

Mitsubishi Industrial Robot

CR800-Q series controller

The Sample Screen of GOT2000 Instruction Manual for iQ Platform Supporting Extended Function (GOT Script Version)



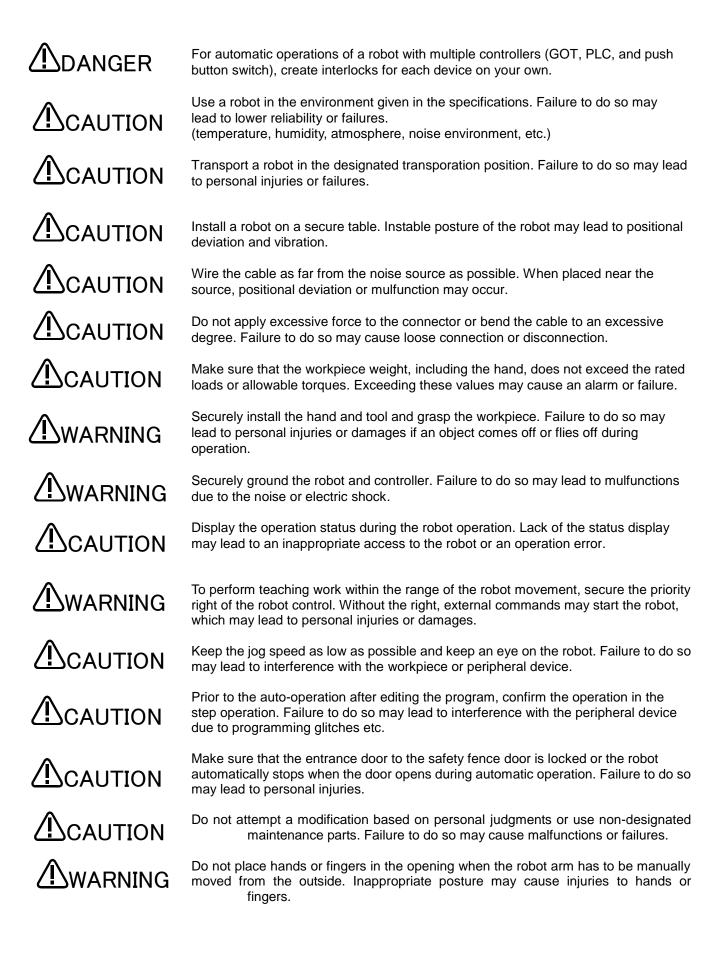
▲ Safety Precautions

Before use of robots, be sure to read the safety precautions below and the supplementary "Safety Manual" carefully and take appropriate measures.

A. See below for safety precautions based on the Ordinance on Labor Safety and Hygiene (Chapter 36,104, 150, and 151).

All teaching work must be carried out by a specially-trained operator (including maintenance work with no power interruption) \rightarrow Conduct safety training
For teaching work, prepare a work plan related to the methods and procedures of robot operation and the mesures to be taken in case of an error and restart. (including maintenance work with no power interruption) \rightarrow Prepare a work plan
Prepare a device that allows an immediate stop of operation during teaching work. (including maintenance work with no power interruption) \rightarrow Set an emergency stop switch
During teaching work, place a sign on a start switch etc. indicating that teaching work is in progress (including maintenance work with no power interruption) \rightarrow Indicate teaching work in progress
Provide a rail or fence, during operation, to prevent contact with the operator and robot. \rightarrow Install a safety fence
To start an operation, establish a certain signaling method. \rightarrow Give a signal to start an operation
As a principle, turn the power off during the maintenance work and place a sign on a start switch etc. indicating that maintenance work is in progress. \rightarrow Indicate maintenance work in progress
Before operation, inspect the robot, emergency stop, other related devices etc. to make sure that everything is in order. \rightarrow Perform a pre-operation check

B. See below for safety precautions given in the separate "Safety Manual". For more details, refer to the "Safety Manual".



DANGER

DANGER

DANGER

Do not stop or apply an emergency stop on the robot by turning the main power to robot controller off. Doing so during the automatic operation may cause a negative impact on the robot accuracy or interfere with the peripheral device due to the fall or coasting of the arm.

Do not turn off the main power to the robot controller while rewriting the internal information of the robot controller such as the programs, parameters, etc. The internal information of the robot controller may be corrupted.

To use the direct GOT functions, do not connect the handy GOT. Handy GOT can perform automatic robot operation with or without the operation right and may cause property damages or physical injuries.

In using the iQ Platform-compatible products with CRnQ, do not connect the hand GOT to PLC.

Handy GOT can perform automatic robot operation with or without the operation right and may cause property damages or physical injuries.

Make sure to attach the cap to the SSCNETIII connector to avoid the dirt and dust. Failure to do so may deteriorate characteristics and lead to malfunction.

Do not remove the SSCNETIII cable while the multi-CPU system or servo amp is turned on. Do not directly face the light from the motion CPU, SSCNETIII connector of the servo amp, and the tip of the SSCNETIII cable. Irritation in the eyes may occur (the light source of SSCNETIII ranks as the Class 1 specified in J1SC6802 and IEC60825-1).



Make sure all the wirings are correct. Connections that do not meet the specifications may cause malfunctions (ex. emergency stop cannot be cancelled). To prevent a malfunction, make sure that all the functions of the robot controller operation, panel emergency stop, teaching box emergency stop, emergency stop by a user, and door switch etc. are operating properly after wiring is completed.

Revision History

Date of Print	Instruction Manual No.	Description
21/AUG/2018	BFP-A3640-*	The '2.1.7. Ethernet Setting' is modified.
19/FEB/2019	BFP-A3640-A	Added the GOT screens for the preventive maintenance function. (*Notice) The preventive maintenance function is required the MELFA Smart Plus option.
27/SEP/2019	BFP-A3640-B	Added the GOT screens for the predictive maintenance function. (*Notice) The predictive maintenance function is required the MELFA Smart Plus option.

Introduction

Thank you for purchasing the Mitsubishi Electric Industrial Robot MELFA manufactured by Mitsubishi Electric. This instruction manual explains GOT operations to utilize the iQ Platform supporting expanded function for CR800 Series robot controller

With the shared memory between the GOT and robot, monitoring of robot status and data setting from GOT is made easy.

Read this instruction carefully before use.

Target Controllers

This instruction manual covers the robot controllers below:

· CR800-Q series controller: Ver. A2 or later

Robot Language: MELFA BASIC VI or later

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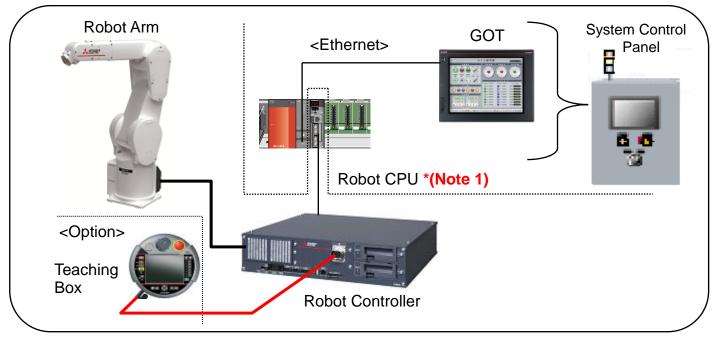
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4.3	M	ANUAL DOCUMENT DISPLAY SCREEN			
4.3.1	1 Ro	bot Manual			
4.4	4.4 ERROR INFORMATION SCREEN				
4.4.1	4.4.1 Check the Robot Error Information				

1. System Configuration

1.1 System Configuration



• (Note 1) When use the GOT sample screen, attach the robot CPU (Q172DSRCPU) at the 2nd machine slot of the multiple CPU high-speed main base unit.

GOT

GT Designer3 Version.	Version 1.205P
GOT Type	GOT2000 Series •GT27 * GT27 can play the video by attaching the optional multi-media unit.
Type of Connecting Device	MELSEC-QnU,Q17nD/NC/DR,CRnD-700

Robot

Ver. of Controller	CR800-Q series controller: Version A2 or later(*1) (*1) The preventive maintenance function requires Version A3 or later. The predictive maintenance function requires Version A4 or later.
Controller Type	CR800-Q series
Option	MELFA Smart Plus (When use screens for the preventive/predictive maintenance function)

PLC

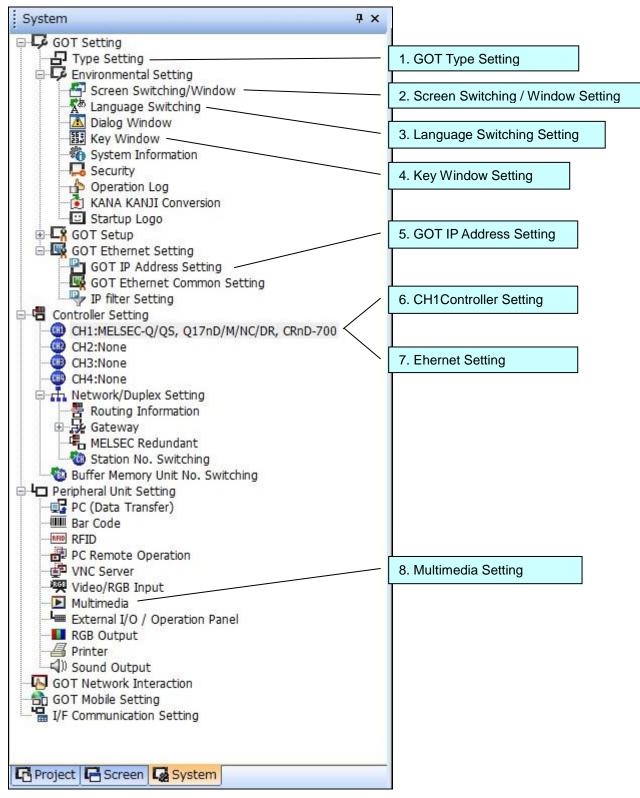
Base	Multiple CPU high speed main base unit •Q35DB 5 slots •Q38DB 8 slots •Q312DB 12 slots
Power Supply	·Q61P ·Q62P ·Q63P ·Q64PN
PLC CPU	•Q03UD(E/V)CPU •Q04,06UD(E/V)HCPU •Q10UD(E)HCPU •Q13UD(E/V)HCPU •Q20UD(E)HCPU •Q26UD(E/V)HCPU •Q100UD(E)HCPU

MELFA Smart Plus function and compatible card

	MELFA Smart Plus card					
Function Name	Card A type			Card Pack AB type		
Preventive function	2F-DQ511	—	2F-DQ510	-		
Predictive function	_	2F-DQ521	_	2F-DQ520		

2 Setting

2.1 System Setting



2.1.1 Type Setting

2	Type Setting			×	1
	GOT Type	GOT2000		-	
	Туре:	GT27**-V (640)	(480)		
	Model:	GT2710-VTBA GT2710-VTWA GT2708-VTBA	GT2710-VTBD GT2710-VTWD GT2708-VTBD	GT27**-V(640	0×480) Select
	Setup Direction:	 Horizontal 	O Vertical		
	Color Setting:	65536 Colors			
	Use the gesture function				
	\square Enable the graphics acc	elerator			

2.1.2 Use Language Switching Setting

	Use L	anguage S	Switching							
	Lang	uage Swite	ching Device:	GD500	-				Language Swite Device number	hing'
	Alter	native Disp	lay (when the	language switching devi	ce value is out	of the rar	ige (1-30)	or comment column	No. does not exist):	
				🔿 Not Display	Oisplay	Commen	t Column N	lo.: 2 💌		
	Comr	ment colur	nn No. to be p	previewed on the editor:	1	•				
	Se		e format of ead g with languag	ch function when changir e switching.	ng the sort					
		Standard	Comment Column No.	Remark (Region Name)	Date Format	Decimal	Marker	New		
	1		1	JPN	yy/mm/dd	. (period)	Delete		
	2	*	2	USA	mm/dd/yy	. (period)	Delete All		
	3		3	CHN	yy/mm/dd	. (period)			
*Date will appear in the standard format if language switching device value is out of the range or comment column No. is not set above.										
	Use S	ystem Lan	guage Switchi	nç						
	Syste	em Langua	ge Device:	GD500		·	System La	anguage Setting		

2.1.3 Screen Switch/Window Setting

creen Switching / Window Setting						
Base So	creen : GD203		·]		
Overlap	Window					
	Screen Switching Device		Use also as a system	window	Detail Setting	
1 🔽	GD1050	·	Use Use			
	Display Position: X:	Y:				
2 🔽	GD1051	·	🗖 Use			
	Display Position: X:	Y:				
3 🔽	GD1052	·	🗖 Use			
	Display Position: X:	Y:				
4 🔽	GD1053	·	🔽 Use			
	Display Position: X:	Y:				
5 🔽	GD1054	·	Use			
	Display Position: X:	Y:			nput the Devic	
Superin	npose Window				•	
	Screen Switching Device		Detail Setting			
1 🔽	GD1055	·				
2 🔽	GD1056	·				
Dialog	Window 🔽 GD1057		·			

2.1.4 Key Window Setting

Basic Setting Advanced Sett	ing					
Key Window Setting						
Key Window: O Standard O User-created (individual setting)						
Change display screen Language : 1 *	in conjunction with Langu	age Switching				
Key Window	Key Window Type	Window Screen No.	Number of used screens			
DEC	User-created 💌	802 ÷	-			
HEX	User-created 💌	803 🕂	-			
Text	User-created 💌	801 🕂	1			
🗖 Display standard key w	indow for Text	Window S	Screen No. Setting			
Key Window Type						
 Display value during input Display previous value Display input function rang 	e					

2.1.5 GOT Ethernet Setting

🙀 GOT Ethernet Setting	
GOT IP Address Setting GOT Ethernet Common S IP filter Setting	Standard Port Extended Port Wireless LAN Update GOT Ethernet Standard Port setting The Ethernet Standard Port setting in the GOT will be overwritten with the contents set in GT Designer3. The setting will be retained if the update is disabled. GOT IP Address: 192 . 168 . 3 . 18 Subnet Mask: 255 . 255 . 0 Select from GOT Setting List:
	Input an IP address of GOT. OK Cancel Apply

2.1.6 Controller Setting

Manufactu	Irer: MITSUBISHI ELECTRIC		~	
Controller	Type: MELSEC-Q/QS, Q17nD/	M/NC/DR, CRnD-700	*	
I/F:	Ethernet:Multi Ethernet(MITSUBISHI ELECTRIC), Gateway			
Driver:	Ethernet(MITSUBISHI E	ELECTRIC), Gateway	-	
	Setting	Value		
G	OT Net No.	1		
G	OT Station	1		
G	OT Communication Port No.	5001	Calent COT interface and com	
R	etry(Times)	3 /	Select GOT interface and comp driver for contoroller to be connect	
S	tartup Time(Sec)	3	(Sample program use a Ethernet	
Т	imeout Time(Sec)	3		
D	elay Time(ms)	0		
75	ervo axis switching GD device first No.			

2.1.7 Ethernet Setting

				Input	Input the ethernet information of PLC.			
_								
	Host	Net No.	Station	Unit Type	IP Address	Port No.	Communication	

2.1.8 Multimedia Setting

Destination I/F:	Extend I/F(1st)		•	Detail Setting	
🔽 Enable the setting	of Multimedia				
Recording Setting	Playback/External Notifica	ition Display Setting	<u>ה</u>		
Playback Setting Playback File Ti	ime Specification Device:	GD70		· · · ·	
Year:GD71	Date:GD70	Hour:GD73	Minute/Seco	nd:GD72	
External Notification	n yback Status Notification D	Pevice:		Destination I/F and Dack Setting.	

2.2 Robot Parameter Setting

It is necessary to set the following parameters to use this sample GOT program.

The "RT ToolBox3 Instruction Manual (BFP-A3495)" of RT ToolBox3 descrive a way to set these parameters.

2.2.1 Shared-Memory Expansion Function Selection Parameter Setting

Set the parameters below.

Detailes of these parameter is discrived on the manual that name "CR800 series iQ Platform Supporting Extended Function Instruction Manual (BFP-A3528)".

(1) Multi-Parameter Setting

Set the number of multiple CPU on 'QMLTCPUN' parameter and set the multiple CPU high speed transmission area on 'QMLTCPU*' that same as PLC settings.

(2) Setting of Shared-Memory Expansion Function Selection Parameter

Change Bit 0 of the shared-memory expansion function selection parameter on 'IQMEM' to 1 (shared-memory expansion function enabled).

2.2.2 Parameter Setting of Hand Control Enable Input/Output Signals

🚰 🗉 🛧 🖂 🗷 🖂 🐂 🖃 🖬 📼	RT ToolBox3 - [Parameter list 1:RC1 (Simulation)]	= = ×
Workspace Home Online 3D view	Parameter View Help	0
Search Search		
Workspace 4 ×	Parameter list 1:RC1 (Simulation) ×	-
 ☐ RV-7FR-D ☑ 3D Monitor ☑ RC1 ☑ Simulation 	Robot1 I: RV-7FR-D Image: Second sec	Parameter list Read
RV-7FR-D Operation panel Program SQ Direct Spline Parameter Parameter Movement parameter Movement parameter Program parameter	Parameter Explanation HANDDLY Initial value of GC/GO HAND Open or Close delay HANDENA Hand control enable INPUT,Hand control enable OUTPUT HANDINIT Initial status for air hand I/F HANDOUT hand output control signal INPUT(start,end) HANDTYPE Control type for HAND1-8 (single/double/special=S***/D***/UMAC*) HIOTYPE I/O type of HAND I/F.(0:SOURCE / 1:SINK -1:UNSETTING)	Attribute Robot Common Robot Common Robot Common
 Parameter edit Parameter name : 		×
	HANDENA Robot# : 0	
▷ Image: Morest and		
Output	Print Write	Close
Ready		

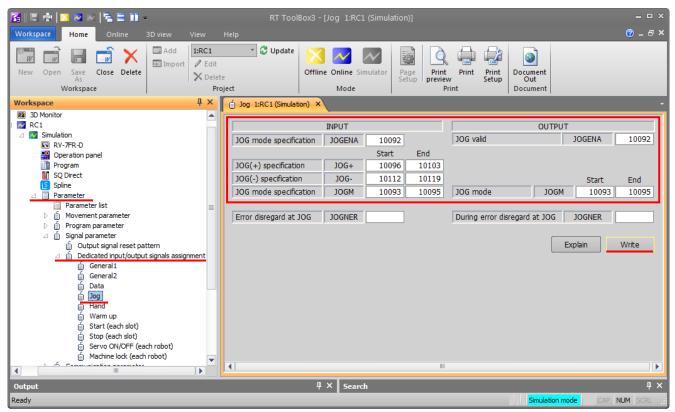
- (1) Go to [Parameter] in the workspace and double-click on [Parameter List]
- (2) Enter [Parameter Name: HANDENA] and click [Read (R)]
- (3) [Parameter edit] window opens.
- (4) Enter [1: 10079] [2: 10079]
- (5) Click [Write] to write a parameter.
- (6) [Do you want to write a parameter into the robot controller?] \rightarrow click [Yes (Y)]
- (7) [Restart the robot controller] \rightarrow [**OK**]
 - * Continue to write other parameters without a restart

2.2.3 Hand Output Control Signal (Start/End number) Parameter Setting

🔀 E 🛧 🖂 🖂 🖂 E 🚍 🖬 -	RT ToolBox3 - [Parameter list 1:RC1 (Simulation)]	= ¤ ×
Workspace Home Online 3D view	Parameter View Help	0
Search Search		
Workspace 7 ×	Parameter list 1:RC1 (Simulation) ×	i i i i i i i i i i i i i i i i i i i
△	Robot1 1: RV-7FR-D O All O Changed Changed Image: Second Seco	Parameter list Read
RV-7FR-D Operation panel Program SQ Direct Spline Parameter Parameter Movement parameter Frogram parameter	Parameter Explanation HANDINIT Initial status for air hand I/F HANDOUT hand output control signal INPUT(start,end) HANDTYPE Control type for HAND1-8 (single/double/special=S***/D***/UMAC*) HIOTYPE I/O type of HAND I/F.(0:SOURCE / 1:SINK -1:UNSETTING) HLVLERR No signal,During H-error OUTPUT HNDCNTL1 No signal,Robot1 hand output signal OUTPUT	Attribute Robot Common Robot Common Common Common
▷ ∰ Parameter edit		×
 D i Parameter name : D Mo Explanation : D Backup 	HANDOUT Robot# : 0 hand output control signal INPUT(start,end)	
▶ 🖓 Tool ▶ ∰ MELFA-3D ▶ 1 : 10080 ▶ 1/O Simulat 2 : 10087		
Output Ready	Print Write	Close

- (1) Open [Parameter] in the workspace and double-click on [Parameter List]
- (2) Enter [Parameter Name: HANDOUT] and click [Read (R)]
- (3) [Parameter edit] window opens
- (4) Enter [1: 10080] [2: 10087]
- (5) Click [Write] to write a parameter
- (6) [Do you want to write a parameter into the robot controller?] \rightarrow click [Yes(Y)]
- (7) [Restart the robot controller] \rightarrow [**OK**]
 - * Continue to write other parameters without a restart

