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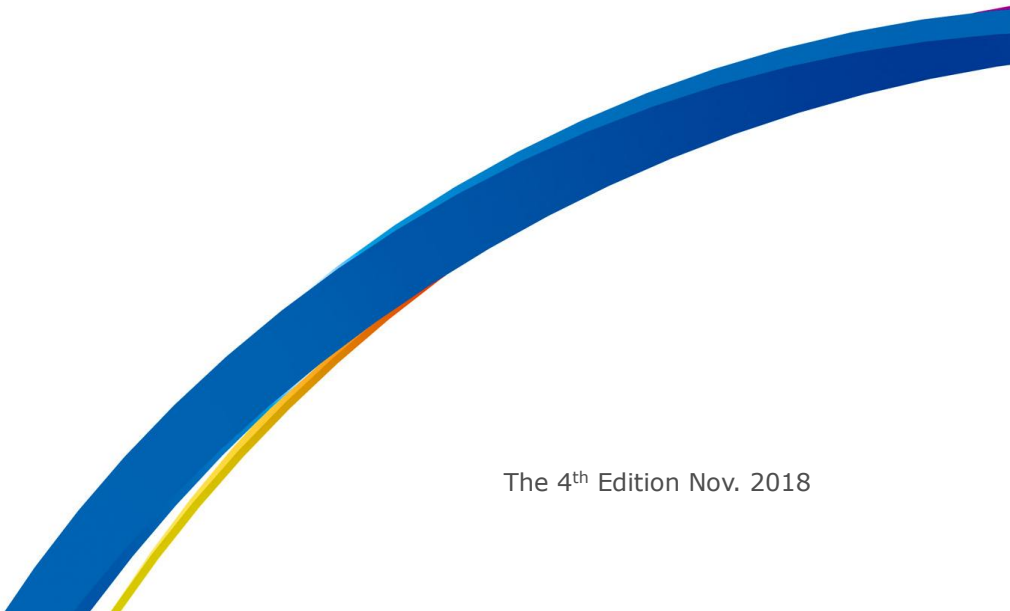
Replacement Guidebook

GP-3750T

> SP-5700TP(Premium Display)

\+ SP-5B00(Standard Box)



The 4th Edition Nov. 2018

Preface

This guidebook introduces the procedures to replace a unit in GP-3750T series with a SP-5700TP+SP-5B00.

Model in use	Model No.	Recommended Substitution
GP-3750T	AGP3750-T1-AF	SP-5700TP (Premium Display) + SP-5B00 (Standard Box) ※ ->see 1.1
	AGP3750-T1-D24	

※ SP-5700TP (Premium Display) and SP-5B00(Standard Box) doesn't have Video Input I/F and doesn't support Multimedia features. if using these features on GP-3750T, be aware that you could not replace to SP5000 series. -> see 2.7

'Display' and 'Box' of SP5000 series can be separated, so you can freely select a suitable combination of them according to use. This guidebook introduces specifications for a combination of SP-5700TP (Premium display) that is a 15-inch display module and SP-5B00(Standard box) that is a box module.

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.

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Chapter 1 Specification Comparison

1.1. Specification of GP-3750T and SP-5700TP+SP-5B00

		GP-3750T	SP-5700TP+SP-5B00
Display Type		TFT Color LCD	
Display Colors		65,536 colors (without blink)/ 16,384 colors (with blink)	**UP!** 16,777,216 colors (without blink) *1
Display Resolution		XGA (1,024×768 pixels)	
Panel Cut Dimensions		W383.5×H282.5mm	
External Dimensions		W395×H294×D60mm	**NEW !** W397×H296×D67mm *2
Touch Panel Type		Resistive film (Analog)	**UP!** Resistive film (Analog, multi-touch)
Memory	**Application**	16MB	**UP!** 64MB
	SRAM	SRAM : 320KB	**UP !** NVRAM : 320KB
Backup Battery		Secondary Battery (Rechargeable Lithium battery)	**UP !** - -> see 2.6
Input Voltage		DC24V AC 100 to 240V	**NEW !** DC 12 to 24V -> see 2.2
Serial I/F	**COM1**	D-Sub9 pin (plug) RS-232C/422/485	D-Sub9 pin (plug) RS-232C
	COM2	D-Sub9 pin (socket) RS-422/485	**NEW !** D-Sub9 pin (plug) RS-422/485 -> see 2.4.1 see Chapter 4

Ethernet I/F		1 port 10BASE-T/100BASE-TX	**UP !** 2 ports 10BASE-T/100BASE-TX
CF Card I/F		✔	**NEW !** - -> see 2.4.5
SD Card I/F		-	**NEW !** ✔ -> see 2.4.5
USB I/F	**Type A**	2 ports	**UP !** SP-5700TP (premium display) : 1 port (Front)
			SP-5B00 (Standard box) : 2 ports
	Type mini B	-	**NEW !** SP-5700TP (premium display) : 1 port (Front)
			NEW ! SP-5B00 (Standard box) : 1 port
Printer I/F		USB Type A-> see 2.5.2	
Auxiliary I/O I/F		✔	-*3 -> see 2.4.2
Video Input I/F		✔	- -> see 2.7
Sound Input I/F		✔	-*3 -> see 2.4.3
Sound Output I/F		Speaker output : 70mW	-*3 -> see 2.4.4
Expansion Unit I/F (Communication Unit)		✔	-*3 -> see 2.5.3
Expansion Unit I/F (Image Unit)		✔	- -> see 2.7
Expansion Memory		✔	- *4
Software		GP-Pro EX 2.00 or later	GP-Pro EX 4.08.200 or later

