Remote Ethernet Driver

Introduction

This manual describes how to connect the Display and the External Device (target Controller).

In this manual, the connection procedure will be described by following the below sections:

| 1 | System Configuration
This section shows the types of External Devices which can be connected and SIO type. | ☞ "1 System Configuration" (page 3) |

| 2 | Selection of External Device
Select a model (series) of the External Device to be connected and connection method. | ☞ "2 Selection of External Device" (page 4) |

| 3 | Example of Communication Settings
This section shows setting examples for communicating between the Display and the External Device. | ☞ "3 Example of Communication Setting" (page 5) |

| 4 | Setup Items
This section describes communication setup items on the Display.
Set communication settings of the Display with GP-Pro EX or in offline mode. | ☞ "4 Setup Items" (page 7) |

Operation

1   System Configuration

The system configuration in the case when the External Device of Seiko Epson Corporation and the Display are connected is shown.

Series	CPU	Link I/F	Interface	Setting Example
RC700	RC700	LAN(Ethernet Communication) Port	Ethernet (TCP)	Setting Example 1 (page 5)

> NOTE   • Firmware version 7.0.6.1 or later is required to use the RC700.

■ Connection Configuration

•   1:1 Connection

•   1:n Connection

Maximum number of connections : 64 units *1
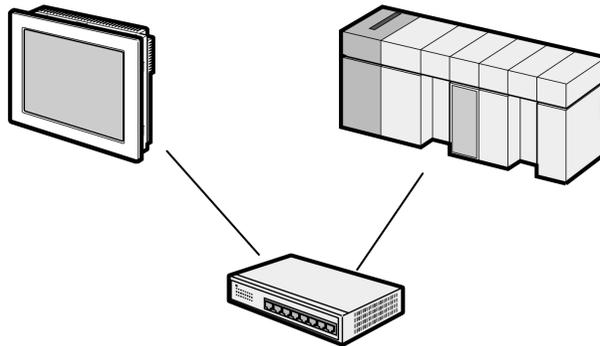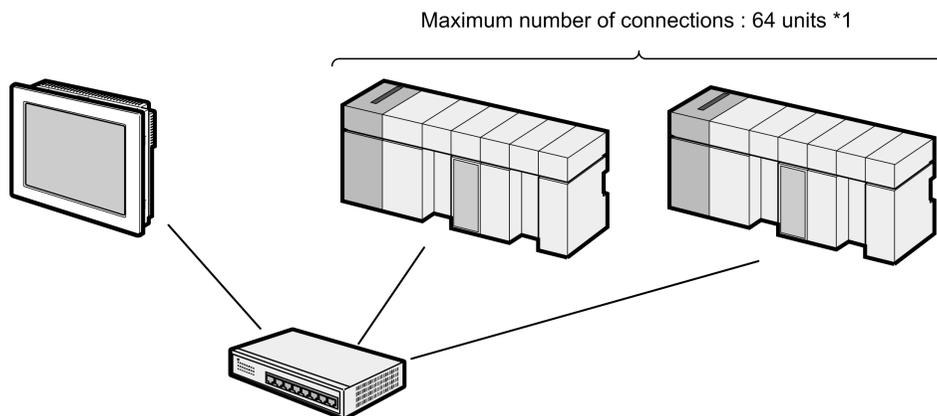
*1   When 17 or more External Devices are connected, it is necessary to check [Increase allowable number of Devices/PLCs].

)☞ "4.1 Setup Items in GP-Pro EX" (page 7)

2   Selection of External Device

Select the External Device to be connected to the Display.
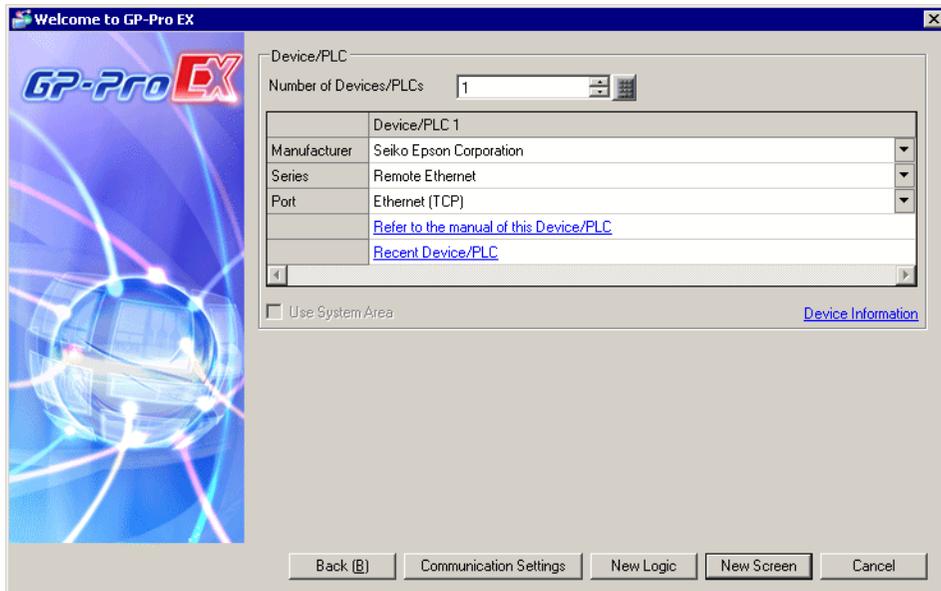
Setup Items	Setup Description
Number of Devices/ PLCs	Enter an integer from 1 to 4 to define the number of Devices/PLCs to connect to the display.
Manufacturer	Select the manufacturer of the External Device to connect. Select "Seiko Epson Corporation".
Series	Select the External Device model (series) and the connection method. Select "Remote Ethernet". In System configuration, make sure the External Device you are connecting is supported by "Remote Ethernet". ☞ "1 System Configuration" (page 3)
Port	Select the Display port to connect to the External Device. Select "Ethernet(TCP)".
Use System Area	Not available in this driver.

3   Example of Communication Setting

Examples of communication settings of the Display and the External Device, recommended by Pro-face, are shown.

3.1   Setting Example 1

■ Settings of GP-Pro EX

◆ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] ▦ .
To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the display in the offline mode of the display.

■ Settings of External Device

Use the programming software (EPSON RC+ V7.0) by Seiko Epson Corporation to configure the communication settings for the External Device.

Refer to your External Device manual for details.

1 In the programming software, create a project.

2 Select [System Configuration] from [Setup] menu.

3 Select [Controller]-[Configuration] in the tree view.

4 Enter the following settings and click [Apply].

Setup Items	Setup Description
Name	Input the project name.
IP Address	192.168.1.1
IP Mask	255.255.255.0
IP Gateway	0.0.0.0
USB Speed	Auto
Control Device	Remote Ethernet

5 Select [Controller]-[Remote Control]-[Ethernet] in the tree view.

6 Enter the following settings and click [Apply].

Setup Items	Setup Description
TCP/IP Port	5000
Terminator	CRLF
Timeout	60.00
Password	Enter the same password set in the GP-Pro EX [Login Password].
Use only for monitoring	Clear the check box.

7 Click [Close] and restart the External Device.

◆ Notes

• Check with your network administrator for setting the IP address.

