

Easy! Smooth!
ST-400 Series->GP4000 Series
Replacement Guidebook

## **Preface**

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

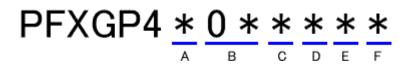
| Model in use | Recommended Substitution |  |
|--------------|--------------------------|--|
| ST-400       | GP-4201TW                |  |
| ST-401       |                          |  |
| ST-402       | GP-4203T                 |  |
| ST-403       | GP-4201T                 |  |

# Safety Information

HAZARD OF OPERATOR INJURY, OR UNINTENDED EQUIPMENT DAMAGE
Before operating any of these products, be sure to read all related manuals thoroughly.
Failure to follow these instructions can result in death, serious injury or unintended equipment damage.

# **GP4000 Series Model Number**

GP4000 series model number partly differs depending on a specification. Before placing an order, please make sure of the model number.



| 2  | GP-4200 series (3.5")             |  |
|----|-----------------------------------|--|
| 3  | GP-4300 series (5.7")             |  |
| 4  | GP-4400 series (7.5"/7.0"W)       |  |
| 5  | GP-4500 series (10.4")            |  |
| 6  | GP-4600 series (12.1")            |  |
| 01 | RS-232C/422/485                   |  |
| 03 | RS-485 (isolation)                |  |
| Т  | TFT color LCD                     |  |
| W  | TFT color LCD (Wide Type)         |  |
| А  | Analog Resistive Film Touch Panel |  |
| М  | Matrix Resistive Film Touch Panel |  |
| А  | AC Type Power Supply              |  |
| D  | DC Type Power Supply              |  |
| W  | GP-4201TW/4301TW/4401WW/4501TW    |  |
| С  | Coated model                      |  |
| WC | Coated model of GP-4301TW         |  |
|    | 3 4 5 6 01 03 T W A M A D W C     |  |

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# **Chapter 1 Specification Comparison**

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

|                         |                   |          | ST-400/401                                    | GP-4201TW   |
|-------------------------|-------------------|----------|---|---|
|                         |                   |          | 100 00 00 00 00 00 00 00 00 00 00 00 00       |   |
| Display Type            |                   | ре       | Monochrome LCD                                | UP! TFT color LCD   |
| Display Colors, Levels  |                   | , Levels | Monochrome, 2 levels/<br>Monochrome, 8 levels | UP! 65,536 colors (without blink)/ 16,384 colors (with blink) ->See 2.3 |
| Displ                   | ay Reso           | lution   | QVGA (32                                      | 20x240 pixels)  |
| Panel C                 | utout Din<br>(mm) | nensions | 118.5(  | W)x92.5(H)  |
| Exteri                  | nal Dime<br>(mm)  | nsions   | 130(W)x104(H)x41(D)                           | 132(W)x106(H)x42(D)   |
| Touch Panel Type        |                   | Туре     | Resistive film (Matrix)                       | NEW! Resistive film (Analog) ->See 2.2                                  |
| Memory Application SRAM |                   | lication | 640KB   | UP! 8MB   |
|                         |                   | RAM      | 96KB  | <b>UP!</b> 128KB  |
| Bad                     | kup Bat           | tery     | Secondary Battery (Red                        | chargeable Lithium battery)   |
| Rated                   | Input V           | oltage   | DC 24V  |   |
| Fun                     | ction Sv          | vitch    | V   | -   |
|                         |                   |          | D-Sub 9 pin (plug)<br>RS-422                  | D-Sub 9 pin (plug)  |
| Serial I/F              | COM1              | ST-401   | D-Sub 9 pin (plug)<br>RS-232C                 | RS-232C<br>->See <u>2.6.1</u> and <u>Chapter4</u>                       |
| COM2                    |                   | )M2      | -   | D-Sub 9 pin (plug)  RS-422/485  ->See <u>2.6.1</u> and <u>Chapter4</u>  |
| USB                     | Туј               | ре А     |   | NEW! ✓  |
| I/F                     | I/F Type mini B   |          | -   | -> <u>See 2.4</u>   |
| Tool Connector I/F      |                   | or I/F   | <b>✓</b>                                      | -   |

