Beckhoff Automation GmbH

TwinCAT ADS/ AMS Driver

Introduction

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

In this manual, the connection procedure will be described in the sections identified below:

1	System Configuration This section lists the types of External Devices and SIO that you can connect.	☞ "1 System Configuration" (page 3)
2	External Device Selection Select a model (series) of the External Device and its connection method.	☞ "2 External Device Selection" (page 5)
3	Communication Settings This section shows setting examples for communicating between the Display and the External Device.	☞ "3 Communication Settings" (page 6)
4	Setup Items This section describes communication setup items on the Display. Set the Display's communication settings in GP Pro-EX or in off-line mode.	☞ "3.4 Setting Example 4" (page 12)

Operation

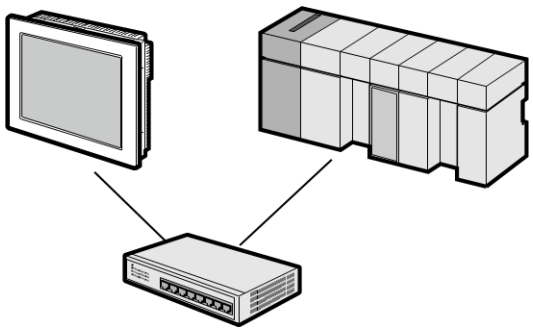
1 System Configuration

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

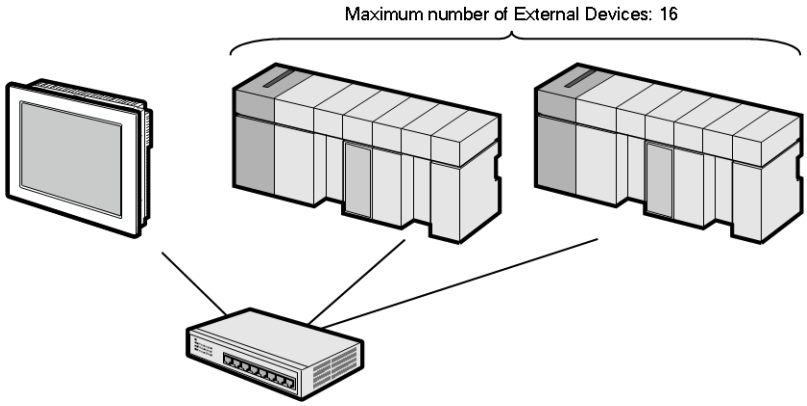
Series	CPU	Link I/F	SIO Type	Setting Example
Bus Terminal Controller	BC9000 BC9100 BX9000	RJ45 on CPU unit	Ethernet (TCP)	"Setting Example 1" (page 6)
		X900	Ethernet (TCP)	"Setting Example 1" (page 6)
Embedded PC	CX1000	X01	Ethernet (TCP)	"Setting Example 2" (page 8)
	CX1010	X001	Ethernet (TCP)	"Setting Example 2" (page 8)
	CX1020	X01 or X02	Ethernet (TCP)	"Setting Example 2" (page 8)
	CX9000	X001 or X02	Ethernet (TCP)	"Setting Example 2" (page 8)
IPC/TwinCAT2-SoftPLC	IPC PC/AT	RJ45	Ethernet (TCP)	"Setting Example 3" (page 10)
IPC/TwinCAT3-Runtime	IPC PC/AT	RJ45	Ethernet (TCP)	"Setting Example 4" (page 12)
	CX5020	X000 or X001	Ethernet (TCP)	"Setting Example 5" (page 14)

■ Connection Configuration

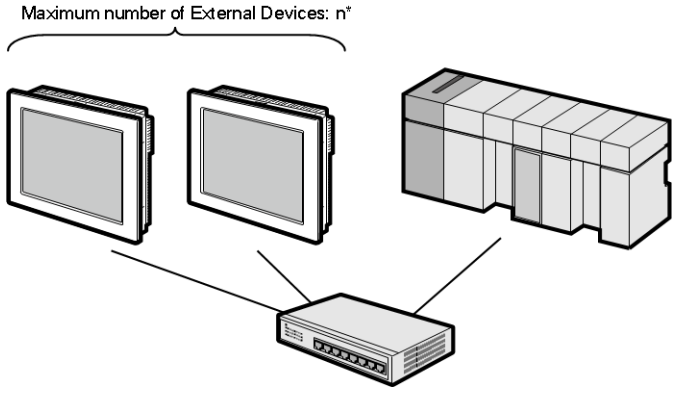
- 1:1 Connection



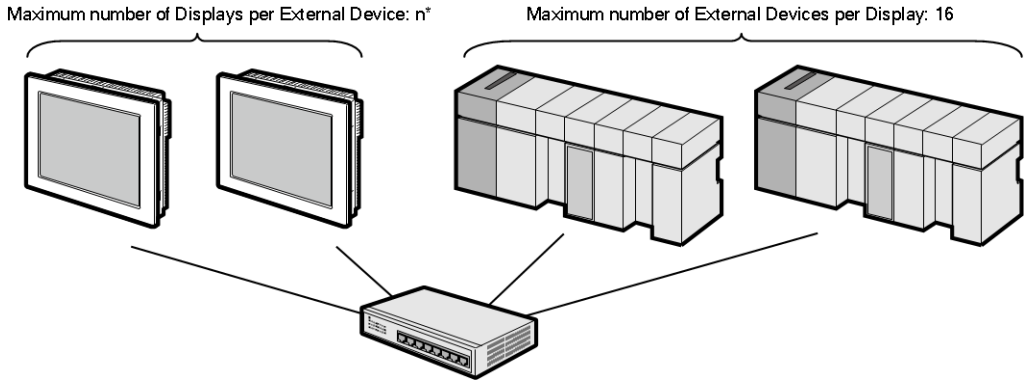
- 1:n Connection



- n:1 Connection



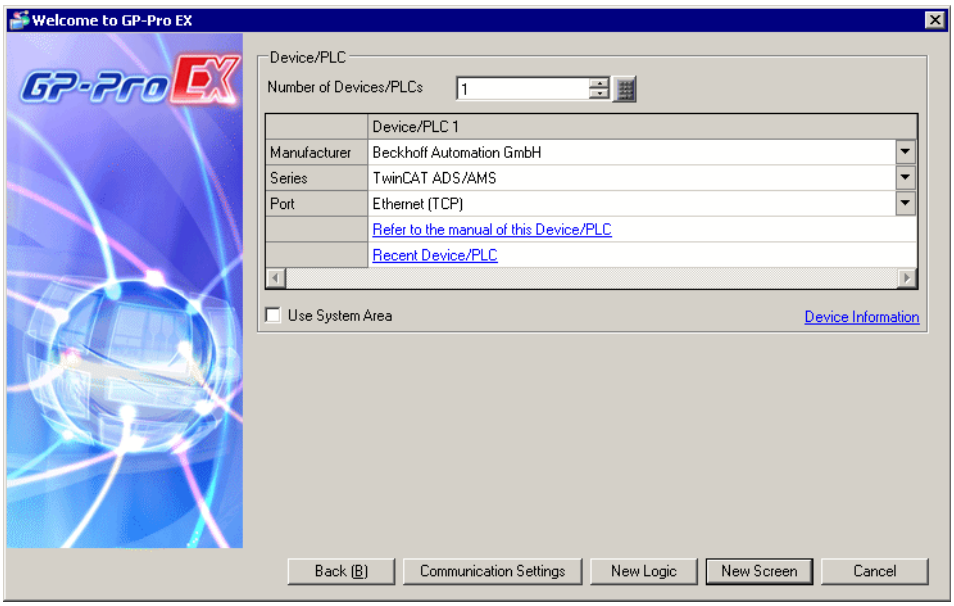
- n:m Connection



* The number of Displays you can connect depends on the External Device. Check the specifications of the External Device. Adding more External Devices increases the load, which may require adjustments to the Timeout time.

2 External Device Selection

Select the External Device to be connected to the Display.



Setup Items	Setup Description
Number of Devices/PLCs	Use an integer from 1 to 4 to enter the number of Devices/PLCs to connect to the display.
Manufacturer	Select the manufacturer of the External Device to be connected. Select "Beckhoff Automation GmbH".
Series	Select a model (series) of the External Device to be connected and connection method. Select "TwinCAT ADS/AMS". Check the External Device which can be connected in "TwinCAT ADS/AMS" in system configuration. ☞ "1 System Configuration" (page 3)
Port	Select the Display port to be connected to the External Device. Select "Ethernet (TCP)".
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 "System Settings [Display Unit] - [System Area] Settings Guide" Cf. Maintenance/Troubleshooting Guide "Main Unit - System Area Settings"

3 Communication Settings

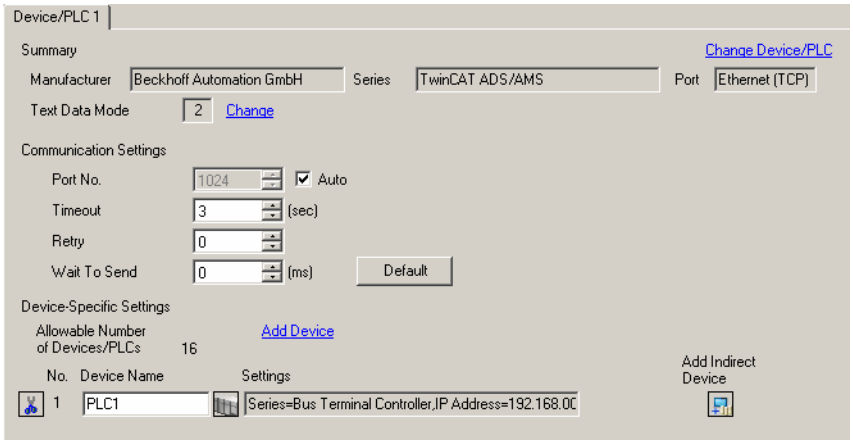
Examples of communication settings of the Display and the External Device, recommended by Pro-face, are shown.

3.1 Setting Example 1

■ Settings of GP-Pro EX

◆ Communication Settings

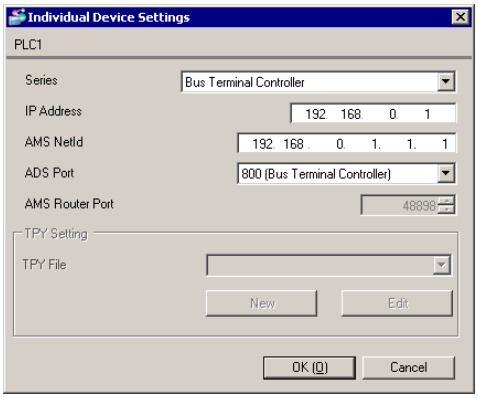
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



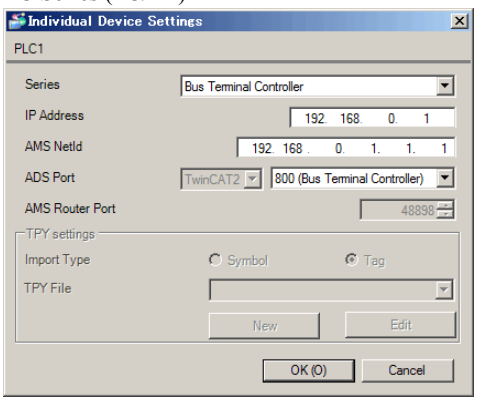
◆ Device Setting

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.

- GP3000, ST, LT3000 and GP-4100 series (Monochrome Mode)



- GP4000 (except GP-4100 series (Monochrome Mode)), LT-4*01TM, LT-Rear Module, SP5000 and IPC Series (PC/AT)



NOTE

- Check with a network administrator about IP address. Do not set the duplicate IP address in the same network.
- Set IP address and Port Number for the External Device in the [Individual Device Settings] dialog box.
- You need to set the IP address for the Display in offline mode.

■ Settings of External Device

Use the TwinCAT for setting up communication with the External Device. Refer to your External Device manual for details.

1 Set up the External Device as in the following table, and add to the TwinCAT system. Please refer to the manual of the External Device for more details.

Setup Items	Setting Value
Address	192.168.0.1
AMS Net Id	192.168.0.1.1.1

2 Add the Display's IP address and AMS NetId to the TwinCAT system.
Right click the TwinCAT icon in the Notification Area, and select [Properties].

3 In the [AMS Router] tab, click [Add].

4 Enter the following settings and click [OK].

Setup Items	Setting Value
AMS Net Id	192.168.0.2.1.1
Address	192.168.0.2
Transport	TCP/IP

NOTE

- In the AMS Net Id, set a value that appends 1.1 to the IP address.

5 Restart the TwinCAT system.

6 Create the project in TwinCAT PLC Control, and download to the External Device.

NOTE

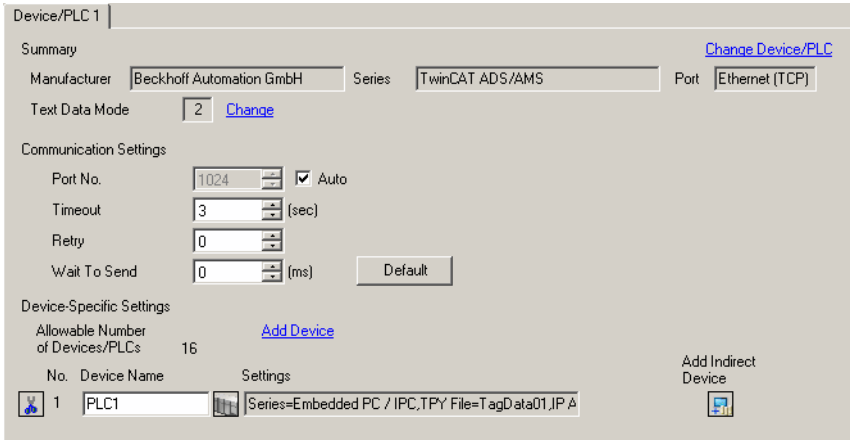
- Check with a network administrator about IP address. Do not set the duplicate IP address in the same network.
- Set the IP address and Port Number for the External Device in the [Individual Device Settings] dialog box.
- You need to set the IP address for the Display in offline mode.

