of the CC-Link IE TSN expansion unit becomes abnormal.

0: Clear

1: Hold

	#88301	PLC Stop Output	Output setting at PLC STOP

Select whether to hold or clear the cyclic data output sent from CC-Link IE TSN expansion unit when the PLC is put in STOP state.

0: Hold

1: Clear

(PR)	#88302	Link speed	Link speed

Specify the link speed of the CC-Link IE TSN expansion unit.

For CC-Link IE TSN expansion unit, the link speed is not fixed. The link is established after the autonegotiation.

0: 1 Gbps Full Duplex

1: 100 Mbps Full Duplex

	#88310	SB Link-d size	Number of SB link devices

Specify the number of SB link devices for link refresh.

Specify this parameter with the number in increments of 16 points.

---Setting range---

0 to 512

	#88311	SB Link-d DNo.	Start device No. of SB link device

Specify the start device No. of SB link devices that perform link refresh.

Enter this parameter in hexadecimal with the number in increments of 16 points.

---Setting range---

0 to 1F0 (HEX)

	#88312	Refr-d PNo.(SB)	Refresh device project No. of SB link device

Specify the project No. of PLC devices that perform link refresh with the SB link devices.
Enter a value that fits within the [Maximum Project No.] of the multi-project parameter.

Enter "1" when the multi-project is disabled.
Set "0" when SB link devices do not perform link refresh.

---Setting range---

0 to 6

0: No setting

	#88313	Refr-d name(SB)	Refresh device name of SB link device

Specify the name of PLC devices that perform link refresh with the SB link devices.

Set "0" when SB link devices do not perform link refresh.

---Setting range---

0, M, L, B, D, W, R, SB

0: No setting

#88314	Refr-d DNo.(SB)	Refresh device start device No. of SB link device

Specify the start device No. of PLC devices that perform link refresh with the SB link devices.

If you specify bit devices, set this parameter in increments of 16 points.

---Setting range---

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

SB: 0 to 7FF0

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88320	SW Link-d size	Number of SW link devices

Specify the number of SW link devices for link refresh.

Specify this parameter with the number in increments of 4 points.

---Setting range---

0 to 512

#88321	SW Link-d DNo.	Start device No. of SW link device

Specify the start device No. of SW link devices that perform link refresh.

Enter this parameter in hexadecimal with the number in increments of 4 points.

---Setting range---

0 to 1FC (HEX)

#88322	Refr-d PNo.(SW)	Refresh device project No. of SW link device

Specify the project No. of PLC devices that perform link refresh with the SW link devices.
Enter a value that fits within the [Maximum Project No.] of the multi-project parameter.

Enter "1" when the multi-project is disabled.
Set "0" when SW link devices do not perform link refresh.

---Setting range---

0 to 6

0: No setting

#88323	Refr-d name(SW)	Refresh device name of SW link device

Specify the name of PLC devices that perform link refresh with the SW link devices.

Set "0" when SW link devices do not perform link refresh.

---Setting range---

0, M, L, B, D, W, R, SW

0: No setting

#88324	Refr-d DNo.(SW)	Refresh device start device No. of SW link device

Specify the start device No. of PLC devices that perform link refresh with the SW link devices.

If you specify bit devices, set this parameter in increments of 16 points.

---Setting range---

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

SW: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88330	RX Link-d size	Number of RX link devices

Specify the number of RX link devices for link refresh.

Specify this parameter with the number in increments of 16 points.

---Setting range---

0 to 2048

#88331	Refr-d PNo.(RX)	Refresh device project No. of RX link device

Specify the project No. of PLC devices that perform link refresh with the RX link devices.
Enter a value that fits within the [Maximum Project No.] of the multi-project parameter.

Enter "1" when the multi-project is disabled.
Set "0" when RX link devices do not perform link refresh.

---Setting range---

0 to 6

0: No setting

#88332	Refr-d name(RX)	Refresh device name of RX link device

Specify the name of PLC devices that perform link refresh with the RX link devices.

Set "0" when RX link devices do not perform link refresh.

---Setting range---

0, Y, M, L, B, D, W, R

0: No setting

#88333	Refr-d DNo.(RX)	Refresh device start device No. of RX link device

Specify the start device No. of PLC devices that perform link refresh with the RX link devices.

If you specify bit devices, set this parameter in increments of 16 points.

---Setting range---

Y: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88340	RY Link-d size	Number of RY link devices

Specify the number of RY link devices for link refresh.

Specify this parameter with the number in increments of 16 points.

---Setting range---

0 to 2048

#88341	Refr-d PNo.(RY)	Refresh device project No. of RY link device

Specify the project No. of PLC devices that perform link refresh with the RY link devices.
Enter a value that fits within the [Maximum Project No.] of the multi-project parameter.

Enter "1" when the multi-project is disabled.
Set "0" when RY link devices do not perform link refresh.

---Setting range---

0 to 6

0: No setting

#88342	Refr-d name(RY)	Refresh device name of RY link device

Specify the name of PLC devices that perform link refresh with the RY link devices.

Set "0" when RY link devices do not perform link refresh.

---Setting range---

0, X, M, L, B, D, W, R

0: No setting

#88343	Refr-d DNo.(RY)	Refresh device start device No. of RY link device

Specify the start device No. of PLC devices that perform link refresh with the RY link devices.

If you specify bit devices, set this parameter in increments of 16 points.

---Setting range---

X: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88350	RWr Link-d size	Number of RWr link devices

Specify the number of RWr link devices for link refresh.

Specify this parameter with the number in increments of 4 points.

