MX On Corporation

Industrial HMI Touch Panel

TOPRX Series

Hardware Manual

Thank you for purchasing the industrial HMI touch panel series of MX On.

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

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Contents

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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 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 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 30 ㎝ 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 ⚠ 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 in/output signal or communication lines should be separated from the power line or high-tension wire. They should be installed 100 ㎜ (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.
- Wire ends should be twisted during power wiring to prevent short circuits, EMI, 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 2 ㎟.
- b. grounding point be closed to the products and make short the distance to the ground cable if possible.

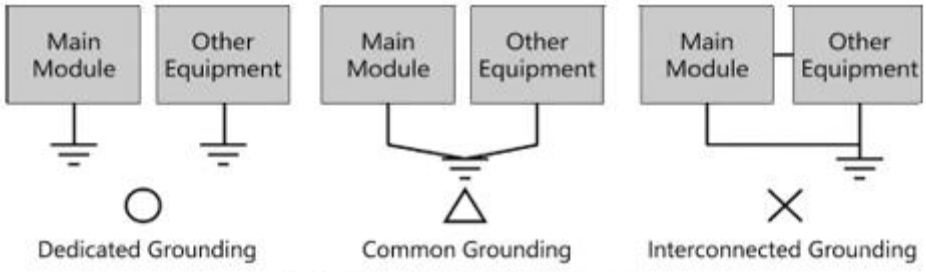

Fig. Grounding Example Diagram

■ 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 -10℃ 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.
- For indoor use only.
- Use the product under 2000 m altitude.
- The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC/EN 60664-1.

■ 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 ⚠ **Caution**

MS920SE Battery is not replaced by the user.

Item	Content
Battery Voltage	DC 3.0 V
Battery Model	MS920SE (Lithium / Rechargeable)
Battery lifetime	Permanent (In case of ambient temperature 25 ℃)

*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 secondary circuits.

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 ㎝ 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'écranLCD.

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

■ Précautions de conception ⚠ Warning

nstallez 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 ㎜ (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 lesvis 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 ㎟.
- 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.

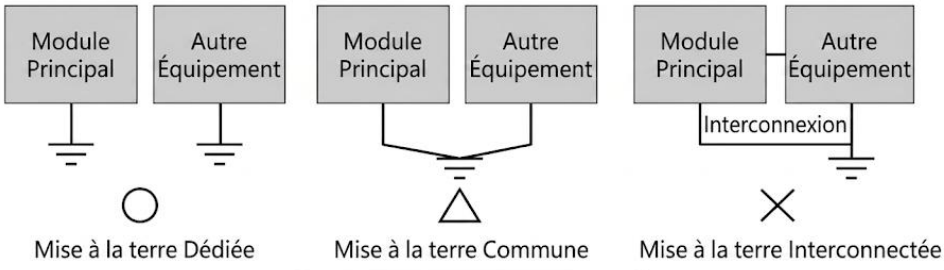

Fig. Diagramme d'exemple de mise à la terre

■ **Précautions d'installation** ⚠ **Caution**

- 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 pressionsont installés.
- DN'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.

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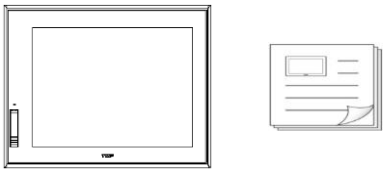
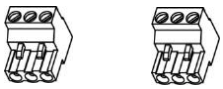
Chapter 2 Overview

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

Package contents of TOPRX Series are below. please make sure that all of components are in the package Series before using TOPRX.

Components	Figure	Quantity
Process Module and User Manual		1 each
Clamp		4
Power Connector and COM3 Communication Connector		1 each
Accessories (Sold separate)	 USB Memory  USB Cable  SD Card  Front Protect Sheet	User Options

2.3 Explanation of Model name

TOPRX	□□	□□	□	□		□□
Series	Display Size	Option	Resolution	power	blank	Touch sensor type
	05: 5.6″	00: Standard	Q: QVGA (320*240)	A: AC		Blank : resistive touch
	08: 8.4″	10: Premium	V: VGA (640*480)	D: DC		01 : Multi resistive touch
	10: 10.4"	□1: No SD Card support	S: SVGA (800*600)			
	12: 12.1″		X: XGA (1024*768)			
	15: 15″					

Chapter 3 General Specifications

3.1 Electrical Specifications

Input Voltage	TOPRX□□□□□A	AC 100 ~ 240 V, 50 / 60 Hz
	TOPRX□□□□□D	DC 20 ~ 28 V, Class 2
Consumption Power	TOPRX05 Series	12 W
	TOPRX08 Series	
	TOPRX10 Series	15 W
	TOPRX12 Series	
	TOPRX15 Series	18 W
Voltage endurance	TOPRX□□□□□A	AC 85 / 170 V, Within 10 ms
	TOPRX□□□□□D	DC 24 V, Within 10 ms
Insulation Resistance		500 V DC, 10 MΩ