3.2 Setting Example 2

■ Settings of GP-Pro EX

◆ Communication Settings

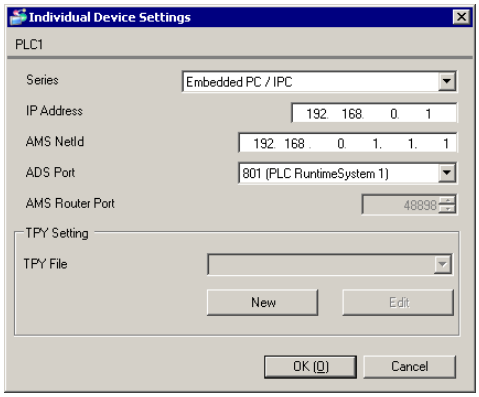
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



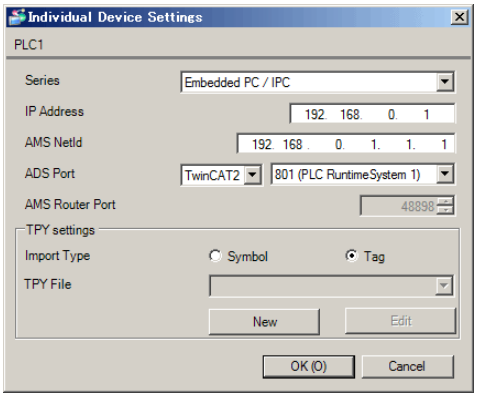
◆ Device Setting

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.

- GP3000, ST, LT3000 and GP-4100 series (Monochrome Mode)



- GP4000 (except GP-4100 series (Monochrome Mode)), LT-4*01TM, LT-Rear Module, SP5000 and IPC Series (PC/AT)



NOTE

- When using Embedded PC/IPC, in the [TPY File] field define the TPY file (tag data) output by TwinCAT ADS/AMS.
- Check with a network administrator about IP address. Do not set the duplicate IP address in the same network.
- Set the IP address and Port Number for the External Device in the [Individual Device Settings] dialog box.
- You need to set the IP address for the Display in offline mode.

■ Settings of External Device

Use the TwinCAT for communication settings of the External Device. Refer to your External Device manual for details.

1 Set up the External Device as in the following table. Please refer to the manual of the External Device for more details.

Setup Items	Setting Value
Address	192.168.0.1
AMS Net Id	192.168.0.1.1.1

2 Change the target to External Device.
From the TwinCAT System Manager's tree view, select [SYSTEM - Configuration].

3 From the [General] tab, click [Choose Target] to display a dialog box. Select the External Device. When selecting the target, set the [Target Route] and [Remote Route] to [Static].

4 Set up the Display's IP address and AMS NetId on the External Device.
From the TwinCAT System Manager's tree view, select [SYSTEM - Configuration] and then [Route Settings] to display a screen.

5 Select the [Static Route] tab and click [Add].

6 Enter the following settings and click [Add Route].

Setup Items	Setting Value
AmsNetId	192.168.0.2.1.1
Transport Type	TCP/IP
Address Info	192.168.0.2 (IP Address)
Target Route	Static
Remote Route	none

NOTE

- In the AmsNetId, set a value that appends 1.1 to the IP address.

7 Create the project in TwinCAT PLC Control, and download to the External Device.

NOTE

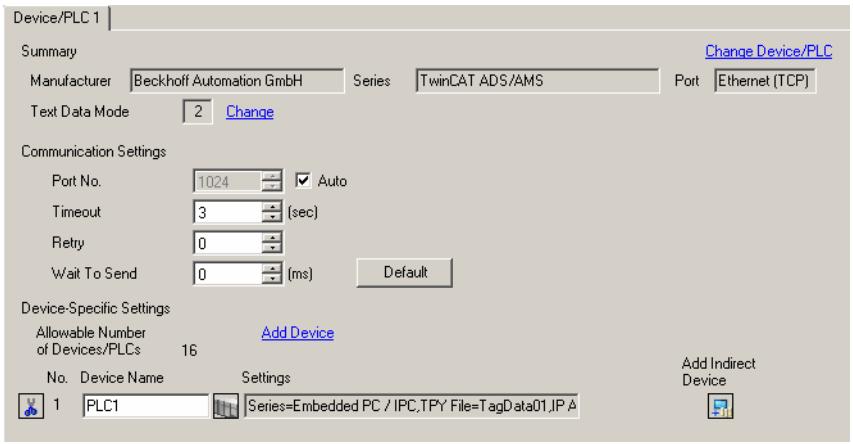
- Check with a network administrator about IP address. Do not set the duplicate IP address in the same network.
- Set the IP address and Port Number for the External Device in the [Individual Device Settings] dialog box.
- You need to set the IP address for the Display in offline mode.

3.3 Setting Example 3

■ Settings of GP-Pro EX

◆ Communication Settings

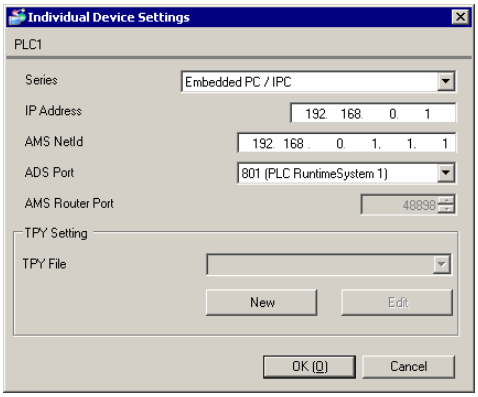
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



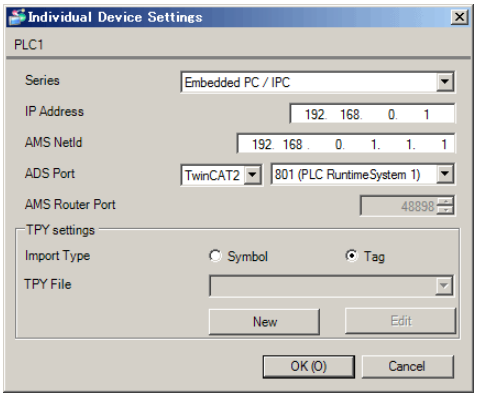
◆ Device Setting

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.

- GP3000, ST, LT3000 and GP-4100 series (Monochrome Mode)



- GP4000 (except GP-4100 series (Monochrome Mode)), LT-4*01TM, LT-Rear Module, SP5000 and IPC Series (PC/AT)



NOTE

- When using Embedded PC/IPC, in the [TPY File] field define the TPY file (tag data) output by TwinCAT ADS/AMS.
- Check with a network administrator about IP address. Do not set the duplicate IP address in the same network.
- Set the IP address and Port Number for the External Device in the [Individual Device Settings] dialog box.
- You need to set the IP address for the Display in offline mode.

■ Settings of External Device

Use the TwinCAT for communication settings of the External Device. Refer to your External Device manual for details.

1 In the TwinCAT system, enter the following settings. Please refer to the manual of the External Device for more details.

Setup Items	Setting Value
Address	192.168.0.1
AMS Net Id	192.168.0.1.1.1

2 Add the Display's IP address and AMS NetId to the TwinCAT system.
Right click the TwinCAT icon in the Notification Area, and select [Properties].

3 In the [AMS Router] tab, click [Add].

4 Enter the following settings and click [OK].

Setup Items	Setting Value
AMS Net Id	192.168.0.2.1.1
Address	192.168.0.2
Transport	TCP/IP

NOTE

- In the AMS Net Id, set a value that appends 1.1 to the IP address.

5 Restart the TwinCAT system.

NOTE

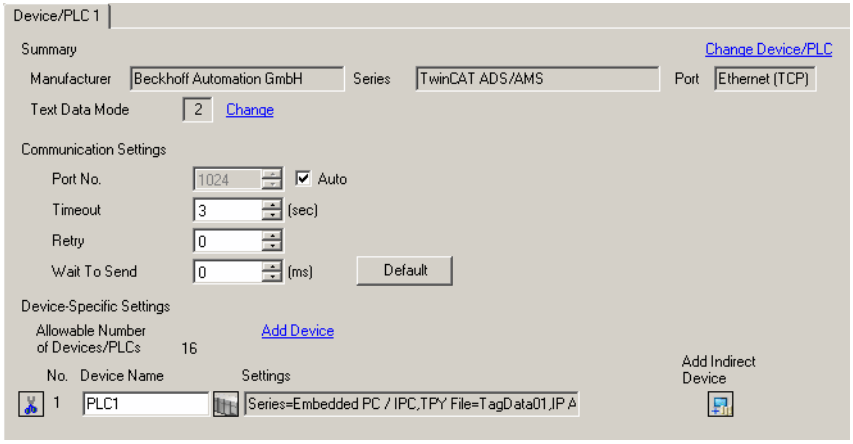
- Check with a network administrator about IP address. Do not set the duplicate IP address in the same network.
- Set the IP address and Port Number for the External Device in the [Individual Device Settings] dialog box.
- You need to set the IP address for the Display in offline mode.

3.4 Setting Example 4

■ Settings of GP-Pro EX

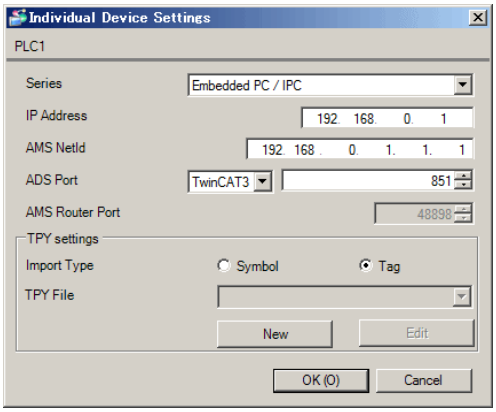
◆ Communication Settings

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.



NOTE

- GP3000, ST, LT3000 and GP-4100 series do not support TwinCAT3.
- When using Embedded PC/IPC, in the [TPY File] field define the TPY file (tag data) output by TwinCAT ADS/AMS.
- Check with a network administrator about IP address. Do not set the duplicate IP address in the same network.
- Set the IP address and Port Number for the External Device in the [Individual Device Settings] dialog box.
- You need to set the IP address for the Display in offline mode.

■ Settings of External Device

Use the TwinCAT for communication settings of the External Device. Refer to your External Device manual for details.

1 Start the setting tool.
2 Select [Routes] from [SYSTEM] in [Solution Explorer].
3 Select the [Static Route] tab from display, click [Add].
4 Enter the following settings and click [Add Route]. Set the Display and the External Device.
Display

Setup Items	Setting Value
Ams Net Id	192.168.0.2.1.1
Transport Type	TCP/IP
Connection Timeout (s)	5

NOTE
- In the AMS Net Id, set a value that appends 1.1 to the IP address.

5 From [PLC] in [Solution Explorer], right click the PLC project that you want to connect, and select [Change Port] from the displayed menu.
Enter the Port number and click [OK].

Setup Items	Setting Value
Port	851

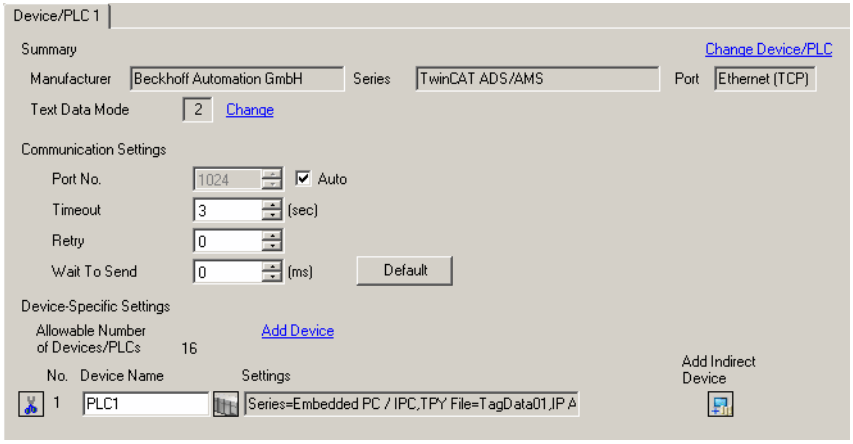
NOTE
- Check with a network administrator about IP address. Do not set the duplicate IP address in the same network.
- Set the IP address and Port number for the External Device in the [Individual Device Settings] dialog box.
- You need to set the IP address for the Display in offline mode.

3.5 Setting Example 5

■ Settings of GP-Pro EX

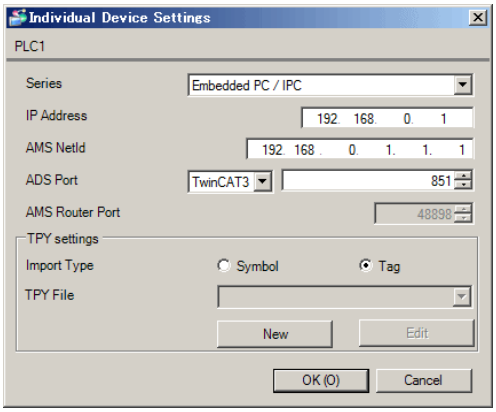
◆ Communication Settings

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.



NOTE

- GP3000, ST, LT3000 and GP-4100 series do not support TwinCAT3.
- When using Embedded PC/IPC, in the [TPY File] field define the TPY file (tag data) output by TwinCAT ADS/AMS.
- Check with a network administrator about IP address. Do not set the duplicate IP address in the same network.
- Set the IP address and Port Number for the External Device in the [Individual Device Settings] dialog box.
- You need to set the IP address for the Display in offline mode.

■ Settings of External Device

Use the TwinCAT for communication settings of the External Device. Refer to your External Device manual for details.

