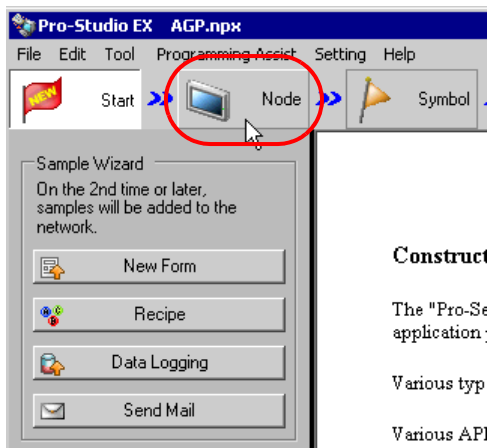# 31 Node Registration

31.1 Registration and Deletion of Entry Nodes

To use 'Pro-Server EX', you must first register the PC and display unit connected on the network as entry nodes. You set the node name, communication information like IP addresses, and Device/PLC type as registration information.

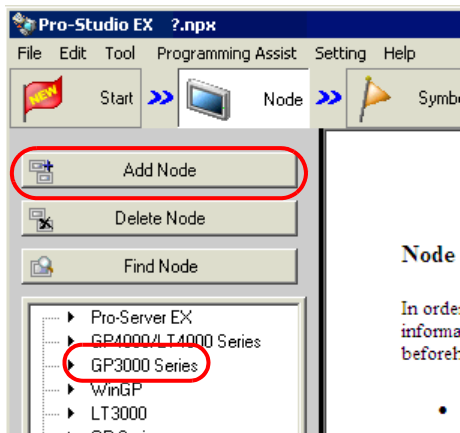This section describes the procedure to register and delete entry nodes.

31.1.1 Registration of Entry Nodes

1 Click the [Node] icon on the status bar.

2 Select a node type from the tree display on the left of the screen and click [Add Node].

3 Enter [Node Name] and [IP Address]. (Enter [Node Name], [IP Address], and [Subnet Mask] in the "GP Series".
Also enter [Gateway], if required.)

4 Click the list buttons of [Maker], [Device Type] and [Port Type], and set these items related to Device/PLC.

(When you select "GP Series" as the node type, set [Device Type] only.)
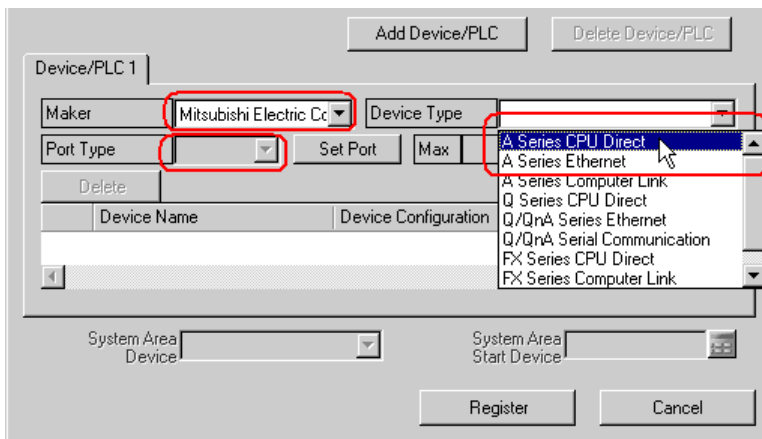
NOTE
- The following items are automatically determined according to the selection of Device/PLC type. To change the setting, please follow the steps given below.
- Please correspond the registered information of Device/PLC to that of the actual Device/PLC of the display unit. If the setting is incorrect, proper operation is not expected.
- Depending on the type of device/PLC you selected, you cannot change the setting of each item.

5 Click [▲] or [▼] button of [Text Mode] to specify the text mode adopted by Device/PLC.
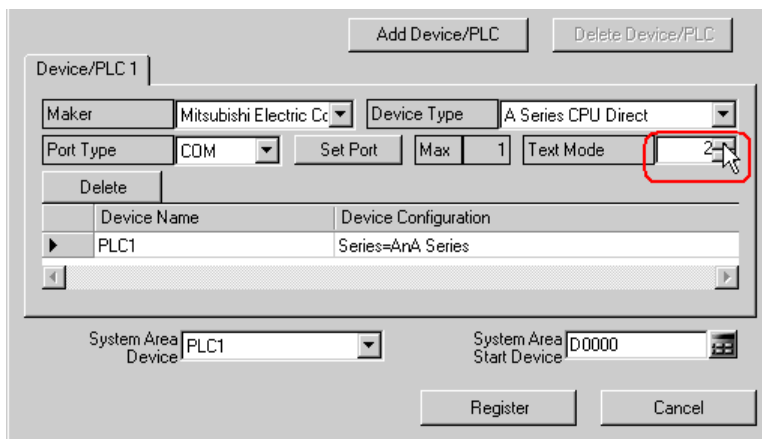
NOTE
- Text mode is automatically set when [Device Type] or [Port Type] is selected. This step is necessary only when you wish to change this setting.

6 Click [Device Name] field and enter a Device/PLC name.
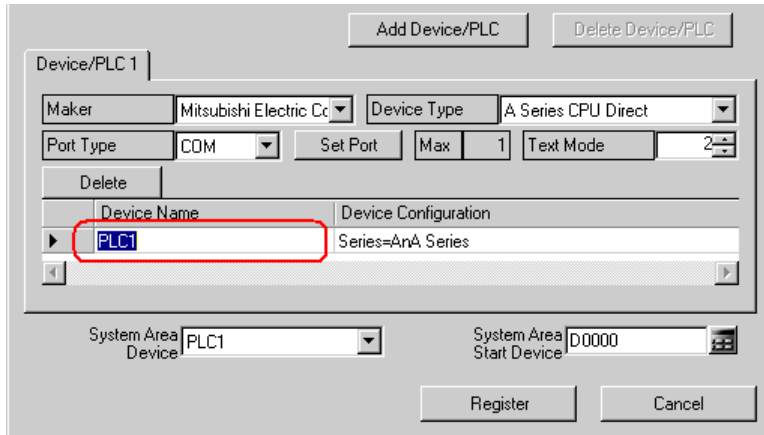
NOTE • Please make sure to totally conform the device name, type and setting to the data specified in 'GP-Pro EX'. Inconsistency may cause access to unauthorized devices.

7 Click [Device Configuration] field to set a device.
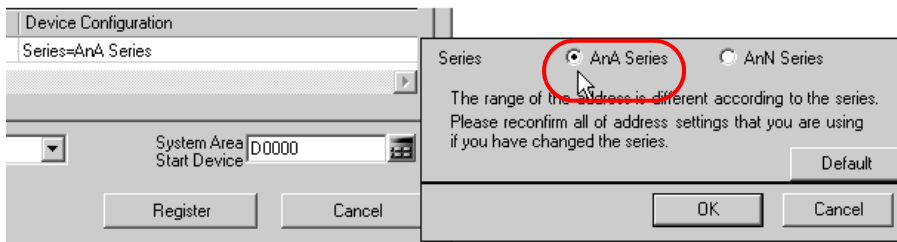
8 Click [System Area Device] drop down list to select the Device/PLC to assign the system address.
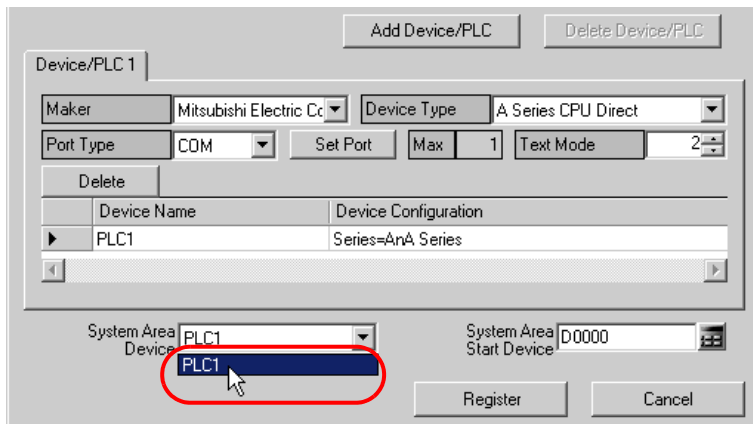
9 Enter the first device address of the assigned system area in [System Area Start Device].