3.2 Memory Specifications

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

3.3 Display Specifications

Color	16 M 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 touch sensor

3.5 Environment Specifications

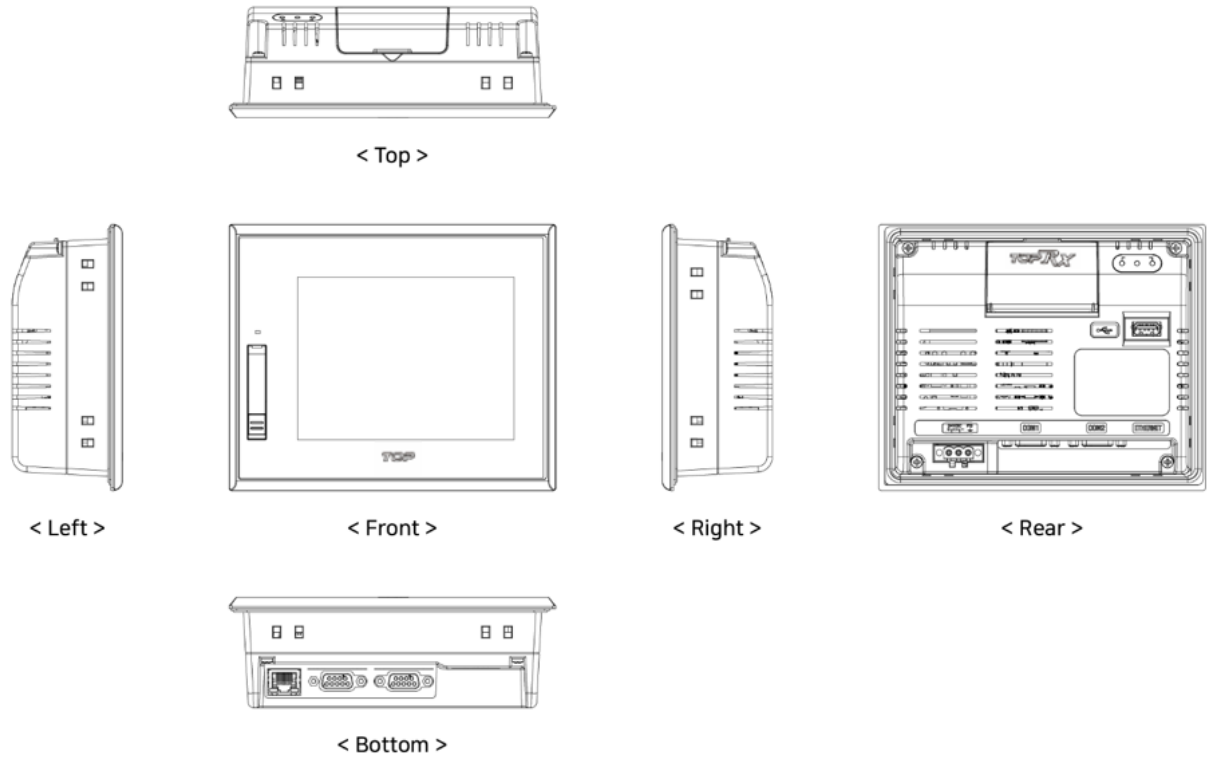
Operation Temperature (℃)	-10 ~ +50
Storage Temperature (℃)	-20 ~ +60
Operation Humidity (%RH)	10 ~ 90 (No dew)
Atmosphere	No corrosive gas
Vibration Endurance	Amplitude: 10 ≤ F < 25 Hz (2G) X, Y, Z each direction(for 30 minutes)
Noise Immunity	1000 Vp-p (Pulse width 1 μs)
Electrostatic Discharge	Connective discharge from EN61000-4-2: ±4 kV
Shock Endurance	10G X, Y, Z each direction (for 3 times)
Surge Voltage	500 V (VIN to FG)
Ground Connection	Class 3 (Under 100 Ω)
Protection Classification	Front IP65
Insulation Coordination	Overvoltage category II

3.6 Structure Specifications

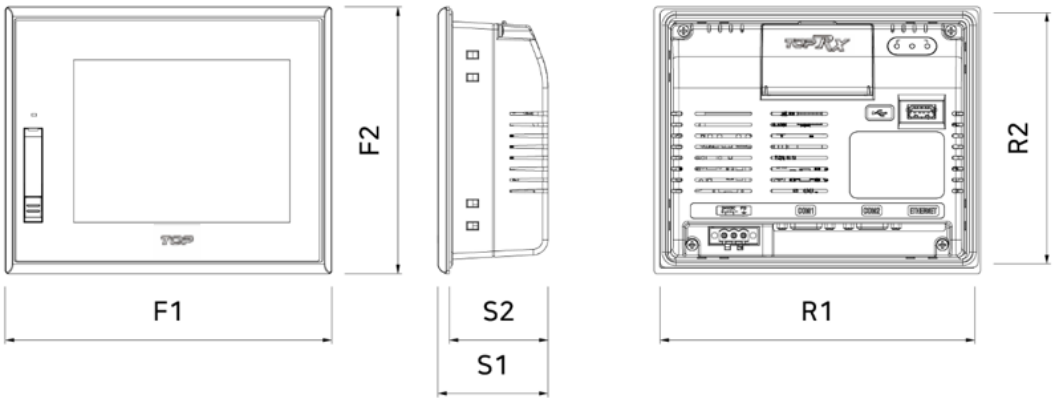
Model	TOPRX05	TOPRX08	TOPRX10	TOPRX12	TOPRX15
Weight (Kg)	0.62	1.06	1.68	2.18	2.78
Cooling System	Natural air circulation				
Case Material	PC (Flameless)				

Chapter 4 Parts Identification and Functions

4.1 TOPRX05 / 08 Series



4.1.1 External Dimension



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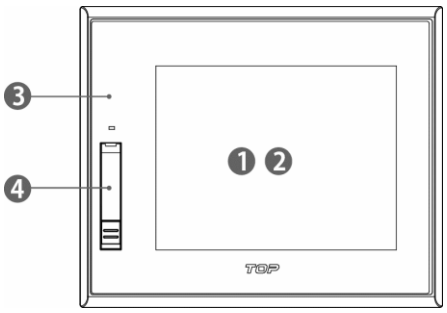
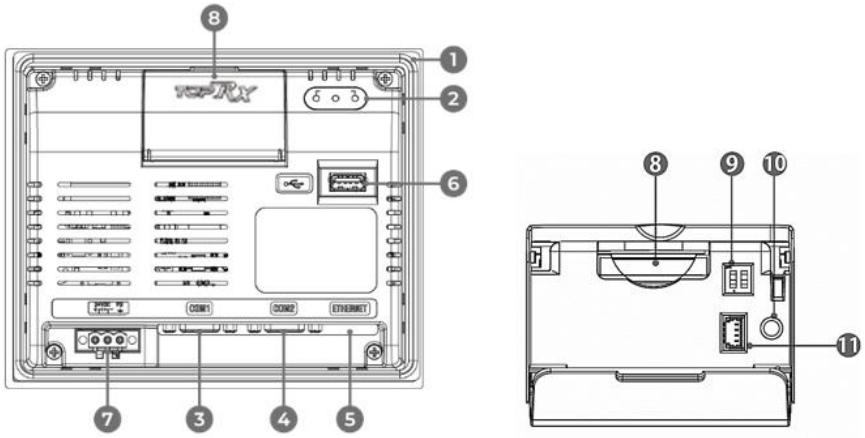
Model	F1	F2	S1	S2	R1	R2
TOPRX05	172	140	58	51	157	125
TOPRX08	236	182	58.9	52.9	221	167