1 Start the setting tool.

2 Change the target to External Device.
From [Solution Explorer], select [SYSTEM].

3 From the [General] tab, click [Choose Target] to display a dialog box. Select the External Device. When selecting the target, set the [Target Route] and [Remote Route] to [Static].

4 Set the Display's IP address and AMS Net Id on the External Device.
From [SYSTEM] in [Solution Explorer], select [Routes].

5 Select the [Static Route] tab and click [Add].

6 Enter the following settings and click [Add Route]. Set the Display and the External Device.
Display

Setup Items	Setting Value
Ams Net Id	192.168.0.2.1.1
Transport Type	TCP/IP
Connection Timeout (s)	5

NOTE

- In the AMS Net Id, set a value that appends 1.1 to the IP address.

7 From [PLC] in [Solution Explorer], right click the PLC project that you want to connect, and select [Change Port] from the displayed menu.
Enter the Port number and click [OK].

Setup Items	Setting Value
Port	851

NOTE

- Check with a network administrator about IP address. Do not set the duplicate IP address in the same network.
- Set the IP address and Port number for the External Device in the [Individual Device Settings] dialog box.
- You need to set the IP address for the Display in offline mode.

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 9)

NOTE

- Set the Display's IP address in off-line mode.

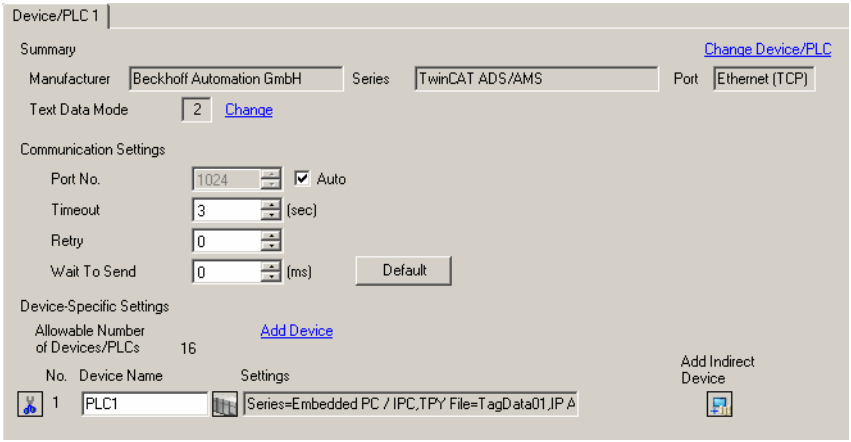
  Cf. Maintenance/Troubleshooting Guide "Ethernet Settings"

- To use this driver, open TCP port 48898.

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 the Display waits for the response from the External Device.
Retry	In case of no response from the External Device, use an integer from 0 to 255 to enter 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.

NOTE

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

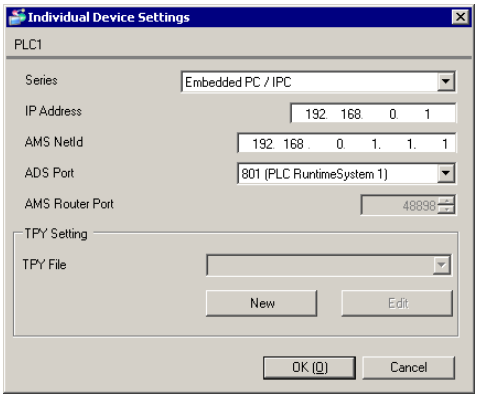
  Cf. GP-Pro EX Reference Manual "Changing the Device/PLC at Runtime (Indirect Device)"

◆ Device Setting

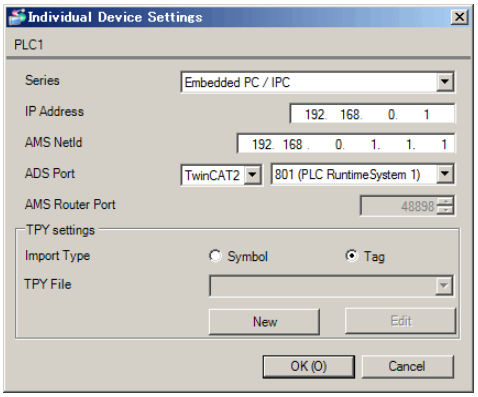
To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

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

- GP3000, ST, LT3000 and GP-4100 series (Monochrome Mode)



- GP4000 (except GP-4100 series (Monochrome Mode)), LT-4*01TM, LT-Rear Module, SP5000 and IPC Series (PC/AT)



Setup Items	Setup Description
Series	Set series of the External Device.
IP Address	Set IP address of the External Device. **NOTE** • Check with a network administrator about IP address. Do not set the duplicate IP address.
AMS NetId	Enter the External Device's AMS NetId. AMS NetId is the IP Address with 1.1 appended.
ADS Port	Set up the TwinCAT version and the ADS Port.
AMS Router Port	Displays the AMS Router Port. AMS Router Port is fixed to 48898.
Import Type	When the [Series] is set to [Embedded PC/IPC], select the import type for the TPY file. Tag (recommended): Import tag data. Symbol: Import symbol names only. Import type is the same as the import type for GP3000, ST, LT3000 and GP-4100 series (monochrome model).
TPY File	When the [Series] is set to [Embedded PC/IPC], select the tag data that defines the TPY file for the External Device. When creating new tag data, click [New]. ☞ "5.2 Embedded PC Series / IPC/TwinCAT2-SoftPLC (Tag)" (page 21) ☞ "5.3 Embedded PC Series / IPC/TwinCAT2-SoftPLC (Symbol)" (page 27) ☞ "5.4 Embedded PC Series / IPC/TwinCAT3-Runtime (Tag)" (page 34) ☞ "5.5 Embedded PC Series / IPC/TwinCAT3-Runtime (Symbol)" (page 41)

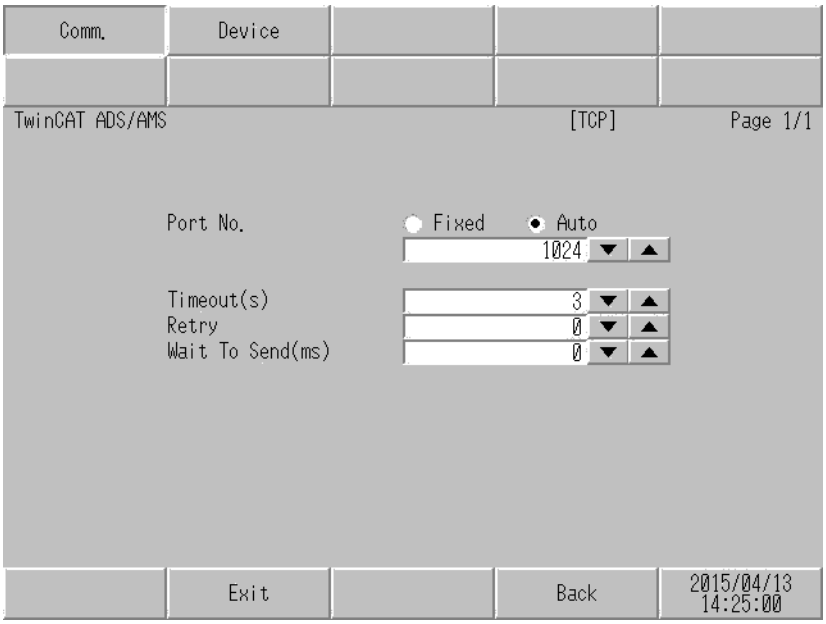
4.2 Setup Items in Offline Mode

NOTE

- Please refer to Maintenance/Troubleshooting Guide for more information on how to enter offline mode or about operation.
  Cf. Maintenance/Troubleshooting Guide "Offline Mode"
- The number of the setup items to be displayed for 1 page in the offline mode depends on the Display in use. Please refer to the Reference manual for details.

■ Communication Settings

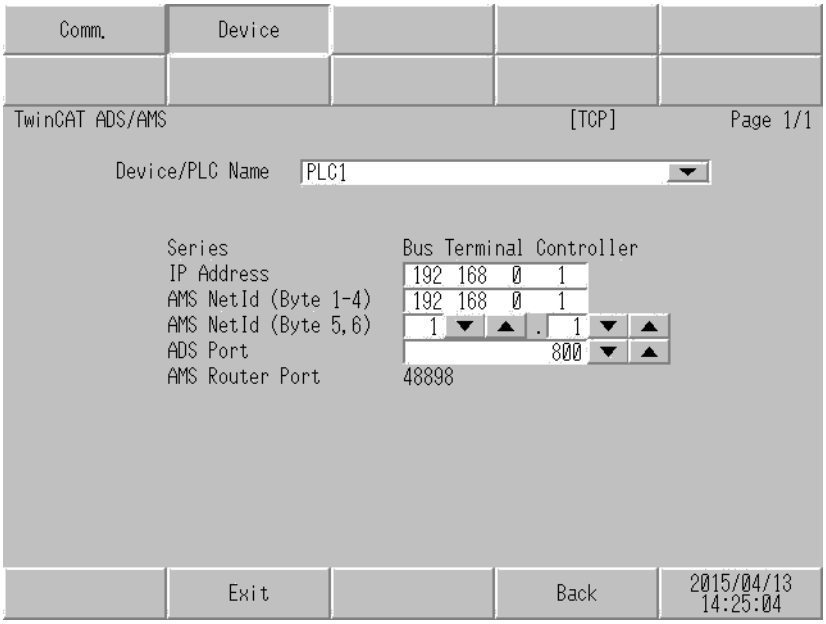
To display the setting screen, touch [Device/PLC Settings] from [Peripheral Settings] in offline mode. Touch the External Device you want to set from the displayed list.



Setup Items	Setup Description
Port No.	Set the Port No. of the Display. Select either [Fixed] or [Auto]. When you select [Fixed], use an integer from 1024 to 65535 to enter the port No. of the Display. When you select [Auto], the port No. will be automatically assigned regardless of the entered value.
Timeout	Use an integer from 1 to 127 to enter the time (s) for which the Display waits for the response from the External Device.
Retry	In case of no response from the External Device, use an integer from 0 to 255 to enter 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 for device setting. Device name is a title of External Device set with GP-Pro EX.(Initial value [PLC1])
Series	Displays the External Device model.
IP Address	Set IP address of the External Device. **NOTE** • Check with a network administrator about IP address. Do not set the duplicate IP address.
AMS NetId (Byte 1-4) / AMS NetId (Byte 5, 6)	Enter the External Device's AMS NetId. AMS NetId is the IP Address with 1.1 appended.
ADS Port	Set up the ADS Port.
AMS Router Port	Displays the AMS Router Port. AMS Router Port is fixed to 48898.

5 Supported Devices

Range of supported device address is shown in the table below. Please note that the actually 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.

5.1 Bus Terminal Controller

This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Group Index	
				Bit Address	Word Address
Input Relay	%IX00000.0 - %IX65535.7	%IW00000 - %IW65534	L / H	0x0000 F021	0x0000 F020
Output Relay	%QX00000.0 - %QX65535.7	%QW00000 - %QW65534		0x0000 F031	0x0000 F030
Internal Relay	%MX00000.0 - %MX65535.7	%MW00000 - %MW65534		0x0000 4021	0x0000 4020
Data Area	%DX00000000 - %DX16777215	%DW00000000 - %DW16777214		0x0000 4040	0x0000 4040

NOTE

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

  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"

- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

5.2 Embedded PC Series / IPC/TwinCAT2-SoftPLC (Tag)

You can import tag data from projects created using TwinCAT.

This address can be specified as system data area.

Device		Bit Address	Word Address	32 bit	Notes
BOOL	Single	<TAGNAME>	-	-	*1
	1D Array	<TAGNAME>[xl] - <TAGNAME>[xh]	-		
	2D Array	<TAGMNAME>[xl,yl] - <TAGNAME>[xh,yh]	-		
	3D Array	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]	-		
BYTE SINT USINT	Single	<TAGNAME>.00 - <TAGNAME>.07	<TAGNAME>	L / H	*1
	1D Array	<TAGNAME>[xl].00 - <TAGNAME>[xh].07	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	<TAGNAME>[xl,yl].00 - <TAGNAME>[xh,yh].07	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	<TAGNAME>[xl,yl,zl].00 - <TAGNAME>[xh,yh,zh].07	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
INT WORD UINT	Single	<TAGNAME>.00 - <TAGNAME>.15	<TAGNAME>		*1*2
	1D Array	<TAGNAME>[xl].00 - <TAGNAME>[xh].15	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	<TAGNAME>[xl,yl].00 - <TAGNAME>[xh,yh].15	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	<TAGNAME>[xl,yl,zl].00 - <TAGNAME>[xh,yh,zh].15	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
DINT DWORD UDINT	Single	<TAGNAME>.00 - <TAGNAME>.31	<TAGNAME>		*1
	1D Array	<TAGNAME>[xl].00 - <TAGNAME>[xh].31	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	<TAGNAME>[xl,yl].00 - <TAGNAME>[xh,yh].31	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	<TAGNAME>[xl,yl,zl].00 - <TAGNAME>[xh,yh,zh].31	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
DATE REAL[*3] TIME TIME_OF_DAY DATE_AND_TIME[*4]	Single	-	<TAGNAME>		*1
	1D Array	-	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	-	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	-	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		

Device		Bit Address	Word Address	32 bit	Notes
STRING	Single	-	<TAGNAME>	-	*1*5
	1D Array		<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array		<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array		<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		

*1 <TAGNAME>: TagName including structure name in case of structure. The maximum number of characters for Symbol Name is 255 including delimiters and element number. In addition, maximum number of characters when using D-Script, limited to 54 characters.

