

M2I Corporation

Industrial HMI TOPRN Series

Hardware Manual



Thank you for purchasing the industrial HMI touch panel series from M2I Corporation.

To ensure safe and proper use of the product, please make sure to thoroughly read this manual, which includes installation, wiring, and operational instructions, before use.

Contents

Contents.....	2
Chapter 1 Safety Precautions.....	3
Chapter 1 Consignes de sécurité.....	5
Chapter 2 Overview	7
2.1 Introduction of Products.....	7
2.2 Components.....	7
2.3 Model Name Description	7
Chapter 3 General Specifications	8
3.1 Power Specifications	8
3.2 Memory Specifications.....	8
3.3 Display Specifications	8
3.4 Touch Specifications	8
3.5 Environment Specifications.....	8
3.6 Structure Specifications	9
Chapter 4 Parts Identification and Functions.....	9
4.1 TOPRN0400WD	9
4.2 TOPRN0700WD	11
4.3 TOPRN1000UD.....	13
Chapter 5 Interface	15
5.1 Serial Interface	15
5.2 Ethernet Interface.....	18
5.3 USB Interface	18
Chapter 6 Installation	19
6.1 Installation Requirements	19
6.2 Panel Processing Method.....	19
6.3 Front Protective Sheet Processing Method	22
6.4 Installation Method	24
Chapter 7 Wiring	25
7.1 Power Wiring.....	25
7.2 Grounding wiring.....	26
Chapter 8 Maintenance	27
8.1 Cleaning the Display	27
8.2 Periodic Check Points.....	27
8.3 In case of a device issue.....	27
8.4 Setting System Recovery Mode.....	27
Chapter 9 Products and Warning Labels	29
9.1 TOPRN0400WD/ TOPRN0700WD	29
9.2 TOPRN1000UD.....	30

Chapter 1 Safety Precautions

■ Before using the product

To ensure the safe and efficient use of the product, please read this manual thoroughly and completely before use. The safety precautions must be followed to prevent accidents and hazards. These precautions are divided into "Warning" and "Caution" sections. The meanings of each category are as follows.

 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 hard or pointed objects (such as an awl, screwdriver, or pen), or apply excessive force. This may cause damage to the front sheet or malfunction of the touch screen.
-  Do not use or store the product in highly vibrating environment.
-  Ensure that foreign substances such as water, liquids, or metal particles do not enter the product. This may lead to damage or electric shock.
-  Keep radios or mobile phones at least 30 cm (12 inches) away from the device.
-  The LCD screen may display up to two bright dots or have areas that appear slightly brighter. These are characteristics of LCDs and do not indicate a defect.
-  Do not store or operate the device under direct sunlight, as it may alter the characteristics 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 **Warning**

-  In the event of an abnormality in the external power supply or this product, install an external protection circuit to safeguard the overall control system.
-  Malfunctions or incorrect outputs from the main unit may cause serious harm to system stability or human safety. Therefore, be sure to install external safety devices such as an emergency stop switch, upper/lower limit switches, and forward/reverse operation interlock circuits to prevent physical damage to the system.
-  When a computer or other external device exchanges data with the main unit or controls its status (e.g., switching operation modes) via communication, ensure that the sequence program includes interlock functions to protect the system from communication errors.
-  Input/output signals and communication lines must be routed at least 100 mm (3.94 inches) away from high-voltage or power lines. In particular, communication-related I/O lines must be installed separately from power lines.

■ Wiring Precautions **Warning**

-  Before starting any wiring work, check the rated voltage and terminal layout of each product, and ensure all wiring is performed correctly. Incorrect wiring may result in fire, electric shock, or malfunction.
-  When wiring, be sure to tighten terminal screws to the specified torque. Loose screws may cause short circuits, fire, or malfunction.
-  The FG (Frame Ground) terminal must be grounded using a dedicated grounding line. Improper grounding may cause system malfunction.
-  a. Use a Class 3 grounding method with a grounding wire of at least 2 mm².

- ❗ b. The grounding point should be as close to the main unit as possible, and the grounding wire should be kept as short as possible.

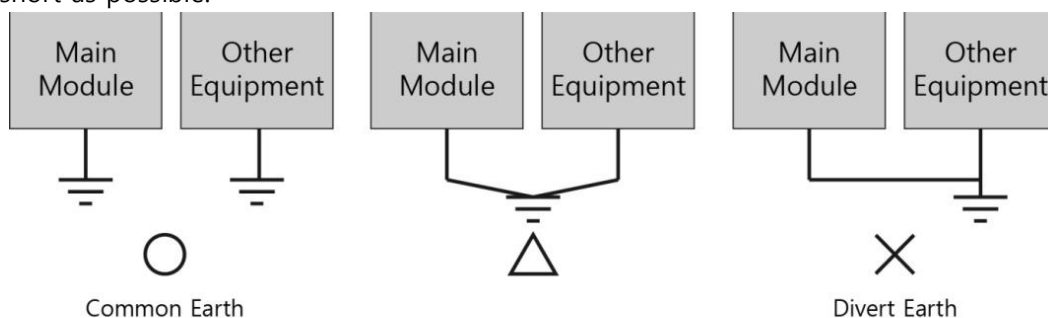


Fig. Grounding Example Diagram

■ Installation Precautions ⚠ Caution

- ⊘ The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC/EN 60664-1.
- ⊘ Do not install the product in locations where the temperature exceeds the allowable range, as this may cause damage to the unit or reduce its lifespan.
- ⊘ Do not install the product in the following environments:
 - Locations where the ambient temperature is outside the range of -10°C to 50°C
 - Surfaces of control panels where high-voltage equipment is installed
- ⊘ Do not install the unit in areas subject to continuous strong shock or vibration.
- ⊘ Use only at altitudes below 2,000 meters.
- ⊘ This product does not guarantee front-side protection by default. Attach a protective film or cover suitable for the operating environment to the display surface. Failure to do so may result in damage or malfunction due to impact, contamination, or the ingress of foreign substances.
- ⊘ For Indoor use only.

■ Disposal Precaution ⚠ Caution

When disposing of the product and battery, treat them as industrial waste. Improper disposal may result in the release of toxic substances or cause explosions.

■ Internal Battery Specifications and Replacement

- ⊘ The CR2032 internal battery on the mainboard may only be replaced in non-explosive environments. Please refer to the following information to ensure proper replacement procedures.

Items	Model	Specifications
Voltage and Capacity	TOPRN0400WD	DC 3V, 240mAh
	TOPRN0700WD	DC 3V, 240mAh
	TOPRN1000UD	DC 3V, 220mAh
Model Name and Manufacturer	TOPRN0400WD	CR2032H (Lithium Battery), Maxwell
	TOPRN0700WD	CR2032 (Lithium Battery), Changzhou Yufeng Battery
	TOPRN1000UD	CR2032 (Lithium Battery), Panasonic
Battery Life	More than 2 years (In case of ambient temperature 25°C)	

* Specifications may vary depending on the model.

■ Wiring connected to the product must be from an isolated secondary source or Class 2 circuit with a limited voltage/current and output fuse, operating at 24 VDC or below.

Chapter 1 Consignes de sécurité

■ Avant d'utiliser le produit

Pour utiliser le produit en toute sécurité et de manière efficace, veuillez lire attentivement le contenu de ce manuel avant toute utilisation. Veuillez respecter les consignes de sécurité afin de prévenir les accidents et tout danger potentiel. Les consignes de sécurité sont classées en 'Avertissement' et 'Attention', dont les significations sont les suivantes. De plus, les illustrations indiquées sur le produit et dans ce manuel ont les significations suivantes.

 Warning	Le non-respect de cette consigne peut entraîner des blessures graves voire mortelles.
 Caution	Le non-respect de cette consigne peut entraîner des blessures légères ou des dommages matériels.
	Soyez prudent, un danger potentiel peut être présent.
	Soyez prudent, un risque de choc électrique est possible.

■ Précautions générales Caution

-  D Ne pas appuyer sur l'écran avec un objet dur ou pointu (poinçon, tournevis, stylo) avec une force excessive. It may cause malfunction of touch due to damage of the front sheet.
-  Ne pas utiliser ou stocker dans un environnement à forte vibration.
-  Ne laissez pas entrer d'objets étrangers tels que de l'eau, des liquides ou des poudres métalliques dans le produit. Cela pourrait entraîner des cassures ou des chocs électriques.
-  Utilisez le radio ou le téléphone mobile à au moins 30 cm de l'unité principale.
-  lumineuses, mais cela ne constitue pas un défaut des caractéristiques de l'écran LCD.
-  Ne pas stocker ou faire fonctionner l'appareil en plein soleil. La lumière directe du soleil peut modifier les propriétés de l'écran LCD.

AVERTISSEMENT – NE PAS CONNECTER OU DÉCONNECTER LORSQUE L'ÉQUIPEMENT EST SOUS TENSION. Ou équivalent.

■ Précautions de conception Warning

installez un circuit de protection à l'extérieur des produits afin de protéger l'ensemble du système de contrôle en cas de problème avec l'alimentation externe ou les produits.

-  Comme un dysfonctionnement ou un résultat incorrect des produits pourrait nuire à la stabilité de l'ensemble du système et à la sécurité des personnes, vous devez installer un circuit d'interverrouillage préventif, tel qu'un arrêt d'urgence, des circuits de protection, des fins de course supérieur et inférieur, et un interverrouillage pour les opérations avant/arrière.
-  Lorsque l'ordinateur ou d'autres contrôleurs communiquent et échangent des données avec les produits ou modifient le mode de fonctionnement des produits, configurez un programme de séquence de protection dans le PC ou le contrôleur afin de protéger le système contre les erreurs de communication.
-  Les lignes de signaux d'entrée/sortie ou de communication doivent être séparées de la ligne d'alimentation ou des câbles haute tension. Elles doivent être installées à au moins 100 mm (3,94 pouces) les unes des autres.

■ Précautions de câblage Warning

-  Assurez-vous que le câblage est effectué correctement en vérifiant la tension nominale du produit et la disposition des bornes. Un câblage incorrect pourrait provoquer un incendie, des dommages ou des dysfonctionnements.
-  Serrez les vis des bornes avec le couple spécifié. Si les vis des bornes sont desserrées, cela pourrait entraîner un court-circuit, un incendie ou des dysfonctionnements.
-  La borne FG doit être utilisée comme une mise à la terre dédiée. Ne pas le faire pourrait entraîner des dysfonctionnements.

- ❗ a. La mise à la terre doit être de classe 3. Le câble de mise à la terre doit avoir une section d'au moins 2 mm².
- ❗ b. Le point de mise à la terre doit être proche des produits et réduire autant que possible la distance jusqu'au câble de mise à la terre.

