

IAI ELECYLINDER
Sample Project File
For VGA and WVGA
Technical Guide

Ver1.20

Revision History

No.	Date	Details
01	Oct. 15, 2019	New
02	Jul. 20, 2020	Added models that can be connected.
03	Sep. 14, 2020	Elecyylinder type added.
04	JuI. 1, 2021	Elecyylinder type added.

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1. Overview

This sample project file is for connecting IAI ELECYLINDER to GP4000 / SP5000 /LT4000 /ST6000 series. The following functions are provided for more convenient use of the ELECYLINDER.

- Checking setting status of up to 16 ELECYLINDERS
- Easily configuring forward and backward settings of the ELECYLINDER and the position settings
- Checking setting status of every ELECYLINDER one by one when checking settings
- Configuring settings of axis numbers and names
- Manual mode – JOG operation and Inching -
- Homing is possible when it is not completed

2. Notes

- The intellectual property rights for the files provided by Schneider Electric Japan Holdings Ltd. belong to us
- Downloaded files and the data extracted from those files are not guarantees of our product specifications. Please be aware of this fact.
- Please use this service at your own risk.
- In any case, this not intended as a warranty for any work for a system that makes use of the data on these screens.
- For the models that can run on this program, please refer to the chapter of [5.2. Target model list of the display unit] in this sample project file.
- Any modifications made to this service by a customer are entirely at the responsibility of the customer.
- Please be aware that we cannot respond to any inquiries for the purpose of modifying these data.
- The content and information in the data on these screens and documentation are subject to change without prior notification.

3. Limitations

Typcal features of GP4000 / SP5000 / LT4000 / ST6000 series are used for this screen data.

When using the sample project file, be sure to refer to our product manual or the connection device manual, including the usage restrictions and safety precautions. In addition, please be aware that we are unable to accept responsibility for damage arising from use of this sample project file -modification and diversion included-, loss of customer opportunity or profit arising from the malfunction of our product, damage arising from special circumstances whether or not we had foreknowledge of those circumstances, secondary damage, compensation for accidents, damage to our products, or other business-related guarantees.

4. How to use this project file

When using this project file (hereinafter referred to as “the file”), be sure to confirm the following details:

- 1) Confirm the connection configuration and the communication settings.

Referring to [5. Device Configuration], confirm the connection configuration to be used and the communication settings of the ELECYLINDER unit. The initial settings configured in the file are as described in [Table 4-1 Connection Configuration Initial Settings]. When the connection configuration to be used is the same as the initial settings in the file, transfer the data to the programmable display unit (hereinafter referred to as “the display unit”) using the transfer feature of GP-Pro EX. For use in another configuration, change the settings in the file before transferring them.

Table 4-1 Connection Configuration Initial Settings

Item	Default	Details
Display Unit Type	For the file for QVGA, Model : GP-4301T	5.2. Target model list of the display unit Change it to the display unit type you use before use.
	For the file for VGA, Model : GP-4501T(Analog Touch Panel)	
	For the file for WVGA, Box Type : SP-5B10 Display Type : SP-5400WA (WVGA (800*480))	
System Configuration	When a SIO converter is not used,	5.5.1. System Configuration 5.5.2. Cable Diagram 5.6.1. GP-Pro EX Communication Settings The cable diagram and the communication method differ depending on with or without use of a SIO converter, a connection port, and a cable type to be used. When different from the initial settings, check every item again and change them according to the connection configuration you will use.
Cable Diagram	Cable Diagram 2	
Display Unit Connection Port	COM2	
Communication method	RS-422/485(2-wire type)	
Baud rate	38400 (bps)	
Data length	8 bits	5.6.1. GP-Pro EX Communication Settings

Parity	None	The communication settings must be the same as those of the ELECYLINDER to be connected.
Stop Bit	1 bit	

2) How to combine with other files

In GP-Pro EX, select [Project] → [Utilities] → [Copy from Another Project].

For further details, refer to “from Startup to Shutdown” in our reference manual.

However, there are issues to be aware of, such as overlapping screen numbers, so also refer to sections 3) and later.

[Copy from Another Project] is for screen data only. If the following settings are not configured except screen data,

- Communication Settings [5.6. Communication Settings]
- Text Table [10. Text Table]

the operation will be affected.

For details, refer to 11. Incorporating project data in the file.

3) Screen numbers when combining

Don't change the screen numbers in the file. Note that the operation will be affected if you change them. At the time of combining with other project files, when there are duplicate screen numbers, the screens are overwritten. For the screen numbers used in the file, refer to [6.2. Screen Transition].

When combining with (2), it is possible to designate a copy destination screen number before starting to copy. Before combining, be sure to either designate a screen number when copying, or change the screen number in advance.

4) Changing addresses

Don't change the addresses of the connected devices used in the file. If you change them, the operation will be affected. Also, do not use the internal addresses (USER address) and the connection device addresses described in [9.1. Address Map].

5. Device Configuration

5.1. System Configuration

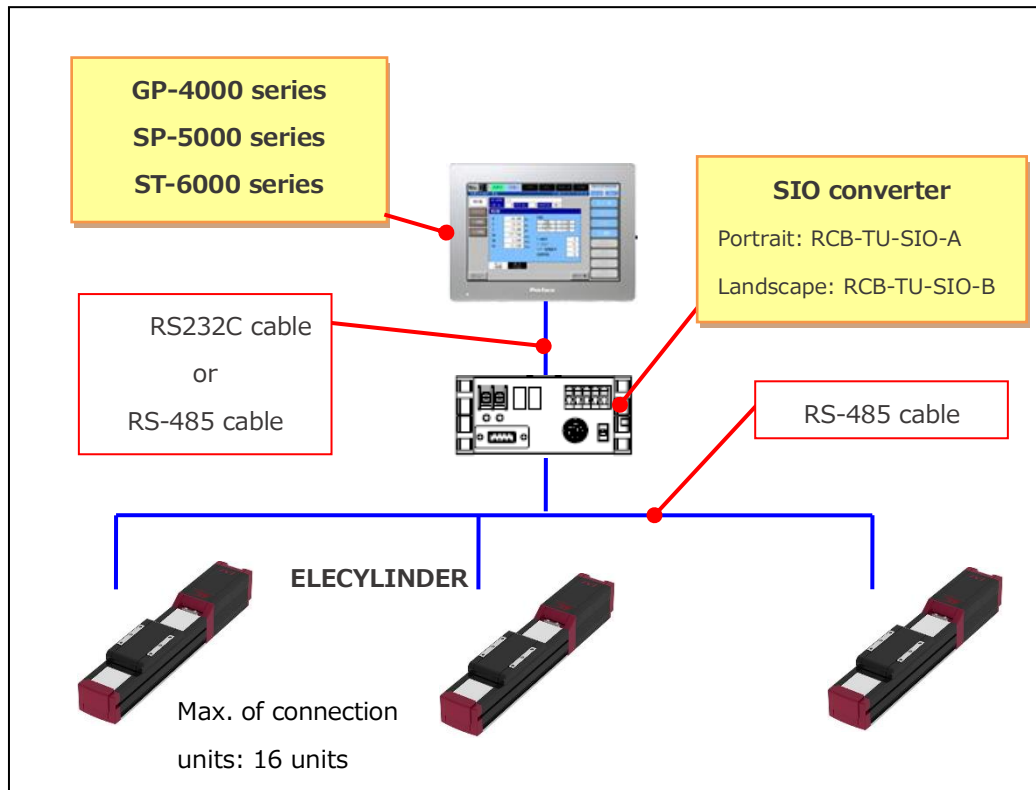


Figure 5-1 System Configuration

- * The power supply specifications of GP4000 / SP5000 /LT4000 /ST6000series differ depending on a model.
- * For this file, up to 16 ELECYLINDERS can be connected per display unit.
- * For details of connection, refer to [5.5. How to connect and communication cable diagram].
- * When there are duplicate unit numbers, it's hard to tell one from another. Be sure to avoid duplicate unit numbers when configuring settings.

5.2. Target model list of the display unit

GP4000 series and SP5000 series can use the file here.

For details of supported target models, see the following table.

The model names that can be selected on GP-Pro EX are stated.

Table 5-1 Supported target models

Series	Model	Target model	Note
GP4000 Series	GP-4104		
	GP-4105		
	GP-4106		
	GP-4107		
	GP-4114T		
	GP-4115T		
	GP-4116T		
	GP-4115T3		
	GP-4201T		
	GP-4201TM (Modular Type)		
	GP-4201TW		
	GP-4203T		
	GP-4301T		
	GP-4301TM (Modular Type)		
	GP-4301TW		
	GP-4303T		
	GP-4311HT		
	GP-4401T	√	*1
	GP-4401WW	√	*2
	GP-4501T (Analog Touch Panel)	√	*1 *Model using the file for VGA
	GP-4501T (Matrix Touch Panel)	√	*1
	GP-4501TW	√	*1
	GP-4503T	√	*1
	GP-4521T	√	*1
	GP-4601T (Analog Touch Panel)		
	GP-4601T (Matrix Touch Panel)		
	GP-4603T		
	GP-4621T		
	GP-4G01 VGA (640*480)	√	*1
	GP-4G01 SVGA (800*600)		

	GP-4G01 WVGA (800*480)	√	*2
	GP-4000M (Rear Modular Type)		
SP5000 Series (SP-5B00)	SP-5400WA WVGA (800*480)	√	*2
	SP-5500TP VGA (640*480)	√	*1
	SP-5500TP SVGA (800*600)		
	SP-5500WA WXGA (1280*800)		
	SP-5600TA XGA (1024*768)		
	SP-5600TP VGA (640*480)	√	*1
	SP-5600TP SVGA (800*600)		
	SP-5600TP XGA (1024*768)		
	SP-5600WA WXGA (1280*800)		
	SP-5660TP VGA (640*480)	√	*1
	SP-5660TP SVGA (800*600)		
	SP-5660TP XGA (1024*768)		
	SP-5700TP VGA (640*480)	√	*1
	SP-5700TP SVGA (800*600)		
	SP-5700TP XGA (1024*768)		
	SP-5700WC FWXGA (1366*768)		
	SP-5800WC FWXGA (1366*768)		
	DC Power Supply Adapter SVGA (800*600)		
	DC Power Supply Adapter XGA (1024*768)		
SP5000 Series (SP-5B10)	SP-5400WA WVGA (800*480)	√	*2 *Model using the file for WVGA
	SP-5500TP VGA (640*480)	√	*1
	SP-5500TP SVGA (800*600)		
	SP-5500WA WXGA (1280*800)		
	SP-5600TA XGA (1024*768)		
	SP-5600TP VGA (640*480)	√	*1
	SP-5600TP SVGA (800*600)		
	SP-5600TP XGA (1024*768)		
	SP-5600WA WXGA (1280*800)		
	SP-5660TP VGA (640*480)	√	*1
	SP-5660TP SVGA (800*600)		
	SP-5660TP XGA (1024*768)		
	SP-5700TP VGA (640*480)	√	*1
	SP-5700TP SVGA (800*600)		
	SP-5700TP XGA (1024*768)		

	SP-5700WC FWXGA (1366*768)		
	SP-5800WC FWXGA (1366*768)		
	DC Power Supply Adapter SVGA (800*600)		
	DC Power Supply Adapter XGA (1024*768)		
SP5000 Series (SP-5B40, SP-5B41)	SP-5400WA WVGA (800*480)	√	*2
	SP-5500TP SVGA (800*600)		
	SP-5500WA WXGA (1280*800)		
	SP-5600TA XGA (1024*768)		SP-5B41 only
	SP-5600TP SVGA (800*600)		
	SP-5600TP XGA (1024*768)		
	SP-5600WA WXGA (1280*800)		
	SP-5660TP SVGA (800*600)		
	SP-5660TP XGA (1024*768)		
	SP-5700TP SVGA (800*600)		
	SP-5700TP XGA (1024*768)		
	SP-5700WC FWXGA (1366*768)		SP-5B41 only
	SP-5800WC FWXGA (1366*768)		SP-5B41 only
	DC Power Supply Adapter SVGA (800*600)		
	DC Power Supply Adapter XGA (1024*768)		
	DC Power Supply Adapter HD720p (1280*720)		SP-5B41 only
	DC Power Supply Adapter WXGA (1280*800)		SP-5B41 only
	DC Power Supply Adapter SXGA (1280*1024)		SP-5B41 only
	DC Power Supply Adapter FWXGA (1360*768)		SP-5B41 only
	DC Power Supply Adapter FWXGA (1366*768)		SP-5B41 only
	DC Power Supply Adapter WXGA+ (1440*900)		SP-5B41 only
	DC Power Supply Adapter WXGA++ (1600*900)		SP-5B41 only
	DC Power Supply Adapter FullFD (1920*1080)		SP-5B41 only

SP5000 Series (SP-5B90)	SP-5490WA WVGA (800*480)	√	*2
	SP-5690WA WXGA (1280*800)		
	SP-5790WA FWXGA (1366*768)		
ST6000 Series	ST-6200W WQVGA (480*272)		*2
	ST-6400W WVGA (800*480)	√	GP-Pro EX 4.09 SP1 (V4.09.250) or later. Can select the model of ST6000.
	ST-6500W WSVGA (1024*600)		
	ST-6600W WXGA (1280*800)		
	ST-6700W FWXGA (1366*768)		

*1. Use the file for VGA, "connection_gp4501_v_IAI-ELECYLINDER_ml_V120.prx".

In the file above, the display unit type is set as shown below;

- Series: GP4000 Series
- Model: GP-4501T (Analog Touch Panel)

Change models on GP-Pro EX according to a model at transfer destination. For the model change procedure, refer to the attached GP-Pro EX Reference Manual (5.1 Changing a Display Unit).

*2. Use the file for WVGA, "connection_sp5400_wv_IAI-ELECYLINDER_ml_V120.prx".

In the file above, the display unit type is set as shown below;

- Series: SP5000 Series
- Box Module: SP-5B10
- Display Module: SP-5400WA(WVGA(800*480))

Change models on GP-Pro EX according to a model at transfer destination. For the model change procedure, refer to the attached GP-Pro EX Reference Manual (5.1 Changing a Display Unit).

5.3. Software

Table5-2 Software

NO	Manufacturer	Product Name	Model	Note
1	Schneider Electric Holdings	GP-Pro EX	PFXEXEDV40	Ver4.00.000 or later

GP-Pro EX Ver.4.00.000 or later is required to use the file. If the version of GP-Pro EX you have is earlier than Ver.4.00.000, update the version before use.

To use the file, you need to install IAI ELECYLINDER SIO Driver.

When using the ST6000 series, please use Ver4.09.250 or later.

5.4. Connected device

Table5-3 Connected Device

No	Manufacturer	Product Name	Series	Model	Note
1	IAI Corporation	*1 ELECYLINDER SIO	See Table5-4	See Table5-4	*2 • ELECYLINDER SIO • File Ver1.20 for ELECYLINDER

*1 Note that this is not described in the GP-ProEX connection manual.

*2 Use IAI ELECYLINDER SIO with the file.