Example)

BOOL type single symbol	"BOOLSYMBOL"
BOOL type 1D Array	"BOOL1D[10]"
WORD type 2D Array	"WORD2D[10,10]"
UDINT type 3D Array	"UDINT3D[0,1,2]"
STRING in User Defined Structure [STRUCT001]	"STRUCT001.STRINGSYM"

- You cannot start names with any of the following text:
  LS, USR, SCR, PRT

*2 The system data area is initially set up with 16 words of items. If you set up less than 16 words of items, after allocating a 16 word or larger array of tags in the system data area, select only the necessary items.

*3 32 bit type

*4 DATE_AND_TIME is a 64-bit data type in theDisplay, and a 32-bit data type on the External Device. Bit conversion is handled by the protocol.
The Display supports precision to the milliseconds. The External Device supports precision to the seconds.

*5 Up to 1414 single-byte characters are supported by the STRING data type. Characters 1415 or higher are ignored.

IMPORTANT

- You can use tags on supported Displays. To check if tags are supported by your Display, in the GP-Pro EX Reference Manual's "Supported Features", see "Import Device/PLC tags".
- The tag import feature is supported in GP-Pro EX V3.01.000 or later (or in the case of GP-4*01TM, V3.10.000 or later).
- To import tags, use tag data output from TwinCAT2's TwinCAT 2.11 Version 2237 or earlier.

NOTE

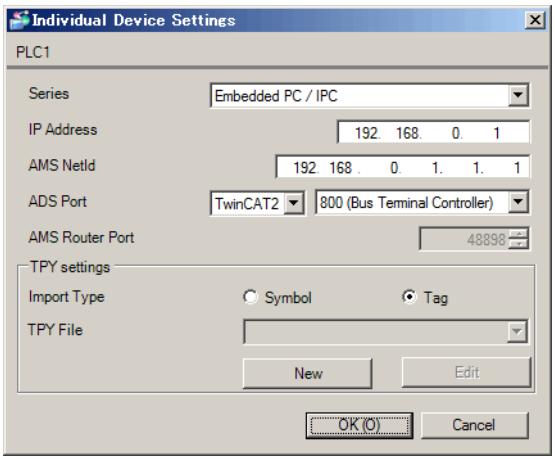
- You cannot use tags with nested arrays (for example, Array[x][y].Structure) in GP-Pro EX. Design your tags using multidimensional arrays (for example, Array[x,y].Structure) so you can use them in GP-Pro EX.
- When using this driver, if you have many parts on a screen set up with tags, changing screens and displaying windows may take longer than expected. This is due to the time required to reference tag values on the screen or window.
  To reduce the time to change screens or display windows, consider separating the parts onto multiple screens.
- Please refer to the GP-Pro EX Reference Manual for system data area.

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

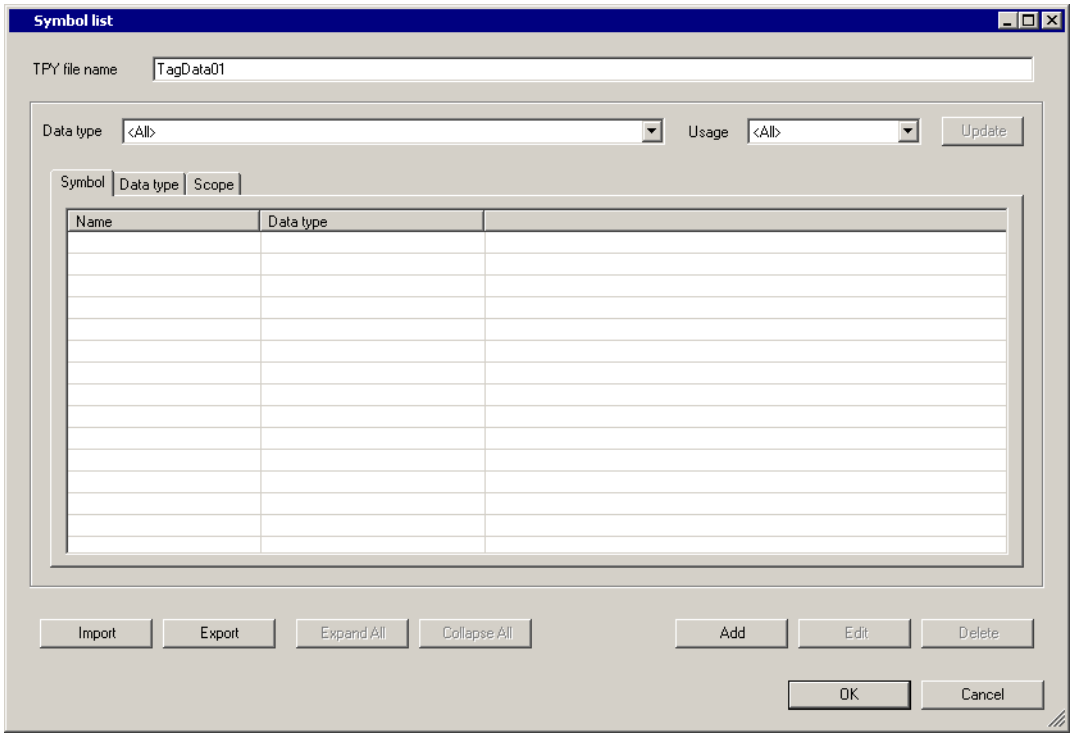
  ☞ "Manual Symbols and Terminology"

■ Importing Tag File

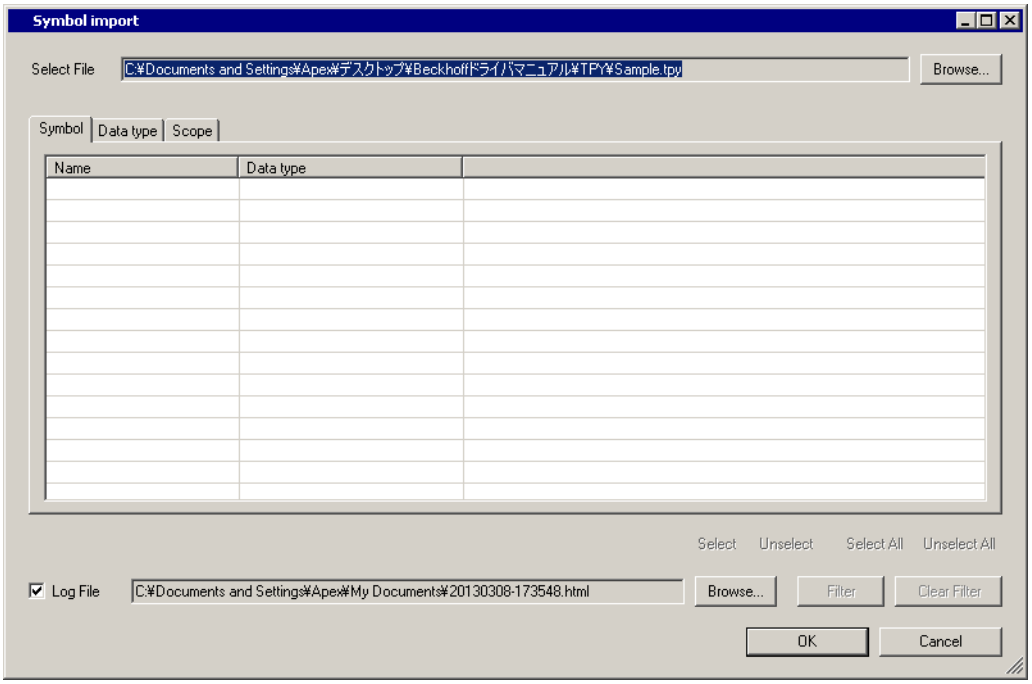
1 In GP-Pro EX, open the [Individual Device Settings] dialog box, and from the [Series] drop-down list, select "Embedded PC/IPC". Set [ADS Port] to [TwinCAT2], and the [Import Type] to [Tag].



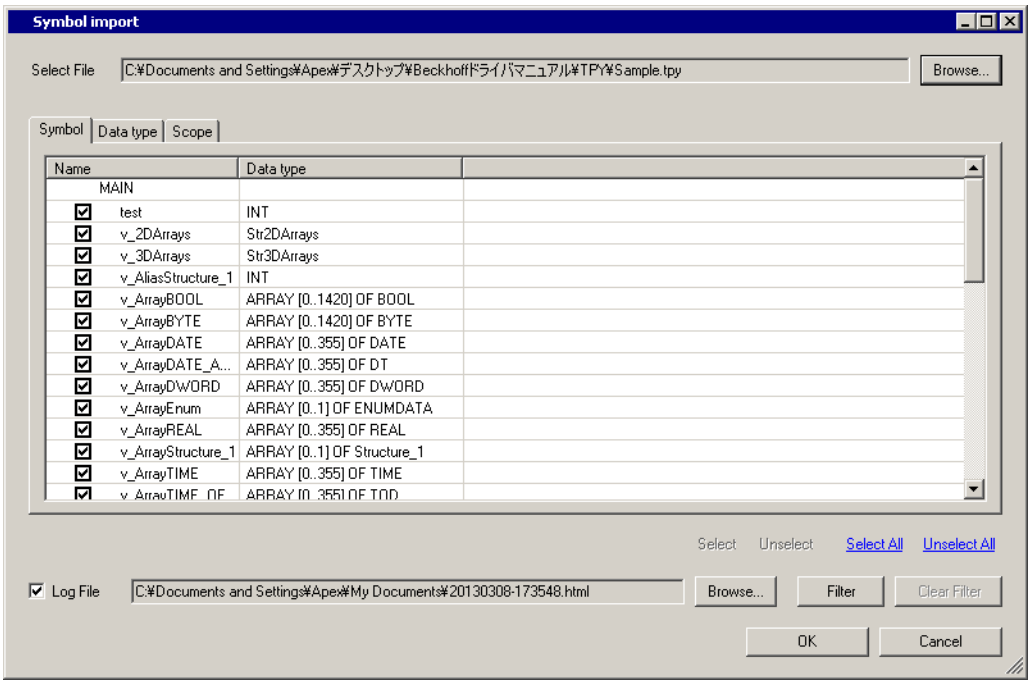
2 Click [New].



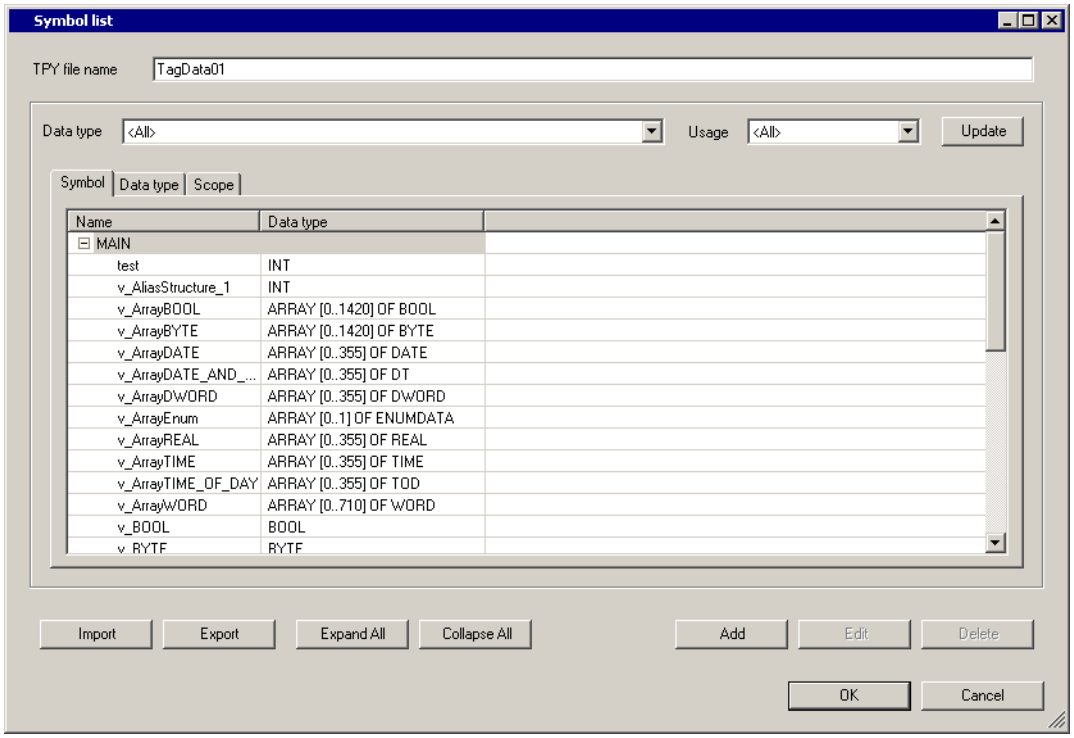
3 Click [Import].



4 From the [Select File] field, click [Browse..], and then select the TPY file.



5 Check the tags to import, and click [OK].



NOTE

- For details on importing tags, see "Using Device/PLC Tags" in the GP-Pro EX Reference Manual.
- GP-Pro EX does not support editing or deleting global scope symbols. To modify those symbols, please override them by TPY file import or create a new symbol list by selecting [New].

5.3 Embedded PC Series / IPC/TwinCAT2-SoftPLC (Symbol)

You can import symbols only from projects created using TwinCAT. You cannot create symbols in GP-Pro EX.

This address can be specified as system data area.

