GP4000 Series

Hardware Manual (for GP-Pro EX)

GP4000-MM01-ENG-PDF_T
11/2023

www.pro-face.com

Pro-face™
by Schneider Electric

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries (hereinafter, referred to as Schneider Electric) shall be responsible or liable for misuse of the information that is contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

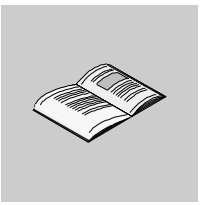
All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

Table of Contents



Safety Information

Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

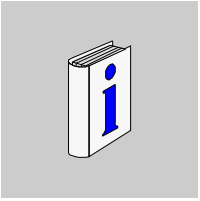
NOTICE is used address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

About The Book



Document Scope

This document describes how to use GP4000 Series unit (hereafter referred to as the “GP unit”).

Validity Note

This document is valid for the GP unit with GP-Pro EX version 3.0 or later.

The technical characteristics of the device(s) described in this manual also appear online at *https://www.pro-face.com*.

The characteristics presented in this manual should be the same as those that appear online. In line with our policy of constant improvement we may revise content over time to improve clarity and accuracy. In the event that you see a difference between the manual and online information, use the online information as your reference.

Related Documents

Title of Documentation
GP-Pro EX Reference Manual GP-Pro EX Maintenance/Troubleshooting Manual GP-Pro EX Device/PLC Connection Manual

You can download these technical publications and other technical information from our website.
https://www.pro-face.com/trans/en/manual/1085.html.

Product Related Information

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- The application of this product requires expertise in the design and programming of control systems. Only persons with such expertise should be allowed to program, install, alter, and apply this product.
- Follow all applicable safety standard, local regulations and directives.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Cybersecurity

Cybersecurity Guideline

Use this product inside a secure industrial automation and control system. Total protection of components (equipment/devices), systems, organizations, and networks from cyber attack threats requires multi-layered cyber risk mitigation measures, early detection of incidents, and appropriate response and recovery plans when incidents occur. For more information about cybersecurity, refer to the Pro-face HMI/IPC Cybersecurity Guide.

https://www.proface.com/en/download/manual/cybersecurity_guide

⚠ WARNING

POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY

- Change default passwords at first use to help prevent unauthorized access to device settings, controls and information.
- Disable unused ports/services and default accounts, where possible, to minimize pathways for malicious attacks.
- Place networked devices behind multiple layers of cyber defenses (such as firewalls, network segmentation, and network intrusion detection and protection).
- Apply the latest updates and hotfixes to your Operating System and software.
- Use cybersecurity best practices (for example: least privilege, separation of duties) to help prevent unauthorized exposure, loss, modification of data and logs, interruption of services, or unintended operation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Overview

1

Overview

This chapter describes the GP unit panels and general topics such as package contents and standards.

What Is in This Chapter?

This chapter contains the following topics:

Model Numbers

Model List

Series		Model Name	Model Number
GP4000 Series	GP-4200 Series	GP-4201T	PFXGP4201TAD
		GP-4201TW	PFXGP4201TADW
		GP-4203T	PFXGP4203TAD
	GP-4300 Series	GP-4301T	PFXGP4301TAD PFXGP4301TADC PFXGP4301TADR*1
		GP-4301TW	PFXGP4301TADW PFXGP4301TADWC
		GP-4303T	PFXGP4303TAD
	GP-4400 Series	GP-4401T	PFXGP4401TAD PFXGP4401TADR*1
		GP-4401WW	PFXGP4401WADW
	GP-4500 Series	GP-4501T (Analog Touch Panel)	PFXGP4501TAA PFXGP4501TAAC
			PFXGP4501TAD PFXGP4501TADC PFXGP4501TADR*1
		GP-4501T (Matrix Touch Panel)	PFXGP4501TMA
			PFXGP4501TMD
		GP-4501TW	PFXGP4501TADW
		GP-4503T	PFXGP4503TAD
		GP-4521T	PFXGP4521TAA
			PFXGP4521TAD
	GP-4600 Series	GP-4601T (Analog Touch Panel)	PFXGP4601TAA PFXGP4601TAAC
			PFXGP4601TAD PFXGP4601TADC PFXGP4601TADR*1
		GP-4601T (Matrix Touch Panel)	PFXGP4601TMD
			PFXGP4601TMA
		GP-4603T	PFXGP4603TAD
		GP-4621T	PFXGP4621TAA
			PFXGP4621TAD

*1 For rear mount model specific information, refer to Rear Mount Model *(see page 179)*.

NOTE:

- For GP-4100 Series, refer to "GP-4100 Series Hardware Manual" and "GP-4100 Series Color Model Hardware Manual".
- For GP-4201TM /GP-4301TM (Modular Type), refer to "GP-4201TM/4301TM/4000M Hardware Manual".

Model Number Configuration

The following describes the format of model names.

Digit	Possible Values	Description
A	2	GP-4200 Series (3.5-inch, 320 x 240 dots (QVGA))
	3	GP-4300 Series (5.7-inch, 320 x 240 dots (QVGA))
	4	GP-4400 Series (7.5-inch, 640 x 480 dots (VGA)) (7.0-inch, 800 x 480 dots (WVGA))
	5	GP-4500 Series (10.4-inch, 640 x 480 dots (VGA))
	6	GP-4600 Series (12.1-inch, 800 x 600 dots (SVGA))
B	01	RS-232C and RS-422/RS-485 are available. On GP-4201T, either RS-232C or RS-422/485 is available.
	03	RS-232C and RS-485 (isolation) are available. On GP-4203T, one serial interface – RS-485 (isolation) – is available.
	21	RS-232C, RS-422/RS-485 and Video unit are available.
C	T	TFT color LCD
	W	Wide TFT color LCD
D	A	Analog Touch Panel
	M	Matrix Touch Panel
E	A	AC type power supply
	D	DC type power supply
F	W	GP-4201TW/GP-4301TW/GP-4401WW/GP-4501TW
	C	Coating model
	WC	Coating model of GP-4201TW/GP-4301TW/GP-4401WW/GP-4501TW
	R	Rear Mount Model

Global Code

A global code is assigned to every Pro-face product as a universal model number. For more information on product models and their matching global codes, please refer to the following URL.

https://www.pro-face.com/trans/en/manual/1003.html

Package Contents

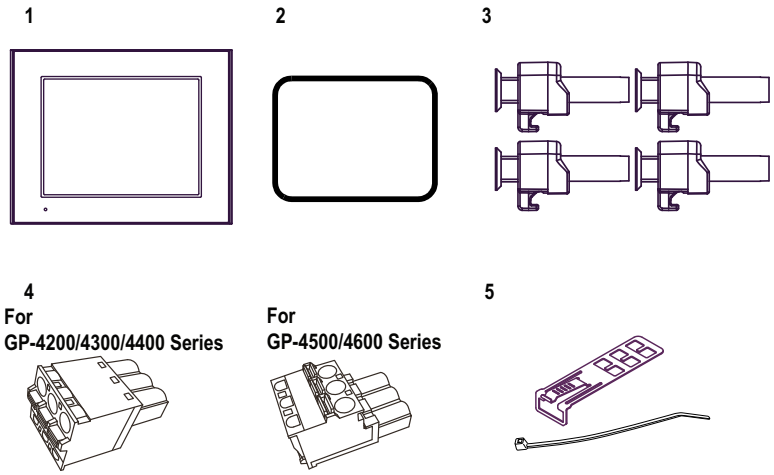
Package Contents

Package Contents

Verify all items listed here are present in your package:

Note:

- For information on the package contents for the rear mount model, refer to Package Contents *(see page 180)*.



1 GP unit: 1
2 Installation gasket: 1 (attached to the GP unit)
3 Installation fasteners: 4 per set
4 DC power supply connector: 1 (only for DC type)[*1]
5 USB cable clamp Type A: 1 set (1 clip and 1 tie)
6 GP4000 Series Installation Guide: 1
7 Warning/Caution information: 1

This unit has been carefully packed with special attention to quality. However, should you find anything damaged or missing, please contact your local distributor.

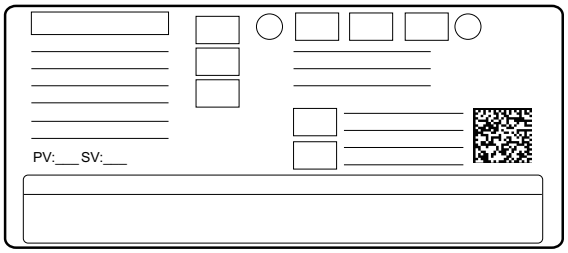
[*1] You can use the DC power supply connector for GP-4200/4300/4400 series to supply power to GP-4500/4600 series. However the reverse is not possible. You cannot use the DC power supply connector for GP-4500/4600 series on GP-4200/4300/4400 series.

Product Revision

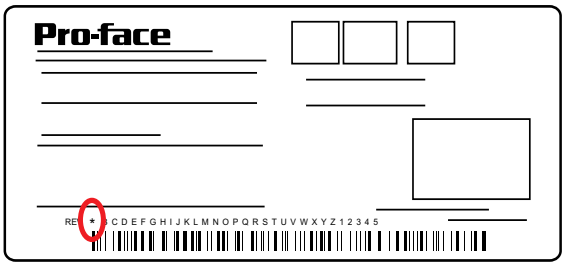
You can identify the product version (PV), revision level (RL), and the software version (SV) from the product label.

Note:

- Depending on the model, the product label may not be marked RL.



Also, depending on the model, the product revision (REV) may be indicated by an alphabet or a combination of an alphabet and numbers.
The following diagram is a representation of Revision A. The product label indicates Revision A with an asterisk (*) in the "A" position.



Certifications and Standards

Introduction

Schneider Electric submitted this product for independent testing and qualification by third-party listing agencies. These agencies have certified this product as meeting the following standards.

For information on Standards and Regulations, such as certified models and certificates, see the following.
https://www.pro-face.com/trans/en/manual/1002.html

Note:
- For information on the certifications and standards of the rear mount model, refer to Certifications and Standards *(see page 182)*.

Agency Certifications

The GP unit is manufactured in accordance with:

All models except for GP-4521T/GP-4621T

- UL 508 and CSA C22.2 N^{o}142, Industrial Control Equipment
- ANSI/ISA 12.12.01 and CSA C22.2 N^{o}213, Electrical Equipment for Use in Class I, Division 2 Hazardous (Classified) Locations

GP-4521T/GP-4621T

- UL 61010-2-201 and CSA C22.2 N^{o}61010-2-201, Industrial Control Equipment

Note:
- For use in Pollution Degree 2 environments.
- For use on a flat surface of a Type 1, Type 4X (Indoor Use Only) or Type 13 Enclosure.
- Use Class 2 power supply, SELV (Safety Extra-Low Voltage) circuit and LIM (Limited Energy) circuit for DC input.
- Suitable for use in Class I, Division 2 Groups A, B, C, and D Hazardous Locations.

Hazardous Substances

The GP is a device for use in factory systems. When using the GP in a system, the system should comply with the following standards in regards to the installation environment and handling:
- WEEE, Directive 2012/19/EU
- RoHS, Directive 2011/65/EU and 2015/863/EU
- RoHS China, Standard (GB/T 26572)

CE Markings

This product conforms to the necessary requirements of the following Directives for applying the CE label:
- Directive 2014/35/EU (Low Voltage)
- Directive 2014/30/EU (EMC)

This conformity is based on compliance with EN 61000-6-4, EN 61000-6-2 (DC model, AC model)

This conformity is based on compliance with EN 60950-1 (AC model)

⚠ DANGER

POTENTIAL FOR EXPLOSION

- Verify that the power, input and output (I/O) wiring are in accordance with Class I, Division 2 wiring methods.
- Substitution of any component may impair suitability for Class I, Division 2.
- Do not connect or disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
- Securely lock externally connected units and each interface before turning on the power supply.
- Do not use, connect, or disconnect USB cable unless area is known to be non-hazardous.
- Do not disconnect while circuit is live or unless the area is known to be free of ignitable concentrations.
- Potential electrostatic charging hazard: wipe the front panel of the terminal with a damp cloth before turning ON.

Failure to follow these instructions will result in death or serious injury.

KC Markings

사용자안내문

기 종 별	사 용 자 안 내 문
A급 기기 (업무용 방송통신기자재)	이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

GP Series of Panels

Critical systems, alarms and handling Requirements

Critical alarm indicators and system functions require independent and redundant protection hardware and/or mechanical interlocks.

When you cycle power, wait at least 10 seconds before restoring the power to the GP unit after it has been turned off. If GP unit is restarted too quickly, it may not operate correctly.

In the event the screen cannot be properly read, for example, if the backlight is not functioning, it may be difficult or impossible to identify a function. Functions that may present a hazard if not immediately executed, such as a fuel shut-off, must be provided independently of the GP unit. The machine's control system design must take into account the possibility of the backlight no longer functioning and the operator being unable to control the machine or making mistakes in the control of the machine.

⚠ WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and overtravel stop, power outage and restart.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines.
- Each implementation of this equipment must be individually and thoroughly tested for proper operation before being placed into service.
- The machine control system design must take into account the possibility of the backlight no longer functioning and the operator being unable to control the machine, or making errors in the control of the machine.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

For additional information, refer to NEMA ICS 1.1 (latest edition), "Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control" and to NEMA ICS 7.1 (latest edition), "Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems" or their equivalent governing your particular location.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Do not use this equipment as the only means of control for critical system functions such as motor start/stop or power control.
- Do not use this equipment as the only notification device for critical alarms, such as device overheating or overcurrent.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Handling the LCD panel

The following characteristics are specific to the LCD panel and are considered normal behavior:

- LCD screen may show unevenness in the brightness of certain images or may appear different when seen from outside the specified viewing angle. Extended shadows, or crosstalk may also appear on the sides of screen images.
- LCD screen pixels may contain black and white colored spots and color display may seem to have changed.
- When the same image is displayed on the screen for a long period, an afterimage may appear when the image is changed.
- The panel brightness may decrease when used for a long time in an environment continuously filled with inert gas. To prevent deterioration of panel brightness, regularly ventilate the panel. For more information, please contact your local distributor.
  https://www.pro-face.com/trans/en/manual/1015.html

NOTE: Change the screen image periodically and try not to display the same image for a long period of time.

⚠ CAUTION

SERIOUS EYE AND SKIN INJURY

The liquid in the LCD panel contains an irritant:
- Avoid direct skin contact with the liquid.
- Wear gloves when you handle a broken or leaking unit.
- Do not use sharp objects or tools in the vicinity of the LCD touch panel.
- Handle the LCD panel carefully to prevent puncture, bursting, or cracking of the panel material.

Failure to follow these instructions can result in injury or equipment damage.

If the panel is damaged and any liquid comes in contact with your skin, immediately rinse the area with running water for at least 15 minutes. If the liquid gets in your eyes, immediately rinse your eyes with running water for at least 15 minutes and consult a doctor.

Device Connectivity

2

Introduction

This chapter presents the equipment you can connect to the GP unit.

What Is in This Chapter?

This chapter contains the following topics:

System Design

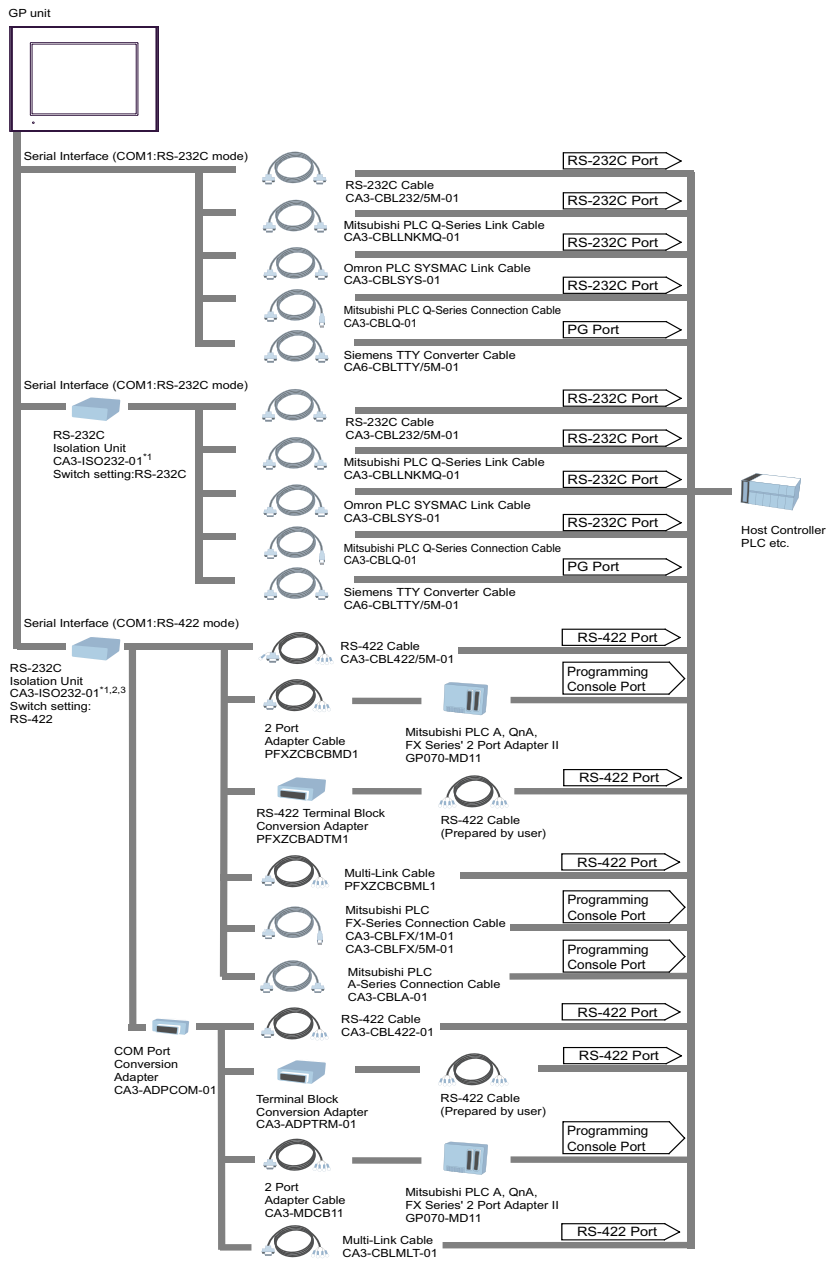
Introduction

The following diagrams represent equipment you can connect to the GP unit.

	COM1	COM2
GP-4201T	RS-232C or RS-422/RS-485 *(see page 21)*	–
GP-4201TW	RS-232C *(see page 21)*	RS-422/RS-485 *(see page 25)*
GP-4203T	RS-485 (isolation) *(see page 24)*	–
GP-4301T	RS-232C *(see page 21)*	RS-422/RS-485 *(see page 25)*
GP-4301TW	RS-232C *(see page 21)*	RS-422/RS-485 *(see page 25)*
GP-4303T	RS-232C *(see page 21)*	RS-485 (isolation) *(see page 26)*
GP-4401T	RS-232C *(see page 21)*	RS-422/RS-485 *(see page 25)*
GP-4401WW	RS-232C *(see page 21)*	RS-422/RS-485 *(see page 25)*
GP-4501T	RS-232C *(see page 21)*	RS-422/RS-485 *(see page 25)*
GP-4501TW	RS-232C *(see page 21)*	RS-422/RS-485 *(see page 25)*
GP-4503T	RS-232C *(see page 21)*	RS-485 (isolation) *(see page 26)*
GP-4521T	RS-232C *(see page 21)*	RS-422/RS-485 *(see page 25)*
GP-4601T	RS-232C *(see page 21)*	RS-422/RS-485 *(see page 25)*
GP-4603T	RS-232C *(see page 21)*	RS-485 (isolation) *(see page 26)*
GP-4621T	RS-232C *(see page 21)*	RS-422/RS-485 *(see page 25)*

RUN Mode Peripherals - COM1: RS-232C

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.



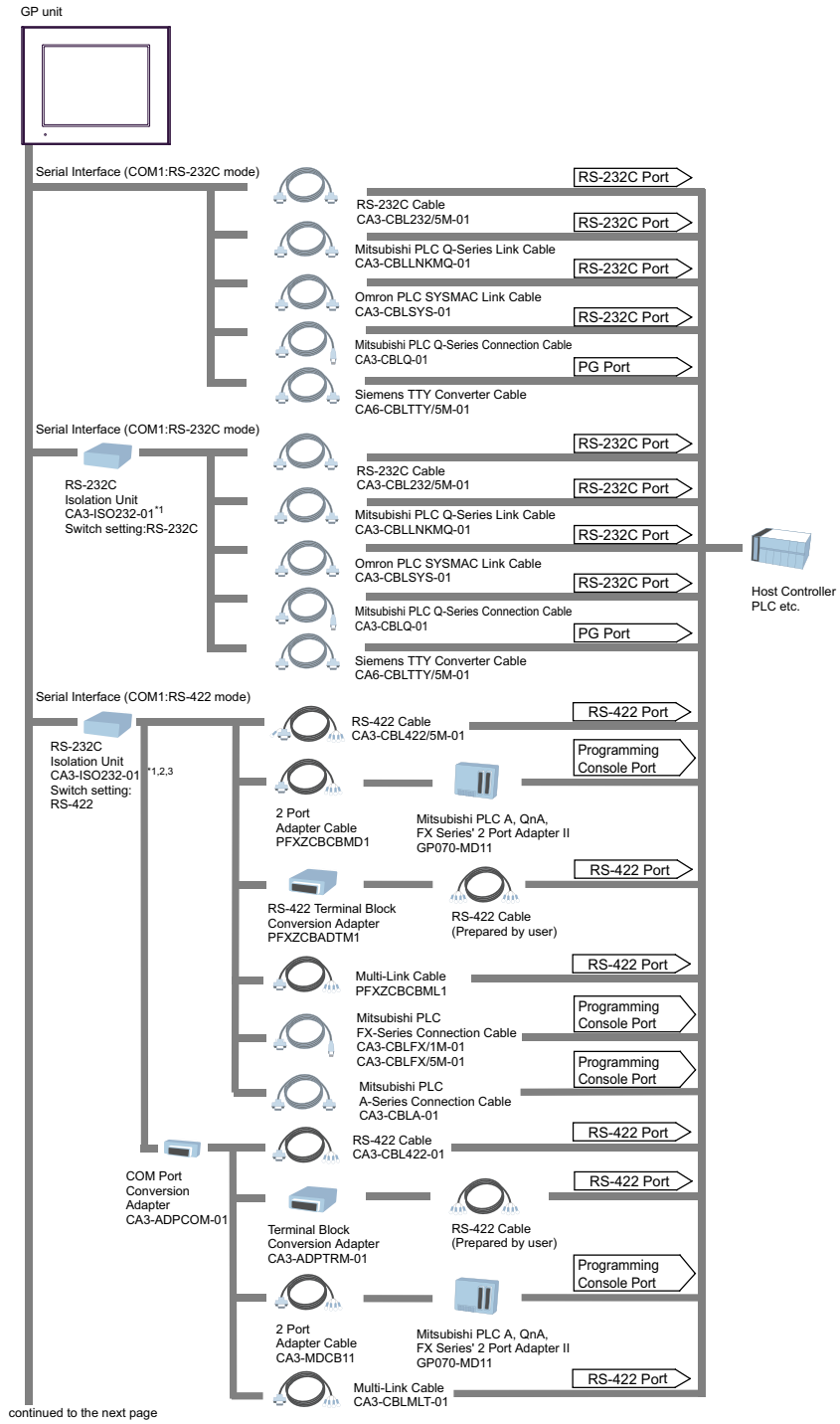
*1 When connecting the CA3-ISO232-01, the COM port’s pin 9 setting should be VCC. You can define COM port settings in GP-Pro EX or in the GP unit’s offline menu.

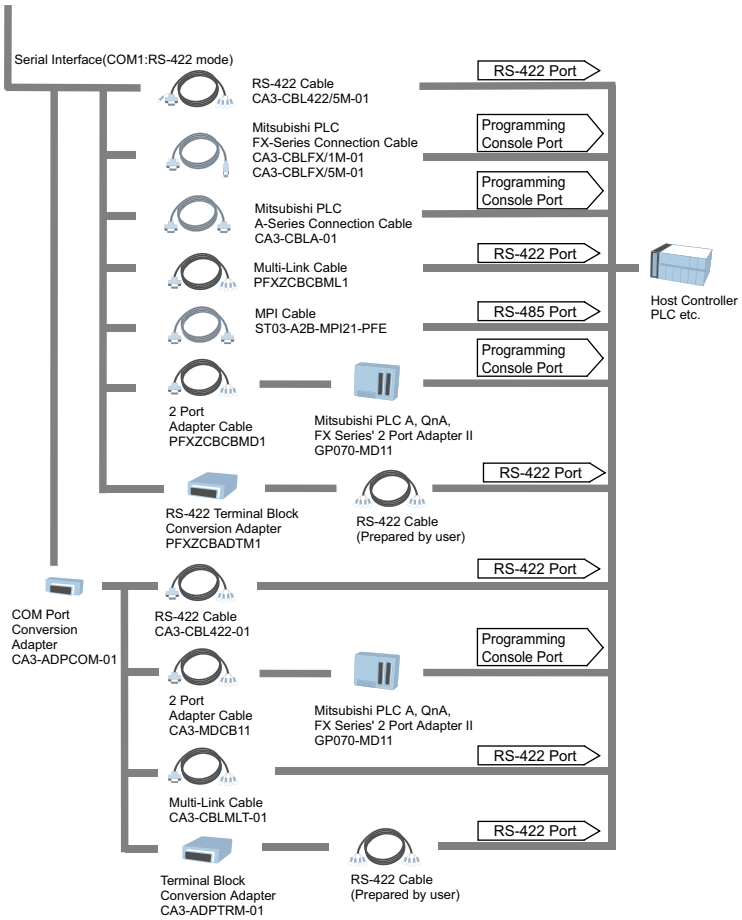
*2 The RS-232C Isolation Unit corresponds to only RS-422/485 (4 wire) communication.

*3 The RS-232C Isolation Unit does not correspond to Serial Multilink communication.

RUN Mode Peripherals - COM1: RS-232C or RS-422/RS-485

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.





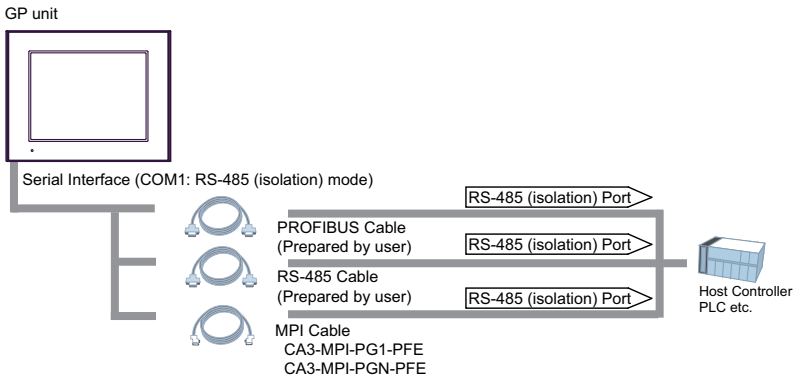
*1 When connecting the CA3-ISO232-01, the COM port's pin 9 setting should be VCC. You can define COM port settings in GP-Pro EX or in the GP unit's offline menu.

*2 The RS-232C Isolation Unit corresponds to only RS-422/485 (4 wire) communication.

*3 The RS-232C Isolation Unit does not correspond to Serial Multilink communication.

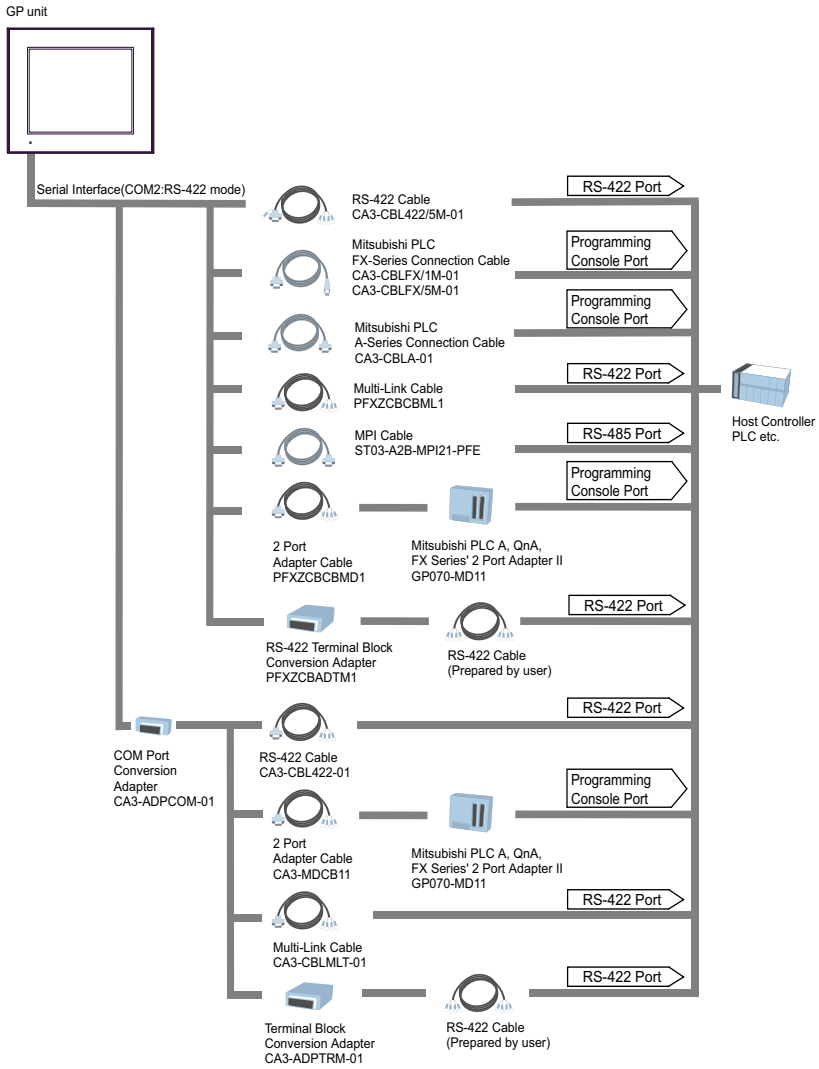
RUN Mode Peripherals - COM1: RS-485 (isolation)

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.



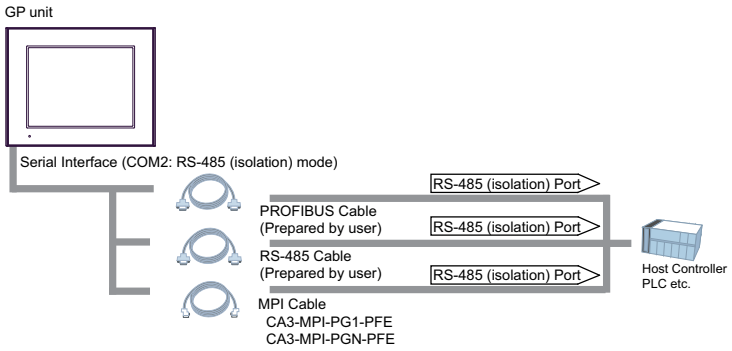
RUN Mode Peripherals - COM2: RS-422/RS-485

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.

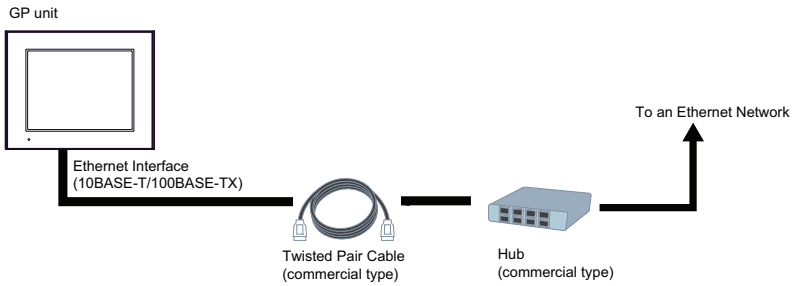


RUN Mode Peripherals - COM2: RS-485 (isolation)

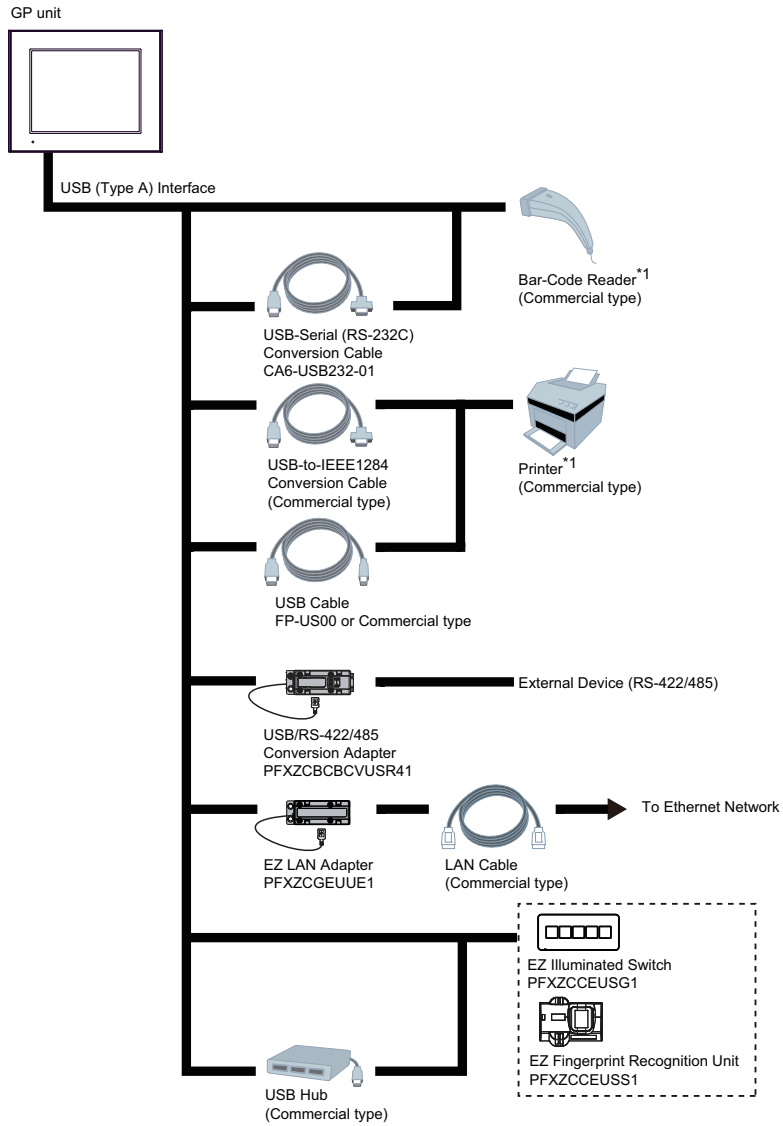
NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.



RUN Mode Peripherals - Ethernet Communication



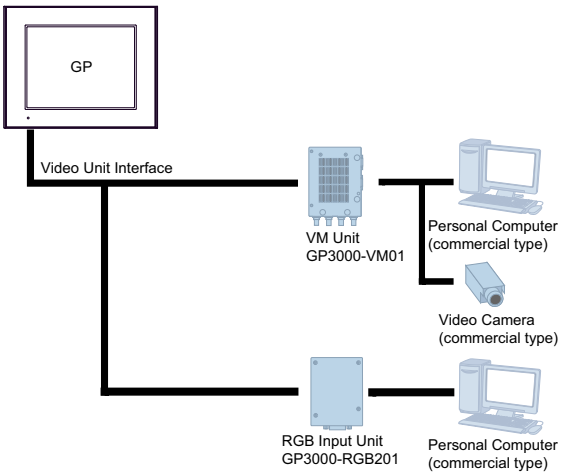
RUN Mode Peripherals - USB Type A / mini-B Interface



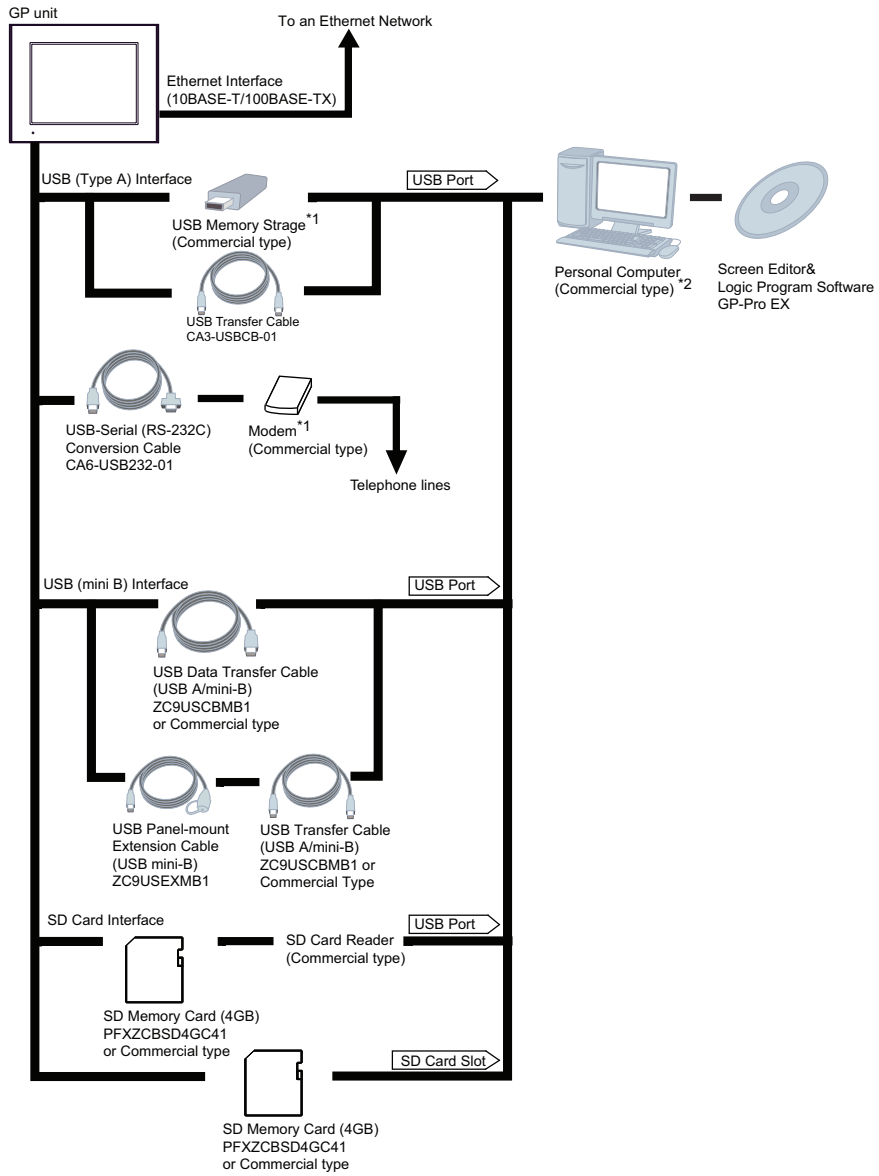
*1 For supported models, refer to our website.
https://www.pro-face.com/trans/en/manual/1001.html

RUN Mode Peripherals - Video Unit Interface

NOTE: GP-4521T/GP-4621T only supports the Video unit.



Edit Mode Peripherals



*1 For supported models, refer to our website.
https://www.pro-face.com/trans/en/manual/1001.html

*2 There are certain types and models of PCs that are not supported. Please refer to the “GP-Pro EX Reference Manual” for the software’s operating environment requirements.

Accessories

Products may change or be discontinued without notice. Please check our website for the latest information.

https://www.pro-face.com

Serial Interface Items

Product Name	Product Number	Description
RS-232C Cable (5m)	CA3-CBL232/5M-01	Connects a host controller to the GP unit. (RS-232C)
RS-422 Cable (5m)	CA3-CBL422/5M-01	Connects a host controller to the GP unit. (RS-422 / Socket Type)
Mitsubishi PLC Q-Series Link Cable (5m)	CA3-CBLLNKMQ-01	Connects Mitsubishi PLC Q-Series (or other host controller) to the GP unit. (RS-232C)
Omron PLC SYSMAC Link Cable (5m)	CA3-CBLSYS-01	Connects Omron PLC SYSMAC Series unit (or other host controller) to the GP unit. (RS-232C)
Mitsubishi PLC A-Series Connection Cable (5m)	CA3-CBLA-01	Connects Mitsubishi PLC A or QnA Series programming console I/F to GP unit. (Simultaneous use of programming consoles is not possible.)
Mitsubishi PLC Q-Series Connection Cable (5m)	CA3-CBLQ-01	Connects Mitsubishi PLC Q-Series programming console I/F to GP unit. (Simultaneous use of programming consoles is not possible.)
Mitsubishi PLC FX-Series Connection Cable	CA3-CBLFX/1M-01 (1m) CA3-CBLFX/5M-01 (5m)	Connects Mitsubishi PLC FX-Series programming console I/F and GP unit. (Simultaneous use of programming consoles is not possible.)
RS-422 Cable (5m)	CA3-CBL422-01	Connects a host controller to the GP unit. (RS-422 / Plug Type)
2 Port Adapter Cable (5m)	CA3-MDCB11	Connects Mitsubishi PLC to the GP unit using 2 port adapter II (RS-422). Please see "GP-Pro EX Device/PLC Connection Manual" for how to connect the cable.
	PFXZCBCBMD1	Connects Mitsubishi PLC directly to the GP unit (D-sub 9 pin plug) using 2 port adapter II (RS-422).
Mitsubishi PLC A, QnA, FX Series 2 Port Adapter II	GP070-MD11	Enables simultaneous use of a GP unit and a Mitsubishi PLC A, QnA, or FX Series peripheral device.
Terminal Block Conversion Adapter	CA3-ADPTRM-01	Connects output from a GP unit's Serial Interface (D-sub 9 pin socket) directly with an RS-422 terminal block.
RS-422 Terminal Block Conversion Adapter	PFXZCBADTM1	Connects output from a GP unit's Serial Interface (D-sub 9 pin plug) directly with an RS-422 terminal block.
COM Port Conversion Adapter	CA3-ADPCOM-01	Connects optional RS-422 communication items to GP unit's Serial Interface.

Product Name	Product Number	Description
Multi-Link Cable (5m)	CA3-CBLMLT-01	Connects a host controller to the GP unit for multi-link (n:1) communication. Please see "GP-Pro EX Device/PLC Connection Manual" for how to connect the cable.
	PFXZCBCBML1	Connects a host controller directly to the GP unit (D-sub 9 pin plug) for multi-link (n:1) communication.
9-pin-to-25-pin RS-232C Conversion Cable (0.2m)	CA3-CBLCBT232-01	Connects a standard RS-232C cable (D-Sub 25-pin socket) to the GP unit (D-sub 9-pin plug).
RS-422 9/25-pin Conversion Cable (0.2m)	PFXZCBCBCVR41	Connects a standard RS-422 cable (D-sub 25-pin socket) to the GP unit (D-sub 9 pin plug).
Siemens TTY Converter Cable (5m)	CA6-CBLTTY/5M-01	Connects Siemens PLC S5 Series to the GP unit.
MPI Cable (3.5m)	ST03-A2B-MPI21-PFE CA3-MPI-PG1-PFE CA3-MPI-PGN-PFE	Connects a host controller to the GP unit for MPI communication.
RS-232C Isolation Unit	CA3-ISO232-01	Connects a host controller to the GP unit and provides isolation. (RS-232C and RS-422 are switchable.)

USB Interface Items

Product Name	Product Number	Description
USB Transfer Cable (USB Type A/mini-B) (1.8 m)	ZC9USCBMB1	Cable for transferring screen data from a PC (USB Type A) to the GP unit (USB mini-B). Supported USB 2.0 High Speed (480 Mbps).
USB Panel-mount Extension Cable (USB mini-B) (1 m)	ZC9USEXMB1	Extension cable that attaches to the USB (mini-B) interface on the front side of the operation panel.
USB Clamp mini-B (1 port)	ZC9USCLMB1	Clamp to prevent disconnection of USB cable (USB/mini-B, 1 port, 5 clamps/set)
USB Cable (5m)	FP-US00	Connects a USB printer. (TYPE-B)
USB Front Cable (1m)	CA5-USBEXT-01	Extension cable attaching USB interface to front panel.
USB-Serial (RS-232C) Conversion Cable (0.5m)	CA6-USB232-01	Cable for converting a GP unit's USB interface into a serial interface (RS-232C). Allows connection to modems[*1] or bar code readers[*1] that support RS-232C.
USB/RS-422/485 Conversion Adapter	PFXZCBCBCVUSR41	Adapter for connecting a GP unit (USB Type A) with an external device (RS-422/RS-485).
EZ Illuminated Switch	PFXZCCEUSG1	A unit of 5 illuminated switches with multiple color LED easily connected with GP unit via USB.
EZ Fingerprint Recognition Unit	PFXZCCEUSS1	Fingerprint recognition unit easily connected with GP unit via USB.
EZ Tower Light tube mounting fixing plate	PFXZCETWHA1	USB Connection Type Monolithic EZ Tower Light tube mounting with fixing plate 3 tiers, Ø60, lighting and flashing with a buzzer.

Product Name	Product Number	Description
EZ Tower Light with base mounting	PFXZCETWW1	USB Connection Type Monolithic EZ Tower with base mounting 3 tiers, Ø60, lighting and flashing with a buzzer.
EZ Numpad	PFXZCCEUKB1	Numpad connected to this product via USB.
EZ LAN Adapter	PFXZCGEUUE1	USB-Ethernet conversion adapter easily added Ethernet interface (RJ-45) on HMI vis USB.

*1 For supported models, refer to our website *https://www.pro-face.com/trans/en/manual/1001.html*.

Video Unit Interface Items

Product Name	Product Number	Corresponding GP unit	Description
VM Unit	GP3000-VM01	GP-4521T GP-4621T	Video-Mix Unit (262,000 colors, Video Input x 4ch, DVI Input/Output x 1ch each)
RGB Input Unit	GP3000-RGB201	GP-4521T GP-4621T	Expansion Unit to enable analog RGB input (2ch).