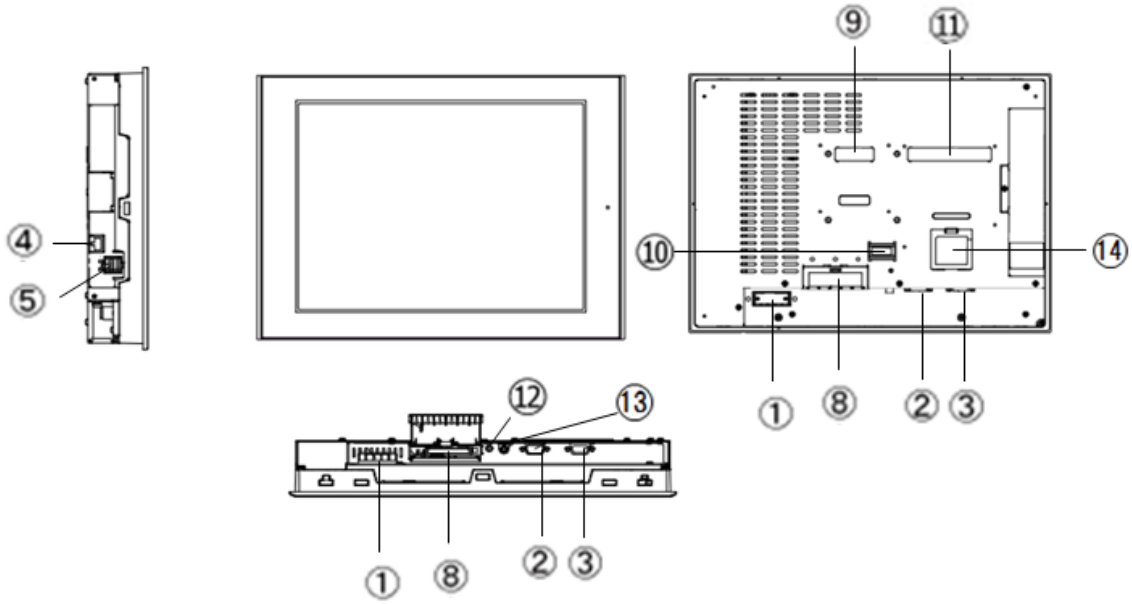
*1: SP-5B00 does not support hardware 3rd speed blink.
*2: Size for the time when SP-5700TP (Premium display) is combined with SP-5B00 (Standard box).
*3: If need this I/F, SP5B10(Power box) is required.
*4: No expansion unit but SP5000 series has enough memory to cover GP3000 series + expansion memory.

Chapter 2 Compatibility of Hardware

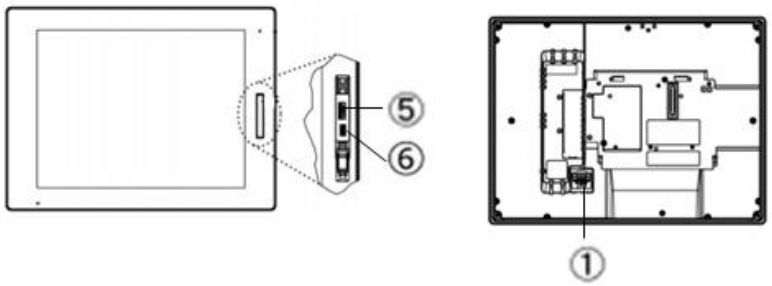
2.1. Locations of connector

Connector locations of GP-3750T and SP-5700TP+SP-5B00

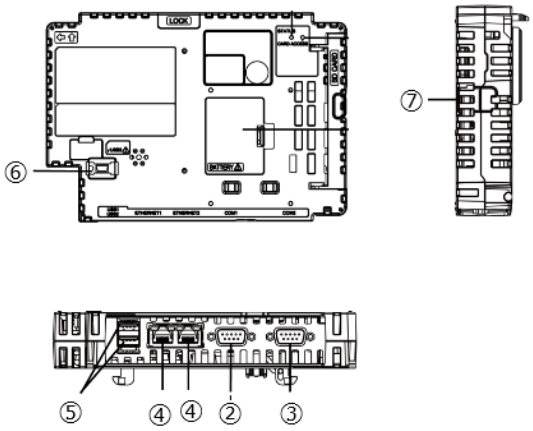
GP-3750T



SP-5700TP (Premium display)



SP-5B00(Standard box)



	GP-3750T	SP-5700TP+SP-5B00
1	Power Input Terminal Block (AC) / Power Connector (DC)	Power Connector (DC)
2	Serial I/F (COM1)	
3	Serial I/F (COM2)	
4	Ethernet I/F	
5	USB I/F (Type A)	
6	-	USB I/F (Type mini B)
7	-	Storage Card Cover (There's a SD card I/F for storage under the cover.)
8	CF card I/F	-
9	Expansion Unit I/F (Communication Unit)	-
10	Auxiliary I/O / Sound Output I/F (AUX)	-
11	Expansion Unit I/F (Image Unit)	-
12	Sound Input I/F	-
13	Video Input I/F	-
14	Expansion Memory Cover	-

2.2. Power supply

SP5000 has a DC power supply type only. When replacing GP-3750T AC type with SP5000 series, changing to DC power supply is required. For the detailed electric specifications, see the hardware manual.

2.3. USB Transfer cable

Like the GP3000 series, a USB transfer cable (CA3-USBCB-01) can be used for the SP5000 series. Also, a USB (Type mini B) cable (ZC9USCBMB1) and commercial cables can be used on the SP5000 series' side.

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

2.4. Interface

2.4.1. Serial Interface

The SP5000 series has a COM port on the side of box module.

The pin array and the shapes of the plug and the socket differ between GP-3750T COM2 port and SP-5B00(Standard box) COM port. The PLC connection cable that used to be connected to GP3000 Series via its COM2 port cannot be used as it is. For details, refer to "Chapter 4 Communication with Device/PLC". Cables other than that can be used as they are.

When both the COM1 port and the COM2 port have the RS-422/485 setting, only the COM2 port can be used for RS-422/485 connection after replacement to SP-5B00(Standard box).