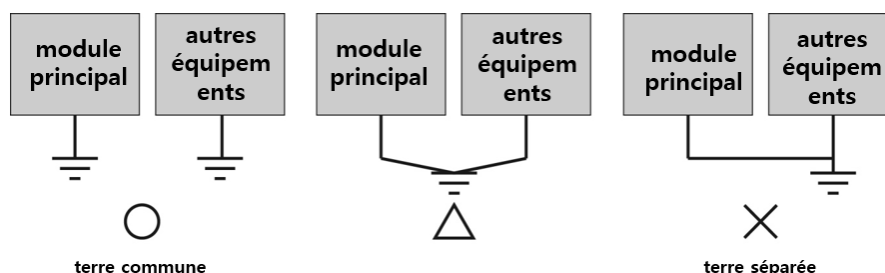


fig. : exemple de schéma de mise à la terre

■ Précautions d'installation ⚠ Caution

- ❗ L'équipement doit uniquement être utilisé dans une zone ayant un degré de pollution 2, comme défini dans la norme IEC/EN 60664-1.
- ❗ N'installez pas l'équipement dans un endroit où la température dépasse la limite autorisée. Le produit peut être endommagé ou voir sa durée de vie réduite. En particulier, l'environnement d'installation suivant doit être évité.
- ❗ N'installez pas le produit dans un endroit où la température ambiante dépasse les limites autorisées, soit de -10 à 50°C, ou sur une surface de panneau de contrôle où des équipements à haute pression sont installés.
- ❗ N'installez pas le produit dans un endroit où des chocs ou des vibrations fortes et continues affectent l'équipement.
- ❗ Utilisez le produit à une altitude inférieure à 2000 m.
- ❗ Utilisation en intérieur uniquement.

■ Précautions de mise au rebut ⚠ Caution

Lorsque vous vous débarrassez du produit et de la batterie, veuillez les traiter comme des déchets industriels. Cela peut créer des substances toxiques ou provoquer des explosions.

■ Spécifications de la batterie ⚠ Caution

- ❗ Une batterie interne MS920SE sur la carte mère ne peut être remplacée que dans un endroit non explosif. Veuillez vérifier les informations ci-dessous pour effectuer le remplacement correctement.

Élément	Informations
Tension et capacité	DC 3.0 V
Nom du modèle et fabricant	MS920SE (Lithium / Rechargeable)
Durée de vie de la batterie	Permanent (en cas de température ambiante de 25 °C)

* Les spécifications sont susceptibles de changer en fonction du modèle.

- Toutes les connexions de câblage sur le terrain à cette unité doivent provenir d'une source secondaire isolée à ****tension limitée / courant limité****, inférieure à 20 ~ 28 VDC avec un fusible de sortie, ou de circuits secondaires de Classe 2.

Chapter 2 Overview

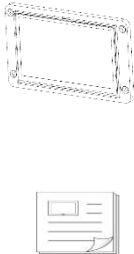
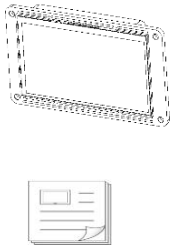
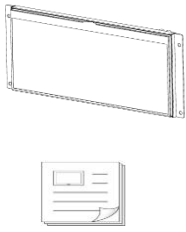
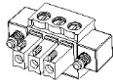
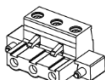
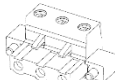
2.1 Introduction of Products

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 Components

The components of the product are as follows.

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

Components	Illustration			Quantity
	TOPRN0400WD	TOPRN0700WD	TOPRN1000UD	
Product and Manual				1
Power Connector				1
COM Port Housing (SMH200-12)		-	-	1
COM Port Crimp Terminal (YST-200)		-	-	12
Screws	 M3 Screws	 M3 Screws	 M4 Screws	4
Accessories (Sold separate)	 USB Cable			User Options

2.3 Model Name Description

Series	Screen Size	Option	Resolution	Power	Explosion proof	Blank	Reserve
TOPRN	04: 4.3" 07: 7.0" 10: 10.25"	00: Standard	W: WQVGA (480*272) W: WVGA (800*480) U: Ultra Wide (1280*480)	D: DC	-Ex: Explosion proof or special model Blank: Non-explosion proof or general model		□□: not related to Explosion proof, show as blank, digits, or letters

Chapter 3 General Specifications

3.1 Power Specifications

Input Voltage	DC 24V, Class 2	
Input Voltage Range	DC 20~28V, Class 2	
Power Consumption	TOPRN0400WD	15W
	TOPRN0700WD	
	TOPRN1000UD	
Voltage endurance	DC 24V, 10ms within	
Insulation Resistance	500V DC, 10MΩ	

3.2 Memory Specifications

Screen Memory	128MB
Backup Memory	512KB: System buffer (10K Word), Including Alarm/Log/Recipe
Backup Period	Permanent
Real Time Clock	Built in (by Battery)

3.3 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

3.4 Touch Specifications

Touch Type	Built in, Analog resistive type
------------	---------------------------------

3.5 Environment Specifications

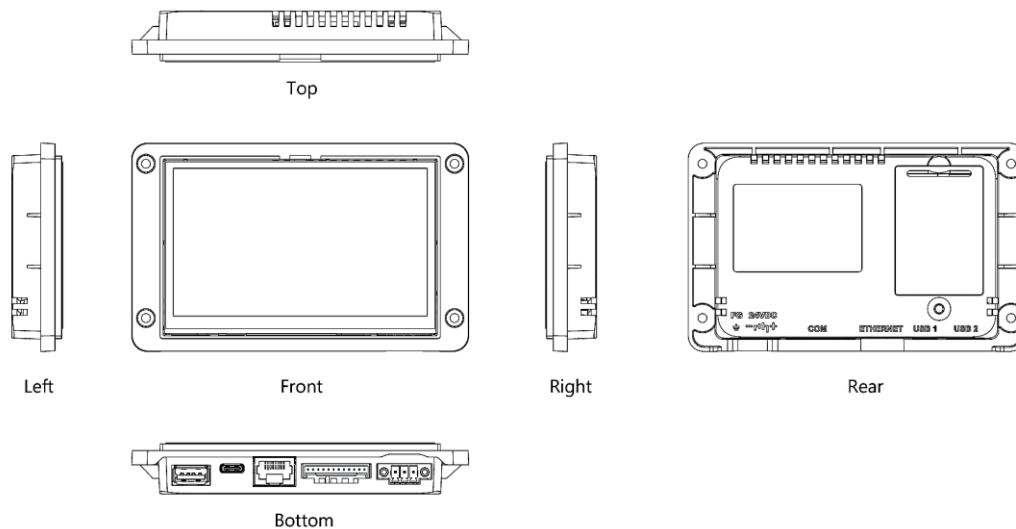
Operation Temperature(°C)	-10 ~ +50
Storage Temperature(°C)	-20 ~ +60
Operation Humidity(%RH)	0 ~ 90 (No dew)
Atmosphere	No corrosive gas
Vibration Endurance	Amplitude: 10≤F < 25Hz(2G) X, Y, Z each direction (for 30 minutes)
Noise Immunity	1000Vp-p (Pulse width 1μs)
Electrostatic Discharge	Connective discharge from EN61000-4-2: ±4KV
Shock Endurance	10G X, Y, Z each direction (for 3 times)
Withstand Voltage	500V (Line-Line)
Ground Connection	Class 3 (Under 100Ω)
Insulation Coordination	Overvoltage category II

3.6 Structure Specifications

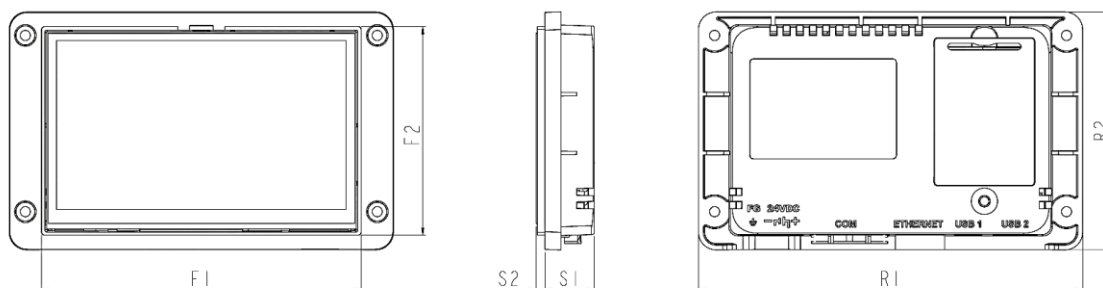
Model	TOPRN0400WD	TOPRN0700WD	TOPRN1000UD
Weight (Kg)	0.3	0.5	0.65
Cooling System	Natural air circulation		
Case Material	Plastic		

Chapter 4 Parts Identification and Functions

4.1 TOPRN0400WD



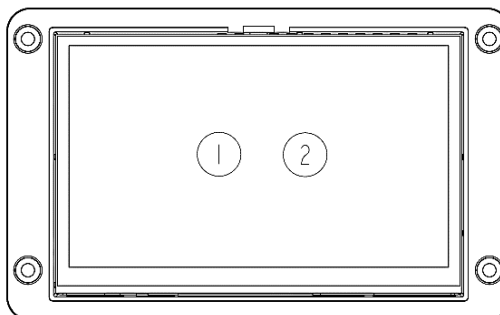
4.1.1 External Dimensions



(mm)

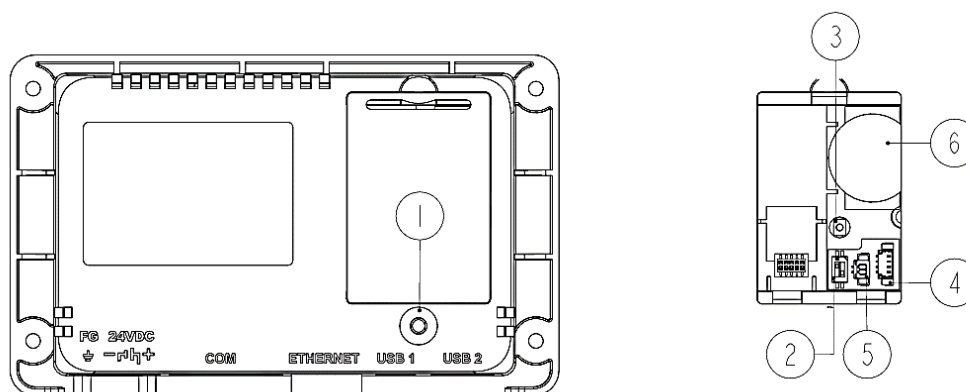
Model	F1	F2	S1	S2	R1	R2
TOPRN0400WD	109	71	16.8	3.0	131	81

