

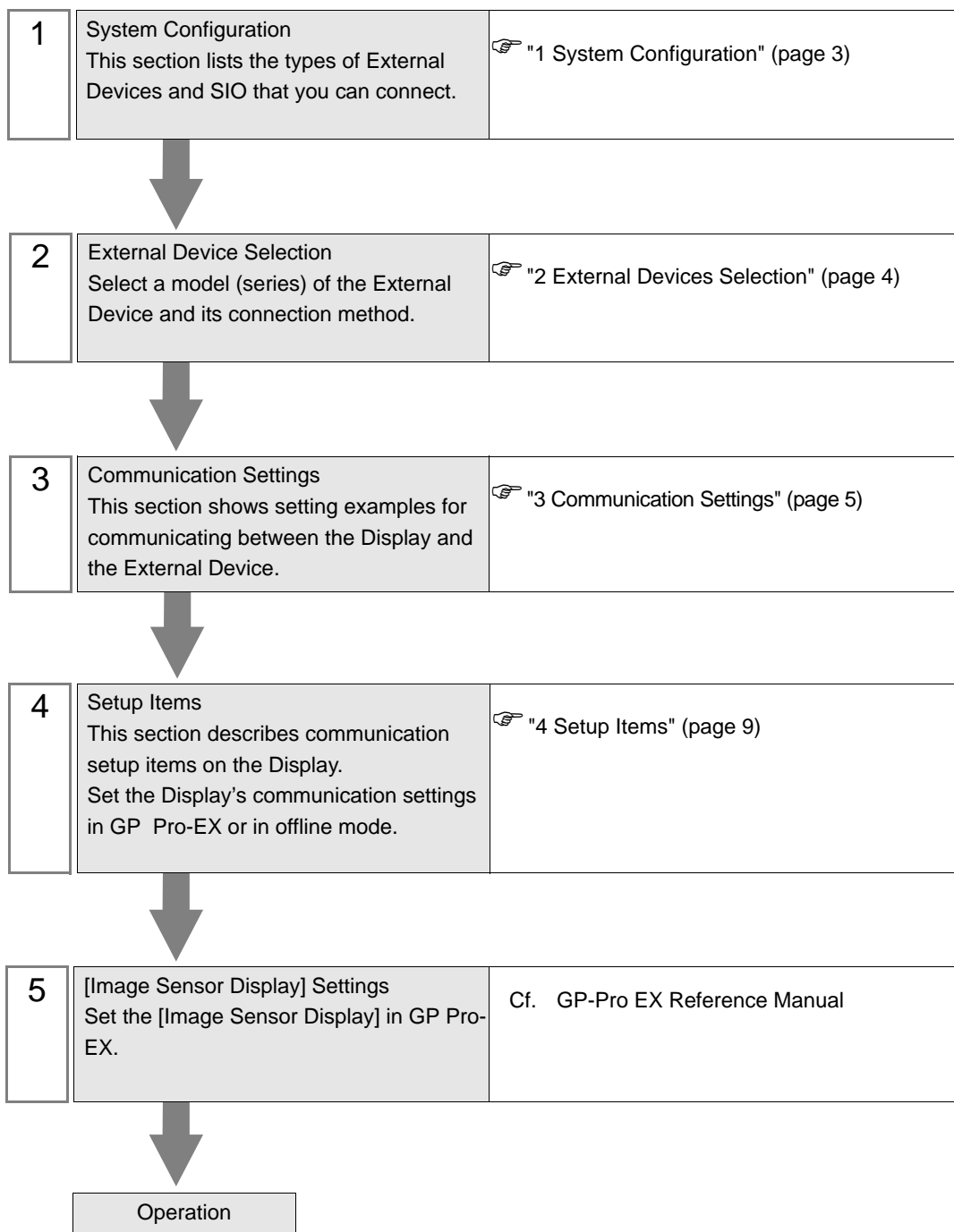
# In-Sight Vision Systems Driver

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## Introduction

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

In this manual, connection procedures are described in the sections identified below.



# 1 System Configuration

The following section shows system configurations for connecting Cognex Corporation External Device and the Display.