---Setting range---

0 to 512

#88351	Refr-d PNo.(RWr)	Refresh device project No. of RWr link device

Specify the project No. of PLC devices that perform link refresh with the RWr link devices.
Enter a value that fits within the [Maximum Project No.] of the multi-project parameter.

Enter "1" when the multi-project is disabled.
Set "0" when RWr link devices do not perform link refresh.

---Setting range---

0 to 6

0: No setting

#88352	Refr-d name(RWr)	Refresh device name of RWr link device

Specify the name of PLC devices that perform link refresh with the RWr link devices.

Set "0" when RWr link devices do not perform link refresh.

---Setting range---

0, M, L, B, D, W, R

0: No setting

#88353	Refr-d DNo.(RWr)	Refresh device start device No. of RWr link device

Specify the start device No. of PLC devices that perform link refresh with the RWr link devices.

If you specify bit devices, set this parameter in increments of 16 points.

---Setting range---

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88360	RWw Link-d size	Number of link devices of RWw link device

Specify the number of RWw link devices for link refresh.

Specify this parameter with the number in increments of 4 points.

---Setting range---

0 to 512

#88361	Refr-d PNo.(RWw)	Refresh device project No. of RWw link device

Specify the project No. of PLC devices that perform link refresh with the RWw link devices.
Enter a value that fits within the [Maximum Project No.] of the multi-project parameter.

Enter "1" when the multi-project is disabled.
Set "0" when RWw link devices do not perform link refresh.

---Setting range---

0 to 6

0: No setting

#88362	Refr-d name(RWw)	Refresh device name of RWw link device

Specify the name of PLC devices that perform link refresh with the RWw link devices.

Set "0" when RWw link devices do not perform link refresh.

---Setting range---

0, M, L, B, D, W, R

0: No setting

#88363	Refr-d DNo.(RWw)	Refresh device start device No. of RWw link device

Specify the start device No. of PLC devices that perform link refresh with the RWw link devices.

If you specify bit devices, set this parameter in increments of 16 points.

---Setting range---

M: 0 to 61424

L: 0 to 32752

B: 0 to EFF0

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

2.35 PROFIBUS-DP Parameters

(PR) #57000+4(n-1) #n I/O reg PROFIBUS I/O area

Select whether to allocate the devices to PX or PY of PROFIBUS-DP. (n=1 to 64)

(Note) If 0 is set, the PROFIBUS allocation parameters of the n-th set are all disabled.

0: Disable

1: PX

2: PY

(PR) #57001+4(n-1) #n sect No. PROFIBUS section number

Select the section of PROFIBUS-DP I/O data (PX/PY) to which the devices are allocated. (n=1 to 64)

---Setting range---

0 to 31

(PR) #57002+4(n-1) #n dev name PROFIBUS device name

Select the device that is allocated to the section of PROFIBUS-DP I/O data(PX/PY). (n=1 to 64)

(Note) The setting range varies according to the value of "#n I/O reg".

---Setting range---

X, Y, M, L, B, D, R or W

When "#n I/O reg" is "1", "Y" is out of the setting range.

When "#n I/O reg" is "2", "X" is out of the setting range.

(PR) #57003+4(n-1) #n dev No. PROFIBUS device number

Select the 32 bytes of devices to which PROFIBUS-DP I/O data is allocated. Specify the starting device number. (n=1 to 64)

* If the set value is out of the following ranges, an alarm occurs at the start of NC.

Hexadecimal setting:

X: 0 to 1C0, 300 to 500

Y: 0 to 1C0, 300 to 500

B: 0 to DF00

W: 0 to 2FF0

Decimal setting:

M: 0 to 61184

L: 0 to 768

D: 0 to 4080

R: 8300 to 9884, 18300 to 19884, 28300 to 29884

(Note) Due to the multi-project function, if the number of the first project points is smaller than the default value, the range becomes narrower corresponding to the number of the first project points.

---Setting range---

The setting range varies according to the value of "#n dev name".

X, Y, B, W: 0 to FFFF

M, L, D, R: 0 to 65535

#57300 PLC Stop Output Setting of output at PLC STOP

When the PLC of the NC unit is in the STOP state or error state, select the value to send to the slave device, either the value of the PLC device allocated by NC parameters or the value cleared to "0".

0: Send the PLC device value

1: Send the data cleared to "0"

2.36 FL-net Parameters

#88000	Node name	Node name

Specify the node name for the NC to be used in FL-net communication.
This parameter is used for response of message transmission.
The communication is possible even when the node name is unspecified.

---Setting range---

Up to 10 characters in length, containing alphanumeric characters and symbols

0: No setting

#88001	Token Wdog Time	Token watchdog time

Specify the length of token watchdog time.
Set the value in increments of 1 ms.

This parameter has the following 2 uses.

(1) Monitoring local node

When a token cannot be issued within the token watchdog time set by this parameter and a time-out occurs, "token watchdog time error flag" in "local node management information" is turned to "1" (ON). When the time-out is counted for 3 consecutive times, the node is released from the network and the system alarm (Z103) occurs. When a time-out occurs, set the larger value than current value to this parameter.

(2) Monitoring other node

Check the release of the other nodes based on token watchdog time for each node, and the token is to be re-issued.

Calculate the token watchdog time with the following formula.

[Calculation method]

Token watchdog time =
(Total number of cyclic frames for local nodes + 2) × 2.0 ms
+ (Total number of cyclic frames for local nodes + 2) × the allowable minimum frame interval time

(*) The maximum data size for 1 packet is 1024 bytes.

---Setting range---

1 to 255 (ms)

#88002	Min. Frame Time	Minimum permissible frame interval

Specify the allowable minimum frame interval time.
The minimum frame interval time is ensured the time from the end of a frame to the subsequent frame to be sent.

