

M2I Corporation



Industrial HMI Touch Panel

TOPR Series (Display Module)

Hardware Manual

Thank you for purchasing the industrial HMI touch panel series of M2I corporation.

Please read this manual carefully to know installing, wiring, operating this equipment for safe use of this product.





Index

Index	2
Chapter 1 Safety Precautions.....	3
Chapter 2 Overview	5
2.1 Introduction of Products.....	5
2.2 Package Contents.....	5
2.3 Explanation of Model name.....	6
Chapter 3 General Specifications	6
3.1 Electrical Specifications	6
3.2 Display Specifications	7
3.3 Touch Specifications.....	7
3.4 Sub Function Specifications (*Premium models only)	7
3.5 Environment Specifications	7
3.6 Structure Specifications	7
Chapter 4 Part Names and General Specifications.....	8
4.1 TOPRD□□10 / □□20	8
4.2 TOPRD12 30.....	9
Chapter 5 Installation	11
5.1 Installation Requirements	11
5.2 TOPRP Series Assemble.....	11
5.3 Installation Procedure.....	12
5.4 Panel Cut-out	12
5.5 Fixation	13
5.6 Front USB	14
Chapter 6 Maintenance	15
6.1 Cleaning the Display	15
6.2 Periodic Check Points.....	15
6.3 Problems with the Device.....	15
Chapter 7 Warning Label.....	15
Chapter 8 Products Label	16







Chapter 1 Safety Precautions

■ Before using the product





To use the product safely and effectively, please read the contents of this manual thoroughly before use. Please keep to the safety precaution, for it is to prevent accidents and potential danger from occurring. Safety precaution is classified into 'Warning' and 'Caution' and their meanings are as follows. Also the indicated illustrations on the product and in the manual have the following meanings.

 Warning	Violating the instruction may result in serious personal injury or death.
 Caution	Violating the instruction may result in slight personal injury or product damage.
	Be cautious, for danger may be present.
	Be cautious, for there is a possibility of an electric shock.

■ General Precautions Caution

-  Do not press the screen with a hard or sharp object (awl, screwdriver, pen) with too strong a force.
It may cause malfunction of touch due to damage of the front sheet.
-  Do not use or store in an environment with high vibration.
-  Do not allow foreign objects such as water, liquids, or metal powders to enter the product. This may cause breakage or electric shock.
-  Use the radio or mobile phone at least 30cm away from the main unit.
-  Two or fewer bright spots may appear on the LCD screen, and certain areas may appear brighter, but this is not a defect in LCD characteristics.
-  Do not store or operate in direct sunlight. Direct sunlight can change the properties of the LCD.
WARNING – DO NOT CONNECT OR DISCONNECT WHEN ENERGIZED. or equivalent.
AVERTISSEMENT – NE PAS CONNECTER OU DÉCONNECTER LORSQUE L'ÉQUIPEMENT EST SOUS TENSION.

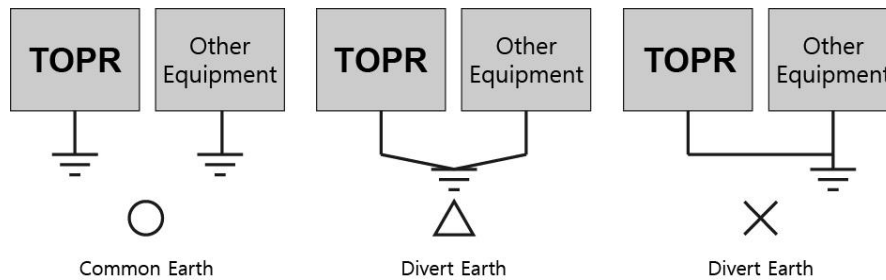
■ Design Precautions

-  Install protection circuit on the outside of Products to protect the entire control system when external power supply or Products have problems.
-  As the malfunction & incorrect result of Products could damage the stability of the entire systems and human body, you must install damage preventing interlock circuit such as emergency stop, Protective circuits, positioning upper and lower limit switch and interlock for forward/reverse operation.
-  When computer or other controllers communicate and exchange data with products or change operation mode of products, set up protective sequence program in PC or Controller for protecting system from communication error.
-  The output signal or communication lines should be separated from the power line or high tension wire.
They should be installed 100mm(3.94 Inch) or more from each other.

■ Wiring Precautions Warning

- ❗ Be sure the wiring is done correctly by checking the product's rated voltage and the terminal layout. Incorrect wiring could result in fire, damage or malfunctions.
- ❗ Tighten the terminal screw with the specified torque. If the screws of terminal are loose, it could result in short circuit, fire, malfunctions.
- ❗ FG Terminal must be used a dedicated ground. Not doing so could result in malfunctions.
- ❗ a. Grounding should be the Class 3 grounding. The cable for grounding should be more than 2mm².
- ❗ b. Grounding point be closed to the products and make short the distance to the ground cable if possible.

Please see below.