Device		Bit Address	Word Address	32 bit	Notes
BOOL	Single	<TAGNAME>	-	-	*1
	1D Array	<TAGNAME>[xl] - <TAGNAME>[xh]	-		
	2D Array	<TAGMNAME>[xl,yl] - <TAGNAME>[xh,yh]	-		
	3D Array	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]	-		
BYTE SINT USINT	Single	<TAGNAME>.00 - <TAGNAME>.07	<TAGNAME>	L / H	*1
	1D Array	<TAGNAME>[xl].00 - <TAGNAME>[xh].07	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	<TAGNAME>[xl,yl].00 - <TAGNAME>[xh,yh].07	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	<TAGNAME>[xl,yl,zl].00 - <TAGNAME>[xh,yh,zh].07	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
INT WORD UINT	Single	<TAGNAME>.00 - <TAGNAME>.15	<TAGNAME>		*1*2
	1D Array	<TAGNAME>[xl].00 - <TAGNAME>[xh].15	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	<TAGNAME>[xl,yl].00 - <TAGNAME>[xh,yh].15	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	<TAGNAME>[xl,yl,zl].00 - <TAGNAME>[xh,yh,zh].15	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
DINT DWORD UDINT	Single	<TAGNAME>.00 - <TAGNAME>.31	<TAGNAME>		*1
	1D Array	<TAGNAME>[xl].00 - <TAGNAME>[xh].31	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	<TAGNAME>[xl,yl].00 - <TAGNAME>[xh,yh].31	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	<TAGNAME>[xl,yl,zl].00 - <TAGNAME>[xh,yh,zh].31	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
DATE REAL*3 TIME TIME_OF_DAY DATE_AND_TIME	Single	-	<TAGNAME>		*1
	1D Array	-	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	-	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	-	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		

Device		Bit Address	Word Address	32 bit	Notes
STRING	Single	-	<TAGNAME>	-	*1*4
	1D Array		<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array		<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array		<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		

*1 <TAGNAME>: TagName including structure name in case of structure. The maximum number of characters for Symbol Name is 255 including delimiters and element number. In addition, maximum number of characters when using D-Script, limited to 54 characters.

Example)

BOOL type single symbol	"BOOLSYMBOL"
BOOL type 1D Array	"BOOL1D[10]"
WORD type 2D Array	"WORD2D[10,10]"
UDINT type 3D Array	"UDINT3D[0,1,2]"
STRING in User Defined Structure [STRUCT001]	"STRUCT001.STRINGSYM"

- You cannot start names with any of the following text:
  LS, USR, SCR, PRT

*2 The system data area is initially set up with 16 words of items. If you set up less than 16 words of items, after allocating a 16 word or larger array of tags in the system data area, select only the necessary items.

*3 32 bit type

*4 Up to 1414 single-byte characters are supported by the STRING data type. Characters 1415 or higher are ignored.

IMPORTANT

- To import symbols, use symbol data output from TwinCAT2's TwinCAT 2.11 Version 2237 or earlier.

NOTE

- Imported LREAL symbols use the bottom 32 bits only.
- Imported POINTER symbols display the associated address.
- Imported DATE, TIME, TIME_OF_DAY, and DATE_AND_TIME symbols display 32-bit data.
- Please refer to the GP-Pro EX Reference Manual for system data area.

  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"

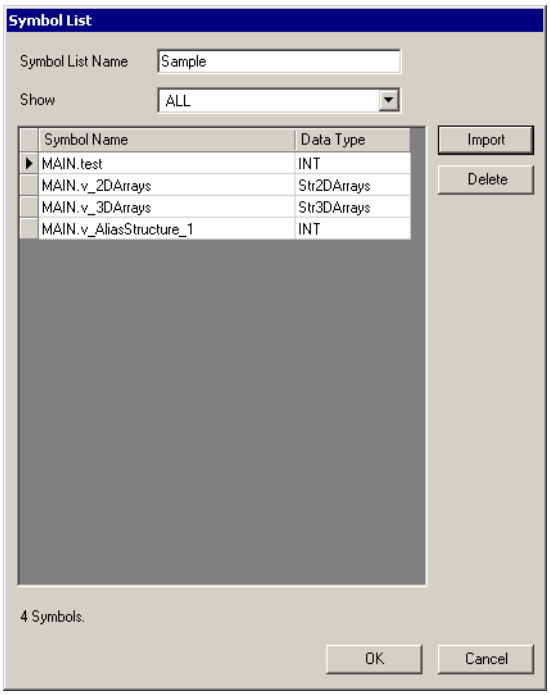
- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

■ Symbol List Dialog Box Settings

- Symbol List

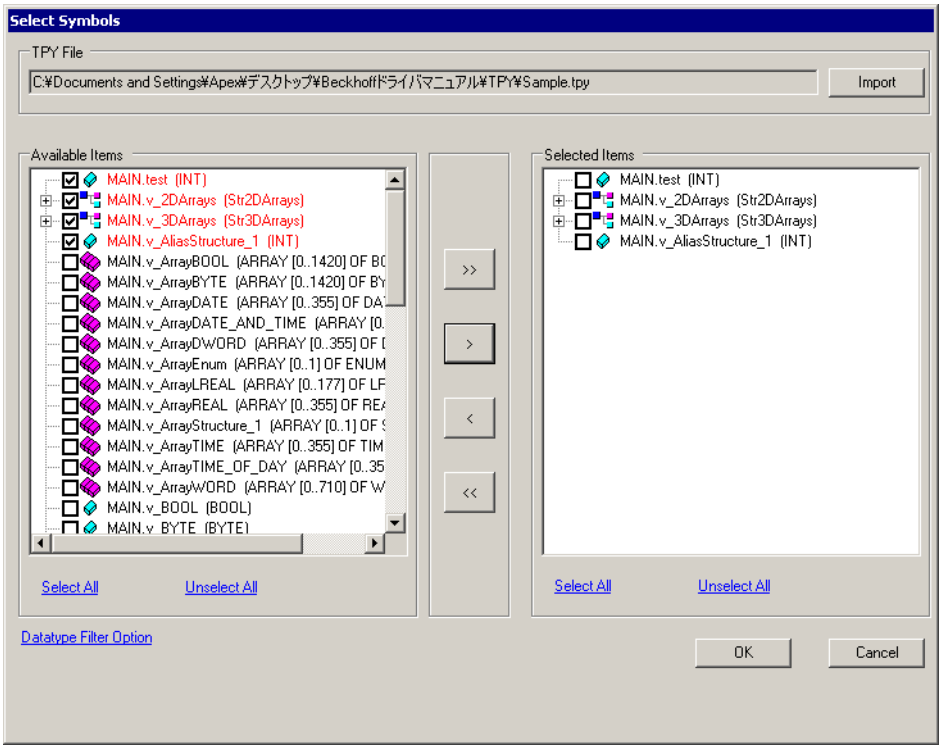
  To use a symbol in GP-Pro EX, the symbol needs to be registered in the [Symbol List].



Setup Items	Setup Description
Symbol List Name	Enter the name of the Symbol List.
Show	Filters the symbols displayed in the list.
Import	Imports a TPY file into the current Symbol List.
Delete	Deletes the selected symbol.

- Select Symbols

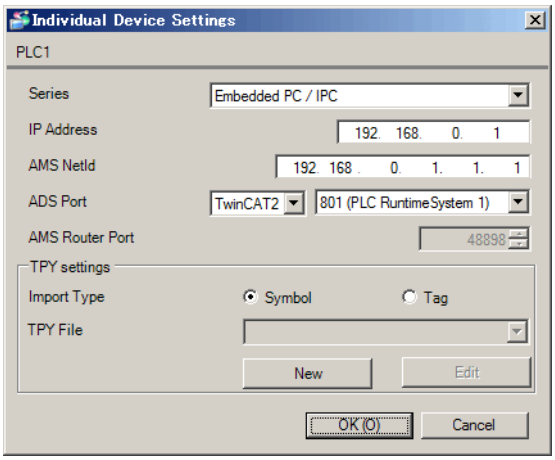
  Select the TPY file to import, and the individual symbols to import into GP-Pro EX.



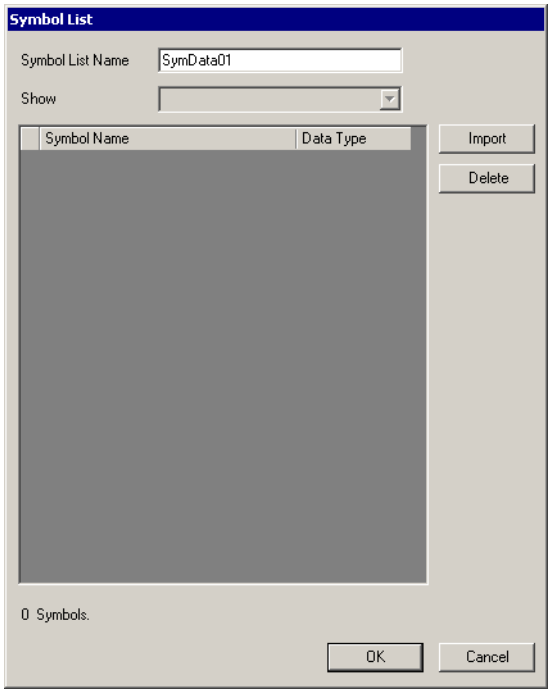
Setup Items	Setup Description
TPY File	Select the TPY file to import.
Available Items	Among all the symbols in the TPY file, displays only those symbols that you can import.
Selected Items	Displays the symbols to import.
[>>] [>]	Move to [Selected Items]. Click [>] to move symbols selected with a check mark. Click [>>] to move all symbols.
[<<] [<]	Remove from [Selected Items]. Click [<] to remove symbols selected with a check mark. Click [<<] to remove all symbols.
Datatype Filter Option	Filter the symbols displayed in the [Available Items] area.

■ Importing Symbols

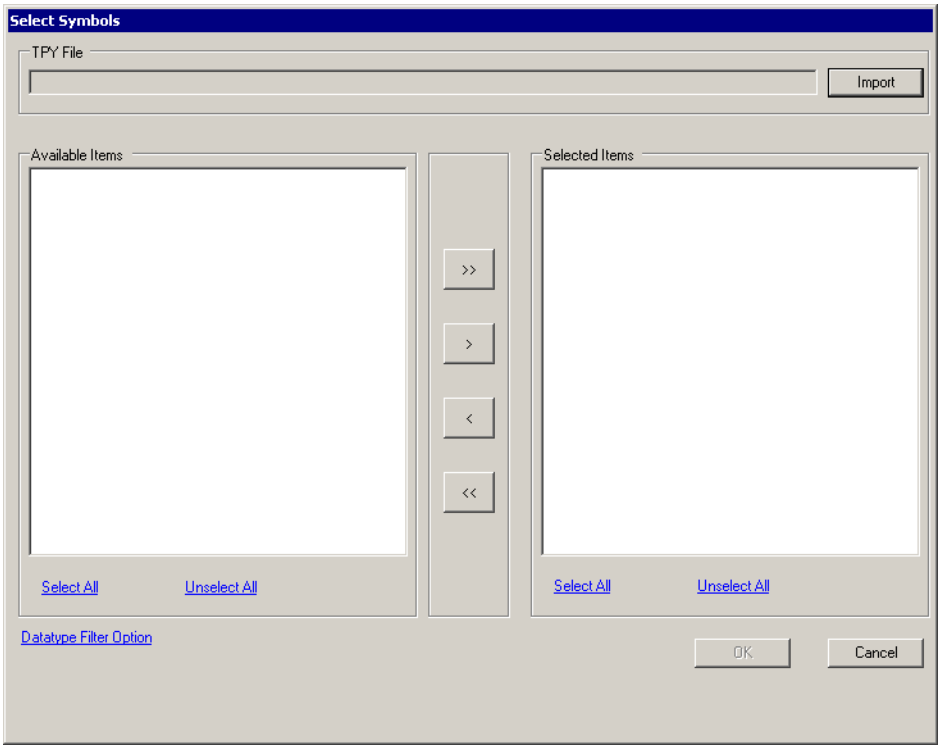
1 In GP-Pro EX, open the [Individual Device Settings] dialog box, and from the [Series] drop-down list, select "Embedded PC/IPC". Set [ADS Port] to [TwinCAT2], and the [Import Type] to [Symbol].



2 Click [New].



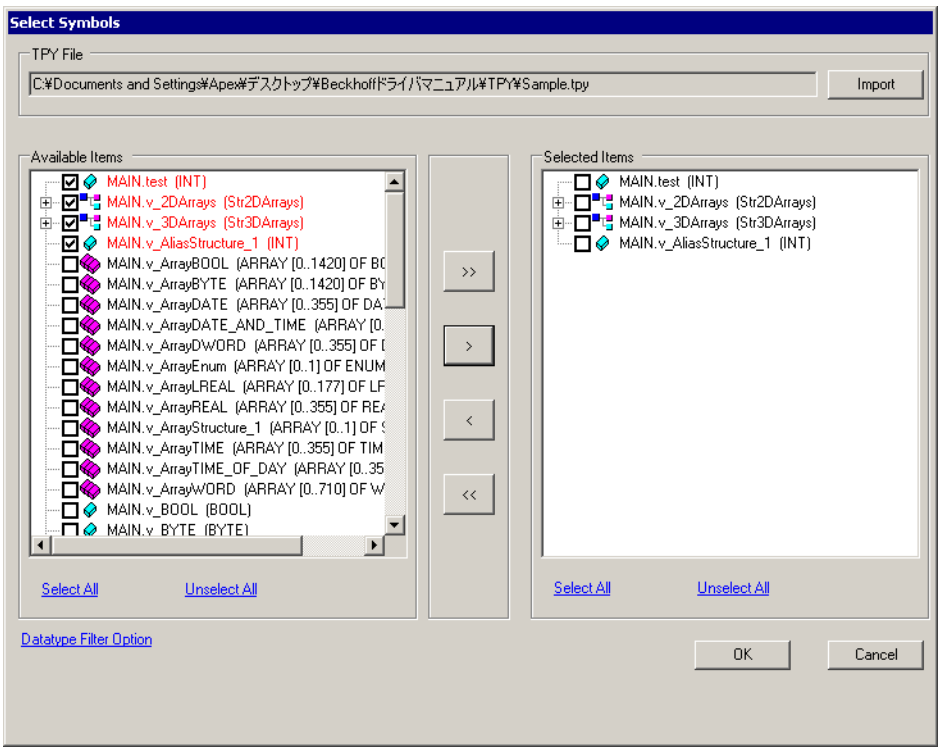
3 Click [Import].