This parameter has the following 2 uses.

(1) Time until any frame is sending from local node after the local node address token was received

(2) Transmission interval for cyclic frames or message frames

Note that this does not apply between the token frame and the preceding cyclic frame.
The largest value of the allowable minimum frame interval time within the network is used for all devices.
When any restriction is needed for the configuration of devices or communication path, set "1" or larger value to this parameter. Set "0" when no restriction is needed.

---Setting range---

0: No setting

1 to 9: 1 (ms)

10 to 19: 2 (ms)

20 to 29: 3 (ms)

30 to 39: 4 (ms)

40 to 49: 5 (ms)

50: 6 (ms)

#88003	PLC Stop Output	Setting of output at PLC STOP

Select which data is sent to the hardware connected when the NC enters the PLC STOP mode, the set PLC device value or the cleared data (the data cleared to "0").

0: Send the PLC device value

1: Send the data cleared to "0"

#88010	CyC1 My Addr	Start address in local node area of common memory area 1

Specify the start address (word) in the local node area of the common memory area 1.
The sum of the start address and its size cannot exceed 200 (HEX).

---Setting range---

0 to 1FF (word) (hexadecimal)

#88011	CyC1 My Size	Size of local node area in common memory area 1

Specify the size (word) of the local node area of the common memory area 1.

When "0" is set, the data will not be transmitted.

The sum of the start address and its size cannot exceed 200 (HEX).

---Setting range---

0 to 512 (words)

#88012	CyC1 My Proj. No.	PLC project number for local node area in common memory area 1

Specify the project number of PLC device to be assigned to the local node area of the common memory area 1.

---Setting range---

1 to 6

0: No setting

#88013	CyC1 My dev name	PLC device name for local node area in common memory area 1

Specify the PLC device name to be assigned to the local node area of the common memory area 1.

(Example) Y

When the setting of this parameter is changed, the value of "#88014 CyC1 My dev No." is cleared to "0".

---Setting range---

Y, M, L, SB, B, SW, D, R, W

0: No setting

#88014	CyC1 My dev No.	Start number of PLC device for local node area in common memory area 1

Specify the start number of PLC device to be assigned to the local node area of the common memory area 1.

If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).

(Example) 100

---Setting range---

Y: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88020	CyC1 A1 Addr	Start address in other node area 1 of common memory area 1

Specify the start address (word) in the other node area 1 of the common memory area 1.

The sum of the start address and its size cannot exceed 200 (HEX).

---Setting range---

0 to 1FF (word) (hexadecimal)

#88021	CyC1 A1 Size	Size of other node area 1 in common memory area 1

Specify the size (word) of the other node area 1 of the common memory area 1.

When "0" is set, the data will not be transmitted.

The sum of the start address and its size cannot exceed 200 (HEX).

---Setting range---

0 to 512 (words)

#88022	CyC1 A1 Proj. No.	PLC project number for other node area 1 in common memory area 1

Specify the project number of PLC device to be assigned to the other node area 1 of the common memory area 1.

---Setting range---

1 to 6

0: No setting

#88023	CyC1 A1 dev name	PLC device name for other node area 1 in common memory area 1

Specify the PLC device name to be assigned to the other node area 1 of the common memory area 1.

(Example) X

When the setting of this parameter is changed, the value of "#88024 CyC1 A1 dev No." is cleared to "0".

---Setting range---

X, M, L, SB, B, SW, D, R, W

0: No setting

#88024	CyC1 A1 dev No.	Start number of PLC device for other node area 1 in common memory area 1

Specify the start number of PLC device to be assigned to the other node area 1 of the common memory area 1.

If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).

(Example) 100

---Setting range---

X: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88030	CyC1 A2 Addr	Start address in other node area 2 of common memory area 1

Specify the start address (word) in the other node area 2 of the common memory area 1.

The sum of the start address and its size cannot exceed 200 (HEX).

---Setting range---

0 to 1FF (word) (hexadecimal)

#88031	CyC1 A2 Size	Size of other node area 2 in common memory area 1

Specify the size (word) of the other node area 2 of the common memory area 1.

When "0" is set, the data will not be transmitted.

The sum of the start address and its size cannot exceed 200 (HEX).

---Setting range---

0 to 512 (words)

#88032	CyC1 A2 Proj. No.	PLC project number for other node area 2 in common memory area 1

Specify the project number of PLC device to be assigned to the other node area 2 of the common memory area 1.

---Setting range---

1 to 6

0: No setting

#88033	CyC1 A2 dev name	PLC device name for other node area 2 in common memory area 1

Specify the PLC device name to be assigned to the other node area 2 of the common memory area 1.

(Example) X

When the setting of this parameter is changed, the value of "#88034 CyC1 A2 dev No." is cleared to "0".

---Setting range---

X, M, L, SB, B, SW, D, R, W

0: No setting

#88034	CyC1 A2 dev No.	Start number of PLC device for other node area 2 in common memory area 1

Specify the start number of PLC device to be assigned to the other node area 2 of the common memory area 1.

If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).

(Example) 100

---Setting range---

X: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88040	CyC2 My Addr	Start address in local node area of common memory area 2

Specify the start address (word) in the local node area of the common memory area 2.

The sum of the start address and its size cannot exceed 2000 (HEX).

---Setting range---

0 to 1FFF (word) (hexadecimal)

#88041	CyC2 My Size	Size of local node area in common memory area 2

Specify the size (word) of the local node area of the common memory area 2.

When "0" is set, the data will not be transmitted.