# 1.2 Specifications of ST-402 and GP-4203T

|                          |                      | ST-402  | GP-4203T  |
|--------------------------|----------------------|---|---|
|                          |                      | 100 mm m     |   |
| Display Type             |                      | Monochrome LCD                                | UP! TFT color LCD   |
| Display Colors           |                      | Monochrome, 2 levels/<br>Monochrome, 8 levels | UP! 65,536 colors (without blink)/ 16,384 colors (with blink) ->See 2.3 |
|                          | Resolution           | QVGA (32                                      | 20x240 pixels)  |
|                          | ut Dimensions<br>mm) | 118.5(  | W)×92.5(H)  |
| External Dimensions (mm) |                      | 130(W)x104(H)x41(D)                           | 132(W)x106(H)x42(D)   |
| Touch Panel Type         |                      | Resistive film (Matrix)                       | <b>NEW!</b> Resistive film (Analog) ->See 2.2                           |
| Mamaria                  | Application          | 640KB   | <b>UP!</b> 16MB   |
| Memory SRAM              |                      | 96KB  | <b>UP!</b> 320KB  |
| Backup Battery           |                      | Secondary Battery (Re                         | chargeable Lithium battery)   |
| Rated In                 | put Voltage          | DC 24V  |   |
| Function                 | on Switch            | <b>✓</b>                                      | -   |
| Serial COM1              |                      | D-Sub 9 pin (socket)<br>RS-485 (for MPI only) | D-Sub 9 pin (socket) RS-485 (for MPI only) ->See 2.6.1 and Chapter4     |
| I/F                      | COM2                 | D-Sub 9 pin (plug)<br>RS-422                  | -   |
| Ethernet I/F             |                      | -   | NEW!<br>10BASE-T/100BASE-TX   |
| UCD T/F                  | Туре А               |   | NEW! ✓  |
| USB I/F                  | Type mini B          | <u>-</u>                                      | -> <u>See 2.4</u>   |
| Tool Connector I/F       |                      | <b>✓</b>                                      | -   |

# 1.3 Specifications of ST-403 and GP-4201T

|                          |                         | ST-403  | GP-4201T  |
|--------------------------|-------------------------|---|---|
|                          |                         |   |   |
| Disp                     | lay Type                | Monochrome LCD                                | UP! TFT color LCD   |
| Display Colors           |                         | Monochrome, 2 levels/<br>Monochrome, 8 levels | UP! 65,536 colors (without blink)/ 16,384 colors (with blink) ->See 2.3     |
| Display                  | Resolution              | QVGA (320x240 pixels)                         |   |
|                          | el Cutout<br>sions (mm) | 118.5(W)x92.5(H)                              |   |
| External Dimensions (mm) |                         | 130(W)x104(H)x41(D)                           | 132(W)x106(H)x42(D)   |
| Touch Panel Type         |                         | Resistive film (Matrix)                       | NEW! Resistive film (Analog) ->See 2.2                                      |
| Application              |                         | 640KB   | UP! 16MB  |
| Memory                   | SRAM                    | 96KB  | <b>UP!</b> 320KB  |
| Backup Battery           |                         | Secondary Battery (Rec                        | chargeable Lithium battery)   |
| Rated I                  | nput Voltage            | D   | C 24V   |
| Funct                    | ion Switch              | <b>✓</b>                                      | -   |
| Serial<br>I/F            | COM1                    | D-Sub 9 pin (plug)<br>RS-232C/422             | D-Sub 9 pin (plug)  RS-232C/422/485  ->See <u>2.6.1</u> and <u>Chapter4</u> |
| Ethernet I/F             |                         | 10BASE-T                                      | NEW!<br>10BASE-T/100BASE-TX   |
| USB                      | Type A                  | _   | NEW! ✓  |
| I/F                      | Type mini B             | -   | -> <u>See 2.4</u>   |
| Tool Co                  | nnector I/F             |   | -   |

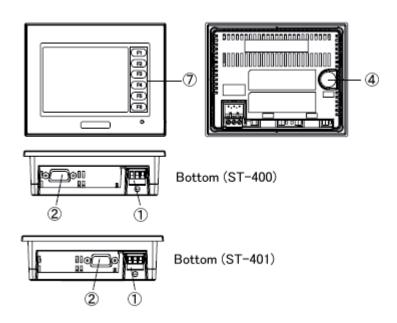
# **Chapter 2 Compatibility of Hardware**

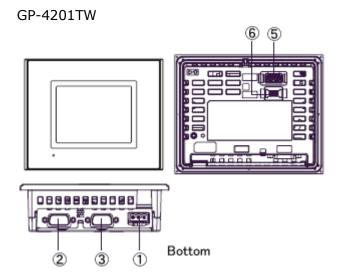
## 2.1 Locations of connector

Connector locations on ST-400 series and GP4000 series are as follows:

Connector locations on ST-400/401 and GP-4201TW

ST-400/401

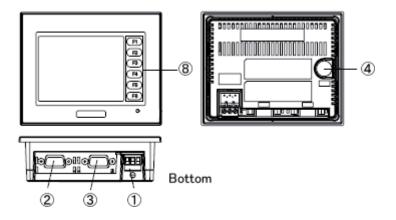




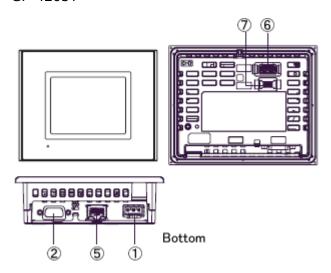
## Interface names

|   | 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



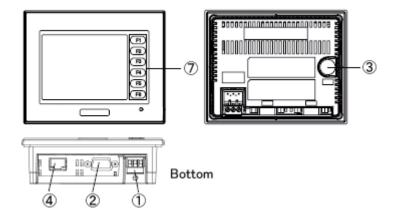
GP-4203T



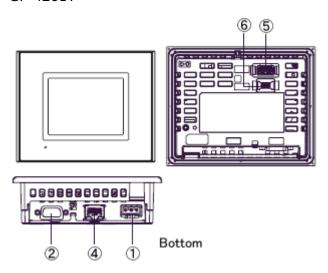
# Interface names

|   | 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

GP-420xT/4201TW adopts the Analog type. Because of it, simultaneous 2-point touch input operation is not supported. When simultaneous 2-point touch input operation is performed, GP's operation is as described below.

GP-420xT: Only the first detected touch is effective.

GP-4201TW: When two different points are pushed at the same

time, touch input on the middle coordinates between

those two points is recognized.

If you have used the 2-point touch input on GP-2300 series, change to the 1-point touch input setting using the switch delay function of GP-Pro EX.

## 2.3 Display Colors

The display color of ST-400 series is monochrome, but GP4000 series has a TFT color LCD. After replacement, the display color changes from monochrome to color.

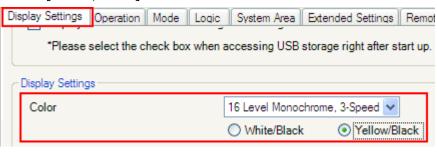
When data of a monochrome model is converted to data of a color model with GP-Pro EX, the data may be displayed in colors depending on the version of the Project Converter or settings of the drawing/the parts on the screen.

After conversion, please confirm the display colors of the drawing or the parts on the screens just in case.

#### If the display is in colors after the data conversion to GP4000 series...

GP-Pro EX Ver. 3.01.200 (Service Pack1) or later supports the function which changes drawing in colors to in monochrome. To change the setting, follow the steps below.

- (1) Click [Project]->[System Settings]->[Display Unit].
- (2) Open the [Display Settings] tab.
- (3) Change [Color] setting to "16 Levels Monochrome, 3-Speed Blink".
- (4) Select [Yellow/Black].



\* [Reverse Display] setting is for displaying the screen with black/white reversed. Check on it if needed.



\* Please confirm the display colors of the drawing or the parts on the screens after changing the [Color] setting to "16 Levels Monochrome, 3-Speed Blink".

#### 2.4 Transfer cable

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

|                 | Model        | Connector Type     | Connector on GP   |
|-----------------|--------------|--------------------|-------------------|
| Options         | CA3-USBCB-01 | Type A Type A      | USB (Type A)      |
| Options         | ZC9USCBMB1   | Type A Type mini B | USB (Type mini B) |
| Commercial Item | -            |                    |                   |

Please note that the cables (GPW-CB02, GPW-CB03, GP430-CU02-M) for ST-400 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 ST-400 series, please make settings of the switches to replace the function keys on GP-ProEX.

#### 2.6 Interface

## 2.6.1 Serial Interface

The pin assignment and the shape of plug/socket connector of ST-400 series are different from those of GP4000 series.

To know the details about them, see [4.2 Shapes of COM ports] and [4.3 Signals of COM ports].

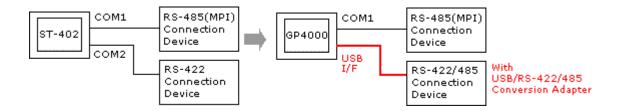
Because of it, the existing PLC connection cables cannot be used as they are. If you

use the existing connection cables, see [4.6 Cable Diagram at the time of replacement].

#### \* For ST-402 users only:

If ST-402 is connected to a RS-422 device via its COM2 port, after ST-402 is replaced with GP-4203, the device cannot be connected.

Using a **USB/RS-422/485 Conversion Adapter (PFXZCBCBCVUSR41)** allows you to use GP-4203 USB interface as RS-422/485 serial interface for connection.



For more information, please refer to USB/RS-422/485 Conversion Adapter Installation Guide.