2.2.4 Jog Parameter Setting to Assign Dedicated Input/Output Signals



- (1) Open [Parameter] item and double-click [Dedicated Input/Output Signals Assignment]
- (2) Double-click [Jog].
- (3) Enter [**10092**] to [JOGENA] of the input signal. And enter [**10092**] to [JOGENA] of the output signal.
- (4) Enter [Start (S): 10096] and [End (N): 10103] to [Jog Feed+ Side JOG+] of the input signal.
- (5) Enter [Start (S): 10112] and [End (N): 10119] to [Jog Feed Side JOG-] of the input signal.
- (6) Enter [Start (S): 10093] and [End (N): 10095] to [Jog Mode JOGM] of the input signal. Enter [Start (S): 10093] and [End (N): 10095] to [Jog Mode JOGM] of the output signal.
- (7) Click on [Write (R)] to write parameters.
- (8) [Do you want to write parameters to the robot controller?] \rightarrow Click [Yes (Y)]
- (9) [Restart the robot controller] \rightarrow [**OK**]
- (10) Restore the power of PLC (Off \rightarrow On) of reset \rightarrow run the PLC CPU.
- (11) Parameter write is completed

2.2.5 Dedicated Input/Output Signals Parameter Setting

Parameter	Robot Input Signal	Robot Output Signal		obot oping	G	GOT M	apping	
Name	Name	Name	Input	Output	Output (U3E0¥)	bit	Input (U3E1¥)	bit
STOP	Stop input	Pausing output	10000	10000	00000	000	00000	000
RCREADY	-	Controller power ON ready	-	10001	-	-	00000	001
ATEXTMD	-	Remote mode output	-	10002	-	-	00000	002
TEACHMD	-	Teaching mode output	-	10003	-	-	00000	003
ATTOPMD	-	Automatic mode output	-	10004	-	-	00000	004
IOENA	Operation rights input	Operation rights output	10005	10005	00000	005	00000	005
START	Start input	Operating output	10006	10006	00000	006	00000	006
STOPSTS	-	Stop signal input	-	10007	-	-	00000	007
SLOTINIT	Program reset input	Program selection enabled output	10008	10008	00000	800	00000	008
ERRRESET	Error reset input	Error occurring output	10009	10009	00000	009	00000	009
SRVON	Servo ON input	In servo ON output	10010	10010	00000	00A	00000	00A
SRVOFF	Servo OFF input	Servo ON disable output	10011	10011	00000	00B	00000	00B
CYCLE	Cycle stop input	In cycle stop operation output	10012	10012	00000	00C	00000	00C
SAFEPOS	Safe point return input	In safe point return output	10013	10013	00000	00D	00000	00D
BATERR	-	Battery voltage drop	-	10014	-	-	00000	00E
OUTRESET	General-purpose output signal reset	-	10015	-	00000	00F	-	-
HLVLERR	-	High level error output	-	10016	-	-	00001	000
LLVLERR	-	Low level error output	-	10017	-	-	00001	001
CLVLERR	-	Warning level error output	-	10018	-	-	00001	002
EMGERR	-	Emergency stop output	-	10019	-	-	00001	003
PRGSEL	Program selection input	-	10020	-	00001	004	-	-
OVRDSEL	Override selection input	-	10021	-	00001	005	-	-
PRGOUT	Program No. output request	Program No. output	10022	10022	00001	006	00001	006
LINEOUT	Line No. output request	Line No. output	10023	10023	00001	007	00001	007
OVRDOUT	Override value request	Override value output	10024	10024	00001	008	00001	008
ERROUT	Error No. output request	Error No. output	10025	10025	00001	009	00001	009
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
IODATA	Numeric value input 0	Numeric value output 0	10032	10032	00002	000	00002	000
1	Numeric value input 1	Numeric value output 1	10033	10033	00002	001	00002	001
1	Numeric value input 2	Numeric value output 2	10034	10034	00002	002	00002	002
1	Numeric value input 3	Numeric value output 3	10035	10035	00002	003	00002	003
1	Numeric value input 4	Numeric value output 4	10036	10036	00002	004	00002	004
1	Numeric value input 5	Numeric value output 5	10037	10037	00002	005	00002	005
1	Numeric value input 6	Numeric value output 6	10038	10038	00002	006	00002	006
1	Numeric value input 7	Numeric value output 7	10039	10039	00002	007	00002	007
1	Numeric value input 8	Numeric value output 8	10040	10040	00002	008	00002	008

↑	Numeric value input 9	Numeric value output 9	10041	10041	00002	009	00002	009
\uparrow	Numeric value input 10	Numeric value output 10	10042	10042	00002	00A	00002	00A
↑	Numeric value input 11	Numeric value output 11	10043	10043	00002	00B	00002	00B
↑	Numeric value input 12	Numeric value output 12	10044	10044	00002	00C	00002	00C
↑	Numeric value input 13	Numeric value output 13	10045	10045	00002	00D	00002	00D
1	Numeric value input 14	Numeric value output 14	10046	10046	00002	00E	00002	00E
1	Numeric value input 15	Numeric value output 15	10047	10047	00002	00F	00002	00F
HNDCNTL1	Hand output 900	Hand output signal state 900		10048			00003	000
1	Hand output 901	Hand output signal state 901		10049			00003	001
↑	Hand output 902	Hand output signal state 902		10050			00003	002
↑	Hand output 903	Hand output signal state 903		10051			00003	003
1	Hand output 904	Hand output signal state 904		10052			00003	004
↑	Hand output 905	Hand output signal state 905		10053			00003	005
↑	Hand output 906	Hand output signal state 906		10054			00003	006
↑	Hand output 907	Hand output signal state 907		10055			00003	007
HNDSTS1		Hand output signal state 900	-	10056	-	-	00003	008
↑	-	Hand output signal state 901	-	10057	-	-	00003	009
1	-	Hand output signal state 902	-	10058	-	-	00003	00A
↑	-	Hand output signal state 903	-	10059	-	-	00003	00B
↑	-	Hand output signal state 904	-	10060	-	-	00003	00C
↑		Hand output signal state 905	-	10061	-	-	00003	00D
1	-	Hand output signal state 906	-	10062	-	-	00003	00E
1	-	Hand output signal state 907	-	10063	-	-	00003	00F
USRAREA	-	User defined area 1	-	10064	-	-	00004	000
1	-	User defined area 2	-	10065	-	-	00004	001
\uparrow	-	User defined area 3	-	10066	-	-	00004	002
1	-	User defined area 4	-	10067	-	-	00004	003
\uparrow	-	User defined area 5	-	10068	-	-	00004	004
1	-	User defined area 6	-	10069	-	-	00004	005
\uparrow	-	User defined area 7	-	10070	-	-	00004	006
1	-	User defined area 8	-	10071	-	-	00004	007
-	-	-	-	-	-	-	-	-

3 Description of Robot Screen

3.1 Common Operation

3.1.1 How To Change The Display Language

Press the 'EARTH' bottun and 'Language Setting' window is displayed. Select the language you want to use in list on the 'Language Setting' window.

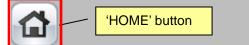
The 'EARTH' button is located at top-right corner on the every robot screens.

[Rob	ot Main Menu]
Robot Operation	Error Information
Lang	uage Setting
Monitor/Mainten	日本語
	English
	中文 (简体)
	한국어

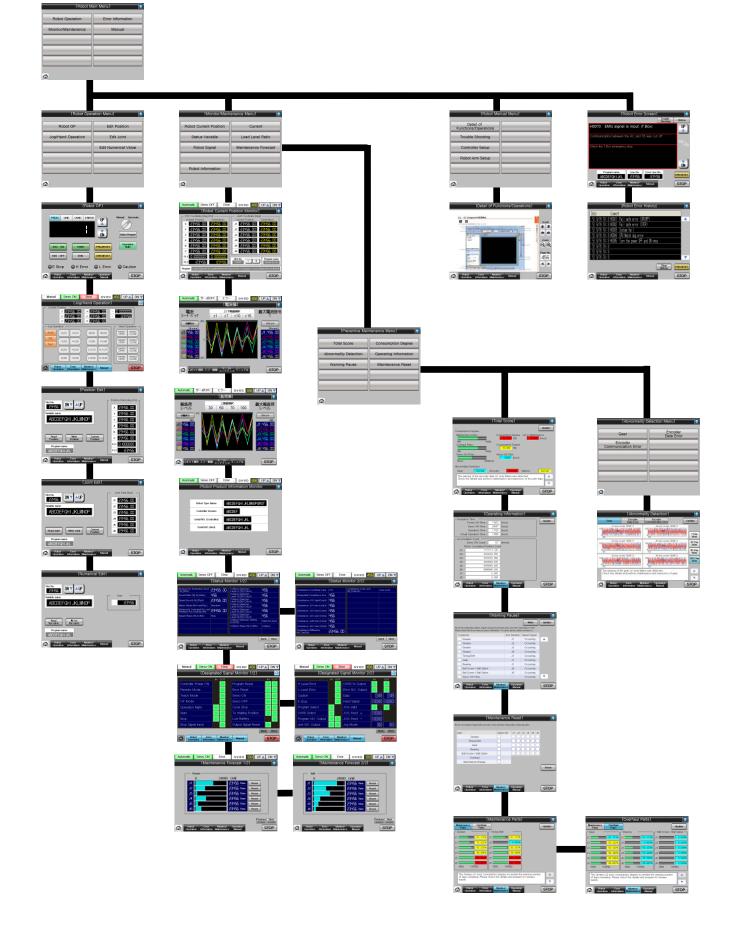
3.1.2 How To Exit the Robot Screen

When press the 'HOME' bottun, exit the robot screen and change display to 001 base screen.

The 'HOME' button is located at bottom-left corner on the every robot screens.



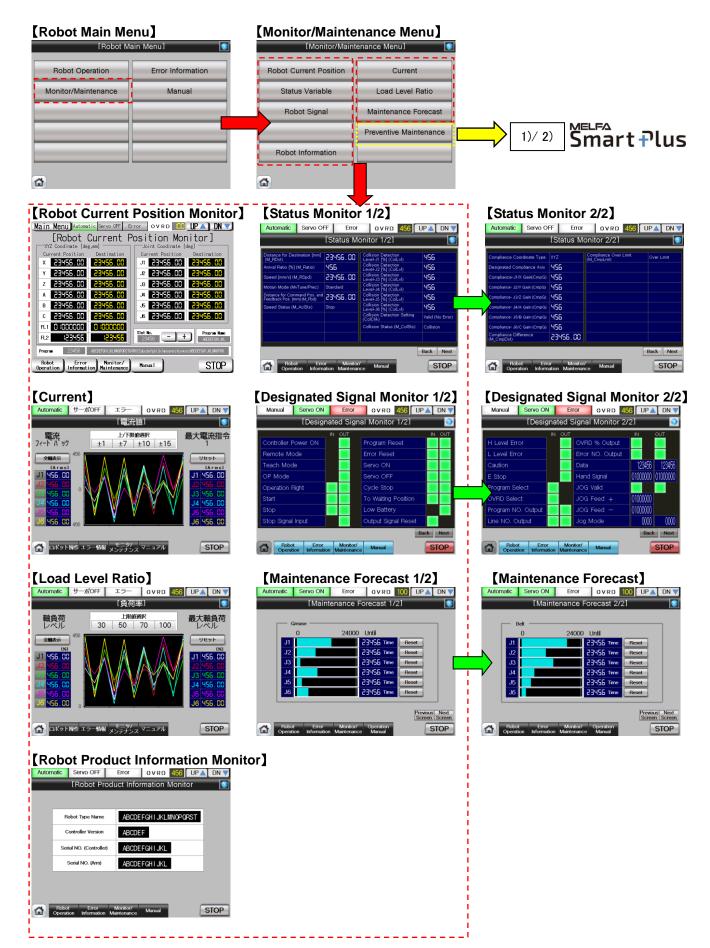
3.2 Screen Tree



3.3 Robot Operation Screens

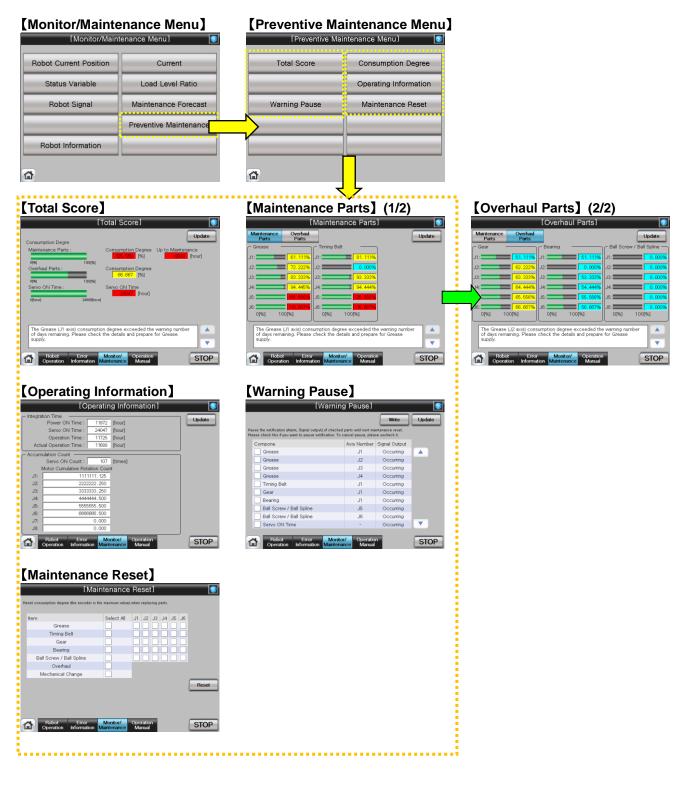
[Robot Mai	n Menu]	[Robot Opera	tion Menul	
Robot Operation	Error Information	Robot OP	Edit Position	
Monitor/Maintenance	Manual	Jog/Hand Operation	Edit Joint	
			Edit Numerical Value	
)			-	
Robot OP】		[Position Edit]		【Joint Edit】
[Robot	OP]	[Position	Edit]	[Joint Edit]
PROG LINE OVRD ERROR	UP Manual Automatic	Slot No. 23455 DN V AUP	Position Data [deg,mm]	Stot No. DN ▼ ▲ UP Joint Data (deg) J33455 DN ▼ ▲ UP J1 23455
	DN Select Program	Variable name	× 23456.00 × 23456.00	Variable name J2 23456.00
		ABCDEFGHIJKLMNOP	z 23456.00	ABCDEFGHIJKLMNOP 33 23455.00
	PRG.RESET Operation Right	Read Write Curr Position Position Posi	B 23456.00	J5 23\155.00 Read Joint Write Joint J6 23\155.00
SVO OFF END	ERRRESET	Program name	FL1 0 1000000	Read Joint Write Joint Current Position J6 23455.60 Program name
	L Error Caution	ABCDEFGHIJKL Robot Error Monitor/	FL2 (23456	ABCDEFGHIJKL
Robot Error Monitor/ Operation Information Maintenance	Manual STOP	Operation Information Maintenance	Manual	Robot Error Monitor/ Manual STOP
Jog/Hand Opera	ation】	[Numeric Edit]		
Manual Servo ON Error [Jog/Hand C		[Numerica	al Edit]	
Current Position	55.00 - 0.000000	Slot No. 23455 DN V AUP		
J2 23456,00 J5 234 J3 23456,00 J6 234	156.CC	Variable name	Data	
Jog Operation	+B(J5) Hand Operation (HAND1 HAND1 OPEN CLOSE	ABCDEFGHIJKLMNOP	123426	
XYZ -Y(J2) +Y(J2) -C(J6)	+C(J6) HAND2 HAND2 OPEN CLOSE	Read		
-Z(J3) +Z(J3) -L1(J7)		Read Variable Program name		
(-A(J4) +A(J4) (-L2(J8)		ABCDEFGHIJKL		
Robot Error Monitor/ Operation Information Maintenance	Manual	Robot Error Monitor/ Operation Information Maintenance	Manual STOP	

3.4 Monitor/Maintenance





Notice) It is necessary to restart the GOT when activate the 'Preventive Maintenance Function'.





Notice) It is necessary to restart the GOT when activate the 'Predictive Maintenance Function'.

[Monitor/Main	tenance Menu] 💿	[Predictive Maintenance Menu]	նա]
bot Current Position	Current	Total score Consumption Degree Gear Da	ncoder ta Error
Status Variable	Load Level Ratio	Abnormality Detection Operating Information Encoder Communication Error	
Robot Signal	Maintenance Forecast	Warning Pause Maintenance Reset	
	Predictive Maintenance	<u> </u>	
Robot Information			
otal Score		[Maintenance Parts] (1/2) [Gear]	
[Total	Score]	[Maintenance Parts]	
nption Degree	Update	Maintenance Overhaul Parts Parts Data Error Communication Error Grease J asis score 1256.0 J4 sais score	Updat 12345.0
100[%]	mption Degree Up to Maintenance 10.000 [%] 123466 [hour]	J1 61,1176 J1 81,1176 11 1 11 1 11 1 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
100[%]	mption Degree 70.000 [%]	J2 17, 2225, J2 10,000 132 132 132 132 132 132 132 132 132 132	12345.0 30
ON Time : Servo 24000(hsur)	ON Time 12000 [hour]	J4 J4<	12345.0
ality Detection : Normal Encoder :	Normal Battery : Normal		36 ×
warning of the encoder data (J1 axis ck the details and perform maintenar	a) failure was detected. Ince and inspection of encoder data	The Greate (JI axis) consumption degree exceeded the warning number of days remaining. Please check the details and prepare for Grease supply.	
Robot Error Monito Operation Information Maintena	r/ Operation nce Manual STOP	Robot Error Monitor/ Operation Operation Information Mantenance Manual	STC
perating Info		[Overhaul Parts] (2/2)	
tion Time Power ON Time : 11972 [https://www.com.com/intelligence/com/inte		[Overhaul Parts] [Abnormality Detection]	Updat
Servo ON Time : 24047 [ht Operation Time : 11725 [ht	[uc]	Gear Bearing Ball Screw / Ball Spine Ji avis score: 1295.0 J4 avis score: 1295.0 J4 avis score: 1294.0 J4 avis	in a state of the second s
tual Operation Time : 11688 [https://www.inulation Count		J1: 51.1176 JJ: 0.0005 JJ: 113 0.0005 JJ: 113 0.0005 JJ: 113 0.0005 JJ: 113 JJ: 113 0.0005 JJ: 113 JJ:	12345.0 30
Motor Cumulative Rotation Count 11111111.125	ires)		
2222222.250 3333333.250 4444444,500		J6	12345.0
5555555.500 0866686.500		The Grease (J2 axis) consumption degree exceeded the warning number of days remaining. Please that the days of the encoder data (J2 axis) failure was detect	ed.
0.000		Or table remaining. Prease Cireck one use and prepare for surgary	
Robot Error Monito Operation Information Maintena		Robot Error Monitor/ Operation Operation Information Maintenance Manual STOP Robot Error Monitor/ Operation Manual	STC
aintenance F	(eset)	[Warning Pause] [Encoder Communicat	ion Err
[Maintena		[Warning Pause] [Abnormality Detection]	
sumption degree (the encoder is the maximum	value) when replacing parts.	Write Update Geor Encoder Encoder Pause the softwards offers Data Error Communication Error Softward	Upda 12345.0
Grease Timing Belt	t All J1 J2 J3 J4 J5 J6	Compone Axis Number Signal Output	7
Gear Bearing		Grease J2 Occurring J2 avis score 1245.0 J3 avis score	ing, its of shirts in
Il Screw / Ball Spline Overhaul Mechanical Change		Grease J3 Occurring Grease J4 Occurring Triming Belt J1 Occurring Gear J1 Occurring	12345.0
Encoder	Reset	Gear J1 Occurring ¹⁰³ / ₁ <	
	- HODE	Ball Screw / Ball Spline J6 Occurring Servo NN Time - Occurring Counting	of encoder co

3.5 Error Information

[Robot Main Menu] [Robot Main Menu] Robot Operation Error Information Monitor/Maintenance Manual [Robot Error History] [Robot Error Screen] [Robot Error Screen] Trouble Histroy 00000000 194:8 H0001 Fail safe error (SRNEF) 194:8 H0002 Fail safe error (STOP) 194:8 H0003 System fail 194:8 H0004 (24) Match dog error 194:8 H0005 Turn the power (PF and ON once 194:8 UP 10070 EMG signal is input. (T.Box) DN . Program name Line No. Error Line No. ABCDEFGHIJKL 23456 23456 Clear History ERR.RESET ERRRESET Robot Error Monitor/ Operation Information Maintenance Manual STOP Robot Error Monitor/ Operation Information Maintenance Manual STOP _ _ _ _ [Troubleshooting] [Trouble shooting] 2.2 Scree Scroll Same an ALC: NO THE OWNER *** *** Ze QQ Page No. 456 •

Robot Error Monitor/ Operation Information Maintenance Manual STOP

3.6 Manual

[Robot Main Menu]

4 Screen Operation

- 4.1 Robot Operation on GOT Screen
- 4.1.1 Select [Robot Operation] for setting and operation
 - (1) Select [Robot Operation] from [Robot Main Menu].