Do not set duplicate IP address in the same network.

4 Setup Items

Set communication settings of the Display with GP-Pro EX or in offline mode of the Display.

The setting of each parameter must be identical to that of External Device.

)"3 Example of Communication Setting" (page 5)

NOTE • Set the Display's IP address in offline mode.

Cf.   Maintenance/Troubleshooting Manual "Ethernet Settings"

4.1   Setup Items in GP-Pro EX

■ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Setup Items	Setup Description
Port No.	Enter a port number of the Display, using 1024 to 65535. Check into [Auto], and a port number is set automatically.
Timeout	Use an integer from 1 to 127 to enter the time (s) for which Display waits for the response from External Device.
Retry	In case of no response from the External Device, use an integer from 0 to 255 to display how many times the Display retransmits the command.
Wait To Send	Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands.
Increase Allowable Number of Devices/ PLCs	When clicked, the [Increase Allowable Number of Devices/PLCs] dialog box is displayed. When you check [Increase allowable number of Devices/PLCs], the settings for [Allowable Number of Devices/PLCs] can be extended to "64".

NOTE
• Refer to the GP-Pro EX Reference Manual for Indirect Device.

    Cf.   GP-Pro EX Reference Manual "Changing the Device/PLC at Runtime (Indirect
          Device)"

■ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC]

window, select the external device and click [Settings] 📑 .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add

Device] to add another External Device.

Setup Items	Setup Description
IP Address	Enter the IP address for the External Device. **NOTE** • Check with your network administrator for setting the IP address. Do not set duplicate IP address in the same network.
Port No.	Enter an integer value from 0000 to 65535 for the External Device's port number.
Terminator	Select the end of line character.
Auto Login	Select the check box to enable the Auto Login function. Auto Login is used to log in to the External Device automatically, when: • Display starts up • Display changes status from offline to online mode • Display changes status from Communication Scan Stop to Communication Scan Restart
Login Password	Enter the password. This password must be the same as the Ethernet [Password] set in the External Device.
Copy to LOGINPASS	Select to copy the Login Password to the External Device's login password.

4.2　Setup Items in Offline Mode

NOTE　• Refer to the Maintenance/Troubleshooting manual for information on how to enter offline mode or about the operation.

　　Cf.　　Maintenance/Troubleshooting Manual "Offline Mode"

• The number of the setup items to be displayed for 1 page in the offline mode depends on the Display in use. refer to the Reference manual for details.

■ Communication Settings

To display the setting screen, touch [Device/PLC Settings] from [Peripheral Settings] in offline mode. Touch the External Device you want to set from the displayed list.

Setup Items	Setup Description
Port No.	Enter a port number of the Display. Select either of "Fixed" "Auto". Enter a port number of the Display with "1024-65535", when select "Fixed". Assign automatically without affecting the input value, when select "Auto".
Timeout	Use an integer from 1 to 127 to enter the time (s) for which Display waits for the response from External Device.
Retry	In case of no response from the External Device, use an integer from 0 to 255 to display how many times the Display retransmits the command.
Wait To Send	Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands.

■ Device Setting

To display the setting screen, touch [Device/PLC Settings] from [Peripheral Settings]. Touch the External Device you want to set from the displayed list, and touch [Device].

Setup Items	Setup Description
Device/PLC Name	Select the External Device's name. The External Device name is the name you set in GP-Pro EX (the initial value is [PLC1]).
IP Address	Enter the IP address of the External Device. **NOTE** • Check with your network administrator for setting the IP address. Do not set duplicate IP address in the same network.
Port No.	Use an integer 0000 to 65535 to enter the port number of the External Device.
Terminator	Select the end of line character.
Auto Login	Displays the auto login function's setting.
Password Copy	Displays the copy password function's setting.

5 Supported Device

Range of supported device address is shown in the table below. Please note that the actual supported range of the devices varies depending on the External Device to be used. Please check the actual range in the manual of your External Device.

⬜ This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Input acceptance condition of write Process. [*12]	Remarks
Login Password	-	LOGINPASS0 - LOGINPASS7		-	*1 *2 *3
Login	LOGIN	-		-	*1 *4 *5
Logout	LOGOUT	-		-	*1 *5
Execute the function	-	START		[When writing] Auto ON Ready ON Error OFF EStop OFF Safeguard ON	*1 *6
Stop all tasks and commands.	STOP	-		[When writing] Auto ON	*1 *5
Pause all tasks	PAUSE			[When writing] Auto ON Running ON	*1 *5
Continue paused tasks	CONTINUE	-		[When writing] Auto ON Ready ON	*1 *5
Reset	RESET	-	[L / H]	[When writing] Auto ON Ready ON	*1 *5
Motor operation (Power of robot motor)	MOTOR00 - MOTOR16	-		[When motor is ON] Auto ON Ready ON EStop OFF Safeguard OFF [When motor is OFF] Auto ON Ready ON	*1 *7
Current robot number	-	CURROBOT		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF [When writing] Auto ON Ready ON Error OFF EStop OFF Safeguard OFF	*8

Device	Bit Address	Word Address	32 bits	Input acceptance condition of write Process. [12]	Remarks
Move the arm to home position	-	HOME	[L / H]	[When writing] Auto ON Ready ON Error OFF EStop OFF Safeguard OFF	[1] [9]
Input I/O	INBIT00000 - INBIT65535	INWORD0000 - INWORD4095		-	[10] [11]
Output I/O	OUTBIT00000 - OUTBIT65535	OUTWORD00000 - OUTWORD4095		[When writing] Auto ON Ready ON	[11]
Memory I/O	MEMIOBIT00000 - MEMIOBIT65535	MEMIOWORD0000 - MEMIOWORD4095		[When writing] Auto ON Ready ON	[11]
State(Remoto)		STATUS0 - STATUS1		-	Bit **15** [10] [12]
Abort the command execution	ABORT	-		[When writing] Auto ON	[1] [5]
State(SPELL)		STAT0 - STAT2		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF	Bit **31** [10] [13]
Status information for the robot.		RBTINF0 - RBTINF5		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF	Bit **31** [10] [14]
Power Mode	POWER	-		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF [When writing] Auto ON Ready ON Error OFF EStop OFF Safeguard OFF	[15]
IO label	-	IOLABEL0,0,00000 - IOLABEL2,2,65535		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF	[16] [10] [17]

Device	Bit Address	Word Address	32 bits	Input acceptance condition of write Process.[12]	Remarks
System error	-	SYSERR0 - SYSERR1		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF	[10] [18]
Controller information		CTRLINF00-CTRLINF10		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF	Bit**31** [10] [19]
Current Position of robot(World)	-	RBTW0 - RBTW9		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF	[10] [20] [21]
Current Position of robot(Joint)	-	RBTJ0 - RBTJ9		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF	[10] [21] [22]
Current Position of robot(Pulse)	-	RBTP1 - RBTP9	L / H	[When reading] Auto ON Error OFF EStop OFF Safeguard OFF	[10] [21] [23]
Speed	-	SPEED0 - SPEED 2		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF [When writing] Auto ON Ready ON Error OFF EStop OFF Safeguard OFF	[21] [24]
Accel	-	ACCEL0 - ACCEL5		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF [When writing] Auto ON Ready ON Error OFF EStop OFF Safeguard OFF	[21] [25]

