

Easy! Smooth!
GP2000H Series
Replacement Guidebook

Preface

This guidebook introduces the procedures to replace the unit in the GP2000H series (GP-2401HT, GP-2301HS/L) with the GP3000H series (GP-3310HT, GP-3300HS/L). The recommended replacement models are as follows:

| Model in use | Replacement model |
|--------------|-------------------|
| GP-2401HT | GP-3310HT |
| GP-2301HS | GP-3300HS |
| GP-2301HL | GP-3300HL |

Second Edition: June 2009

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Chapter 1. Specification Comparison

1.1 Specifications of GP-2401HT and GP-3310HT

| | | GP-2401HT | GP-3310HT |
|--|--------------------|---|--|
| | |  |  |
| Display Type | | TFT color LCD | |
| Display Colors | | 256 colors | UP! 65,536 colors |
| Display Resolution | | VGA (640×480 pixels) → See 2.2 | |
| External Dimensions (Unit: mm [in.]) | | W253[9.96]×H185[7.28]×D58[2.28] (When including the Emergency Switch: D76[2.99]) | W224[8.82]×H174[6.85]×D87.1[3.43] (When including the Emergency Switch: D107.5[4.23]) |
| Touch Panel Type | | Matrix | NEW! Resistive Film (Analog) → See 2.3 |
| Memory | Application | 2MB | UP! 8MB |
| | SRAM | 128KB | UP! 320KB |
| Serial Interface | | RS-232C/422 | UP! RS-232C/422/485 |
| Ethernet Interface | | 10BASE-T | UP! 10BASE-T/100BASE-TX |
| Vibration | | Yes | No → See 2.4 |
| Function Switch | | 15 switches | 11 switches → See 2.5 |
| 3-Position Enable Switch Output Interface | | Rear panel switch 3-position output → See 2.6 | |
| Emergency Switch Output Interface | | Push-lock switch | |
| Key Switch Output Interface | | No | NEW! Yes → See 2.7 |
| External Output Interface | | Yes → See 2.8 | |
| CF Card Interface | | Yes | |
| USB Host Interface | | No | NEW! Yes |
| Printer Interface | | No | NEW! USB → See 2.8 |

1.2 Specifications of GP-2301HS/L and GP-3300HS/L

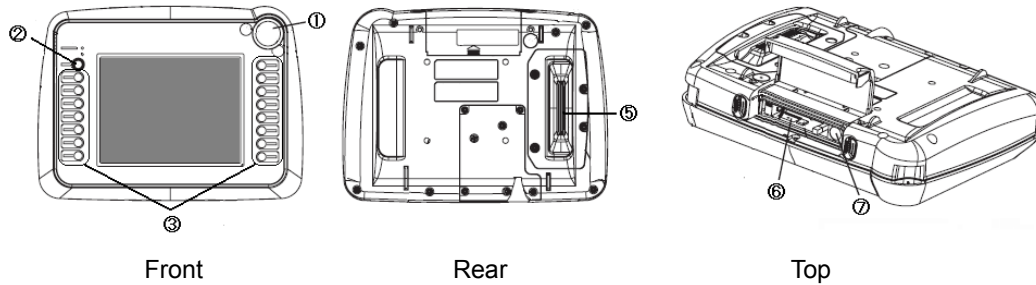
| | | GP-2301HS/L | GP-3300HS/L |
|---|-------------|---|--|
| | |  |  |
| Display Type | GP-****HS | STN color LCD | |
| | GP-****HL | Monochrome LCD | |
| Display Color | GP-****HS | 64 colors | UP! 4,096 colors |
| | GP-****HL | 2 levels / 8 levels | UP! 16 levels |
| Display Resolution | | QVGA (320 × 240 pixels) | |
| External Dimensions (Unit: mm [in.]) | | W253[9.96]×H185[7.28]×D58[2.28] (When including the Emergency Switch: D76[2.99]) | W224[8.82]×H174[6.85]×D87.1[3.43] (When including the Emergency Switch: D107.5[4.23]) |
| Touch Panel Type | | Matrix | NEW! Resistive film (Analog) → See 2.3 |
| Memory | Application | 1MB | UP! 6MB |
| | SRAM | 128KB | UP! 320KB |
| Serial Interface | | RS-232C/422 | UP! RS-232C/422/485 |
| Ethernet Interface | | No | UP! 10BASE-T/100BASE-TX |
| Vibration | | Yes | No → See 2.4 |
| Function Switch | | 11 switches | |
| 3-Position Enable Switch Output Interface | | Rear panel switch 3-position output → See 2.6 | |
| Emergency Switch Output Interface | | Push-lock switch | |
| Key Switch Output Interface | | No | NEW! Yes → See 2.7 |
| External Output Interface | | Yes → See 2.8 | |
| CF Card Interface | | Yes | |
| USB Host Interface | | No | NEW! Yes |
| Printer Interface | | No | NEW! USB → See 2.8 |
| Overseas Standards | |  |  → See 2.13 |

Chapter 2. Compatibility of Hardware

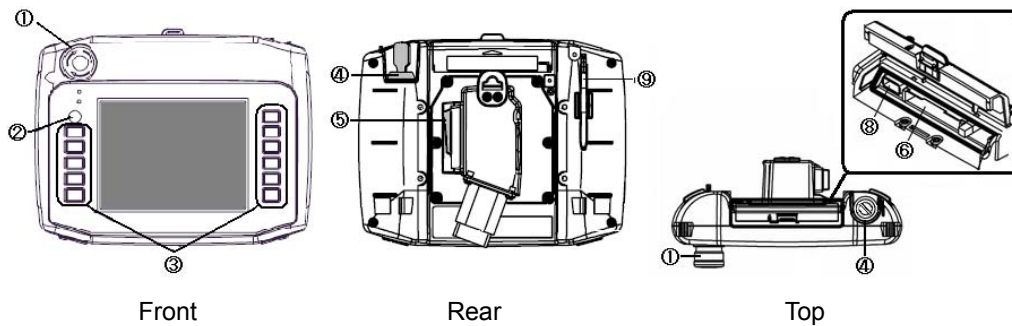
2.1 Locations of interfaces

Locations of connectors and switches on the GP2000H series and the GP3000H series are as follows:

GP2000H (2401H)



GP3000H (3310H)



Interface names

| | GP2000H Series | GP3000H Series |
|---|--------------------------|--------------------|
| 1 | Emergency Switch | |
| 2 | Operation Switch | |
| 3 | Function Switches | |
| 4 | - | Key Switch |
| 5 | 3-Position Enable Switch | |
| 6 | CF Card Interface | |
| 7 | Tool Connector | - |
| 8 | - | USB Host Interface |
| 9 | - | Touch Pen |

2.2 Screen size

The screen size of GP-3310HT, which is 5.7 inches, is smaller than that of GP-2401HT (6.5 inches). However, its display resolution is same.

Displays of texts, parts, etc. become smaller after conversion. If they are too small to touch with your finger, please use the provided touch pen.

2.3 Touch panel specifications

The GP3000H series units are analog resistive. An analog resistive touch panel does not recognize the touch input when you touch two points at the same time. If you applied the two-point touch input on the GP2000H unit, we recommend you change to the one-point touch input using the switch delay function.

2.4 Vibration function

The GP3000H series doesn't have the vibration function. Please aware of it when converting project data. If you use the vibration function in the GP2000H series, change it to another function as necessary.

2.5 Function switch

The GP-2401HT has 15 function switches. However, the GP-3310HT has only 11 switches, as the GP3000H series is designed lightweight. Please aware of it when converting project data.

2.6 GP-H70 Compatibility Mode

The GP3000H series doesn't have the GP-H70 Compatibility Mode. The operation switch and the 3-Position Operation Switch on the rear operate in the GP2000H Mode.

For the details of the GP2000H Mode and the GP-H70 Compatibility Mode, refer to GP2000H Series User Manual "3.3.3 2000H Mode / GP-H70 Compatibility Mode."

2.7 Key switch

In case of setting up an external circuit (an emergency stop circuit) using the Key switch, the GP3000H series allows you to remove it from the conversion adapter without stopping the system.

However, to use the Key switch, the GP3000H conversion adapter (AGP3000H-ADPCOM-01) and the GP3000H cable with a connector (GP3000H-CBL*D- * M) are required. The Key switch is disabled when the GP2000H conversion adapter (GP2000H-AP***) is used.

2.8 External output interface

To use the DOUT, Operation Switch Output, or External Buzzer Output, the GP3000H Conversion Adapter (AGP3000H-ADPCOM-01) is required. These interfaces are disabled when the GP2000H conversion adapter (GP2000H-AP***) is used.

2.9 Barcode reader connection

The GP3000H units are not equipped with a tool port. A barcode reader connected from the tool port on the GP2000H unit cannot be used with the GP3000H. However, the GP3000H series allows you to connect a barcode reader on its USB interface.

2.10 Screen data transfer

The GP3000H unit uses a USB or Ethernet cable to transfer screen data. For USB transfer, use a transfer cable for the GP3000 series (model: CA3-USBCB-01). Please note that any commercial USB cable cannot be used.

The tool port and a transfer cable for the GP2000 series (GPW-CB02, GPW-CB03, GP430-CU02-M) are used for screen data transfer to the GP2000H series, but they are not available with the GP3000H series.

2.11 Optional products

Optional products for the GP3000H series are different from those for the GP2000H series, other than the neck strap (model: GP2000H-STRAP11). For the GP3000H series, prepare the followings as necessary:

- ◆ Screen Protection Sheet (GP3000H-DFS6-01)
Disposable, dirt-resistant sheet for the GP unit's screen (5 sheets/set, hard type)
- ◆ Wall Adapter Attachment (GP3000H-WMA-01)
Bracket for mounting the GP3000H series unit to a commercially available arm or panel.
- ◆ Touch Pen (CA7-TPPEN/ALL-01)
Pen for screen operation (5 pens/set, 1 pen is provided in the package.)
- ◆ Hand Strap (GP3000H-HS-01)
Strap for hanging GP3000H by hand (1 strap is provided in the package.)
- ◆ Emergency Switch Guard (GP3000H-EMGD11)
Guard for preventing accidental operation. Includes 3 mounting screws. (1 guard is provided in the package.)
- ◆ Function Switch Sheet (1 set is provided in the package.)

2.12 Connection to host controller

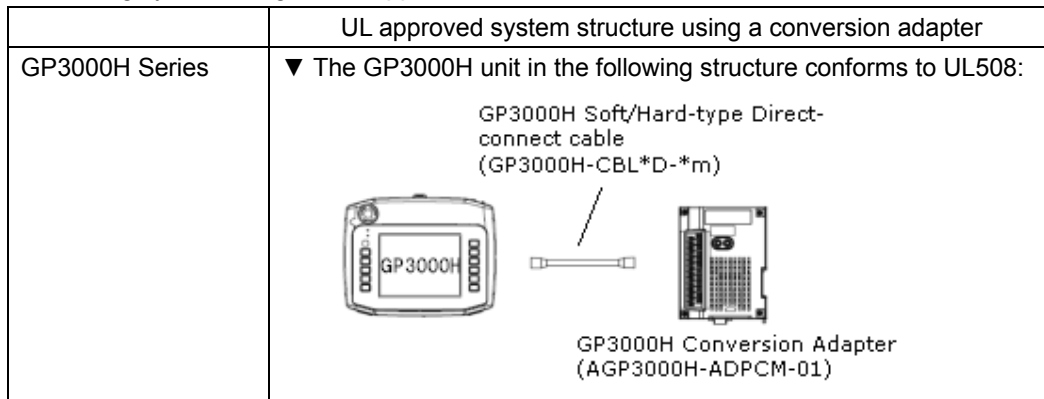
For replacement of the GP2000H with the GP3000H, you may need to rewire. For the details, see [4.2 Differences of system structures](#).

2.13 Overseas standards

The GP2000H series and GP3000H series conform to the following standards:

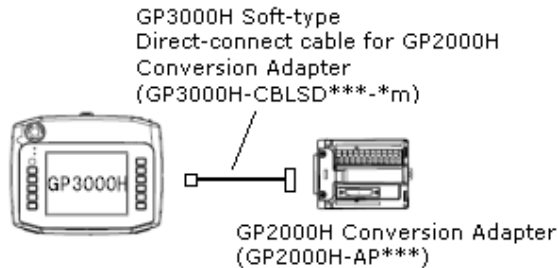
| | UL | c-UL (CSA) | CE |
|----------------|---|--|------------------------------------|
| GP2000H Series | UL60950 Third edition (Safety Standard for Information Technology Equipment) | CAN/CSA-C22.2 No. 60950-00 (Standard for Safety of Information Technology Equipment) | EN55011 Class A and EN61000-6-2 |
| GP3000H Series | UL508 (Safety Standard for Industrial Control Equipment) * | CAN/CSA-C22.2 No.142-M1987 (c-UL approval) (Industrial Control Equipment) | |

* The following system design is UL approved.



NOTE

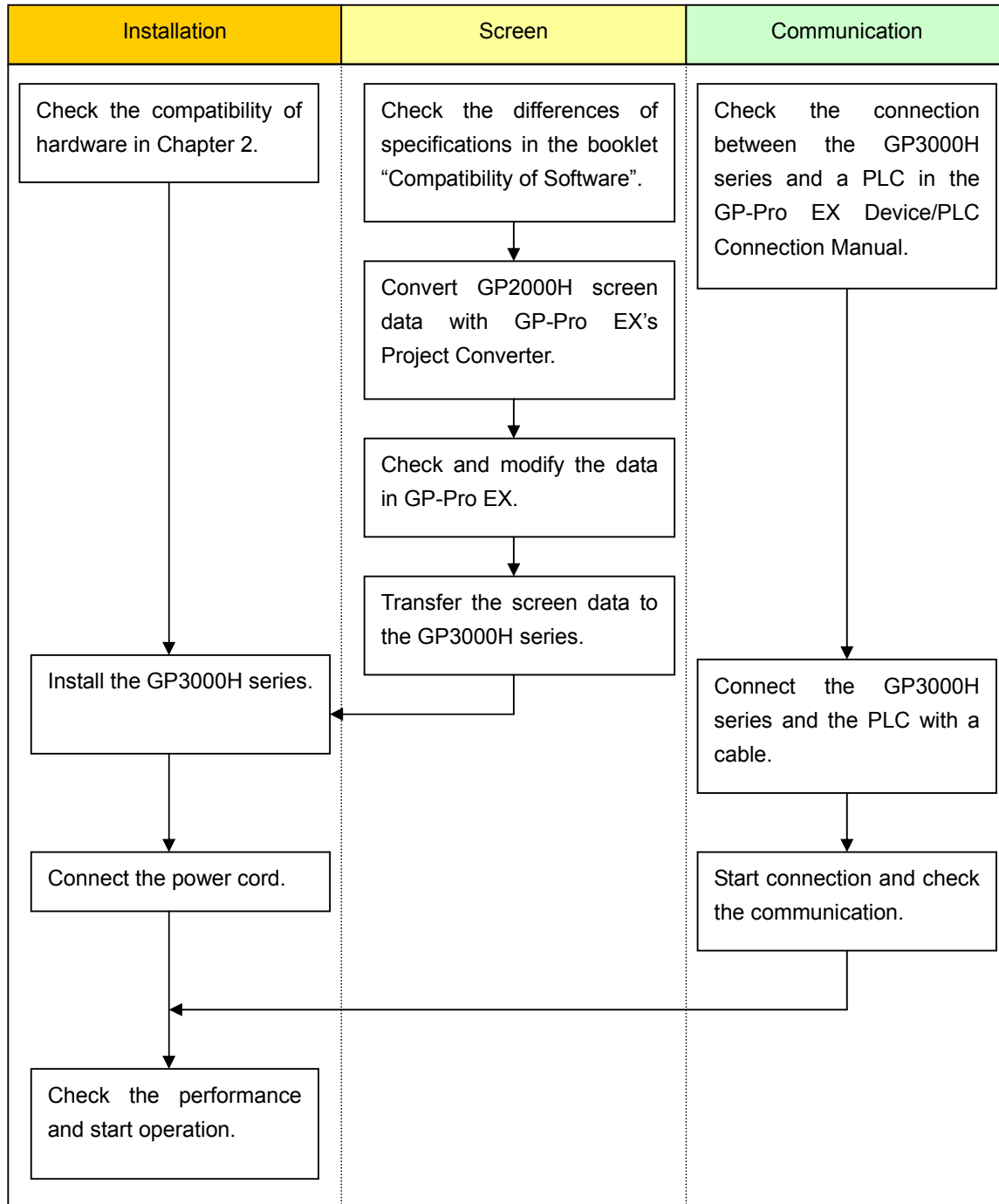
The system structure using a GP3000H series unit + a GP3000H cable + a GP2000 conversion adapter is not UL508 listed. If you need it UL508 approved, the application shall be made at your end. For the detailed documents of the product, contact the nearest Pro-face office.