■ Installation Precaution

- ⊘ Do not install in the location which exceeds allowed temperature. Product can be damaged or shorten the life. Especially Install environment as below should be avoided.
- ⊘ Do not Install product to the place which the ambient temperature is out of limits, from -10 ~ 50°C or on the surface of control board which high pressure equipment is installed.
- ⊘ Do not install to the place where strong shock or vibration continuously have impacted on product.
- ⊘ Indoor use only.
- ⊘ Use the product under 2000M altitude.

■ Disposal Precautions Caution

When you dispose of product and battery, please treat it as industrial waste. It can create poisonous substances or explosion.

Chapter 2 Overview

2.1 Introduction of Products

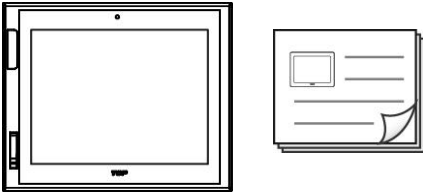






This industrial HMI touch panel is an industrial control device required in industrial field. It is a device based on RS-232C and RS-422/485, Ethernet which is used for the basic purpose of communication with another device (PLC).

The TOPR and TOPRT series consists of a Process module(TOPRP□□□) and a Display Module(TOPRD□□□□□). This user manual is for a Display Module(TOPRD□□□□□).

2.2 Package Contents

The components of the product are as follows.

Before using the product, please check that all of the following components are included.

Item	Figure	Quantity
Display Module and Manual		1
Gasket		1
Mounting Clamp		4
Accessories (Sold separate)	 USB Memory  USB Cable  SD Card  Front Protect Sheet	User Options

2.3 Explanation of Model name

2.3.1 Processor Module (Main Unit)

TOPR	P	□□	□
Series	Type	Option	Power
	P: Process	10: Standard	D: DC
		20: Premium	A: AC
		50: Standard(10) + Performance improvement	

2.3.2 Display Module (Accessory Unit)

TOPR	D	□□	□□	□
Series	Type	Screen	Option	Resolution
	D: Display	10: 10.4"	10: Standard	Q: QVGA(320*240)
		12: 12.1"	20: Premium	V: VGA(640*480)
		15: 15.0"	30: "20" Premium + Expansion of auxiliary feature options	S: SVGA(800*600)
				X: XGA(1024*768)

2.3.3 Processor Module + Display Module

Model	Screen	Resolution	Assembled Module
TOPRT1210SD	12.1"	XGA(1024*768)	TOPRP10D + TOPRD1220X
TOPRT1230XD	12.1"	XGA(1024*768)	TOPRP10D + TOPRD1230X
TOPRT1240XD	12.1"	XGA(1024*768)	TOPRP50D + TOPRD1230X

Chapter 3 General Specifications

3.1 Electrical Specifications

Item		Specifications	
Input Voltage	Powered by Processor Module	12V, 3.3V	
Power Consumption	Process Module	TOPRP10 Series	9W
		TOPRP20 Series	9W
		TOPRP50D	9W
	Display Module	TOPRD08 Series	9W
		TOPRD10 Series	9W
		TOPRD1210S	9W
		TOPRD1220X	9W
		TOPRD1230X	9W
		TOPRD15 Series	12W
	Process Module + Display Module	TOPRT1210SD	18W
		TOPRT1230XD	18W
		TOPRT1240XD	18W

3.2 Display Specifications

Color	16M Color
Brightness Level	10 Level(by software)
Backlight Type	LED
Backlight Life	50,000 hours
Display Font	MS Windows Vector font possible Image font
Front LED Indicate	Built in

3.3 Touch Specifications

Item	Specification
Touch Type	Built-in, Analog resistive touch sensor

3.4 Sub Function Specifications (*Premium models only)

Functional	Specification	Model
Front Camera	Built-in, Resolution: VGA(640*480)	TOPRD□□ 20 / 30
Proximity Sensor	Built-in, Sensing Distance 0.7M	TOPRD□□ 30
Brightness Sensor	Built-in, brightness controls automatically as 10 level	TOPRD□□ 30
Infrared communication(IrDA)	Built-in, 0.7M working distance, communication with dedicated equipment	TOPRD□□ 30