2.4.2. Auxiliary I/O Interface (AUX)

There is no Auxiliary I/O interface (AUX) on SP-5B00(Standard box).

If using AUX, please select SP-5B10(Power box) for the box module.

2.4.3. Sound Input Interface

SP-5B00 (Standard Box) does not have the sound input interface. It's an important note especially for those who use sound input with a microphone.

2.4.4. Sound Output Interface

If needed, apply SP5B10(Power box)'s AUX I/F.

The output value has been increased from 70mW to 300mW. Please take note of it when you use an amplifier.

2.4.5. CF Card Interface

SP5000 series is not equipped with a CF card slot. But a SD card slot and a USB interfaces are installed. In order to use the GP-3750T data saved in the CF card and the functions using the CF card, use a SD card or a USB flash drive instead.

When the setting of the output destination folder is set to "CF Card" on GP-Pro EX, if you change the display unit type, the setting will automatically change to the one that uses a SD card.

To change the setting of the output destination folder, see [5.1 Changing the setting of the external media to use].

2.5. Peripheral units and option units

2.5.1. Barcode/ 2D [two-dimensional] code reader connection

Like GP3000 series, SP5000 series allows you to connect a barcode reader to its USB interface (Type A) or its serial interface. In replacing GP3000 series with SP5000 series, verify proper operation of the barcode/2D code reader before use.

2.5.2. Printer connection

Like GP3000 series, SP5000 series allows you to connect a printer on its USB interface (Type A). In replacing GP3000 series with SP5000 series, verify proper operation of the printer before use.

2.5.3. Expansion Unit

The expansion unit cannot be used with SP-5B00(Standard box).
If you used PROFIBUS unit for GP3000 series (model:CA5-PFSALL/EX-01), please replace with SP-5B10(Power Box).
In this case, apply PROFIBUS DP Slave (model no.: PFXZCDEUPF1) for SP-5B10(Power box)

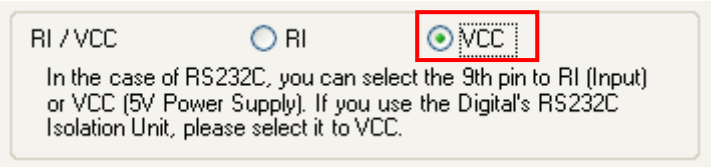
Reference:
[FA315627] Replacement for GP3000 series PROFIBUS unit (Model no.: CA5-PFSALL/EX-01)
https://www.proface.com/en/support/faq?page=content&country=PROFACE&lang=en&locale=en_US&id=FA315627&prd=&redirect=true

SP5000 Series Option List
(https://www.proface.com/en/product/hmi/sp5000/option)

The expansion unit (each kind of unit like CC-LINK Unit, VM unit) for GP3000 series cannot be used for SP5000 series.

2.5.4. Isolation Unit

RS-485 isolation unit for GP3000 Series (CA3-ISO485-01) cannot be used for SP-5B00(Standard box). You can use the RS-232C isolation unit (CA3-ISO232-01) for SP-5B00 (Standard box) instead. (The communication method is switched with this unit's DIP switch.)

Note for using RS-232C isolation unit (CA3-ISO232-01)
・ Connect it to SP5000 series via COM1 (232C). ・ In the case of RS-232C, it's necessary to set the 9th pin of the COM port to VCC. [Settings on GP-ProEX] Select "VCC" from [System Settings] -> [Device/PLC] in the [Project] menu on GP-Pro EX.    ・ RS-422/485 (2-wire type) communication and serial multilink are not supported.

2.6. Backup Battery

SP-5B00 is not needed a backup battery for Clock.
Supercapacitor (electric double-layer capacitor) can be back up clock data.

Please note the following points,

- When the voltage from the Supercapacitor is low, clock data is lost when this product is turned OFF. In order to charge up the super capacitor, power needs to be supplied to the main unit for 5 minutes or longer.

- The average period for backup is as follows:

  Initial: Approximately 100 days
  After 5 years: Approximately 30 days (used at ambient temperature of 25 °C [77 °F])

  By connecting the Battery for Memory Backup (Model Number PFXZCBBT1) accessory, you can set up a backup period of up to 10 years or more.

2.7. Supported features

SP5000 Series does not support the following features.

- Recording/Playing a video
- Features using Image Unit (VM/DVI/RGB input)
- Camera-Viewer EX
- RPA
- PLC Ladder Monitor

2.8. Power Consumption

The power consumption of GP3000 series is different from that of SP5000 series.

