23 Connecting with Factory Gateway

23.1   Try to connect with Factory Gateway

To use the Factory Gateway, it is necessary to transfer protocols of Device/PLC in advance from 'Factory Gateway Configuration Tool' or 'GP-PRO/PB III for Windows'.

After protocol transfer, you can register nodes in the same way as GP.

NOTE   • Once protocols have been transferred, it is unnecessary to activate 'Factory Gateway Configuration Tool' unless you change them
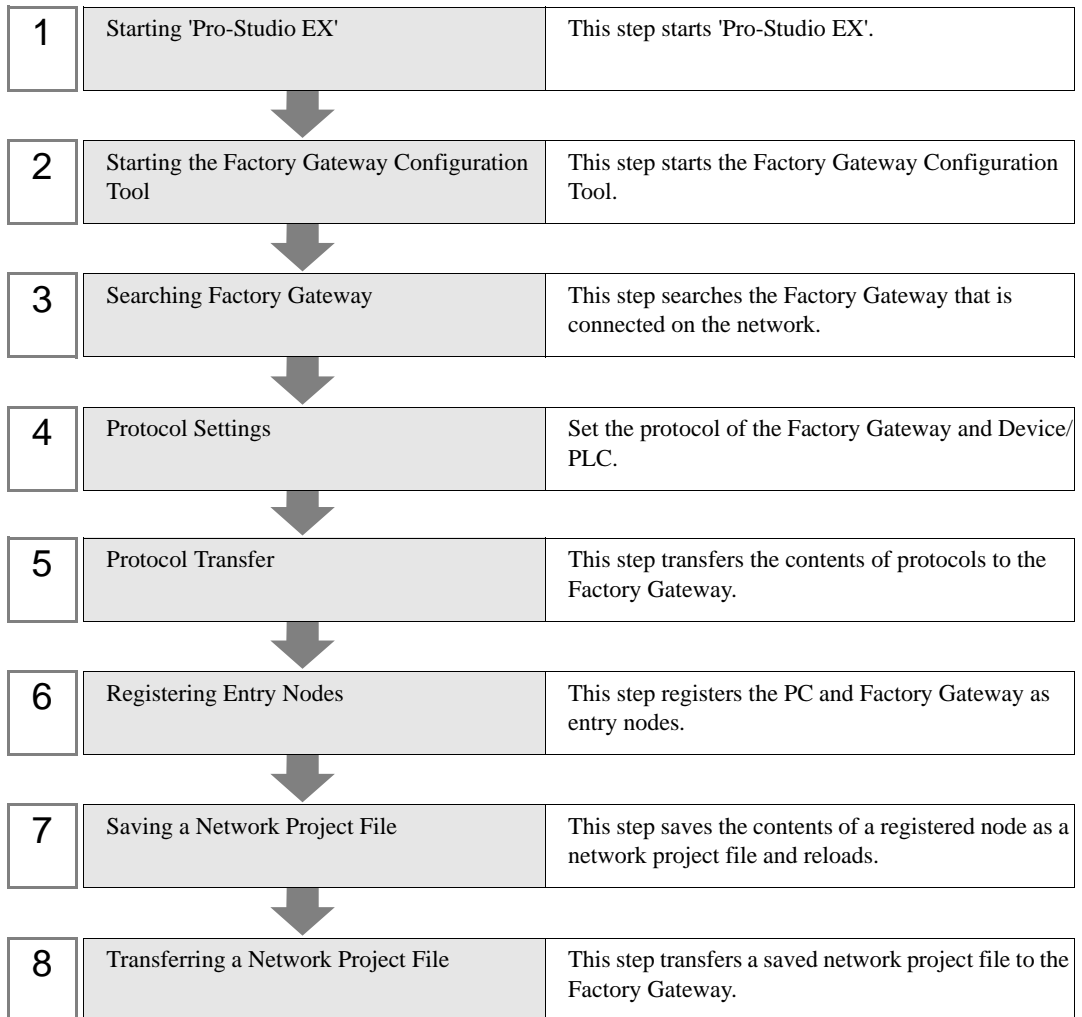

[Connection Sample]

To connect the Factory Gateway (FGW) which is under serial communication, to Device/PLC.