Enter the address directly or click the Calculator icon to enter it on the device address input screen.
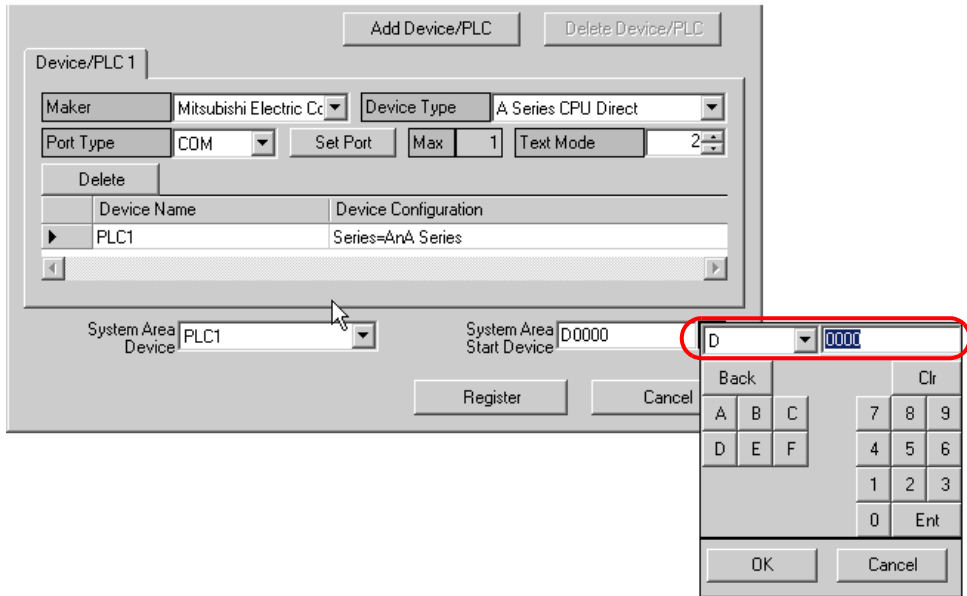
10 Click [Register].

The entry node is now registered with the set contents.

31.1.2   Deletion of Entry Nodes

1 Select the entry node you wish to delete from the node list on the left of the screen, and Click [Delete Node].
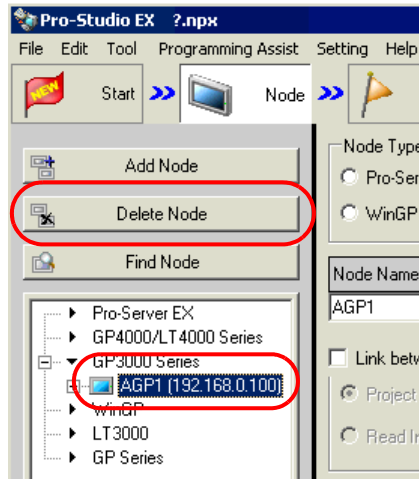
2 The following message appears confirming the deletion. Click [Yes].
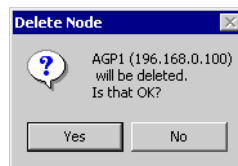
The selected node is now deleted.

NOTE   • Node deletion may cause inconsistency in the contents specified on the feature screen. Please check the contents of a network project file to confirm the consistency before reloading and transferring it.

31.2 Searching Nodes

31.2.1 What is "Searching Nodes"?

You can register the PC and display units that are active on the network, individually as a node, and also detect and register any node that is not in the network project file by using the search function.

It allows you to register network nodes easily, without confirming on the spot the Ethernet setting of each display unit.
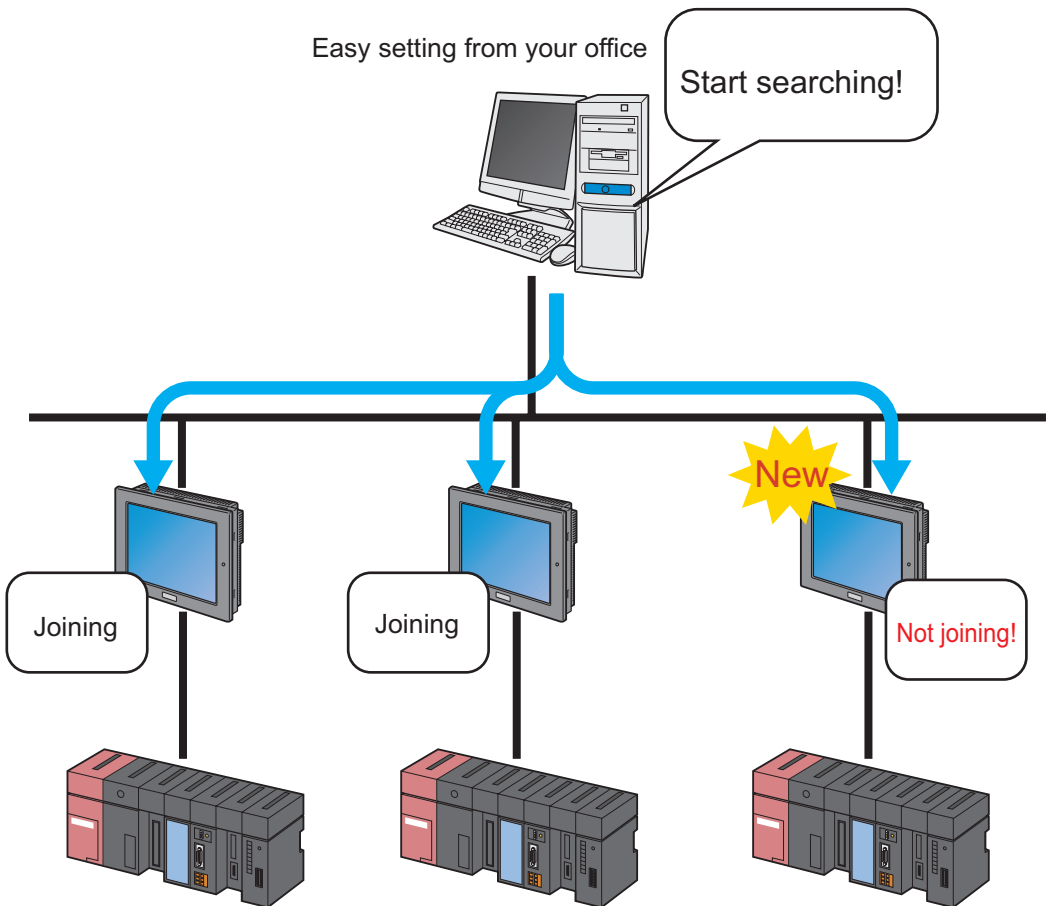
| NOTE | • The search area (where nodes can be found) covers the nodes having the same class ID as that of the IP address of the PC to search. You cannot search the nodes located in the different class or over the router. |

This section describes how to use the search function and register entry nodes.

1 Click [Node] icon on the status bar.
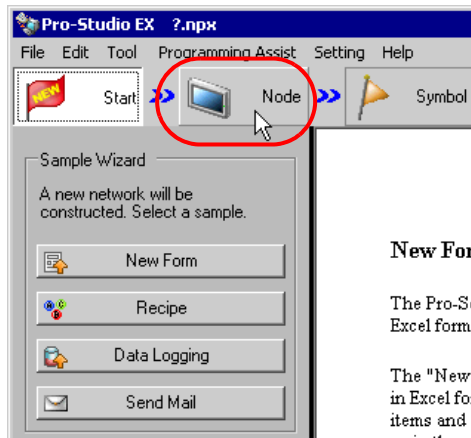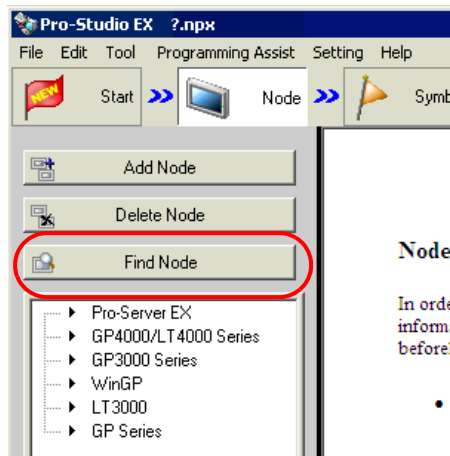
2 Click [Find Node].