The sum of the start address and its size cannot exceed 2000 (HEX).

---Setting range---

0 to 8192 (words)

#88042	CyC2 My Proj. No.	PLC project number for local node area in common memory area 2

Specify the project number of PLC device to be assigned to the local node area of the common memory area 2.

---Setting range---

1 to 6

0: No setting

#88043	CyC2 My dev name	PLC device name for local node area in common memory area 2

Specify the PLC device name to be assigned to the local node area of the common memory area 2.

(Example) Y

When the setting of this parameter is changed, the value of "#88044 CyC2 My dev No." is cleared to "0".

---Setting range---

Y, M, L, SB, B, SW, D, R, W

0: No setting

#88044	CyC2 My dev No.	Start number of PLC device for local node area in common memory area 2

Specify the start number of PLC device to be assigned to the local node area of the common memory area 2.

If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).

(Example) 100

---Setting range---

Y: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88050	CyC2 A1 Addr	Start address in other node area 1 of common memory area 2

Specify the start address (word) in the other node area 1 of the common memory area 2.

The sum of the start address and its size cannot exceed 2000 (HEX).

---Setting range---

0 to 1FFF (word) (hexadecimal)

#88051	CyC2 A1 Size	Size of other node area 1 in common memory area 2

Specify the size (word) of the other node area 1 of the common memory area 2.

When "0" is set, the data will not be transmitted.

The sum of the start address and its size cannot exceed 2000 (HEX).

---Setting range---

0 to 8192 (words)

#88052	CyC2 A1 Proj. No.	PLC project number for other node area 1 in common memory area 2

Specify the project number of PLC device to be assigned to the other node area 1 of the common memory area 2.

---Setting range---

1 to 6

0: No setting

#88053	CyC2 A1 dev name	PLC device name for other node area 1 in common memory area 2

Specify the PLC device name to be assigned to the other node area 1 of the common memory area 2.

(Example) X

When the setting of this parameter is changed, the value of "#88054 CyC2 A1 dev No." is cleared to "0".

---Setting range---

X, M, L, SB, B, SW, D, R, W

0: No setting

#88054	CyC2 A1 dev No.	Start number of PLC device for other node area 1 in common memory area 2

Specify the start number of PLC device to be assigned to the other node area 1 of the common memory area 2.

If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).

(Example) 100

---Setting range---

X: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88060	CyC2 A2 Addr	Start address in other node area 2 of common memory area 2

Specify the start address (word) in the other node area 2 of the common memory area 2.

The sum of the start address and its size cannot exceed 2000 (HEX).

---Setting range---

0 to 1FFF (word) (hexadecimal)

#88061	CyC2 A2 Size	Size of other node area 2 in common memory area 2

Specify the size (word) of the other node area 2 of the common memory area 2.

When "0" is set, the data will not be transmitted.

The sum of the start address and its size cannot exceed 2000 (HEX).

---Setting range---

0 to 8192 (words)

#88062	CyC2 A2 Proj. No.	PLC project number for other node area 2 in common memory area 2

Specify the project number of PLC device to be assigned to the other node area 2 of the common memory area 2.

---Setting range---

1 to 6

0: No setting

#88063	CyC2 A2 dev name	PLC device name for other node area 2 in common memory area 2

Specify the PLC device name to be assigned to the other node area 2 of the common memory area 2.

(Example) X

When the setting of this parameter is changed, the value of "#88064 CyC2 A2 dev No." is cleared to "0".

---Setting range---

X, M, L, SB, B, SW, D, R, W

0: No setting

#88064	CyC2 A2 dev No.	Start number of PLC device for other node area 2 in common memory area 2

Specify the start number of PLC device to be assigned to the other node area 2 of the common memory area 2.

If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).

(Example) 100

---Setting range---

X: 0 to 5F0

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88070	My sts Proj. No.	PLC project number for Local node management information

Specify the project number of the PLC device that stores the local node management information.

---Setting range---

1 to 6

0: No setting

#88071	My sts dev name	PLC device name for Local node management information

Specify the name of the PLC device that stores the Local node management information.

(Example) M

When the setting of this parameter is changed, the value of "#88072 My sts dev No." is cleared to "0".

---Setting range---

M, L, SB, B, SW, D, R, W

0: No setting

#88072	My sts dev No.	PLC device number for Local node management information

Specify the number of the PLC device that stores the Local node management information.

If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).

The eight bytes of area starting from the specified device are occupied.

(Example) 1024

---Setting range---

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88080	N List Proj. No.	PLC project number for List of participating nodes

Specify the project number of the PLC device that stores the list of participating nodes.

---Setting range---

1 to 6

0: No setting

#88081 N List dev name PLC device name for List of participating nodes

Specify the name of the PLC device that stores the List of participating nodes.
(Example) M
When the setting of this parameter is changed, the value of "#88082 N List dev No." is cleared to "0".

---Setting range---

M, L, SB, B, SW, D, R, W
0: No setting

#88082 N List dev No. PLC device number for List of participating nodes

Specify the number of the PLC device that stores the List of participating nodes.
If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).
The 32 bytes of area starting from the specified device are occupied.
(Example) 1024

---Setting range---

M: 0 to 61424
L: 0 to 32752
SB: 0 to 7FF0
B: 0 to EFF0
SW: 0 to 7FFF
D: 0 to 32767
W: 0 to 7FFF
R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88090 Warnig Proj. No. PLC project number for WARNING information

Specify the project number of the PLC device that stores the WARNING information.

