

# STM6000 Series

## Hardware Manual

08/2020

STM6000-MM01-EN\_00



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SCIGATE AUTOMATION (S) PTE LTD

No 1 Bukit Batok Street 22 #01-01 Singapore 659592

Tel: (65) 6561 0488

Fax: (65) 6561 0588

Email: [sales@scigate.com.sg](mailto:sales@scigate.com.sg)

Web: <https://scigate.com.sg/>

Business Hours: Monday - Friday 8:30AM - 6:15PM

[www.pro-face.com](http://www.pro-face.com)

**Pro-face**<sup>TM</sup>

by **Schneider** Electric

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# Safety Information

## Important Information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin 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.**

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

### **⚠ WARNING**

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

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

### **⚠ CAUTION**

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

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

### **NOTICE**

**NOTICE** is used to address practices not related to physical injury.

**Failure to follow these instructions can result in equipment damage.**

## 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, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

# About This Manual

## Document Scope

This manual describes how to use this product.

## Validity Note

This documentation is valid for this product.

The technical characteristics of the devices described in the present document also appear online. To access the information online, go to our website.  
<https://www.pro-face.com>

The characteristics presented in the present document 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 document and online information, use the online information as your reference.

## Registered Trademarks

Microsoft® and Windows® are registered trademarks of Microsoft Corporation in the United States and/or other countries.

Product names used in this manual may be the registered trademarks owned by the respective proprietors.

## Related Documents

You can download the manuals related to this product, such as the software manual, 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.

### **DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Remove all power from the device before removing any covers or elements of the system, and prior to installing or removing any accessories, hardware, or cables.
- Unplug the power cable from both this product and the power supply prior to installing or removing the product.
- Always use a properly rated voltage sensing device to confirm power is off where and when indicated.
- Replace and secure all covers or elements of the system before applying power to this product.
- Use only the specified voltage when operating this product. This product is designed to use 24 Vdc. Always check whether your device is DC powered before applying power.

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

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 after it has been turned off. If this product 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 this product. 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 product 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**

- 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 local and national safety standards.

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

## ⚠ WARNING

### UNINTENDED EQUIPMENT OPERATION

- Do not use this product 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.
- Use only the software provided with this product. If you use other software, please confirm the operation and safety before use.

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

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 experiencing vibrations within a certain frequency range and vibration acceleration is above what is acceptable, the LCD screen may partially turn white. Once the vibration condition ends, the whitening of the screen is resolved.
- 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 customer support.

<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.

## ⚠ WARNING

### 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 panel.
- Handle the LCD panel carefully to prevent puncture, bursting, or cracking of the panel material.
- 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.

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

## Cybersecurity Best Practices

To help keep your Pro-face products secure and protected, we recommend that you implement the cybersecurity best practices. Following the recommendations may help significantly reduce your company's cybersecurity risk. For the recommendations, refer to the following URL:

<https://www.pro-face.com/trans/en/manual/1087.html>

# Overview

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## Model Numbers

### Model List

Series	Model name	Model number
STM60000 Series	STM-6200WA	PFXSTM6200WAD
	STM-6400WA	PFXSTM6400WAD

**NOTE:** All model numbers may be followed by any letter or number.

### Model Number Configuration

The following describes the configuration of model numbers.

Digit position							
1	2	3	4	5	6	7	8
P	F	X	(model)			(series)	(display size)
			STM			6	2: 4" 4: 7"

9	10	11	12	13
(type)		(LCD)	(touch panel)	(power supply)
00: (Reserved)		W: Wide TFT	A: Analog	D: DC

### 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.

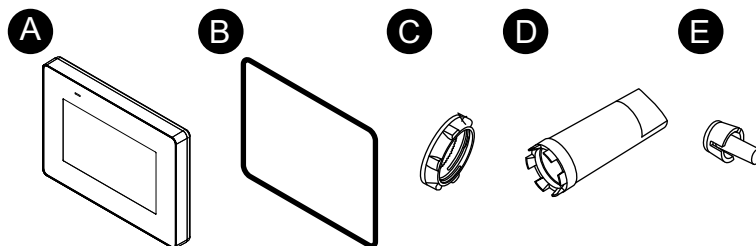
<https://www.pro-face.com/trans/en/manual/1003.html>

## Package Contents

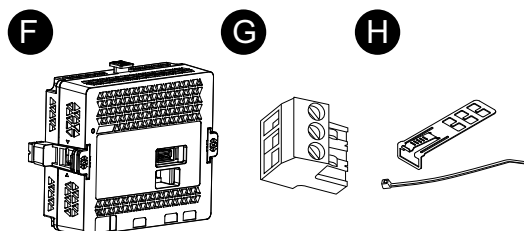
Verify all items listed here are present in your package.

**NOTE:** This product has been carefully packed with special attention to quality. However, should you find anything damaged or missing, please contact customer support immediately.

## Display module



## Rear module



- A. Display module x 1
- B. Installation gasket (attached to this product) x 1
- C. Display module fixing nut x 1
- D. Socket wrench x 1
- E. Anti-rotation tee x 1
- F. Rear module x 1
- G. DC power connector x 1
- H. USB cable clamp (Type A) x 1 set (1 clip and 1 tie)
- I. Installation guide x 1
- J. Warning/Caution Information x 1

## Product Revision

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

## Certifications and Standards

The certifications and standards listed below may include those that are not yet acquired. Please check the product marking and the following URL for the latest acquisition status.

<https://www.pro-face.com/trans/en/manual/1002.html>

## Agency Certifications

- Underwriters Laboratories Inc., UL 61010-2-201 and CSA C22.2 N°61010-2-201, for Industrial Control Equipment used in Ordinary Location
- Underwriters Laboratories Inc., UL 121201 and CSA C22.2 N°213, for Industrial Control Equipment used in Class I, Division 2 Hazardous (Classified) Locations
- IECEx / ATEX for use in zone 2 gas /zone 22 dust
- Merchant Navy, following IACS E10.

## Compliance Standards

Europe:

CE

- Directive 2014/30/EU (EMC: EN 61131-2)
- Directive 2014/34/EU (ATEX)

Australia, New Zealand:

- RCM

Korea:

- KC

Russia, Belarus, Kazakhstan:

- EAC

## Hazardous Substances

This product is designed to be compliant with the following environmental regulations, even if the product may not fall directly in the scope of the regulation:

- RoHS, Directive 2011/65/EU and 2015/863/EU
- RoHS China, Standard GB/T 26572
- REACH regulation EC 1907/2006

## End of Life (WEEE)

The product contains electronic boards. It must be disposed of in specific treatment channels. The product contains cells and/or storage batteries which must be collected and processed separately when they have run out and at the end of product life (Directive 2012/19/EU).

Refer to [Maintenance](#), page 57 when extracting cells and batteries from the product. These batteries do not contain a weight percentage of heavy metals over the threshold notified by European Directive 2006/66/EC.

## KC Markings

기종별	사용자안내문
A급 기기 (업무용 방송통신기자재)	이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

## Federal Communication Commission Radio Frequency Interference Statement - For USA

### FCC Radio Interference Information

This product has been tested and found to comply with the Federal Communications Commission (FCC) limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial, industrial or business environment. This product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause or be subject to interference with radio communications. To minimize the

possibility of electromagnetic interference in your application, observe the following two rules:

- Install and operate this product in such a manner that it does not radiate sufficient electromagnetic energy to cause interference in nearby devices.
- Install and test this product to ensure that the electromagnetic energy generated by nearby devices does not interfere with the operation of this product.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this product.

## **⚠ WARNING**

### **ELECTROMAGNETIC / RADIO INTERFERENCE**

Electromagnetic radiation may disrupt the operation of this product leading to unintended equipment operation. If electromagnetic interference is detected:

- Increase the distance between this product and the interfering equipment.
- Reorient this product and the interfering equipment.
- Reroute power and communication lines to this product and the interfering equipment.
- Connect this product and the interfering equipment to different power supplies.
- Always use shielded cables when connecting this product to a peripheral device or another computer.

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

## **Hazardous Location Installation - For USA and Canada**

### **General**

This product is suitable for use in Class I, Division 2, Groups A, B, C, and D hazardous locations or in non-hazardous locations. Before installing or using this product, confirm that the Hazardous Location certification appears on the product labeling.

**NOTE:** Some products are not yet rated as suitable for use in hazardous locations. Always use your product in conformance with the product labeling and this manual.

## **⚡⚠ DANGER**

### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Remove all power from the device before removing any covers or elements of the system, and prior to installing or removing any accessories, hardware, or cables.
- Unplug the power cable from both this product and the power supply.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace and secure all covers or elements of the system before applying power to this product.
- Use only the specified voltage when operating this product. This product is designed to use 24 Vdc. Always check whether your device is DC powered before applying power.

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

**▲ WARNING****EXPLOSION HAZARD**

- Do not use this product in hazardous environments or locations other than Class I, Division 2, Groups A, B, C, and D.
- Substitution of any components may impair suitability for Class I, Division 2.
- Always confirm the UL 121201 or CSA C22.2 N°213 hazardous location rating of your device before installing or using it in a hazardous location.
- To apply or remove the supply power from this product installed in a Class I, Division 2 hazardous location, you must either: A) Use a switch located outside the hazardous environment, or B) Use a switch certified for Class I, Division 1 operation inside the hazardous area.
- Do not connect or disconnect equipment unless power has been switched off or the area is known to be non-hazardous. This applies to all connections including power, ground, serial, parallel, and network connections.
- Do not install any Pro-face or OEM components, equipment, or accessories unless these have also been qualified as suitable for use in Class I, Division 2, Groups A, B, C, and D locations.
- Never use unshielded/ungrounded cables in hazardous locations.
- Use only non-incendive USB devices.
- Do not attempt to install, operate, modify, maintain, service, or otherwise alter this product except as permitted in this manual. Unpermitted actions may impair the suitability of this product for Class I, Division 2 operation.

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

Make sure that this product is properly rated for the location. If the intended location does not presently have a Class, Division and Group rating, then users should consult the appropriate authorities having jurisdiction in order to determine the correct rating for that hazardous location.

## Operation and Maintenance

The systems have been designed for compliance with relevant spark ignition tests.

**▲ WARNING****EXPLOSION HAZARD**

In addition to the other instructions in this manual, observe the following rules when installing this product in a hazardous location:

- Wire the equipment in accordance with the National Electrical Code article 501.10 (B) for Class I, Division 2 hazardous locations.
- Install this product in an enclosure suitable for the specific application. IP65F, UL 50/50E, Type 1, Type 4X (indoor use only), Type 12 or Type 13 enclosures are recommended even when not required by regulations.