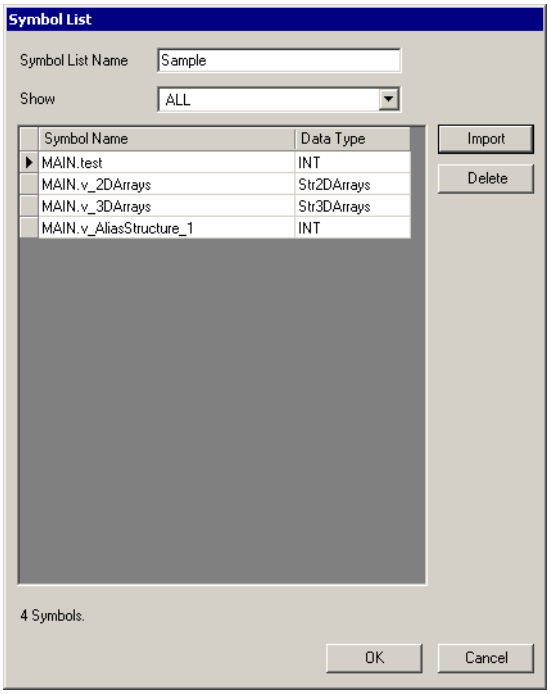
4 From the [TPY file] field, click [Import].

5 Select the TPY file to import.

6 In the [Available Items] area, select the symbols to import and click [>]. The symbols to import are added to the [Selected Items] area.



7 Click [OK] to import. Import results appear in the [Symbol List].



NOTE

- When there are symbols that failed to import, you can save the generated error log.

5.4 Embedded PC Series / IPC/TwinCAT3-Runtime (Tag)

You can import tag data from projects created using TwinCAT.

This address can be specified as system data area.

Device		Bit Address	Word Address	32 bit	Notes
BOOL	Single	<TAGNAME>	-	-	*1
	1D Array	<TAGNAME>[xl] - <TAGNAME>[xh]	-		
	2D Array	<TAGMNAME>[xl,yl] - <TAGNAME>[xh,yh]	-		
	3D Array	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]	-		
	4D Array	<TAGNAME>[xl,yl,zl,wl] - <TAGNAME>[xh,yh,zh,wh]	-		
	5D Array	<TAGNAME>[xl,yl,zl,vl, wl] - <TAGNAME>[xh,yh,zh,vh, wh]	-		
	6D Array	<TAGNAME>[xl,yl,zl,ul, vl,wl] - <TAGNAME>[xh,yh,zh,uh, vh,wh]	-		
BYTE SINT USINT	Single	<TAGNAME>.00 - <TAGNAME>.07	<TAGNAME>	L / H	*1
	1D Array	<TAGNAME>[xl].00 - <TAGNAME>[xh].07	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	<TAGNAME>[xl,yl].00 - <TAGNAME>[xh,yh].07	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	<TAGNAME>[xl,yl,zl].00 - <TAGNAME>[xh,yh,zh].07	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
	4D Array	<TAGNAME>[xl,yl,zl,wl] .00 - <TAGNAME>[xh,yh,zh,wh] .07	<TAGNAME>[xl,yl,zl,wl] - <TAGNAME>[xh,yh,zh,wh]		
	5D Array	<TAGNAME>[xl,yl,zl,vl, wl].00 - <TAGNAME>[xh,yh,zh,vh, wh].07	<TAGNAME>[xl,yl,zl,vl, wl] - <TAGNAME>[xh,yh,zh,vh, wh]		
	6D Array	<TAGNAME>[xl,yl,zl,ul, vl,wl].00 - <TAGNAME>[xh,yh,zh,uh, vh,wh].07	<TAGNAME>[xl,yl,zl,ul, vl,wl] - <TAGNAME>[xh,yh,zh,uh, vh,wh]		

Device		Bit Address	Word Address	32 bit	Notes
INT WORD UINT	Single	<TAGNAME>.00 - <TAGNAME>.15	<TAGNAME>	L / H	*1*2
	1D Array	<TAGNAME>[xl].00 - <TAGNAME>[xh].15	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	<TAGNAME>[xl,yl].00 - <TAGNAME>[xh,yh].15	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	<TAGNAME>[xl,yl,zl].00 - <TAGNAME>[xh,yh,zh].15	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
	4D Array	<TAGNAME>[xl,yl,zl,wl] .00 - <TAGNAME>[xh,yh,zh,wh] .15	<TAGNAME>[xl,yl,zl,wl] - <TAGNAME>[xh,yh,zh,wh]		
	5D Array	<TAGNAME>[xl,yl,zl,vl, wl].00 - <TAGNAME>[xh,yh,zh,vh, wh].15	<TAGNAME>[xl,yl,zl,vl, wl] - <TAGNAME>[xh,yh,zh,vh, wh]		
	6D Array	<TAGNAME>[xl,yl,zl,ul, vl,wl].00 - <TAGNAME>[xh,yh,zh,uh, vh,wh].15	<TAGNAME>[xl,yl,zl,ul, vl,wl] - <TAGNAME>[xh,yh,zh,uh, vh,wh]		
DINT DWORD UDINT	Single	<TAGNAME>.00 - <TAGNAME>.31	<TAGNAME>		*1
	1D Array	<TAGNAME>[xl].00 - <TAGNAME>[xh].31	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	<TAGNAME>[xl,yl].00 - <TAGNAME>[xh,yh].31	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	<TAGNAME>[xl,yl,zl].00 - <TAGNAME>[xh,yh,zh].31	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
	4D Array	<TAGNAME>[xl,yl,zl,wl] .00 - <TAGNAME>[xh,yh,zh,wh] .31	<TAGNAME>[xl,yl,zl,wl] - <TAGNAME>[xh,yh,zh,wh]		
	5D Array	<TAGNAME>[xl,yl,zl,vl, wl].00 - <TAGNAME>[xh,yh,zh,vh, wh].31	<TAGNAME>[xl,yl,zl,vl, wl] - <TAGNAME>[xh,yh,zh,vh, wh]		
	6D Array	<TAGNAME>[xl,yl,zl,ul, vl,wl].00 - <TAGNAME>[xh,yh,zh,uh, vh,wh].31	<TAGNAME>[xl,yl,zl,ul, vl,wl] - <TAGNAME>[xh,yh,zh,uh, vh,wh]		

Device		Bit Address	Word Address	32 bit	Notes
DATE REAL*3 TIME TIME_OF_DAY DATE_AND_TIME*4	Single	-	<TAGNAME>	L / H	*1
	1D Array	-	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	-	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	-	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
	4D Array	-	<TAGNAME>[xl,yl,zl,wl] - <TAGNAME>[xh,yh,zh,wh]		
	5D Array	-	<TAGNAME>[xl,yl,zl,vl, wl] - <TAGNAME>[xh,yh,zh,vh, wh]		
	6D Array	-	<TAGNAME>[xl,yl,zl,ul, vl,wl] - <TAGNAME>[xh,yh,zh,uh, vh,wh]		
STRING	Single	-	<TAGNAME>	-	*1*5
	1D Array	-	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	-	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	-	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
	4D Array	-	<TAGNAME>[xl,yl,zl,wl] - <TAGNAME>[xh,yh,zh,wh]		
	5D Array	-	<TAGNAME>[xl,yl,zl,vl, wl] - <TAGNAME>[xh,yh,zh,vh, wh]		
	6D Array	-	<TAGNAME>[xl,yl,zl,ul, vl,wl] - <TAGNAME>[xh,yh,zh,uh, vh,wh]		

*1 <TAGNAME>: TagName including structure name in case of structure. The maximum number of characters for Symbol Name is 255 including delimiters and element number. In addition, maximum number of characters when using D-Script, limited to 54 characters.

Example)

BOOL type single symbol	"BOOLSYMBOL"
BOOL type 1D Array	"BOOL1D[10]"
WORD type 2D Array	"WORD2D[10,10]"
UDINT type 3D Array	"UDINT3D[0,1,2]"
STRING in User Defined Structure [STRUCT001]	"STRUCT001.STRINGSYM"

- You cannot start names with any of the following text:
  LS, USR, SCR, PRT

*2 The system data area is initially set up with 16 words of items. If you set up less than 16 words of items, after allocating a 16 word or larger array of tags in the system data area, select only the necessary items.

*3 32 bit type

*4 DATE_AND_TIME is a 64-bit data type in theDisplay, and a 32-bit data type on the External Device. Bit conversion is handled by the protocol.
The Display supports precision to the milliseconds. The External Device supports precision to the seconds.

*5 Up to 1414 single-byte characters are supported by the STRING data type. Characters 1415 or higher are ignored.

IMPORTANT

- You can use tags on supported Displays. To check if tags are supported by your Display, in the GP-Pro EX Reference Manual's "Supported Features", see "Import Device/PLC tags".
- The tag import feature is supported in GP-Pro EX V3.01.000 or later (or in the case of GP-4*01TM, V3.10.000 or later).
- To import tags, use tag data output from TwinCAT3's TwinCAT 3.1 Version 3.1.4012.0 or earlier.

NOTE

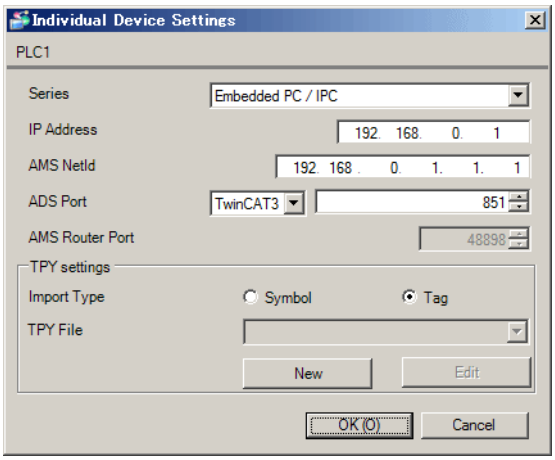
- You cannot use tags with nested arrays (for example, Array[x][y].Structure) in GP-Pro EX. Design your tags using multidimensional arrays (for example, Array[x,y].Structure) so you can use them in GP-Pro EX.
- When using this driver, if you have many parts on a screen set up with tags, changing screens and displaying windows may take longer than expected. This is due to the time required to reference tag values on the screen or window.
  To reduce the time to change screens or display windows, consider separating the parts onto multiple screens.
- Please refer to the GP-Pro EX Reference Manual for system data area.

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

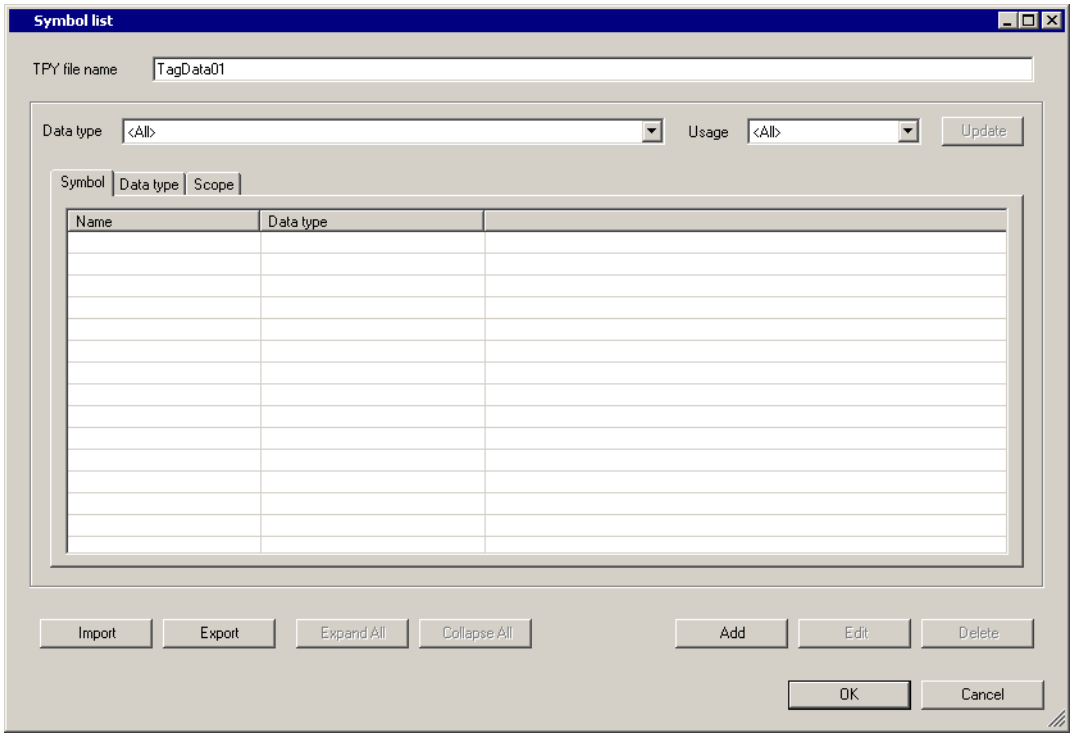
  ☞ "Manual Symbols and Terminology"

■ Importing Tag File

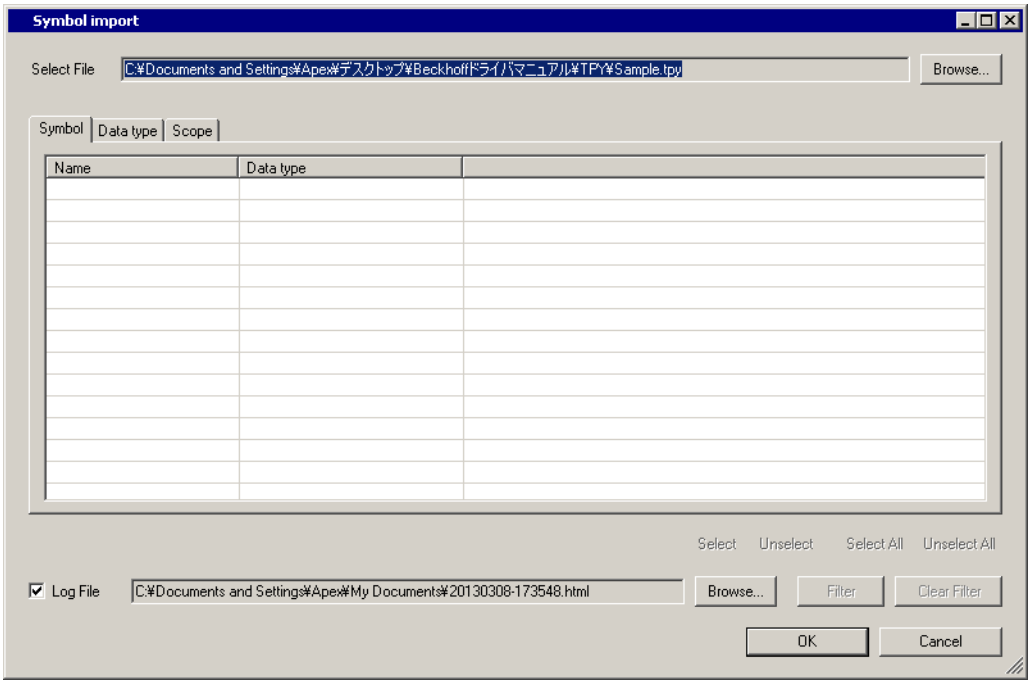
1 In GP-Pro EX, open the [Individual Device Settings] dialog box, and from the [Series] drop-down list, select "Embedded PC/IPC". Set [ADS Port] to [TwinCAT3], and the [Import Type] to [Tag].



