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.

M2I Corporation   **1 / 14**

11-35, Simin-daero 327beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do 14055, Korea, Tel: +82-70-465-3366, Fax: +82-31-465-3355, www.m2i.co.kr

Contents

M2I Corporation   **2 / 14**

11-35, Simin-daero 327beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do 14055, Korea, Tel: +82-70-465-3366, Fax: +82-31-465-3355, www.m2i.co.kr

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.

🚫 Do not allow foreign objects such as water, liquids, or metal powders to enter into the front(screen) protective sheet. The screen may be invisible or may cause a malfunction of the touch.

🚫 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.

■ **Design Precautions** ⚠ Warning

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 4㎟

❗ b. Grounding point be closed to the products and make short the distance to the ground cable if possible. Please see below.

TOPR	Other Equipment	TOPR	Other Equipment	TOPR	Other Equipment
○		△		✕	
Common Earth		Divert Earth		Divert Earth	
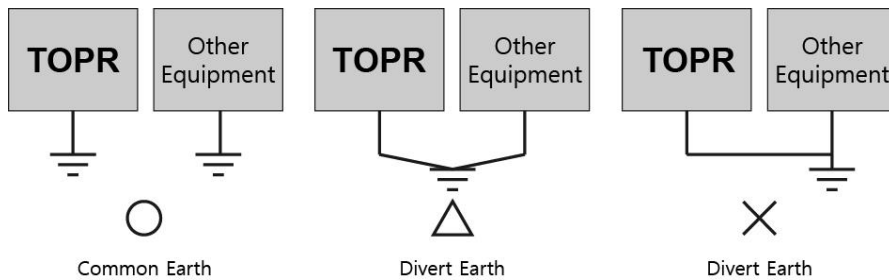
■ Installation Precaution ⚠ Caution

Do not install 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 0℃ to 50℃ 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.

❗ The space between back of product and back of control board must be more than 100mm for maintenance and ventilation.

🚫 In order to improve water retention and ventilation, the space between the back of the main body and the console box should be 100mm or more, and install the cooling fan when installed in an enclosed space.

■ Disposal Precaution ⚠ Caution

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

■ Battery Specification and Exchanging ⚠ Caution

Mounted on mainboard Model MS920SE Battery is not replaced by the user. If the battery has run out of service, please contact our Customer Support Center for replacement and inspection.

Item	Content
Battery Voltage	DC 3V
Battery Model	MS920SE (lithium / Rechargeable)
Battery lifetime	Permanent (In case of ambient temperature 25℃)
Battery Discharge	Last about 7 days After turn it off

٭ Depending on the model specifications are subject to change.

■ All field-wiring connections to this unit shall be from Limited Voltage / Limited Current, below 24 Vdc isolated secondary source with an output fuse, or Class 2.
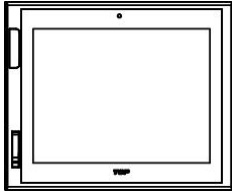
Chapter 2. Overview
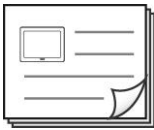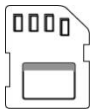
2.1 Introduction of Products

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)

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		1
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 Process Module

TOPR	P	□□	□
Serise	**Type**	**Option**	**Power**
		10 : Standard	D : DC
		20 : Premium	A : AC

2.3.2 Display Module

TOPR	D	□□	□□	□
Serise	**Type**	**Screen Size**	**Option**	**Resolution**
		10 : 10.4"	10 : Standard	Q : QVGA (320*240)
		12 : 12.1″	20 : Premium	V : VGA (640*480)
		15 : 15″		S : SVGA (800*600)
				X : XGA (1024*768)
				W: WQVGA (480*272)
				WVGA (800*480)

Chapter 3. General Specifications

3.1 Electrical Specifications

Input Voltage	By Process Module	12V, 3.3V	
Consumption	Process Module only	6W or less	
	Display Module included	TOPRD10	15W or less
		TOPRD12	15W or less
		TOPRD15	18W or less

3.2 Display Specifications

Color	16M Colors
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

Touch Type	Analog resistive touch
Touch Life	10 million times or more

3.4 Sub Function Specifications

Front Camera	Front dedicated. Resolution: VGA (640*480)
Proximity sensor	Built in, Sensing Distance 1.5M
Brightness Sensor	Built in, 0~3000cd brightness controls automatically as 10 level