Table 5-4 Type of ELECYLINDER that can be connected

Category	Type		Model
Slider	Standard	—	EC-S3, EC-S4, EC-S6, EC-S7
		Motor return type	EC-S3□R, EC-S4□R, EC-S6□R, EC-S7□R
	Belt-driven	—	EC-B6, EC-B7
		Bottom-mounted	EC-B6U, EC-B7U
	High rigidity	—	EC-S6□AH, EC-S7□AH
		Motor return type	EC-S6□AHR, EC-S7□AHR
	Large	—	EC-S13, EC-S13X, EC-S15, EC-S15X
Rod	Standard		EC-R6, EC-R7
	Radial Cylinder	—	EC-RR3, EC-RR4, EC-RR6, EC-RR7
		Motor return type	EC-RR3□R, EC-RR4□R, EC-RR6□R, EC-RR7□R
	High rigidity Radial Cylinder	—	EC-RR6□AH, EC-RR7□AH
		Motor return type	EC-RR6□AHR, EC-RR7□AHR
	Small type		EC-RP4, EC-GS4, EC-GD4
	Dust-proof and drip-proof		EC-R6□W, EC-R7□W
	Dust-proof and drip-proof radial cylinder		EC-RR6□W, EC-RR7□W

Table	Small type	EC-TC4, EC-TW4
Stopper cylinder	—	EC-ST15
Rotary	—	EC-RTC9、EC-RTC12
Gripper	—	EC-GRB8、EC-GRB10、EC-GRB13、

5.5. How to connect and communication cable diagram

There are two ways to connect to ELECYLINDER, one with using a SIO converter and the other without. The following shows the connection method (cabling) including the system configuration.

5.5.1. System Configuration

The settings in the file are for use without using a SIO converter – the communication type is RS485 (on the display unit) -. For use in another configuration, confirm [5.5.2. Cable Diagram] and change the display unit’s connection port and communication settings according to the configuration to be used on GP-Pro EX. For the communication setting change procedure, refer to [12. GP-Pro EX communication setting change].

5.5.1.1. Without using the SIO converter

When the communication type is RS232C (settings on the display unit),



Figure 5-2

Table 5-5

Series	Model	Link I/F	Communication type(GP)	Cable diagram	Supplementary
ELECYLINDER	<u>Connected device</u>	-	RS232C	<u>Cable diagram1</u>	1:1

When the communication type is RS485 (on the display unit)

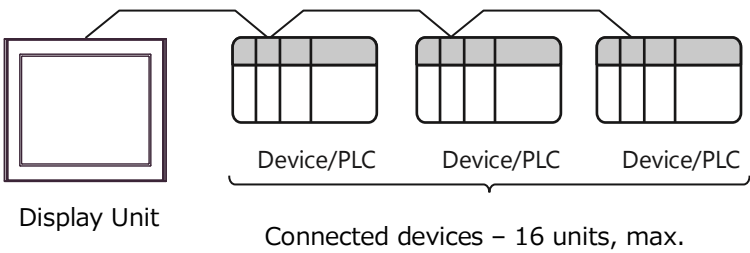


Figure 5-3

Table 5-6

Series	Model	Link I/F	Communication type (GP)	Cable Diagram	Supplementary
ELECYLINDER	<u>Connected device</u>	-	RS-485(2Wire)	<u>Cable diagram2</u>	1:1 1:n

5.5.1.2. When using a SIO converter

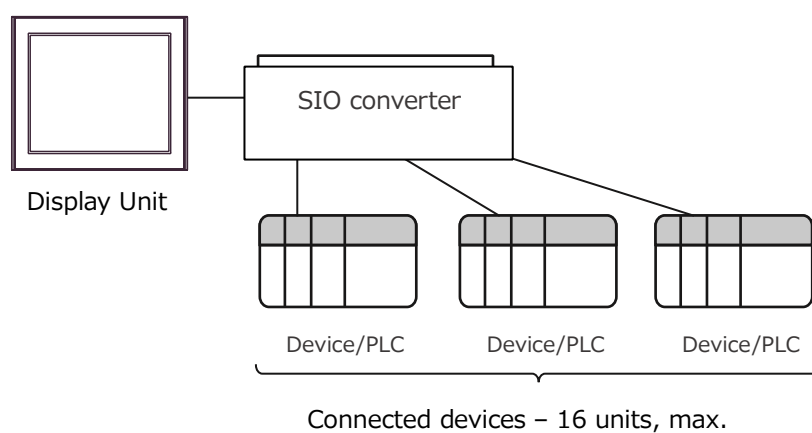


Figure 5-4

表 5-7

Series	Model	Link I/F	Communication type (GP)	Cable Diagram	Supplementary
ELECYLINDER	<u>Connected device</u>	D-sub 9 pin connector on SIO Converter (RCB-TU-SIO-□)	RS-232C	<u>Cable diagram 3</u>	1:1 1:n
		Mini DIN 8 pin connector on SIO Converter (RCB-TU-SIO-□)	RS-232C	<u>Cable diagram 4</u>	1:1 1:n

- 【Note】
- Do not connect a Teaching Box or PC simultaneously with the display unit for use. (On the SIO converter, the D-sub 9 pin connector and the mini DIN 8 pin connector cannot be simultaneously connected for use.)

5.5.2. Cable Diagram

The settings in the file are for use in the case of [5.5.2.2. Cable Diagram 2 (RS422/485 2-Wire)]. For use with another cable diagram, change the display unit's connection port and communication settings according to the configuration to be used on GP-Pro EX. For the communication setting change procedure, refer to [12. GP-Pro EX communication setting change].

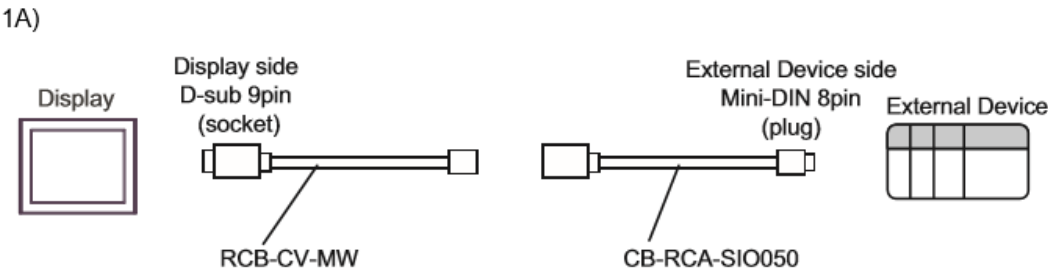
5.5.2.1. Cable Diagram 1 (RS232C)

Table 5-8

Connection Port	Example	Cable and Adapter	Comment
GP4000 (COM1)*1 SP5000 (COM1/2)*2 SP5B00 (COM1) ST6000 (COM1)	1A	RS232C conversion unit by IAI Corporation RCB-CV-MW + Communication cable by IAI Corporation CB-RCA-SIO050	RS232C conversion unit (RCB-CV-MW) and communication cable (CB-RCA-SIO050) are accessories of PC interface Software (RCM-101-MW) by IAI Corporation.

*1 Except GP-4203T

*2 Except SP-5B00



5.5.2.2. Cable Diagram 2 (RS422/485 2-Wire)

Table 5-9

Connection Port	Cable and Adapter		Comment
GP4000 ※ ¹ (COM2) GP-4201T (COM1) GP4*01TM (COM1) GP-Rear Module (COM1) SP5000 ※ ² (COM1/2) SP-5B00 (COM2) ST6000 ※ ⁵ (COM2) ST6200 (COM1)	<u>2A</u>	Pro-face RS-422 Terminal Block Conversion Adapter PFXZCBADTM1 + User-created cable 1 + Junction by AMP * ⁴ 5-1473574-4 + Controller link cable by IAI Corporation CB-RCB-CTL002	Cable length: 100m or less
	<u>2B</u>	User-created cable 1 + Junction by AMP * ⁴ 5-1473574-4 + Controller link cable by IAI Corporation CB-RCB-CTL002	
GP-4*03T ※ ³ (COM2) GP-4203T (COM1)	<u>2C</u>	User-created cable 1 + Junction by AMP * ⁴ 5-1473574-4 + Controller link cable by IAI Corporation CB-RCB-CTL002	

*1 Except GP-4*01TM, GP-Rear Module, GP-4201T and GP-4*03T

*2 Except SP-5B00

*3 Except GP-4203T

*4 When using more than one junction by AMP, user-created cable 2 is required.

*5 Except ST6200

2A)

- 1:1 connection

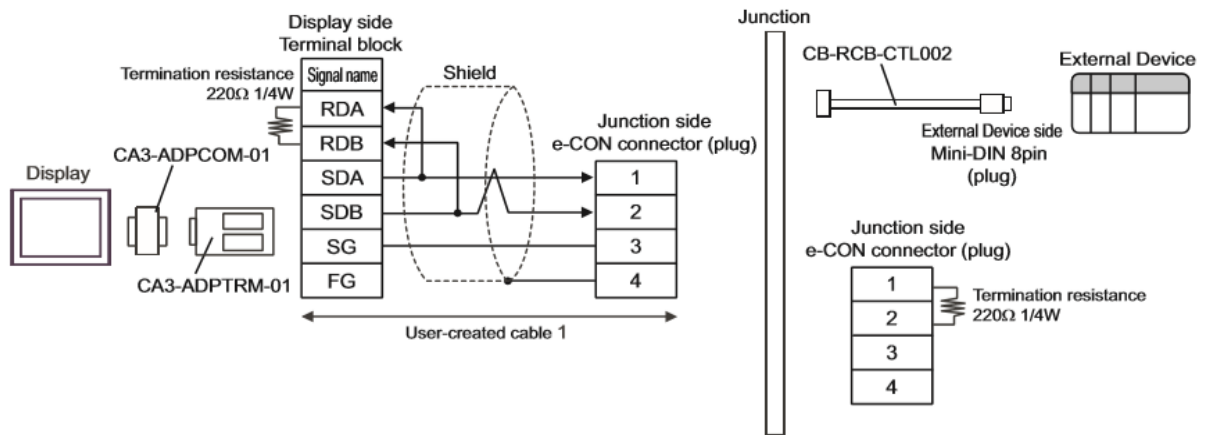


Figure 5-5

- 1:n connection

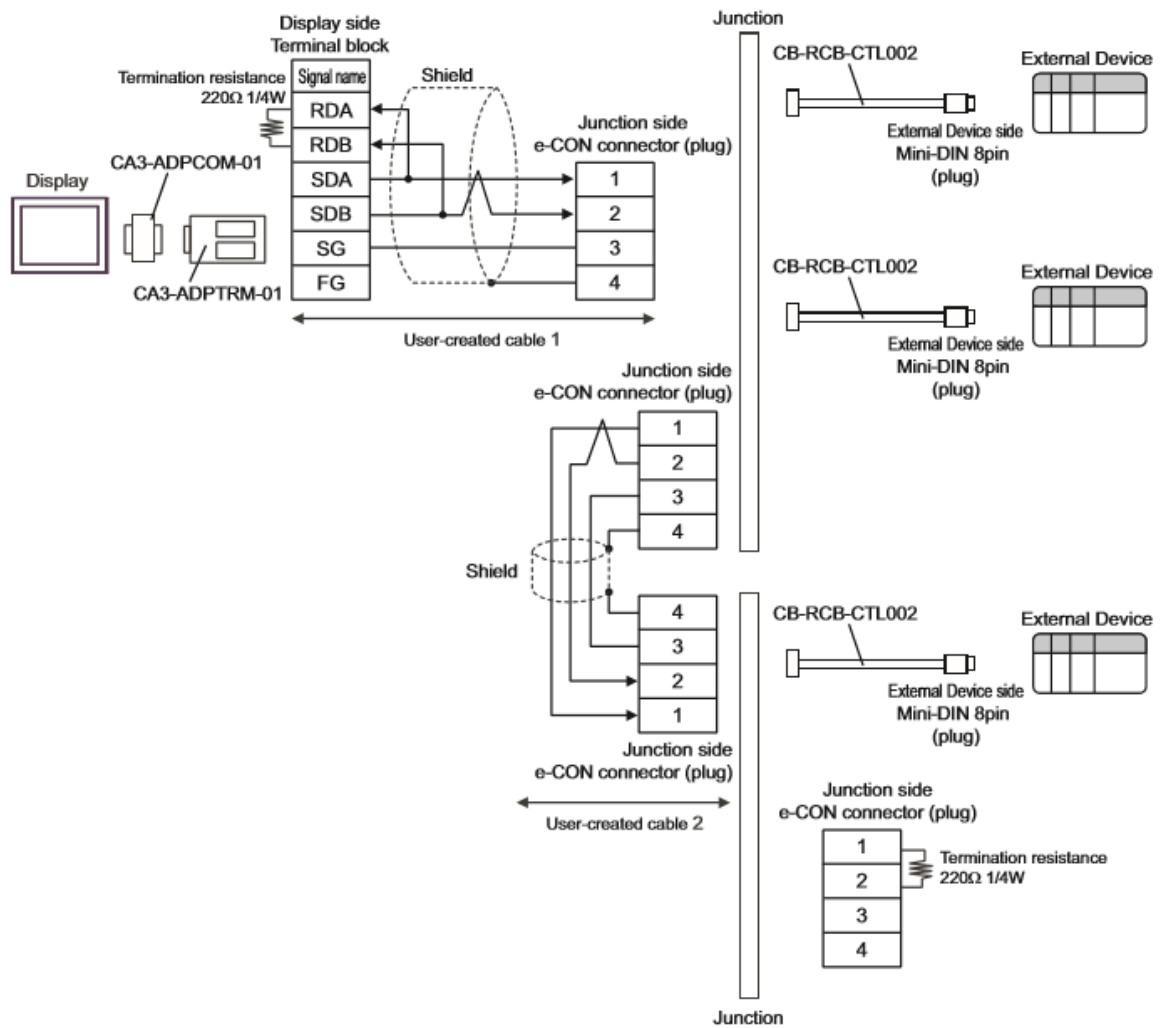


Figure 5-6

2B)