PC
(Node Name: PC1)

Factory Gateway
(Node Name: FGW1)

Serial Communication

Device/PLC
(Device Name: PLC1)
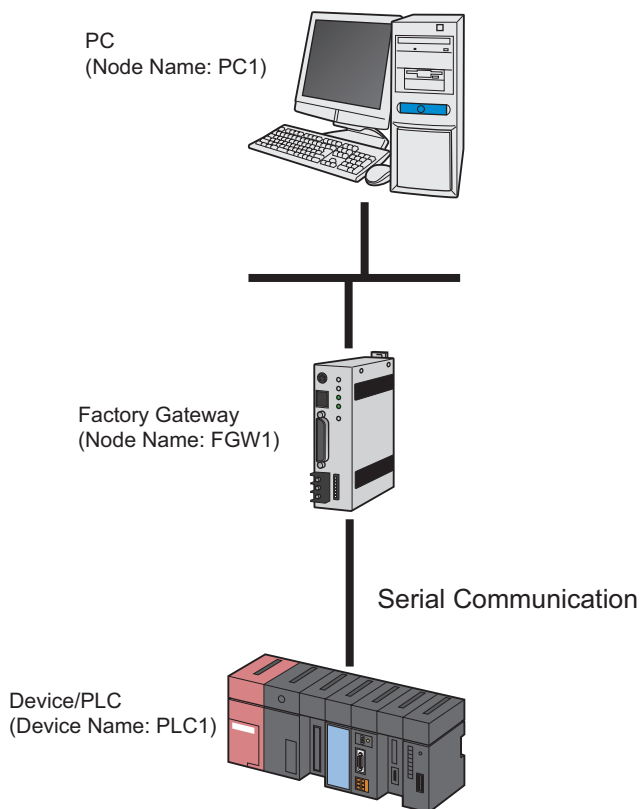
This section describes the setting procedures for making the above connection as an example.

[Setting Procedure]

|		
1	Starting 'Pro-Studio EX'	This step starts 'Pro-Studio EX'.
2	Starting the Factory Gateway Configuration Tool	This step starts the Factory Gateway Configuration Tool.
3	Searching Factory Gateway	This step searches the Factory Gateway that is connected on the network.
4	Protocol Settings	Set the protocol of the Factory Gateway and Device/ PLC.
5	Protocol Transfer	This step transfers the contents of protocols to the Factory Gateway.
6	Registering Entry Nodes	This step registers the PC and Factory Gateway as entry nodes.
7	Saving a Network Project File	This step saves the contents of a registered node as a network project file and reloads.
8	Transferring a Network Project File	This step transfers a saved network project file to the Factory Gateway.

23.1.1 Starting 'Pro-Studio EX'

This step starts 'Pro-Studio EX'.

Refer to "3 Trial of Pro-Server EX" for details about starting method.

23.1.2 Starting the Factory Gateway Configuration Tool

This step starts the Factory Gateway Configuration Tool from 'Pro-Server EX'.
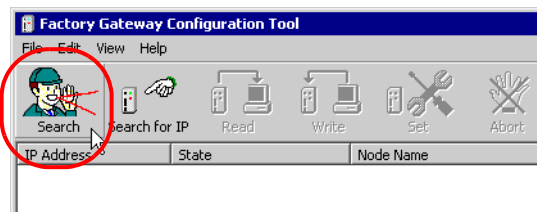
1 Click [Set Factory Gateway] of [Tool] on the menu bar.
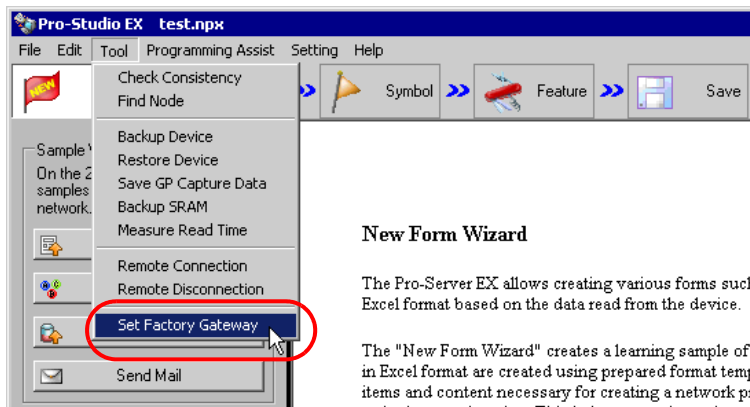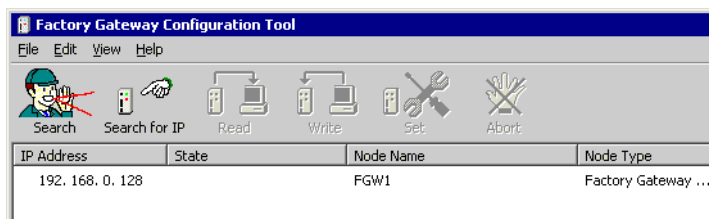