SD Card Items

Product Name	Product Number	Description
SD Memory Card (4 GB)	PFXZCBSD4GC41	SD Memory Card (4 GB, CLASS4)

Option Items

Product Name	Product Number	Corresponding GP unit	Description
Screen Protection Sheet	CA7-DFS12-01	GP-4600 Series*1	Disposable, dirt-resistant sheet for the GP unit screen (5 sheets/set)
	PFXZCBDS101	GP-4500 Series*1	
	PFXZCBDS71	GP-4401T*1	
	PFXZCBDS72	GP-4401WW	
	PFXZCBDS61	GP-4300 Series*1	
	CA6-DFS4-01	GP-4200 Series	
UV Protection Sheet	PFXZCFUV121	GP-4600 Series*1	Sheet to protect the display from dirt and ultraviolet light.
	PFXZCFUV101	GP-4500 Series*1	
	PFXZCFUV71	GP-4401T*1	
	PFXZCFUV72	GP-4401WW	
	PFXZCFUV61	GP-4300 Series*1	
	PFXZCFUV41	GP-4200 Series	

Product Name	Product Number	Corresponding GP unit	Description
Environment Cover	PFXZCBOP121	GP-4600 Series[*1] GP-4501TW	Disposable, environment cover for the GP unit screen (1 sheet/set)
	PFXZCBOP101	GP-4500 Series[*1*2]	
	PFXZCBOP71	GP-4400 Series[*1]	
	PFXZCBOP61	GP-4300 Series[*1]	
	PFXZCBOP41	GP-4200 Series	

[*1] These options cannot be used with the rear mount model. For information on the option items dedicated for use with the rear mount model, refer to Option Items / Maintenance Options *(see page 184)*.

[*2] Please use "12.1-inch Environment Cover" for GP-4501TW (10.4-inch model).

Maintenance Options

Product Name	Product Number	Corresponding GP unit	Description
Installation Fastener	PFXZCBAF1	GP4000 Series*1*2	Used to install the GP unit into a solid panel (4 pieces/ set)
10.4-inch TW models & 12.1-inch Installation Gasket	PFXZCBWG121	GP-4600 Series*2 GP-4501TW	Provides dust and moisture resistance when GP unit is installed into a solid panel (1 piece)
10.4-inch Installation Gasket	PFXZCBWG101	GP-4500 Series*2 (except GP-4501TW)	
7.0-inch Wide & 7.5-inch Installation Gasket	PFXZCBWG71	GP-4400 Series*2	
5.7-inch Installation Gasket	PFXZCBWG61	GP-4300 Series*2	
3.5-inch Installation Gasket	PFXZCBWG41	GP-4200 Series	
USB Clamp Type A (1 port)	PFXZCBCLUSA1	GP4000 Series*1	Clamp to prevent disconnection of USB cable (USB/A, 1 port, 5 clamps/set)
DC Power Supply Connector	PFXZCBCNDC1	GP-4400 Series GP-4300 Series GP-4200 Series	Connector to connect DC power supply cables (5 pcs/set)
DC Power Supply Connector (Right-angle)	PFXZCBCNDC2	GP-4600 Series GP-4500 Series	Right-angle connector to connect DC power supply cables (5 pcs/set)
Battery for Memory Backup	PFXZCBBT1	GP-4600 Series GP-4500 Series GP-4400 Series GP-4300 Series (except GP-4301TW)	Primary battery for memory and time data backup (1)
Panel Cutout Adapter	CA4-ATM10-01	GP-4500 Series (except Rear Mount Models)	Panel cutout adapter for mounting GP-4500 Series in cutout for GP-2500/2600 series.

*1 Does not include GP-4100 Series, GP-4201TM, or GP-4301TM.

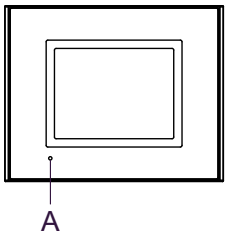
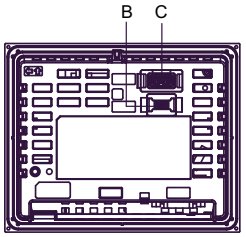
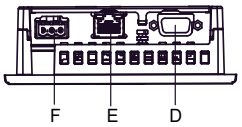
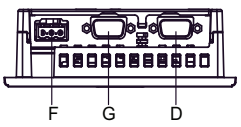
*2 These options cannot be used with the rear mount model. For information on the option items dedicated for use with the rear mount model, refer to Option Items / Maintenance Options *(see page 184)*.

Parts Identification and Functions

3

Parts Identification and Functions

GP-4200 Series Parts Identification

Side	GP-4200 Series
Front	
Rear	
Bottom	GP-4201T/4203T  GP-4201TW 

Part	Name	Description
A	Status LED	*1
B	USB (mini-B) Interface	Conforms to USB2.0 (mini-B) x 1. Communication Distance: 5 m (16.4 ft) or less.

Part	Name	Description
C	USB (Type A) Interface	Conforms to USB2.0 (Type A) x 1. Power supply voltage: 5Vdc+/-5%. Output Current: 500 mA or less. Maximum communication distance: 5 m (16.4 ft).
D	Serial Interface (COM1)	GP-4201T: RS-232C/422/485 Serial Interface. (You can switch the communication method via software.) Connector: D-Sub 9 pin (plug) x 1. GP-4201TW: RS-232C Serial Interface. Connector: D-Sub 9 pin (plug) x 1. GP-4203T: RS-485 (isolation) Serial Interface. Connector: D-Sub 9 pin (socket) x 1.
E	Ethernet Interface*2	Ethernet transmission interface (10BASE-T/100BASE-TX) Connector: Modular jack (RJ-45) x 1. Ethernet Interface is not attached to GP-4201TW.
F	Power Plug Connector	-
G	Serial Interface (COM2)	GP-4201TW: RS-422/485 Serial Interface. Connector: D-Sub 9 pin (plug) x 1.

*1 Status LED operations are as shown below:

Color	Indicator	Operation Mode (Drawing)	Logic execution mode (when logic is enabled)
Green	ON	Offline	–
		In operation	RUN
	Flashing	In operation	STOP
Orange	Flashing	Software starting up.	
Red	ON	Power is turned ON.	
	Flashing	In operation	Major Error
LED fade (Green)	ON	The GP unit's "Backlight Control" is set to Standby Mode and the screen has gone blank.	
-	OFF	Power is turned OFF.	

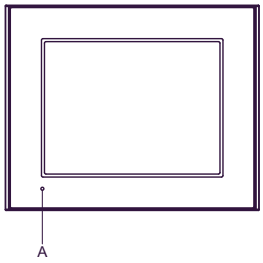
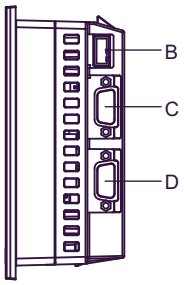
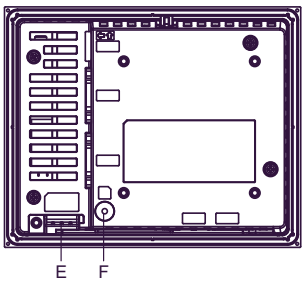
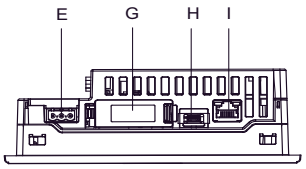
*2 Ethernet LED operations are as shown below.

	Color	Indicator	Description
	Green (Active)	Flashing	Data transmission is occurring.
		OFF	No data transmission.
	Green (Link)	ON	Data transmission is available in 10BASE-T/100BASE-TX.
		OFF	No connection or error.

GP-4300 Series Parts Identification

NOTE:

- If you are using the rear mount model, refer to Parts Identification and Functions *(see page 185)*.

Side	GP-4300 Series
Front	
Right	
Rear	
Bottom	

Part	Name	Description
A	Status LED	*1
B	USB (Type A) Interface	Conforms to USB2.0 (Type A) x 1. Power supply voltage: 5Vdc+/-5%. Output Current: 500 mA or less. Maximum communication distance: 5 m (16.4 ft).
C	Serial Interface (COM1)	RS-232C Serial Interface. Connector: D-Sub 9 pin (plug) x 1.

Part	Name	Description
D	Serial Interface (COM2)	GP-4301T/GP-4301TW: RS-422/485 Serial Interface. Connector: D-Sub 9 pin (plug) x 1. GP-4303T: RS-485 (isolation) Serial Interface. Connector: D-Sub 9 pin (socket) x 1.
E	Power Plug Connector	-
F	SD Card Access LED *2	This lamp lights up when SD Card is inserted. **NOTE:** Do not remove or insert the SD Card when the LED lamp is on. Doing so may damage data on the SD Card.
G	SD Card Interface Cover/Replacement Battery Insertion Cover	For information on how to insert or remove the SD Card, refer to SD Card Insertion / Removal *(see page 160)*. For information on how to replace the battery, refer to Replacing the Battery *(see page 176)*. **NOTE:** This cover is not on GP-4301TW
H	USB (mini-B) Interface	Conforms to USB2.0 (mini-B) x 1. Communication Distance: 5 m (16.4 ft) or less.
I	Ethernet Interface *3	Ethernet transmission interface (10BASE-T/100BASE-TX) Connector: Modular jack (RJ-45) x 1.

*1 Status LED operations are as shown below:

Color	Indicator	Operation Mode (Drawing)	Logic execution mode (when logic is enabled)
Green	ON	Offline	–
		In operation	RUN
	Flashing	In operation	STOP
Orange	Flashing	Software starting up.	
Red	ON	Power is turned ON.	
	Flashing	In operation	Major Error
LED fade (Green)	ON	The GP unit's "Backlight Control" is set to Standby Mode and the screen has gone blank.	
-	OFF	Power is turned OFF.	

*2 SD Card Access LED operations are as shown below.

Color	Indicator	Description
Green (Active)	ON	The SD Card is inserted.
	OFF	The SD Card is not inserted or detected.

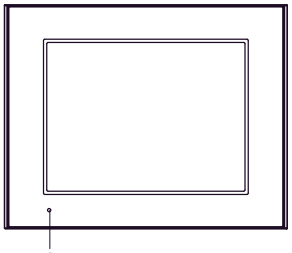
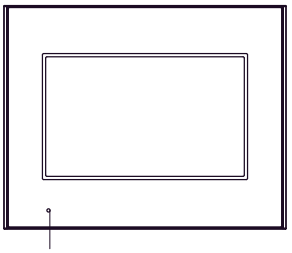
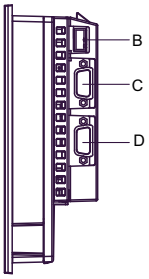
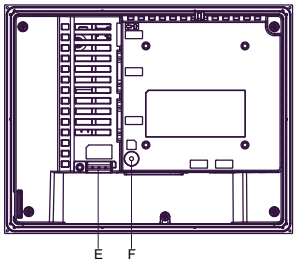
*3 Ethernet LED operations are as shown below.

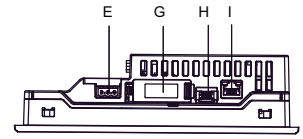
	Color	Indicator	Description
	Green (Active)	Flashing	Data transmission is occurring.
		OFF	No data transmission.
	Green (Link)	ON	Data transmission is available in 10BASE-T/100BASE-TX.
		OFF	No connection or error.

GP-4400 Series Parts Identification

NOTE:

- If you are using the rear mount model, refer to Parts Identification and Functions *(see page 185)*.

Side	GP-4400 Series
Front	GP-4401T  GP-4401WW 
Right	
Rear	

Side	GP-4400 Series
Bottom	

Part	Name	Description
A	Status LED	*1
B	USB (Type A) Interface	Conforms to USB2.0 (Type A) x 1. Power supply voltage: 5Vdc+/-5%. Output Current: 500 mA or less. Maximum communication distance: 5 m (16.4 ft).
C	Serial Interface (COM1)	RS-232C Serial Interface. Connector: D-Sub 9 pin (plug) x 1.
D	Serial Interface (COM2)	RS-422/485 Serial Interface. Connector: D-Sub 9 pin (plug) x 1.
E	Power Plug Connector	-
F	SD Card Access LED *2	This lamp lights up when SD Card is inserted. **NOTE:** Do not remove or insert the SD Card when the LED lamp is on. Doing so may damage data on the SD Card.
G	SD Card Interface Cover/Replacement Battery Insertion Cover	For information on how to insert or remove the SD Card, refer to SD Card Insertion / Removal *(see page 160)*. For information on how to replace the battery, refer to Replacing the Battery *(see page 176)*.
H	USB (mini-B) Interface	Conforms to USB2.0 (mini-B) x 1. Communication Distance: 5 m (16.4 ft) or less.
I	Ethernet Interface *3	Ethernet transmission interface (10BASE-T/100BASE-TX) Connector: Modular jack (RJ-45) x 1.

*1 Status LED operations are as shown below:

Color	Indicator	Operation Mode (Drawing)	Logic execution mode (when logic is enabled)
Green	ON	Offline	–
		In operation	RUN
	Flashing	In operation	STOP
Orange	Flashing	Software starting up.	
Red	ON	Power is turned ON.	
	Flashing	In operation	Major Error
LED fade (Green)	ON	The GP unit's "Backlight Control" is set to Standby Mode and the screen has gone blank.	
-	OFF	Power is turned OFF.	

*2 SD Card Access LED operations are as shown below.

Color	Indicator	Description
Green (Active)	ON	The SD Card is inserted.
	OFF	The SD Card is not inserted or detected.

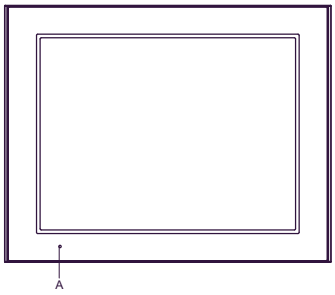
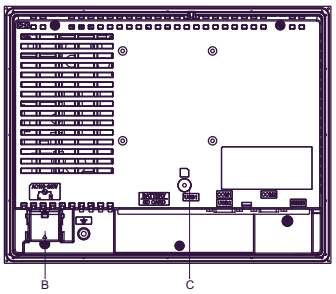
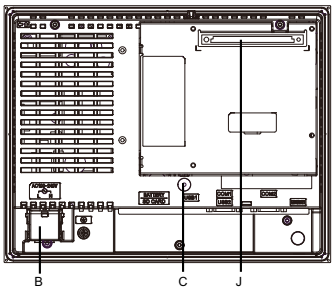
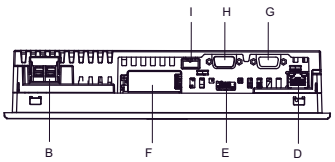
*3 Ethernet LED operations are as shown below.

	Color	Indicator	Description
	Green (Active)	Flashing	Data transmission is occurring.
		OFF	No data transmission.
	Green (Link)	ON	Data transmission is available in 10BASE-T/100BASE-TX.
		OFF	No connection or error.

GP-4500 Series Parts Identification

NOTE:

- If you are using the rear mount model, refer to Parts Identification and Functions *(see page 185)*.

Side	GP-4500 Series
Front	
Rear	 GP-4500 Series (except for GP-4521T)  GP-4521T
Bottom	

Part	Name	Description
A	Status LED	*1
B	Power Input Terminal Block (AC model), Power Plug Connector (DC model)	-

Part	Name	Description
C	SD Card Access LED *2	This lamp lights up when SD Card is inserted. **NOTE:** Do not remove or insert the SD Card when the LED lamp is on. Doing so may damage data on the SD Card.
D	Ethernet Interface *3	Ethernet transmission interface (10BASE-T/100BASE-TX) Connector: Modular jack (RJ-45) x 1.
E	USB (mini-B) Interface	Conforms to USB2.0 (mini-B) x 1. Communication Distance: 5 m (16.4 ft) or less.
F	SD Card Interface Cover/Replacement Battery Insertion Cover	For information on how to insert or remove the SD Card, refer to SD Card Insertion/Removal *(see page 160)*. For information on how to replace the battery, refer to Replacing the Battery *(see page 176)*.
G	Serial Interface (COM2)	GP-4501T/GP-4501TW: RS-422/485 Serial Interface. Connector: D-Sub 9 pin (plug) x 1. GP-4503T: RS-485 (isolation) Serial Interface. Connector: D-Sub 9 pin (socket) x 1.
H	Serial Interface (COM1)	RS-232C Serial Interface. Connector: D-Sub 9 pin (plug) x 1.
I	USB (Type A) Interface	Conforms to USB2.0 (Type A) x 1. Power supply voltage: 5Vdc+/-5%. Output Current: 500 mA or less. Maximum communication distance: 5 m (16.4 ft).
J	Video Unit Interface (GP-4521T only)	The interface which connects VM Unit or RGB Input Unit.

*1 Status LED operations are as shown below:

Color	Indicator	Operation Mode (Drawing)	Logic execution mode (when logic is enabled)
Green	ON	Offline	–
		In operation	RUN
	Flashing	In operation	STOP
Orange	Flashing	Software starting up.	
Red	ON	Power is turned ON.	
	Flashing	In operation	Major Error
LED fade (Green)	ON	The GP unit's "Backlight Control" is set to Standby Mode and the screen has gone blank.	
-	OFF	Power is turned OFF.	

*2 SD Card Access LED operations are as shown below.

Color	Indicator	Description
Green (Active)	ON	The SD Card is inserted.
	OFF	The SD Card is not inserted or detected.

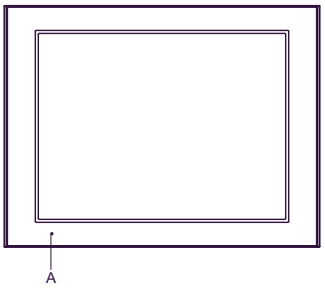
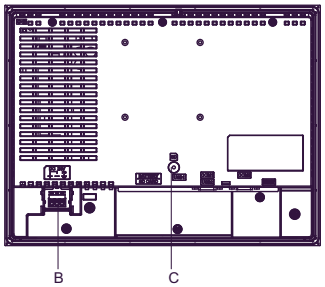
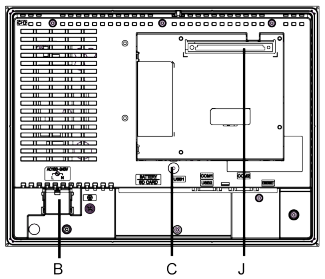
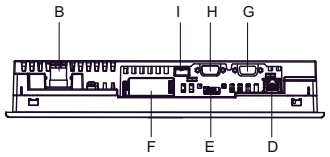
*3 Ethernet LED operations are as shown below.

	Color	Indicator	Description
	Green (Active)	Flashing	Data transmission is occurring.
		OFF	No data transmission.
	Green (Link)	ON	Data transmission is available in 10BASE-T/100BASE-TX.
		OFF	No connection or error.

GP-4600 Series Parts Identification

NOTE:

- If you are using the rear mount model, refer to Parts Identification and Functions *(see page 185)*.

Side	GP-4600 Series
Front	
Rear	 GP-4600 Series (except for GP-4621T)  GP-4621T
Bottom	

Part	Name	Description
A	Status LED	*1
B	Power Input Terminal Block (AC model), Power Plug Connector (DC model)	-

Part	Name	Description
C	SD Card Access LED *2	This lamp lights up when SD Card is inserted. **NOTE:** Do not remove or insert the SD Card when the LED lamp is on. Doing so may damage data on the SD Card.
D	Ethernet Interface *3	Ethernet transmission interface (10BASE-T/100BASE-TX) Connector: Modular jack (RJ-45) x 1.
E	USB (mini-B) Interface	Conforms to USB2.0 (mini-B) x 1. Communication Distance: 5 m (16.4 ft) or less.
F	SD Card Interface Cover/Replacement Battery Insertion Cover	For information on how to insert or remove the SD Card, refer to SD Card Insertion/Removal *(see page 160)*. For information on how to replace the battery, refer to Replacing the Battery *(see page 176)*.
G	Serial Interface (COM2)	GP-4601T: RS-422/485 Serial Interface. Connector: D-Sub 9 pin (plug) x 1. GP-4603T: RS-485 (isolation) Serial Interface. Connector: D-Sub 9 pin (socket) x 1.
H	Serial Interface (COM1)	RS-232C Serial Interface. Connector: D-Sub 9 pin (plug) x 1.
I	USB (Type A) Interface	Conforms to USB2.0 (Type A) x 1. Power supply voltage: 5Vdc+/-5%. Output Current: 500 mA or less. Maximum communication distance: 5 m (16.4 ft).
J	Video Unit Interface (GP-4621T only)	The interface which connects VM Unit or RGB Input Unit.

*1 Status LED operations are as shown below:

Color	Indicator	Operation Mode (Drawing)	Logic execution mode (when logic is enabled)
Green	ON	Offline	–
		In operation	RUN
	Flashing	In operation	STOP
Orange	Flashing	Software starting up.	
Red	ON	Power is turned ON.	
	Flashing	In operation	Major Error
LED fade (Green)	ON	The GP unit's "Backlight Control" is set to Standby Mode and the screen has gone blank.	
-	OFF	Power is turned OFF.	

*2 SD Card Access LED operations are as shown below.

Color	Indicator	Description
Green (Active)	ON	The SD Card is inserted.
	OFF	The SD Card is not inserted or detected.

*3 Ethernet LED operations are as shown below.

	Color	Indicator	Description
	Green (Active)	Flashing	Data transmission is occurring.
		OFF	No data transmission.
	Green (Link)	ON	Data transmission is available in 10BASE-T/100BASE-TX.
		OFF	No connection or error.

Specifications

4

Overview

This chapter presents the GP unit specifications.

What Is in This Chapter?

This chapter contains the following sections:

4.1 GP-4200 Series

What Is in This Section?

This section contains the following topics:

Electrical Specifications

Power Supply	Rated Input Voltage		24 Vdc
	Input Voltage Limits		19.2...28.8 Vdc
	Voltage Drop		2 ms or less
	Power Consumption		9.6 W or less
		When power is not supplied to external devices	5.2 W or less
		Backlight OFF (Standby Mode)	4.2 W or less
		Backlight Dimmed (Brightness: 20%)	4.3 W or less
	In-Rush Current		30 A or less
Voltage Endurance			1,000 Vac for 1 minute (between power terminal and FG terminal), leakage current: 20 mA or less
Insulation Resistance			500 Vdc, 10 MΩ or more (between power terminal and FG terminal)

Environmental Specifications

Physical Environment	Surrounding Air Temperature	0...50 °C (32...122 °F)
	Storage Temperature	-20...60 °C (-4...140 °F)
	Surrounding Air and Storage Humidity	10%...90% RH (Non condensing, wet bulb temperature 39 °C [102.2 °F] or less)
	Dust	0.1 mg/m^3 (10^{-7} oz/ft^3) or less (non-conductive levels)
	Pollution Degree	For use in Pollution Degree 2 environment
	Corrosive Gases	Free of corrosive gases
	Atmospheric Pressure (Operating Altitude)	800...1,114 hPa (2,000 m [6,561 ft] or lower)
Mechanical Environment	Vibration Resistance	IEC/EN 61131-2 compliant 5...9 Hz Single amplitude 3.5 mm (0.14 in.) 9...150 Hz Fixed acceleration: 9.8 m/s^2 X, Y, Z directions for 10 cycles (approx. 100 min.)
	Concussion Resistance	IEC/EN 61131-2 compliant 147 m/s^2, X, Y, Z directions for 3 times
Electrical Environment	Noise immunity	Noise Voltage: 1,000 Vp-p Pulse Width: 1 μs Rise Time: 1 ns
	Electrostatic Discharge Immunity	Contact Discharge Method: 6 kV (IEC/EN 61000-4-2 Level 3)

Air quality requirements

Do not operate or store the panel where chemicals evaporate, or where chemicals are present in the air:

- Corrosive chemicals: Acids, alkalines, liquids containing salt.
- Flammable chemicals: Organic solvents.

⚠ CAUTION

INOPERATIVE EQUIPMENT

Do not allow water, liquids, metal, and wiring fragments to enter the panel case.

Failure to follow these instructions can result in injury or equipment damage.

Structural Specifications

Grounding	Functional grounding: Grounding resistance of 100 Ω or less, 2 mm^2 (AWG 14) or thicker wire, or your country's applicable standard. (Same for FG and SG terminals)
Cooling Method	Natural air circulation
Structure *1	IP65F NEMA #250 TYPE 4X/13 (on the front panel when properly installed in an enclosure)
External Dimensions	W132 x H106 x D42 mm (W5.2 x H4.17 x D1.65 in.)
Panel Cut Dimensions	W118.5 x H92.5 mm (W4.67 x H3.64 in.)*2 Panel thickness area: 1.6...5 mm (0.06...0.2 in)*3
Weight	0.4 kg (0.9 lb) or less (main unit only)

*1 The front face of the GP unit, installed in a solid panel, has been tested using conditions equivalent to the standards shown in the specification. Even though the GP unit's level of resistance is equivalent to these standards, oils that should have no effect on the GP unit can possibly harm the panel. This can occur in areas where either vaporized oils are present, or where low viscosity cutting oils are allowed to adhere to the panel for long periods of time. If the GP unit's front face protection sheet peels off, these conditions can lead to the ingress of oil into the GP unit and separate protection measures are suggested.
Also, if non-approved oils are present, they may cause deformation or corrosion of the front panel's plastic cover. Therefore, prior to installing the GP unit, be sure to confirm the type of conditions that will be present in the GP unit's operating environment. If the installation gasket is used for a long period of time, or if the GP unit and its gasket are removed from the panel, the original level of protection cannot be kept. To maintain the original protection level, be sure to replace the installation gasket regularly.

*2 For dimensional tolerance, everything +1/-0 mm (+0.04/-0 in.) and R in angle are below R3 (R0.12 in.)

*3 Even if the installation wall thickness is within the recommended range for the "Panel Cut Dimensions", depending on wall's material, size, and installation location of the GP unit and other devices, the installation wall could warp. To prevent warping, the installation surface may need to be strengthened.

The front face of the panel, installed in a solid panel, has been tested using conditions equivalent to the standards shown in the specification.

NOTICE

EQUIPMENT DAMAGE

- Ensure that the panel is not in permanent and direct contact with oils.
- Do not expose the device in direct sunlight.

Failure to follow these instructions can result in equipment damage.

NOTICE

STORAGE AND OPERATION OUTSIDE OF SPECIFICATIONS

- Store the panel in areas where temperatures are within the panel's specifications.
- Do not restrict or block the panel's rear-face ventilation slots.

Failure to follow these instructions can result in equipment damage.

NOTICE

GASKET AGING

- Inspect the gasket periodically as required by your operating environment to keep the initial IP level.
- Change the gasket at least once a year, or as soon as scratches or dirt become visible.

Failure to follow these instructions can result in equipment damage.

Display Specifications

		GP-4201T / GP-4203T	GP-4201TW
Display Type		TFT Color LCD	
Display Size		3.5”	
Resolution		320 x 240 pixels (QVGA)	
Effective Display Area		W70.56 x H52.92 mm (W2.78 x H2.08 in.)	
Display Colors		65,536 colors (No blink) / 16,384 colors (Blink)	
Backlight		White LED (Not user replaceable. When replacement is required, contact your local distributor.)	
Backlight Service Life		50,000 hours or more (continuous operation at 25 °C [77 °F] before backlight brightness decreased to 50%)	
Brightness Control		16 levels (Adjusted with touch panel or software)	8 levels (Adjusted with touch panel or software)
Language Fonts[*1]		Japanese, ASCII, Chinese (Simplified), Chinese (Traditional), Korean, Cyrillic, Thai	
Character Sizes		Standard font: 8 x 8, 8 x 16, 16 x 16 and 32 x 32 pixel fonts Stroke font: 6...127 pixel fonts Image font: 8...72 pixel fonts	
Font Sizes		Standard font: You can expand width up to 8 times, and expand height up to 8 times.[*2]	
Text	8 x 8 pixels	40 characters per row x 30 rows	
	8 x 16 pixels	40 characters per row x 15 rows	
	16 x 16 pixels	20 characters per row x 15 rows	
	32 x 32 pixels	10 characters per row x 7 rows	

[*1] Please refer to the GP-Pro EX Reference Manual for details on font types and character codes.

[*2] You can set up other font sizes using the software.

Memory, Clock, and Touch Panel

Memory

		GP-4201T / GP-4203T	GP-4201TW
Application Memory	Screen Area[*1]	FLASH EPROM 16 MB (including the logic program area)	FLASH EPROM 8 MB (including the logic program area)
	Logic Program Area	FLASH EPROM 132 KB (Equivalent to 15,000 steps[*2])	
	Font Area	FLASH EPROM 8 MB (when limit exceeded, uses application memory)	
Backup Memory	Data Backup	SRAM 320 KB (Rechargeable lithium battery for data backup)	SRAM 128 KB (Rechargeable lithium battery for data backup)
	Variable Area	SRAM 64 KB (Rechargeable lithium battery for retentive variables)	None

[*1] Capacity available for user application.

[*2] Up to 60,000 steps can be converted in software. However, this reduces application memory capacity for screen data by 1 MB.

NOTE:

- For details on the memory, refer to the following URL.
  https://www.pro-face.com/trans/en/manual/1082.html
- When the message "RAAA051 Low battery" is displayed, supply power to the GP unit and fully charge the battery. In 24 hours the battery charges to a level that allows backup operation. Completing a full charge requires about 120 hours (5 days).
- The lithium battery's lifetime is: 10 years when the battery's ambient temperature is 40 °C (104 °F) or less, 4.1 years when the battery's ambient temperature is 50 °C (122 °F) or less, and 1.5 years when the battery's ambient temperature is 60 °C (140 °F) or less.
  When used for backup:
  Approximately 100 days, with a fully charged battery.
  Approximately 6 days, with a half-charged battery.

Clock

± 65 seconds per month (deviation at room temperature and power is OFF). Variations in operating conditions and battery life can cause clock deviations from -380 to +90 seconds per month.

For systems where this level of precision is insufficient, the user should monitor and make adjustments when required.

NOTE:

- When the message "RAAA051 Low battery" is displayed, supply power to the GP unit and fully charge the battery. In 24 hours the battery charges to a level that allows backup operation. Completing a full charge requires about 120 hours (5 days).
- The lithium battery's lifetime is: 10 years when the battery's ambient temperature is 40 °C (104 °F) or less, 4.1 years when the battery's ambient temperature is 50 °C (122 °F) or less, and 1.5 years when the battery's ambient temperature is 60 °C (140 °F) or less.
  When used for backup:
  Approximately 100 days, with a fully charged battery.
  Approximately 6 days, with a half-charged battery.

Touch Panel

Touch Panel Type	Resistive Film (analog)
Touch Panel Resolution	1,024 x 1,024
Touch Panel Service Life	1 million times or more

The touch panel does not support multi-touch (two point touch / multiple point touch). If you touch multiple points on the touch panel, it may operate as if you touched the center-point of the multiple touches.

For example, if you touch two or more points on the touch panel and at the center of the touches is a switch for a drive system, even though you did not directly touch that switch, it may function as if you did.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Do not touch two or more points on the touch panel.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Interface Specifications

Introduction

Use only the SELV (Safety Extra-Low Voltage) circuit to connect the serial, USB and Ethernet interfaces.

Serial Interface COM1

	GP-4201T	GP-4201TW	GP-4203T
Asynchronous Transmission	RS-232C / RS-422 / RS-485	RS-232C	RS-485 (isolation)
Data Length	7 or 8 bits		
Stop Bit	1 or 2 bits		
Parity	None, odd or even		
Data Transmission Speed	2,400...115,200 bps, 187,500 bps (MPI)	2,400...115,200 bps	2,400...115,200 bps, 187,500 bps (MPI)
Connector	D-Sub 9 pin (plug)		D-Sub 9 pin (socket)

Serial Interface COM2

	GP-4201TW
Asynchronous Transmission	RS-422 / RS-485
Data Length	7 or 8 bits
Stop Bit	1 or 2 bits
Parity	None, odd or even
Data Transmission Speed	2,400...115,200 bps, 187,500 bps (MPI)
Connector	D-Sub 9 pin (plug)

USB Interface

	USB (Type A) Interface	USB (mini-B) Interface
Connector	USB 2.0 (Type A) x 1	USB 2.0 (mini-B) x 1
Power Supply Voltage	5 Vdc ±5%	-
Maximum Current Supplied	500 mA	-
Maximum Transmission Distance	5 m (16.4 ft)	

Ethernet Interface

	GP-4201T / GP-4203T
Ethernet (LAN)	IEEE802.3i / IEEE802.3u, 10BASE-T/100BASE-TX
Connector	Modular jack (RJ45) x 1

NOTE: GP-4201TW does not have an Ethernet interface.

Specifications of Serial Interface COM1

Introduction

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.

The COM1 ports of GP-4201T and GP-4201TW are not isolated. The SG (signal ground) and FG (frame ground) terminals are connected inside the GP unit.

⚠ DANGER

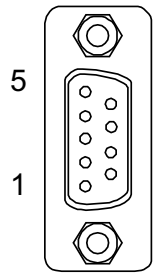
ELECTRIC SHOCK

When using the SG terminal to connect an external device to the panel:
- Verify that a short-circuit loop is not created when you set up the system.
- Connect the #5 SG terminal to remote equipment when the host (PLC) unit is not isolated. Connect the #5 SG terminal to a known reliable ground connection to reduce the risk of damaging the circuit.

Failure to follow these instructions will result in death or serious injury.

Serial Interface COM1

GP-4201T: D-Sub 9 pin plug connector via an RS-232C or RS-422/RS-485 cable.

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

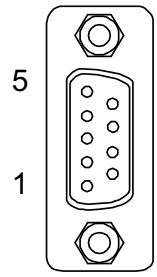
[*1] You can switch pin #9 between RI and VCC via software.

NOTICE

EQUIPMENT DAMAGE

Use only the rated current.

Failure to follow these instructions can result in equipment damage.

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

Interfit bracket is #4-40 (UNC).

Recommendations:
- Cable Connector: XM3D-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

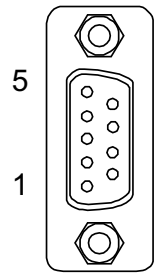
⚠ CAUTION

LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

Failure to follow these instructions can result in injury or equipment damage.

GP-4201TW: D-Sub 9 pin plug connector via an RS-232C cable.

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

[*1] You can switch pin #9 between RI and VCC via software.

NOTICE

EQUIPMENT DAMAGE

Use only the rated current.

Failure to follow these instructions can result in equipment damage.

Interfit bracket is #4-40 (UNC).

Recommendations:
- Cable Connector: XM3D-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

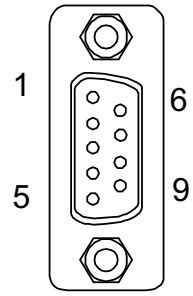
⚠ CAUTION

LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

Failure to follow these instructions can result in injury or equipment damage.

GP-4203T: D-Sub 9 pin socket connector via a RS-485, PROFIBUS, or MPI cable.

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

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

*2 The SG and FG terminals are isolated.

Interfit bracket is #4-40 (UNC).

Recommendations:
- Cable Connector: XM3A-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

⚠ CAUTION

LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

Failure to follow these instructions can result in injury or equipment damage.

Specifications of Serial Interface COM2

Introduction

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.

The serial port is not isolated. The SG (signal ground) and FG (frame ground) terminals are connected inside the GP unit.

⚠⚠ DANGER

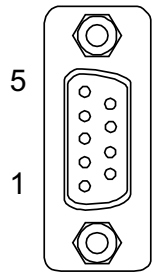
ELECTRIC SHOCK

When using the SG terminal to connect an external device to the panel:
- Verify that a short-circuit loop is not created when you set up the system.
- Connect the #5 SG terminal to remote equipment when the host (PLC) unit is not isolated. Connect the #5 SG terminal to a known reliable ground connection to reduce the risk of damaging the circuit.

Failure to follow these instructions will result in death or serious injury.

Serial Interface COM2

GP-4201TW: D-Sub 9 pin plug connector via an RS-422/485 cable.

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

Interfit bracket is #4-40 (UNC).

Recommendations:
- Cable Connector: XM3D-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

⚠ CAUTION

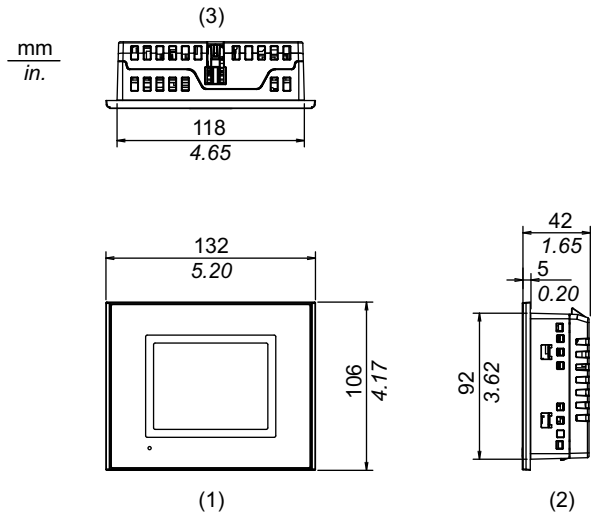
LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

Failure to follow these instructions can result in injury or equipment damage.

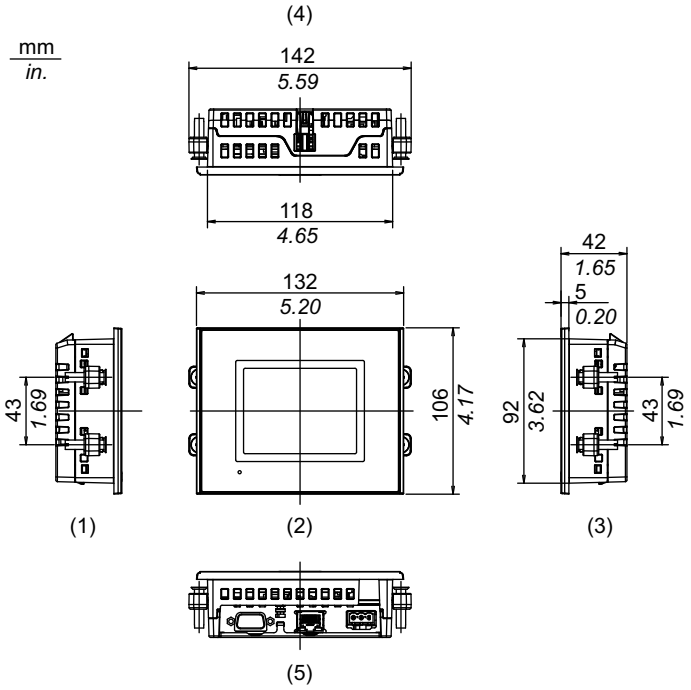
Dimensions

External Dimensions



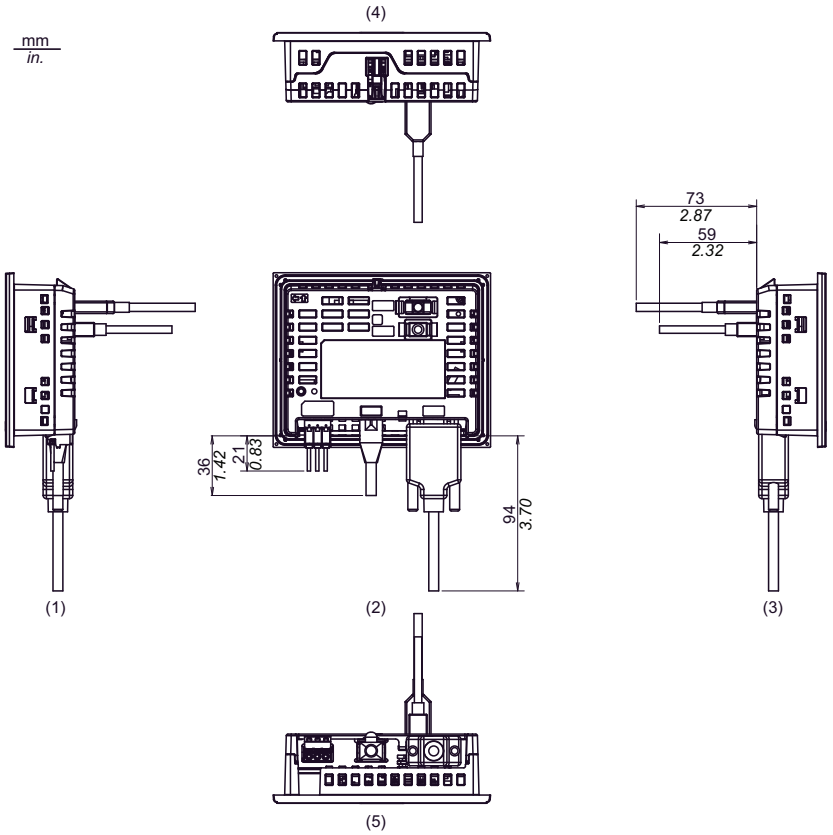
1 Front
2 Right Side
3 Top

Installation with Installation Fasteners



1 Left Side
2 Front
3 Right Side
4 Top
5 Bottom

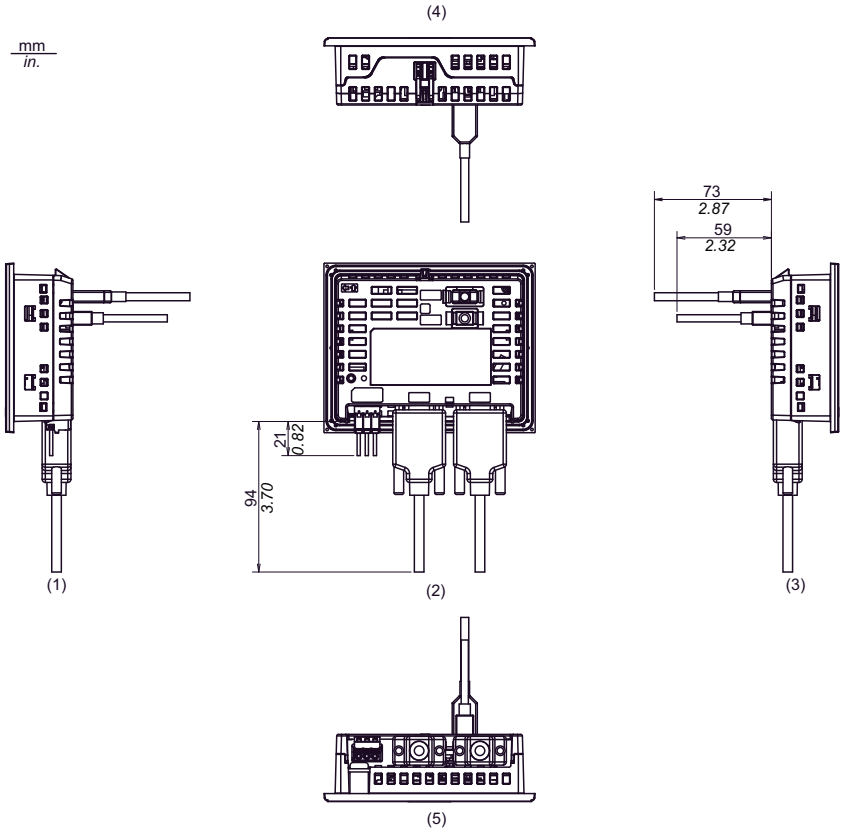
Dimensions with Cables: GP-4201T



1 Left Side
2 Rear
3 Right Side
4 Top
5 Bottom

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

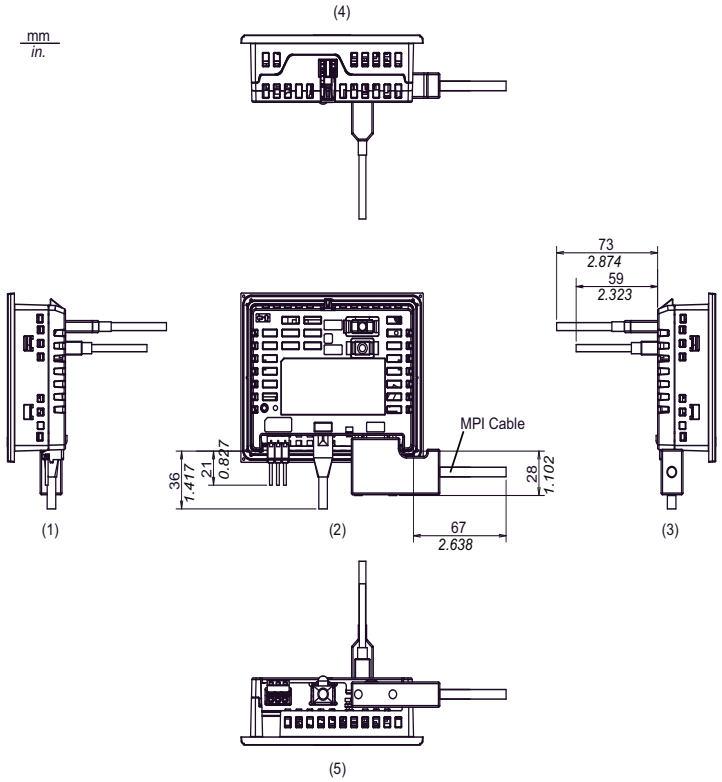
Dimensions with Cables: GP-4201TW



1 Left Side
2 Rear
3 Right Side
4 Top
5 Bottom

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

Dimensions with Cables: GP-4203T

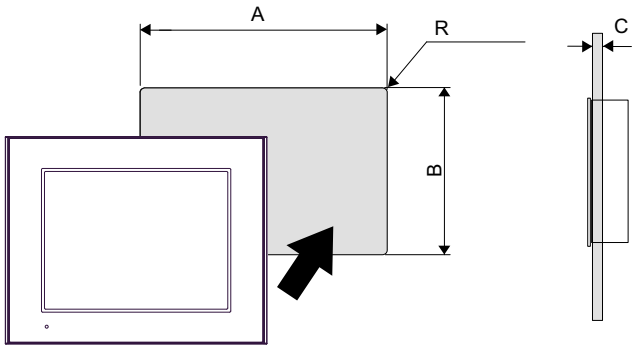


1 Left Side
2 Rear
3 Right Side
4 Top
5 Bottom

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

Panel Cut Dimensions

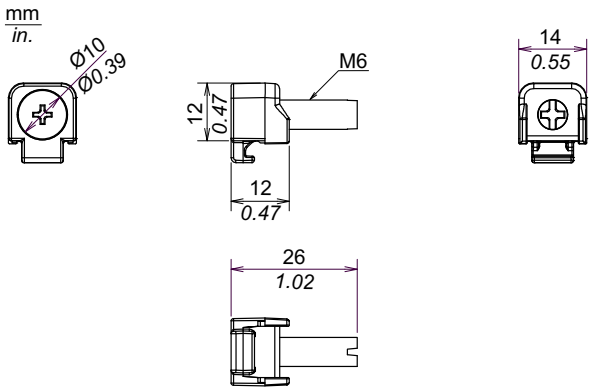
Create a panel cut and insert the GP unit into the opening from the front.