3.5 Environment Specifications

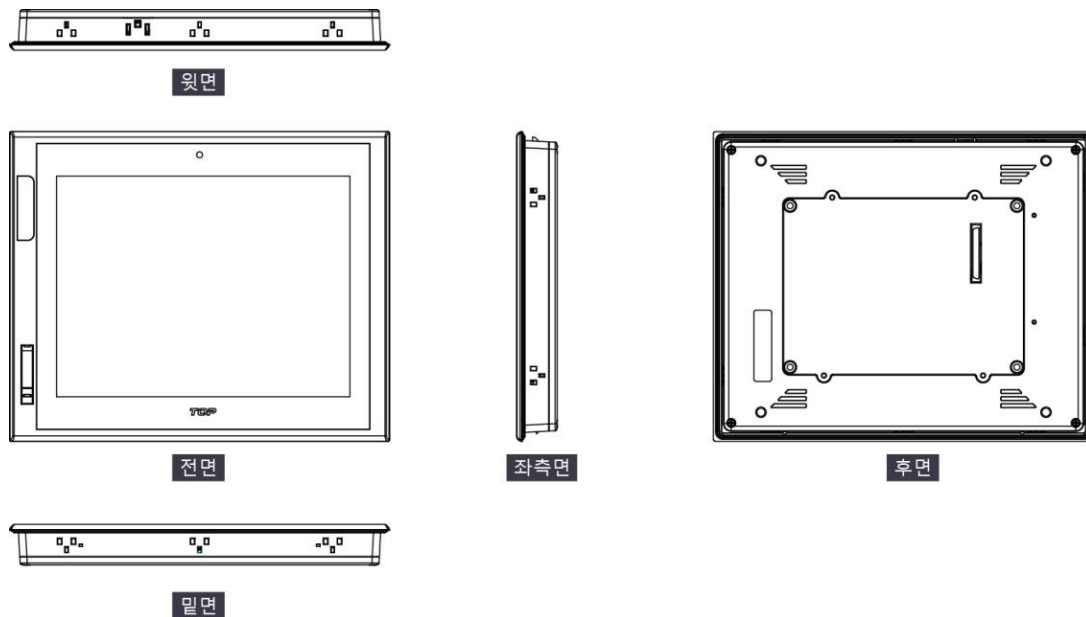
Operation Temperature(°C)	-10 ~ +50
Storage Temperature(°C)	-20 ~ +60
Operation Humidity(%RH)	0 ~ 90 (No dew)
Atmosphere	No corrosive gas
Protection Classification	Conform to IP65(Process Module: IP2X)

3.6 Structure Specifications

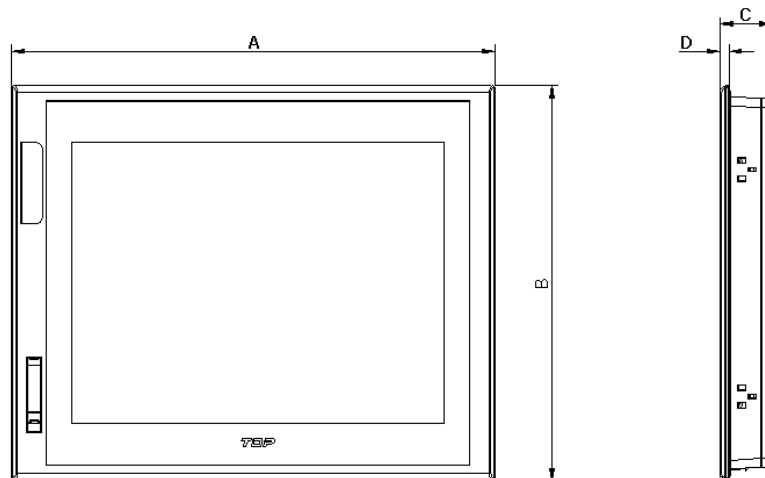
Cooling System	Natural air circulation
Case Material	AL(Aluminium)