The Factory Gateway Configuration Tool starts.

23.1.3 Searching Factory Gateway

This step searches the Factory Gateway that is connected on the network.

1 Click the [Search] button.

The connected Factory Gateway will appear.

NOTE

• When you know the IP address set for the Factory Gateway in advance, click the [Search for IP] button to search.

• In addition to the Factory Gateway, GP and the PC where 'Pro-Server EX' is running are displayed in the list, but this configuration tool is available only for protocol setting of the Factory Gateway.

• When a protocol has not been transferred to the Factory Gateway, [PLC Type] will be blank.

• If the Factory Gateway and the PC executing 'Pro-Server EX' is not located in the same subnet mask, searching the Factory Gateway will not be carried out properly.
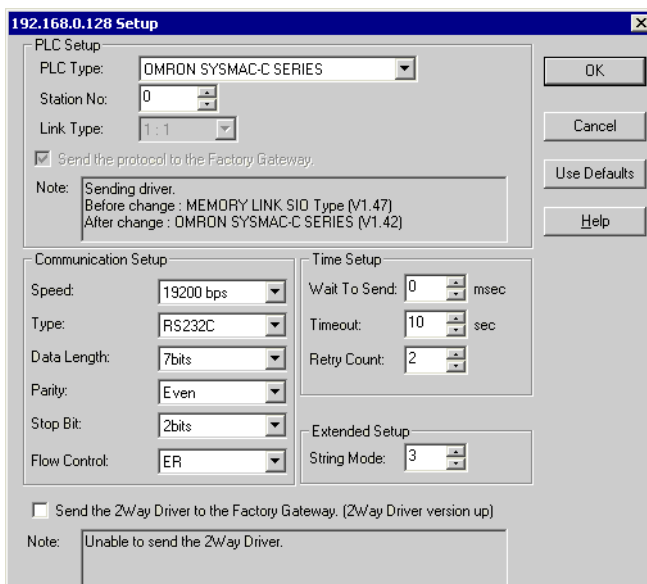
23.1.4   Protocol Settings

This step sets the protocol of the Factory Gateway and Device/PLC.

1 Select the Factory Gateway to which a protocol is transferred and click the [Set] button.
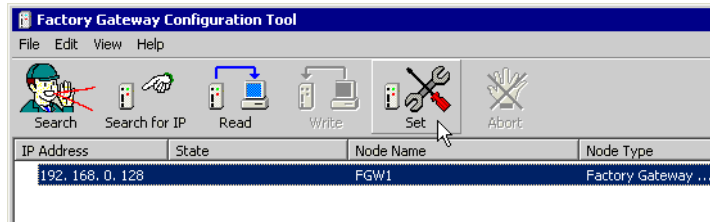
Protocol setup information of Device/PLC is read out, and the setup screen of communication protocol appears.
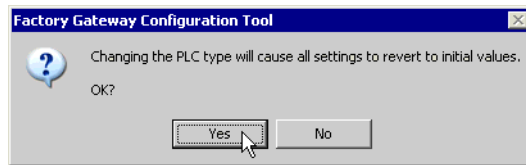