4.1.2 Front Section Components and Specifications



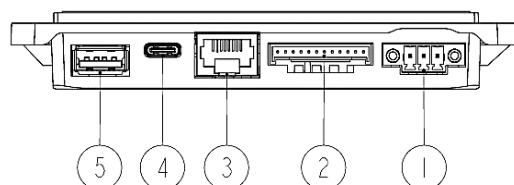
No.	Components	Description
①	LCD	TFT 16M Color LCD
②	Touch Panel	Analog Touch

4.1.3 Rear Section Components and Specifications



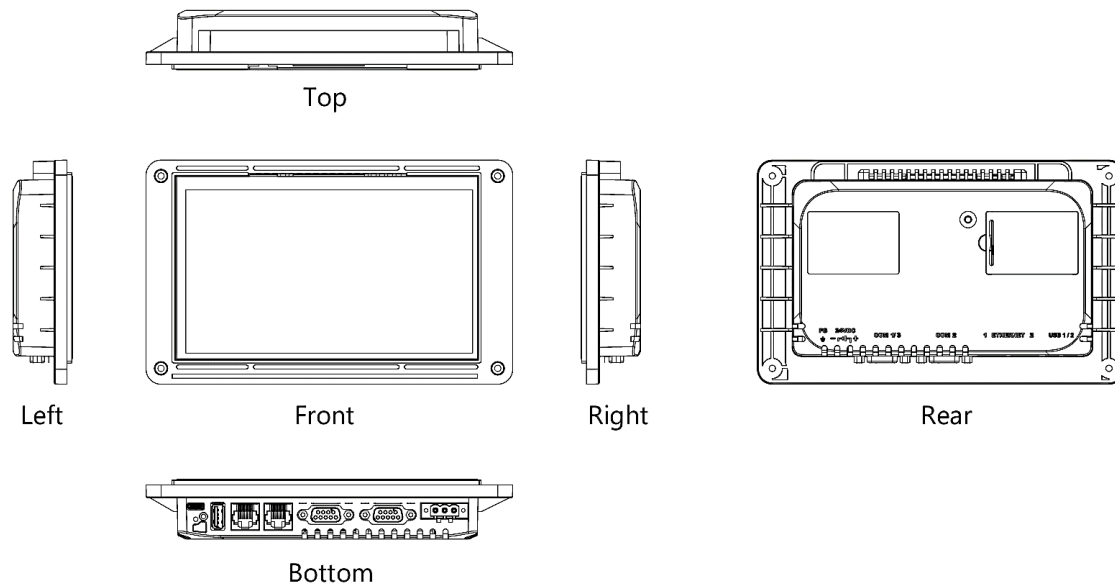
No.	Components	Type	Description
①	LED Indicator	1ea	Operation status display
②	Mode Switch	DIP Switch 2P	System mode selection switch
③	Reset Switch	Tact Switch	System reset switch
④	Diagnosis Connector	1.25mm 4P	System diagnosis (for manufacturer use only)
⑤	Battery Connector	1.25mm 2P	RTC battery connector
⑥	RTC Battery	CR2032H	RTC battery

4.1.4 Bottom Section Components and Specifications

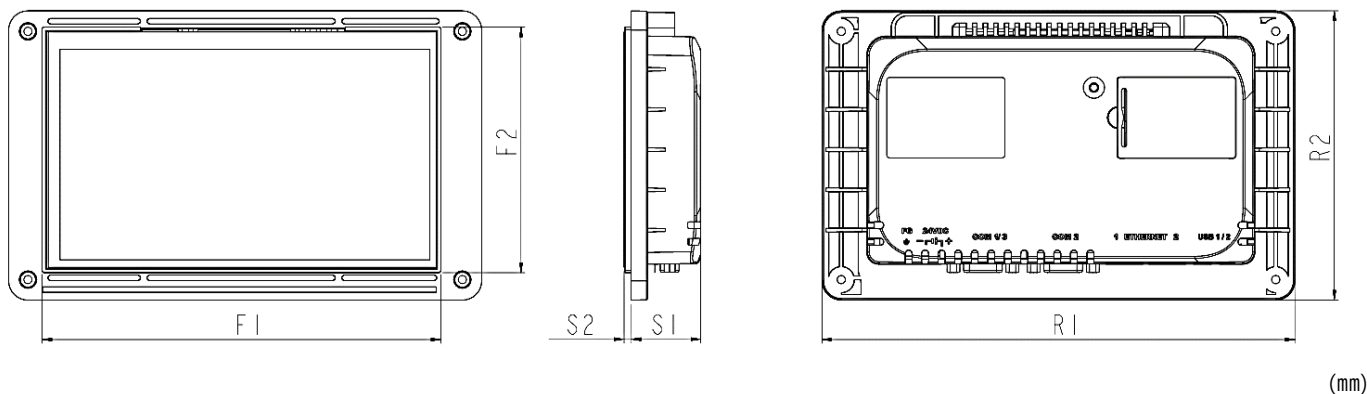


No.	Components	Type	Description
①	Power Input Terminal	TB 3.5mm 3P	Power supply for product
②	Serial Connector	SMAW200-12	COM1: RS-232C Serial Comm., COM2: RS-232C/422/485 Serial Comm. (select by software), COM3: RS-485 Serial Comm.
③	Ethernet Connector	RJ-45	10BASE-T/100BASE-TX, Auto-MDIX
④	USB Device	USB-C Type	USB port for uploading or downloading project files
⑤	USB Host	Type A	USB port for external storage (optional)

4.2 TOPRN0700WD

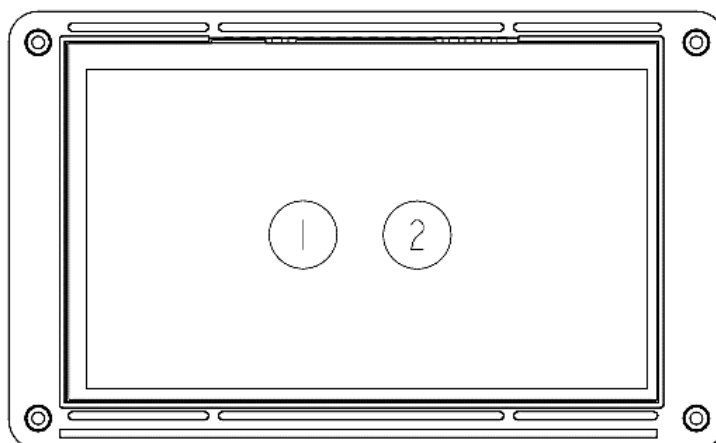


4.2.1 External Dimensions



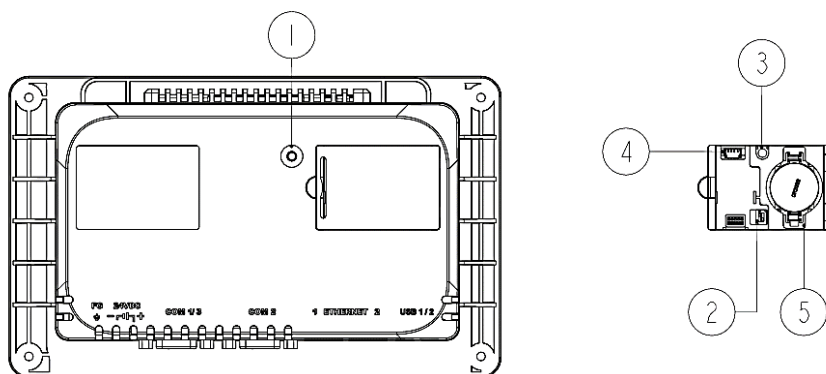
Model	F1	F2	S1	S2	R1	R2
TOPRN0700WD	168.9	103.9	29.5	3.0	200.4	122.4

4.2.2 Front Section Components and Specifications



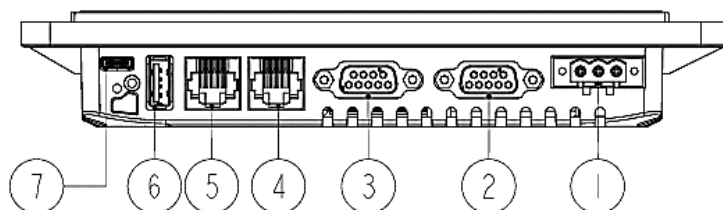
No.	Components	Description
①	LCD	TFT 16M Color LCD
②	Touch Panel	Analog Touch

4.2.3 Rear Section Components and Specifications



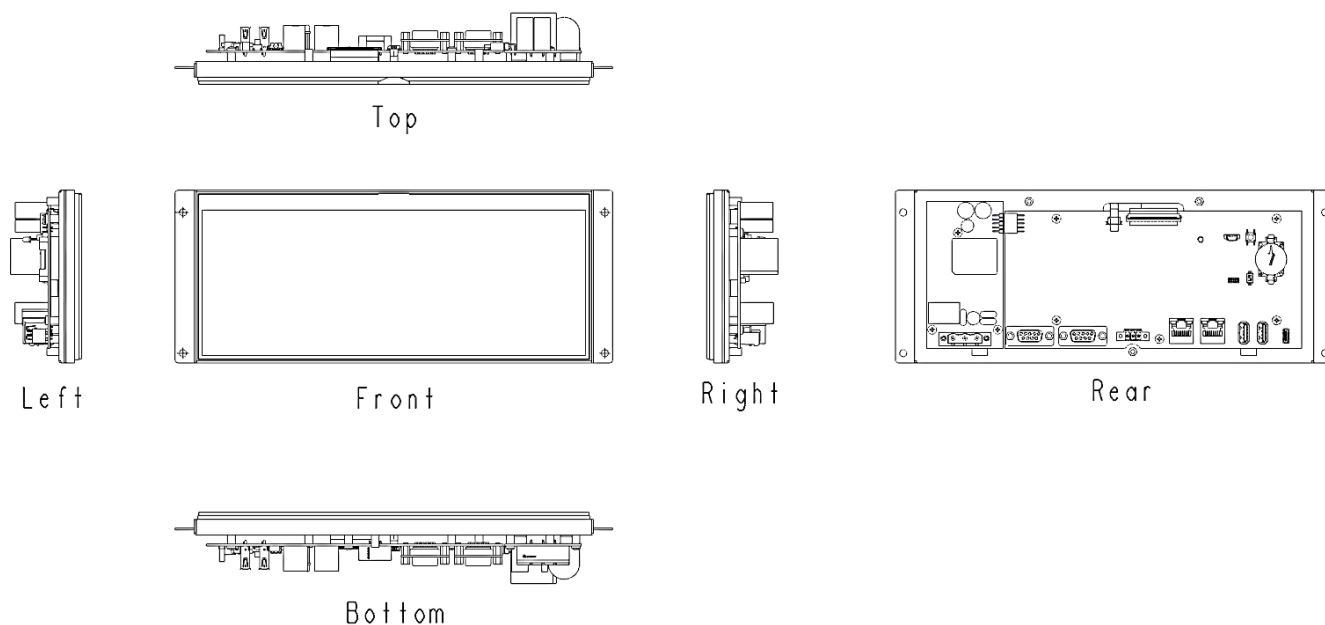
No.	Components	Type	Description
①	LED Indicator	1ea	Operation status display
②	Mode Switch	DIP Switch 2P	System mode selection switch
③	Reset Switch	Tact Switch	System reset switch
④	Diagnosis Connector	1.25mm 4P	System diagnosis (for manufacturer use only)
⑤	RTC Battery	CR2032	RTC battery