4.1.2 Front Part Names and Specifications



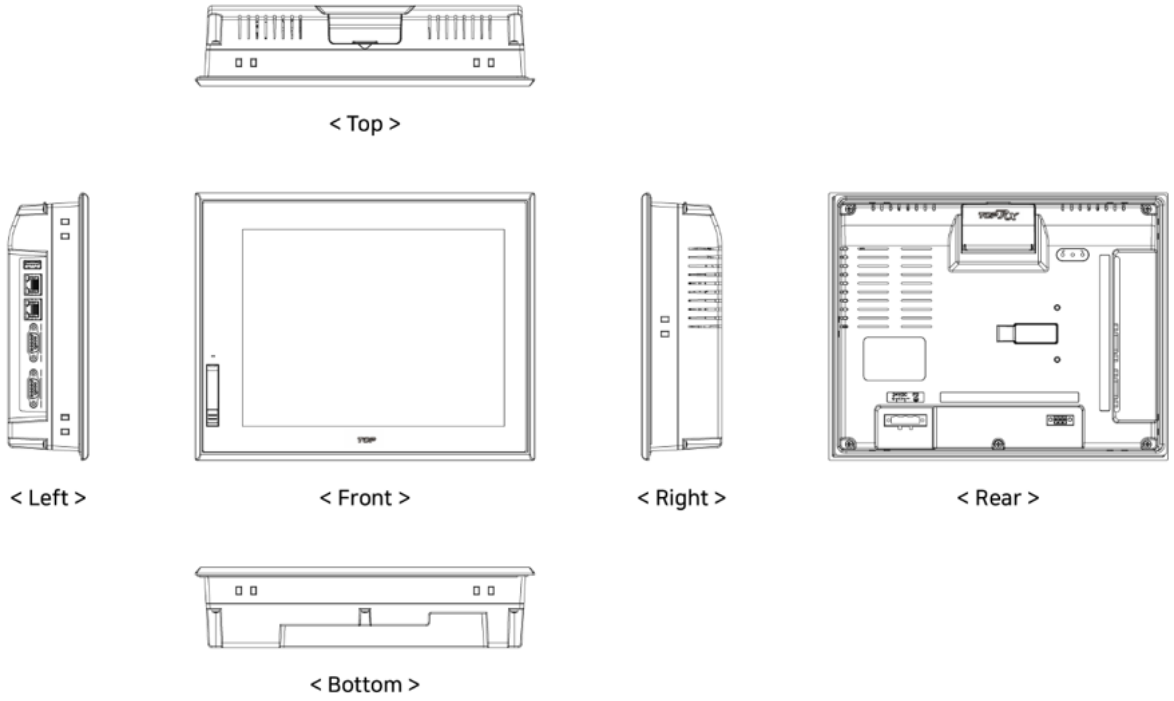
No.	Part	Description
①	LCD	TFT 16 M Color LCD
②	Touch Panel	Analog Touch
③	Front Sheet	Front Cover Sheet for Damp Proof and Dust Proof
④	USB Port	USB Download / Upload Port

4.1.3 Rear Part Names and Specifications

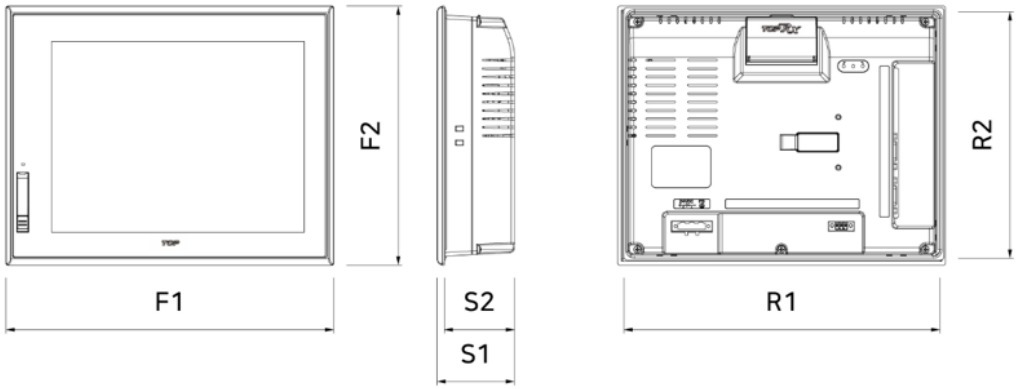


No.	Part	Form	Description
①	Rubber Packing	-	Silicone Gasket for Impact Buffering and IP Securing for Wall Mounting
②	Status LED	3	Status of Power, Communication and CPU
③	COM1 Connector	D-sub 9P	RS-232C / 422 / 485 Serial Comm. with PLC (Switchable the Comm. Via Software)
④	COM2 Connector	D-sub 9P	RS-232C / 422 / 485 Serial Comm. with PLC (Switchable the Comm. Via Software)
⑤	ETHERNET Connector	RJ-45 x 1ch	10BASE-T / 100BASE-Tx, Auto-MDIX
⑥	USB	Type-A	USB Connectors for Storage Options
⑦	Power Input Terminal	TB 5 ㎜, 3P	Power Supply of Main Unit
⑧	SD Card Cover	Plastic Cover	SD Card (*Option), Reset Switch, Mode Switch included
⑨	Mode Switch	DIP Switch 2 Digit.	Set Up System Mode
⑩	Reset Switch	Tact Switch	System Reset Switch
⑪	Diagnose Connector	2 ㎜ 4P	Diagnose System (Manufacturer Only)