NOTE • When the protocol setup information has been already read out by clicking the [Read] button, the setup screen appears without reading.
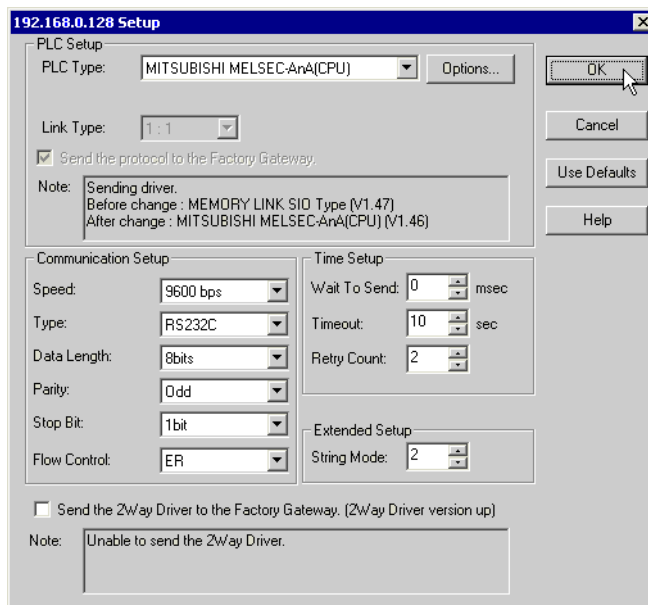
2 Select the Device/PLC connected to the Factory Gateway in [PLC Type].
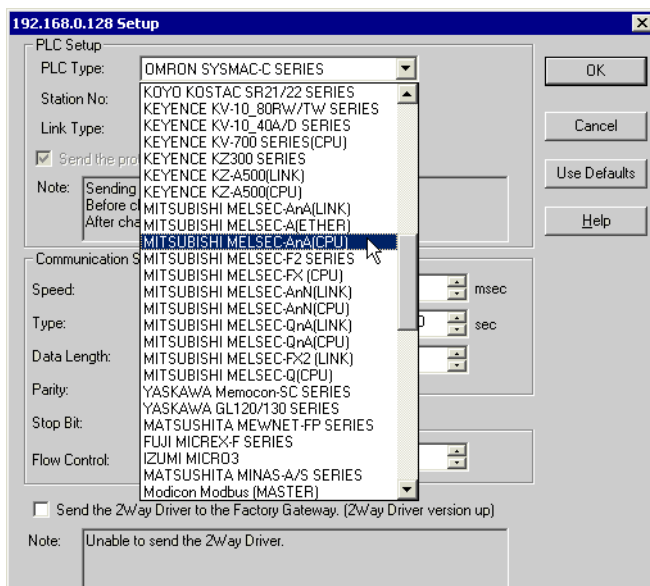
3 All the set items will turn to the default values when the [PLC] type is changed.

Check if the PLC type is correct and click the [Yes] button.

4 Set the protocol on the protocol setup screen, and click the [OK] button.

NOTE • The setup items displayed vary according to the PLC type selected.

)☞ "■ Protocol Setup Screen (Serial)"

)☞ "■ Protocol Setup Screen (Ethernet)"

23.1.5   Protocol Transfer

This step transfers the contents of the set protocol to the Factory Gateway.

1 The protocol transfer confirmation dialog box will appear. Click the [Yes] button.
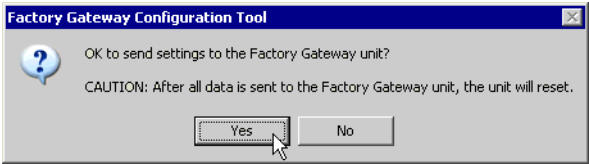
The "Now performing data write" message is displayed in the [State] field.

When the writing is completed, a status icon indicating completion appears.

Now, the protocol has been written to the Factory Gateway.

> **NOTE**
> - During protocol transfer, the Factory Gateway cuts communication with Device/PLC. When the transfer is completed, the Factory Gateway is reset and becomes ready to communicate with Device/PLC.
> - If you click the [No] button, the protocol setup is established but not transferred to the Factory Gateway. Click the [Write] button if you wish to transfer the setup contents (not transferred at this step) later.
> - If multiple Factory Gateways are connected, repeat the steps of Protocol Settings and of Protocol Transfer.

