M2I Corporation

Industrial HMI Touch Panel
TOPRW0700WD-IO

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.

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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

⊘ 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 product.

⊘ 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.

❗ Do not touch an adaptor or power code with wet hands. It can cause electric shock.

⊘ Do not use this product in explosive environments with flammable liquid, gas, or dust.

⊘ If the product needs long-term storage without using, avoid direct sunlight and keep dry condition.

❗ After this product is installed, the general user should only touch the part exposed on the front during operation.

■ Design Precautions ⚠Warning

⊘ For protecting whole control system from outer power input or malfunction of product, protection circuit must be installed outside of product.

❗ Physical protection devices as emergency switch, limit switch, or motion interlock circuit and others to prevent a critical damage of whole system's safety and human accident from the product's malfunction.

❗ When computers or other outer devices control (operation mode change) the product, set interlock in sequence program to protect from any communication errors.

❗ Input/output signals or communication cables must have at least 100mm(3.94inch) distance from power cable or high-tension wire. Especially communication cables must be set apart from power cables.

■ 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

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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.

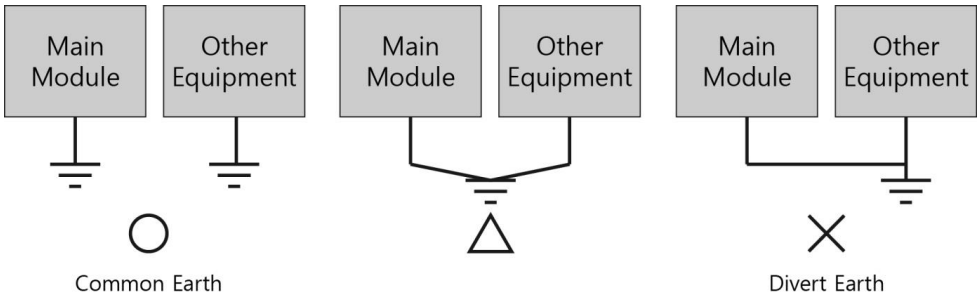

Fig. Grounding Example Diagram

■ Installation 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 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.
- If the product is left without using in long-term, it must be recharged and stored in room temperature.
- The space between back of product and back of control board must be more than 100mm for maintenance and ventilation.
- Use the product indoors only.
- Use the product under 2000M altitute.
- Power cable's length should be 3M(10ft) or shorter.

■ Disposal Precautions ⚠ Caution

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

■ Cell Type Battery Specifications and Exchange ⚠ 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℃)

* Depending on the model specifications are subject to change.

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

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Chapter 2 Overview

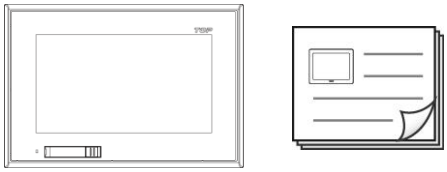
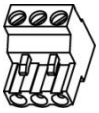
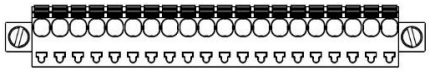
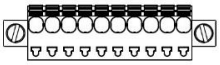
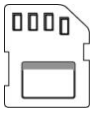
2.1 Introduction of Products

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 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
Process Module And Manual		각 1
Clamp		4
Power Connector		1
I/O Connector (20 Pin)		2
I/O Connector (10 Pin)		2
Accessories (Sold separate)	 USB Memory  USB Cable  SD Card  Front Protect Sheet	User Options

2.3 Explanation of Model Name

TOPRW	□□	□□	□	□	-□□
Series	**Display Size**	**Option**	**Resolution**	**Power**	**Series**
	07: 7.0"	00: Standard	W: WVGA (800*480)	D: DC	-IO: Standard

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Chapter 3 General Specifications

3.1 Power Specifications

Input Voltage	DC24V
Input Voltage Range	DC 20~28V
Consumption Power	15W 이하
Voltage endurance	DC 24V, Within 10 ㎳
Insulation Resistance	500V DC, 10 ㏁

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 Interface and Functional Specification

	I/O Voltage and Current Range	Maximum Delay Time	Resolution	Insulation
Digital Input	ON: 11.0Vdc ~ 28.8Vdc / Max. 6mA OFF: 5Vdc 이하 / Max. 6mA	OFF - ON: Max. 0.1ms ON - OFF: Max. 0.5ms	N/A	Photocoupler
Digital Output	11.0Vdc ~ 28.8Vdc / 0.5A	ON: Max. 0.3ms, OFF: Max. 0.5ms	N/A	
Analog Input	AIC: 0 ~ 20mA, AIV: 0 ~ 5Vdc, RTD: PT100 (*-200°C ~ +850°C)	TBD	16 bit	Capacitive
Analog Output	AOC: 0 ~ 20mA, AOV: 0 ~ 5Vdc	TBD	16 bit	

* While using digital input port, electrical noise can be flowed. A digital filter is integrated for preventing, and this can cause maximum 0.5ms input delay.