Device	Bit Address	Word Address	32 bits	Input acceptance condition of write Process.*12	Remarks
Current torque instruction value.	-	REALTRQ1 - REALTRQ9		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF	*10 *21 *26
Clears and initializes the average torque.	ATCLR1 - ATCLR9	ATCLR1		[When writing] Auto ON Ready ON Error OFF EStop OFF Safeguard OFF	*1 *21 *27
Display average torque.	-	ATRQ1 - ATRQ9		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF	*10 *21 *28
Clears and initializes the peak torque.	PTCLR1 - PTCLR9	PTCLR1		[When writing] Auto ON Ready ON Error OFF EStop OFF Safeguard OFF	*1 *21 *29
Display peak torque.	-	PTRQ1 - PTRQ 9	⌐L / H⌐	[When reading] Auto ON Error OFF EStop OFF Safeguard OFF	*10 *21 *30
Display overload rating.	-	OLRATE1 - OLRATE9		[When reading] Auto ON Error OFF EStop OFF Safeguard OFF	*10 *21 *31
Controller name	-	CNTNAME		-	*10 *32
Serial number of controller.	-	CNTNO		-	*10 *32
Project name.	-	PRJNAME		-	*10 *32
Main program number list	-	MAINLIST000 - MAINLIST065		-	*10 *33
All tasks information (Get)	-	GETTASKINF000 - GETTASKINF060		-	*34 *35
All tasks information (Detail)	-	TASKINF00.0 - TASKINF59.9		-	*10 *36
Running main number.	-	GETMAIN		-	*10 *37
I/O map		IOMAP		-	Bit F *10 *38

Device	Bit Address	Word Address	32 bits	Input acceptance condition of write Process. [*12]	Remarks
I/O structure.	-	GETIOSTR0.0 - GETIOSTRA.8		-	*10 *39
Language setting.	-	LANGUAGE		-	*1 *40
Error history (Get)	-	GETERRHIS0 - GETERRHIS1		-	*34 *41
Error history (Detail)	-	ERRHIS00.00 - ERRHIS49.16		-	*10 *42
Error message (Code)	-	ERRCODE00 - ERRCODE99		-	*43
Error message (String)	-	ERRMSG00 - ERRMSG99		-	*10 *17 *43
Point file name list of the specified robot.	-	PFILELIST 00.00 - PFILELIST 16.99		-	*10 *32 *44
Point file name that is loaded in the specified robot.	-	LOADPFILE01 - LOADPFILE16		-	*10 *32 *45
Point information (Get)	-	GETPINF00 - GETPINF54	⌐L / H⌐	-	*34 *46
Point information (Detail)	-	PINF00.00 - PINF49.36		-	*10 *47
Information of the registered robot.	-	GETRBTINF00.0 - GETRBTINF16.1		-	*10 *48
Console device.	CONSOLE	-		[When reading] Ready ON	*10 *49
Controller operation time.	-	ENETIME0 - ENETIME1		-	*10 *50
Motor on time of the robot / Num of motor on times of the robot.	-	EXTTIME00.00 - EXTTIME16.01		-	*10 *51
Variable name	-	VARNAME0.0 - VARNAME15.1		-	*1 *52
Refresh	REFRESH	-		-	*1 *53
Variable	-	VARIABLE0 - VARIABLE15		[When writing] Auto ON Ready ON	*54

*1 When you read from this device, the Display does not send the command. The Display shows the last value written to the device.
The values of the following devices are affected by write operations of the other devices.
The following tables shows how the values change:

• LOGIN and LOGOUT devices

Device	Operation	Result	
		LOGIN	LOGOUT
Initial value		OFF	ON
LOGIN	ON	ON	OFF
	OFF	(No change)	(No change)
LOGOUT	ON	OFF	ON
	OFF	(No change)	(No change)

• START, STOP, PAUSE, and CONTINUE devices

Device	Operation	Result			
		START	STOP	PAUSE	CONTINUE
Initial value		0	OFF	OFF	OFF
START	Write value	Input value	OFF	OFF	OFF
STOP	ON	0	ON	OFF	OFF
	OFF	(No change)	(No change)	(No change)	(No change)
PAUSE	ON	(No change)	OFF	ON	OFF
	OFF	(No change)	(No change)	(No change)	(No change)
CONTINUE	ON	(No change)	OFF	OFF	ON
	OFF	(No change)	(No change)	(No change)	(No change)

*2 Use the same password that LOGIN device uses. We recommend that you also enable "Hide Input Value [Show asterisks]" for security.

*3 16 bytes character string

*4 The Display sends a login command with a value of "LOGINPASS0 - LOGINPASS7".

*5 When you write "ON" to this device, Display sends a command.

*6 Write the corresponding number of the function that you want to run.

Function Name	Function No.
Main	0
Main1	1
Main2	2
Main3	3
Main4	4
Main5	5
Main6	6
Main7	7

*7 MOTOR00 sends a command to all manipulators. MOTOR01 - MOTOR16 sends a command to the specified manipulator.
0: Turn OFF the robot motor.
1: Turn ON the robot motor.

*8 Read: Read the current robot number.
Write: Write the robot number of the selected manipulator.

*9 0: All manipulators move to home position.
1 - 16: Selected manipulators (robot number 1 to 16) move to home position.

*10 Write disabled

*11   The device specifications are as follows.:

Input I/O		Output I/O		Memory I/O	
Word Address	Bit Address	Word Address	Bit Address	Word Address	Bit Address
INWORD0000	INBIT00000	OUTWORD0000	OUTBIT00000	MEMIOWORD0000	MEMIOBIT00000
	INBIT00001		OUTBIT00001		MEMIOBIT00001
	:		:		:
	INBIT00007		OUTBIT00007		MEMIOBIT00007
	INBIT00008		OUTBIT00008		MEMIOBIT00008
	INBIT00009		OUTBIT00009		MEMIOBIT00009
	:		:		:
	INBIT00015		OUTBIT00015		MEMIOBIT00015
INWORD0001	INBIT00016	OUTWORD0001	OUTBIT00016	MEMIOWORD0001	MEMIOBIT00016
	INBIT00017		OUTBIT00017		MEMIOBIT00017
	:		:		:
:	:	:	:	:	:

The address range varies according to the External Device. Please confirm specifications of the External Device before using these devices.