---Setting range---

1 to 6
0: No setting

#88091 Warnig dev name PLC device name for WARNING information

Specify the name of the PLC device that stores the WARNING information.
(Example) M
When the setting of this parameter is changed, the value of "#88092 Warning dev No." is cleared to "0".

---Setting range---

M, L, SB, B, SW, D, R, W
0: No setting

#88092 Warnig dev No. PLC device number for WARNING information

Specify the number of the PLC device that stores the WARNING information.
If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).
The 32 bytes of area starting from the specified device are occupied.
(Example) 1024

---Setting range---

M: 0 to 61424
L: 0 to 32752
SB: 0 to 7FF0
B: 0 to EFF0
SW: 0 to 7FFF
D: 0 to 32767
W: 0 to 7FFF
R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88100	Alarm Proj. No.	PLC project number for ALARM information

Specify the project number of the PLC device that stores the ALARM information.

---Setting range---

1 to 6

0: No setting

#88101	Alarm dev name	PLC device name for ALARM information

Specify the name of the PLC device that stores the ALARM information.

(Example) M

When the setting of this parameter is changed, the value of "#88102 Alarm dev No." is cleared to "0".

---Setting range---

M, L, SB, B, SW, D, R, W

0: No setting

#88102	Alarm dev No.	PLC device number for ALARM information

Specify the number of the PLC device that stores the ALARM information.

If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).

The 32 bytes of area starting from the specified device are occupied.

(Example) 1024

---Setting range---

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88110	Run Stop Proj. No.	PLC project number for RUN/STOP information

Specify the project number of the PLC device that stores the RUN/STOP information.

---Setting range---

1 to 6

0: No setting

#88111	Run Stop dev name	PLC device name for RUN/STOP information

Specify the name of the PLC device that stores the RUN/STOP information.

(Example) M

When the setting of this parameter is changed, the value of "#88112 Run Stop dev No." is cleared to "0".

---Setting range---

M, L, SB, B, SW, D, R, W

0: No setting

#88112	Run Stop dev No.	PLC device number for RUN/STOP information

Specify the number of the PLC device that stores the RUN/STOP information.

If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).

The 32 bytes of area starting from the specified device are occupied.

(Example) 1024

---Setting range---

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88120	CM Comp. Proj. No.	PLC project number for info. of Completion of common memory setting

Specify the project number of the PLC device that stores the information of completion of common memory setting.

---Setting range---

1 to 6

0: No setting

#88121	CM Comp. dev name	PLC device name for information of Completion of common memory setting

Specify the name of the PLC device that stores the information of Completion of common memory setting.

(Example) M

When the setting of this parameter is changed, the value of "#88122 CM Comp. dev No." is cleared to "0".

---Setting range---

M, L, SB, B, SW, D, R, W

0: No setting

#88122	CM Comp. dev No.	PLC device number for information of Completion of common memory setting

Specify the number of the PLC device that stores the information of completion of common memory setting.

If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).

The eight bytes of area starting from the specified device are occupied.

(Example) 1024

---Setting range---

M: 0 to 61424

L: 0 to 32752

SB: 0 to 7FF0

B: 0 to EFF0

SW: 0 to 7FFF

D: 0 to 32767

W: 0 to 7FFF

R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88130	CM Valid Proj. No.	PLC project number for information of Common memory data valid

Specify the project number of the PLC device that stores the information of common memory data valid.

---Setting range---

1 to 6

0: No setting

#88131	CM Valid dev name	PLC device name for information of Common memory data valid

Specify the name of the PLC device that stores the information of Common memory data valid.
(Example) M
When the setting of this parameter is changed, the value of "#88132 CM Valid dev No." is cleared to "0".

---Setting range---

M, L, SB, B, SW, D, R, W
0: No setting

#88132	CM Valid dev No.	PLC device number for information of Common memory data valid

Specify the number of the PLC device that stores the information of common memory data valid.
If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).
The 32 bytes of area starting from the specified device are occupied.
(Example) 1024

---Setting range---

M: 0 to 61424
L: 0 to 32752
SB: 0 to 7FF0
B: 0 to EFF0
SW: 0 to 7FFF
D: 0 to 32767
W: 0 to 7FFF
R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

#88140	Net sts Proj. No.	PLC project number for Network management information

Specify the project number of the PLC device that stores the network management information.

---Setting range---

1 to 6
0: No setting

#88141	Net sts dev name	PLC device name for Network management information

Specify the name of the PLC device that stores the Network management information.
(Example) M
When the setting of this parameter is changed, the value of "#88142 Net sts dev No." is cleared to "0".

---Setting range---

M, L, SB, B, SW, D, R, W
0: No setting

#88142	Net sts dev No.	PLC device number for Network management information

Specify the number of the PLC device that stores the Network management information.
If you specify bit devices, set them with numbers divisible by 16 (in increments of 16 points).
The four bytes of area starting from the specified device are occupied.
(Example) 1024

---Setting range---

M: 0 to 61424
L: 0 to 32752
SB: 0 to 7FF0
B: 0 to EFF0
SW: 0 to 7FFF
D: 0 to 32767
W: 0 to 7FFF
R: 8300 to 9799, 9800 to 9899, 18300 to 19799, 19800 to 19899, 28300 to 29799, 29800 to 29899

2.37 Laser Parameters

(PR)	#90001	lsr_unit_type	Laser oscillator type

Specify the type of laser oscillator to be connected.

0: No laser I/F unit connected

1: Type1

2: Type2

(PR)	#90002	lsr_unit_write	Laser I/F unit firmware write

Specify "1" when writing the firmware for the laser oscillator specified using #90001 to the laser I/F unit.

The firmware is written to the laser I/F unit at NC power on, and #90002 is set to "0" when writing has completed.