The search of entry nodes now starts and the "Find Node" screen appears.

The "Find Node" screen shows the number of the entry nodes currently connected on the network (detected nodes) and the number of those not registered (Non-Prticipant nodes).
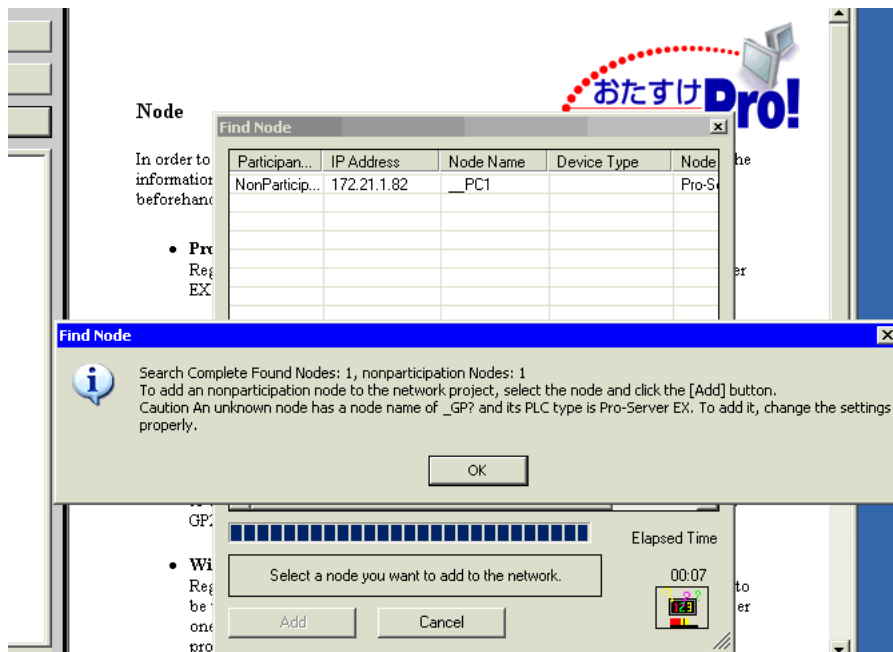
• To perform the node search function, 'Pro-Server EX' should be operated. If 'Pro-Server EX' is not running, the following dialog message appears.
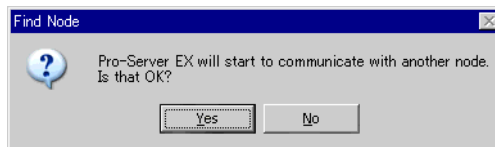
Clicking [Yes] activates 'Pro-Server EX' and starts searching entry nodes. Clicking [No] stops the node search.

3 Click [OK] after checking the message.
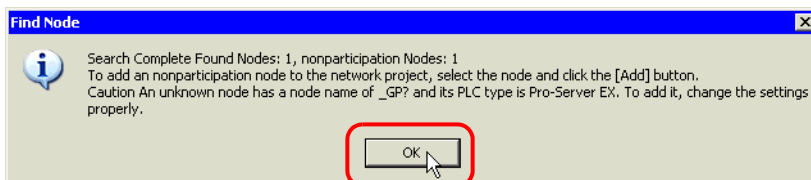
4 Select [NonParticipant Status] on the "Find Node" screen, and then click [Add].
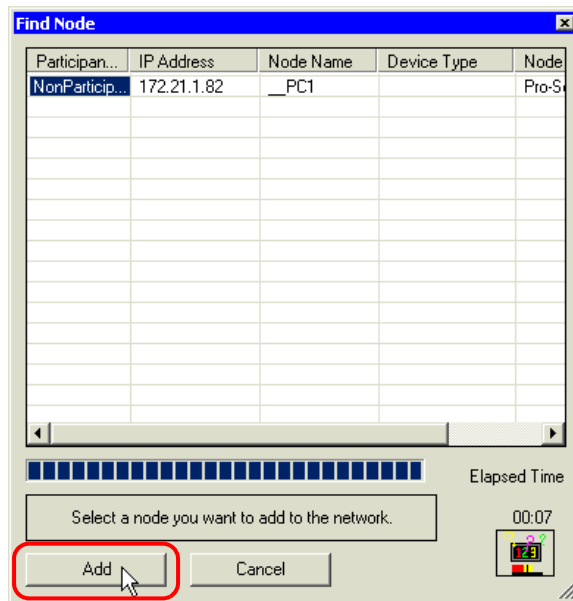
The selected non-participant node is registered as an entry node and indicated in the node list with a temporary name.
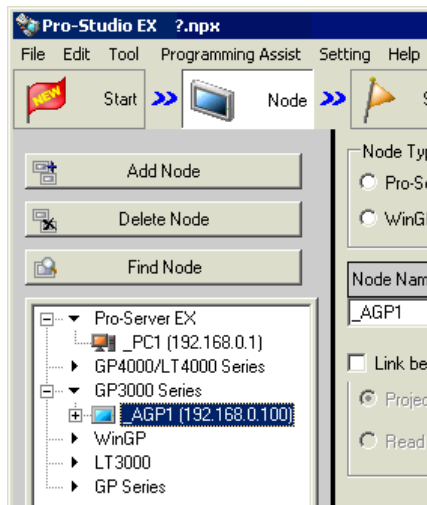
• To select more than one node at one time, click the non-entry nodes while pressing the [Shift] key.
• Depending on the type of device/PLC you selected, you cannot change the setting of each item.

Import Project File	⊠
❓ Do you want to also import the Symbol Info of the GP3000 node?	
Yes	No
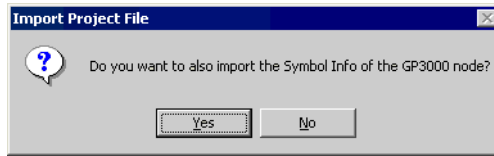
To import the symbol data of the screen project file simultaneously, click [Yes]. If you wish not, click [No].

5 Click a node name in the node list.
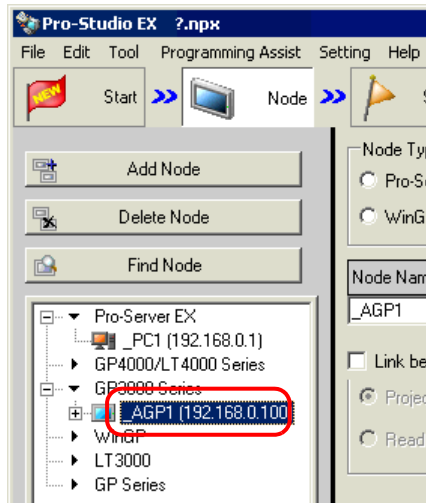
The details of the selected entry node are displayed on the right of the screen.
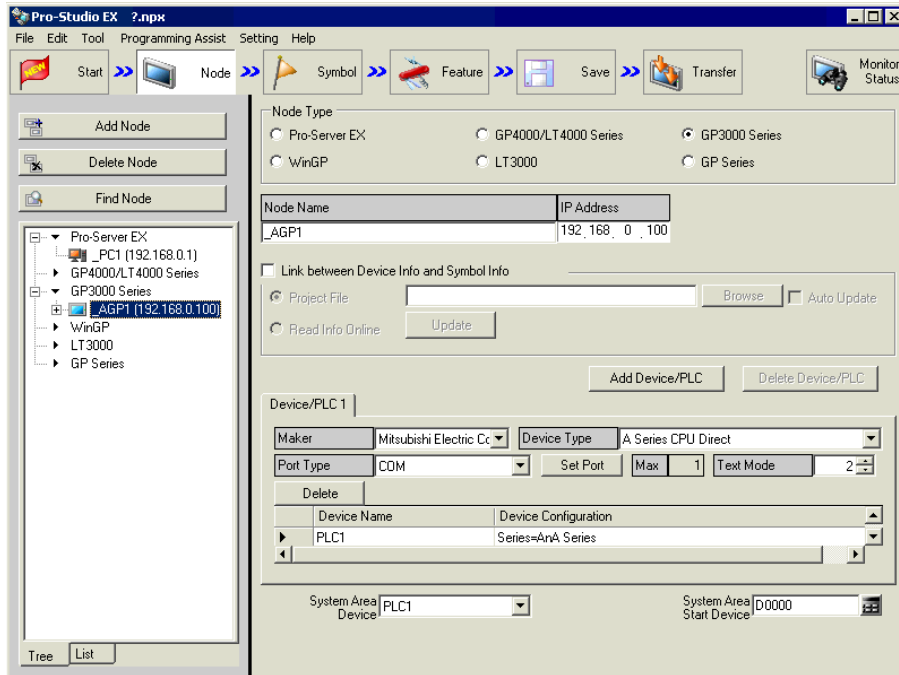
6 Set the items related to Device/PLC.