3.5 Environment Specifications

Operation Temperature (℃)	-10 ~ +50
Storage Temperature (℃)	-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

TOP

Front

Right

Rear

Bottom
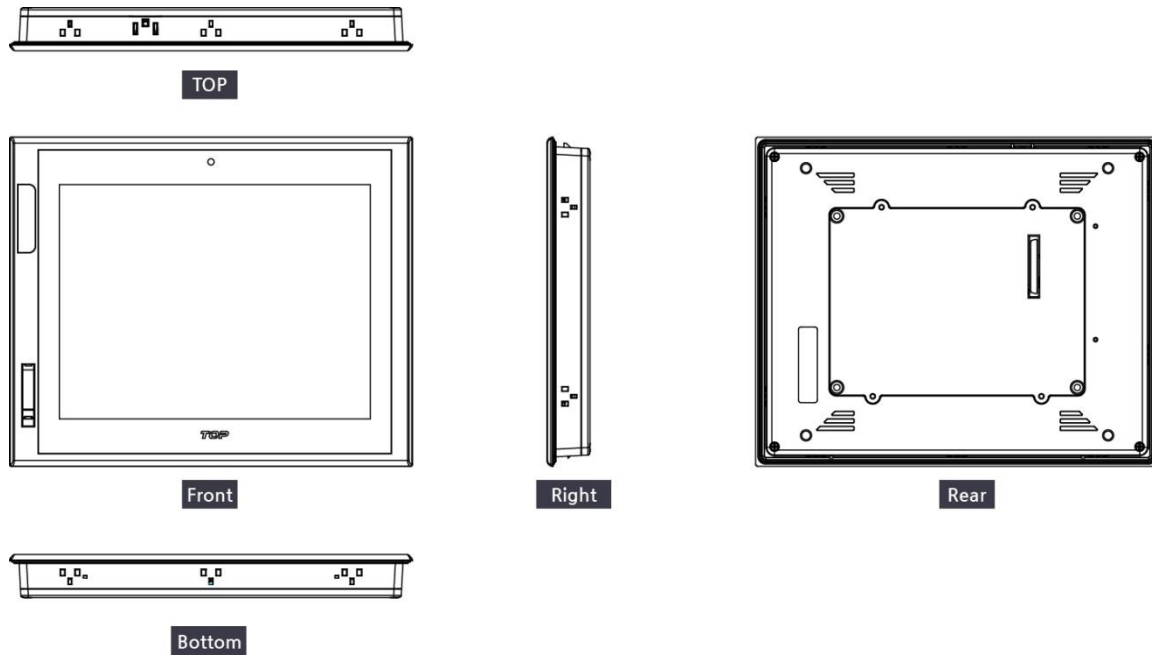
4.1 External Dimension
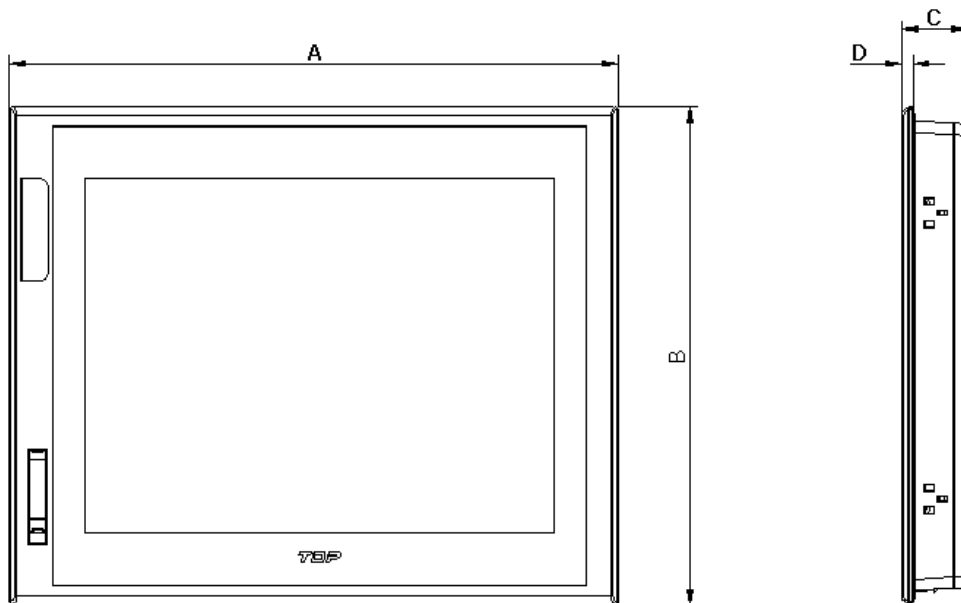
Model	A(mm)	B(mm)	C (mm)	D (mm)
TOPRD10	276	219.5	32.6	
TOPRD12	320	261	34.2	5
TOPRD15	370	301	36.7	