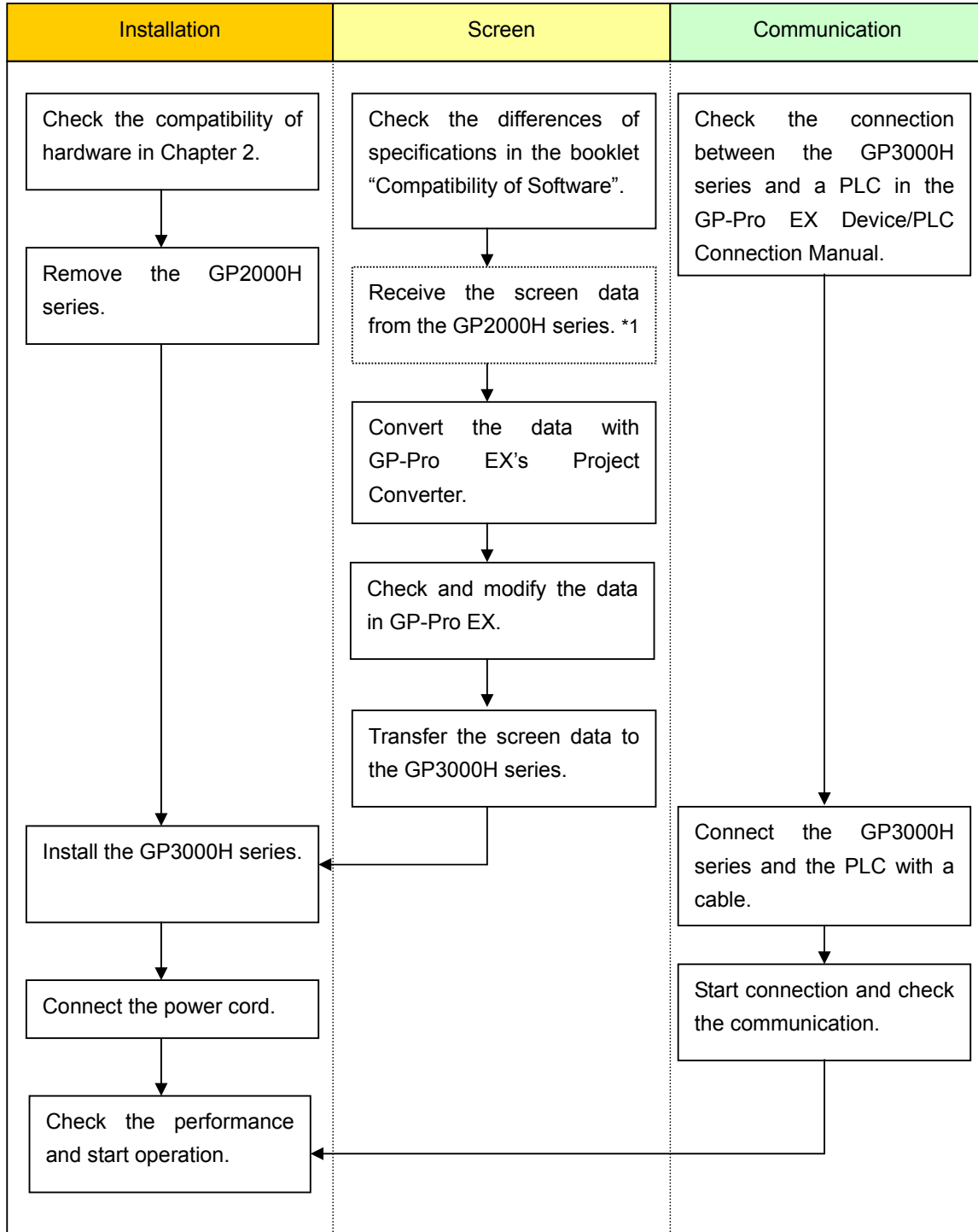
Chapter 3. Replacement Procedure

3.1 Work Flow

- ◆ To change the equipment designed for the GP2000H series to the GP3000H series



- ◆ To replace the 2000H series mounted to the equipment with the 3000H series



*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 the GP2000H series (*1) | PC in which GP-PRO/PB3 for Windows V.6.01 or later is installed Note: The software version must be the same or higher than the version that you used when creating screen data for the GP2000H series. We recommend you upgrade to the latest version, which is Ver. 7.29 as of June 2009. |
| | Transfer cable (the following three types of cable are available) <ul style="list-style-type: none"> ▪ GPW-CB02 (9-pin D-sub to the PC) ▪ GPW-CB03 (USB to the PC) (*2) ▪ GP430-CU02-M or GPW-SET <p>The GP2000H series also allows you to transfer screen data via a CF card.</p> |
| Requirements for converting screen data of the GP2000H series and transferring to the 3000H series | PC in which GP-Pro EX is installed |
| | Transfer cable (model: CA3-USBCB-01) The GP3000H series also allows you to transfer screen data via an Ethernet cable, CF card, or USB flash drive. |

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

*2: GPW-CB03 is compliant with GP-PRO/PB3 for Windows C-Package02 SP2 Ver. 6.23 or later.

To use it, you may need to [install the driver](#).

Go to our support website [Otasuke Pro!](#)

-> Download

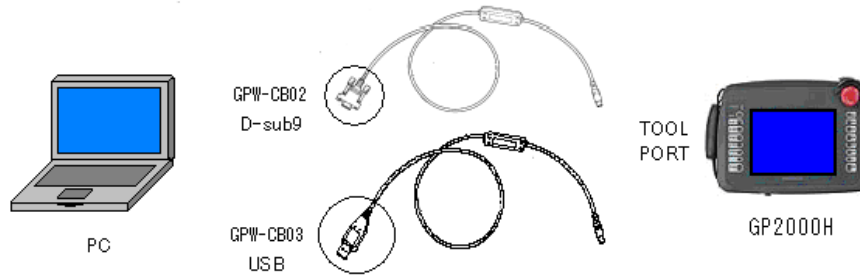
-> Updates/Drivers

-> GP-PRO/PB3: USB Data Transfer Cable (GPW-CB03)

3.3 Receive screen data from the GP2000H series

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

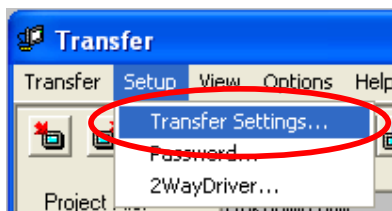
1. Connect a transfer cable to the GP2000H series.



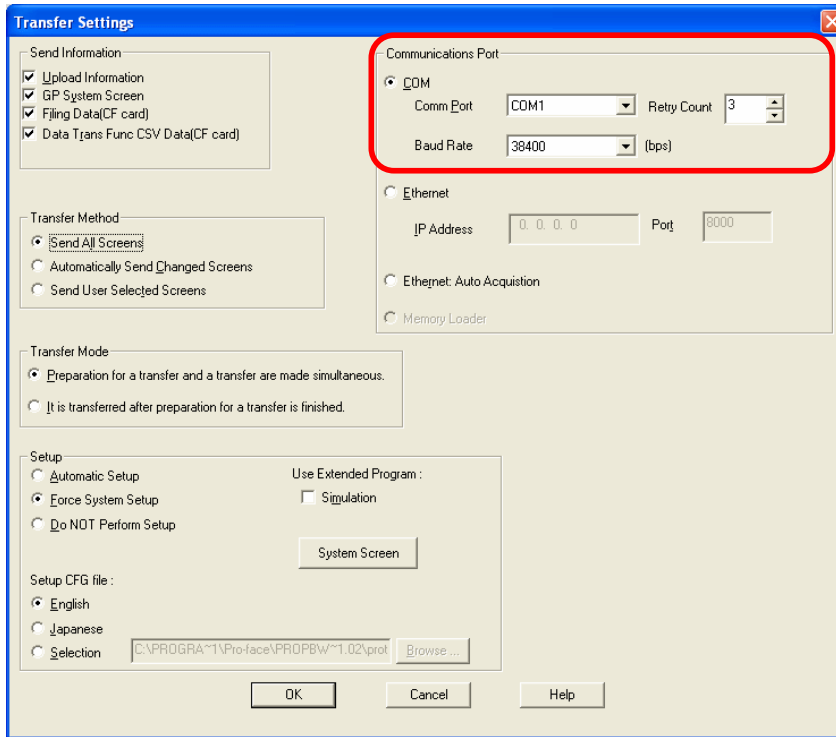
2. Start up GP-PRO/PB3 C-Package and click the [Transfer] icon on the Project Manager. (Specify a desired project file.)



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

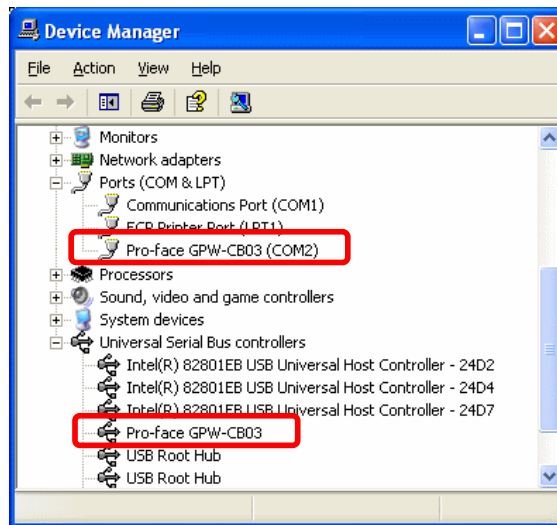


4. In the Communication Port field, select [COM], specify the COM port to which the cable is connected, and click [OK].

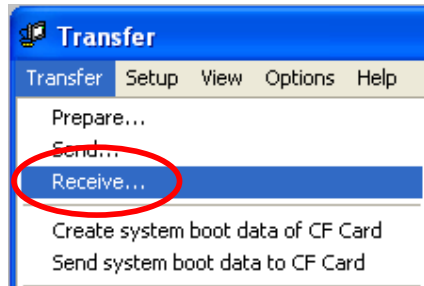


If you use a USB transfer cable (GPW-CB03)...

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.



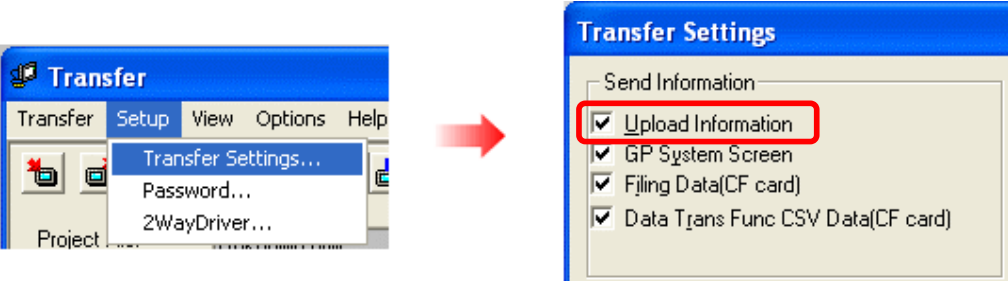
5. Select the [Transfer] menu and click [Receive...].



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

In case there is no Upload Information...

“Upload Information” is necessary to receive screen data from the display unit. 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.

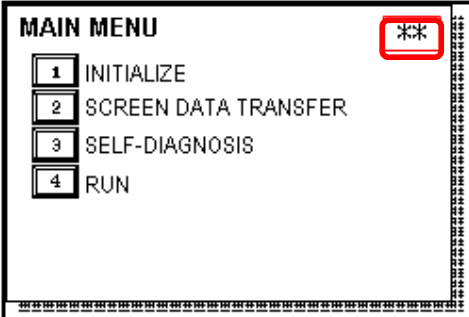


The diagram shows the 'Transfer' menu with 'Transfer Settings...' selected. An arrow points to the 'Transfer Settings' dialog box. In the 'Send Information' section, the 'Upload Information' checkbox is checked and highlighted with a red box. Other checked items include 'GP System Screen', 'Filing Data(CF card)', and 'Data Trans Func CSV Data(CF card)'.

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

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

Enter into the GP's Offline mode. If there are 2 asterisk (*) marks in the Main menu as below, the Upload Information has been sent. If not, there is no Upload Information sent.

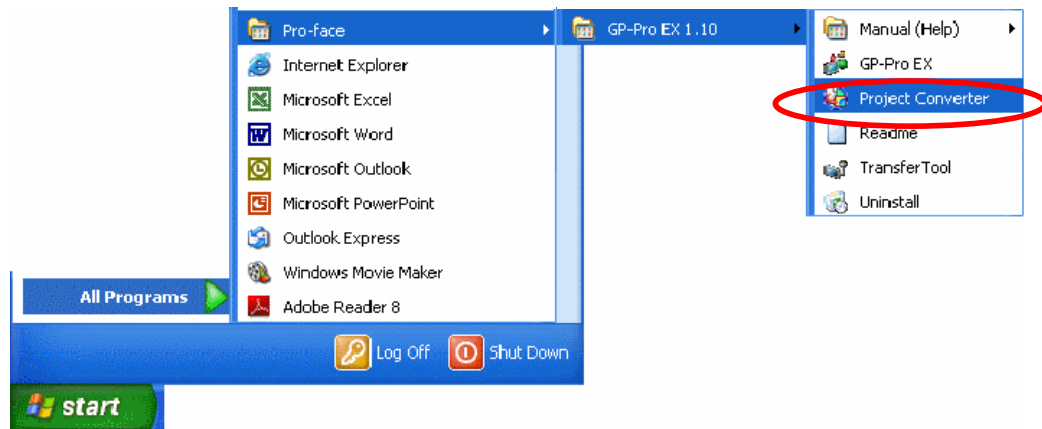


The screenshot shows the 'MAIN MENU' with four options: 1 INITIALIZE, 2 SCREEN DATA TRANSFER, 3 SELF-DIAGNOSIS, and 4 RUN. Two asterisks (***) are displayed in the top right corner of the menu area, enclosed in a red box.

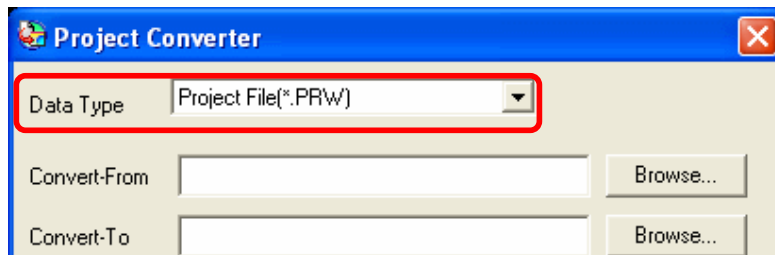
3.4 Convert screen data with the Project Converter

Convert a project file (*.prw) for the GP-37W2 unit with the GP-Pro EX's Project Converter.

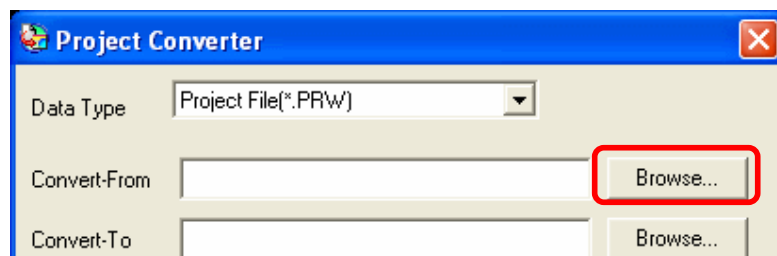
1. Click the [Start] button, select the [All Programs] ([Programs] on Windows® 2000 menu → [Pro-face] → [GP-Pro EX*.**]. (Where *.* is the version of the software you use.)

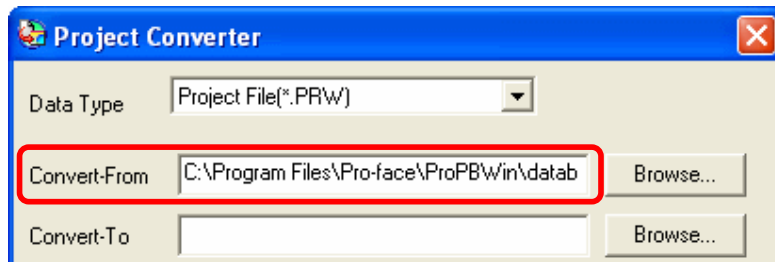
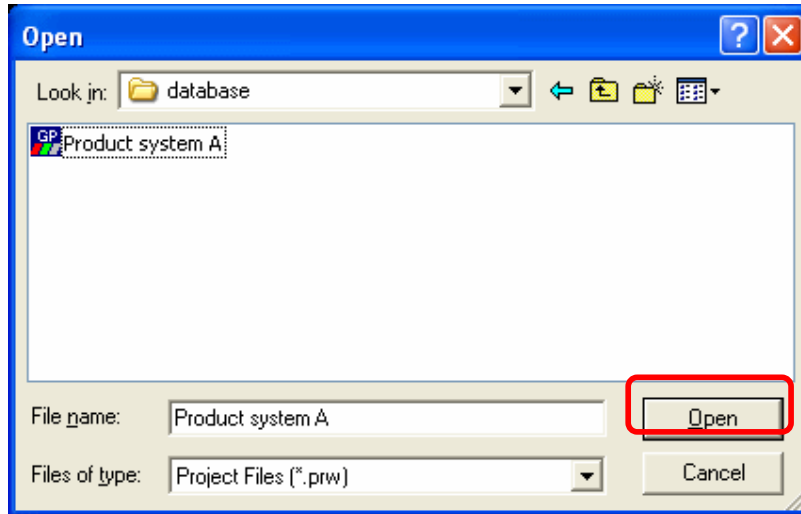


1. The Project Converter starts up and the [Project Converter] dialog box opens. Select [Project File (*.PRW)] in the [Data Type].

