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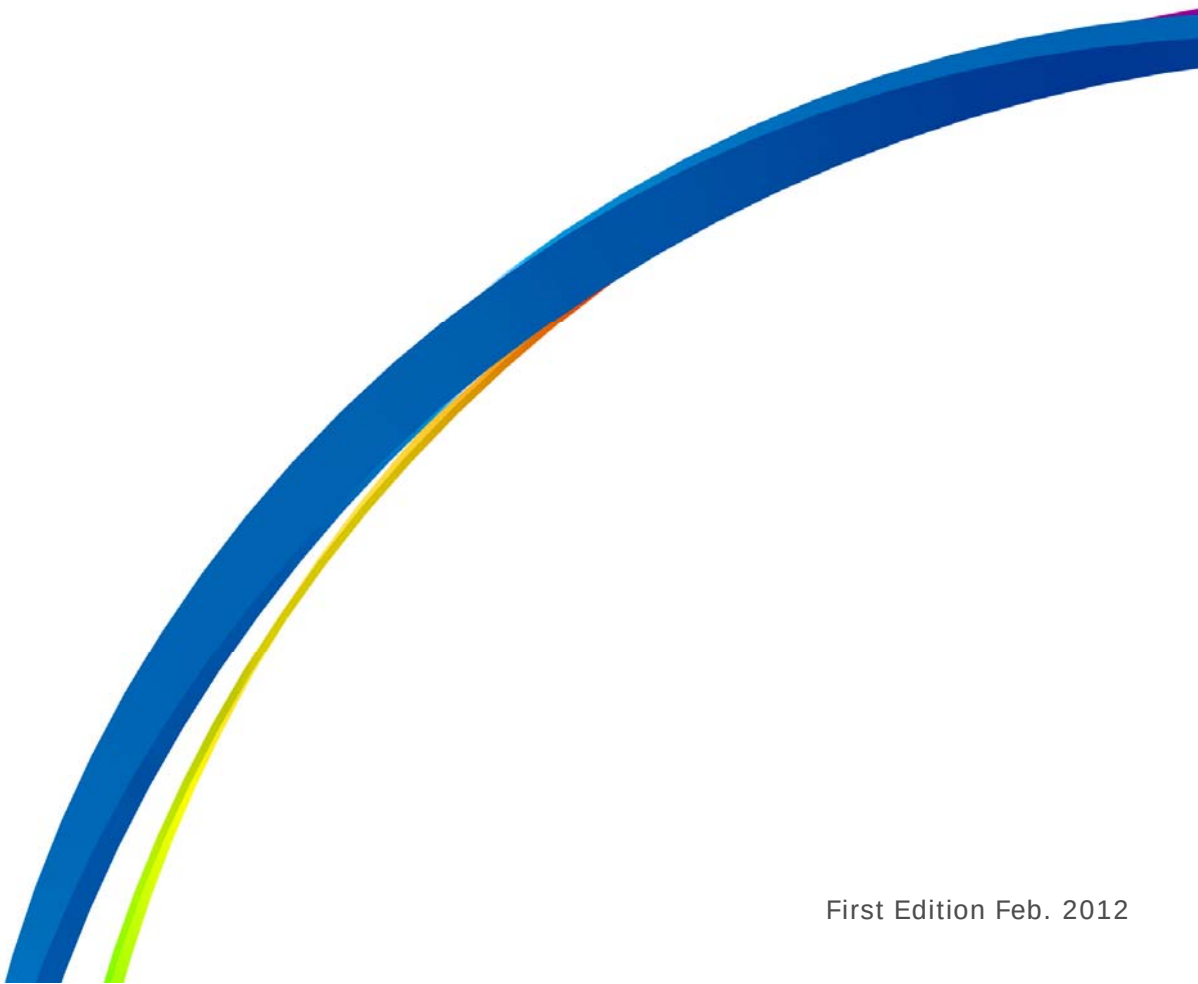
ST40X→GP4000 Series

Replacement Guidebook



First Edition Feb. 2012

Preface

This manual introduces the procedures to replace a unit in ST40X series (ST-400/401/402/403) with a unit in GP4000 series.

Model in use	Replacement model
ST-400	**GP-4201TW**
ST-401	
ST-402	**GP-4203T**
ST-403	**GP-4201T**

Contents

Chapter 1 Specification Comparison

1.1 Specifications of ST-400/ST-401 and GP-4201TW

<table>
<tr><th colspan="3"></th><th>ST-400/ST-401</th><th>GP-4201TW</th></tr>
<tr><td colspan="3"></td><td>  </td><td>  </td></tr>
<tr><td colspan="3">Display Type</td><td>Monochrome LCD</td><td>UP! TFT color LCD</td></tr>
<tr><td colspan="3">Display Colors, Levels</td><td>Monochrome, 2 levels/
Monochrome, 8 levels</td><td>UP!
65,536 colors (without blink)/
16,384 colors (with blink)</td></tr>
<tr><td colspan="3">Display Resolution</td><td colspan="2">QVGA (320x240 pixels)</td></tr>
<tr><td colspan="3">Panel Cutout Dimensions (mm)</td><td colspan="2">118.5(W) x 92.5(H)</td></tr>
<tr><td colspan="3">External Dimensions (mm)</td><td>130(W) x 104(H) x 41(D)</td><td>132(W) x 106(H) x 42(D)</td></tr>
<tr><td colspan="3">Touch Panel Type</td><td>Matrix</td><td>NEW!
Resistive film (Ananlog)
→See 2.2</td></tr>
<tr><td rowspan="2">Memory</td><td colspan="2">Application</td><td>640KB</td><td>UP! 8MB</td></tr>
<tr><td colspan="2">SRAM</td><td>96KB</td><td>UP! 128KB</td></tr>
<tr><td colspan="3">Backup Battery</td><td colspan="2">Secondary Battery (rechargeable)</td></tr>
<tr><td colspan="3">Function Switch</td><td>✔</td><td>-</td></tr>
<tr><td rowspan="3">Serial I/F</td><td rowspan="2">COM1</td><td>ST-400</td><td>9 pin D-Sub (male)
RS-422</td><td rowspan="2">9 pin D-Sub (male)
RS-232C
→See 2.6.1</td></tr>
<tr><td>ST-401</td><td>9 pin D-Sub (male)
RS-232C</td></tr>
<tr><td colspan="2">COM2</td><td>-</td><td>9 pin D-Sub (male)
RS-422/485
→See 2.6.1</td></tr>
<tr><td rowspan="2">USB I/F</td><td colspan="2">Type A</td><td rowspan="2">-</td><td rowspan="2">NEW! ✔ →See 2.4</td></tr>
<tr><td colspan="2">Type mini B</td></tr>
<tr><td colspan="3">Tool Connector Interface</td><td>✔</td><td>-</td></tr>
</table>

Printer Interface	-	**NEW!** USB (Type A)

1.2 Specifications of ST-402 and GP-4203T

		ST-402	GP-4203T
			
Display Type		Monochrome LCD	**UP!** TFT color LCD
Display Colors		Monochrome, 2 levels/ Monochrome, 8 levels	**UP!** 65,536 colors (without blink)/ 16,384 colors (with blink)
Display Resolution		QVGA (320x240 pixels)	
Panel Cutout Dimensions (mm)		118.5(W)×92.5(H)	
External Dimensions (mm)		130(W) x 104(H) x 41(D)	132(W) x 106(H) x 42(D)
Touch Panel Type		Matrix	**NEW!** Resistive film (Analog) →See 2.2
Memory	**Application**	640KB	**UP!** 16MB
	SRAM	96KB	**UP!** 320KB
Backup Battery		Secondary Battery (rechargeable)	
Function Switch		✔	-
Serial Interface	**COM1**	9 pin D-Sub (female) RS-485 (for MPI only)	9 pin D-Sub (female) RS-485 (for MPI only) →See 2.6.1
	COM2	9 pin D-Sub (male) RS-422	-
Ethernet Interface		-	**NEW!** 10BASE-T/100BASE-TX
USB Interface	**Type A**	-	**NEW!** ✔ →See 2.4
	Type mini B		
Tool Connector Interface		✔	-
Printer Interface		-	**NEW!** USB (Type A)

1.3 Specifications of ST-403 and GP-4201T

		ST-403	GP-4201T
			
Display Type		Monochrome LCD	**UP!** TFT color LCD
Display Colors		Monochrome, 2 levels/ Monochrome, 8 levels	**UP!** 65,536 colors (without blink)/ 16,384 colors (with blink)
Display Resolution		QVGA (320x240 pixels)	
Panel Cutout Dimensions (mm)		118.5(W) x 92.5(H)	
External Dimensions (mm)		130(W) x 104(H) x 41(D)	132(W) x 106(H) x 42(D)
Touch Panel Type		Matrix	**NEW!** Resistive film (Analog) →See 2.2
Memory	**Application**	640KB	**UP!** 16MB
	SRAM	96KB	**UP!** 320KB
Backup Battery		Secondary Battery (rechargeable)	
Function Switch		✔	-
Serial I/F	**COM1**	9 pin D-Sub (male) RS-232C/422	9 pin D-Sub (male) RS-232C/422/485 →See 2.6.1
Ethernet Interface		10BASE-T	**NEW!** 10BASE-T/100BASE-TX
USB I/F	**Type A**	-	**NEW!** ✔ →See 2.4
	Type mini B		
Tool Connector Interface			-
Printer Interface		-	**NEW!** USB (Type A)