A	B	C	R
118.5 mm (+1, -0 mm) (4.67 in [+0.04, -0 in.])	92.5 mm (+1, -0 mm) (3.64 in. [+0.04, -0 in.])	1.6...5 mm (0.06...0.2 in)	3 mm (0.12 in.) maximum

NOTE: Before designing the panel cut, refer to Installation *(see page 144)*.

Installation Fastener Dimensions



4.2 GP-4300 Series

What Is in This Section?

This section contains the following topics:

Electrical Specifications

Power Supply	Rated Input Voltage		24 Vdc
	Input Voltage Limits		19.2...28.8 Vdc
	Voltage Drop		5 ms or less
	Power Consumption		10.5 W or less
		When power is not supplied to external devices	6.5 W or less
		Backlight OFF (Standby Mode)	4.5 W or less
		Backlight Dimmed (Brightness: 20%)	5 W or less
	In-Rush Current		30 A or less
Voltage Endurance			1,000 Vac for 1 minute (between power terminal and FG terminal), leakage current: 20 mA or less
Insulation Resistance			500 Vdc, 10 MΩ or more (between power terminal and FG terminal)

Environmental Specifications

		GP-4301T / GP-4303T	GP-4301TW
Physical Environment	Surrounding Air Temperature	0...55 °C (32 °F...131 °F)	0...50 °C (32...122 °F)
	Storage Temperature	-20...60 °C (-4...140 °F)	
	Surrounding Air and Storage Humidity	10...90% RH (Non condensing, wet bulb temperature 39 °C [102.2 °F] or less)	
	Dust	0.1 mg/m^3 (10^{-7} oz/ft^3) or less (non-conductive levels)	
	Pollution Degree	For use in Pollution Degree 2 environment	
	Corrosive Gases	Free of corrosive gases	
	Atmospheric Pressure (Operating Altitude)	800...1,114 hPa (2,000 m [6,561 ft] or lower)	
Mechanical Environment	Vibration Resistance	IEC/EN 61131-2 compliant 5...9 Hz Single amplitude 3.5 mm (0.14 in.) 9...150 Hz Fixed acceleration: 9.8 m/s^2 X, Y, Z directions for 10 cycles (approx. 100 min)	
	Concussion Resistance	IEC/EN 61131-2 compliant 147 m/s^2, X, Y, Z directions for 3 times	
Electrical Environment	Noise Immunity	Noise Voltage: 1,000 Vp-p Pulse Width: 1 μs Rise Time: 1 ns	
	Electrostatic Discharge Immunity	Contact Discharge Method: 6 kV (IEC/EN 61000-4-2 Level 3)	

Air quality requirements

Do not operate or store the panel where chemicals evaporate, or where chemicals are present in the air:

- Corrosive chemicals: Acids, alkalines, liquids containing salt.
- Flammable chemicals: Organic solvents.

⚠ CAUTION

INOPERATIVE EQUIPMENT

Do not allow water, liquids, metal, and wiring fragments to enter the panel case.

Failure to follow these instructions can result in injury or equipment damage.

Structural Specifications

NOTE:

- If you are using the rear mount model, refer to Structural Specifications *(see page 191)*.

Grounding	Functional grounding: Grounding resistance of 100 Ω or less, 2 mm^2 (AWG 14) or thicker wire, or your country's applicable standard. (Same for FG and SG terminals)
Cooling Method	Natural air circulation
Structure[*1]	IP65F NEMA #250 TYPE 4X/13 (on the front panel when properly installed in an enclosure)
External Dimensions	W169.5 x H137 x D59.5 mm (W6.67 x H5.39 x D2.34 in.)
Panel Cut Dimensions	W156 x H123.5 mm (W6.14 x H4.86 in.) [*2] Panel thickness area: 1.6...5 mm (0.06...0.2 in.) [*3]
Weight	0.8 kg (1.8 lb) or less (main unit only)

[*1] The front face of the GP unit, installed in a solid panel, has been tested using conditions equivalent to the standards shown in the specification. Even though the GP unit's level of resistance is equivalent to these standards, oils that should have no effect on the GP unit can possibly harm the panel. This can occur in areas where either vaporized oils are present, or where low viscosity cutting oils are allowed to adhere to the panel for long periods of time. If the GP unit's front face protection sheet peels off, these conditions can lead to the ingress of oil into the GP unit and separate protection measures are suggested.
Also, if non-approved oils are present, they may cause deformation or corrosion of the front panel's plastic cover. Therefore, prior to installing the GP unit, be sure to confirm the type of conditions that will be present in the GP unit's operating environment. If the installation gasket is used for a long period of time, or if the GP unit and its gasket are removed from the panel, the original level of protection cannot be kept. To maintain the original protection level, be sure to replace the installation gasket regularly.

[*2] For dimensional tolerance, everything +1/-0 mm (+0.04/-0 in.) and R in angle are below R3 (R0.12 in.)

[*3] Even if the installation wall thickness is within the recommended range for the "Panel Cut Dimensions", depending on wall's material, size, and installation location of the GP unit and other devices, the installation wall could warp. To prevent warping, the installation surface may need to be strengthened.

NOTICE

EQUIPMENT DAMAGE

- Ensure that the panel is not in permanent and direct contact with oils.
- Do not expose the device in direct sunlight.

Failure to follow these instructions can result in equipment damage.

NOTICE

STORAGE AND OPERATION OUTSIDE OF SPECIFICATIONS

- Store the panel in areas where temperatures are within the panel's specifications.
- Do not restrict or block the panel's rear-face ventilation slots.

Failure to follow these instructions can result in equipment damage.

NOTICE

GASKET AGING

- Inspect the gasket periodically as required by your operating environment to keep the initial IP level.
- Change the gasket at least once a year, or as soon as scratches or dirt become visible.

Failure to follow these instructions can result in equipment damage.

Display Specifications

		GP-4301T / GP-4303T	GP-4301TW
Display Type		TFT Color LCD	
Display Size		5.7”	
Resolution		320 x 240 pixels (QVGA)	
Effective Display Area		W115.2 x H86.4 mm (W4.54 x H3.40 in.)	
Display Colors		65,536 colors (No blink) / 16,384 colors (Blink)	
Backlight		White LED (Not user replaceable. When replacement is required, contact your local distributor.)	
Backlight Service Life		50,000 hours or more (continuous operation at 25 °C [77 °F] before backlight decreases to 50%.)	
Brightness Control		16 levels (Adjusted with touch panel or software)	8 levels (Adjusted with touch panel or software)
Language Fonts*1		Japanese, ASCII, Chinese (Simplified), Chinese (Traditional), Korean, Cyrillic, Thai	
Character Sizes		Standard font: 8 x 8, 8 x 16, 16 x 16 and 32 x 32 pixel fonts Stroke font: 6...127 pixel fonts Image font: 8...72 pixel fonts	
Font Sizes		Standard font: You can expand the width up to 8 times, and expand the height up to 8 times.*2	
Text	8 x 8 pixels	40 characters per row x 30 rows	
	8 x 16 pixels	40 characters per row x 15 rows	
	16 x 16 pixels	20 characters per row x 15 rows	
	32 x 32 pixels	10 characters per row x 7 rows	

*1 Please refer to the GP-Pro EX Reference Manual for details on font types and character codes.

*2 You can set up other font sizes using the software.

Memory, Clock, and Touch Panel

Memory

		GP-4301T / GP-4303T	GP-4301TW
Application Memory	Screen Area[*1]	FLASH EPROM 16 MB (including the logic program area)	FLASH EPROM 8 MB (including the logic program area)
	Logic Program Area	FLASH EPROM 132 KB (Equivalent to 15,000 steps[*2])	
	Font Area	FLASH EPROM 8 MB (when this limit exceeded, uses application memory)	
Backup Memory	Data Backup	SRAM 320 KB (Replaceable lithium battery for data backup)	SRAM 128 KB (Rechargeable lithium battery for data backup)
	Variable Area	SRAM 64 KB (Replaceable Lithium battery for retentive variables)	None

[*1] Capacity available for user application (internal memory).

[*2] Up to 60,000 steps can be converted in software. However, this reduces application memory capacity for screen data by 1 MB.

NOTE:

- For details on the memory, refer to the following URL.
  https://www.pro-face.com/trans/en/manual/1082.html
- When the message "RAAA051 Low battery" is displayed on the GP-4301TW, supply power to the GP unit and fully charge the battery. In 24 hours the battery charges to a level that allows backup operation. Completing a full charge requires about 120 hours (5 days).
- The lithium battery's lifetime is: 10 years when the battery's ambient temperature is 40 °C (104 °F) or less, 4.1 years when the battery's ambient temperature is 50 °C (122 °F) or less, and 1.5 years when the battery's ambient temperature is 60 °C (140 °F) or less.
  When used for backup:
  Approximately 100 days, with a fully charged battery.
  Approximately 6 days, with a half-charged battery.

Clock

± 65 seconds per month (deviation at room temperature and power is OFF). Variations in operating conditions and battery life can cause clock deviations from -380 to +90 seconds per month.

For systems where this level of precision is insufficient, the user should monitor and make adjustments when required.

NOTE:

- When the message "RAAA051 Low battery" is displayed on the GP-4301TW, supply power to the GP unit and fully charge the battery. In 24 hours the battery charges to a level that allows backup operation. Completing a full charge requires about 120 hours (5 days).
- The lithium battery's lifetime is: 10 years when the battery's ambient temperature is 40 °C (104 °F) or less, 4.1 years when the battery's ambient temperature is 50 °C (122 °F) or less, and 1.5 years when the battery's ambient temperature is 60 °C (140 °F) or less.
  When used for backup:
  Approximately 100 days, with a fully charged battery.
  Approximately 6 days, with a half-charged battery.

Touch Panel

Touch Panel Type	Resistive Film (analog)
Touch Panel Resolution	1,024 x 1,024
Touch Panel Service Life	1 million times or more

The touch panel does not support multi-touch (two point touch / multiple point touch). If you touch multiple points on the touch panel, it may operate as if you touched the center-point of the multiple touches.

For example, if you touch two or more points on the touch panel and at the center of the touches is a switch for a drive system, even though you did not directly touch that switch, it may function as if you did.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Do not touch two or more points on the touch panel.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Interface Specifications

Introduction

Use only the SELV (Safety Extra-Low Voltage) circuit to connect the serial, USB and Ethernet interfaces.

Serial Interface COM1

Asynchronous Transmission	RS-232C
Data Length	7 or 8 bits
Stop Bit	1 or 2 bits
Parity	None, odd or even
Data Transmission Speed	2,400...115,200 bps
Connector	D-Sub 9 pin (plug)

Serial Interface COM2

	GP-4301T / GP-4301TW	**GP-4303T**
Asynchronous Transmission	RS-422 / RS-485	RS-485 (isolation)
Data Length	7 or 8 bits	
Stop Bit	1 or 2 bits	
Parity	None, odd or even	
Data Transmission Speed	2,400...115,200 bps, 187,500 bps (MPI)	
Connector	D-Sub 9 pin (plug)	D-Sub 9 pin (socket)

USB Interface

	USB (Type A) Interface	**USB (mini-B) Interface**
Connector	USB 2.0 (Type A) x 1	USB 2.0 (mini-B) x 1
Power Supply Voltage	5 Vdc ±5%	-
Maximum Current Supplied	500 mA	-
Maximum Transmission Distance	5 m (16.4 ft)	

Ethernet Interface

Ethernet (LAN)	IEEE802.3i / IEEE802.3u, 10BASE-T/100BASE-TX
Connector	Modular jack (RJ45) x 1

SD Card Interface

GP-4301T/GP-4303T: SD Card slot x 1 (maximum 32 GB SD/SDHC Card)

NOTE: GP-4301TW does not have an SD Card interface.

Specifications of Serial Interface COM1

Introduction

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.

The serial port is not isolated. The SG (signal ground) and FG (frame ground) terminals are connected inside the GP unit.

⚠⚠ DANGER

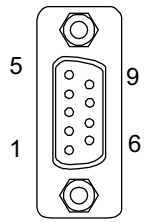
ELECTRIC SHOCK

When using the SG terminal to connect an external device to the panel:
- Verify that a short-circuit loop is not created when you set up the system.
- Connect the #5 SG terminal to remote equipment when the host (PLC) unit is not isolated. Connect the #5 SG terminal to a known reliable ground connection to reduce the risk of damaging the circuit.

Failure to follow these instructions will result in death or serious injury.

Serial Interface COM1

GP-4301T / GP-4301TW / GP-4303T: D-Sub 9 pin plug connector via an RS-232C cable.

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

[*1] You can switch pin #9 between RI and VCC via software.

NOTICE

EQUIPMENT DAMAGE

Use only the rated current.

Failure to follow these instructions can result in equipment damage.

Interfit bracket is #4-40 (UNC).

Recommendations:

- Cable Connector: XM3D-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

⚠ CAUTION

LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

Failure to follow these instructions can result in injury or equipment damage.

Specifications of Serial Interface COM2

Introduction

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.

The COM2 ports of GP-4301T and GP-4301TW are not isolated. The SG (signal ground) and FG (frame ground) terminals are connected inside the GP unit.

⚠⚠ DANGER

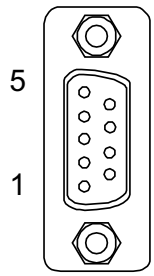
ELECTRIC SHOCK

When using the SG terminal to connect an external device to the panel:
- Verify that a short-circuit loop is not created when you set up the system.
- Connect the #5 SG terminal to remote equipment when the host (PLC) unit is not isolated. Connect the #5 SG terminal to a known reliable ground connection to reduce the risk of damaging the circuit.

Failure to follow these instructions will result in death or serious injury.

Serial Interface COM2

GP-4301T / GP-4301TW: D-Sub 9 pin plug connector via an RS-422/485 cable.

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

Interfit bracket is #4-40 (UNC).

Recommendations:
- Cable Connector: XM3D-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

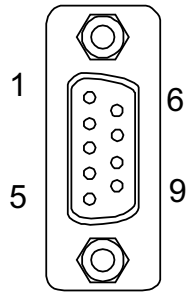
⚠ CAUTION

LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

Failure to follow these instructions can result in injury or equipment damage.

GP-4303T: D-Sub 9 pin socket connector via an RS-485, PROFIBUS, or MPI cable.

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

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

[*2] The SG and FG terminals are isolated.

Interfit bracket is #4-40 (UNC).

Recommendations:
- Cable Connector: XM3A-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

⚠ CAUTION

LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

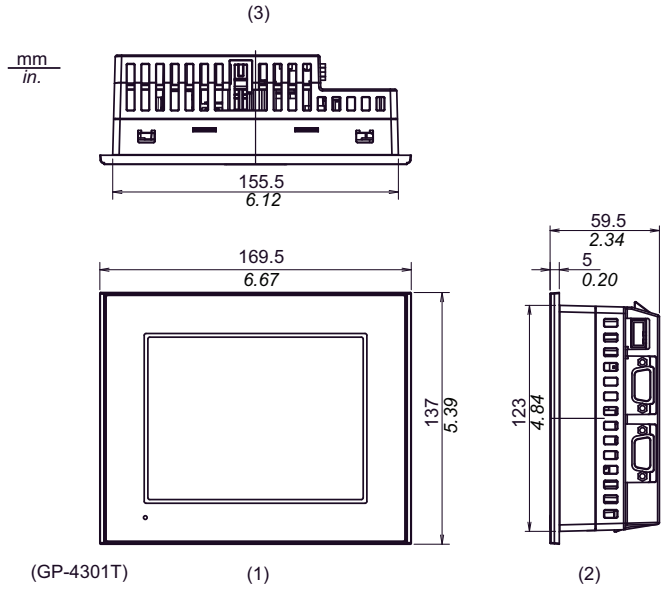
Failure to follow these instructions can result in injury or equipment damage.

Dimensions

NOTE:

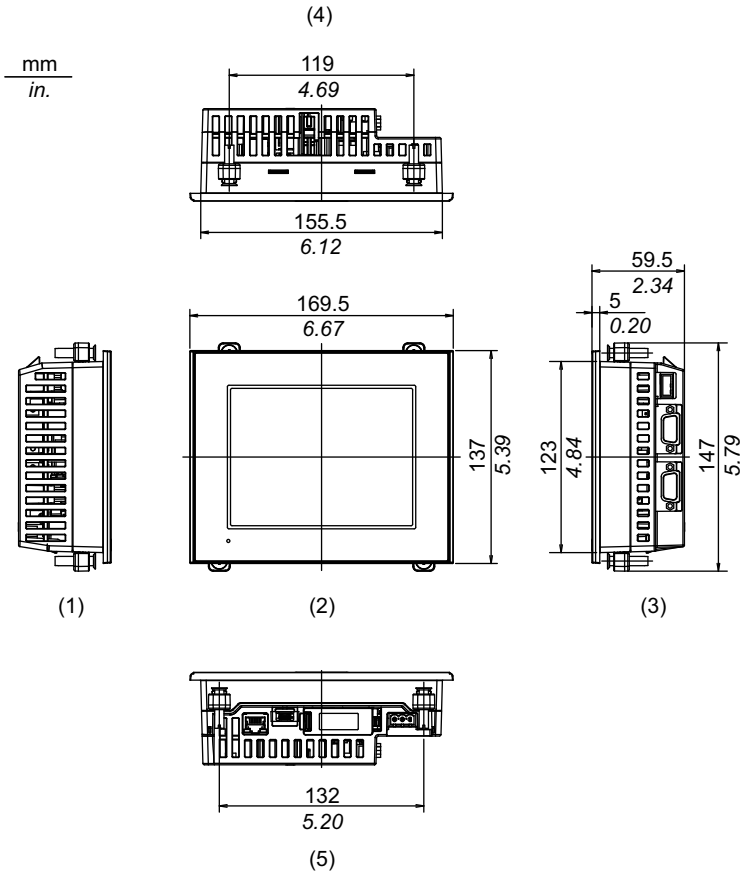
- If you are using the rear mount model, refer to Dimensions *(see page 193)*.

External Dimensions



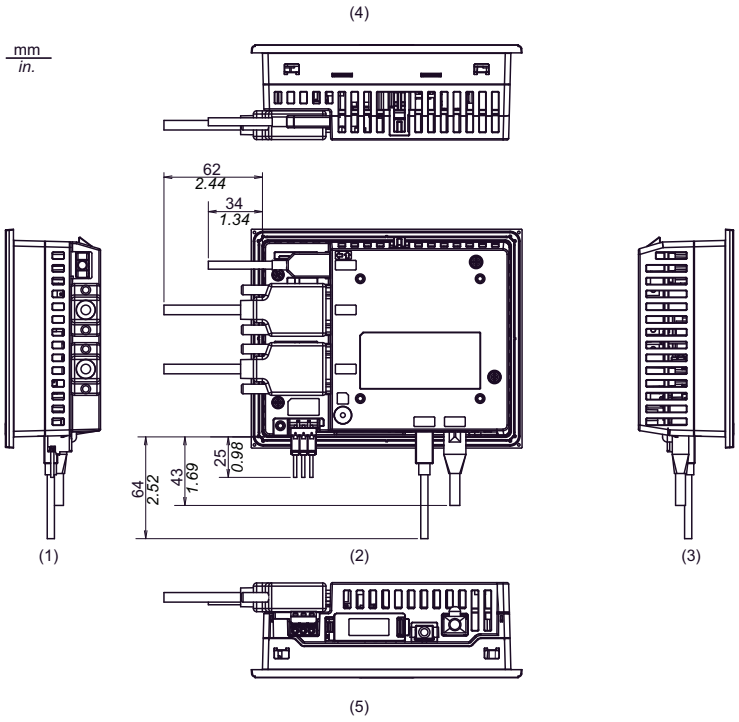
1 Front
2 Right Side
3 Top

Installation with Installation Fasteners



1 Left Side
2 Front
3 Right Side
4 Top
5 Bottom

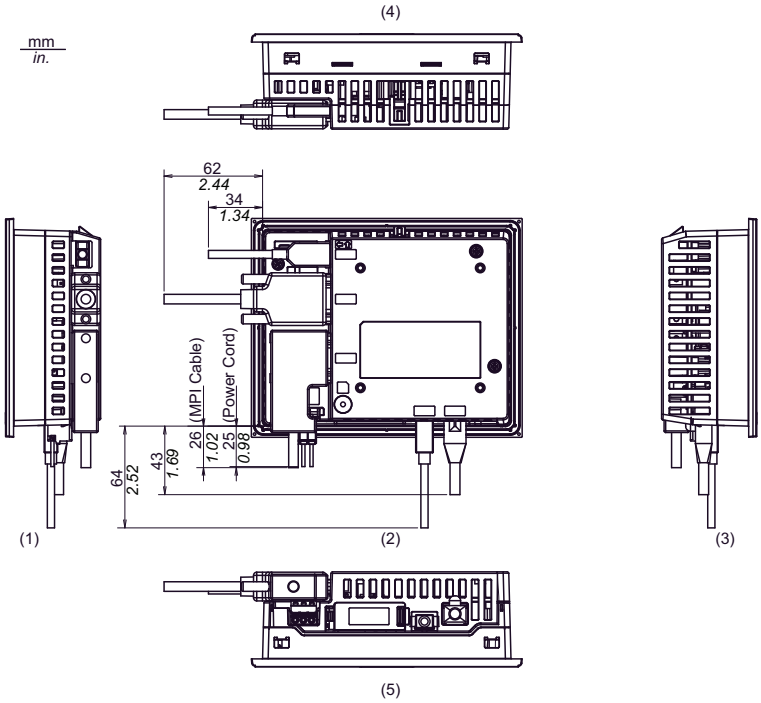
Dimensions with Cables: GP-4301T/GP-4301TW



1 Left Side
2 Rear
3 Right Side
4 Top
5 Bottom

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

Dimensions with Cables: GP-4303T

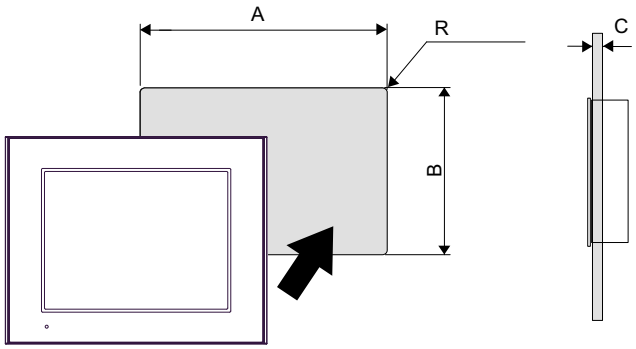


1 Left Side
2 Rear
3 Right Side
4 Top
5 Bottom

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

Panel Cut Dimensions

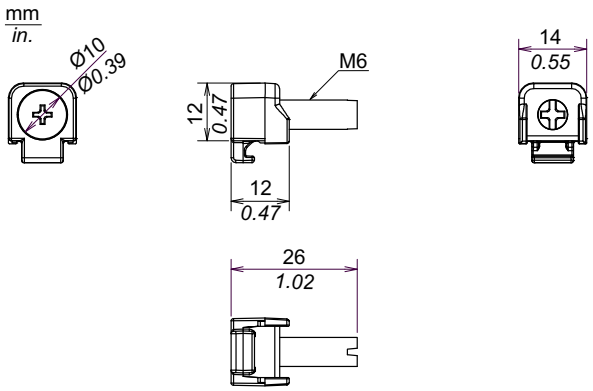
Create a panel cut and insert the GP unit into the opening from the front.



A	B	C	R
156 mm (+1/-0) mm (6.14 in [+0.04, -0 in.])	123.5 mm (+1, -0 mm) (4.86 in [+0.04, -0 in.])	1.6...5 mm (0.06...0.2 in.)	3 mm (0.12 in.) maximum

NOTE: Before designing the panel cut, refer to Installation *(see page 144)*.

Installation Fastener Dimensions



4.3 GP-4400 Series

What Is in This Section?

This section contains the following topics:

Electrical Specifications

Power Supply	Rated Input Voltage		24 Vdc
	Input Voltage Limits		19.2...28.8 Vdc
	Voltage Drop		5 ms or less
	Power Consumption		12 W or less
		When power is not supplied to external devices	8 W or less
		Backlight OFF (Standby Mode)	5 W or less
		Backlight Dimmed (Brightness: 20%)	5.5 W or less
	In-Rush Current		30 A or less
Voltage Endurance			1,000 Vac for 1 minute (between power terminal and FG terminal), leakage current: 20 mA or less
Insulation Resistance			500 Vdc, 10 MΩ or more (between power terminal and FG terminal)

Environmental Specifications

		GP-4401T	GP-4401WW
Physical Environment	Surrounding Air Temperature	0...55 °C (32...131 °F)	0...50 °C (32...122 °F)
	Storage Temperature	-20...60 °C (-4...140 °F)	
	Surrounding Air and Storage Humidity	10...90% RH (Non condensing, wet bulb temperature 39 °C [102.2 °F] or less)	
	Dust	0.1 mg/m^3 (10^{-7} oz/ft^3) or less (non-conductive levels)	
	Pollution Degree	For use in Pollution Degree 2 environment	
	Corrosive Gases	Free of corrosive gases	
	Atmospheric pressure (Operating Altitude)	800...1,114 hPa (2,000 m [6,561 ft] or lower)	
Mechanical Environment	Vibration Resistance	IEC/EN 61131-2 5...9 Hz Single amplitude 3.5 mm (0.14 in.) 9...150 Hz Fixed acceleration: 9.8 m/s^2 X, Y, Z directions for 10 cycles (approx. 100 min)	
	Concussion Resistance	IEC/EN 61131-2 compliant 147 m/s^2, X, Y, Z directions for 3 times	
Electrical Environment	Noise Immunity	Noise Voltage: 1,000 Vp-p Pulse Width: 1 μs Rise Time: 1 ns	
	Electrostatic Discharge Immunity	Contact Discharge Method: 6 kV (IEC/EN 61000-4-2 Level 3)	

Air quality requirements

Do not operate or store the GP unit where chemicals evaporate, or where chemicals are present in the air:

- Corrosive chemicals: Acids, alkalines, liquids containing salt.
- Flammable chemicals: Organic solvents.

⚠ CAUTION

INOPERATIVE EQUIPMENT

Do not allow water, liquids, metal, and wiring fragments to enter the panel case.

Failure to follow these instructions can result in injury or equipment damage.

Structural Specifications

NOTE:

- If you are using the rear mount model, refer to Structural Specifications *(see page 191)*.

Grounding	Functional grounding: Grounding resistance of 100 Ω or less, 2 mm^2 (AWG 14) or thicker wire, or your country's applicable standard. (Same for FG and SG terminals)
Cooling Method	Natural air circulation
Structure*1	IP65F NEMA #250 TYPE 4X/13 (on the front panel when properly installed in an enclosure)
External Dimensions	W218 x H173 x D60 mm (W8.58 x H6.81 x D2.36 in.)
Panel Cut Dimensions	W204.5 x H159.5 mm (W8.05 x H6.28 in.)*2 Panel thickness area: 1.6...5 mm (0.06...0.2 in.)*3
Weight	1.2 kg (2.6 lb) or less (main unit only)

*1 The front face of the GP unit, installed in a solid panel, has been tested using conditions equivalent to the standards shown in the specification. Even though the GP unit's level of resistance is equivalent to these standards, oils that should have no effect on the GP unit can possibly harm the panel. This can occur in areas where either vaporized oils are present, or where low viscosity cutting oils are allowed to adhere to the panel for long periods of time. If the GP unit's front face protection sheet peels off, these conditions can lead to the ingress of oil into the GP unit and separate protection measures are suggested.
Also, if non-approved oils are present, they may cause deformation or corrosion of the front panel's plastic cover. Therefore, prior to installing the GP unit, be sure to confirm the type of conditions that will be present in the GP unit's operating environment. If the installation gasket is used for a long period of time, or if the GP unit and its gasket are removed from the panel, the original level of protection cannot be kept. To maintain the original protection level, be sure to replace the installation gasket regularly.

*2 For dimensional tolerance, everything +1/-0 mm (+0.04/-0 in.) and R in angle are below R3 (R0.12 in.)

*3 Even if the installation wall thickness is within the recommended range for the "Panel Cut Dimensions", depending on wall's material, size, and installation location of the GP unit and other devices, the installation wall could warp. To prevent warping, the installation surface may need to be strengthened.

NOTICE

EQUIPMENT DAMAGE

- Ensure that the panel is not in permanent and direct contact with oils.
- Do not expose the device in direct sunlight.

Failure to follow these instructions can result in equipment damage.

NOTICE

STORAGE AND OPERATION OUTSIDE OF SPECIFICATIONS

- Store the panel in areas where temperatures are within the panel's specifications.
- Do not restrict or block the panel's rear-face ventilation slots.

Failure to follow these instructions can result in equipment damage.

NOTICE

GASKET AGING

- Inspect the gasket periodically as required by your operating environment to keep the initial IP level.
- Change the gasket at least once a year, or as soon as scratches or dirt become visible.

Failure to follow these instructions can result in equipment damage.

Display Specifications

		GP-4401T	GP-4401WW
Display Type		TFT Color LCD	
Display Size		7.5”	7.0”
Resolution		640 x 480 pixels (VGA)	800 x 480 pixels (WVGA)
Effective Display Area		W153.7 x H115.8 mm (W6.05 x H4.56 in.)	W152.4 x H91.44 mm (W6.0 x H3.6 in.)
Display Colors		65,536 colors (No blink) / 16,384 colors Blink)	
Backlight		White LED (Not user replaceable. When replacement is required, contact your local distributor.)	
Backlight Service Life		50,000 hours or more (continuous operation at 25 °C [77 °F] before backlight brightness decreases to 50%)	
Brightness Control		16 levels (Adjusted with touch panel or software)	8 levels (Adjusted with touch panel or software)
Language Fonts[*1]		Japanese, ASCII, Chinese (Simplified), Chinese (Traditional), Korean, Cyrillic, Thai	
Character sizes		Standard font: 8 x 8, 8 x 16, 16 x 16 and 32 x 32 pixel fonts Stroke font: 6...127 pixel fonts Image font: 8...72 pixel fonts	
Font sizes		Standard font: You can expand the width up to 8 times, and expand the height up to 8 times.[*2]	
Text	8 x 8 pixels	80 characters per row x 60 rows	100 characters per row x 60 rows
	8 x 16 pixels	80 characters per row x 30 rows	100 characters per row x 30 rows
	16 x 16 pixels	40 characters per row x 30 rows	50 characters per row x 30 rows
	32 x 32 pixels	20 characters per row x 15 rows	25 characters per row x 15 rows

[*1] Please refer to the GP-Pro EX Reference Manual for details on font types and character codes.

[*2] You can set up other font sizes using the software.

Memory, Clock, and Touch Panel

Memory

		GP-4401T	GP-4401WW
Application Memory	Screen Area[*1]	FLASH EPROM 32 MB (including the logic program area)	FLASH EPROM 16 MB (including the logic program area)
	Logic Program Area	FLASH EPROM 132 KB (Equivalent to 15,000 steps[*2])	
	Font Area	FLASH EPROM 8 MB (when limit exceeded, uses application memory)	
Backup Memory	Data Backup	SRAM 320 KB (Replaceable lithium battery for data backup)	SRAM 128 KB (Replaceable lithium battery for data backup)
	Variable Area	SRAM 64 KB (Replaceable lithium battery for retentive variables)	None

[*1] Capacity available for user application (internal memory).

[*2] Up to 60,000 steps can be converted in software. However, this reduces application memory capacity for screen data by 1 MB.

NOTE: For details on the memory, refer to the following URL.
https://www.pro-face.com/trans/en/manual/1082.html

Clock

± 65 seconds per month (deviation at room temperature and power is OFF). Variations in operating conditions and battery life can cause clock deviations from -380 to +90 seconds per month.

For systems where this level of precision is insufficient, the user should monitor and make adjustments when required.

Touch Panel

Touch Panel Type	Resistive Film (analog)
Touch Panel Resolution	1,024 x 1,024
Touch Panel Service Life	1 million times or more

The touch panel does not support multi-touch (two point touch / multiple point touch). If you touch multiple points on the touch panel, it may operate as if you touched the center-point of the multiple touches.

For example, if you touch two or more points on the touch panel and at the center of the touches is a switch for a drive system, even though you did not directly touch that switch, it may function as if you did.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Do not touch two or more points on the touch panel.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Interface Specifications

Introduction

Use only the SELV (Safety Extra-Low Voltage) circuit to connect the serial, USB and Ethernet interfaces.

Serial Interface COM1

Asynchronous Transmission	RS-232C
Data Length	7 or 8 bits
Stop Bit	1 or 2 bits
Parity	None, odd or even
Data Transmission Speed	2,400...115,200 bps
Connector	D-Sub 9 pin (plug)

Serial Interface COM2

Asynchronous Transmission	RS-422 / RS-485
Data Length	7 or 8 bits
Stop Bit	1 or 2 bits
Parity	None, odd or even
Data Transmission Speed	2,400...115,200 bps, 187,500 bps (MPI)
Connector	D-Sub 9 pin (plug)

USB Interface

	USB (Type A) Interface	**USB (mini-B) Interface**
Connector	USB 2.0 (Type A) x 1	USB 2.0 (mini-B) x 1
Power Supply Voltage	5 Vdc ±5%	-
Maximum Current Supplied	500 mA	-
Maximum Transmission Distance	5 m (16.4 ft)	

Ethernet Interface

Ethernet (LAN)	IEEE802.3i / IEEE802.3u, 10BASE-T/100BASE-TX
Connector	Modular jack (RJ45) x 1

SD Card Interface

SD Card slot x 1 (maximum 32 GB SD/SDHC Card)

Specifications of Serial Interface COM1

Introduction

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.

The serial port is not isolated. The SG (signal ground) and FG (frame ground) terminals are connected inside the GP unit.

⚠ DANGER

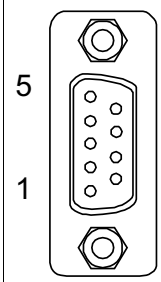
ELECTRIC SHOCK

When using the SG terminal to connect an external device to the panel:
- Verify that a short-circuit loop is not created when you set up the system.
- Connect the #5 SG terminal to remote equipment when the host (PLC) unit is not isolated. Connect the #5 SG terminal to a known reliable ground connection to reduce the risk of damaging the circuit.

Failure to follow these instructions will result in death or serious injury.

Serial Interface COM1

GP-4401T / GP-4401WW: D-Sub 9 pin plug connector via an RS-232C cable.

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

[*1] You can switch pin #9 between RI and VCC via software.

NOTICE

EQUIPMENT DAMAGE

Use only the rated current.

Failure to follow these instructions can result in equipment damage.

Interfit bracket is #4-40 (UNC).

Recommendations:

- Cable Connector: XM3D-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

⚠ CAUTION

LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

Failure to follow these instructions can result in injury or equipment damage.

Specifications of Serial Interface COM2

Introduction

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.

The serial port is not isolated. The SG (signal ground) and FG (frame ground) terminals are connected inside the GP unit.

⚠⚠ DANGER

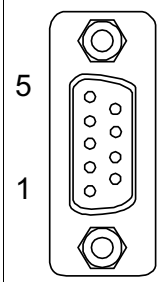
ELECTRIC SHOCK

When using the SG terminal to connect an external device to the panel:
- Verify that a short-circuit loop is not created when you set up the system.
- Connect the #5 SG terminal to remote equipment when the host (PLC) unit is not isolated. Connect the #5 SG terminal to a known reliable ground connection to reduce the risk of damaging the circuit.

Failure to follow these instructions will result in death or serious injury.

Serial Interface COM2

GP-4401T/GP-4401WW: D-Sub 9 pin plug connector via an RS-422/485 cable.

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

Interfit bracket is #4-40 (UNC).

Recommendations:
- Cable Connector: XM3D-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

⚠ CAUTION

LOSS OF COMMUNICATION

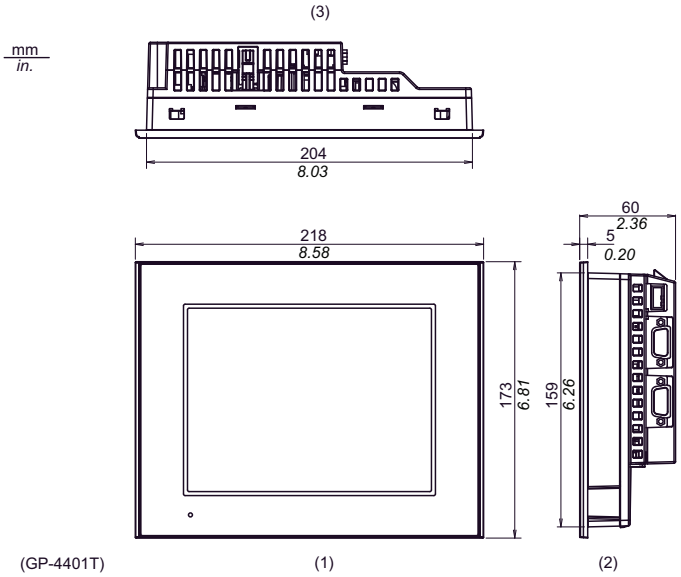
- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

Failure to follow these instructions can result in injury or equipment damage.

Dimensions

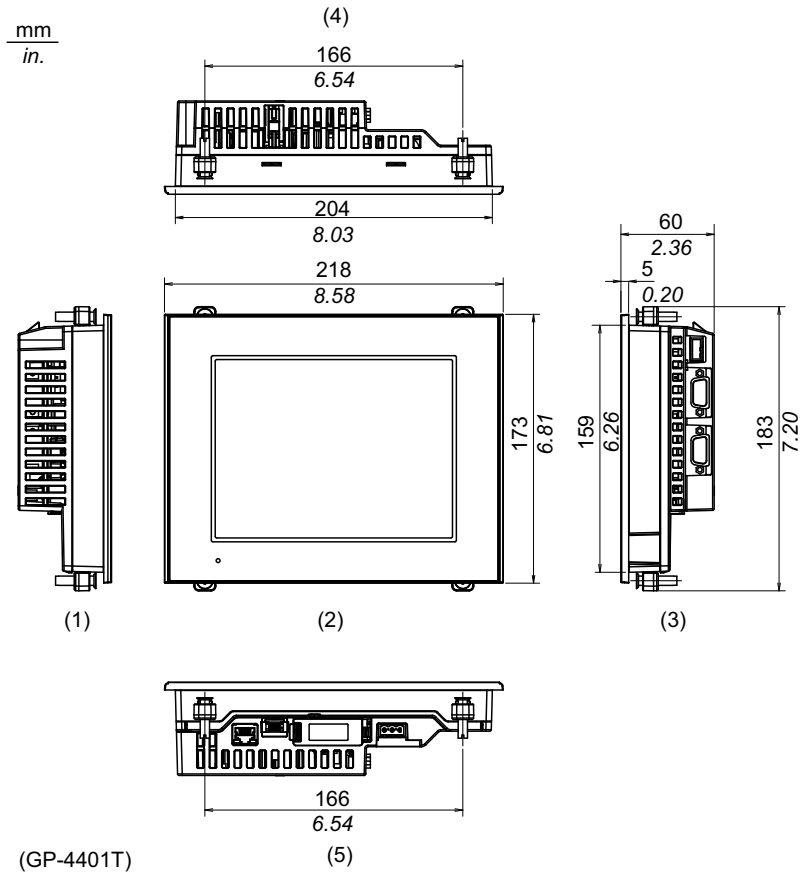
NOTE:
- If you are using the rear mount model, refer to Dimensions *(see page 193)*.

External Dimensions



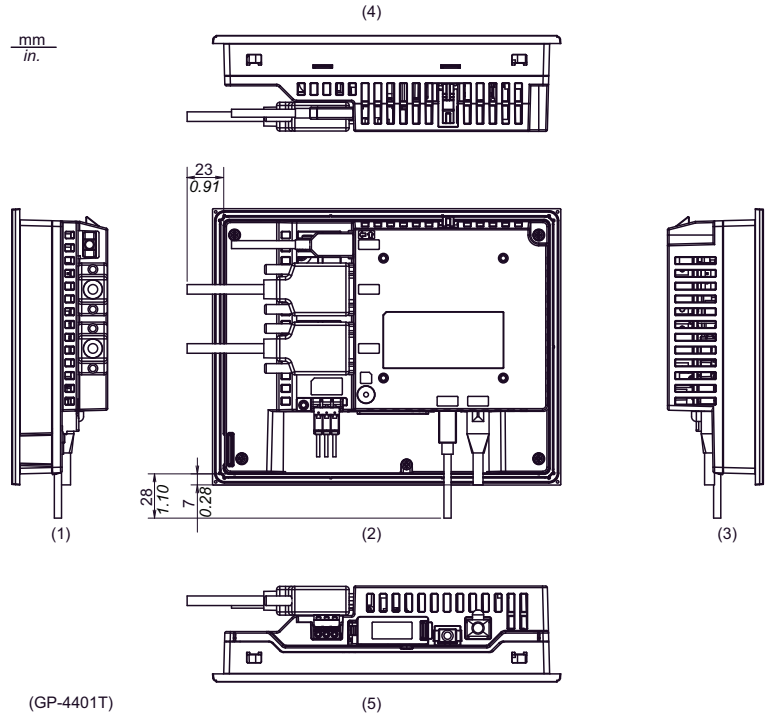
1 Front
2 Right Side
3 Top

Installation with Installation Fasteners



1 Left Side
2 Front
3 Right Side
4 Top
5 Bottom

Dimensions with Cables

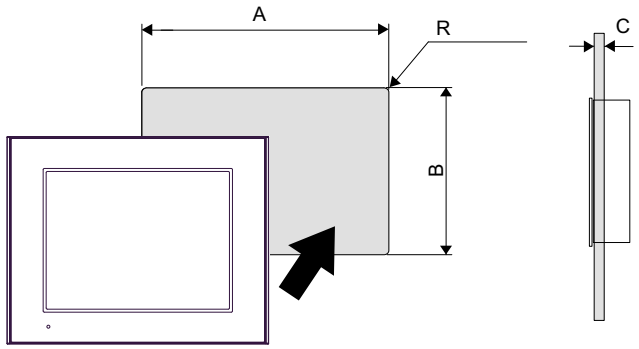


1 Left Side
2 Rear
3 Right Side
4 Top
5 Bottom

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

Panel Cut Dimensions

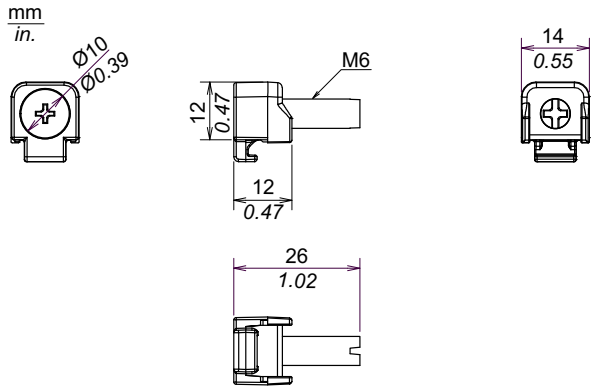
Create a panel cut and insert the GP unit into the opening from the front.



A	B	C	R
204.5 mm (+1, -0 mm) (8.05 in. [+0.04, -0 in.])	159.5 mm (+1, -0 mm) (6.28 in. [+0.04, -0 in.])	1.6...5 mm (0.06...0.2 in.)	3 mm (0.12 in.) maximum

NOTE: Before designing the panel cut, refer to Installation *(see page 144)*.

Installation Fastener Dimensions



4.4 GP-4500 Series

What Is in This Section?

This section contains the following topics:

Electrical Specifications

			DC Model		AC Model	
			GP-4501T / GP-4501TW / GP-4503T	**GP-4521T**	GP-4501T	GP-4521T
Power Supply	Rated Input Voltage		24 Vdc		100...240 Vac	
	Input Voltage Limits		19.2...28.8 Vdc		85...264 Vac	
	Rated Frequency		-		50/60 Hz	
	Rated Frequency Range		-		47...63 Hz	
	Voltage Drop		10 ms or less		1 cycle or less (Voltage drop interval must be 1 second or more)	
	Power Consumption		17 W or less	24 W or less	100 Vac: 44 VA or less 240 Vac: 58 VA or less	100 Vac: 56 VA or less 240 Vac: 77 VA or less
		When power is not supplied to external devices	12 W or less		100 Vac: 30 VA or less 240 Vac: 44 VA or less	100 Vac: 31 VA or less 240 Vac: 44 VA or less
		Backlight OFF (Standby Mode)	7 W or less		100 Vac: 18 VA or less 240 Vac: 29 VA or less	100 Vac: 19 VA or less 240 Vac: 30 VA or less
		Backlight Dimmed (Brightness: 20%)	8 W or less		100 Vac: 22 VA or less 240 Vac: 31 VA or less	100 Vac: 22 VA or less 240 Vac: 32 VA or less
	In-Rush Current		30 A or less			
Voltage Endurance			1,000 Vac for 1 minute (between power terminal and FG terminal), leakage current: 20 mA or less		1,500 Vac for 1 minute (between power terminal and PE terminal), leakage current: 20 mA or less	
Insulation Resistance			500 Vdc, 10 MΩ or more (between power terminal and PE/FG terminals)			

Environmental Specifications

		DC Model		AC Model
		GP-4501T / GP-4503T / GP-4521T	**GP-4501TW**	
Physical Environment	Surrounding Air Temperature	0...55 °C (32...131 °F)*1	0...50 °C (32...122 °F)	0...55 °C (32...131 °F)*1
	Storage Temperature	-20...60 °C (-4...140 °F)		
	Surrounding Air and Storage Humidity	10...90% RH (Non condensing, wet bulb temperature 39 °C [102.2 °F] or less)		
	Dust	0.1 mg/m^3 (10^{-7} oz/ft^3) or less (non-conductive levels)		
	Pollution Degree	For use in Pollution Degree 2 environment		
	Corrosive Gases	Free of corrosive gases		
	Atmospheric Pressure (Operating Altitude)	800...1,114 hPa (2,000 m [6,561 ft] or lower)		
Mechanical Environment	Vibration Resistance	IEC/EN 61131-2 compliant 5...9 Hz Single amplitude 3.5 mm (0.14 in.) 9...150 Hz Fixed acceleration: 9.8 m/s^2 X, Y, Z directions for 10 cycles (approx. 100 min)		
	Concussion Resistance	IEC/EN 61131-2 compliant 147 m/s^2, X, Y, Z directions for 3 times		
Electrical Environment	Noise Immunity	Noise Voltage: 1,000 Vp-p Pulse Width: 1 μs Rise Time: 1 ns		Noise Voltage: 1,500 Vp-p Pulse Width: 1 μs Rise Time: 1 ns
	Electrostatic Discharge Immunity	Contact Discharge Method: 6 kV (IEC/EN 61000-4-2 Level 3)		

*1 Surrounding Air Temperature of the Video Unit is 0...50 °C (32...122 °F) when attaching the Video Unit to GP-4521T.