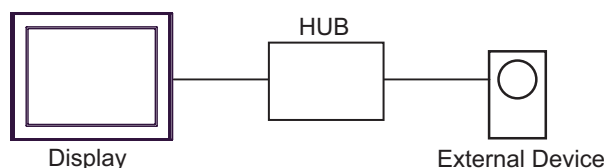
Series	CPU	Link I/F	SIO Type	Setting Example
In-Sight 5000 Series Vision Systems		Ethernet port on the External Device	Ethernet (TCP)	"Setting Example 1" (page 5)
In-Sight Micro Vision Systems		Ethernet port on the External Device	Ethernet (TCP)	"Setting Example 2" (page 7)

**NOTE**

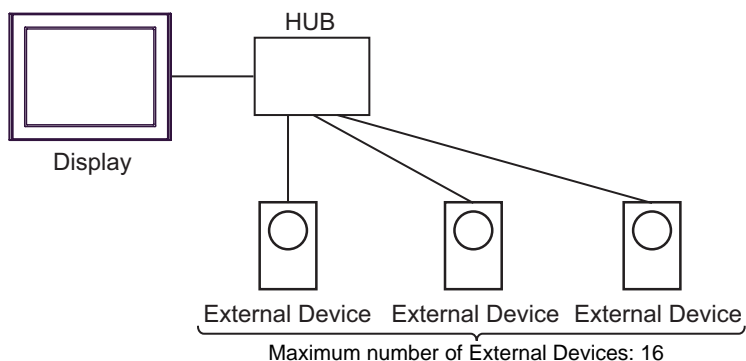
- This driver does not support GP-4100 series and GP-4\*01TM.

## ■ Connection Configuration

### ◆ 1:1 Connection



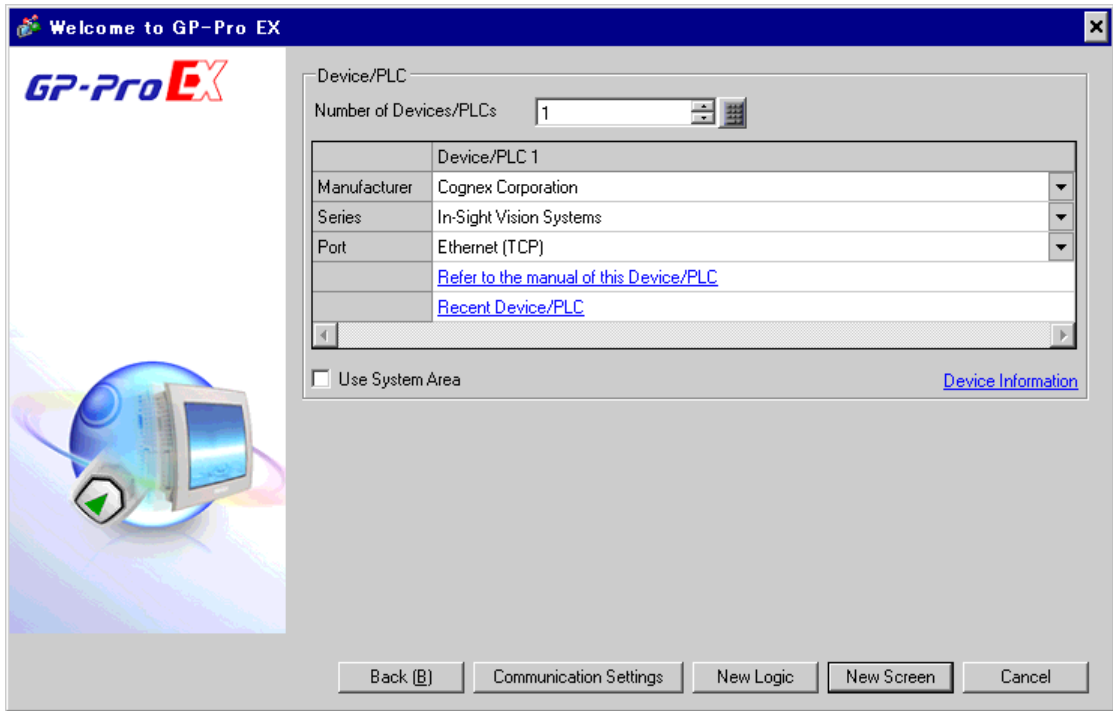
### ◆ 1:n Connection


**NOTE**

- Two or more Displays cannot be connected to one External Device.