4.2.4 Bottom Section Components and Specifications

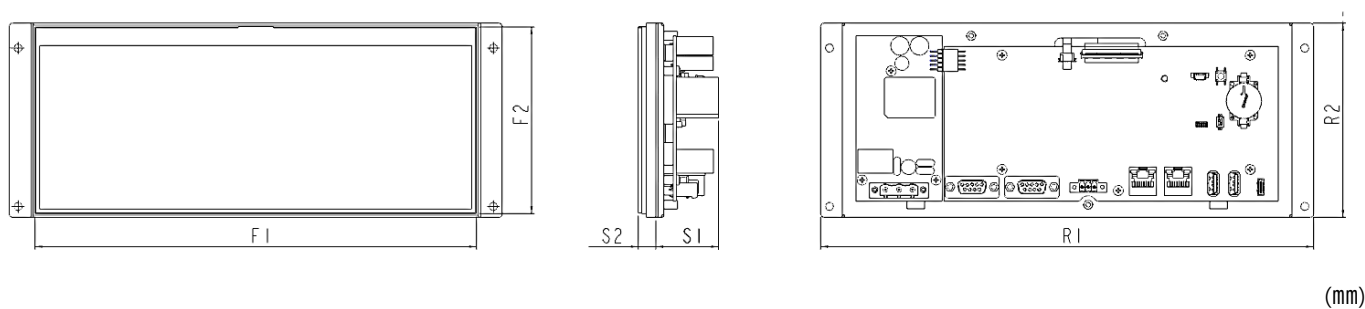


No.	Components	Type	Description
①	Power Input Terminal	TB 5mm 3P	Power supply for the product
②	Serial COM1/COM3	DSUB9	COM1: RS-232C Serial Comm., COM3: RS-485 Serial Comm.
③	Serial COM2	DSUB9	RS-232C/422/485 Serial Comm. (Selectable via software)
④	Ethernet 1 Connector	RJ-45	10BASE-T/100BASE-TX, Auto-MDIX
⑤	Ethernet 2 Connector	RJ-45	10BASE-T/100BASE-TX, Auto-MDIX
⑥	USB Host	Type A	USB Port for External Storage Device Connection
⑦	USB Device	USB-C Type	USB port for uploading or downloading project files

4.3 TOPRN1000UD

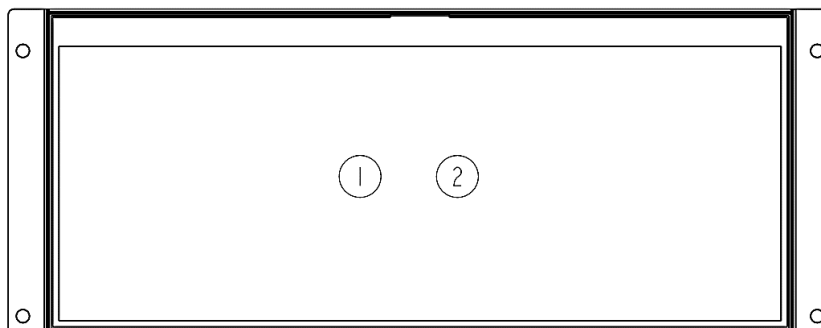


4.3.1 External Dimensions



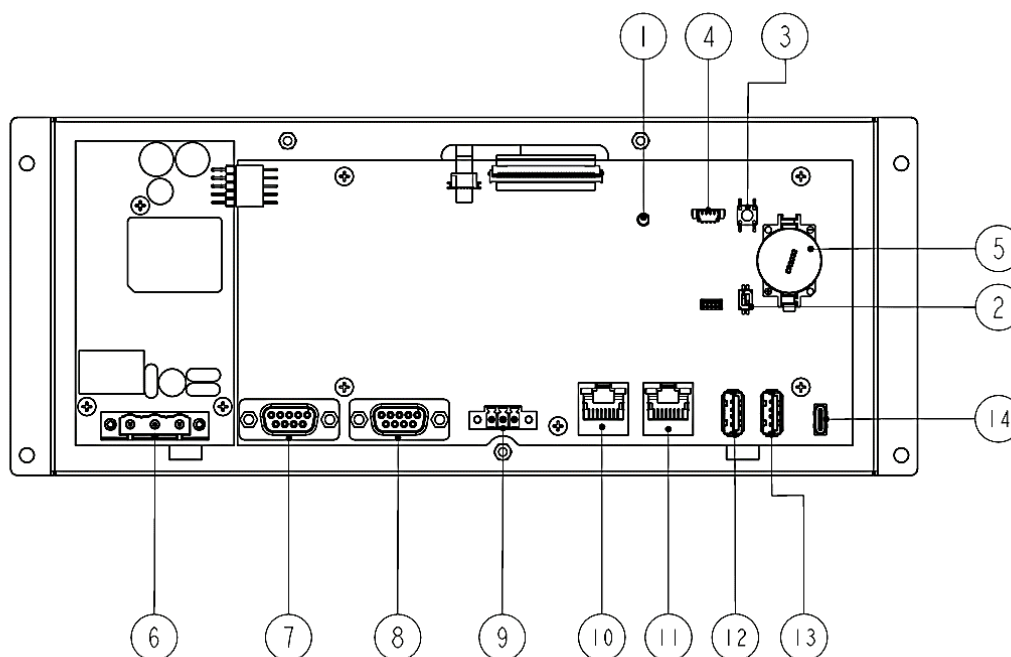
Model	F1	F2	S1	S2	R1	R2
TOPRN1000UD	250.8	106.1	35.5	10.0	280.0	110.4

4.3.2 Front Section Components and Specifications



No.	Components	Description
①	LCD	TFT 16M Color LCD
②	Touch Panel	Analog Touch

4.3.3 Rear Section Components and Specifications



No.	Components	Type	Description
①	LED Indicator	1ea	Operation status display
②	Mode Switch	DIP Switch 2P	System mode selection switch
③	Reset Switch	Tact Switch	System reset switch
④	Diagnosis Connector	1.25mm 4P	System diagnosis (for manufacturer use only)
⑤	RTC Battery	CR2032	RTC battery
⑥	Power Input Terminal	TB 5mm 3P	Power supply for the product
⑦	Serial COM1	DSUB9	RS-232C Serial Comm.
⑧	Serial COM2	DSUB9	RS-232C/422/485 Serial Comm. (Selectable via software)
⑨	Serial COM3	3.5mm 3P	RS-485 Serial Comm.
⑩	Ethernet 1 Connector	RJ-45	10BASE-T/100BASE-TX, Auto-MDIX
⑪	Ethernet 2 Connector	RJ-45	10BASE-T/100BASE-TX, Auto-MDIX
⑫	USB Host 1	Type A	USB Port for External Storage Device Connection
⑬	USB Host 2	Type A	USB Port for External Storage Device Connection
⑭	USB Device	Type C	USB port for uploading or downloading project files

Chapter 5 Interface

To enable communication between this product and external devices, please refer to the following to connect the two devices.

5.1 Serial Interface

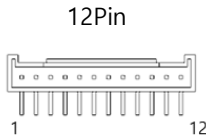
5.1.1 RS-232C

Items		Specification
Protocol		Full duplex
Synchronous Method		Asynchronous
Communication Distance		About 15m
Connection Type		1:1
Control Codes		ASCII code or HEXA code
Transmission Speed		2400, 4800, 9600, 19200, 38400, 57600, 76800, 115200, 187500bps
Data Type	Data Bit	7, 8bit
	Parity Bit	NONE, ODD, EVEN parity
	Stop Bit	1, 2bit
Connector	TOPRN0400WD	SMAW200-12
	TOPRN0700WD	DSUB 9pin
	TOPRN1000UD	DSUB 9pin

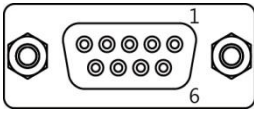
5.1.2 RS-422/485

Items		Specification
Protocol		Full duplex / Half duplex
Synchronous Method		Asynchronous
Communication Distance		About 500m
Connection Type		1:N (N≤31)
Control Codes		ASCII code or HEXA code
Transmission Speed		2400, 4800, 9600, 19200, 38400, 57600, 76800, 115200, 187500bps
Data Type	Data Bit	7, 8bit
	Parity Bit	NONE, ODD, EVEN parity
	Stop Bit	1, 2bit
Connector	TOPRN0400WD	SMAW200-12
	TOPRN0700WD	DSUB 9pin
	TOPRN1000UD	DSUB 9pin / 3.5mm 3P

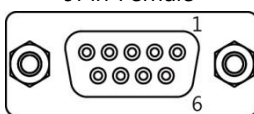
5.1.3 Pin Number and Signal Names for COM1/COM2/COM3 Connector of TOPRN0400WD

Type	Pin No.	Signal	Direction	Description
	1	SG	-	Signal ground(1, 6 same signal)
	2	SD(TxD)	Output	RS-232C send data(COM1)
	3	RD(RxD)	Input	RS-232C receive data(COM1)
	4	D-	Input/Output	RS-485 data(-)(COM3)
	5	D+	Input/Output	RS-485 data(+)(COM3)
	6	SG	-	Signal ground(1, 6 same signal)
	7	SD(TxD)	Output	RS-232C send data(COM2)
	8	RD(RxD)	Input	RS-232C receive data(COM2)
	9	RDB(RD-)	Input	RS-422/485 receive data(-)(COM2)
	10	RDA(RD+)	Input	RS-422/485 receive data(+)(COM2)
	11	SDB(SD-)	Output	RS-422/485 send data(-)(COM2)
	12	SDA(SD+)	Output	RS-422/485 send data(+)(COM2)

5.1.4 Pin Number and Signal Names for COM1/COM3 Connector of TOPRN0700WD

Type	Pin No.	Signal	Direction	Description
	1	NC	-	N/A
	2	RD(RxD)	Input	RS-232C receive data(COM1)
	3	SD(TxD)	Output	RS-232C send data(COM1)
	4	NC	-	N/A
	5	SG	-	Signal ground(5, 9 same signal)
	6	NC	-	N/A
	7	D+	Input/Output	RS-485 data(+)(COM3)
	8	D-	Input/Output	RS-485 data(-)(COM3)
	9	SG	-	Signal ground(5, 9 same signal)

5.1.5 Pin Number and Signal Names for COM2 Connector of TOPRN0700WD

Type	Pin No.	Signal	Direction	Description
	1	RDA(RD+)	Input	RS-422/485 receive data(+)
	2	RD(RxD)	Input	RS-232C receive data
	3	SD(TxD)	Output	RS-232C send data
	4	RDB(RD-)	Input	RS-422/485 receive data(-)
	5	SG	-	Signal ground
	6	SDA(SD+)	Output	RS-422/485 send data(+)
	7	NC	-	N/A
	8	NC	-	N/A
	9	SDB(SD-)	Output	RS-422/485 send data(-)

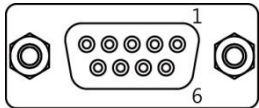
* Be sure to connect the RD and SD to the RS-232C communication line by crossing each other with a Twisted Pair Cable.