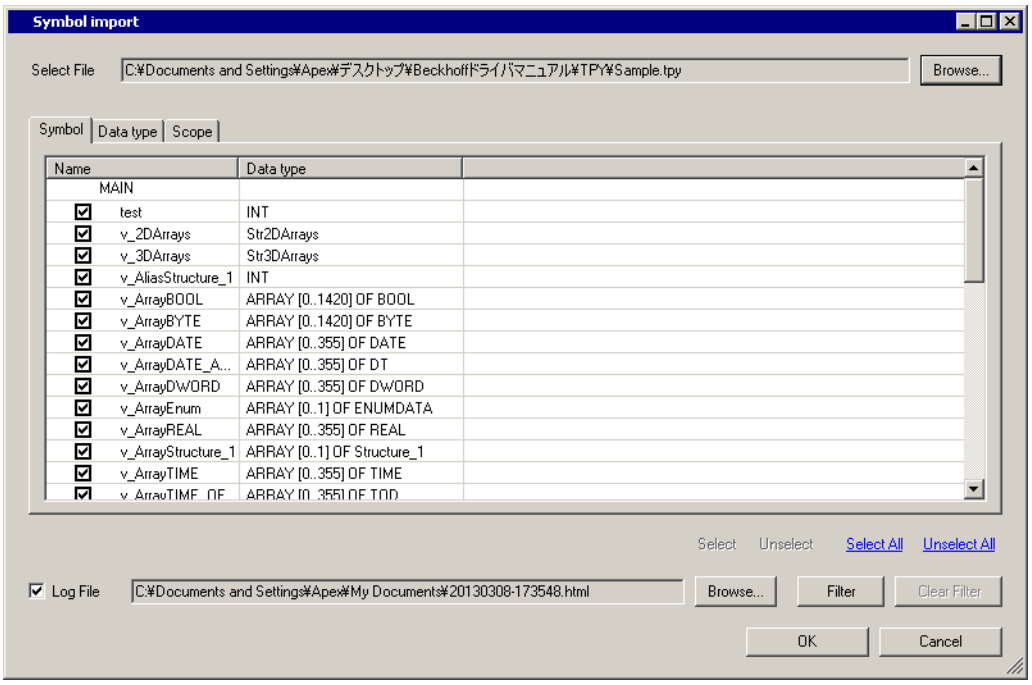
2 Click [New].



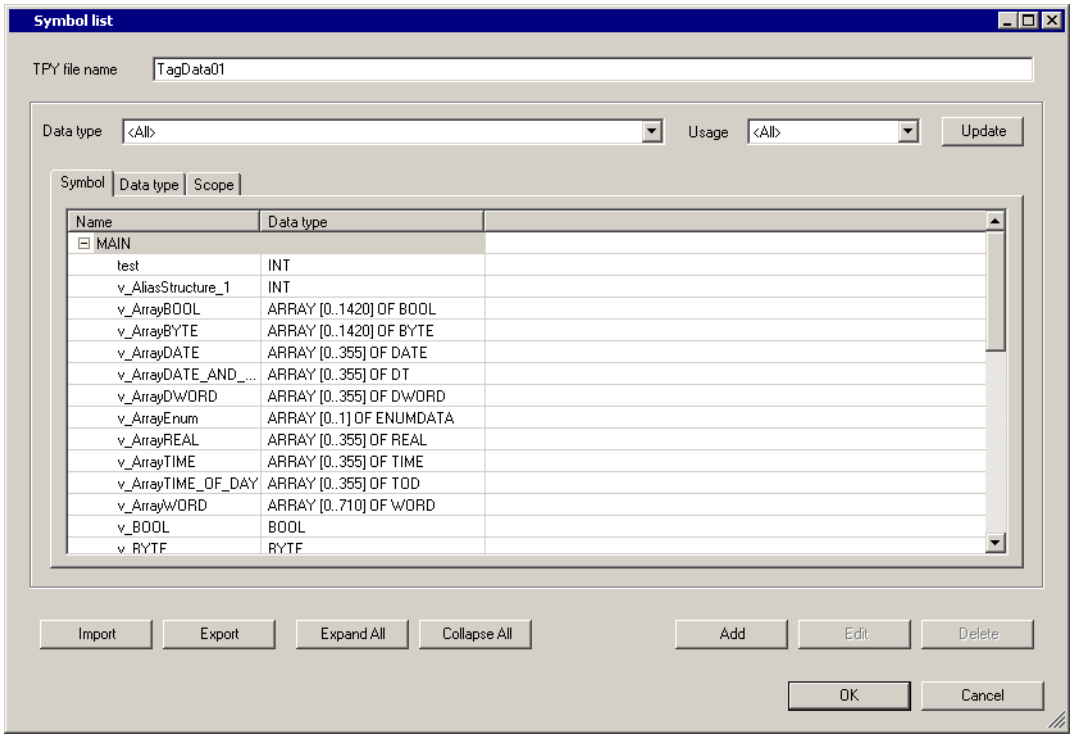
3 Click [Import].



4 From the [Select File] field, click [Browse..], and then select the TPY file.



5 Check the tags to import, and click [OK].



NOTE

- For details on importing tags, see "Using Device/PLC Tags" in the GP-Pro EX Reference Manual.
- GP-Pro EX does not support editing or deleting global scope symbols. To modify those symbols, please override them by TPY file import or create a new symbol list by selecting [New].

5.5 Embedded PC Series / IPC/TwinCAT3-Runtime (Symbol)

You can import symbols only from projects created using TwinCAT. You cannot create symbols in GP-Pro EX.

This address can be specified as system data area.

Device		Bit Address	Word Address	32 bit	Notes
BOOL	Single	<TAGNAME>	-	-	*1
	1D Array	<TAGNAME>[xl] - <TAGNAME>[xh]	-		
	2D Array	<TAGMNAME>[xl,yl] - <TAGNAME>[xh,yh]	-		
	3D Array	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]	-		
	4D Array	<TAGNAME>[xl,yl,zl,wl] - <TAGNAME>[xh,yh,zh,wh]	-		
	5D Array	<TAGNAME>[xl,yl,zl,vl, wl] - <TAGNAME>[xh,yh,zh,vh, wh]	-		
	6D Array	<TAGNAME>[xl,yl,zl,ul, vl,wl] - <TAGNAME>[xh,yh,zh,uh, vh,wh]	-		
BYTE SINT USINT	Single	<TAGNAME>.00 - <TAGNAME>.07	<TAGNAME>	L / H	*1
	1D Array	<TAGNAME>[xl].00 - <TAGNAME>[xh].07	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	<TAGNAME>[xl,yl].00 - <TAGNAME>[xh,yh].07	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	<TAGNAME>[xl,yl,zl].00 - <TAGNAME>[xh,yh,zh].07	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
	4D Array	<TAGNAME>[xl,yl,zl,wl] .00 - <TAGNAME>[xh,yh,zh,wh] .07	<TAGNAME>[xl,yl,zl,wl] - <TAGNAME>[xh,yh,zh,wh]		
	5D Array	<TAGNAME>[xl,yl,zl,vl, wl].00 - <TAGNAME>[xh,yh,zh,vh, wh].07	<TAGNAME>[xl,yl,zl,vl, wl] - <TAGNAME>[xh,yh,zh,vh, wh]		
	6D Array	<TAGNAME>[xl,yl,zl,ul, vl,wl].00 - <TAGNAME>[xh,yh,zh,uh, vh,wh].07	<TAGNAME>[xl,yl,zl,ul, vl,wl] - <TAGNAME>[xh,yh,zh,uh, vh,wh]		

Device		Bit Address	Word Address	32 bit	Notes
INT WORD UINT	Single	<TAGNAME>.00 - <TAGNAME>.15	<TAGNAME>	L / H	*1*2
	1D Array	<TAGNAME>[xl].00 - <TAGNAME>[xh].15	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	<TAGNAME>[xl,yl].00 - <TAGNAME>[xh,yh].15	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	<TAGNAME>[xl,yl,zl].00 - <TAGNAME>[xh,yh,zh].15	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
	4D Array	<TAGNAME>[xl,yl,zl,wl] .00 - <TAGNAME>[xh,yh,zh,wh] .15	<TAGNAME>[xl,yl,zl,wl] - <TAGNAME>[xh,yh,zh,wh]		
	5D Array	<TAGNAME>[xl,yl,zl,vl, wl].00 - <TAGNAME>[xh,yh,zh,vh, wh].15	<TAGNAME>[xl,yl,zl,vl, wl] - <TAGNAME>[xh,yh,zh,vh, wh]		
	6D Array	<TAGNAME>[xl,yl,zl,ul, vl,wl].00 - <TAGNAME>[xh,yh,zh,uh, vh,wh].15	<TAGNAME>[xl,yl,zl,ul, vl,wl] - <TAGNAME>[xh,yh,zh,uh, vh,wh]		
DINT DWORD UDINT	Single	<TAGNAME>.00 - <TAGNAME>.31	<TAGNAME>		*1
	1D Array	<TAGNAME>[xl].00 - <TAGNAME>[xh].31	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	<TAGNAME>[xl,yl].00 - <TAGNAME>[xh,yh].31	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	<TAGNAME>[xl,yl,zl].00 - <TAGNAME>[xh,yh,zh].31	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
	4D Array	<TAGNAME>[xl,yl,zl,wl] .00 - <TAGNAME>[xh,yh,zh,wh] .31	<TAGNAME>[xl,yl,zl,wl] - <TAGNAME>[xh,yh,zh,wh]		
	5D Array	<TAGNAME>[xl,yl,zl,vl, wl].00 - <TAGNAME>[xh,yh,zh,vh, wh].31	<TAGNAME>[xl,yl,zl,vl, wl] - <TAGNAME>[xh,yh,zh,vh, wh]		
	6D Array	<TAGNAME>[xl,yl,zl,ul, vl,wl].00 - <TAGNAME>[xh,yh,zh,uh, vh,wh].31	<TAGNAME>[xl,yl,zl,ul, vl,wl] - <TAGNAME>[xh,yh,zh,uh, vh,wh]		

Device		Bit Address	Word Address	32 bit	Notes
DATE REAL TIME TIME_OF_DAY DATE_AND_TIME	Single	-	<TAGNAME>	L / H	*1*3
	1D Array	-	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	-	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	-	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
	4D Array	-	<TAGNAME>[xl,yl,zl,wl] - <TAGNAME>[xh,yh,zh,wh]		
	5D Array	-	<TAGNAME>[xl,yl,zl,vl, wl] - <TAGNAME>[xh,yh,zh,vh, wh]		
	6D Array	-	<TAGNAME>[xl,yl,zl,ul, vl,wl] - <TAGNAME>[xh,yh,zh,uh, vh,wh]		
STRING	Single	-	<TAGNAME>	-	*1*4
	1D Array	-	<TAGNAME>[xl] - <TAGNAME>[xh]		
	2D Array	-	<TAGNAME>[xl,yl] - <TAGNAME>[xh,yh]		
	3D Array	-	<TAGNAME>[xl,yl,zl] - <TAGNAME>[xh,yh,zh]		
	4D Array	-	<TAGNAME>[xl,yl,zl,wl] - <TAGNAME>[xh,yh,zh,wh]		
	5D Array	-	<TAGNAME>[xl,yl,zl,vl, wl] - <TAGNAME>[xh,yh,zh,vh, wh]		
	6D Array	-	<TAGNAME>[xl,yl,zl,ul, vl,wl] - <TAGNAME>[xh,yh,zh,uh, vh,wh]		

*1 <TAGNAME>: TagName including structure name in case of structure. The maximum number of characters for Symbol Name is 255 including delimiters and element number. In addition, maximum number of characters when using D-Script, limited to 54 characters.

Example)

BOOL type single symbol	"BOOLSYMBOL"
BOOL type 1D Array	"BOOL1D[10]"
WORD type 2D Array	"WORD2D[10,10]"
UDINT type 3D Array	"UDINT3D[0,1,2]"
STRING in User Defined Structure [STRUCT001]	"STRUCT001.STRINGSYM"

You cannot start names with any of the following text:

LS, USR, SCR, PRT

*2 The system data area is initially set up with 16 words of items. If you set up less than 16 words of items, after allocating a 16 word or larger array of tags in the system data area, select only the necessary items.

*3 32 bit type

*4 Up to 1414 single-byte characters are supported by the STRING data type. Characters 1415 or higher are ignored.