---Setting range---

0/1

(PR)	#90003	lsr_dio_dev1	Laser digital I/O 1

Specify the number of the R register to be used in digital input 1 to the laser oscillator.

The output from the laser oscillator is stored in that R register number + 1.

When not using this parameter, set to "0".

If a number not within the user area is specified, a setting error is output.

User area: 8300 to 9898, 18300 to 19898, 28300 to 29898

---Setting range---

0, 8300 to 9898, 18300 to 19898, 28300 to 29898

(PR)	#90004	lsr_dio_dev2	Laser digital I/O 2

Specify the number of the R register to be used in digital input 2 to the laser oscillator.

The output from the laser oscillator is stored in that R register number + 1.

When not using this parameter, set to "0".

If a number not within the user area is specified, a setting error is output.

User area: 8300 to 9898, 18300 to 19898, 28300 to 29898

---Setting range---

0, 8300 to 9898, 18300 to 19898, 28300 to 29898

	#90005	lsr_max_stop_t	Maximum stop time with beam ON

Specify the time period during which the axis can be stopped while laser beam is ON without raising safety problems.

If set to zero, 20 (s) applies.

---Setting range---

0 to 20 (s)

(PR)	#90006	lsr_rated_output	Rated power

Set the rated power of the laser oscillator.

When "0" is set, laser is not output.

---Setting range---

0 to 50000 (W)

(PR)	#90007	lsr_rated_AbsV	Rated voltage

Set the rated voltage of the laser oscillator.

When "0" is set, laser is not output.

---Setting range---

0.000 to 10.000 (V)

	#90008	lsr_fb_gain	Gain adjustment value for laser power feedback

Set the gain adjustment value for laser power feedback.

When "0" is set, the laser power feedback value is displayed without gain adjustment.

---Setting range---

0.00 to 200.00 (%)

	#90009	lsr_fb_ofs	Offset adjustment value for laser power feedback

Set the offset adjustment value for laser power feedback.

When "0" is set, the laser power feedback value is displayed without offset.

---Setting range---

-32768 to 32767 (W)

(PR)	#90010	lsr_fb_rated_o_p	FB rated power

Set the rated power of the laser oscillator for feedback.

When "0" is set, the value of parameter "#90006 lsr_rated_output" is used.

---Setting range---

0 to 50000 (W)

(PR)	#90011	lsr_fb_rated_AbsV	FB rated voltage

Set the rated voltage of the laser oscillator for feedback.

When "0" is set, the value of parameter "#90007 lsr_rated_AbsV" is used.

---Setting range---

0.000 to 10.000 (V)

	#90021	lsr_PWR_limit	Maximum laser power

Specify the maximum power to the laser oscillator.

---Setting range---

0 to 50000 (W)

	#90022	lsr_FRQ_limit	Maximum frequency

Specify the maximum frequency to the laser oscillator.

---Setting range---

0 to 9999 (Hz)

	#90023	lsr_M_beam_on	Beam ON M code

Specify the M code number used to turn on laser beam.

When set to zero, no M code can be used to turn on laser beam.

---Setting range---

0, 200 to 99999999

	#90024	lsr_M_beam_off	Beam OFF M code

Specify the M code number used to turn off laser beam.

When set to zero, no M code can be used to turn off laser beam.

---Setting range---

0, 200 to 99999999

	#90025	lsr_f_laser_syn	Time constant for laser command synchronization

Specify the time constant used as a time lag between the time that a command for changing the processing condition is issued and the time that the change takes effect.

Adjust this parameter when axis movement and change in beam status do not coincide.

---Setting range---

0 to 100 (ms)

	#90026	lsr_tr1	Time constant for laser command rising

Specify the time constant for changing the processing condition when the processing condition (laser output, frequency, duty) is set to a value greater than the current one.

---Setting range---

0 to 100 (ms)

	#90027	lsr_tr2	Time constant for laser command falling

Specify the time constant for changing the processing condition when the processing condition (laser output, frequency, duty) is set to a value smaller than the current one.

---Setting range---

0 to 100 (ms)

(PR)	#90041	lsr_cond_M	M code for laser processing condition selection

Specify the M code number used to select preset laser processing conditions.

A processing condition is selected according to the specified number as follows when this M code is executed.

Set value + 0: Processing condition 1

Set value + 1: Processing condition 2

Set value + 2: Processing condition 3

Set value + 3: Processing condition 4

:

Set value + 29: Processing condition 30

When set to zero, no M code can be used to select processing conditions.

---Setting range---

0, 200 to 99999000

(PR)	#90042	lsr_cond_M_num	Number of M codes for laser processing condition selection

Specify the number of M codes used to select laser processing conditions.

When set to zero, 30 applies.

---Setting range---

0 to 30

(PR)	#90043	lsr_cond_out_Rreg	R register number for laser processing condition output

Specify the R register number to which to output beam focus, nozzle height, gas pressure, and gas type in the laser processing condition.

The processing condition values are output as follows according to the specified number.

Set value + 0: Beam focus (L)

Set value + 1: Beam focus (H)

Set value + 2: Nozzle height (L)

Set value + 3: Nozzle height (H)

Set value + 4: Gas pressure (L)

Set value + 5: Gas pressure (H)

Set value + 6: Gas type

When not using this parameter, set to "0".

Be sure to specify an even number.

If one of the following is specified, this parameter cannot be set.

- Odd number
- A device that conflicts with parameter "#90003 lsr_dio_dev1" (Laser digital I/O 1) or "#90004 lsr_dio_dev2" (Laser digital I/O 2)
- A number not within the user area

---Setting range---

0, 8300 to 9892, 18300 to 19892, 28300 to 29892

	#90061	lsr_DR_varid	DR control ON

Specify whether to enable the DR control function.