Air quality requirements

Do not operate or store the GP unit where chemicals evaporate, or where chemicals are present in the air:

- Corrosive chemicals: Acids, alkalines, liquids containing salt.
- Flammable chemicals: Organic solvents.

⚠ CAUTION

INOPERATIVE EQUIPMENT

Do not allow water, liquids, metal, and wiring fragments to enter the panel case.

Failure to follow these instructions can result in injury or equipment damage.

Structural Specifications

NOTE:

- If you are using the rear mount model, refer to Structural Specifications *(see page 191)*.

	GP-4501T / GP-4503T / GP-4521T	GP-4501TW
Grounding	Functional grounding: Grounding resistance of 100 Ω or less, 2 mm^2 (AWG 14) or thicker wire, or your country's applicable standard. (Same for FG and SG terminals)	
Cooling Method	Natural air circulation	
Structure*1	IP65F NEMA #250 TYPE 4X/13 (on the front panel when properly installed in an enclosure)	
External Dimensions	W272.5 x H214.5 x D57 mm (W10.73 x H8.44 x D2.24 in.)	W315 x H241 x D56 mm (W12.4 x H9.49 x D2.2 in.)
Panel Cut Dimensions	W259 x H201 mm (W10.2 x H7.91 in.)*2 Panel thickness area: 1.6...5 mm (0.06...0.2 in.)*3	W301.5 x H227.5 mm (W11.87 x H8.96 in.)*2 Panel thickness area: 1.6...5 mm (0.06...0.2 in.)*3
Weight	2.0 kg (4.4 lb) or less (main unit only)	2.5 kg (5.5 lb) or less (main unit only)

*1 The front face of the GP unit, installed in a solid panel, has been tested using conditions equivalent to the standards shown in the specification. Even though the GP unit's level of resistance is equivalent to these standards, oils that should have no effect on the GP unit can possibly harm the panel. This can occur in areas where either vaporized oils are present, or where low viscosity cutting oils are allowed to adhere to the GP unit for long periods of time. If the GP unit's front face protection sheet peels off, these conditions can lead to the ingress of oil into the GP unit and separate protection measures are suggested.
Also, if non-approved oils are present, they may cause deformation or corrosion of the front GP unit's plastic cover. Therefore, prior to installing the GP unit, be sure to confirm the type of conditions that will be present in the GP unit' operating environment. If the installation gasket is used for a long period of time, or if the GP unit and its gasket are removed from the panel, the original level of protection cannot be kept. To maintain the original protection level, be sure to replace the installation gasket regularly.

*2 For dimensional tolerance, everything +1/-0 mm (+0.04/-0 in.) and R in angle are below R3 (R0.12 in.)

*3 Even if the installation wall thickness is within the recommended range for the "Panel Cut Dimensions", depending on wall's material, size, and installation location of the GP unit and other devices, the installation wall could warp. To prevent warping, the installation surface may need to be strengthened.

NOTICE

EQUIPMENT DAMAGE

- Ensure that the panel is not in permanent and direct contact with oils.
- Do not expose the device in direct sunlight.

Failure to follow these instructions can result in equipment damage.

NOTICE

STORAGE AND OPERATION OUTSIDE OF SPECIFICATIONS

- Store the panel in areas where temperatures are within the panel's specifications.
- Do not restrict or block the panel's rear-face ventilation slots.

Failure to follow these instructions can result in equipment damage.

NOTICE

GASKET AGING

- Inspect the gasket periodically as required by your operating environment to keep the initial IP level.
- Change the gasket at least once a year, or as soon as scratches or dirt become visible.

Failure to follow these instructions can result in equipment damage.

Display Specifications

		GP-4501T / GP-4503T / GP-4521T	GP-4501TW
Display Type		TFT Color LCD	
Display Size		10.4”	
Resolution		640 x 480 pixels (VGA)	
Effective Display Area		W211.2 x H158.4 mm (W8.31 x H6.24 in.)	
Display Colors		65,536 colors (No blink) / 16,384 colors (Blink)	
Backlight		White LED (Not user replaceable. When replacement is required, contract your local distributor.)	
Backlight Service Life		50,000 hours or more (continuous operation at 25 °C [77 °F] before backlight brightness decreases to 50%	
Brightness Control		16 levels (Adjusted with touch panel or software)	8 levels (Adjusted with touch panel or software)
Language Fonts[*1]		Japanese, ASCII, Chinese (Simplified), Chinese (Traditional), Korean, Cyrillic, Thai	
Character Sizes		Standard font: 8 x 8, 8 x 16, 16 x 16 and 32 x 32 pixel fonts Stroke font: 6...127 pixel fonts Image font: 8...72 pixel fonts	
Font Sizes		Standard font: You can expand the width up to 8 times, and expand the height up to 8 times.[*2]	
Text	8 x 8 pixels	80 characters per row x 60 rows	
	8 x 16 pixels	80 characters per row x 30 rows	
	16 x 16 pixels	40 characters per row x 30 rows	
	32 x 32 pixels	20 characters per row x 15 rows	

[*1] Please refer to the GP-Pro EX Reference Manual for details on font types and character codes.

[*2] You can set up other font sizes using the software.

Memory, Clock, and Touch Panel

Memory

		GP-4501T / GP-4503T / GP-4521T	GP-4501TW
Application Memory	Screen Area[*1]	FLASH EPROM 32 MB (including the logic program area)	FLASH EPROM 16 MB (including the logic program area)
	Logic Program Area	FLASH EPROM 132 KB (Equivalent to 15,000 steps[*2])	
	Font Area	FLASH EPROM 8 MB (when limit exceeded, uses application memory)	
Backup Memory	Data Backup	SRAM 320 KB (Replaceable lithium battery for data backup)	SRAM 128 KB (Replaceable lithium battery for data backup)
	Variable Area	SRAM 64 KB (Replaceable lithium battery for retentive variables)	None

[*1] Capacity available for user application (internal memory).

[*2] Up to 60,000 steps can be converted in software. However, this reduces application memory capacity for screen data by 1 MB.

NOTE: For details on the memory, refer to the following URL.
https://www.pro-face.com/trans/en/manual/1082.html

Clock

± 65 seconds per month (deviation at room temperature and power is OFF). Variations in operating conditions and battery life can cause clock deviations from -380 to +90 seconds per month.

For systems where this level of precision is insufficient, the user should monitor and make adjustments when required.

Touch Panel

	GP-4501T (Analog Touch Panel) / GP-4501TW / GP-4503T / GP-4521T	GP-4501T (Matrix Touch Panel)
Touch Panel Type	Resistive Film (analog)	Resistive Film (matrix)
Touch Panel Resolution	1,024 x 1,024	32 x 24 keys/screen
Service Life	1 million times or more	

The analog-resistive touch panel does not support multi-touch (two point touch / multiple point touch). If you touch multiple points on the touch panel, it may operate as if you touched the center-point of the multiple touches.
For example, if you touch two or more points on the touch panel and at the center of the touches is a switch for a drive system, even though you did not directly touch that switch, it may function as if you did.

⚠ WARNING
UNINTENDED EQUIPMENT OPERATION
On touch panels that do not support multi-touch, do not touch two or more points.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

Interface Specifications

Introduction

Use only the SELV (Safety Extra-Low Voltage) circuit to connect the serial, USB and Ethernet interfaces.

Serial Interface COM1

Asynchronous Transmission	RS-232C
Data Length	7 or 8 bits
Stop Bit	1 or 2 bits
Parity	None, odd or even
Data Transmission Speed	2,400...115,200 bps
Connector	D-Sub 9 pin (plug)

Serial Interface COM2

	GP-4501T / GP-4501TW/ GP-4521T	**GP-4503T**
Asynchronous Transmission	RS-422 / RS-485	RS-485 (isolation)
Data Length	7 or 8 bits	
Stop Bit	1 or 2 bits	
Parity	None, odd or even	
Data Transmission Speed	2,400...115,200 bps, 187,500 bps (MPI)	
Connector	D-Sub 9 pin (plug)	D-Sub 9 pin (socket)

USB Interface

	USB (Type A) Interface	**USB (mini-B) Interface**
Connector	USB 2.0 (Type A) x 1	USB 2.0 (mini-B) x 1
Power Supply Voltage	5 Vdc ±5%	-
Maximum Current Supplied	500 mA	-
Maximum Transmission Distance	5 m (16.4 ft)	

Ethernet Interface

Ethernet (LAN)	IEEE802.3i / IEEE802.3u, 10BASE-T/100BASE-TX
Connector	Modular jack (RJ45) x 1

SD Card Interface

SD Card slot x 1 (maximum 32 GB SD/SDHC Card)

Specifications of Serial Interface COM1

Introduction

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.

The serial port is not isolated. The SG (signal ground) and FG (frame ground) terminals are connected inside the GP unit.

⚠ DANGER

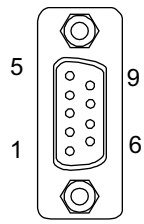
ELECTRIC SHOCK

When using the SG terminal to connect an external device to the panel:
- Verify that a short-circuit loop is not created when you set up the system.
- Connect the #5 SG terminal to remote equipment when the host (PLC) unit is not isolated. Connect the #5 SG terminal to a known reliable ground connection to reduce the risk of damaging the circuit.

Failure to follow these instructions will result in death or serious injury.

Serial Interface COM1

GP-4501T / GP-4501TW / GP-4503T / GP-4521T:
D-Sub 9 pin plug connector via an RS-232C cable.

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

[*1] You can switch pin #9 between RI and VCC via software.

NOTICE

EQUIPMENT DAMAGE

Use only the rated current.

Failure to follow these instructions can result in equipment damage.

Interfit bracket is #4-40 (UNC).

Recommendations:

- Cable Connector: XM3D-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

⚠ CAUTION

LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

Failure to follow these instructions can result in injury or equipment damage.

Specifications of Serial Interface COM2

Introduction

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.

The COM2 ports of GP-4501T and GP-4501TW are not isolated. The SG (signal ground) and FG (frame ground) terminals are connected inside the GP unit.

⚠⚠ DANGER

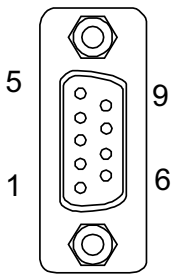
ELECTRIC SHOCK

When using the SG terminal to connect an external device to the panel:
- Verify that a short-circuit loop is not created when you set up the system.
- Connect the #5 SG terminal to remote equipment when the host (PLC) unit is not isolated. Connect the #5 SG terminal to a known reliable ground connection to reduce the risk of damaging the circuit.

Failure to follow these instructions will result in death or serious injury.

Serial Interface COM2

GP-4501T / GP-4501TW / GP-4521T:
D-Sub 9 pin plug connector via an RS-422/485 cable.

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

Interfit bracket is #4-40 (UNC).

Recommendations:
- Cable Connector: XM3D-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

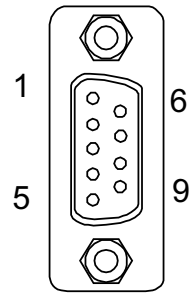
⚠ CAUTION

LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

Failure to follow these instructions can result in injury or equipment damage.

GP-4503T: D-Sub 9 pin socket connector via an RS-485, PROFIBUS, or MPI cable.

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

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

*2 The SG and FG terminals are isolated.

Interfit bracket is #4-40 (UNC).

Recommendations:
- Cable Connector: XM3A-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

⚠ CAUTION

LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

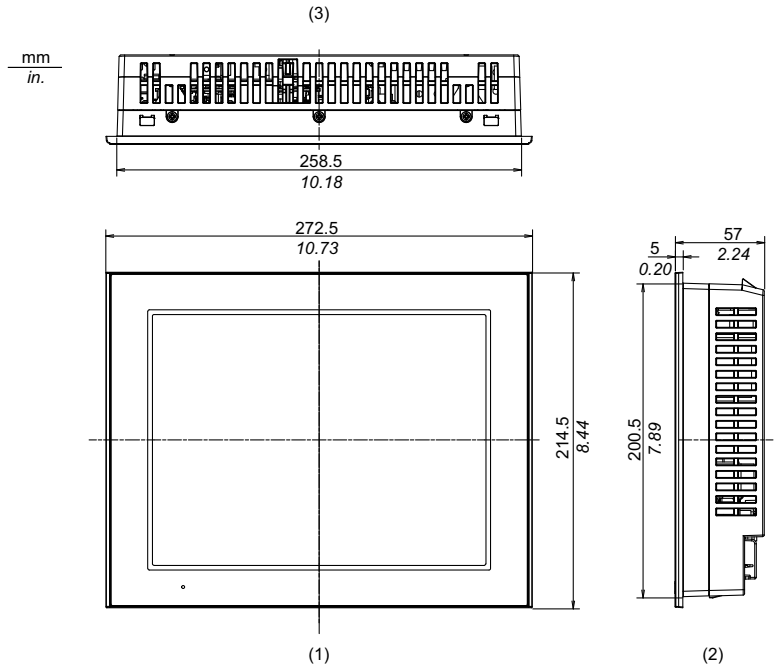
Failure to follow these instructions can result in injury or equipment damage.

Dimensions

NOTE:

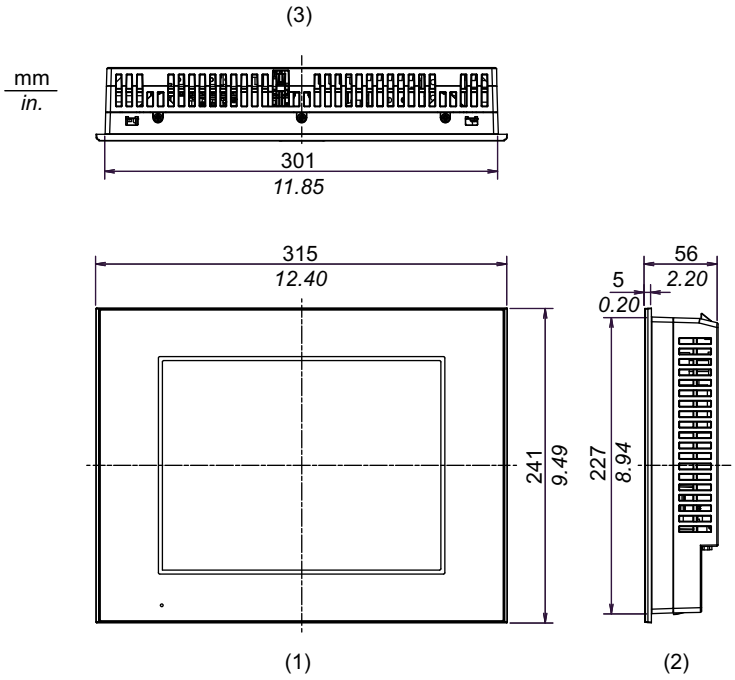
- If you are using the rear mount model, refer to Dimensions *(see page 193)*.

External Dimensions: GP-4501T / GP-4503T / GP-4521T



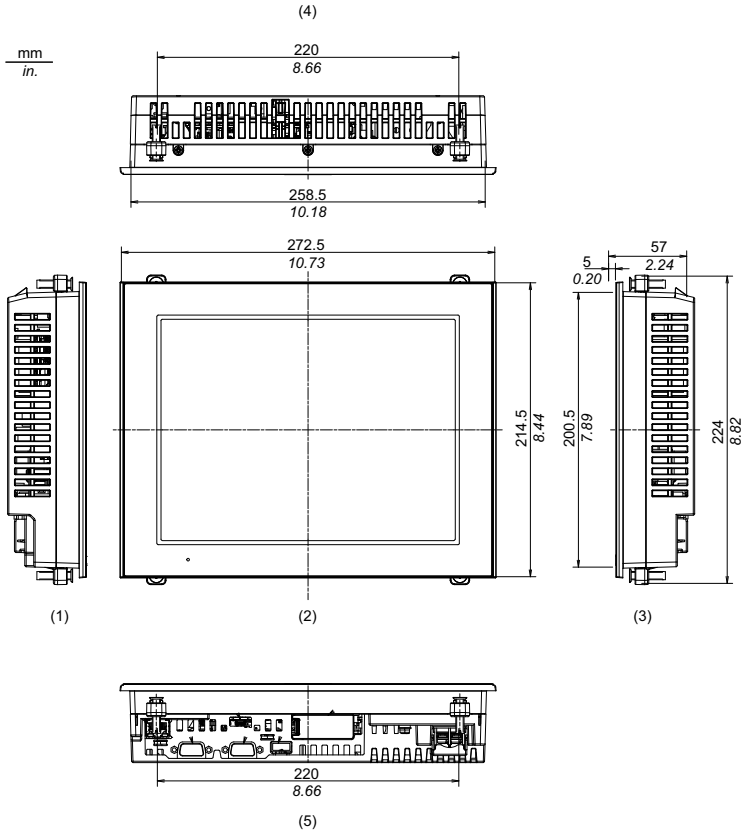
1 Front
2 Right Side
3 Top

External Dimensions: GP-4501TW



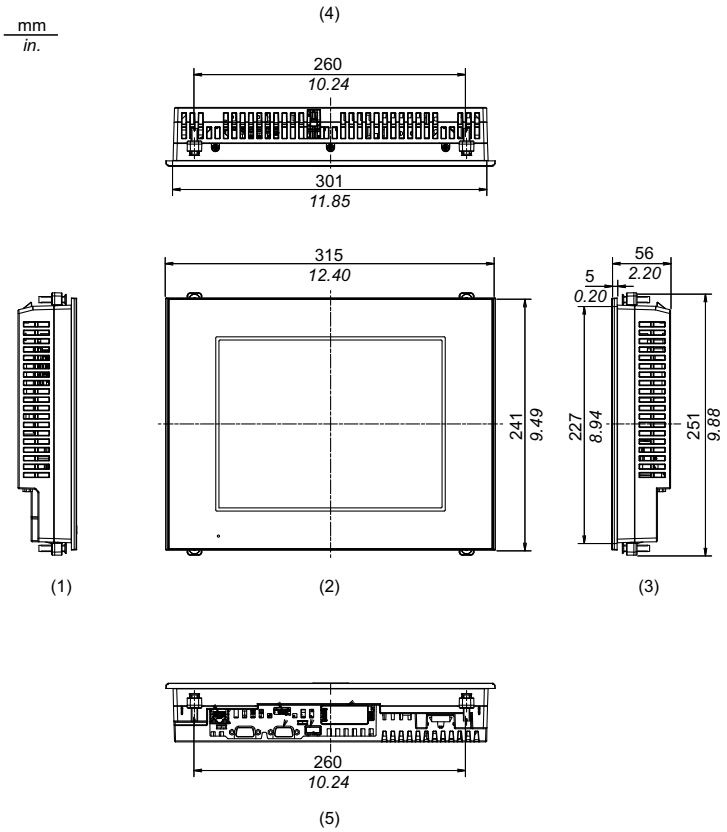
1 Front
2 Right Side
3 Top

Installation with Installation Fasteners: GP-4501T / GP-4503T / GP-4521T



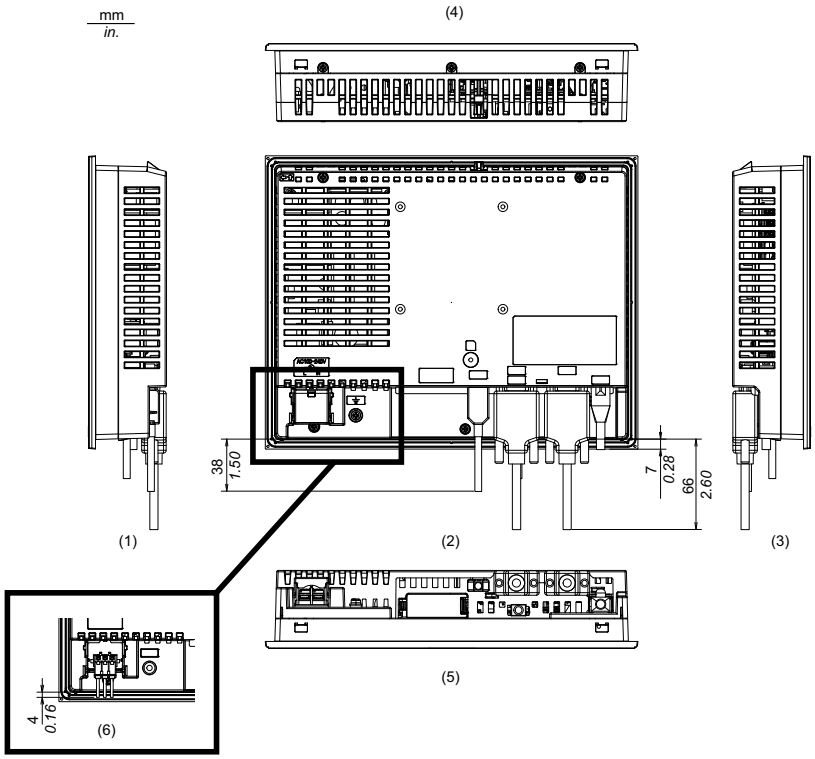
1 Left Side
2 Front
3 Right Side
4 Top
5 Bottom

Installation with Installation Fasteners: GP-4501TW



1 Left Side
2 Front
3 Right Side
4 Top
5 Bottom

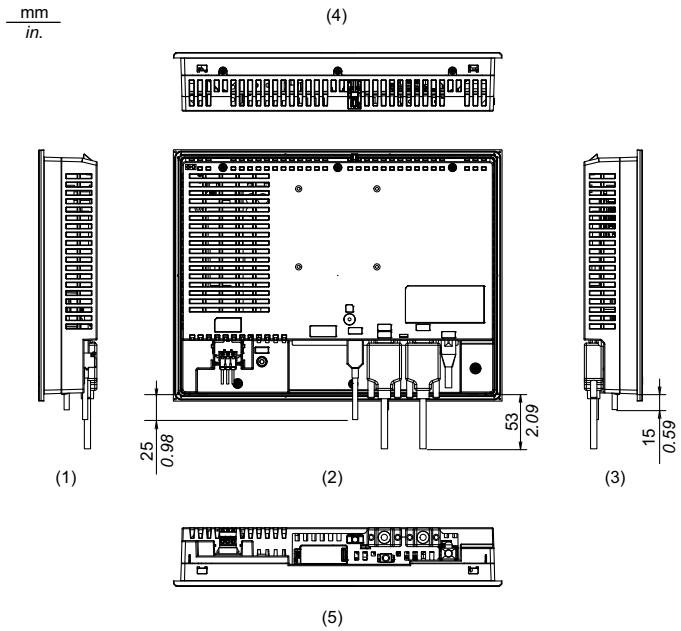
Dimensions with Cables: GP-4501T



1 Left Side
2 Rear
3 Right Side
4 Top
5 Bottom
6 DC type units have power supply terminals

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

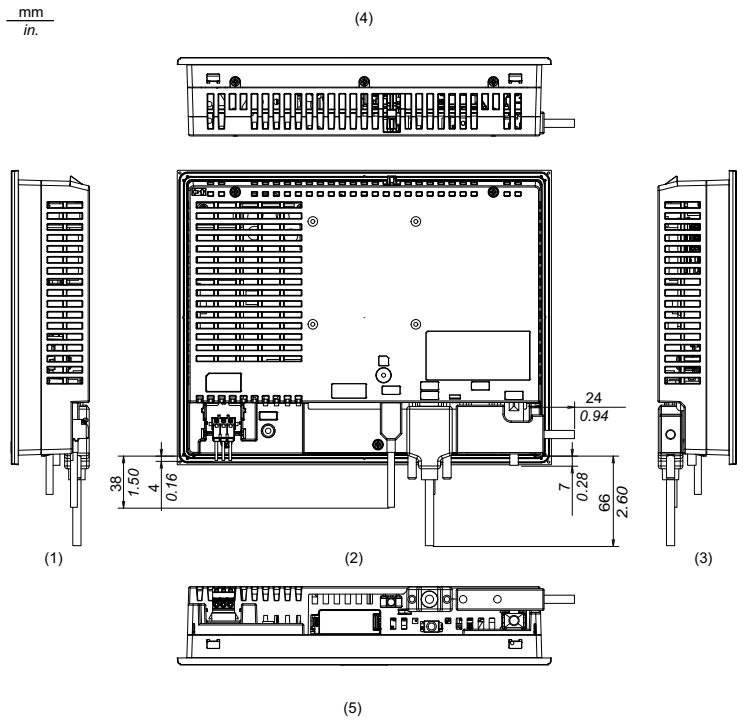
Dimensions with Cables: GP-4501TW



1 Left Side
2 Rear
3 Right Side
4 Top
5 Bottom

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

Dimensions with Cables: GP-4503T

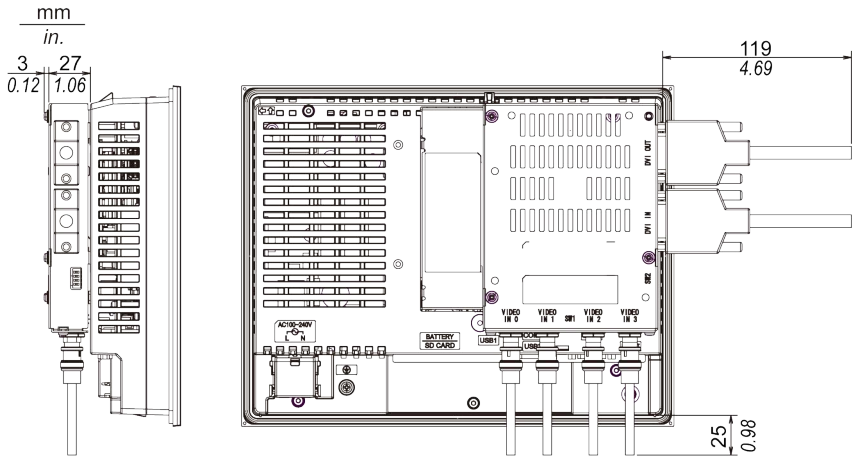


1 Left Side
2 Rear
3 Right Side
4 Top
5 Bottom

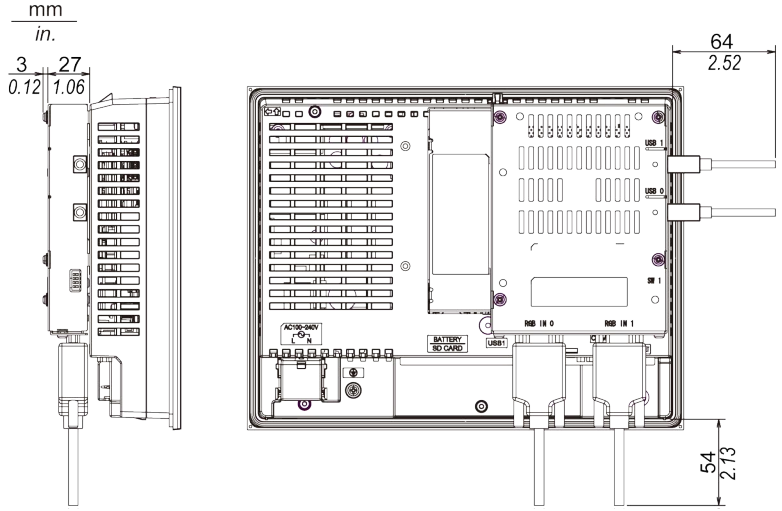
NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

Dimensions with Video Unit: GP-4521T

- Dimensions with VM Unit

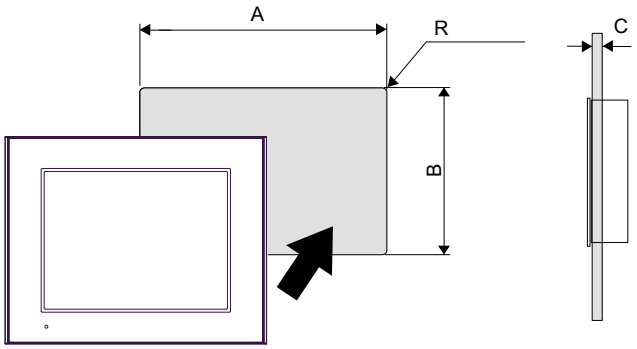


- Dimensions with RGB Input Unit



Panel Cut Dimensions

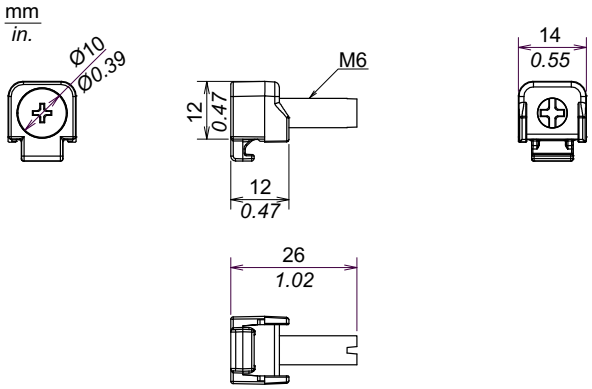
Create a panel cut and insert the GP unit into the opening from the front.



	A	B	C	R
GP-4501T GP-4503T GP-4521T	259 mm (+1, -0 mm) (10.2 in. [+0.04, -0 in.])	201 mm (+1, -0 mm) (7.91 in. [+0.04, -0 in.])	1.6...5 mm (0.06...0.2 in.)	3 mm (0.12 in.) maximum
GP-4501TW	301.5 mm (+1, -0 mm) (11.87 in. [+0.04, -0 in.])	227.5 mm (+1, -0 mm) (8.96 in. [+0.04, -0 in.])		

NOTE: Before designing the panel cut, refer to Installation *(see page 144)*.

Installation Fastener Dimensions



4.5 GP-4600 Series

What Is in This Section?

This section contains the following topics:

Electrical Specifications

			DC Model		AC Model	
			GP-4601T/ GP-4603T	**GP-4621T**	**GP-4601T**	**GP-4621T**
Power Supply	Rated Input Voltage		24 Vdc		100...240 Vac	
	Input Voltage Limits		19.2...28.8 Vdc		85...264 Vac	
	Rated Frequency		-		50/60 Hz	
	Rated Frequency Range		-		47...63 Hz	
	Voltage Drop		10 ms or less		1 cycle or less (Voltage drop interval must be 1 second or more)	
	Power Consumption		17 W or less	24 W or less	100 Vac: 44 VA or less 240 Vac: 58 VA or less	100 Vac: 56 VA or less 240 Vac: 77 VA or less
		When power is not supplied to external devices	12 W or less		100 Vac: 30 VA or less 240 Vac: 44 VA or less	100 Vac: 31 VA or less 240 Vac: 44 VA or less
		Backlight OFF (Standby Mode)	7 W or less		100 Vac: 18 VA or less 240 Vac: 29 VA or less	100 Vac: 19 VA or less 240 Vac: 30 VA or less
		Backlight Dimmed (Brightness: 20%)	8 W or less		100 Vac: 22 VA or less 240 Vac: 31 VA or less	100 Vac: 22 VA or less 240 Vac: 32 VA or less
	In-Rush Current		30 A or less			
Voltage Endurance			1,000 Vac for 1 minute (between power terminal and FG terminal), leakage current: 20 mA or less		1,500 Vac for 1 minute (between power terminal and PE terminal), leakage current: 20 mA or less	
Insulation Resistance			500 Vdc, 10 MΩ or more (between power terminal and PE/FG terminals)			

Environmental Specifications

		DC Model	AC Model
Physical Environment	Surrounding Air Temperature	0...55 °C (32...131 °F)*1	
	Storage Temperature	-20...60 °C (-4...140 °F)	
	Surrounding Air and Storage Humidity	10...90% RH (Non condensing, wet bulb temperature 39 °C [102.2 °F] or less)	
	Dust	0.1 mg/m^3 (10^{-7} oz/ft^3) or less (non-conductive levels)	
	Pollution Degree	For use in Pollution Degree 2 environment	
	Corrosive Gases	Free of corrosive gases	
	Atmospheric Pressure (Operating Altitude)	800...1,114 hPa (2,000 m [6,561 ft] or lower)	
Mechanical Environment	Vibration Resistance	IEC/EN 61131-2 compliant 5...9 Hz Single amplitude 3.5 mm (0.14 in.) 9...150 Hz Fixed acceleration: 9.8 m/s^2 X, Y, Z directions for 10 cycles (approx.100 minute)	
	Concussion Resistance	IEC/EN 61131-2 compliant 147 m/s^2, X, Y, Z directions for 3 times	
Electrical Environment	Noise Immunity	Noise Voltage: 1,000 Vp-p Pulse Width: 1 μs Rise Time: 1 ns	Noise Voltage: 1,500 Vp-p Pulse Width: 1 μs Rise Time: 1 ns
	Electrostatic Discharge Immunity	Contact Discharge Method: 6 kV (IEC/EN 61000-4-2 Level 3)	

*1 Surrounding Air Temperature of the Video Unit is 0...50 °C (32...122 °F) when attaching the Video Unit to GP-4621T.

Air quality requirements

Do not operate or store the GP unit where chemicals evaporate, or where chemicals are present in the air:

- Corrosive chemicals: Acids, alkalines, liquids containing salt.
- Flammable chemicals: Organic solvents.

⚠ CAUTION

INOPERATIVE EQUIPMENT

Do not allow water, liquids, metal, and wiring fragments to enter the panel case.

Failure to follow these instructions can result in injury or equipment damage.

Structural Specifications

NOTE:

- If you are using the rear mount model, refer to Structural Specifications *(see page 191)*.

Grounding	Functional grounding: Grounding resistance of 100 Ω or less, 2 mm^2 (AWG 14) or thicker wire, or your country's applicable standard. (Same for FG and SG terminals)
Cooling Method	Natural air circulation
Structure[*1]	IP65F NEMA #250 TYPE 4X/13 (on the front panel when properly installed in an enclosure)
External Dimensions	W315 x H241 x D56 mm (W12.4 x H9.49 x D2.2 in.)
Panel Cut Dimensions	W301.5 x H227.5 mm (W11.87 x H8.96 in.)[*2] Panel thickness area: 1.6...5 mm (0.06...0.2 in.)[*3]
Weight	2.5 kg (5.5 lb) or less (main unit only)

[*1] The front face of the GP unit, installed in a solid panel, has been tested using conditions equivalent to the standards shown in the specification. Even though the GP unit's level of resistance is equivalent to these standards, oils that should have no effect on the GP unit can possibly harm the panel. This can occur in areas where either vaporized oils are present, or where low viscosity cutting oils are allowed to adhere to the GP unit for long periods of time. If the GP unit's front face protection sheet peels off, these conditions can lead to the ingress of oil into the GP unit and separate protection measures are suggested.
Also, if non-approved oils are present, they may cause deformation or corrosion of the front GP unit's plastic cover. Therefore, prior to installing the GP unit, be sure to confirm the type of conditions that will be present in the GP unit's operating environment. If the installation gasket is used for a long period of time, or if the GP unit and its gasket are removed from the panel, the original level of protection cannot be kept. To maintain the original protection level, be sure to replace the installation gasket regularly.

[*2] For dimensional tolerance, everything +1/-0 mm (+0.04/-0 in.) and R in angle are below R3 (R0.12 in.)

[*3] Even if the installation wall thickness is within the recommended range for the "Panel Cut Dimensions", depending on wall's material, size, and installation location of the GP unit and other devices, the installation wall could warp. To prevent warping, the installation surface may need to be strengthened.

NOTICE

EQUIPMENT DAMAGE

- Ensure that the panel is not in permanent and direct contact with oils.
- Do not expose the device in direct sunlight.

Failure to follow these instructions can result in equipment damage.

NOTICE

STORAGE AND OPERATION OUTSIDE OF SPECIFICATIONS

- Store the panel in areas where temperatures are within the panel's specifications.
- Do not restrict or block the panel's rear-face ventilation slots.

Failure to follow these instructions can result in equipment damage.

NOTICE

GASKET AGING

- Inspect the gasket periodically as required by your operating environment to keep the initial IP level.
- Change the gasket at least once a year, or as soon as scratches or dirt become visible.

Failure to follow these instructions can result in equipment damage.

Display Specifications

Display Type		TFT Color LCD
Display Size		12.1”
Resolution		800 x 600 pixels (SVGA)
Effective Display Area		W246.0 x H184.5 mm (W9.69 x H7.26 in.)
Display Colors		65,536 colors (No blink) / 16,384 colors (Blink)
Backlight		White LED (Not user replaceable. When replacement is required, contact your local distributor.)
Backlight Service Life		50,000 hours (continuous operation at at 25 °C [77 °F] before backlight brightness decreases to 50%)
Brightness Control		16 levels (Adjusted with touch panel or software)
Language Fonts*1		Japanese, ASCII, Chinese (Simplified), Chinese (Traditional), Korean, Cyrillic, Thai
Character Sizes		Standard font: 8 x 8, 8 x 16, 16 x 16 and 32 x 32 pixel fonts Stroke font: 6...127 pixel fonts Image font: 8...72 pixel fonts
Font Sizes		Standard font: You can expand width up to 8 times, and expand height up to 8 times.*2
Text	8 x 8 pixels	100 characters per row x 75 rows
	8 x 16 pixels	100 characters per row x 37 rows
	16 x 16 pixels	50 characters per row x 37 rows
	32 x 32 pixels	25 characters per row x 18 rows

*1 Please refer to the GP-Pro EX Reference Manual for details on font types and character codes.

*2 You can set up other font sizes using the software.

Memory, Clock, and Touch Panel

Memory

Application Memory	Screen Area[*1]	FLASH EPROM 32 MB (including logic program area)
	Logic Program Area	FLASH EPROM 132 KB (Equivalent to 15,000 steps[*2])
	Font Area	FLASH EPROM 8 MB (when limit exceeded, uses application memory)
Backup Memory	Data Backup	SRAM 320 KB (Replaceable lithium battery for backup memory)
	Variable Area	SRAM 64 KB (Replaceable lithium battery for retentive variables)

[*1] Capacity available for user application (internal memory).

[*2] Up to 60,000 steps can be converted in software. However, this reduces application memory capacity for screen data by 1 MB.

NOTE: For details on the memory, refer to the following URL.
https://www.pro-face.com/trans/en/manual/1082.html

Clock

± 65 seconds per month (deviation at room temperature and power is OFF). Variations in operating conditions and battery life can cause clock deviations from -380 to +90 seconds per month.

For systems where this level of precision is insufficient, the user should monitor and make adjustments when required.

Touch Panel

	GP-4601T (Analog Touch Panel) / GP-4603T / GP-4621T	**GP-4601T (Matrix Touch Panel)**
Touch Panel Type	Resistive Film (analog)	Resistive Film (matrix)
Touch Panel Resolution	1,024 x 1,024	40 x 30 keys/screen
Touch Panel Service Life	1 million times or more	

The analog-resistive touch panel does not support multi-touch (two point touch / multiple point touch). If you touch multiple points on the touch panel, it may operate as if you touched the center-point of the multiple touches.
For example, if you touch two or more points on the touch panel and at the center of the touches is a switch for a drive system, even though you did not directly touch that switch, it may function as if you did.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

On touch panels that do not support multi-touch, do not touch two or more points.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Interface Specifications

Introduction

Use only the SELV (Safety Extra-Low Voltage) circuit to connect the serial, USB and Ethernet interfaces.

Serial Interface COM1

Asynchronous Transmission	RS-232C
Data Length	7 or 8 bits
Stop Bit	1 or 2 bits
Parity	None, odd or even
Data Transmission Speed	2,400...115,200 bps
Connector	D-Sub 9 pin (plug)

Serial Interface COM2

	GP-4601T / GP-4621T	**GP-4603T**
Asynchronous Transmission	RS-422 / RS-485	RS-485 (isolation)
Data Length	7 or 8 bits	
Stop Bit	1 or 2 bits	
Parity	None, odd or even	
Data Transmission Speed	2,400...115,200 bps, 187,500 bps (MPI)	
Connector	D-Sub 9 pin (plug)	D-Sub 9 pin (socket)

USB Interface

	USB (Type A) Interface	**USB (mini-B) Interface**
Connector	USB 2.0 (Type A) x 1	USB 2.0 (mini-B) x 1
Power Supply Voltage	5 Vdc ±5%	-
Maximum Current Supplied	500 mA	-
Maximum Transmission Distance	5 m (16.4 ft)	

Ethernet Interface

Ethernet (LAN)	IEEE802.3i / IEEE802.3u, 10BASE-T/100BASE-TX
Connector	Modular jack (RJ45) x 1

SD Card Interface

SD Card slot x 1 (maximum 32 GB SD/SDHC Card)

Specifications of Serial Interface COM1

Introduction

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.

The serial port is not isolated. The SG (signal ground) and FG (frame ground) terminals are connected inside the GP unit.

⚠⚠ DANGER

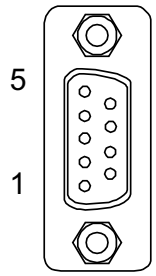
ELECTRIC SHOCK

When using the SG terminal to connect an external device to the panel:
- Verify that a short-circuit loop is not created when you set up the system.
- Connect the #5 SG terminal to remote equipment when the host (PLC) unit is not isolated. Connect the #5 SG terminal to a known reliable ground connection to reduce the risk of damaging the circuit.

Failure to follow these instructions will result in death or serious injury.

Serial Interface COM1

GP-4601T / GP-4603T / GP-4621T:
D-Sub 9 pin plug connector via an RS-232C cable.

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

[*1] You can switch pin #9 between RI and VCC via software.

NOTICE

EQUIPMENT DAMAGE

Use only the rated current.

Failure to follow these instructions can result in equipment damage.

Interfit bracket is #4-40 (UNC).

Recommendations:
- Cable Connector: XM3D-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

⚠ CAUTION

LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

Failure to follow these instructions can result in injury or equipment damage.

Specifications of Serial Interface COM2

Introduction

NOTE: For instructions on how to connect to other devices, always refer to the “GP-Pro EX Device/PLC Connection Manual”.

The COM2 port of GP-4601T is not isolated. The SG (signal ground) and FG (frame ground) terminals are connected inside the GP unit.

⚠⚠ DANGER

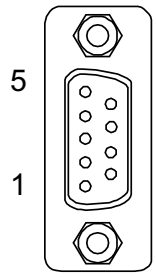
ELECTRIC SHOCK

When using the SG terminal to connect an external device to the panel:
- Verify that a short-circuit loop is not created when you set up the system.
- Connect the #5 SG terminal to remote equipment when the host (PLC) unit is not isolated. Connect the #5 SG terminal to a known reliable ground connection to reduce the risk of damaging the circuit.

Failure to follow these instructions will result in death or serious injury.

Serial Interface COM2

GP-4601T / GP-4621T: D-Sub 9 pin plug connector via an RS-422/485 cable.

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

Interfit bracket is #4-40 (UNC).

Recommendations:
- Cable Connector: XM3D-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

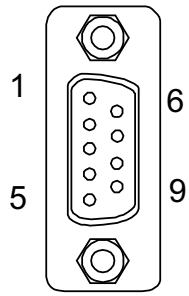
⚠ CAUTION

LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

Failure to follow these instructions can result in injury or equipment damage.

GP-4603T: D-Sub 9 pin socket connector via an RS-485, PROFIBUS, or MPI cable.

Pin Connection	Pin No.	RS-485 (isolation)		
		Signal Name	Direction	Meaning
 (GP unit side)	1	NC	-	no connection
	2	NC	-	no connection
	3	Line A	Input/Output	Data A (+)
	4	RS(RTS)	Output	Request to Send
	5	SG	-	Signal Ground
	6	VCC	-	+5V±5% External Output*1
	7	NC	-	no connection
	8	Line B	Input/Output	Data B (-)
	9	NC	-	no connection
	Shell	FG	–	Frame Ground*2 (No connection with SG)

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

*2 The SG and FG terminals are isolated.

Interfit bracket is #4-40 (UNC).

Recommendations:
- Cable Connector: XM3A-0921 manufactured by OMRON Corporation.
- Cable Cover: XM2S-0913 manufactured by OMRON Corporation.
- Jack Screw (#4-40 UNC): XM2Z-0073 manufactured by OMRON Corporation.

⚠ CAUTION

LOSS OF COMMUNICATION

- All connections to the communication ports must not put excessive stress on the ports.
- Securely attach communication cables to the panel wall or cabinet.
- Use only D-Sub 9 pin cables with a locking tab in good condition.

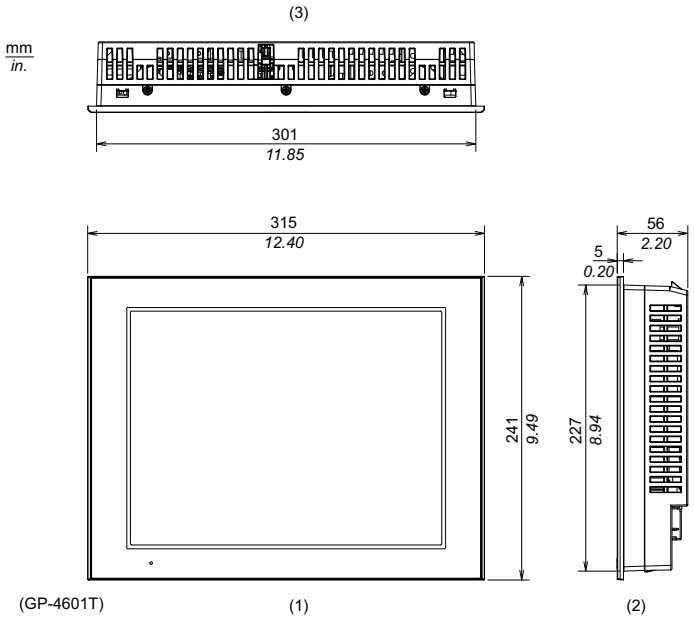
Failure to follow these instructions can result in injury or equipment damage.