3.4 Environment Specifications

Operation Temperature (℃)	-10 ~ +50
Storage Temperature (℃)	-20 ~ +60
Operation Humidity (%RH)	0 ~ 90 (No dew)
Atmosphere	No corrosive gas
Vibration Endurance	Amplitude: 10≤F < 25 ㎐(2G) X,Y,Z each direction(for 30 minutes)
Noise Immunity	1000Vp-p(Pulse width 1 ㎲)
Static Electricity Discharge	Connective discharge from EN61000-4-2: ±4 ㎸
Shock Endurance	10G X,Y,Z each direction(for 3 times)
Surge Voltage	500V(Line-Line)
Ground Connection	Class 3(Under 100Ω)
Protection Classification	Conform to IP65

3.5 Structure Specifications

Weight(㎏)	0.8
Cooling System	Natural Air Circulation
Case Material	PC(Flameless)

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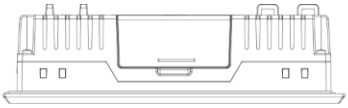
Chapter 4 Part Names and General Specifications

4.1 TOPRW0700WD-IO



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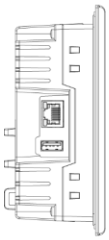

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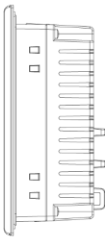

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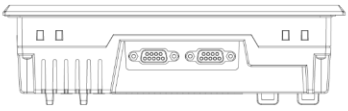

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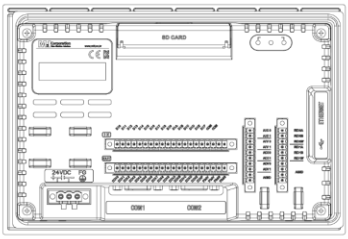
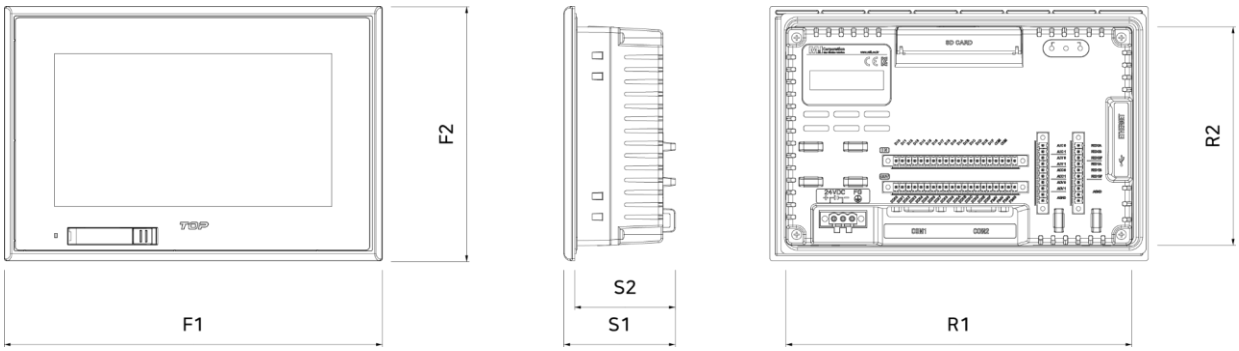


< Rear >

4.2 Product Dimension



Model Name	F1(mm)	F2(mm)	S1 (mm)	S2 (mm)	R1(mm)	R2(mm)
TOPRW0700WD-IO	212	145	62.5	56.5	194.2	124.9