	[Robot Main Menu]				
	Robot Operation	Error Information			
	Monitor/Maintenance	Manual			
Ī					
ľ					
1					

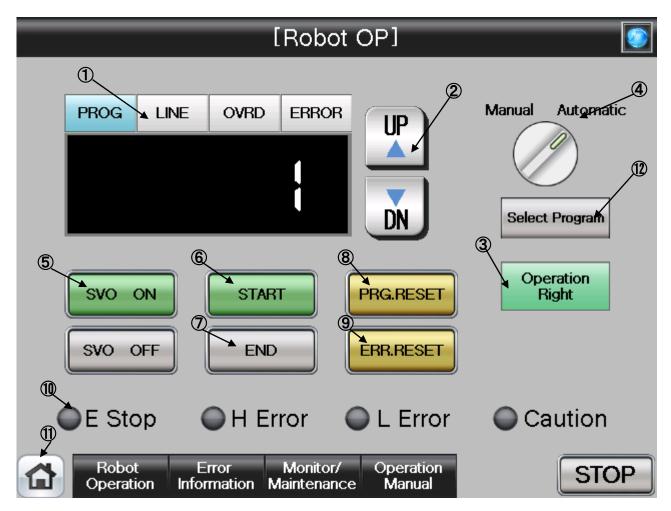
(2) Select [Robot OP] from [Robot Operation Menu].

[Robot Operation Menu]				
Robot OP	Edit Position			
Jog/Hand Operation	Edit Joint			
	Edit Numerical Value			

(3) [Robot OP] screen appears.

	_	[Ro	obot (OP]		
PROG	LINE	OVRD EF	ROR		Manual Select	Automatic
svo svo		START END		PRG.RESET ERR.RESET		eration light
●E Ste	op (H Erro	· (L Erroi	· OCa	aution
Robo Operat			nitor/ enance	Operation Manual		STOP

(4) See below for details of the [Robot OP] screen. For details of each operation button, see "Table 4-1: Details and Roles of [Robot Operation] Buttons".



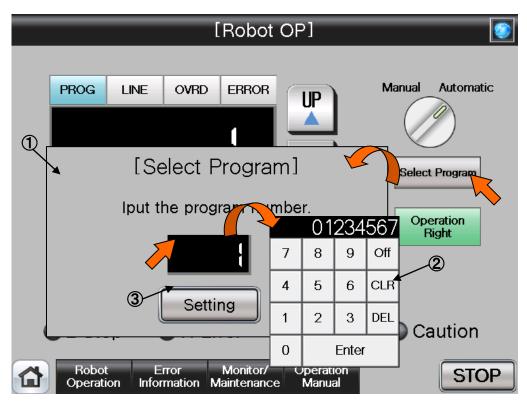
[Screen Specification]

Screen for operation setting in the auto-operation mode

- (1) Display Panel···PROG (program No.), LINE (program execution line) OVRD (operation speed setting), and ERROR (error No.)
- (2) UP/DOWN···UP (up) and DN (down) display of the information on the display panel
- (3) Operation Right Button · · · Obtains the robot operation right with the Operation Right on the GOT screen
- (4) Mode Switching Display...Displays the operation mode during execution (Manual/Automatic) * Only drive unit can switch the modes from/to Manual and Automatic
- (5) Servo Power Button · · · SVO ON (Servo ON) SVO OFF (Servo OFF)
- (6) Start Button · · · Starts the program to run the robot
- (7) End Button ···· Stops the robot program at the last line of the running program or END sentence.
- (8) Program Reset Button · · · Cancels the operation and resets the program
- (9) Error Reset Button · · · Resets the error
- (10) Display of Running State · · · Displays the error status with "Emergency stop" "High Error" "Low Error" and "Caution"
- (11) Common Buttons · · · Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)
- (12) Select PROG (*1)···Selects a robot program

(*1) To enter a program No., press "Select Program". The screen for program selection appears

(5) See below for details of the program selection screen.



[Screen Specification]

Screen to select/set the program number

- (1) Program selection screen ···· Selects/sets the program number
- (2) Number input screen · · · Inputs the program number with a decimal-input key
- (3) Setting · · · Sets the selected program number

Table 4-1: Details and Roles of [Robot Operation] Buttons

	m		es of [Robot Operation] Buttons		
Classification	Name	Function Spec.		Note	
Display Panel	PROG	Blue Light ON	Displays the selected robot program No.	Displays the	
	LINE	Blue Light ON	Displays the program execution line	value of each	
	OVRD	Blue Light ON	Displays the robot override value (speed changes when the value is entered)	button that illuminates blue	
	ERROR	Blue Light ON	Displays the ongoing error No.		
	UPΔ	Gray Light ON	Increases the value of the button illuminating blue	Increases and decreases the	
	DN▽	Gray Light ON	Decreases the value of the button illuminating blue	value one by one	
	Display of Mode Switch	Green Light ON	Auto-mode operation in progress (Automatic)	Not operatable (Display only)	
		Light OFF	Manual mode operation in progress (Manual)		
Auto-	Operation		ot operation right in the HMI screen	Button	
Operation	Rights		are transferred to the drive unit when the	operations	
			wn with the operation right obtained	other than SVO	
		ON	Robot operation enabled in the HMI screen	OFF/STOP are enabled only	
		Light OFF	Robot operation enabled in the drive unit	when the	
	PRG.RESET		ot program sequence to the beginning of	automatic	
		the program		operation is in	
		Blue Light ON	Program reset	progress and operation	
			(Valid only when the program stops)	rights are	
		Yellow Light ON		enabled.	
	ERR.RESET	Resets the ongo			
		Blue Light ON	Robot error reset		
		Yellow Light ON			
	SVO ON	Turns the robot s			
		Green Light ON	Servo ON		
		Light OFF	Servo OFF		
	SVO OFF Turns the robot servo off				
		Red Light ON	Servo OFF		
		Light OFF	Servo ON		
	START	Starts the robot p			
		Green Light ON			
		Light OFF	Program is stopped or not selected		
	END	of the operating			
		Red Light ON	Stops the robot program sequence at the END statement		
		Light OFF	Continuous operation in progress		
	Select PROG	Selects a progra			
		Blue Light ON	Program selection in progress	4	
		Light OFF	Program selection completed/ Program selection not performed		
Display of Running State	Emergency Stop	Red Light ON	Emergency stop in progress		
	H Error	Red Light ON	High-level robot error		
	LError	Red Light ON	Low-level robot error		
-	Alarm	Red Light ON	Robot error alarm		
Common	Main Menu	Jumps to the ma			
Screen	Robot Operation				
	Error Jumps to the robot failure display Information				
		Jumps to the mo	onitor/maintenance sub menu		
	Manual	Jumps to the rob	oot manual sub menu]	
	STOP		g program (servo remains ON)		
		Red Light ON	Program stops]	
		Light OFF	Program in operation		
		·	· - ·		

4.1.2 Jog/Hand Operation

(1) Select [Robot Operation] from [Robot Main Menu].

[Robot Main Menu] 💽				
Robot Operation	Error Information			
Monitor/Maintenance	Manual			

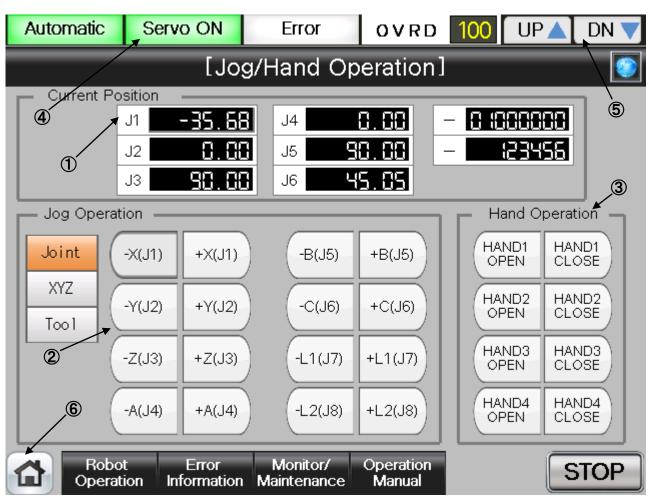
(2) Select [Jog/Hand Operation] from [Robot Operation Menu].

[Robot Operation Menu] 💽				
Robot OP	Edit Position			
Jog/Hand Operation	Edit Joint			
	Edit Numerical Value			
•				
	Robot OP			

(3) [Jog/Hand Operation] screen appears.

Automatic	Servo ON	Error OVRD	100 UP 🔺 DN 🔻			
[Jog/Hand Operation]						
C Current Po						
	J1 <u>-35.68</u>	J4 8.88 -				
	J2 8.88	J5 98.88 -	123456			
	J3 SC.00	J6 45.85				
Jog Operat	ion		Hand Operation			
Joint	-X(J1) +X(J1)	-B(J5) +B(J5)	HAND1 OPEN HAND1 CLOSE			
Too 1	-Y(J2) +Y(J2)	-C(J6) +C(J6)	HAND2 OPEN HAND2 CLOSE			
	-Z(J3) +Z(J3)	-L1(J7) +L1(J7)	HAND3 OPEN CLOSE			
	-A(J4) +A(J4)	-L2(J8) +L2(J8)	HAND4 OPEN CLOSE			
Robo Operat		Monitor/ Operation Naintenance Manual	STOP			

(4) See below for the details of the [Jog/Hand Operation] screen. For details of each operation button, see "Table 4-2: [Jog/Hand Operation] screen".



[Screen Specification]

Screen for jog/hand operations

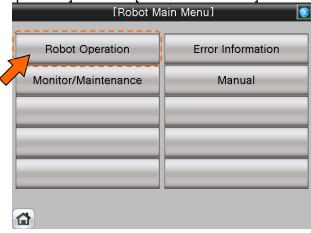
- (1) Current Position · · · Joint jog operation→current position of 6 axes XYZ and Tool jog operation→Displays the coordinate value and postural axis
- (2) Jog Operation · · · Jog operation of each axis (joint) and coordinate (XYZ and tool)
- (3) Hand Operation · · · Switching operation of each hand (hand 1, 2, 3, and 4)
- (4) Display of Running Status · · · Lights a lamp according to the running status of a robot
 * Auto-operation in progress (green) Servo Power ON (green) Error (red) Current Working Speed Value (%)
- (5) UP/DOWN Button···Changes the working speed value in the OVRD Display UP (speed-up), DN (speed-down)
- (6) Common Buttons · · · Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)

Table 4-2: Details and Roles of	[Jog/Hand Operation]	Buttons
---------------------------------	----------------------	---------

Table 4-2: Details and Roles of [Jog/Hand Operation] Buttons				
Classification	Name	Function Spec.		Note
Current	Current Position	Displays the robot		Switches The display
Position	(Axis)	(1) Joint jog opera		character
			gle of each axis (J1~J6)	string as
		Displays the angle of additional axis $(J7 \sim J8)$		well
		(2) When selecting the XYZ jog		
			ordinate value mm of each axis (X·Y·	
		Z)		
		Displays the an	gle of each postural axis (A·B·C)	
		Displays the co	pordinate value mm of each additional	
		axis (L1·L2) (*1)		
		(*1) Parameter		
			tional Axis Interface Instruction	
		Manual".		Onenatable
Jog	Joint	Executes joint jog		Operatable only when
Operation		Orange Light ON	Selecting joint jog operation	the servo is
		Light OFF	Selecting XYZ or tool jog operation	ON
	XYZ	Executes XYZ jog		
		Orange Light ON		
	Taal	Light OFF	Selecting jog or tool jog operation	
	Tool	Executes the tool		
		Orange Light ON		
		Light OFF	Selecting jog or XYZ jog operation	
	+	(1) When selectin	peration (while the button is being held)	
		Operates counterclockwise direction for each axis		
		angle (2) When selecting an XYZ/tool jog		
		Operates for each axis in the unit of mm(XYZL1L2) and		
		(1) When selecting a joint jog		
		Operates counterclockwise direction for each axis		
		angle		
		(2) When selecting an XYZ/tool jog		
		Operates for each axis in the unit of mm(XYZL1L2) and		
		axis angle (ABC)		
Hand	OPEN	Opens the hand (
Operation	CLOSE	Closes the hand (
Display of	Operation Mode	Displays the operation		_
Running			Auto operation mode (Automatic)	
State		Light OFF	Manual operation mode (Manual)	
	Servo ON	Displays the statu		
		Green Light ON		
			Servo power OFF	
	Error	Displays the robot		
			Robot error in progress	
			No error	
	OVRD		ent override value (%)	
		UP	Increases the override value	
		DN▼	Decreases the override value	
Common	Main Menu	Jumps to the main menu screen		_
Screen	Robot Operation	Jumps to the robot operation sub menu		
	Error Information			
	Monitor/Maintenance	Jumps to the error information display sub menu Jumps to the monitor/maintenance execution sub menu		
	Manual		ual display sub menu	
	STOP		program (Servo remains ON)	
SIUP		Red Light ON	Program stops	
			Program in running	
		Light OFF	Fiogram minuming	

4.1.3 Editing of Position Data Which Have been Taught to the Robot

(1) Select [Robot Operation] from the [Robot Main Menu] screen.



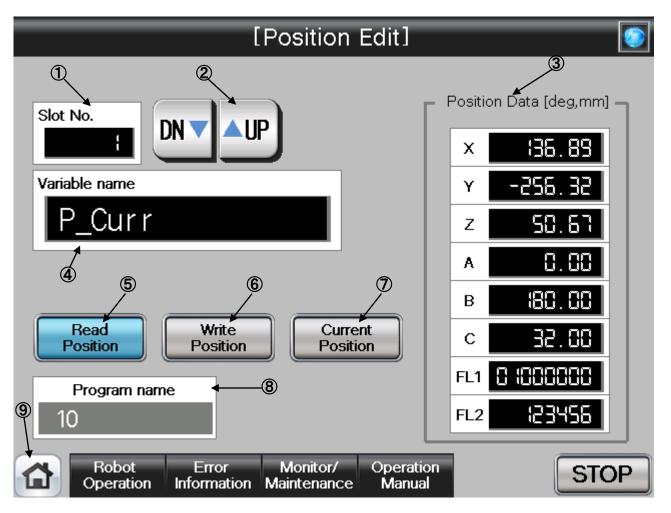
(2) Select [Edit Position] from the [Robot Operation Menu] screen.

[Robot Operation Menu]			
Robot OP	Edit Position		
Jog/Hand Operation	Edit Joint		
	Edit Numerical Value		

(3) [Position Edit] screen appears.

[Position Edit]	(
	Position Data [deg,mm]
	× (35.89
Variable name	Y -255.32
P_Curr	z 50.67
	A 0.00
	в 180.00
Read Write Current Position	c <u>32.60</u>
Program name	FL1 8 (888888
10	FL2 123455
Robot Error Monitor/ Operation Operation Information Maintenance Manual	STOP

(4) See below for the details of [Position Edit] screen. For details of each operation button, see "Table 4-3: Details and Roles of [Position Edit] Operational Buttons".



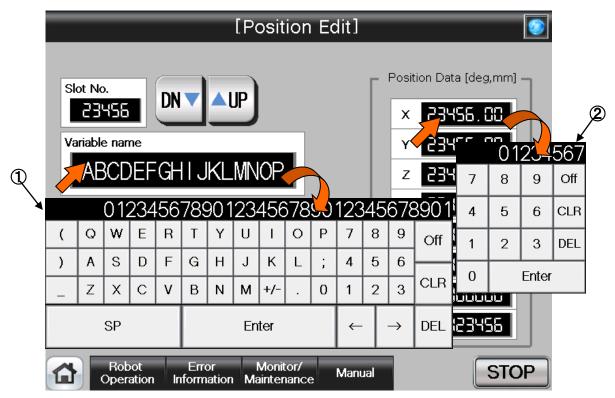
[Screen Specifications]

Operation screen to edit the position variable of the robot

* For the position data of the program specified in the robot OP screen

- (1) Slot No. · · · Selects the task slot No. (0~32) to be edited
- (2) UP/DOWN···Scrolls UP and DN (down) of the task slot No.
- (3) Position Data (*1)···Edits the position data of each axis (X, Y, Z, A, B, C) and configuration flag (FL1 postural flag/FL2 multi-rotation data)
 - Configuration flag (FLT postural flag/FLZ multi-rotation
- (4) Variable Name (*2)···Enters the name of the position data to be edited
- (5) Read Position · · · Reads the **position data specified** in the variable name in the position edit
- (6) Write Position · · · Writes the edited position data to the position edit
- (7) Current Position · · · Reads the current robot position data and displays it in the position data
- (8) Program Name · · · Displays the program specified in the robot OP screen
- (9) Common Buttons · · · Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)
- (*1) To enter the variable name, press the numeric display. Character entry screen appears
- (*2) To enter the position data, press the numeric display of the configuration flag (FL1: postural flat; FL2: multi-rotation data) of each axis (X, Y, Z, A, B, and C). Numeric entry screen appears

(5) See below for the character/number entry screens.



[Screen Specifications]

Operation screen to enter the variable name and position data

* For the position data of the program specified in the robot OP screen

- (1) Character entry screen · · · enters the name of position variable with alphanumeric keys
- (2) Numeric value entry screen · · · enters position data with decimal input keys

Table 4-3: Details and Roles of [Position Edit] Operation Buttons									
Classification	Name	Function Spec.		Note					
Target	Slot No.		sk No. $(0 \sim 32)$ to be edited	—					
Selection for		* Task slot No							
Position Edit		external variable	e Increases the slot No. one by one						
		UP▲							
		DN▼	Decreases the slot No. one by one						
	Variable Name		osition variable with the position data						
		to be edited							
			get variable name, press the numeric						
Edit	Read Position		aracter entry screen appears.	More than two					
Eait	Read Position		ified position variable data Position variable data reading in	edit					
		ON	progress	operations					
		Light OFF	Reading completed or not	cannot be					
		Light Of I	performed	performed at					
	Write Position		ited position data to the position	the same time					
		variable	-						
		Yellow Light ON	Position variable data writing in progress						
			-						
	Oursent Desition	Light OFF	-						
	Current Position	Reads and disp Yellow Light ON	-						
		fellow Light ON	Current position data reading in progress						
		Light OFF							
	Program Name	Displays the pr	-						
	Ū.	OP screen							
Position	Current Position	Displays/edits the	—						
Data	(Axis Position)	(X, Y, and Z), a							
		and configuration							
			get position data, press the numeric						
		display. The nur							
Common	Main Menu		ain menu screen						
Screen	Robot Operation		bot operation sub menu	-					
	Error Information	Jumps to the er	-						
	Monitor/Maintenance	Jumps to the i menu							
	Manual		anual display sub menu						
	STOP		ng program (Servo remains ON)						
		Red Light ON	Program stops						
		Light OFF	Program in running						

Table 4-3: Details and Roles of [Position Edit] Operation Buttons

4.1.4 Editing of Joint Data Which Have been Taught to the Robot

(1) Select [Robot Operation] from the [Robot Main Menu] screen.

[Robot M	1ain Menu] 💽
Robot Operation	Error Information
Monitor/Maintenance	Manual

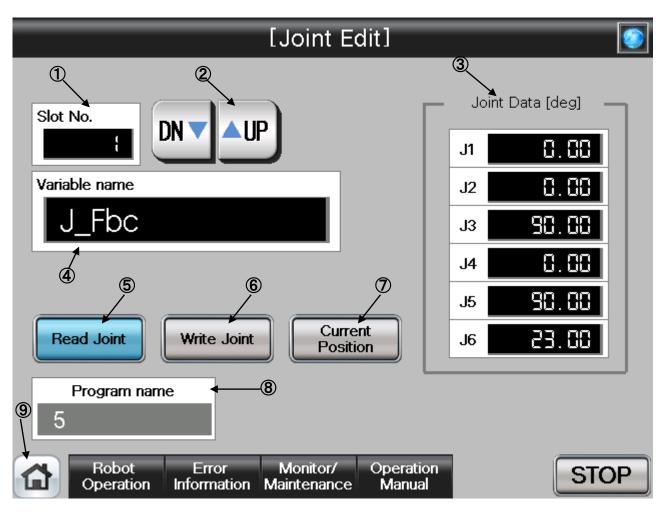
(2) Select [Edit Joint] from the [Robot Operation Menu] screen.

[Robot Ope	ration Menu]
Robot OP	Edit Position
Jog/Hand Operation	Edit Joint
	Edit Numerical Value
a	

(3) [Joint Edit] screen appears.