Refer to "31.1.1 Registration of Entry Nodes" for more details about the setting items.

NOTE • To change the node name, move the cursor to the text box of [Node Name] and enter a new name.

7 Click [Register].

The entry node is now registered with the set contents.

NOTE • There are 2 types of display formats of a node list: "Tree format" and "List format". (Normally, nodes are displayed in a tree format.)
In a tree format, the top layer shows a node type and the lower layers indicate a node name and a Device/PLC name respectively.
In a list format, node names and IP addresses are indicated .

Tree format   List format

• You can change the display format by clicking the tab at the bottom of the node list.

31.2.2   Countermeasure Against Unrecognized Nodes

When no entry node is recognized by the search function, please check the following items.

(1) Cable and LAN hub

Check if the Ethernet cable is not disconnected.

(2) Network setting on the PC and display unit side

Check if the IP address and subnet mask are specified properly.

• Confirmation of display unit setting

☞ "2.4 Set the network of display unit"

• Confirmation of PC setting

☞ "2.3 Setting PC Network"

NOTE

• You can check the setting of the IP address and subnet mask by the following method.

(1) From the [Start] button in Windows, select [All Programs] - [Accessory] - [Command Prompt].

(2) Enter "ipconfig" on the command prompt screen.

(3) The following screen appears, displaying [IP Address] and [Subnet Mask].

```
Connection-specific DNS Suffix  . :
IP Address. . . . . . . . . . . : 192.168.0.1
Subnet Mask . . . . . . . . . . : 255.255.255.0
Default Gateway . . . . . . . . :
```

31.3 Getting Data from a Screen Project File (PRX)

This feature allows you to obtain (import) the Device/PLC information and symbol information from a screen project file (*.PRX) made by a screen creation application like 'GP-Pro EX'.

By utilizing a screen project file made by a screen creation application, it is possible to register the accurate data of entry nodes for a short time.
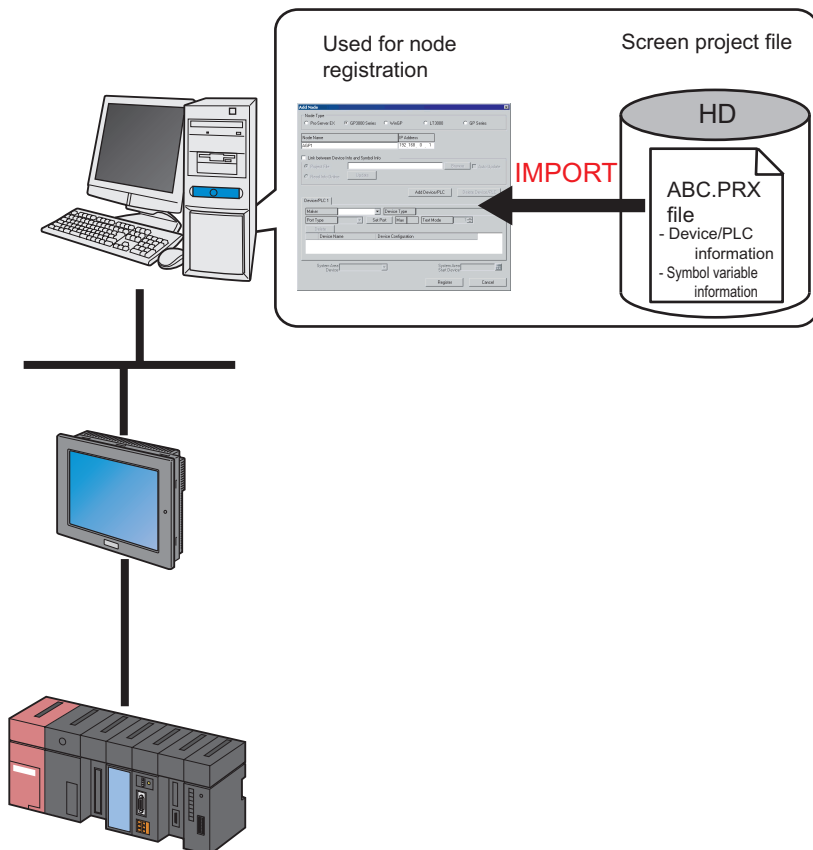
NOTE	• The information that can be imported from a screen project file is that of Device/PLC and of symbols. Import of data saves the effort of inputting the same data to 'Pro-Studio EX'. You can also import data from a screen project file (*.PRW) made by the 'GP-PRO/PBIII for Windows' as well. You can also get information from a "GP-Pro/PB III for Windows" screen project file (*.PRW).

1 Click the [Node] icon on the status bar.
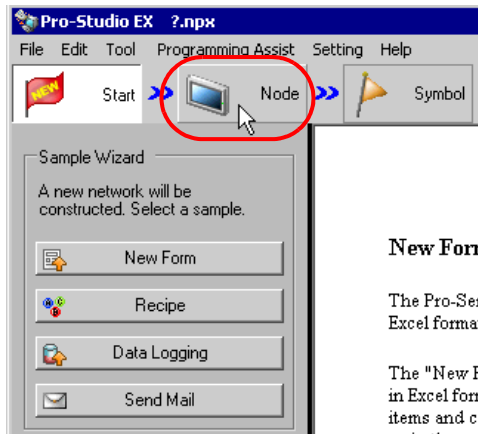
2 Select a node type from the tree display on the left of the screen and click [Add Node].
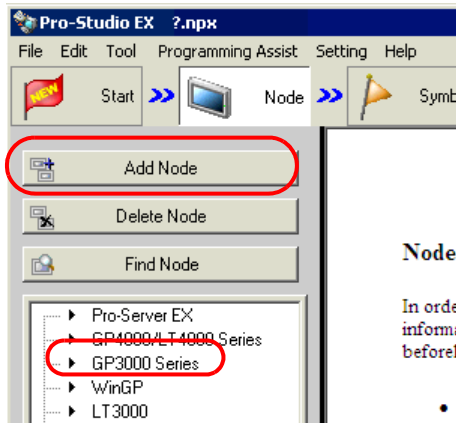
3 Enter [Node Name] and [IP Address]. (Enter [Node Name], [IP Address], and [Subnet Mask] in the GP Series. Also enter [Gateway], if required.)
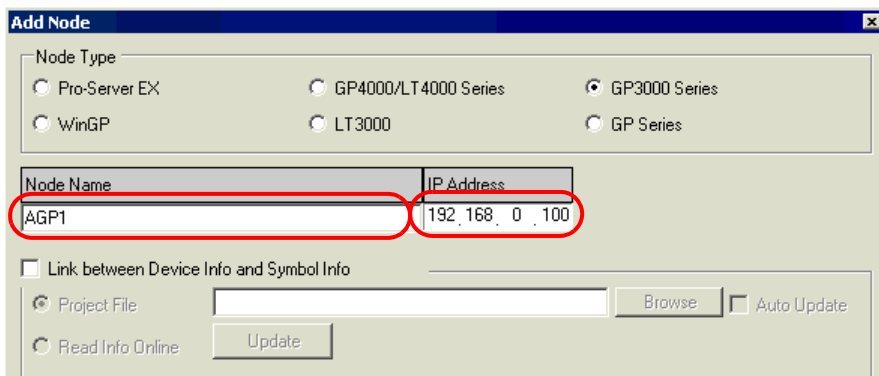
4 Check [Link between Device Info and Symbol Info].
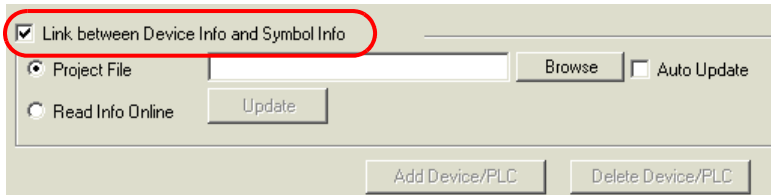
NOTE • When [Auto Update] is checked, the screen project file that has been imported is automatically updated if there is any change to it.