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

**NOTE:** IP65F is not part of UL certification.

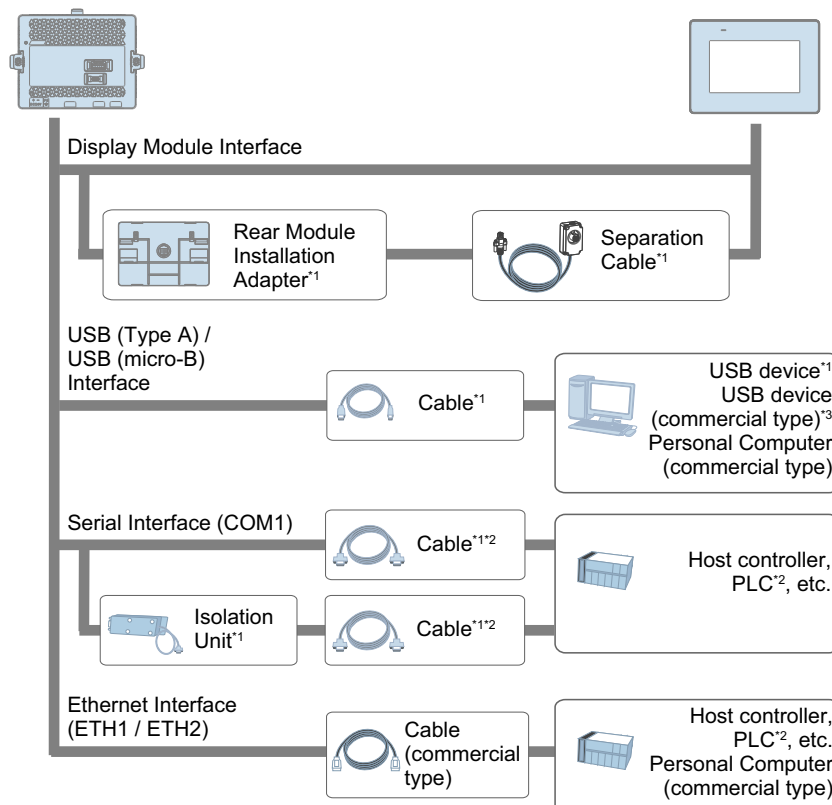
# Device Connectivity

## What's in This Chapter

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## System Design

This section describes the system configuration with this product and peripheral equipment.



\*1 Refer to Accessories, page 14.

\*2 For information on how to connect controllers and other types of equipment, refer to the corresponding device driver manual of your screen editing software.

\*3 For supported models, refer to our support site.  
<https://www.pro-face.com/trans/en/manual/1001.html>

## Accessories

This section introduces optional products that can be used with this product.

**NOTE:** For host controllers and connection cables, refer to the corresponding device driver manual of your screen editing software.

Product name	Product number	Description
<b>Serial interface</b>		
RS-422 Terminal Block Conversion Adapter	PFXZCBADTM1	Connects output from a serial interface (D-sub 9 pin plug) directly to an RS-422 terminal block.

Product name	Product number	Description
COM Port Conversion Adapter	CA3-ADPCOM-01	Connects optional RS-422 communication items to serial interface.
RS-232C Isolation Unit	CA3-ISO232-01	Connects a host controller to this product and provides isolation (RS-232C and RS-422 are switchable).
<b>USB (Type A) interface</b>		
USB Front Cable (1 m)	CA5-USBEXT-01	Extension cable that attaches USB interface to front panel.
<b>USB (micro-B) interface</b>		
USB Transfer Cable	PFXZUSCBMB2	Cable for transferring screen data from a PC (USB Type A) to this product (USB micro-B)
USB (micro-B) Front Cable	PFXZCIEXMB2	Extension cable that attaches USB interface to front panel.
<b>Others</b>		
Rear Module Installation Adapter	PFXZCM6DSA	Adapter for installing the rear module on a DIN rail.
Screen Protection Sheet with UV Protected	PFXZCIDS42	Disposable, dirt-resistant and ultraviolet protection sheet for 4-inch Wide screen (1 sheet/set).
	PFXZCIDS72	Disposable, dirt-resistant and ultraviolet protection sheet for 7-inch Wide screen (1 sheet/set).
Spacer	PFXZCM6MP2	Plate for adjusting installation panel thickness for the 4-inch wide display module.
	PFXZCM6MP4	Plate for adjusting installation panel thickness for the 7-inch wide display module.
Display Module/Rear Module Separation Cable (3 m)	PFXZCM6SM3	Cable for use when installing the rear module and display module apart from the other.
Display Module/Rear Module Separation Cable (5 m)	PFXZCM6SM5	
Display Module/Rear Module Separation Cable (10 m)	PFXZCM6SM10	

## Maintenance Accessories

Product name	Product number	Description
Rear Module	PFXSTM6B	Rear module for STM6000 Series
Display Module	PFXSTM62TP	Display module for STM-6200WA, 4-inch wide type
	PFXSTM64TP	Display module for STM-6400WA, 7-inch wide type
Installation Gasket	PFXZCIWG44	Gasket that provides dust and moisture resistance, for a 4-inch wide display module (1 piece).
	PFXZCIWG74	Gasket that provides dust and moisture resistance, for a 7-inch wide display module (1 piece).
DC Power Supply Connector	CA5-DCCNM-01	Connector for a DC power supply cable.
USB Clamp Type A (for 1 port)	PFXZCBCLUSA1	Clamp to prevent disconnection of USB cable (for 1 port, USB Type A, 5 pieces/set)

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<b>Product name</b>	<b>Product number</b>	<b>Description</b>
Display Installation Nut	PFXZGMNT1	Nut to install the display module (10 pieces/set)
Socket Wrench	PFXZGMSW1	Socket wrench to tighten and loosen the display installation nut
Accessories Kit	PFXZCM6KIT	Anti-rotation Tee, USB Clamp Type A, USB Clamp mini-B* <sup>1</sup> (1 piece/each)

\*<sup>1</sup> USB Clamp mini-B can be used for optional USB micro-B cables.

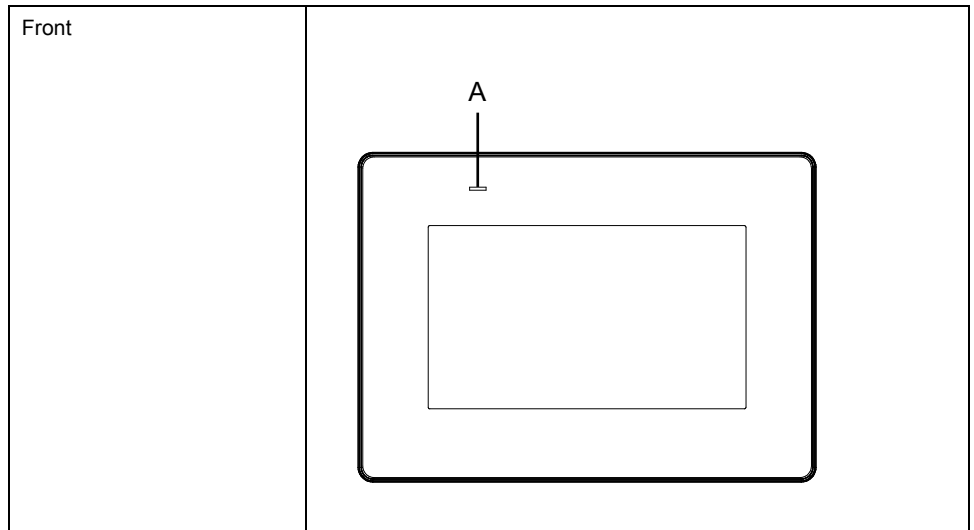
# Parts Identification and Functions

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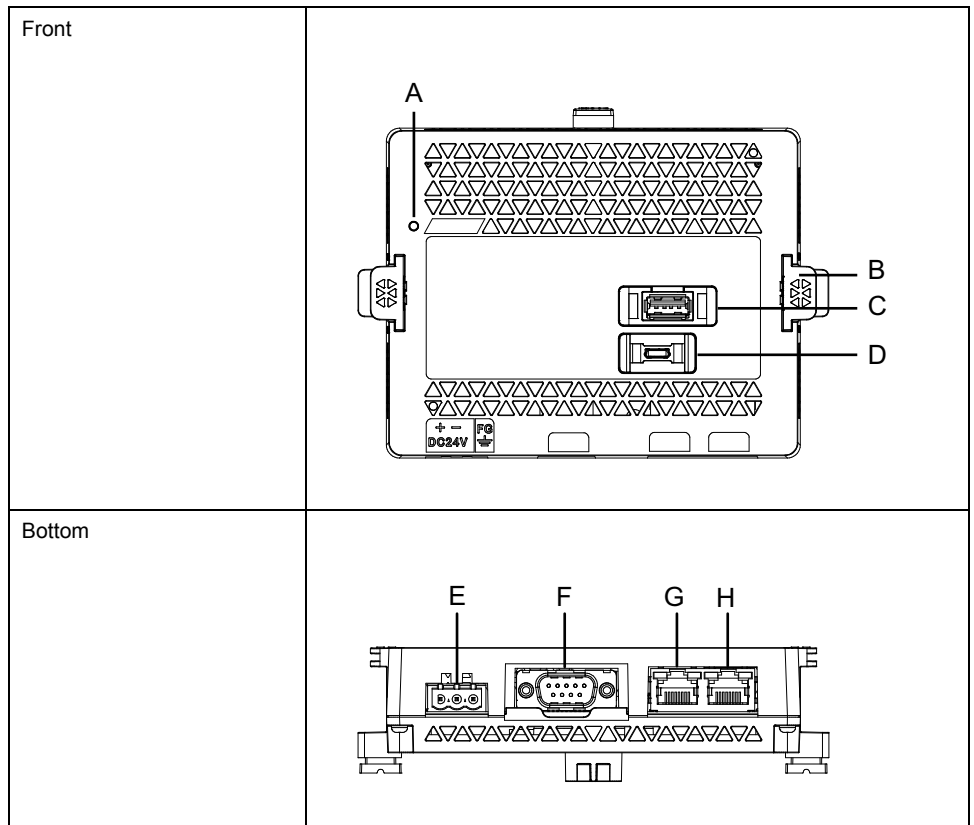
## Parts Identification

### Parts Identification (Display Module)



A. Status LED

### Parts Identification (Rear Module)



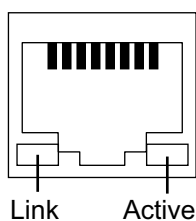
- A. Status LED
- B. Bumper
- C. USB (Type A) interface
- D. USB (micro-B) interface
- E. Power plug connector
- F. Serial interface (COM1)
- G. Ethernet interface (ETH1)
- H. Ethernet interface (ETH2)

## LED Indications

### Status LED

Color	Indicator	HMI operation
Green	ON	In operation
	LED fade	Backlight OFF (Standby Mode)
Orange	Flashing	Software starting up
Red	ON	Power is ON.
-	OFF	Power is OFF.

### Ethernet LED



Color	Indicator	Description
Green (Link)	ON	Data transmission is available.
	OFF	No connection or error
Green (Active)	Flashing	Data transmission is occurring.
	OFF	No data transmission

# Specifications

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## General Specifications

### Electrical Specifications

#### Rear Module

Rated input voltage		24 Vdc
Input voltage limits		19.2...28.8 Vdc
Voltage drop (at rated input voltage)		5 ms or less
Power consumption	Max	6.8 W
	When power is not supplied to external devices	3.5 W
In-rush current		30 A or less
Noise immunity		Noise voltage: 1,000 Vp-p Pulse duration: 1 μs Rise time: 1 ns (via noise simulator)
Dielectric strength		1,000 Vac for 1 minute (between power terminal and FG terminal)
Insulation resistance		500 Vdc, 10 MΩ or more (between power terminal and FG terminals)

#### Display Module

Specification		STM-6200WA	STM-6400WA
Power consumption	Max	1.0 W	3.6 W
	When screen turns off the backlight (standby mode)	0.6 W	1.3 W

**NOTE:** The power consumption for the combined unit of the rear module and the display module equals the sum of power consumption of the two modules.