Chapter 4 Part Names and General Specifications

4.1 TOPRD□□10 / □□20

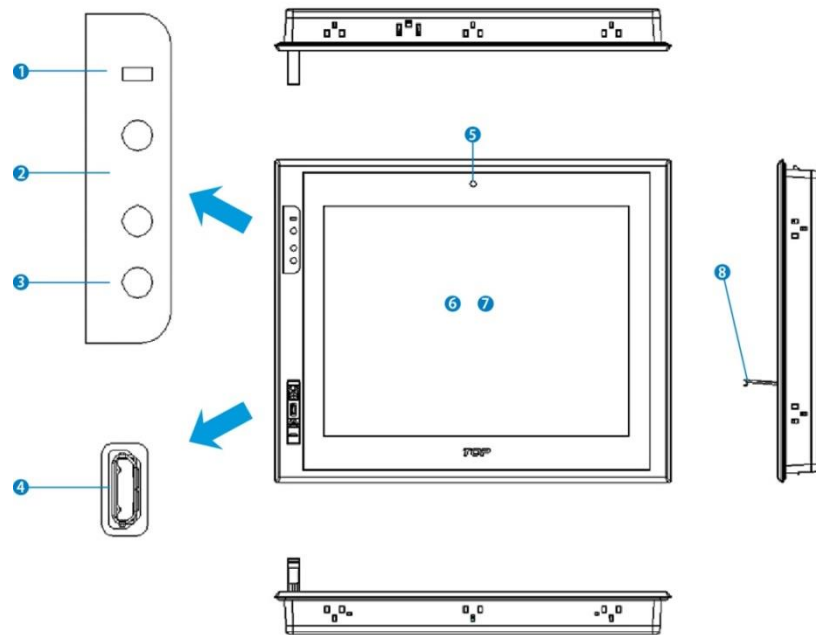


4.1.1 External Dimension



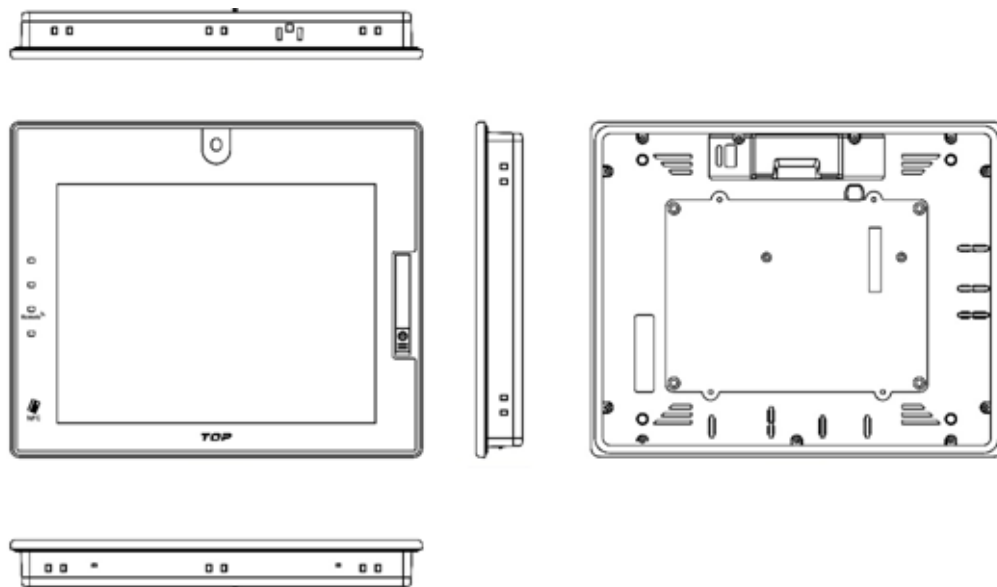
(mm)				
Product	A	B	C)	D
TOPRD10 Series	276	219.5	32.6	5
TOPRD12 Series	320	261	34.2	
TOPRD15 Series	370	301	36.7	

4.1.2 Front Part Names and Specifications

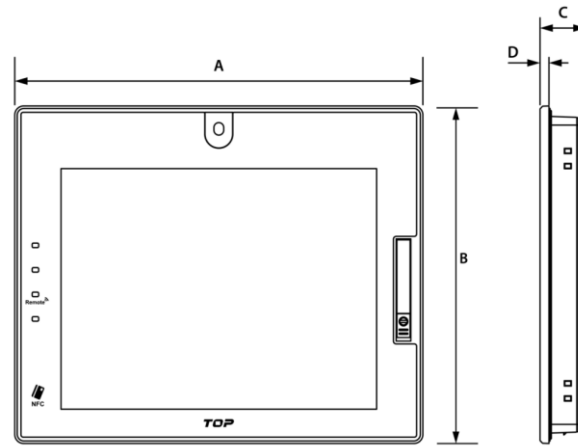


No.	Title	Description
①	Power LED	System Power Status LED
②	USB OTG	UP/Down load project file
③	Camera	Resolution VGA(640*480)
④	LCD Panel	TFT 16M Color LCD
⑤	Touch Panel	Analog resistive touch sensor
⑥	USB OTG Cover	Front USB OTG cover hole

4.2 TOPRD1230



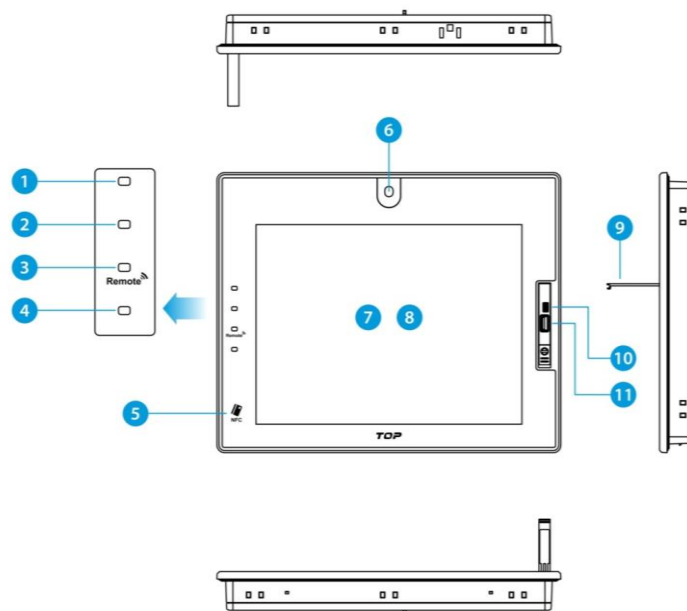
4.2.1 External Dimension



(mm)

Product	A	B	C	D
TOPRD12 Series	320	261	34.2	5

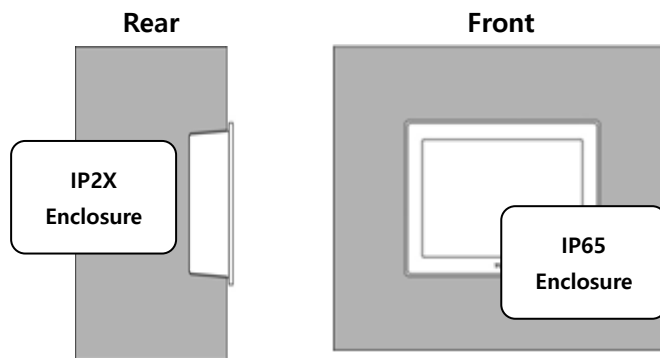
4.2.2 Front Part Names and Specifications