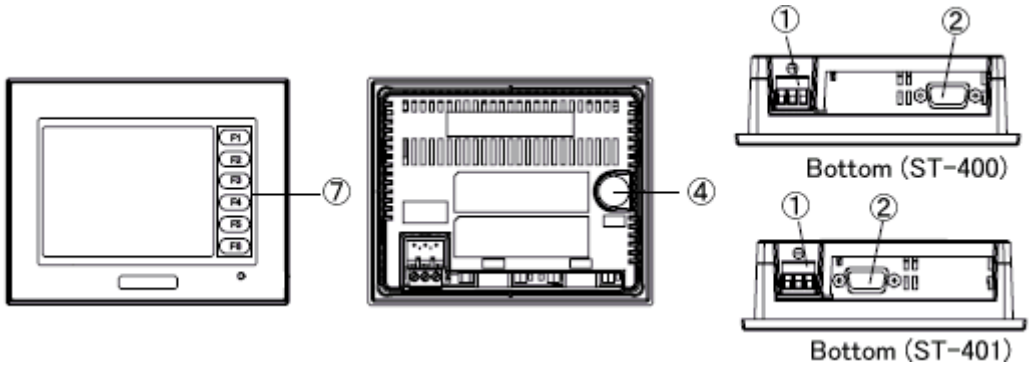
Chapter 2 Compatibility of Hardware

2.1 Locations of connector

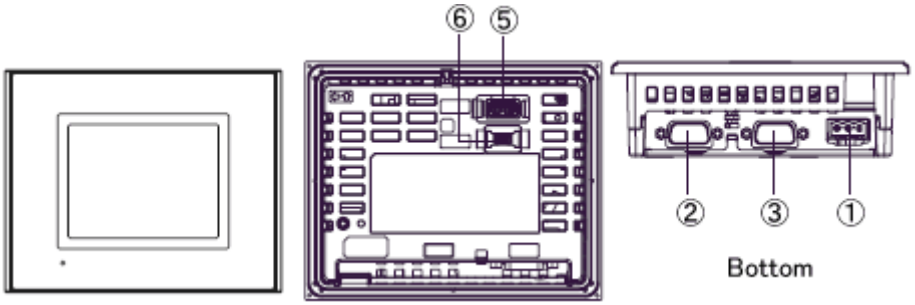
Connector locations on ST40X series and GP4000 series are as follows:

Connector locations on ST400/401 and GP-4201TW

ST-400/401



GP-4201TW

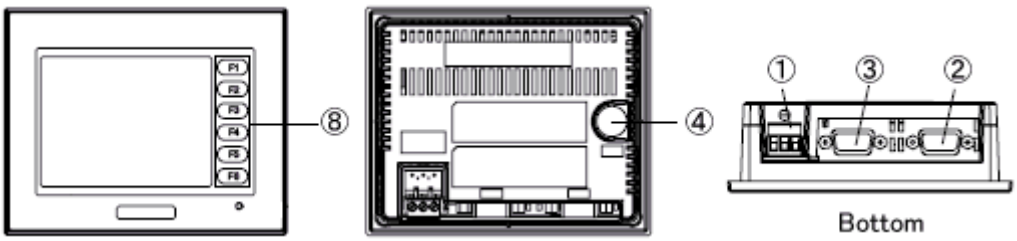


Interface names

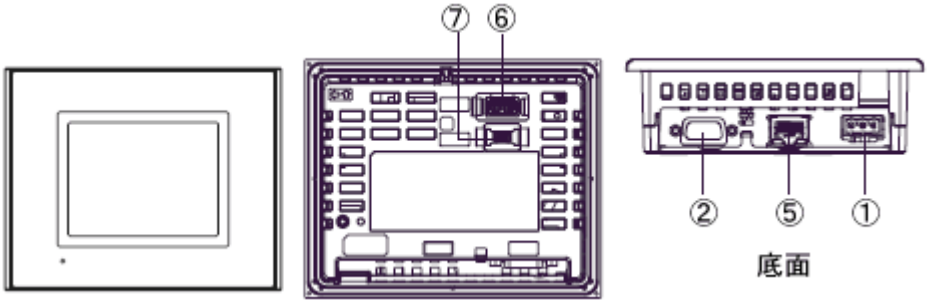
	ST-400/401	GP-4201TW
1	Power Connector	
2	Serial Interface (COM1)	
3	-	Serial Interface (COM2)
4	Tool Connector	-
5	-	USB Interface (Type A)
6	-	USB Interface (Type mini B)
7	Function Switch	-

Connector locations on ST402 and GP-4203T

ST-402



GP-4203T

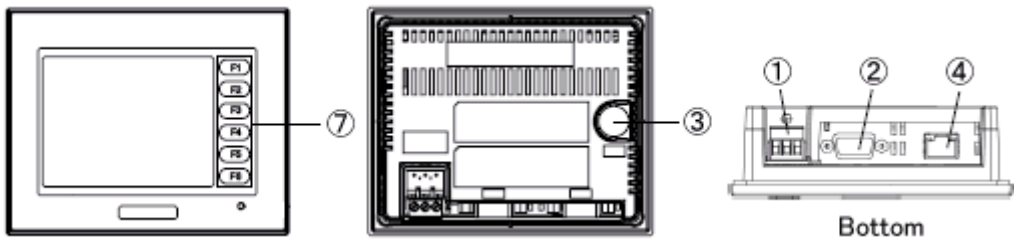


Interface names

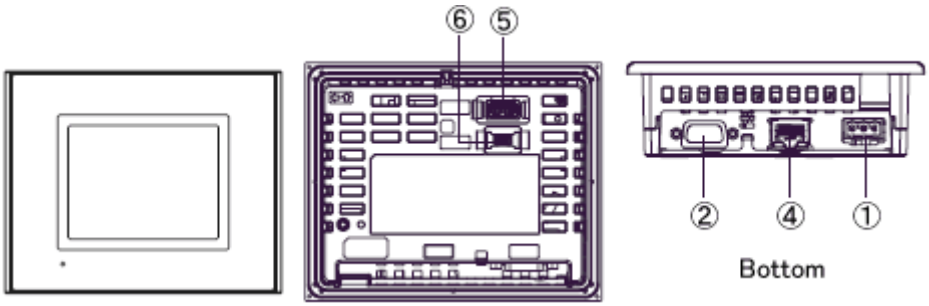
	ST-402	GP-4203T
1	Power Connector	
2	Serial Interface (COM1)	
3	Serial Interface (COM2)	-
4	Tool Connector	-
5	-	Ethernet Interface
6	-	USB Interface (Type A)
7	-	USB Interface (Type mini B)
8	Function Switch	-

Connector locations on ST403 and GP-4201T

ST403



GP-4201T



Interface names

	ST403	GP-4201T
1	Power Connector	
2	Serial Interface (COM1)	
3	Tool Connector	-
4	-	Ethernet Interface
5	-	USB Interface (Type A)
6	-	USB Interface (Type mini B)
7	Function Switch	-

2.2 Touch Panel specifications

The touch panel type for GP4000 series is “Resistive Film (Analog) type”.
For the resistive film (Analog) type, if you touch two points at the same time, operation goes like this:

GP-4201TW: The touch point of the coordinates located between those two points is recognized.
GP-420XT: Only the 1st touched point is recognized, but the 2nd point is not.

If you have applied the two-point touch input on ST40X series, we recommend you to change to the one-point touch input using the switch delay function of GP-Pro EX.

2.3 Display Colors

The display type of ST40X series is Monochrome LCD, but GP4000 series has TFT color LCD. After replacement, the black and white display changes to the color one.
When data of a monochrome model are converted to data of a color model with GP-Pro EX, the converted data may be displayed in colors except black and white depending on a setting of GP-PRO/PBIII. After conversion, please confirm the display colors of the drawing or the parts on the screens just in case.

2.4 Transfer cable

To transfer screen data to GP4000 series, use a USB transfer cable or Ethernet.
The USB cables that can be used for GP4000 series are as follows:

<table>
<tr><th></th><th>Model</th><th>Connector Type</th><th>Connector on GP</th></tr>
<tr><td rowspan="2">Options</td><td>CA3-USBCB-01</td><td> 
</td><td>USB (Type A)</td></tr>
<tr><td>ZC9USCBMB1</td><td rowspan="2"> 
</td><td rowspan="2">USB (Type mini B)</td></tr>
<tr><td>Commercial Item</td><td>-</td></tr>
</table>

Please note that the cables (GPW-CB02, GPW-CB03, GP430-CU02-M) for ST40X series cannot be used for GP4000 series.

2.5 Function Switch

GP4000 series does not have function switches. If you use the functions of the function switches specified on ST40X series, please make settings of the switches to replace the function keys on GP-ProEX.

2.6 Interface

2.6.1 Serial Interface

The COM1 port on ST-402 is RS-485 (MPI) and the COM2 port on it is RS-422. But GP-4203T has RS-485 (MPI) only. After replacing ST-402 with GP-4203T, the devices with RS-422 that used to be connected to the COM2 port (RS-422) on ST-402 cannot be connected to GP-4203T.