0: Disable

1: Enable

	#90062	lsr_PWR_DR_start	Laser power to start DR control

Specify the laser power at which DR control is started.

---Setting range---

0 to 50000 (W)

	#90063	lsr_FRQ_DR_start	Frequency to start DR control

Specify the frequency at which DR control is started.

---Setting range---

0 to 9999 (Hz)

#90064	lsr_DUTY_DR_start	Duty to start DR control

Specify the duty at which DR control is started.

---Setting range---

0.0 to 100.0 (%)

#90065	lsr_PWR_DR_lowlmt	Minimum laser power in DR control

Specify the minimum laser power during DR control.

---Setting range---

0 to 50000 (W)

#90066	lsr_FRQ_DR_lowlmt	Minimum frequency in DR control

Specify the minimum frequency during DR control.

---Setting range---

0 to 9999 (Hz)

#90067	lsr_DUTY_DR_lowlmt	Minimum duty in DR control

Specify the minimum duty during DR control.

---Setting range---

0.0 to 100.0 (%)

#90068	lsr_f_laser_DR_syn	Time constant for laser command synchronization in DR control

Specify the time constant used as a time lag between the time that the specified speed is changed and the time that the processing condition changes when DR control is enabled.

Adjust this parameter when axis movement and change in beam status do not coincide.

---Setting range---

0 to 100 (ms)

#90069	lsr_DR_tr1	Time constant for laser command rising in DR control

Specify the time constant for changing the processing condition when the processing condition (laser output, frequency, duty) for DR control is changed to a value greater than the current one.

---Setting range---

0 to 100 (ms)

#90070	lsr_DR_tr2	Time constant for laser command falling in DR control

Specify the time constant for changing the processing condition when the processing condition (laser output, frequency, duty) for DR control is changed to a value smaller than the current one.

---Setting range---

0 to 100 (ms)

#90091	lsr_M_fcut_on	F-CUT ON M code

Specify the M code number used to turn on F-CUT.

When set to zero, no M code can be used to turn on F-CUT.

---Setting range---

0, 200 to 99999999

#90092	lsr_M_fcut_off	F-CUT OFF M code

Specify the M code number used to turn off F-CUT.

When set to zero, no M code can be used to turn off F-CUT.

---Setting range---

0, 200 to 99999999

#90093	lsr_fcut_on_tr1	F-CUT beam ON correction time 1

Specify the correction time for the timing to turn on laser beam while F-CUT is active.

---Setting range---

0 to 10000 (μs)

	#90094	lsr_fcut_off_tr1	F-CUT beam OFF correction time 1

Specify the correction time for the timing to turn off laser beam while F-CUT is active.

---Setting range---

0 to 10000 (μs)

	#90095	lsr_fuct_cmp_spd1	Speed to switch correction for beam ON/OFF in F-CUT 1

Set the cutting feed rate at which to switch the correction time for the timing to turn on/off laser beam while F-CUT is active.

When the cutting feed rate is higher than the set value or when the set value is "0", "#90093 lsr_fcut_on_tr1" (F-CUT beam ON correction time 1) and "#90094 lsr_fcut_off_tr1" (F-CUT beam OFF correction time 1) are used as the correction time for the timing to turn on/off laser beam.

When the cutting feed rate is equal to or lower than the set value, "#90096 lsr_fcut_on_tr2" (F-CUT beam ON correction time 2) and "#90097 lsr_fcut_off_tr2" (F-CUT beam OFF correction time 2) are used as the correction time for the timing to turn on/off laser beam.

---Setting range---

0 to 1000000 (mm/min)

	#90096	lsr_fcut_on_tr2	F-CUT beam ON correction time 2

Specify the correction time for the timing to turn on laser beam while F-CUT is active.

---Setting range---

0 to 10000 (μs)

	#90097	lsr_fcut_off_tr2	F-CUT beam OFF correction time 2

Specify the correction time for the timing to turn off laser beam while F-CUT is active.

---Setting range---

0 to 10000 (μs)

	#90101	lsr_hight_ctrl	Height control

Specify whether to enable the height control function.

0: Disable

1: Enable

When using DIO to enable and disable height control, set this parameter to "0".

(PR)	#90102	lsr_hight_ax	Height control axis

Specify the axis to which height control is applied using an axis number in the part system.

The axis number is an NC axis number excluding spindles and PLC axes.

When "0" is set, height control is not applied.

---Setting range---

0 to the number of control axes

	#90103	lsr_hight_sen_ofs	Height control Sensor offset

Set the position of the sensor relative to the tip of the nozzle.

Enter a positive value when the sensor measurement position is farther away from the workpiece than the tip of the nozzle.

Enter a negative value when the sensor measurement position is closer to the workpiece than the tip of the nozzle.

---Setting range---

-99.9 to 99.9 (mm)

(PR)	#90104	lsr_hight_itf_sen	Height control_Head interference sensor signal

Set the sensor signal that inputs the detected interference by the laser head during height control.

The sensor signal is shared with the skip signal.

When "0" is set, the detection of interference by the laser head during height control is disabled.

---Setting range---

0 to 8

#90105	lsr_M_HEvac_on	Height control_Fast retraction control ON M code

Set the M code number for enabling the fast retraction control for height control.

If "0" is set, M code will be unavailable.

---Setting range---

0, 200 to 99999999

#90106	lsr_M_HEvac_off	Height control_Fast retraction control OFF M code

Set the M code number for disabling the fast retraction control for height control.