Dimensions

NOTE:

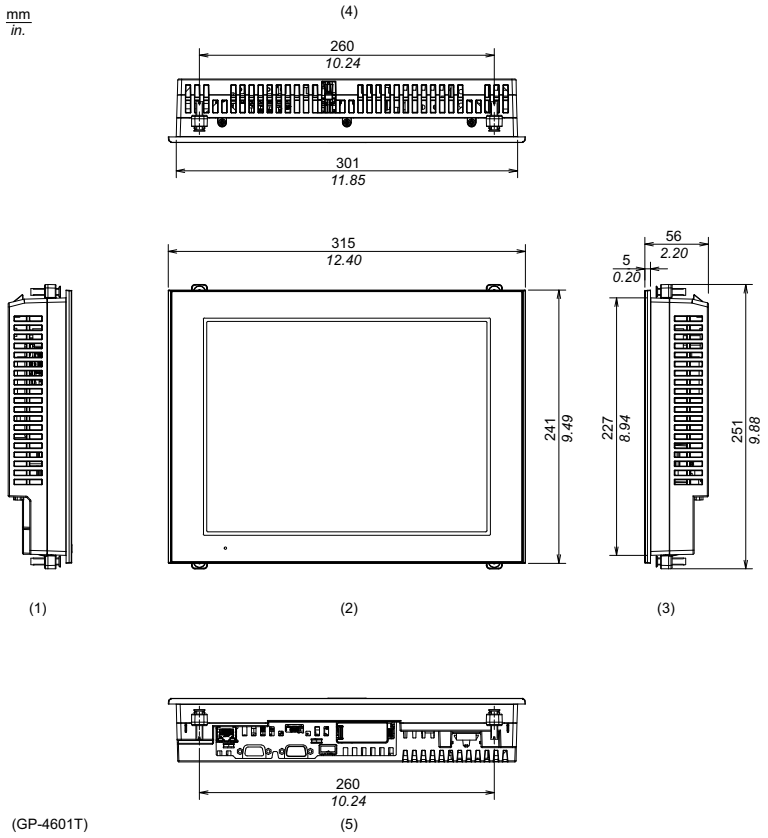
- If you are using the rear mount model, refer to Dimensions *(see page 193)*.

External Dimensions



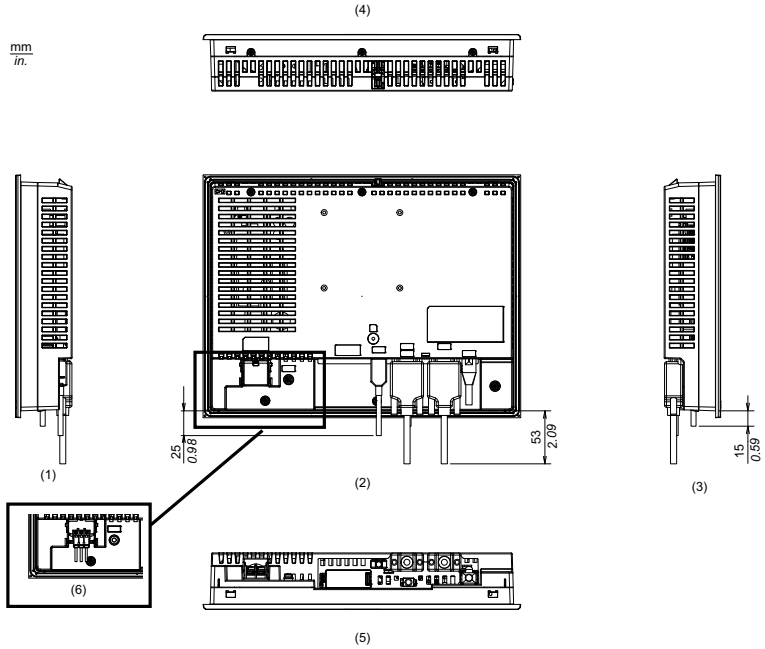
1 Front
2 Right Side
3 Top

Installation with Installation Fasteners



1 Left Side
2 Front
3 Right Side
4 Top
5 Bottom

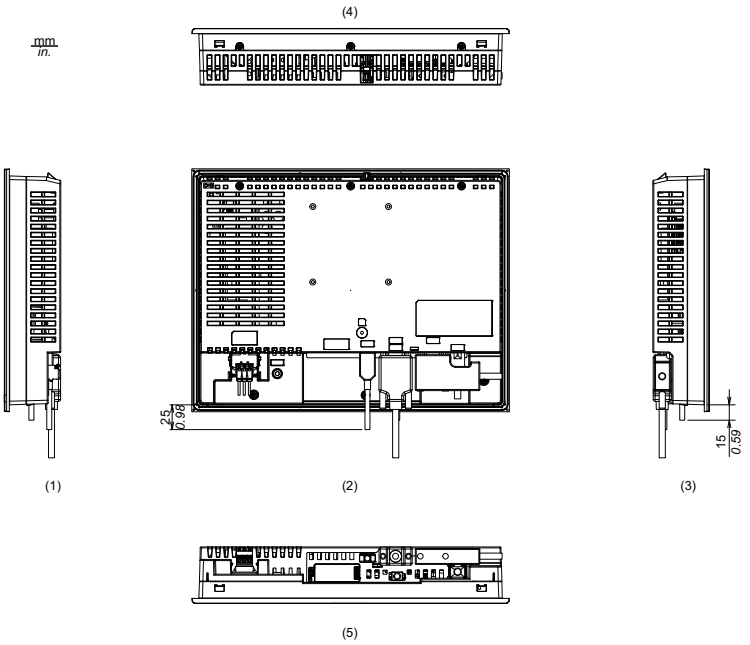
Dimensions with Cables: GP-4601T



1 Left Side
2 Rear
3 Right Side
4 Top
5 Bottom
6 DC type units have power supply terminals

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

Dimensions with Cables: GP-4603T

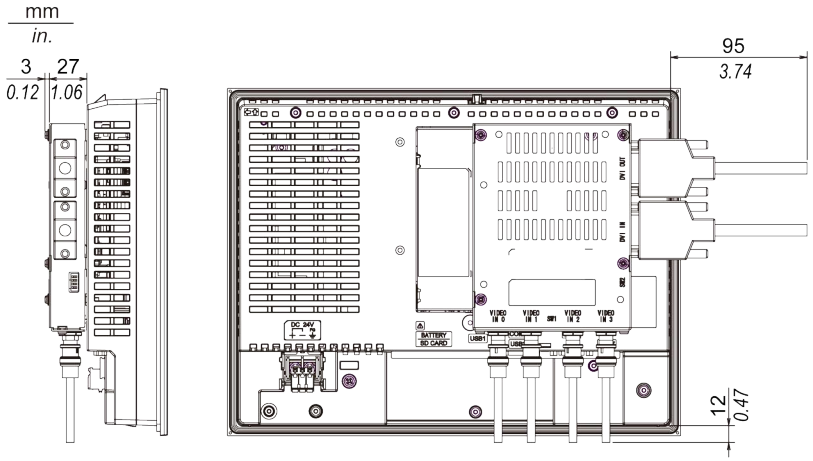


1 Left Side
2 Rear
3 Right Side
4 Top
5 Bottom

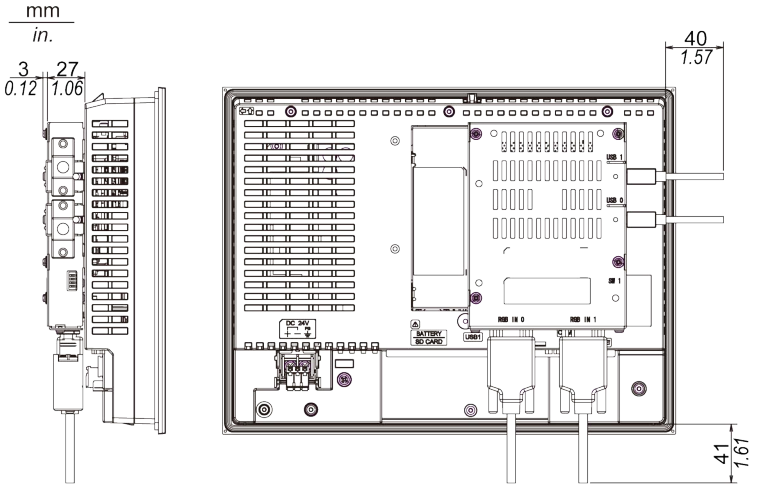
NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

Dimensions with Video Unit: GP-4621T

- Dimensions with VM Unit

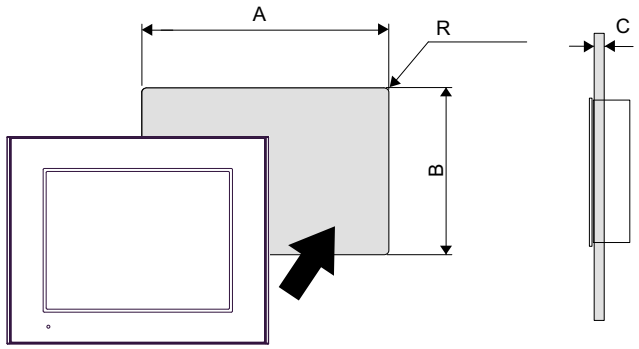


- Dimensions with RGB Input Unit



Panel Cut Dimensions

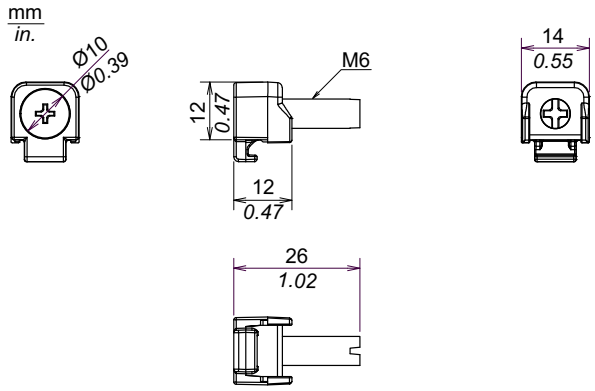
Create a panel cut and insert the GP unit into the opening from the front.



A	B	C	R
301.5 mm (+1, -0 mm) (11.87 [+0.04, -0 in.])	227.5 mm (+1, -0 mm) (8.96 in. [+0.04, -0 in.])	1.6...5 mm (0.06...0.2 in.)	3 mm (0.12 in.) maximum

NOTE: Before designing the panel cut, refer to Installation *(see page 144)*.

Installation Fastener Dimensions



Installation and Wiring

5

What Is in This Chapter?

This chapter contains the following sections:

5.1 Installation

NOTE:
- If you are using the rear mount model, refer to Installation *(see page 229)*.

Installation Procedures

Introduction

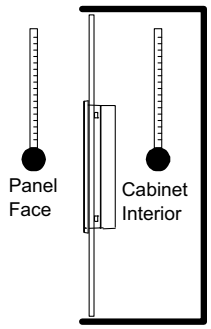
This product is designed for use on flat surfaces of Type 1, Type 4X (Indoor Use Only), Type 13 Enclosure, or IP65F.

Be aware of the following when building this product into an end-use product:

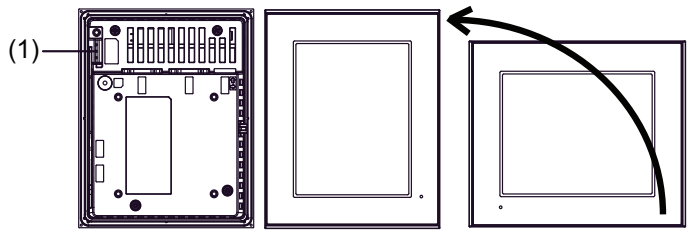
- The rear face of this product is not approved as an enclosure. When building this product into an end-use product, be sure to use an enclosure that satisfies standards as the end-use product's overall enclosure.
- Install this product in an enclosure with mechanical rigidity.
- This product is not designed for outdoor use. UL certification obtained is for indoor use only.
- Install and operate this product with its front panel facing outward.

NOTE:
- IP65F is not part of the UL certification.
- The necessary torque is 0.5 N•m (4.4 lb-in.).

Installation Requirements

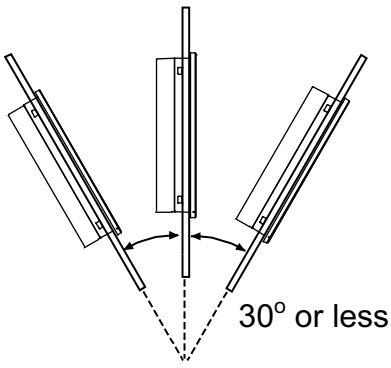
Check that the installation wall or cabinet's surface is flat, in good condition and has no jagged edges. Metal reinforcing strips may be attached to the inside of the wall, near the panel-cut, to increase its rigidity.
Decide on the thickness of the enclosure wall, based on the level of strength required: 1.6...5 mm (0.06...0.2 in.). Even if the installation wall thickness is within the recommended range for the "Panel Cut Dimensions", depending on wall's material, size, and installation location of this product and other devices, the installation wall could warp. To prevent warping, the installation surface may need to be strengthened.
Check that the surrounding air temperature and the ambient humidity are within their designated ranges. (please see the Environment Specifications for your GP unit) When installing the GP unit in a cabinet or enclosure, the surrounding air temperature is the cabinet's or enclosure's internal temperature. 
Be sure that heat from surrounding equipment does not cause the GP unit to exceed its standard operating temperature.

When mounting the GP unit vertically, ensure that the right side of the unit faces up. In other words, the power connector for DC model, power terminal block for AC model, should be at the top.



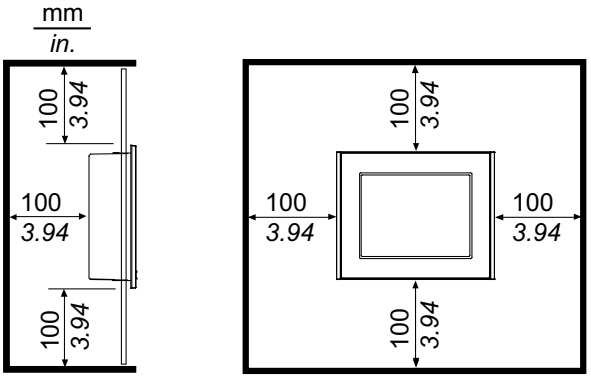
1 Power connector or power terminal block

When installing the GP unit in a slanted position, the GP unit face should not incline more than 30°.



When installing the GP unit in a slanted position with an incline more than 30°, the ambient temperature must not exceed 40 °C (104 °F). You may need to use forced air cooling (fan, A/C) to ensure the ambient operating temperature is 40°C or less (104 °F or less).

For easier maintenance, operation and improved ventilation, install the GP unit at least 100 mm (3.94 in.) away from adjacent structures and other equipment as shown in the following illustration:



The holes on the rear of the GP unit (except GP-4200 Series) do not correspond to VESA 75 mm standards. Do not attach the GP unit to a commercial-type VESA arm.

Pressure Differences

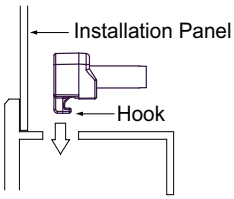
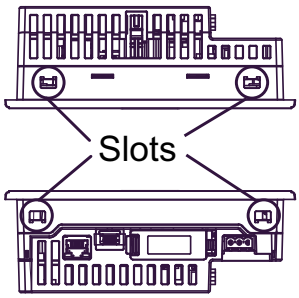
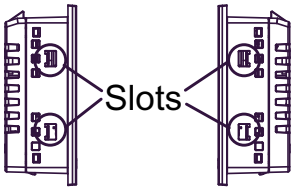
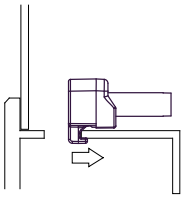
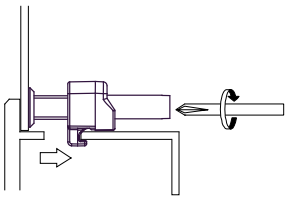
When applying and installing this product, it is important that steps are taken to eliminate any pressure difference between the inside and the outside of the enclosure in which this product is mounted. Higher pressure inside the enclosure can cause delamination of the front membrane of the display. Even a small pressure difference inside the enclosure will act on the large area of the membrane and can result in sufficient force to delaminate the membrane and thus cause failure of the touch capability. Pressure differences can often occur in applications where there are multiple fans and ventilators moving air at different rates in different rooms. Please follow these techniques to ensure that this product's function is not impacted by this mis-application:

1. Seal all conduit connections inside of the enclosure, especially those that lead to other rooms that may be at a different pressure.
2. Where applicable, install a small weep hole at the bottom of the enclosure to allow equalization of the internal and external pressure.

Panel Mounting Procedure

NOTICE
EQUIPMENT DAMAGE Keep GP unit stabilized in the panel-cut while you are installing or removing the screw fasteners. **Failure to follow these instructions can result in equipment damage.**

Step	Action
1	Place the GP unit on a clean and level surface with the display facing downward.
2	Check that the GP unit’s gasket is seated securely into the gasket’s groove, which runs around the perimeter of the GP unit frame.
3	Cut a hole in the installation panel as defined by the GP unit’s panel cutout dimensions. GP-4200 Series *(see page 69)* GP-4300 Series *(see page 87)* GP-4400 Series *(see page 102)* GP-4500 Series *(see page 124)* GP-4600 Series *(see page 142)*
4	Insert the GP unit into the panel-cut.

Step	Action
5	Insert the installation fasteners into the GP unit's insertion slots on the top and bottom sides (left and right sides for the GP-4200 Series). Slide the fasteners to the back. If the fasteners are not correctly attached, the GP unit may shift or fall out.  GP-4301T  GP-4201T 
6	Insert each of the fasteners shown below. Make sure you pull the fastener back until it is flush with the rear of the attachment hole insert. 
7	Use a Phillips screwdriver to tighten each fastener screw and secure the GP unit in place. The necessary torque is 0.5 N•m (4.4 lb-in.). 

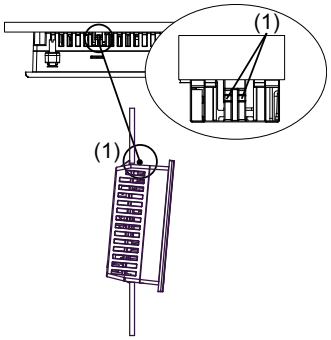
NOTICE

BROKEN ENCLOSURE

- Do not exert more than 0.5 N•m (4.4 in-lb) of torque when tightening the fastener's screws.
- Use on flat surface of a Type 1, Type 4X (Indoor Use Only) or Type 13 Enclosure.

Failure to follow these instructions can result in equipment damage.

Removal Procedure

Step	Action
1	Loosen the installation fasteners (4) from the GP unit.
2	Remove the GP unit slowly from the panel while pressing the projections on the top of the GP unit.  **1** Projections **NOTE:** ● You could damage the GP unit if you try and remove it without holding down the projections. ● Watch your fingers so they do not get caught when holding down the projections.

⚠ CAUTION

RISK OF INJURY

Do not drop the GP unit when you remove it from the panel.

- Hold the GP unit in place after removing the fasteners.
- Use both hands.

Failure to follow these instructions can result in injury or equipment damage.

5.2 Wiring Principles

Overview

This section presents the GP unit wiring principles.

What Is in This Section?

This section contains the following topics:

Connecting the AC Power Cord

⚠ WARNING

EXCESSIVE ELECTROMAGNETIC INTERFERENCE

- When the protective earth (PE) terminal is connected, be sure the wire is grounded. Not grounding the GP unit can result in excessive Electromagnetic Interference (EMI). Grounding is required to meet EMC level immunity.
- Remove power before wiring the GP unit's power terminals.
- The AC model is designed to use 100 Vac to 240 Vac input. Using any other level of power can damage both the power supply and the GP unit.
- Since the GP unit is not equipped with a power switch, be sure to connect a power switch to the power supply.
- Be sure to ground the GP unit's PE terminal.

Use the following torque to tighten the terminals:

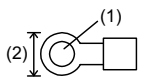
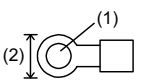
- Terminal Block: 1.4 N•m (12.4 lb-in.)
- PE Terminal: 1.4 N•m (12.4 lb-in.)

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: The SG (signal ground) and PE (protective earth) terminals are connected internally in the GP unit.

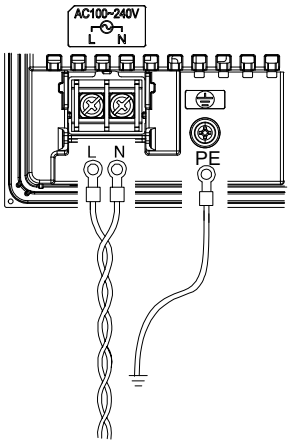
AC Power Cord Preparation

- Make sure the ground wire is either the same or heavier gauge than the power wires.
- Do not use aluminum wires in the power supply's power cord.
- For power cord, use copper wire rated for 75 °C (167 °F) or higher.

	AC Power Cord	**Grounding Wire**
Power Cord	Double-insulated Wire 0.75 to 3.5 mm^2 (18-12AWG)	0.75 to 3.5 mm^2 (18-12AWG)
Recommended Ring Terminal[*1]	J.S.T Mfg. Co., Ltd compatible: ● V1.25-M4 (18-16AWG) ● V2-P4 (16-14AWG) ● V5.5-S4 (14-12AWG)  (1) ϕ4.3 mm (0.17 in.) or more (2) Less than 7.2 mm (0.28 in.)	J.S.T Mfg. Co., Ltd compatible: ● V1.25-M4 (18-16AWG) ● V2-P4 (16-14AWG) ● V5.5-S4 (14-12AWG)  (1) ϕ4.3 mm (0.17 in.) or more (2) Less than 7.2 mm (0.28 in.)

[*1] To prevent a short circuit caused by loose screws, use a crimp-type terminal with an insulating sleeve.

How to connect the AC Power Cord

Step	Action
1	Confirm the power cord is not connected to the power supply.
2	Open the terminal strip's clear plastic cover.
3	Remove screws from the L, N, and PE (protective earth) terminals. Attach the ring terminals and reinsert the screws. Check each wire to make sure the connections are correct. **NOTE:** The torque required to tighten these screws are as follows: ● Terminal Block: 1.4 N•m (12.4 lb-in.) ● PE Terminal: 1.4 N•m (12.4 lb-in.) 
4	Close the terminal strip's clear plastic cover.

Connecting the DC Power Cord

⚠ WARNING

EXCESSIVE ELECTROMAGNETIC INTERFERENCE

- When the functional ground (FG) terminal is connected, be sure the wire is grounded. Not grounding the GP unit can result in excessive Electromagnetic Interference (EMI). Grounding is required to meet EMC level immunity.
- Remove power before wiring the GP unit's power terminals.
- The DC model uses only 24 Vdc power. Using any other level of power can damage both the power supply and the GP unit.
- Since the GP unit is not equipped with a power switch, be sure to connect a power switch to the power supply.
- Be sure to ground the GP unit's FG terminal.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

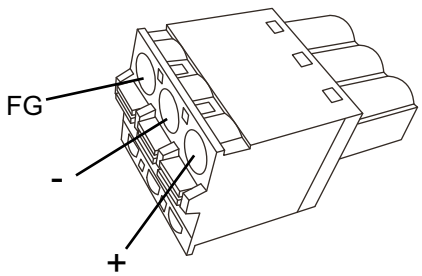
NOTE: The SG (signal ground) and FG (functional ground) terminals are connected internally in the GP unit.

DC Power Cord Preparation

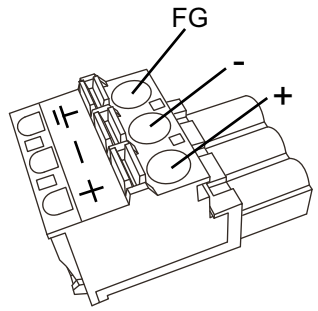
- Make sure the ground wire is either the same or heavier gauge than the power wires.
- Do not use aluminum wires in the power supply's power cord.
- If the ends of the individual wires are not twisted correctly, the wires may create a short circuit.
- Wherever possible, use wires that are 0.75 to 2.5 mm^2 (AWG 18 - 13) for the power cord, and twist the wire ends before attaching the terminals.
- The conductor type is solid or stranded wire.
- For power cord, use copper wire rated for 75 °C (167 °F) or higher.

DC Power Supply Connector (Plug) Specifications: Spring Clamp Terminal Blocks

GP-4200 Series / GP-4300 Series / GP-4400 Series



GP-4500 Series / GP-4600 Series



Connection	Wire
+	24 Vdc
-	0 Vdc
FG	Grounded terminal connected to the panel chassis.

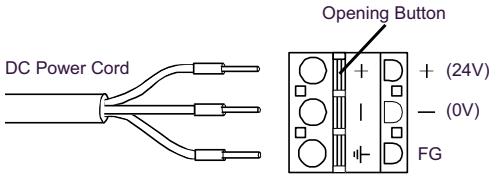
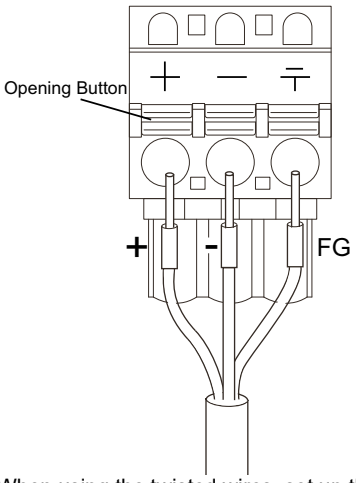
NOTE: The DC power supply connector (plug) for GP-4200 Series / GP-4300 Series / GP-4400 Series is optional PFXZCBCNDC1. The DC power supply connector (plug) for GP-4500 Series / GP-4600 Series is PFXZCBCNDC2.

Recommended Driver	SZS 0.6x3.5 (1205053)
Recommended Pin Terminals	3201288 AI 0,75-10 GY 3200182 AI 1 -10 RD 3200195 AI 1,5 -10 BK 3202533 AI 2,5 -10 BU
Recommended Pin Terminal Crimp Tool	CRIMPFOX 6

(The above items are manufactured by Phoenix Contact.)

How to connect the DC Power Cord

Step	Action
1	Confirm the power cord is not connected to the power supply.
2	Check the rated voltage and remove the “DC24V” sticker on the DC power supply connector.
3	Remove 10 mm (0.39 in.) of the vinyl membrane off the ends of the power cord wires.
4	Push the Opening button with a small and flat screwdriver to open the desired pin hole.

Step	Action
5	Insert each pin terminal into its corresponding hole. Release the Opening button to clamp the pin in place. GP-4200 Series / GP-4300 Series / GP-4400 Series  GP-4500 Series / GP-4600 Series  When using the twisted wires, set up the system not to create a short circuit between one wiring and another.
6	After inserting all three pins, insert the power plug into the power connector on the GP unit.

NOTE:

- Do not solder the wire directly to the power receptacle pin.
- To prevent the possibility of a terminal short, use a pin terminal that has an insulating sleeve.
- You can connect the DC power supply connector for GP-4200 Series, GP-4300 Series, or GP-4400 Series to GP-4500 Series or GP-4600 Series units. However, the reverse is not possible. You cannot connect the DC power supply connector for GP-4500 Series or GP-4600 Series to GP-4200 Series, GP-4300 Series, or GP-4400 Series units.

Connecting the Power Supply

Precautions

- For AC input, when using models other than GP-4521T/GP-4621T, use a maximum 20 A branch circuit protective device, and when using GP-4521T/ GP-4621T, use a maximum 16 A branch circuit protective device.
- Use Class 2 power supply, SELV (Safety Extra-Low Voltage) circuit and LIM (Limited Energy) circuit for DC input.
- To increase the electromagnetic noise resistance, make sure you twist the ends of the power cord wires before connecting them to the power plug or ring terminal.
- The GP unit's power supply cord should not be bundled with or kept close to main circuit lines (high voltage, high current), or input/output signal lines.
- Connect a lightning surge absorber to handle power surges.
- To reduce electromagnetic noise, make the power cord as short as possible.
- If there is an excess amount of noise on the power supply line, connect a noise reducing transistor before turning on the power.

⚠ WARNING

SHORT CIRCUIT, FIRE, OR UNINTENDED EQUIPMENT OPERATION

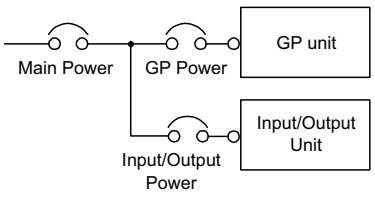
Avoid excessive force on the power cable to prevent accidental disconnection

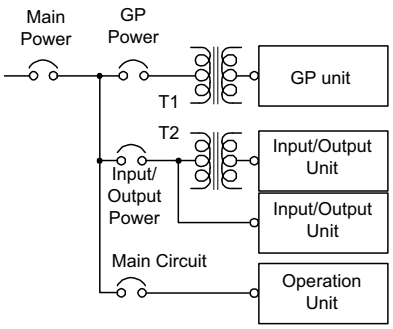
- Securely attach power cables to the GP unit or cabinet.
- Use the designated torque to tighten the unit terminal block screws.
- Install and fasten the GP unit on installation panel or cabinet prior to connecting power supply and communication lines.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

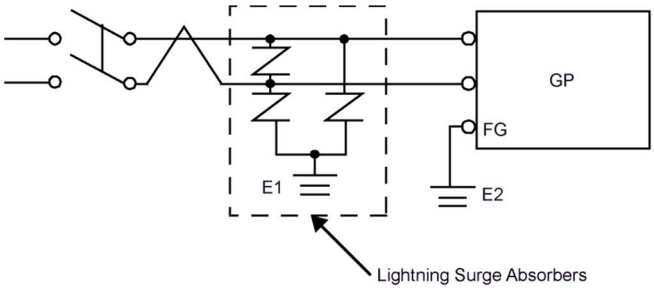
Power Supply Connections

When supplying power to the GP unit, separate the input/output and power lines, as shown.



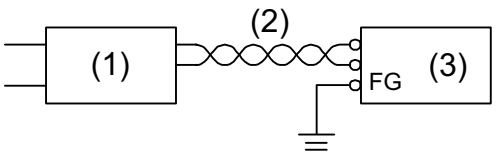


The following shows a lightning surge absorber connection:



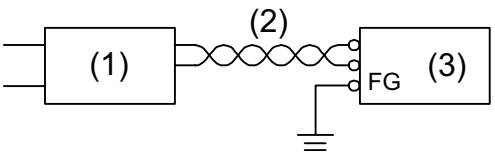
- Ground the surge absorber (E1) separately from the GP unit (E2).
- Select a surge absorber that has a maximum circuit voltage greater than that of the peak voltage of the power supply.

If the supplied voltage exceeds the GP unit range, connect a constant voltage transformer.



1 Constant voltage transformer
2 Twisted-pair cord
3 GP unit

Select a power supply low in noise for between the line and ground. If there is an excess amount of noise, connect an insulating transformer.



1 Insulating transformer
2 Twisted-pair cord
3 GP unit

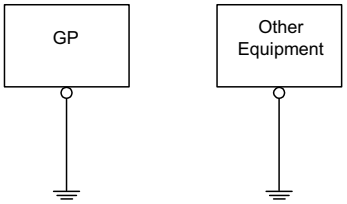
NOTE: Use constant voltage and insulating transformers with capacities exceeding the Power Consumption value.

Grounding

Exclusive Grounding

When supplying power to the GP unit, separate the input/output and power lines as shown below.

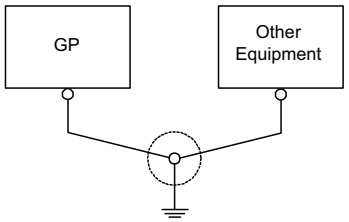
Connect the PE/FG terminal on the power plug to an exclusive ground.



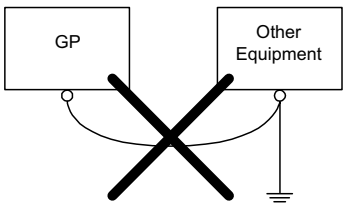
Precautions

Electromagnetic Interference (EMI) can be created if the devices are improperly grounded. EMI can cause loss of communication. Do not use common grounding, except for the authorized configuration described below. If exclusive grounding is not possible, use a common grounding point.

Common grounding



Incorrect grounding



- Check that the grounding resistance is 100 Ω or less.[*1]
- The PE (protective earth)/FG (functional ground) wire should have a cross sectional area greater than 2 mm^2 (AWG 14) [(1)]. Create the connection point as close to the GP unit as possible, and make the wire as short as possible. When using a long grounding wire, replace the thin wire with a thicker wire, and place it in a duct.
- SG (signal ground) and PE (protective earth)/FG (functional ground) terminals are internally connected in the GP unit. When connecting an external device to the GP unit using the SG terminal, check that you do not create a short-circuit loop when you set up the system.

*1 Observe local codes and standards. Ensure the ground connection has a resistance of 100 Ω and that the ground wire has a cross-section of at least 2 mm^2 or AWG 14.

5.3 SD Card Insertion/Removal

What Is in This Section?

This section contains the following topics:

Introduction

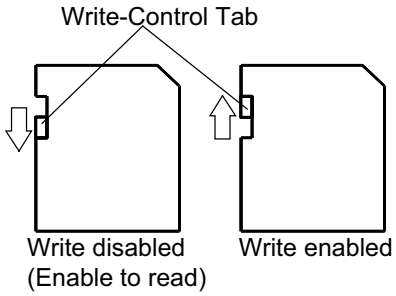
NOTICE
LOSS OF DATA When using a SD Card: ● Regularly back up the SD Card data since an accidental data loss can occur at any time. ● Before removing the SD Card from the GP unit, run the Offline Mode's hardware removal process. ● While a SD Card is accessed, do not turn OFF or reset the GP unit, and do not insert or remove the SD Card. ● Before using the SD Card, familiarize yourself with the SD Card's front and rear face orientation, as well as the position of the SD Card connectors. **Failure to follow these instructions can result in equipment damage.**

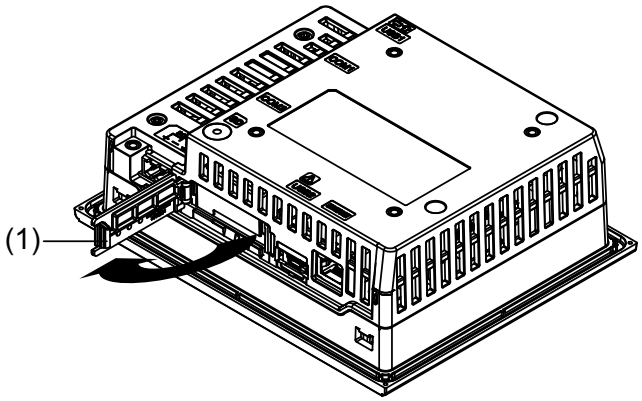
NOTICE
LOSS OF DATA When handling the SD Card: ● Avoid storing the SD Card where there is static electricity or electromagnetic waves. ● Avoid storing the SD Card in direct sunlight, near a heater, or other locations where high temperatures can occur. ● Do not bend the SD Card. ● Do not drop or strike the SD Card against another object. ● Keep the SD Card dry. ● Do not touch the SD Card connectors. ● Do not disassemble or modify the SD Card. ● Use only SD Cards formatted using FAT or FAT32. The GP unit does not recognize NTFS formatted SD Cards. **Failure to follow these instructions can result in equipment damage.**

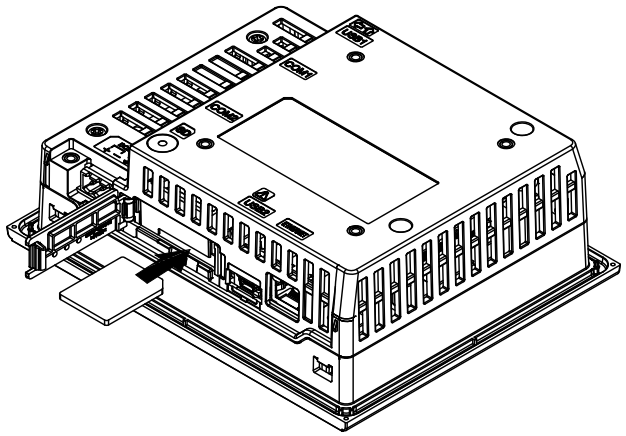
To make your backups, you can either insert the SD Card directly into the SD Card interface on your computer, or use a commercially available SD Card reader.

Inserting the SD Card

NOTE: As shown in the image below (example on the left-hand side), you can set the Write-Control Tab to prevent write operations to the SD Card. Push the tab up, as shown in the example on the right-hand side, to release the lock and enable writing to the SD Card. Before using a commercial-type SD Card, read the manufacturer's instructions.



Step	Action
1	Pull on the tab and open the SD Card cover.  **1** Tab

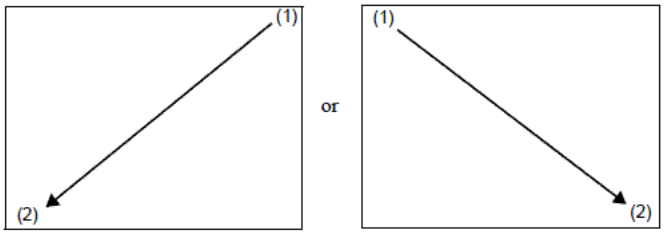
Step	Action
2	Insert the SD Card into the SD Card interface, and push until you hear it “click”. 
3	Close the SD Card cover.

Before Removing the SD Card

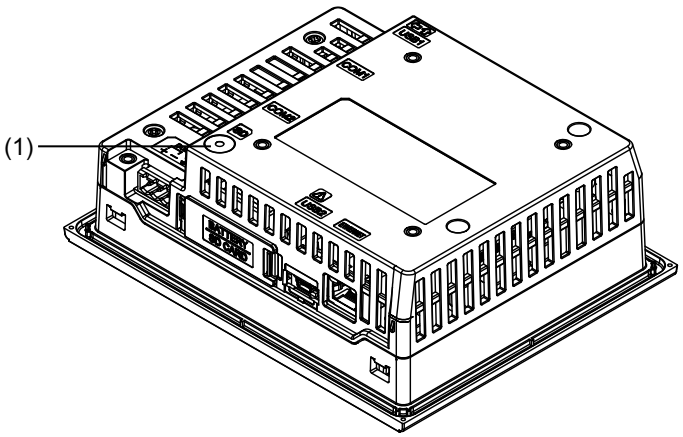
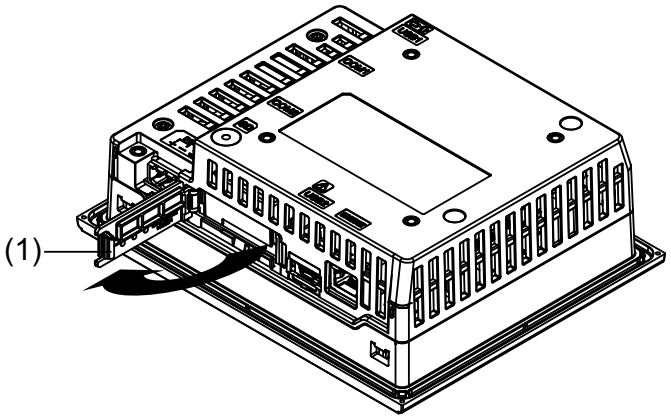
Do not remove the SD Card while it is being accessed. Doing so could corrupt the data on the SD Card. Before removing the SD Card from the GP unit, make sure you run the following procedure to stop SD Card operation.

NOTE:

- When the GP unit is in offline mode or in screen transfer mode, you cannot stop SD Card operation. Return to RUN mode to stop the SD Card.
- When the SD Card removal process is complete, the GP unit's SD Card Access LED is off. Confirm the lamp is off, then remove the SD Card.
- For instructions on how to stop SD Card operation, refer to the GP-Pro EX Reference Manual, "Safely Detaching the SD Card or USB Storage Device".

Step	Action
1	Either touch the top-right then the bottom-left corner, or the top-left then bottom-right corner of the panel (within a 40 pixel area) in 0.5 seconds. 
2	In the system menu, touch the SD Card icon. 
3	In the "Remove SD Card?" message, touch [Yes].
4	When the GP unit completes the removal process, the SD Card icon disappears from the system menu. 
5	Touch the Close icon to exit the system menu. 

Removing the SD Card

Step	Action
1	Make sure the SD Card Access LED is off.  **1** SD Card Access LED
2	Push down the tab on the SD Card cover, then pull open the cover.  **1** Tab
3	Push the SD Card once to release, and pull out the card. After removing the card, close the cover. **NOTE:** After using the SD Card, store the SD Card in its case or other safe location.

5.4 USB Cable Clamp

Overview

This section presents the USB cable clamp.

What Is in This Section?

This section contains the following topics:

USB Cable Clamp for USB (Type A)

Introduction

When using a USB device, attaching a USB cable clamp to the USB interface to prevent the USB cable from being disconnected.

⚠ DANGER

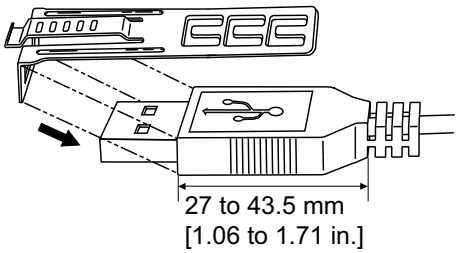
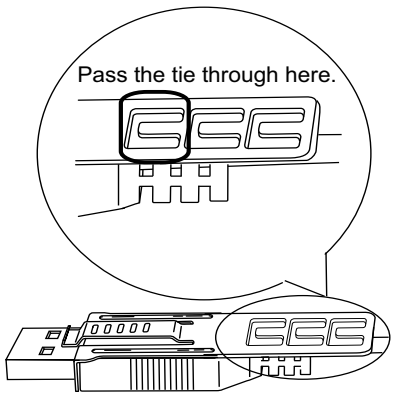
POTENTIAL FOR EXPLOSION

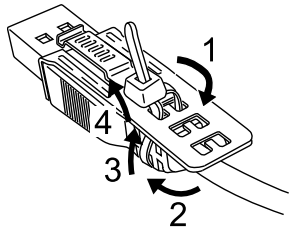
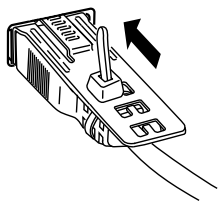
- Verify that the power, input and output (I/O) wiring are in accordance with Class I, Division 2 wiring methods.
- Substitution of any component may impair suitability for Class I, Division 2.
- Confirm that the USB cable has been attached with the USB cable clamp before using the USB interface.
- Remove power before attaching or detaching any connectors to or from the unit.

Failure to follow these instructions will result in death or serious injury.

Attaching the USB Cable Clamp

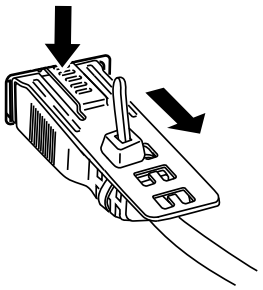
NOTE: Watch your fingers. The edge of the clip is sharp.

Step	Action
1	Mount the clip to the USB mark connector shell so that it overlaps. The clip matches the 27 to 43.5 mm [1.06 to 1.71 in.] length of the USB connector. 
2	Align the clip and the USB cable connector shell. Adjust the position of the holes where the clip is attached. To ensure stability, select the clip-hole position that is closest to the base of the connector shell. 

Step	Action
3	As shown, pass the tie through the clip hole. Next, turn the tie and pass it through the head so that the USB cable can pass through the center of the tie loop. The clip is now attached to the USB cable.  **NOTE:** ● Check the direction of the head beforehand. Make sure the USB cable is through the center of the tie loop and that the tie can pass through the head. ● Tie provided can be substituted with optional PFXZCBCLUSA1, or other commercially available ties with 4.8 mm (0.19 in) width and 1.3 mm (0.05 in) thickness.
4	While pressing the grip on the clip, insert the cable from step 3 all the way into the USB host interface. Make sure that the clip tab is secured to the USB cable attached to the GP unit. 

Removing the USB Cable

Remove the USB cable while pushing the grip section of the clip.



USB Cable Clamp for USB (mini-B)

Introduction

When using a USB device, you can attach a USB cable clamp to the USB (mini-B) interface to prevent the USB cable from being disconnected.

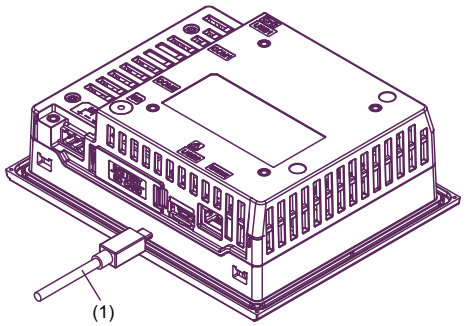
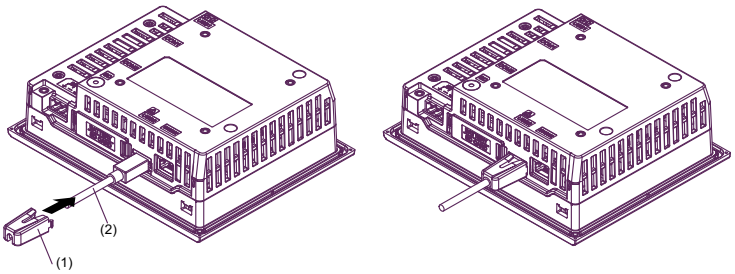
⚠ DANGER

POTENTIAL FOR EXPLOSION

- Verify that the power, input and output (I/O) wiring are in accordance with Class I, Division 2 wiring methods.
- Substitution of any component may impair suitability for Class I, Division 2.
- Confirm that the USB cable has been attached with the USB cable clamp before using the USB interface.
- Remove power before attaching or detaching any connectors to or from the unit.
- Use the USB (mini-B) interface for temporary connection only during maintenance and setup of the device.
- Do not use the USB (mini-B) interface in hazardous locations.

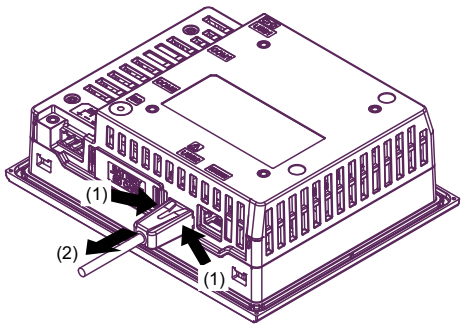
Failure to follow these instructions will result in death or serious injury.

Attaching the USB Cable Clamp

Step	Action
1	Insert the USB cable into the USB (mini-B) interface.  **1** USB cable
2	Attach the USB clamp to fix the USB cable in place. Insert the USB clamp into the USB (mini-B) interface.  **1** USB clamp **2** USB cable

Removing the USB Cable Clamp

Remove the USB clamp by pressing the tabs from the sides.



1 USB clamp
2 USB cable

Maintenance

6

Overview

This chapter explains how to maintain your GP unit.

What Is in This Chapter?

This chapter contains the following topics:

Regular Cleaning

Cleaning the GP unit

NOTICE
EQUIPMENT DAMAGE ● Power off the GP unit before cleaning it. ● Do not use hard or pointed objects to operate the touch panel. ● Do not use paint thinner, organic solvents, or a strong acid compound to clean the unit. **Failure to follow these instructions can result in equipment damage.**

When the GP unit gets dirty, soak a soft cloth in water with a neutral detergent, wring the cloth tightly and wipe the GP unit.