[Joint Edit]	
	J1
Variable name	J2 C.CC
J_Fbc	J3 <u>50.00</u>
	J4 0.00
	J5 <u>SC. CC</u>
Read Joint Write Joint Current Position	J6 23.00
Program name	
Robot Error Monitor/ Operation Operation Information Maintenance Manual	STOP

(4) See below for the details of [Joint Edit] screen. For details of each operation button, see "Table 4-4: Details and Roles of [Joint Edit] Operational Buttons".



[Screen Specification]

Operation screen to edit the robot joint variable

- * For the joint data of the program specified in the robot OP screen
- (1) Slot No. · · · Selects the task slot No. (0~32) to be edited
- (2) UP/DOWN···Scrolls UP and DN (down) of the task slot No.
- (3) Joint data (*1)···Edits the joint data of each axis (J1, J2, J3, J4, J5, J6)
- (4) Variable Name (*2) · · · Enters the name of joint data to be edited
- (5) Read Joint · · · Reads the joint data specified in the variable name in the position edit
- (6) Write Joint · · · Writes the edited joint data in the position edit
- (7) Current Position · · · Reads the current joint data of the robot and displays it in the joint data
- (8) Program Name · · · Displays the program specified in the robot OP screen
- (9) Common Buttons · · · Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)
- (*1) To enter the variable name, press the numeric display. The character-entry screen appears
- (*2) To enter the joint data, press the numeric display of each axis (J1, J2, J3, J4, J5, and J6). The numeric entry screen appears

(5) See below for the character/number entry screens.

	_							[.	Joii	nt E	Edit]				_	_	۲	
Q	Va	riable	o. 455 e nar BCE	ne	DN	_	_	JP)	OF				[J1 J2 J3	234	56.C	R	9	2 567 off
À			01	234	156	789	901	23	456	578	<u>_</u>	123	45	678	3901	4	5	6	CLR
	(Q	W	E	R	Т	Υ	U	Ι	0	Ρ	7	8	9	Off	1	2	3	DEL
)	Α	S	D	F	G	н	J	к	L	;	4	5	6	<u> </u>	0		Enter	
	_	Z	X	С	۷	В	N	м	+/-		0	1	2	3	CLR	-			
			SP					En	ter			~		\rightarrow	DEL				
			Rot Oper		In	Erro	or ation		Monit ainter		2	Manı	Jal				STO	P	

[Screen Specification]

Operation screen to enter the variable name/joint data

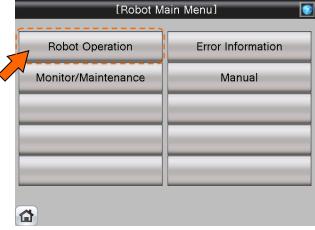
- * For the joint data of the program specified in the robot OP screen
- (1) Character entry screen · · · Enters the joint variable name with the alphabetic keys
- (2) Number entry screen · · · Enters the joint data with the decimal input keys

Table 4-4: Details and Roles of [Joint Edit] Operation Buttons

Classification	Name	Function Spec.	Note					
Target	Slot No.	Displays the task slot No.(0-32) to be edited.	—					
Selection for		* Task slot No. can be specified in setting the						
Position Edit		external variable						
		UP▲ Increases the slot No. one by one						
		DN▼ Decreases the slot No. one by one						
	Variable Name	Specifies the position variable with the position data						
		to be edited						
		To enter the target variable name, press the numeric						
		display. The character entry screen appears.						
Edit	Read Joint	Reads the specified joint variable data	More than					
		Yellow Light Joint variable data reading in ON	woo edit					
			operations cannot be					
		Light OFF Reading completed or not performed	performed at					
	Write Joint	Writes the edited joint data to the position variable	the same time					
		Yellow Light Joint variable data writing in						
		ON progress						
		Light OFF Writing completed or not performed						
	Current Position	Reads and displays the current joint data						
		Yellow Light Joint data reading in progress						
		Light OFF Reading completed or not performed						
	Program Name	Displays the program name specified in the robot						
	Ŭ	OP screen						
Position	Current Position	Displays/edits the joint value [deg] of each axis (J1,	_					
Data	(Each Joint Position)	J2, J3, J4, J5, and J6)						
		To enter the target joint data, press the numeric						
		display. The numeric entry screen appears.						
Common	Main Menu	Jumps to the main menu screen	—					
Screen	Robot Operation	Jumps to the robot operation sub menu						
	Error Information	Jumps to the error Information display sub menu						
	Monitor/Maintenance	Jumps to the monitor/maintenance execution sub						
		menu						
	Manual Jumps to the manual display sub menu							
	STOP Stops the running program (Servo remains ON)							
		Red Light ON Program stops						
		Light OFF Program in running						

4.1.5 Editing the Program Variable Data

(1) Select [Robot Operation] from the [Robot Main Menu] screen.



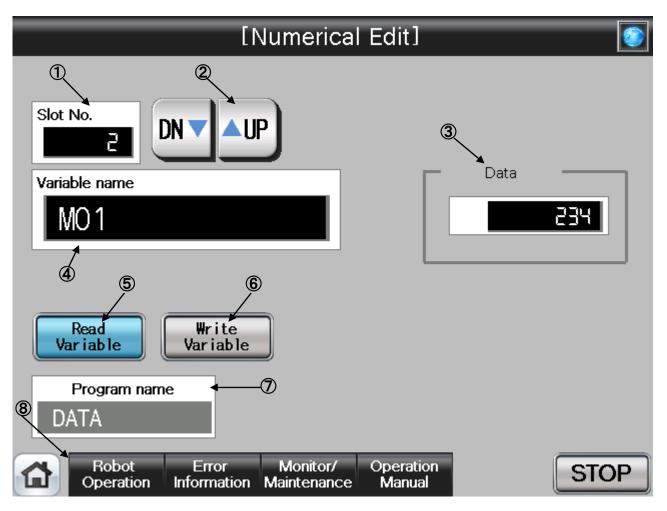
(2) Select [Edit Numerical Value] from the [Robot Operation Menu] screen.

[Robot Ope	ration Menu] 🛛 💽
Robot OP	Edit Position
Jog/Hand Operation	Edit Joint
5	Edit Numerical Value

(3) [Numerical Edit]screen appears.

[Numerical Edit]	
Slot No. 2 DN AUP Variable name MO 1	34
Read Variable Program name DATA	
Bobot Error Monitor/ Operation Information Maintenance Manual	STOP

(4) See below for the [Numerical Edit] screen. For details of the operation buttons, see "Table 4-5: Details and roles of [Numerical Edit] Operation Buttons."



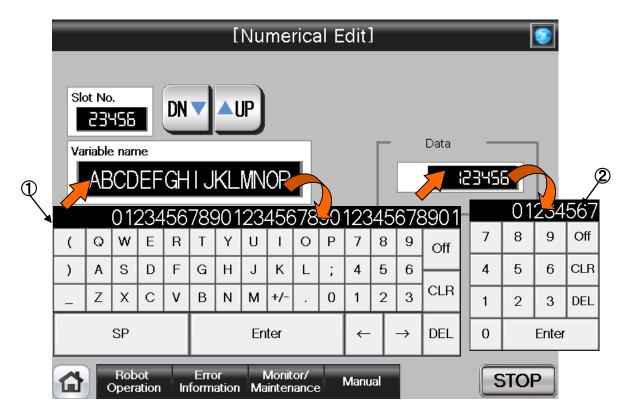
[Screen Specifications]

Operation screen to set the numeric variable

* For the variable name of the program specified in the robot OP screen

- (1) Slot No. · · · Selects the task slot (0~32) to be edited
- (2) UP/DOWN···Scrolls UP and DN (down) of the task slot No.
- (3) Numeric Variable (*1)····Edits the numeric variable
- (4) Variable Name (*2)···Enters the variable name to be edited
- (5) Read Variable · · · Reads the variable name specified in the variable name
- (6) Write Variable · · · Writes the edited variable name
- (7) Program Name · · · Displays the program specified in the robot OP screen
- (8) Common Buttons · · · Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)
- (*1) To enter the variable name, press the numeric entry. The character entry screen appears
- (*2) To enter the numeric variable data, press the numeric display. The numeric entry screen appears

(5) See below for the character/number entry screens.



[Screen Specifications]

Operation screen to enter the variable name/data

* For the joint data of the program specified in the robot OP screen

(1) Character entry screen · · · Enters the joint variable name with the alphameric keys

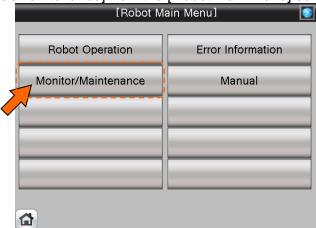
(2) Number entry screen · · · Enters the numeric value with the decimal input keys

Classification	Name	Function Spec.	merical Edit j Operation Buttons	Note							
				NULE							
Target Selection for	Slot No.	Displays the tas	—								
Position Edit			* Task slot No. can be specified in setting the								
1 OSIGOT Edit			external variable								
	Variable Name		DN▼ Decreases the slot No. one by one Specifies the variable with the variable data to be								
		edited									
			get variable name, press the numeric								
			aracter entry screen appears.								
Edit	Read Variable		ified variable data	More than woo							
		Yellow Light	Variable data reading in progress	edit operations							
		ON		cannot be							
		Light OFF	Reading completed or not	performed at							
			performed	the same time							
	Write Variable	Writes the edite									
		Yellow Light ON	Variable data writing in progress								
		Light OFF	Writing completed or not performed								
	Program Name	<u> </u>	pgram name specified in the robot OP								
	Fiogram Name	screen	Syram hame specified in the lobot OF								
Numeric	Variable Value	Displays/edits th	he variable value								
Variable		To enter the tar	get variable data, press the numeric								
Data			meric entry screen appears.								
Common	Main Menu		ain menu screen	—							
Screen	Robot Operation		bot operation sub menu								
	Error Information Jumps to the robot failure display										
	Monitor/	Jumps to the m	onitor/maintenance sub menu								
	Maintenance										
	Manual	Jumps to the ro									
	STOP		Stops the running program (servo remains ON)								
		Red Light ON	Program stops								
		Light OFF	Program in running								

4.2 Monitoring/Maintenance Operation from GOT Screen

4.2.1 Monitoring of the Current Robot Position and Program Execution Line

(1) Select [Monitor/Maintenance] from the [Robot Main Menu] screen.



(2) Select [Robot Current position] from the [Monitor/Maintenance] screen.

	[Monitor/Maintenance Menu]										
5	Robot Current Position	Current									
	Status Variable	Load Level Ratio									
	Robot Signal	Maintenance Forecast									
		Preventive Maintenance									
	Robot Information										

(3) [Robot Current Position Monitor] screen appears.

Automatic	Servo	ON Er	ror	ľ	OVRD	100	UP 🔺	DN 🔻
	[Rot	oot Currer	it Pos	siti	ion Mo	nitor		
Current Po		nm] — Destination			oint Coodi ırrent Posi		g] Destinat	ion
	is. 98			JI		. 88	Destinat	
Y	8.68	6.68		J2	-8	.81	8	. 88
z 🖁	35. (3)	8.88		J3	89	. 99	8	. 88
A - (38.88	8.88		J4	6	. 88	6	. 88
в	8.62	8.88		J5	30	.88	6	. 88
с - 8	38.88	8.88		J6	8	.88	6	. 88
FL1 🔒 🏭	8888	8 1868688		Slot	No		Progra	m name
FL2	8	i i i i i i i i i i i i i i i i i i i		JIOC		+	MAIN	
Program 100 Mov P1								
Robot Error Monitor/ Operation STOP								

(4) See below for the [Robot Current Position Monitor] screen. For details of the operation button, see "Table 4-6: Details and Roles of [Robot Current Position Monitor] Operation Button".

	Automatic	Serva-O	T Error	0	vrd 100	UP 🔺 DN 🔻	
	[Robot Current Position Monitor]						
	■ XYZ Coodinate [deg,mm] — Joint Coodinate [deg] ← 2 Current Position Destination Current Position Destination						
		<u>3. 38</u>	6.68	J1	6.60	8.68	
	Y	8.88	8.88	J2	-0.01	6.68	
	z 🕄	5. (3	8.88	J3	89.99	6.66	
	A - 18	8.88	8.88	J4	8.88	0.00	
	В	8.62	8.88	J5	90.00	8.88	
	c - 18	8.88	8.88	J6	8.88	6.00	
	FL1 8 88			3 ▼ Slot No		5 Program name	
6	FL2	8	8	1		MAIN	
9	Program 100 Mov P1						
1	RobotErrorMonitor/OperationSTOPOperationInformationMaintenanceManual						

[Screen Specifications]

Screen to monitor the current position of each robot axis

- (1) XYZ Coordinates · · · Displays the current position of each coordinate (X, Y, and Z axes: in mm), postural axis (A, B, and C: in angles), and configuration flag (FL1 postural flag; FL2 multiple-rotation data) in the XYZ coordinates
 - * Current Position: Current robot position
 - * **Destination:** Destination of the running program (displayed only when the program movement command is executed)
- (2) Joint Coordinates · · · Displays the current position of **each axis** (J1, J2, J3, J4, J5, and J6: in angles) in the joint coordinates
 - * Current Position: Current robot position
 - * **Destination:** Destination of the running program (displayed only when the program movement command is executed)
- (3) Slot No. (*1) ···· Selects the task slot No. (1-32)
- (4) +/- Buttons...Displays the task slot No. with + (plus) and (minus)
- (5) Program Name · · · Displays the program specified in the robot OP screen
- (6) Program...Displays the line number of the running program and statement
- (7) Running Status · · · Lights the lamp according to the robot running status * Automatic Operation in Progress (green) Serve Power ON (green) Frr

* Automatic Operation in Progress (green) Servo Power ON (green) Error (red) Current operation speed value(%)

- (8) UP/DOWN···Changes the operation speed value in the OVRD DISPLAY UP (speed-up) and DN (speed-down)
- (9) Common Buttons · · · Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)
 - (*1) To enter the task slot No, press the numeric display. The numeric entry screen appears.

(5) See below for the number-entry screen.

Automatic	Servo	OFF	Erro	r	0	VRD	45	6	UP 🔺	DN 🔻
	[Robot Current Position Monitor]									
Current Po		mm] — Destir	ation			t Cood int Pos			 Destin	ation
	5.00			J						
Y 2349	6.00	2345	6.00	J	2	3458	5.80		2345	6.00
z 234	6.88	2345	6.68	J	3	2458	5. GC		2345	6.00
A 234	6.00	2345	6.00	J	4	2458	5. OC		2345	6.00
в 2349	6.00	2345	6.68	J	5	2458	5. GC		2345	6.88
c 2349	6.00	2345	6.00	J	6	3458	5.80		2345	6.00
FL1 🔒 🏭	8888	6 (88	8886	S	ot N				Prog	ram name
FL2	3456	6	3456		3456		01	+ 234		DEFGHIJKL
Program 2345	6 ABCDEFG	HIJKLMNOF	°QRSTUV#XY.	Zabcde	fghijl	7	8	9	Off	IJKLMNOPOR
Robo Operat		Error ormation	Monito Maintena		Ma	4	5	6	CLR	STOP
		madon	Maintena	ince		1	2	3	DEL	
							_		<u> </u>	
						0		Enter		

[Screen Specification]

Operation screen to enter the task slot No. * For the joint data of the program specified in the robot OP screen

(1) Number Entry Screen ... Enters the task slot No. with the decimal input keys

Table 4-6: Details and Roles of [Robot Current Position Monitor] Operation Buttons

Classification	Name	Function Spec.	ent Position Monitor] Operation Button	Note			
Display	XYZ Coordinates		urrent position and destination of each	_			
Current			axis				
Position			(1) Coordinate Position (X/Y/Z axis: mm)				
		(2) Postural axi					
		(3) Configura	tion flag (FL1 postural flag; FL2				
		multi-rotation da					
	Joint Coordinates		urrent position and destination of each				
		axis					
	0 1	•Axes (J1-J6 in	÷ /				
Target	Slot No.		sk slot No. (1-32) to be edited				
Selection for		Addition +	Increases the slot No. one by one				
Position Edit		Subtraction-	Decreases the slot No. one by one				
	Variable Name		ariable with the variable data to be edited				
			arget variable name, press the numeric				
			aracter entry screen appears.				
Edit	Program Name		rogram name specified in the robot OP	—			
	D	screen					
	Program	Displays the I command					
Display of	Operation Mode	Displays the op	peration mode				
Running		Green Light Auto-operation mode (Automatic)					
State		ON LIGHT	Auto-operation mode (Automatic)				
		Light OFF	Manual operation mode (Manual)				
	Servo ON	Displays the se	rvo power status				
			Servo power ON				
		ON	•				
		Light OFF	Servo power OFF				
	Error	Displays the rol					
		Red Light ON	Robot error in progress				
		Light OFF	No error				
	OVRD		rrent override value (%)				
		UPA	Increases the override value				
-		DN▼	Decreases the override value				
Common Screen	Main Menu		ain menu screen				
Scieen	Robot Operation		bot operation sub menu				
	Error Information		bot failure display				
	Monitor/	Jumps to the m	onitor/maintenance sub menu				
	Maintenance						
	Manual		bot manual sub menu				
	STOP	Stops the running program (servo remains ON)					
		Red Light ON	Program stops				
		Light OFF	Program in running				

4.2.2 Monitoring of the Robot Status Variable

(1) Select [Monitor/Maintenance] from the [Robot Main Menu] screen.

[Robot	Main Menu] 💽
Robot Operation	Error Information
Monitor/Maintenance	Manual

(2) Select [Status Variable] from the [Monitor/Maintenance] menu.

	[Monitor/Maintenance Menu]							
	Robot Current Position	Current						
5	Status Variable	Load Level Ratio						
	Robot Signal	Maintenance Forecast						
		Preventive Maintenance						
	Robot Information							
	a							

(3) [Status Monitor 1/2] screen appears.

Automatic Servo O	FF Error	ovrd 456	UP 🔺 DN 🔻				
	[Status Monitor 1/2]						
Distance for Destination [mm] (M RDst)	23455.00	Collision Detection Level-J1 [%] (ColLvl)	455				
Arrival Ratio [%] (M_Ratio)	456	Collision Detection Level-J2 [%] (ColLvl)	456				
Speed [mm/s] (M_RSpd)	23456.00	Collision Detection Level-J3 [%] (ColLvl)	456				
Motion Mode (MvTune/Prec)	Standard	Collision Detection Level-J4 [%] (ColLvl)	456				
Distance for Command Pos. and Feedback Pos. [mm] (M_Fbd)	23456.00	Collision Detection Level-J5 [%] (ColLvl)	456				
Speed Status (M_AclSts)	Stop	Collision Detection Level-J6 [%] (ColLvl)	456				
		Collision Detection Settin (ColChk)	^g Valid (No Error)				
		Collision Status (M_ColSt	s) Collision				
Back Next							
Robot Error Monitor/ Manual STOP							

(4) See below for [Status Variable Monitor 1/2] screen. For details of the operation button, see "Table 4-7: Details and Roles of [Status Variable Monitor] Operation Buttons".

Automatic Servo OF	_							
	[Status Monitor 1/2]							
Arrival Ratio [%] (M_Ratio) Speed [mm/s] (M_RSpd) Motion Mode (MvTune/Prec) Distance for Command Pos. and Feedback Pos. [mm] (M_Fbd)	23456.00 456 23456.00 ^{Standard} 23456.00 Stop	Collision Detection Level-J1 [%] (ColLvl) Collision Detection Level-J2 [%] (ColLvl) Collision Detection Level-J3 [%] (ColLvl) Collision Detection Level-J4 [%] (ColLvl) Collision Detection Level-J5 [%] (ColLvl)	456 456 456 456 456 456					
Image: Second state sta		Collision Detection Setting (ColChk) Collision Status (M_ColSts)	Valid (No Error) Collision Back Next					

[Screen Specifications]

Screen to monitor the internal robot variable data

(1) Back ··· · Switches the status variable monitor screens

[Status Variable Monitor 1/2]→[Status Variable Monitor 2/2]

- (2) Next···Switches the status variable monitor screens
 [Status Variable Monitor 1/2]→[Status Variable Monitor 2/2]
- (3) Status Variable · · · Displays the **robot parameter data** (robot parameter setting values) * For details of the status variable, see "Table 4-8: Details of Status Variable "Status Variable Monitor 1/2"
- (4) Running Status · · · Lights the lamp according to the robot running status
 * Automatic Operation in Progress (green) Servo Power ON (green) Error (red) Current operation speed value(%)
- (5) UP/DOWN···Changes the operation speed in the OVRD display UP (speed-up),

DN (speed-down)

- (6) Common Buttons...Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)

(4) See below for [Status Variable Monitor 2/2] screen. For details of the operation button, see "Table 4-7: Details and Roles of [Status Variable Monitor] Operation Buttons".