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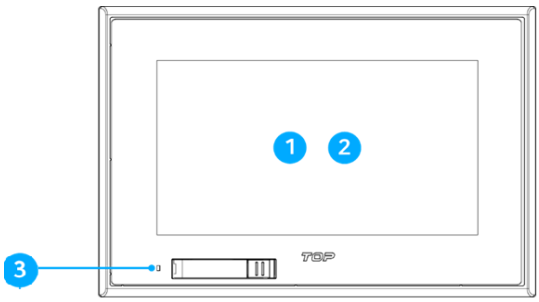
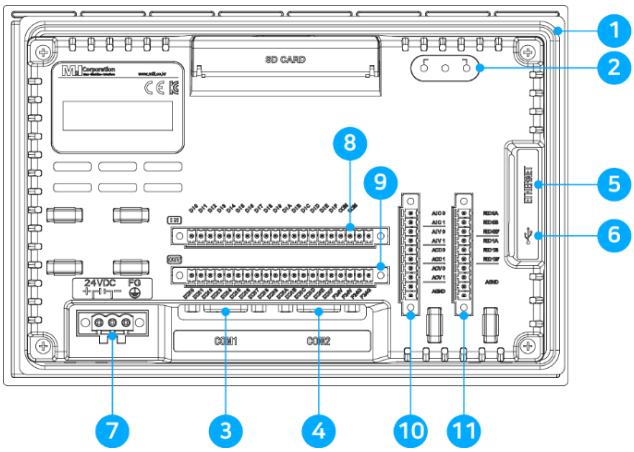
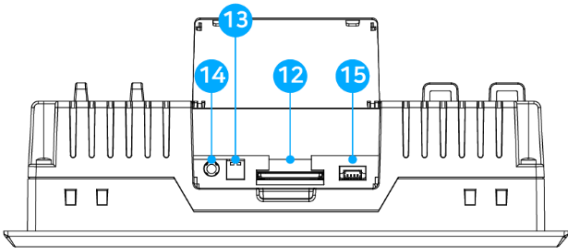
4.3 Part Names and General Specifications



Num.	Name	Description
1	LCD	TFT 16M Color LCD
2	Touch Panel	Analog Touch
3	USB OTG Cover and Power LED	Front USB OTG Cover and Power LED

4.4 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	DSUB9	RS-232C Serial Comm. with PLC
4	COM2 Connector	DSUB9	RS-232C/422/485 Serial Comm. with PLC (Switchable the Comm. Via Software)
5	ETHERNET Connector	RJ45	10BASE-T/100BASE-TX, Auto-MDIX
6	USB Connector	MINI USB Type AB	USB Connectors for Storage Options
7	Power Input Terminal	TB 5mm 3P	Power Supply of Main Unit(DC 24V)
8	Digital Input Terminal	TB 3.5mm 20P	Digital Input Terminal Point
9	Digital Output Terminal	TB 3.5mm 20P	Digital Output Terminal Point
10	Analog I/O Terminal	TB 3.5mm 10P	Analog Input / Output Terminal
11	RTD Input Terminal	TB 3.5mm 10P	Analog RTD, PT100 Input Terminal
12	SD Card Slot	SD Card Slot	SD Card Insert Connector
13	Mode Switch	DIP Switch 2Digit	Set Up System Switch
14	Reset Switch	Tact Switch	System Reset Switch
15	Diagnose Connector	2mm 4P	Diagnose System (Manufacturer Only)

Chapter 5 External Device 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

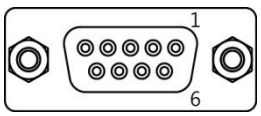
5.1.1 RS-232C

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

5.1.2 RS-422/485

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

5.1.3 COM1 Connector pin number and Signal name

Type	Pin No.	Signal	Direction	Meaning
9Pin Female 	1	NC	-	Not Available
	2	RD(RxD)	Input	RS-232C Receive Data
	3	SD(TxD)	Output	RS-232C Send Data
	4	NC	-	Not Available
	5	SG	-	Signal Ground
	6	NC		Not Available
	7	*1)Power	-	+5V, 0.2A
	8	*2)GND	-	Power Ground
	9	NC		Not Available

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

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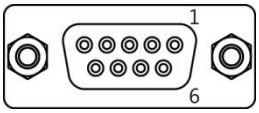
5.1.4 COM2 Connector pin number and Signal name

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	NC	-	Not Available
	8	NC	-	Not Available
	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.

* SG must be connected directly.

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

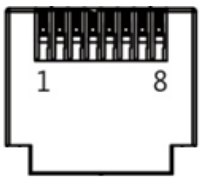
* Do not use shield wire of communication line as signal ground. It may cause communication failure.