*12   Word Address
STATUS0: [short] Status (Refer to Bit Address)
STATUS1: [short] Error code, warning code
Bit Address
STATUS0.00: Test, STATUS0.01: Teach, STATUS0.02: Auto, STATUS0.03: Warning,
STATUS0.04: SError, STATUS0.05: Safeguard, STATUS0.06: EStop, STATUS0.07: Error,
STATUS0.08: Paused, STATUS0.09: Running, STATUS0.10: Ready, STATUS0.11 - 16: reserved

Flag	Description
Test	Turn ON in the TEST mode
Teach	Turn ON in the TEACH mode
Auto	Turn ON in the remote input acceptance condition
Warning	Turn ON in the warning condition Task can be executed as usual even a warning condition. However, take action for the warning as soon as possible.
SError	Turn ON in the serious error condition When a serious error occurs, Reboot the Controller to recover from the error condition. "Reset input" is not available.
Safeguard	Turn ON with safety door open
EStop	Turn ON in the emergency condition
Error	Turn ON in the error condition Use "Reset input" to recover from the error condition.
Paused	Turn ON with paused task
Running	Turn ON with task executing Turn OFF when "Paused output" is ON
Ready	Turn ON with the Controller completed the startup and no task executing

*13 Word Address
STAT0 - STAT2: [Int] Status (Refer to Bit Address)
Bit Address

Address	Bit	Value	State of the controller to be displayed when bit is on
0	0-15	&H1-&H8000	Task 1 - 16 are executing (Xqt) or Halt condition.
	16	&H10000	Task is executing
	17	&H20000	Pause condition
	18	&H40000	Error condition
	19	&H80000	TEACH mode
	20	&H100000	Emergency stop condition
	21	&H200000	Low power mode (Power Low)
	22	&H400000	Safety door input is open
	23	&H800000	Enable switch is open
	24	&H1000000	Undefined
	25	&H2000000	Undefined
	26-31		Undefined
1	0	&H1	Conditional approval of Jump...Sense statement at history of target coordinates over the suspension. (Jump statements then executed this history is cleared.)
	1	&H2	Conditional approval of Go/Jump/Move...Till statement at history of operating suspend. (Go/Jump/Move...Till statements then executed this history is cleared.)
	2	&H4	Undefined
	3	&H8	Conditional approval of Trap statement at history of operating suspend.
	4	&H10	Motor On condition
	5	&H20	Home position at currently
	6	&H40	Low power condition
	7	&H80	Undefined
	8	&H100	Joint 4 motor is on
	9	&H200	Joint 3 motor is on
	10	&H400	Joint 2 motor is on
	11	&H800	Joint 1 motor is on
	12	&H1000	Joint 6 motor is on
	13	&H2000	Joint 5 motor is on
	14	&H4000	Joint T motor is on
	15	&H8000	Joint S motor is on
	16	&H10000	Joint 7 motor is on
	17-31		Undefined
2	0-15	&H1-&H8000	Task 17 - 32 are executing (Xqt) or Halt condition.
	16-31		Undefined

*14   Word Address
      RBTINF0 - RBTINF5: [Int] Information (Refer to Bit Address)
      Bit Address

Index	Bit	Value	Description
0	0	&H1	Undefined
	1	&H2	Resettable error occur
	2	&H4	Unresettable error occur
	3	&H8	Motor ON
	4	&H10	Power High
	5	&H20	Undefined
	6	&H40	Undefined
	7	&H80	Undefined
	8	&H100	Robot is Halt condition
	9	&H200	Robot is not Halt condition (operating or quick pausing)
	10	&H400	Roboy is stop at pausing or safety door
	11		Undefined
	12		Undefined
	13		Undefined
	14	&H4000	Meet TILL condition, after operation command
	15	&H8000	Meet SENSE condition, after operation command
	16-31		Undefined
1	0	&H1	In the follow-up operation (In the conveyor tracking)
	1	&H2	Wait for return action (WaitRecover condition)
	2	&H4	Return action is executing
	3-31		Undefined
2	0	&H1	Robot is home position
	1-31		Undefined
3	0	&H1	Joint 1 servo is on
	1	&H2	Joint 2 servo is on
	2	&H4	Joint 3 servo is on
	3	&H8	Joint 4 servo is on
	4	&H10	Joint 5 servo is on
	5	&H20	Joint 6 servo is on
	6	&H40	Joint 7 servo is on
	7	&H80	Joint S servo is on
	8	&H100	Joint T servo is on
	9-31		Undefined
4	NA	0-32 -1	It is a task number executing a robot command. 0 = Execute the command from command window or macro. -1 = Task or manipulator is unused.
5	0	&H1	Joint 1 brake is on
	1	&H2	Joint 2 brake is on
	2	&H4	Joint 3 brake is on
	3	&H8	Joint 4 brake is on
	4	&H10	Joint 5 brake is on
	5	&H20	Joint 6 brake is on
	6	&H40	Joint 7 brake is on
	7	&H80	Joint S brake is on
	8	&H100	Joint T brake is on
	9-31		Undefined

*15   Bit Address
      0: Power Low, 1: Power High

*16   Word Address

IOLABEL 0 . 0 . 00000

      → Port No.: 0 - 65535

      → IO width: 0 (bit), 1 (byte), 2 (word)

      → IO type: 0 (Input), 1 (Output), 2 (Memory)
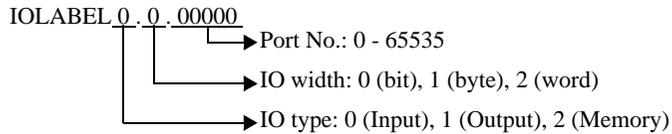
*17   256 bytes character string

*18   Word Address
     SYSERR0: Error code [Short]
     SYSERR1: Warning code [Short]

*19   Word Address
     CTRLINF0 - CTRLINF9: Index (Refer to Bit Address)

Bit Address

Index	Bit	Value	Description
0	N/A		Reserved
1	Controller condition		
	0	&H1	Ready condition
	1	&H2	Start condition
	2	&H4	Pause condition
	3-7		Undefined
	8	&H100	Emergency stop condition
	9	&H200	Safety door open condition
	10	&H400	Error condition
	11	&H800	Fatal error condition
	12	&H1000	Warning condition
	13	&H2000	WaitRecover condition (It is waiting return from safe door open)
	14	&H4000	Recover condition (It is executing return from safe door open)
	15-31		Reserved
2	0	&H1	Enable switch of TP1 is ON
	1-31		Reserved
3	0	&H1	TEACH mode circuit failure detection
	1	&H2	Safety door circuit failure detection
	2	&H4	Emergency stop circuit failure detection
	3-31		Reserved
4	N/A		0: Real run mode, 1: Dry run mode
5	N/A		Control device 21: RC+, 22: Remote, 26: Remote Ethernet, 29: Remote RS232C
6	N/A		Number of the set robot
7	N/A		Operation mode 0: Programing mode, 1: AUTO mode
8	N/A		Reserved
9	N/A		Firm ware version of the controller Major number*1000000 + Minor number*10000 + Revision number*100 + Build number Example: In the case of 1.6.2.4 1060204
10	N/A		SMART status of the hard disk 0: SMART status is normal, 1: SMART status is abnormal When SMART status is abnormal, the hard disk may break down, back up data immediately, and use a new hard disk. You cannot use SMART status when you use RAID. It will always return Normal.

*20 Word Address
   The robot point represents the current position of the specified robot.

Address	Name	Num of Words	Read / Write	Comment
RBTW0	Data	1DWord	Read	When data exists, a bit turns ON. Bit0: X coordinate Bit1: Y coordinate : Bit7: S coordinate Bit8: T coordinate Bit9: Lefty Bit10: Righty Bit9, Bit10 varies depending on the arm attribute.
RBTW1	X coordinate	1DWord	Read	
RBTW2	Y coordinate	1DWord	Read	
RBTW3	Z coordinate	1DWord	Read	
RBTW4	U coordinate	1DWord	Read	[Float] The current position of the specified robot in the World mode.
RBTW5	V coordinate	1DWord	Read	
RBTW6	W coordinate	1DWord	Read	
RBTW7	R coordinate	1DWord	Read	
RBTW8	S coordinate	1DWord	Read	
RBTW9	T coordinate	1DWord	Read	

*21 Robot motion command runs on the selected manipulator. Make sure that the robot is selected with the CURROBOT command, before you use these devices.