Automatic	Servo O	F Error	OVRD	456	UP 🛕 DN 🔻		
[Status Monitor 2/2]							
Compliance Coord	inate Type	XYZ	Compliance Over (M_CmpLmt)	^r Limit	Over Limit		
Designated Compli	iance Axis	456					
Compliance-J1/X G	iain(CmpG)	456					
Compliance- J2/Y G	ain (CmpG)	456					
Compliance- J3/Z G	ain (CmpG)	456					
Compliance- J4/A G	ain (CmpG)	456					
Compliance- J5/B G	ain (CmpG)	456					
Compliance- J6/C G	ain (CmpG)	456					
Compliance Differe (M_CmpDst)	ence	23456.00					
Ģ			-3-	1-*	Back Next		
Robot Operatio	n Inform		Manijaj		² STOP		

[Screen Specifications]

Screen to monitor the internal variable data of the robot

(1) Back · · · Switches the status variable monitor screens

- [Status Variable Monitor 2/2] \rightarrow [Status Variable Monitor 1/2]
- (2) Next ··· Switches the status variable monitor screens
 [Status Variable Monitor 2/2] → [Status Variable Monitor 1/2]
- (3) Status Variable ···· Displays the robot parameter data (robot parameter setting values)
 * For details of the status variable, see "Table 4-9: Details of Status Variable "Status Variable Monitor 2/2"
- (4) Running Status · · · Lights the lamp according to the robot running status
 * Automatic operation in progress (green) Servo Power ON (green) Error (red) Current operation speed value (%)
- (5) UP/DOWN····Changes the operation speed in the OVRD display UP (speed-up), DN (speed-down)
- (7) Common Buttons...Jump to each screen
 - * "**STOP**" stop a running program (Servo remains ON)

Classification	Name	Function Spec		Note	
Screen	Back	Switches the			
Screen Back			_		
Switch	Next	order $(2/2 \rightarrow 1/2)$	•		
	INEXL		e state variable monitor screen in rder $(1/2 \rightarrow 2/2 \rightarrow 1/2)$		
Diaplay of	Operation Made	-			
Display of	Operation Mode		peration mode		
Running State			N Auto-operation mode (Automatic)	-	
Siale		Light OFF	Manual operation mode (Manual)	-	
	Servo ON		tatus of servo power		
		Green Light O		-	
	L	Light OFF	Servo power OFF	-	
	Error	Displays the robot error status		-	
		Red Light ON			
		Light OFF No error		-	
	OVRD	Displays the current override value (%)		_	
		UP▲	Increases the override value		
		DN▼	Decreases the override value		
Common	Main Menu	Jumps to the i	—		
Screen	Robot Operation	Jumps to the I			
	Error Information	Jumps to the I			
Monitor/		Jumps to the I			
	Maintenance	•			
	Manual	Jumps to the	robot manual sub menu		
STOP Stops the running program (servo running Program stops) Red Light ON Program stops					
		Light OFF	Program in running		
			r iograffi in furfilling		

Table 4-8: Details of Status Variable [Status Variable Monitor 1/2]

Variable Name	Unit	Description
M_RDst	[mm]	Remaining distance to the target position while the robot is in motion.
M_Ratio	[%]	Returns how much the robot has approached the target position (0 to
		100%) while the robot is moving.
M_RSpd	[mm/s]	Current command speed
MvTune/Prec	—	Currently-set operation characteristic mode
		[1: Standard/2: High-speed positioning mode/3: Trajectory priority
		mode/4: Vibration suppression]
M_Fbd	[mm]	Distance between the command position and feedback position
M_AclSts		Current acceleration/deceleration status
		[0=stop/1=acceleration/2=constant speed/3=deceleration]
Collision Detection Level	[%]	Detection level (sensitivity) of tolerance to impact of each joint axis
(ColLvl)		when program is running.
		[Setting range 1 (most sensitive) – 500 (least sensitive)]
Collision Detection Setting	—	Setting status of the impact detection function
(ColChk)		[ON(Error)/ON(No Error)/OFF]
		* ON (Error): Outputs error in collision
		ON (No Error): No error output in collision
Collision Detection Status	—	Collision detection status
(M_ColSts)		[1: Collision being detected/0: No collision detected]

Table 4-9: Details of Status Variable [Status Variable Monitor 2/2]

Variable Name	Unit	Description
Compliance Coordinate	—	Coordinate type of compliance function
Туре		[0: Joint coorcinate/1: XYZ corcinate/2: Tool]
Designated Compliance	—	Designated compliance axis
Axis		[Designates 6 axes 1: Valid/0: Invalid]
Compliance Gain (CmpG)	—	Gain value of compliance specified for each axis
		(specified value of softness)
Compliance Difference	—	Travel distance between the command value and actual position
(M_CmpOst)		when executing the compliance function
Compliance Over Limit		Reports if the compliance function exceeds various limits
(M_CmpLmt)		[1: About to exceed the limit/0: Not about to exceed the limit]

4.2.3 Monitoring of Robot Signal

(1) Select [Monitor/Maintenance] from the [Robot Main Menu] screen.

1	[Robot Ma	ain Menu] 💽
	Robot Operation	Error Information
4	Monitor/Maintenance	Manual
	a	

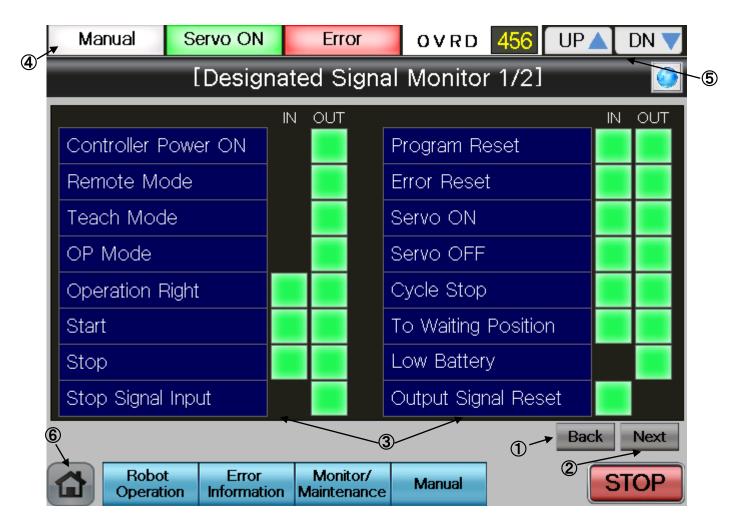
(2) Select [Robot Signal] from the [Monitor/Maintenance Menu] screen.

[Monitor/Maint	[Monitor/Maintenance Menu]							
Robot Current Position	Current							
Status Variable	Load Level Ratio							
Robot Signal	Maintenance Forecast							
	Preventive Maintenance							
Robot Information								

(3) [Designated Signal Monitor 1/2] screen appears.



(4) See below for the [Designated Signal Monitor 1/2] screen. For details of the operation button, see [Table4-10: Details and Roles of "Designated Signal Monitor" Operation Buttons].



[Screen Specifications]

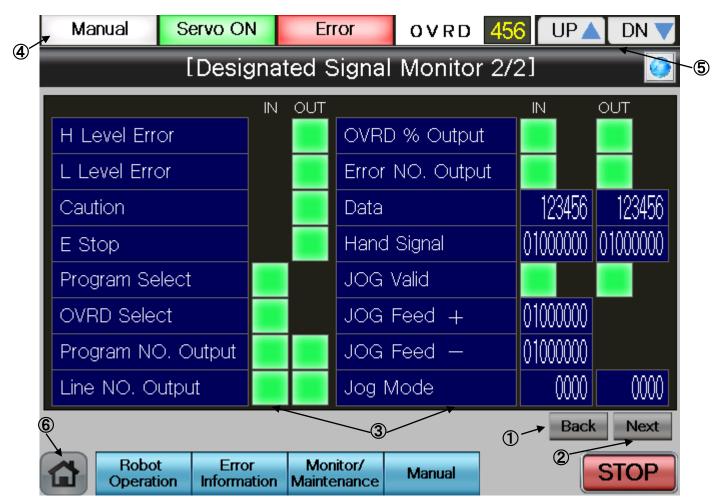
Screen to monitor the designated robot input/output (I/O) signals

- (1) Back ··· · Switches the dedicated signal monitor screens [Dedicated Signal Monitor 1/2] → [Dedicated Signal Monitor 2/2]
- (2) Next···Switches the dedicated signal monitor screens [Dedicated Signal Monitor 1/2]→ [Dedicated Signal Monitor 2/2]
- (3) Dedicated Signal · · · Displays the dedicated I/O signal status of robot controller
 - * For details of the dedicated I/O signals, see [Table 4-11: Details of the Dedicated Signal Monitor "Dedicated Signal Monitor 1/2"]
- (4) Display of Running State · · · Lights the lamp according to the robot running status
 * Automatic Operation in Progress (green) Servo power ON (green) Error (red) Current operation speed value (%)
- (5) UP/DOWN···Changes the operation speed in the OVRD display UP (speed-up),

DN (speed-down)

- (6) Common Buttons...Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)

(5) See below for the [Dedicated Signal Monitor 2/2] screen. For details of the operation buttons, see [4-10: Details and Roles of "Dedicated Signal Monitor" Operation Buttons].



[Screen Specifications]

Screen to monitor the dedicated robot I/O signals

- (1) Back···Switches the dedicated signal monitor screens [Dedicated Signal Monitor 2/2]→ [Dedicated Signal Monitor 1/2]
- (2) Next···Switches the dedicated signal monitor screens [Dedicated Signal Monitor 2/2]→ [Dedicated Signal Monitor 1/2]
- (3) Dedicated Signal · · · Displays the dedicated I/O signal status of robot controller
 - * For details of the dedicated I/O signals, see [Table 4-12: Details of the Dedicated Signal Monitor "Dedicated Signal Monitor 2/2"]
- (4) Display of Running State · · Lights the lamp according to the robot running status
- * Automatic Operation in Progress (green) Servo Power ON (green) Error (red) Current operation speed value (%)
- (5) UP/DOWN···Changes the operation speed in the OVRD display UP (speed-up), DN (speed-down)
- (6) Common Buttons...Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)

Table 4-10: Details and Roles of "Robot Signal Monitor" Operation Buttons

Classification	Name	Function S		Signal Monitor" Operation Buttons	Note	
Screen Switch	Back	Switches	Switches the state variable monitor screen in ascending order $(2/2 \rightarrow 1/2 \rightarrow 2/2)$			
	Next		Switches the state variable monitor screen in descending order $(1/2 \rightarrow 2/2 \rightarrow 1/2)$			
Display of	Operation Mode			ation mode	—	
Execution		Green Ligh	nt ON	Auto-operation mode(Automatic)		
Status		Light OFF		Manual operation mode		
				(Manual)		
	Servo ON	Displays th	ne statu	is of servo power		
		Green Ligh	nt ON	Servo power ON		
		Light OFF		Servo power OFF		
	Error	Displays the robot error status				
		Red Light ON		Robot error in progress No error	-	
	01/22	Light OFF	-			
	OVRD	Displays the current override value (%)				
		UP Increases the override value		-		
Common	Main Menu	DN▼Decreases the override valueJumps to the main menu screen				
Screen		-				
Ocieen	Robot Operation		Jumps to the robot operation sub menu			
	Error Information	Jumps to the robot failure display			-	
	Monitor/ Maintenance	Jumps to the monitor/maintenance sub menu				
	Manual	Jumps to t	he robo	ot manual sub menu		
	STOP	Stops the r	unning	program (servo remains ON)		
		Red Light ON Program stops				
		Light OFF		Program in running		

Table 4-11: Details of the Dedicated Signal Monitor "Dedicated Signal Monitor 1/2"

Variable Name	Classification	Description
Controller Power ON	Output	ON when the external input signal can be received after the power is ON
Remote Mode	Output	ON when the key switch on the operation panel is set to AUTO and remote operation is valid
Teach Mode	Output	ON when the key switch on the operation panel is set to the teach mode (TBD)
OP Mode	Output	ON when the key switch is in the AUTO mode and the operation panel is valid
Operation Right	Input/Output	[Input] ON when requesting the operation rights of the external signal control [Output] ON when in the AUTO mode and the operation right input signal is ON
Start	Input/Output	[Input] ON when requesting to start a program [Output] ON while the program is running
Stop	Input/Output	[Input] ON when requesting to stop the program in operation [Output] ON when program is interrupted
Stop Input	Output	ON the stop signal is input.
Program Reset	Input/Output	[Input] ON when cancelling the paused of the program and bringing the execution line to the top. [Output] ON when selecting a program
Error Reset	Input/Output	[Input] ON when requesting error status cancellation [Output] ON with an error status
Servo ON	Input/Output	[Input] ON when requesting to turn the servo on [Output] ON when the servo is on
Servo OFF	Input/Output	[Input] ON when requesting to turn the servo off [Output] ON when the servo cannot be on
Cycle Stop	Input/Output	[Input] ON when requesting the cycle stop [Output] ON during the operation to request the cycle stop
Safe Point Return	Input/Output	[Input] ON when requesting the safe point return operation [Output] ON during the safe point return
Battery Voltage Drop	Output	ON when the battery voltage of the controller is lowered
General Output Reset	Input	ON when requesting the general output signal reset

Table 4-12: Details of the Dedicated Signal Monitor "Dedicated Signal Monitor 2/2"

Variable Name	Classification	Description
High Level Error	Output	ON with a serious error
Low Level Error	Output	ON with a minor error
Warning Error Level	Output	ON with an alarm
Emergency Stop	Output	ON with an emergency stop
Program Selection	Input	ON when selecting a program
Override Selection	Input	ON when setting override
Program No. Output	Input/Output	[Input] ON when requesting Task 1 program No. output [Output] ON when outputting the program No.
Line Number Output	Input/Output	[Input] ON when requesting Task 1 program No. output [Output] ON when outputting the line No.
Override Value Output	Input/Output	[Input] ON when requesting an override value output [Output] ON when outputting the override value
Error No. Output	Input/Output	[Input] ON when requesting the error No. output [Output] ON when outputting the error No.
Numeric Value	Input/Output	[Input] Displays the numeric value when the No. output is requested [Output] Displays the output numeric value
Hand Signal	Input/Output	[Input] Displays the hand-input signal status [Output] Displays the hand-output signal status
Jog Valid	Input/Output	[Input] ON when requesting jog operation for the specified axis [Output] ON when the specified axis is in jog operation
Jog Feed+	Input	Specifies the jog operation axis
Jog Feed-	Input	Specifies the jog operation axis
Jog Mode	Input/Output	[Input] Specifies a jot mode [joint=0/XUZ=1] [Output] Displays the current jog mode

4.2.4 Confirming the Robot Product Information

(1) Select [Monitor/Maintenance] from the [Robot Main Menu] screen.

[Robot Main Menu]							
Robot Operation	Error Information						
Monitor/Maintenance	Manual						
a							

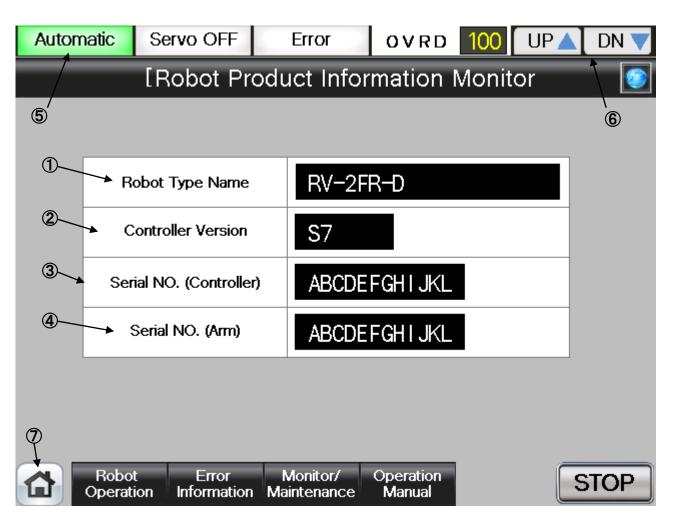
(2) Select [Robot Information] from the [Monitor/Maintenance] screen.

[Monitor/Maintenance Menu]						
Robot Current Position	Current					
Status Variable	Load Level Ratio					
Robot Signal	Maintenance Forecast					
	Preventive Maintenance					
Robot Information						
ີ ຜ						

(3) [Robot Product Information Monitor] screen appears.

ŀ	Automa	tic	Servo OFF		Error	OVRD	100	UP 🔺	DN 🔻
	[Robot Product Information Monitor								
		Ro	bot Type Name		RV-2F	R-D			
		C	ontroller Version		S 7				
		Serial NO. (Controller)		1	ABCDEFGHIJKL				
		5	Serial NO. (Arm)		ABCDE	FGH I JKL			
6		Robot perati			Vionitor/ iintenance	Operation Manual		9	TOP

(6) See below for the [Robot Product Information Monitor] screen. For details of operation button, [Table 4-13: Details and Roles of the "Robot Production Information Monitor" Operation Buttons"].



[Screen Specifications]

Screen to monitor the product information of the robot body and controller

- (1) Robot Type Name ... Type of the robot body
- (2) Controller Version · · · S/W version of the controller
- (3) Controller Serial No. · · · Specific serial No. to identify a controller
- (4) Robot Serial No. · · · Specific serial No. to identify a robot
- (5) Display of Running State · · · Lights the lamp according to the robot running status
- * Automatic Operation in Progress (green) Servo Power ON (green) Error (red) Current operation speed value (%)
- (6) UP/DOWN···Changes the operation speed in the OVRD DISPLAY UP (speed-up) DN (speed-down)
- (7) Common Buttons · · · Jump to each screen* "STOP" stop a running program (Servo remains ON)

Table 4-13: Details and Roles of [Robot Product Info Monitor] Operation Buttons

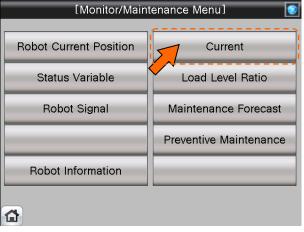
Classification	Name	Function Spe	C.	Note
Product Info	Product Info	Displays the controller info (1) Robot Typ (2) Controller (3) Controller	_	
Display of Running State	Operation Mode	(4) Robot Ser Displays the Green Ligh ON Light OFF	operation mode	
	Servo ON		servo power status t Servo power ON Servo power OFF	
	Error		robot error status I Robot error in progress No error	
	OVRD	UP▲ Ir	current override value (%) ncreases the override value pecreases the override value	•
Common Screen	Main Menu Robot Operation Error Information Monitor/ Maintenance	Jumps to the Jumps to the	main menu screen robot operation sub menu robot failure display monitor/maintenance sub menu	
	Manual STOP	Jumps to the robot manual sub menuStops the running program (servo remains ON)Red Light ONProgram stopsLight OFFProgram in running		

4.2.5 Monitoring of the Robot Current

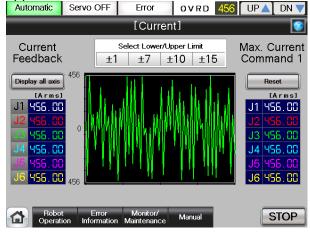
(1) Select [Monitor/Maintenance] from the [Robot Main Menu] screen.

	[Robot M	ain Menu] 💽
	Robot Operation	Error Information
	Monitor/Maintenance	Manual
/		

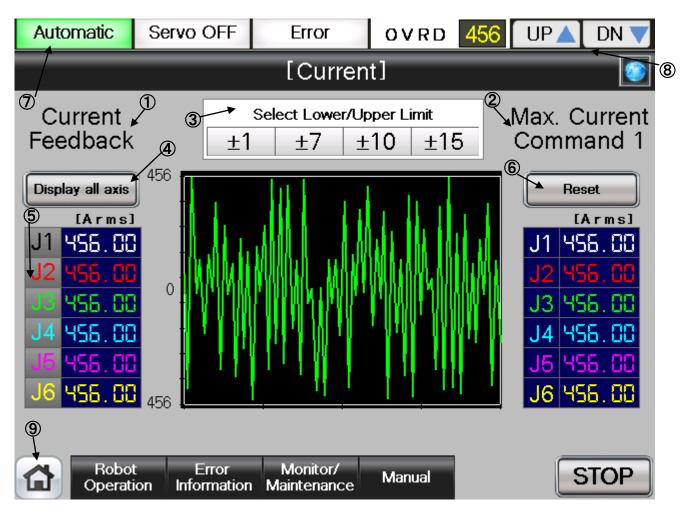
(2) Select [Current] from the [Monitor/Maintenance] screen.



(3) [Current] screen appears.



(4) See below for the [Current] screen. For details of the operation buttons, see [Table 4-14: Details and Roles of "Current" Operation Buttons].