* Please connect SG directly.

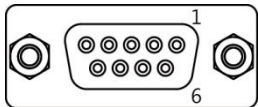
* RS-422/485 communication line must use RDA and RDB as Twisted Pair Cable, SDA and SDB as Twisted Pair Cable.

* Communication cable's Shield cable cannot be used as communication ground. It can cause communication error.

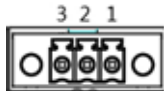
5.1.6 Pin Number and Signal Names for COM1 Connector of TOPRN1000UD

Type	Pin No.	Signal	Direction	Description
9Pin Female 	1	NC	-	N/A
	2	RD(RxD)	Input	RS-232C receive data(COM1)
	3	SD(TxD)	Output	RS-232C send data(COM1)
	4	NC	-	N/A
	5	SG	-	Signal ground
	6	NC	-	N/A
	7	NC	-	N/A
	8	NC	-	N/A
	9	NC	-	N/A

5.1.7 Pin Number and Signal Names for COM2 Connector of TOPRN1000UD

Type	Pin No.	Signal	Direction	Description
9Pin Female 	1	RDA(RD+)	Input	RS-422/485 receive data(+)
	2	RD(RxD)	Input	RS-232C receive data
	3	SD(TxD)	Output	RS-232C send data
	4	RDB(RD-)	Input	RS-422/485 receive data(-)
	5	SG	-	Signal ground
	6	SDA(SD+)	Output	RS-422/485 send data(+)
	7	NC	-	N/A
	8	NC	-	N/A
	9	SDB(SD-)	Output	RS-422/485 send data(-)

5.1.8 Pin Number and Signal Names for COM3 Connector of TOPRN1000UD

Type	Pin No.	Signal	Direction	Description
	1	D+	Input/Output	RS-485 data(+)
	2	D-	Input/Output	RS-485 data(-)
	3	SG	-	Signal ground

* Be sure to connect the RD and SD to the RS-232C communication line by crossing each other with a Twisted Pair Cable.

* Please connect SG directly.

* RS-422/485 communication line must use RDA and RDB as Twisted Pair Cable, SDA and SDB as Twisted Pair Cable.

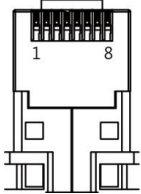
* Communication cable's Shield cable cannot be used as communication ground. It can cause communication error.

5.2 Ethernet Interface

5.2.1 Ethernet

Items		Specification
Ethernet Protocol		IEEE802.3i/IEEE802.3u, 10Base-T/100Base-Tx
Speed		10M/100Mbps
Communication Method		Base Band
Switching Method		AUTO MDIX
Maximum Segment Length		100m (Between Hub)
Communication Cable		UTP (Unshielded Twisted Pair)
Connection Connector	TOPRN0400WD	RJ45 x 1ch
	TOPRN0700WD	RJ45 x 2ch
	TOPRN1000UD	RJ45 x 2ch

5.2.2 RJ - 45 Pinout

Type	Pin No.	Color	Signal
	1	Orange/White	TD+
	2	Orange	TD-
	3	Green/White	RD+
	4	Blue	Not used in 10Base-T
	5	Blue/White	Not used in 10Base-T
	6	Green	RD-
	7	Brown/White	Not used in 10Base-T
	8	Brown	Not used in 10Base-T

* When a HUB is used, be sure to use straight cable to connect.

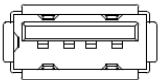
- Straight Cable Wiring: Connect 1:1 according to the wiring diagram above.

* In case of do not using HUB, do not use HUB, when it is connected directly, Cross Cable should be used.

- Cross Cable Wiring: In the above wiring diagram, TD+ and RD+ are changed, and TD- and RD- are exchanged.

5.3 USB Interface

5.3.1 USB Host

Type	Items	Specification
	USB Interface	EHCI/OHCI Specification Version 1.0, USB2.0/1.1 Compatible
	Transmission Method	Control/Bulk
	Transmission Speed	Max. 480Mb/s
	Support Device	USB Storage (FAT16/FAT32 file format)
	Connector Type	USB type A (1ch)

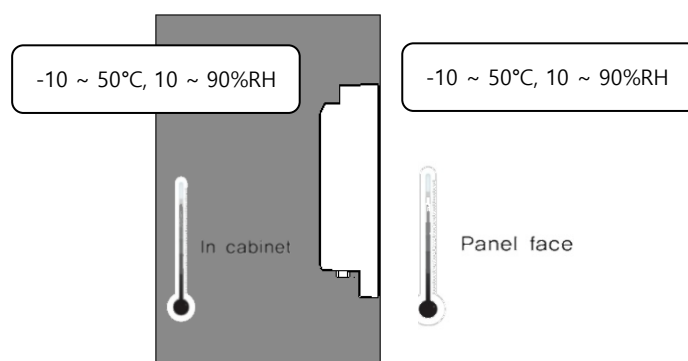
5.3.2 USB Device

Type	Items	Specification
	USB Interface	USB 2.0
	Transmission Method	Interrupt/Bulk/Isochronous
	Transmission Speed	Max 480Mb/s
	Supported OS	Windows 98SE/2000/XP/VISTA/7/10 (32/64bit)
	Cable Length	Recommended: 3m cable (manufacturer). Use ≤1.5m if purchased separately.
	Connector Type	USB type C, Female (1ch)
	Connection Method	Connected via USB device

Chapter 6 Installation Warning

6.1 Installation Requirements

- (1) It should be installed within $-10 \sim 50^{\circ}\text{C}$ and $10 \sim 90\%\text{RH}$, otherwise the screen may be changed or cause malfunction and damage.
- (2) Be sure that heat from surrounding equipment does not cause product to exceed its standard operating temperature.



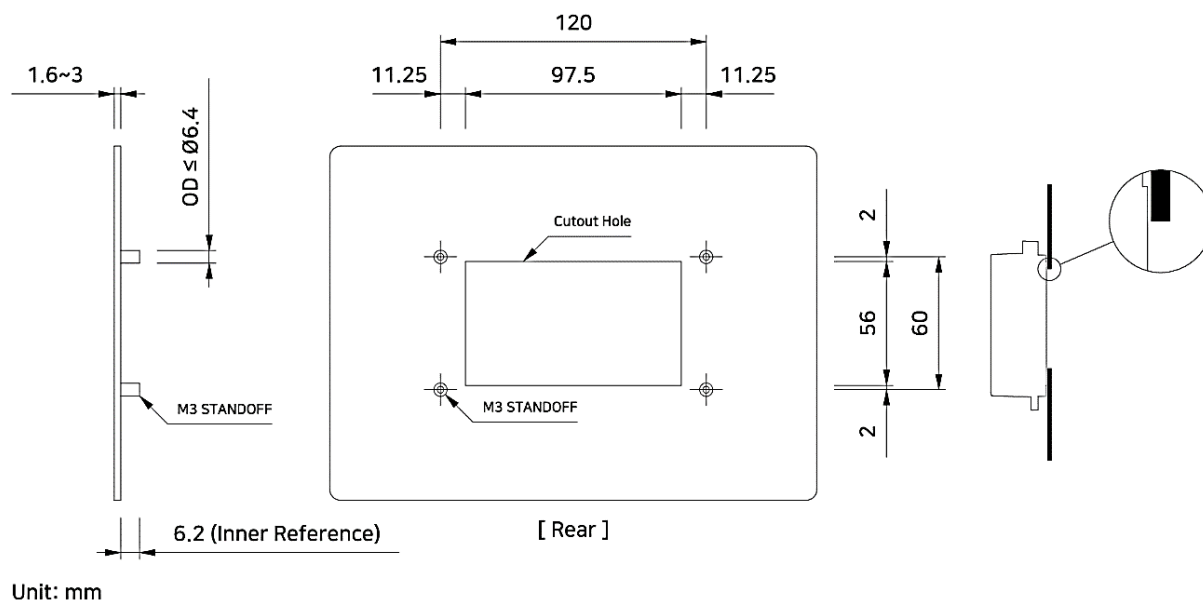
- (3) In order to minimize external mechanical hazards, please control the mechanical hazards of the surrounding environment.
- (4) Prepare and attach a protective sheet for your environment to the display. Otherwise, the product may be damaged or dirty, and foreign substances may enter the product and cause failure or malfunction.

6.2 Panel Processing Method

Before installing the product, cut out the panel and prepare standoffs according to the dimensions shown in the drawing below.