### Environmental Specifications

Use and store this product in areas that conform to the specified conditions.

**NOTE:** When using any of the options for this product, check the specifications for special conditions or cautions that may apply to this product.

Physical environment	
Ambient air temperature	0...50 °C (32...122 °F)
Storage temperature	-20...60 °C (-4...140 °F)
Ambient air and storage humidity	10...90% RH (non condensing, wet bulb temperature 39 °C [102.2 °F] or less)
Dust	0.1 mg/m <sup>3</sup> (10 <sup>-7</sup> oz/ft <sup>3</sup> ) 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)
<b>Mechanical environment</b>	
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 <sup>2</sup> X, Y, Z directions for 10 cycles (approximately 100 minutes)
Shock resistance	IEC/EN 61131-2 compliant 147 m/s <sup>2</sup> , X, Y, Z directions for 3 times
<b>Electrical environment</b>	
Electrical fast transient/burst immunity	IEC 61000-4-4 2 kV: Power port 1 kV: Signal ports
Electrostatic discharge immunity	Contact discharge method: 6 kV Air discharge method: 8 kV (IEC/EN 61000-4-2 Level 3)

## Air Quality Requirements

Do not operate or store the product 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

### Rear Module

Grounding	Functional grounding: Grounding resistance of 100 Ω or less, 2 mm <sup>2</sup> (AWG 14) or thicker wire, or your country's applicable standard (SG and FG are connected inside the product).
Cooling method	Natural air circulation
Structure	IP20
External dimensions (W x H x D)	145.6 x 108.23 x 41.4 mm (5.73 x 4.26 x 1.63 in) (excluding protrusions)
Weight	0.27 kg (0.6 lb) or less

### **NOTICE**

#### **EQUIPMENT DAMAGE**

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

**Failure to follow these instructions can result in equipment damage.**

## Display Module

	STM-6200WA	STM-6400WA
Cooling method	Natural air circulation	
Structure*1	IP65F, UL 50/50E, Type 1, Type 4X (indoor use only), Type 12, Type 13	
External dimensions (W x H x D)	140.4 x 101.1 x 13.9 mm (5.53 x 3.98 x 0.55 in) (excluding protrusions)	201.2 x 137.2 x 17.1 mm (7.92 x 5.4 x 0.67 in) (excluding protrusions)
Panel cut dimensions	Diameter 22.5 mm (0.88 in)	
Weight	0.22 kg (0.49 lb) or less	0.49 kg (1.08 lb) or less

\*1 The front face of this product, installed in a solid panel, has been tested using conditions equivalent to the standards shown in the specification. Even though this product's level of resistance is equivalent to these standards, oils that should have no effect on this product can possibly harm this product. This can occur in areas where either vaporized oils are present, or where low viscosity cutting oils are allowed to adhere to this product for long periods of time. If this product's front face protection sheet peels off, these conditions can lead to the ingress of oil into this product and separate protection measures are suggested. Also, if non-approved oils are present, they may cause deformation or corrosion of the front panel's cover. Therefore, prior to installing this product, be sure to confirm the type of conditions that will be present in this product's operating environment.

If the installation gasket is used for a long period of time, or if this product 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.

### **NOTICE**

#### **EQUIPMENT DAMAGE**

- Ensure this product is not in permanent and direct contact with oils.
- Do not press on the display of this product with excessive force or with a hard object.
- Do not press on the touch panel with a pointed object, such as the tip of a mechanical pencil or a screwdriver.
- Do not expose the device to direct sunlight.
- Store this product in areas where temperatures are within the product's specifications.

**Failure to follow these instructions can result in equipment damage.**

### **NOTICE**

#### **GASKET AGING**

- Inspect the gasket periodically as required by your operating environment.
- 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.**

## Functional Specifications

### Display Specifications

	STM-6200WA	STM-6400WA
Display type	TFT Color LCD	
Display size	4.3"	7"
Resolution	480 x 272 pixels	800 x 480 pixels (WVGA)
Effective display area (W x H)	95.04 x 53.86 mm (3.74 x 2.12 in)	154.08 x 85.92 mm (6.07 x 3.38 in)
Display colors	16 million colors For details about display colors, refer to the manual of your screen editing software.	
Backlight	White LED (Not user replaceable. When replacement is required, contact customer support.)	
Backlight service life	50,000 hours or more (continuous operation at 25 °C [77 °F] before backlight brightness decreases to 25%)	
Brightness control	16 levels (Adjusted with touch panel or software)	

### Touch Panel

Touch panel type	Resistive film (analog, single touch)
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.**

### Memory

System memory*1	Flash EPROM 1 GB (operating system, project data, and other data)
Backup memory*1	NVRAM 512 KB

\*1 For the usage capacity of each 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.

This product uses a primary battery for data backup of the internal clock. If the battery is depleted, the clock data will be lost.

# Interface Specifications

## Specifications of Each Interface

<b>Serial interface COM1</b>	
Asynchronous transmission	RS-232C/422/485
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)
<b>USB (Type A) interface</b>	
Connector	USB 2.0 (Type A) x 1
Power supply voltage	5 Vdc $\pm$ 5%
Maximum current supplied	500 mA
Maximum transmission distance	5 m (16.4 ft)
<b>USB (micro-B) interface</b>	
Connector	USB 2.0 (micro-B) x 1
Maximum transmission distance	5 m (16.4 ft)
<b>Ethernet interface</b>	
Standard	IEEE802.3i/IEEE802.3u, 10BASE-T/100BASE-TX
Connector	Modular jack (RJ-45) x 2

## Interface Connection

Use only the SELV (Safety Extra-Low Voltage) circuit to connect all interfaces on this product.

## Cable Connections

### **⚠ WARNING**

#### **EXPLOSION HAZARD**

- Always confirm the UL 121201 or CSA C22.2 N°213 hazardous location rating of your device before installing or using it in a hazardous location.
- To apply or remove the supply power from this product installed in a Class I, Division 2 hazardous location, you must either: A) Use a switch located outside the hazardous environment, or B) Use a switch certified for Class I, Division 1 operation inside the hazardous area.
- Do not connect or disconnect equipment unless power has been switched off or the area is known to be non-hazardous. This applies to all connections including power, ground, serial, parallel, and network connections.
- Never use unshielded/ungrounded cables in hazardous locations.
- Use only non-incendive USB devices.
- Use the USB (micro-B) interface for temporary connection only during maintenance and setup of the device.
- Do not use the USB (micro-B) interface in hazardous locations.

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

Division 2 hazardous location regulations require that all cable connections be provided with adequate strain relief and positive interlock. As this product does not provide adequate strain relief for the USB connection (USB micro-B interface) on this product, use only non-incendive USB devices. Never connect or disconnect a cable while power is applied at either end of the cable. All communication cables should include a chassis ground shield. This shield should include both copper braid and aluminum foil. The D-sub style connector housing must be a metal conductive type (for example, molded zinc) and the ground shield braid must be terminated directly to the connector housing. Do not use a shield drain wire.

The outer diameter of the cable must be suited to the inner diameter of the cable connector strain relief so that a reliable degree of strain relief is maintained. Always secure the D-sub connectors to the workstation-mating connectors via the two screws located on both sides.

## Serial Interface

The serial interface is not isolated. The SG (signal ground) and FG (frame ground) terminals are connected inside this product. When using a D-Sub serial interface connector, connect the FG wire to the shell.

You can switch the communication method between RS-232C and RS-422/RS-485 via the software.

**NOTE:** For information on how to connect controllers and other types of equipment, refer to the corresponding device driver manual of your screen editing software.

### **DANGER**

#### **ELECTRIC SHOCK AND FIRE**

When using the SG terminal to connect an external device to this product:

- Verify that a ground loop is not created when you set up the system.
- Connect the SG terminal to remote equipment when the external device is not isolated.
- Connect the 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.**

### **CAUTION**

#### **LOSS OF COMMUNICATION**

- Do not put excessive stress on the communication ports of all connections.
- Securely attach communication cables to the panel wall or cabinet.
- Use a D-Sub 9 pin connector that has jack screws.

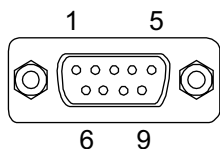
**Failure to follow these instructions can result in injury or equipment damage.**

**NOTE:** Use within the rated current.

## RS-232C

D-Sub 9 pin plug connector

Product side:



Pin No.	RS-232C		
	Signal name	Direction	Description
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	Clear To Send
9	CI (RI)/VCC	Input/-	Called Status Display +5 Vdc $\pm$ 5% Output 0.25 A*1
Shell	FG	-	Frame Ground (common with SG)

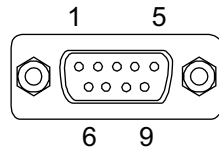
\*1 You can switch pin #9 between CI (RI) and VCC via the software. The VCC output is not protected against overcurrent. To prevent damage or malfunction, use only within the rated current.

Recommended jack screw is #4-40 (UNC).

**RS-422/485**

D-Sub 9 pin plug connector

Product side:



Pin No.	RS-422/RS-485		
	Signal name	Direction	Description
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	Clear To Send B (-)
7	SDB	Output	Send Data B (-)
8	CSA	Input	Clear To Send A (+)
9	ERB	Output	Data Terminal Ready B (-)
Shell	FG	-	Functional Ground (common with SG)

Recommended jack screw is #4-40 (UNC).