## 2 External Devices Selection

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 "Cognex Corporation".
Series	Select the External Device model (series) and the connection method. Select "In-Sight Vision Systems". In System configuration, make sure the External Device you are connecting is supported by "In-Sight Vision Systems". ☞ "1 System Configuration" (page 3)
Port	Select the Display port to connect to the External Device.
Use System Area	Check this option to synchronize the system data area of the Display and the device (memory) of the External Device. When synchronized, you can use the External Device's ladder program to switch the display or display the window on the Display. Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)" This feature can also be set in GP-Pro EX or in the Display's offline mode. Cf. GP-Pro EX Reference Manual "Display Unit (System Area) Settings Guide" Cf. Maintenance/Troubleshooting Guide "Main Unit - System Area Settings"

### 3 Communication Settings

This section provides communication setting examples recommended by Pro-face for communications between the Display and the External Device.

#### 3.1 Setting Example 1

##### ■ GP-Pro EX Settings

##### ◆ Communication Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].

Device/PLC 1

Summary

Manufacturer: Cognex Corporation Series: In-Sight Vision Systems Port: Ethernet (TCP) [Change Device/PLC](#)

Text Data Mode: 2 [Change](#)

Communication Settings

Timeout: 3 (sec)

Retry: 0

Wait To Send: 0 (ms) [Default](#)

Device-Specific Settings

Allowable Number of Devices/PLCs: 16 [Add Device](#)

No.	Device Name	Settings
1	PLC1	IP Address=192.168.0.001, Telnet Port=23, Data Ch

[Add 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.

Individual Device Settings

PLC1

Equipment Configuration

IP Address: 192.168.0.1

Telnet Port: 23

User Name: admin

Password: \*\*\*\*\*

Data Channel Port: 50000

[Default](#)

[OK \(O\)](#) [Cancel](#)

Individual Device Settings

PLC1

Equipment Configuration

Image

Offset X: 0 Y: 0

Zoom: 1:1 (100%)

Down Scale: None

[Default](#)

[OK \(O\)](#) [Cancel](#)

## ■ External Device Settings

The In-Sight Connection Manager tool configures the External Device's communication settings.

Refer to your External Device manual for communication setting details.

- 1 Start up the In-Sight Connection Manager tool.

### NOTE

- When the [Enter Administrative Account] dialog box appears, input the user name and password to connect to the External Device.

- 2 Select the External Device and click [Next].

- 3 Input the subnet mask and click [Next].

Setup Item	Setting Value
Subnet mask	255.255.255.0
Default gateway	Optional
DNS server	Optional
Domain	Optional

- 4 Input the IP address and click [Next].

Setup Item	Setting Value
IP address	192.168.0.1

- 5 Click [Configure].

- 6 Reboot the External Device.

## 3.2 Setting Example 2

### ■ GP-Pro EX Settings

#### ◆ Communication Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].

Device/PLC 1

Summary

Manufacturer  Series  Port  [Change Device/PLC](#)

Text Data Mode  [Change](#)

Communication Settings

Timeout  (sec)

Retry

Wait To Send  (ms)

Device-Specific Settings

Allowable Number of Devices/PLCs  [Add Device](#)

No.	Device Name	Settings
1	PLC1	IP Address=192.168.000.001, Telnet Port=23, Data Ch

#### ◆ 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.

Individual Device Settings

PLC1

Equipment Configuration | Image

IP Address

Telnet Port

User Name

Password

Data Channel Port

Individual Device Settings

PLC1

Equipment Configuration | Image

Offset X  Y

Zoom

Down Scale

## ■ External Device Settings

The In-Sight Explorer tool configures the External Device's communication settings.

Refer to your External Device manual for communication setting details.

- 1 Start up the In-Sight Explorer tool.
- 2 Select [Add Sensor/Device to Network] from [System] menu to display [Add Sensor/Device to Network] dialog box.
- 3 Select the External Device from the list in the left.
- 4 Select "Use the Following Network Settings", and define the items as follows.

Setup Item	Setting Value
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Default Gateway	Optional
DNS Server	Optional
Domain Name	Optional

- 5 Click [Apply].



## 4 Setup Items

Set up the Display's communication settings in GP-Pro Ex or in the Display's offline mode.

Each parameter setting must match the External Device's settings.