[Screen Specifications]

Screen to monitor the current of each robot axis

- (1) Current Feedback · · · Displays the **feedback value** from the servo
- (2) Maximum Current Command ···· Maximum current in the robot operation
- (3) Select Upper/Lower Limit · · · Switches the scale of the current (unit) shown on the chart
- (4) Display All Axis · · · Displays the currents of **all axes** on the chart: J1(white), J2 (red), J3(green), J4 (blue), J5 (pink), and J6 (yellow)
- (5) Display Each Axis · · · Displays the currents of **each axis** on the chart: J1(white), J2 (red), J3(green), J4 (blue), J5 (pink), and J6 (yellow)
- (6) Reset · · · Resets the maximum current command
- (7) Display of Running State · · · Lights the lamp according to the robot running status
 * Automatic Operation in Progress (green) Servo Power ON (green) Error (red)
 Current operation speed value(%)
- (8) UP/DOWN···Changes the operation speed in the OVRD DISPLAY UP (speed-up), DN (speed-down)
- (9) Common Buttons · · · Jump to each screen*"STOP" stop a running program (Servo remains ON)

Table 4-14: Details and Roles of "Current" Operation Buttons

Table 4-14: Details and Roles of "Current" Operation Buttons						
Classification	Name	Function Spec.	Note			
Display	Display All Axes		Displays the currents of all axes $(J1 \sim J6)$ on the			
Current		chart				
			ue from the servo			
		(2) Electric curre				
		All axes are color				
			d), J3(green), J4 (blue), J5 (pink),			
		and J6 (yellow)				
		Green Light ON	Displays the current values of all axes			
		Light OFF	Displays the current value of the selected axis			
	Select Upper/Lower	Switches the sca	le of the current value for graphical	-		
	Limit	display				
		[±15、±10、±7、±	1]			
		Light Blue Light		1		
		OŇ	selected scale	-		
		Light OFF	Displays the current within the default scale			
	Display Each Axis	Selects an axis ir	n graph form			
		Green Light ON	Displays the current within the			
			selected scale			
		Light OFF	Displays the current within the default scale			
Display of	Operation Mode					
Execution	oporation mode	Green Light ON		-		
Status			(Automatic)			
•		Light OFF	Manual operation mode (Manual)	-		
	Servo ON		-			
	Servo ON	Displays the serv Green Light ON		-		
		Light OFF	Servo Power OFF	-		
	Error	Displays the robo		4		
		Red Light ON	Robot error in progress	4		
		Light OFF	No error	4		
	OVRD	0	Displays the current override value (%)			
			4			
			Increases the override value Decreases the override value	4		
Common	Main Menu	Jumps to the mail				
Screen	Robot Operation	Jumps to the rob	1			
	Error Information	Jumps to the rob	4			
			4			
	Monitor/ Maintenance	Jumps to the mo				
	Manual	Jumps to the rob	1			
	STOP		g program (servo remains ON)	1		
		Red Light ON	Program stops	-		
				4		
		Light OFF	Program in running			

4.2.6 Monitoring of the Robot Load Level Ratio

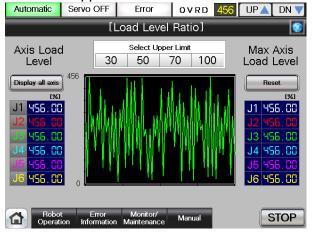
(1) Select [Monitor/Maintenance] from the [Robot Main Menu] screen.

1	[Robot Main Menu]							
	Robot Operation	Error Information						
	Monitor/Maintenance	Manual						
	<u>م</u>							

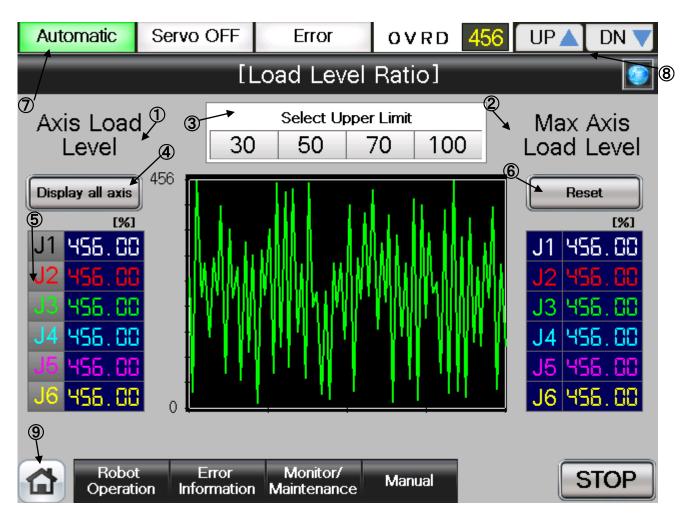
(2) Select [Load Level Ratio] from the [Monitor/Maintenance] screen.

[Monitor/Maintenance Menu]				
Robot Current Position	Current			
Status Variable	Load Level Ratio			
Robot Signal	Maintenance Forecast			
	Preventive Maintenance			
Robot Information				
<u>۵</u>				

(3) [Load Level Ratio] screen appears.



(4) See below for the [Robot Product Information Monitor] screen. For details of the operation buttons, see [Table 4-15: Details and Roles of "Load Level Ratio" Operation Buttons].



[Screen Specifications]

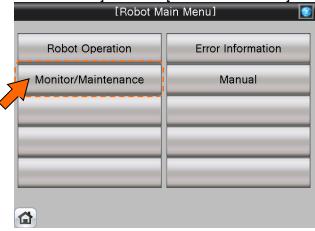
Screen to monitor the current of each robot axis

- (1) Axis Load Level · · · Displays the current load level of each axis
- (2) Maximum Axis Load Level...Displays the maximum load level calculated from when the operation starts
- (3) Select Upper Limit ··· Switches the scale of the load level (unit) shown on the chart
- (4) Display All Axes...Displays the currents of **all axes** on the chart: J1(white), J2 (red),
 - J3 (green), J4(blue), J5 (pink), and J6 (yellow)
- (5) Display Each Axis · · · Displays the currents of each axis on the chart: J1(white), J2 (red), J3 (green), J4 (blue), J5 (pink), and J6 (yellow)
- (6) Reset · · · Resets the maximum axis load level
- (7) Display of Running State · · · Lights the lamp according to the robot running status
 * Automatic Operation in Progress (green) Servo Power ON (green) Error (red)
 Current operation speed value(%)
- (8) UP/DOWN···Changes the operation speed in the OVRD DISPLAY UP (speed-up), DN (speed-down)
- (9) Common Buttons · · · Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)

		Table 4-15: Details and Roles of "Load Level Ratio" Operation Buttons							
	lame	Function Spec.	Note						
	isplay All Axes	Displays the load	—						
Level		chart							
			el (current load level of each axis) oad Level (maximum load level						
		measured after th							
		All axes are color							
		J1(white), J2 (red							
		and J6 (yellow) Green Light ON							
		2	Displays the load rates of all axes						
		Light OFF	Displays the load rate of a selected axis						
	ala at	Outitals as the sea							
	elect	Switches the sca							
	Ipper/ Lower Limit		form [30, 50, 70, 100]						
		Light Blue Light ON	Displays the current within the						
		Light OFF	selected scale						
			Displays the current within the default scale						
	isplay Each Axis	Selects the axis in							
	nspiay Lauri Anis	Green Light ON	Displays the axis of the lighted						
			button						
		Light OFF	No axis display						
Display of O	peration Mode	Displays the oper							
Running	operation mode	Green Light ON	Automatic operation mode						
State		5	(Automatic)						
		Light OFF	Manual operation mode						
		0	(Manual)						
S	Servo ON	Displays the serve	o power status						
		Green Light ON	Servo power ON						
		Light OFF	Servo power OFF						
E	rror	Displays the robo							
		Red Light ON	Robot error in progress						
		Light OFF	No error						
0	VRD	Displays the current override value (%)							
		UP▲	Increases the override value						
		DN▼	Decreases the override value						
	lain Menu	Jumps to the main menu screen		—					
	obot Operation	Jumps to the robot operation sub menu							
	rror Information	Jumps to the robot failure display							
	1onitor/	Jumps to the mor	Jumps to the monitor/maintenance sub menu						
	Maintenance								
	lanual	Jumps to the robo							
S	TOP	Stops the running							
	Red L		Program stops						

4.2.7 Robot Maintenance Forecast

(1) Select [Monitor/Maintenance] from the [Robot Main Menu] screen.



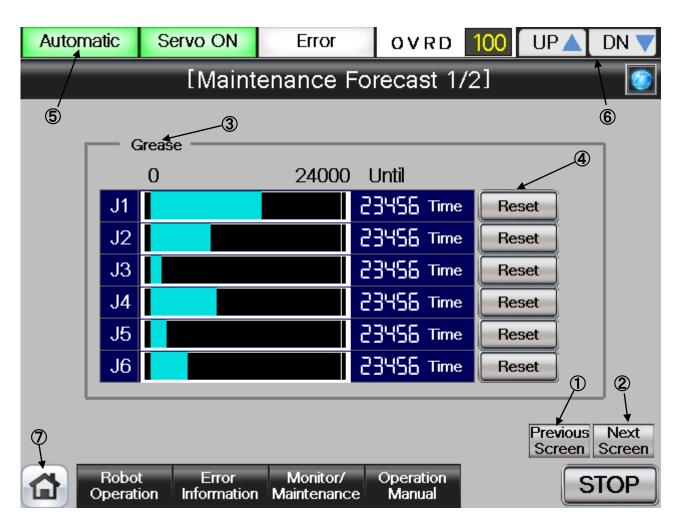
(2) Select [Maintenance Forecast] from the [Monitor/Maintenance Menu] screen.

[Monitor/Maintenance Menu]				
Robot Current Position	Current			
Status Variable	Load Level Ratio			
Robot Signal 🗸	Maintenance Forecast			
	Preventive Maintenance			
Robot Information				

(3) [Maintenance Forecast 1/2] screen appears.

Automat	tic	Servo ON	Error	OVRD	100 UP	🔺 DN 🔻		
	[Maintenance Forecast 1/2]							
	— G	irease						
	0 24000 Until							
	J1			23456 Time	Reset			
	J2			23456 Time	Reset			
	J3			23456 Time	Reset			
	J4			23456 Time	Reset			
	J5			23456 Time	Reset			
	J6			23456 Time	Reset			
Previous Next								
Robot Error Monitor/ Operation STOP Operation Information Maintenance Manual STOP								

(4) See below for the [Maintenance Forecast 1/2] screen. For details of the operation buttons, see [Table 4-16: Details and Roles of "Maintenance Forecast" Operation Buttons].

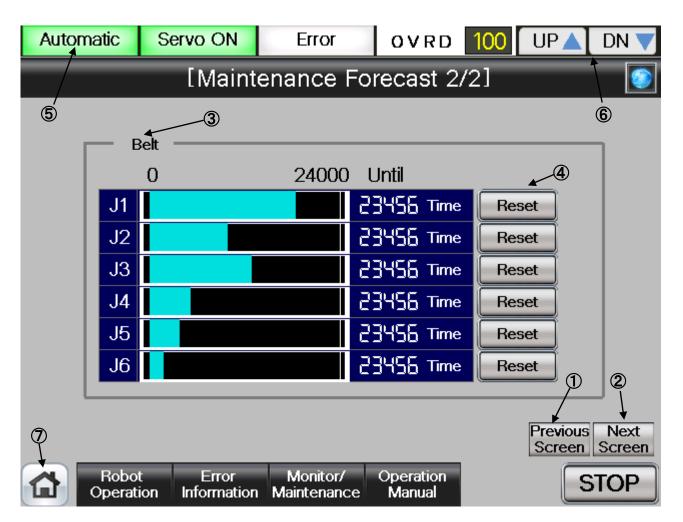


[Screen Specifications]

Screen to monitor the robot grease

- (1) Back ··· · Switches the dedicated signal monitor screens [Dedicated Signal Monitor 1/2] →[Dedicated Signal Monitor 2/2]
- (2) Next · · · Switches the dedicated signal monitor screens [Dedicated Signal Monitor 1/2] →[Dedicated Signal Monitor 2/2]
- (3) Grease · · · Displays the grease useable time for each axis (J1, J2, J3, J4, J5, and J6)
- (4) Reset · · · Displays 6000 hours for a reset (by each axis) (currently unavailable) * Grease is useable up to 6000 hours
- (5) Display of Running State · · · Lights the lamp according to the robot running status
 * Automatic Operation in Progress (green) Servo Power (green) Error (red)
 Current operation speed value (%)
- (6) UP/DOWN···Changes the operation speed in the OVRD DISPLAY UP (speed-up), DN (speed-down)
- (7) Common Buttons...Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)

(5) See below for the [Maintenance Forecast 2/2] screen. For details of the operation buttons, see [Table 4-16: Details and Roles of "Maintenance Forecast" Operation Buttons].



[Screen Specifications]

Screen to monitor the dedicated robot input/output (I/O) signals

- (1) Back ··· · Switches the dedicated signal monitor screens [Dedicated Signal Monitor 2/2] →[Dedicated Signal Monitor 1/2]
- (2) Next · · · Switches the dedicated signal monitor screens [Dedicated Signal Monitor 2/2] →[Dedicated Signal

Monitor 1/2]

- (3) Belt · · · Displays the usable time of the belt for driving of J5 axis
- (4) Reset · · · Displays 35000 hours for a belt reset (currently unavailable) * Belt is useable for up to 35000 hours
- (5) Display of Running State · · · Lights the lamp according to the robot running status
 * Automatic Operation in Progress (green) Servo Power ON (green) Error (red) Current operation speed value (%)
- (6) UP/DOWN···Changes the operation speed in the OVRD DISPLAY UP (speed-up), DN (speed-down)
- (7) Common Buttons · · · Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)

Classification	Name	Function Spec.	nance Forecast" Operation Buttons	Note		
		1	tate variable monitor screen in	NOLE		
Switch	Back		—			
Screen			ascending order (2/2-01/2-2/2) Switches the state variable monitor screen in			
	Next					
		descending order				
Time Reset	Reset	Clears the elapse				
	(Currently	Yellow Light ON				
	Unavailable)	Light OFF	Displays the accumulated time			
Display of	Operation Mode	Displays the oper		—		
Running		Green Light ON	Automatic operation mode			
State			(Automatic)			
		Light OFF	Manual operation mode (Manual)			
	Servo ON	Displays the serv	o power status	-		
		Green Light ON	een Light ON Servo Power ON			
		Light OFF	Servo Power OFF			
	Error	Displays the robo	t error status			
		Red Light ON	Robot error in progress			
		Light OFF	No error			
	OVRD	Displays the curre	ent override value (%)			
		UP▲	Increases the override value			
		DN▼	Decreases the override value			
Common	Main Menu	Jumps to the mai	n menu screen	—		
Screen	Robot Operation	Jumps to the rob	ot operation sub menu			
	Error Information	Jumps to the robe	ot failure display			
	Monitor/	Jumps to the mor	nitor/maintenance sub menu			
	Maintenance					
	Manual	Jumps to the robe				
	STOP	Stops the running				
		Red Light ON				
		Light OFF	Program stops Program in running			

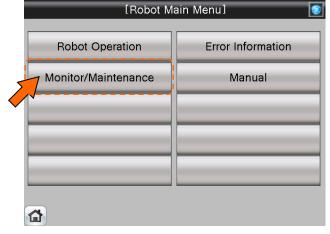
4.2.8 Preventive Maintenance



The MELFA Smart Plus option is nessessary when use the preventive maintenance function. Refer to "Preventive Maintenance Function Operation Manual (bfp-a3625)" for details of display contents.

Notice) It is necessary to restart the GOT when activate the 'Preventive Maintenance Function'.

(1) Select [Monitor/Maintenance] from the [Robot Main Menu] screen.



(2) Select [Preventive Maintenance] from the [Monitor/Maintenance Menu] screen.

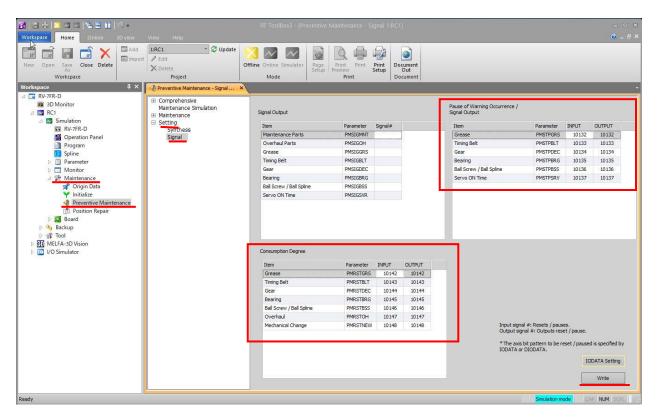
[Monitor/Maintenance Menu]				
Robot Current Position	Current			
Status Variable	Load Level Ratio			
Robot Signal				
5	Preventive Maintenance			
Robot Information				
<u>۵</u>				

(3) [Preventive Maintenance Menu] screen appears.

[Preventive Maintenance Menu]				
Total Score	Consumption Degree			
	Operating Information			
Warning Pause	Maintenance Reset			
a				

4.2.8.1 Parameter Setting of Preventive Maintenance Input/Output Signals

Input/Output signals parameter setting about "Pause of Warrning Occurrence / Signal Output" and "Consumption Degree" is nessessary when you use "Warning Pause" and "Maintenance Reset".



- (1) Open [Maintenance] in the workspace and double-click on [Preventive Maintenance]
- (2) [Preventive Maintenance] window opens
- (3) Open [Setting] and click on [Signal]
- (4) Enter Input/Output signals of "Pause of Warning Occurrence / Signal Output" and "Consumption Degree" according to the table.
- (5) Click [Write] to write parameters
- (6) [Are you sure you want to write the set content in the robot controller?] \rightarrow click [Yes(Y)]
- (7) [Writing of Parameters to the robot controller was completed.] \rightarrow click [**OK**]

Item	Parameter	INPUT	OUTPUT
Item	Farameter	INFUT	UUIFUI
Grease	PMSTPGRS	10132	10132
Timing Belt	PMSTPBLT	10133	10133
Gear	PMSTPDEC	10134	10134
Bearing	PMSTPBRG	10135	10135
Ball Screw / Ball Spline	PMSTPBSS	10136	10136
Servo ON Time	PMSTPSRV	10137	10137

Pause of Warning Occurrence / Signal Output

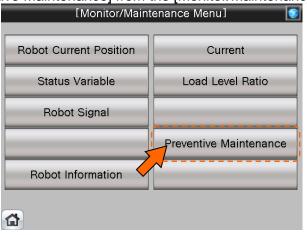
Consumption Degree

Item	Parameter	INPUT	OUTPUT
Grease	PMRSTGRS	10142	10142
Timing Belt	PMRSTBLT	10143	10143
Gear	PMRSTDEC	10144	10144
Bearing	PMRSTBRG	10145	10145
Ball Screw / Ball Spline	PMRSTBSS	10146	10146
Overhaul	PMRSTOH	10147	10147
Mechanical Change	PMRSTNEW	10148	10148

4.2.8.2 Total Score

(1) Select [Preventive Maintenance] from the [Monitor/Maintenance Menu] screen.

Smart Plus



(2) Select [Total Score] from the [Preventive Maintenance Menu] screen.

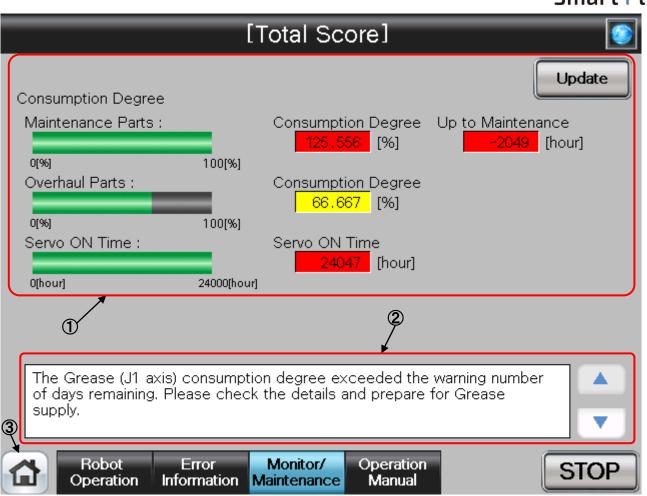
1	[Preventive Maintenance Menu]					
	Total Score	Consumption Degree				
		Operating Information				
	Warning Pause	Maintenance Reset				
(a					

(3) [Total Score] screen appears.

[-	Total Score]	
Consumption Degre Maintenance Parts :	Consumption Degree	Update Up to Maintenance -2049 [hour]
0(%) 100(%) Overhaul Parts : 0(%) 100(%) Servo ON Time :	Consumption Degree 66.667 [%] Servo ON Time 24047 [hour]	
O(hour) 24000(hour)		
The Grease (J1 axis) consumption of days remaining. Please check supply.	the details and prepare	
Robot Error Operation Information	Monitor/ Operation Maintenance Manual	STOP

(4) This screen displays the total evaluation result of the consumption degree calculation function. For details of the operation buttons, see [Table 4-17: Details and Roles of "Total Score" Operation Buttons].