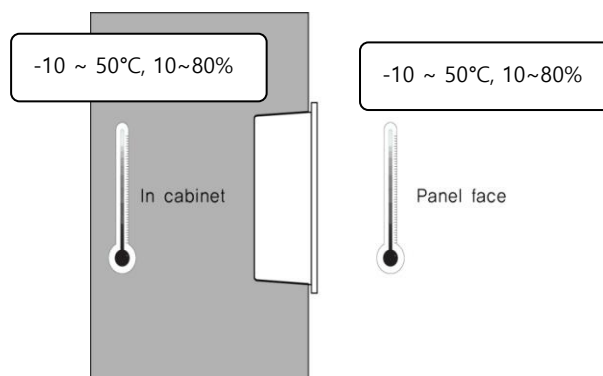
No.	Title	Description	Support Model
①	Power LED	System power status LED	Common
②	Proximity Sensor	Automatically backlight ON/OFF by sensing object coming	Common
③	IR Sensor	Device for communication with dedicated equipment	Common
④	Brightness Sensor	Automatically brightness controls by ambient brightness	Common
⑤	Camera	Resolution VGA(640*480)	TOPRD□□ 20
⑥	LCD Panel	TFT 16M Color LCD	Common
⑦	Touch Panel	Analog resistive touch sensor	TOPRD1230
⑧	USB Cover	Front USB cover hole	Common
⑨	USB OTG	Program upload or download	Common
⑩	USB HOST	USB Port	Common

Chapter 5 Installation Warning

5.1 Installation Requirements

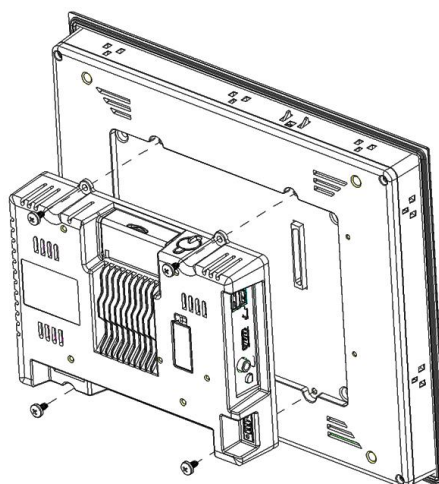


- (1) It should be installed within $-10 \sim 50^{\circ}\text{C}$ and $10 \sim 80\% \text{RH}$ otherwise the screen may be changed or cause malfunction and damage.
- (2) Please check surrounding temperature exceeds operation temperature of product.
- (3) When you don't see within 30° , you may not see clearly. When installing the product in a slanted position, the product screen should not incline more than 30° .
- (4) In order to minimize external mechanical hazards, please control the mechanical hazards of the surrounding environment.



5.2 TOPRP Series Assemble

Insert Process Module to Guide of Rear of Display Module and Mount with Bolts included in Package.
(Bolt Size: M4x8L, 0.4N.m)