 "3 Communication Settings" (page 5)

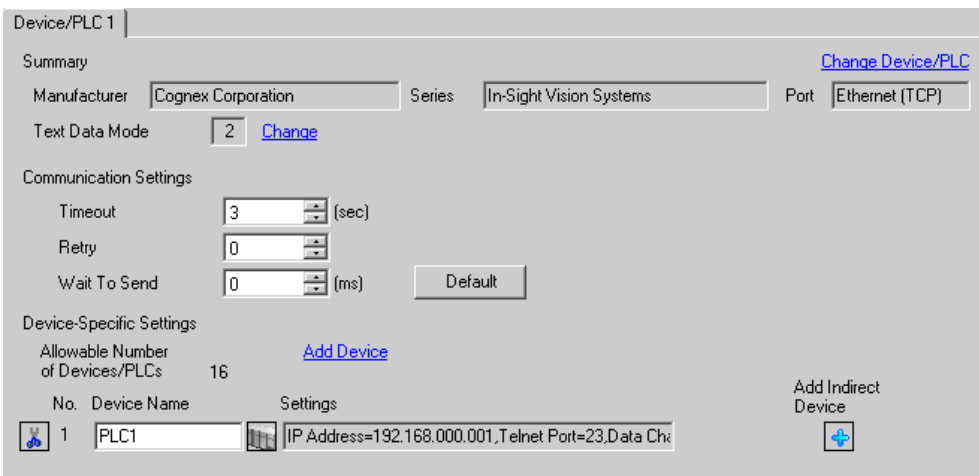
### NOTE

- You need to set IP address on the Display in the offline mode of the Display.  
Cf. Maintenance/Troubleshooting Guide "Ethernet Settings"

### 4.1 Setup Items in GP-Pro EX

#### ■ Communication Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].




The screenshot shows the 'Device/PLC 1' configuration window. It has three main sections: Summary, Communication Settings, and Device-Specific Settings. In the Summary section, Manufacturer is 'Cognex Corporation', Series is 'In-Sight Vision Systems', and Port is 'Ethernet (TCP)'. Text Data Mode is set to '2'. In the Communication Settings section, Timeout is '3 (sec)', Retry is '0', and Wait To Send is '0 (ms)' with a 'Default' button. In the Device-Specific Settings section, Allowable Number of Devices/PLCs is '16'. Below this is a table with one entry: No. 1, Device Name 'PLC1', and Settings 'IP Address=192.168.000.001, Telnet Port=23, Data Chk'. There are buttons for 'Change Device/PLC', 'Add Device', and 'Add Indirect Device'.

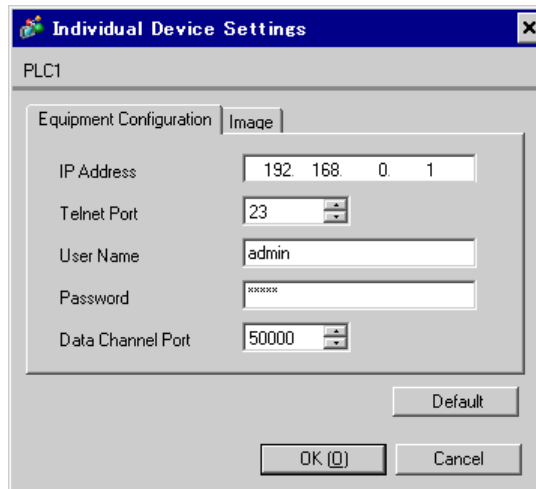
Setup Items	Setup Description
Timeout	Enter the time (seconds) for which the Display waits for the response from the External Device, from "1 to 127".
Retry	In case of no response from the External Device, enter how many times the Display retransmits the command, from "0 to 255".
Wait To Send	Enter the standby time (milliseconds) from when the Display receives packets until it transmits the next command, from "0 to 255".

### NOTE

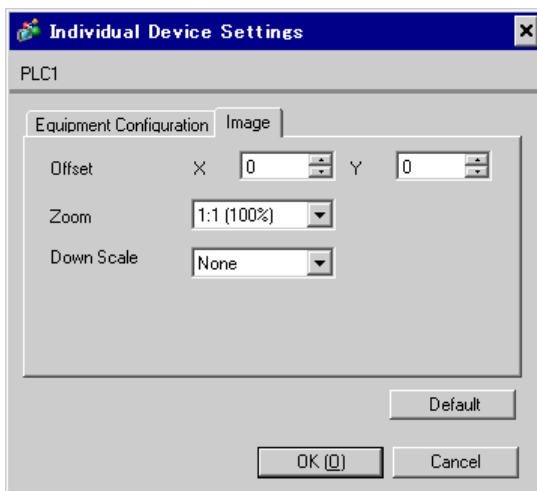
- Refer to the GP-Pro EX Reference Manual for Indirect Device.