)☞ "31.5 Setting Guide"

The confirmation screen for data import appears. Click [OK].
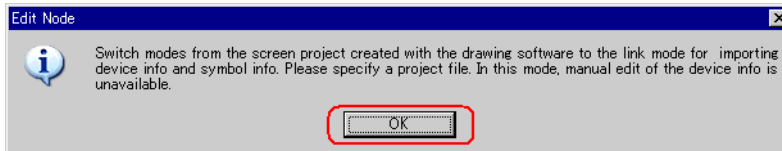
The mode is switched to the link mode that allows the data import.

NOTE • When [Link between Device Info and Symbol Info] is unchecked, the confirmation screen of link-mode cancellation appears.

Click [OK] to cancel the link mode.

• Depending on the type of device/PLC, you cannot edit the device information manually even if [Link between Device Info and Symbol Info] is cleared.

5 Select [Project File] and click [Browse].
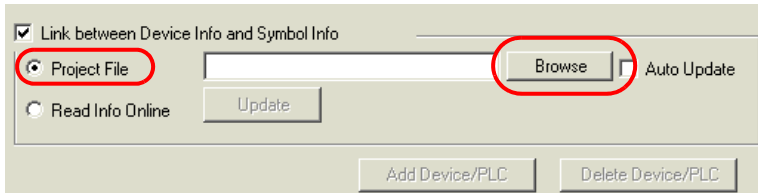
The "Open" dialog box appears.
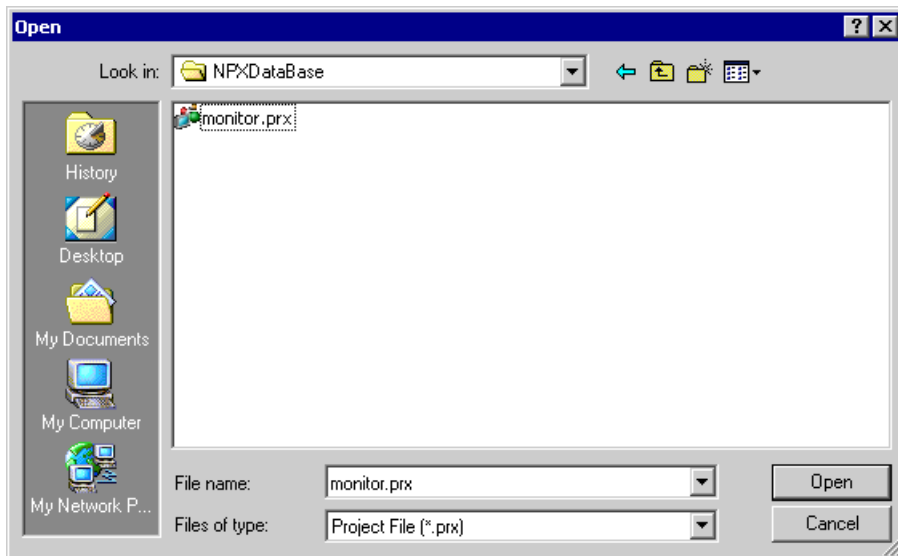
6 Select your target screen project file (*.prx) and click [Open].
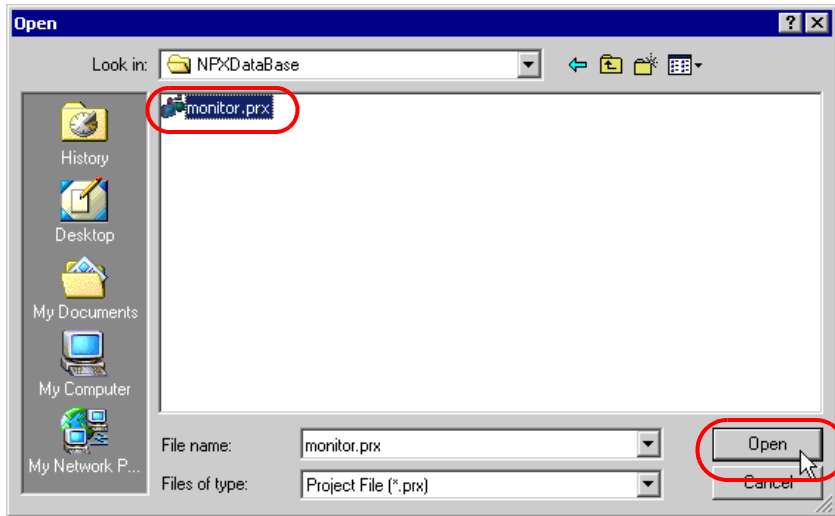
The "Import Project File" screen appears. Click [OK].
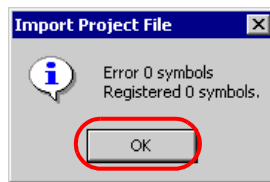
The Device/PLC data set in the screen project file is displayed in each item in the [Device/PLC] tab.
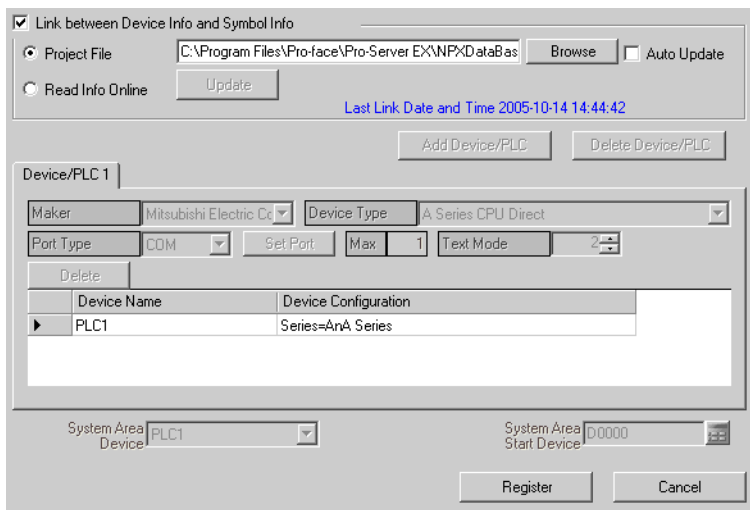
7 Click [Register].

The entry node is now registered with the set contents.

| NOTE | • Imported variables (variable format) of the logic program are registered in a new symbol sheet named "Node name_LOGIC".
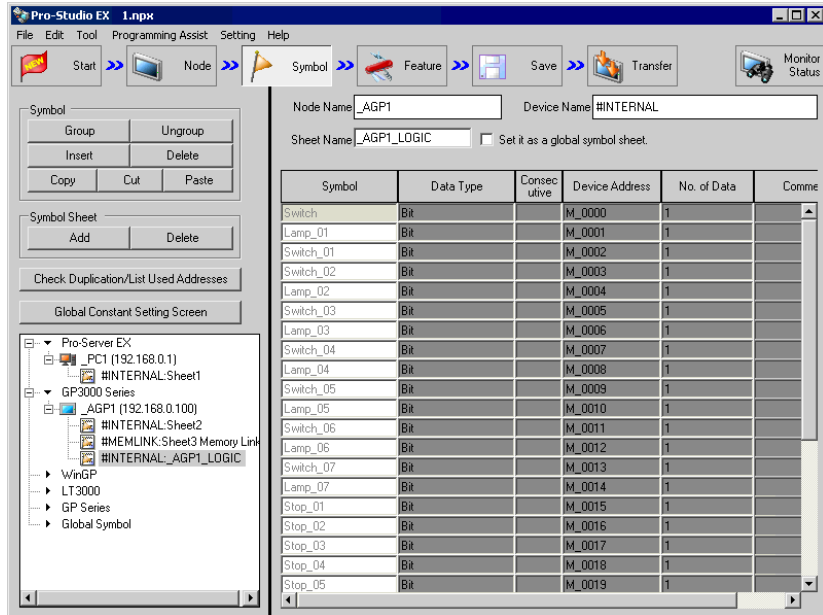
31.4 Getting Data from the Screen Project File (PRX) Transferred to the display unit

You can obtain (import) via the network the Device/PLC data and symbol data from the screen project file (*.PRX) transferred to the display unit.

By utilizing a screen project file made by a screen creation application, it is possible to register the accurate data of entry nodes for a short time.