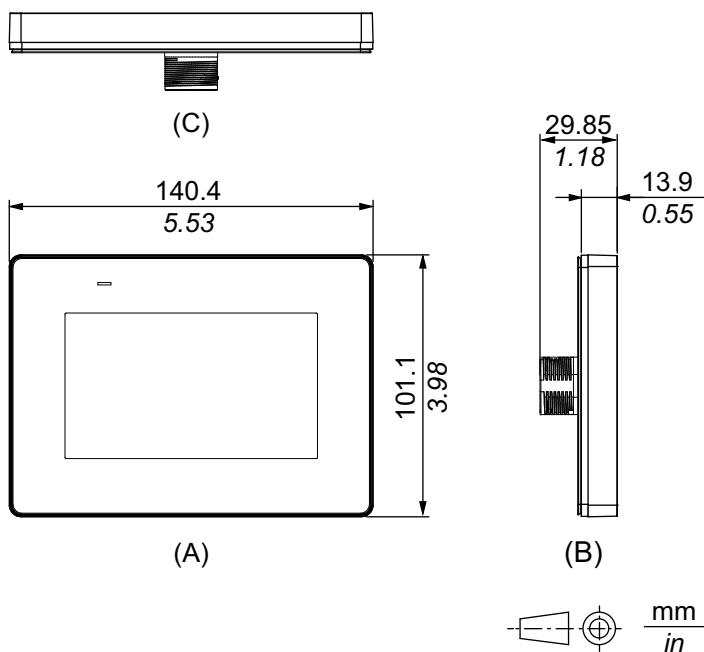
# Dimensions

## What's in This Chapter

STM-6200WA External Dimensions .....	28
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Rear Module External Dimensions .....	32
Rear Module Installation Adapter External Dimensions .....	33
Display Module/Rear Module Separation Cable Dimensions .....	34

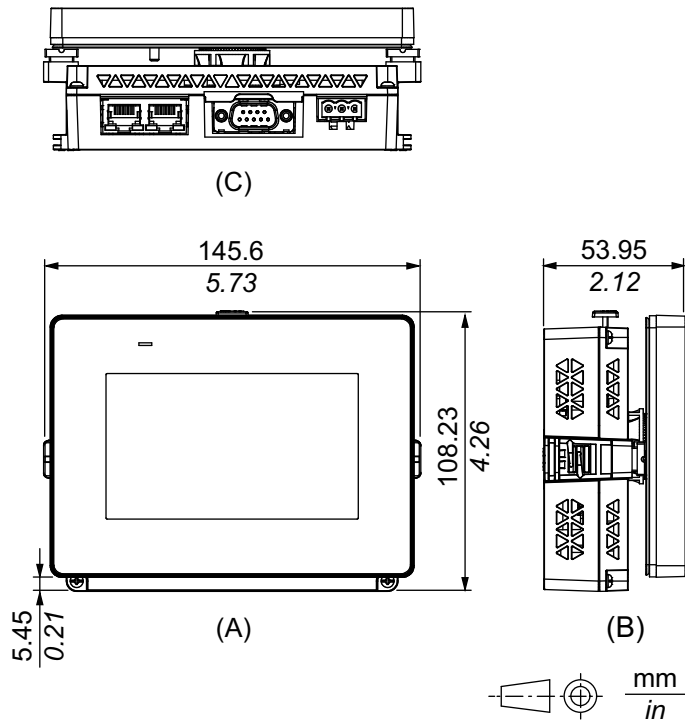
## STM-6200WA External Dimensions

### Display Module Dimensions



- A. Front
- B. Left
- C. Bottom

**Dimensions When Rear Module Attached to Display Module**

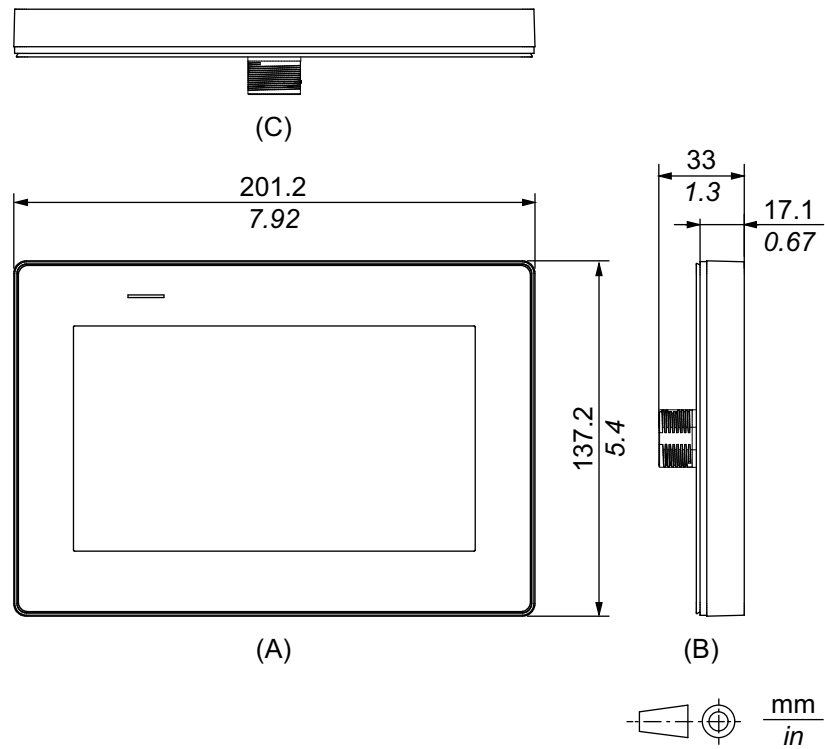


- A. Front
- B. Left
- C. Bottom

**NOTE:** See the following for dimensions of rear module only.  
Rear Module External Dimensions, page 32

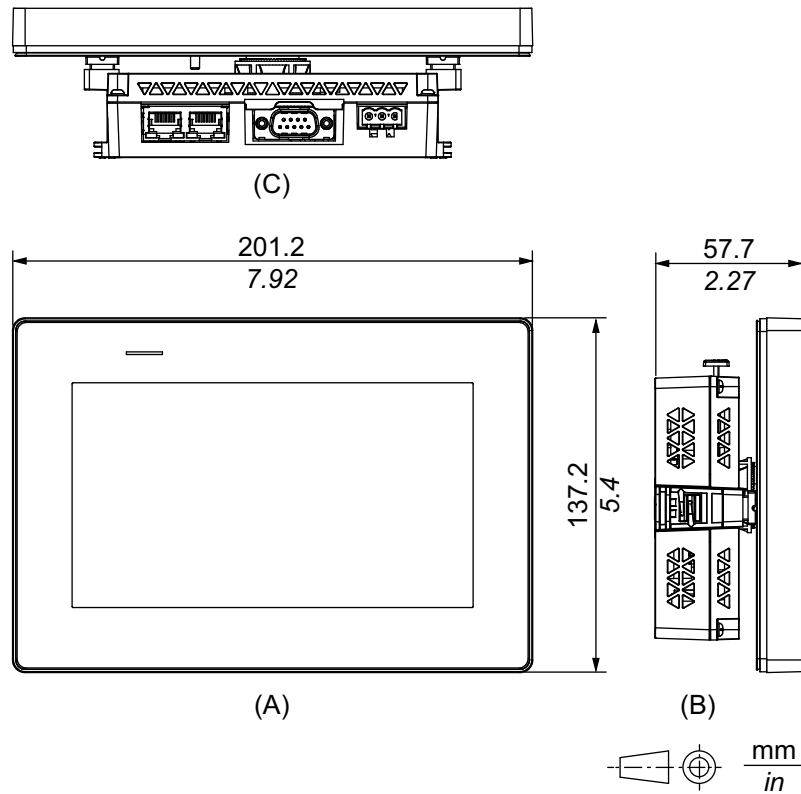
# STM-6400WA External Dimensions

## Display Module Dimensions



- A. Front
- B. Left
- C. Bottom

### Dimensions When Rear Module Attached to Display Module

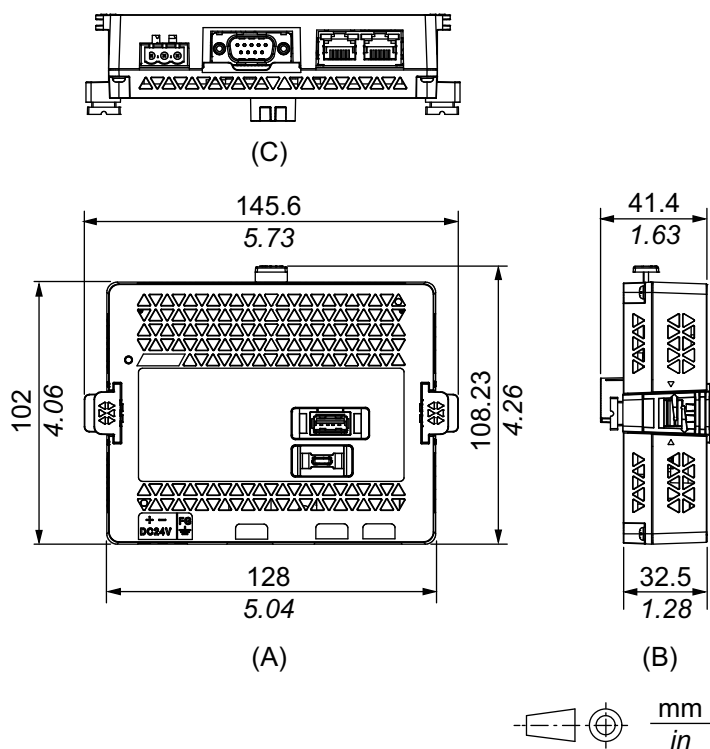


- A. Front
- B. Left
- C. Bottom

**NOTE:** See the following for dimensions of rear module only.  
Rear Module External Dimensions, page 32

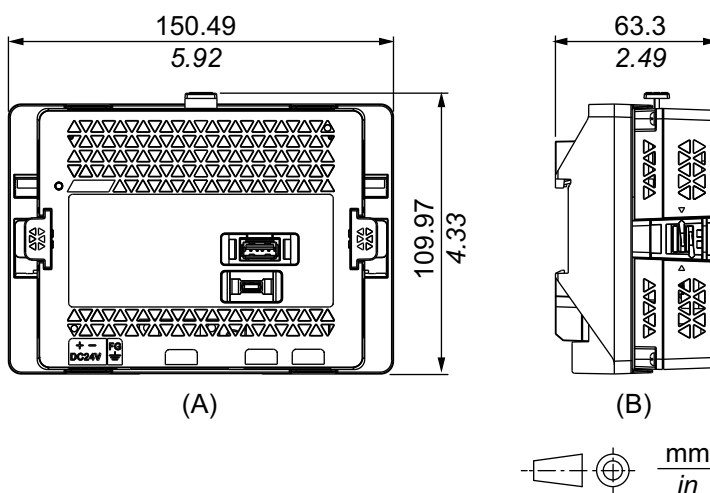
# Rear Module External Dimensions

## Rear Module Dimensions



- A. Front
- B. Right
- C. Bottom

## Dimensions When Rear Module Attached to Installation Adapter

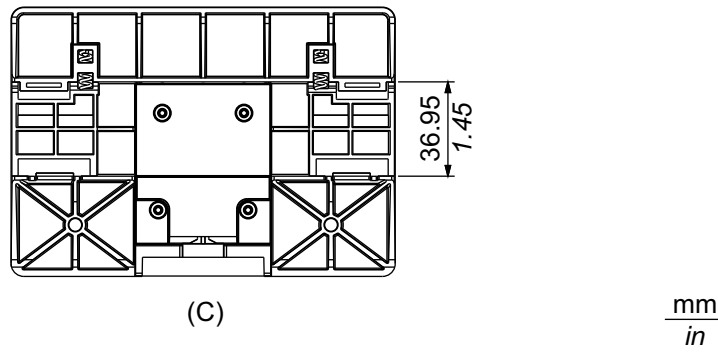
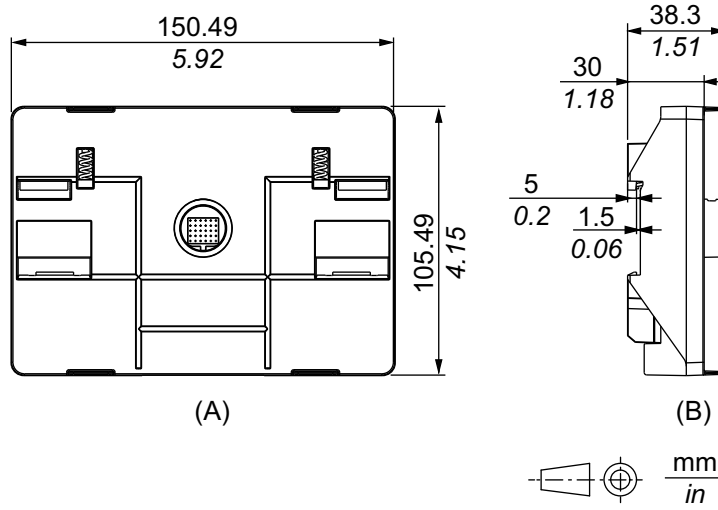