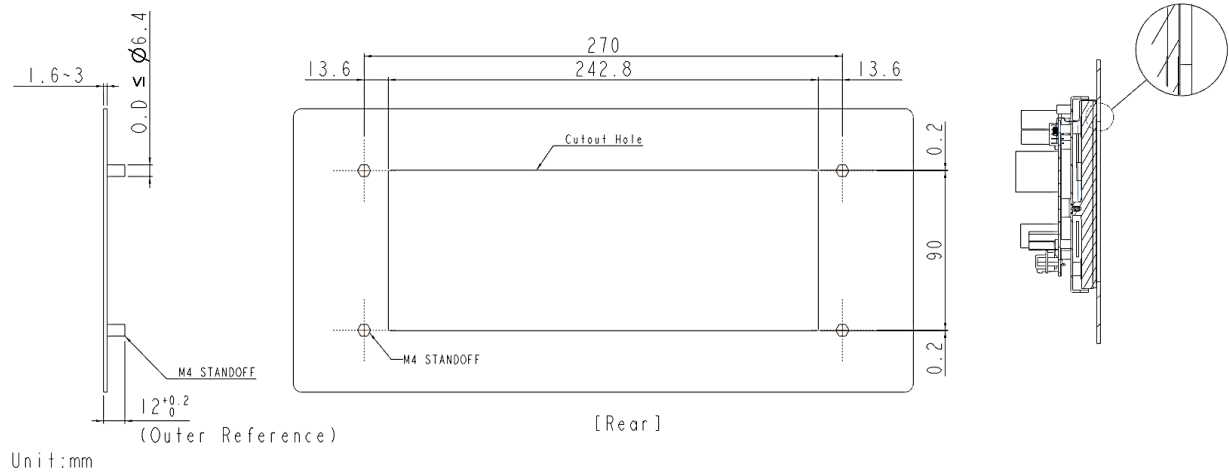
(1) Panel Drawing

1) TOPRN0400WD Standard Mount Type

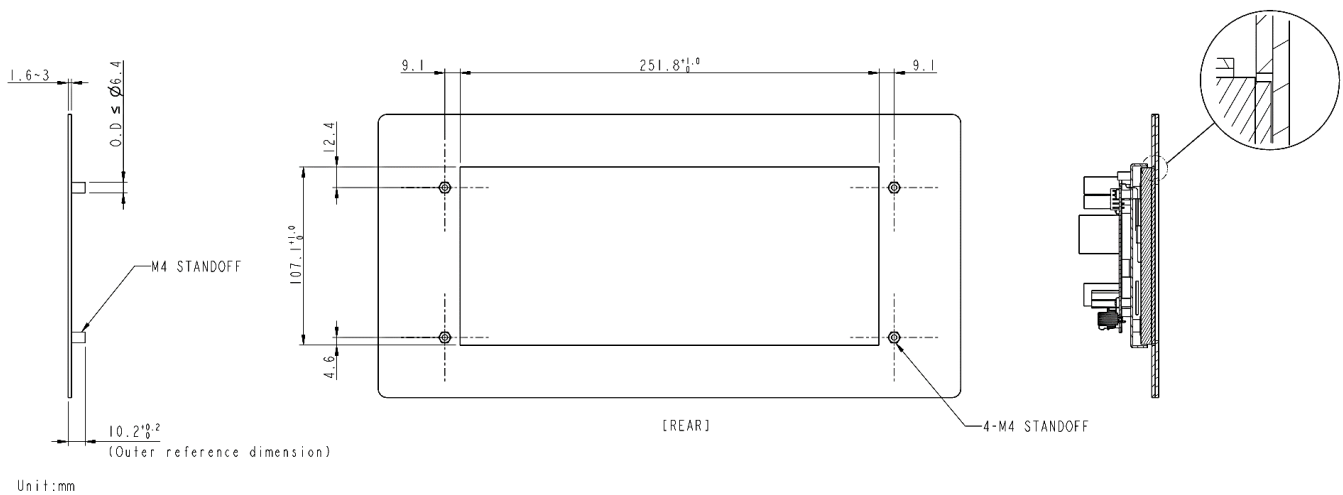




5) TOPRN1000UD Standard Mount Type



6) TOPRN1000UD Flat Mount Type



(2) Cutout Hole Processing

The product can be installed using either the Standard Mount or Flat Mount method. The cutout hole shape differs depending on the selected method.

1) Standard Mount Type

Cut the hole to match the display area of the product. Only the screen is exposed through the cutout, resulting in the panel surface protruding above the screen, creating a height difference.

Recommended panel thickness: 1.6 to 3 mm.

2) Flat Mount Type

Cut the hole to match the screen guide of the product. Both the screen and screen guide are exposed through the cutout, and the panel surface is flush with the screen surface.

Recommended panel thickness: 1.6 to 3 mm. If the panel exceeds 3 mm in thickness, the panel surface may protrude above the screen, causing a height difference. In this case, ensure the panel thickness is checked in advance.

(3) Standoff Processing

Install four M3 standoffs near the corners of the cutout hole, as shown in the drawing.

1) Standard Mount Type

The standoff height should be measured from the inner surface of the panel and follow the dimensions specified in the drawing.

2) Flat Mount Type

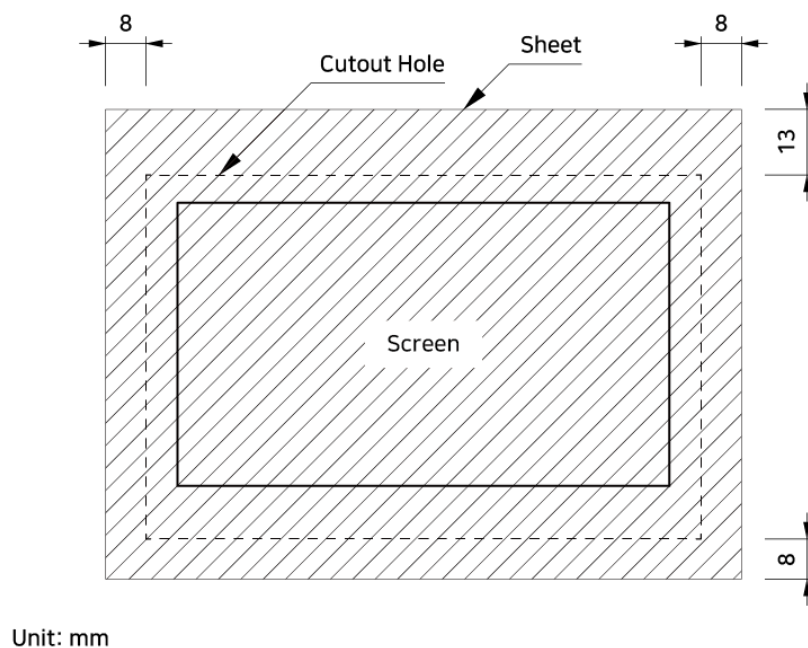
The standoff height should be measured from the outer surface of the panel and follow the drawing specifications. To ensure the screen and panel surface are level, be sure to calculate standoff height based on the outer panel surface.

6.3 Front Protective Sheet Processing Method

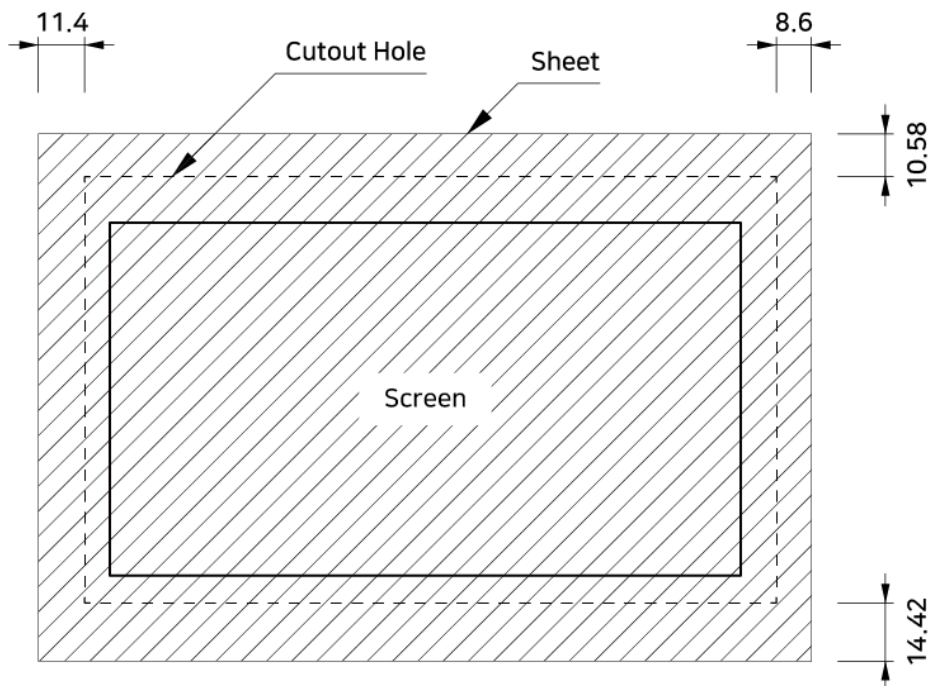
When using the Flat Mount method, it is recommended to attach a front protective sheet to prevent the ingress of dust or foreign substances through the front panel.

The sheet should be large enough to cover both the screen and its surrounding screen guide. Please refer to the drawing below for exact dimensions.