Used for node registration

IMPORT

Screen project file

ABC.PRX file

- Device/PLC information
- Symbol information

NOTE • The information that can be imported from a screen project file in the display unit is that of Device/PLC and of symbols. Import of data saves the effort of inputting the same data to 'Pro-Studio EX'. This function is available on display units (except those set up as GP Series nodes).

This section describes the setting required for importing the data of a screen project file (PRX) from each display unit on the network.

1 Click the [Node] icon on the status bar.
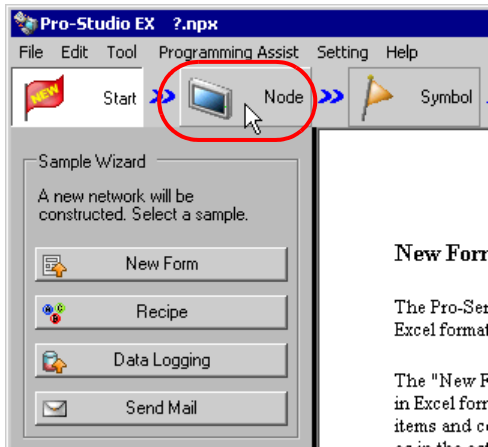
2 Select a node from the tree display on the left of the screen and click [Add Node].
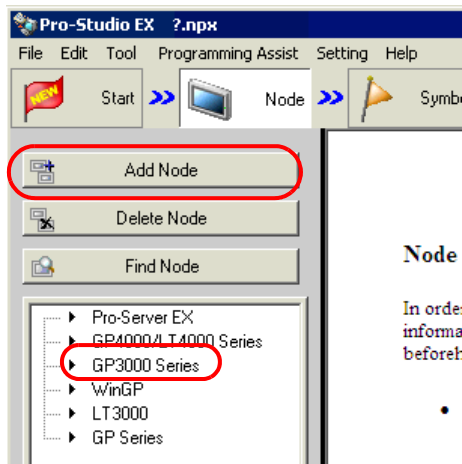
3 Enter [Node Name] and [IP Address]. (Enter [Node Name], [IP Address], and [Subnet Mask] in the GP Series.
Also enter [Gateway], if required.)

4 Check [Link between Device Info and Symbol Info].

☑ Link between Device Info and Symbol Info

◉ Project File [   ] [Browse] ☐ Auto Update

◯ Read Info Online [Update]

[Add Device/PLC] [Delete Device/PLC]

The confirmation screen for data import appears. Click [OK].

Edit Node ✕

ⓘ Switch modes from the screen project created with the drawing software to the link mode for importing device info and symbol info. Please specify a project file. In this mode, manual edit of the device info is unavailable.

[OK]
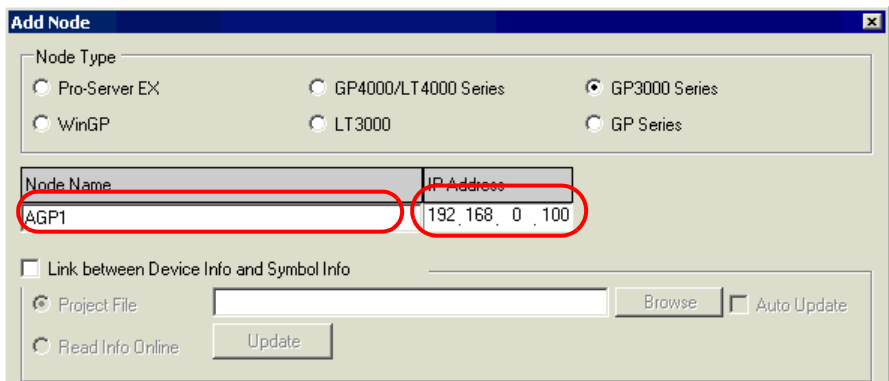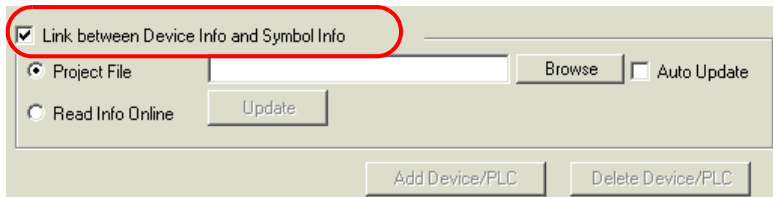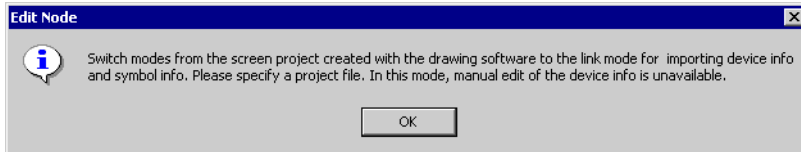
The mode is switched to the link mode that allows the data import.

> **NOTE**
> • When the [Link between Device Info and Symbol Info] check box is cleared, a confirmation box for link-mode cancellation appears.
> Click [OK] to cancel link mode.
>
> **Edit Node** ✕
>
> ⓘ Release the link mode and allow you to manually edit device settings.
>
> [OK]
>
> • Depending on the type of device/PLC, you cannot edit the device information manually even if the [Link between Device Info and Symbol Info] check box is cleared.

5 Select [Read Info Online] and click [Update].
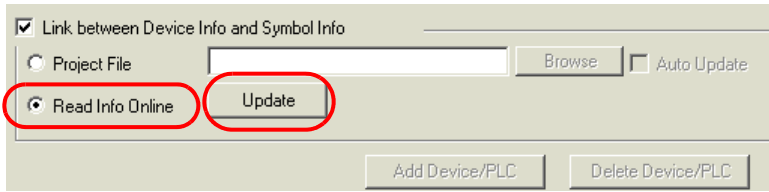
The "Read Info Online" dialog box appears and starts communication with the display unit whose IP address you entered in Step 4. Without going online, the display unit runs an online read.
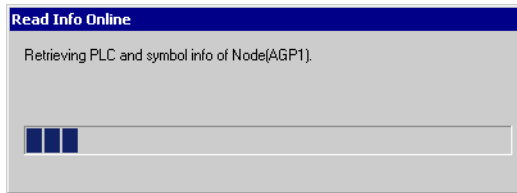
NOTE • If "Transfer password" is set for the display unit, the "Transfer password entry" screen appears. Enter the password and click the [OK] button.

6 When the communication is completed, the Device/PLC data set in the screen project file is displayed in each item in the [Device/PLC] tab.
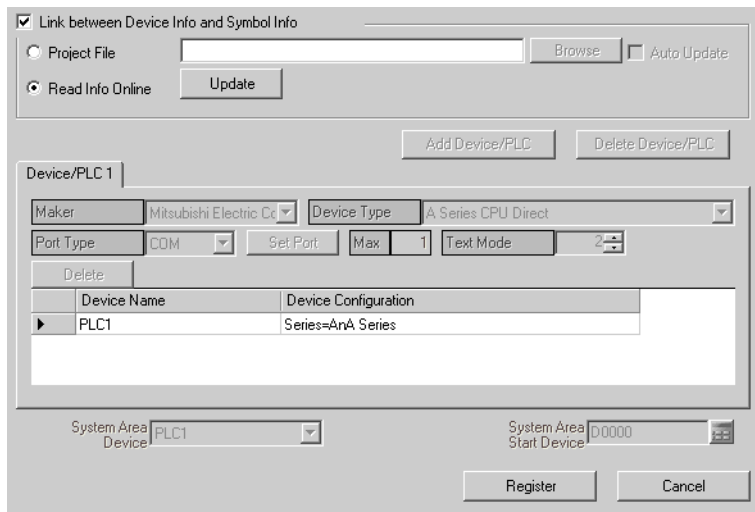
7 Click [Register].