For replacing ST-402 that used to be connected to the RS-485 (MPI) devices with GP-4203T, the communication cable for GP4203T is, however, different from that for ST-402. For the communication cable for GP-4203T, see GP-Pro EX Device/PLC Connection Manual.

(http://www.proface.co.jp/otasuke/files/manual/soft/gpproex/new/device/index.htm)

The other cables can be used.

2.7 Peripheral units and option units

2.7.1 Barcode reader connection

GP4000 series is not equipped with a tool port. A barcode reader that used to be connected to the tool port on ST40X series cannot be used. However, GP4000 series allows you to connect a barcode reader on its USB interface (Type A).

For the models GP4000 series supports, see [OtasukePro!] (http://www.pro-face.com/otasuke/).

2.8 Power Consumption

The power consumption of ST40X series is different from that of GP4000 series.

ST40X Series	GP4000 Series
7W or lower	9.6W or lower

For the detailed electric specifications, see the hardware manual.

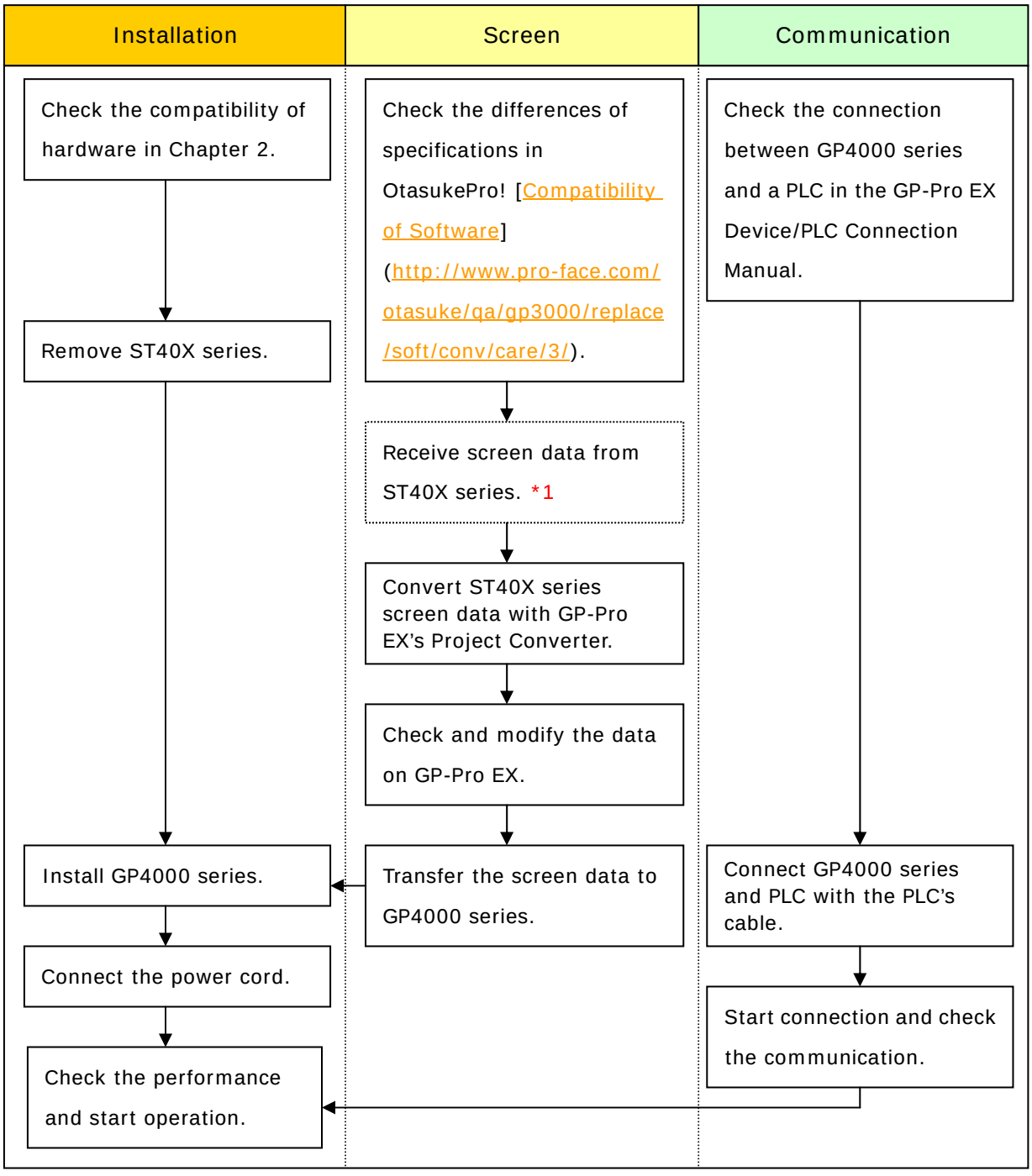
2.9 Materials/Colors of the body

The material and the colors of ST40X series and GP4000 series are as follows:

	ST40X Series	GP4000 Series
Color	Light Gray	
Material	Resin	Resin with glass

Chapter 3 Replacement Procedure

3.1 Work Flow



*1: This step is required if screen data is saved only in the GP unit, not in any other device.

3.2 Preparation

Requirements for receiving screen data from ST40X series *1	**ST-400/401/402:** PC in which GP-PRO/PBIII for Windows C-Package02 V6.3 or later is installed. *2 **ST-403:** PC in which GP-PRO/PBIII for Windows C-Package03 V7.2 or later is installed *2
	Transfer cable (The following three types of cables are available) ・ GPW-CB02 (D-sub 9-pin to the PC) ・ GPW-CB03 (USB to the PC) *3 ・ GP430-CU02-M or GPW-SET (D-sub 25-pin to the PC) * Also, it's possible for ST-403 to send/receive data via Ethernet.
Requirements for converting screen data of ST40X series and transferring the converted data to GP4000 series	PC in which GP-Pro EX Ver.3.01 or later is installed
	Transfer cable (The following three types of cables are available) ・A USB transfer cable (model: CA3-USBCB-01) ・A USB data transfer cable (model: ZC9USCBMB1) ・A commercial USB cable (USB Type A/mini B) * Possible to send/receive a screen with a USB storage device or on Ethernet.

*1: This step is required if screen data is saved only in the GP unit, not in any other device

*2: Please use the same version or later as or than that of the software used during creating screens on GP2000 series.

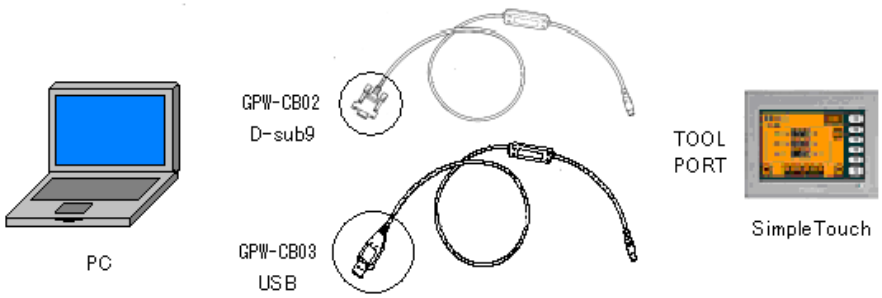
If you don't know the version, we recommend you to use the newest version. The newest version is GP-PRO/PBIII for Windows C-Package03 (SP2) V7.29. Those who have GP-PRO/PBIII for Windows C-Package03 V7.0 can download it from our web site called [OtasukePro!] (http://www.pro-face.com/otasuke/).

*3: GPW-CB03 is supported by GP-PRO/PBIII for Windows C-Package02(SP2)V6.23 or later. You need to install a driver from [Download] on our Web site called [OtasukePro!] (http://www.pro-face.com/otasuke/)

3.3 Receive screen data from ST40X series

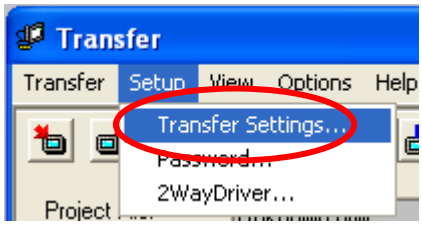
This section explains, as an example, how to receive screen data from ST40X series using a transfer cable, GPW-CB02 or GPW-CB03. If you have backed up screen data, this step is unnecessary; skip to the next section [3.4 Convert screen data with the Project Converter].