4.2 TOPRX10 / 12 / 15 Series



4.2.1 External Dimension



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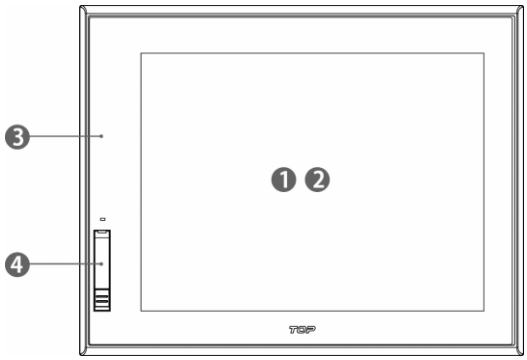
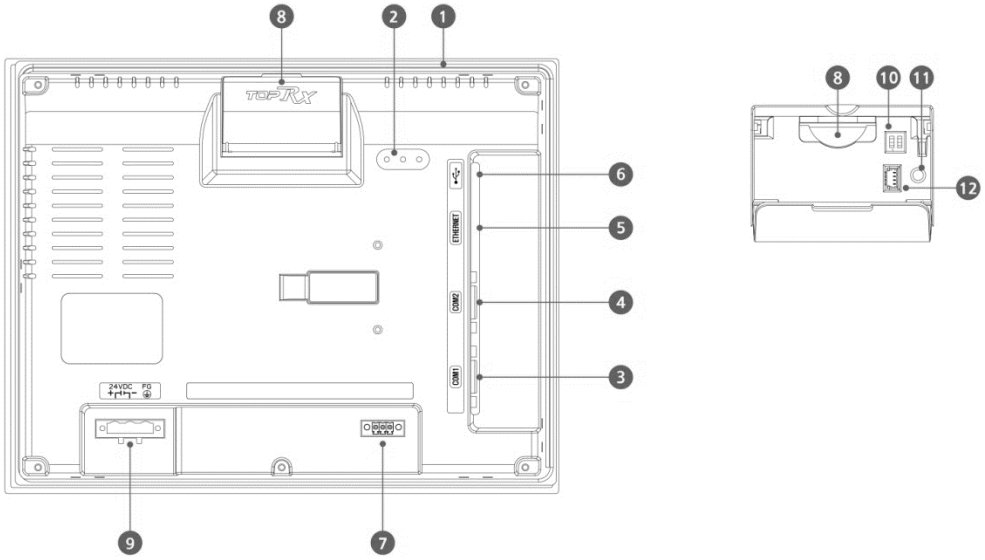
Model	F1	F2	S1	S2	R1	R2
TOPRX10	274	216	64.7	58.7	259	201
TOPRX12	320	261	64.7	58.7	305	246
TOPRX15	369	300	67.2	61.2	354	285

4.2.2 Front Part Names and Specifications



No.	Part	Description
①	LCD	TFT 16 M Color LCD
②	Touch Panel	Analog Touch
③	Front Sheet	Front Cover Sheet for Damp Proof and Dust Proof
④	USB Port	USB Download / Upload Port

4.2.3 Rear Part Names and Specifications



No.	Part	Form	Description
①	Rubber Packing	-	Silicone Gasket for Impact Buffering and IP Securing for Wall Mounting
②	Status LED	3	Status of Power, Communication and CPU
③	COM1 Connector	D-sub 9P	RS-232C / 422 / 485 Serial Comm. with PLC (Switchable the Comm. Via Software)
④	COM2 Connector	D-sub 9P	RS-232C / 422 / 485 Serial Comm. with PLC (Switchable the Comm. Via Software)
⑤	ETHERNET Connector	RJ-45 x 2ch	10BASE-T / 100BASE-Tx, Auto-MDIX
⑥	USB	Type-A	USB Connectors for Storage Options
⑦	COM3 Connector	TB 3.5 ㎜ 3P	RS-485 Serial Comm. only
⑧	SD Card Cover	Plastic Cover	SD Card, Reset Switch, Mode Switch included
⑨	Power Input Terminal	TB 7.6 ㎜ 3P	Power Supply of Main Unit
⑩	Mode Switch	DIP Switch 2Digit.	Set Up System Mode
⑪	Reset Switch	Tact Switch	System Reset Switch
⑫	Diagnose Connector	2 ㎜ 4P	Diagnose System (Manufacturer Only)

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Chapter 5 Interface

In order for the main unit to communicate with an external device, it is necessary to connect the two devices by referring to the following.

5.1 Serial Communication Specifications

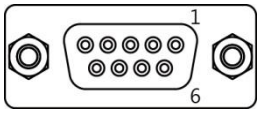
5.1.1 RS-232C

Items		Contents
Protocol		Full Duplex
Synch		Asynchronous
Communication Distance		About 15 m
Type of Connection		1:1
Control Code		ASCII Code or HEXA Code
Transmission Speed		2400, 4800, 9600, 19200, 38400, 57600, 76800, 115200, 187500 bps
Data Type	Data Bit	7, 8 bit
	Parity Bit	NONE, ODD, EVEN Parity
	Stop Bit	1, 2 bit
Modular Jack		D-sub 9pin

5.1.2 RS-422/485

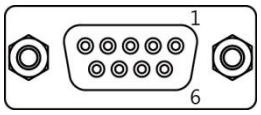
Items		Contents
Protocol		Full Duplex / Half Duplex
Synch		Asynchronous
Communication Distance		About 500 m
Type of Connection		1:N (N ≤ 31)
Control Code		ASCII Code or HEXA Code
Transmission Speed		2400, 4800, 9600, 19200, 38400, 57600, 76800, 115200, 187500 bps
Data Type	Data Bit	7, 8 bit
	Parity Bit	NONE, ODD, EVEN Parity
	Stop Bit	1, 2 bit
Modular Jack		D-sub 9pin

5.1.3 COM1 Connector pin number and Signal name

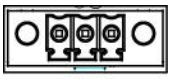
Type	Pin No.	Signal	Direction	Meaning
9Pin Female 	1	RDA (RD+)	Input	RS-422 / 485 Receive Data(+)
	2	RD (RxD)	Input	RS-232C Receive Data
	3	SD (TxD)	Output	RS-232C Send Data
	4	RDB (RD-)	Input	RS-422 / 485 Receive Data(-)
	5	SG	-	Signal Ground
	6	SDA (SD+)	Output	RS-422 / 485 Send Data(+)
	7	VCC*1	Output	+5 V, 0.2 A
	8	VCC GND*1	-	Power Ground
	9	SDB (SD-)	Output	RS-422 / 485 Send Data(-)

*1 When need VCC for external equipment, use 7.VCC and 8.VCC GND that output is 0.2A.