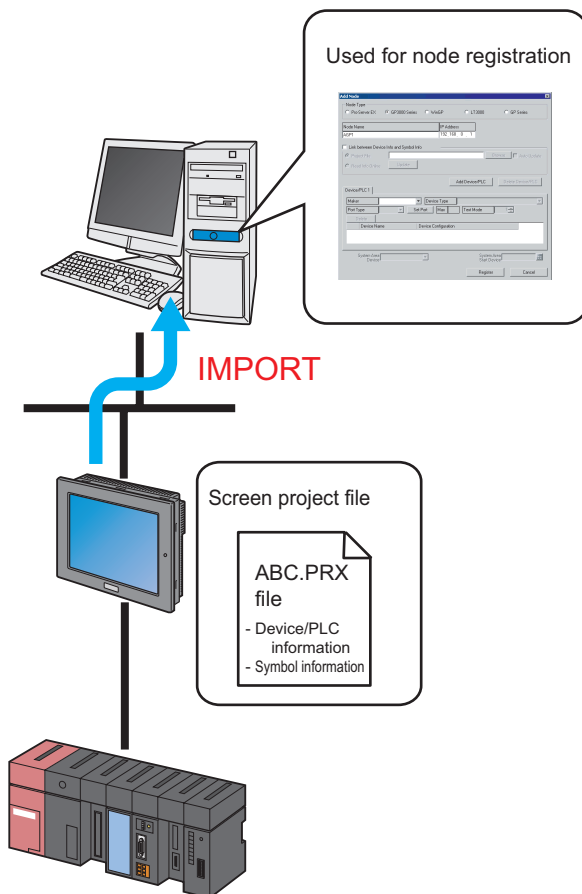The entry node is now registered with the set contents.

NOTE • You can click the [Confirm Nodes online] button on the transfer setting screen to confirm if the screen project file (PRX) transferred to the display unit matches the imported information.Refer to "26 Transferring" for more details.
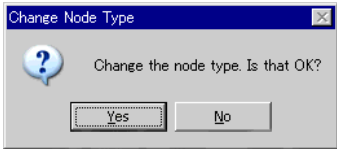
31.5　Setting Guide

31.5.1　Pro-Server EX Node

This section explains the settings on the screen displayed on the conditions below:

1) When you select "Pro-Server EX" from the node list and click [Add Node]; or

2) When you click a node name from the node list.

Setting item	Setting content
Node Type	"Pro-Server EX" is selected. **NOTE** • When the node type is changed, the following dialog box appears. Clicking the [Yes] button deletes the set data of the Device/PLC and of symbols.
Node Name	Enter the node name to be registered. Example) PC_1 **NOTE** • Restrictions on a node name are as follows: 　• Must be entered at maximum 32 single-byte characters. 　• Cannot begin with a number. 　• Is distinguished between uppercase and lowercase letters, hiragana and katakana.
IP Address	Enter the IP address of the entry node.
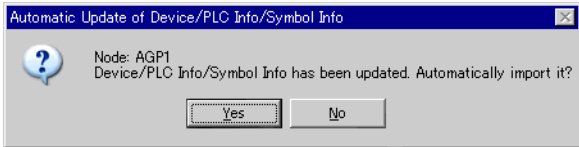
31.5.2　GP4000/LT4000 Series, GP3000 Series, WinGP, and LT3000 nodes
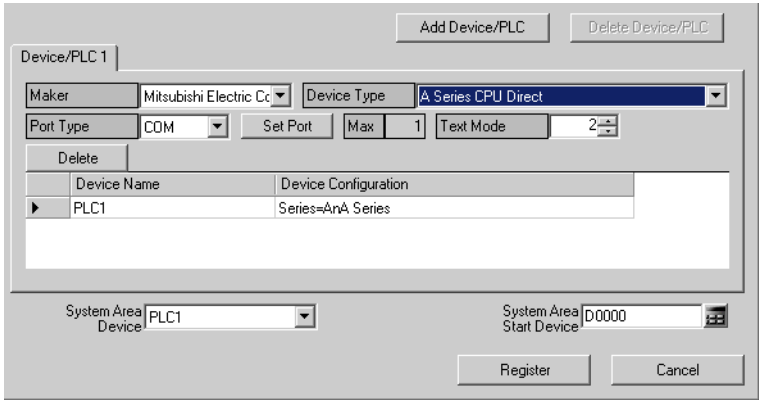
This section explains the settings on the screen displayed on the conditions below:

　　1) When you select "GP4000/LT4000 Series" , "GP3000 Series" , "WinGP" , or "LT3000" from the node list

　　and click the [Add Node]; or

　　2) When you click a node name from the node list.

Setting item	Setting content
Node Type	"GP4000/LT4000 Series" , "GP3000 Series" , "WinGP" , or "LT3000" is selected. **NOTE** • When the node type is changed to "Pro-Server EX" or "GP Series", the following dialog box appears. Clicking the [Yes] button deletes the set information of the Device/PLC and of symbol variables.

Setting item	Setting content

Node Name	Enter the node name to be registered.
	Example) AGP_1
	
	NOTE
	
	• Restrictions on a node name are as follows:
	  • Must be entered at maximum 32 Unicode characters.
	  • Cannot begin with a number.
	  • Is distinguished between uppercase and lowercase letters.

IP Address	Enter the IP address of the entry node.
Link between Device Info and Symbol Info	Import the Device/PLC information or symbol variable information from a screen project file (*.PRX). **NOTE** • Import of data saves the effort of inputting the same data to 'Pro-Studio EX'.
Project File	Select a screen project file in a folder on the PC.
Browse	The "Open" screen appears. Select the screen project file you wish to use on this screen.

Auto Update	The screen project file that has been imported is automatically updated if there is any change to it.
	The following dialog box appears to indicate updating occurrence, if any.
	
	Automatic Update of Device/PLC Info/Symbol Info
	
	? Node: AGP1
	Device/PLC Info/Symbol Info has been updated. Automatically import it?
	
	[Yes] [No]
	
	Click the [Yes] button when you want to import the updated data.
	
	The following messages also appear indicating the link status.
	• When Auto Update has been successful:
	  "The link has been updated. The latest link date: yyyy/mm/dd hh:mm:ss"
	• When a link error has occurred:
	  "Failed to update. The latest link date: yyyy/mm/dd hh:mm:ss"
	• When [Cancel] has been selected in the Update dialog box:
	  "Canceled to update. The latest link date: yyyy/mm/dd hh:mm:ss"

Read Info Online	Select this to import the Device/PLC information or symbol variable information in the screen project file that has been transferred online from display unit which is registered as a entry node.
Update	Read the data of a screen project file online.

Setting item	Setting content
Add Device/PLC	Add Device/PLCs. You can add Device/PLCs up to 4 drivers. Added Device/PLCs are displayed in each tab. **NOTE** • When LT3000 is selected as the Node Type, you can connect only one device/PLC to the node.
Delete Device/PLC	Delete the Device/PLC currently displayed. The message "Delete xxx (Device/PLC name). Continue?" appears. Click the [Yes] button to delete it.
Maker	Select the name of the manufacturer of Device/PLC.
Device Type	Select the type of Device/PLC.
Port Type	Select the type of port that connects display unit and Device/PLC.
Set Port	Set the details of communication. For further information, please refer to "Communication Setup" for the corresponding manufacturer in 'GP-Pro EX Device/PLC Connection Manual'.
Max.	Displays the maximum number of Device/PLCs that can be connected. **NOTE** • No change can be made.
Text Mode	Specify the text mode of Device/PLC. Refer to "■ Text Mode" for more details.
Device Name	Enter the name of Device/PLC which is connected. Restrictions on its name are as follows: • Must be entered at maximum 32 Unicode characters. • Cannot begin with a number. **NOTE** • As for the Device/PLC data, please confirm the contents set on 'GP-Pro EX', and specify the set items to meet such contents. If there is inconsistency in the set contents like the device name, communication is not established.

Setting item	Setting content
Device Configuration	Set up the Device/PLC. **NOTE** • The set contents may vary according to the Device/PLC. For further information, please refer to "Communication Setup" for the corresponding manufacturer in 'GP-Pro EX Device/PLC Connection Manual'. • When the GP4000/LT4000 Series node is set, in the [Tag Data] you can select [View]. Refer to "■ Tag List" for more details.
System Area Device	Select the Device/PLC where the system area is assigned. **NOTE** • By default, displays the device name set in [System Area Device] on the "System Area Setting" screen (accessible from [Main Unit Setting] on "System setup window" in 'GP-Pro EX'). ☞ 'GP-Pro EX Reference Manual'
System Area Start Device	Enter the device address where system area is assigned. Enter the address directly or click the Calculator icon to enter it on the device address input screen. **NOTE** • By default, displays the device set in [System Data Area] on the "System Area Setting" screen (accessible from [Main Unit Setting] on "System setup window" in 'GP-Pro EX'). ☞ 'GP-Pro EX Reference Manual'
Register	An entry node is registered with the set contents.