Replacing the Installation Gasket

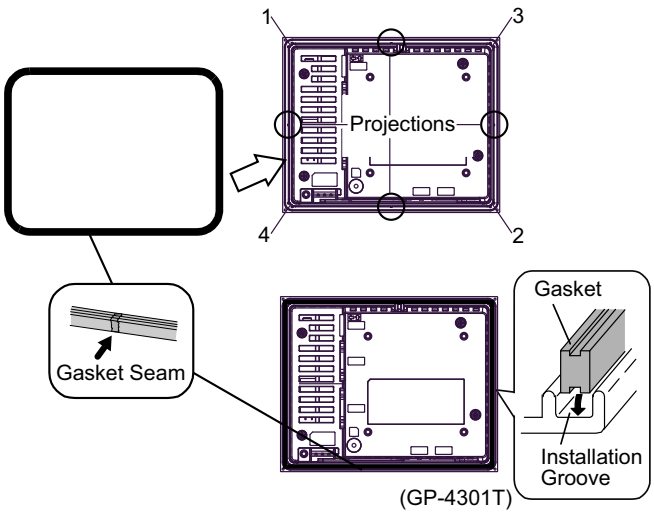
NOTE:
- If you are using the rear mount model, refer to Installation *(see page 229)*.

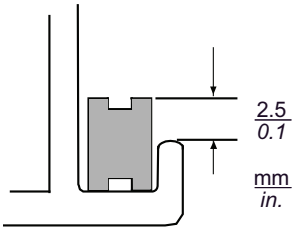
Overview

The installation gasket provides protection against dust and moisture.

NOTICE
GASKET AGING ● Inspect the gasket periodically as required by your operating environment to keep the initial IP level. ● Change the gasket at least once a year, or as soon as scratches or dirt become visible. **Failure to follow these instructions can result in equipment damage.**

Installing the Installation Gasket

Stage	Description
1	Place the GP unit on a flat, level surface, with the display face pointing down.
2	Remove the gasket from the GP unit.
3	Attach the new gasket to the GP unit. Position the gasket in the installation groove so that the gasket seam is at the bottom of the GP unit. First, insert the gasket into the 4 corners, in the order shown in the image below. Then, insert the rest of the gasket into the installation groove. **NOTE:** ● The center of the GP unit bezel's installation groove is ribbed. Make sure you insert the gasket all the way in without catching the ribbed sections. ● When using a tool to insert the gasket, make sure the tool does not catch the rubber gasket and cause a tear. 

Stage	Description
4	The upper surface of the gasket should protrude approximately 2.5 mm (0.1 in.) from the groove. Check the gasket is inserted correctly before installing the GP unit into a panel. 

The gasket must be inserted correctly into the groove for IP65F moisture resistance for the GP unit.

NOTICE

EQUIPMENT DAMAGE

- Since the gasket is flexible but not elastic, be careful not to stretch it unnecessarily.
- Make sure the gasket seam is not inserted into any of the GP unit corners.
- Insert the gasket in the installation groove

Failure to follow these instructions can result in equipment damage.

Periodic Check Points

Operation Environment

- Is the ambient air temperature within the allowable range? (*see Environmental Specifications*)
- Is the ambient air humidity within the specified range? (*see Environmental Specifications*)
- Is the operating atmosphere free of corrosive gasses?

When the GP unit is inside a panel, the ambient environment refers to the interior of the panel.

Electrical Specifications

- Is the input voltage appropriate? (*see Electrical Specifications*)

Related Items

- Are all power cords and cables connected properly? Are there any loose cables?
- Are all mounting brackets holding the unit securely?
- Are there scratches or traces of dirt on the installation gasket?

Unit Disposal

When disposing this product, dispose it in a manner appropriate to, and in accordance with, your country's industrial machinery disposal/recycling standards.

Replacing the Battery

Introduction

GP uses a battery for data backup of memory and the internal clock. If the battery is depleted, the backup data is lost.
For models equipped with a replaceable lithium battery (primary battery), a message will appear to indicate it is time to replace the battery one month before the battery is completely depleted.
For replacement batteries of primary batteries used in the GP unit, refer to "Maintenance Options" (page 34).

NOTE: The GP-4200 Series and GP-4301TW are equipped with a rechargeable lithium battery, there is no need to replace the battery.

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Follow the procedures step by step to replace the battery correctly and safely.
- Before replacing the battery, turn OFF the GP unit's power.

Failure to follow these instructions will result in death or serious injury.

⚠ DANGER

EXPLOSION, FIRE, OR CHEMICAL HAZARD

- Use this product's replacement battery only.
- Do not cause a short circuit.
- Recycle or properly dispose of used batteries.

Failure to follow these instructions will result in death or serious injury.

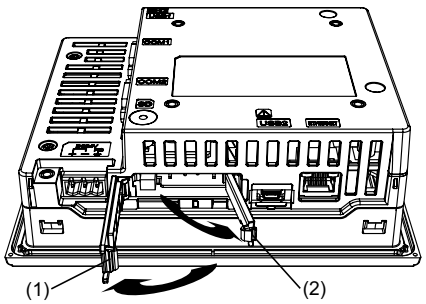
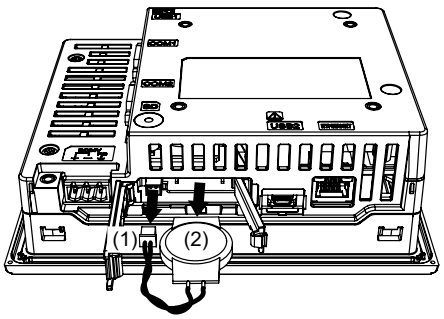
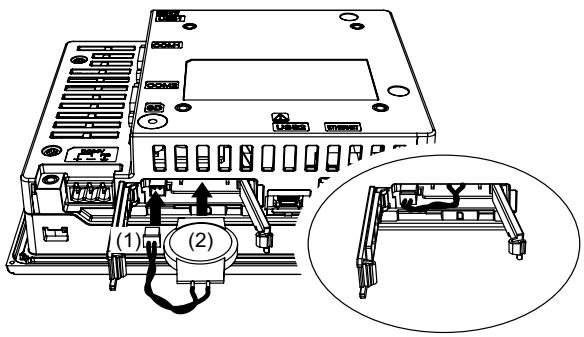
NOTICE

LOSS OF DATA

- Replace the battery within one month after the message appears.
- Complete replacing the battery within ten minutes of shutting down the GP unit.
- Replace the battery regularly every five years after you purchase the GP unit.
- Allow only qualified personnel to change the battery.

Failure to follow these instructions can result in equipment damage.

NOTE: The battery replacement time (within a month after the message appears) is only a guideline.

Step	Action
1	Disconnect the power supply from the GP unit.
2	Touch the housing or ground connection (not the power supply) to discharge any electrostatic charge from your body.
3	Open the SD Card Interface Cover by pressing its tab. Next, open the Replacement Battery Insertion Cover by pressing its tab.  **1** SD Card Interface Cover / Tab **2** Replacement Battery Insertion Cover / Tab
4	Remove the primary battery and connector.  **1** Connector **2** Primary battery
5	Insert the replacement battery and connector all the way. Either side of the battery can face top or bottom.  **1** Connector **2** Replacement battery

Step	Action
6	First close the replacement battery cover, then close the SD Card Interface Cover. **NOTE:** Make sure the cables are inserted completely inside the enclosure. Otherwise, you can damage the cables when you close the cover.
7	Reconnect the power supply to the GP unit.

Rear Mount Model

7

Overview

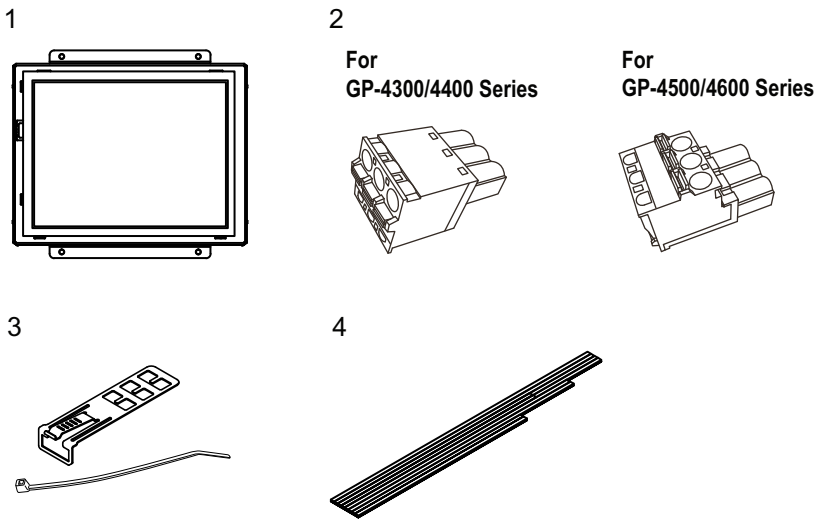
This chapter presents the Rear Mount Model.

What Is in This Chapter?

This chapter contains the following sections.

7.1 Package Contents

Verify all items listed here are present in your package:



1 GP unit: 1
2 DC power supply connector: 1 *1
3 USB cable clamp Type A: 1 set (1 clip and 1 tie)
4 Installation gasket: 1 set (8 per set)
5 Installation fasteners: 2 per set (attached to the top and bottom surfaces of the GP unit)
6 Installation screws: 4 per set (attached to the top and bottom surfaces of the GP unit)
7 GP4000 Series Rear Mount Model Installation Guide: 1
8 Warning/Caution Information: 1

This unit has been carefully packed with special attention to quality. However, should you find anything damaged or missing, please contact your local distributor.

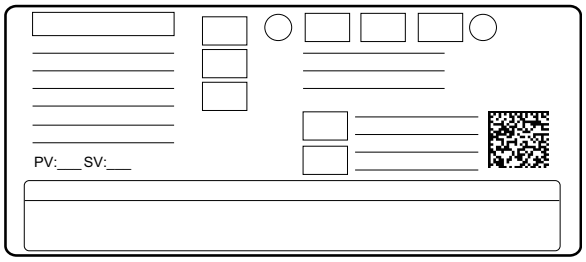
*1 You can use the DC power supply connector for GP-4300/4400 series to supply power to GP-4500/4600 series. However the reverse is not possible. You cannot use the DC power supply connector for GP-4500/4600 series on GP-4300/4400 series.

Revision

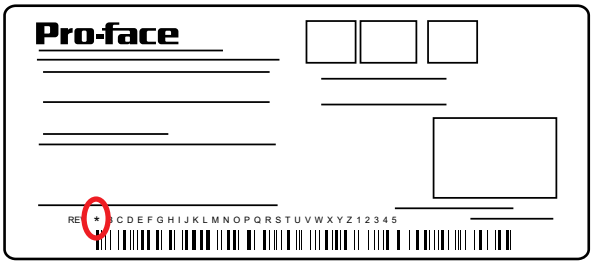
You can identify the product version (PV), revision level (RL), and the software version (SV) from the product label.

Note:

- Depending on the model, the product label may not be marked RL.



Also, depending on the model, the product revision (REV) may be indicated by an alphabet or a combination of an alphabet and numbers.
The following diagram is a representation of Revision A. The product label indicates Revision A with an asterisk (*) in the "A" position.



7.2 Certifications and Standards

Introduction

Schneider Electric submitted this product for independent testing and qualification by third-party listing agencies. These agencies have certified this product as meeting the following standards.

For information on Standards and Regulations, such as certified models and certificates, see the following.
https://www.pro-face.com/trans/en/manual/1002.html

Agency Certifications

The GP unit is manufactured in accordance with:
- UL 508 and CSA C22.2 n°142 for Industrial Control Equipment

Note:
- For use in Pollution Degree 2 environments.
- For use on a flat surface of a Type 1 Enclosure.
- 24 Vdc input panel must be used with a Class 2 power supply.

Hazardous Substances

The GP is a device for use in factory systems. When using the GP in a system, the system should comply with the following standards in regards to the installation environment and handling:
- WEEE, Directive 2012/19/EU
- RoHS, Directive 2011/65/EU and 2015/863/EU
- RoHS China, Standard (GB/T 26572)

CE Markings

This product conforms to the necessary requirements of the following Directives for applying the CE label:
- 2014/30/EU EMC Directive

This conformity is based on compliance with EN 61000-6-4, EN 61000-6-2

⚠ DANGER

POTENTIAL FOR EXPLOSION

- Verify that the power, input and output (I/O) wiring are in accordance with Class I, Division 2 wiring methods.
- Substitution of any component may impair suitability for Class I, Division 2.
- Do not connect or disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
- Securely lock externally connected units and each interface before turning on the power supply.
- Do not use, connect, or disconnect USB cable unless area is known to be non-hazardous.
- Do not disconnect while circuit is live or unless the area is known to be free of ignitable concentrations.
- Potential electrostatic charging hazard: wipe the front panel of the terminal with a damp cloth before turning ON.

Failure to follow these instructions will result in death or serious injury.

KC Markings

사용자안내문

기 종 별	사 용 자 안 내 문
A급 기기 (업무용 방송통신기자재)	이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

7.3 Option Items / Maintenance Options

This section explains the option items and maintenance options dedicated for use with the rear mount model. Read this section together with chapter 2, "Accessories" *(see page 30)*.

Products may change or be discontinued without notice. Please check our website for the latest information.

https://www.pro-face.com

Option Items

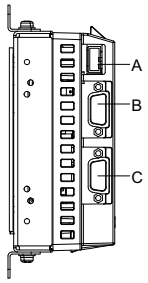
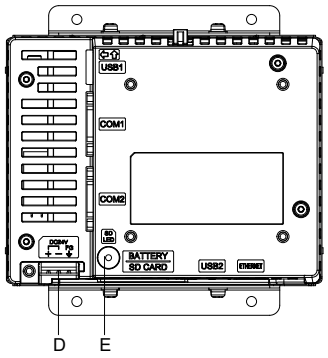
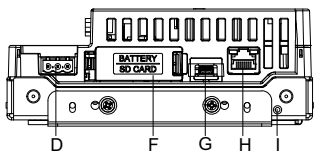
Product Name	Model Number	Corresponding GP unit	Description
12.1-inch Overlay	PFXZGPFSR12W1	PFXGP4601TADR	Overlay (Front Sheet) for Flat Mount of GP4000 Series Rear Mount Model (Color: White, 1 piece)
10.4-inch Overlay	PFXZGPFSR10W1	PFXGP4501TADR	
7.5-inch Overlay	PFXZGPFSR7W1	PFXGP4401TADR	
5.7-inch Overlay	PFXZGPFSR6W1	PFXGP4301TADR	

Maintenance Options

Product Name	Model Number	Corresponding GP unit	Description
12.1-inch & 10.4-inch Rear mount Installation Fastener	PFXZGPAFRL1	PFXGP4601TADR PFXGP4501TADR	Used to install the GP4000 Series Rear Mount model into a solid panel (2 pieces/ set). Includes the installation screws (4 pieces/set).
7.5-inch & 5.7-inch Rear mount Installation Fastener	PFXZGPAFRM1	PFXGP4401TADR PFXGP4301TADR	
Rear mount Installation Gasket	PFXZGPWGR1	PFXGP4601TADR PFXGP4501TADR PFXGP4401TADR PFXGP4301TADR	GP4000 Series Rear Mount model Installation Gasket (1 piece)

7.4 Parts Identification and Functions

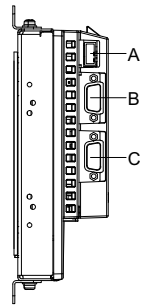
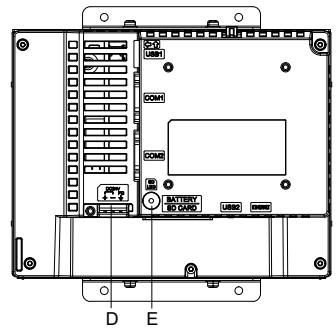
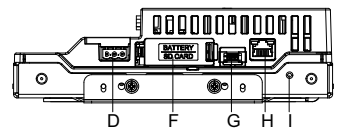
PFXGP4301TADR

Side	PFXGP4301TADR
Right	
Rear	
Bottom	

Part	Name	Description
A	USB (Type A) Interface	Conforms to USB2.0 (Type A) x 1. Power supply voltage: 5Vdc+/-5%. Output Current: 500 mA or less. Maximum communication distance: 5 m (16.4 ft).
B	Serial Interface (COM1)	RS-232C Serial Interface. Connector: D-Sub 9 pin (plug) x 1.
C	Serial Interface (COM2)	RS-422/485 Serial Interface. Connector: D-Sub 9 pin (plug) x 1.
D	Power Plug Connector	-
E	SD Card Access LED	This lamp lights up when SD Card is inserted. *(see page 190)* **NOTE:** Do not remove or insert the SD Card when the LED lamp is on. Doing so may damage data on the SD Card.

Part	Name	Description
F	SD Card Interface Cover/Replacement Battery Insertion Cover	For information on how to open the cover, and insert or remove the SD Card, refer to SD Card Insertion / Removal *(see page 160)*. For information on how to open the cover and replace the battery, refer to Replacing the Primary Battery *(see page 176)*.
G	USB (mini-B) Interface	Conforms to USB2.0 (mini-B) x 1. Communication Distance: 5 m (16.4 ft) or less.
H	Ethernet Interface	Ethernet transmission interface (10BASE-T/100BASE-TX) Connector: Modular jack (RJ-45) x 1. *(see page 190)*
I	Maintenance LED	*(see page 190)*

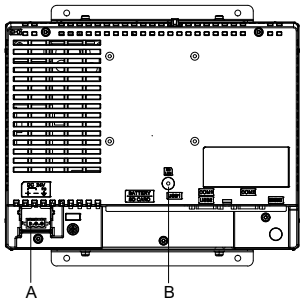
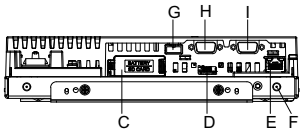
PFXGP4401TADR

Side	PFXGP4401TADR
Right	
Rear	
Bottom	

Part	Name	Description
A	USB (Type A) Interface	Conforms to USB2.0 (Type A) x 1. Power supply voltage: 5Vdc+/-5%. Output Current: 500 mA or less. Maximum communication distance: 5 m (16.4 ft).
B	Serial Interface (COM1)	RS-232C Serial Interface. Connector: D-Sub 9 pin (plug) x 1.

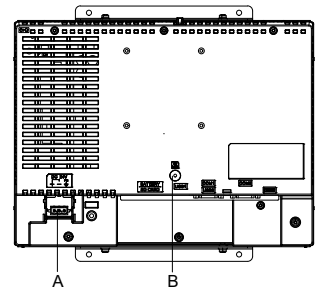
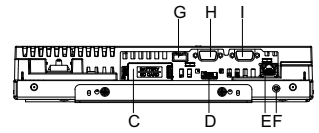
Part	Name	Description
C	Serial Interface (COM2)	RS-422/485 Serial Interface. Connector: D-Sub 9 pin (plug) x 1.
D	Power Plug Connector	-
E	SD Card Access LED	This lamp lights up when SD Card is inserted. *(see page 190)* **NOTE:** Do not remove or insert the SD Card when the LED lamp is on. Doing so may damage data on the SD Card.
F	SD Card Interface Cover/Replacement Battery Insertion Cover	For information on how to open the cover, and insert or remove the SD Card, refer to SD Card Insertion / Removal *(see page 160)*. For information on how to open the cover and replace the battery, refer to Replacing the Primary Battery *(see page 176)*.
G	USB (mini-B) Interface	Conforms to USB2.0 (mini-B) x 1. Communication Distance: 5 m (16.4 ft) or less.
H	Ethernet Interface	Ethernet transmission interface (10BASE-T/100BASE-TX) Connector: Modular jack (RJ-45) x 1. *(see page 190)*
I	Maintenance LED	*(see page 190)*

PFXGP4501TADR

Side	PFXGP4501TADR
Rear	
Bottom	

Part	Name	Description
A	Power Plug Connector	-
B	SD Card Access LED	This lamp lights up when SD Card is inserted. *(see page 190)* **NOTE:** Do not remove or insert the SD Card when the LED lamp is on. Doing so may damage data on the SD Card.
C	SD Card Interface Cover/Replacement Battery Insertion Cover	For information on how to open the cover, and insert or remove the SD Card, refer to SD Card Insertion/Removal *(see page 160)*. For information on how to open the cover and replace the battery, refer to Replacing the Primary Battery *(see page 176)*.
D	USB (mini-B) Interface	Conforms to USB2.0 (mini-B) x 1. Communication Distance: 5 m (16.4 ft) or less.
E	Ethernet Interface	Ethernet transmission interface (10BASE-T/100BASE-TX) Connector: Modular jack (RJ-45) x 1. *(see page 190)*
F	Maintenance LED	*(see page 190)*
G	USB (Type A) Interface	Conforms to USB2.0 (Type A) x 1. Power supply voltage: 5Vdc+/-5%. Output Current: 500 mA or less. Maximum communication distance: 5 m (16.4 ft).
H	Serial Interface (COM1)	RS-232C Serial Interface. Connector: D-Sub 9 pin (plug) x 1.
I	Serial Interface (COM2)	RS-422/485 Serial Interface. Connector: D-Sub 9 pin (plug) x 1.

PFXGP4601TADR

Side	PFXGP4601TADR
Rear	
Bottom	

Part	Name	Description
A	Power Plug Connector	-
B	SD Card Access LED	This lamp lights up when SD Card is inserted. *(see page 190)* **NOTE:** Do not remove or insert the SD Card when the LED lamp is on. Doing so may damage data on the SD Card.
C	SD Card Interface Cover/Replacement Battery Insertion Cover	For information on how to open the cover, and insert or remove the SD Card, refer to SD Card Insertion/Removal *(see page 160)*. For information on how to open the cover and replace the battery, refer to Replacing the Primary Battery *(see page 176)*.
D	USB (mini-B) Interface	Conforms to USB2.0 (mini-B) x 1. Communication Distance: 5 m (16.4 ft) or less.
E	Ethernet Interface	Ethernet transmission interface (10BASE-T/100BASE-TX) Connector: Modular jack (RJ-45) x 1. *(see page 190)*
F	Maintenance LED	*(see page 190)*
G	USB (Type A) Interface	Conforms to USB2.0 (Type A) x 1. Power supply voltage: 5Vdc+/-5%. Output Current: 500 mA or less. Maximum communication distance: 5 m (16.4 ft).
H	Serial Interface (COM1)	RS-232C Serial Interface. Connector: D-Sub 9 pin (plug) x 1.
I	Serial Interface (COM2)	RS-422/485 Serial Interface. Connector: D-Sub 9 pin (plug) x 1.

LED Indications

(1)Maintenance LED

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

You cannot check the maintenance LED from the front of the GP unit.

- Design software by considering the possibility that touch operations may be performed while an error has occurred.
- To prevent malfunctions caused by touch operations, design software so that switches and other controls arranged on the screen do not function when you want the screen to be off even if these controls are accessed with touch operations. *1

Failure to follow these instructions can result in death, serious injury, or equipment damage.

1 For details on the Standby Mode function and on the operations to use in the system data area to turn the screen off, read the "GP-Pro EX Reference Manual".

Color	Indicator	Operation Mode (Drawing)	Logic execution mode (when logic is enabled)
Green	ON	Offline	–
		In operation	RUN
	Flashing	In operation	STOP
Orange	Flashing	Software starting up.	
Red	ON	Power is turned ON.	
	Flashing	In operation	Major Error
LED fade (Green)	ON	The GP unit's "Backlight Control" is set to Standby Mode and the screen has gone blank.	
-	OFF	Power is turned OFF.	

(2)SD Card Access LED

Color	Indicator	Description
Green (Active)	ON	The SD Card is inserted.
	OFF	The SD Card is not inserted or detected.

(3)Ethernet LED

	Color	Indicator	Description
	Green (Active)	Flashing	Data transmission is occurring.
		OFF	No data transmission.
	Green (Link)	ON	Data transmission is available in 10BASE-T/100BASE-TX.
		OFF	No connection or error.

7.5 Structural Specifications

	PFXGP4301TADR	PFXGP4401TADR	PFXGP4501TADR	PFXGP4601TADR
Grounding	Functional grounding:Grounding resistance of 100Ω or less, 2mm^2 (AWG 14) or thicker wire, or your country's applicable standard. (Same for FG and SG terminals)			
Cooling Method	Natural air circulation			
Protection structure	IP67F (1)(2)			
External dimensions (not attached installation fasteners)	W155.6 x H123.4 x D59.7 mm (W6.13 x H4.86 x D2.35 in.)	W204 x H159.4 x D60.4 mm (W8.03 x H6.28 x D2.38 in.)	W259.7 x H201.5 x D57.6mm (W10.22 x H7.93 x D2.27 in.)	W302 x H228 x D56.6mm (W11.89 x H8.98 x D2.23 in.)
Panel cut dimensions(3)(4)(5)	depends on the installation method. Refer to "Panel Cut Dimensions" *(page. 232)*			
Weight approx.	≤ 1 kg (2.2 lb.) (including the installation fasteners)	≤ 1.4 kg (3.1 lb.) (including the installation fasteners)	≤ 2.3 kg (5.1 lb.) (including the installation fasteners)	≤ 2.8 kg (6.2 lb.) (including the installation fasteners)

NOTE: (1) Equivalent to IP20 in a standard installation. In a flat installation, protection structure equivalent to IP67F*1 can be maintained by affixing an overlay (sold separately) on the GP screen and its surrounding area. Use the overlay in combination with the protection structure of the panel or resin plate. In a flat installation, if you do not use an overlay, protection is equivalent to IP20.

Use the optional overlay. Use one of the following models.

- PFXZGPFSR6W1 (for the PFXGP4301TADR)
- PFXZGPFSR7W1 (for the PFXGP4401TADR)
- PFXZGPFSR10W1 (for the PFXGP4501TADR)
- PFXZGPFSR12W1 (for the PFXGP4601TADR)

*1 This is a protective structure for the front face of the Overlay and that has been correctly affixed to a panel or to a resin sheet. The performance of the sheet according to the material properties of the overlay in combination with a panel or a resin sheet has been confirmed under appropriate test conditions, but this does not guarantee that the protective structure enables the Overlay to be used in any and all environments. In certain situations, the sheet can be damaged. This can occur in areas where either vaporized oils are present, or where low viscosity cutting oils are allowed to adhere to the Overlay for long periods of time. If the Overlay becomes peeled off, these conditions can lead to the ingress of oil into the GP unit and separate protection measures are suggested.

Also, if non-approved oils are present, it may cause deformation or corrosion of the front panel's plastic cover. Therefore, prior to installing the GP unit be sure to confirm the type of conditions that will be present in the GP unit's operating environment. If the Rear Mount Installation Gasket is used for a long period of time, or if the unit and its gasket are removed from the panel, the original level of the protection cannot be guaranteed. To maintain the original protection level, be sure to replace the Rear Mount Installation Gasket regularly.

(2) Affix the Overlay to the front of the GP unit. Use a material with the material properties of one of the following objects for the resin board or paints.

- Polybutylene terepthalate resin
- A mixture of polybutylene terepthalate resin and polycarbonate resin
- A mixture of acrylonitrile butadiene styrene resin and polybutylene terepthalate resin
- Stainless steel
- Polyester paint
- Acrylic paint

(3) As for dimensional tolerance everything +0.5/-0 mm (+0.02/-0 in.) and R in angle are below R1 (R0.04in.).

(4) Even if panel thickness is within recommend range for "Panel Cut Dimensions", the panel could warp, depending on panel's material, size, and installation location of GP unit or other devices. To prevent panel warpage, the installation surface may need to be strengthened.

(5) For the details about the installation method, refer to Installation (see page 229).

NOTICE

EQUIPMENT DAMAGE

Ensure that the panel is not in permanent and direct contact with oils.

Failure to follow these instructions can result in equipment damage.

NOTICE

STORAGE AND OPERATION OUTSIDE OF SPECIFICATIONS

- Store the panel in areas where temperatures are within the panel’s specifications.
- Do not restrict or block the panel’s rear-face ventilation slots.

Failure to follow these instructions can result in equipment damage.

NOTICE

GASKET AGING

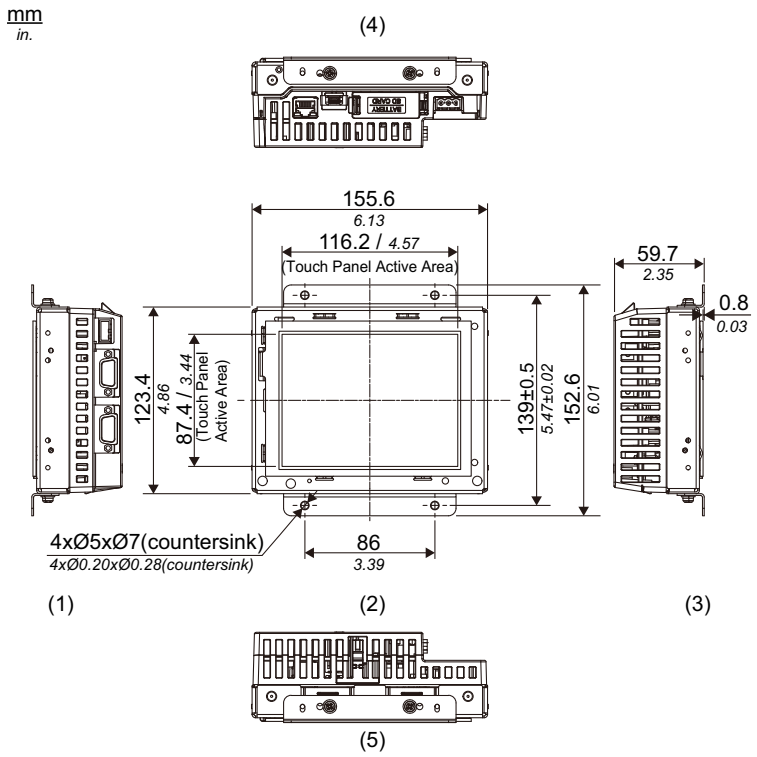
- Inspect the gasket periodically as required by your operating environment not to damage the GP unit.
- Change the gasket at least once a year, or as soon as scratches or dirt become visible.

Failure to follow these instructions can result in equipment damage.

7.6 Dimensions

<Panel Type/ Standard Mount : PFXGP4301TADR>

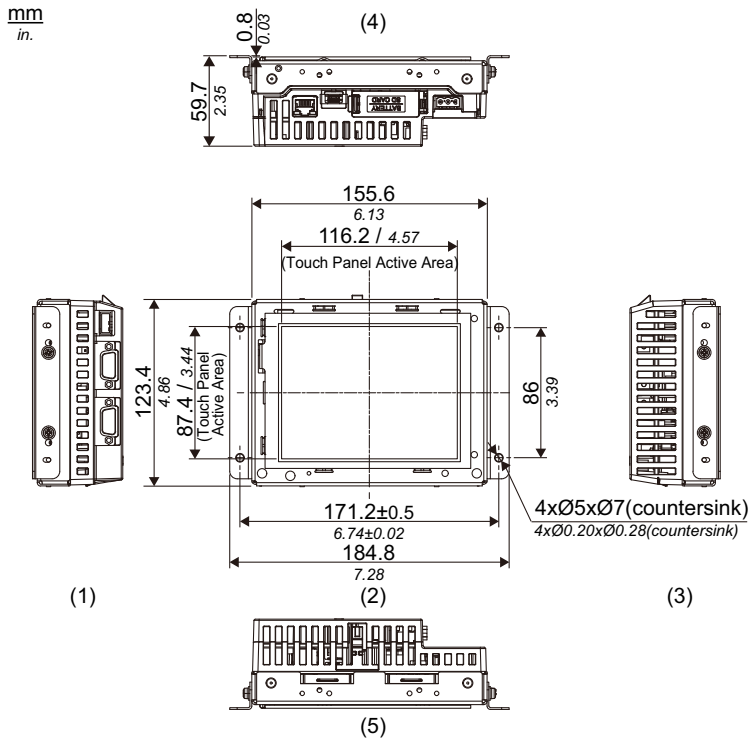
Installation with Installation Fasteners attached to the top and bottom surfaces of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Standard Mount : PFXGP4301TADR>

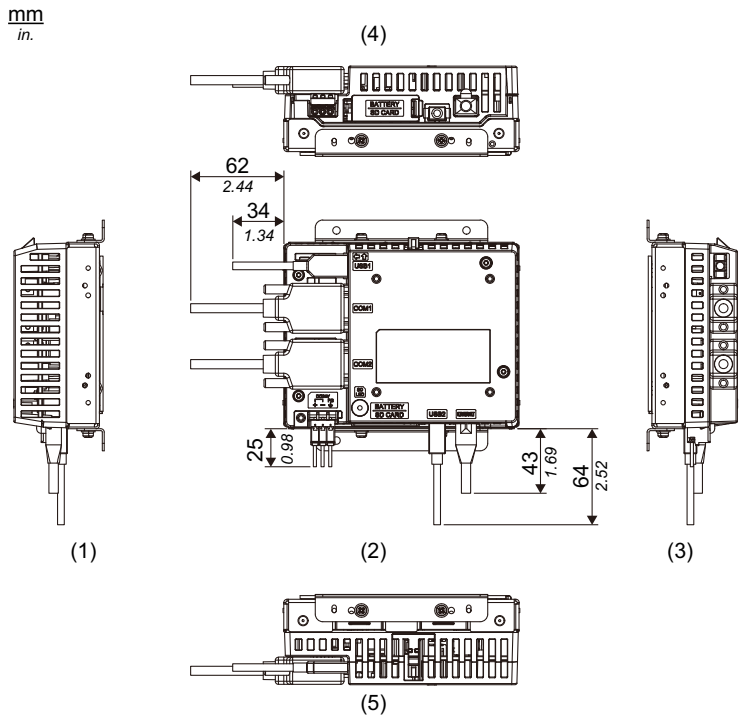
Installation with Installation Fasteners attached to the sides of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Standard Mount: PFXGP4301TADR>

Dimensions with Cables

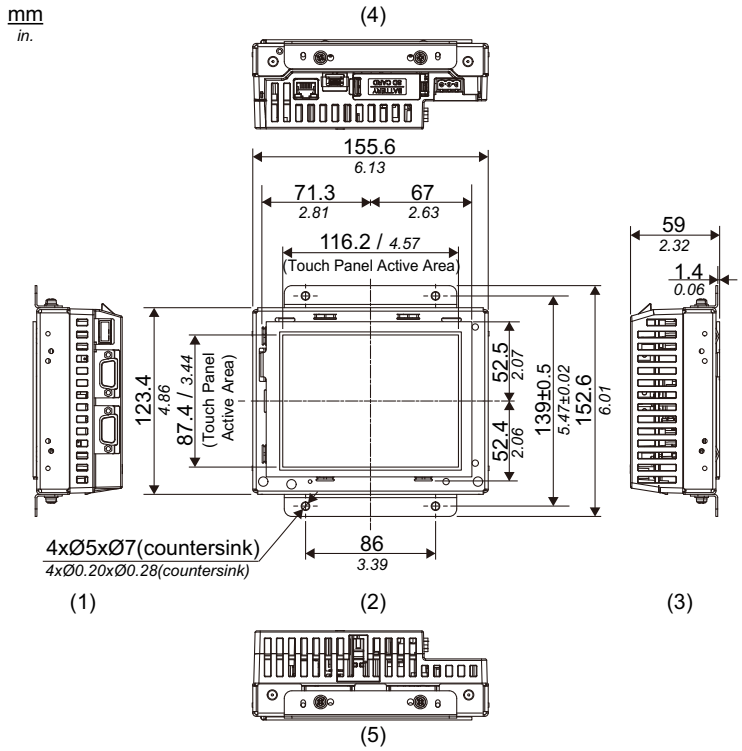


1 Right Side
2 Rear
3 Left Side
4 Bottom
5 Top

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

<Panel Type/ Flat Mount: PFXGP4301TADR>

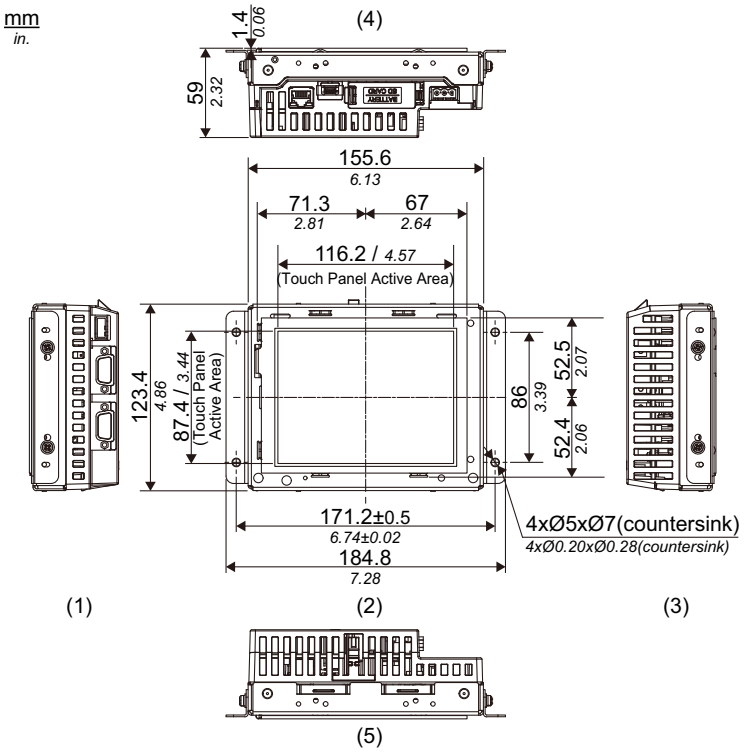
Installation with Installation Fasteners attached to the top and bottom surfaces of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Flat Mount: PFXGP4301TADR>

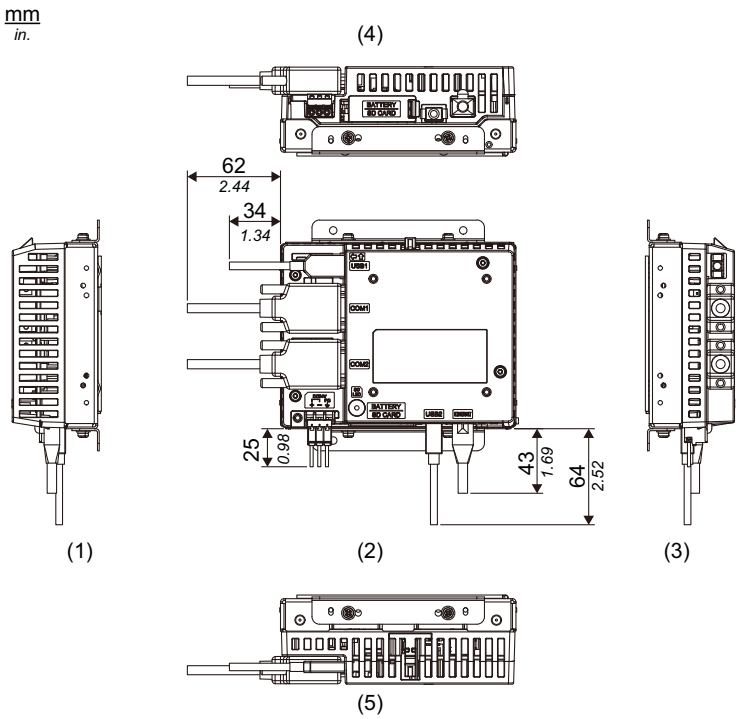
Installation with Installation Fasteners attached to the sides of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Flat Mount: PFXGP4301TADR>

Dimensions with Cables

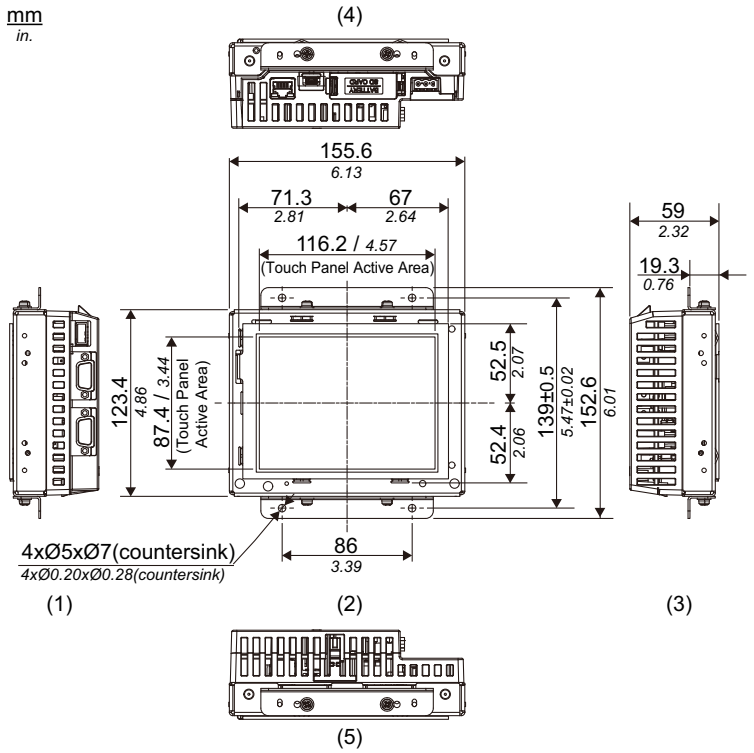


1 Right Side
2 Rear
3 Left Side
4 Bottom
5 Top

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

<Resin BossType/ Standard Mount and Flat Mount: PFXGP4301TADR>

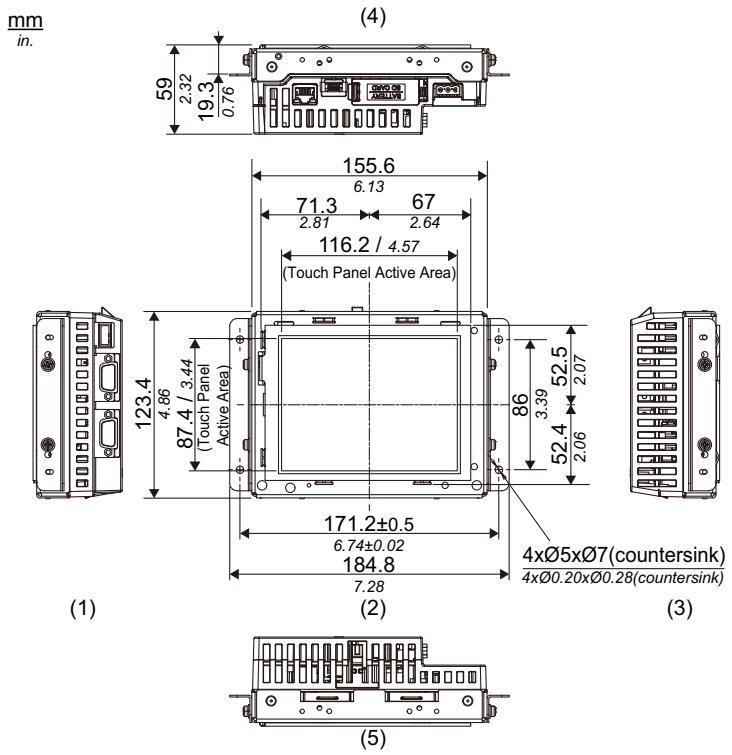
Installation with Installation Fasteners attached to the top and bottom surfaces of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Resin Boss Type/ Standard Mount and Flat Mount: PFXGP4301TADR>

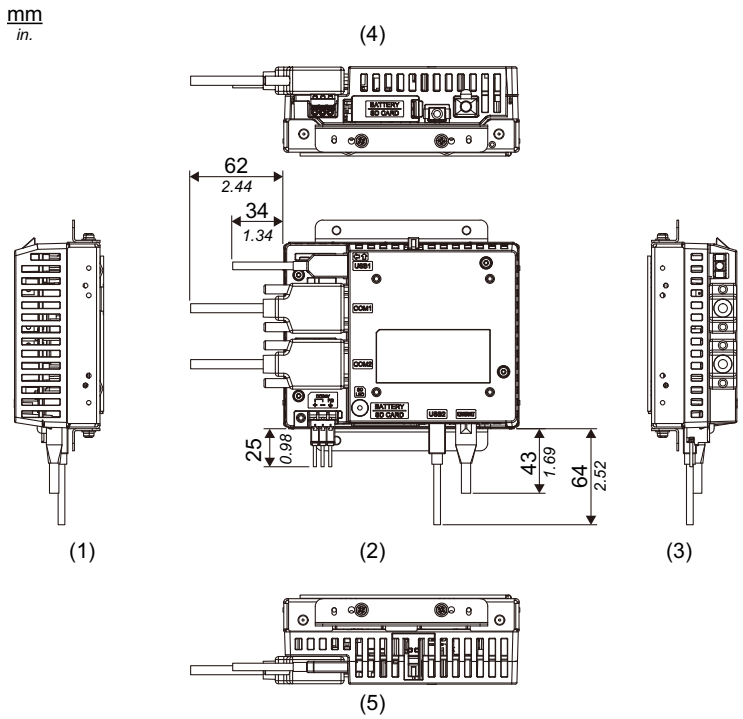
Installation with Installation Fasteners attached to the sides of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Resin Boss Type/ Standard Mount and Flat Mount: PFXGP4301TADR>