4.2 Front Part Names and Specifications
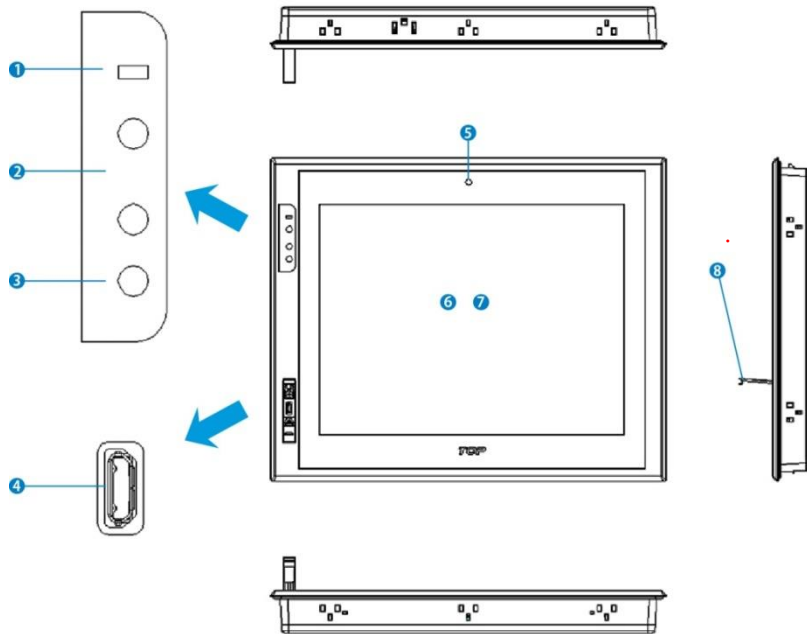
No.	Title	Description	Support Model
①	Power LED	System Power Status LED	All
②	Proximity sensor	Automatically Backlight ON/OFF by Sensing Person coming	TOPRDXX20
③	Brightness Sensor	Automatically Brightness Controls by Ambient Brightness	TOPRDXX20
④	USB OTG	UP/Down load Project file	All
⑤	Camera	Resolution VGA(640*480)	TOPRDXX20
⑥	LCD Panel	TFT 16M Color LCD	All
⑦	Touch Panel	Analog resistive Multi touch	All
⑧	USB OTG Cover	Front USB OTG Cover hole	All

Chapter 5. Installation ⚠Warning

5.1 Installation Requirements

(1) For the performance, ventilation and safe use of the equipment, keep the distance between the back of the main unit and each wall of the container at least 100mm and install the cooling fan when installed in an enclosed space.

Left — Front
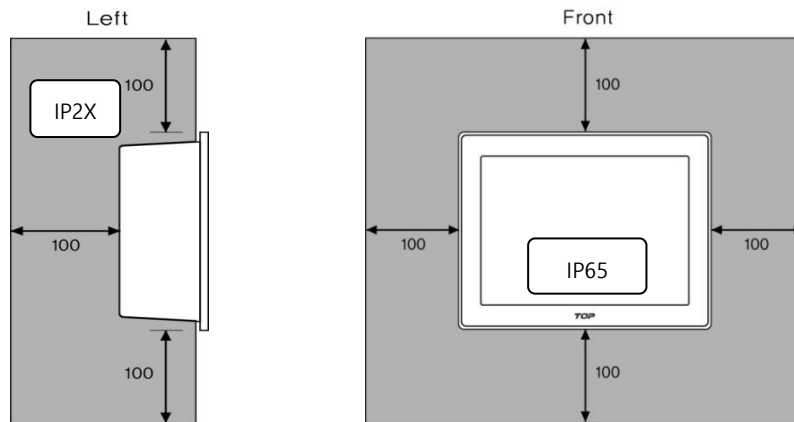
(2) It should be installed within -10 ~ 50°C and 10~80% relative-humidity, otherwise the screen
may be changed or cause malfunction and damage.