1. Connect a transfer cable to a unit in ST40X series.

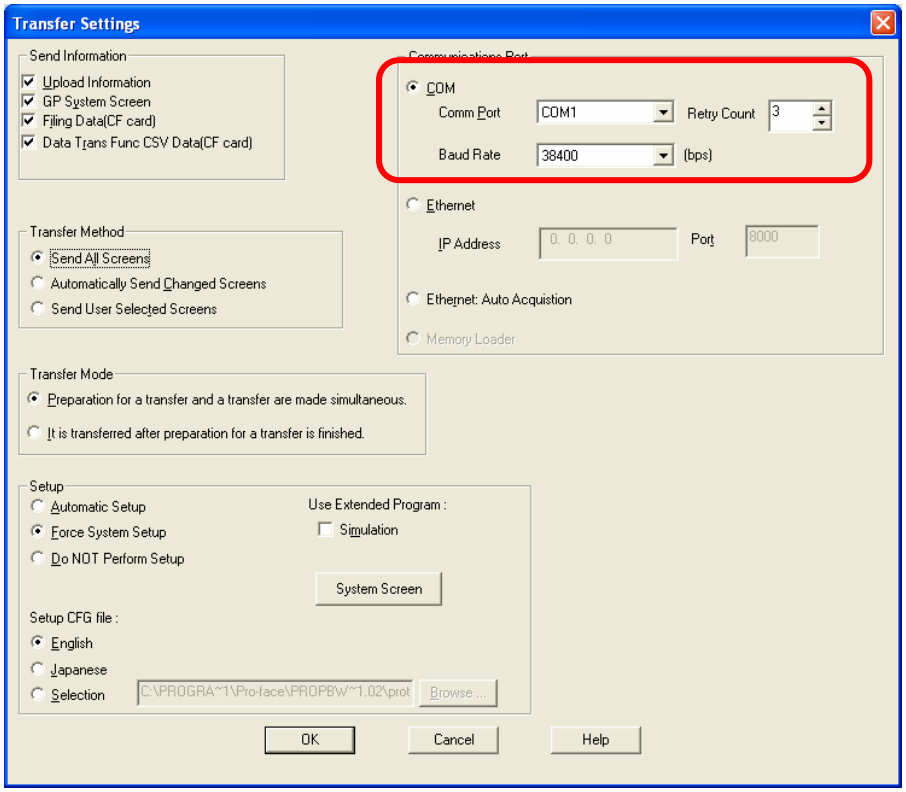


2. Start up GP-PRO/PBIII for Windows and click the [Transfer] icon on the Project Manager (Specify a desired project file.)

3. On the [Transfer] window, select the [Setup] menu and click [Transfer Settings...].

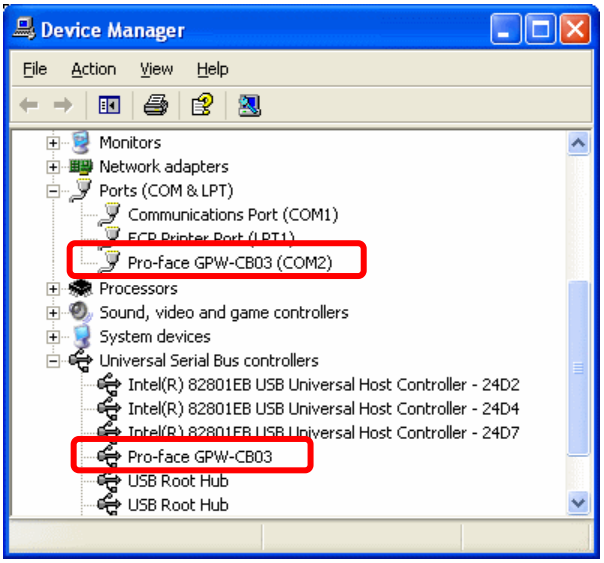


4. In the Communication Port field, select [COM], specify the COM port to which the cable is connected, and click [OK].

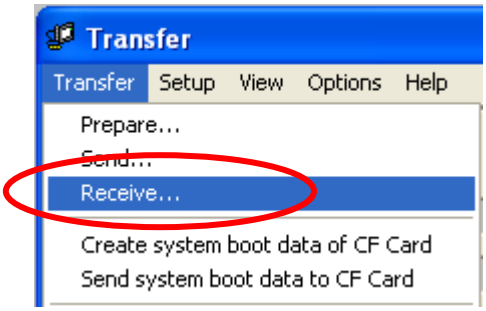


If you use a USB transfer cable (GPW-CB03)

You can check the COM port for the USB transfer cable (GPW-CB03), which is assigned to the PC, with the Device Manager of Windows.



5. Select the [Transfer] menu and click [Receive..].



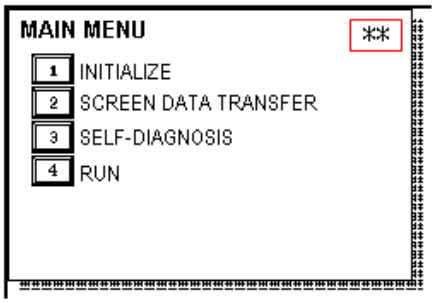
6. Specify the location to save the received screen data at and the project file name and save them.

In case there is no Upload Information

"Upload Information" is necessary to receive screen data from ST40X series. It needs to be included in screen data when transferring screen data to the display unit beforehand. The Upload Information is sent to the display unit by default, however, you may check off the box of Upload Information to prevent screen reception by a third party.

You can check in the following way if the Upload Information has been sent or not.

1. Enter into the GP's Offline mode
2. If there are 2 asterisk (*) marks in the Main menu as shown below, the Upload Information has been sent.

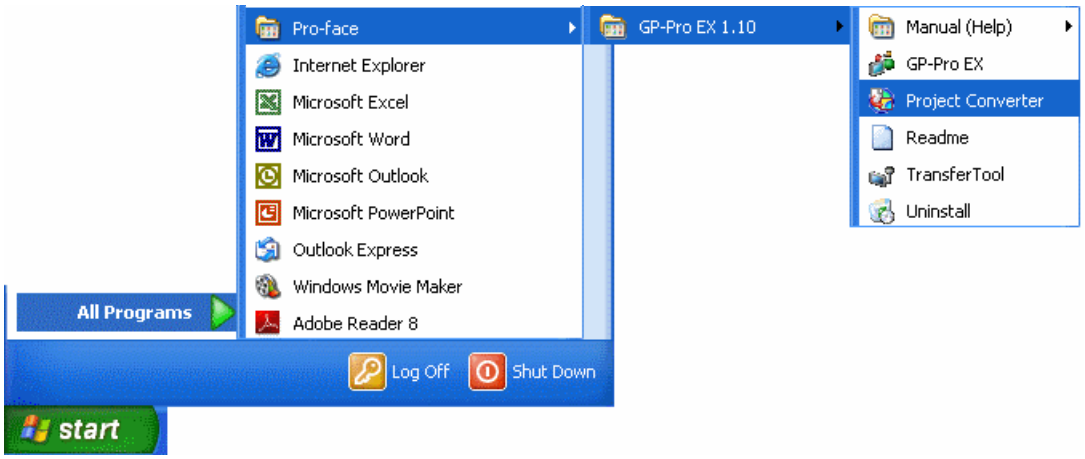


If not, there is no Upload Information sent. In this case, a message, which indicates there is no Upload Information," appears and you cannot receive the data.

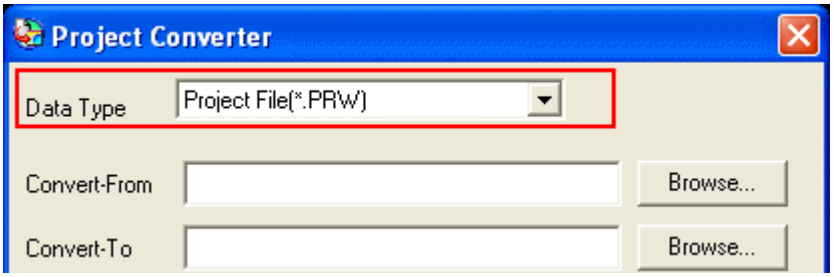
3.4 Convert screen data with the Project Converter

Convert a project file (*.prw) for ST40X series with the GP-Pro EX's Project Converter.

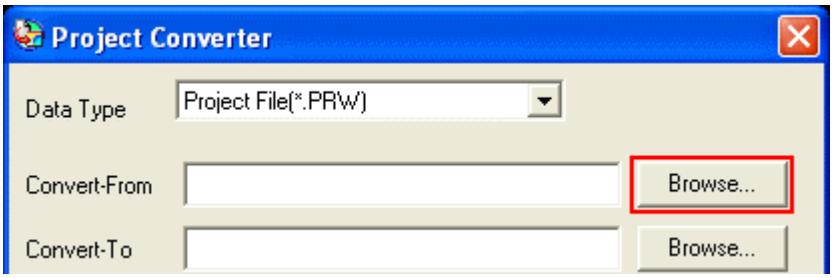
1. Click the [Start] button, select [All Programs] ([Programs]->[Pro-face]->[GP-Pro EX *.**]->[Project Converter]) (For this part, [*.**], the version of the software you use is displayed.)