(<a href="http://www.pro-face.com/otasuke/download/manual/cgi/manual.cgi?mode=33">http://www.pro-face.com/otasuke/download/manual/cgi/manual.cgi?mode=33</a> &cat=3)

## **IMPORTANT**

When using USB/RS-422/485 Conversion Adapter (PFXZCBCBCVUSR41) with a display unit, the device/PLCs you can connect to its serial interface (RS-422/485) are limited. To check the connection configuration, please refer to GP-Pro EX Device/PLC Connection Manual.

(<a href="http://www.pro-face.com/otasuke/files/manual/gpproex/new/device/index.h">http://www.pro-face.com/otasuke/files/manual/gpproex/new/device/index.h</a> tm)

If it's not possible to use USB/RS-422/485 Conversion Adapter (PFXZCBCBCVUSR41) for your connection, please contact our sales office in your region. (<a href="http://www.pro-face.com/customer/contact.html">http://www.pro-face.com/customer/contact.html</a>)

#### 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 ST-400 series cannot be used. However, GP4000

series allows you to connect a barcode reader on its USB interface (Type A) or its serial interface.

For the models GP4000 series supports, see [OtasukePro!] (http://www.pro-face.com/otasuke/qa/3000/0056 connect e.html).

## 2.8 Power Consumption

The power consumption of ST-400 series is different from that of GP4000 series.

| ST-400 series | GP4000 Series |
|---------------|---------------|
| 7W or less    | 9.6W or less  |

For the detailed electric specifications, see the hardware manual.

## 2.9 Materials/Colors of the body

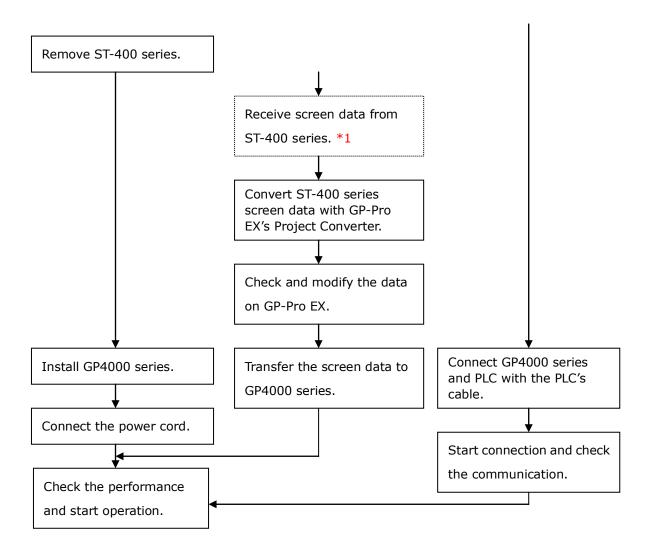
The material and the colors of ST-400 series and GP4000 series are as follows:

|          | ST-400 series | GP4000 Series    |  |  |  |
|----------|---------------|------------------|--|--|--|
| Color    | Light Gray    |                  |  |  |  |
| Material | Resin         | Resin with glass |  |  |  |

## **Chapter 3 Replacement Procedure**

#### 3.1 Work Flow

| Installation                                      | Screen  | Communication   |
|---|---|---|
| Check the compatibility of hardware in Chapter 2. | Check the differences of specifications in OtasukePro! [Compatibility of Software] (http://www.pro-face.com/otasuke/qa/qp3000/replace/soft/conv/care/3/). | Check the connection between GP4000 series and a PLC in the GP-Pro EX Device/PLC Connection Manual. |



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

## 3.2 Preparation

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

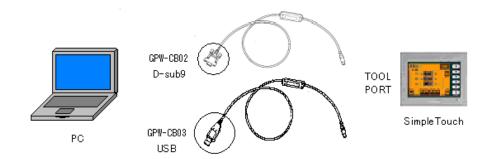
- \*1: This step is required if screen data is saved only in the GP unit, not in any other device
- \*2: Please use the same version or later as or than that of the software used during creating screens on GP2000 series.
  - If you don't know the version, we recommend you to use the newest version. The 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/download/update/).
- \*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/download/driver/)

#### 3.3 Receive screen data from ST-400 series

This section explains, as an example, how to receive screen data from ST-400 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 ST-400 series.