- 1:1 connection

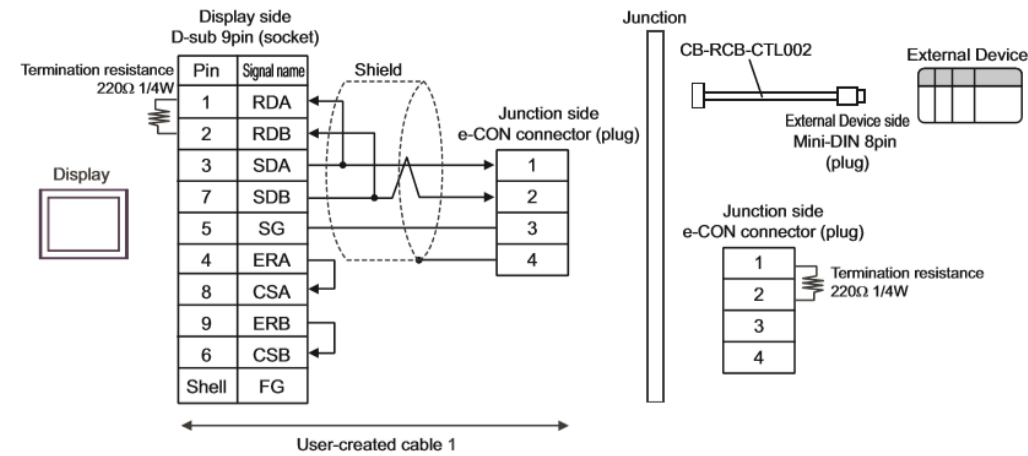


Figure 5-7

- 1:n connection

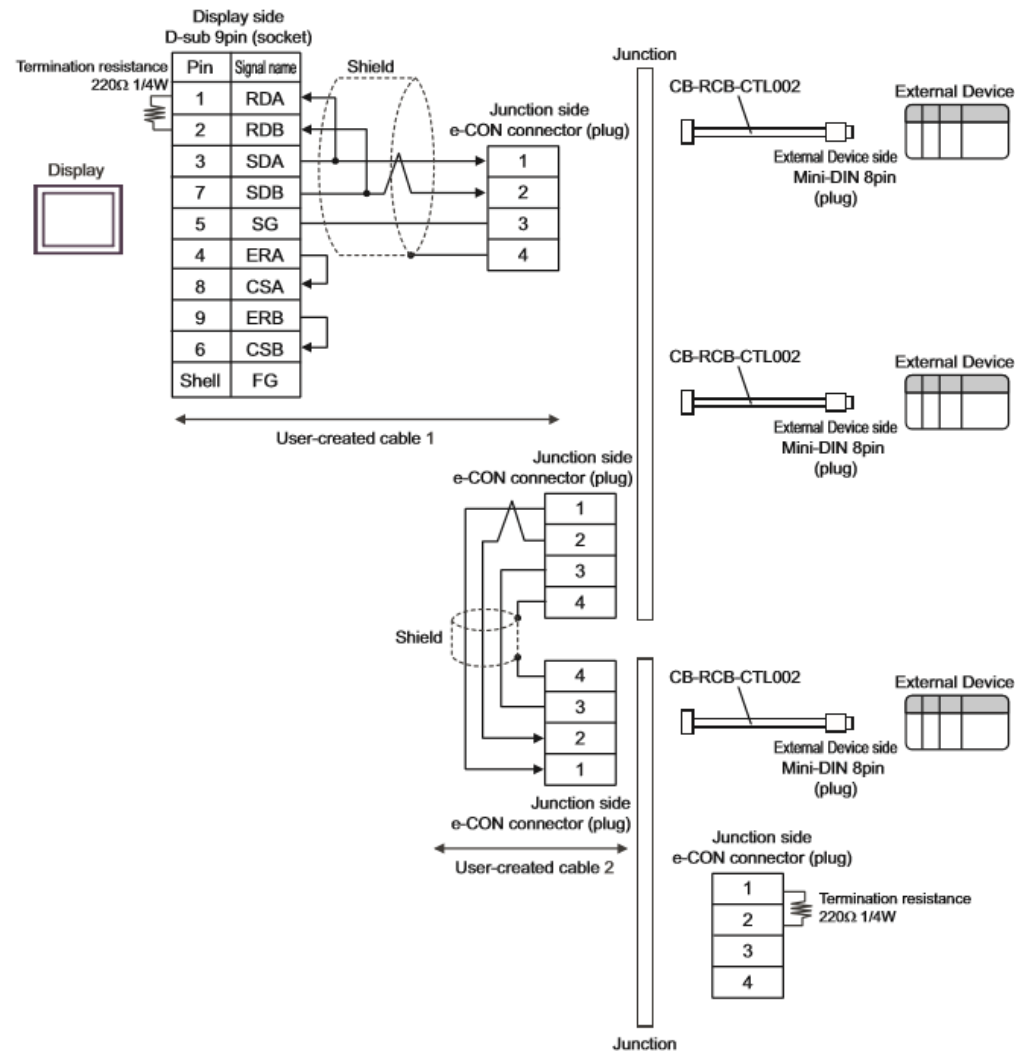


Figure 5-8

2C)

- 1:1 connection

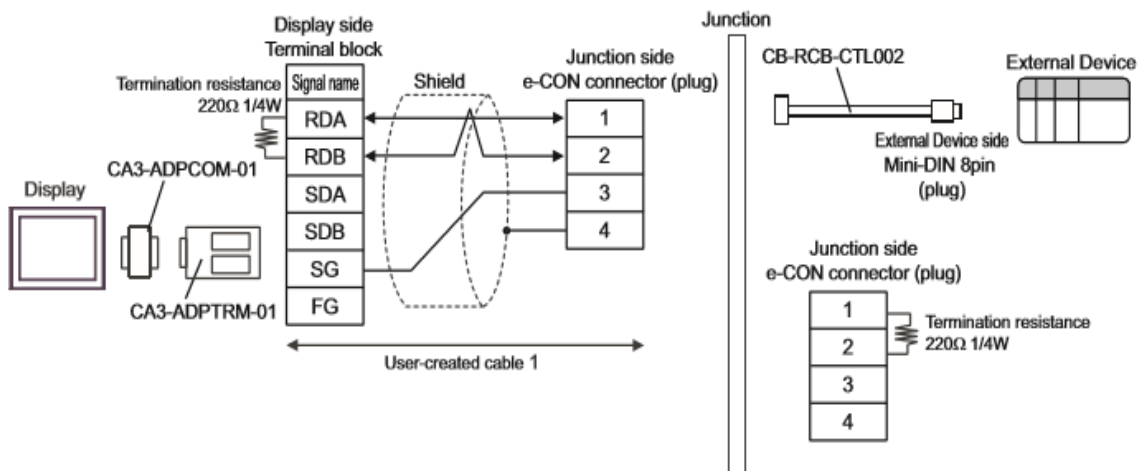


Figure 5-9

- 1:n connection

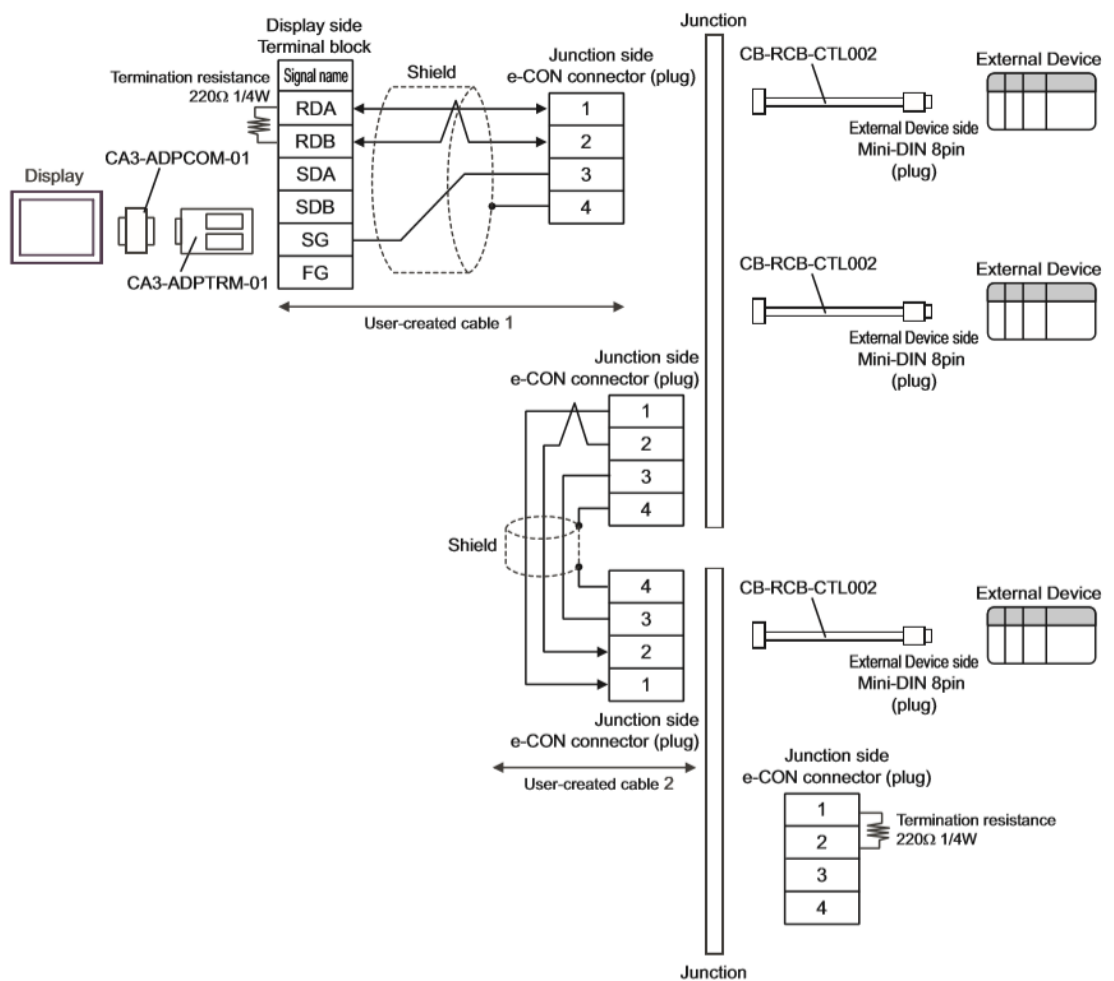


Figure 5-10

[Important] •5V output (6pin) of Display must not be connected.

5.5.2.3. Cable Diagram 3 (RS232C)

Table 5-10

Connection Port	Cable/Adapter		Comment
GP4000 (COM1)*1 SP5000 (COM1/2)*2 SP-5B00 (COM1) ST6000 (COM1)	<u>3A</u>	User-created cable + SIO converter by IAI Corporation RCB-TU-SIO-• + Controller link cable by IAI Corporation CB-RCB-CTL002	Cable length from Display Unit to SIO converter: 15m or less Cable length from SIO converter to Connected Device: 100m or less
	<u>3B</u>	User-created cable 1 + SIO converter by IAI Corporation RCB-TU-SIO-• + User-created cable 2 + Junction by AMP*3 5-1473574-4 + Controller link cable by IAI Corporation CB-RCB-CTL002	
	<u>3C</u>	User-created cable 1 + SIO converter by IAI Corporation RCB-TU-SIO-• + User-created cable 2 + Junction by AMP*3 5-1473574-4 + Controller link cable by IAI Corporation CB-RCB-CTL002	

*1 Except GP-4203T.

*2 Except SP-5B00.

*3 When using more than one junction by AMP, user-created cable 3 is required.

3A)

- 1:1 connection

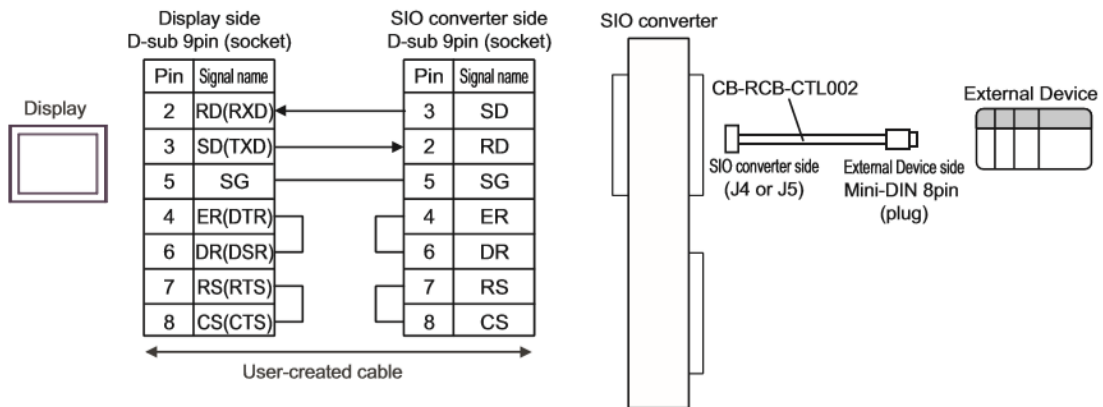


Figure 5-11

- 1:n connection

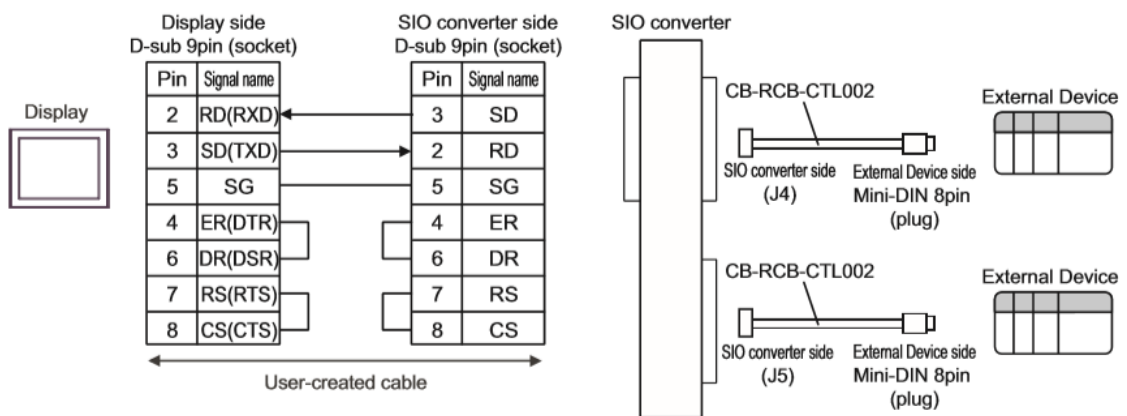


Figure 5-12

3B)