*22 Word Address
   A robot point that is set by the specified joint angle.
   You can use this device when the robot is stopped.

Address	Name	Num of Words	Read / Write	Comment
RBTJ0	Data	1DWord	Read	When data exist, a bit turns ON. Bit0: Joint 1 location Bit1: Joint 2 location : Bit7 : Joint 8 location [S] Bit8 : Joint 9 location [T]
RBTJ1	Joint 1 location	1DWord	Read	
RBTJ2	Joint 2 location	1DWord	Read	
RBTJ3	Joint 3 location	1DWord	Read	
RBTJ4	Joint 4 location	1DWord	Read	[Float] The current position of the specified robot in the Joint mode.
RBTJ5	Joint 5 location	1DWord	Read	
RBTJ6	Joint 6 location	1DWord	Read	
RBTJ7	Joint 7 location	1DWord	Read	
RBTJ8	Joint 8 location [S]	1DWord	Read	
RBTJ9	Joint 9 location [T]	1DWord	Read	

*23   Word Address
    Returns an integer value representing the current encoder pulse count for the joint specified by joint number.

Address	Name	Num of Words	Read / Write	Comment
RBTP1	Joint 1 pulse	1DWord	Read	
RBTP2	Joint 2 pulse	1DWord	Read	
RBTP3	Joint 3 pulse	1DWord	Read	
RBTP4	Joint 4 pulse	1DWord	Read	[Int]
RBTP5	Joint 5 pulse	1DWord	Read	The current position of the specified robot in the Pulse mode.
RBTP6	Joint 6 pulse	1DWord	Read	
RBTP7	Joint 7 pulse	1DWord	Read	
RBTP8	Joint 8 pulse [S]	1DWord	Read	
RBTP9	Joint 9 pulse [T]	1DWord	Read	

*24   Word Address

Address	Name	Num of Words	Read / Write	Comment
SPEED0	PTP motion percent speed[%]	1	Read / Write	
SPEED1	Jump depart speed[%]	1	Read / Write	[short] When you write only to SPEED0, the value is reflected in SPEED0 - SPEED2.
SPEED2	Jump approach speed[%]	1	Read / Write	

When you perform a write operation to a word with a value outside of the following ranges, the Display reads all the word addresses, changes the values, and then writes the values back to the addresses. Note that the correct data may not be written if you change the value of a word address in the External Device while the Display is performing a write operation.
• Write 1 word from SPEED0
• Write 3 words from SPEED0

*25   Word Address

Address	Name	Num of Words	Read / Write	Comment
ACCEL0	acceleration specification value	1	Read / Write	
ACCEL1	deceleration specification value	1	Read / Write	
ACCEL2	depart acceleration specification value for Jump	1	Read / Write	[short]
ACCEL3	depart deceleration specification value for Jump	1	Read / Write	
ACCEL4	approach acceleration specification value for Jump	1	Read / Write	
ACCEL5	approach deceleration specification value for Jump	1	Read / Write	

When you perform a write operation to a word with a value outside of the following ranges, the Display reads all the word addresses, changes the values, and then writes the values back to the addresses. Note that the correct data may not be written if you change the value of a word address in the External Device while the Display is performing a write operation.
• Write 2 words from ACCEL0
• Write 6 words from ACCEL0

*26 Word Address

REALTRQ_1

→Joint Number (1 - 9). Return value [Float]

*27 Word Address

ATCLR1: Refer to the explanation of the BIT Address.

The Display writes the first 9 bits to the controller. Bits 10 to 16 are ignored.

Bit Address

Clears and initializes the average torque for one or more joints.

ATCLR_1

→Joint Number (1 - 9).

When you write a value 0 (OFF), the Display does nothing. When you write a value 1 (ON), the Display clears and initializes the average torque. If you want to clear and initialize multiple joints, write to the word.

*28 Word Address

ATRQ_1

→Joint Number (1 - 9). Return value [Float]

*29 Word Address

PTCLR1: Refer to the explanation of the BIT Address.

The Display writes the first 9 bits to the controller. Bits 10 to 16 are ignored.

Bit Address

Clears and initializes the peak torque for one or more joints.

PTCLR_1

→Joint Number (1 - 9).

When you write a value 0 (OFF), the Display does nothing. When you write a value 1(ON), the Display clears and initializes the peak torque. If you want to clear and initialize multiple joints, write to the word.

*30 Word Address

PTRQO_1

→Joint Number (1 - 9). Return value [Float]

*31 Word Address

OLRATE_1

→Joint Number (1 - 9). Return value [Float]

*32 32 bytes character string

*33 Word Address

Address	Name	Num of Words	Read / Write	Comment
MAINLIST000	Num of Function in Program.	1	Read	[short]
MAINLIST001 : MAINLIST065	Existing Function No.	1	Read	[short] When there is no function, the value is zero.

*34 Some addresses are write disabled.

*35　Word Address
Creates a snapshot of Task Information.

Address	Name	Num of Words	Read / Write	Comment
GETTASKINF000	Trigger	1	Read / Write	[short] 0: Initial value 1: Creates a snapshot of Task Information (when the process completes, the value changes to 0).
GETTASKINF001	Num of Task.	1	Read	[short]
GETTASKINF002 : GETTASKINF060	Existing Task No.	1	Read	[short] When there is no Task, the value is zero.

*36　Word Address
Reads a snapshot of Task Information.

TASKINF 001 . 0

➤ Please refer to the following.

➤ Existing Task No01 - 59 (Please refer to GETTASKINF002 -)

Address	Name	Num of Words	Read / Write	Comment
TASKINF***.0	Function name	32	Read	[String] 64byte string
TASKINF***.1	Status	3	Read	[String] 5byte string The following is displayed "Quit", "Run", "Wait", "Halt", "Pause", "Error", "Halt Reserved"
TASKINF***.2	Type	5	Read	[String] 10byte string The following is displayed "Normal", "NoPause", "NoEmgAbort", "Background", "Trap"
TASKINF***.3	Start Time: YY	1	Read	[Short]
TASKINF***.4	Start Time: MM	1	Read	[Short]
TASKINF***.5	Start Time: DD	1	Read	[Short]
TASKINF***.6	Start Time: HH	1	Read	[Short]
TASKINF***.7	Start Time: MM	1	Read	[Short]
TASKINF***.8	Start Time: SS	1	Read	[Short]
TASKINF***.9	Execution line.	2	Read	[Short x 2] (Number of 5 digit.)

*37　Word Address
The following explains the values:
　　　-1: There is no main.
　　　 0: main
　　Others: main1 -

*38   Word Address
      Reads if an I/O exists.