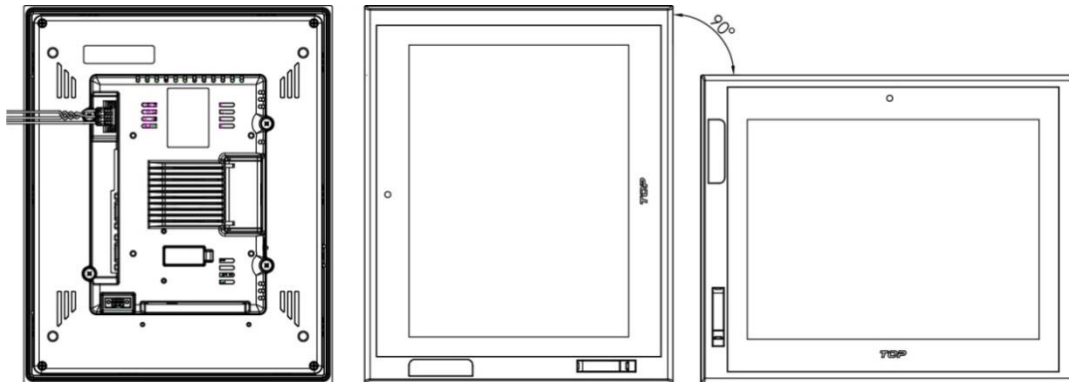


5.3 Installation Procedure Warning

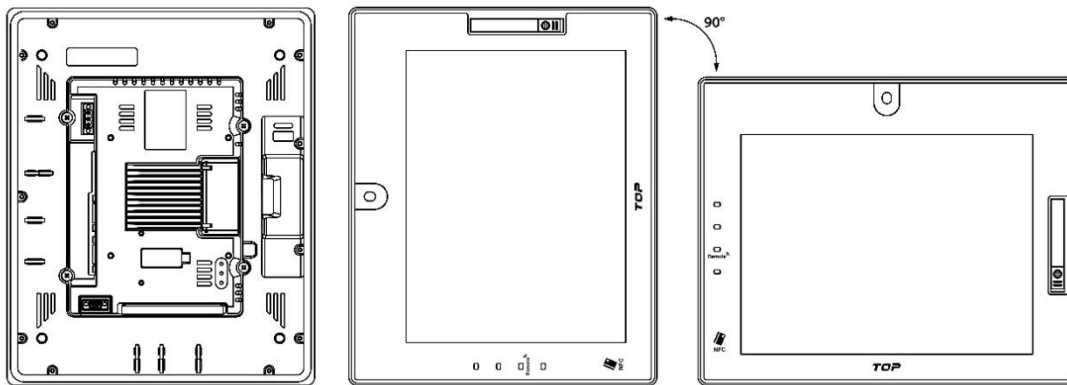
For mounting product to the control panel, it should be recommended following below items.

It is recommended that the power connector at the rear is located at the top for vertical installation.

5.3.1 TOPRD□□10 / □□20



5.3.2 TOPRD1230



5.4 Panel Cut-out

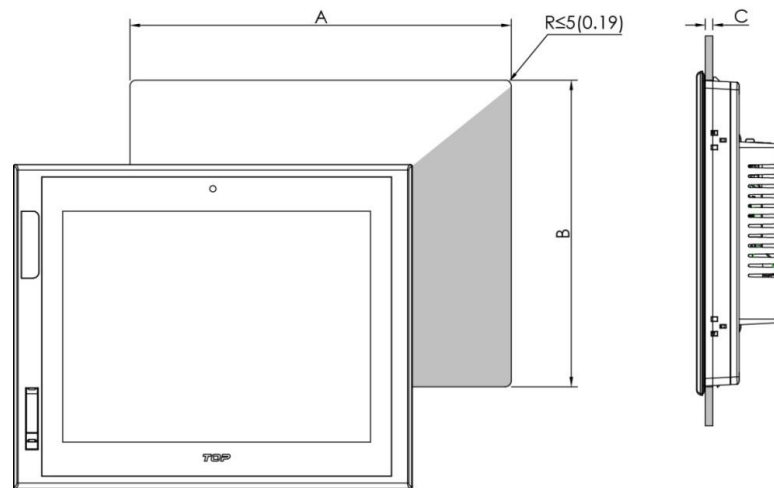
Make a panel cut which product is mounted and insert the TOPR to the panel form the front side.

5.4.1 The Size of Panel Cut (Mounting Place)

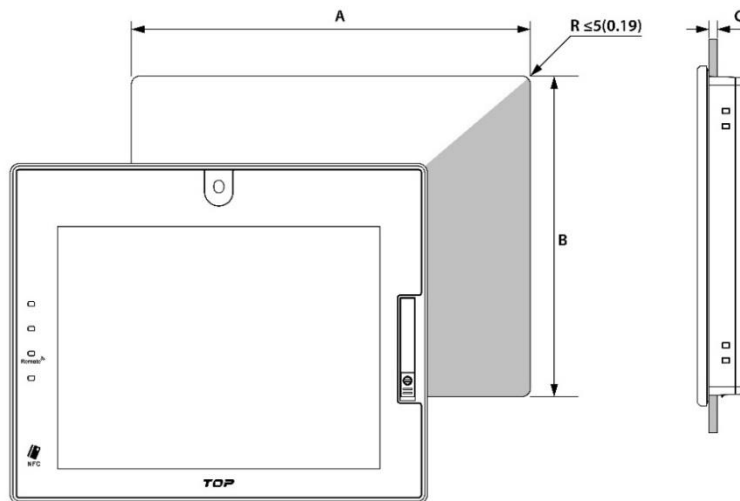
Making the Panel Cut (Mounting Size) per each TOPRD Series as below Table, Before Installation.

(mm)			
Product	A	B	C
TOPRD10 Series	260(+1.0/0)	202(+1.0/0)	1.6~5.0(+1.0/0)
TOPRD12 Series	306(+1.0/0)	247(+1.0/0)	
TOPRD15 Series	355(+1.0/0)	286(+1.0/0)	

5.4.2 TOPRD□□10 / □□20



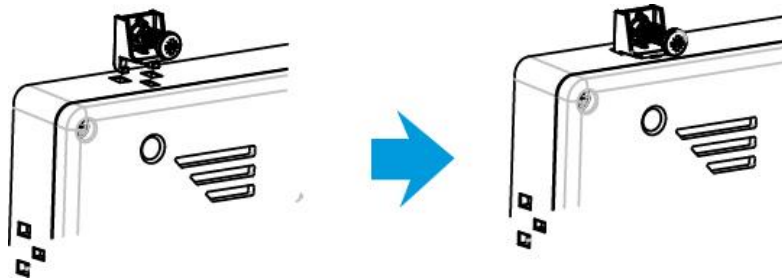
5.4.3 TOPRD1230



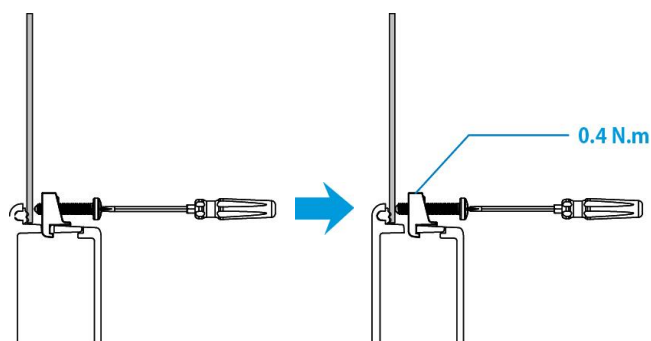
5.5 Fixation

Installation methods should be following by using the supplied installation clamps for keeping IP specification.