- 1:1 connection

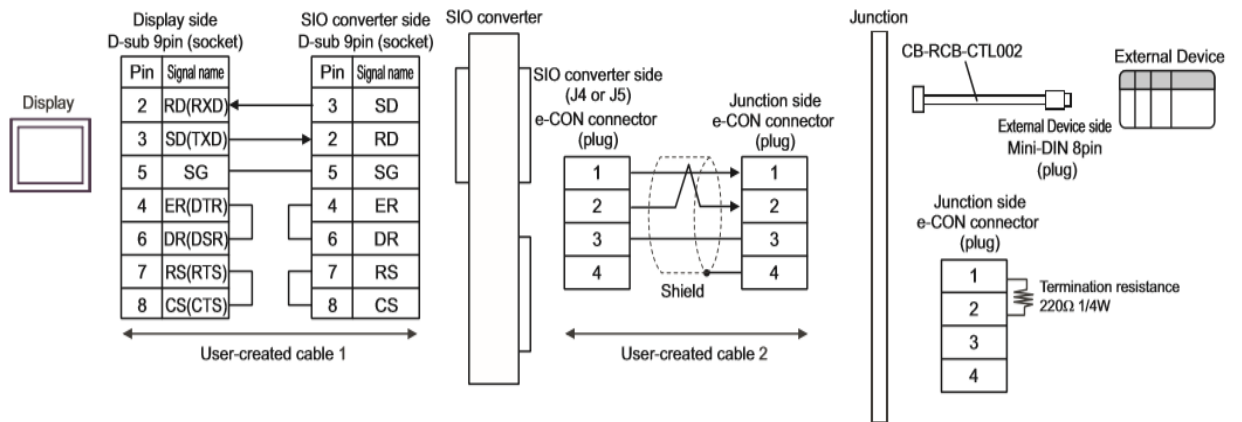


Figure 5-13

- 1:n connection

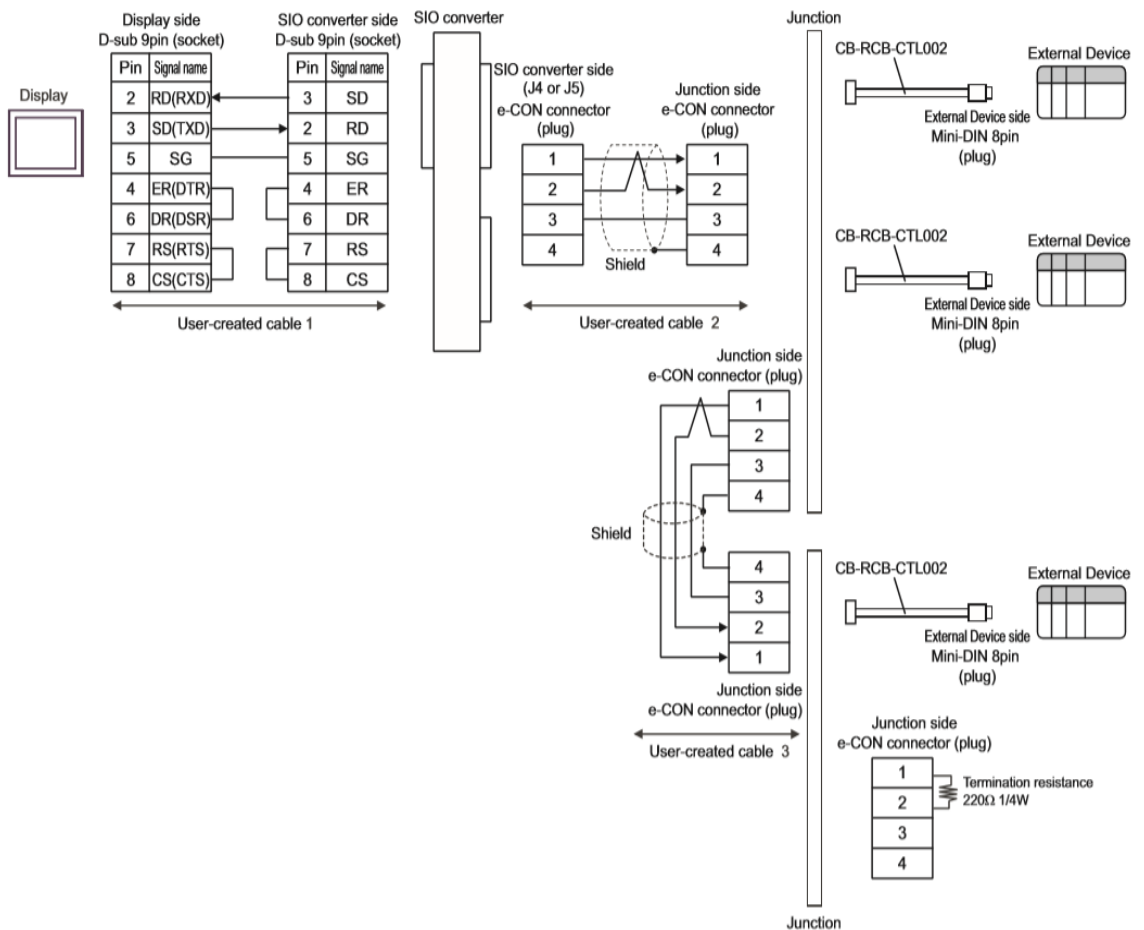


Figure 5-14

3C)

- 1:1 connection

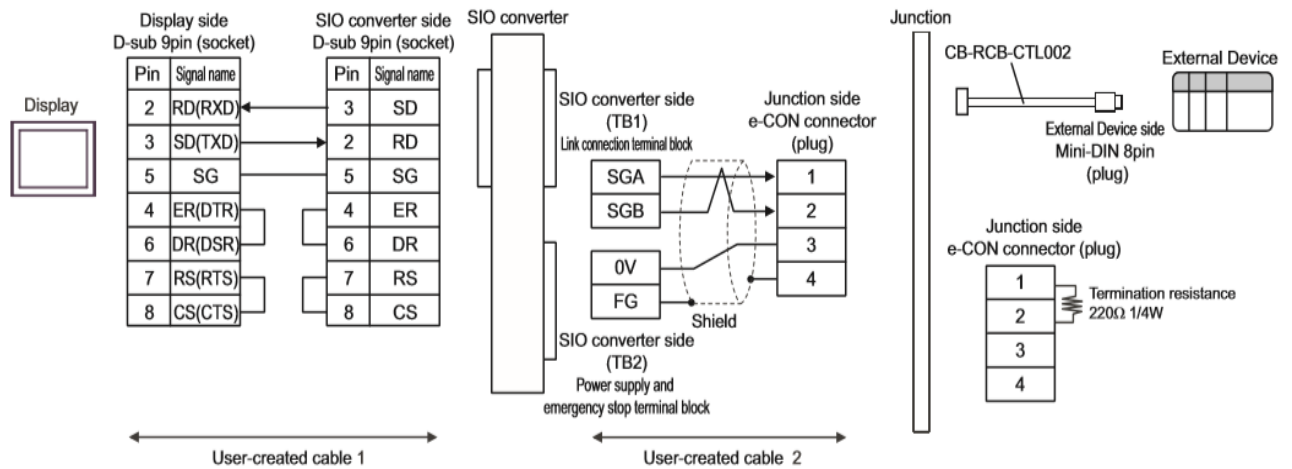


Figure 5-15

- 1:n connection

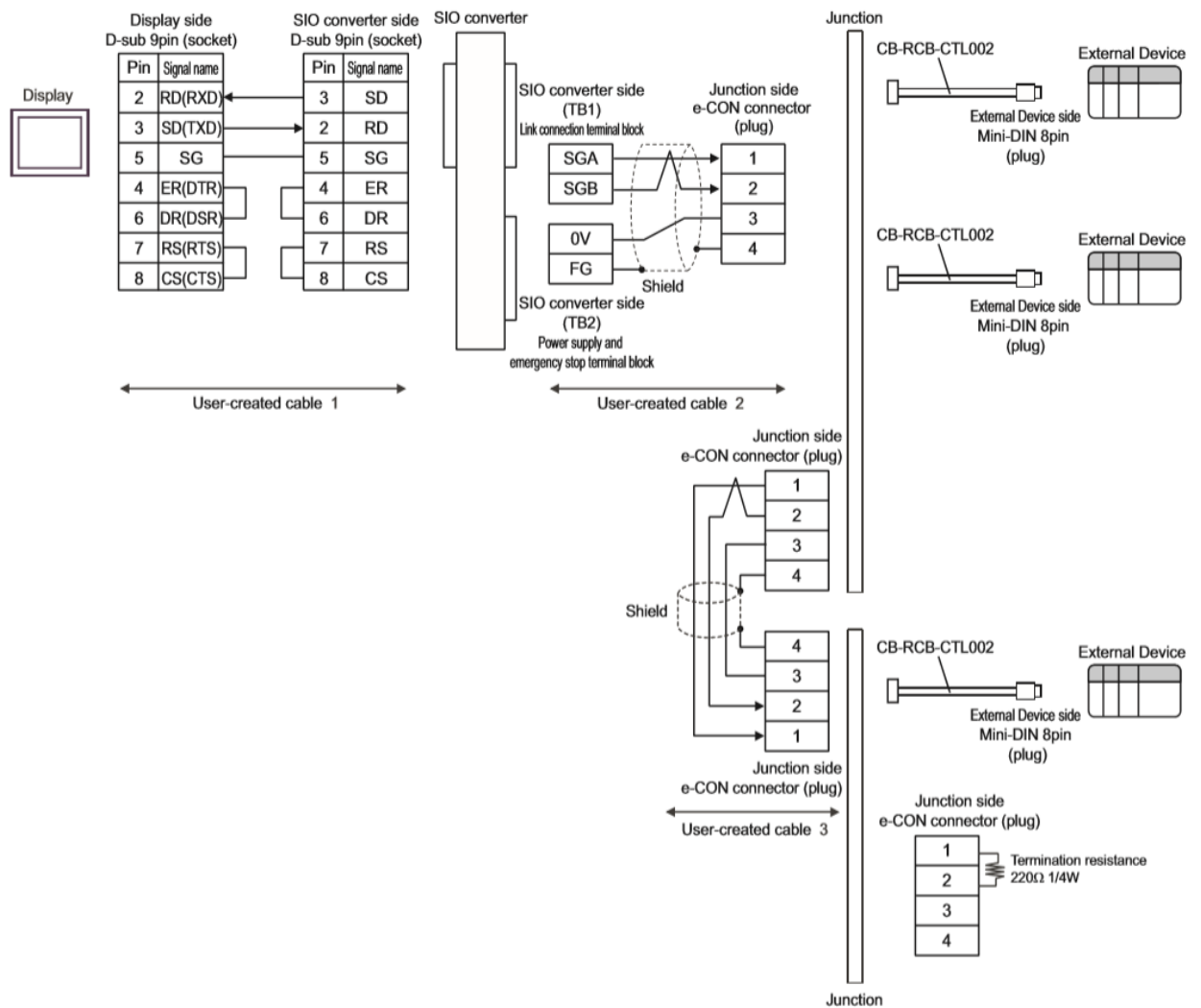


Figure 5-16

5.5.2.4. Cable Diagram 4 (RS232C)

Table 5-11

Connection Port	Cable/Adapter		Comment
GP4000 (COM1)*1 SP5000 (COM1/2)*2 SP-5B00 (COM1) ST-6000 (COM1)	<u>4A</u>	RS232C conversion unit by IAI Corporation RCB-CV-MW + Communication cable by IAI Corporation CB-RCA-SIO050 + SIO converter by IAI Corporation RCB-TU-SIO-□ + Controller link cable by IAI Corporation CB-RCB-CTL002	Cable length from SIO Converter to Connected Device: 100m or less
	<u>4B</u>	RS232C conversion unit by IAI Corporation RCB-CV-MW + Communication cable by IAI Corporation CB-RCA-SIO050 + SIO converter by IAI Corporation RCB-TU-SIO-□ + User-created cable 1 + Junction by AMP*3 5-1473574-4 + Controller link cable by IAI Corporation CB-RCB-CTL002	
	<u>4C</u>	RS232C conversion unit by IAI Corporation RCB-CV-MW + Communication cable by IAI Corporation CB-RCA-SIO050 + SIO converter by IAI Corporation RCB-TU-SIO-□ + User-created cable 1 + Junction by AMP*3 5-1473574-4 + Controller link cable by IAI Corporation CB-RCB-CTL002	

*1 Except GP-4203T

*2 Except SP-5B00

*3 When using more than one junction by AMP, user-created cable 2 is required.

【NOTE】 RS232C Conversion Unit (RCB-CV-MW) and Communication Cable (CB-RCA-SIO050) are accessories of PC-compatible Software by IAI Corporation (RCM-101-MW).

4A)

- 1:1 connection

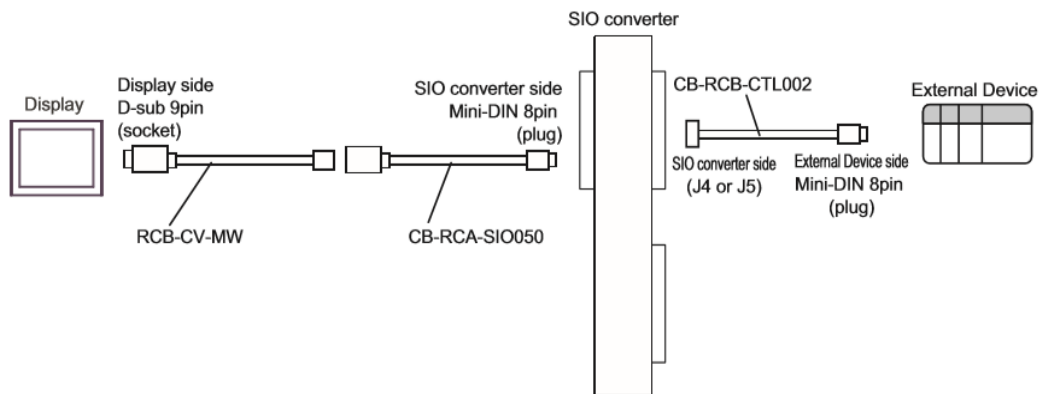


Figure 5-17

- 1:n connection

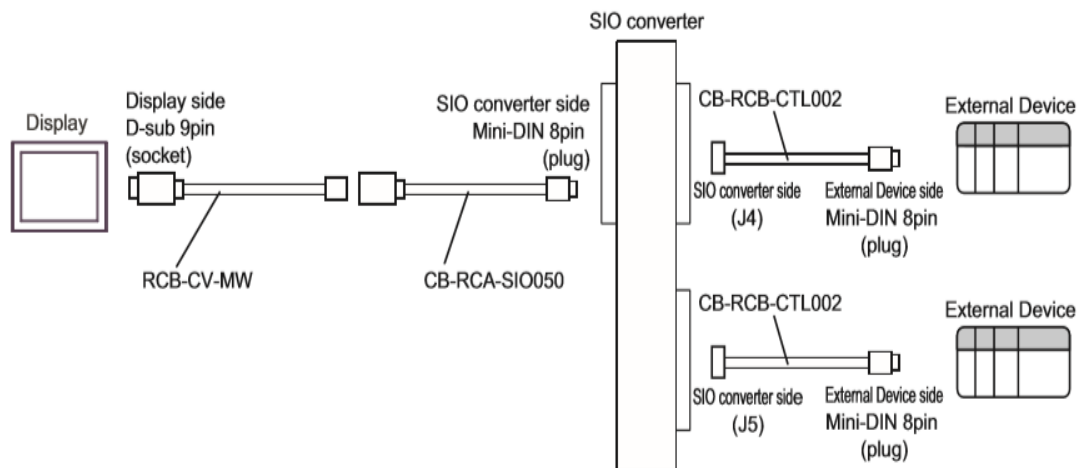


Figure 5-18

4B)