(1) TOPRN0400WD – Flat Mount Front Protective Sheet Drawing

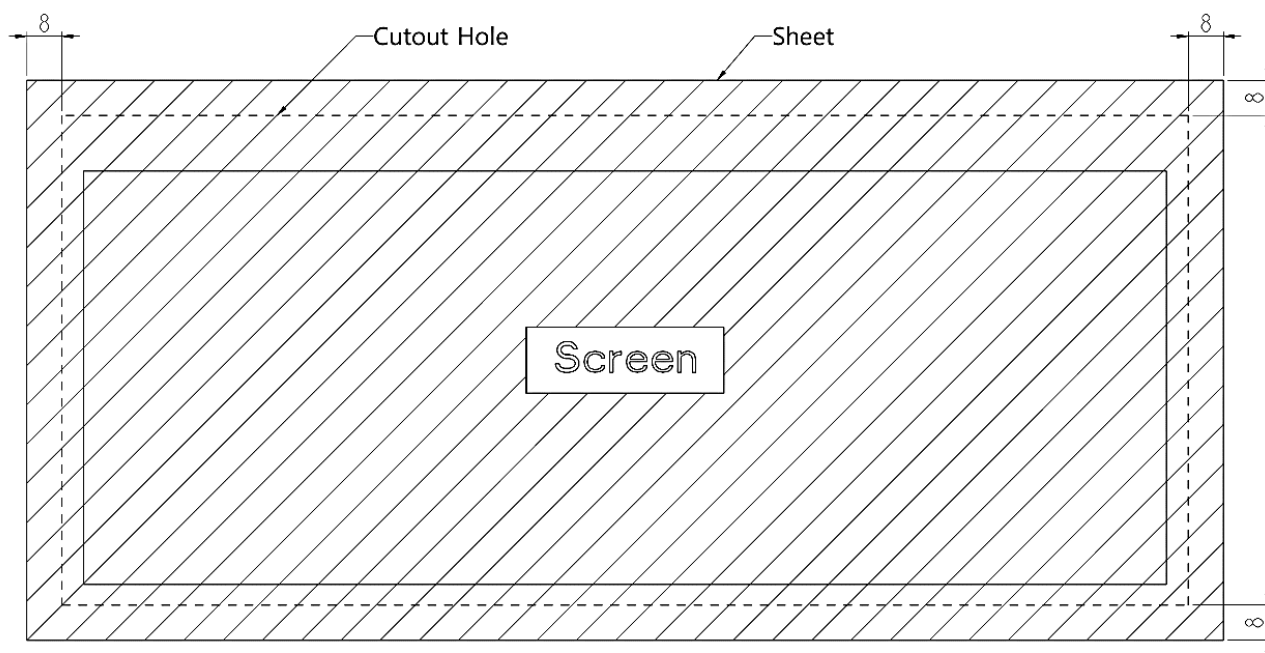


(2) TOPRN0700WD – Flat Mount Front Protective Sheet Drawing



Unit: mm

(3) TOPRN1000UD – Flat Mount Front Protective Sheet Drawing



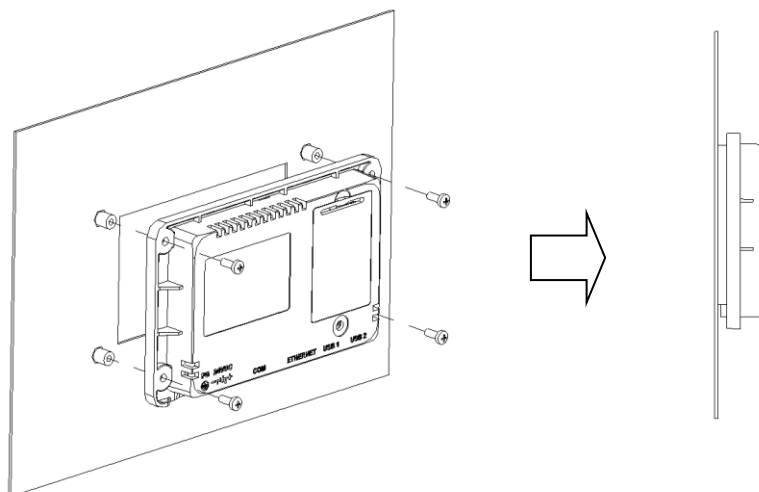
The dimensions indicated on the drawing represent the minimum clearance to be added around the outer edge of the cutout hole.

The protective sheet should be manufactured to meet or exceed the minimum dimensions specified in the drawing and be precisely fabricated to ensure sufficient tight fit and adhesion.

6.4 Installation Method

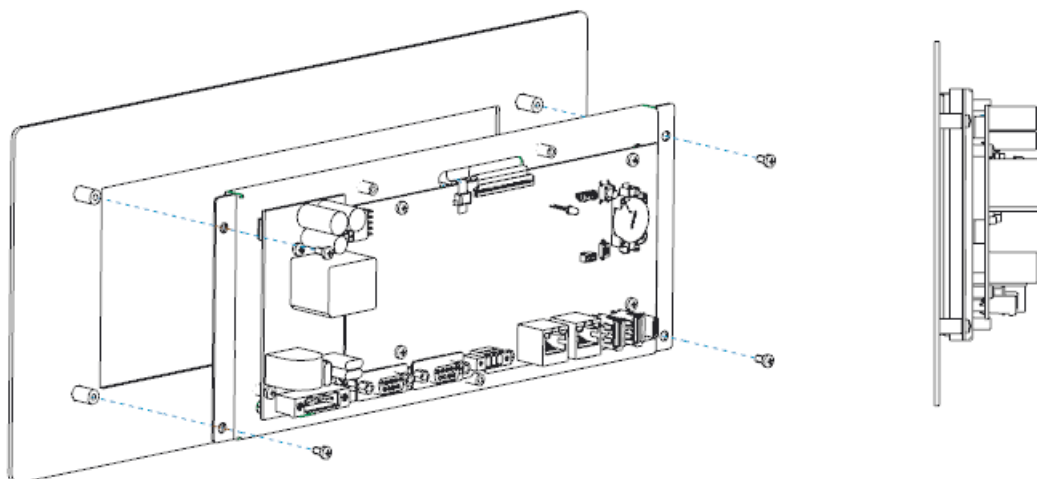
6.4.1 TOPRN0400WD, TOPRN0700WD

- (1) Insert the product from the rear of the panel, aligning it with the cutout hole.
- (2) From the front, check that the cutout hole and the screen are correctly aligned.
- (3) After confirming alignment, fasten the product to the standoffs on the rear side of the panel using M3 screws.



6.4.2 TOPRN1000UD

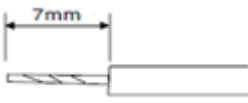
- (1) Insert the product from the rear of the panel, aligning it with the cutout hole.
- (2) From the front, check that the cutout hole and the screen are correctly aligned.
- (3) After confirming alignment, fasten the product to the standoffs on the rear side of the panel using M4



Chapter 7 Wiring Warning

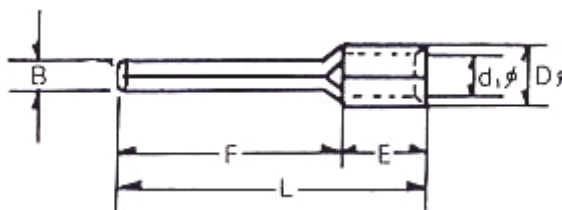
7.1 Power Wiring Warning

(1) The Power cable should have the following specification.  Warning

Power Cable Width	TOPRN0400WD	0.75~1.5mm ² (18~16AWG)
	TOPRN0700WD	0.75~2.5mm ² (18~13AWG)
	TOPRN1000UD	0.75~2.5mm ² (18~13AWG)
Grounding Cable Width	TOPRN0400WD	Over 0.75mm ² (18AWG)
	TOPRN0700WD	Over 2mm ² (14AWG)
	TOPRN1000UD	Over 2mm ² (14AWG)
Conductor Type	Single wire or stranded wire	
Bolt Tightening Force	0.6N.m  Warning	
Conductor Length		
Wiring Conductor Temperature	65°C	

(2) The specifications for the power and ground terminals are as follows.  Warning

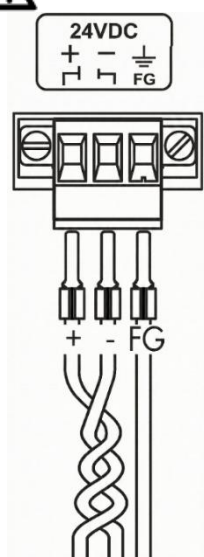
To prevent wear on the power wires and to improve the quality of electrical signal transmission, pin terminals (e.g., phenol pins or equivalent components) are used during the installation of power and ground terminals.



(mm)

Model	B	L	F	E	D	d
TOPRN0400WD	1.8~1.9	14~22	8~14	5	3.3~3.8	2~2.5
TOPRN0700WD	1.8~2.0	14~22	8~14	5	3.3~3.8	2~2.5
TOPRN1000UD	1.8~2.0	14~22	8~14	5	3.3~3.8	2~2.5

(3) Wiring of power cable is as follows.  Warning



7.2 Grounding wiring Warning

- (1) The device has sufficient noise protection, but for the safety of both the device and the user, the user must connect the grounding of the device. When connecting the grounding, please follow the instructions below.
- (2) The grounding should preferably be connected to a dedicated ground. It is recommended to use a Type 3 Grounding system (the grounding resistance should be less than 100Ω).
- (3) If a dedicated grounding is not possible, please use a shared grounding as shown in the diagram below.

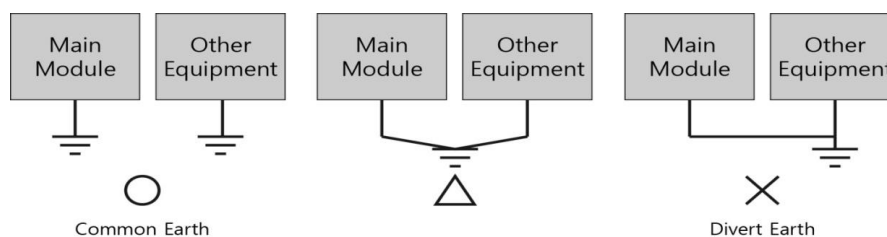


Fig. Grounding Example Diagram

- (4) Use a grounding wire with a cross-sectional area of at least 2mm^2 . Place the grounding point as close as possible to the device and keep the grounding wire as short as possible.

Chapter 8 Maintenance Warning

8.1 Cleaning the Display

When the screen surface or frame becomes dirty, spray a cleaning solution onto a soft cloth and wipe the area clean. Do not spray the cleaning solution directly onto the screen.

8.2 Periodic Check Points

Check the followings periodically for best condition of the device.

(1) Environmental Check

- 1) Verify that the device is operating within the specified temperature range.
- 2) Verify that the device is operating within the specified humidity range.
- 3) Check for the presence of corrosive gases in the surrounding environment.

(2) Power Supply Check

- 1) Confirm that the input voltage is within the normal operating range.

(3) Other Related Checks

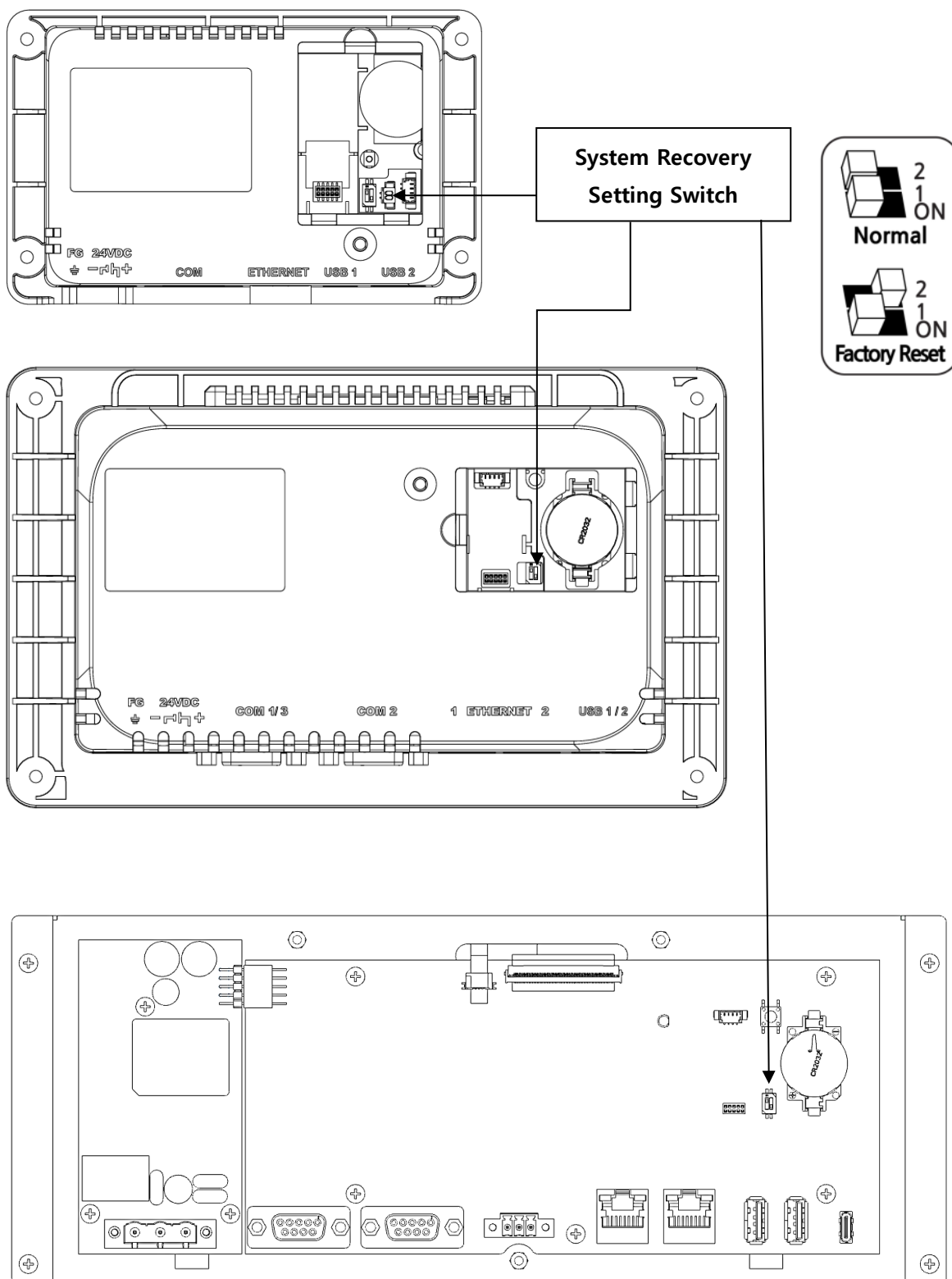
- 1) Visually inspect the touch panel for any damage, scratches, or contamination.
- 2) Check the replacement timing for the LCD backlight.