5.1.4 COM2 Connector pin number and Signal name

Type	Pin No.	Signal	Direction	Meaning
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	RTS	Output	RS-232C Request to Send
	8	CTS	Input	RS-232C Clear To Send
	9	SDB (SD-)	Output	RS-422 / 485 Send Data(-)

5.1.5 COM3 Connector pin number and Signal name

Type	Pin No.	Signal	Direction	Meaning
	1	D+	I/O	RS-485 Data(+)
	2	D-	I/O	RS-485 Data(-)
	3	SG	-	Signal Ground

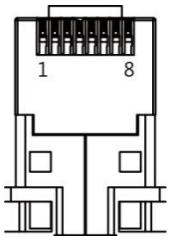
* Be sure to connect the RD and SD to the RS-232C communication line by crossing each other with a Twisted Pair Cable.
* Please connect SG directly.
* RS-422 / 485 communication line must use RDA and RDB as Twisted Pair Cable, SDA and SDB as Twisted Pair Cable.
* Do not use shield wire of communication line as signal ground. It may cause communication failure.

5.2 Ethernet Interface

5.2.1 Ethernet

Item	Specification	
Ethernet Method	IEEE 802.3i / IEEE 802.3u, 10BASE-T / 100BASE-Tx	
Speed	10M / 100Mbps	
Communication Method	baseband	
Switching Method	Auto-MDIX	
Maximum Segment Length	100 m (Hub between product)	
Communication Cable	UTP (Unshielded Twisted Pair)	
Modular Jack	TOPRX 05 / 08 Series	RJ-45 x 1 ch
	TOPRX 10 / 12 / 15 Series	RJ-45 x 2 ch

5.2.2 RJ-45 Pin Layout

Type	Pin No.	Color	Signal
	1	Orange / White	TD+
	2	Orange	TD-
	3	Green / White	RD+
	4	Blue	-
	5	Blue / White	-
	6	Green	RD-
	7	Brown / White	-
	8	Brown	-

* When HUB is using, Straight cable should be used.

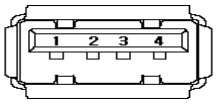
Ex) Straight Cable Wiring: Connect 1:1 according to the wiring diagram above.

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

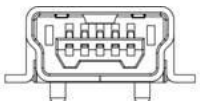
Ex) Cross Cable Wiring: In the above wiring diagram, TD+ and RD+ are changed, and TD- and RD- are exchanged.

5.3 USB Interface

5.3.1 USB Host

Type	Item	Specification
	USB Interface	EHCI / OHCI Specification Version 1.0, USB 2.0 / 1.1 Compatible
	Communication Method	Control / Bulk
	Transfer Speed	Max. 480 Mb/s
	Support Device	USB Storage (FAT16 / FAT32 File Format Available)
	Connector Type	USB Type-A x 1 port

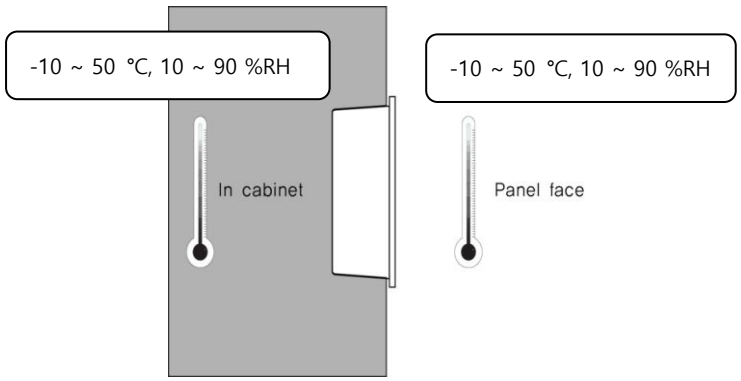
5.3.2 USB Device

Type	Item	Specification
	USB Interface	USB 2.0
	Communication Method	Interrupt / Bulk / Isochronous
	Transfer Speed	Max. 480 Mb/s
	Supporting OS	Windows 98SE / 2000 / XP / VISTA / 7 / 10 / 11 (32 / 64bit)
	Cable Length	Recommended: 3 m cable (manufacturer). Use ≤ 1.5 m if purchased separately.
	Connect Type	USB Mini-B (Female) x 1 port
	Connect Method	Connected via USB device

Chapter 6 Installation ⚠Warning

6.1 Installation Requirements

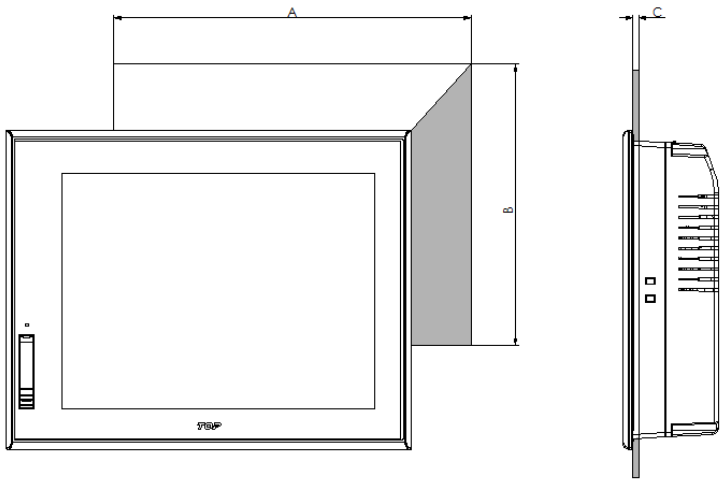
(1) It should be installed within -10 ~ 50 ℃ and 10 ~ 90 %RH, otherwise the screen may be changed or cause malfunction and damage.
(2) Be sure that heat from surrounding equipment does not cause product to exceed its standard operating temperature.
(3) In order to minimize external mechanical hazards, please control the mechanical hazards of the surrounding environment.