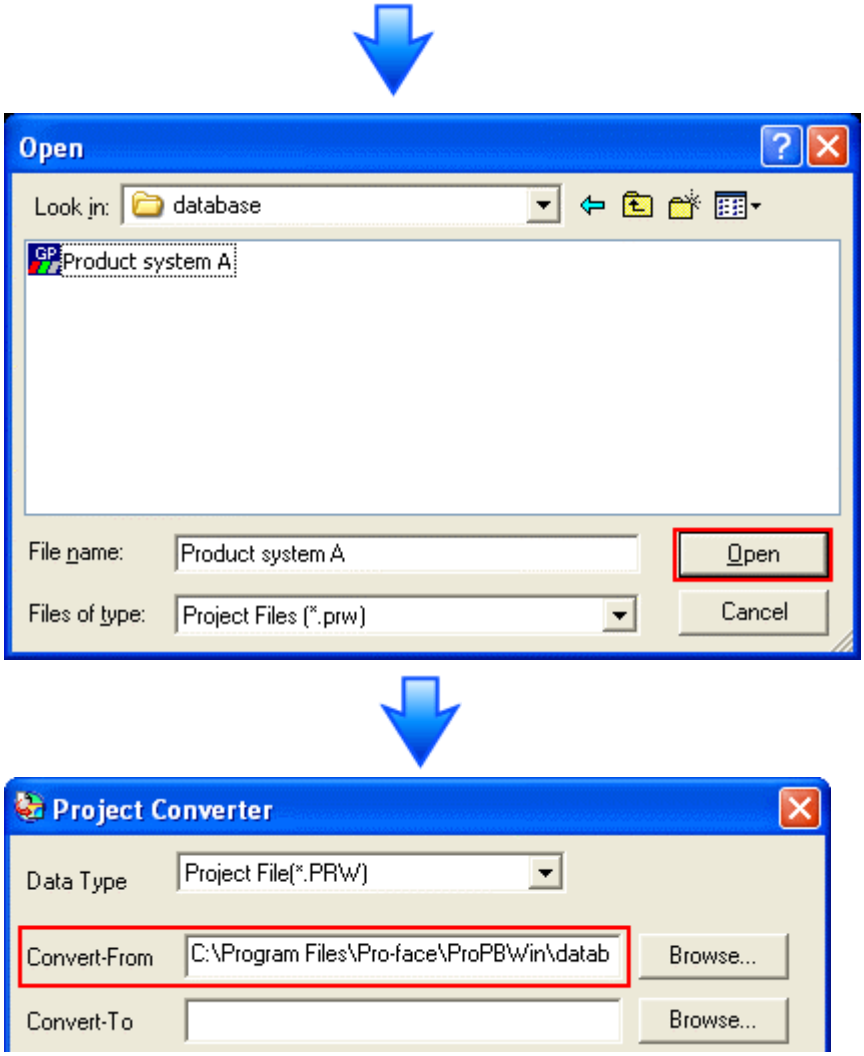


2. The Project Converter starts up and the [Project Converter] dialog box opens. Select [Project File (*.PRW)] in the [Data Type].

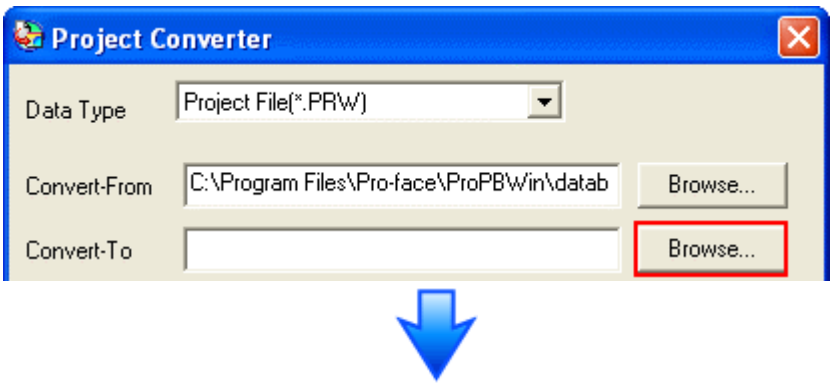


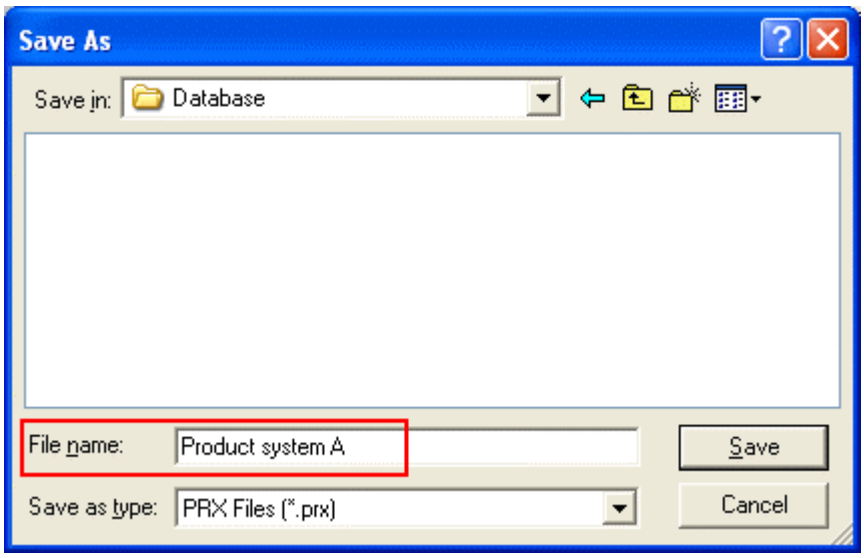
3. Click the [Browse...] button and select a project file (e.g.: "Project system A.prw"). Click [Open], and the file will be set in [Convert-From].

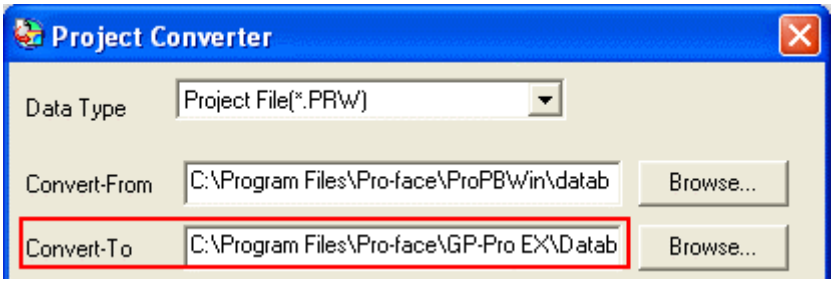




4. In [Convert-To], designate a GP-Pro EX's project file (*.prx). Click the [Browse...] button and enter a new [File Name] (e.g.: "Product system A.prx"). Click [Save], and a new project file will be set to [Convert-To].

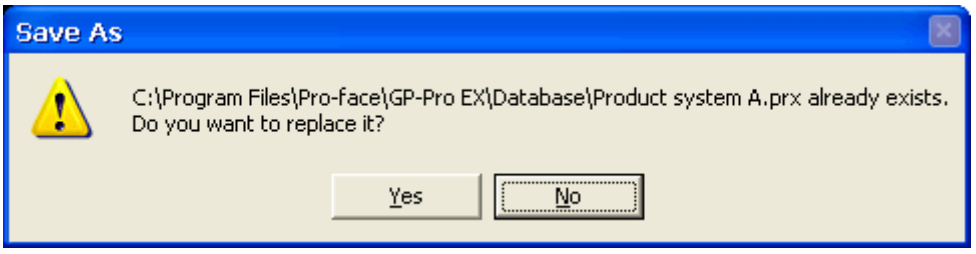




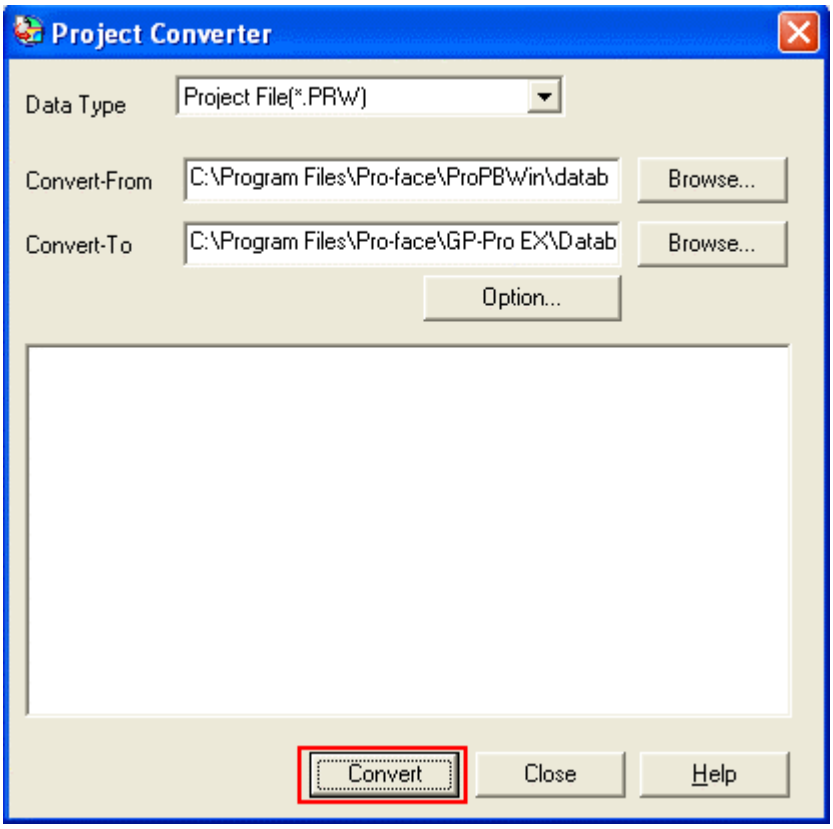


NOTE

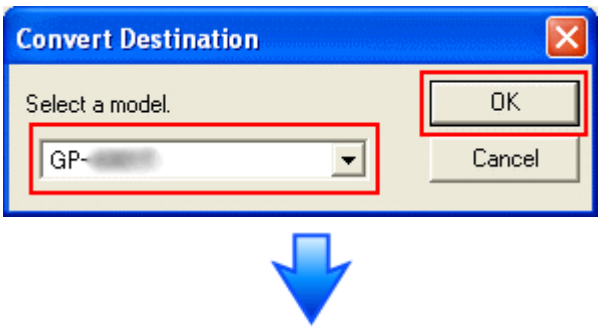
When a convert-to file exists, the window that confirms whether or not to overwrite the file is displayed.