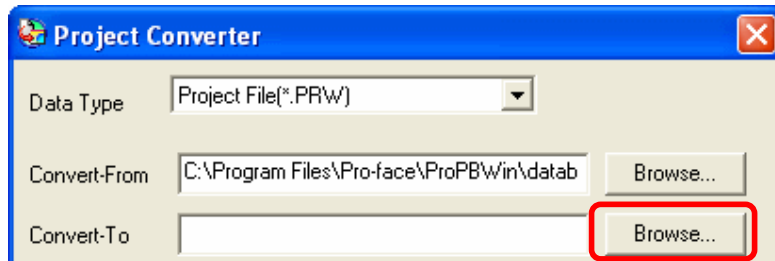


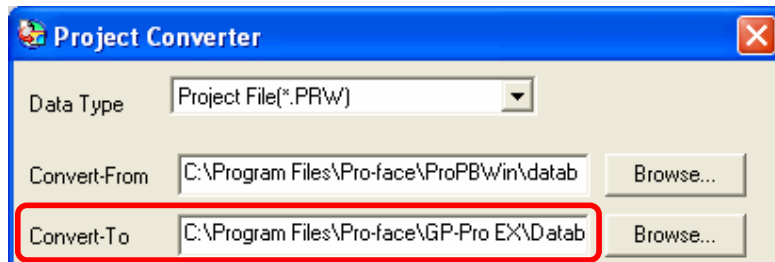
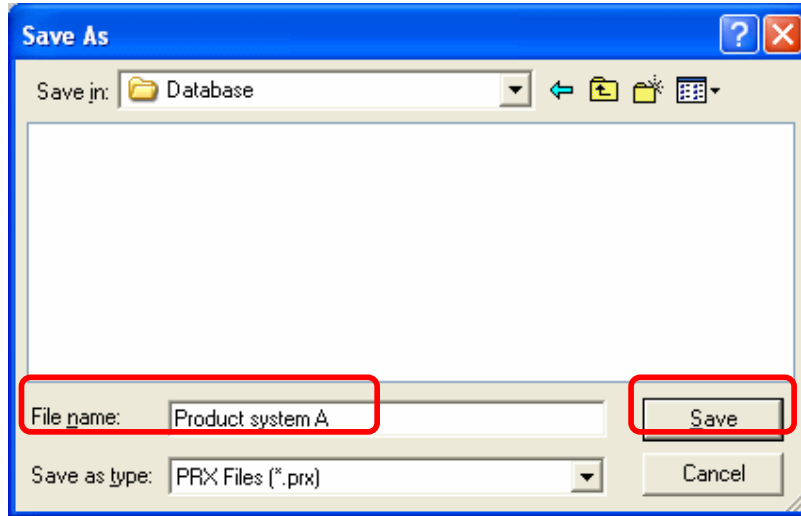
1. Designate a GP-PRO/PB3 for Windows' project file (*.prw) in [Convert-From]. Click the [Browse...] button and select a project file (e.g.: "Project system A.prw"). Click [Open], and the file will be set in [Convert-From].





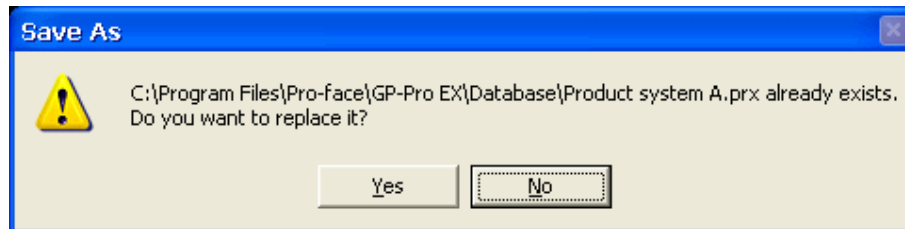
4. In [Convert-To], designate a GP-Pro EX's project file (*.prx). Click the [Browse...] button and enter a new [File Name] (e.g.: "Product system A.prx"). Click [Save], and a new project file will be set to [Convert-To].



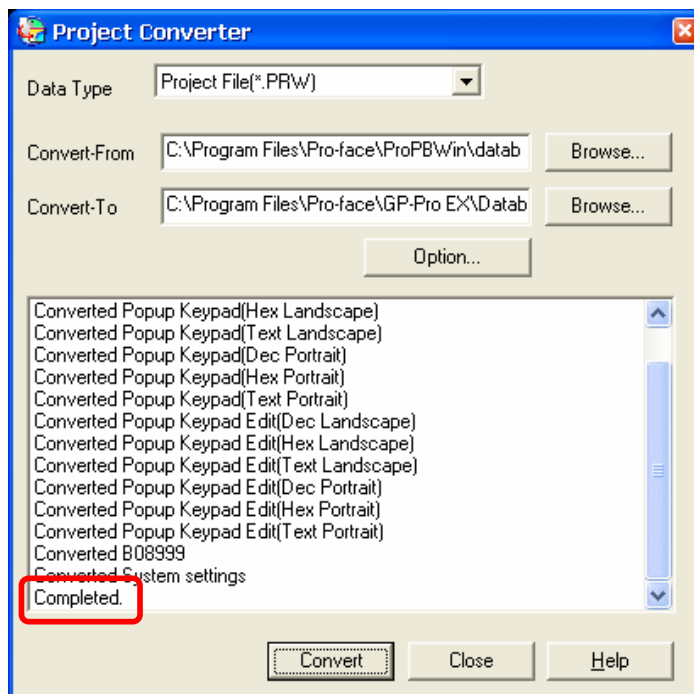
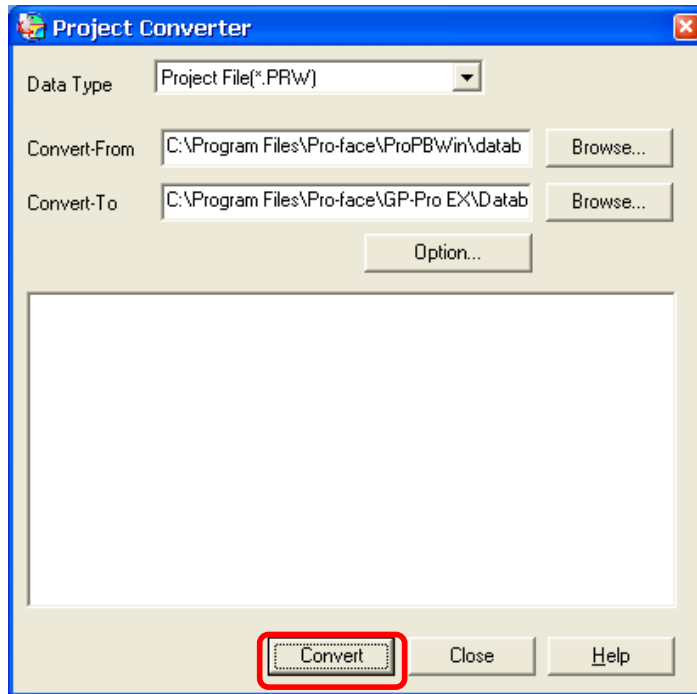


NOTE

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

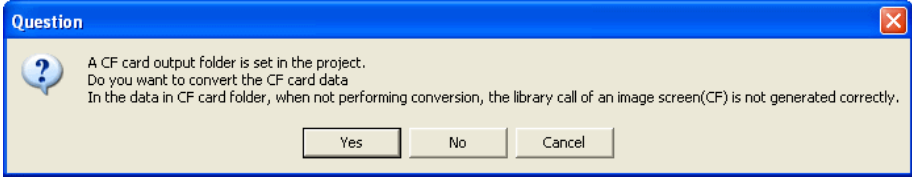


5. Click [Convert] and start the conversion.



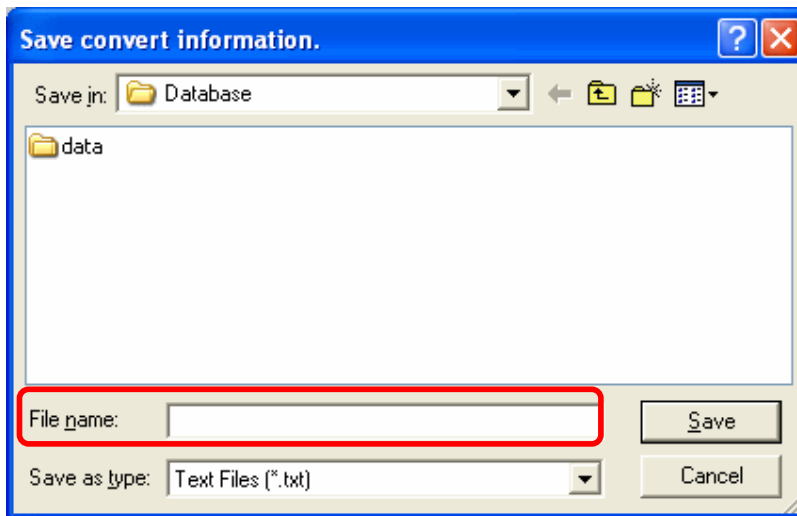
NOTE

- Depending on the model you are converting from, the [Convert Destination] dialog box may appear and you can select the type and the model.
- If the following dialog box appears, set a CF card output folder.
→ [See the next page](#)
Convert GP-PRO/PB3 for Windows' "Destination CF Card Folder"



The image shows a 'Question' dialog box with a blue title bar and a question mark icon. The text inside reads: 'A CF card output folder is set in the project. Do you want to convert the CF card data. In the data in CF card folder, when not performing conversion, the library call of an image screen(CF) is not generated correctly.' At the bottom, there are three buttons: 'Yes', 'No', and 'Cancel'.

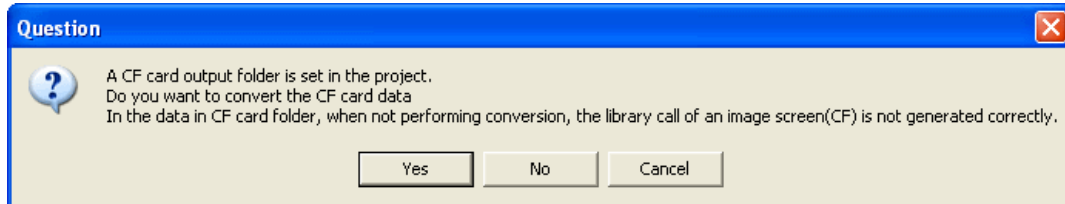
6. After conversion, the [Save convert information] dialog box appears. If you click [Save], you can save the conversion information in a text file.



7. Click [Close] to close the [Project Converter] dialog box.

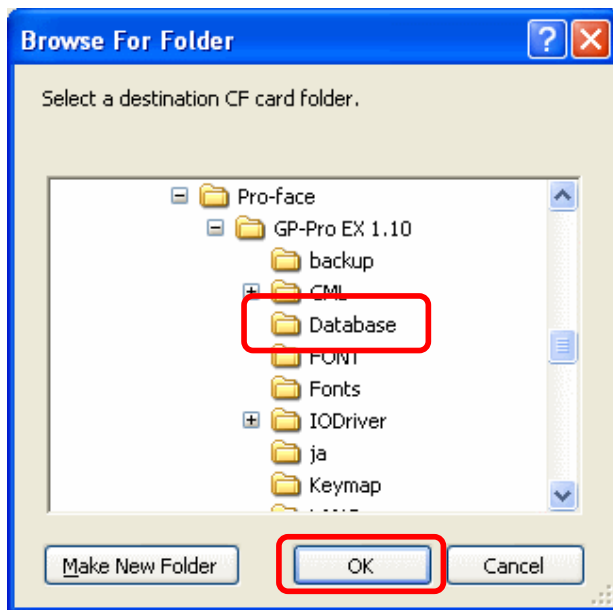
◆ **Convert GP-PRO/PB3 for Windows' "Destination CF Card Folder"**

If you convert a project file (*.prw) with a destination CF card folder designated in the step 5, the Question dialog box asking whether or not to designate the destination CF card folder for the convert destination appears again.



Select a folder (e.g.: "Database") and click [OK].

If you click the [Make New Folder] button, you can create a new folder at any location.



IMPORTANT

In the [Question] dialog box, be sure to select [Yes] and specify the destination folder. If you select [No], images will not be called correctly.

3.5 Differences of software after conversion

Check the differences of screen data after conversion.

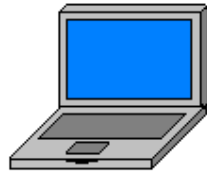
For the details of each item, refer to the booklet "Compatibility of Software" or visit our website.

<http://www.pro-face.com/otasuke/ga/gp3000/replace/soft.htm>

| | |
|----|---|
| 1 | Touch Panel Type |
| 2 | Compatibility of Bit Switch |
| 3 | Compatibility of Trend Graph |
| 4 | Compatibility of K Tag (Input Order) |
| 5 | Compatibility of K Tag (Difference of Writing) |
| 6 | Compatibility of K Tag (Indirect Setting) |
| 7 | Compatibility of N Tag |
| 8 | About the performance when a window is overlapping on a momentary switch |
| 9 | About the performance when display area of the system window is overlapping |
| 10 | Change of Tag Process |
| 11 | Compatibility of Text |
| 12 | Compatibility of Fill |
| 13 | Compatibility of CF Card |
| 14 | Precautions for conversion when filing data is saved in a CF card |
| 15 | Precautions for setting "Color Settings" to [256 Colors without blinking] |
| 16 | Precautions for loading a part with "L Tag (Library Display)" |
| 17 | Compatibility of MRK files and CPW files |
| 18 | Compatibility of VM Unit Settings |
| 19 | Compatibility of Extended SIO Script |
| 20 | Compatibility of Sound Data |
| 21 | Compatibility of Device Monitor |
| 22 | Compatibility of J Tag and R Tag |
| 23 | Converting Screen Data of DOS |
| 24 | Compatibility of Standard Font |
| 25 | Compatibility of Trigger Condition of D-Script (D-Script is triggered immediately after a screen changes or the power is turned on.) |
| 26 | Compatibility of U Tag (Difference in position of a called Window screen) |
| 27 | Precautions for using Screen Level Change |

3.6 Transfer screen data to the GP3000H series

Transfer the converted project file to the GP3000H unit. Although you can transfer data to the GP3000H unit via a USB flash drive, this section explains, as an example, how to transfer screen data with a USB transfer cable (model: CA3-USBCB-01).



PC



CA3-USBCB-01



GP3000H

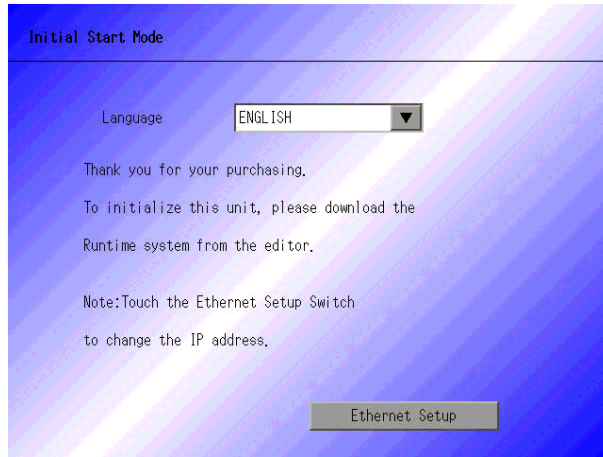
1. Connect your PC and the GP3000H series with a USB transfer cable. If the driver of the cable has not been installed on your PC yet, a dialog box will appear. Please follow the instructions.

NOTE

The “Hardware Installation” dialog box as follows may appear during installing the driver of a USB depending on the security level of Windows XP. Click [Continue Anyway] to start installing the driver for CA3-USBCB-01. When installation is completed, click [Finish].

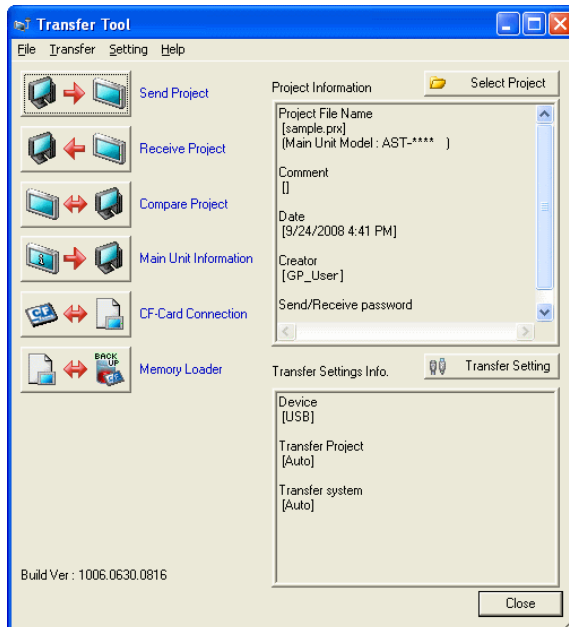


2. Turn on the display unit's power. The "Initial Start Mode" screen will appear on the display unit.



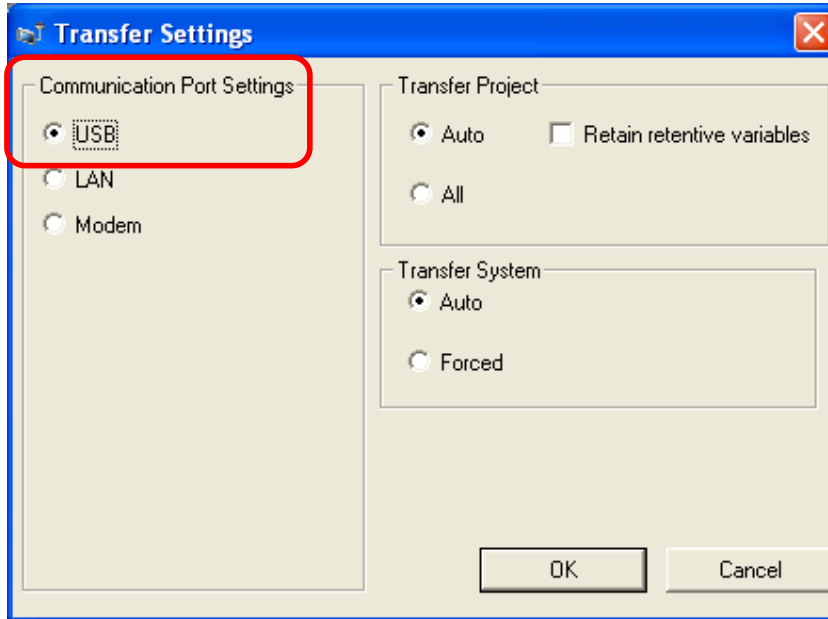
This screen will appear when you first connect the display unit's power code. After transferring a project file once, this screen will not appear again.

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

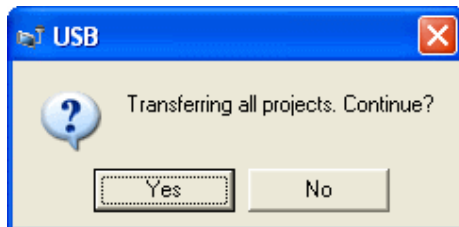


4. Check the project file name and other data to be transferred in the Project Information. To transfer a different project file, click the [Select Project] button and select a project file.