6.2 Installation Procedure Warning

6.2.1 Panel Cut-out

Make a panel cut which product is mounted and insert the TOPRX to the panel form the front side.
Making the Panel Cut (Mounting Size) per each TOPRX Series as below Table, Before Installation.



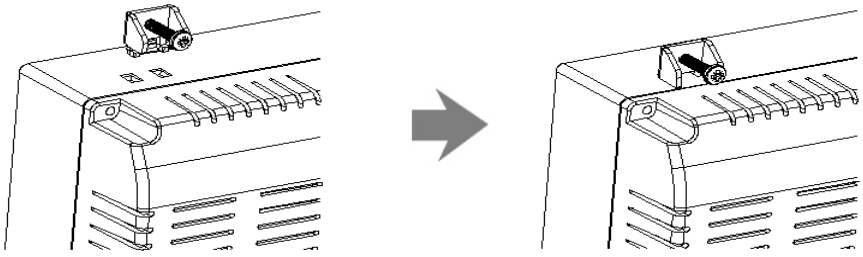
(㎜)

모델명	A	B	C
TOPRX05	158 (+1.0 / 0)	125 (+1.0 / 0)	1 - 5 (+1.0 / 0)
TOPRX08	222 (+1.0 / 0)	168 (+1.0 / 0)	
TOPRX10	260 (+1.0 / 0)	202 (+1.0 / 0)	
TOPRX12	306 (+1.0 / 0)	247 (+1.0 / 0)	
TOPRX15	355 (+1.0 / 0)	286 (+1.0 / 0)	

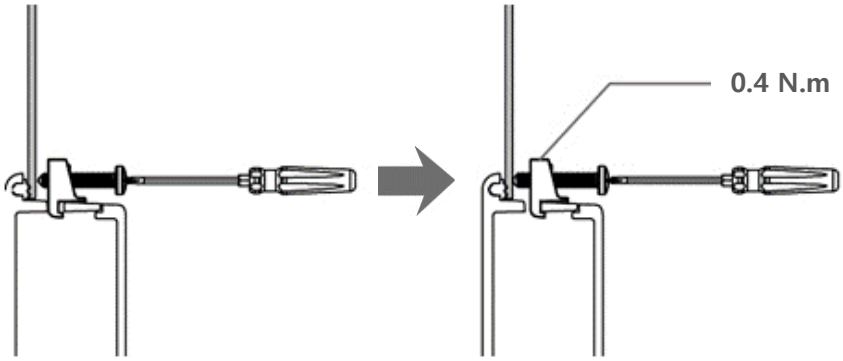
6.2.2 Fixing Warning

Install clamps with this product should be installed as follows to maintain the IP performance of the device.

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



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

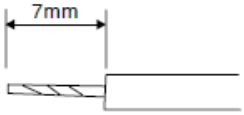


If the screw is over tightened, it may cause the front deformation, thus resulting the touch sensor can't work properly Tighten the screws to a torque of 0.4 N.m.

Chapter 7 Wiring ⚠Warning

7.1 Power wiring ⚠Warning

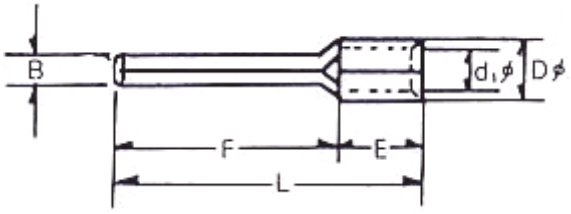
(1) The Power cable should have the following specification.

Power Cable Specification	0.75 ~ 2.5 ㎟ (18 ~ 13 AWG)
FG Cable Specification	Over 2 ㎟ (14 AWG)
Conductor type	Simple or Stranded wire
Bolt tightening force	0.6 N.m ⚠Warning
Conductor length	
Conductor temperature	65 ℃

(2) The Power terminal should have the following specification.

The use of the Pin Terminal (ferrule) when installing the power supply and ground terminal is important for maintaining the performance of the device. Failure to install power and ground using the same Pin Terminal (ferrule) as below may cause explosion due to spark due to abnormal cable loss.

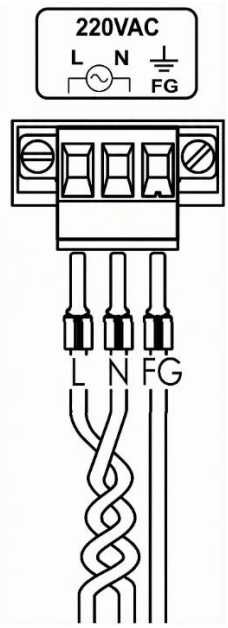
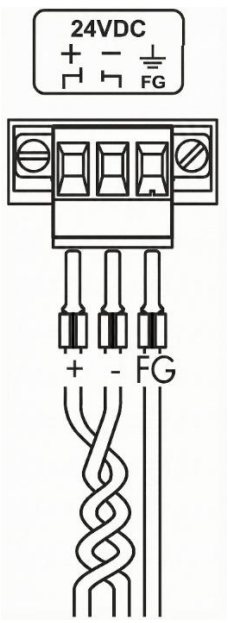
Therefore, please be sure to familiarize yourself with how to use Pin Terminal (ferrule) below.



(㎜)

B	L	F	E	D	d
1.8 ~ 2.0	14 ~ 22	8 ~ 14	5	3.3 ~ 3.8	2 ~ 2.5

(3) Power wiring must use stranded wire, as follows. Warning

TOPRX□□□□□A (AC Power)	TOPRX□□□□□D (DC Power)
	

7.2 Ground wiring

(1) The product has enough anti-noise measure, so except that there are many noises. Specially, the ground is not needed. When doing ground, please refer to the followings.
(2) The ground should be the exclusive ground. The ground should be type class 3 ground (ground resistor is less than 100 Ω).
(3) When not doing the exclusive ground, do common ground like figure B).
(4) Use the cable more than 2 ㎟. Put the point of the ground near product and shorten Ground line.