- 1:1 connection

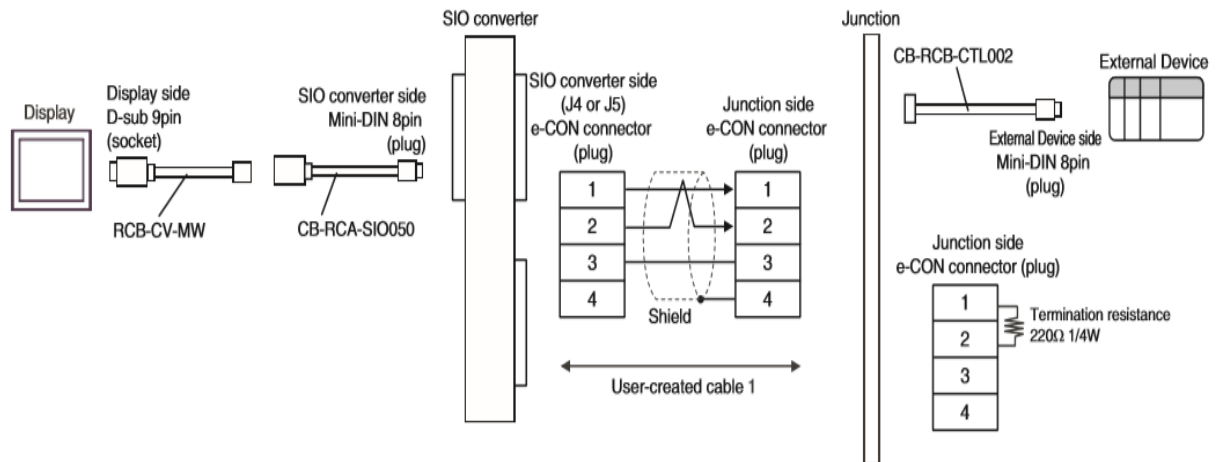


Figure 5-19

- 1:n connection

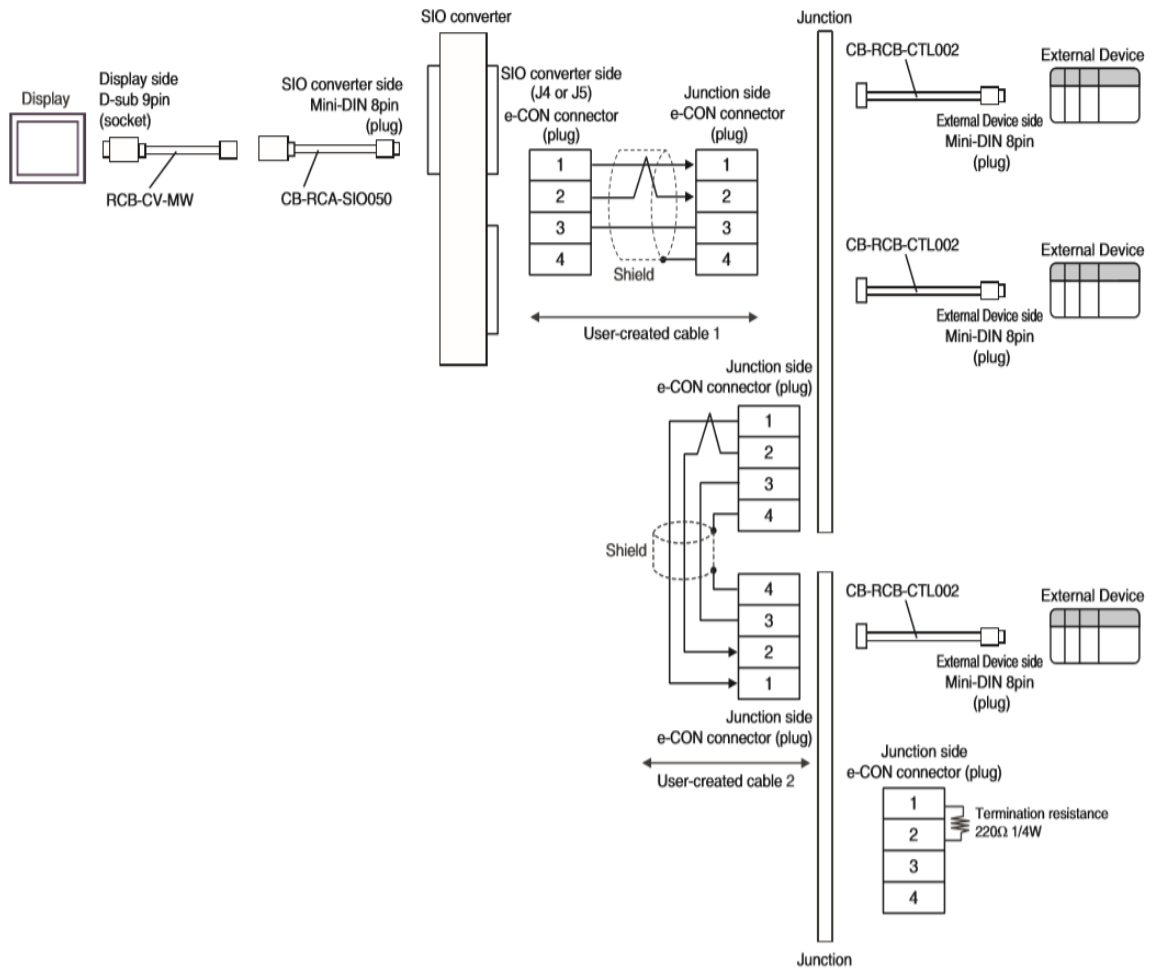


Figure 5-20

4C)

- 1:1 connection

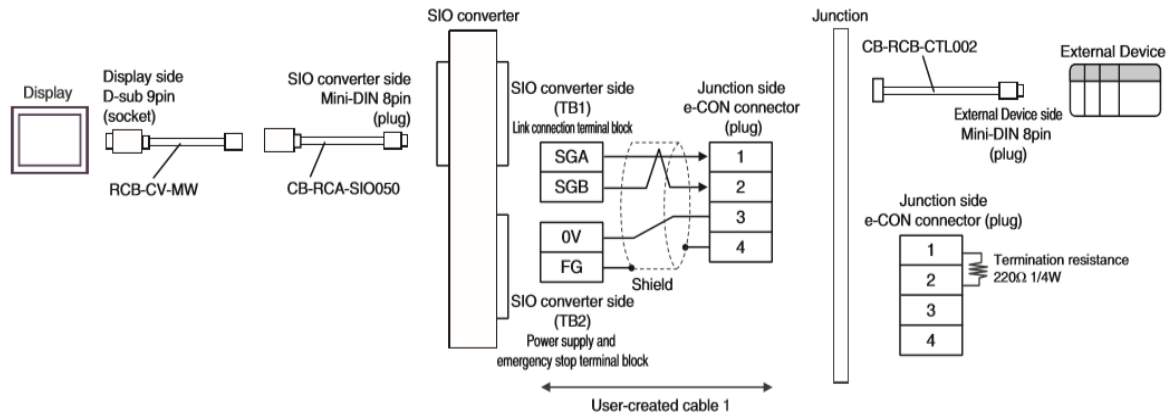


Figure 5-21

- 1:n connection

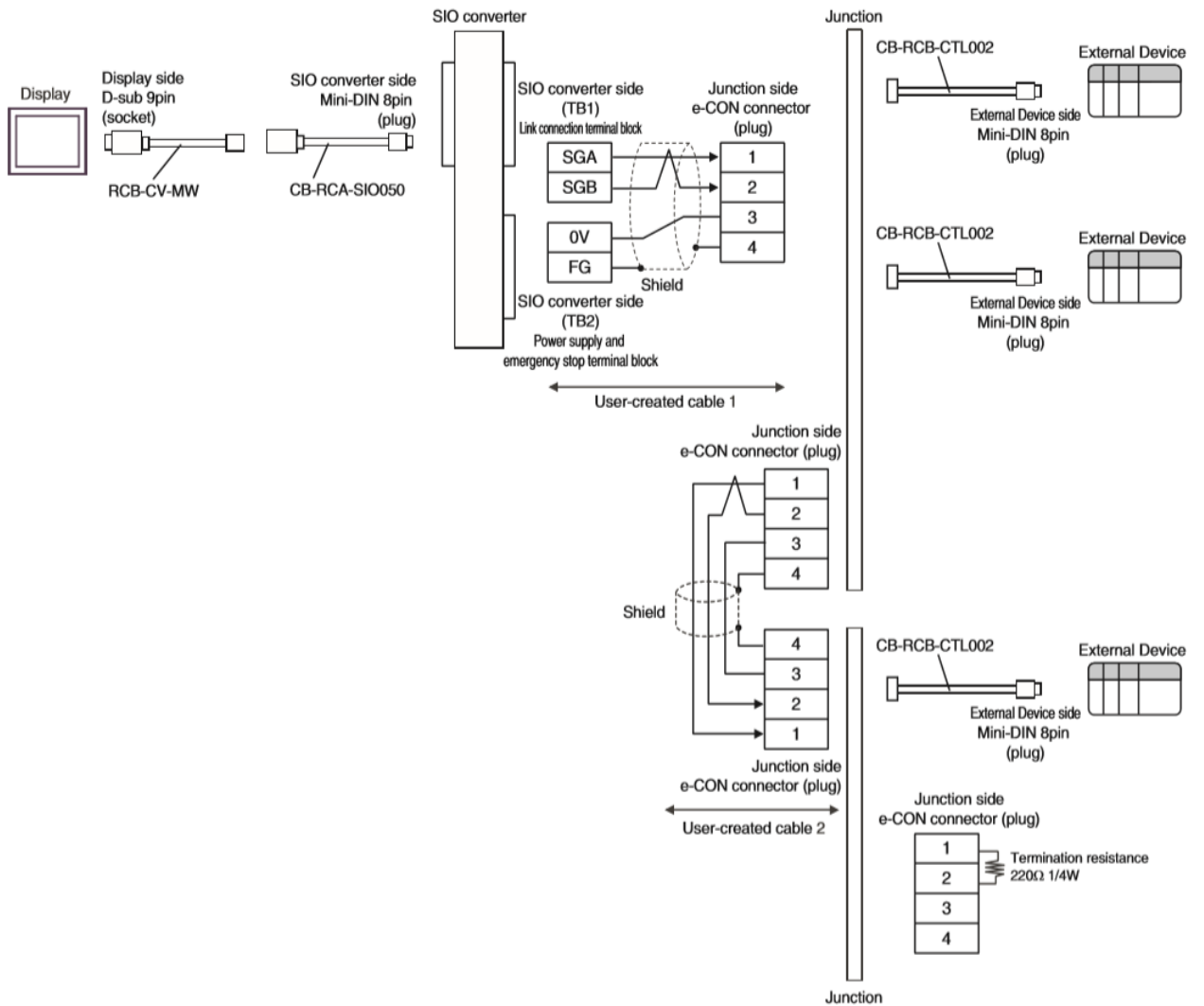


Figure 5-22

5.6. Communciation Settings

5.6.1. GP-Pro EX Communication Settings

Change the settings according to the communication settings of the ELECYLINDER unit and the connection configuration to be used. For the communicaton setting change procedure, refer to [12. GP-Pro EX communication setting change]. For the default of the communication settings of the ELECYLINDER unit, refer to the table 5-12.

For the file, 16 that is the maximum number of connected devices is selected because of the feature that checks connection axes.

Even if the number of connected ELECYLINDER units is less than 16, be sure to select 16 for the number of connected devices in the communication settings.

[NOTE] If the Allowable Number of Devices/PLCs of the connected devices is deleted, operation is affected. Even when the number of connected devices is small, keep 16 in the setting for use.

Device/PLC 1

Summary

Change Device/PLC

ManufacturerIAI CorporationSeriesELECYLINDER SIOPortCOM2

Text Data Mode1Change

Communication Settings

SIO Type

☐ RS232C☒ RS422/485(2wire)☐ RS422/485(4wire)

Speed

38400

Data Length

☐ 7☒ 8

Parity

☒ NONE☐ EVEN☐ ODD

Stop Bit

☒ 1☐ 2

Flow Control

☒ NONE☐ ER(DTR/CTS)☐ XON/XOFF

Timeout

3(sec)

Retry

2

Wait To Send

2(ms)

Default

Device-Specific Settings

Allowable Number of Devices/PLCs16Add DeviceIndirect Device Configuration

No.	Device Name	Settings	Device ID	Add Indirect Device	Update Indirect Device Settings
1	EC00	Axis No.=0	1		
2	EC01	Axis No.=1	2		
3	EC02	Axis No.=2	3		
4	EC03	Axis No.=3	4		
5	EC04	Axis No.=4	5		
6	EC05	Axis No.=5	6		
7	EC06	Axis No.=6	7		
8	EC07	Axis No.=7	8		
9	EC08	Axis No.=8	9		
10	EC09	Axis No.=9	10		
11	EC10	Axis No.=10	11		
12	EC11	Axis No.=11	12		
13	EC12	Axis No.=12	13		
14	EC13	Axis No.=13	14		
15	EC14	Axis No.=14	15		
16	EC15	Axis No.=15	16		

No.	Indirect Device	Device ID Address	Initial ID
1	Indirect1	Axis No.=1	[#INTERNAL]USR299801

Figure 5-23 GP-Pro EX Communication Settings

Table 5-12 Communication Settings

Item	Default	Range
Communication type	RS-422/485(2-wire)	RS232C / RS-422/485(2-wire)
Baud rate	38400 (bps)	2400 / 4800 / 9600 / 19200 / 38400 57600 / 115200
Data length	8 bits	Fixed
Parity	None	Fixed
Stop bit	1 bit	Fixed
Flow control	None	Fixed
Timeout	3 (sec)	1 to 127
Retry	2	0 to 255
Wait to send	2 (ms)	0 to 255
Text data mode	1	1 to 8

[NOTE] The communication type setting differs depending on a connection method. For RS232C connection, change the setting before use.

5.6.2. Communication Settings of Devices/PLCs

- 1) The default values of the ELECYLINDER communication settings are as shown below.

Table 5-13 Device/PLC communication settings (Default)

Communication settings	On Device/PLC
Baud rate	38400 (bps)
Data length	8 bits
Parity	None
Stop bit	1 bit

5.6.3. Indirect Device Settings

The file has used Indirect Device Settings. If a device ID address of Indirect Device Settings is changed, operation will be affected. Be cautious when revising the Device/PLC settings.

Refer to Chapter 7.5 in GP-Pro EX Reference Manual.

Table 5-14 Device/PLC communication settings (Default)

Indirect Device	Address
Indirect1	[#INTERNAL]USR29980

5.6.1. Device-Specific Settings

For the file data, 16 is selected for the allowable number of Devices/PLCs.

Configure settings as shown in the table 5-8 below for the 16 units. If the settings are different, operation will be affected.

Table 5-15 Device-Specific Settings

No.	Device Name	Settings	Device ID
1	EC00	Axis No.=0	1
2	EC01	Axis No.=1	2
3	EC02	Axis No.=2	3
4	EC03	Axis No.=3	4
5	EC04	Axis No.=4	5
6	EC05	Axis No.=5	6
7	EC06	Axis No.=6	7
8	EC07	Axis No.=7	8
9	EC08	Axis No.=8	9
10	EC09	Axis No.=9	10
11	EC10	Axis No.=10	11
12	EC11	Axis No.=11	12
13	EC12	Axis No.=12	13
14	EC13	Axis No.=13	14
15	EC14	Axis No.=14	15
16	EC15	Axis No.=15	16

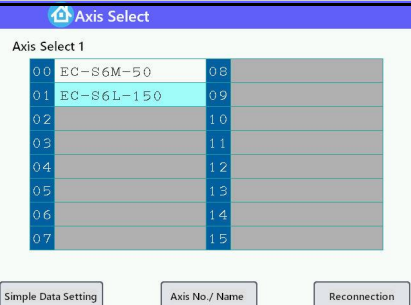
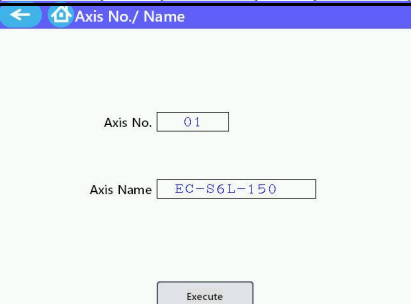
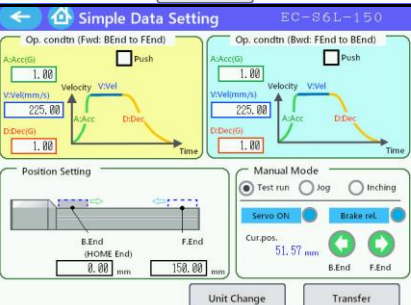
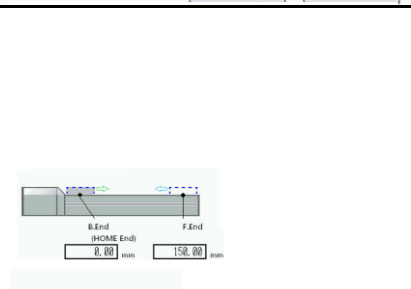
6. Screen Configuration

6.1. Screen Type

The file provides 4 kinds of feature screens as shown below.