GP-3750T	ST-5700TP+SP-5B00
50W or less	40W or less

2.9. About Pro-Server EX

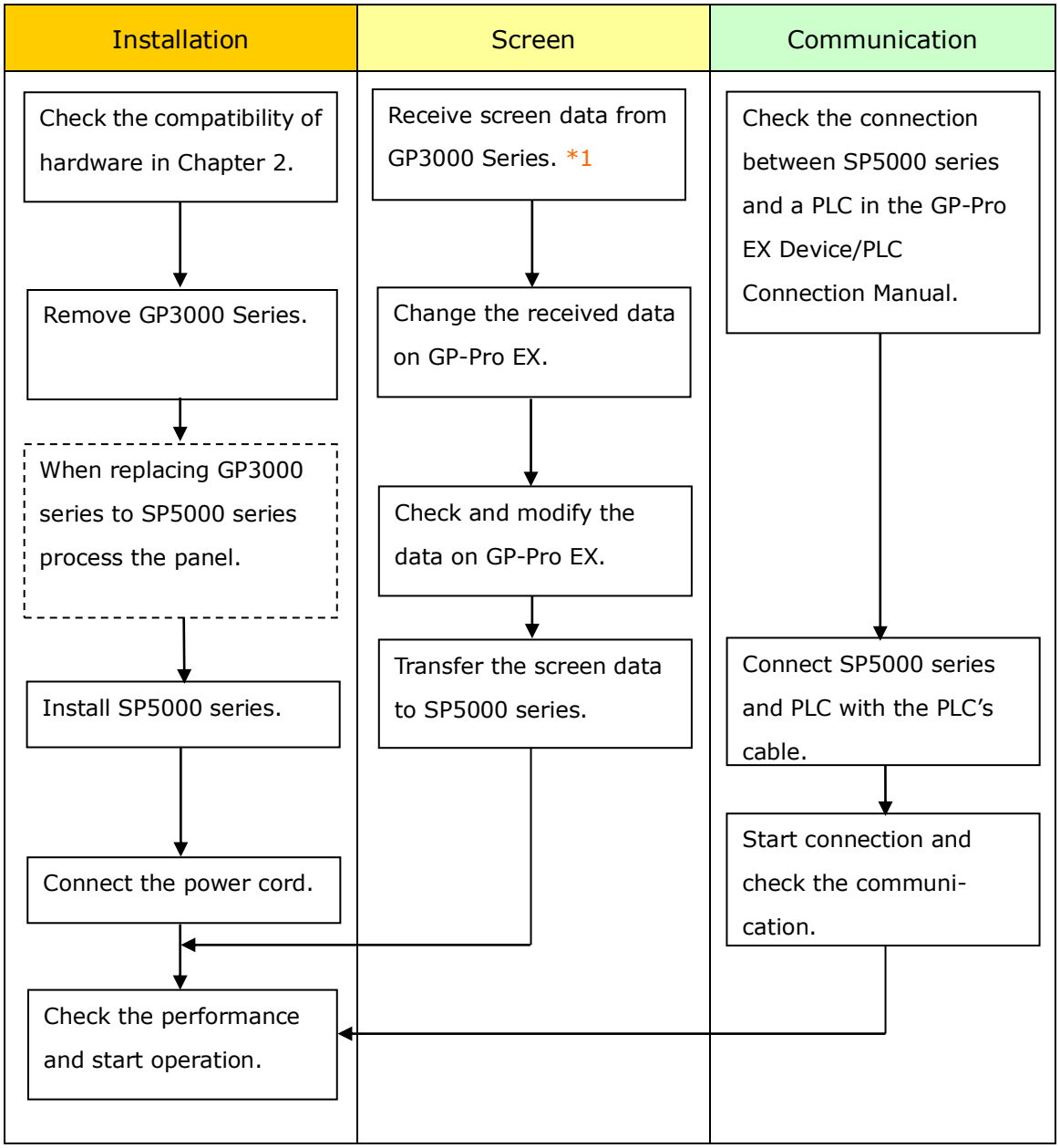
Use Pro-Server EX Ver.1.36 or later. For more detail, please refer to the following.
(http://www.proface.co.jp/otasuke/qa/server_ex/replace/)

2.10. Other Notes

- Do not expose SP5000 series to direct sunlight.
- Do not use SP5000 series outdoors.
- Do not turn on SP5000 series if condensation has occurred inside the device.
- When you are continuously using SP5000 series without oxygen, the brightness might decrease. Please ventilate the control panel periodically.

Chapter 3 Replacement Procedure

3.1. Work Flow



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

3.2. Preparation

Requirements for receiving screen data from GP3000 Series*1	PC in which GP-Pro EX Transfer Tool is installed. *2
	USB Transfer Cable (model: CA3-USBCB-01) * Possible to send/receive a screen via a CF card, a USB storage device or Ethernet.
Requirements for converting screen data of GP3000 Series and transferring the converted data to SP5000 series.	PC with GP-Pro EX installed. Ver4.08.200 or later is required for SP-5B00.
	Transfer Cable (The following three types of cables are available) ・ A USB transfer cable (model: CA3-USBCB-01) ・ A USB data-transfer cable (model: ZC9USCBMB1) ・ A commercial USB cable (USB Type A/mini B) * Possible to send/receive a screen via a SD card , a USB storage device or 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 GP3000 Series. If you don't know the version, we recommend you to use the newest version. For the newest version, you can download the transfer tool from our web site called [OtasukePro!] (http://www.pro-face.com/otasuke/download/freesoft/gpproex_transfer.htm).

3.3. Receive screen data from GP3000 series

You can transfer data to GP3000 Series via;

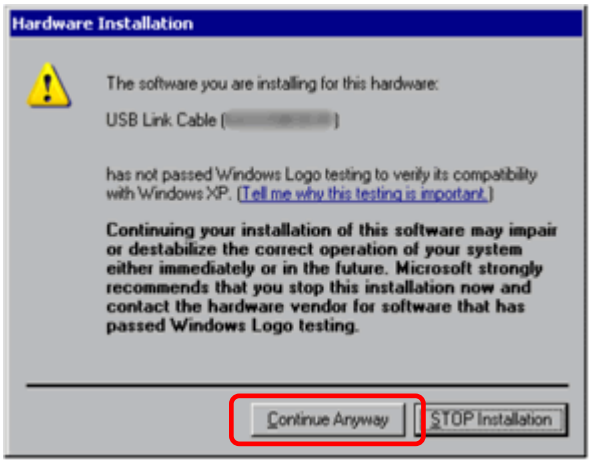
- A USB transfer cable (model: CA3-USBCB-01)
- A CF card/USB storage device
- Ethernet

If you have backed up screen data, this step is unnecessary, skip to the next section [3.4 Change the Display Unit Type].