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

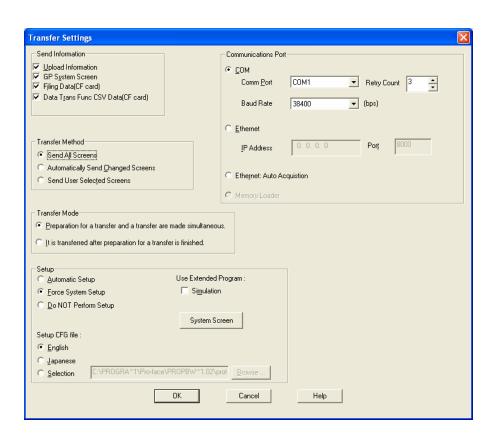


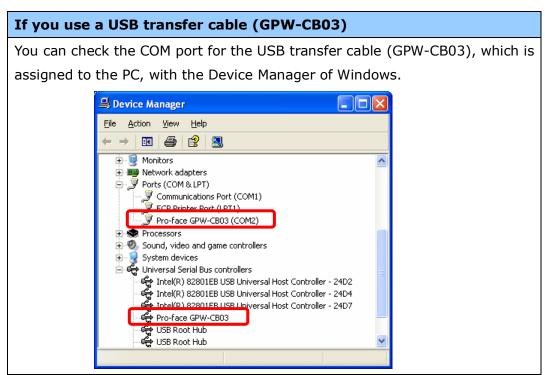
(3) On the [Transfer] window, select the [Setup] menu and click [Transfer Settings...].



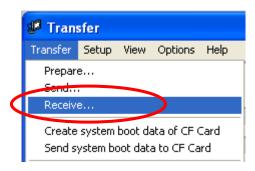
(4) In the Communication Port field, select [COM], specify the COM port to which the cable is connected, and click [OK].







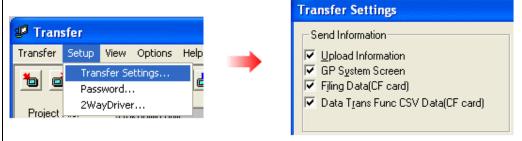
(5) Select the [Transfer] menu and click [Receive...].



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

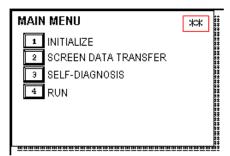
## In case there is no Upload Information

"Upload Information" is necessary to receive screen data from ST-400 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.



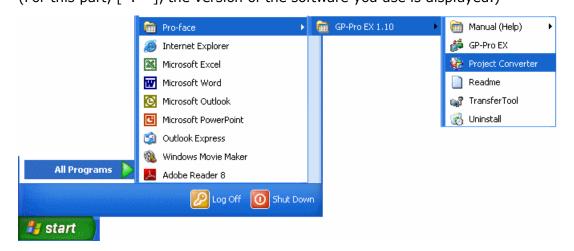
If not, there is no Upload Information sent. In this case, a message, which indicates there is no Upload Information," appears and you cannot receive the data.

## 3.4 Convert screen data with the Project Converter

Convert a project file (\*.prw) for ST-400 series with the GP-Pro EX's Project Converter.

(1) Click the [Start] button, select [All Programs] (or [Programs])-> [Pro-face]-> [GP-Pro EX \*.\*\*]->[Project Converter].

(For this part, [\*.\*\*], the version of the software you use is displayed.)

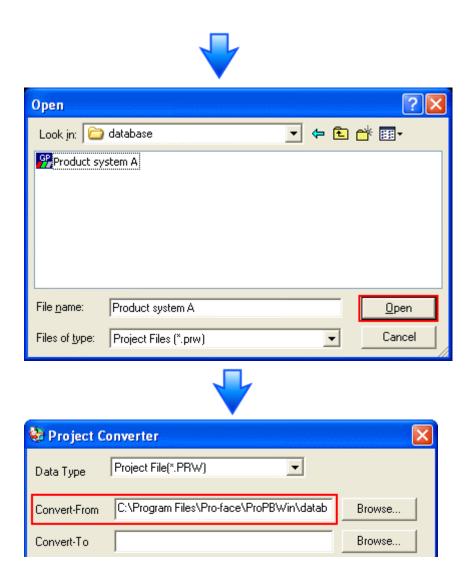


(2) The Project Converter starts up and the [Project Converter] dialog box opens. Select [Project File (\*.PRW)] in the [Data Type].

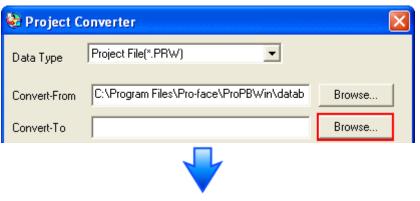


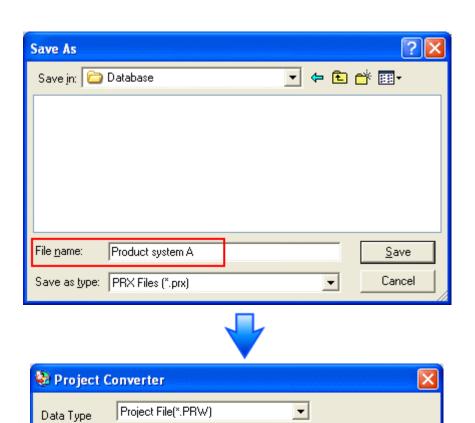
(3) Click the [Browse...] button and select a project file (e.g.: "Project system A.prw"). Click [Open], and the file will be set in [Convert-From].