If "0" is set, M code will be unavailable.

---Setting range---

0, 200 to 99999999

#90107	lsr_HEvac_rise_lim	Height control_Fast retraction control lift upper limit

Set the upper limit of lift to be applied during fast retraction control in height control.

If "0" is set, the position where approach is started will be the upper limit of lift.

---Setting range---

0 to 999999.999 (mm)

#90111	lsr_op_calibrate	Power calibration

Enable laser power calibration.

0: Disable laser power calibration

1: Enable laser power calibration

#90121+2(n-1)	lsr_calib_cmd_01-30	Laser power command value

Set the laser power command value for laser power calibration. (n = 1 to 30)

- Do not specify the same value more than once for "#90121 lsr_calib_cmd_01" through "#90179 lsr_calib_cmd_30".
- Do not specify "0" for the parameters that come between "#90121 lsr_calib_cmd_01" and "#90179 lsr_calib_cmd_30".
- Set the values of "#90121 lsr_calib_cmd_01" to "#90179 lsr_calib_cmd_30" in ascending order.
- Set a value smaller than or equal to "#90006 lsr_rated_output" (Rated power) for "#90121 lsr_calib_cmd_01" through "#90179 lsr_calib_cmd_30".

---Setting range---

0 to 50000 (W)

#90122+2(n-1)	lsr_calib_meas_01-30	Laser power measured value

Set the result of laser power measurement for laser power command value. (n = 1 to 30)

---Setting range---

0 to 50000 (W)

2.38 NC Axis Switch Parameters

#71001-71256	**SV001-SV256**	**NC axis switch parameters**

The description and setting range for these parameters are the same as Servo parameters "#2201 SV001" to "#2456 SV256". Refer to "2.7 Servo Parameters" for details.

#71257	**Hotaxname**	**NC axis name change**

Specify by two characters the name of the axis to be changed in NC axis switchover.

The first character must be a letter because it is used as a command address. The second character must be a number.

---Setting range---

2-character string consisting of A to Z followed by 1 to 9
(When "0" is set, change is not reflected.)

2.39 Spindle Switch Parameters

#71501-71740	**SP001-SP240**	**Spindle switch parameters**

The description and setting range for these parameters are the same as Spindle parameters "#13001 SP001" to "#13240 SP240". Refer to "2.9 Spindle Parameters" for details.

Revision History

Revision Date	Manual No.	Changes
Aug. 2025	IB(NA)1501809-A	First edition created. Contents of "M800V/M80V Series Alarm/Parameter Manual" (IB-1501623-H) were divided as follows. ♦"M800V/M80V Series Alarm Manual" (IB-1501808-A) ♦"M800V/M80V Series Parameter Manual" (IB-1501809-A) Contents were revised to correspond to Mitsubishi Electric CNC M800V/M80V Series software version B4. The following chapters were revised. - 1.3 Control Parameters 1 - 1.13 Operation Parameters - 1.17 Wireless LAN Parameters - 2.2 Base Axis Specification Parameters - 2.3 Base Common Parameters - 2.4 Axis Specifications Parameters - 2.7 Servo Parameters - 2.9 Spindle Parameters - 2.34 CC-Link IE TSN (Remote station) Other mistakes were corrected.
Jan. 2026	IB(NA)1501809-B	Contents were revised to correspond to Mitsubishi Electric CNC M800V/M80V Series software version B8. Chapters 1 and 2 were modified. The main changes are as follows. Chapter numbers are indicated in parentheses. The following parameters were added. ♦Machining parameter #19256 (1.1) ♦Control parameter 1 #8166/bit0 (1.3) ♦Ethernet parameters #9722, #9742, #9762, #9782 (1.7) ♦Machining condition selection parameters #42022, #42322, #42622 (1.14) ♦Base system parameters #1508, #1509, #12064, #12147 (2.1) ♦Base common parameters #1236/bit4, #1259/bit4, #1297/bit5, #1450/bit7, #1703/bit0,bit4,bit5,bit6,bit7, #1712/bit5,bit6, #1725/bit4,bit5, #1751/bit6, #1756/bit5, #11864 (2.3) The contents were revised as follows. ♦User parameters #19250, #8120, #8174, etc. (1.1, 1.3, 1.4, etc.) ♦Machine parameters #1488, #2001, #2002, etc. (2.3, 2.4) Other mistakes were corrected.

Revision Date	Manual No.	Changes
May 2026	IB(NA)1501809-C	Contents were revised to correspond to Mitsubishi Electric CNC M800V/M80V Series software version BB. Chapters 1 and 2 were modified. The main changes are as follows. Chapter numbers are indicated in parentheses. The following parameters were added. •Machining parameters #8046, #8047, #19448 (1.1) •Control parameters 2 #8183, #8184, #8185 (1.4) •Base system parameters #12149/bit0,bit1, #12166, #12167 (2.1) •Axis specifications parameters #12561 (2.4) The contents were revised as follows. •User parameters #19256, #8957 (1.1, 1.13) •Machine parameters #1021, #11012, #3031, etc. (2.2, 2.3, 2.8, etc.) Other mistakes were corrected.

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Pulau Pinang Service Center
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Notice

Every effort has been made to keep up with software and hardware revisions in the contents described in this manual. However, please understand that in some unavoidable cases simultaneous revision is not possible. Please contact your Mitsubishi Electric dealer with any questions or comments regarding the use of this product.

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MODEL	M800V/M80V Series
MODEL CODE	100-921
Manual No.	IB-1501809

IB(NA)1501809(ENG)-C(2605)MEE
Made in JAPAN

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