- A. Front
- B. Right

**NOTE:** See the following for dimensions of Rear Module Installation Adapter only.  
Rear Module Installation Adapter External Dimensions, page 33

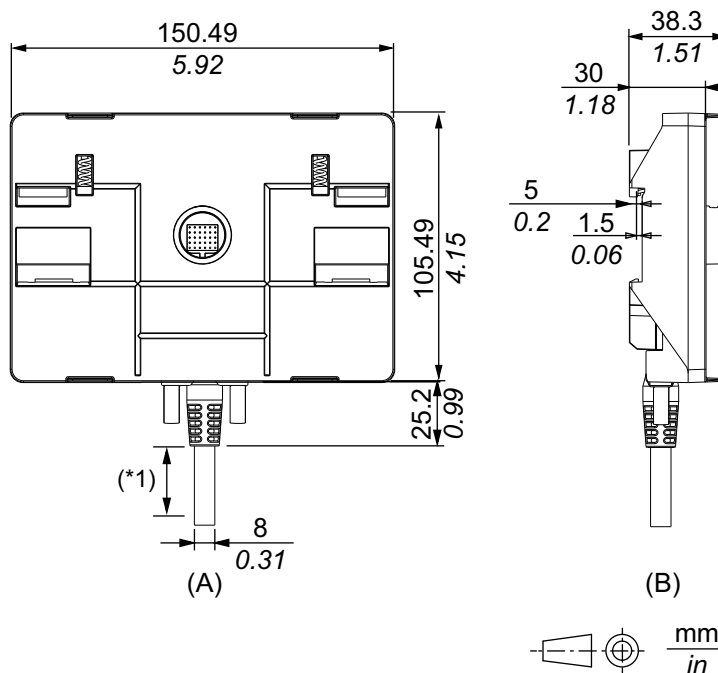
# Rear Module Installation Adapter External Dimensions

## Rear Module Installation Adapter Dimensions



- A. Front
- B. Right
- C. Rear

### Dimensions with Separation Cable Attached

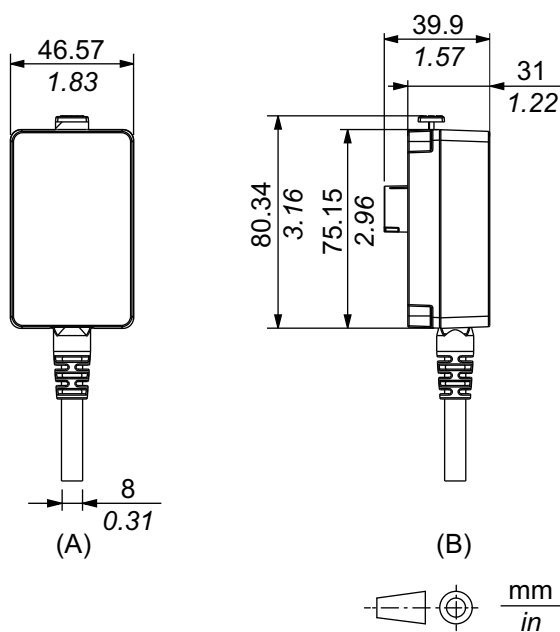


A. Front

B. Right

\*1 To assemble this product, you need 20 mm (0.78 in) or more space to bend the rubber portion at the end of the cable.

### Display Module/Rear Module Separation Cable Dimensions



A. Front

B. Right

# Installing and Wiring

## What's in This Chapter

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Wiring the Power Supply .....	48
USB Cable Clamp .....	53

## Installation

### Precautions for Building into an End-use Product

The display module of this product is designed for use on flat surfaces of IP65F, UL 50/50E, Type 1, Type 4X (indoor use only), Type 12 and Type 13 enclosures.

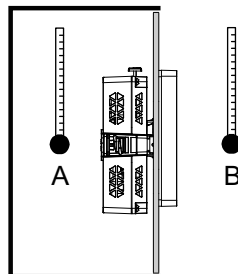
Be aware of the following when building this product into an end-use product:

- The rear module 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 the display module with its front panel facing outward.

**NOTE:** IP65F is not part of the UL certification.

### Installation Requirements

- Check that the installation wall or cabinet 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. Even if the installation wall thickness is within the recommended range for the *Panel Cut Dimensions*, page 37, 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 ambient air temperature and the ambient humidity are within their specified ranges in *Environmental Specifications*, page 19. When installing this product in a cabinet or enclosure, the ambient air temperature is the cabinet's or enclosure's internal and external temperature.

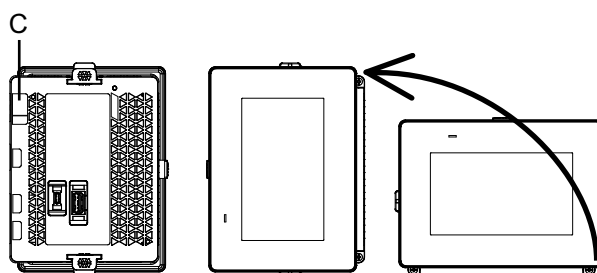


- A. Internal temperature
- B. External temperature

- Be sure that heat from surrounding equipment does not cause this product to exceed its standard operating temperature.

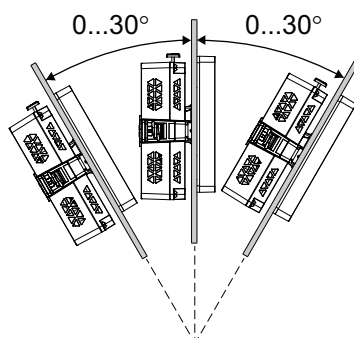
- When mounting this product in portrait orientation, ensure that the right side of this product faces up. In other words, the DC power connector should be at the top.

**NOTE:** For portrait orientation mounting, make sure your screen editing software supports the function.

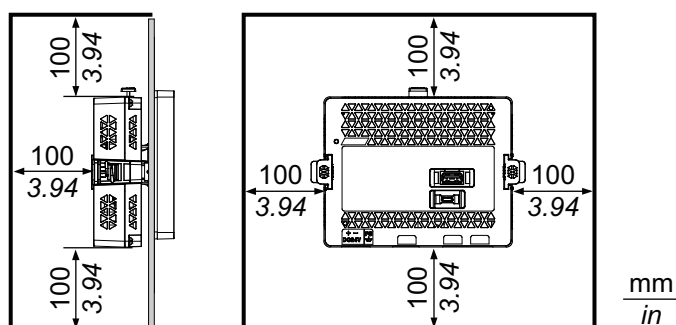


#### C. Power connector

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



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



- The panel must be designed to avoid any induced vibration resonance on the rear module exceeding an amplitude factor of 10 and to avoid any induced permanent vibration resonance. To reduce the resonance use the spacer (sold separately).

## NOTICE

### EQUIPMENT DAMAGE

When transporting a panel with the product installed, remove its rear module.

**Failure to follow these instructions can result in equipment damage.**

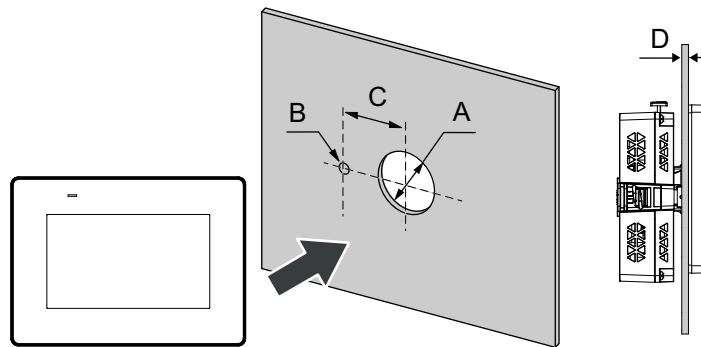
### Pressure Differences

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

Based on the panel cut dimensions, open a mount hole on the panel.



A	B	C
22.5 mm (+0/-0.3 mm) (0.88 in [+0/-0.01 in])	4.0 mm (+0/-0.2 mm) (0.15 in [+0/-0.007 in])	30.0 mm (+0/-0.2 mm) (1.18 in [+0/-0.007 in])

#### Panel thickness recommended range:

Panel material	Thickness range (D)
Steel	1.5... 6.0 mm (0.06... 0.23 in)
Glass fiber reinforced plastics (minimum GF30)	3.0... 6.0 mm (0.12... 0.23 in)

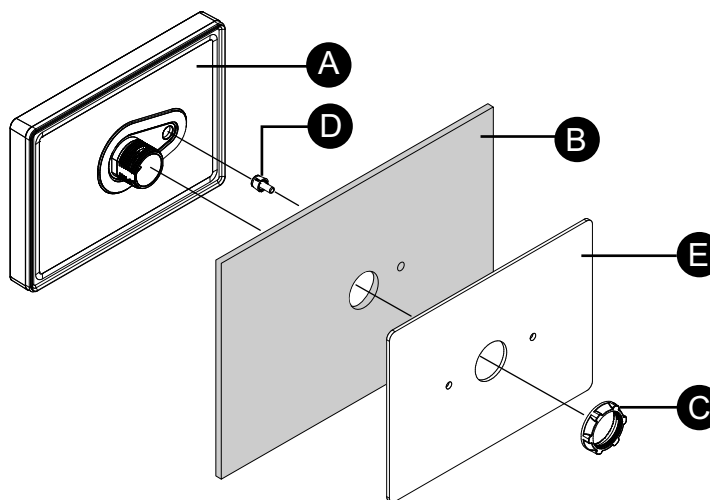
### About Spacer

If the panel thickness does not meet the conditions for use with the product, you can use an optional spacer.

Product number	PFXZCM6MP2	PFXZCM6MP4
Spacer size (W x H x D)	145 x 105 x 2 mm (5.71 x 4.13 x 0.08 in)	204 x 140 x 2 mm (8.03 x 5.51 x 0.08 in)
Spacer material	Stainless steel	Stainless steel

The thickness and material of panels you can use the spacer are as follows.

Panel material	STM-6200WA	STM-6400WA
Steel	1 ... 1.5 mm (0.04 ... 0.06 in)	1 ... 1.5 mm (0.04 ... 0.06 in)
Glass fiber reinforced plastics (minimum GF30)	1 ... 3 mm (0.04 ... 0.12 in)	2 ... 3 mm (0.08 ... 0.12 in)
Other plastic	1 ... 3 mm (0.04 ... 0.12 in)	not possible



- A. Display module
- B. Panel
- C. Display module fixing nut
- D. Anti-rotation tee
- E. Spacer

## Installation Procedure

This section describes how to install the rear module and display module to the panel.