(1) Insert the clamp into the slot of the product.



(2) Screw the unit into the panel cut with a screwdriver.



Note: If the clamping screw below is over-tightened, the touch sensor may stop working or malfunction. Tighten to 0.4N.m screwdriver torque.

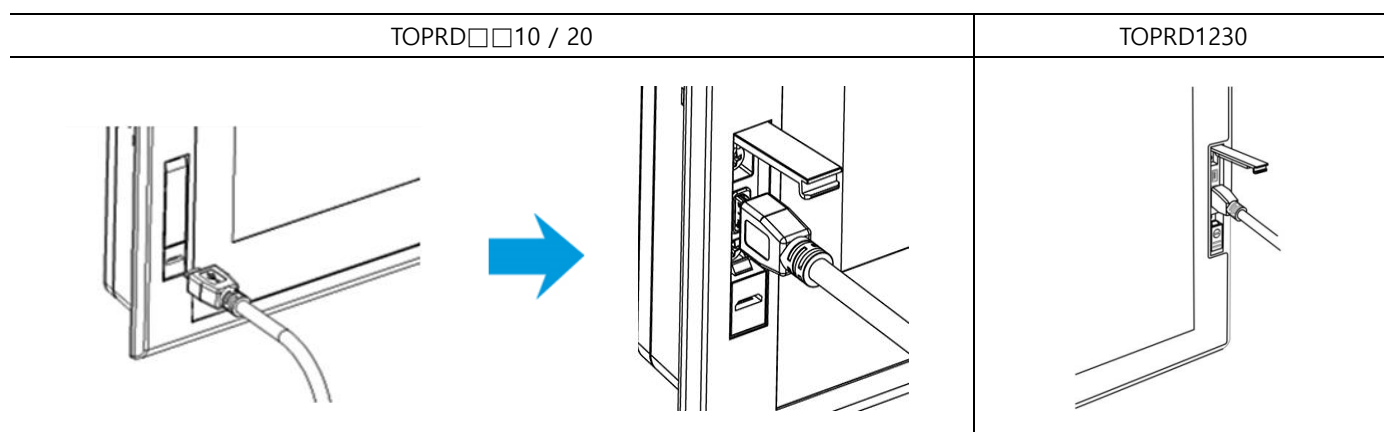
Caution: IP performance cannot be secured if the clamp is not tightened with a tightening force of 0.4N.m.

5.6 Front USB

5.6.1 Open/Close of Front USB Cover

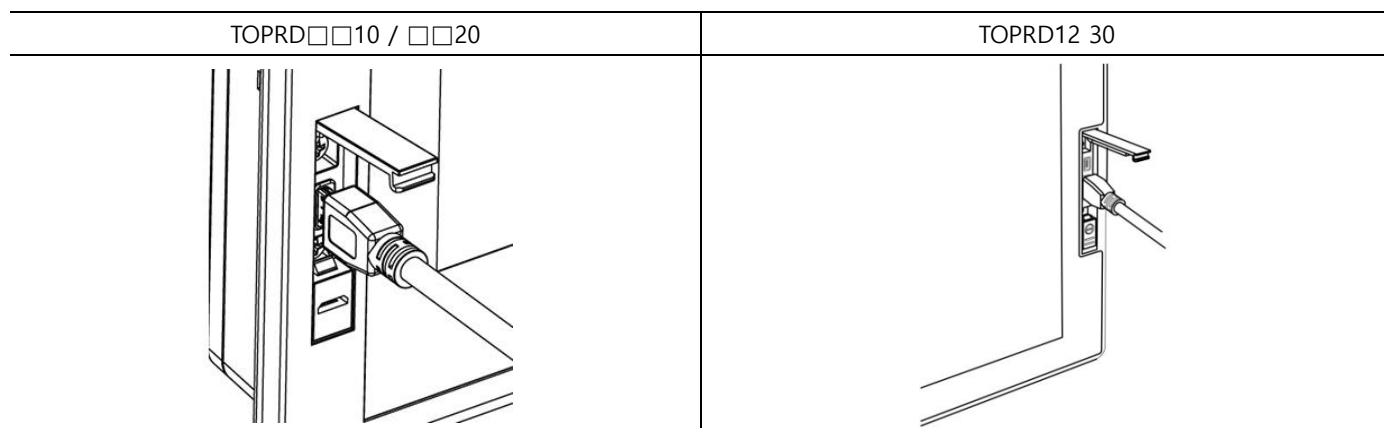
(1) TOPRD□□10 / 20: Push MicroUSB cable's male connector to hole of USB cover for opening.