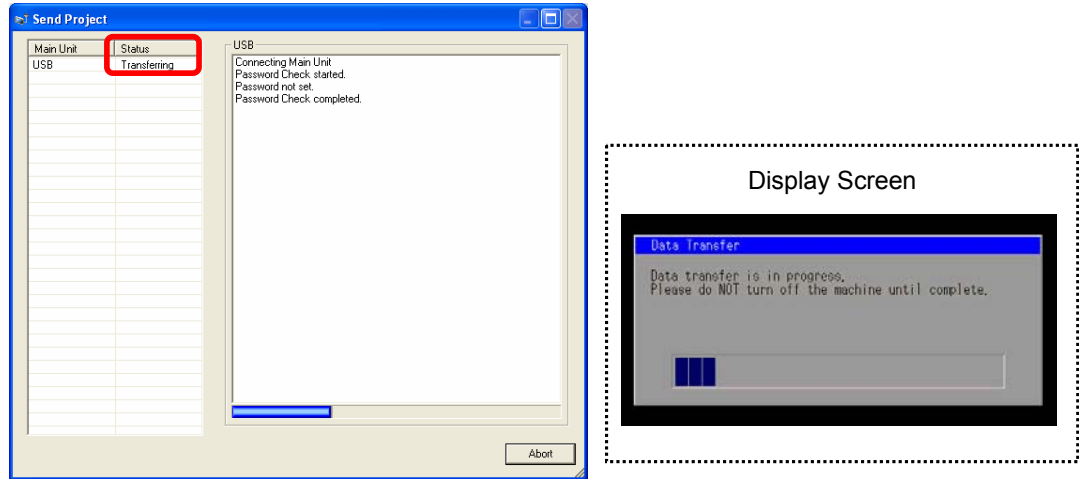
5. Make sure that the [Device] in the “Transfer Information” is set to [USB]. If not, click the [Transfer Setting] button to open the “Transfer Settings” dialog box. Select [USB] in the Communication Port Settings field and click [OK].



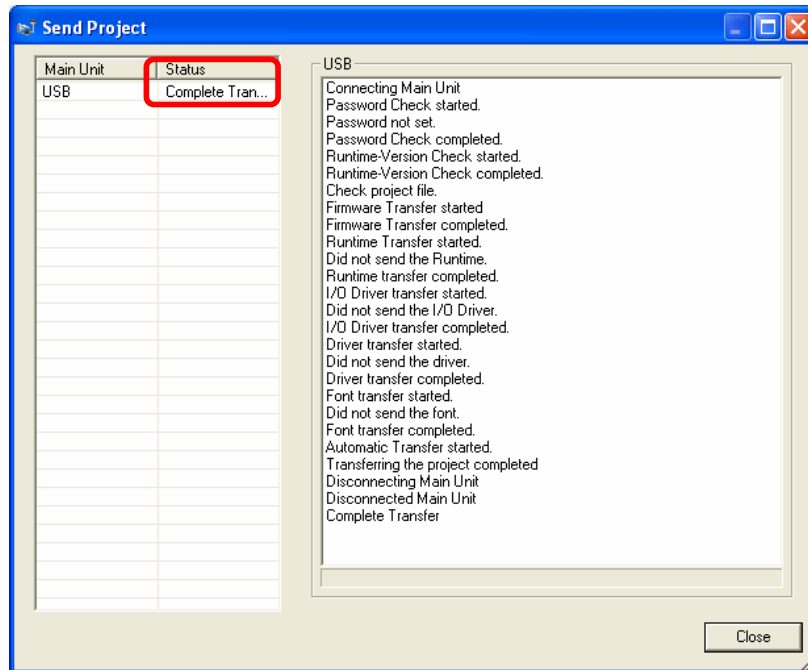
6. Click [Send Project] to start transfer. When the following dialog box appears, click [Yes]. This dialog box doesn't appear when the same project file is sent again.



7. 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.)



8. 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.)



9. Close the Transfer Tool.

Chapter 4. Communication with Device/PLC

4.1 Driver list

IMPORTANT

The followings are information as of May 2009.

More connectable drivers will be added. Please check our website "Otasuke Pro!" for the latest information.

| PLC | | |
|--|---------------------------------|---------|
| Manufacturer | Series | GP3000H |
| Mitsubishi Electric Corporation | A Series CPU Direct | ✓ |
| | A Series Ethernet | ✓ |
| | A Series Computer Link | ✓ |
| | FX Series CPU Direct | ✓ |
| | FX Series Computer Link | ✓ |
| | Q Series CPU Direct | ✓ |
| | Q/QnA Serial Communication | ✓ |
| | Q/QnA Series Ethernet | ✓ |
| | QnA Series CPU Direct | ✓ |
| | QUTE Series CPU Direct | ✓ |
| | Q Series QnU CPU Ethernet | ✓ |
| OMRON Corporation | C/CV Series HOST Link | ✓ |
| | CS/CJ Series HOST Link | ✓ |
| | CS/CJ Series Ethernet | ✓ |
| YASKAWA Electric Corporation | MEMOBUS SIO | ✓ |
| | MEMOBUS Ethernet | ✓ |
| | MP Series SIO (Extension) | ✓ |
| | MP Series Ethernet (Extension) | ✓ |
| Hitachi IES Co., Ltd. | H Series SIO | ✓ |
| | H Series Ethernet | ✓ |
| Panasonic Electric Works, Ltd. (Formerly Matsushita Electric Works, Ltd.) | FP Series Computer Link SIO | ✓ |
| YOKOGAWA Electric Corporation | Personal Computer Link SIO | ✓ |
| | Personal Computer Link Ethernet | ✓ |
| JTEKT Corporation (Formerly Toyoda Machine Works) | TOYOPUC CMP-LINK SIO | ✓ |
| | TOYOPUC CMP-LINK Ethernet | ✓ |
| Fuji Electric Co., Ltd. | MICREX-F Series SIO | ✓ |
| | MICREX-SX Series SIO | ✓ |
| | MICREX-SX Series Ethernet | ✓ |

| | | |
|-----------------------------------|----------------------------------|---|
| GE Fanuc Automation | Series 90 Ethernet | ✓ |
| | Series 90-30/70 SNP | ✓ |
| | Series 90-30/70 SNP-X | ✓ |
| FUNUC Ltd | Power Mate Series | ✓ |
| Siemens AG | SIMATIC S7 MPI Direct | ✓ |
| | SIMATIC S7 3964(R)/RK512 | ✓ |
| | SIMATIC S7 Ethernet | ✓ |
| | SIMATIC S5 CPU Direct | ✓ |
| Rockwell Automation, Inc. | DF1 | ✓ |
| | EtherNet/IP | ✓ |
| | DH-485 | ✓ |
| KEYENCE Corporation | KV-700/1000/3000/5000 CPU Direct | ✓ |
| | KV-700/1000/3000/5000 Ethernet | ✓ |
| | KV Series CPU Direct | ✓ |
| | KZ10_80R/Tseries CPU Direct | ✓ |
| Schneider Electric Industries | MODBUS SIO Master | ✓ |
| | MODBUS TCP Master | ✓ |
| | Uni-Telway | ✓ |
| | MODBUS Slave | ✓ |
| SHARP MS Corporation | JW Series Computer Link SIO | ✓ |
| | JW Series Computer Link Ethernet | ✓ |
| LS Industrial System | MASTER-K Series Cnet | ✓ |
| | XGT Series FEnet | ✓ |
| | XGT Series Cnet | ✓ |
| Mitsubishi Heavy Industries, Ltd. | DIASYS Netmation MODBUS TCP | ✓ |
| | MHI STEP3 Ethernet | ✓ |
| Saia-Burgess Controls Ltd. | SAIA S-Bus SIO | ✓ |
| MEIDENSHA Corporation | UNISEQUE Series Ethernet | ✓ |
| Hitachi, Ltd. | S10V Series Ethernet | ✓ |
| | S10 Series SIO | ✓ |
| TOSHIBA Machine Co., Ltd. | TCmini/TC200 | ✓ |
| TOSHIBA Corporation | Computer Link SIO | ✓ |
| | Computer Link Ethernet | ✓ |
| Koyo Electronics Co., Ltd. | KOSTAC/DL Series CCM SIO | ✓ |
| | KOSTAC/DL Series MODBUS TCP | ✓ |
| FATEK AUTOMATION Corporation | FB Series SIO | ✓ |

| Temperature Controller | | |
|---------------------------------|-----------------------------|---------|
| Manufacturer | Series | GP3000H |
| Yamatake Corporation | Digital Controller SIO | ✓ |
| RKC Instrument Inc. | Temp. Controller MODBUS SIO | ✓ |
| | Temperature Controller | ✓ |
| OMRON Corporation | Temp. Controller CompoWay/F | ✓ |
| Shinko Technos Co., Ltd. | Controller SIO | ✓ |
| YOKOGAWA Electric Corporation | Personal Computer Link SIO | ✓ |
| CHINO Corporation | Temp. Controller MODBUS SIO | ✓ |
| Fuji Electric Systems Co., Ltd. | Temp. Controller MODBUS SIO | ✓ |

| Inverter/Servo | | |
|---------------------------------|-----------------------|---------|
| Manufacturer | Series | GP3000H |
| Mitsubishi Electric Corporation | FREQROL Inverter | ✓ |
| YASKAWA Electric Corporation | Inverter SIO | ✓ |
| Hitachi IES Co., Ltd. | Inverter ASCII SIO | ✓ |
| | InverterModbus RTU | ✓ |
| Sanmei Electric Co., Ltd. | Si/CutyAxisSeries SIO | ✓ |

| Industrial Robot | | |
|--------------------------|--------------------------|---------|
| Manufacturer | Series | GP3000H |
| Hyundai Heavy Industries | Hi4 Robot | ✓ |
| IAI Corporation | ROBO CYLINDER MODBUS SIO | ✓ |
| | X-SEL Controller | ✓ |

| Other Devices | | |
|---------------------------------|---------------------------|---------|
| Manufacturer | Series | GP3000H |
| Digital Electronics Corporation | Memory Link *1 | ✓ |
| | General SIO *2 | ✓ |
| | General Ethernet *2 | ✓ |
| MODBUS IDA | General Modbus SIO Master | ✓ |
| | General Modbus TCP Master | ✓ |

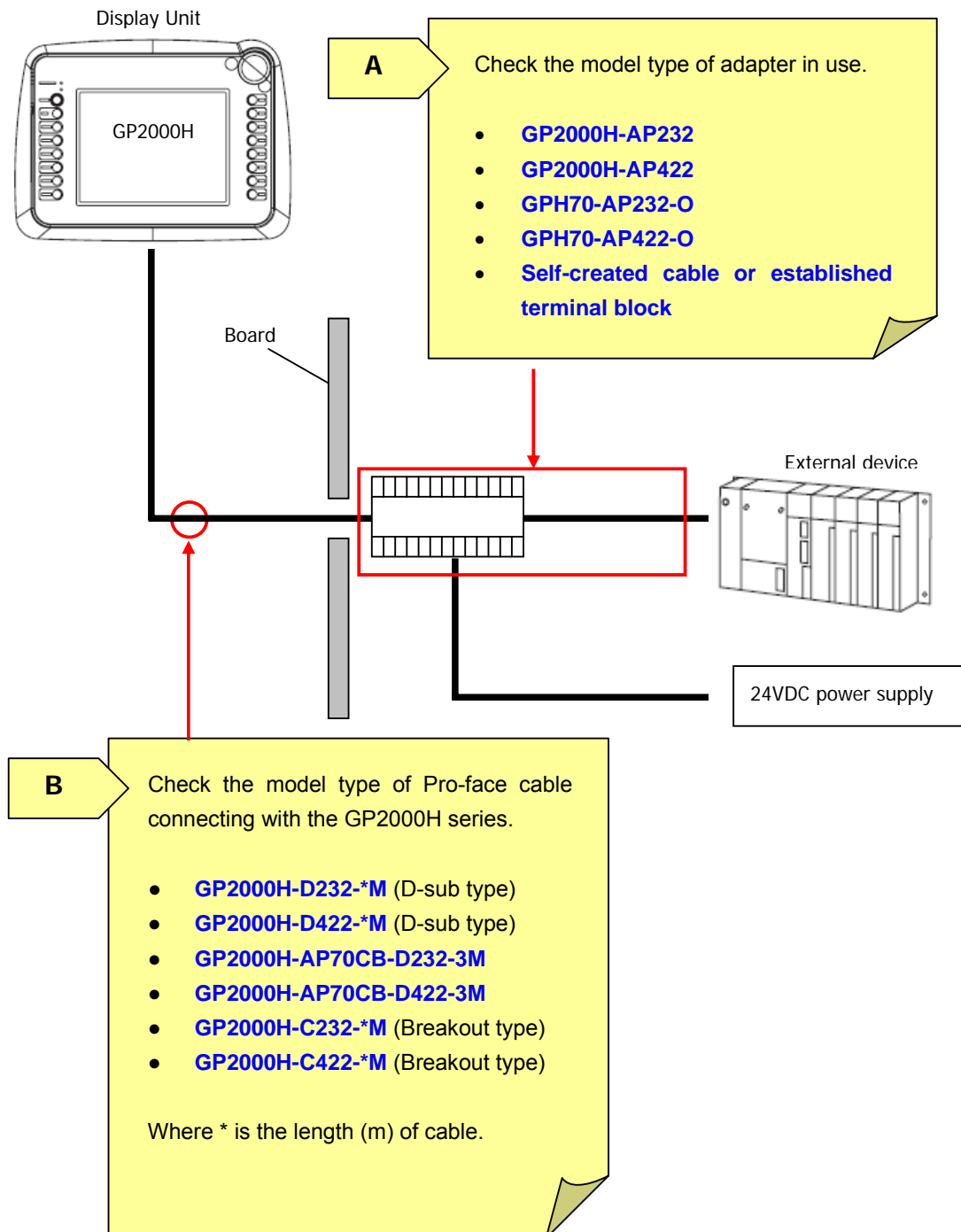
*1: The product doesn't need to choose a host controller like PC, Microcomputer board, etc. It communicates via the storage space built into the main unit

*2: A program driver for the send/receive command process by D-Script.

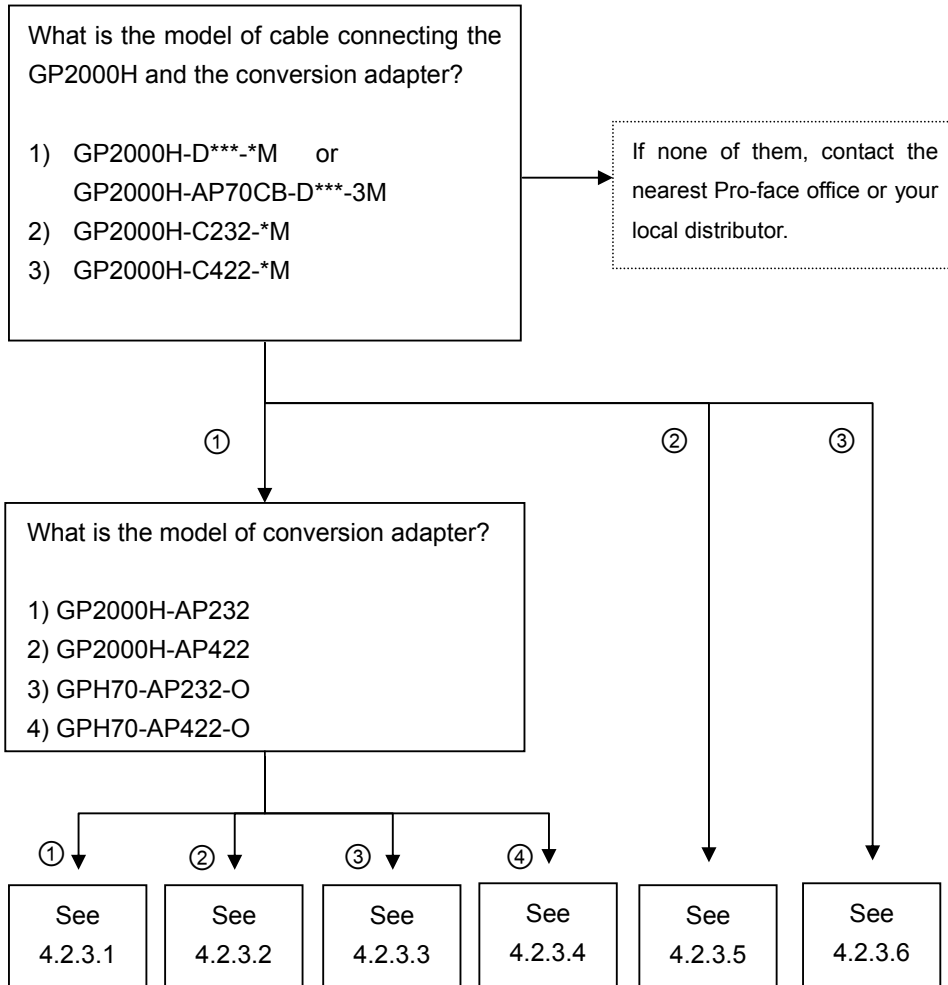
4.2 Differences of system structures

4.2.1 System structure before replacement (GP2000H Series)

The following system structure is one of the typical structures for the connection of the GP2000H series:



4.2.2 Work flow of replacement of GP2000H with GP3000H

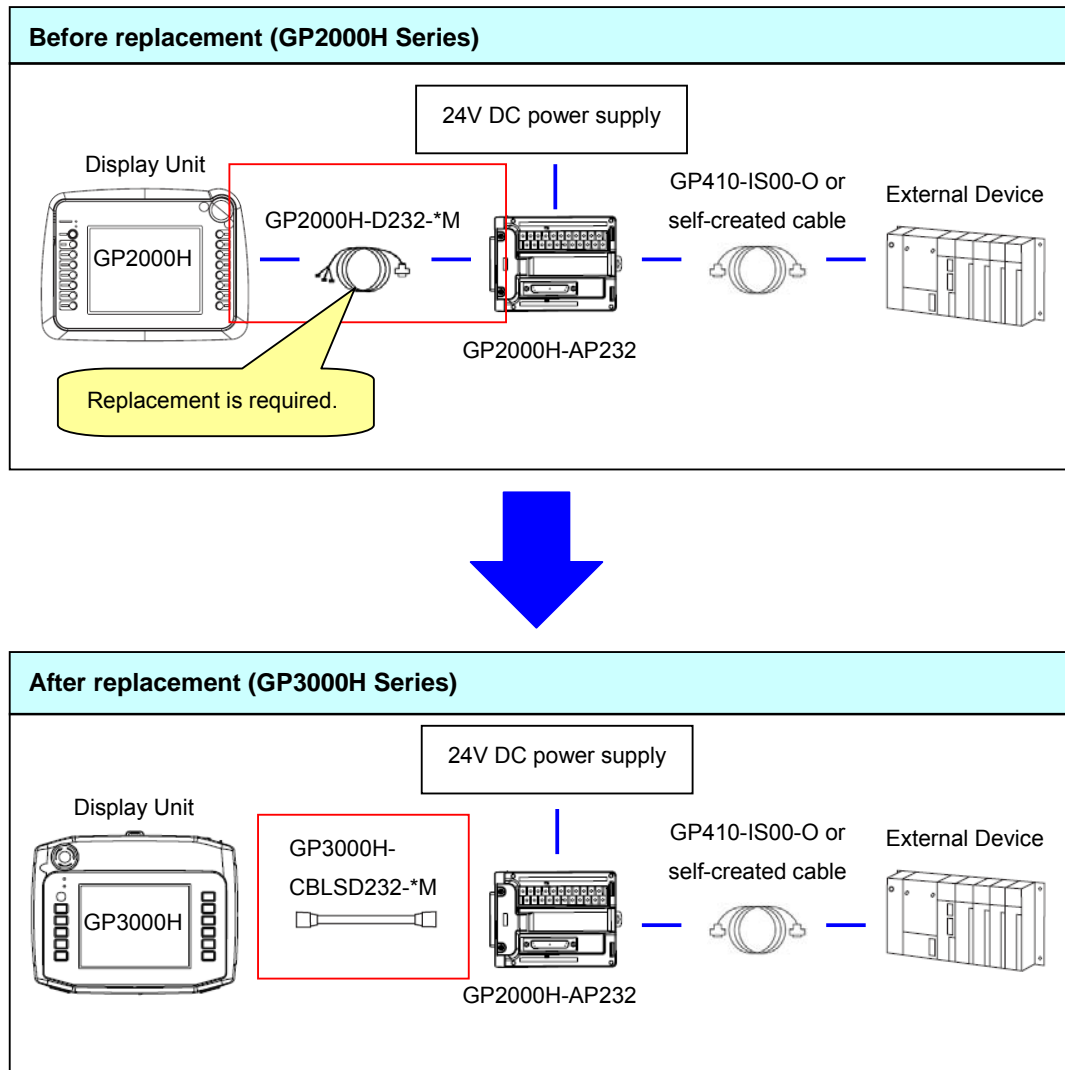


NOTE

Where *** in the model name is the communication method and * is the length of the cable.

4.2.3 System structure after replacement (GP3000H Series)

4.2.3.1 Structure 1

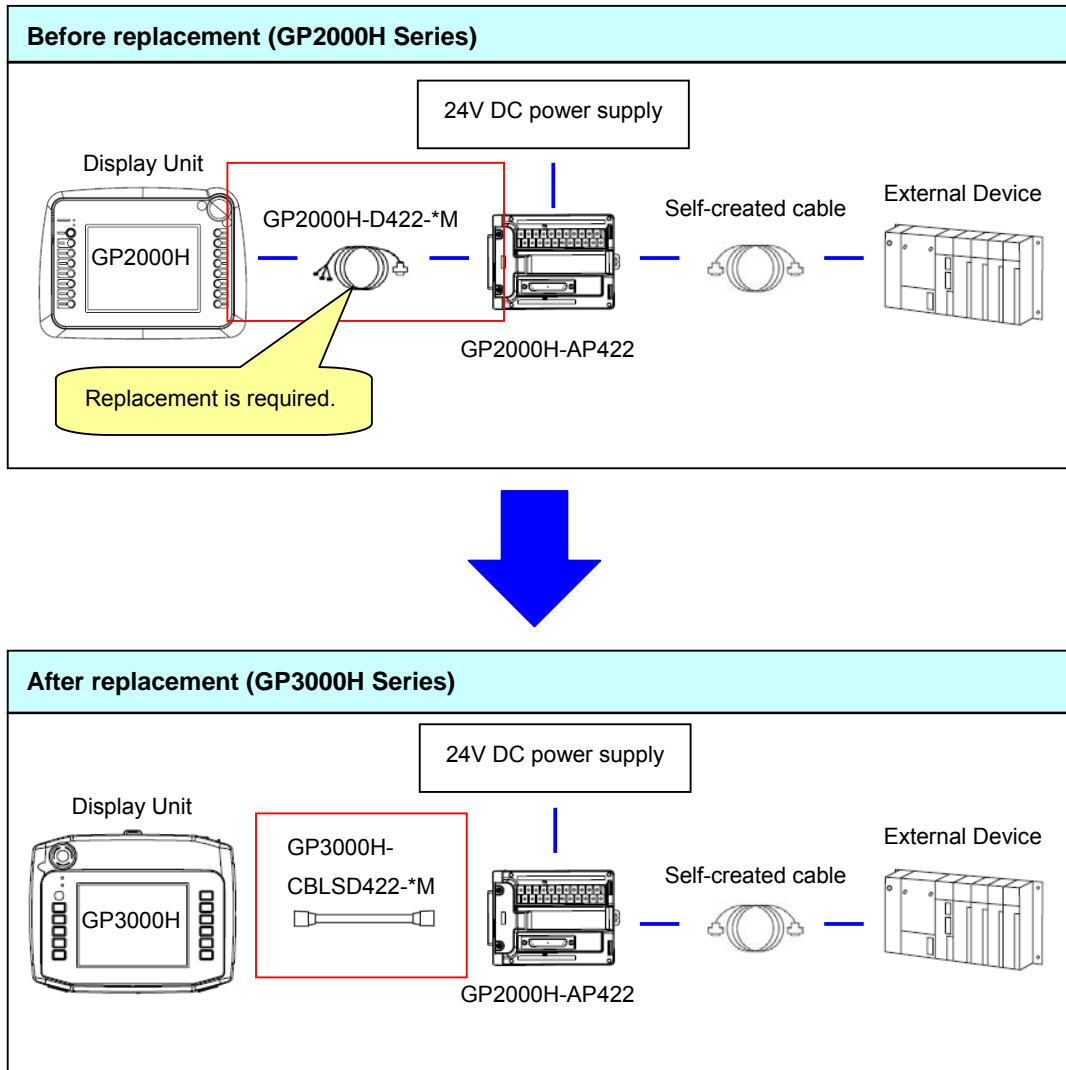


About replacement

When you replace the GP2000H unit with the GP3000H unit, you also need to replace the GP2000H cable (GP2000H-D232-*M) with the GP3000H cable (GP3000H-CBLS232-*M). However, you can use the GP2000H conversion adapter (GP2000H-AP232) and the cable GP410-IS00-O or self-created cable without changing.

If you use GP2000H-AP232 to connect the GP3000H, some features are restricted. For the details, see A.1.3 "IMPORTANT."

4.2.3.2 Structure 2

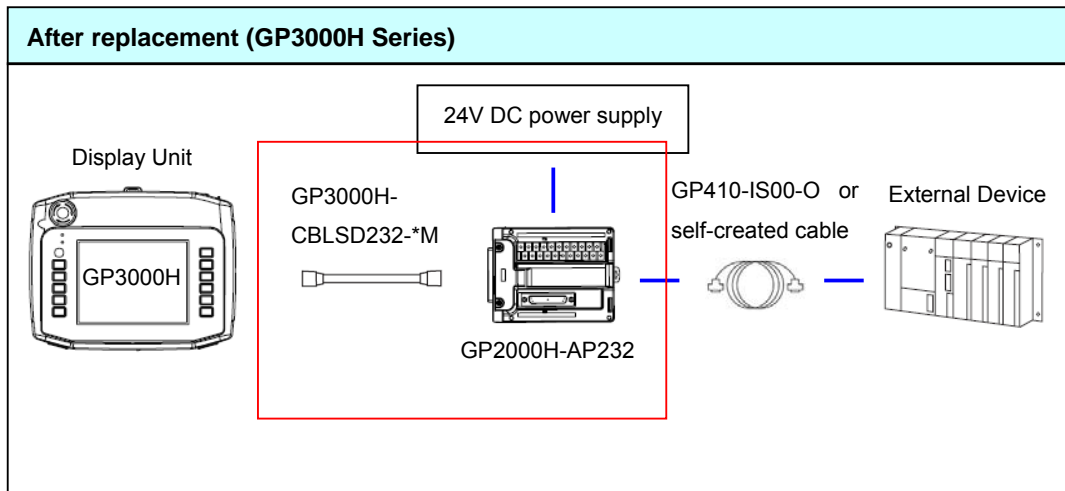
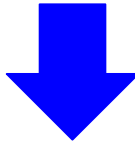
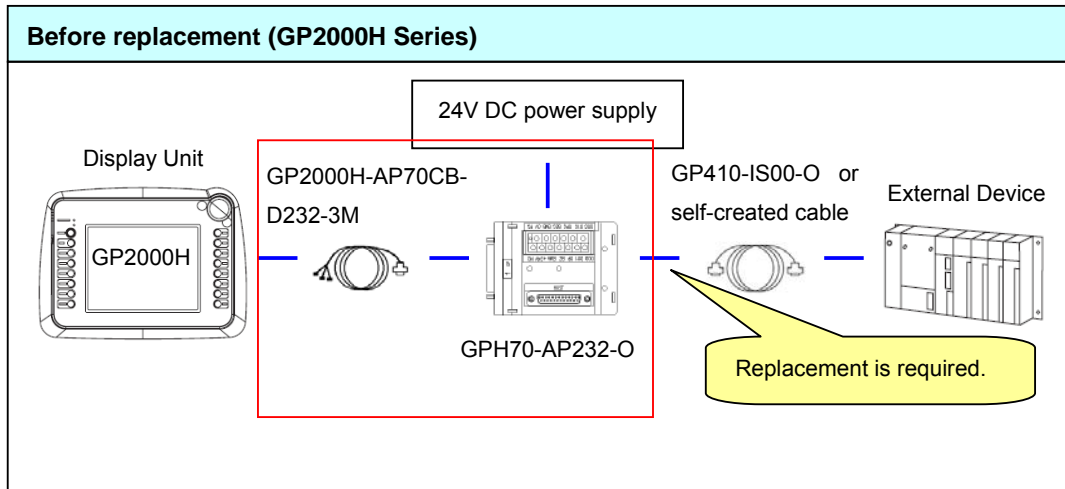


About replacement

When you replace the GP2000H unit with the GP3000H unit, you also need to replace the GP2000H cable (GP2000H-D422-*M) with the GP3000H cable (GP3000H-CBLSD422-*M). However, you can use the GP2000H conversion adapter (GP2000H-AP422) and the [self-created cable](#) without changing.

If you use [GP2000H-AP422](#) to connect the GP3000H, some features are restricted. For the details, see [A.1.3 "IMPORTANT."](#)

4.2.3.3 Structure 3

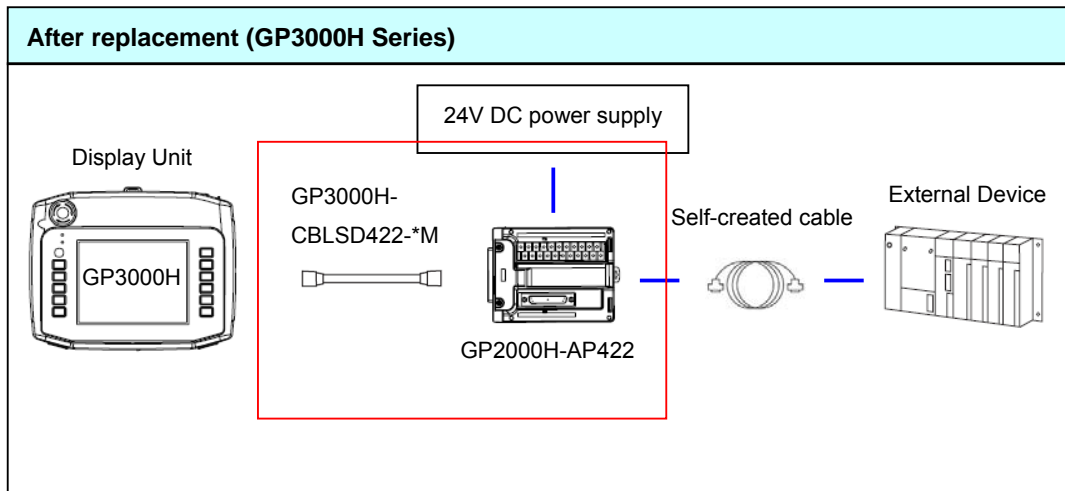
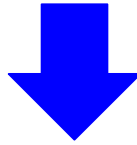
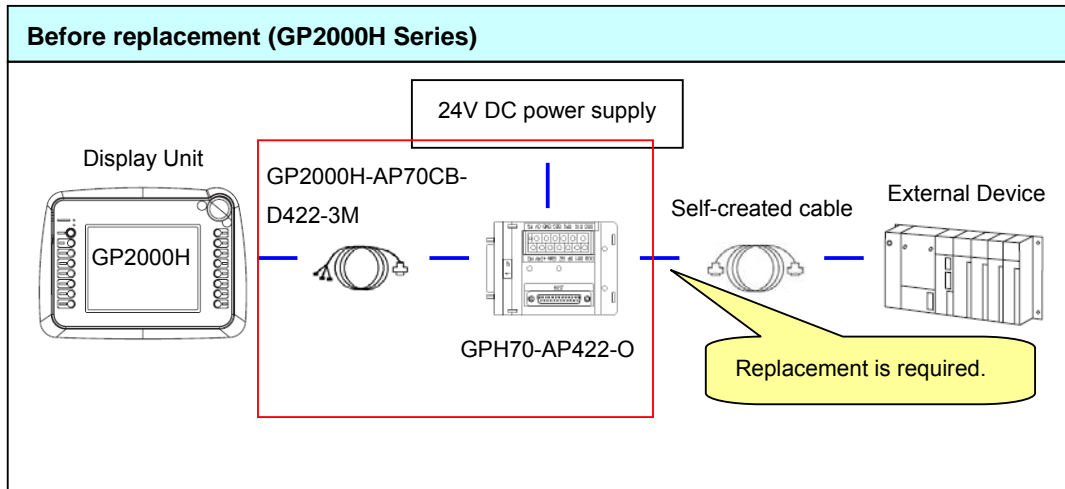


About replacement

When you replace the GP2000H unit with the GP3000H unit, you also need to replace the GP2000H series GP-H70 conversion adapter connection cable ([GP2000H-AP70CB-D232-3M](#)) with the GP3000H cable ([GP3000H-CBLS232-*M](#)), and the GP-H70 conversion adapter ([GPH70-AP232-O](#)) with the GP2000H conversion adapter ([GP2000H-AP232](#)). However, you can use the cable [GP410-IS00-O](#) or [self-created cable](#) without changing.

If you use [GP2000H-AP232](#) to connect the GP3000H, some features are restricted. For the details, see [A.1.3 "IMPORTANT."](#)

4.2.3.4 Structure 4

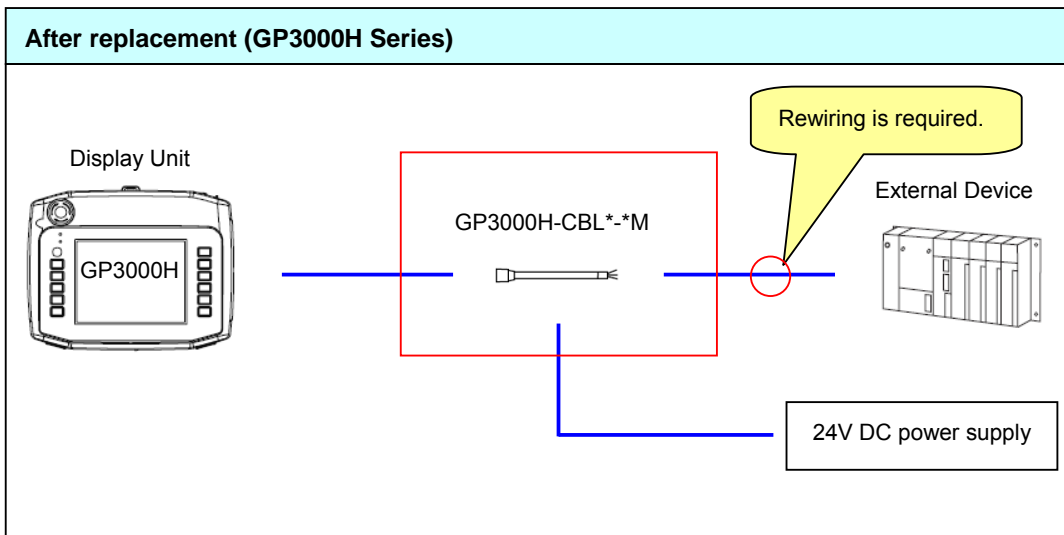
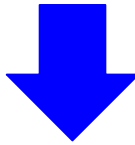
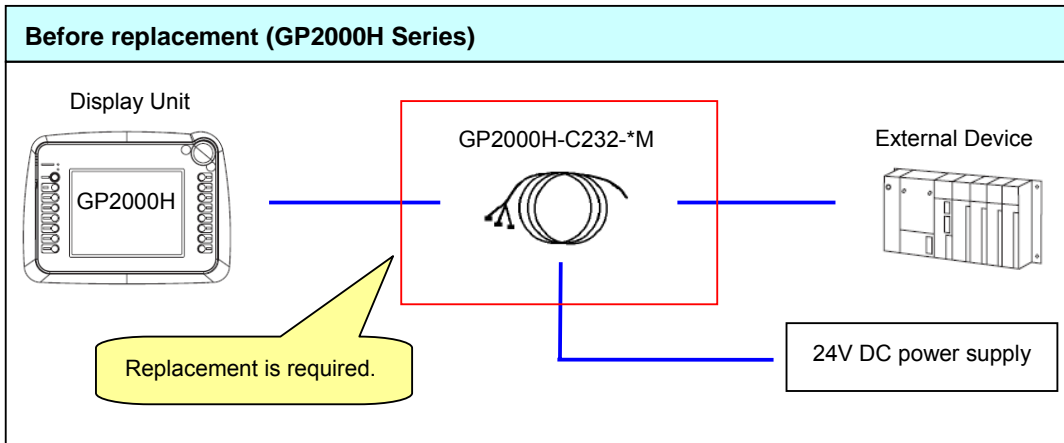


About replacement

When you replace the GP2000H unit with the GP3000H unit, you also need to replace the GP2000H series GP-H70 conversion adapter connection cable ([GP2000H-AP70CB-D422-3M](#)) with the GP3000H cable ([GP3000H-CBLS422-*M](#)), and the GP-H70 conversion adapter ([GPH70-AP422-O](#)) with the GP2000H conversion adapter ([GP2000H-AP422](#)). However, you can use the [self-created cable](#) without changing.