IMPORTANT
- To import symbols, use symbol data output from TwinCAT3's TwinCAT 3.1 Version 3.1.4012.0 or earlier.

NOTE
- Imported LREAL symbols use the bottom 32 bits only.
- Imported POINTER symbols display the associated address.
- Imported DATE, TIME, TIME_OF_DAY, and DATE_AND_TIME symbols display 32-bit data.
- Please refer to the GP-Pro EX Reference Manual for system data area.

  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"

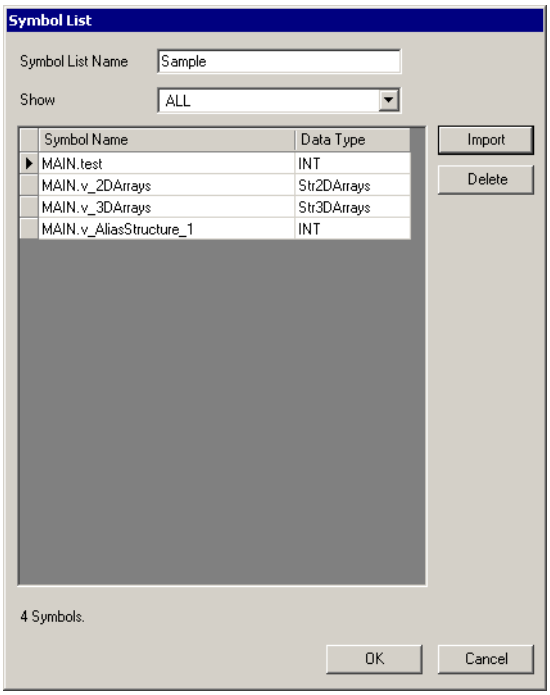
- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

■ Symbol List Dialog Box Settings

- Symbol List

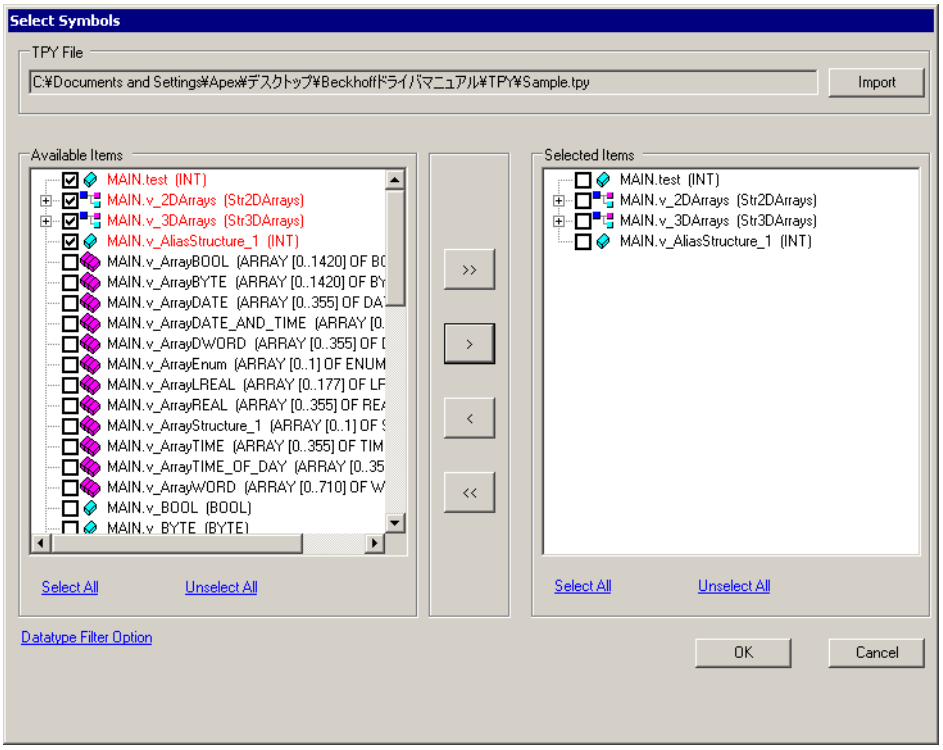
  To use a symbol in GP-Pro EX, the symbol needs to be registered in the [Symbol List].



Setup Items	Setup Description
Symbol List Name	Enter the name of the Symbol List.
Show	Filters the symbols displayed in the list.
Import	Imports a TPY file into the current Symbol List.
Delete	Deletes the selected symbol.

- Select Symbols

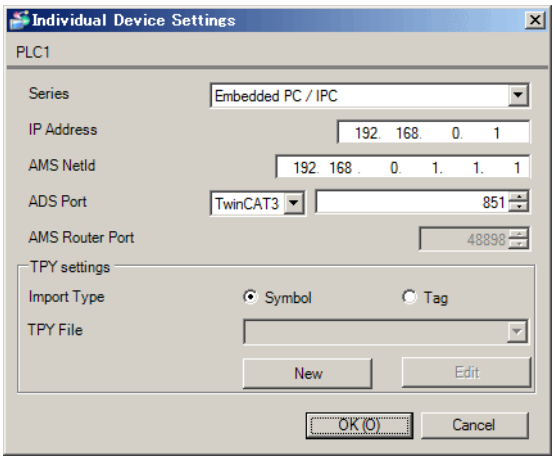
  Select the TPY file to import, and the individual symbols to import into GP-Pro EX.



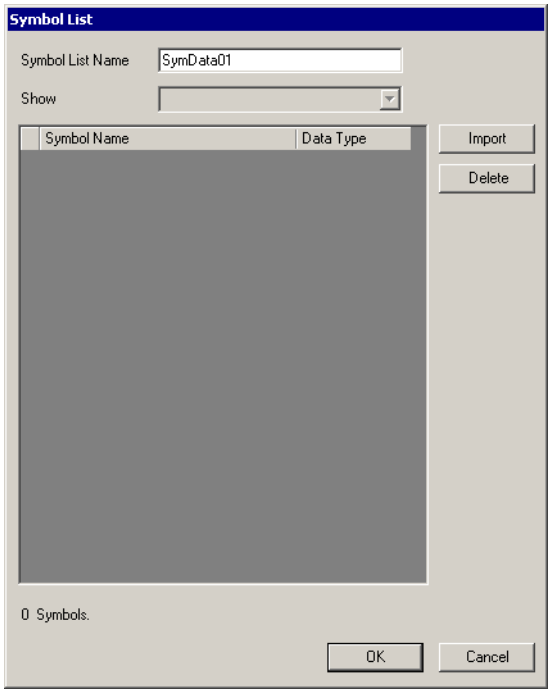
Setup Items	Setup Description
TPY File	Select the TPY file to import.
Available Items	Among all the symbols in the TPY file, displays only those symbols that you can import.
Selected Items	Displays the symbols to import.
[>>] [>]	Move to [Selected Items]. Click [>] to move symbols selected with a check mark. Click [>>] to move all symbols.
[<<] [<]	Remove from [Selected Items]. Click [<] to remove symbols selected with a check mark. Click [<<] to remove all symbols.
Datatype Filter Option	Filter the symbols displayed in the [Available Items] area.

■ Importing Symbols

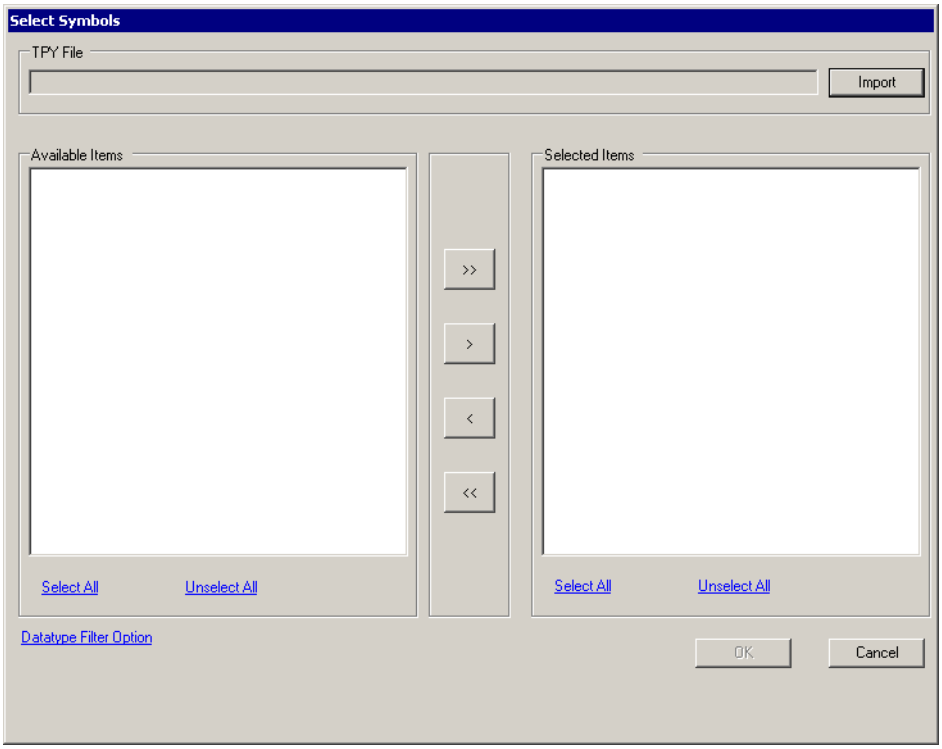
1 In GP-Pro EX, open the [Individual Device Settings] dialog box, and from the [Series] drop-down list, select "Embedded PC/IPC". Set [ADS Port] to [TwinCAT3], and the [Import Type] to [Symbol].



2 Click [New].



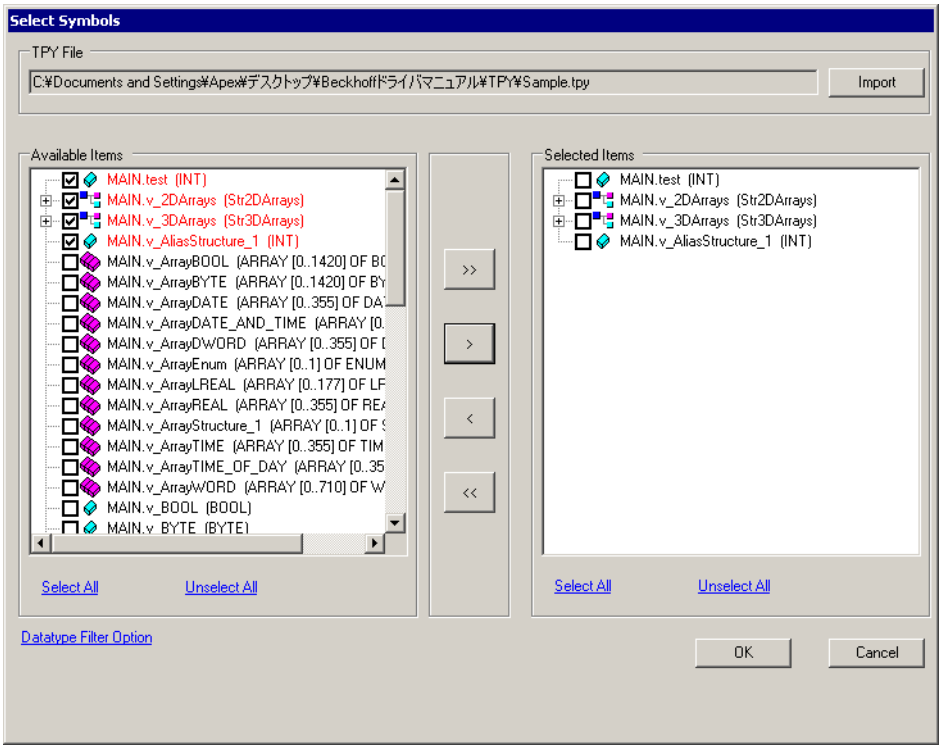
3 Click [Import].



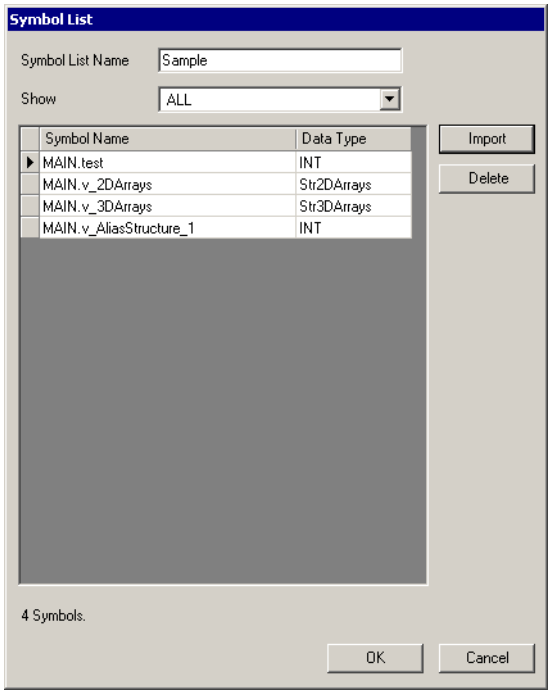
4 From the [TPY file] field, click [Import].

5 Select the TPY file to import.

6 In the [Available Items] area, select the symbols to import and click [>]. The symbols to import are added to the [Selected Items] area.



7 Click [OK] to import. Import results appear in the [Symbol List].



NOTE

- When there are symbols that failed to import, you can save the generated error log.

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.

NOTE

- When select [Embedded PC/IPC] in series of the External Device, cannot use a device cord and the address code.

Device	Device Name	Device Code (HEX)	Address Code
Input	%I	0001	Word address
Output	%Q	0002	Word address
Marker	%M	0003	Word address
Data	%D	0000	Word address

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 Guide" for details on the error messages common to the driver.

■ Error Messages Unique to External Device

Message ID	Error Message	Description
RHxx128	NodeName:Out of range value in write request (Address: %s)	This message appears when writing out of range values from the Display to DATE, TOD, or DT data types on the External Device.