2 Click [Exit] from [File] on the menu bar.

The Factory Gateway Configuration Tool exits.

> **NOTE**
> - You can save the set contents by selecting [Save] or [Save as] of the [File] menu. The contents possible to be saved are the searched node information and protocol setup contents.

23.1.6   Registering Entry Nodes

This step registers the PC and Factory Gateway connected with a network, as nodes.

Refer to "30 Node Registration" for details about entry nodes.

Node Name	:PC1
IP Address	:192.168.0.1
Subnet Mask	:255.255.255.0

Node Name	:FGW1
IP Address	:192.168.0.100
Subnet Mask	:255.255.255.0
Device/PLC Information	

Ex.

Entry node	Setting item	Setting example
PC	Node Name	PC1
	IP Address	192.168.0.1
	Subnet Mask	255.255.255.0
Factory Gateway	Type	GP Series
	Node Name	FGW1
	IP Address	192.168.0.100
	Subnet Mask	255.255.255.0

NOTE
• You can set the IP address of the Factory Gateway with the rotary switch located on the right side of the Factory Gateway unit. Refer to 'Factory Gateway User's Manual' about the setting method.
• The Ethernet related setting available on the Factory Gateway is IP address only. The "Node Name", "Subnet Mask" and "Gateway" settings can be made on the entry node setting screen.

23.1.7   Saving a Network Project File

This step saves the current settings as a network project file and reloads to 'Pro-Server EX'.

Refer to "24 Saving" for details about saving a network project file.

IMPORTANT
- 'Pro-Server EX' reads a created network project file, and then executes ACTION according to the settings in the file. The settings therefore need be saved in the network project file.
- Be sure to reload the network project file to 'Pro-Server EX' If not, ACTION will not work.

Ex.

- Path of network project file   : Desktop\FGWconnect
- Title   : FGW connection

23.1.8   Transferring a Network Project File

This step transfers a saved network project file to the Factory Gateway.

Refer to "25 Transferring" for details about transferring a network project file.
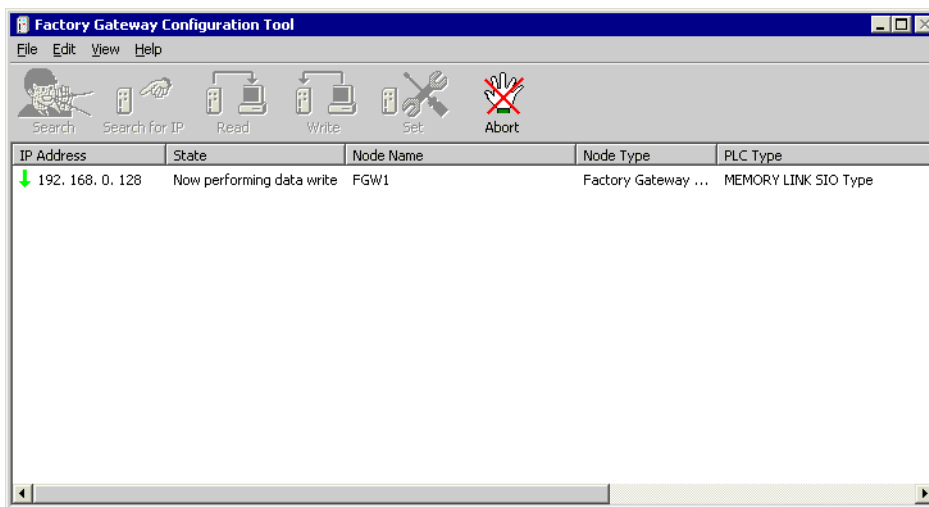

NOTE
- Be sure to transfer a network project file. If not, ACTION will not work.

23.2　Setting Guide

This section describes the names and functions of the main screen of the Factory Gateway Configuration Tool.