(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].



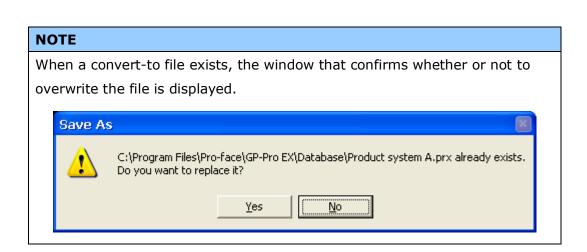


C:\Program Files\Pro-face\ProPBWin\datab

C:\Program Files\Pro-face\GP-Pro EX\Datab

Convert-From

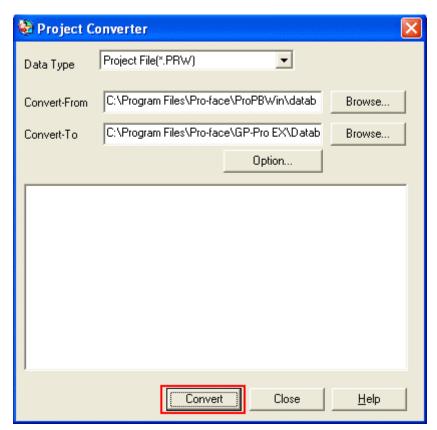
Convert-To



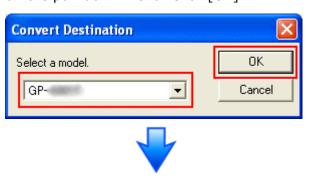
Browse...

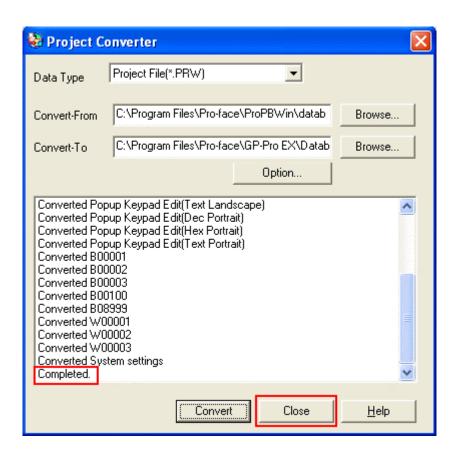
Browse...

(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].



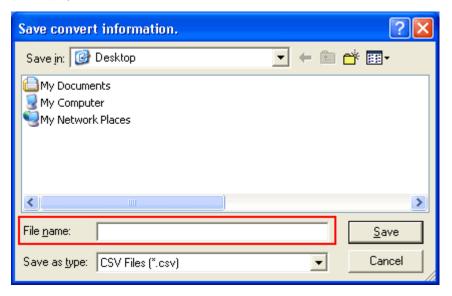


## If an error message is displayed during conversion...

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.

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

- An USB transfer cable (model: CA3-USBCB-01)
- An USB data transfer cable (model: ZC9USCBMB1)
- A commercial USB cable (USB Type A/mini B)
- · An USB storage device
- Ethernet (\*for GP-4201T/4203T only)

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

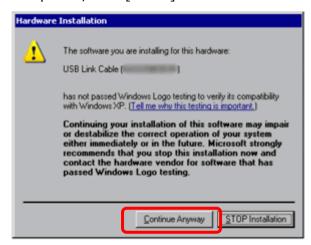


(1) Connect your PC and GP4000 series with a USB transfer cable (model: CA3-USBCB-01).

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].



- If the following symptoms appear on Microsoft Windows® 7, go to updating "USB Data Transfer Driver" on [OtasukePro!] for download
   (http://www.pro-face.com/otasuke/download/freesoft/gpproex\_transfer.htm).
- 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.

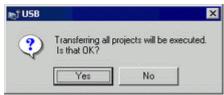


On the GP-Pro EX's State Toolbar, click the [Transfer Project] icon to open the Transfer Tool.

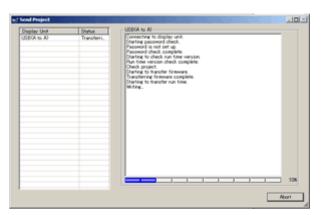
(4) Make sure that the [Device] in the "Transfer Settings Information" is set to [USB]. If not, click the [Transfer Setting] button to open the "Transfer Setting" dialog box. Select [USB] in the Communication Port Settings field and click [OK].



(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.