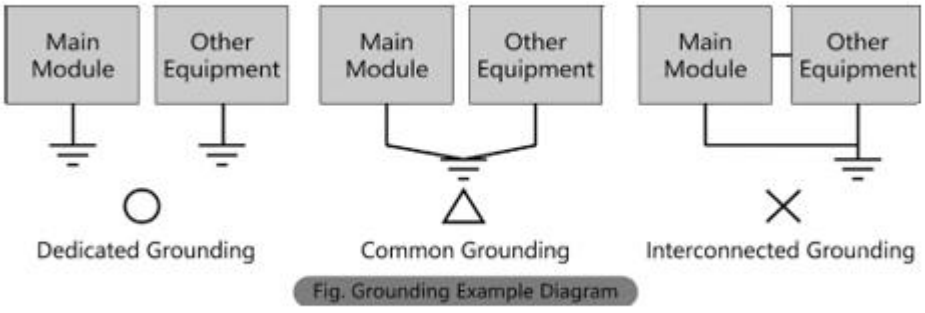


Fig. Grounding Example Diagram

Chapter 8 Maintenance

8.1 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.

8.2 Periodic Check Points

Check the followings periodically for best condition of the device.

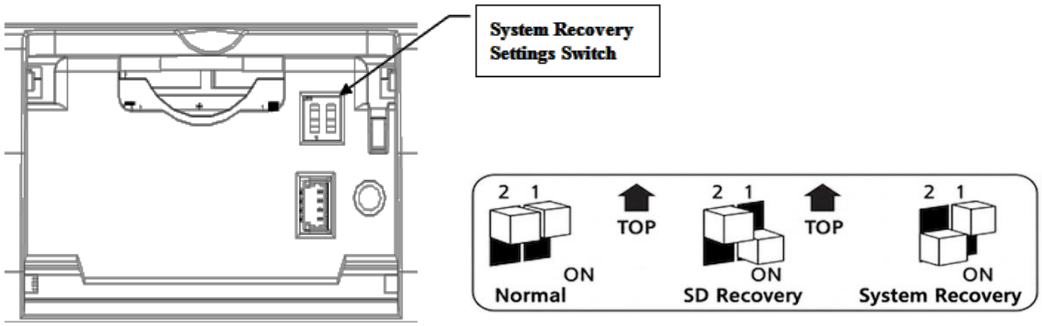
(1) Environment
1) Is the operating temperature within the allowable range (-10 ~ 50 °C)?
2) Is the operating humidity within the allowable range (10 ~ 90 %RH)?
3) Is the Surrounding pollution no corrosive gas?
(2) Power
1) Is the input voltage within the change range?
(3) Related Items
1) Check the guarantee duration of LCD Backlight by eye.
2) Check the touch pad there is no damage, scratch or pollution by eye.

8.3 Problems with the Device

(1) If there is a problem during operation, stop using it and contact the A/S department of MX On, which is indicated on the product label.
(2) Only the authorized worker from MX On 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 MX On.
(4) The manufacturer, MX On, 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.

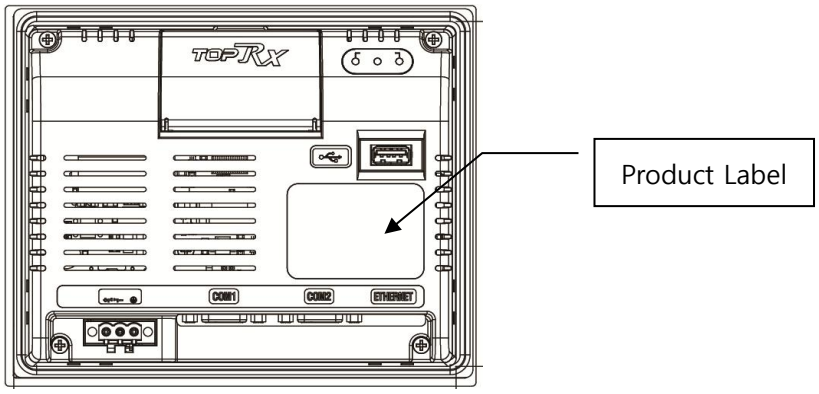
8.4 Setting System Recovery Mode

(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 "System Recovery".
(3) When the recovery is completed, the buzzer sounds, then turn off the power and reset to "Normal" state.