Setting item		Setting content
Icon	Search	Search the Factory Gateway connected on the network.
	Search for IP	Specify the IP address of the Factory Gateway to search.
	Read	Read the setup information of the protocol of a selected Factory Gateway.
	Write	Write a protocol and its setup information to a selected Factory Gateway.
	Set	Open the window to set the protocol of a selected Factory Gateway.
	Abort	Cancel searching, reading and writing processing.
IP Address		Displays the IP address of a searched Factory Gateway."Status Icon" indicating the status appears on the left side of the IP address. The details of "Status Icon" are as follows: (Blank): Searched only ↑ :In the process of reading protocol setup information :Protocol setup information has been read. :Protocol and its setup information have been set (changed). ↓ :In the process of writing (changing) protocol and its setup information :Protocol and its setup information have been written (changed).

Setting item	Setting content
State	Displays Factory Gateway status. (Blank): Not operated Search waiting: Waiting for the order to read node information. Now searching: In the process of reading node information. Read waiting: Waiting for reading protocol setup information. Now reading: In the process of reading protocol setup information. Write waiting: Waiting for writing protocol setup information. Now writing: In the process of writing protocol setup information Now setting up: In the process of setting up the protocol. Transfer available: In the status that the transfer is possible (Other errors): Error is displayed. ☞ "35 Error Information"
Node Name	Displays the node name on the Factory Gateway.
Node Type	Displays the Factory Gateway type.
PLC Type	Displays the protocol specified for the Factory Gateway.
2-Way Driver Version	Displays the version of the 2-way driver installed on the Factory Gateway.

■ Protocol Setup Screen (Serial)

Setting item		Setting content
PLC Setting	PLC Type	Specifies a PLC type. **NOTE** • The [Option] button may appear according to the PLC type selected. You can specify the optional items by clicking this button.
	Station No.	Specifies the device No. of PLC (Link unit).
	Link Type	Displays the link type of the Factory Gateway, either 1:1 connection or n:1 (multi-link) connection.
	Send the protocol to the Factory Gateway	Checks if the protocol is transferred to the Factory Gateway. **NOTE** • When the PLC type is changed, this set content becomes invalid and the protocol is essentially transferred.
	Note	Displays if the protocol is changed during the writing process. Displays the protocol name and version before and after change if the protocol is transferred.
Communication Setup	Speed	Specifies the transmission speed of serial communication.
	Type	Specifies the method of serial communication.
	Data Length	Specifies the data length (bit configuration) for data transfer.
	Parity	Specifies the parity check method.
	Stop Bit	Specifies the bit number of stop bits.
	Flow Control	Specifies the communication control method to prevent the overflow of sent or received data.

Setting item		Setting content
Time Setup	Wait To Send	Specifies the waiting time to send the next command after receiving response from PLC.
	Timeout	Specifies the receiving timeout span of the Factory Gateway during the communication with PLC.
	Retry Count	Specifies the number of retry times (to send the command again) of the Factory Gateway in the case of PLC communication error.
Extended Setup	String Mode	Specifies the text mode. **NOTE** • Particular change is not required since the text mode is automatically selected according to the PLC type.
Send the 2Way Driver to the Factory Gateway		Checks if you transfer the 2-way driver to the Factory Gateway. **NOTE** • When the 2-way driver is transferred, the set contents of [Communication Setup] are also transferred.
Note		Displays whether or not the 2-way driver is transferred in the process of writing. If the driver is transferred, displays the version of the 2-way driver before and after change.

NOTE

• The above explanation is just an example. The setup items displayed vary according to the PLC type selected.

■ Protocol Setup Screen (Ethernet)

Setting item		Setting content
PLC Setup	PLC Type	Specifies a PLC type. **NOTE** • The [Options] button may appear according to the PLC type selected. You can specify the optional items by clicking this button.
	Send the protocol to the Factory Gateway	Checks if the protocol is transferred to the Factory Gateway. **NOTE** • When the PLC type is changed, this set content becomes invalid and the protocol is essentially transferred.
	Note	Displays if the protocol is changed during the writing process. Displays the protocol name and version before and after change if the protocol is transferred.
Communication Setup	Source IP Address	Specifies the IP address of the Factory Gateway.
	Source IP Port No.	Specifies the port number of the Factory Gateway.
	Destination IP Address	Specifies the IP address of the PLC.
	Destination IP Port No.	Specifies the PLC port number.
	Protocol Type	Selects the protocol type.