(3) Be sure that heat from surrounding equipment does not cause product to exceed its standard operating
temperature.

(4) 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°.
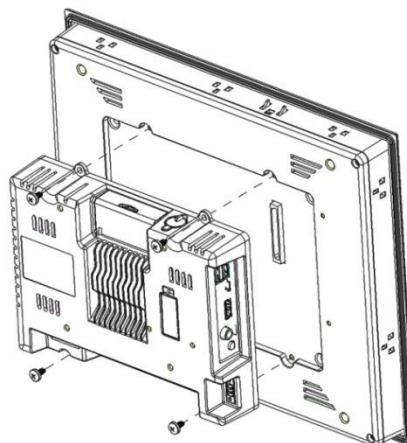
(5) In order to minimize external mechanical hazards, please control the mechanical hazards of
the surrounding environment.

-10 ~ 50°C, 10~80% — In cabinet

-10 ~ 50°C, 10~80% — Panel face

30° — 30°
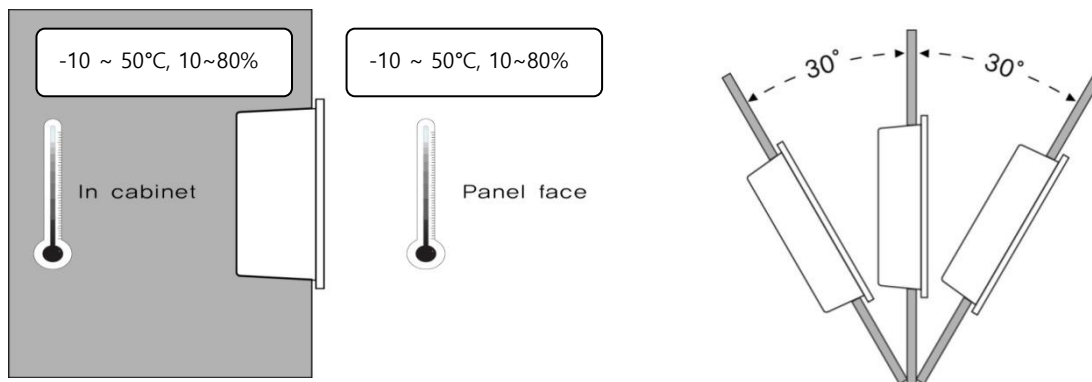
5.2 TOPR Assemble

Insert Process Module to Guide of Rear of Display Module and Mount with Bolts included in Package.
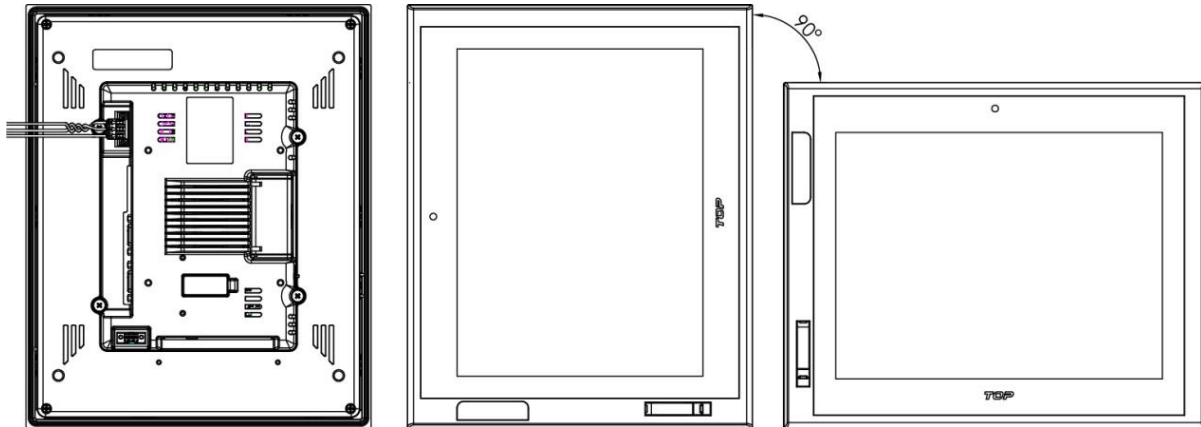(Bolt Size: M4 X 8L, Torque: 0.2N.m)

5.3 Installation Procedure

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

(1) Mounting Direction

When mounting this product vertically, should be that the USB connector of this product points to the bottom and the power connector of this product rear points to the top.