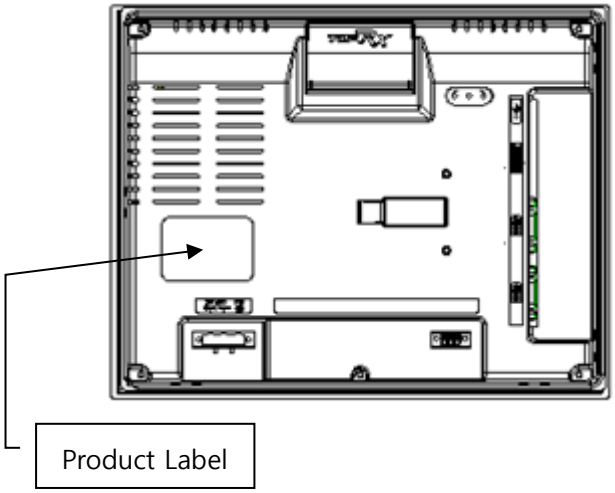


Chapter 9 Products and Warning Label Location

9.1 TOPRX05 / 08 Series

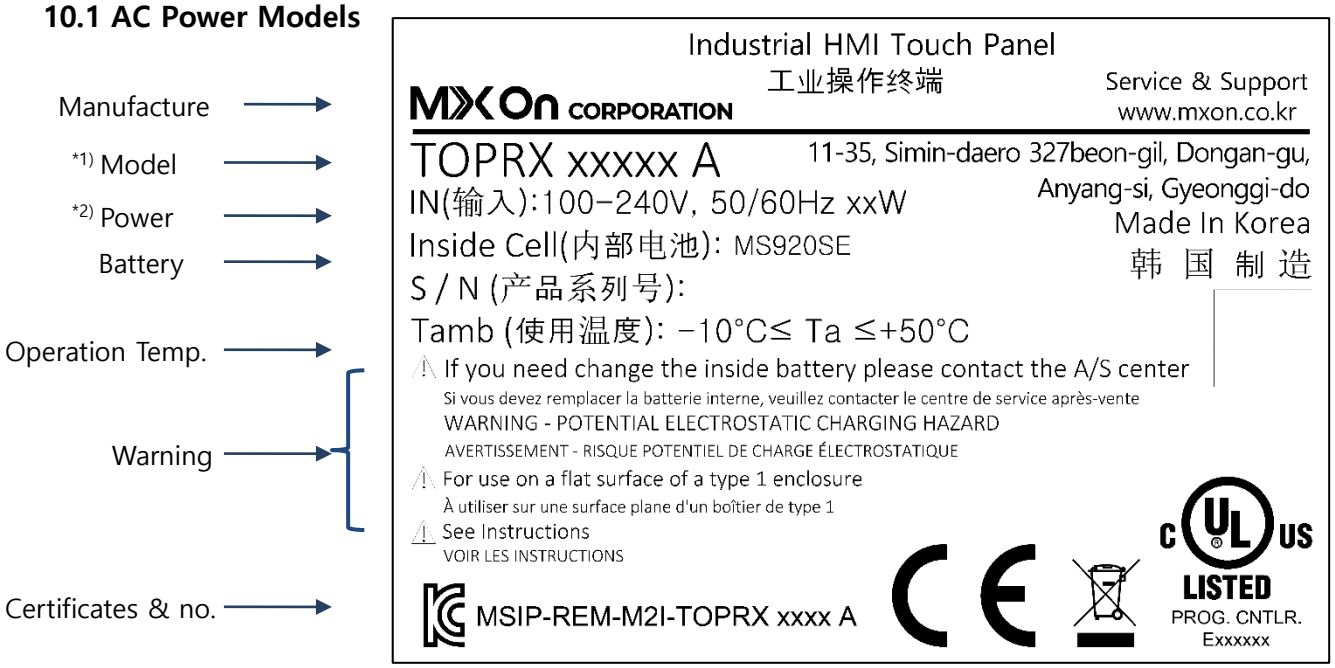


9.2 TOPRX10 / 12 / 15 Series



Chapter 10 Products Label

10.1 AC Power Models



*1) Model name can be changed by each model.

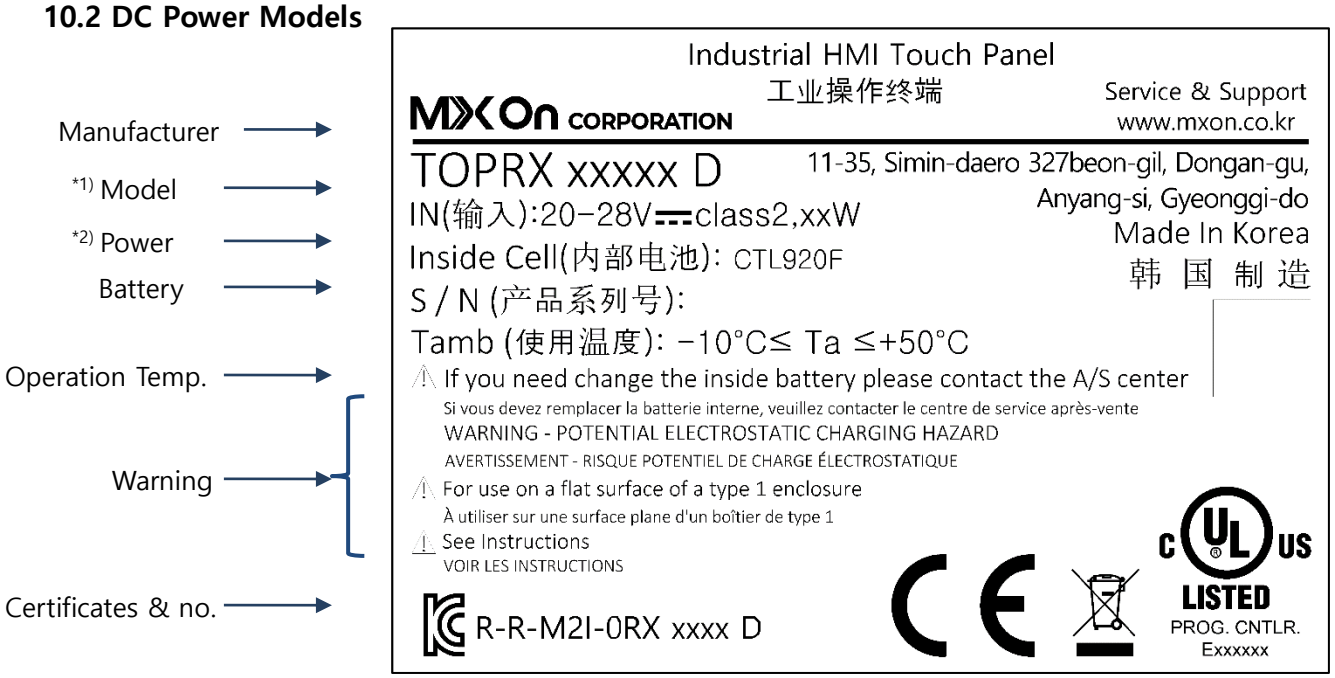
*2) The power consumption can be changed by each model.

** Certificates or protection grade can be changed by each model.

Model Name and Power Specifications

AC 100 ~ 240 V, 50 / 60 Hz, TOPRX05 / 08 12W, TOPRX10 / 12 15W, TOPRX15 18W

10.2 DC Power Models



Model Name and Power Specifications

20 ~ 28 Vdc, Class 2, TOPRX05 / 08 12W, TOPRX10 / 12 15W, TOPRX15 18W

- When using MX On 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.