■ Tag List

You can check the device/PLC tag information imported into a GP-Pro EX project file. A "Tag" is a name associated with a device address. The "Tag" is also known as a "variable" or "symbol", depending on the device/ PLC manufacturer.

For the list of supported drivers, refer to "■ Supported Driver".

Setting item	Setting content
Tag Data Name	Displays the device/PLC tag data name imported to the GP-Pro EX project file (.prx).
Data Type	Select a data type to display. Displays tags with the selected data type only.
Usage	Select the tags to display from [All], [Use], and [Unused].
Update	Update the display list after changing the [Data Type] and [Usage] conditions.
List	[Tag] and [Data Type] tabs change the display list content. Displayed information varies depending on the tag. [Tag]: Displays the list of information for each tag. [Data Type]: Displays the list of data types in a project. **NOTE** • Click [Expand All] or [Collapse All] in the [Data Type] tab to expand or collapse the lists's diplay information in one step.
Import	
Export	
Expand All	• In Pro-Server EX, you cannot edit or add tags. To edit or add tags, use GP-Pro EX and update the project file (.prx). For more details, in the "GP-Pro EX Reference Manual', refer to "7.8 Using Device/PLC Tags".
Collapse All	
Add	
Edit	
Delete	

■ Supported Driver
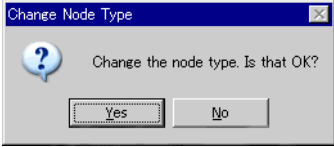
Manufacturer	Series	Tag Data
Siemens AG	SIMATIC S7 MPI Direct	Project file (*.S7P)
	SIMATIC S7 Ethernet	
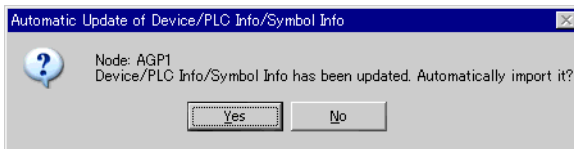
31.5.3   GP Series Node

This section explains the settings on the screen displayed on the conditions below:

1) When you select "GP Series" from the node list and click the [Add Node]; or

2) When you click a node name from the node list.

Setting item	Setting content
Node Type	"GP Series" is selected. **NOTE** • When the node type is changed, the following dialog box appears. Clicking the [Yes] button deletes the set information of the Device/PLC and of symbol variables.

Node Name	Enter the node name to be registered.
	Example) GP_1
	
	NOTE
	• Restrictions on a node name are as follows:
	  • Must be entered at maximum 32 Unicode characters.
	  • Cannot begin with a number.
	  • Is distinguished between uppercase and lowercase letters, hiragana and katakana.

IP Address	Enter the IP address of the entry node.
Subnet Mask	Enter the subnet mask value of the network on which the node is connected.

Setting item	Setting content
Gateway	Enter the IP address of the gateway when accessing the node via the gateway.
Link between Device Info and Symbol Info	Import the Device/PLC information or symbol variable information from a screen project file (*.PRX). **NOTE** • Import of data saves the effort of inputting the same data to Pro-Studio EX'. • When Auto Update is not checked, a screen project file (*.PRX) needs to be updated manually after editing. Specify the edited file and click the [More] button to import the data again.
Screen Project File	Select a screen project file in a folder on the PC.
Browse	The "Open File" screen appears. Select the screen project file you wish to use on this screen.
Auto Update	The screen project file that has been imported is automatically updated if there is any change to it. The following dialog box appears to indicate updating occurrence, if any. Automatic Update of Device/PLC Info/Symbol Info Node: AGP1 Device/PLC Info/Symbol Info has been updated. Automatically import it? [Yes]　[No] Click the [Yes] button when you want to import the updated data. The following messages also appear indicating the link status. • When Auto Update has been successful: "The link has been updated. The latest link date: yyyy/mm/dd hh:mm:ss" • When a link error has occurred: "Failed to update. The latest link date: yyyy/mm/dd hh:mm:ss" • When [Cancel] has been selected in the Update dialog box: "Canceled to update. The latest link date: yyyy/mm/dd hh:mm:ss"
Device Type	Select the type of Device/PLC.
Text Mode	Specify the text mode of Device/PLC. Refer to "■ Text Mode" for more details.
Correction of Inconsecutive Addresses	Specify the data number of protocol communication to be optimized. In the case of "-1", the maximum data number supported by the protocol is adopted and optimization is executed. In the case of "0", optimization is not performed. Address spaces having 1-address space between each other are regarded as non-sequential. Please use it under the circumstance that holds a device which causes trouble when accessed. **NOTE** • Enter the number in the range of -1 to 255.
Register	An entry node is registered with the set contents.

31.5.4　Text Mode

The order of the characters in a string can vary according to the manufacturer of Device/PLC.

Please check the Device/PLC you are using, and select the storage order of the characters in a string from the following table to set the text mode.

(I)　　Device storage order of data

(II)　　Byte LH/HL storage order in Word

(III)　　Word LH/HL storage order in Double-Word

NOTE
• Display unit and 'Pro-Server EX' do not match, the string that is read in will be different, and therefore cannot be processed as text.

Please set the text mode of the display unit in the character string data mode on the "Device/PLC Setting" screen (accessible from [System Setup Window] in 'GP-Pro EX').

List of Text Mode

(I) Device storage order of data	(II) Byte LH/HL storage order in Word	(III) Word LH/HL storage order in Double-Word	Text mode
Store from the front data	LH	LH	4
		HL	2
	HL	LH	5
		HL	1
Store from the end data	LH	LH	6
		HL	7
	HL	LH	8
		HL	3

Example) When the character string is "ABCDEFGHIJ", the following patterns are available.

Character string　　A B C D E F G H I J

AB CD EF GH IJ .... Text mode 4
BA DC FE HG JI .... Text mode 2
CD AB GH EF IJ .... Text mode 5
DC BA HG FE JI .... Text mode 1

IJ GH EF CD AB .... Text mode 6
JI HG FE DC BA .... Text mode 7
GH IJ CD EF AB .... Text mode 8
HG JI DC FE BA .... Text mode 3

31.6   Restrictions

■ Note on importing the symbol information from a screen project file, or the display unit, to which a screen project file has been transferred

- When you import a screen project file of 'GP-Pro EX' or 'GP-PRO/PBIII for Windows', the data type of word symbol is "Unknown". Please set the data type on 'Pro-Studio EX' again.
- When specifying "Unknown" one more time, you cannot set the bit type.
- The real variable R_xxxx cannot be imported.
- You cannot import if the character string of the device address exceeds 255.

■ Notes on importing a variable created with a logic program

- When you import a variable created with a logic program, you cannot edit the symbol sheet including the imported contents.

  To edit them, copy the imported contents on the symbol sheet to another symbol sheet. You can edit the contents on the symbol sheet copied once.
- A timer variable, counter variable, date variable, time variable and PID variable are imported as a group.
- For an alignment variable, the number of alignment elements is replaced with the number of data.
- Maximum number of alignment elements is 4096. If it exceeds the number of symbol data specified by 'Pro-Server EX', symbols are divided and registered on a symbol sheet.

  Variable categories and the maximum number of data that can be handled in 'Pro-Server EX' are follows:

Variable category	Maximum number of data
Bit variables	255
Integer variables	510
Float variables	510

Example) When importing the integer valuable "Pump" including 2000 elements

First symbol	Pump
Second symbol	Pump_510_1019
Third symbol	Pump_1020_1539
Fourth symbol	Pump_1540_1999

■ Notes on importing

- All the preset Device/PLC information, symbol variable information and symbol variable information for searching the node are deleted, and replaced with the imported information.
- If you import a file with global constants settings, all the preset global constants are deleted, and replaced with the imported global constants.

■ Notes on "Link between Device Info and Symbol Info"

Under "Link between Device Info and Symbol Info" in the Node Settings, device and symbol information cannot be imported from a screen project file in the following cases:

- If a PRX file is set under the Device/PLC name that starts from the numeral value in 'GP-Pro EX'
- If a PRX file as mentioned above has been transferred to the display unit

Please change the PRX file name using a Device/PLC name that starts from something other than the numeral value in 'GP-Pro EX'.