Screen Number B9990, B9992, B9993, B9994, and W2000 cannot be edited and the screen numbers cannot be changed, either.

Table 6-1 Screen Type

Screen Title	Screen Image	Feature
<p>Axis Select</p> <p>Screen Number B9990</p>		<ul style="list-style-type: none"> Check connection status of 16 axes Select connection axes.
<p>Axis No./Name</p> <p>Screen Number B9992</p>		<ul style="list-style-type: none"> Change the specified axis number. Change the name of the specified axis number.
<p>Simple Data Setting</p> <p>Screen Number B9993</p>		<ul style="list-style-type: none"> Forward and backward settings Position data settings Manual operation
<p>ELECYLINDER Type Image (ELECYLINDER image screen)</p> <p>Screen Number B9994</p>		<ul style="list-style-type: none"> B9993 uses the screen.

Screen Title	Screen Image	Feature
TransferConfirmationScreen Screen Number W2000	 The screenshot shows a white rectangular dialog box with a blue border. Inside the box, the text "Send Setting Data" is centered at the top. Below the text, there are two light gray buttons with rounded corners. The left button is labeled "Yes" and the right button is labeled "No".	<ul style="list-style-type: none">• Window Screen for confirming data transfer

6.2. Screen Transition

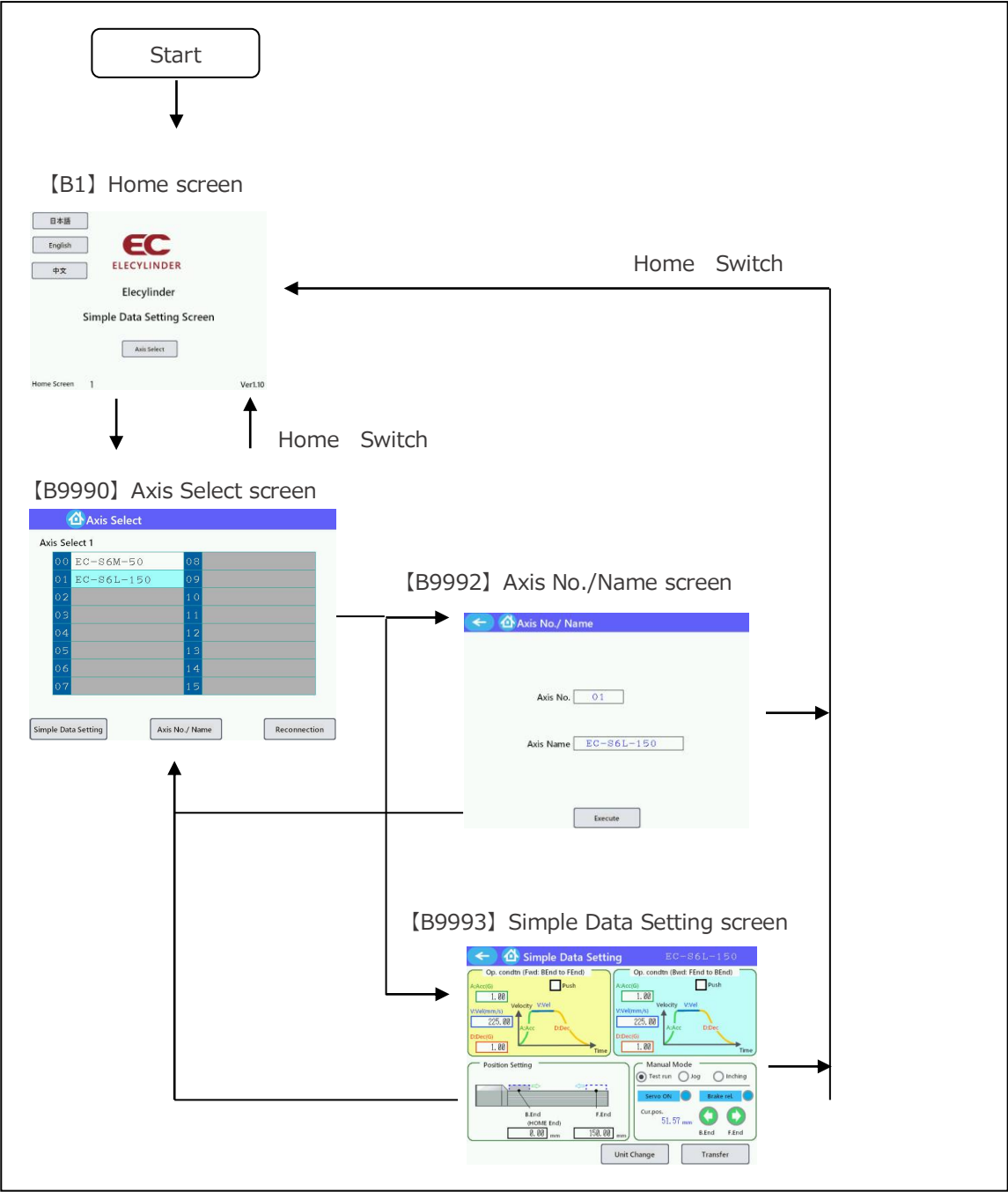


Figure 6-1 Screen Transition

7. Details of Screens

7.1. Home Screen (B0001: Edit allowed)

7.1.1. Overview

This is the Home screen displayed at the time of starting the display unit. The Home screen can be edited. To separately create a Home screen, you can delete this screen and replace it with another screen.

7.1.2. Screen Image

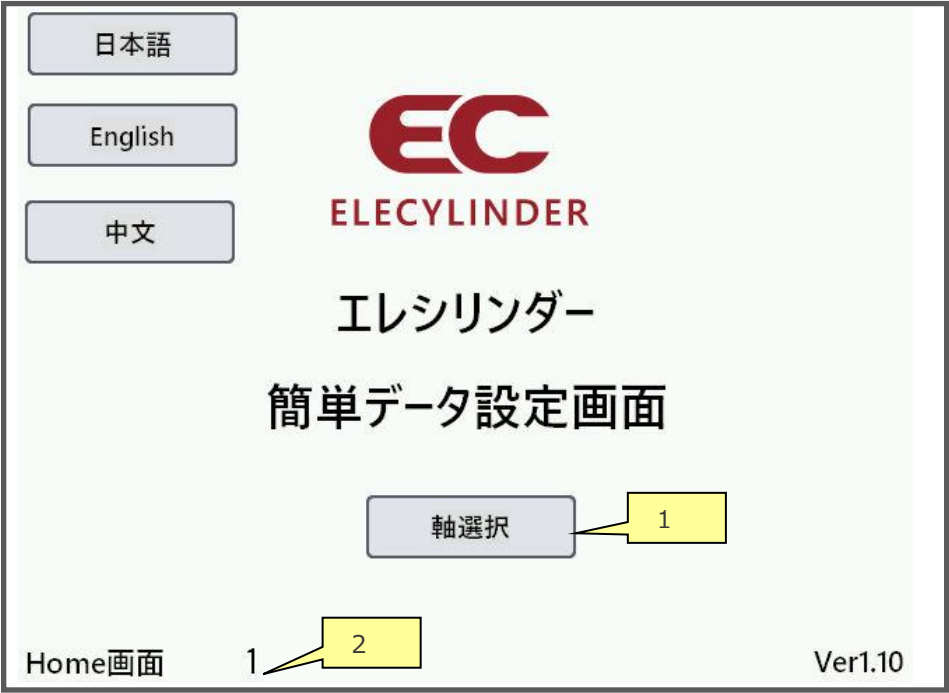


Figure 7-1 Home Screen

Table 7-1 Descriptions of parts

No.	Item	Parts	Descriptions
1	Axis Select	Switch	Switches to the Axis Select screen (B9990). To separately create a Home screen, place a switch that switches the screen to the screen number, "9990".
2	Home Screen Number Specification	Data Display	Screen number of Home. The screen with the number specified here is operated as a Home screen. When the Home switch of the header is pressed, the screen is changed to the one with the specified number. ("1" in the file). Or when a value is entered in [#INTERNAL]USR29999, the screen number of the entered value means the Home screen.

7.2. Axis Select (B9990: Edit not allowed)

7.2.1. Overview

This screen checks connection status with the ELECYLINDERS (Axis 1 to 16) and selects an axis number of setting target. To check connection status of the ELECYLINDER, touch the [Reconnection] switch. After checking the connection status, selecting an axis allows you to check or change values of the selected axis.

7.2.2. Screen Image

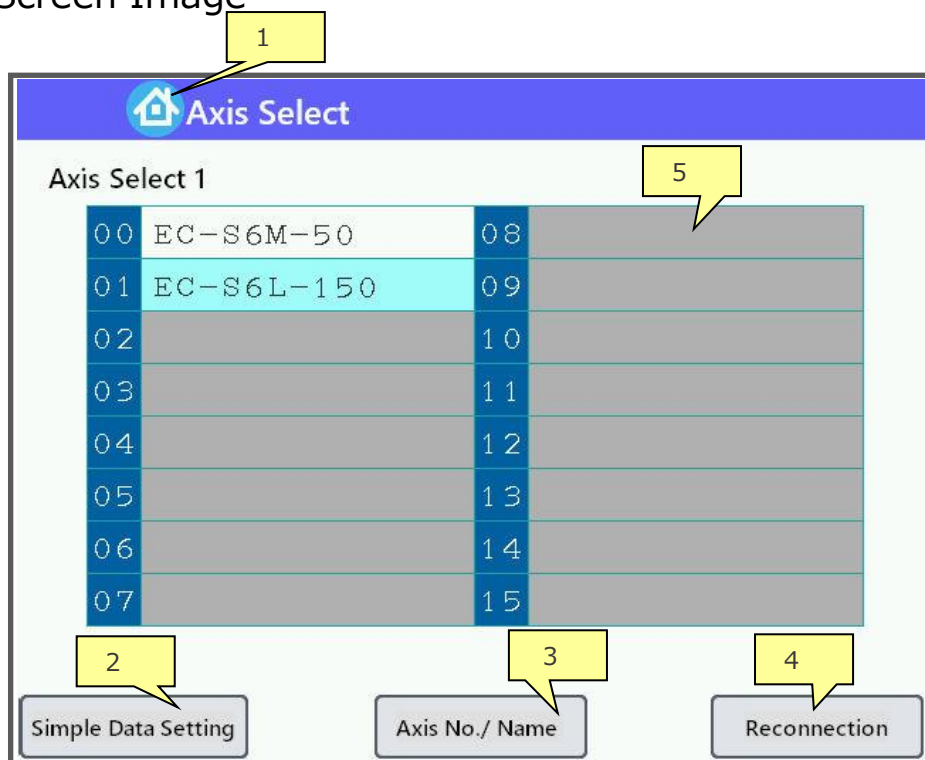


Figure 7-2 Axis Select Screen

Table 7-2 Descriptions of parts

No.	Item	Parts	Descriptions
1	Home	Switch	Switches to the Home screen. The value specified for [#INTERNAL]USR29999 becomes the Home screen number.
2	Simple Data Setting	Switch	Switches to the Simple Data Setting screen.
3	Axis No./Name	Switch	Switches to the Axis No./Name screen.
4	Reconnection	Switch	Starts checking connection status of Axis 1 to 16.
5	Axis Select	Switch	The axis names of ELECYLINDERS with connection confirmed are shown and can be selected. When the axis name of ELECYLINDER at connection destination is empty, the text, [EC] is shown. When no ELECYLINDER is connected or any ELECYLINDER out of support target is connected, you cannot select axes because of grayout display.

7.3. Axis No./Name (B9992: Edit not allowed)

7.3.1. Overview

You can change axis numbers and names of ELECYLINDERS. Press the [Execute] switch after entering them to change them. When axis numbers and axis names are changed, be sure to run [Reconnection] on the Axis Select screen.

7.3.2. Screen Image

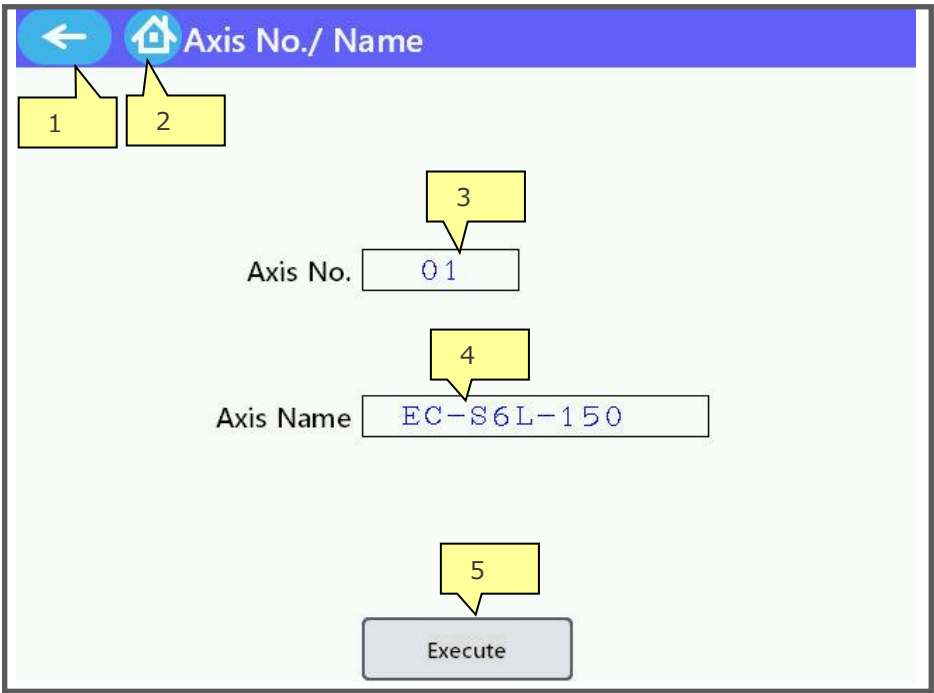


Figure 7-3 Axis No./Names

Table 7-3 Descriptions of parts

No.	Item	Parts	Descriptions
1	Return	Switch	Switches to 1-upper level (Axis Select)
2	Home	Switch	Switches to the Home screen. The value specified for [#INTERNAL]USR29999 becomes the Home screen number.
3	Axis Number	Data Display	Specify an axis number. Change the selected axis to a different axis number.
4	Axis Name	Data Display	Specify an axis name. Up to 12 single-byte characters can be entered.
5	Execute	Switch	Writes the axis number and the axis name to the ELECYLINDER selected on the Axis Select screen.