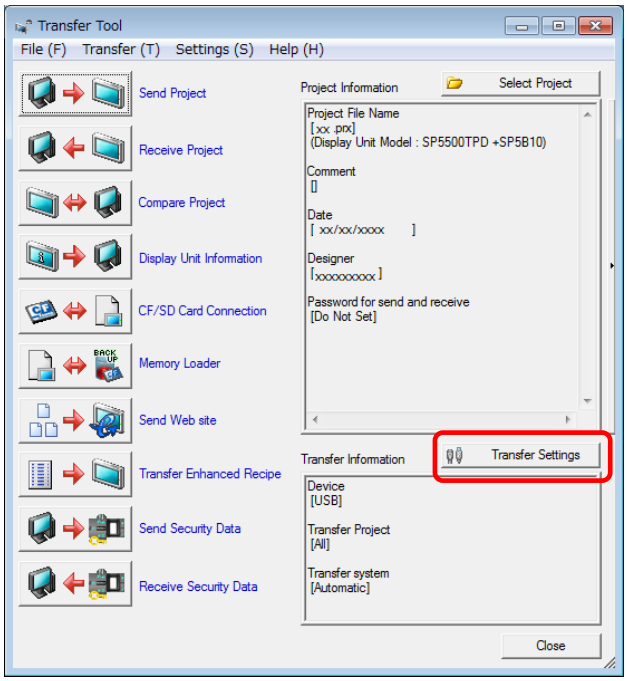
(1) Connect your PC and GP3000 Series with a USB transfer cable.
If the driver of the cable has not been installed on your PC yet, a dialog box will appear. Please follow the instructions.

NOTE

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

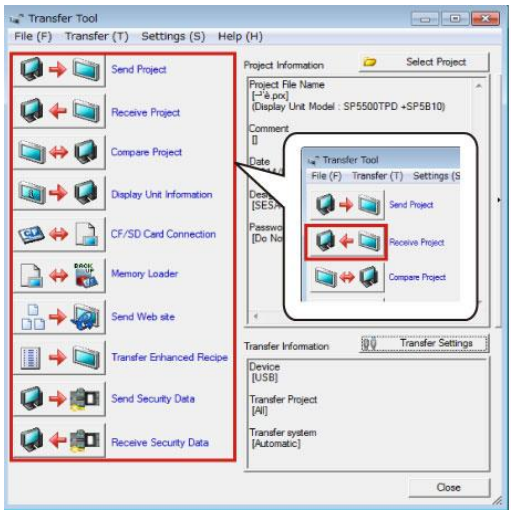


(2) Start the Transfer Tool of GP-Pro EX.

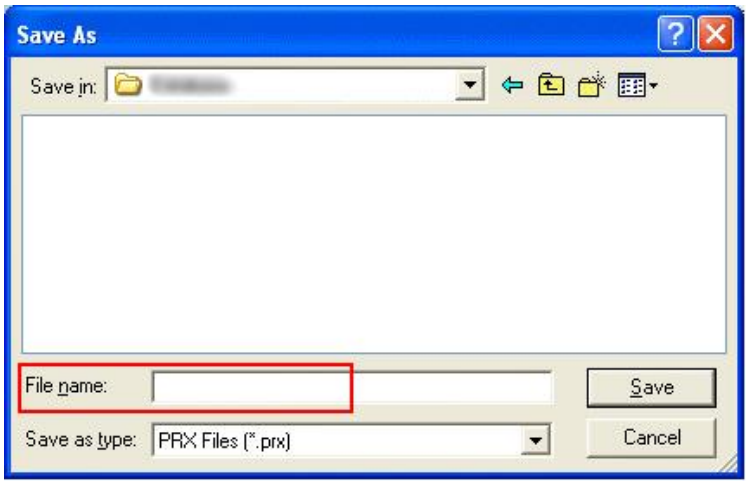


(3) Make sure that the [Device] in the "Transfer Settings Information" is set to [USB].
If not, click the [Transfer Setting] button to open the "Transfer Setting" dialog box.
Select [USB] in the Communication Port Settings field and click [OK].

(4) Start GP-Pro EX Transfer Tool and click the [Receive Project] button

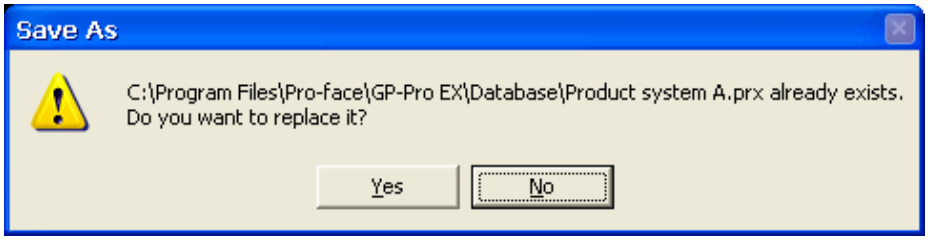


(5) Click [Receive Project], and the following dialog box will appear. Specify a place to save the received data in and a project file name, and then click [Save] to start transfer.

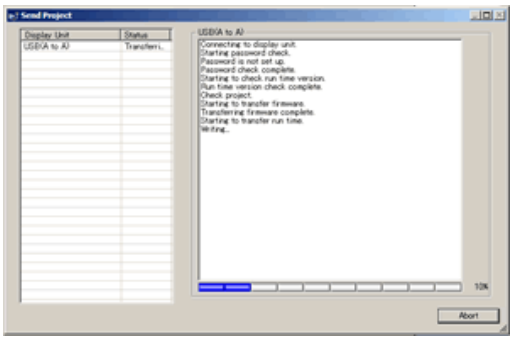


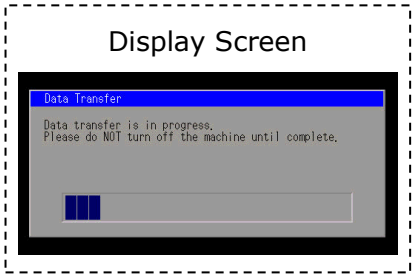
NOTE

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



(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.)