Address	Name	Read / Write	Comment
IOMAP0	Memory I/O	Read	[Short] 0: Does not exist 1: Exists
IOMAP1	Standard I/O	Read	
IOMAP2	Drive unit 1	Read	
IOMAP3	Drive unit 2	Read	
IOMAP4	Drive unit 3	Read	
IOMAP5	Expansion I/O-1	Read	
IOMAP6	Expansion I/O-2	Read	
IOMAP7	Expansion I/O-3	Read	
IOMAP8	Expansion I/O-4	Read	
IOMAP9	Fieldbus Master	Read	
IOMAPA	Fieldbus Slave	Read	
IOMAPB - IOMAPF	Reserved	Read	

*39 Word Address
Reads the I/O structure.

GETIOSTR 0 . 0

→ Please refer to the following.
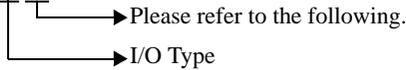
→ I/O Type
0: Memory I/O, 1: Standard I/O, 2: Drive unit 1, 3: Drive unit 2, 4: Drive unit 3,
5: Expansion I/O-1, 6: Expansion I/O-2, 7: Expansion I/O-3, 8: Expansion I/O-4,
9: Fieldbus Master, A: Fieldbus Slave, B - F: Reserved.

Address	Name	Num of Words	Read / Write	Comment
GETIOSTR0.0	Exist I/O?	1	Read	[short] 0: Not exist.(0 is set to IOSTRUCR*.1 - 8) 1: 1data Exist.(0 is set to IOSTRUCR*.5 - 8) 2: 2data Exist. (Input/Output are separated.)
GETIOSTR0.1	I/O type	1	Read	[short] 0: Memory I/O 1: Standard I/O 2: Drive units1 3: Drive units2 4: Drive units3 5: Expansion I/O-1 6: Expansion I/O-2 7: Expansion I/O-3 8: Expansion I/O-4 9: Fieldbus master A: Fieldbus slave B - F: Resaerved
GETIOSTR0.2	Input / Output	1	Read	[short] 0: Input 1: Output 2: Input and Output
GETIOSTR0.3	Start number.	1	Read	[short]
GETIOSTR0.4	Memory size	1	Read	[short]
GETIOSTR0.5	Input / Output(2)	1	Read	[short] 0: Input 1: Output 2: Input and Output
GETIOSTR0.7	Start number. (2)	1	Read	[short]
GETIOSTR0.8	Memory size(2)	1	Read	[short]

*40 Word Address
Specify the language for the Error History (detail) and the Error Message (String) devices.
Default: "0-English"
0-English, 1-Japanese, 2-German, 3-French, 4-Simplified Chinese, 5-Traditional Chinese

*41   Word Address
Creates a snapshot of Error History.

Address	Name	Num of Words	Read / Write	Comment
GETERRHIS0	Trigger	1	Read / Write	[short] 0: Initial value 1: Creates a snapshot of Error history (when the process completes, the value changes to 0. If an error occurs, this value changes to 2). 2: An error occurred.
GETERRHIS1	Num of History	1	Read	[short] Max 50 history.

*42   Word Address
Reads a snapshot of Error History.

ERRHIS 01 . 00

➤ Please refer to the following

➤ Error history No.[1 - 49]
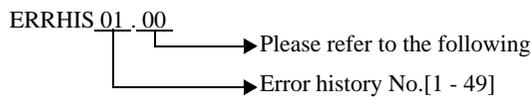
The Language of this device depends on the LANGUAGE setting device.

Address	Name	Num of Words	Read / Write	Comment
ERRHIS**.00	Code	1	Read	[Short] (Number of 4digit)
ERRHIS**.01	Function name	32	Read	[String] 64bytes string
ERRHIS**.02	Line	2	Read	[Short x2] (Number of 5digit)
ERRHIS**.03	Internal code.	1	Read	[Short] (Number of 4digit)
ERRHIS**.04	Error Time: YY	1	Read	[Short]
ERRHIS**.05	Error Time: MM	1	Read	[Short]
ERRHIS**.06	Error Time: DD	1	Read	[Short]
ERRHIS**.07	Error Time: HH	1	Read	[Short]
ERRHIS**.08	Error Time: MM	1	Read	[Short]
ERRHIS**.09	Error Time: SS	1	Read	[Short]
ERRHIS**.10	Error Time: xxx	1	Read	[Short]
ERRHIS**.11	Robot No	1	Read	[Short]
ERRHIS**.12	Axis No	1	Read	[Short]
ERRHIS**.13	Task No	1	Read	[Short]
ERRHIS**.14	Additional information 1	5	Read	[String] 10byte string
ERRHIS**.15	Additional information 2	5	Read	[String] 10byte string
ERRHIS**.16	Error message	128	Read	[String] 255byte string

*43   Word Address

ERRCODE 00

→ 00 - 99: Specifies the error code to be displayed.

ERRMSG 00

→ 00 - 99: Stores the error message of the number specified for ERRCODE.

When you set "1" to "ERRCODE00" and then read "ERRMSG00", the message of the controller error code 1 is read.
The Language of this device depends on the LANGUAGE setting device.

*44   Word Address

PFILELIST 00 . 00

→ 00 - 99: The filename (MAX 32-byte string)

→ 00 - 16: Robot No. 00=Reads from all manipulators (reads the first 100 files).

01 - 16 = Represents the Robot No of a manipulator.

*45   Word Address

LOADPFILE 01

→ 01 - 16: Robot No.

*46   Word Address
Creates a snapshot of Point information.

Address	Name	Num of Words	Read / Write	Comment
GETPINF00	Trigger	1	Read / Write	[short] 0: Initial value 1: Creates a snapshot of Point Information (when the process completes, the value changes to 0. If an error occurs, this value changes to 2). 2: An error occurred
GETPINF01	Robot No.	1	Read / Write	[short]
GETPINF02	Stat Point No. of snapshot.	1	Read / Write	[short]
GETPINF03	End Point No. of snapshot	1	Read / Write	[short] The maximum number of snapshots is 50.
GETPINF04	Num of points.	1	Read	[short] -
GETPINF05	The point number that is registered	1	Read	
:	-	-	-	
GETPINF54	The point number that is registered	1	Read	

*47   Word Address

Reads a snapshot of Point information.

PINF 00 . 00

→ 00 - 36: Please refer to the following table.

→ 00 - 49: The defined point number
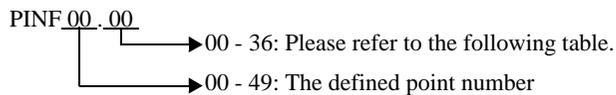
Example) When you read PINF00.**, the Display reads the data points in GETPINF05.