## ■ Device Setting

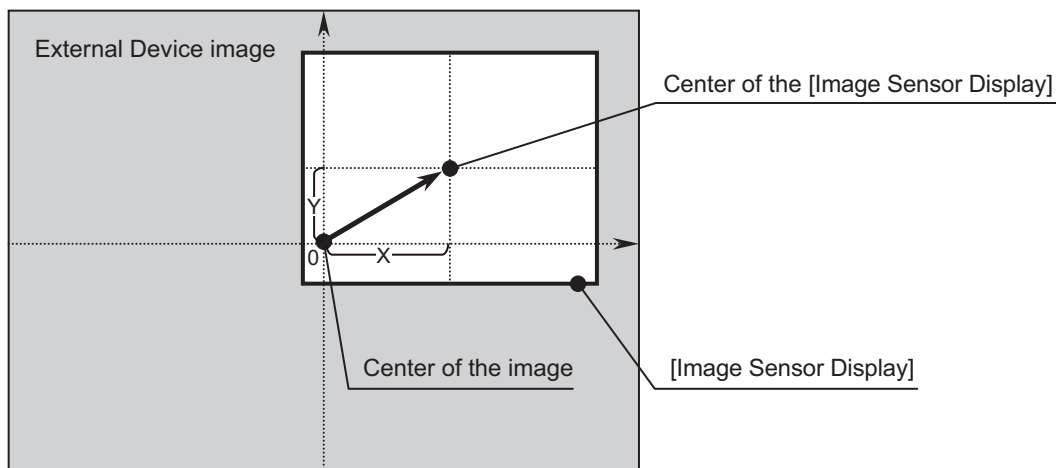
To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] . To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External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



Setup Items	Setup Description
IP Address	Set the External Device's IP address. <div> <b>NOTE</b> <ul style="list-style-type: none"> <li>• Check with a network administrator for IP addresses.</li> <li>• Do not set duplicate IP addresses on the same network.</li> </ul> </div>
Telnet Port	Enter the port No. of the External Device from 1 to 65535.
User Name	Input the user name consisting of up to 15 one-byte characters to connect the External Device.
Password	Input the password consisting of up to 15 one-byte characters to connect the External Device.
Data Channel Port	Enter the port No. of the data channel from 1 to 65535.



Setup Items		Setup Description
Offset	X	Input a lateral offset value. The offset value is added to the External Device image center becoming the center of [Image Sensor Display]. When the image is smaller than the window, the set value becomes invalid.
	Y	Input a longitudinal offset value. The longitudinal value is added to the External Device image center becoming the center of [Image Sensor Display]. When the image is smaller than the window, the set value becomes invalid.
Zoom		Select an image zoom value to be displayed.
Down Scale		Select an image resolution.

**NOTE**

- Set the image size to be displayed on the Display in [Image Sensor Display]. Refer to the GP Pro-EX Reference Manual for details.
- Use IMAGE/OffsetX and IMAGE/OffsetY to change the display position during system operation.

☞ "5 Supported Devices" (page 14)

## 4.2 Setup Items in Offline Mode

**NOTE**

- Refer to the Maintenance/Troubleshooting guide for information on how to enter offline mode and how to operate offline mode.

Cf. Maintenance/Troubleshooting Guide "Offline Mode"

### ■ Communication Settings

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

Comm.	Device			
In-Sight Vision Systems		[TCP]	Page 1/1	
<div> <div>Timeout(s)</div> <div>3 ▼ ▲</div> </div> <div> <div>Retry</div> <div>0 ▼ ▲</div> </div> <div> <div>Wait To Send(ms)</div> <div>0 ▼ ▲</div> </div>				
Exit		Back		2011/03/03 04:59:14

Setup Items	Setup Description
Timeout	Enter the time (seconds) for which the Display waits for the response from the External Device, from "1 to 127".
Retry	In case of no response from the External Device, enter how many times the Display retransmits the command, from "0 to 255".
Wait To Send	Enter the standby time (milliseconds) from when the Display receives packets until it transmits the next command, from "0 to 255".