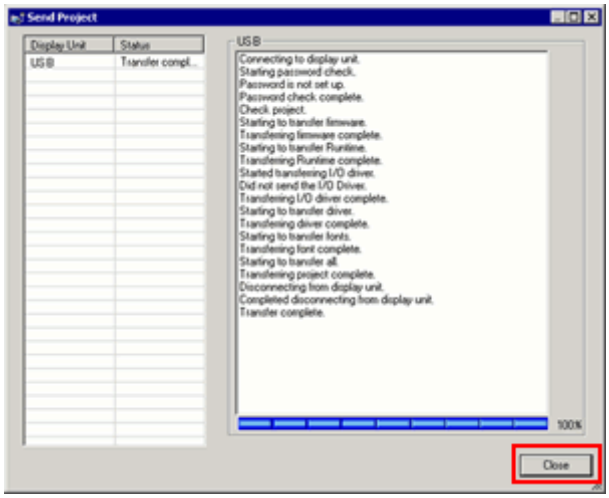


NOTE

(1) If you receive the project files that use CF card data such as Recipe Function (CSV data), the following dialog box will appear during transfer. Specify a place to save the CF card data in. Click [OK], and the [Receive Project] dialog box will return and transfer will be completed.

(2) SP5000 series that is a replacement model is not equipped with a CF card slot. If the display unit type is changed to SP5000 series, the CF card setting will be replaced with the SD card setting automatically. To check or change the destination folder setting, see [5.1 Changing the setting of the external media to use].

(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.



(8) Close the Transfer Tool.

3.4. Change the Display Unit Type

Open the received project file (*.prx) of GP3000 Series on GP-Pro EX and change the display unit type to SP5000 series.

(1) Open the received project file (*.prx) on GP-Pro EX.

(2) Click [System Settings]->[Display]->[Change Display] in [Project] menu and change the Display Unit type to the replacement model.

(3) Click [Project]->[Save As] and save the changed project file.

3.5. Transfer the screen data to SP5000 series

Transfer the project file after the display unit type change to SP5000 series.
You can transfer data to SP5000 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)
- A SD card/USB storage device
- Ethernet

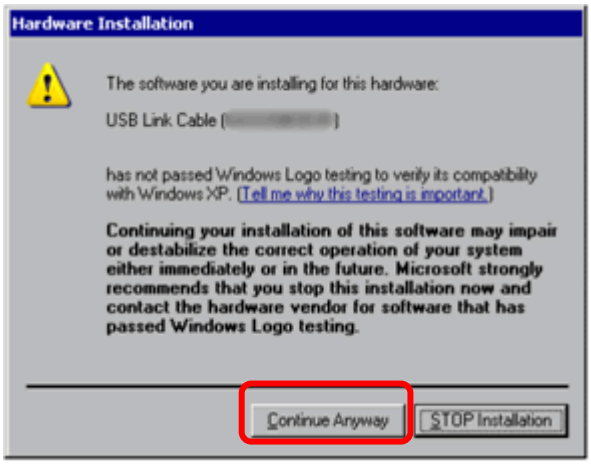
But, this section explains, as an example, how to transfer screen data with an USB transfer cable (model: CA3-USBCB-01).

(1) Connect your PC and the GP unit of SP5000 series with a USB transfer cable. If the driver of the cable has not been installed on you PC, a dialog box will appear.
Please follow the instructions.

NOTE

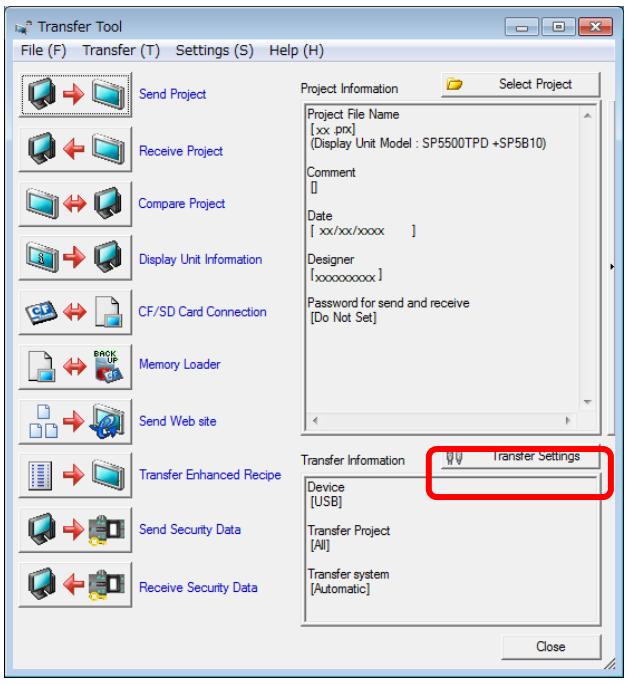
・The "Hardware Installation" dialog box as shown below may appear during installing the USB driver depending on the security level of Windows®.

Click [Continue Anyway] to start installing the driver. When installation is completed, click [Finish].



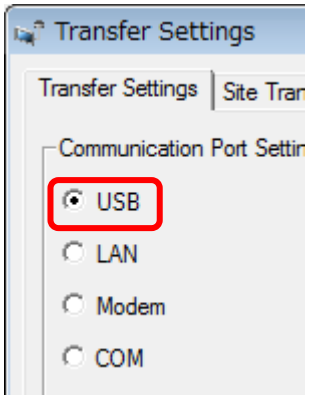
(2) Turn on the power of SP5000 series. The “Initial Start Mode” screen will appear on the display unit. After transferring a project file once, this screen will not appear again.

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

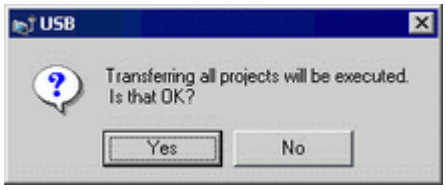


To transfer a different project file, click the [Select Project] button and select a project file.