8.3 In case of a device issue 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.
- (5) If there is a high electromagnetic noise, put ferrite core on main power cable and field cable. The noise of power cable and communication cables can be high under the installation circumstances.
- (6) Please put ferrite cores on each side's end when USB is not working by noise.

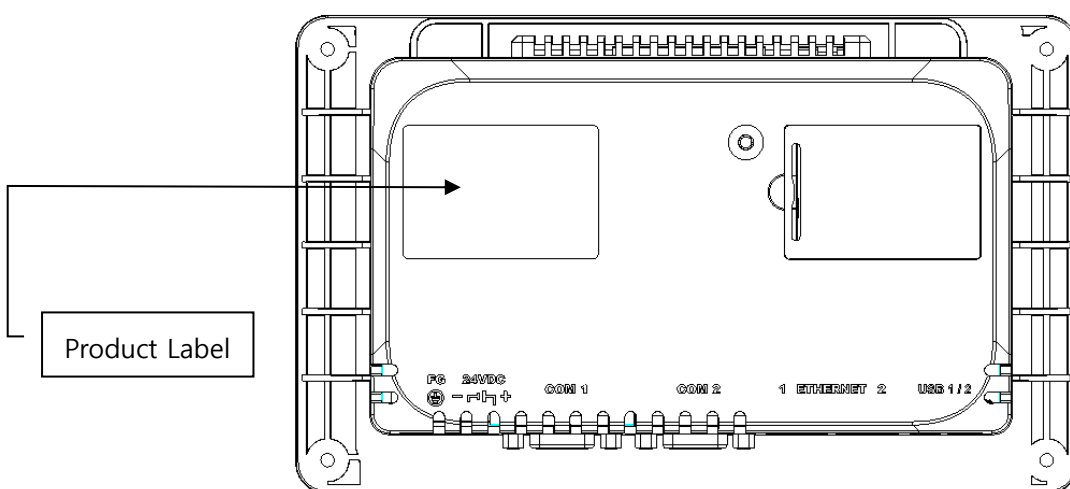
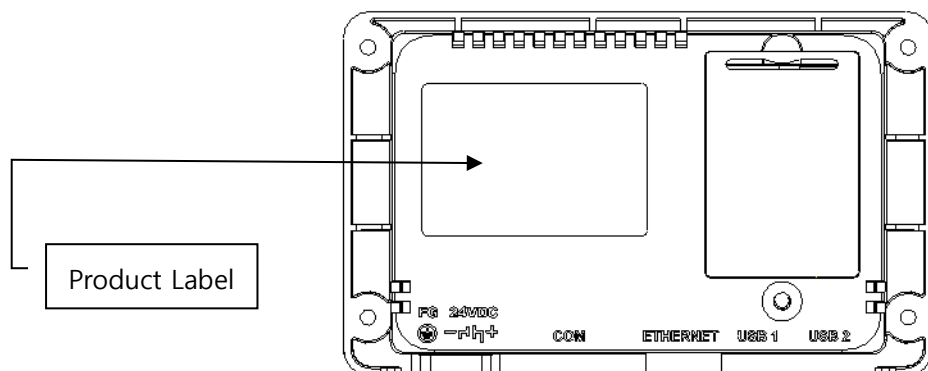
8.4 Setting System Recovery Mode

- (1) If the system fails to boot normally due to a problem during operation, the built-in recovery function can be used to maintain the factory default state. Please note that the built-in project will be deleted when using the recovery mode.
- (2) After opening the rear cover, you can adjust the setting switch. Keep the "Normal" state when booting normally. If the system is recovering, turn off the power and set it to "Factory Reset".
- (3) When the recovery is completed, the buzzer sounds, then turn off the power and reset to "Normal" state.



Chapter 9 Products and Warning Labels

9.1 TOPRN0400WD/ TOPRN0700WD

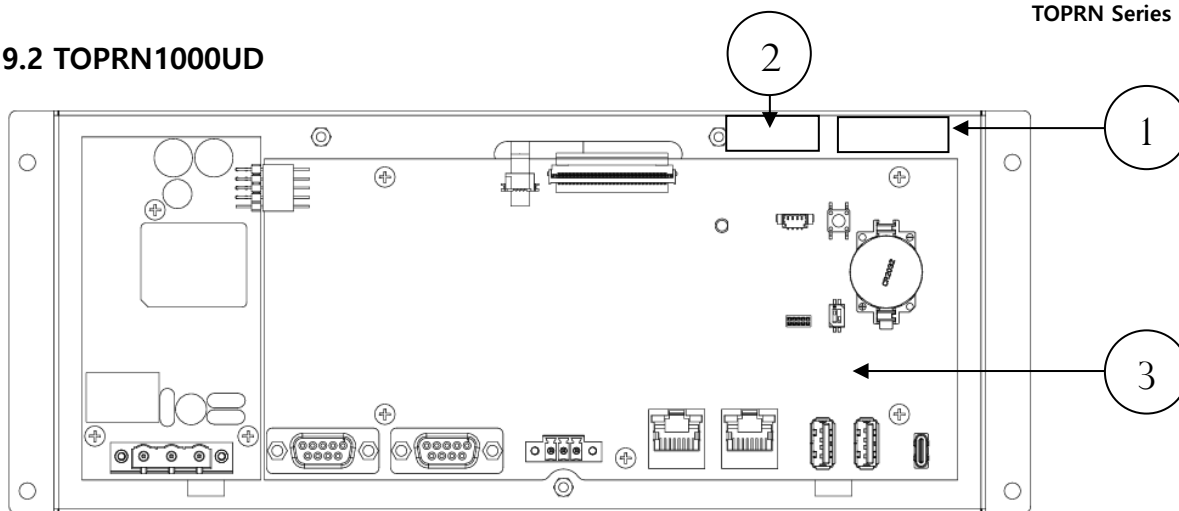


Manufacture (AS)	→	M2i Corporation 工业操作终端	Service & Support www.m2i.co.kr
*1) Model	→	TOPRN xxxXWD	M2i Bldg, Simin-daero 327,
*2) Power	→	IN(输入): 20~28V $\equiv$ class2, xxW	Anyang-si, 14055
Battery	→	Inside Cell(内部电池): CR2032	Made In Korea
Operation Temp.	→	S / N (产品系列号): -	韩国制造
	→	Tamb (使用温度): $-10^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$	V1
Warning	→	⚠ If you need change the inside battery please contact the A/S center Si vous devez remplacer la batterie interne, veuillez contacter le centre de service après-vente WARNING-POTENTIAL ELECTROSTATIC CHARGING HAZARD AVERTISSEMENT - RISQUE POTENTIEL DE CHARGE ÉLECTROSTATIQUE ⚠ See Instructions Voir les instructions.	
Certificate & No.	→	R-R-M2i-0RNXX00WD	EXXXXXX PROG. CNTLR.

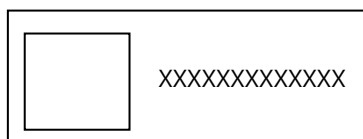
*1), 2) Model Name and Power Specifications:

- TOPRN0400WD: 24Vdc, 15W, Class 2 Power Only
- TOPRN0700WD: 24Vdc, 15W, Class 2 Power Only

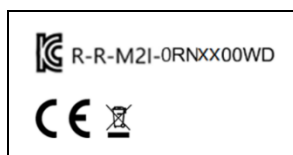
9.2 TOPRN1000UD



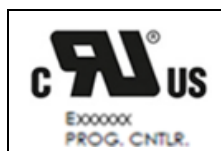
(1) **QR Label:** The QR code and serial number are displayed.



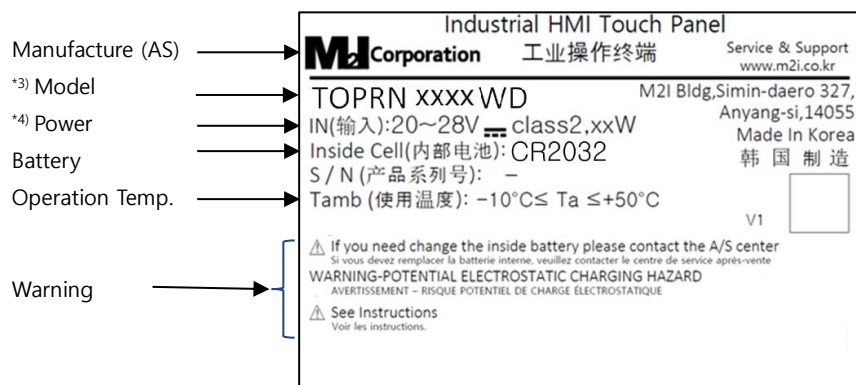
(2) **KC / CE Certification Label:** The KC and CE certification marks and the corresponding approval numbers are displayed.



(3) **UL Certification Label:** The UL certification mark and file number are displayed.



(4) **Product Box Label:** Product information is displayed as shown below.



*3), 4) Model Name and Power Specifications:

- TOPRN1000UD: 24Vdc, 15W, Class 2 Power Only

- When using M2I equipment, be sure to fully understand the relevant information provided in the manual, handle the product properly, and pay close attention to safety.
- Keep the manual in a safe place for future reference whenever necessary.