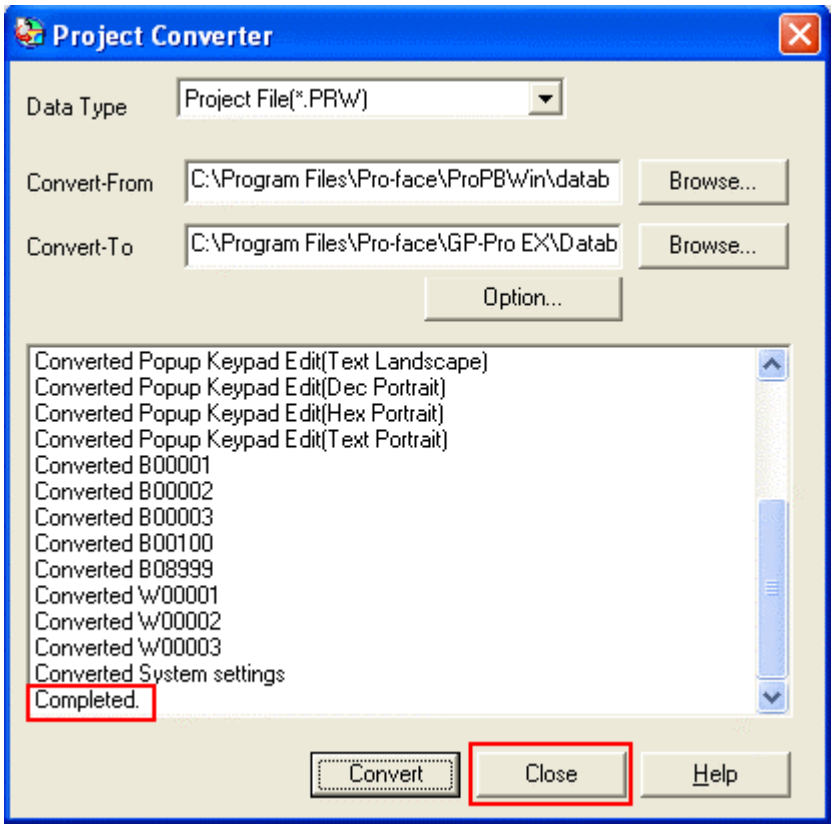


5. Click [Convert] and start the conversion.



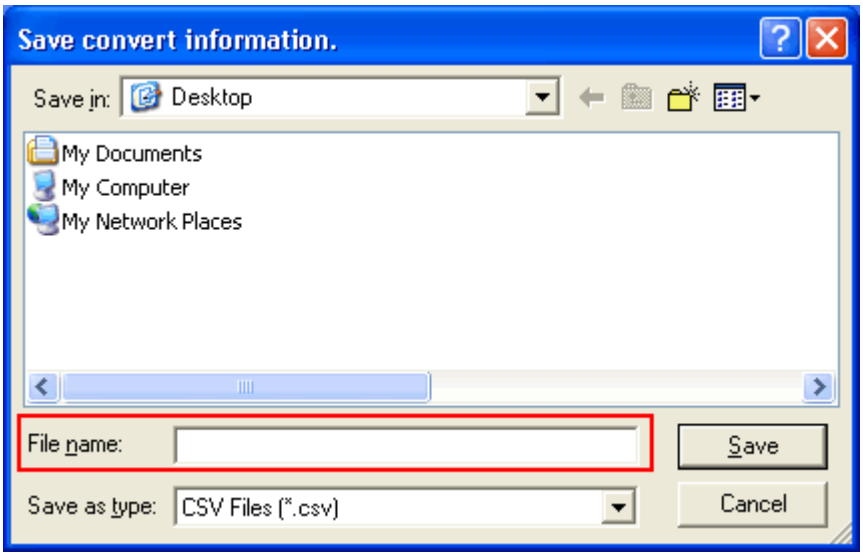
6. If you are asked about the [Convert-To] type as shown below, select [GP-4501TW] on the pull-down menu. Click [OK].





If an error message is displayed during conversion...
If an error message is displayed during conversion, refer to [Project Converter Error Message] (http://www.pro-face.com/otasuke/qa/gp3000/replace/soft/conv/project_converter_error.html) on our Web site called [OtasukePro!] for the cause and the solution.

7. After conversion, the [Save convert information] dialog box appears. If you click [Save], you can save the conversion information in a CSV file format.



NOTE
Because the differences made at the time of conversion from GP-Pro/PBIII for Windows are described in the saved file, the project file (*.prx) after conversion can be checked and modified according to the conversion information.

8. Click [Close] to close the [Project Converter] dialog box.
9. If you double click the project file (*.prx) after conversion, GP-Pro EX will start and the file will open.

3.5 Transfer the screen data to GP4000 series

Transfer the project file after conversion to GP4000 series.

You can transfer data to GP4000 series via

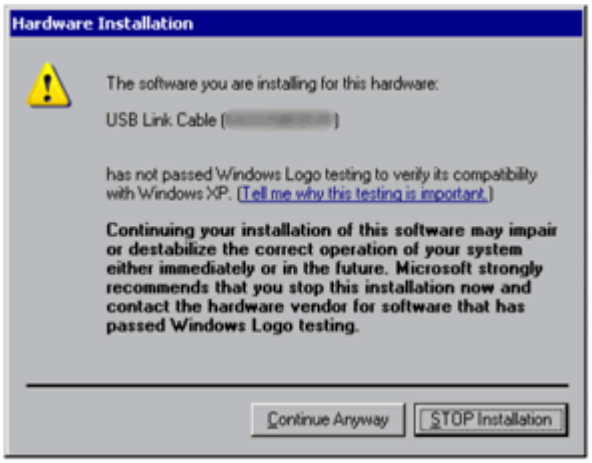
- A USB transfer cable (model: CA3-USBCB-01)
- A USB data transfer cable (model: ZC9USCBMB1)
- A commercial USB cable (USB Type A/mini B)
- A USB storage device
- Ethernet

But, this section explains, as an example, how to transfer screen data with a USB transfer cable (model: CA3-USBCB-01).

1. Connect your PC and GP4000 series with a USB transfer cable (model: CA3-USBCB-01).
   If the driver of the cable has not been installed on you PC yet, a dialog box will appear. Please follow the instructions.

NOTE

The “Hardware Installation” dialog box as shown below may appear during installing the USB driver depending on the security level of Windows® XP. Click [Continue Anyway] to start installing the driver. When installation is completed, click [Finish].



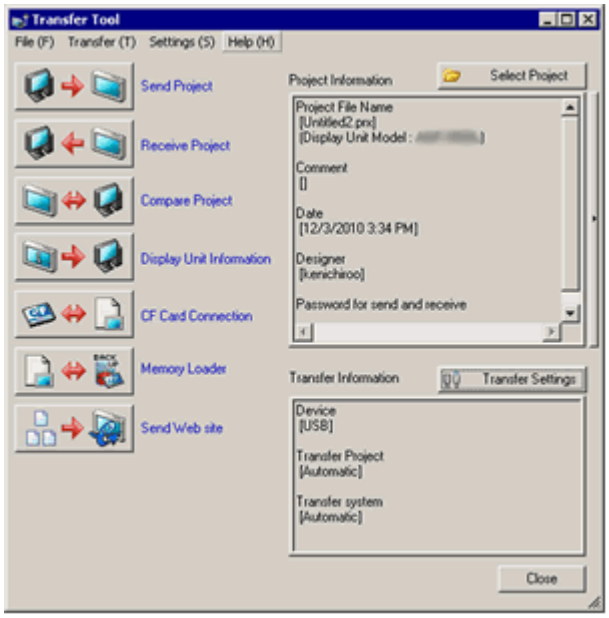
NOTE

If the following symptoms appear on Microsoft Windows® 7, go to updating “USB Data Transfer Driver” on OtasukePro!
(http://www.pro-face.com/otasuke/) for download.

- An error occurs when GP-Pro EX or Transfer Tool is installed
- An error occurs when data is transferred via a USB transfer cable (model: CA3-USBCB-01).

2. Trun on the power of GP4000 series. The “Initial Start Mode” screen will appear on the display unit. After transferring a project file once, this screen will not appear again.

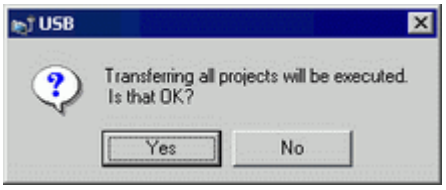
3. On the GP-Pro EX’s State Toolbar, click the [Transfer Project] icon to open the Transfer Tool.



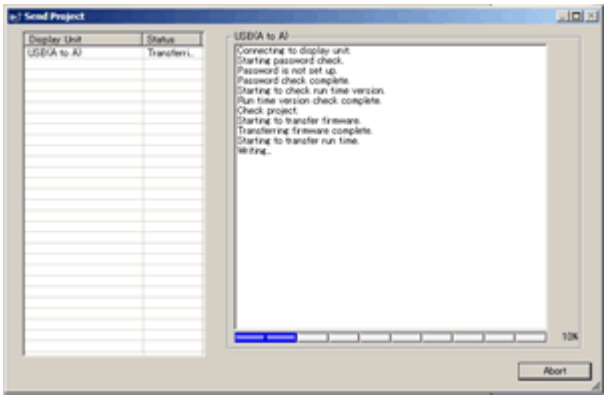
On the GP-Pro EX’s State Toolbar, click the [Transfer Project] icon to open the Transfer Tool.