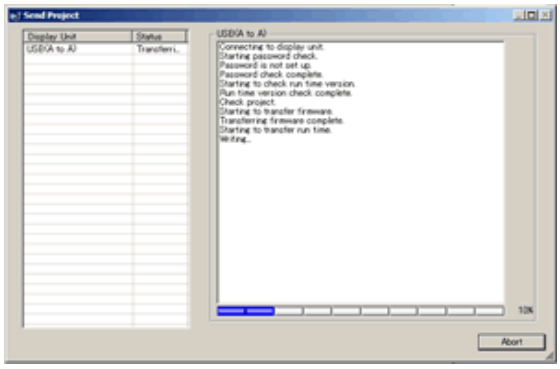
(4) Make sure that the [Device] in the "Transfer Settings Information" is set to [USB].
If not, click the [Transfer Setting] button to open the "Transfer Setting" dialog box.
Select [USB] in the Communication Port Settings field and click [OK].



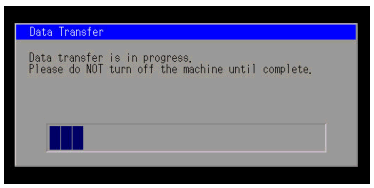
(5) Click [Send Project] to start transfer.
When the following dialog box appears, click [Yes]. This dialog box doesn't appear when the same project file is sent again.



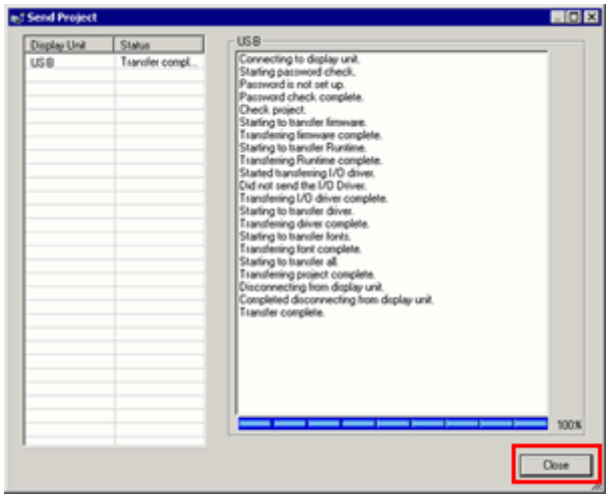
(6) The following dialog box appears during transfer and you can check the communication status. (The display unit enters the Transferring mode and communication with the device such as a PLC is terminated.)



Display Screen



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



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

(8) Close the Transfer Tool.

(9) Click the [X] mark on top right of the screen or [Project]->[Exit] to close GP-Pro EX.

3.6. Differences of software

Some functions supported by GP3000 Series are not supported by SP5000 series. For details of the details of the supported parts and functions, refer to [Supported Features] of GP-Pro EX Reference Manual (http://www.pro-face.com/otasuke/files/manual/gpproex/new/refer/gpproex.htm).

Chapter 4 Communication with Device/PLC

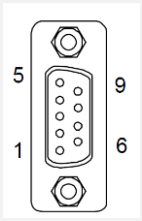
4.1. Shapes and Communication method of COM ports

	GP-3750T	SP-5B00 (Standard box)
COM1	D-Sub9 pin (plug) RS-232C/422/485	D-Sub9 pin (plug) RS-232C
COM2	D-Sub9 pin (socket) RS-422/485	D-Sub9 pin (plug) RS-422/485

When both the COM1 port and the COM2 port have the RS-422/485 setting, RS-422/485 cannot be used for COM1 with SP-5B00(Standard Box). In this case, replacement to SP-5B10(Power box) is required.

4.2. Signals of COM ports

At the time of RS-422/485 communication, the signal and the pin array differ between the COM2 port on GP-3750T and the COM2 port on SP-5B00 (Standard box).

Pin Arrangement	Pin No.	GP-3750T			SP-5B00 (Standard box)		
		Signal Name	Direction	Meaning	Signal Name	Direction	Meaning
	1	TRMRX	-	Termination (Receive side:100Ω)	RDA	Input	Receive Data A (+)
	2	RDA	Input	Receive Data A (+)	RDB	Input	Receive Data B (-)
	3	SDA	Output	Send Data A (+)	SDA	Output	Send Data A (+)
	4	RS(RTS)	Output	Request for Send	ERA	Output	Data Terminal Ready A (+)
	5	SG	-	Signal Ground	SG	-	Signal Ground
	6	VCC *1	-	+5V±5% output 0.25A	CSB	Input	Send Possible B (-)
	7	RDB	Input	Receive Data B (-)	SDB	Output	Send Data B (-)
	8	SDB	Output	Send Data B (-)	CSA	Input	Send possible A (+)
	9	TRMTX	-	Termination (Receiver side: 100Ω)	ERB	Output	Data Terminal Ready B (-)
	Shell	FG	-	Frame Ground (Common with SG)	FG	-	Frame Ground (Common with SG)

*1: RI and VICC 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.

4.3. Cable Diagram at the time of replacement

◆GP-3750T's COM1 cable

For RS-232C connection, it can be used for the COM1 on SP-5B00(Standard Box) as it is.

When a RS-422/485 device is connected via the COM1 port, if GP-3750T is replaced with SP-5B00(Standard box), it will be connected via the COM2 port of SP-5B00(Standard box). (The cable diagram can be still used.)

Before SP-5B00(Standard box) is connected, be sure to change the port setting to COM2 on the Device/PLC setting.

Also, please check the communication settings with GP-Pro EX Device/PLC Connection Manual just in case.

(http://www.pro-face.com/otasuke/files/manual/gpproex/new/device/index.htm)

◆GP-3750T's COM2 cable

For the following case only, it can be used for the COM2 on SP-5B00(Standard box) if the "COM Port Conversion Adapter (CA3-ADPCOM-01)" is added to the GP's side.