MELFA Smart Plus



[Screen Specifications]

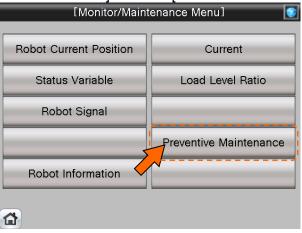
- (1) Consumption Degree Calculation ···· The Consumption Degree area indicates the total score (Consumption Degree [%] and Up to Maintenance) of maintenance parts (grease, timing belt), and the total score (Consumption Degree [%]) of overhaul parts (Reduction gear, bearing, ball screw, ball spline), and the accumulated servo ON time since the previous overhaul time.
- (2) Preventive maintenance message ··· When the consumption status of the target part exceeds the notification day you specified, the preventive maintenance message according to the status is displayed; check the message content and take measures.
- (3) Common Buttons ··· Jump to each screen* "STOP" stop a running program (Servo remains ON)

Table 4-17: Details and Roles of "Total Score" Operation Buttons

Classification	Name	Function Spec.	Function Spec.		
Consumption	Update	Update a display value.		_	
Degree		Red Light ON	Updating a display value		
Calculation		Light OFF	Update done		
Message	Preventive	Preventive main	ntenance message is displayed.	—	
Display	Maintenance Message		Scroll a displayed message up. Button color is changed to gray when first message is displayed.		
		▼	Scroll a displayed message down. Button color is changed to gray when last message is displayed.		
Common	Main Menu	Jumps to the m	ain menu screen	—	
Screen	Robot Operation	Jumps to the robot operation sub menu			
	Error Information	Jumps to the ro			
	Monitor/ Maintenance	Jumps to the monitor/maintenance sub menu			
	Manual	Jumps to the robot manual sub menu			
	STOP	Stops the running	ng program (servo remains ON)]	
		Red Light ON	Program stops	1	
		Light OFF	Program in running]	

4.2.8.3 Consumption degree calculation function

(1) Select [Preventive Maintenance] from the [Monitor/Maintenance Menu] screen.



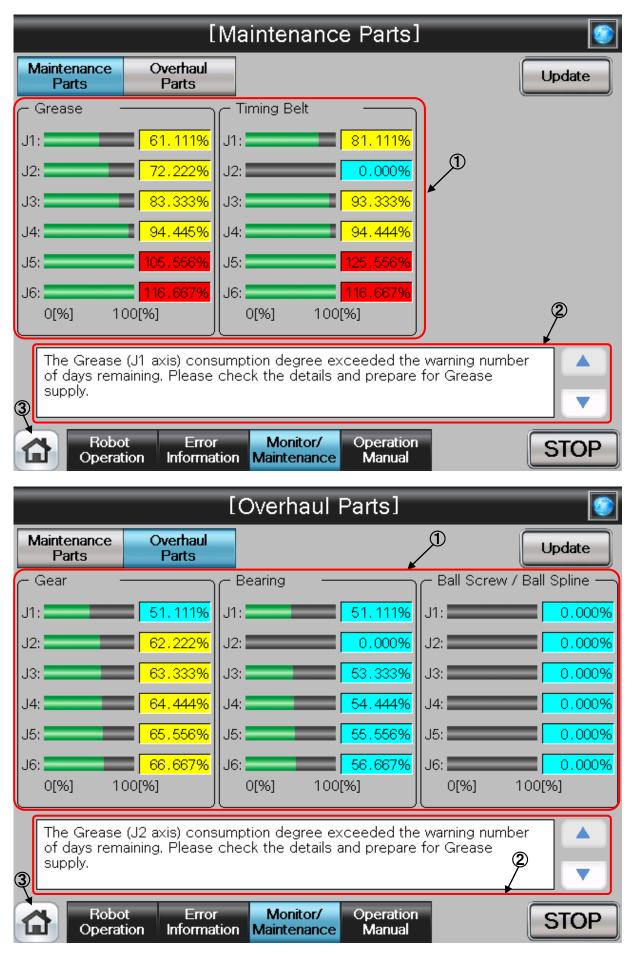
(2) Select [Consumption Degree] from the [Preventive Maintenance Menu] screen.

[Preventive Maintenance Menu]				
Total Score	Consumption Degree			
	Operating Information			
Warning Pause	Maintenance Reset			

(3) [Consumption Degree] screen appears.

]	Maintenance	Parts]	
Maintenance Parts	Overhaul Parts			Update
Grease ·		Timing Belt		
J1:	61.111%	J1:	81.111%	
J2:	72.222%	J2:	0.000%	
J3:	83.333%	J3:	<mark>93.333%</mark>	
J4:	94.445%	J4:	<mark>94.444%</mark>	
J5:	105.556%	J5: 1	25.556%	
J6:	116.667%		<mark>16.667%</mark>	
0[%] 1	00[%]	0[%] 100[%	51	
		sumption degree exc check the details an		
			Operation Manual	STOP

(4) When you select "Maintenance Parts" or "Overhaul Parts", the consumption degree of each part of the target axis and each joint axis is displayed. For details of the operation buttons, see [Table 4-18: Details and Roles of "Maintenance Parts/Overhaul Parts" Operation Buttons].



[Screen Specifications]

- (1) Consumption Degree ··· This area of the screen indicates the consumption degree of each part of the target axis and each joint axis in a graph and numeric value [%]. Non target axes are displayed at [0%].
- (2) Preventive maintenance message · · · This field displays preventive maintenance messages according to the part status. When the remaining time exceeds the notification day, an appropriate preventive maintenance message is displayed; check the message content and take measures.
- (3) Common Buttons ··· Jump to each screen* "STOP" stop a running program (Servo remains ON)

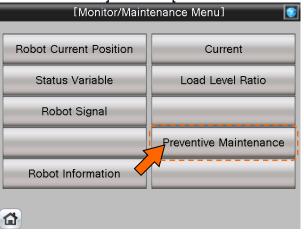
Table 4-18: Details and Roles of "Maintenance Parts/Overnaul Parts" Operation Buttons					
Classification	Name	Function Spec.		Note	
Consumption	Update	Update a display value.		_	
Degree		Red Light ON Updating a display value			
		Light OFF	Update done		
Change	Maintenance Patrs	Maintenance Pa	arts screen is displayed.	_	
Screen	Ovehaul Parts	Overhaul Parts	screen is displayed.		
Message	Preventive	Preventive main	ntenance message is displayed.	_	
Display	Maintenance		Scroll a displayed message up.		
	Message		Button color is changed to gray		
			when first message is displayed.		
		▼	Scroll a displayed message down.		
			Button color is changed to gray		
			when last message is displayed.		
Common	Main Menu	Jumps to the m	ain menu screen		
Screen	Robot Operation	Jumps to the ro	bot operation sub menu		
	Error Information	Jumps to the ro	bot failure display		
	Monitor/	Jumps to the monitor/maintenance sub menu			
	Maintenance				
	Manual	Jumps to the robot manual sub menu			
	STOP	Stops the runni	1		
		Red Light ON Program stops		1	
		Light OFF	Program in running		

Table 4-18: Details and Roles of "Maintenance Parts/Overhaul Parts" Operation Buttons



4.2.8.4 Operating Information

(1) Select [Preventive Maintenance] from the [Monitor/Maintenance Menu] screen.



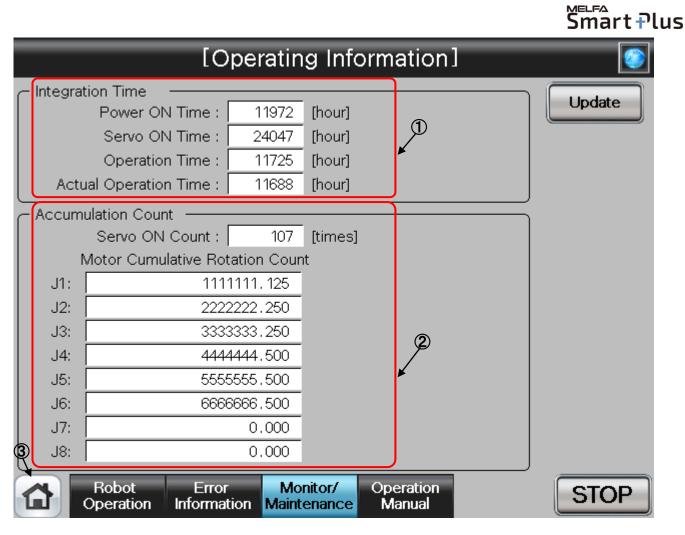
(2) Select [Operating Information] from the [Preventive Maintenance Menu] screen.

[Preventive Maintenance Menu]		
Total Score	Consumption Degree	
	Operating Information	
Warning Pause	Maintenance Reset	
a		

(3) [Operating Information] screen appears.

[Ope	rating Information]	
Integration Time		
Power ON Time :	1972 [hour]	Update
Servo ON Time : 2	24047 [hour]	
Operation Time :	1725 [hour]	
Actual Operation Time :	1688 [hour]	
Accumulation Count		
Servo ON Count :	107 [times]	
Motor Cumulative Rotation	n Count	
J1: 1111111	. 125	
J2: 2222222	.250	
J3: 3333333	.250	
J4: 4444444	.500	
J5: 5555555	.500	
J6: 6666666	.500	
J7: 0	.000	
J8: 0	.000	
Robot Error Operation Information	Monitor/ Operation Maintenance Manual	STOP

(4) The Operating Information screen is used to manage and display the integration time and accumulation count from the time when the previous overhaul was carried out. For details of the operation buttons, see [Table 4-19: Details and Roles of "Operating Information" Operation Buttons].



[Screen Specifications]

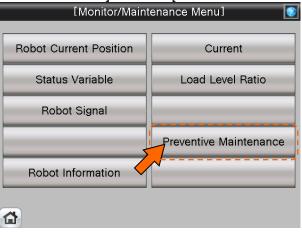
- (1) Integration Time ··· The integration time that power on time, servo on time, operation time, actual operation time, are indicated.
- (2) Accumulation Count ··· The accumulation count that servo on count, motor cumulative count, are indicated.
- (3) Common Buttons ··· Jump to each screen
 * "STOP" stop a running program (Servo remains ON)

Table 4-19: Details and Roles of "Oper	ating Information" Operation Buttons
--	--------------------------------------

Classification	Name	Function Spec.		Note
Integration	Update	Update a display value.		_
Time/		Red	Updating a display value	
Accumulation		Light ON		
Time		Light	Update done	
		OFF		
Common	Main Menu	Jumps to t	he main menu screen	
Screen	Robot Operation	Jumps to t	he robot operation sub menu	
	Error Information	Jumps to the robot failure display		
	Monitor/	Jumps to the monitor/maintenance sub menu		
	Maintenance			
	Manual	Jumps to the robot manual sub menu		
	STOP	Stops the running program (servo remains ON)		
		Red Program stops		
		Light ON		
		Light	Program in running	
		OFF		

4.2.8.5 Warning Pause

(1) Select [Preventive Maintenance] from the [Monitor/Maintenance Menu] screen.



(2) Select [Warning Pause] from the [Preventive Maintenance Menu] screen.

l Preventive Maintenance Menu J		
Total Score	Consumption Degree	
	Operating Information	
Warning Pause	Maintenance Reset	
a		

(3) [Warning Pause] screen appears.

[Warning Pause]					
		Write	Update		
Pause the notification (Alarm, Signal output) of checked parts until next maintenance reset. Please check this if you want to pause notification. To cancel pause, please uncheck it.					
Component	Axis Number	Signal Output			
Grease	J1	Occurring			
Grease	J2	Occurring			
Grease	J3	Occurring			
Grease	J4	Occurring			
Timing Belt	J1	Occurring			
Gear	J1	Occurring			
Bearing	J1	Occurring			
Ball Screw / Ball Spline	J5	Occurring			
Ball Screw / Ball Spline	J6	Occurring			
Servo ON Time	-	Occurring			
Robot Error Monitor Operation Information Maintenar		n	STOP		

(4) Displays the list of warning and warning signals that are occurring or paused. If you desire to stop notification (alarm, dedicated output signal), you can temporarily disable at this stage. For details of the operation buttons, see [Table 4-20: Details and Roles of "Warning Pause" **Operation Buttons].**

MELFA

				Smart Plus
	[Warning			
			Write	Update
	ause the notification (Alarm, Signal output) of checked ease check this if you want to pause notification. To c			
	Component	Axis Number	Signal Output	
	Grease	J1	Occurring	
	Grease	J2	Occurring	
	Grease	J3	Occurring	
	Grease	J4	Occurring	
	Timing Belt	J1	Occurring	Q
	Gear	J1	Occurring	
	Bearing	J1	Occurring	
	Ball Screw / Ball Spline	J5	Occurring	
	Ball Screw / Ball Spline	J6	Occurring	
3	Servo ON Time	-	Occurring	
Y				
1	Robot Error Monitor Operation Information Maintenar		n	STOP

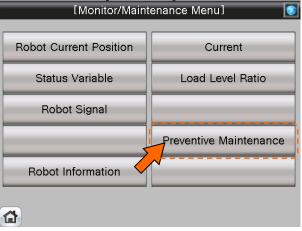
[Screen Specifications]

- (1) Component/Axis Number ··· This area of the screen indicates the consumption degree of each part of the target axis and each joint axis in a graph and numeric value [%].
- (2) Signal Output ··· Indicates either occurring or pause.
 - Select this check box to pause. Deselect this check box to cancel pause.
- (3) Common Buttons ··· Jump to each screen * "STOP" stop a running program (Servo remains ON)

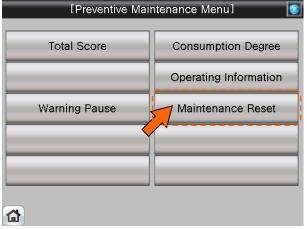
Classification	Name	Function Spec.	Note	
Warning	Update	Update a display value.	—	
Pause		Red Light ON Updating a display value		
		Light OFF Update done		
	Write	Writes the content of the selected item.	—	
		You can temporarily disable notification related to		
		consumption degree calculation until part		
		replacement (reset of consumption degree).		
		Scroll displayed list up.	—	
		Button color is changed to gray when first message		
		is displayed or number of cautions is within 10.		
	▼	Scroll displayed list down.	—	
		Button color is changed to gray when last message		
0		is displayed or number of cautions is within 10.		
Common	Main Menu	Jumps to the main menu screen	—	
Screen	Robot Operation	Jumps to the robot operation sub menu		
	Error Information	Jumps to the robot failure display		
	Monitor/	Jumps to the monitor/maintenance sub menu		
	Maintenance			
	Manual	Jumps to the robot manual sub menu		
	STOP	Stops the running program (servo remains ON)		
		Red Light ON Program stops		
		Light OFF Program in running		

4.2.8.6 Maintenance Reset

(1) Select [Preventive Maintenance] from the [Monitor/Maintenance Menu] screen.



(2) Select [Maintenance Reset] from the [Preventive Maintenance Menu] screen.



(3) [Maintenance Reset] screen appears.

[Maintenance Reset] 💿				
Reset consumption degree (the encoder is the maximum value) when replacing parts.				
	Item	Select All	J1 J2 J3 J4 J5 J6	
	Grease			
	Timing Belt			
	Gear			
	Bearing			
	Ball Screw / Ball Spline			
	Overhaul			
	Mechanical Change			
				Reset
1			peration Manual	STOP

(4) When part replacement, grease replenishing, or overhaul was performed, the information of the axes for which maintenance was performed accumulated in the controller needs to be reset.

On the Maintenance Reset screen, you can reset the information held by the controller such as the consumption degrees calculated by the consumption degree calculation function. For details of the operation buttons, see [Table 4-21: Details and Roles of "Maintenance Reset" Operation Buttons].

			Smart P lus
[Main	tenance	Reset]	
Reset consumption degree (the encoder is the	maximum value;) when replacing parts.	
ltem	Select All	J1 J2 J3 J4 J5	J6
Grease			
Timing Belt			
Gear			
Bearing			
Ball Screw / Ball Spline			
Overhaul		R	
Mechanical Change		3	
		F	Reset
Robot Error Operation Information M	Monitor/ aintenance	Operation Manual	STOP

[Screen Specifications]

- (1) Item ··· Displays parts subject to reset..
- (2) Select All ··· Selecting this check box selects all [J1] to [J6] check boxes on the right field.
- (3) J1 to J6 ··· Depending on the robot type, non-target axes are ignored.
- (4) Common Buttons ··· Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)

Function Spec. Classification Name Note Resets the consumption degree of the items you have Maintenance Reset ____ Reset selected. Common Main Menu Jumps to the main menu screen Screen **Robot Operation** Jumps to the robot operation sub menu Error Information Jumps to the robot failure display Monitor/ Jumps to the monitor/maintenance sub menu

Red

Light OFF

Light ON

Jumps to the robot manual sub menu

Program stops

Program in running

Stops the running program (servo remains ON)

Maintenance

Manual STOP

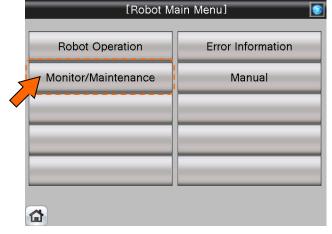
Table 4-21: Details and Roles of "Maintenance Reset" Operation Buttons

4.2.9 Predictive Maintenance

The MELFA Smart Plus option is nessessary when use the predictive maintenance function. Refer to "Predictive Maintenance Function Operation Manual (bfp-a3663)" for details of display contents.

Notice) It is necessary to restart the GOT when activate the 'Predictive Maintenance Function'.

(1) Select [Monitor/Maintenance] from the [Robot Main Menu] screen.



(2) Select [Predictive Maintenance] from the [Monitor/Maintenance] screen.

[Monitor/Maintenance Menu]					
Robot Current Position	Current				
Robol Current Position	Current				
Status Variable	Load Level Ratio				
Robot Signal					
5	Predictive Maintenance				
Robot Information					

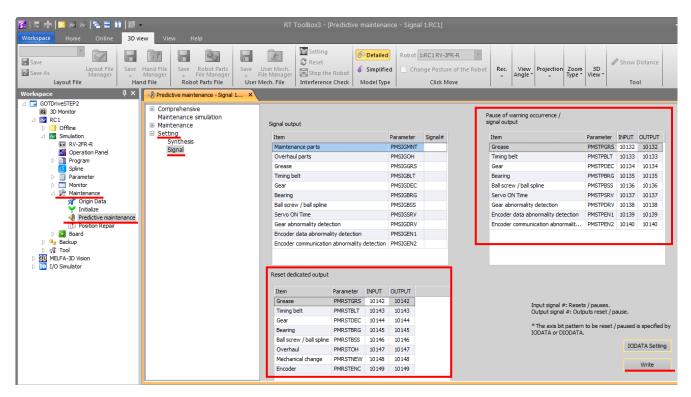
(3) [Predictive Maintenance Menu] screen appears.

[Predictive Maintenance Menu]				
Total Score	Consumption Degree			
Abnormality Detection	Operating Information			
Warning Pause	Maintenance Reset			
<u>م</u>				

Smart Plus

4.2.9.1 Parameter Setting of Predictive Maintenance Input/Output Signals

Input/Output signals parameter setting about "Pause of Warrning Occurrence / Signal Output" and "Consumption Degree" is nessessary when you use "Warning Pause" and "Maintenance Reset".



- (1) Open [Maintenance] in the workspace and double-click on [Predictive Maintenance]
- (2) [Predictive Maintenance] window opens
- (3) Open [Setting] and click on [Signal]
- (4) Enter Input/Output signals of "Pause of Warning Occurrence / Signal Output" and "Consumption Degree" according to the table.
- (5) Click [Write] to write parameters
- (6) [Are you sure you want to write the set content in the robot controller?] \rightarrow click [Yes(Y)]
- (7) [Writing of Parameters to the robot controller was completed.] \rightarrow click [**OK**]

Item	Parameter	INPUT	OUTPUT
Grease	PMSTPGRS	10132	10132
Timing Belt	PMSTPBLT	10133	10133
Reduction Gear	PMSTPDEC	10134	10134
Bearing	PMSTPBRG	10135	10135
Ball Screw / Ball Spline	PMSTPBSS	10136	10136
Servo ON Time	PMSTPSRV	10137	10137
Reduction Gear Abnormality Detection	PMSTPDRV	10138	10138
Encoder Data Abnormality Detection	PMSTPEN1	10139	10139
Encoder Communication Abnormality Detection	PMSTPEN2	10140	10140

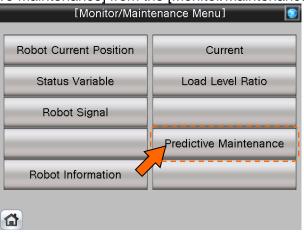
Pause of Warning Occurrence / Signal Output

Item	Parameter	INPUT	OUTPUT
Grease	PMRSTGRS	10142	10142
Timing Belt	PMRSTBLT	10143	10143
Gear	PMRSTDEC	10144	10144
Bearing	PMRSTBRG	10145	10145
Ball Screw / Ball Spline	PMRSTBSS	10146	10146
Overhaul	PMRSTOH	10147	10147
Mechanical Change	PMRSTNEW	10148	10148
Encoder (Score of Abnormality Detection)	PMRSTENC	10149	10149

4.2.9.2 Total Score

(1) Select [Predictive Maintenance] from the [Monitor/Maintenance Menu] screen.