## ■ 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].

Comm.	Device			
In-Sight Vision Systems		[TCP]		Page 1/1
Device/PLC Name		PLC1		
IP Address		192 168 0 1		
Telnet Port		23		
User Name		admin		
Password		admin		
Data Channel		50000		
Exit		Back		2011/03/03 04:59:23

Setup Items	Setup Description
IP Address	Set the External Device's IP Address. <b>NOTE</b> <ul style="list-style-type: none"> <li>• Check with a network administrator about IP address.</li> <li>• Do not set the duplicate IP address in the same network.</li> </ul>
Telnet Port	Enter the port No. of the External Device from 1 to 65535.
User Name	Input the user name consisting of up to 15 one-byte characters to connect the External Device.
Password	Input the password consisting of up to 15 one-byte characters to connect the External Device.
Data Channel	Enter the port No. of the data channel from 1 to 65535.

## 5 Supported Devices

The following table shows the supported range of device addresses. Please note, the supported device address ranges depend on your External Device. Please check your External Device's manual for the correct device address ranges.

  : This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
IMAGE	IMAGE/SoftPause IMAGE/HardPause IMAGE/ImageKnown IMAGE/CommunicationGood	IMAGE/OffsetX IMAGE/OffsetY IMAGE/ZoomIn IMAGE/ZoomOut IMAGE/SaveVolume IMAGE/SaveIndex IMAGE/Downscale	<span style="border: 1px solid black; padding: 2px;">L / H</span>	
CELL/INT	CELL/INT:A000.00 - CELL/INT:Z399.31	<span style="border: 1px solid black; padding: 2px;">CELL/INT:A000 - CELL/INT:Z399</span>		*1
CELL/FLOAT CELL/STR	-	CELL/FLOAT:A000 - CELL/FLOAT:Z399 CELL/STR:A000 - CELL/STR:Z399		*1
SYSTEM	SYSTEM/Online SYSTEM/Live SYSTEM/SetEvent0 SYSTEM/SetEvent1 SYSTEM/SetEvent2 SYSTEM/SetEvent3 SYSTEM/SetEvent4 SYSTEM/SetEvent5 SYSTEM/SetEvent6 SYSTEM/SetEvent7 SYSTEM/SetEvent8	SYSTEM/JobFileName SYSTEM/ReturnCode		

\*1 Contents of address are shown below.

- Example 1: Bit address

CELL/INT:A000.00

Bit number (0 to 31)  
Row (0 to 399)  
Column (A to Z)

- Example 2: Word address

CELL/INT:A000

Row (0 to 399)  
Column (A to Z)

### NOTE

- You can only set the Read Area Size for the system area available to use in the External Device. Please refer to the GP Pro-EX Reference Manual for Read Area Size.  
Cf. GP Pro-EX Reference Manual "LS Area (Direct Access Method Area)"
- Refer to the precautions on manual notation for icons in the table.

"Manual Symbols and Terminology"

## ■ Register

- IMAGE Device

### Bit Register

Register Name	Range	Read/Write	Notes
IMAGE/SoftPause	0 to 1	Read/Write	0: Display 1: Soft Pause
IMAGE/HardPause	0 to 1	Read/Write	0: Display 1: Hard Pause When the hard pause executes, communication with the External Device disconnects.
IMAGE/ImageKnown	0 to 1	Read/Write	0: Not received 1: Received When an image is received, "1" is set.
IMAGE/ CommunicationGood	0 to 1	Read	0: Communication with the External Device is disconnected. 1: Communication with the External Device is connected.

### Word Register

Register Name	Range	Read/Write	Notes
IMAGE/OffsetX	16-bit signed integer	Read/Write	Write: Lateral offset setting value Read: Lateral offset current value The offset value is added to the External Device image center becoming the center of [Image Sensor Display]. When the image is smaller than the window, the set value becomes invalid.
IMAGE/OffsetY	16-bit signed integer	Read/Write	Write: Longitudinal offset setting value Read: Longitudinal offset current value The longitudinal value is added to the External Device image center becoming the center of [Image Sensor Display]. When the image is smaller than the window, the set value becomes invalid.
IMAGE/ZoomIn	1 to 32	Write	Magnification for zooming in. This is valid only when the IMAGE/ZoomOut is "1".
IMAGE/ZoomOut	1 to 4	Write	1: Use IMAGE/ZoomIn 2: 3:4 (75%) 3: 1:2 (50%) 4: 1:4 (25%)
IMAGE/SaveVolume	0 to 2	Read/Write	0: The image is not saved. 1: The image is saved in the CF card. 2: The image is saved in the USB device. Setting is "0", after saving the image. If set the value other than 0 to 2, setting is "0".
IMAGE/SaveToIndex	16-bit unsigned integer	Read/Write	Integer is added to end of the file name. Set before saving the image. Example: CG00025.bmp
IMAGE/Downscale	0 to 2	Write	0: The image is not reduced. 1: The image is reduced to the gray scale (1:2 (50%)). 2: The image is reduced to the gray scale (1:4 (25%)).