Dimensions with Cables

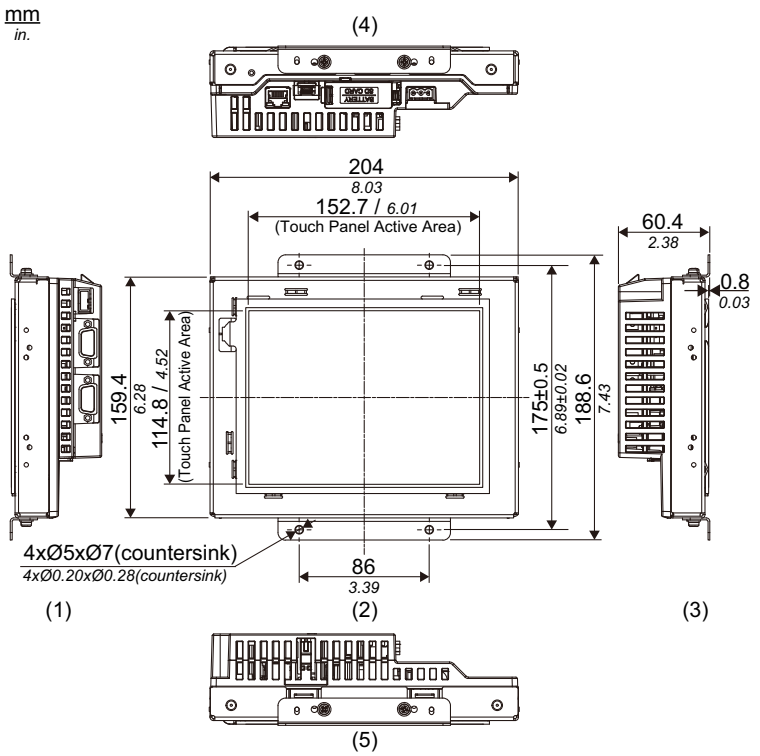


1 Right Side
2 Rear
3 Left Side
4 Bottom
5 Top

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

<Panel Type/ Standard Mount: PFXGP4401TADR>

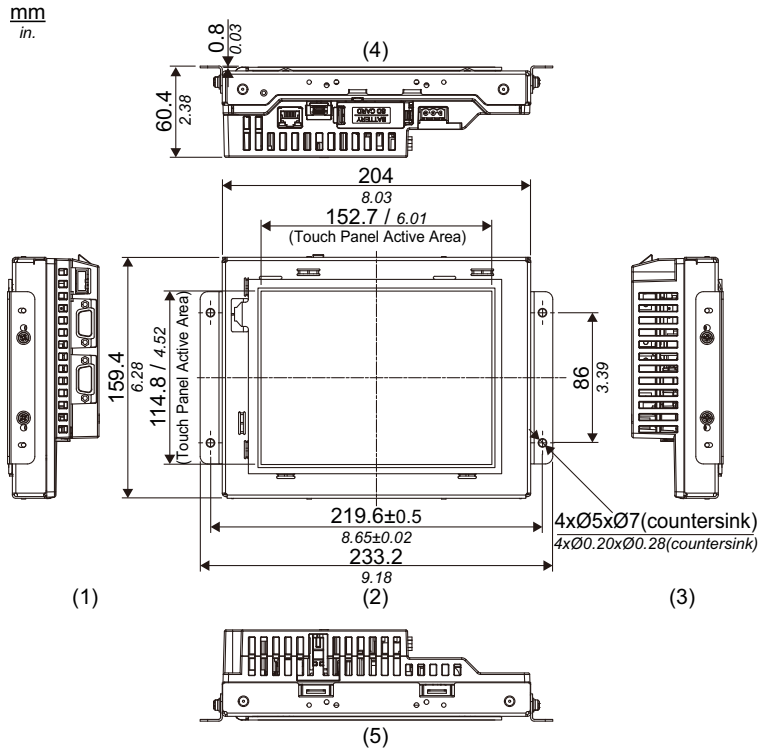
Installation with Installation Fasteners attached to the top and bottom surfaces of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Standard Mount: PFXGP4401TADR>

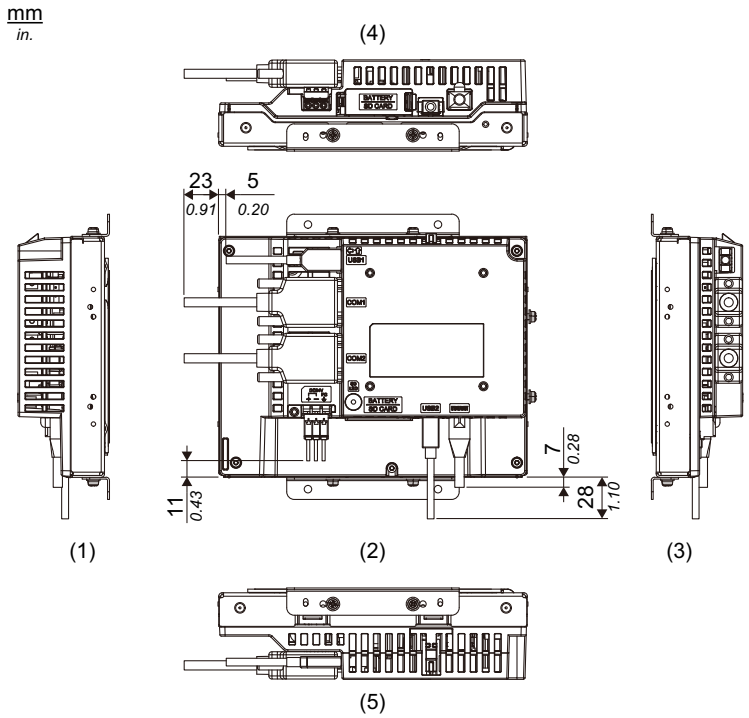
Installation with Installation Fasteners attached to the sides of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Standard Mount: PFXGP4401TADR>

Dimensions with Cables

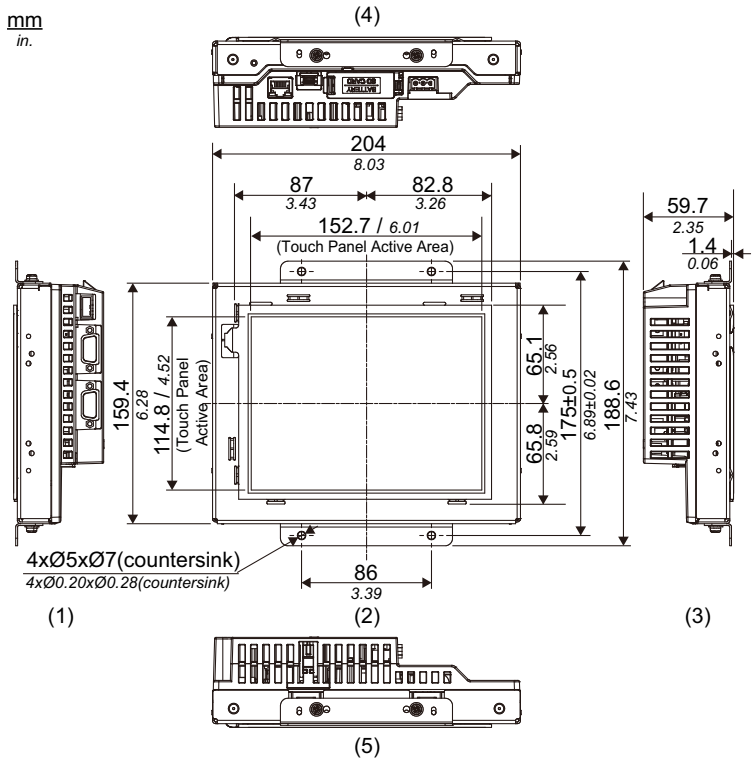


1 Right Side
2 Rear
3 Left Side
4 Bottom
5 Top

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

<Panel Type/ Flat Mount: PFXGP4401TADR>

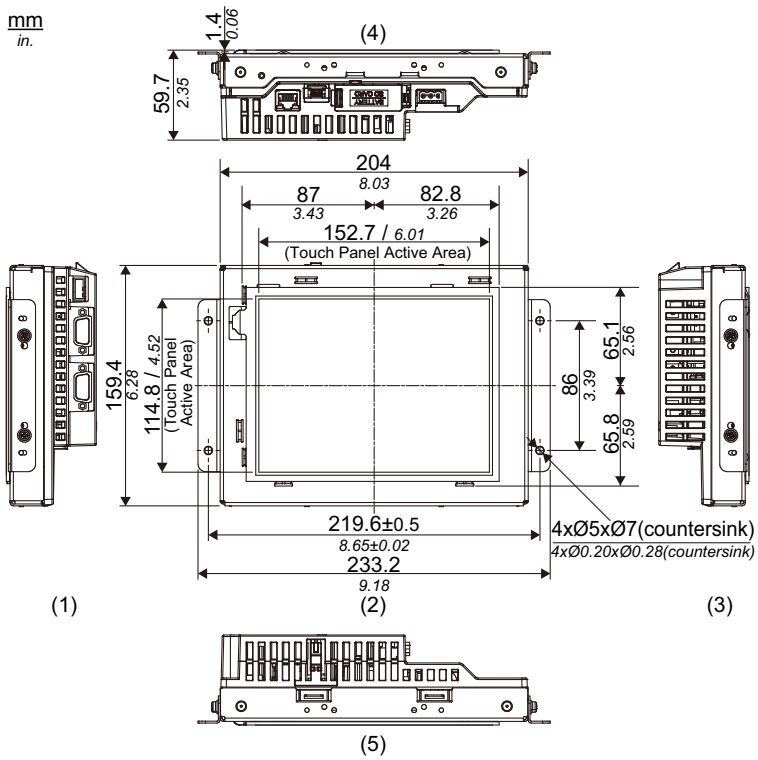
Installation with Installation Fasteners attached to the top and bottom surfaces of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Flat Mount: PFXGP4401TADR>

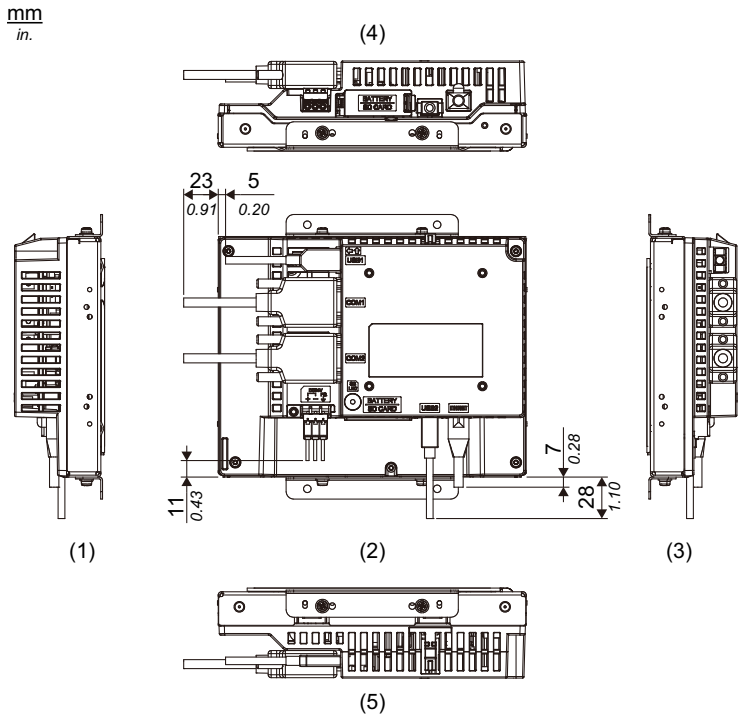
Installation with Installation Fasteners attached to the sides of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Flat Mount: PFXGP4401TADR>

Dimensions with Cables

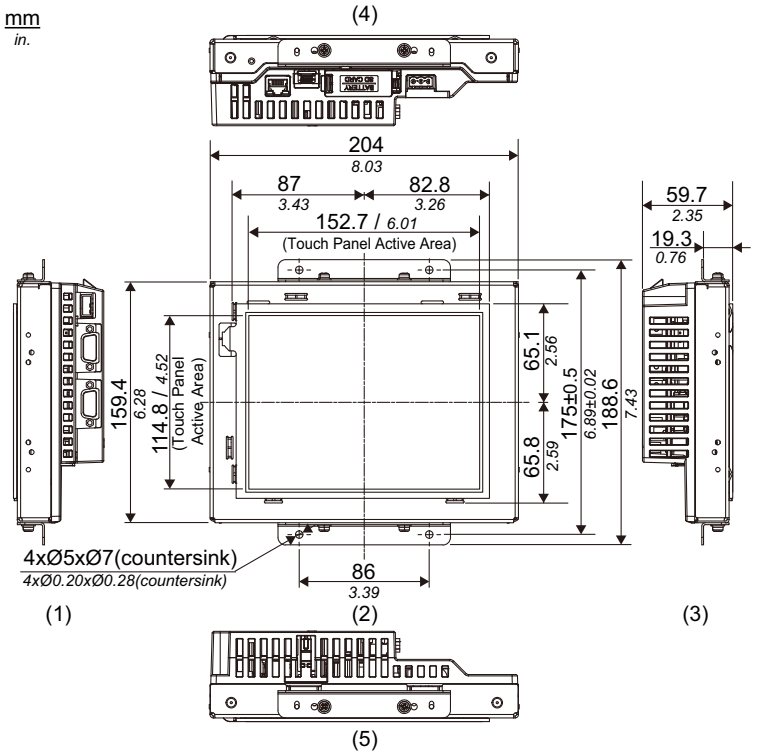


1 Right Side
2 Rear
3 Left Side
4 Bottom
5 Top

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

<Resin BossType/ Standard Mount and Flat Mount: PFXGP4401TADR>

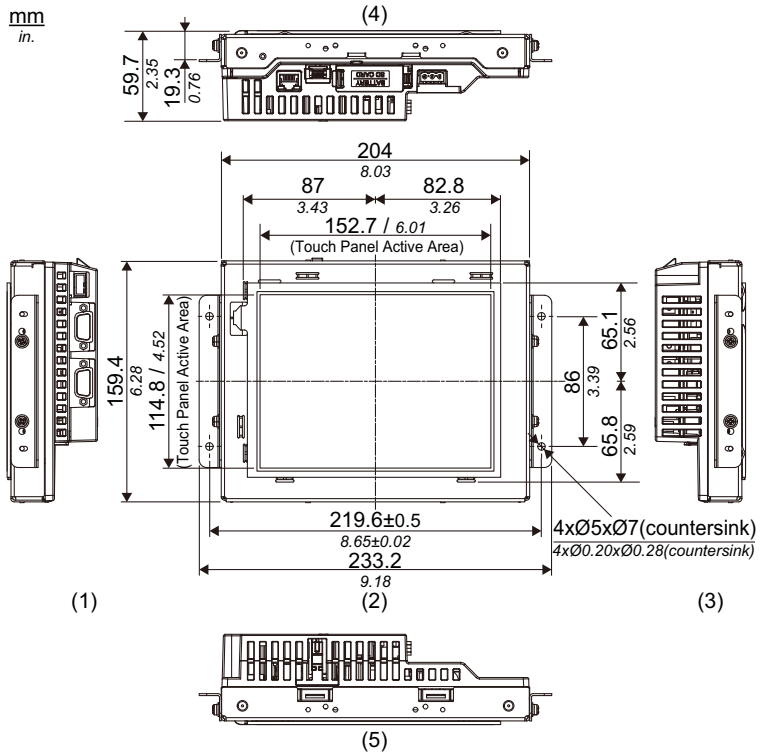
Installation with Installation Fasteners attached to the top and bottom surfaces of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Resin Boss Type/ Standard Mount and Flat Mount: PFXGP4401TADR>

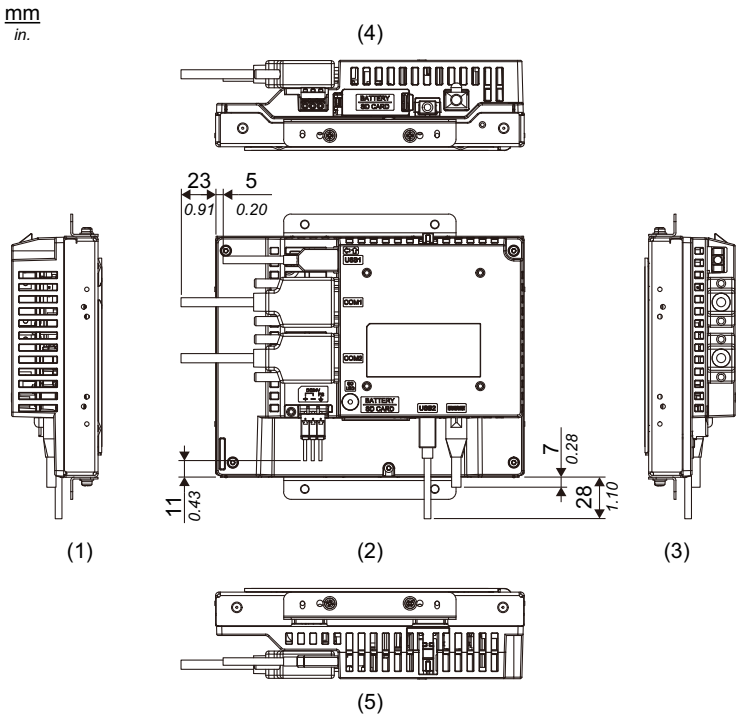
Installation with Installation Fasteners attached to the sides of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Resin Boss Type/ Standard Mount and Flat Mount: PFXGP4401TADR>

Dimensions with Cables

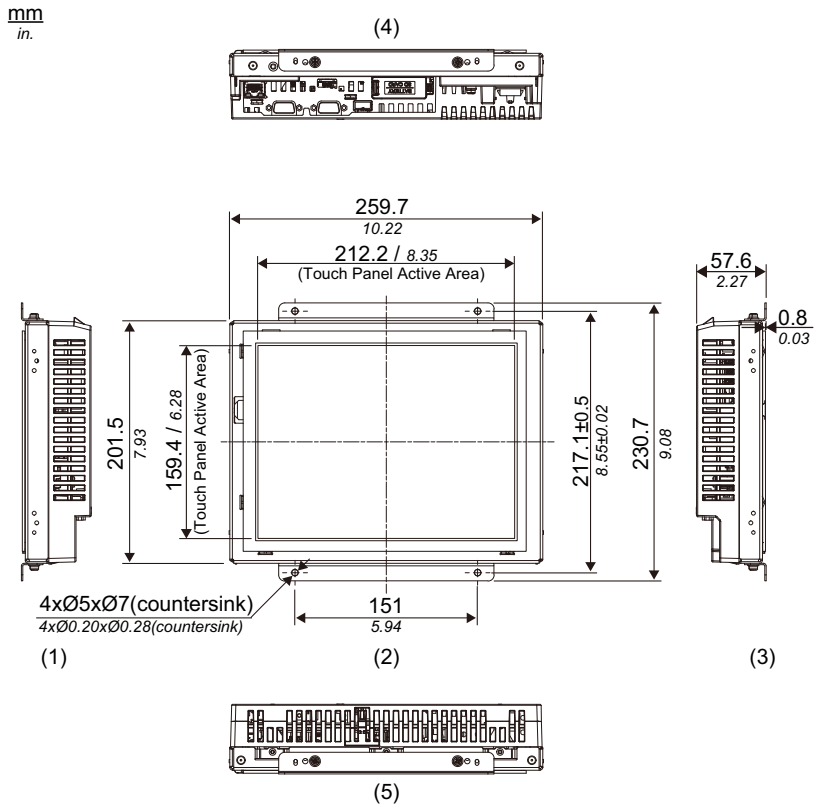


1 Right Side
2 Rear
3 Left Side
4 Bottom
5 Top

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

<Panel Type/ Standard Mount: PFXGP4501TADR>

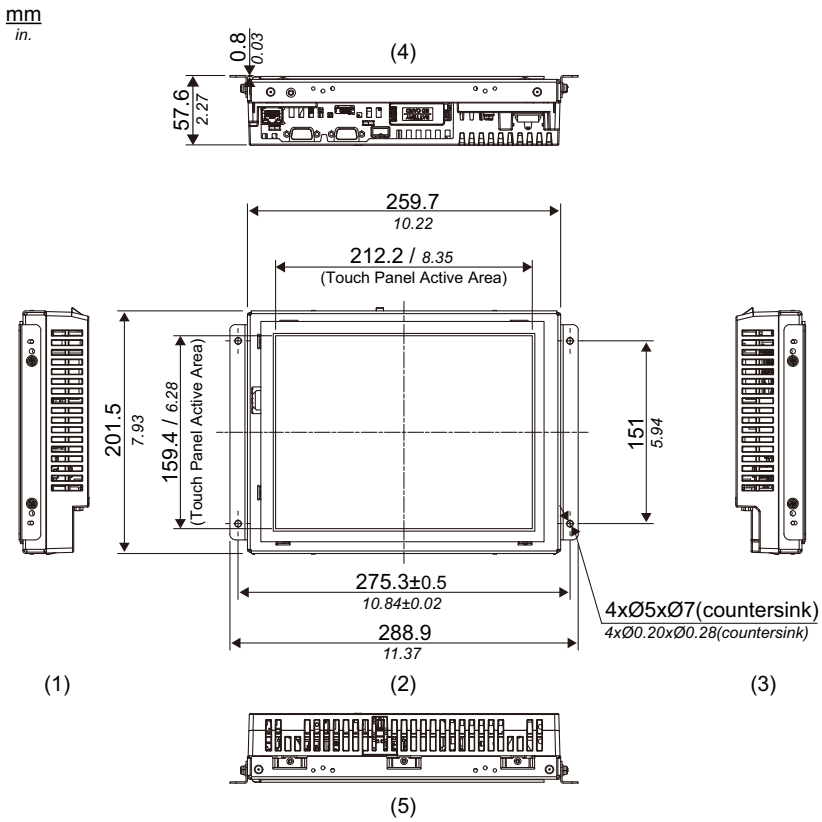
Installation with Installation Fasteners attached to the top and bottom surfaces of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Standard Mount: PFXGP4501TADR>

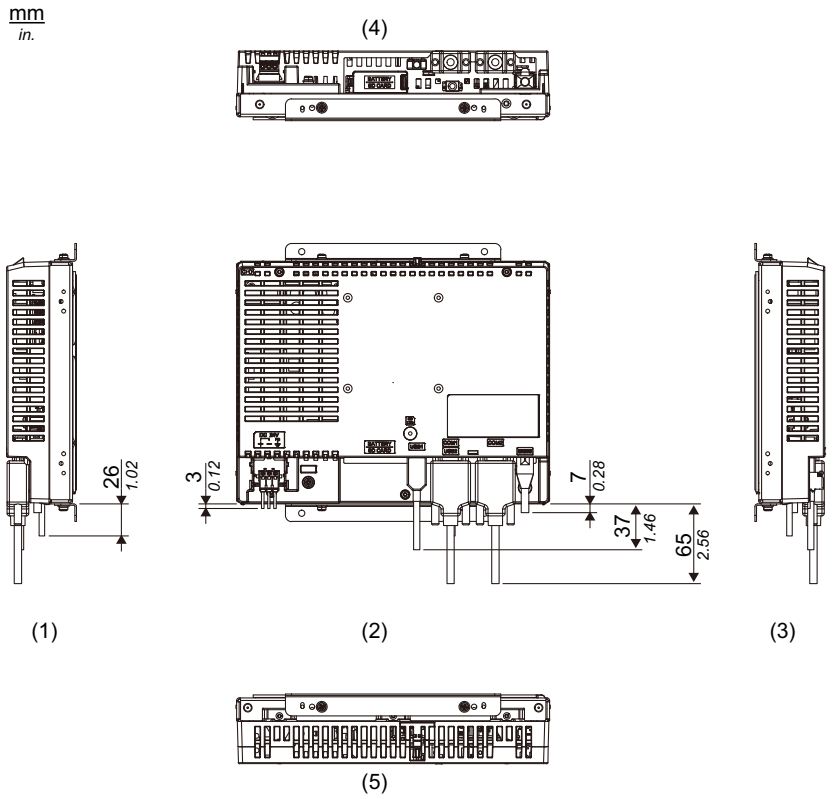
Installation with Installation Fasteners attached to the sides of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Standard Mount: PFXGP4501TADR>

Dimensions with Cables

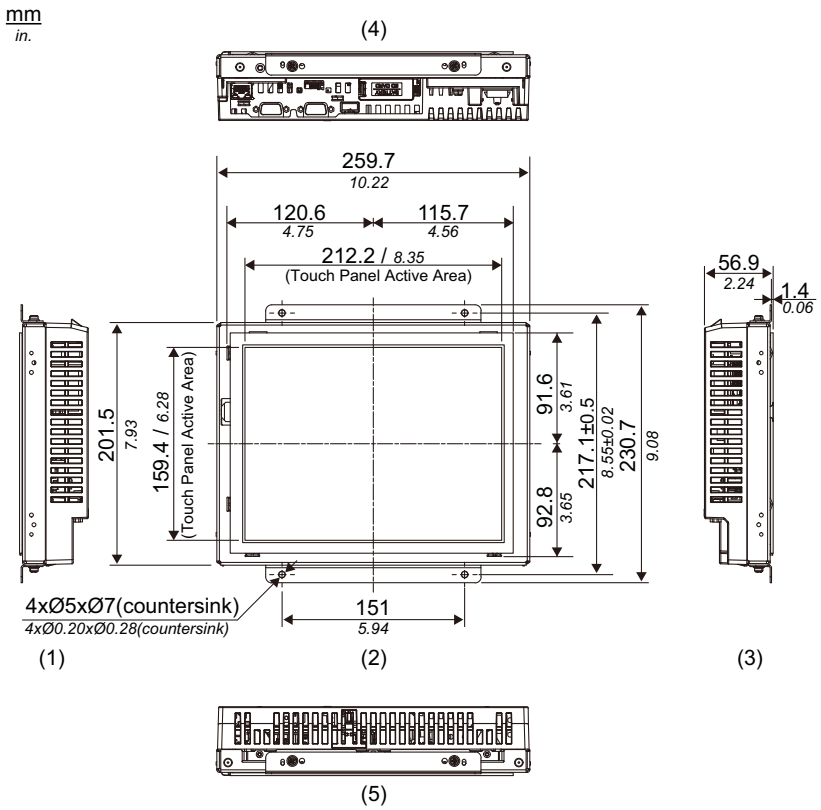


1 Right Side
2 Rear
3 Left Side
4 Bottom
5 Top

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

<Panel Type/ Flat Mount: PFXGP4501TADR>

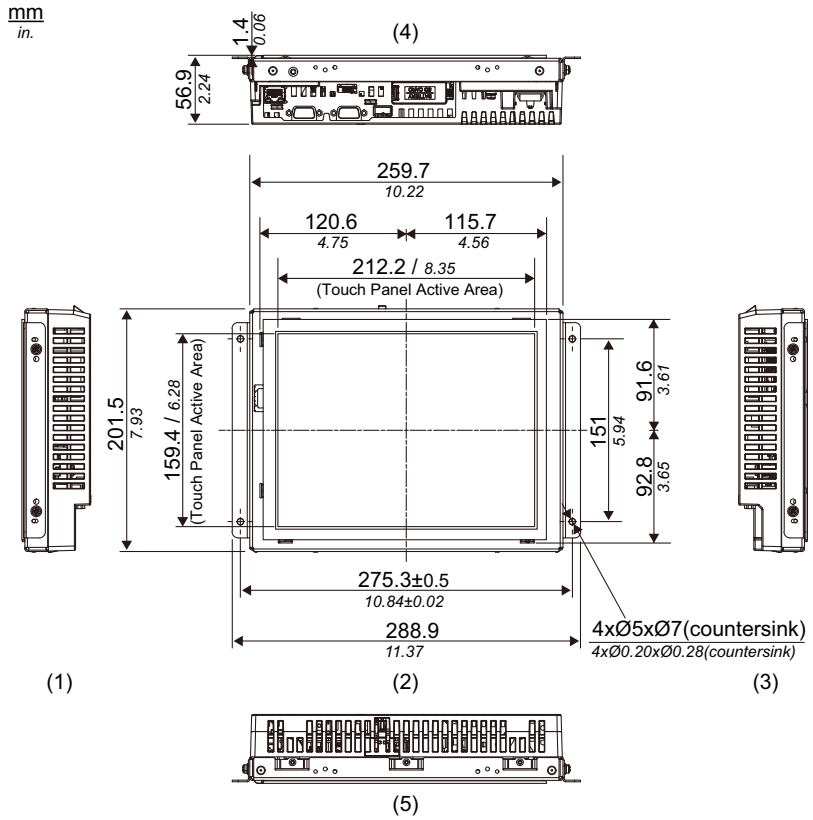
Installation with Installation Fasteners attached to the top and bottom surfaces of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Flat Mount: PFXGP4501TADR>

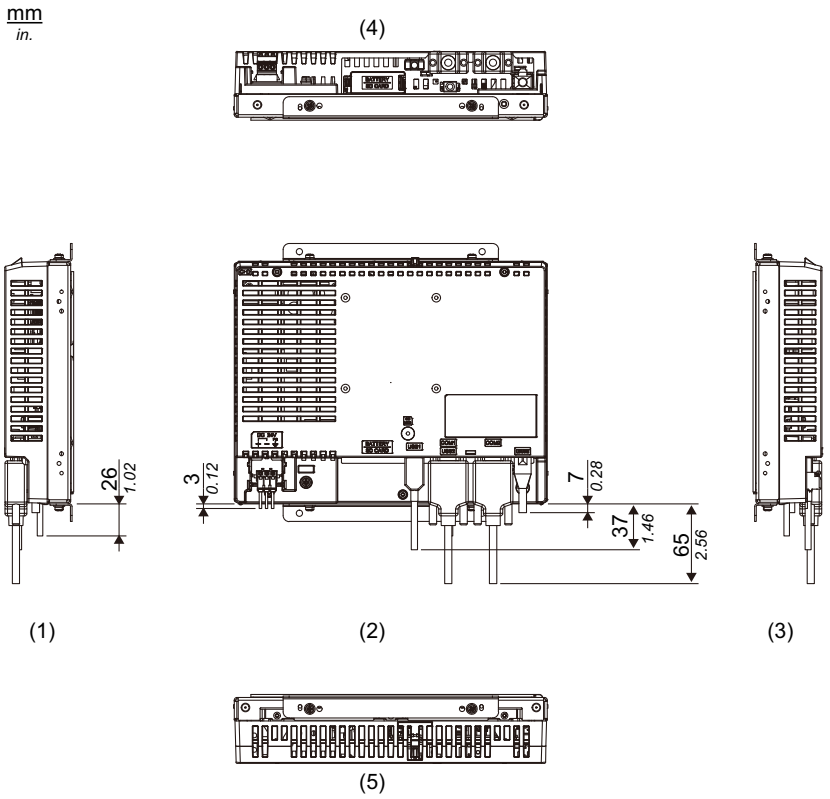
Installation with Installation Fasteners attached to the sides of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Flat Mount: PFXGP4501TADR>

Dimensions with Cables

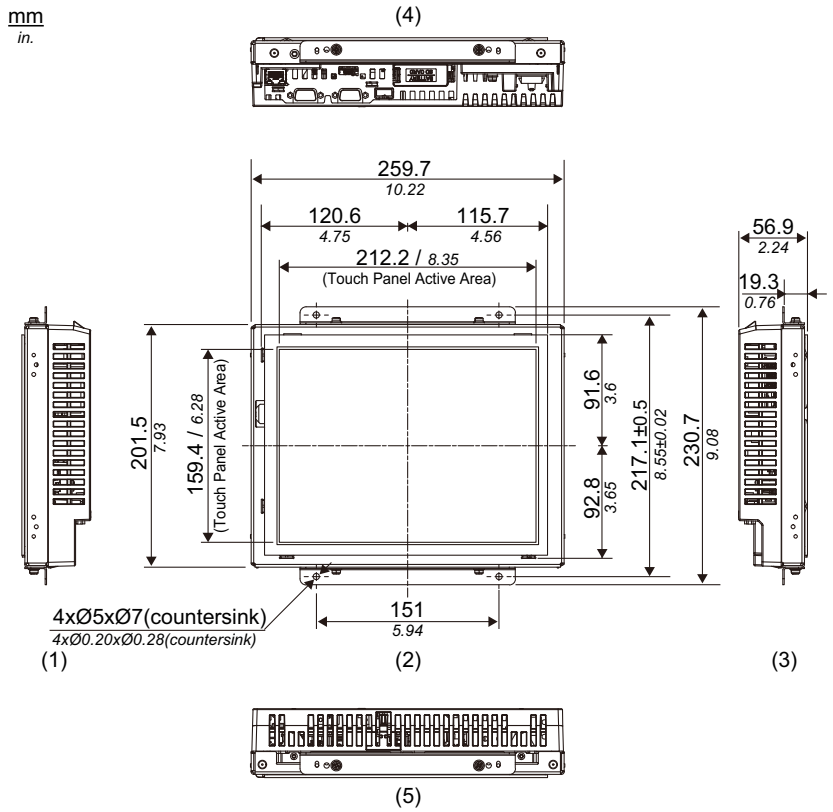


1 Right Side
2 Rear
3 Left Side
4 Bottom
5 Top

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

<Resin BossType/ Standard Mount and Flat Mount: PFXGP4501TADR>

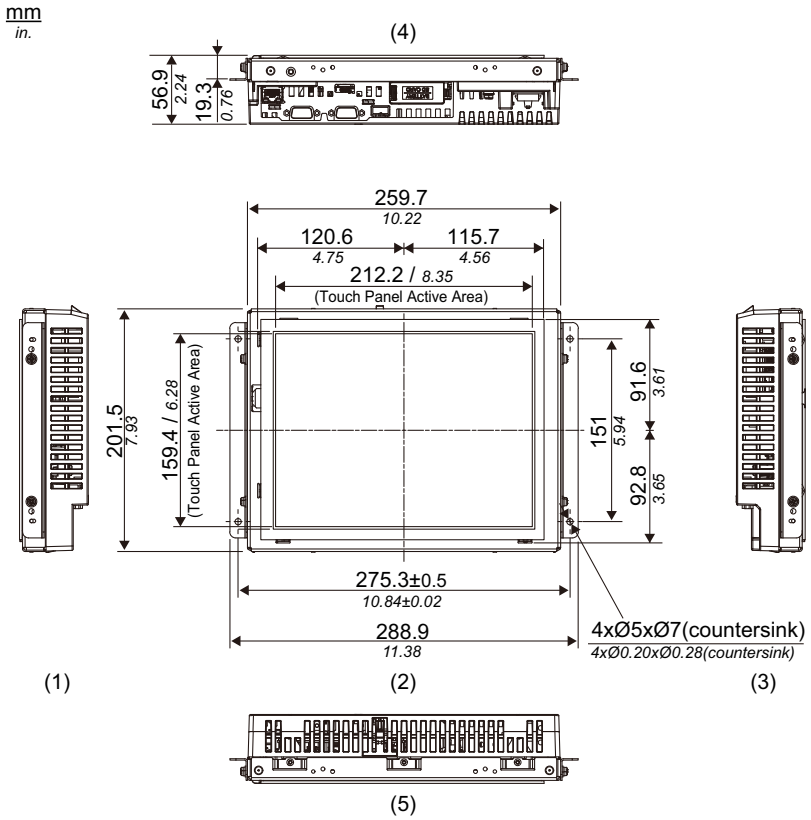
Installation with Installation Fasteners attached to the top and bottom surfaces of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Resin Boss Type/ Standard Mount and Flat Mount: PFXGP4501TADR>

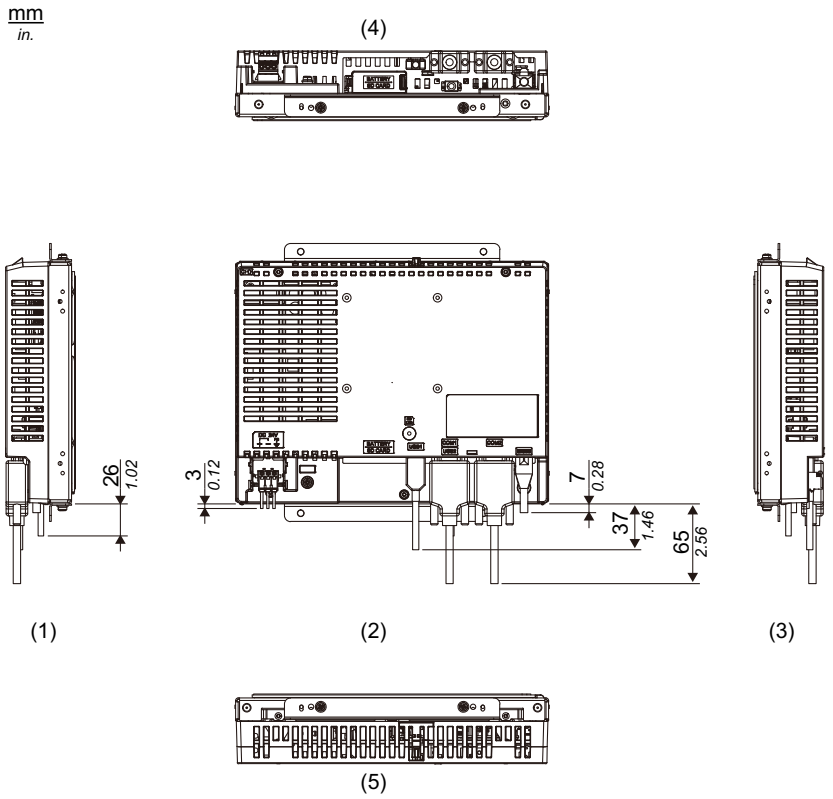
Installation with Installation Fasteners attached to the sides of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Resin Boss Type/ Standard Mount and Flat Mount: PFXGP4501TADR>

Dimensions with Cables

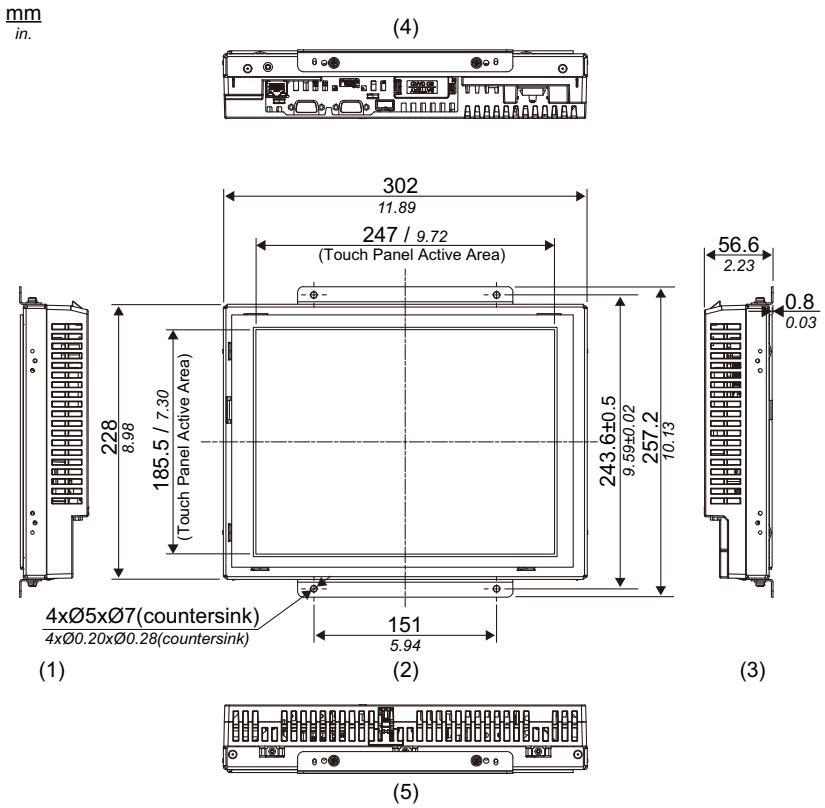


1 Right Side
2 Rear
3 Left Side
4 Bottom
5 Top

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

<Panel Type/ Standard Mount: PFXGP4601TADR>

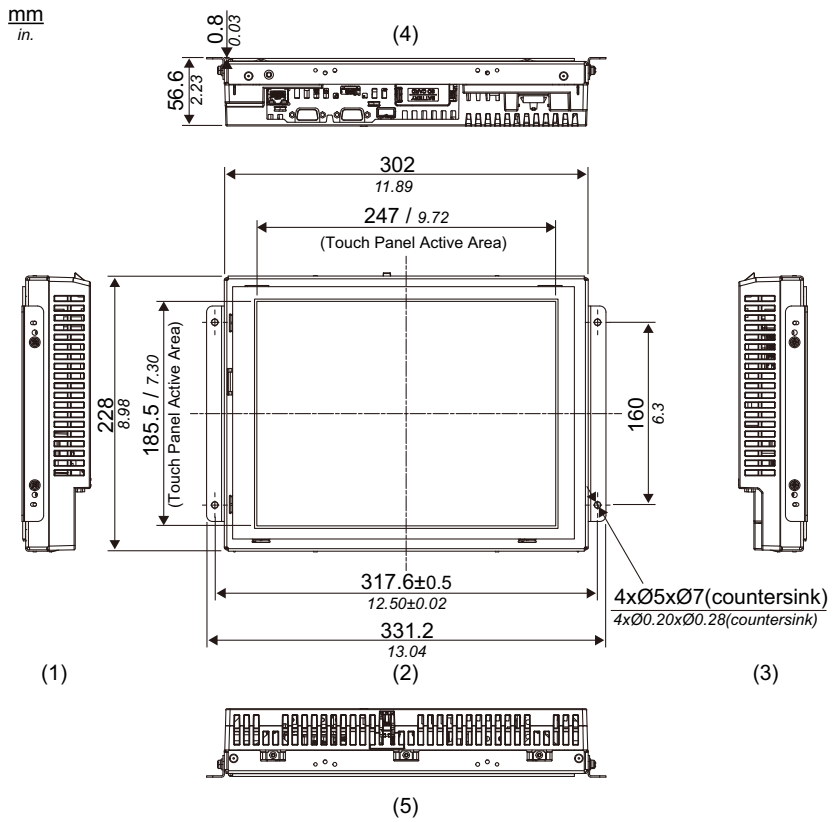
Installation with Installation Fasteners attached to the top and bottom surfaces of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Standard Mount: PFXGP4601TADR>

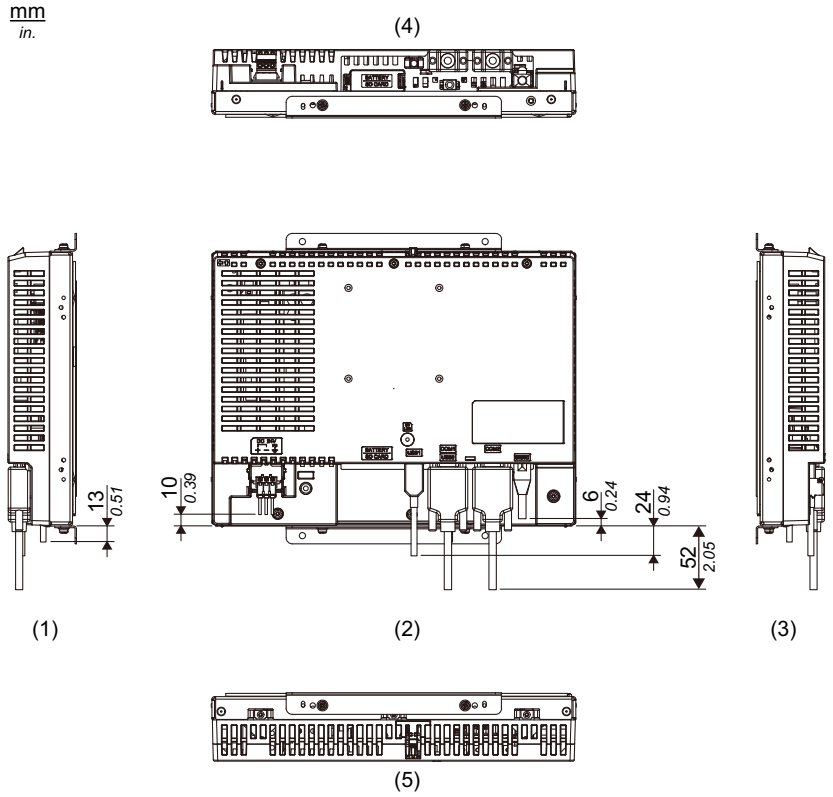
Installation with Installation Fasteners attached to the sides of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Standard Mount: PFXGP4601TADR>

Dimensions with Cables

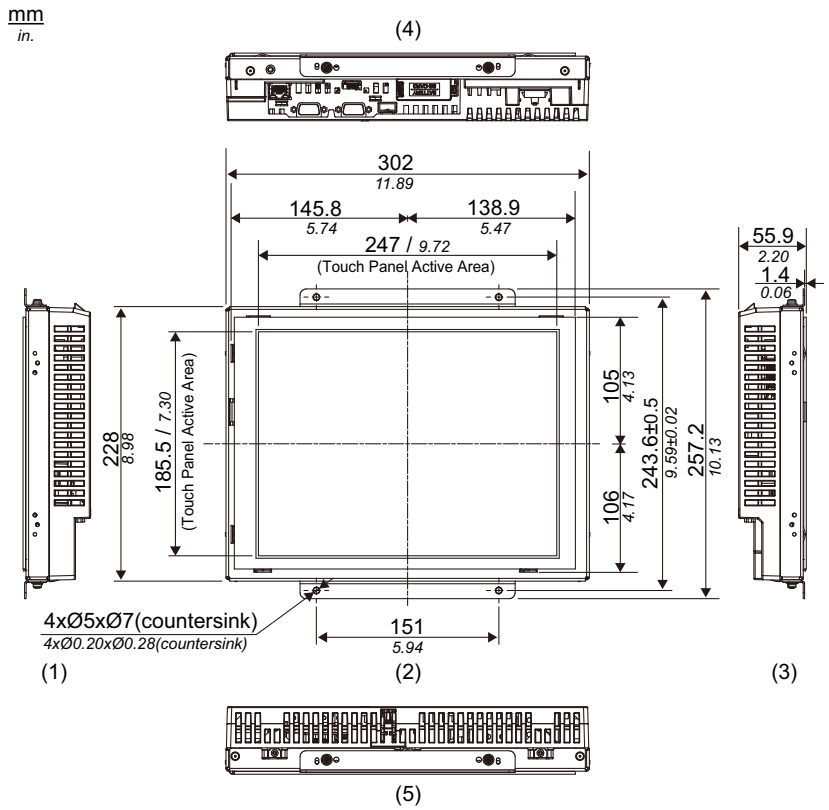


1 Right Side
2 Rear
3 Left Side
4 Bottom
5 Top

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

<Panel Type/ Flat Mount: PFXGP4601TADR>

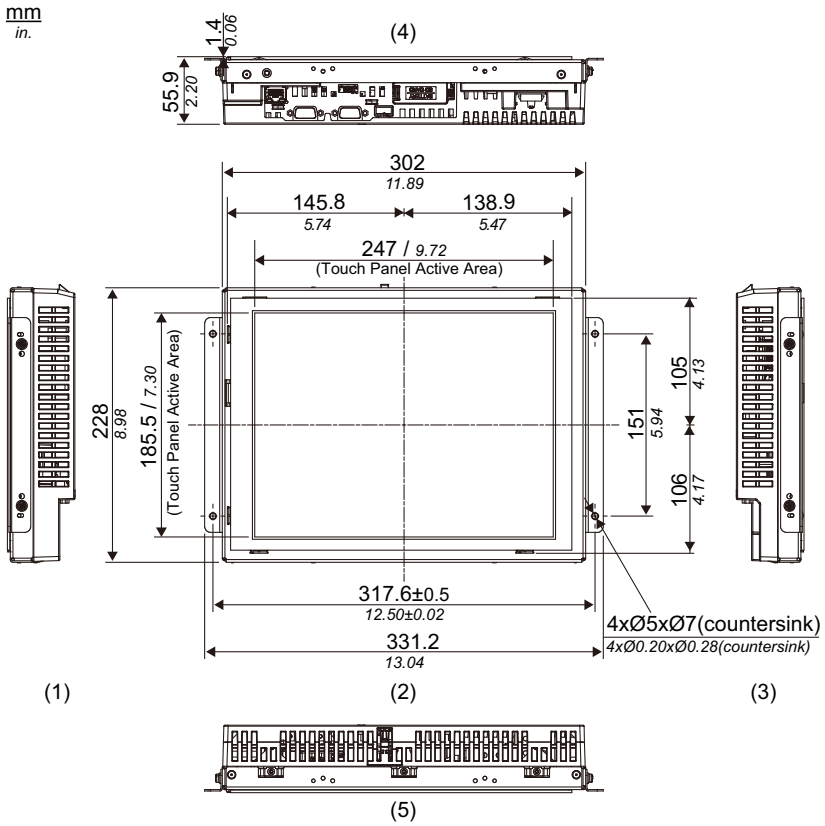
Installation with Installation Fasteners attached to the top and bottom surfaces of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Flat Mount: PFXGP4601TADR>