Setting item		Setting content
Extended Setup	String Mode	Specifies the text mode. **NOTE** • Particular change is not required since the text mode is automatically selected according to the PLC type.
Send the 2Way Driver to the Factory Gateway		Checks if you transfer the 2-way driver to the Factory Gateway. **NOTE** • When the 2-way driver is transferred, the set contents of [Communication Setting] are also transferred.
Note		Displays whether or not the 2-way driver is transferred in the process of writing. If the driver is transferred, displays the version of the 2-way driver before and after change.

NOTE • The above explanation is just an example. The setup items displayed vary according to the PLC type selected.

23.3   Restrictions

23.3.1   PLC Type Compatible with the Factory Gateway

The PLC types compatible with the Factory Gateway are listed below.

Manufacturer	PLC Type
Mitsubishi Electric Corp.	MELSEC-AnN(LINK)
	MELSEC-AnN(CPU)
	MELSEC-AnA(LINK)
	MELSEC-AnA(CPU)
	MELSEC-A(ETHER)
	MELSEC-F2 series
	MELSEC-FX(CPU)
	MELSEC-FX2(LINK)
	MELSEC-QnA(LINK)
	MELSEC-QnA(CPU)
	MELSEC-Q(CPU)
	MELSEC-Q(ETHER)
	FREQROL series
	MELSEC-FX 1:n communication (CPU)
	MELSEC-FX(CPU2)
Omron Corp.	SYSMAC-C series
	SYSMAC-C 1:n communication
	SYSMAC-CV series
	SYSMAC-CS1 series
	THERMAC NEO series
Sharp Corp.	SHARP New Satellite JW Series
Yokogawa Electric Corp.	FACTORY ACE 1:1 communication
	FACTORY ACE 1:n communication
	FA-M3(ETHER)
Fuji Electric Co., Ltd.	MICREX-F series
	MICREX-F series (FLT)
	FLEX-PC(LINK)
	FLEX-PC(CPU)
	FUJI INVERTER
	FUJI TEMPERATURE PXR

Manufacturer	PLC Type
Toyoda Machine Works, Ltd.	TOYOPUC-PC2 series
	TOYOPUC-PC2 1:n communication
	TOYOPUC-PC3J series
	TOYOPUC-PC3J 1:n communication
Yaskawa Electric Corp.	Memocon-SC series
	GL120/130 series
	PROGIC8 series
	MP900/CP9200SH series
	MP2000/920(ETHER)
	Inverter
Hitachi, Ltd.	HIDIC-S10α series
	HIZAC-EC series
Hitachi Industrial Equipment Systems Co., Ltd.	HIDIC-H series
	HIDIC-H2 series
	SJ300/L300P series
Toshiba Corp.	PROSEC-EX2000 series
	PROSEC-T series
	PROSEC-T(ETHER)
	SCHNEIDER inverter
Matsushita Electric Works, Ltd.	MEWNET-FP series
Koyo Electronics Industries Co., Ltd	KOSTAC-SG8 series
	KOSTAC SR21/22 series
	DL-305 series
	DL-205/405 series
Toshiba Machine Co., Ltd	TC200 series
	TC200-S series
GE FANUC Automation	90SNP-X
	90-30/70 SNP
Fanuc Ltd.	Power Mate series
IDEC Izumi Corp.	IDEC_1
	IDEC_2
	IDEC_3
	MICRO3
	FC3/FC4A series