If you use [GP2000H-AP422](#) to connect the GP3000H, some features are restricted. For the details, see [A.1.3 "IMPORTANT."](#)

4.2.3.5 Structure 5



About replacement

When you replace the GP2000H unit with the GP3000H unit, you also need to replace the GP2000H cable (without connector) (GP2000H-C232-*M) with the GP3000H cable (without connector) (GP3000H-CBL*-*M). For the details of wiring to the connection device, check the cable diagram for connection using [your self-created cable \(your own cable\)](#) in the GP3000 Series Device/PLC Connection Manual. The cable-wiring diagram is different depending on the connection device to use.

Cable diagram 1

| Display (Connection Port) | Cable | |
|------------------------------|-------|--|
| GP (COM1) | A | Mitsubishi Q link cable by Pro-face CA3-CBLLNKMQ-01 |
| SI (COM1) IPC*1 PC/AT | B | Your own cable |

Example of Device/PLC Connection Manual

About cable color and identification mark

The wire jacket colors of the GP2000H cable are different from those of the GP3000H cable as follows:

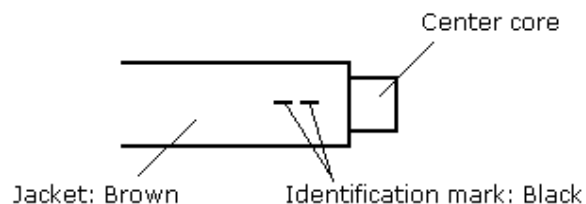
GP2000H-C232-*M

GP3000H-CBL*-*M

| Jacket color | | Jacket color | Identification mark | Signal |
|--------------|---|--------------|---------------------|--------------------|
| Purple | ⇒ | Brown | White 1 | CD |
| Orange | ⇒ | Brown | Black 1 | RD (RXD) |
| Blue | ⇒ | Brown | White 2 | SD (TXD) |
| Gray | ⇒ | Brown | White 4 | ER (DTR) |
| White | ⇒ | Brown | - | SG |
| - | | Brown | Black 3 | DR (DSR) |
| Red | ⇒ | Brown | Black 2 | RS (RTS) |
| Brown | ⇒ | Brown | White 3 | CS (CTS) |
| - | | Brown | Black 4 | CI (RI) |
| Black/Green | ⇒ | Red | - | Power input 24V DC |
| Red/Green | ⇒ | Black | - | Power input 0V |
| Shield | ⇒ | Green | - | FG |

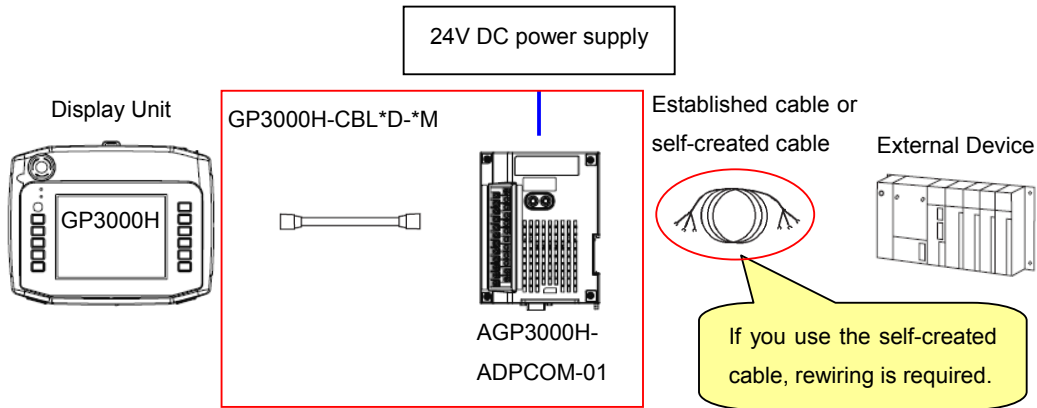
Example of GP3000H-CBL*-*M

In the right figure, the jacket color of the wire is brown and two black marks are on it. Therefore, this wire can be identified as RS (RTS).



NOTE

System structure using the GP3000H conversion adapter (AGP3000H-ADPCOM-01)



About replacement

You can also replace the GP2000H cable (without connector) (GP2000H-C232-*M) with the combination of the GP3000H cable (with connector) (GP3000H-CBL*D-*M) and the GP3000H conversion adapter (AGP3000H-ADPCOM-01).

As the shape of the serial interface on AGP3000H-ADPCOM-01 is same as that of the COM1 port of the GP3000H series, you can use not only the self-created cable (B in the table below) but also established cable (A in the table).

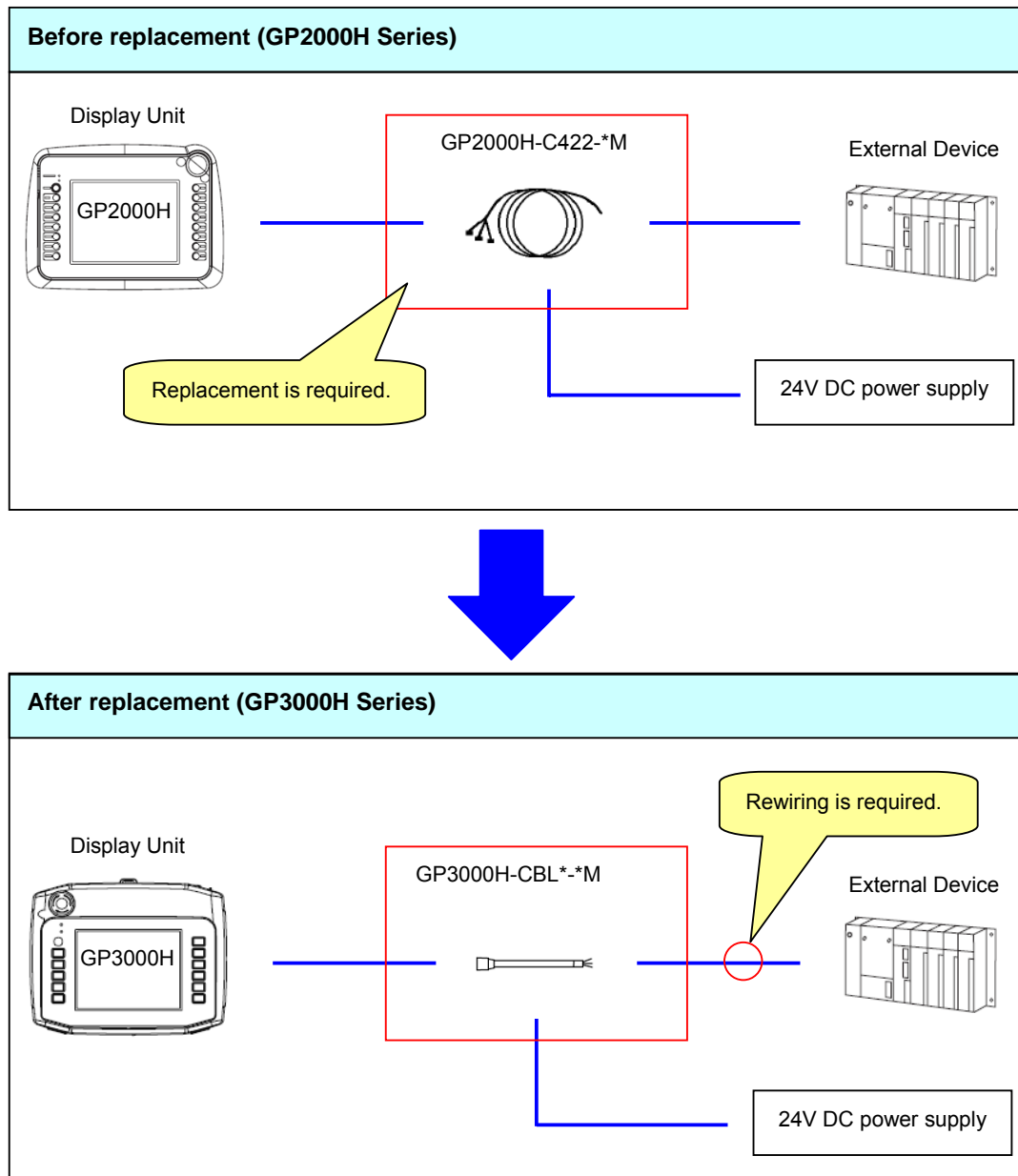
For the details of wiring AGP3000H-ADPCOM-01 to the connection device, check the cable diagram in the GP3000 Series Device/PLC Connection Manual. The cable-wiring diagram is different depending on the connection device to use.

Cable diagram 1

| Display (Connection Port) | Cable | |
|---------------------------|-------|--|
| GP (COM1) | A | Mitsubishi Q link cable by Pro-face CA3-CBLLNKMQ-01 |
| ST (COM1) | B | Your own cable |
| IPC*1 | | |
| PC/AT | | |

Example of Device/PLC Connection Manual

4.2.3.6 Structure 6



About replacement

When you replace the GP2000H unit with the GP3000H unit, you also need to replace the GP2000H cable (without connector) (GP2000H-C422-*M) with the GP3000H cable (without connector) (GP3000H-CBL*-*M). For the details of wiring to the connection device, check the cable diagram for connection using [your self-created cable \(your own cable\)](#) in the GP3000 Series Device/PLC Connection Manual. The cable-wiring diagram is different depending on the connection device to use.

Cable diagram 2

| Display (Connection Port) | Cable | |
|---|-------|--|
| GP ^{*1} (COM1) AGP-3302B (COM2) ST ^{*2} (COM2) IPC ^{*3} | A | COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable |
| | B | Your own cable |

Example of Device/PLC Connection Manual

About cable color and identification mark

The wire jacket colors of the GP2000H cable are different from those of the GP3000H cable as follows:

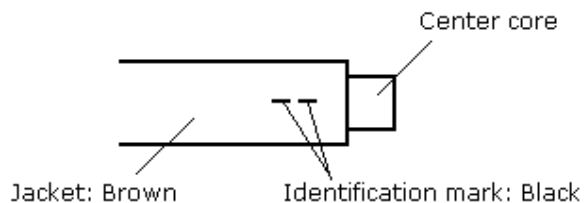
GP2000H-C422-*M

GP3000H-CBL*-*M

| Jacket color | | Jacket color | Identification mark | Signal |
|--------------|---|--------------|---------------------|--------------------|
| White | ⇒ | Brown | White 1 | RDA |
| Black | ⇒ | Brown | Black 1 | RDB |
| Yellow | ⇒ | Brown | White 2 | SDA |
| Green | ⇒ | Brown | Black 2 | SDB |
| Gray | ⇒ | Brown | - | SG |
| Brown | | Brown | White 4 | ERA |
| Red/Green | ⇒ | Brown | White 3 | CSA |
| Orange | ⇒ | Brown | Black 4 | ERB |
| Blue | | Brown | Black 3 | CSB |
| Black/Green | ⇒ | Red | - | Power input 24V DC |
| Red/Green | ⇒ | Black | - | Power input 0V |
| Shield | ⇒ | Green | - | FG |

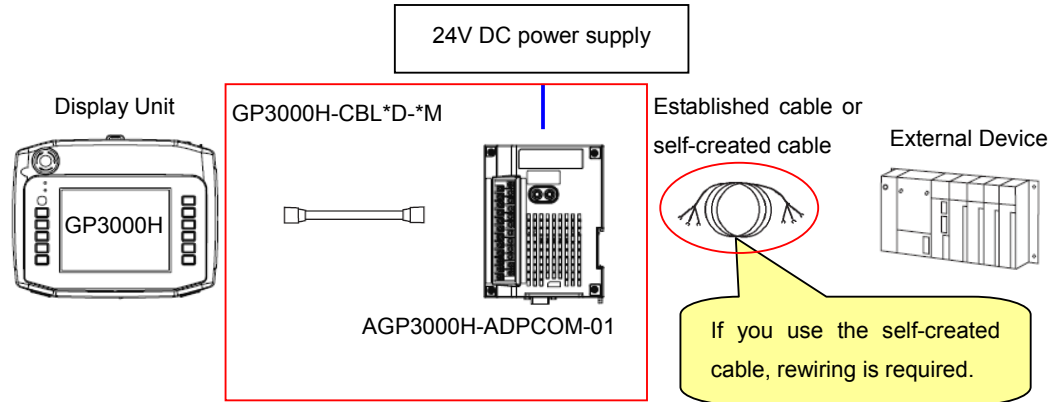
Example of GP3000H-CBL*-*M

In the right figure, the jacket color of the wire is brown and two black marks are on it. Therefore, this wire can be identified as SDB.



NOTE

System structure using the GP3000H conversion adapter (AGP3000H-ADPCOM-01)



About replacement

You can also replace the GP2000H cable (without connector) (GP2000H-C422-*M) with the combination of the GP3000H cable (with connector) (GP3000H-CBL*D-*M) and the GP3000H conversion adapter (AGP3000H-ADPCOM-01).

As the shape of the serial interface on AGP3000H-ADPCOM-01 is same as that of the COM1 port of the GP3000H series, you can use not only the self-created cable (B in the table below) but also established cable (A in the table).

For the details of wiring AGP3000H-ADPCOM-01 to the connection device, check the cable diagram in the GP3000 Series Device/PLC Connection Manual. The cable-wiring diagram is different depending on the connection device to use.

Cable diagram 2

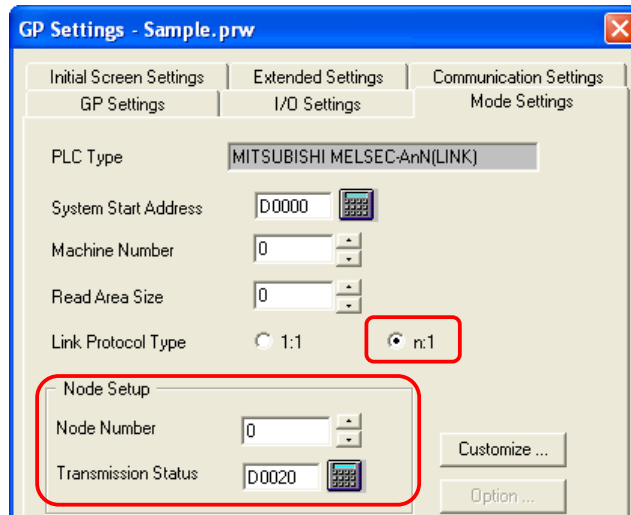
| Display (Connection Port) | Cable | |
|------------------------------|-------|--|
| GP* ¹ (COM1) | A | COM port conversion adapter by Pro-face CA3-ADPCOM-01 + |
| AGP-3302B (COM2) | | Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + |
| ST* ² (COM2) | | Your own cable |
| IPC* ³ | B | Your own cable |

Example of Device/PLC Connection Manual

4.3 Multilink Connection

If you convert a project file in which the multilink connection via RS-422 (n to 1) was set in GP-PRO/PB3 for Windows, the setting will be converted to the “1 to 1 connection” automatically.

- Settings on GP-PRO/PB3 for Windows



For the information on how to configure multilink connection via GP-Pro EX, see “Serial Multilink” on our support website Otasuke Pro!