Address	Name	Num of Words	Read / Write	Comment
PINF**.00	Point No.	1	Read	[short]
PINF**.01	X coordinate [mm]	2	Read	[Float]
PINF**.02	Y coordinate [mm]	2	Read	[Float]
PINF**.03	Z coordinate [mm]	2	Read	[Float]
PINF**.04	U coordinate [deg.]	2	Read	[Float]
PINF**.05	V axis exists	1	Read	[short] V 0:Does not exist, 1:Exists
PINF**.06	V coordinate [deg.]	2	Read	[Float]
PINF**.07	W axis exists	1	Read	[short] W 0:Does not exist, 1:Exists
PINF**.08	W coordinate [deg.]	2	Read	[Float]
PINF**.09	R axis exists	1	Read	[short] R 0:Does not exist, 1:Exists
PINF**.10	R coordinate [??]	2	Read	[Float]
PINF**.11	S axis exists	1	Read	[short] S 0:Does not exist, 1:Exists
PINF**.12	S coordinate [??]	2	Read	[Float]
PINF**.13	T axis exists	1	Read	[short] T 0:Does not exist, 1:Exists
PINF**.14	T coordinate [??]	2	Read	[Float]
PINF**.15	Hand orientation exists	1	Read	[short] Hand orientation 0:Does not exist, 1:Exists, 2:Undefined
PINF**.16	Hand orientation	1	Read	[short] Hand orientation 0: Lefty, 1: Righty
PINF**.17	Elbow orientation exists	1	Read	[short] Elbow orientation 0:Does not exist, 1:Exists, 2: Undefined
PINF**.18	Elbow orientation	1	Read	Elbow orientation 0: BELOW, 1: ADOVE
PINF**.19	Wrist orientation exists	1	Read	[short] Wrist orientation 0:Does not exist, 1:Exists, 2: Undefined
PINF**.20	Wrist orientation	1	Read	Wrist orientation 0: FLIP, 1: NOFLIP
PINF**.21	J4Flag exists	1	Read	[short] j4flag 0:Does not exist, 1:Exists, 2: Undefined
PINF**.22	J4Flag, 0 - 1	1	Read	[short]
PINF**.23	J6Flag exists	1	Read	[short] j6flag 0:Does not exist, 1:Exists, 2: Undefined
PINF**.24	J6Flag, 0 - 127	1	Read	[short]
PINF**.25	J1Flag exists	1	Read	[short] j1flag 0:Does not exist, 1:Exists, 2: Undefined
PINF**.26	J1Flag, 0 - 1	1	Read	[short]
PINF**.27	J2Flag exists	1	Read	[short] h2flag 0:Does not exist, 1:Exists, 2: Undefined
PINF**.28	J2Flag, 0 - 1	1	Read	[short]
PINF**.29	J1angle exists	1	Read	[short] j1angle 0:Does not exist, 1:Exists, 2: Undefined
PINF**.30	J1angle,	2	Read	[Float]
PINF**.31	Local No exists	1	Read	[short] Local No 0:Does not exist, 1:Exists
PINF**.32	Local No	1	Read	[short]
PINF**.33	Conveyer No exists	1	Read	[short] Conveyer No 0:Does not exist, 1:Exists
PINF**.34	Conveyer No	1	Read	[short]
PINF**.35	Label exists	1	Read	[short] Label 0:Does not exist, 1:Exists
PINF**.36	Label	128	Read	[String] 256 byte strings

*48 Word Address

GETRBTINF 00 . 0

└──► Robot Information Element

└──► Num of Robot/Robot No. (0: Num of Robot, 1 - 16: Robot No.)
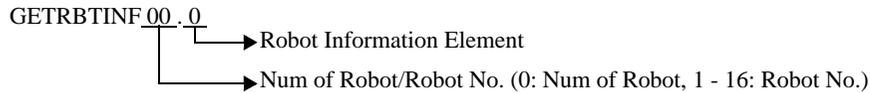
Address	Name	Num of Words	Read / Write	Comment
GETRBTINF00.0	Num of Robot	1	Read	[Short]
GETRBTINF00.1	Reserved	16	Read	[Short]
GETRBTINF01.0	Robot1: Type	1	Read	[Short]
GETRBTINF01.1	Robot1: Model name	16	Read	[Short] 32 bytes string
GETRBTINF02.0	Robot2: Type	1	Read	[Short]
GETRBTINF02.1	Robot2: Model name	16	Read	[Short] 32 bytes string
:	:		Read	
GETRBTINF16.0	Robot16: Type	1	Read	[Short]
GETRBTINF16.1	Robot16: Model name	16	Read	[Short] 32 bytes string

*49 Bit Address

Return value

0: Remote Ethernet is not a console device.

1: Remote Ethernet is a console device.

*50 Word Address

Address	Name	Num of Words	Read / Write	Comment
ENETIME0	Total times[s]	1DWord	Read	[int]
ENETIME1	Power on Times[s]	1DWord	Read	[int]

*51 Word Address

EXTTIME 00 . 0

└──► Motor on time Information Element.

└──► Num of Robot/Robot No. (0: Num of Robot, 1 - 16: Robot No.)
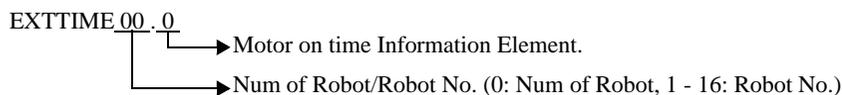
Address	Name	Num of Words	Read / Write	Comment
EXTTIME00.0	Num of Robot	1DWord	Read	[int]
EXTTIME00.1	Reserved	1DWord	Read	[int]
EXTTIME01.0	Robot1: Motor on time.	1DWord	Read	[int]
EXTTIME01.1	Robot1: Number of Motor on.	1DWord	Read	[int]
EXTTIME02.0	Robot2: Motor on time.	1DWord	Read	[int]
EXTTIME02.1	Robot2: Number of Motor on.	1DWord	Read	[int]
:				
EXTTIME016.0	Robot16: Motor on time.	1DWord	Read	[int]
EXTTIME016.1	Robot16: Number of Motor on.	1DWord	Read	[int]

*52   Word Address

VARIABLENAME 0 . 0

$\longrightarrow$ 0 - 1: Please refer to the following table.

$\longrightarrow$ 0 - 15: Variable Name No
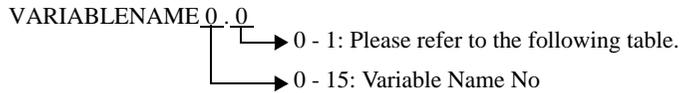
Data types String, Double, and Structure are not supported.

Address	Name	Num of Words	Read / Write	Comment
VARNAME*.0	Variable Type	1	Read / Write	Variable 0x0000: Boolean 0x0001: Byte 0x0002: Integer 0x0003: Long 0x0004: Real 0x0005: Short 0x0006: UByte 0x0007: UShort 0x0008: Int32 0x0009: UInt32 Array Variable 0x0100: Boolean 0x0101: Byte 0x0102: Integer 0x0103: Long 0x0104: Real 0x0105: Short 0x0106: UByte 0x0107: UShort 0x0108: Int32 0x0109: UInt32 Note • Double and String data types are not supported. • You can only read the first element in the Array Variable. • The Array Variable does not support write process.
VARNAME*.1	Variable name	16	Read / Write	32 byte string Variable name.

*53   Bit Address
When a value is written, the following operations occur:

• The LANGUAGE setting for ERRHIS, ERRMSG devices are refreshed when you write any data.

• ERRCODE to be used with ERRMSG device is refreshed when you write any data.

• VARNAME to be use with VARIABLE device is refreshed when you write any data.

*54   Word Address

VARIABLE 0

└────→ 0 - 15: This device accesses a variable set in VARIABLENAME device.