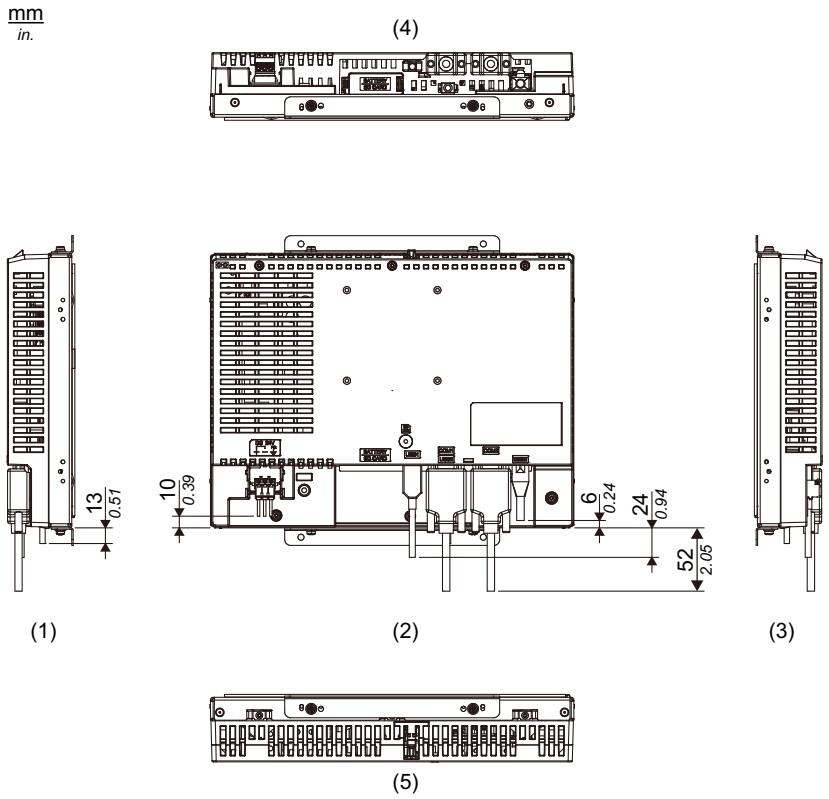
Installation with Installation Fasteners attached to the sides of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Panel Type/ Flat Mount: PFXGP4601TADR>

Dimensions with Cables

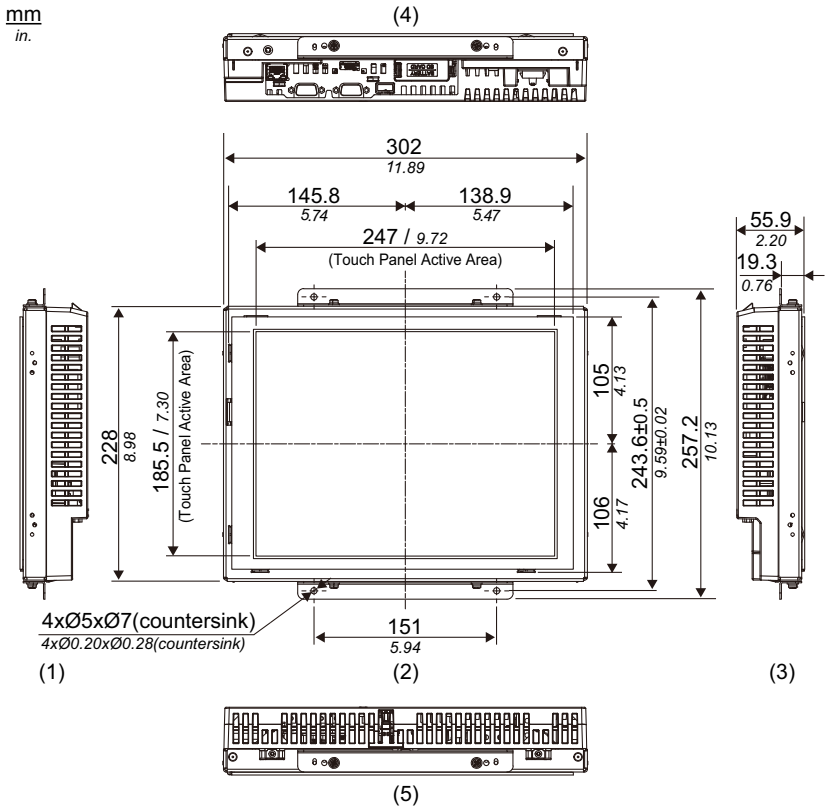


1 Right Side
2 Rear
3 Left Side
4 Bottom
5 Top

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

<Resin BossType/ Standard Mount and Flat Mount: PFXGP4601TADR>

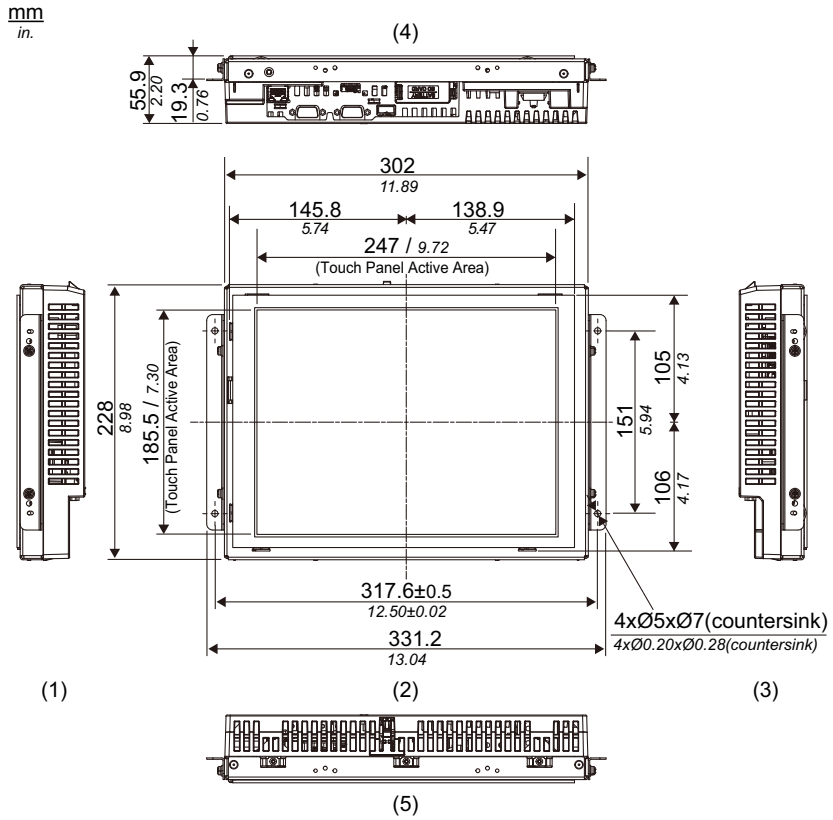
Installation with Installation Fasteners attached to the top and bottom surfaces of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Resin Boss Type/ Standard Mount and Flat Mount: PFXGP4601TADR>

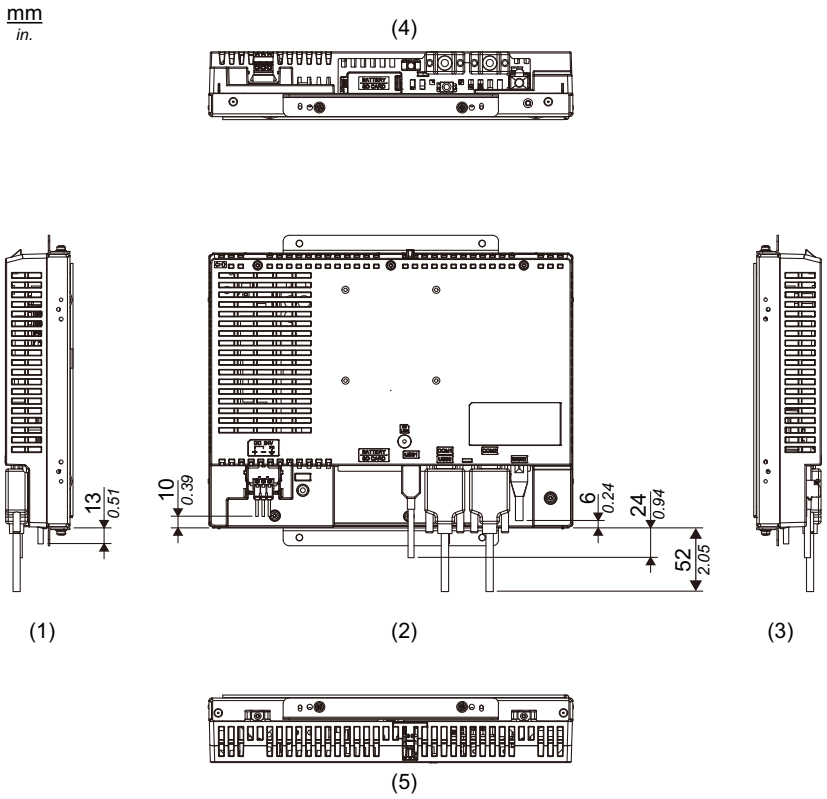
Installation with Installation Fasteners attached to the sides of the GP unit



1 Right Side
2 Front
3 Left Side
4 Bottom
5 Top

<Resin Boss Type/ Standard Mount and Flat Mount: PFXGP4601TADR>

Dimensions with Cables



1 Right Side
2 Rear
3 Left Side
4 Bottom
5 Top

NOTE: All the above values are designed with cable bending in mind. The dimensions given here are representative values depending on the type of connection cable in use. Therefore, these values are intended for reference only.

7.7 Installation

Installation Method

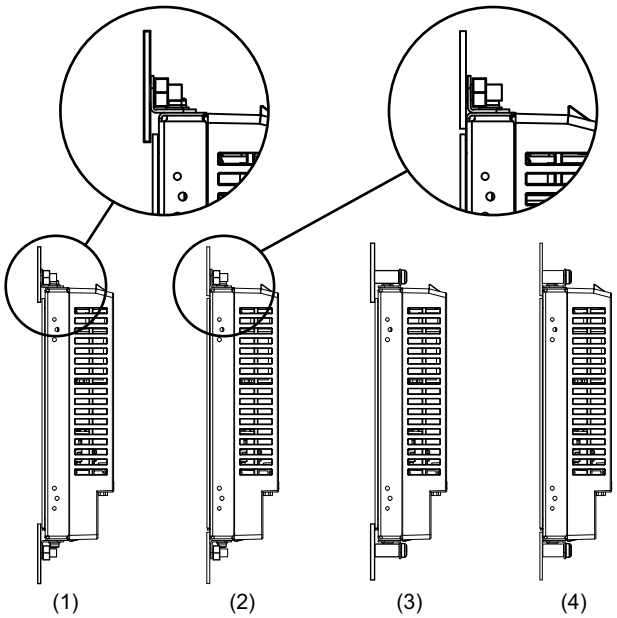
Panel type	standard mount
	flat mount
Resin boss type	standard mount
	flat mount

Panel type: Weld the stud bolts to the panel, and then tighten the nuts to fasten the GP unit to the panel.

Resin boss type: Tighten the screws to attach the GP unit to the bosses of the resin boss-molded product.

Standard mount: The GP unit's screen is fixed within the inside of the panel or resin boss-molded product.

Flat mount: The GP unit's screen is fixed to the same surface of the panel or resin boss-molded product.



Installation diagrams (profile)

1) Panel type, standard mount

2) Panel type, flat mount

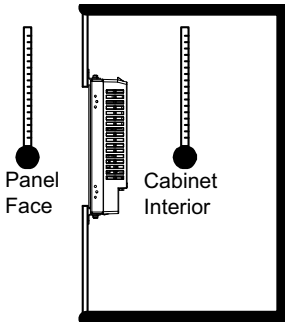
3) Resin boss type, standard mount

4) Resin boss type, flat mount

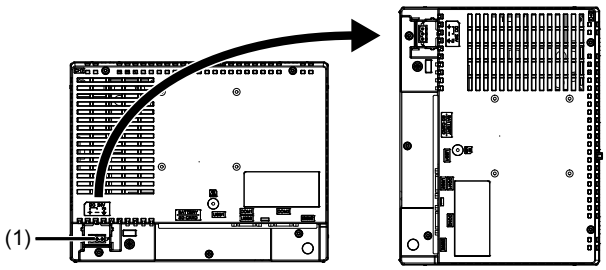
As shown in the figures, installation brackets can be attached at the top and bottom surfaces of the GP unit or on either side of the GP unit.

Installation Requirements

- Decide on the thickness of the enclosure wall, based on the level of strength required: For details, read chapter 3, "Panel Cut Dimensions" (see page 232).
- Even if panel thickness is within recommended range for “Panel Cut Dimensions”, the panel could warp, depending on panel’s material, size, and installation location of GP unit or other devices. To prevent panel warpage, the installation surface may need to be strengthened.
- Check that the installation panel or cabinet's surface is flat, in good condition and has no jagged edges.
  Be sure that the surrounding air temperature and the ambient humidity are within their designated ranges. Surrounding air temperature:
  0 to 55 °C (32 to 131 °F)
  ambient humidity: 10 to 90%RH; wet bulb temperature: maximum 39 °C (102 °F).
  When installing the GP unit in a cabinet or enclosure, the surrounding air temperature is the cabinet’s or enclosure’s internal temperature.

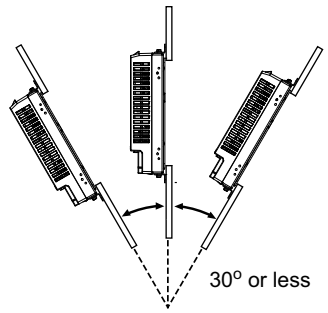


- Be sure that heat from surrounding equipment does not cause the GP unit to exceed its standard operating temperature.
- When installing the GP unit vertically, install the GP unit so that the power supply connector on the rear surface of the unit is at the top.

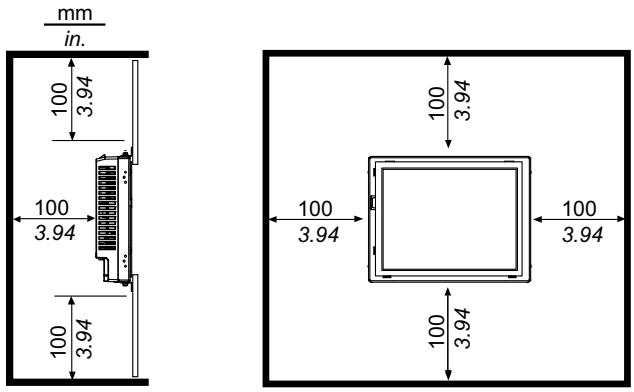


(1) Power Connector

- When installing the GP unit in a slanted position, the GP unit face should not incline more than 30°.



- When installing the GP unit in a slanted position with an incline more than 30°, the ambient temperature must not exceed 40 °C (104 °F). You may need to use forced air cooling (fan, A/C) to ensure the ambient operating temperature is 40°C or less (104 °F or less).
- For easier maintenance, operation and improved ventilation, install the GP unit at least 100 mm (3.94 in.) away from adjacent structures and other equipment as shown in the following illustration.



- The holes on the rear of the GP unit are not correspondent with VESA 75mm standards. Do not attach the GP unit to the commercial-type VESA arm.

Pressure Differences

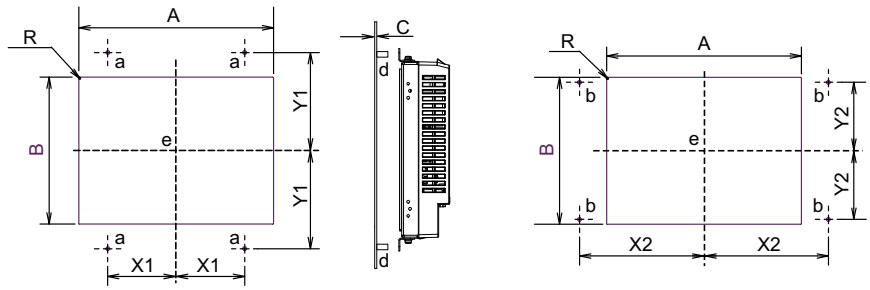
When applying and installing this product, it is important that steps are taken to eliminate any pressure difference between the inside and the outside of the enclosure in which this product is mounted. Higher pressure inside the enclosure can cause delamination of the front membrane of the display. Even a small pressure difference inside the enclosure will act on the large area of the membrane and can result in sufficient force to delaminate the membrane and thus cause failure of the touch capability. Pressure differences can often occur in applications where there are multiple fans and ventilators moving air at different rates in different rooms. Please follow these techniques to ensure that this product's function is not impacted by this mis-application:

1. Seal all conduit connections inside of the enclosure, especially those that lead to other rooms that may be at a different pressure.

2. Where applicable, install a small weep hole at the bottom of the enclosure to allow equalization of the internal and external pressure.

Panel Cut Dimensions

- Standard mount



a) Installation positions of stud bolts or positions of boss molds when attaching installation brackets at the top and bottom surfaces of the GP unit
b) Installation positions of stud bolts or positions of boss molds when attaching installation brackets on either side of the GP unit
d) 4-M4 x 10L stud bolts (no foreign material present on the base due to sparking or similar phenomena) or boss molds
e) Center of the display area

	A	B	C		R
			Panel Type	Resin Boss Type	
PFXGP4301TADR	118.8mm (+0.5, -0mm) (4.68in. [+0.02, -0in.])	90mm (+0.5, -0mm) (3.54in. [+0.02, -0in.])	1.6mm (0.06in.) to 3.2mm (0.13in.) SPCC (JIS G 3141) or SECC (JIS G 3313) 1.5mm (0.06in.) to 6mm (0.24in.) SUS304 (JIS G 4305)	2mm (0.08in.) or more	1mm (0.04in.) maximum
PFXGP4401TADR	155.3mm (+0.5, -0mm) (6.11in. [+0.02, -0in.])	117.4mm (+0.5, -0mm) (4.62in. [+0.02, -0in.])			
PFXGP4501TADR	214.8mm (+0.5, -0mm) (8.46in. [+0.02, -0in.])	162mm (+0.5, -0mm) (6.38in. [+0.02, -0in.])			
PFXGP4601TADR	249.6mm (+0.5, -0mm) (9.83in. [+0.02, -0in.])	188.1mm (+0.5, -0mm) (7.41in. [+0.02, -0in.])			

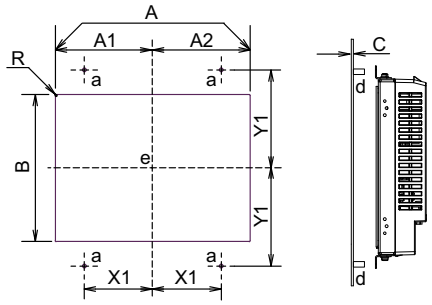
Note: If you are designing the panel with a material other than sheet metal, ensure that the material has sufficient strength.

Unit mm[in.]

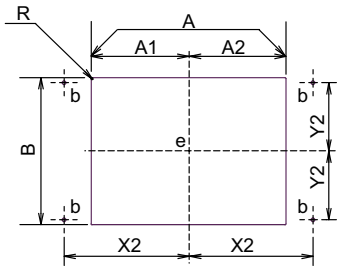
	Attaching Installation Brackets on the Top and Bottom Surfaces of the GP Unit		Attaching Installation Brackets on the Sides of the GP Unit	
	X1	Y1	X2	Y2
PFXGP4301TADR	43 (±0.15) [1.69, (±0.01)]	69.5 (±0.15) [2.74, (±0.01)]	85.6 (±0.15) [3.37, (±0.01)]	43 (±0.15) [1.69, (±0.01)]
PFXGP4401TADR	43 (±0.15) [1.69, (±0.01)]	87.5 (±0.15) [3.45, (±0.01)]	109.8 (±0.15) [4.32, (±0.01)]	43 (±0.15) [1.69, (±0.01)]
PFXGP4501TADR	75.5 (±0.15) [2.97, (±0.01)]	108.55 (±0.15) [4.27, (±0.01)]	137.65 (±0.15) [5.42, (±0.01)]	75.5 (±0.15) [2.97, (±0.01)]
PFXGP4601TADR	75.5 (±0.15) [2.97, (±0.01)]	121.8 (±0.15) [4.80, (±0.01)]	158.8 (±0.15) [6.25, (±0.01)]	75.5 (±0.15) [2.97, (±0.01)]

Note: Note that the panel cut dimensions have been calculated with the display area, not the panel cut (A or B), as the reference.

- Flat mount



Rear panel (resin plate) surface



Rear panel (resin plate) surface

a) Installation positions of stud bolts or positions of boss molds when attaching installation brackets at the top and bottom surfaces of the GP unit
b) Installation positions of stud bolts or positions of boss molds when attaching installation brackets on either side of the GP unit
d) 4-M4 x 10L stud bolts (no foreign material present on the base due to sparking or similar phenomena) or boss molds
e) Center of the display area

	A		B	C		R
	A1	A2		Panel Type	Resin Boss Type	
PFXGP4301TADR	143mm (+0.5, -0mm) (5.63in.[+0.02, -0in.])		109mm (+0.5, -0mm) (4.29in. [+0.02, -0in.])	1.6 mm (0.06in.) SPCC (JIS G 3141) or SECC (JIS G 3313) 1.5 mm (0.06in.) SUS304 (JIS G 4305)	2 mm (0.08in.) maximum	1 mm (0.04in.) maximum
	70.5mm (+0.25, -0mm) (2.78in. [+0.01, -0in.])	72.5mm (+0.25, -0mm) (2.85in. [+0.01, -0in.])				
PFXGP4401TADR	174.5mm (+0.5, -0mm) (6.87in.[+0.02, -0in.])		134.2mm (+0.5, -0mm) (5.28in. [+0.02, -0in.])			
	86.3mm (+0.25, -0mm) (3.4in. [+0.01, -0in.])	88.2mm (+0.25, -0mm) (3.47in. [+0.01, -0in.])				
PFXGP4501TADR	241mm (+0.5, -0mm) (9.49in.[+0.02, -0in.])		188mm (+0.5, -0mm) (7.4in. [+0.02, -0in.])			
	119.2mm (+0.25, -0mm) (4.69in. [+0.01, -0in.])	121.8mm (+0.25, -0mm) (4.8in. [+0.01, -0in.])				
PFXGP4601TADR	289.4mm (+0.5, -0mm) (11.39in.[+0.02, -0in.])		214.4mm (+0.5, -0mm) (8.44in. [+0.02, -0in.])			
	142.4mm (+0.25, -0mm) (5.61in. [+0.01, -0in.])	147mm (+0.25, -0mm) (5.79in. [+0.01, -0in.])				

Note: If you are designing the panel with a material other than sheet metal, ensure that the material has sufficient strength.

Unit mm[in.]

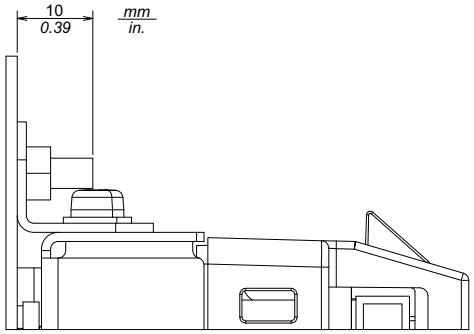
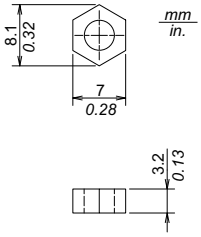
	Attaching Installation Brackets on the Top and Bottom Surfaces of the GP Unit		Attaching Installation Brackets on the Sides of the GP Unit	
	X1	Y1	X2	Y2
PFXGP4301TADR	43 (±0.15) [1.69, (±0.01)]	69.5 (±0.15) [2.74, (±0.01)]	85.6 (±0.15) [3.37, (±0.01)]	43 (±0.15) [1.69, (±0.01)]
PFXGP4401TADR	43 (±0.15) [1.69, (±0.01)]	87.5 (±0.15) [3.45, (±0.01)]	109.8 (±0.15) [4.32, (±0.01)]	43 (±0.15) [1.69, (±0.01)]
PFXGP4501TADR	75.5 (±0.15) [2.97, (±0.01)]	108.55 (±0.15) [4.27, (±0.01)]	137.65 (±0.15) [5.42, (±0.01)]	75.5 (±0.15) [2.97, (±0.01)]
PFXGP4601TADR	75.5 (±0.15) [2.97, (±0.01)]	121.8 (±0.15) [4.80, (±0.01)]	158.8 (±0.15) [6.25, (±0.01)]	75.5 (±0.15) [2.97, (±0.01)]

Note: Note that the panel cut dimensions have been calculated with the display area, not the panel cut (A or B), as the reference.

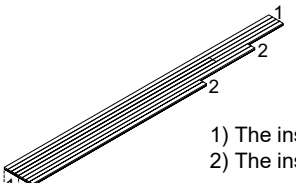
Panel Type

NOTICE
EQUIPMENT DAMAGE ● Keep GP unit stabilized in the panel-cut while you are installing or removing the screw fasteners. **Failure to follow the instruction can result in equipment damage.**

Installation procedure

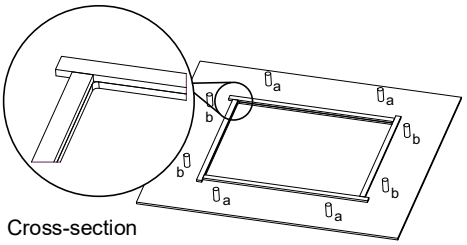
Step	Procedure Details
1	Cut an opening in the panel to match the standard mount or flat mount panel cut dimensions, and then weld four M4 x 10L stud bolts perpendicular to the rear surface of the panel in order to fix the GP unit in place. **Note:** ● Before you start this work, carefully read "3. Panel Cut Dimensions" (see page 232). ● Prepare four stud bolts and four nuts within your quality assurance range. ● The stud bolt height is 10 mm (0.39 in.).  Installation diagram (profile) ● We recommend that you use M4 nuts (ISO4032, JIS B 1181). 

Step	Procedure Details
2	Attach the installation gaskets to the panel. Installation gaskets are included for the standard mount orientation and for the flat mount orientation.



1) The installation gakets for Flat mount
2) The installation gakets for Standard mount

Peel off the removable paper layer, and then attach the adhesive surface to the rear surface of the panel as shown in the figure. Follow the cross-section of the panel cut and attach the adhesive surface on top of the installation gasket so that the adhesive surface sticks out by approximately 3 mm (0.12 in.) past its adjacent adhesive surface.



Cross-section of the panel

Rear surface of the panel

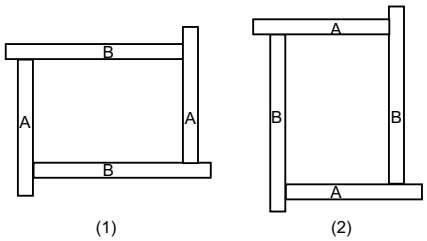
a) Stud bolts when attaching installation brackets at the top and bottom surfaces of the GP unit
b) Stud bolts when attaching installation brackets on either side of the GP unit

Note:

- Be sure to use the included installation gaskets.
- Due to the installation gasket properties, do not pull on the installation gaskets while you attach them. Doing so may cause the installation gaskets to be embedded in the installation brackets.
- If the installation gaskets are used for a long time, the gaskets may be damaged or dirt may affix to the gaskets, which may cause their effectiveness to decrease. Replace the installation gaskets periodically.
- The appropriate length of the installation gasket is as follows;

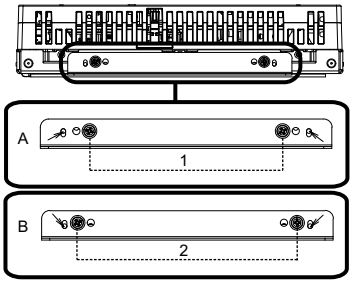
mm(in.)
(dimensional tolerance:±1mm [0.04 in.])

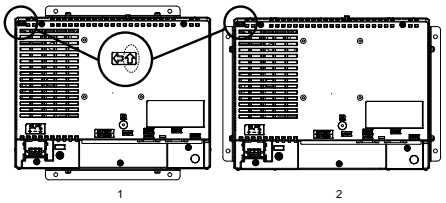
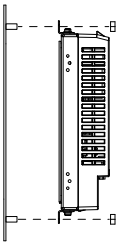
	Standard Mount		Flat Mount	
	A	B	A	B
PFXGP4301TADR	97 [3.82]	126 [4.96]	116 [4.57]	150 [5.91]
PFXGP4401TADR	125 [4.92]	142 [5.59]	142 [5.59]	182 [7.17]
PFXGP4501TADR	169 [6.65]	222 [8.74]	195 [7.68]	248 [9.76]
PFXGP4601TADR	195 [7.68]	257 [10.12]	222 [8.74]	297 [11.69]



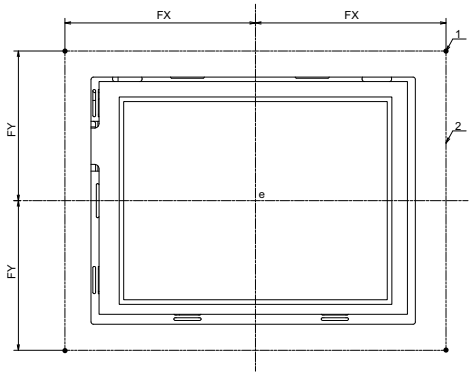
(1) (2)

(1) When the GP unit installing horizontally
(2) When the GP unit installing vertically

Step	Procedure Details
3	Slowly peel the protective sheet off of the GP unit's screen. **Note:** Peeling off the protective sheet with excessive force may peel off the film of the touch panel.
4	When the GP unit is shipped from the factory, installation brackets are fixed to its top surface and bottom surface. This corresponds to the standard mount orientation. If you are installing the GP unit in a panel with the GP unit in the same state as when it was shipped from the factory, read step 8. If you are switching the installation brackets to their positions on the sides of the GP unit or if you are installing the GP unit with the flat mount orientation, read steps 5 to 7.
5	[Switching the installation brackets to their positions on the sides of the GP unit or changing to the flat mount orientation] Orient the GP unit so that its screen faces down, and then place the GP unit on a clean and level surface.
6	Use a Phillips head screwdriver to remove the two installation screws fixing the one installation bracket in place on the top surface of the GP unit. In the same manner, remove the one installation bracket from the bottom surface.
7	Attach the installation brackets to the top and bottom surfaces of the GP unit or to the sides of the GP unit. In each case, attach the surface of the installation bracket that has six open holes to the GP unit. Note that the protruding parts and the fixation positions of installation screws vary between the standard mount (figure A) and flat mount (figure B) orientations. Use a Phillips head screwdriver to fix in place two installation screws per installation bracket. The tightening torque is 0.8 N•m (7.1 lb-in).  A) Standard mount 1) Use two installation screws to fix the bracket in place. (Use the two inner holes.) B) Flat mount 2) Use two installation screws to fix the bracket in place. (Use the two outer holes.) **Note:** Check the positions of the protruding parts. Depending on the installation method, the positions of these parts may differ from the positions indicated by the arrows in the figure.

Step	Procedure Details
8	When you are installing the GP unit horizontally, hold the GP unit so that the arrow pointing in the horizontal direction on the rear surface of the GP unit points up as shown in the figure.  1) Figure of the GP unit's rear surface when attaching installation brackets at the top and bottom surfaces of the GP unit 2) Figure of the GP unit's rear surface when attaching installation brackets on either side of the GP unit
9	Insert the GP unit through the rear surface of the panel, pass the stud bolts through the four installation bracket holes, and then tighten nuts on the stud bolts to fix the GP unit in place. The tightening torque is 0.8 to 1.0 N•m (7.1 to 8.9 lb-in).  Installation diagram (profile)

Step	Procedure Details
10	When installing the GP unit with the flat mount orientation, affix the Overlay to the front of the GP unit. In advance, align the four corners of the Overlay outline on the panel as shown in the figure, and then mark these corners. Peel off the removable paper layer from the Overlay, align the Overlay with the four marks, and then affix the Overlay to the panel.



1) Locations to mark (four locations)
2) Overlay outline
e) Display area

mm(in.)
(dimensional tolerance: ±0.2mm [0.01 in.])

	FX	FY
PFXGP4301TADR	84.0 (3.31)	66.0 (2.60)
PFXGP4401TADR	99.7 (3.93)	78.6 (3.09)
PFXGP4501TADR	133.3 (5.25)	105.5 (4.15)
PFXGP4601TADR	158.5 (6.24)	118.7 (4.67)

Note: Use the optional overlay. Use one of the following models.
- PFXZGPFSR6W1 (for the PFXGP4301TADR)
- PFXZGPFSR7W1 (for the PFXGP4401TADR)
- PFXZGPFSR10W1 (for the PFXGP4501TADR)
- PFXZGPFSR12W1 (for the PFXGP4601TADR)

NOTICE

BROKEN ENCLOSURE

- Attach correctly without a crevice between gaskets and between gasket and the panel.
- Do not attach installation fastener in a different position from mounting instruction.
- Do not exert more than 0.8 N•m (7.1 lb-in) of torque when tightening the installation screws.
- For use on a flat surface of a Type 1 Enclosure
- Attach the Overlay correctly with the installation.
- Do not reuse the Overlay removed once.

Failure to follow these instructions can result in equipment damage.

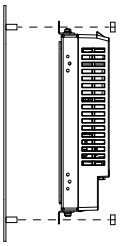
NOTICE

GASKET AGING

- Inspect the installation gasket periodically as required by your operating environment to keep the initial IP level.
- Change the installation gasket at least once a year, or as soon as scratches or dirt become visible.

Failure to follow these instructions can result in equipment damage.

Removal procedure

Step	Procedure Details
1	Remove the nuts from the four stud bolts fixed in place on the rear surface of the panel, and then slowly remove the GP unit from the panel.  Removal diagram (profile)

⚠ CAUTION

RISK OF INJURY

Be careful of the glass of the front of the GP unit.

- Wear gloves when you are installing the GP unit.
- Do not push the LCD panel strongly.
  When installing the GP unit with the flat mount orientation, affix the Overlay to the front of the GP unit.

Do not drop the GP unit when you remove it from the panel.

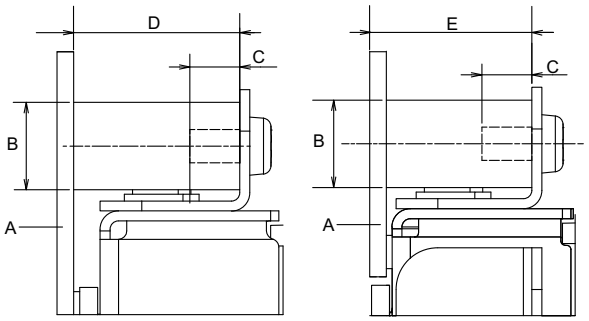
- Hold the GP unit in place after removing the fasteners.
- Use both hands.

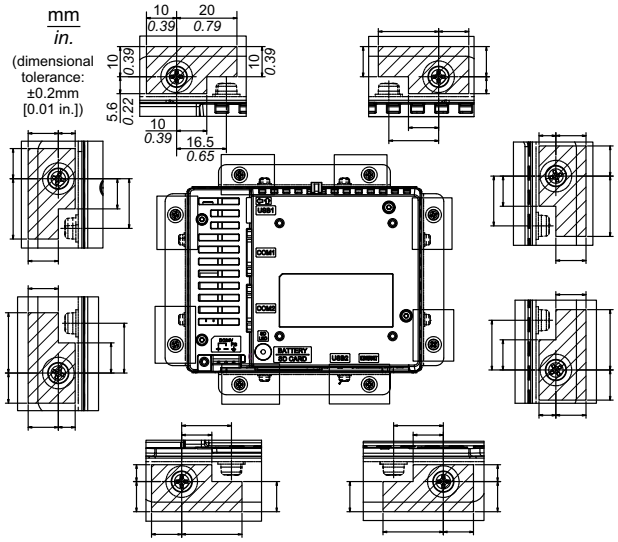
Failure to follow the instruction can result in injury or equipment damage.

Resin Boss Type

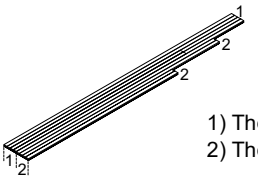
NOTICE
PANEL UNSTEADY WHEN UNSECURED ● Keep GP unit stabilized in the panel-cut while you are installing or removing the screw fasteners. **Failure to follow the instruction can result in equipment damage.**

Installation procedure

Step	Procedure Details
1	Follow the standard mount or flat mount panel cut dimensions to perform sufficient tests in advance with designs that meet the following conditions, confirm the safety of the system, and then mold the resin plate.  Standard mount Flat mount

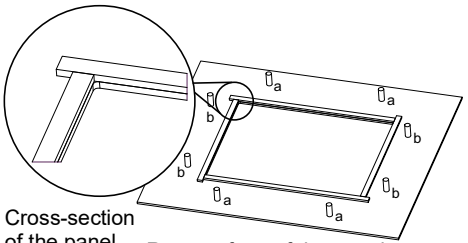
Step	Procedure Details
	A) Resin plate B) Boss diameter: ø10.5 mm ± 0.5 mm (ø 0.41 in. ± 0.02 in.) C) Lower hole depth: 6 mm (0.24 in.) or more D) Boss height: 20 mm (0.79 in.) ± 0.1 mm (± 0 in.) for the standard mount orientation E) Boss height and resin plate thickness[*1]: 19.5 mm (0.77 in.) ± 0.1 mm (± 0 in.) for the flat mount orientation *1 Resin plate thickness: max. 2mm (0.08 in.) **Note:** ● Before you start this work, carefully read "Panel Cut Dimensions" (see page 232). ● Design the resin plate on the basis of sufficient testing and within your quality assurance range. However, the boss height cannot be changed. ● Do not construct any ribs outside of the area indicated by diagonal lines in the figure.  (This figure shows PFXGP4301TADR. The dimensions are common with all of the rear mount models.)

Step	Procedure Details
2	Attach the installation gaskets to the panel. Installation gaskets are included for the standard mount orientation and for the flat mount orientation.



1) The installation gakets for Flat mount
2) The installation gakets for Standard mount

Peel off the removable paper layer, and then attach the adhesive surface to the rear surface of the resin plate as shown in the figure. Follow the cross-section of the panel cut and attach the adhesive surface on top of the installation gasket so that the adhesive surface sticks out by approximately 3 mm (0.12 in.) past its adjacent adhesive surface.



Cross-section of the panel

Rear surface of the panel

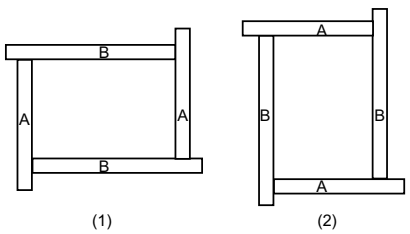
a) Boss when attaching installation brackets at the top and bottom surfaces of the GP unit
b) Boss when attaching installation brackets on either side of the GP unit

Note:

- Be sure to use the included installation gaskets.
- Due to the installation gasket properties, do not pull on the installation gaskets while you attach them. Doing so may cause the installation gaskets to be embedded in the installation brackets.
- If the installation gaskets are used for a long time, the gaskets may be damaged or dirt may affix to the gaskets, which may cause their effectiveness to decrease. Replace the installation gaskets periodically.
- The appropriate length of the installation gasket is as follows;

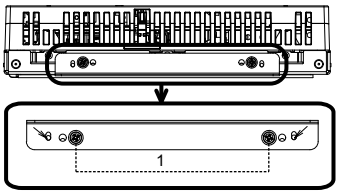
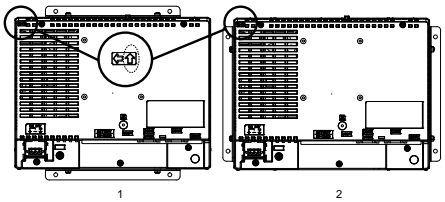
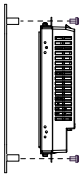
mm(in.)
(dimensional tolerance:±1mm [0.04 in.])

	Standard Mount		Flat Mount	
	A	B	A	B
PFXGP4301TADR	97 [3.82]	126 [4.96]	116 [4.57]	150 [5.91]
PFXGP4401TADR	125 [4.92]	142 [5.59]	142 [5.59]	182 [7.17]
PFXGP4501TADR	169 [6.65]	222 [8.74]	195 [7.68]	248 [9.76]
PFXGP4601TADR	195 [7.68]	257 [10.12]	222 [8.74]	297 [11.69]

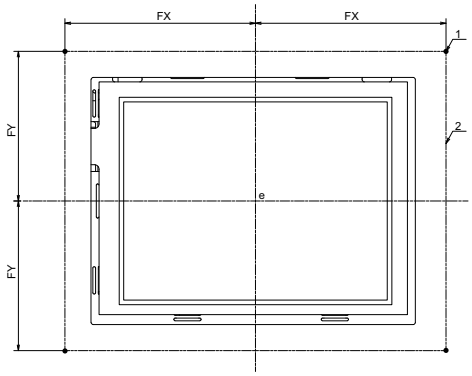


(1) (2)

(1) When the GP unit installing horizontally
(2) When the GP unit installing vertically

Step	Procedure Details
3	Slowly peel the protective sheet off of the GP unit's screen. **Note:** Peeling off the protective sheet with excessive force may peel off the film of the touch panel.
4	When the GP unit is shipped from the factory, installation brackets are fixed to its top surface and bottom surface. These installation brackets are fixed in positions that do not match the resin boss type, so follow the procedure below to change the positions in which the installation brackets are attached.
5	Orient the GP unit so that its screen faces down, and then place the GP unit on a clean and level surface.
6	Use a Phillips head screwdriver to remove the two installation screws fixing the one installation bracket in place on the top surface of the GP unit. In the same manner, remove the one installation bracket from the bottom surface.
7	Attach the installation brackets to the top and bottom surfaces of the GP unit or to the sides of the GP unit. In each case, attach the surface of the installation bracket that has six open holes to the GP unit as shown. Use a Phillips head screwdriver to fix in place two installation screws per installation bracket. The tightening torque is 0.8 N•m (7.1 lb-in).  1) Use two installation screws to fix the bracket in place. (Use the two inner holes.)
8	When you are installing the GP unit horizontally, hold the GP unit so that the arrow pointing in the horizontal direction on the rear surface of the GP unit points up as shown in the figure.  1) Figure of the GP unit's rear surface when attaching installation brackets at the top and bottom surfaces of the GP unit 2) Figure of the GP unit's rear surface when attaching installation brackets on either side of the GP unit
9	Insert the GP unit through the rear surface of the resin plate, pass the bosses through the four installation bracket holes, and then tighten the screws to fix the GP unit in place. We recommend that you use M4 screws. The tightening torque is 0.8 N•m (7.1 lb-in).  Installation diagram (profile)

Step	Procedure Details
10	When installing the GP unit with the flat mount orientation, affix the Overlay to the front of the GP unit. In advance, align the four corners of the Overlay outline on the panel as shown in the figure, and then mark these corners. Peel off the removable paper layer from the Overlay, align the Overlay with the four marks, and then affix the Overlay to the panel.



1) Locations to mark (four locations)
2) Overlay outline
e) Display area

mm(in.)
(dimensional tolerance:±0.2mm [0.01 in.])

	FX	FY
PFXGP4301TADR	84.0 (3.31)	66.0 (2.60)
PFXGP4401TADR	99.7 (3.93)	78.6 (3.09)
PFXGP4501TADR	133.3 (5.25)	105.5 (4.15)
PFXGP4601TADR	158.5 (6.24)	118.7 (4.67)

Note: Use the optional overlay. Use one of the following models.
- PFXZGPFSR6W1 (for the PFXGP4301TADR)
- PFXZGPFSR7W1 (for the PFXGP4401TADR)
- PFXZGPFSR10W1 (for the PFXGP4501TADR)
- PFXZGPFSR12W1 (for the PFXGP4601TADR)

NOTICE

BROKEN ENCLOSURE

- Attach the Overlay correctly with the installation.
- Do not reuse the Overlay removed once.
- Do not exert more than 0.8 N•m (7.1 lb-in) of torque when tightening the installation screws.
- For use on a flat surface of a Type 1 Enclosure
- Attach correctly without a crevice between gaskets and between gasket and the panel.
- Do not attach installation fastener in a different position from mounting instruction.

Failure to follow these instructions can result in equipment damage.

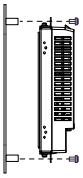
NOTICE

GASKET AGING

- Inspect the installation gasket periodically as required by your operating environment to keep the initial IP level.
- Change the installation gasket at least once a year, or as soon as scratches or dirt become visible.

Failure to follow these instructions can result in equipment damage.

Removal procedure

Step	Procedure Details
1	Remove the screws from the four bosses fixed in place on the rear surface of the resin plate, and then slowly remove the GP unit from the resin plate.  Removal diagram (profile)

⚠ CAUTION

RISK OF INJURY

Be careful of the glass of the front of the GP unit.
- Wear gloves when you are installing the GP unit.
- Do not push the LCD panel strongly.
  When installing the GP unit with the flat mount orientation, affix the Overlay to the front of the GP unit.

Do not drop the GP unit when you remove it from the panel.
- Hold the GP unit in place after removing the fasteners.
- Use both hands.

Failure to follow the instruction can result in injury or equipment damage.

After-sales Service

8

For details on after-sales service, refer to our website.
https://www.pro-face.com/trans/en/manual/1015.html.