7.4. Simple Data Setting (B9993:Edit not allowed)

7.4.1. Overview

You can specify the forward operation condition, the backward operation condition, the position setting, and manual operation of the selected axis on this screen.

When this screen is displayed, data is received from the selected axis. Even if you change each setup value, it will not be reflected to the ELECYLINDER - writing process -. To write each setup value to the ELECYLINDER, touch the [Transfer] switch after changing the values and run writing process to the ELECYLINDER. After the data is written, the axis data is automatically received again and the latest data is shown. But each setup value of [Manual Mode] is reflected right after change.

7.4.2. Screen Image

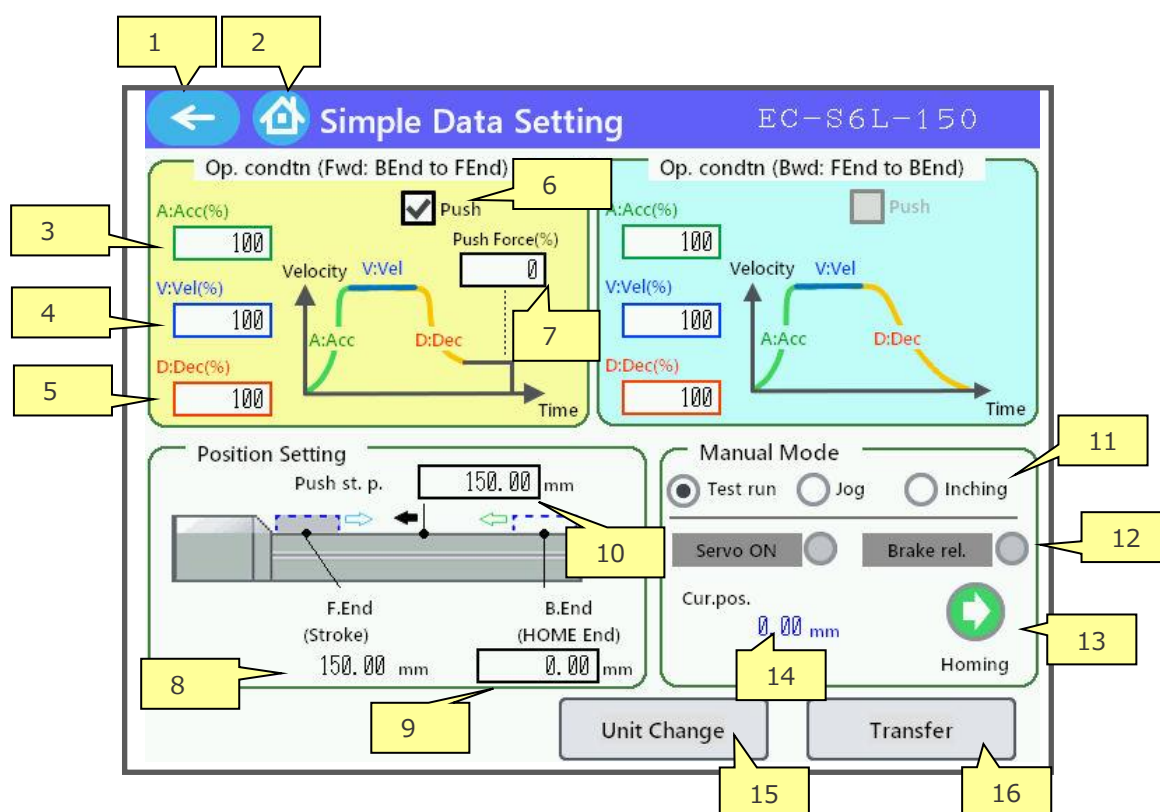


Figure 7-4 Simple Data Setting

Table 7-4 Descriptions of parts

No.	Item	Parts	Descriptions
1	Return	Switch	Switches to 1-upper level (Axis select)
2	Home	Switch	Switches to the Home screen. The value specified for [#INTERNAL]USR29999 becomes the Home screen number.

No.	Item	Parts	Descriptions
3	Acceleration	Data Display (Input allowed)	Specify acceleration. <ul style="list-style-type: none"> • Input value (unit: %) • Input value (unit: G) Possible to input with every unit above by unit change.
4	Velocity	Data Display (Input allowed)	Specify velocity. <ul style="list-style-type: none"> • Input value (unit:%) • Input value (unit:mm/s or mm/deg) Possible to input with every unit above by unit change.
5	Deceleration	Data Display (Input allowed)	Specify deceleration. <ul style="list-style-type: none"> • Input value (unit:%) • Input value (unit:G) Possible to input with every unit above by unit change.
6	Push	Switch	With or without use of push for forward or backward (OFF : Disabled, ON: Enabled) Enable it to show the setting items of [Push Force] and [Push st. p. -Push start point-].
7	Push Force	Data Display (Input allowed)	Specify 'Push force'. <ul style="list-style-type: none"> • Input value (unit:%) • Input value (unit:N or N · m) Possible to input with every unit above by unit change. The push force can be specified only when the box of [Push] is checked.
8	B.End	Data Display (Input allowed under a condition)	Configure position settings of backward end. <ul style="list-style-type: none"> • Input value (unit:mm or deg) The location of B.End differs depending on the position of the home and the state of push. Changing units affects nothing.
9	F.End	Data Display (Input allowed under a condition)	Configure position settings of forward end. <ul style="list-style-type: none"> • Input value (unit:mm or deg) The location of F.End differs depending on the position of the home and the state of push.
10	Push start point (Push st. p.)	Data Display (Input allowed)	Specify the start position of Push. <ul style="list-style-type: none"> • Input value (unit:mm or deg)
11	Operation change	Switch	Radio switches that select Test run, Jog, or Inching. The operation of the move switch differs depending on this setting.
12	Servo ON/Brake	Switch Lamp	Switches the servo's power ON and OFF and the brake's release ON and OFF.
13	Move switch	Switch	Push F.End to move to the F.End side. Push B.End to move to the B.End side. The operation differs depending on a setting state.
14	Current Position	Data Display (Input not allowed)	Shows the current position data. (unit:mm or deg)

No.	Item	Parts	Descriptions
15	Unit Change	Switch	<p>Switches 2 kinds of units. Switching units can switch the values of forward and backward of operation condition.</p> <ul style="list-style-type: none"> • Unit % • Unit mm/s, G, N or mm/deg, G, N · m
16	Transfer	Switch	Writes the setup data to the ELECYLINDER.

7.4.2.1. Position Setting

The display images differ depending on a model of ELECYLINDER to be connected. Four kinds of models can be displayed.

- Slider

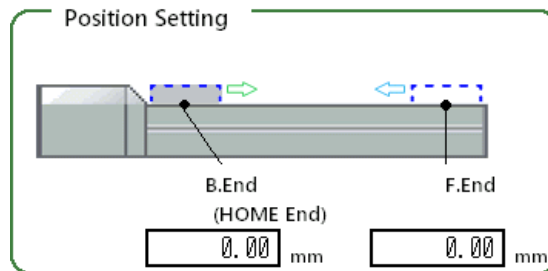


Figure 7-5 Slider

- Rod

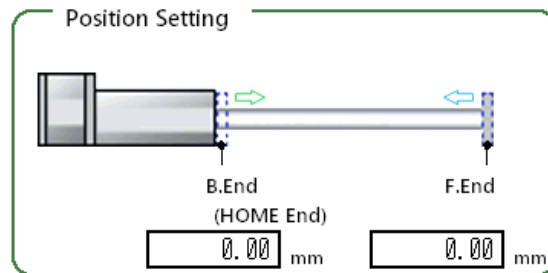


Figure 7-6 Rod

- Table

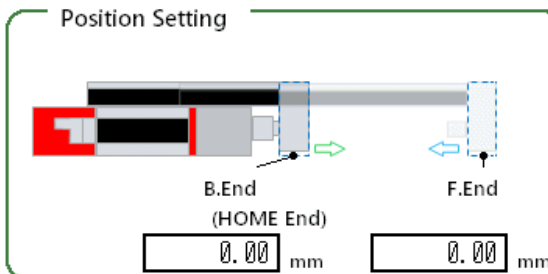


Figure 7-7 Table

- Rotary

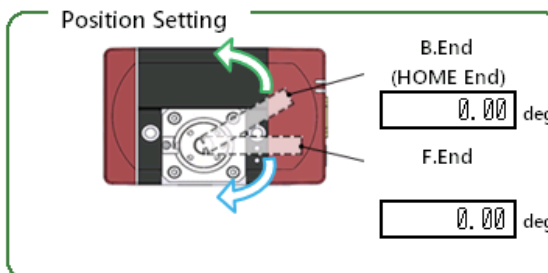


Figure 7-8 Rotary

- Gripper

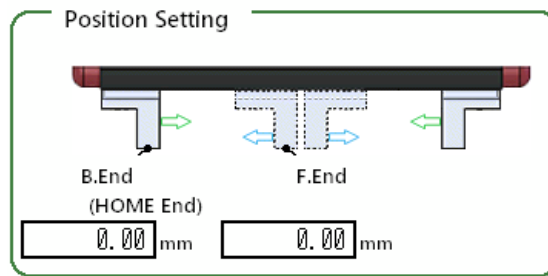


Figure 7-9 Gripper

7.4.2.2. Manual Mode

For the manual mode switches, display of switches differs depending on a state of 'Homing' completed or not completed.

- For home direction standard and homing not completed

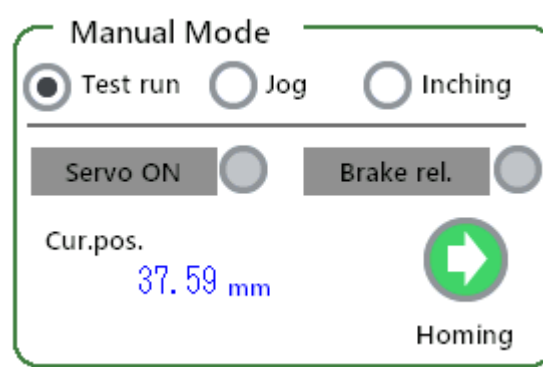


Figure 7-10 Homing switch (home standard)

- For home direction reverse and homing not completed,

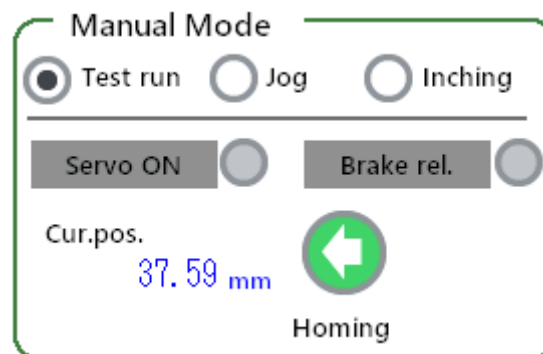


Figure 7-11 Homing switch (home reverse)

- For homing completed

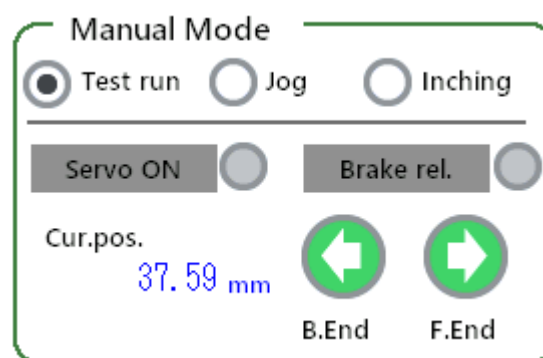


Figure 7-12 After homing is completed

7.5. Transfer Confirmation Screen (W2000: Edit not allowed)

7.5.1. Overview

The confirming message window appears before the data specified on the Simple Data Setting screen is written to the ELECYLINDER. Push [Yes] to start writing the data to the ELECYLINDER. Push [No] to stop writing and return to the original screen.

7.5.2. Screen Image

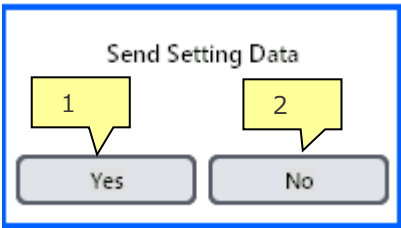


Figure 7-13 Transfer Confirmation Screen

Table 7-5 Descriptions of parts

No.	Item	Parts	Descriptions
1	Yes	Switch	Writes data to ELECYLINDER. Receives the data after writing is completed and updates to the latest data.
2	No	Switch	Closes the dialog box without writing.

8. Global D Script

The file does not use Global D Script.

9. Address Map

9.1. List of used internal addresses

Table 9-1 Address Map

Address	Form	Details
USR29599	16bit	For languages change, change control address You can change this address. No problem.
USR29600 to USR29998	16bit	ELECYLINDER parts reserve area [Important] This address area must not be used. If you edit it, for example, replace addresses, the parts in the file do not properly behave. Make sure that the addresses in this range are not included at the time of edit such as block address conversion.
USR29999	16bit	Home screen number Input the screen number of the Home screen. Switch to the screen number that is input in this address at the time of touching the [Home] switch.

9.2. Variable List

The file does not use Global D Script.

10. Text Table

10.1. Table1 (Table 1)

Table 10-1 Address Map

NO,	Text	Details
9900 to 10000	Japanese	ELECYLINDER parts reserve area.
	Chinese	This area is being used for the ELECYLINDER parts.
	English	If the texts in this area are changed, they are not properly displayed.
Other		Settings To use the language change feature – Text Table -, it's necessary to specify change control addresse. You can change this address according to project data. In this file, it's [#INTERNAL]USR29599. This address can be changed.

11. Incorporating project data

11.1. To create a project data file based on the file

When you create a project data file based on the file, pay attention to the following items.

- Duplicate addresses
- Duplicate text tables
- Duplication of base screen and window screen

11.2. When incorporating the file in the created project file

When incorporating the file in the already created project data file, follow the steps below.

If the steps are not followed, it cannot be properly incorporated.

1. Device/PLC Setting (Settings of 16 device units, Registration of indirect devices)
Be sure to add up to 16 connected devices with [Add Device/PLC] and configure indirect device name settings before copying the screen. For the setting procedure, refer to 11.2.1. Device/PLC Settings.
2. Text Table (No,9900 to No,10000)
 - Export the text table in the file.
(Example; StringTable.txt Can be saved as any filename.)
 - Import the exported file to the project file at destination.
 - The texts registered in the file are Japanese, Chinese, and English.
 - When loading, load them to the table of each language.
 - When the text table is not used, load them to the table 1, 2, and 3.
3. Copy From Another Project
Select the file on [Copy From Another Project] and load the Base Screen and the Window Screen. When loading the window screen, be sure to select 2000 for Copy-To Start Screen Number before copy.

11.2.1. Device/PLC Settings

Configure settings according to the contents of 5.6 Communication Settings.
To newly add a connected device, configure settings of the contents in 5.4 Connected device and add a connected device when the dialog box of Figure 11-1 appears.