### **⚡ ⚠ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Remove all power from the device before removing any covers or elements of the system, and prior to installing or removing any accessories, hardware, or cables.
- Unplug the power cable from both this product and the power supply prior to installing the product.
- Always use a properly rated voltage sensing device to confirm power is off where and when indicated.
- Replace and secure all covers or elements of the system before applying power to this product.

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

### **NOTICE**

#### **EQUIPMENT DAMAGE**

Always use the installation gasket.

**Failure to follow these instructions can result in equipment damage.**

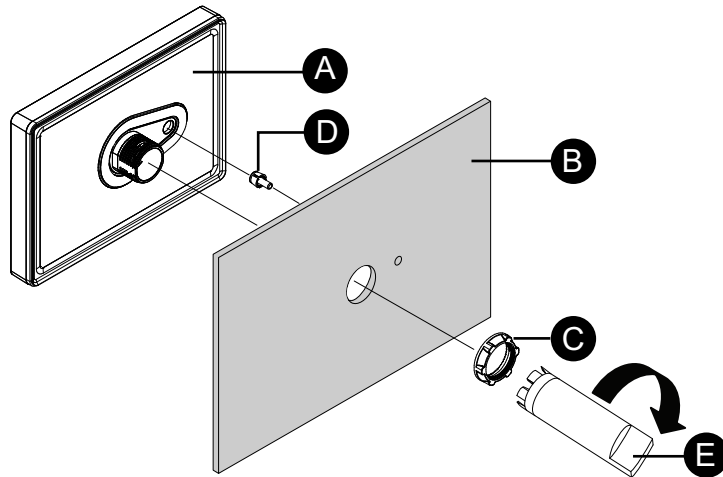
1. Place the display module on a clean and level surface with the screen facing down.
2. Check that the gasket is seated securely into the bezel groove, which runs around the perimeter of the display panel frame.

**NOTE:** Always use the installation gasket, since it absorbs vibration in addition to repelling water. For the procedure on replacing the installation gasket, refer to [Replacing the Installation Gasket](#), page 58.

3. Based on this product's [Panel Cut Dimensions](#), page 37, open a mount-hole on the panel.
4. Insert the display module and the anti-rotation tee into the panel hole from the front side. Use the socket wrench to tighten the nut. The necessary torque for the nut is 1.2 to 2.0 N•m (10.62 to 17.70 lb-in).

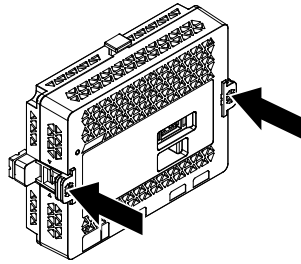
**NOTE:**

- The anti-rotation tee is used to install the display module horizontally on the panel. When you do not use an anti-rotation tee, applying 2.5 N•m (22.12 lb-in) or more force to the display module could cause the product to rotate. By using an anti-rotation tee, 6 N•m (53.10 lb-in) or more force could cause the product to rotate.
- If the panel thickness does not meet the specified conditions, use the spacer (sold separately).

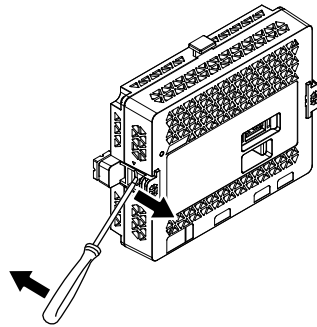


- A. Display module
- B. Panel
- C. Display module fixing nut
- D. Anti-rotation tee
- E. Socket wrench

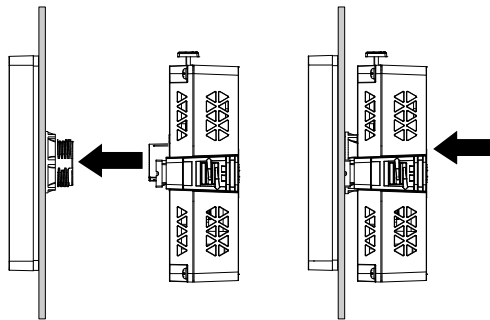
- If the panel thickness is 3.8 mm (0.15 in) or less, push in the bumper on the rear module until you hear a click. If the panel thickness is more than 3.8 mm (0.15 in), do not change the bumper position.



**NOTE:** To return the bumper to its original position, use a screwdriver or other tool as a lever to push the bumper up.



- Insert and push the rear module straight in to the display module, until they lock into place.



## Removal Procedure

This section describes how to remove the rear module and display module from the panel.

## **⚠ ⚠ DANGER**

### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Remove all power from the device before removing any covers or elements of the system, and prior to installing or removing any accessories, hardware, or cables.
- Unplug the power cable from both this product and the power supply prior to removing the product.
- Always use a properly rated voltage sensing device to confirm power is off where and when indicated.

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

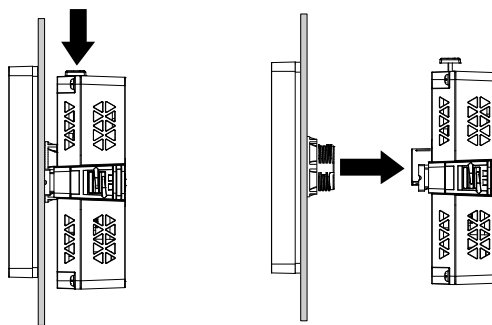
## **NOTICE**

### **EQUIPMENT DAMAGE**

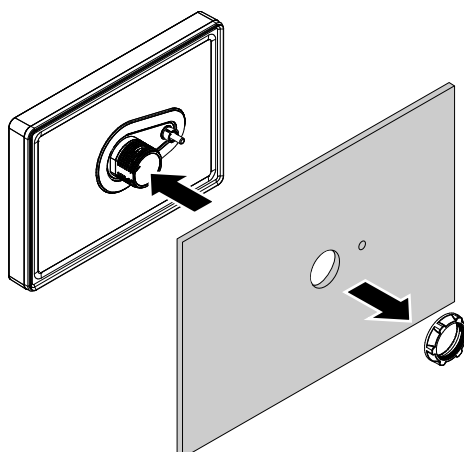
Be sure to remove the rear module from the display module without twisting.

**Failure to follow these instructions can result in equipment damage.**

1. Push and hold the button at the top of the rear module, and pull the rear module straight out.



2. Remove the nut and the display module from the panel.



## Separate Installation

### Introduction

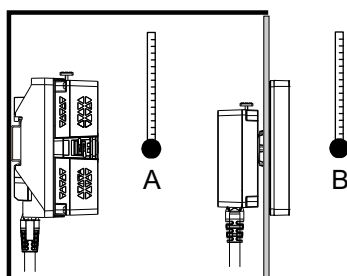
This section describes how to install the display module and rear module separately.

Use the following optional products to mount the rear module on the DIN rail and connect it to the display module mounted on the panel. For information about optional products, refer to *Accessories*, page 14.

- Display Module/Rear Module Separation Cable
- Rear Module Installation Adapter

### Installation Requirements for Separate Installation

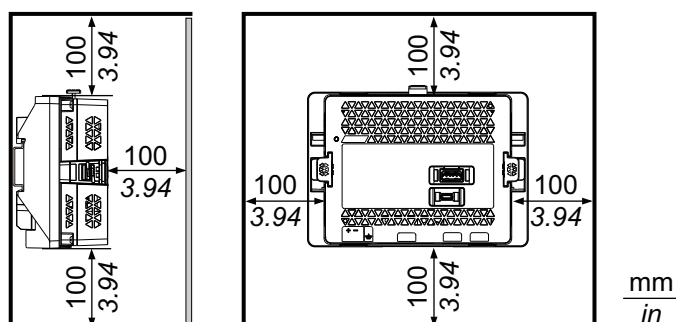
- Check that the installation wall or cabinet surface is flat, in good condition and has no jagged edges. Metal reinforcing strips may be attached to the inside of the wall, near the panel-cut, to increase its rigidity.
- Decide on the thickness of the enclosure wall, based on the level of strength required. Even if the installation wall thickness is within the recommended range for the *Panel Cut Dimensions*, page 37, 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 ambient air temperature and the ambient humidity are within their specified ranges in *Environmental Specifications*, page 19. When installing this product in a cabinet or enclosure, the ambient air temperature is the cabinet's or enclosure's internal and external temperature.



A. Internal temperature

B. External temperature

- Be sure that heat from surrounding equipment does not cause this product to exceed its standard operating temperature.
- For easier maintenance, operation and improved ventilation, install this product at least 100 mm (3.94 in) away from adjacent structures and other equipment as shown in the following illustration:



- The panel must be designed to avoid any induced vibration resonance on the rear module exceeding an amplitude factor of 10 and to avoid any induced permanent vibration resonance. To reduce the resonance use the spacer (sold separately).

<b>NOTICE</b>
<b>EQUIPMENT DAMAGE</b>
When transporting the cabinet or enclosure with the product installed, remove its rear module.
<b>Failure to follow these instructions can result in equipment damage.</b>

### 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.

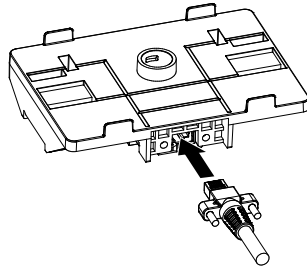
### Installation Procedure on DIN Rail and Panel

This section describes how to install the rear module on a DIN rail and the display module to the panel.

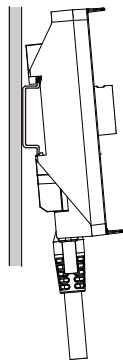
<b>⚠️⚠️ DANGER</b>
<b>HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH</b>
<ul style="list-style-type: none"> <li>• Remove all power from the device before removing any covers or elements of the system, and prior to installing or removing any accessories, hardware, or cables.</li> <li>• Unplug the power cable from both this product and the power supply prior to installing the product.</li> <li>• Always use a properly rated voltage sensing device to confirm power is off where and when indicated.</li> <li>• Replace and secure all covers or elements of the system before applying power to this product.</li> </ul>
<b>Failure to follow these instructions will result in death or serious injury.</b>

<b>NOTICE</b>
<b>EQUIPMENT DAMAGE</b>
Always use the installation gasket.
<b>Failure to follow these instructions can result in equipment damage.</b>

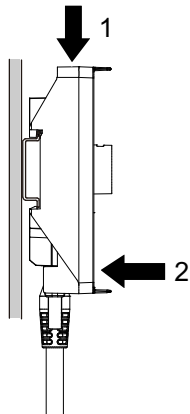
1. Connect the separation cable to the rear module installation adapter. Affix the screws on both sides of the cable connector to secure the cable to the adapter.



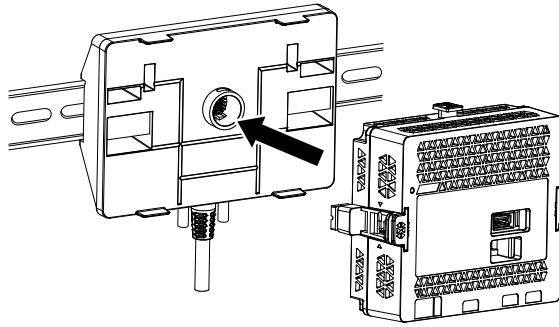
2. Position the top groove of the rear module installation adapter on the top edge of the DIN rail.