Address	Name	Num of Words	Read / Write	Comment
VARIABLE0	R/W to variable of VARIABLENAME0.	1DWord	Read / Write	The type of value changes depend on Variable type of VARIABLENAME device. [0:Boolean](0 or 1) [INT] data is displayed. [1:Byte](-128 - +127)
VARIABLE1	R/W to variable of VARIABLENAME1.	1DWord	Read / Write	[INT] data is displayed. [2:Integer](-32768 - +32767) [INT] data is displayed. [3:Long](-2147483648 - +2147483647) [INT] data is displayed. [4:Real](-3.40E+38 - +3.40E+38 [Number of significant figure is
:	:			6]) [Float] data is displayed. [5:Short](-32768 - +32767) [INT] data is displayed. [6:UByte](0 - +255) [INT] data is displayed. [7:UShort](0 - +65535)
VARIABLE15	R/W to variable of VARIABLENAME15.	1DWord	Read / Write	[INT] data is displayed. [8:Int32](-2147483648 - +2147483647) [INT] data is displayed. [9:UInt32](0 - 4294967295) [INT] data is displayed.

NOTE
• Please refer to the GP-Pro EX Reference Manual for system data area.

Cf.   GP-Pro EXReference Manual "LS Area (Direct Access Method Area)"
• Please refer to the precautions on the manual notation for icons in the table.

☞ "Manual Symbols and Terminology"

6   Device Code and Address Code

Use device code and address code when you select "Device Type & Address" for the address type in data displays.

Device	Device Name	Device Code (HEX)	Address Code
Login Password	LOGINPASS	0060	Word address
Execute the function	START	0061	Word address
Current robot number	CURROBOT	0053	Word address
Move the arm to home position	HOME	0054	Word address
Input I/O	INBIT INWORD	0001	Word address
Output I/O	OUTBIT OUTWORD	0002	Word address
Memory I/O	MEMIOBIT MEMIOWORD	0000	Word address
State(Remoto)	STATUS	0003	Word address
State(SPELL)	STAT	0004	Word address
Status information for the robot.	RBTINF	0005	Word address
IO label	IOLABEL	0062	Value of IO Type * 0x4000000 + IO Width * 0x10000 + Port No. * 0x100 [1]
System error	SYSERR	0063	Word address
Controller information	CTRLINF	0006	Word address
Current Position of robot (World)	RBTW	0064	Word address
Current Position of robot (Joint)	RBTJ	0065	Word address
Current Position of robot (Pulse)	RBTP	0066	Word address -1
Speed	SPEED	0067	Word address
Accel	ACCEL	0068	Word address -1
Current torque instruction value.	REALTRQ	0069	Word address -1
Clears and initializes the average torque.	ATCLR	0008	Word address -1
Display average torque.	ATRQ	006A	Word address -1
Clears and initializes the peak torque.	PTCLR	0009	Word address -1
Display peak torque.	PTRQ	006B	Word address -1
Display overload rating.	OLRATE	006C	Word address -1

Device	Device Name	Device Code (HEX)	Address Code
Controller name	CNTNAME	006D	Word address
Serial number of controller.	CNTNO	006E	Word address
Project name.	PRJNAME	006F	Word address
Main program number list	MAINLIST	0070	Word address
All tasks information(Get)	GETTASKINF	0071	Word address
All tasks information(Detail)	TASKINF	0072	Value of Task No. * 0x80 + Task Information Element [*2]
Running main number.	GETMAIN	0073	Word address
I/O map	IOMAP	0007	Word address
I/O structure.	GETIOSTR	0074	Value of IO Type * 0x20 + IO Structure Status [*3]
Language setting.	LANGUAGE	0075	Word address
Error history(Get)	GETERRHIS	0076	Word address
Error history(Detail)	ERRHIS	0077	Value of Error History No. * 0x200 + Error History Element [*4]
Error message(Code)	ERRCODE	0055	Word address
Error message(String)	ERRMSG	0078	Value of Word address * 0x100
Point file name list of the specified robot.	PFILELIST	0079	Value of Robot No. * 0x1000 + File No. * 0x10
Point file name that is loaded in the specified robot.	LOADPFILE	007A	Value of (Word address -1) * 0x20
Point information(Get)	GETPINF	007B	Word address
Point information(Detail)	PINF	007C	Value of Point No. * 0x200 + Point Information Element [*5]
Information of the registered robot.	GETRBTINF	007D	Value of Num of Robot / Robot No. * 17 + Robot Information Element [*6]
Controller operation time.	ENETIME	007E	Word address
Motor on time of the robot / Num of motor on times of the robot.	EXTTIME	007F	Value of Num of Robot / Robot No. * 2 + Motor on time Information Element (0 or 1)
Variable name	VARNAME	0050	Value of Variable name No. * 0x40 + Element [*7]
Variable	VARIABLE	0051	Word address

*1   IO Type
      0: Input, 1: Output, 2: Memory
      IO Width
      0: bit, 1: byte, 2: word

*2   Task Info Element
      0: Function name(64byte string), 32: Status(5byte string), 35: Type(10 bytes string), 40: YY, 41: MM, 42: DD,
      43: HH, 44: MM, 45: SS, 46: Execution line(number of 5 digit.)

*3   I/O Structure Status: 0 - 7

*4   Error history Element
      0: Code, 1: Function name(64bytes string), 33: Line (Number of 5 digit.), 35: Internal code, 36: YY, 37: MM,
      38: DD, 39: HH, 40: MM, 41: SS, 42: xxx, 43: Robot No, 44: Axis No, 45: Task No, 46: Add Info 1(10bytes
      string), 51: Add info2(10byte string), 56: Error message(255 byte string)

*5   Point info Element
      0: Point No., 1: X coordinate ...

*6   Robot info Element
      0: Num of Robot or Type, 1: Type(32byte String)

*7   Element
      0: Variable type, 1: Variable name(32bytes string)

7 Error Messages

Error messages are displayed on the screen of Display as follows: "No. : Device Name: Error Message (Error Occurrence Area)". Each description is shown below.

Item	Description
No.	Error No.
Device Name	Name of External Device where error occurs. Device name is a title of External Device set with GP-Pro EX.((Initial value [PLC1])
Error Message	Displays messages related to the error which occurs.
Error Occurrence Area	Displays IP address or device address of External Device where error occurs, or error codes received from External Device. **NOTE** • IP address is displayed such as "IP address (Decimal): MAC address (Hex)". • Device address is displayed such as "Address: Device address". • Received error codes are displayed such as "Decimal [Hex]".

Display Examples of Error Messages

"RHAA035: PLC1: Error has been responded for device write command (Error Code: 2 [02H])"

NOTE • Refer to your External Device manual for details on received error codes.
• Refer to "Display-related errors" in "Maintenance/Troubleshooting Manual" for details on the error messages common to the driver.

■ Error Messages Unique to External Device

Message ID	Error Message	Description
RHxx128	(Node Name): Login command password is wrong (Error Code:13)	This message displays when the login password is wrong.
RHxx129	(Node Name): Invalid variable type	The VARNAME supports a specific variable type. This message displays when the variable type is not correct.
RHxx130	(Node Name): Login is not executed (Error Code:11)	This message displays when you send a command without logging in.
RHxx131	(Node Name):You cannot write the Array Variable	This message displays when you try to write to an Array Variable.