(2) Panel Cut-out

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

● **The Size of Panel Cut (Mounting Place)**

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

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

M2I Corporation

11-35, Simin-daero 327beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do 14055, Korea, Tel: +82-70-465-3366, Fax: +82-31-465-3355, www.m2i.co.kr

11 / 14
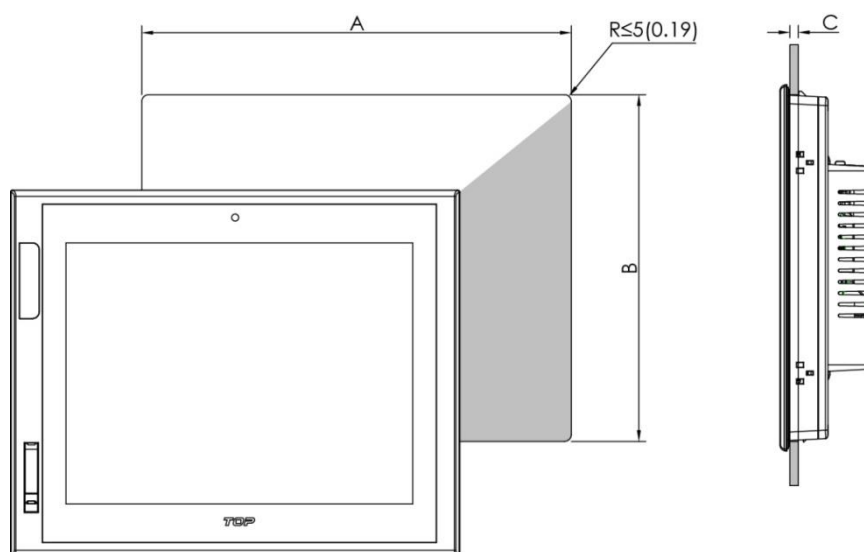
(3) Fixation ⚠Warning

Installation methods should be following by using the supplied installation Clamps.

a.   Insert the clamp into the slot of the product.
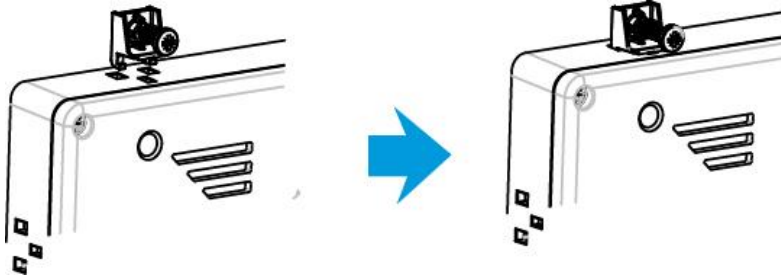
b.   Screw the unit into the panel cut with a screwdriver.
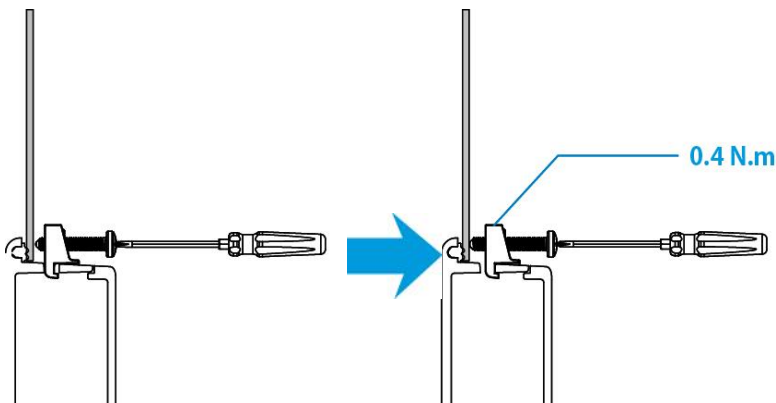
Note: if the screw is over tightened, it may cause the front deformation, thus resulting the touch sensor can't work properly

5.4 Front USB

5.4.1 Data Upload and Download
You can download or Upload Project file or OS 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

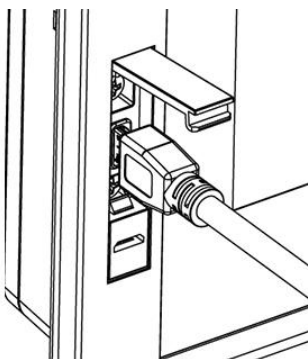Check the followings periodically for best condition of the device.