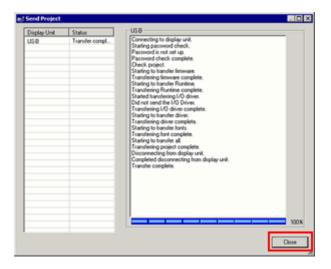


(6) The following dialog box appears during transfer and you can check the communication status. (The display unit enters the Transferring mode and communication with the device such as a PLC is terminated.)





(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   |
|----|---|
| 23 | 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 Drivers

More connectable drivers will be added.

For the devices/PLC each driver supports, see [Connectable Devices] (http://www.pro-face.com/product/soft/gpproex/driver/driver.html).

## **4.2 Shapes of COM ports**

|      | ST-400 series                        | GP4000 series                     |  |  |
|------|--------------------------------------|-----------------------------------|--|--|
|      | D-Sub 9-pin                          | D-Sub9-pin                        |  |  |
|      | 5                                    | 5                                 |  |  |
| COM1 | plug socket                          | plug socket                       |  |  |
|      | ST-400 RS-422<br>ST-401 RS-232C plug | GP-4201T RS-232C/<br>422/485 plug |  |  |
|      | ST-402 RS-485 socket                 | GP-4201TW RS-232C                 |  |  |
|      | (for MPI)                            | GP-4203T RS-485 (for MPI) socket  |  |  |
|      | ST-403 422 plug                      |                                   |  |  |
|      | D-Sub 9-pin plug                     | D-Sub 9-pin plug                  |  |  |
|      | RS-422                               | RS-422/485                        |  |  |
| COM2 | 5 © 9<br>1 © 6                       | 5<br>1<br>9<br>6                  |  |  |
|      | * For ST-402 only                    | *For GP-4201TW only               |  |  |

# 4.3 Signals of COM ports

4.3.1 Signals of COM1

For ST-400

RS-422 (plug)

| Pin Connection | Pin No. | Signal | Signal Name      | Direction |
|----------------|---------|--------|------------------|-----------|
|                | 1       | RDA    | Receive data A   | Input     |
| (a)            | 2       | RDB    | Receive data B   | Input     |
|                | 3       | SDA    | Send data A      | Output    |
|                | 4       | ERA    | Enable receive A | Output    |
| 1 0 0 6        | 5       | SG     | Ground           | -         |
|                | 6       | CSB    | Clear send B     | Input     |
|                | 7       | SDB    | Send data B      | Output    |
| (male)         | 8       | CSA    | Clear send A     | Input     |
|                | 9       | ERB    | Enable receive B | Output    |

For ST-401

# RS-232C (plug)

| Pin Connection | Pin No. | Signal | Signal Name    | Direction |
|----------------|---------|--------|----------------|-----------|
|                | 1       | CD     | Carrier detect | Input     |
|                | 2       | RD     | Receive data   | Input     |
| 5 0            | 3       | SD     | Send data      | Output    |
|                | 4       | ER     | Enable receive | Output    |
| 1 000 6        | 5       | SG     | Ground         | -         |
| 190            | 6       | DR     | Data set ready | Input     |
|                | 7       | RS     | Request send   | Output    |
| (male)         | 8       | CS     | Clear send     | Input     |
|                | 9       | RI     | Ring indicate  | Input     |

For ST-402 RS-485 (for MPI) (socket)

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

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

For ST-403 RS-232C/422 (plug)

| Pin Connection | Pin No. | Signal | Signal Name                         | Direction         |
|----------------|---------|--------|-------------------------------------|-------------------|
|                | 1       | CD/RDA | Carrier detect<br>/Receive data A   | Input<br>/Input   |
|                | 2       | RD/RDB | Receive data<br>/Receive data B     | Input<br>/Input   |
| 5 0            | 3       | SD/SDA | Send data/Send data A               | Output<br>/Output |
| 1 6 (male)     | 4       | ER/ERA | Enable receive<br>/Enable receive A | Output<br>/Output |
|                | 5       | SG/SG  | Ground/Ground                       | -                 |
|                | 6       | DR/CSB | Data set ready/Clear<br>send B      | Input<br>/Input   |
|                | 7       | RS/SDB | Request send<br>/Send data B        | Output<br>/Output |
|                | 8       | CS/CSA | Clear send/Clear send A             | Input<br>/Input   |
|                | 9       | RI/ERB | Ring indicate<br>/Enable receive B  | Input<br>/Output  |