Smart Plus



(2) Select [Total Score] from the [Predictive Maintenance Menu] screen.

[Predictive Maintenance Menu]					
Total Score	Consumption Degree				
Abnormality Detection	Operating Information				
Warning Pause	Maintenance Reset				

(3) [Total Score] screen appears.

[Total Score]	
Consumption Degree	Update
	Maintenance <mark>123456</mark> [hour]
Overhaul Parts : Consumption Degree 70,000 [%]	
Servo ON Time : Servo ON Time 12000 [hour] 0[hour] 24000[hour]	
Abnormality Detection	
Gear : Normal Encoder : Normal Battery	: Normal
The warning of the encoder data (J1 axis) failure was detected. Check the details and perform maintenance and inspection of er	ncoder data
Robot Error Monitor/ Operation Operation Information Maintenance Manual	STOP

(4) This screen displays the total evaluation result of the consumption degree calculation function. For details of the operation buttons, see [Table 4-22: Details and Roles of "Total Score" Operation Buttons].

MELFA Smart Plus

[T	otal Score]		2
① Consumption Degree			Update
Maintenance Parts :	Consumption Degree 70.000 [%]	Up to Maintenanc 123456 [he	e our]
Overhaul Parts :	Consumption Degree 70.000 [%]		
Servo ON Time : 0(hour) 24000(hour)	Servo ON Time 12000 [hour]		
Abnormality Detection ③ Gear : Normal Enco	der: Normal E	Battery : N	lormal
The warning of the encoder data Check the details and perform ma	(J1 axis) failure was dete	cted.	
Robot Error Operation Information M	Monitor/ Operation aintenance Manual		STOP

[Screen Specifications]

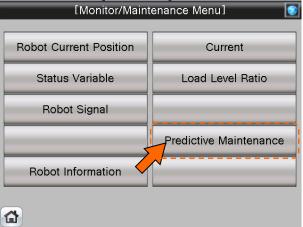
- (1) Consumption Degree Calculation ···· The Consumption Degree area indicates the total score (Consumption Degree [%] and Up to Maintenance) of maintenance parts (grease, timing belt), and the total score (Consumption Degree [%]) of overhaul parts (Reduction gear, bearing, ball screw, ball spline), and the accumulated servo ON time since the previous overhaul time.
- (2) Predictive maintenance message ··· When the consumption status of the target part exceeds the notification day you specified, the predictive maintenance message according to the status is displayed; check the message content and take measures.
- (3) Abnormality Detection ··· This area of the screen indicates the score status obtained using the abnormality detection function. The display also includes the status (normal, fault) of reduction gear, the status (normal, fault) of the encoder, and the status (normal, warning, fault) of the battery.
- (4) Common Buttons ··· Jump to each screen* "STOP" stop a running program (Servo remains ON)

Table 4-22: Details and Roles of "Total Score" Operation Buttons

Classification	Name	Function Spec.	Function Spec.		
Consumption	Update	Update a displa	Update a display value.		
Degree		Red Light ON	Updating a display value		
Calculation		Light OFF	Update done		
Message	Predictive	Predictive main	tenance message is displayed.	—	
Display	Maintenance Message		Scroll a displayed message up. Button color is changed to gray when first message is displayed.		
		▼	Scroll a displayed message down. Button color is changed to gray when last message is displayed.		
Common	Main Menu	Jumps to the m	—		
Screen	Robot Operation	Jumps to the ro	bot operation sub menu		
	Error Information	Jumps to the ro	Jumps to the robot failure display		
	Monitor/ Maintenance	Jumps to the m			
	Manual	Jumps to the robot manual sub menu			
	STOP	Stops the running program (servo remains ON)			
		Red Light ON	Program stops	1	
		Light OFF	Program in running		

4.2.9.3 Consumption degree calculation function

(1) Select [Predictive Maintenance] from the [Monitor/Maintenance Menu] screen.



(2) When select [Abnormality Detection] from the [Predictive Maintenance Menu] screen, the [Abnormality Detection Menu] screen is displayed.

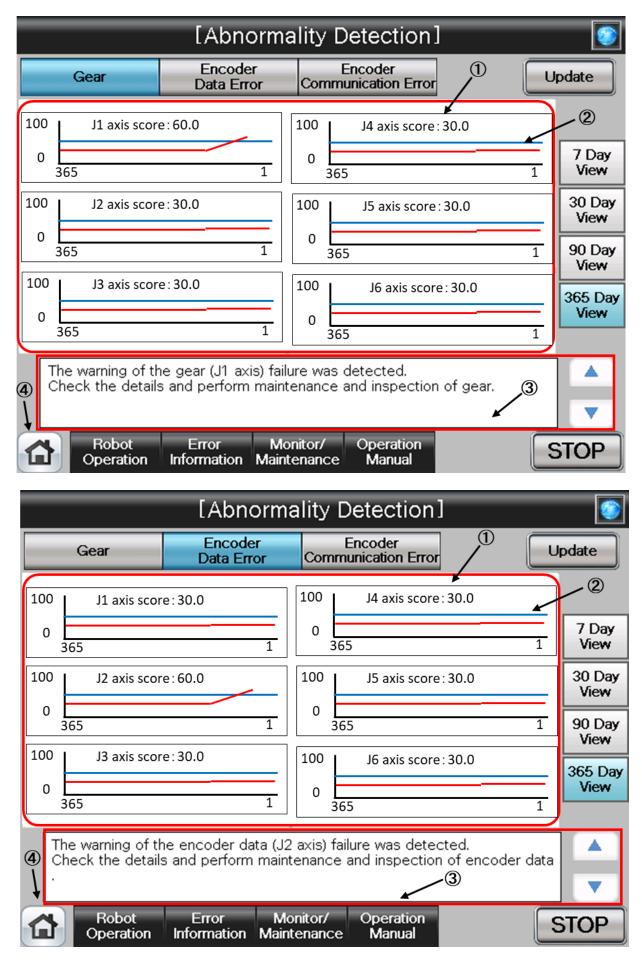
And select [Gear] or [Encoder Data Error] or [Encoder Communication Error] on the [Abnormality Detection Menu] screen.

[Predictive Mai	ntenance Menu]	[Abnormality	Detection Menu]
Total Score	Consumption Degree	Gear	Encoder Data Error
Abnormality Detection	Operating Information	Encoder Communication Error	
Warning Pause	Maintenance Reset		

(3) [Abnormality Detection] screen appears.

	[Abnormality Detection]					
G	ear	Encoder Data Error	r C	Encoder ommunication Error		Jpdate
100	J1 axis scor	e:60.0	10	0 J4 axis score :	30.0]
0 365			1	365	1	7 Day View
100	J2 axis scor	e:30.0	10	0 J5 axis score :	: 30.0	30 Day View
0 365			1	365	1	90 Day View
100 0	J3 axis scor	e:30.0	_	0 J6 axis score	e: 30.0	365 Day View
365			1	365	1	
The w Check	arning of th the details	ne gear (J1 axis s and perform n) failure naintena	was detected. Ince and inspection	of gear.	
	Robot Operation	Error Information	Monit Mainten			STOP

(4) This function detects abnormalities or deterioration of robot reduction gearcomponents early.Before the robot exhibits behavior that is a sign of an abnormality, the function can detect reduction gearor encoder abnormalities. For details of the operation buttons, see [Table 4-23: Details and Roles of "Abnormality Detection" Operation Buttons]



_	[Abnormality Detection]					
	Gear	Encoder Data Error	Comr	Encoder nunication Error		Jpdate
100	J1 axis scor	e:30.0	100	J4 axis score : 3	30.0	2
0	365	1	0 30	55	1	7 Day View
100	J2 axis scor	e:30.0	100	J5 axis score: 3	30.0	30 Day View
	365	1	0	65	1	90 Day View
100 0	J3 axis scor 365	e:60.0 1	100 0 3	J6 axis score : 3	30.0 1	365 Day View
④ C		ne encoder commur and perform maint				•
	Robot Operation		onitor/ tenance	Operation Manual		STOP

[Screen Specifications]

- (1) Score ··· Indicates the scoreofeach joint axis. The value is the current value..
- (2) Log data ··· Displays log data of the maximum value of scoreof each joint axis for the past 365 days. The indicated value is the maximum value of a day.

• You can specify the display period using the "Display Period" field of the end of right side of the screen. Non target axes are displayed at [0].

(3) Predictive maintenance message ··· This field displays predictive maintenancemessages according to the part status.

When an abnormality is detected, an appropriate predictive maintenancemessage is displayed; check the message content and take measures.

(4) Common Buttons ··· Jump to each screen

* "STOP" stop a running program (Servo remains ON)

Table 4-23: Details and Roles of "Abnormality Detection" Operation Buttons

Classification	Name		Function Spec.		
Consumption	Update	Update a displa		_	
Degree	opualo		Updating a display value		
- 3		Light OFF	Update done		
Display	7 Day View		y the display period of log data displayed	_	
Period	30 Day View	on the screen.			
	90 Day View	1 year (365 dag	ys) 3 months (90 days)		
	365 Day View	1 month (30 da	ays) 1 week (7 days)		
Change	Gear	Maintenance P	Parts screen is displayed.	—	
Screen	Encoder Data Error	Overhaul Parts	s screen is displayed.		
	Encoder				
	Communication Error				
Message	Predictive	Predictive main	ntenance message is displayed.		
Display	Maintenance		Scroll a displayed message up.		
	Message		Button color is changed to gray when		
			first message is displayed.	-	
		▼	Scroll a displayed message down.		
			Button color is changed to gray when		
0		last message is displayed.			
Common	Main Menu		nain menu screen		
Screen	Robot Operation		bot operation sub menu	-	
	Error Information	Jumps to the robot failure display		-	
	Monitor/	Jumps to the m	nonitor/maintenance sub menu		
	Maintenance			-	
	Manual	Jumps to the ro			
	STOP	Stops the runni			
		Red Light ON	Program stops		
		Light OFF	Program in running		

4.2.9.4 Consumption degree calculation function

Please refer [4.2.8.3 Consumption degree calculation function].

4.2.9.5 Operating Information

Please refer [4.2.8.4 Operating Information].

4.2.9.6 Warning Pause

Please refer [4.2.8.5 Warning Pause].

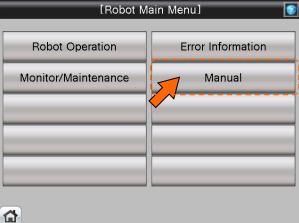
4.2.9.7 Maintenance Reset

Please refer [4.2.8.6 Maintenance Reset].

4.3 Manual Document Display Screen

4.3.1 Robot Manual

(1) Select [Manual] from the [Robot Main Menu] screen.



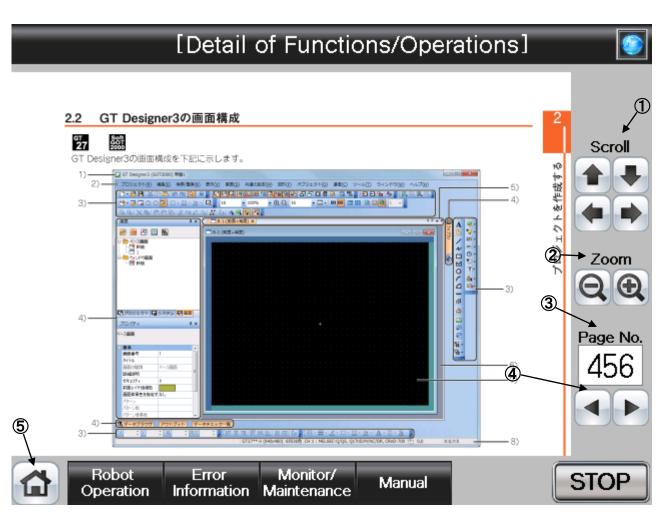
(2) Select [Details of Functions/Operations] from the [Robot Manual Menu] screen.

	[Robot Manual Menu] 💿					
5	Detail of Functions/Operations					
	Trouble Shooting					
	Controller Setup					
	Robot Arm Setup					
	a					

(3) [Details of Functions/Operations] screen appears.



(4) See below for the [Details of Functions/Operations] screen. For details of operation buttons, see [Table4-3-1: Details and Roles of "Manual Monitor" Operation Buttons].



[Screen Specifications]

Screen to monitor the manual display.

(1) Scroll · · · Scrolls the page in the specified direction

- (2) Zoom···Zooms in/out the page
- (3) Page No. (*1) ··· Switches the pages

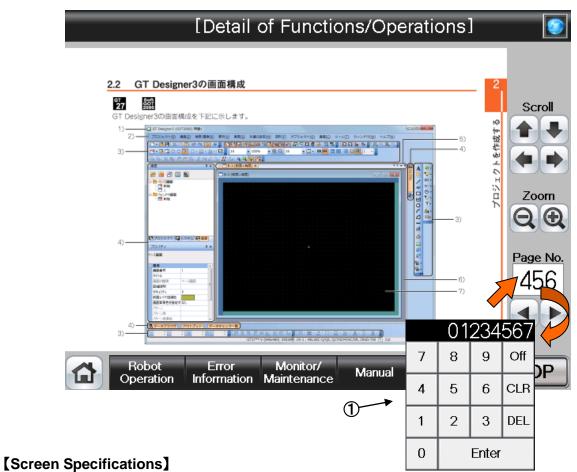
(4) \triangleleft buttons...Goes back to the previous page with " \triangleleft " and " \triangleright " to the next page.

(5) Common Buttons · · · Jump to each screen

* "STOP" stop a running program (Servo remains ON)

(*1) To enter the page No, press the numeric display. Number entry screen appears.

(5) See below for the number-entry screen.



Screen to enter the page No.

(1) Page No. Screen ... Enters the task slot No. with the decimal input keys

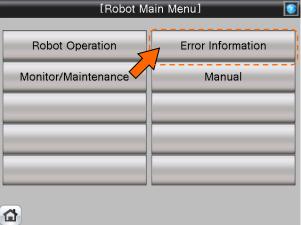
Table 4-3-1: Details and Roles of [Manual] Operation Buttons

Classification	Name	Function Spec.	Note		
Display	Scroll	Scrolls the pag	—		
Operation		仓	Scrolls up the display		
		Û	Scrolls down the display		
		Ą	Scrolls the display to the left		
			Scrolls the display to the right		
	Zoom	Zooms in/out o	f the page		
		_	Zooms out the page		
		+	Zooms in the page		
	Page No.	Switches the pa	Switches the pages to be displayed		
		Numeric	Displays the page of the entered No.		
		•	Goes back to the previous page		
		▶	Goes to a the next page		
Common	Main Menu	Jumps to the m	nain menu screen	—	
Screen	Robot Operation	Jumps to the ro			
	Error Information	Jumps to the ro			
	Monitor/	Jumps to the m			
	Maintenance	-			
	Manual	Jumps to the ro			
	STOP	Stops the runni			
		Red Light ON	Program stops]	
		Light OFF	Program in running		

4.4 Error Information Screen

4.4.1 Check the Robot Error Information

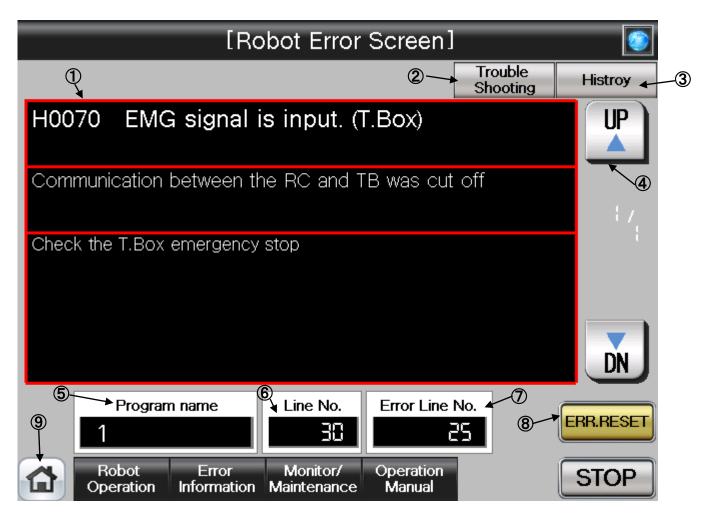
(1) Select [Error Information] from the [Robot Main Menu] screen.
[Robot Main Menu]



(2) [Robot Error Screen] appears.

		[Ro	bot Error	Screen]		
					Trouble Shooting	Histroy
H00	70 EM(G signal	is input. (Г.Вох)		
Comr	nunication	between ti	ne RC and T	B was cut	off	EZ,
Checł	< the T.Box	emergency	stop			
						DN
	Program 1	n name	Line No.	Error Line f	10. 5	ERR.RESET
	Robot Operation	Error Information	Monitor/ Maintenance	Operation Manual		STOP

(3) See below for the [Robot Error Screen]. For details of the operation buttons, see [Table 4-4-1: Details and roles of "Robot Error Screen" Operation Buttons].



[Screen Specifications]

Screen to monitor the robot errors in chronological order

(1) Error Display · · · Displays the description of an ongoing error

- * Upper column: error description
- Middle column: cause
- Lower column: restoration

(2) Troubleshooting ···· Jump to "Troubleshooting" in the [Robot Manual Menu]

- (3) History · · · Jumps to the history screen
- (4) ▲/▼ Buttons···Switches the error screens ▲ for the previous error and ▼ for the next error
- (5) Program Name · · · Displays the name of program with an error
- (6) Line No....Displays the line number of the program with an error
- (7) Error Line No. ··· Displays the number of ongoing error
- (8) Error Reset Button ···· Resets the error with ERR. RESET
- (9) Common Buttons · · · Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)

(4) See below for the [Robot Error History] screen. For details of the operation buttons, see [Table 4-4-2: Details and Roles of "Robot Error History" Operation Buttons].

		_		[Ro	bot Erro	r History]		_	۲
	Date		Commer	nt					1
	5/9/16) 19: 8	H0001	Fails	safe error ((SRVOFF)			
	5/9/16) 19 : 8	H0002	Fails	safe error (STOP)			1
	5/9/16) 19 : 8	H0003	System	n fail				2
	5/9/16) 19 : 8	H0004	CPU Wa	atch dog err	or			
	5/9/16) 19 : 8	H0005	Turn t	he power OF:	F and ON once	9		
	5/9/16) 19 : 8							
	5/9/16) 19 : 8							
	5/9/16) 19 : 8							▼
						3	Clear		
5						l	History	ERR.RE	SET
6		Robot peration		rror mation	Monitor/ Maintenance	e Manual		STO	P

[Screen Specifications]

Screen to monitor the robot error history in chronological order

(1) Error History · · · Displays the errors in the past in chronological order

(2) \blacktriangle / \triangledown Buttons · · · Scrolls the history \blacktriangle for the previous history \triangledown for the next history

- (3) Clear History · · · Deletes all the error history (initialization)
- (4) Error Reset Button ···· Resets the error with ERR. RESET
- (5) Common Buttons · · · Jump to each screen
 - * "STOP" stop a running program (Servo remains ON)

Table 4-4-1: Details and roles of "Robot Error Screen" Operation Buttons

Classification Name Function Spec. Note						
			Note			
Error Screen	Error Screen	Displays the deta	—			
		Upper Column Error description				
		Middle Column	Causes			
		Lower Column	Restoration			
	History	Jumps to the sc	reen with the past error information			
		in chronological	order			
	UP∆/DN▽	Switches the error	ors to display			
		UP▲	Displays the previous error			
		DN▼	Displays the next error			
	ERR.RST	Clears the displa	yed error and cancel the error			
		Blue Light ON	Error reset			
		Yellow Light	No error or error reset			
		ON				
	Program Name	Displays the prog				
	Line No. Displays the line number of the program with an					
error						
	Error No.	Displays the No.				
Common	Main Menu	Jumps to the ma	in menu screen	—		
Screen	Robot Operation	Jumps to the rob				
	Error Information	Jumps to the rob				
	Monitor/	Jumps to the mo				
	Maintenance					
	Manual	Jumps to the rob				
	STOP	Stops the running				
	Red Light ON Program stops					
		Light OFF	Program in running	1		

Table 4-4-2: Details and roles of "Robot Error History" Operation Buttons

Classification	Name	Function Spec.	Note	
Error History	Display of Error	Displays of the e	—	
History		Date of Error	Displays the date when the error	
			occurs	
		Comment	Displays the error summary	
	History Clear	Clears the list of		
	UP∆/DN▽	Scrolls the error		
			Displays the previous error history	
		▼	Displays the next error history	
	ERR.RST	Resets and canc		
		Blue Light ON	Error reset	
		Yellow Light ON	No error or error reset	
Common	Main Menu	Jumps to the ma	in menu screen	—
Screen	Robot Operation	Jumps to the rob	ot operation sub menu	
	Error Information	Jumps to the robot failure display		
	Monitor/	Jumps to the monitor/maintenance sub menu		
	Maintenance			
	Manual	Jumps to the robot manual sub menu		
STOP		Stops the running		
	l l		Program stops	
		Light OFF	Program in running	

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