3. Push down on the adapter until the bottom groove of the installation adapter fits under the DIN rail.



4. Insert and push the rear module straight in to the adapter, until they lock into place.



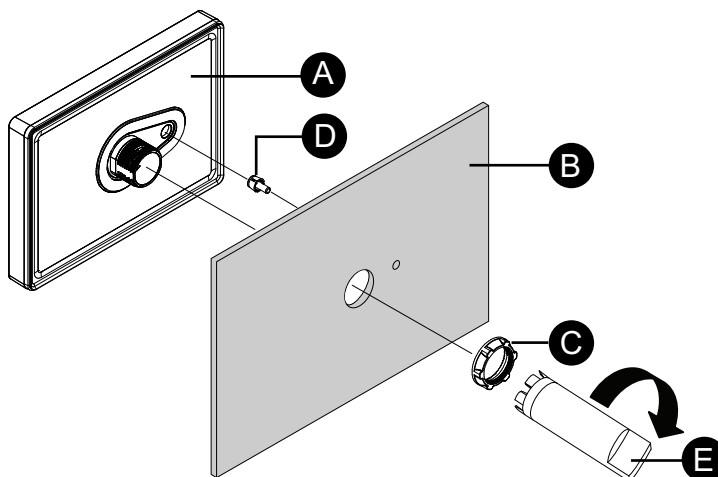
5. Place the display module on a clean and level surface with the screen facing down.
6. Check that the gasket is seated securely into the bezel groove, which runs around the perimeter of the display panel frame.

**NOTE:** Always use the installation gasket, since it absorbs vibration in addition to repelling water. For the procedure on replacing the installation gasket, refer to Replacing the Installation Gasket, page 58.

7. Based on this product's Panel Cut Dimensions, page 37, open a mount-hole on the panel.
8. Insert the display module and the anti-rotation tee into the panel hole from the front side. Use the socket wrench to tighten the nut. The necessary torque for the nut is 1.2 to 2.0 N•m (10.62 to 17.70 lb-in).

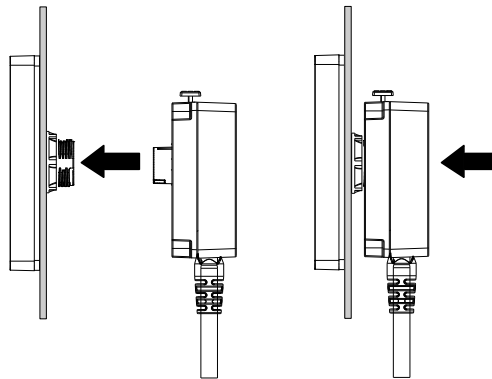
**NOTE:**

- The anti-rotation tee is used to install the display module horizontally on the panel. When you do not use an anti-rotation tee, applying 2.5 N•m (22.12 lb-in) or more force to the display module could cause the product to rotate. By using an anti-rotation tee, 6 N•m (53.10 lb-in) or more force could cause the product to rotate.
- If the panel thickness does not meet the specified conditions, use the spacer (sold separately).



- A. Display module
- B. Panel
- C. Display module fixing nut
- D. Anti-rotation tee
- E. Socket wrench

9. Insert and push the separation cable straight in to the display module, until they lock into place.



## Removal Procedure from DIN Rail and Panel

This section describes how to remove the rear module from a DIN rail and the display module from the panel.

### **⚠️ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Remove all power from the device before removing any covers or elements of the system, and prior to installing or removing any accessories, hardware, or cables.
- Unplug the power cable from both this product and the power supply prior to removing the product.
- Always use a properly rated voltage sensing device to confirm power is off where and when indicated.

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

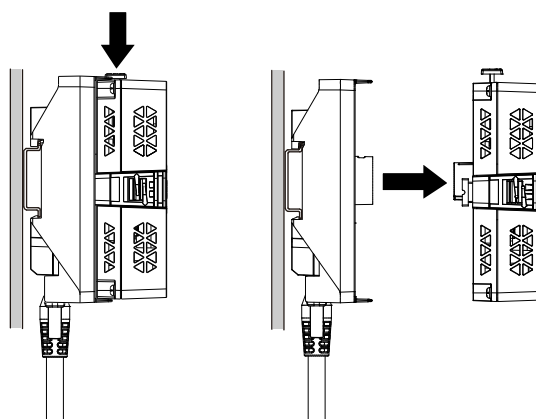
### **NOTICE**

#### **EQUIPMENT DAMAGE**

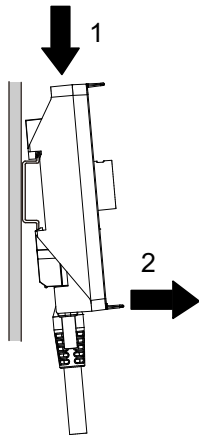
Be sure to remove the separation cable from the display module without twisting.

**Failure to follow these instructions can result in equipment damage.**

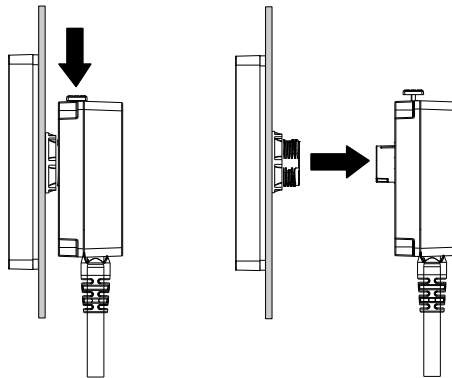
1. Push and hold the button at the top of the rear module, and pull the rear module straight out.



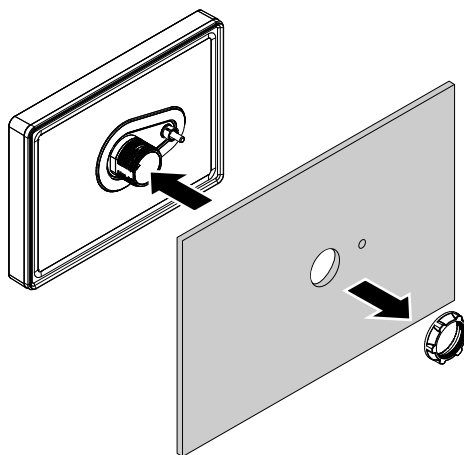
2. Push down on the rear module installation adapter and unhook the bottom part of the adapter from the DIN rail.



3. Push and hold the button at the top of the separation cable, and pull the separation cable straight out.



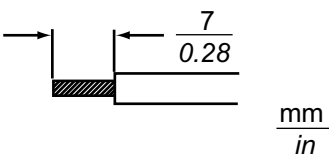
4. Remove the nut and the display module from the panel.



## Wiring the Power Supply

### 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.
- The conductor type is solid or stranded wire.
- Use copper wire rated for 75 °C (167 °F) or higher.
- Use UL Listed power source with LPS (Limited Power Source) or Class 2 output.

Power cord diameter	0.75...2.5 mm <sup>2</sup> (18...13 AWG)* <sup>1</sup>
Conductor type	Solid or stranded wire
Conductor length	 <p style="text-align: right;">mm in</p>
Recommended driver	Flat-head screwdriver (size 0.6 x 3.5)

\*<sup>1</sup> For UL compatibility, use AWG 14 or AWG 13.

### How to Connect the DC Power Cord

#### **DANGER**

##### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

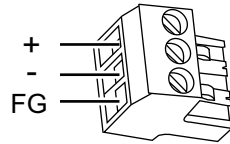
- Remove all power from the device before removing any covers or elements of the system, and prior to installing or removing any accessories, hardware, or cables.
- Remove power before wiring this product's power terminals.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace and secure all covers or elements of the system before applying power to this product.
- Use only the specified voltage when operating this product. This product is designed to use 24 Vdc. Always check whether your device is DC powered before applying power.
- Since this product is not equipped with a power switch, be sure to connect a power switch to the power supply.
- Be sure to ground this product's FG terminal.

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

##### **NOTE:**

- The SG (signal ground) and FG (frame ground) terminals are connected inside this product.
- When the FG terminal is connected, be sure the wire is grounded. Not grounding this product can result in excessive electromagnetic interference (EMI).

## DC Power Connector



Connection	Wire
+	24 Vdc
-	0 Vdc
FG	Grounded terminal. Connect the FG terminal properly to ground.

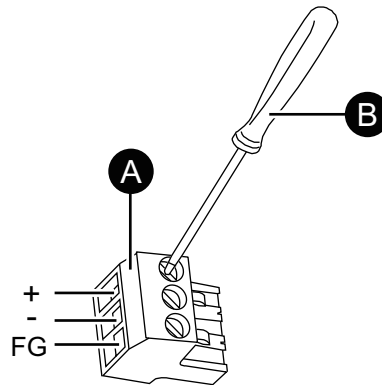
**NOTE:** Model number CA5-DCCNM-01 (or MSTB2,5/3-ST-5,08 by Phoenix Contact)

### Connection Procedure

1. Confirm the power cord is not connected to the power supply.
2. Check the rated voltage.
3. Strip the membrane of the power cord, and twist the wire ends.
4. Insert each power cord wire into its corresponding hole. Fasten the screws of the DC power connector to clamp the wire in place.

**NOTE:**

- The necessary torque is 0.56 N•m (5 lb-in).
- Do not solder the stranded wires.



- A. DC power connector  
 B. Flat-blade screwdriver (size 0.6 x 3.5)

5. After inserting all three power cord wires, insert the DC power connector into the power connector on this product.

## Power Supply Precautions

### **⚡⚠ DANGER**

#### **SHORT CIRCUIT, FIRE, OR UNINTENDED EQUIPMENT OPERATION**

- Install and fasten this product in an installation panel or cabinet prior to connecting power supply and communication lines.
- Securely attach power cables to an installation panel or cabinet.
- Avoid excessive force on the power cable.

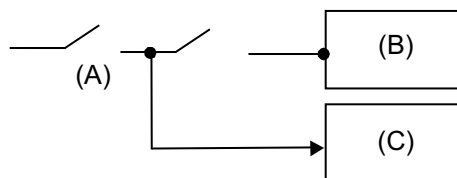
**Failure to follow these instructions will result in death or serious injury.**

### Improving Noise/Surge Resistance

- This product's power cord should not be bundled with or kept close to main circuit lines (high voltage, high current), power lines, or input/output lines, and their various systems should be kept separate. When power lines cannot be wired via a separate system, use shielded cables for input/output lines.
- Make the power cord as short as possible, and be sure to twist the ends of the wires together (i.e. twisted pair cabling) from close to the power supply unit.
- If there is an excess amount of noise on the power supply line, connect a noise reducing transformer, noise filter, or other before turning on the power.
- Connect a surge protection device to handle power surges.
- To increase noise resistance, attach a ferrite core to the power cable.