Manufacturer	PLC Type
SIEMENS AG	S5 90-115 series
	S5 135-155 series
	S5 3964(R) protocol
	S7-200PPI
	S7-300/400 via MPI
	S7 via 3964/RK512
	545/555 CPU
Rockwell (Allen Bradley)	PLC-5 series
	SLC500 series
	Control Logix DF1
Keyence Corp.	KZ300 series
	KZ-A500(CPU)
	KZ-A500(LINK)
	KZ-10_80R/T series
	KV-10_80A/D series
	KV-700 series (CPU)
Shinko Electric Co., Ltd.	SELMART series
Matsushita Electric Industrial Co., Ltd.	MINAS-A/S series
	Panadac 7000 series
Modicon Corp.	Modbus(MASTER)
	Modbus(SLAVE)
FACON	FACON FB
ORIM VEXTA	ORIM VEXTA E1 series
Yamatake Corp.	YAMATAKE SDC SERIES
Toho Electronics Inc.	TTM series
RKC Instrument Inc.	CB/SR-Mini(MODBUS)
	CB/REX-F/LE100(RKC)
Shinko Technos Co., Ltd.	SHINKO TECHNOS INDICATING
Fenwal Controls of Japan, Ltd.	FENWALl AL SERIES
JT Engineering Inc.	JTE Analyzer
SHIMADEN Co., Ltd.	CONTROLLER
CHINO Corp.	CONTROLLER (MODBUS)
Meidensha Corp.	Ethernet
Ubon	UPZ series
Others	Memory link Ethernet type
	Memory link SIO type

23.3.2   Restrictions on the Use of the Factory Gateway

There are some restrictions on Factory Gateway use with 'Pro-Server EX' in comparison with GP use.

■ Restrictions related to the Factory Gateway unit

•   Setting date and time

You cannot change the date and time set inside the Factory Gateway with the Factory Gateway unit. Please change these set contents from the device monitor of 'Pro-Studio EX'. (The time information cannot be specified in seconds. When the setting is changed, the second becomes "0".)

The storage location of these data differs according to the protocol that has been transferred.

•   Protocol restrictions

The Factory Gateway does not apply to a protocol that requires the communication expansion unit.

■ Restrictions related to the 'Pro-Server EX' functions

Among the 'Pro-Server EX' functions, the followings are not available on the Factory Gateway:

•   Saving backup data in SRAM

The Factory Gateway has no backup SRAM function. Contents are not saved though a new file is created.

•   Saving GP screens

The Factory Gateway does not save GP screens, as it has no screen. In addition, the Factory Gateway has no CF card I/F where the data is temporarily saved.

•   Changing port numbers (TCP/UDP port No.)

You cannot change the port number (that the Factory Gateway uses on 'Pro-Server EX') by 'Pro-Server EX' or the Factory Gateway Configuration Tool. Please change such a port number by transferring a network project file from 'Pro-Server EX'.

It is recommended to use the default port number "8000" for 'Pro-Server EX' unless there is inconvenience.

■ Restrictions related to ACTION contents

Among the 'Pro-Server EX' ACTION contents, the followings are not available on the Factory Gateway:

- Upload of GP log data
- Automatic upload of GP filing data
- Automatic download of GP filing data
- Upload of GP JPEG data

These 4 ACTIONs are the functions requiring a backup SRAM or CF card, and unavailable on the Factory Gateway.

■ Restrictions related to the Factory Gateway Configuration Tool

The Factory Gateway Configuration Tool has the following functional restrictions:

- Setting protocols of multi-link (n:1) type

You can neither set nor transfer protocols of multi-link (n:1) type from the Factory Gateway Configuration Tool. Please set and transfer them from 'GP-Pro EX'.

However, it is possible to transfer another protocol to the Factory Gateway in which a protocol of multi-link (n:1) type is specified.

- Password setting

You cannot set a password for the protocol to be transferred with the Factory Gateway Configuration Tool. It is possible to obtain a password for protecting possible protocol overwriting by setting (from the [Transfer] screen, [Settings (S)], and [Password (P)]) and transferring with 'C-Package'.

When you attempt to read password-protected protocol data of the Factory Gateway, a dialog box appears asking the password. By entering the password, you can set up, change and transfer the protocol. The password set in the Factory Gateway will be deleted by transferring the protocol again from the Factory Gateway Configuration Tool.

- Provider information at protocol change

You cannot delete the provider information in the Factory Gateway by changing and transferring the protocol. Please create and transfer a network project file for a new protocol with 'Pro-Studio EX'.