4. Make sure that the [Device] in the “Transfer Settings Information” is set to [USB]. If not, click the [Transfer Setting] button to open the “Transfer Setting” dialog box. Select [USB] in the Communication Port Settings field and click [OK].

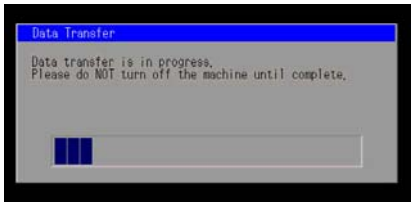
5. Click [Send Project] to start transfer. When the following dialog box appears, click [Yes]. This dialog box doesn’t appear when the same project file is sent again.



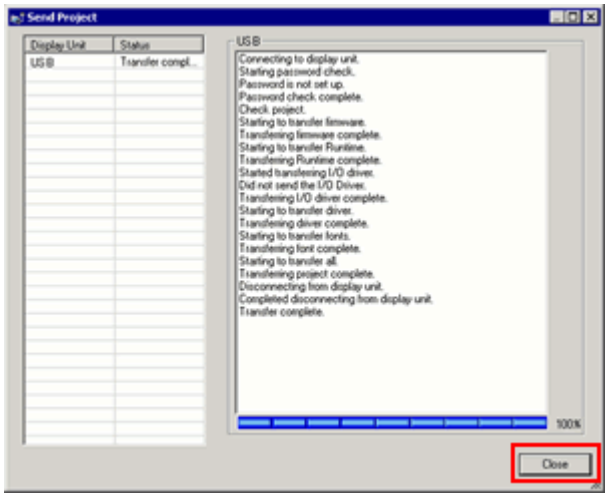
6. The following dialog box appears during transfer and you can check the communication status. (The display unit enters the Transferring mode and communication with the device such as a PLC is terminated.)



Display Screen



7. When transfer is completed, the status displayed in the dialog box will change from [Transferring] to [Complete Transfer]. Click [Close] to close the dialog box.



The display unit will be reset and a screen of the transferred project file will be displayed.

8. Close the Transfer Tool.
9. Click the [X] mark on top right of the screen or [Project]->[Exit] to close GP-Pro EX.

3.6 Differences of software

3.6.1 Differences after conversion

Check the differences of screen data after conversion from GP-PRO/PBIII to GP-Pro EX. For the details of each item, refer to our website.

http://www.pro-face.com/otasuke/qa/gp3000/replace/soft/conv/care/3/

Differences of Software

1	Touch Panel Type
2	Compatibility of Bit Switch
3	Compatibility of Alarm
4	Compatibility of Trend Graph
5	Compatibility of K tag (Input Order)
6	Compatibility of K tag (difference of Writing)
7	Compatibility of K tag (Indirect Setting)
8	Compatibility of N tag
9	Precautions for using the switch for [History Data Display] of Trend Graph on the window
10	About window display on a momentary switch during momentary operation
11	About the performance when a display area of the system window is overlapping
12	Change of Tag Process
13	About the display when a fixed Draw is placed on a Part
14	Compatibility of Text
15	Compatibility of Fill
16	Compatibility of CF Card Data
17	Precautions for conversion when filing data is saved in a CF card
18	Precautions for setting “Color Settings” to [256 Colors without blinking]
19	Precautions for loading a part with “L Tag (Library Display)”
20	Compatibility of MRK files and CPW files
21	Compatibility of V Tag/v tag and Video Screen
22	Compatibility of Extended SIO Script
23	Compatibility of Sound Data
24	Compatibility of Device Monitor

25	Compatibility of Ladder Monitor
26	Compatibility of J Tag and R Tag
27	Converting Screen Data of DOS
28	Compatibility of Standard Font
29	D Script starts right after screen change or power on. (Compatibility of D Script Trigger Condition)
30	The position shifts when loading a window screen (Compatibility of U Tag)
31	Precautions for using Screen Level Change
32	Compatibility of H tag

Chapter 4 Communication with Device / PLC

4.1 Driver list

IMPORTANT
The followings are information as of October 2011. More connectable drivers will be added. Please check our website “Otasuke Pro!” for the latest information. For the devices/PLC each driver supports, see [Connectable Devices] (http://www.pro-face.com/product/soft/gpproex/driver/driver.html).

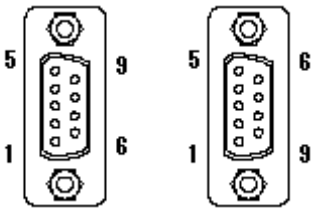
PLC	
Manufacturer	**Series**
OMRON Corporation	C/CV Series HOST Link CS/CJ Series Ethernet CS/CJ Series HOST Link CS/CJ/NJ Series EtherNet/IP
KEYENCE Corporation	KV-700/1000/3000/5000CPU Direct KZ10_80R/T Series CPU Direct KZ-10_80R/T Series CPU Direct KV-700/1000/3000/5000 Ethernet
Koyo Electronics Co., Ltd.	KOSTAC/DL Series CCM SIO KOSTAC/DL Series MODBUS TCP
JTEKT Corporation (Formerly Toyoda Machine Works)	TOYOPUC CMP-LINK SIO TOYOPUC CMP-LINK Ethernet
Sharp Manufacturing Systems Corporation	JW Series Computer Link SIO JW Series Computer Link Ethernet
TOSHIBA Machine Co., Ltd.	TC Series (TCmini/TC200)
Panasonic Electric Works, Ltd. (Formerly Matsushita Electric Works, Ltd)	FP Series Computer Link SIO
Hitachi Industrial Equipment Systems Co., Ltd	H Series Serial H Series Ethernet
HITACHI	S10 Series SIO S10V Series Ethernet
FANUC Corpration	Power Mate Series

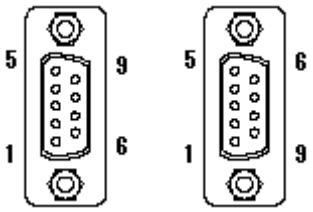
Fuji Electric Co.,Ltd.	MICREX-F Series SIO MICREX-SX Series SIO MICREX-SX Series Ethernet
Mitsubishi Heavy Industories Ltd	DIASYS Netmation MODBUS TCP MHI STEP3 Ethernet
Mitsubishi Electric Corporation	A Series CPU Direct A Series Computer Link A Series Ethernet FX Series Computer Link FX Series CPU Direct FX Series Ethernet Q Series CPU Direct Q Series QnU CPU Ethernet Q/QnA Serial Communication Q/QnA Series Ethernet QnA Series CPU Direct QUTE Series CPU Direct
Meidensha Corporation	UNISEQUE Series Ethernet
YASKAWA Electric Corporation	MEMOBUS SIO MP Series SIO (Extension) MEMOBUS Ethernet MP/SERVO Ethernet
YOKOGAWA Electric Corporation	Personal Computer Link SIO MODBUS SIO Master Personal Computer Ethernet MODBUS TCP Master
Fatek Automation Corp.	FB Series SIO
GE Intelligent Platforms	Series 90-30/70 SNP Series 90-30/70 SNP-X Series 90 Ethernet
LS In dustrial Systems	MASTER-K Series Cnet XGT Series Cnet XGT Series Fenet

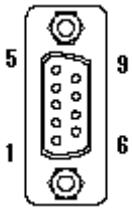
Rockwell Automation Inc.	DF1 DH-485 EtherNet/IP
Saia-Burgess Controls Ltd.	Saia S-Bus SIO
Schneider Electric SA	MODBUS SIO Master MODBUS Slave MODBUS TCP Master Uni-Telway
Siemens AG	SIMATIC S7 MPI Direct SIMATIC S7 3964(R)/RK512 SIMATIC S5 CPU Direct SIMATIC S5 3964(R) SIMATIC S7 Ethernet
Siemens Building Technologies	SAPHIR SIO
Temperature Controller	
Manufacturer	**Series**
OMRON	Controller CompoWay/F
Shinko Technos Co., Ltd.	Controller SIO
CHINO Corporation	Controller MODBUS SIO
Fuji Electric Co., Ltd	Controller MODBUS SIO
Yamatake Corporation	Digital Controller SIO MODBUS SIO Master MODBUS TCP Master
YOKOGAWA Electric Corporation	Personal Computer Link SIO
RKC Instrument Inc.	Controller MODBUS SIO Temperatuer Controller
Inverter / Servo / Industrial Robot	
Manufacturer	**Series**
Hitachi Industrial Equipment Systems Co., Ltd	Inverter ASCII SIO Inverter MODBUS RTU
Fuji Electric Co., Ltd	Inverter SIO
Sanmei Electronics Co., Ltd	Si/CutyAxis Series SIO
Mitsubishi Electric Corporation	FREQROL Inverter