(2) TOPRD1230: Make the lock cross hole's position into vertical for opening.



5.6.2 Data Upload and Download

You can download or Upload Project file data Via USB interface.



Chapter 6 Maintenance Warning

6.1 Cleaning the Display

When the surface or frame of the display become dirty, spray the cleaning solution onto a soft cloth and wipe the device. Do not spray the cleaning solution directly onto the device.

6.2 Periodic Check Points

Check the followings periodically for best condition of the device.

(1) Environment

- a. Is the operating temperature within the allowable range(-10~50°C)?
- b. Is the operating humidity within the allowable range(10~80%RH)?
- c. Is the Surrounding pollution no corrosive gas?

(2) Power

- a. Is the input voltage within the change range ($\pm 15\%$)?

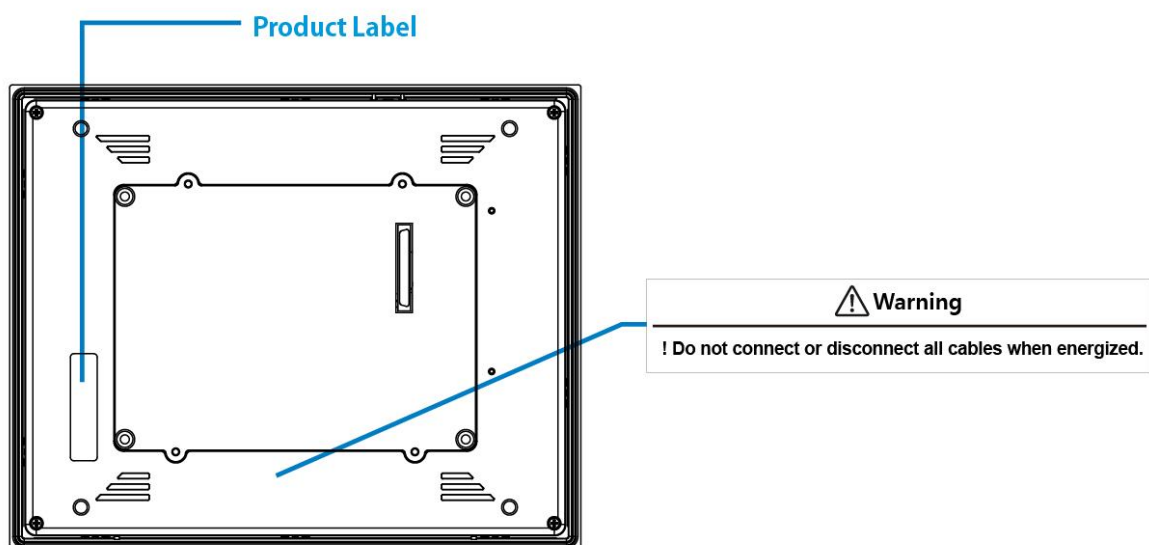
(3) Related Items

- a. Check the battery when is exchanged and voltage drop is indicated.
- b. Check the guarantee duration of LCD Backlight by eye.
- c. Check the touch pad there is no damage, scratch or pollution by eye.

6.3 Problems with the Device Warning

- (1) If there is a problem during operation, stop using it and contact the A/S department of M2I, which is indicated on the product label.
- (2) Only the authorized worker from M2I can check and repair problems related to malfunction of the machine.
- (3) If the problem cannot be solved at the installation site, the equipment can be collected and moved to M2I.
- (4) The manufacturer, M2I, is not responsible for damage or malfunction of the equipment caused by the use conditions of the user beyond the installation and use standards described in the manual.

Chapter 7 Warning Label



Chapter 8 Products Label



Manufacture (AS): M2I Corporation

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Tel: 82-31-465-3366 www.m2i.co.kr

Product Name: Industrial HMI Touch Panel

Model Name:

- Display Module: TOPRD□□□□□

- Assembled Model: TOPRT□□□□□□

Operating Temp: $-10^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$

Power Specifications:

- TOPRD10 Series: 12Vdc, 3.3Vdc, 9W

- TOPRD12 10 / 20 / 30: 12Vdc, 3.3Vdc, 9W

- TOPRD15 Series: 12Vdc, 3.3Vdc, 12W

- TOPRT1210SD (*TOPRP10D Module + TOPRD1220XD Module): 24Vdc (20~28Vdc), 18W

- TOPRT1230XD (*TOPRP10D Module + TOPRD1230XD Module): 24Vdc (20~28Vdc), 18W

- TOPRT1240XD (*TOPRP50D Module + TOPRD1230XD Module): 24Vdc (20~28Vdc), 18W

KC Certificate Number:

Certificated Date:

Serial Number:

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- When using M2I equipment, thoroughly read this datasheet and associated manuals introduced in this datasheet, also pay careful attention to safety and handle the module properly.
- Store this datasheet in a safe place so that you can take it out read it whenever necessary.

User Guide
This product has Relevant Assessments for business environment. If this product is used in home environment, there can be an interference.