<http://www.pro-face.com/otasuke/qa/3000/faq.cgi?mode=3000&cat=c>

For the information on drivers that support serial multilink communication, see the following page:

http://www.pro-face.com/otasuke/qa/3000/0009_sml03_e.html

Appendix 1 Signals of Cables (to Host, no connector)

A 1.1 GP2000H Series Special Purpose RS-232C Cable (GP2000H-C232-3M/10M)

| I/F | No. | Signal Name | Description | Wire Color | Wire Type | Non-GP2000H SIO Pin No. |
|---------------------|-----|-------------|---|--------------|-----------|-------------------------|
| External Device I/F | 1 | RESERVE | Reserved ^{*1} | Black/Gray | AWG22 | |
| | 2 | DOUT0.C | DOUT 0(ZERO) Output | Black/White | AWG22 | |
| | 3 | RESERVE | Reserved ^{*1} | Red/White | AWG22 | |
| | 4 | DOUT1.C | DOUT 1(ONE) Output | Green/Brown | AWG22 | |
| | 5 | OP.GND | OP Ground | Red/Yellow | AWG22 | |
| | 6 | OP.C | OP Output | Red/Blue | AWG22 | |
| | 7 | DOUT.GND | DOUT Ground ^{*2} | Red/Pink | AWG22 | |
| | 8 | BUZZ OUT | External Buzzer Output | Black/Orange | AWG22 | |
| | 9 | EMG0B | Push-Lock Switch 0B (Operates like A contact) | Red/Gray | AWG22 | |
| | 10 | EMG0A | Push-Lock Switch 0A (Operates like A contact) | White/Orange | AWG22 | |
| | 11 | EMG1B | Push-Lock Switch 1B (B contact) | Black/Yellow | AWG22 | |
| | 12 | EMG1A | Push-Lock Switch 1A (B contact) | Green/White | AWG22 | |
| | 13 | EMG2B | Push-Lock Switch 2B (B contact) | White/Blue | AWG22 | |
| | 14 | EMG2A | Push-Lock Switch 2A (B contact) | Black/Blue | AWG22 | |
| | 15 | ENB0B | Enable Switch 0B (A contact) | Black/Pink | AWG22 | |
| | 16 | ENB0A | Enable Switch 0A (A contact) | LightGreen | AWG22 | |
| | 17 | ENB1B | Enable Switch 1B (A contact) ^{*3} | Pink | AWG22 | |
| | 18 | ENB1A | Enable Switch 1A (A contact) ^{*3} | SkyBlue | AWG22 | |
| DC24V I/F | 1 | +24V | Power Input +24V (to GP2000H) | Black/Green | AWG22 | |
| | 2 | 0V | Power Input 0V (to GP2000H) | Red/Green | AWG22 | |
| | 3 | FG | Frame Ground | shield | | 1 |
| Serial I/F | 1 | RS | Request to Send | Red | AWG28 | 4 |
| | 2 | SD | Send Data | Blue | AWG28 | 2 |
| | 3 | CS | Clear to Send | Brown | AWG28 | 5 |
| | 4 | RD | Receive Data | Orange | AWG28 | 3 |
| | 5 | CD | Carrier Detect | Purple | AWG28 | 8 |
| | 6 | ER | Enable to Receive | Gray | AWG28 | 20 |
| | 7 | +5V | DC +5V±5% Output 0.25A (from GP2000H) ^{*4} | Yellow | AWG28 | 14 |
| | 8 | SG | Signal Ground | White | AWG28 | 7 |

*1: External Device I/F lines #1 and #3 are reserved. Be sure not to connect anything to these lines.

*2: The DOUT Ground is used in common with External Buzzer Output (BUZZ OUT), DOUT 0 (zero) Output (DOUT0.C), and DOUT 1 (one) Output (DOUT1.C).

*3: Disabled when the GP-H70 Compatible Mode (set via GP2000H) is used.

*4: When connected to the GP2000H, the power used should be a maximum of 0.25A. Be sure not to exceed this level.

A.1.2 GP2000H Series Special Purpose RS-422 Cable (GP2000H-C422-3M/10M)

| I/F | No. | Signal Name | Description | Wire Color | Wire Size | Non-GP2000H SIO Pin No. |
|---------------------|-----|------------------|--|--------------|-----------|-------------------------|
| External Device I/F | 1 | RESERVE | Reserved ¹ | Black/Gray | AWG22 | |
| | 2 | DOUT0.C | DOUT 0(ZERO) Output | Black/White | AWG22 | |
| | 3 | RESERVE | Reserved ¹ | Red/White | AWG22 | |
| | 4 | DOUT1.C | DOUT 1(ONE) Output | Green/Brown | AWG22 | |
| | 5 | OP.GND | OP Ground | Red/Yellow | AWG22 | |
| | 6 | OP.C | OP Output | Red/Blue | AWG22 | |
| | 7 | DOUT.GND | DOUT Ground ² | Red/Pink | AWG22 | |
| | 8 | BUZZ OUT | External Buzzer Output | Black/Orange | AWG22 | |
| | 9 | EMG0B | Push-Lock Switch 0B (Operates like A contact) | Red/Gray | AWG22 | |
| | 10 | EMG0A | Push-Lock Switch 0A (Operates like A contact) | White/Orange | AWG22 | |
| | 11 | EMG1B | Push-Lock Switch 1B (B contact) | Black/Yellow | AWG22 | |
| | 12 | EMG1A | Push-Lock Switch 1A (B contact) | Green/White | AWG22 | |
| | 13 | EMG2B | Push-Lock Switch 2B (B contact) | White/Blue | AWG22 | |
| | 14 | EMG2A | Push-Lock Switch 2A (B contact) | Black/Blue | AWG22 | |
| | 15 | ENB0B | Enable Switch 0B (A contact) | Black/Pink | AWG22 | |
| | 16 | ENB0A | Enable Switch 0A (A contact) | LightGreen | AWG22 | |
| | 17 | ENB1B | Enable Switch 1B (A contact) ³ | Pink | AWG22 | |
| | 18 | ENB1A | Enable Switch 1A (A contact) ³ | SkyBlue | AWG22 | |
| DC24V I/F | 1 | +24V | Power Input +24V (to GP2000H) | Black/Green | AWG22 | |
| | 2 | 0V | Power Input 0V (to GP2000H) | Red/Green | AWG22 | |
| | 3 | FG | Frame Ground | shield | | 1 |
| Serial I/F | 7 | +5V | DC +5V±5% Output 0.25A (from GP2000H) ⁴ | Purple | AWG28 | 14 |
| | 8 | SG | Signal Ground | Gray | AWG28 | 7 |
| | 13 | RDA | Receive Data A | White | AWG28 | 10 |
| | 14 | RDB | Receive Data B | Black | AWG28 | 16 |
| | 15 | SDA | Send Data A | Yellow | AWG28 | 11 |
| | 16 | SDB | Send Data B | Green | AWG28 | 15 |
| | 17 | CSA | Clear to Send A | Red | AWG28 | 21 |
| | 18 | CSB | Clear to Send B | Blue | AWG28 | 18 |
| 19 | ERA | Enable Receive A | Brown | AWG28 | 22 | |
| 20 | ERB | Enable Receive B | Orange | AWG28 | 19 | |

*1: External Device I/F lines #1 and #3 are reserved. Be sure not to connect anything to these lines.

*2: The DOUT Ground is used in common with External Buzzer Output (BUZZ OUT), DOUT 0 (zero) Output (DOUT0.C), and DOUT 1 (one) Output (DOUT1.C).

*3: Disabled when the GP-H70 Compatible Mode (set via GP2000H) is used.

*4: When connected to the GP2000H, the power used should be a maximum of 0.25A. Be sure not to exceed this level.

A.1.3 GP3000H Hard-type Direct-connect Cable (GP3000H-CBLH-10M)

GP3000H Soft-type Direct-connect Cable (GP3000H-CBLS-3M/5M/10M)

Serial Interface

| Wire Color / Marking Color, Number | RS232C | | RS422/RS485 | |
|---------------------------------------|------------------|---|-------------|----------------------------------|
| | Signal | Description | Signal | Description |
| Brown / White 1 | CD | Carrier Detect | RDA | Receive Data A (+) |
| Brown / Black 1 | RD (RXD) | Receive Data | RDB | Receive Data B (-) |
| Brown / White 2 | SD (TXD) | Send Data | SDA | Send Data A (+) |
| Brown / White 4 | ER (DTR) | Data Terminal Ready | ERA | Data Terminal Ready A (+) |
| Brown / None | SG | Signal Ground | SG | Signal Ground |
| Brown / Black 3 | DR (DSR) | Data Set Ready | CSB | Clear to Send B (-) |
| Brown / Black 2 | RS (RTS) | Request to Send | SDB | Send Data B (-) |
| Brown / White 3 | CS (CTS) | Clear to Send | CSA | Clear to Send A (+) |
| Brown / Black 4 | CI (RI) / VCC | Called status display +5V \pm 5% Output 0.25A *1 | ERB | Data Terminal Ready B (-) |
| Green / None | FG *2 | Frame Ground (Common with SG) | FG *2 | Frame Ground (Common with SG) |

*1: The RI/VCC selection is switched via software. The VCC output is not protected against overcurrent. To prevent damage or unit malfunctions, use only the rated current.

*2: Select the AWG22 cable to use out of two green cables. Be sure to twist wires from a part close to the power supply.

Ethernet Interface

Ethernet (IEEE802.3u, 10BASE-T/100BASE-TX) with modular jack connector (RJ-45)

| Wire Color | Signal | Direction | Description |
|------------|--------|-----------|----------------------|
| Blue | TX + | Output | Ethernet Send (+) |
| White | TX - | Output | Ethernet Send (-) |
| Brown | RX + | Input | Ethernet Receive (+) |
| Gray | RX - | Input | Ethernet Receive (-) |

DC24V Interface

| Wire Color | Signal | Direction | Description |
|------------|--------|-----------|----------------------------------|
| Red | DC24V | Input | Power Input 24V DC |
| Black | 0V | Input | Power Input 0V |
| Green | FG *1 | - | Frame Ground (Common with SG) |

*1: Select the AWG16 cable to use out of two green cables. Be sure to twist wires from a part close to the power supply.

3-Position Enable Switch Output Interface

| Wire Color / Marking Color, Number | Signal Name | Description |
|---------------------------------------|----------------|--|
| Blue / Black2 | ENB0A | 0A (a-contact) Rating: 30V DC, 700mA (min. applicable load: 3V DC, 5mA) |
| Blue / Black3 | ENB0B | 0B (a-contact) |
| Blue / None | ENB1A | 1A (a-contact) Rating: 30V DC, 700mA (min. applicable load: 3V DC, 5mA) |
| Blue / Black1 | ENB1B | 1B (a-contact) |

Emergency Switch Output Interface

| Wire Color / Marking Color, Number | Signal Name | Description |
|---------------------------------------|----------------|---|
| Purple / Black 2 | EMG0A | 0A (a-contact) Rating: 30V DC, 1A (min. applicable load: 5V DC, 1mA) |
| Purple / White 3 | EMG0B | 0B (a-contact) |
| Purple / Black 1 | EMG1A | 1A (b-contact) Rating: 30V DC, 1A (min. applicable load: 5V DC, 1mA) |
| Purple / White 2 | EMG1B | 1B (b-contact) |
| Purple / None | EMG2A | 2A (b-contact) Rating: 30V DC, 1A (min. applicable load: 5V DC, 1mA) |
| Purple / White 1 | EMG2B | 2B (b-contact) |

Key Switch Output Interface

| Wire Color / Marking Color, Number | Signal Name | Description |
|---------------------------------------|----------------|---|
| Orange / None | KEY_NC | b-contact (normally closed) Rating: 24V DC, 300mA |
| Orange / Black 1 | KEY_NO | a-contact (normally open) Rating: 24V DC, 300mA |

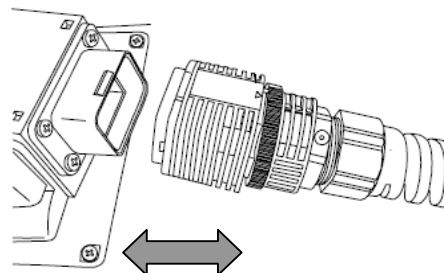
IMPORTANT

External Output Interface

To use the DOUT, Operation Switch Output, or External Buzzer Output, the GP3000H Conversion Adapter (AGP3000H-ADPCOM-01) is required.

<Connection to GP3000H>

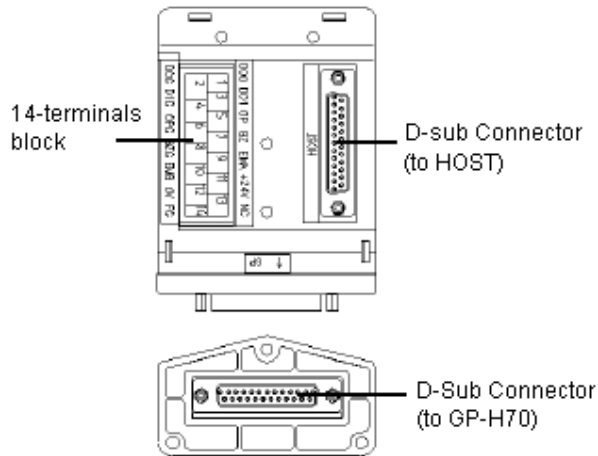
Insert the cable plug to the GP3000H series cable socket until it clicks. To remove it, unlock.



Appendix 2 Interfaces of Conversion Adapters

A.2.1 GP-H70 RS-232C Conversion Adapter (GPH70-AP232-O)

External View



14-terminals Block

(power, external outputs, etc.)

| Pin No. | Signal Name(Drawing Name) |
|---------|---------------------------|
| 1 | DOUT0.C (DO0) |
| 2 | DOUT0.GND (D0G) |
| 3 | DOUT1.C (DO1) |
| 4 | DOUT1.GND (D1G) |
| 5 | OP.C (OP) |
| 6 | OP.GND (OPG) |
| 7 | BUZZ OUT (BZ) |
| 8 | BUZZ GND (BZG) |
| 9 | EMG A (EMA) |
| 10 | EMG B (EMB) |
| 11 | +24(in) (+24V) |
| 12 | 0V (0V) |
| 13 | NC (NC) |
| 14 | FG (FG) |

D-sub Connector (to GP)

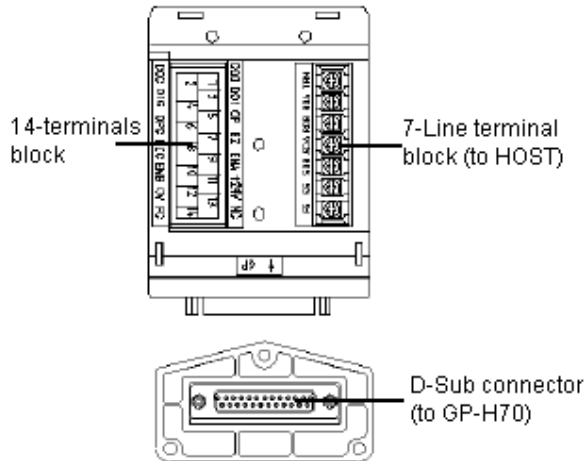
| Pin No. | Signal Name | Description |
|---------|-------------|-----------------------------|
| 1 | FG | Frame Ground |
| 2 | ER | Enable to Receive (RS-232C) |
| 3 | RS | Request to Send (RS-232C) |
| 4 | SD | Send Data (RS-232C) |
| 5 | +5V | Output +5V (GP-H70) |
| 6 | NC | Not Connected |
| 7 | DOUT0. GND | DOUT 0 GND |
| 8 | DOUT1. GND | DOUT 1 GND |
| 9 | OP. GND | OP GND |
| 10 | BUZZ GND | External Buzzer Ground |
| 11 | EMG B | Push-Lock Switch B |
| 12 | 0V | Power Input 0V |
| 13 | NC | Not Connected |
| 14 | SG | Signal Ground |
| 15 | CS | Clear to Send (RS-232C) |
| 16 | RD | Receive Data (RS-232C) |
| 17 | CD | Carrier Detect (RS-232C) |
| 18 | NC | Not Connected |
| 19 | NC | Not Connected |
| 20 | DOUT0. C | DOUT 0 Output |
| 21 | DOUT1. C | DOUT 1 Output |
| 22 | OP. C | OP Output |
| 23 | BUZZ OUT | External Buzzer Output |
| 24 | EMG A | Push-Lock Switch A |
| 25 | +24V | Power Input +24V |

D-sub Connector (to Host)

| Pin No. | Signal Name |
|---------|-------------|
| 1 | FG |
| 2 | SG |
| 3 | RD |
| 4 | RS |
| 5 | CS |
| 7 | SG |
| 8 | CD |
| 14 | +5V(out) |
| 20 | ER |

A.2.2 GP-H70 RS-422 Conversion Adapter (GPH70-AP422-O)

External View



14-terminals Block

(power, external outputs, etc.)

| Pin No. | Signal Name(Drawing Name) |
|---------|---------------------------|
| 1 | DOUT0.C (DO0) |
| 2 | DOUT0.GND (D0G) |
| 3 | DOUT1.C (DO1) |
| 4 | DOUT1.GND (D1G) |
| 5 | OP.C (OP) |
| 6 | OP.GND (OPG) |
| 7 | BUZZ OUT (BZ) |
| 8 | BUZZ GND (BZG) |
| 9 | EMG A (EMA) |
| 10 | EMG B (EMB) |
| 11 | +24(in) (+24V) |
| 12 | 0V (0V) |
| 13 | NC (NC) |
| 14 | FG (FG) |

D-sub Connector (to GP)

| Pin No. | Signal Name | Description |
|---------|-------------|--|
| 1 | FG | Frame Ground |
| 2 | SDB | Send Data B (RS-422) |
| 3 | RDB | Receive Data B (RS-422) |
| 4 | TRMX | Termination (RS-422) |
| 5 | CSA | Clear to Send A (RS-422)* ¹ |
| 6 | NC | Not Connected |
| 7 | DOUT0. GND | DOUT 0 GND |
| 8 | DOUT1. GND | DOUT 1 GND |
| 9 | OP. GND | OP GND |
| 10 | BUZZ GND | External Buzzer Ground |
| 11 | EMG B | Push-Lock Switch B |
| 12 | 0V | Power Input 0V |
| 13 | NC | Not Connected |
| 14 | SG | Signal Ground |
| 15 | SDA | Clear to Send (RS-422) |
| 16 | RDA | Receive Data (RS-422) |
| 17 | CSB | Carrier Detect (RS-422)* ¹ |
| 18 | NC | Not Connected |
| 19 | +5V | Output +5V (GP-H70) |
| 20 | DOUT0. C | DOUT 0 Output |
| 21 | DOUT1. C | DOUT 1 Output |
| 22 | OP. C | OP Output |
| 23 | BUZZ OUT | External Buzzer Output |
| 24 | EMG A | Push-Lock Switch A |
| 25 | +24V | Power Input +24V |

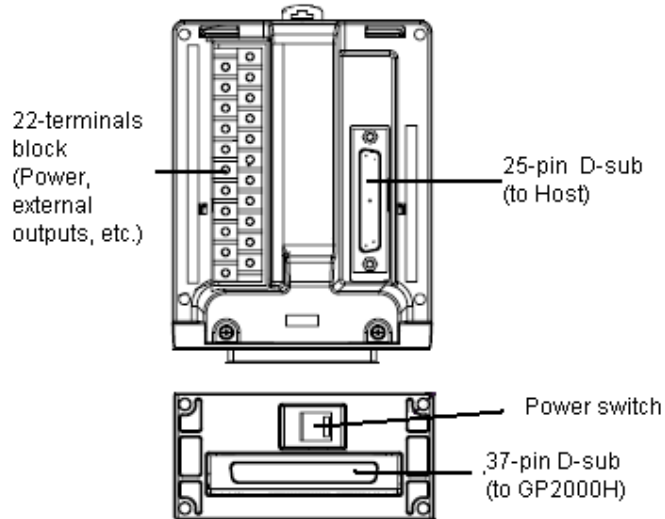
7-terminals Block (to Host)

| Pin No. | Signal Name |
|---------|-------------|
| 1 | FG |
| 2 | SG |
| 3 | SDB |
| 4 | SDA |
| 5 | RDB |
| 6 | RDA |
| 7 | TRMX (TRM) |

*1: In this adapter, pins #5, #14, #17, and #19 have been connected.