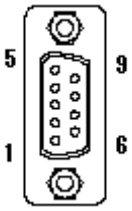
YASKAWA Electric Corporation	Inverter/Servo SIO MP/Servo Ethernet
IAI Corporation	Robo cylinder MODBUS SIO X-SELController
Hyundai Heavy Industries	Hi4 Robot
Other Devices	
Manufacturer	**Series**
Digital Electronics Corporation	General Ethernet General SIO Memory Link
Cognex Corporation	In-Sight Vision System
Modbus-IDA	General MODBUS RTU SIO Master General MODBUS TCP Master
ODVA (Open DeviceNet Vendor Association, Inc.)	EtherNet/IP Explicit Messaging

4.2 Shapes of COM ports

<table>
<tr><th></th><th>ST40X series</th><th>GP4000 series</th></tr>
<tr><td rowspan="2">COM1</td><td>9-pin D-Sub</td><td>9-pin D-Sub</td></tr>
<tr><td>


male female
<table>
<tr><td>ST-400</td><td>RS-422</td><td rowspan="2">male</td></tr>
<tr><td>ST-401</td><td>RS-232C</td></tr>
<tr><td>ST-402</td><td>RS-485 (for MPI)</td><td>female</td></tr>
<tr><td>ST-403</td><td>RS-232C/ 422</td><td>male</td></tr>
</table>
</td><td>


male female
<table>
<tr><td>GP-4201T</td><td>RS-232C/ 422/485</td><td rowspan="2">male</td></tr>
<tr><td>GP-4201TW</td><td>RS-232C</td></tr>
<tr><td>GP-4203T</td><td>RS-485 (for MPI)</td><td>female</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">COM2</td><td>9-pin D-Sub male
RS-422</td><td>9-pin D-Sub male
RS-422/485</td></tr>
<tr><td>


* For ST-402 only
</td><td>


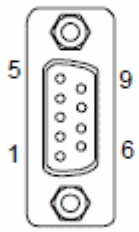
*For GP-4201TW only
</td></tr>
</table>

4.3 Signals of COM ports

4.3.1 Signals of COM1

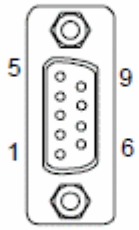
For ST-400

RS-422 (male)

Pin Connection	Pin No.	Signal	Signal Name	Direction
 (male)	1	RDA	Receive data A	Input
	2	RDB	Receive data B	Input
	3	SDA	Send data A	Output
	4	ERA	Enable receive A	Output
	5	SG	Ground	-
	6	CSB	Clear send B	Input
	7	SDB	Send data B	Output
	8	CSA	Clear send A	Input
	9	ERB	Enable receive B	Output

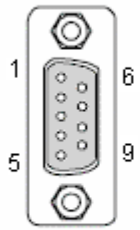
For ST-401

RS-232C (male)

Pin Connection	Pin No.	Signal	Signal Name	Direction
 (male)	1	CD	Carrier detect	Input
	2	RD	Receive data	Input
	3	SD	Send data	Output
	4	ER	Enable receive	Output
	5	SG	Ground	-
	6	DR	Data set ready	Input
	7	RS	Request send	Output
	8	CS	Clear send	Input
	9	RI	Ring indicate	Input

For ST-402

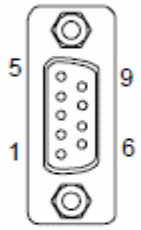
RS-485 (for MPI) (female)

Pin Connection	Pin No.	Signal	Signal Name	Direction
 (female)	1	NC	No connection	-
	2	NC	No connection	-
	3	LINE(+)	Line (+)	In/Output
	4	RTS	Request Send	Output
	5	SG	Ground	-
	6	5V	5V External Output *	Output
	7	NC	No connection	-
	8	LINE(-)	Line (-)	In/Output
	9	NC	No connection	-

* You can supply power to the Siemens PROFIBUS connector only. You cannot supply power to the device/PLC.

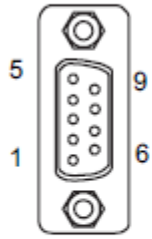
For ST-403

RS-232C/422 (male)

Pin Connection	Pin No.	Signal	Signal Name	Direction
 (male)	1	CD/RDA	Carrier detect /Receive data A	Input /Input
	2	RD/RDB	Receive data /Receive data B	Input /Input
	3	SD/SDA	Send data/Send data A	Output /Output
	4	ER/ERA	Enable receive /Enable receive A	Output /Output
	5	SG/SG	Ground/Ground	-
	6	DR/CSB	Data set ready/Clear send B	Input /Input
	7	RS/SDB	Request send /Send data B	Output /Output
	8	CS/CSA	Clear send/Clear send A	Input /Input
	9	RI/ERB	Ring indicate /Enable receive B	Input /Output

For GP4000 series (except GP-4203T)

RS-232C (male)

Pin Connection	Pin No.	RS-232C		
		Signal Name	Direction	Meaning
 (GP unit side)	1	CD	Input	Carrier Detect
	2	RD(RXD)	Input	Receive Data
	3	SD(TXD)	Output	Send Data
	4	ER(DTR)	Output	Data Terminal Ready
	5	SG	-	Signal Ground
	6	DR(DSR)	Input	Data Set Ready
	7	RS(RTS)	Output	Request to Send
	8	CS(CTS)	Input	Send possible
	9	CI(RI)/VCC	Input/–	Called Status Display +5V±5% Output 0.25A*1
	Shell	FG	–	Frame Ground (Common with SG)

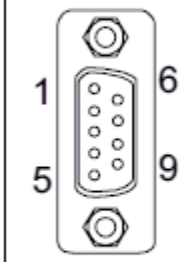
*1: RI and VCC of Pin 9 are switched on the software.

VCC Output is not protected from overcurrent.

Please follow the current rating to avoid false operation or breakdown.

For GP-4203T

RS-485 (for MPI) (female)

Pin Connection	Pin No.	RS-485 (isolation)		
		Signal Name	Direction	Meaning
 GP unit side	1	NC	–	no connection
	2	NC	–	no connection
	3	Line A	Input/Output	Data A (+)
	4	RS(RTS)	Output	Request to Send
	5	SG	–	Signal Ground
	6	VCC	–	+5V±5% External Output(1)
	7	NC	–	no connection
	8	Line B	Input/Output	Data B (-)
	9	NC	–	no connection
	Shell	FG	–	Frame Ground(2) (Not connected with SG)

*1: You can supply power to the Siemens PROFIBUS connector only. You cannot supply power to the device/PLC.

*2: The SG and FG terminals are isolated.

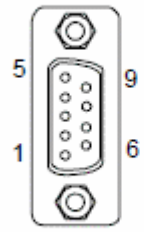
4.3.2 Signals of COM2

For ST-400/401/403

None

For ST-402

RS-422 (male)

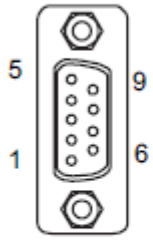
Pin Connection	Pin No.	Signal	Signal Name	Direction
 (male)	1	RDA	Receive data A	Input
	2	RDB	Receive data B	Input
	3	SDA	Send data A	Output
	4	ERA	Enable receive A	Output
	5	SG	Ground	-
	6	CSB	Clear send B	Input
	7	SDB	Send data B	Output
	8	CSA	Clear send A	Input
	9	ERB	Enable receive B	Output

For GP-4201T/ 4203T

None

For GP-4201TW

RS-422/485(male)

Pin Connection	Pin No.	RS-422/RS-485		
		Signal Name	Direction	Meaning
 (GP unit side)	1	RDA	Input	Receive Data A (+)
	2	RDB	Input	Receive Data B (-)
	3	SDA	Output	Send Data A (+)
	4	ERA	Output	Data Terminal Ready A (+)
	5	SG	-	Signal Ground
	6	CSB	Input	Send Possible B (-)
	7	SDB	Output	Send Data B (-)
	8	CSA	Input	Send Possible A (+)
	9	ERB	Output	Data Terminal Ready B (-)
	Shell	FG	–	Frame Ground (Common with SG)

4.4 Multilink Connection

For GP4000 series, some communication drivers do not support multi-link connection (n:1) via RS-422.

When converting the project file with the setting of the communication driver that does not support multi-link connection (n:1) via RS-422, the connection is automatically converted to (1:1).

For the communication drivers that support serial multi-link, see [Which drivers support serial multilink communication?] (http://www.pro-face.com/otasuke/files/manual/gpproex/new/device/com_mlnk.htm).

4.5 Cable Diagram at the time of replacement

The connection cable for ST40X series can be used for GP4000 series. But please note that there are precautions and restrictions as described below.

IMPORTANT
・Please check the connection configurations GP4000 series supports with GP-Pro EX Device/PLC Connection Manual before using a connection cable. (http://www.pro-face.com/otasuke/files/manual/gpproex/new/device/index.htm). ・**The Siemens MPI connection cable** cannot be used. Please refer to the above-mentioned GP-Pro EX Device/PLC Connection Manual and prepare a connection cable for GP4000 series newly. ・If ST-402 is connected to a RS-422 device via its COM2 port, after ST-402 is replaced with GP4000 series, the device cannot be connected. ・If ST-400 is connected to a RS-422 device, after ST-400 is replaced with GP4000 series, the device can be connected on the COM2 port. (The same cable diagram can be used.) Before **GP4000 series is connected, be sure to change the port setting to [COM2] on the Device/PLC setting. Please check the communication settings in the GP-Pro EX Device/PLC Connection Manual just in case.**