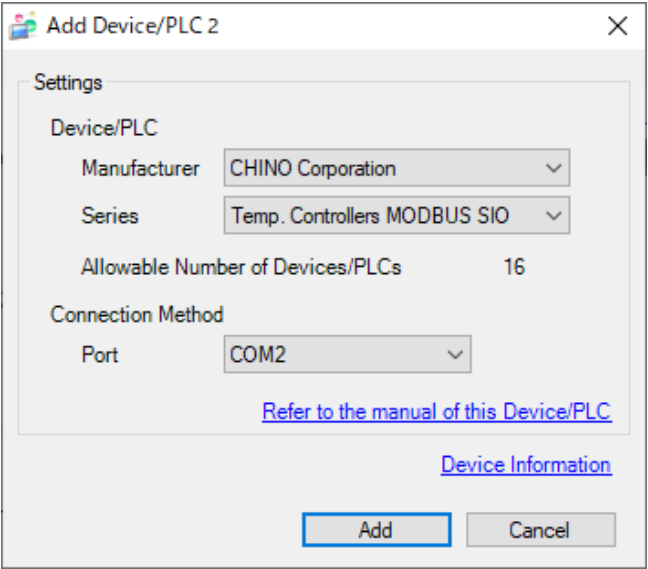


Figure 11-1 Add Device/PLC

Configure Device-Specific settings of the added devices.
Add up to 16 (max.) devices and specify axis numbers, and the state will be as shown in the figure 11-2 below. For details of the settings, refer to 5.6.1 Device-Specific Settings.

Device-Specific Settings					
Allowable Number of Devices/PLCs		Add Device		Indirect Device Configuration	
16				Add Indirect Device	Update Indirect Device Settings
No.	Device Name	Settings	Device ID		
1	EC00	Axis No.=0	1		
2	EC01	Axis No.=1	2		
3	EC02	Axis No.=2	3		
4	EC03	Axis No.=3	4		
5	EC04	Axis No.=4	5		
6	EC05	Axis No.=5	6		
7	EC06	Axis No.=6	7		
8	EC07	Axis No.=7	8		
9	EC08	Axis No.=8	9		
10	EC09	Axis No.=9	10		
11	EC10	Axis No.=10	11		
12	EC11	Axis No.=11	12		
13	EC12	Axis No.=12	13		
14	EC13	Axis No.=13	14		
15	EC14	Axis No.=14	15		
16	EC15	Axis No.=15	16		

Figure 11-2 Add 16 devices

Next, click on the icon of Add Indirect Device of No. 1, and the state will be as shown in the figure 11-3 below.

When the state is as shown in the figure, the settings of the connected device are completed.

Device-Specific Settings

Allowable Number of Devices/PLCs 16

Add Device

[Indirect Device Configuration](#)

No.	Device Name	Settings	Device ID	Add Indirect Device	Update Indirect Device Settings
1	EC00	Axis No.=0	1		
2	EC01	Axis No.=1	2		
3	EC02	Axis No.=2	3		
4	EC03	Axis No.=3	4		
5	EC04	Axis No.=4	5		
6	EC05	Axis No.=5	6		
7	EC06	Axis No.=6	7		
8	EC07	Axis No.=7	8		
9	EC08	Axis No.=8	9		
10	EC09	Axis No.=9	10		
11	EC10	Axis No.=10	11		
12	EC11	Axis No.=11	12		
13	EC12	Axis No.=12	13		
14	EC13	Axis No.=13	14		
15	EC14	Axis No.=14	15		
16	EC15	Axis No.=15	16		

No.	Indirect Device	Device ID Address	Initial ID
1	Indirect1	Axis No.=1	[#INTERNAL]USR29980

Figure 11-3 Add indirect devices

11.2.2. Import and export of text table

Export the text table of the file.

The table registered in the file is [1] [2][3]. Select [1] [2][3] in the export table and export it.

Export Text Table

File Code Type: Unicode Extension (txt)

Export File Name: C:\TEMP\StringTable.txt

Export Table

	Table Name	Language
<input checked="" type="checkbox"/>	Table 1	Japanese
<input checked="" type="checkbox"/>	Table 2	Chinese(Simplified)
<input checked="" type="checkbox"/>	Table 3	ASCII
<input type="checkbox"/>	Table 4	ASCII
<input type="checkbox"/>	Table 5	ASCII
<input type="checkbox"/>	Table 6	ASCII
<input type="checkbox"/>	Table 7	ASCII

Export Cancel

Figure 11-4 Export Text Table

Next, import the exported file to the project file you use.

Before importing it, make sure that the text No. described in the chapter '10. Text Table' is blank in the text table that is an import destination. If text is input, it will be overwritten at the time of import. If you don't change the import destination, it will be imported to the text table number [1][2][3].

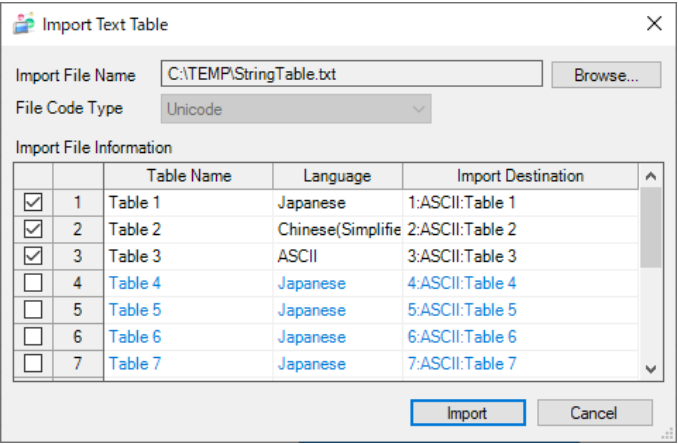


Figure 11-5 Import Text Table

11.2.3. Copy From Another Project

For Copy From Another Project, no screen is necessary except 2 kinds of screens. Disable all except Base Screen and Window Screen.

- Base Screen B9990, B9992, B9993, B9994
- Window Screen W2000

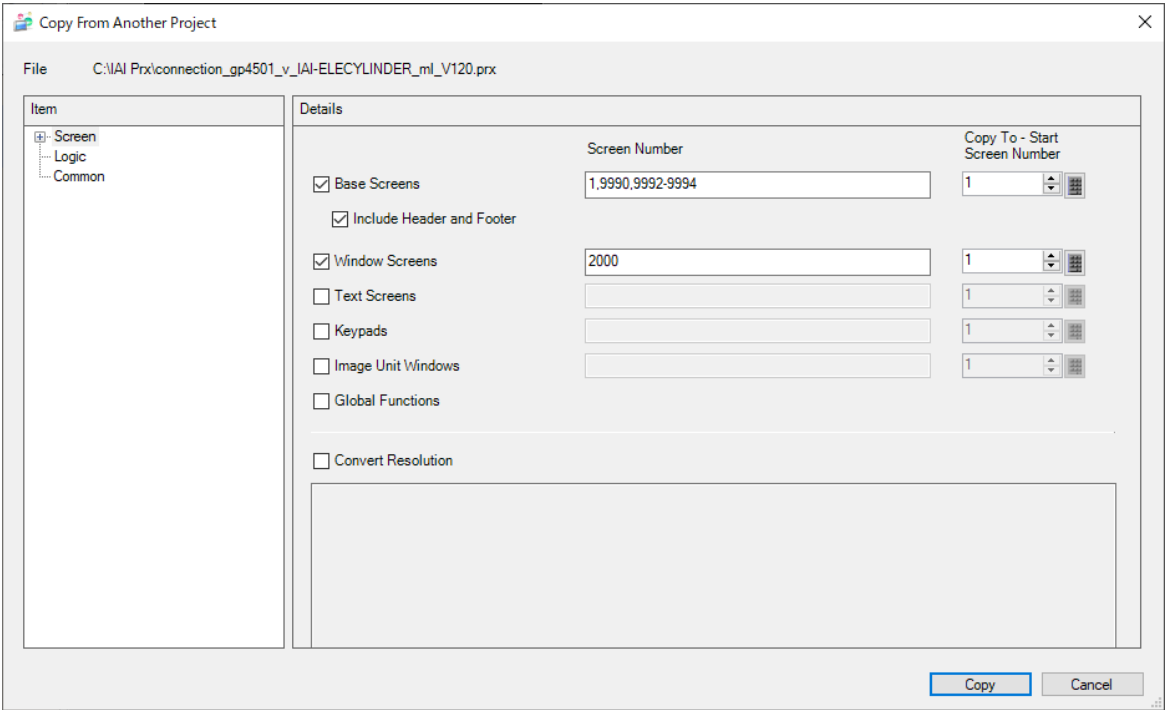


Figure 11-6 Copy From Another Project

When copy is properly completed, Figure 11-7 appears.

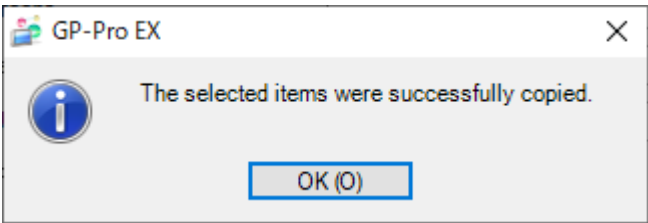


Figure 11-7 Completion message of Copy From Another Project

Confirm the copy result with the Screen List. If there are B0001, B9990, B9992, B9993, B9994, and W2000 in the Screen List, copy is completed. (Figure 11-8)

The screens in red cannot be edited and the details of screen settings cannot be confirmed.

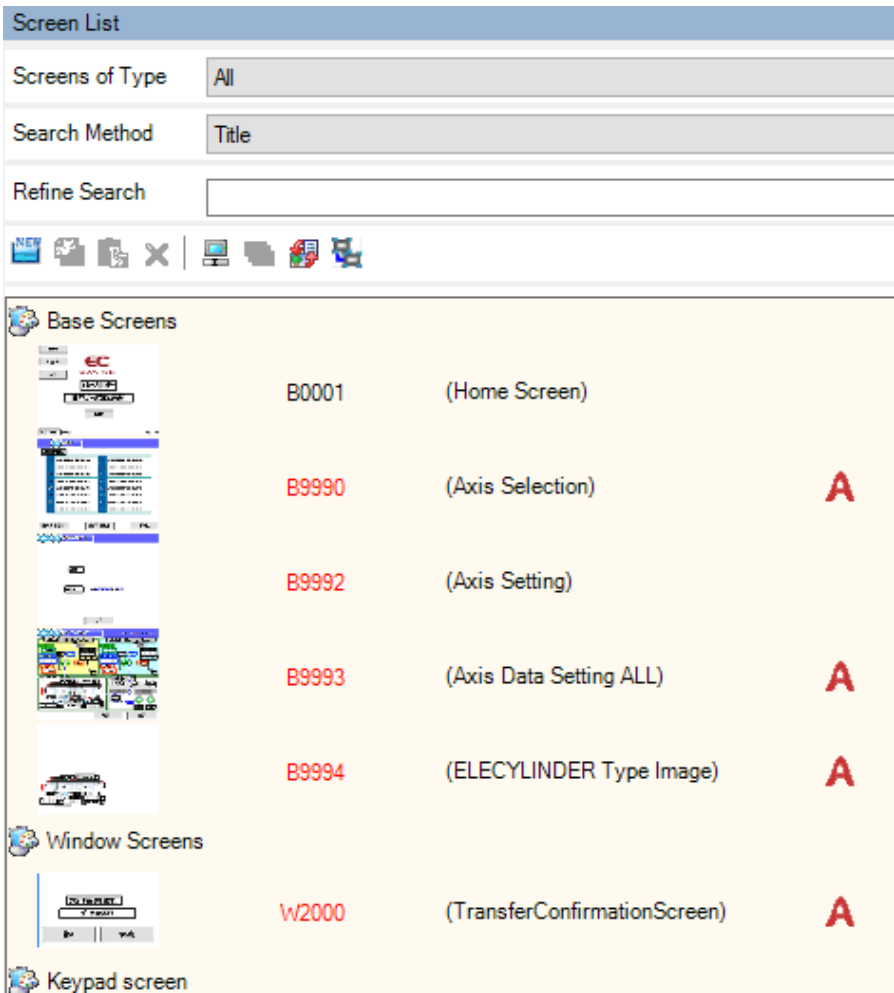


Figure 11-8 Screen List when copy is properly completed

12. Incorporating project data

12.1. Change the communication port.

On the GP-Pro EX menu bar, select [Project]->[System Settings]->[Device/PLC].
And then, select [Change Device/PLC].

The screenshot shows the 'Device/PLC' configuration window. At the top, there are links for 'Add Device/PLC' and 'Delete Device/PLC'. Below this, a tab labeled 'Device/PLC 1' is active. The 'Summary' section shows 'Manufacturer' as 'IAI Corporation', 'Series' as 'ELECYLINDER SIO', and 'Port' as 'COM2'. A 'Text Data Mode' section shows a value of '1' with a 'Change' link. The 'Communication Settings' section includes radio buttons for 'SIO Type' (RS232C, RS422/485(2wire) selected, RS422/485(4wire)), a 'Speed' dropdown set to '38400', 'Data Length' (7, 8 selected), 'Parity' (NONE selected, EVEN, ODD), 'Stop Bit' (1 selected, 2), 'Flow Control' (NONE selected, ER(DTR/CTS), XON/XOFF), and fields for 'Timeout' (3 sec), 'Retry' (2), and 'Wait To Send' (2 ms). A 'Default' button is at the bottom right. A red box highlights the 'Change Device/PLC' link in the top right corner.

Change the [Port] to COM1 or COM2 according to the connection configuration to be used and push the [Change] button to confirm the setting.

The screenshot shows the 'Change Device/PLC' dialog box. It has two main sections: 'Current Settings' and 'Settings After Conversion'. The 'Current Settings' section shows 'Device/PLC' with 'Manufacturer' as 'IAI Corporation', 'Series' as 'ELECYLINDER SIO', 'Number of Devices/PLCs' as '16 Unit(s)', and 'Port' as 'COM2'. A downward arrow points to the 'Settings After Conversion' section. This section shows the same fields, but the 'Port' field is a dropdown menu with 'COM2' selected. A red box highlights the dropdown menu, showing options: 'COM1', 'COM2', and 'USB/SIO(RS422/485)'. At the bottom, there are buttons for 'Change', 'Change Specifying Address Conversion', and 'Cancel'. A link 'Refer to the manual of this Device/PLC' is also present.

12.2. Communication Setting Change (the communication type included)

On the GP-Pro EX menu bar, select [Project]->[System Settings]->[Device/PLC].

Set the type described in the cable diagram to be used for the communication type.

Each item of Speed, Data Length, Parity, and Stop Bit must be the same as that of the ELECYLINDER to be connected. And close the [Device/PLC] setting screen. The communication type that can be used differs depending on a display unit type or communication port. When changing the communication type, select a display unit type and a communication port at first according to the connection configuration to be used.

Device/PLC

[Add Device/PLC](#) [Delete Device/PLC](#)

Device/PLC 1

Summary [Change Device/PLC](#)

Manufacturer Series Port

Text Data Mode [Change](#)

Communication Settings

SIO Type ☐ RS232C ☒ RS422/485(2wire) ☐ RS422/485(4wire)

Speed ▼

Data Length ☐ 7 ☒ 8

Parity ☒ NONE ☐ EVEN ☐ ODD

Stop Bit ☒ 1 ☐ 2

Flow Control ☒ NONE ☐ ER(DTR/CTS) ☐ XON/XOFF

Timeout (sec)

Retry

Wait To Send (ms)