When an online adapter (CA4-ADPONL-01) is attached to the GP-3750T's cable, detach it.

- RS-422 cable (CA3-CBL422-01)
- 2-port adapter cable (CA3-MDCB11)+2-port adapter II (GP070-MD11)
- Multi-link cable (CA3-CBLMLT-01(5m))
- Connector terminal conversion adapter (CA3-ADPTRM-01)+RS-422 cable (homemade cable)
- MPI cable (GP3000-MPI21-PFE)
- SIEMENS COM port conversion adapter (CA3-ADPSEI-01)+CA3-MPI-PGN-PFE or CA3-MPI-PG1-PFE

In all other cases, the operation is not guaranteed and it's recommended to prepare a new connection cable. To check the cable diagram, please refer to GP-Pro EX Device/PLC Connection Manual.

(http://www.pro-face.com/otasuke/files/manual/gpproex/new/device/index.htm)

4.4. Multilink Connection

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

(http://www.pro-face.com/otasuke/files/manual/gpproex/new/device/com_mlnk.htm).

Chapter 5 Appendix

5.1. Changing the setting of the external media to use

If a CF card is used for GP3000 series, after the display unit type of the project file is changed to SP5000 series, "a CF card" is automatically replaced with "a SD card" for the external media setting.

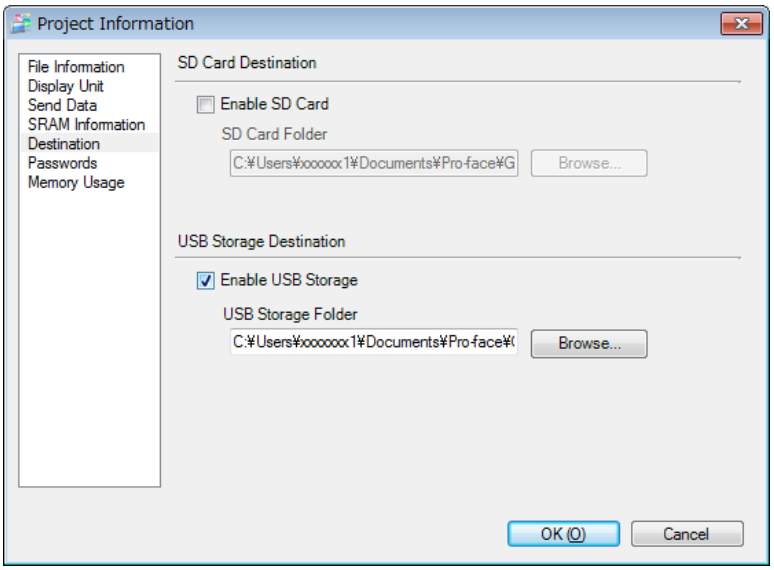
(1) To use a USB flash drive instead of a SD card ->Solution 1
(2) To check or change the SD card's data output destination folder setting ->Solution 2

[Solution]

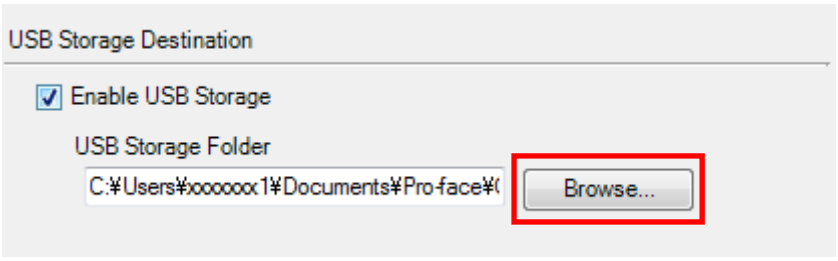
(1) Change the SD Card setting to the USB storage setting following the steps below.

<Procedure>

i. Click [Project]->[Information]->[Destination Folder].
ii. Uncheck "Enable SD Card" and check "Enable USB Storage.



iii. Click the [Browse] button and specify a destination folder.

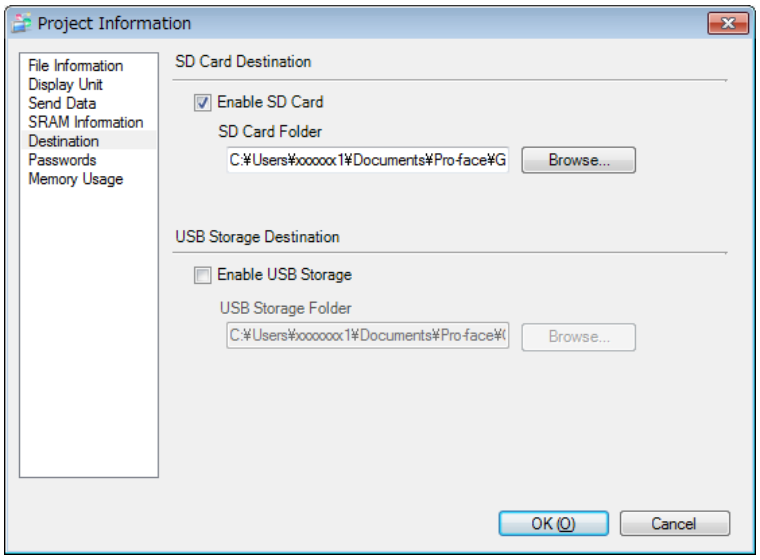


iv. Click [OK] to confirm the setting.
v. Click [Project]->[Save] to save changes.
vi. Check each function that uses the CF card and replace the setting of [SD Card] with the one of [USB Storage].

NOTE
To check each function setting of GP-Pro EX, refer to GP-Pro EX Reference Manual.

(2) Check and change the destination folder setting following the steps below.

i. Click [Project]->[Information]->[Destination Folder].
ii. The current setting is displayed.



iii. After changing it, click [OK] to confirm the setting.
iv. Click [Project]->[Save] to save changes.