A.2.3 GP2000H Series RS-232C Conversion Adapter (GP2000H-AP232)

External View



22-terminals Block (power, external outputs, etc.)

| Pin No. | Signal Name (Drawing Name) | Description |
|---------|----------------------------|---|
| 1 | DOUT0.C (D00) | DOUT 0 Output |
| 2 | RESERVE | Reserved |
| 3 | DOUT1.C (D01) | DOUT 1 Output |
| 4 | RESERVE | Reserved |
| 5 | OP.C (OP) | OP Output |
| 6 | OP.GND (OPG) | OP Ground |
| 7 | BUZZ OUT (BZ) | External Buzzer Output |
| 8 | DOUT.GND (DOG) | DOUT Ground |
| 9 | EMG0A (EM0A) | Push-Lock Switch 0A (Operates like A contact) |
| 10 | EMG0B (EM0B) | Push-Lock Switch 0B (Operates like A contact) |
| 11 | EMG1A (EM1A) | Push-Lock Switch 1A (B contact) |
| 12 | EMG1B (EM1B) | Push-Lock Switch 1B (B contact) |
| 13 | EMG2A (EM2A) | Push-Lock Switch 2A (B contact) |
| 14 | EMG2B (EM2B) | Push-Lock Switch 2B (B contact) |
| 15 | ENB0A (EN0A) | Enable Swith 0A (A contact) |
| 16 | ENB0B (EN0B) | Enable Swith 0B (A contact) |
| 17 | ENB1A (EN1A) | Enable Swith 1A (A contact) **1 |
| 18 | ENB1B (EN1B) | Enable Swith 1B (A contact) **1 |
| 19 | +24V (+24V) | Power Input +24V |
| 20 | 0V (0V) | Power Input 0V |
| 21 | NC (NC) | Not Connected |
| 22 | FG (FG) | Frame Ground |

*1: Disabled when the GP-H70 Compatible Mode (set via GP2000H) is used.

25-pin D-sub (to Host)

| Pin No. | Signal Name | Description |
|---------|-------------|------------------------|
| 1 | FG | Frame Ground |
| 2 | SD | Send Data |
| 3 | RD | Receive Data |
| 4 | RS | Request to Send |
| 5 | CS | Clear to Send |
| 7 | SG | Signal Ground |
| 8 | CD | Carrier Detect |
| 14 | +5V | DC +5V±5% Output 0.25A |
| 20 | ER | Enable to Receive |

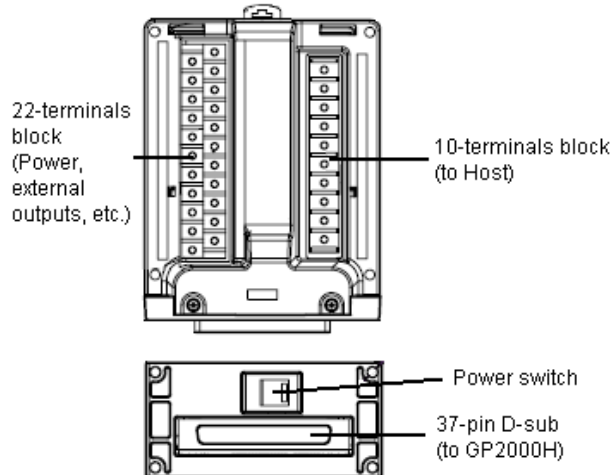
37-pin D-sub (to GP2000H)

| Pin No. | Signal Name | Description |
|---------|-------------|---|
| 1 | FG | Frame Ground |
| 2 | FG | Frame Ground |
| 3 | ER | Enable to Receive |
| 4 | NC | Not Connected |
| 5 | NC | Not Connected |
| 6 | +5V | DC +5V±5% Output 0.25A (from GP2000H) |
| 7 | CD | Carrier Detect |
| 8 | RD | Receive Data |
| 9 | NC | Not Connected |
| 10 | RESERVE | Reserved |
| 11 | RESERVE | Reserved |
| 12 | OP.GND | OP Ground |
| 13 | DOUT.GND | DOUT Ground |
| 14 | EMG0B | Push-Lock Switch 0B (Operates like A contact) |
| 15 | EMG1B | Push-Lock Switch 1B (B contact) |
| 16 | EMG2B | Push-Lock Switch 2B (B contact) |
| 17 | ENB0B | Enable Switch 0B (A contact) |
| 18 | ENB1B | Enable Switch 1B (A contact) *1 |
| 19 | 0V | Power Input 0V (to GP2000H) |
| 20 | FG | Frame Ground |
| 21 | SD | Send Data |
| 22 | RS | Request to Send |
| 23 | NC | Not Connected |
| 24 | NC | Not Connected |
| 25 | SG | Signal Ground |
| 26 | CS | Clear to Send |
| 27 | NC | Not Connected |
| 28 | DOUT0.C | DOUT 0 Output |
| 29 | DOUT1.C | DOUT 1 Output |
| 30 | OP.C | OP Output |
| 31 | BUZZ OUT | External Buzzer Output |
| 32 | EMG0A | Push-Lock Switch 0A (Operates like A contact) |
| 33 | EMG1A | Push-Lock Switch 1A (B contact) |
| 34 | EMG2A | Push-Lock Switch 2A (B contact) |
| 35 | ENB0A | Enable Switch 0A (A contact) |
| 36 | ENB1A | Enable Switch 1A (A contact) *1 |
| 37 | +24V | Power Input +24V (to GP2000H) |

*1: Disabled when the GP-H70 Compatible Mode (set via GP2000H) is used.

A.2.4 GP2000H Series RS-422 Conversion Adapter (GP2000H-AP422)

External View



22-terminals Block (power, external outputs, etc.)

| Pin No. | Signal Name (Drawing Name) | Description |
|---------|----------------------------|---|
| 1 | DOUT0.C (DO0) | DOUT 0 Output |
| 2 | RESERVE | Reserved |
| 3 | DOUT1.C (DO1) | DOUT 1 Output |
| 4 | RESERVE | Reserved |
| 5 | OP.C (OP) | OP Output |
| 6 | OP.GND (OPG) | OP Ground |
| 7 | BUZZ OUT (BZ) | External Buzzer Output |
| 8 | DOUT.GND (DOG) | DOUT Ground |
| 9 | EMG0A (EM0A) | Push-Lock Switch 0A (Operates like A contact) |
| 10 | EMG0B (EM0B) | Push-Lock Switch 0B (Operates like A contact) |
| 11 | EMG1A (EM1A) | Push-Lock Switch 1A (B contact) |
| 12 | EMG1B (EM1B) | Push-Lock Switch 1B (B contact) |
| 13 | EMG2A (EM2A) | Push-Lock Switch 2A (B contact) |
| 14 | EMG2B (EM2B) | Push-Lock Switch 2B (B contact) |
| 15 | ENB0A (EN0A) | Enable Swith 0A (A contact) |
| 16 | ENB0B (EN0B) | Enable Swith 0B (A contact) |
| 17 | ENB1A (EN1A) | Enable Swith 1A (A contact) *1 |
| 18 | ENB1B (EN1B) | Enable Swith 1B (A contact) *1 |
| 19 | +24V (+24V) | Power Input +24V |
| 20 | 0V (0V) | Power Input 0V |
| 21 | NC (NC) | Not Connected |
| 22 | FG (FG) | Frame Ground |

*1: Disabled when the GP-H70 Compatible Mode (set via GP2000H) is used.

10-terminals Block (to Host)

| Pin No. | Signal Name | Description |
|---------|-------------|--------------------------------|
| 1 | FG | Frame Ground |
| 2 | SG | Signal Ground |
| 3 | SDB | Send Data B |
| 4 | SDA | Send Data A |
| 5 | RDB | Receive Data B |
| 6 | RDA | Receive Data A |
| 7 | CSA | Clear to Send A ^{*1} |
| 8 | ERA | Enable Receive A ^{*1} |
| 9 | CSB | Clear to Send B ^{*1} |
| 10 | ERB | Enable Receive B ^{*1} |

*1: Pins #7 (CSA), #8 (ERA), #9 (CSB), and #10 (ERB) are shorted together with shorting clips at the factory.

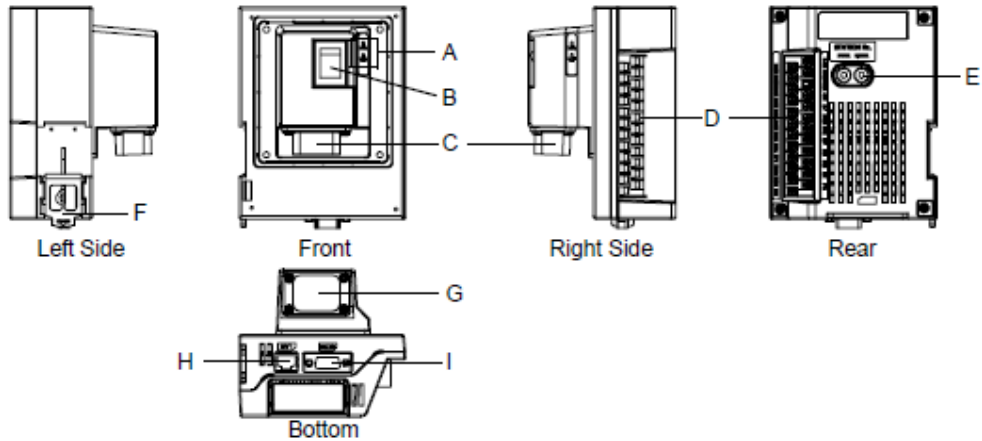
37-pin D-sub (to GP2000H)

| Pin No. | Signal Name | Description |
|---------|-------------|---|
| 1 | FG | Frame Ground |
| 2 | FG | Frame Ground |
| 3 | NC | Not Connected |
| 4 | ERB | Enable Receive B |
| 5 | CSB | Clear to Send B |
| 6 | +5V | DC +5V±5% Output 0.25A (from GP2000H) |
| 7 | SDB | Send Data B |
| 8 | RDB | Receive Data B |
| 9 | NC | Not Connected |
| 10 | RESERVE | Reserved |
| 11 | RESERVE | Reserved |
| 12 | OP.GND | OP Ground |
| 13 | DOUT.GND | DOUT Ground |
| 14 | EMG0B | Push-Lock Switch 0B (Operates like A contact) |
| 15 | EMG1B | Push-Lock Switch 1B (B contact) |
| 16 | EMG2B | Push-Lock Switch 2B (B contact) |
| 17 | ENB0B | Enable Switch 0B (A contact) |
| 18 | ENB1B | Enable Switch 1B (A contact) ^{*1} |
| 19 | 0V | Power Input 0V (to GP2000H) |
| 20 | FG | Frame Ground |
| 21 | NC | Not Connected |
| 22 | NC | Not Connected |
| 23 | ERA | Enable Receive A |
| 24 | CSA | Clear to Send A |
| 25 | SG | Signal Ground |
| 26 | SDA | Send Data A |
| 27 | RDA | Receive Data A |
| 28 | DOUT0.C | DOUT 0 Output |
| 29 | DOUT1.C | DOUT 1 Output |
| 30 | OP.C | OP Output |
| 31 | BUZZ OUT | External Buzzer Output |
| 32 | EMG0A | Push-Lock Switch 0A (Operates like A contact) |
| 33 | EMG1A | Push-Lock Switch 1A (B contact) |
| 34 | EMG2A | Push-Lock Switch 2A (B contact) |
| 35 | ENB0A | Enable Switch 0A (A contact) |
| 36 | ENB1A | Enable Switch 1A (A contact) ^{*1} |
| 37 | +24V | Power Input +24V (to GP2000H) |

*1: Disabled when the GP-H70 Compatible Mode (set via GP2000H) is used.

A.2.5 GP3000H Conversion Adapter (AGP3000H-ADPCOM-01)

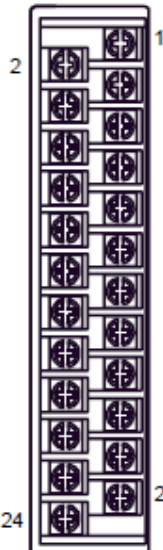
External View



| | | |
|---|--------------------|--|
| A | LED | The color changes depending on the GP's status. |
| B | Power Switch | I: ON, O: OFF |
| C | External Interface | Connect the GP3000H Conversion Adapter Connection Cable to the GP unit. |
| D | 24-terminals block | Connect DOUT signals and other external outputs, power supply lines, etc. Use a self-created cable. |
| E | Rotary Switch | Sets the ID number for this adapter. *1 |
| F | DIN Rail Hook | For mounting to a DIN rail (35mm [1.38 inch]) |
| G | Connector Cover | Remove when connecting the GP3000H Conversion Adapter Connection Cable. |
| H | Ethernet Interface | The Ethernet transmission interface (10BASE-T/100BASE-TX). An RJ-45 type modular jack connector (8-terminals) is used. |
| I | Serial Interface | RS232C/RS422/RS485 serial interface 9-pin D-sub plug type connecter The communication method is switched via software. |

*1: The GP stores the ID number for the conversion adapter in the system variable [#H_MachineNo] at fixed intervals to make sure it recognizes the conversion adapter is connected to the GP correctly. For details on system variables, refer to the GP-Pro EX Reference Manual.

D: 24-terminals Block (power, external outputs, etc.)

| Pin Arrangement | Pin No. | Signal Name | Description |
|---|---------|-----------------------|--|
|  <p>(Conversion adapter side)</p> | 1 | DC24V | Power Input DC24V |
| | 2 | 0V | Power Input 0V |
| | 3 | FG | Frame Ground (Common with SG) |
| | 4 | KEY_COM ^{*1} | Key Switch Common. When this adapter's power on, DC24V is output. Rating: DC24V±20%, 200mA |
| | 5 | KEY_NO | Key Switch a-contact (normally open) |
| | 6 | KEY_NC | Key Switch b-contact (normally closed) |
| | 7 | ENB0A | 3-position operation switch 0A (a-contact: normally open) Rating: DC30V, 700mA (Minimum applicable load: DC3V, 5mA) |
| | 8 | ENB0B | 3-position operation switch 0B (a-contact : normally open) |
| | 9 | ENB1A | 3-position operation switch 1A (a-contact : normally open) Rating: DC30V, 700mA (Minimum applicable load: DC3V, 5mA) |
| | 10 | ENB1B | 3-position operation switch 1B (a-contact : normally open) |
| | 11 | EMG0A | Emergency switch 0A (a-contact : normally open) Rating: DC30V, 1A (Minimum applicable load: DC5V, 1mA) |
| | 12 | EMG0B | Emergency switch 0B (a-contact : normally open) |
| | 13 | EMG1A | Emergency switch 1A (b-contact : normally closed) Rating: DC30V, 1A (Minimum applicable load: DC5V, 1mA) |
| | 14 | EMG1B | Emergency switch 1B (b-contact : normally closed) |
| | 15 | EMG2A | Emergency switch 2A (b-contact : normally closed) Rating: DC30V, 1A (Minimum applicable load: DC5V, 1mA) |
| | 16 | EMG2B | Emergency switch 2B (b-contact : normally closed) |
| | 17 | OP | OP. Output Open collector: DC24V, 300mA |
| | 18 | OP_GND | OP. GND |
| | 19 | DOUT1 | DOUT1 Output Open collector: DC24V, 300mA |
| | 20 | DOUT1_GND | DOUT1 GND |
| | 21 | DOUT0 | DOUT0 Output Open collector: DC24V, 300mA |
| | 22 | DOUT0_GND | DOUT0 GND |
| | 23 | BUZZ | Buzzer Output Open collector: DC24V, 300mA |
| | 24 | BUZZER_GND | BUZZER GND |

I: Serial Interface

Communication method: RS232C/RS422/RS485
 Asynchronous communication method

Data length: 7 bit / 8 bit

Parity: Odd / Even / None

Stop bit: 1 bit / 2 bit

Baud rate: 2400bps to 115.2kbps, 187.5kbps (MPI)

Max. communication distance: 15m (RS-232C), 1200m (RS-422, 115.2kbps)
 (Includes length of the cable between the GP and this adapter)

| Pin # | RS232C | | RS422/RS485 | |
|-------|-------------|--|-------------|----------------------------------|
| | Signal Name | Description | Signal Name | Description |
| 1 | CD | Carrier Detect | RDA | Receive Data A(+) |
| 2 | RD(RXD) | Receive Data | RDB | Receive Data B(-) |
| 3 | SD(TXD) | Send Data | SDA | Send Data A(+) |
| 4 | ER(DTR) | Data Terminal Ready | ERA | Data Terminal Ready A(+) |
| 5 | SG | Signal Ground | SG | Signal Ground |
| 6 | DR(DSR) | Data Set Ready | CSB | Clear to Send B(-) |
| 7 | RS(RTS) | Request to Send | SDB | Send Data B(-) |
| 8 | CS(CTS) | Clear to Send | CSA | Clear to Send A(+) |
| 9 | CI(RI)/VCC | Called status display/ +5V±5% Output 0.25A *1 | ERB | Data Terminal Ready B(-) |
| Shell | FG | Frame Ground (Common with SG) | FG | Frame Ground (Common with SG) |

*1: The RI/VCC selection for the pin #9 is switched via software. The VCC output is not protected against overcurrent. To prevent damage or unit malfunctions, use only the rated current.