- CELL Register

Word Register

Register Name	Range	Notes
CELL/INT	-9,999,999 to 9,999,999	To write to cell, EditInt, Checkbox or ListBox control must be included in job file cell.
CELL/FLOAT	-9,999,999.000 to 9,999,999.000	To write to cell, EditFloat control must be included in job file cell.
CELL/STR	1 to 255 one-byte characters	To write to cell, EditString control must be included in job file cell.

- SYSTEM Device

Register Name	Type	Range	Read/Write	Notes
SYSTEM/Online	bit	0 to 1	Read/Write	0: External Device is switched to the offline mode. 1: External Device is switched to the on-line mode.
SYSTEM/Live	bit	0 to 1	Write	0: External Device live mode is turned off. 1: External Device live mode is turned on.
SYSTEM/SetEvent0 to SYSTEM/SetEvent8	bit	1	Write	SetEvent0 to SetEvent7: Pertinent software 0 to 7 is executed. SetEvent8: An image is taken in to update the spread sheet.
SYSTEM/ JobFileName	string	1 to 255 one-byte characters	Read/Write	Write: The job file name to be replaced is set. Read: The job file name that is currently used is displayed. Writing is disabled when a job file name that is not registered in the External Device is set or the External Device is in the on-line mode.
SYSTEM/ReturnCode	INT16	16-bit signed integer	Read/Write	The last-received error code is maintained.



## 6 Device Code and Address Code

Use device codes and address codes when you set "Device Type & Address" for the address type of the data display or other devices.

Device	Device Name	Device Code (HEX)	Address Code
IMAGE	-	0000	60006 : OffsetX 60007 : OffsetY 60008 : ZoomIn 60009 : ZoomOut 60011 : SaveVolume 60012 : SaveIndex 60013 : Downscale
CELL/INT	-	0040	Value of Column + Row $\times$ 26 <sup>*1</sup>
CELL/FLOAT	-	0042	Value of Column + Row $\times$ 26 <sup>*1</sup>
CELL/STR	-	0044	Value of Column $\times$ 256 + Row $\times$ 16384 <sup>*1</sup>
SYSTEM	-	0050	0 : ReturnCode (integer number) 100 : JobFileName (character string)

\*1 The value of column and row is as follows.  
 Column: A=0, B=1 to Z=25  
 Row: 0 to 399

## 7 Error Messages

Error messages appear on the Display in the following format: "No.: Device Name: Error Message (Error Occurrence Area)". Error descriptions are shown below.

Item	Description
No.	Error number
Device Name	Name of the External Device where the error occurred. Device/PLC name is the title of the External Device set with GP-Pro EX. (Initial value [PLC1])
Error Message	Displays the error message.
Error Occurrence Area	<p>Displays the IP Address or the External Device's device address where the error occurred; also, may display External Device error codes.</p> <div style="border: 1px solid black; padding: 2px; margin: 5px 0;"> <b>NOTE</b> </div> <ul style="list-style-type: none"> <li>• IP addresses display as "IP address (Decimal): MAC address (Hex)".</li> <li>• Error codes display as "Decimal [Hex]".</li> <li>• Device address displays as "Address: Device address".</li> </ul>

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 Guide" 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 Error: User Name or Password is invalid.	Either the user name or the password set in [Individual Device Settings] does not match the user name or password in the External Device. Change the password or username settings in [Individual Device Settings].
RHxx129	(Node Name): Cell read failed (cell).	The External Device acknowledged the CELL read failure. Check the CELL address that was set in the GP-ProEX.
RHxx130	(Node Name): Cell write failed (cell).	The External Device acknowledged the CELL write failure. Check the setting in the External Device to see if one edit control is included in the CELL and the data type matches.
RHxx131	(Node Name): Write attempt to a read only device failed	The External Device acknowledged the write failure. Check that the register to be written is not read only.

Message ID	Error Message	Description
RHxx132	(Node Name): Read attempt from a write only device failed	The External Device acknowledged the read failure. Check that the register to be read is not write only.
RHxx133	(Node Name): Login failed	The data channel connection exceeds the maximum. Check the number of data channel connection to the External Device.