For GP-4201T/TW RS-232C (plug)

| Pin Connectio  | n Pin | RS-232C     |           |  |
|----------------|-------|-------------|-----------|--|
|                | No.   | Signal Name | Direction | Meaning  |
|                | 1     | CD          | Input     | Carrier Detect                                 |
|                | 2     | RD(RXD)     | Input     | Receive Data                                   |
| 5 6 9          | 3     | SD(TXD)     | Output    | Send Data                                      |
|                | 4     | ER(DTR)     | Output    | Data Terminal Ready                            |
| 1 8 6          | 5     | SG          | -         | Signal Ground                                  |
| 0              | 6     | DR(DSR)     | Input     | Data Set Ready                                 |
|                | 7     | RS(RTS)     | Output    | Request to Send                                |
| (GP unit side) | 8     | CS(CTS)     | Input     | Send possible                                  |
|                | 9     | CI(RI)/VCC  | Input/-   | Called Status Display<br>+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) (socket)

| Pin Connection | Pin   | RS-485 (isolation) |              |   |  |
|----------------|-------|--------------------|--------------|---|--|
|                | No.   | Signal Name        | Direction    | Meaning   |  |
|                | 1     | NC                 | -            | no connection                                       |  |
|                | 2     | NC                 | -            | no connection                                       |  |
|                | 3     | Line A             | Input/Output | Data A (+)  |  |
| 1 6            | 4     | RS(RTS)            | Output       | Request to Send                                     |  |
| 000            | 5     | SG                 | -            | Signal Ground                                       |  |
| 5 0 9          | 6     | vcc                | -            | +5V±5% External<br>Output <sup>(1)</sup>            |  |
|                | 7     | NC                 | -            | no connection                                       |  |
| GP unit side   | 8     | Line B             | Input/Output | Data B (-)  |  |
|                | 9     | NC                 | -            | no connection                                       |  |
|                | Shell | FG                 | _            | Frame Ground <sup>(2)</sup> (Not connected with SG) |  |

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

<sup>\*2:</sup> The SG and FG terminals are isolated.

# 4.3.2 Signals of COM2 For ST-400/401/403

None

For ST-402 RS-422 (plug)

| Pin Connection | Pin No. | Signal | Signal Name      | Direction |
|----------------|---------|--------|------------------|-----------|
|                | 1       | RDA    | Receive data A   | Input     |
|                | 2       | RDB    | Receive data B   | Input     |
| 5 8            | 3       | SDA    | Send data A      | Output    |
|                | 4       | ERA    | Enable receive A | Output    |
| 1 000 6        | 5       | SG     | Ground           | -         |
|                | 6       | CSB    | Clear send B     | Input     |
|                | 7       | SDB    | Send data B      | Output    |
| (male)         | 8       | CSA    | Clear send A     | Input     |
|                | 9       | ERB    | Enable receive B | Output    |

For GP-4201T/ 4203T

None

For GP-4201TW RS-422/485(plug)

| Pin Connection |                | Pin<br>No. | RS-422/RS-485 |           |                           |                               |
|----------------|----------------|------------|---------------|-----------|---------------------------|-------------------------------|
|                |                |            | Signal Name   | Direction | Meaning                   |                               |
|                |                | \          | 1             | RDA       | Input                     | Receive Data A (+)            |
|                | <b>(</b>       | 9          | 2             | RDB       | Input                     | Receive Data B (-)            |
| 5              |                |            | 3             | SDA       | Output                    | Send Data A (+)               |
|                | 1              |            | 4             | ERA       | Output                    | Data Terminal Ready A (+)     |
| 1              |                |            | 5             | SG        | -                         | Signal Ground                 |
|                | ◯              |            | 6             | CSB       | Input                     | Send Possible B (-)           |
| /01            | (GP unit side) |            | 7             | SDB       | Output                    | Send Data B (-)               |
| (Gi            |                |            | 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.

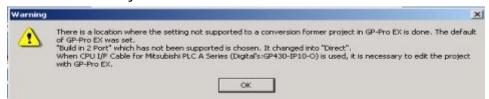
When converting the project file with the setting of the communication driver that does not support multi-link connection (n:1) via RS-422, the connection is automatically converted to (1:1).

For the communication drivers that support serial multi-link, see [Which drivers support serial multilink communication?]

(<a href="http://www.pro-face.com/otasuke/files/manual/gpproex/new/device/com\_mlnk.ht">http://www.pro-face.com/otasuke/files/manual/gpproex/new/device/com\_mlnk.ht</a> m).

#### 4.5 Internal 2-Port feature for Mitsubishi PLC

For GP-4501TW, the internal 2-Port feature for Mitsubishi PLC cannot be used. If [GP Setup]->[Mode Settings]->[Option]->[Inernal 2 port] is selected on GP-PRO/PBIII, the following message will appear when converting the project file with the GP-Pro EX Project Converter.



## 4.6 Cable Diagram at the time of replacement

The connection cable for ST-400 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.ht m).
- 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.
- · For ST-400 users:

After replacing ST-400 with GP4000 series, the device will 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.