(1) Environment

a. Is the operating temperature within the allowable range (-10°C~50°C)?

b. Is the operating humidity within the allowable range (10%~80%RH)?

c. Is the Surrounding pollution no corrosive gas?

(2) Power

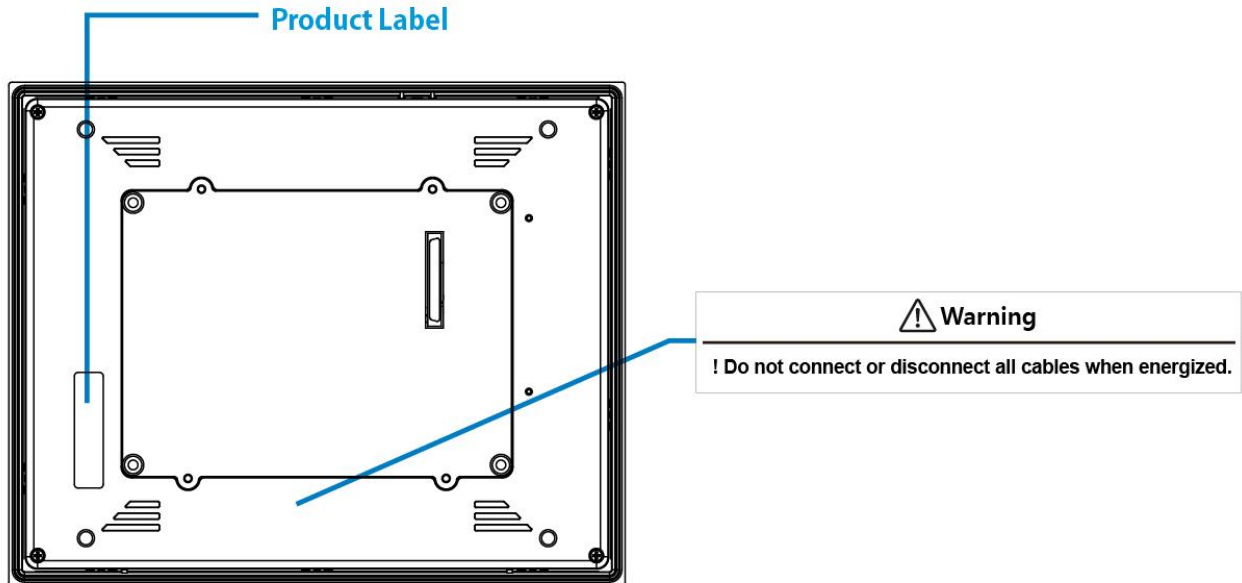Is the input voltage within the change Range (-15%~+10%)?

(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

a. If there is a problem during operation, stop using it and contact the A/S department of M2I Corporation, which is indicated on the product label.

b. Only the authorized worker from M2I Corporation can check and repair problems related to malfunction of the machine.

c. If the problem cannot be solved at the installation site, the equipment can be collected and moved to M2I Corporation.

d. The manufacturer, M2I Corporation, 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.

M2I Corporation   **13 / 14**

11-35, Simin-daero 327beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do 14055, Korea, Tel: +82-70-465-3366, Fax: +82-31-465-3355, www.m2i.co.kr

Chapter 7. Products and Warning Label Location

Chapter 8. Products Label

Manufacture (AS): M2I Corporation

        11-35, Simin-daero 327beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do 14055, Korea

        Tel: 82-31-465-3366

Product Name: Industrial HMI Touch Panel

Model Name: TOPRD□□ □□ □

Operating Temp: -10 ℃ ≤ Ta ≤ +50 ℃

Power specification: TOPRD08.....12Vdc, 3.3Vdc, 12W / TOPRD10/12.....12Vdc, 3.3Vdc, 15W

        TOPRD15.....12Vdc, 3.3Vdc, 18W

Certificate Number:

Inside Cell: Model Name MS920SE (Rechargeable lithium Battery/irreplaceable)

Serial Number:

Copyright: M2I corporation   2020.11   **www.m2i.co.kr**

- 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.

M2I Corporation   **14 / 14**

11-35, Simin-daero 327beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do 14055, Korea, Tel: +82-70-465-3366, Fax: +82-31-465-3355, www.m2i.co.kr