### Power Supply Connections

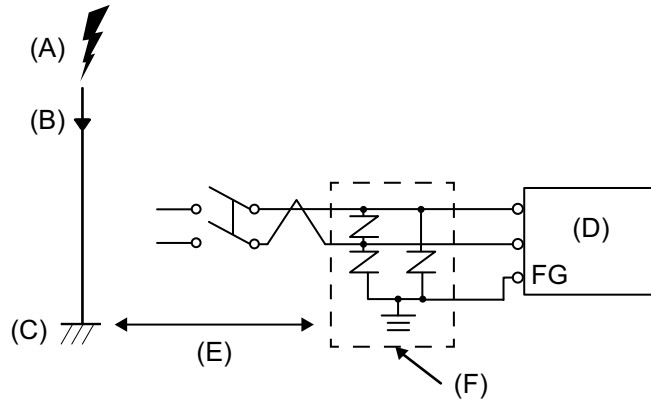
- When supplying power to this product, connect the power as shown below.



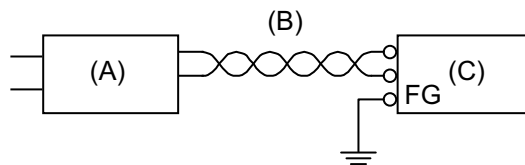
- A. Main power
- B. This product
- C. Other unit

- Use UL Listed power source with LPS (Limited Power Source) or Class 2 output.

- The following shows a surge protection device connection:



- A. Lightning
  - B. Lightning rod
  - C. Ground
  - D. This product
  - E. Provide adequate distance
  - F. Surge protection device
- Attach a surge protection device to prevent damage to this product as a result of a lightning-induced power surge from a large electromagnetic field generated from a direct lightning strike. We also strongly recommend to connect the crossover grounding wire of this product to a position close to the ground terminal of the surge protection device.  
 It is expected that there will be an effect on this product due to fluctuations in grounding potential when there is a large surge flow of electrical energy to the lightning rod ground at the time of a lightning strike. Provide adequate distance between the lightning rod grounding point and the surge protection device grounding point.
  - If the voltage variation is outside the prescribed range, connect a regulated power supply.

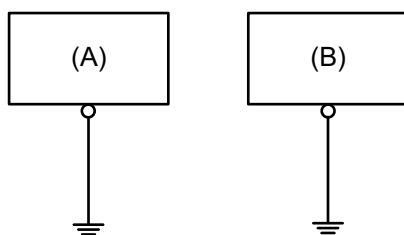


- A. Regulated power supply
- B. Twisted-pair cord
- C. This product

## Grounding

### Independent Grounding

Always ground the FG (functional ground) terminal. Be sure to separate this product from the FG of other devices as shown below.



- A. This product
- B. Other equipment

### Precautions

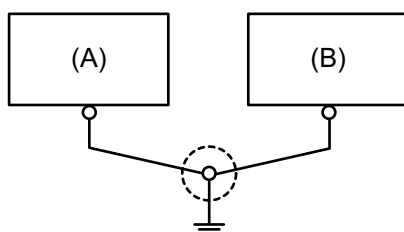
- Check that the grounding resistance is 100  $\Omega$  or less.\*1
- The FG wire should have a cross sectional area 2 mm<sup>2</sup> (AWG14) or greater\*1. Create the connection point as close as possible to this product, and make the wire as short as possible. When using a long grounding wire, replace the thin wire with a thicker wire, and place it in a duct.
- The SG (signal ground) and FG (frame ground) terminals are connected internally in this product. When connecting the SG line to another device, be sure that no ground loop is formed.

\*1 Observe local codes and standards.

### Common Grounding

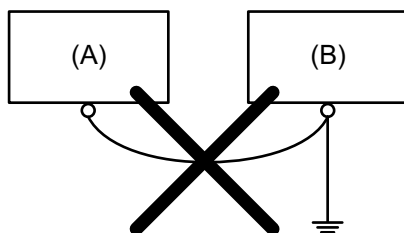
Electromagnetic Interference (EMI) can be created if devices are improperly grounded. EMI can cause loss of communication. If exclusive grounding is not possible, use a common grounding point as shown in the configuration below. Do not use any other configuration for common grounding.

Correct grounding



- A. This product
- B. Other equipment

Incorrect grounding



- A. This product
- B. Other equipment

# USB Cable Clamp

## Attaching USB Clamp Type A

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


### ▲ WARNING

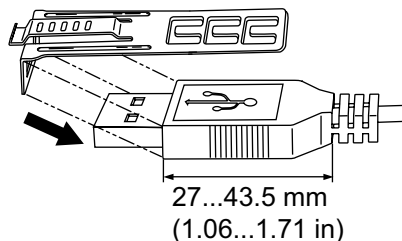
#### EXPLOSION HAZARD

- Verify the power, input, and output (I/O) wiring are in accordance with Class I, Division 2 wiring methods.
- Substitution of any components may impair suitability for Class I, Division 2.
- Do not disconnect equipment while the circuit is live or unless the area is known to be free of ignitable concentrations.
- Remove power before attaching or detaching any connectors to or from this product.
- Ensure that power, communication, and accessory connections do not place excessive stress on the ports. Consider the vibration in the environment when making this determination.
- Securely attach power, communication, and external accessory cables to the panel or cabinet.
- Use only commercially available USB cables.
- Use only non-incendive USB configurations.
- Suitable for use in Class I, Division 2, Groups A, B, C, D Hazardous Locations.
- Confirm that the USB cable has been attached with the USB cable clamp before using the USB interface.

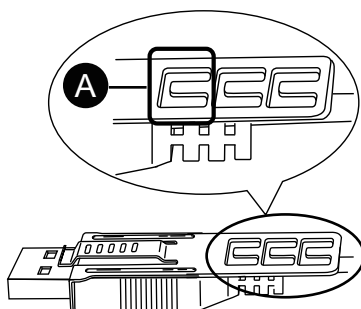
**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

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

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.

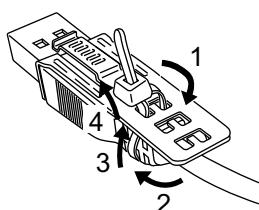


- Align the clip and the USB cable connector shell. Adjust the position of the holes where the clip is attached. To ensure stability, select the clip-hole position that is closest to the base of the connector shell.



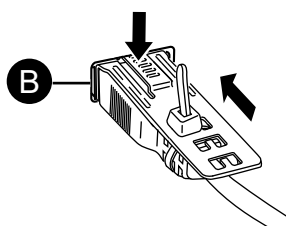
A. Hole for tie to pass through

- 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:**

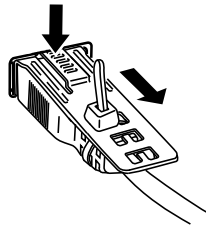
- Check the direction of the head beforehand. Make sure the USB cable is through the center of the tie loop and that the tie can pass through the head.
  - You can substitute the tie provided with PFXZCBCLUSA1, or other commercially available ties with a width of 4.8 mm (0.19 in) and thickness of 1.3 mm (0.05 in).
- 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 this product.



B. USB Type A interface

## Removing USB Clamp Type A

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



### Attaching USB Clamp mini-B

When using the USB micro-B cable (option), you can use the USB mini-B clamp included in the Accessory kit (sold separately) to prevent the cable from being disconnected.

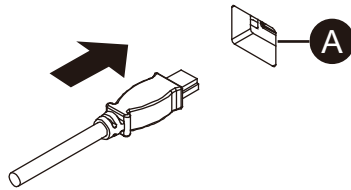
## ⚠ WARNING

### EXPLOSION HAZARD

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

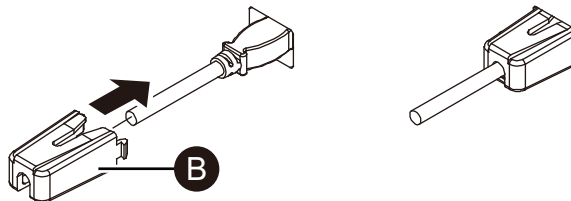
**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

1. Insert the USB cable into the USB (micro-B) interface.



A. USB interface

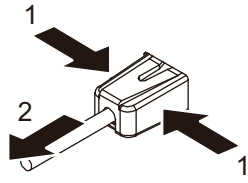
2. Attach the USB clamp to fix the USB cable in place. Insert the USB holder into the USB (micro-B) interface.



B. USB clamp

## Removing USB Clamp mini-B

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



# Maintenance

## What's in This Chapter

Regular Cleaning .....	57
Periodic Check Points.....	57
Replacing the Installation Gasket.....	58
Replacing the Battery .....	58
Replacing the Backlight .....	58
After-sales Service .....	58

## Regular Cleaning

### Cleaning the Product

<b>NOTICE</b>
<p><b>EQUIPMENT DAMAGE</b></p> <ul style="list-style-type: none"> <li>• Power off this product before cleaning it.</li> <li>• Do not use hard or pointed objects to operate the touch panel.</li> <li>• Do not use paint thinner, organic solvents, or a strong acid compound to clean the unit.</li> </ul> <p><b>Failure to follow these instructions can result in equipment damage.</b></p>

When this product gets dirty, wipe this product except for the display face with a soft, dry cloth or a soft cloth soaked in only water and wrung tightly. Wipe the display face with a soft cloth soaked in water with a neutral detergent and wrung tightly.

## Periodic Check Points

### Operation Environment

- Is the ambient air temperature within the allowable range? Refer to Environmental Specifications, page 19.
- Is the ambient air humidity within the specified range? Refer to Environmental Specifications, page 19.

When this product is inside a panel, the ambient environment refers to the interior of the panel.

### Electrical Specifications

- Is the input voltage appropriate? Refer to Electrical Specifications, page 19.
- 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 Installation Gasket

The installation gasket provides protection against dust and moisture. The gasket must be inserted correctly into the groove for moisture resistance for the display module.

### **NOTICE**

#### **GASKET AGING**

- Inspect the gasket periodically as required by your operating environment.
- 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.**

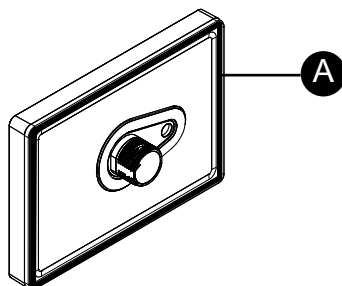
### **NOTICE**

#### **EQUIPMENT DAMAGE**

Be careful not to stretch the gasket unnecessarily.

**Failure to follow these instructions can result in equipment damage.**

1. Place the display module on a flat, level surface, with the display face pointing down.
2. Remove the gasket from the display module.
3. Attach the new gasket to the display module.



A. Installation gasket

## Replacing the Battery

Not user replaceable. When replacement is required, contact customer support.

## Replacing the Backlight

Not user replaceable. When replacement is required, contact customer support.

## After-sales Service

For details on after-sales service, refer to our website.

<https://www.pro-face.com/trans/en/manual/1001.html>



Schneider Electric Japan Holdings Ltd.  
Schneider Electric Osaka Building, 4-4-9 Kitahama, Chuo-ku, Osaka  
541-0041  
Japan

+ 81 (0)6 6208 3133

[www.pro-face.com](http://www.pro-face.com)

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STM6000-MM01-EN\_00