5.2 Ethernet Communication Specifications

5.2.1 Ethernet

Items	Contents
Ethernet Method	IEEE802.3i/IEEE802.3u, 10BaseT / 100BaseT
Speed	10M / 100Mbps
Communication Method	Base Band
Switching Method	AUTO MDIX
Maximum Segment Length	100M (Hub between products)
Communication Cable	UTP (Unshielded Twisted Pair)
Modular Jack	RJ45

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	Not Available in 10BaseT
	5	Blue/White	Not Available in 10BaseT
	6	Green	RD-
	7	Brown/White	Not Available in 10BaseT
	8	Brown	Not Available in 10BaseT

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

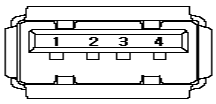
Ex) Straight Cable Wiring: Connect 1:1 according to the wiring diagram above.

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

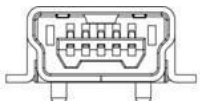
Ex) Cross Cable Wiring: In the above wiring diagram, TD+ and RD+ are changed, and TD- and RD- are exchanged.

5.3 USB Specifications

5.3.1 USB Host

Type	Item	Specification
	USB Interface	EHCI/OHCI Specification Version 1.0, USB2.0/1.1 compatible
	Communication Method	Control/Bulk
	Transfer Speed	480Mb/s
	Support Device	USB Storage (FAT16/FAT32 File Format Available)
	Connector Type	Type A(1ch)

5.3.2 USB OTG

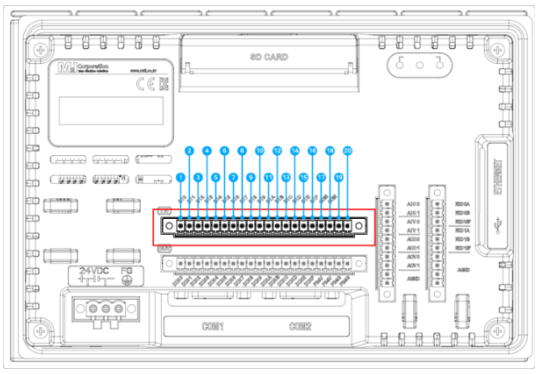
Type	Item	Specification
	USB Interface	USB 2.0
	Communication Method	Interrupt/Bulk/Isochronous
	Transfer Speed	480Mb/s
	Supporting OS	Windows 98SE/2000/XP/VISTA/7/10(32/64bit)
	Cable Length	3M(recommended to use M2I's Option Cable), If purchased separately for less than 1.5 m.
	Connect Type	MINI USB AB, Female
	Connect Method	Connect through USB OTG

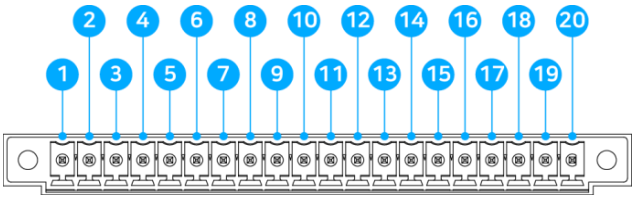
Chapter 6 I/O Interface Specification

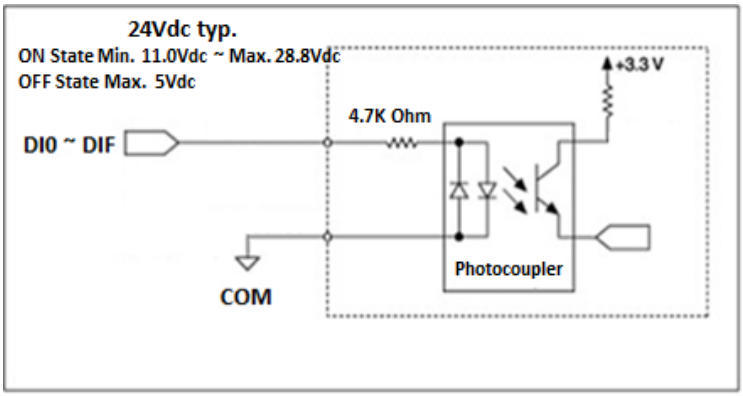
Warning

6.1 Digital Input

- Digital Sink and Source, Input 16ch: DI0 ~ DIF







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6.1.1 Digital Input Contact Terminal

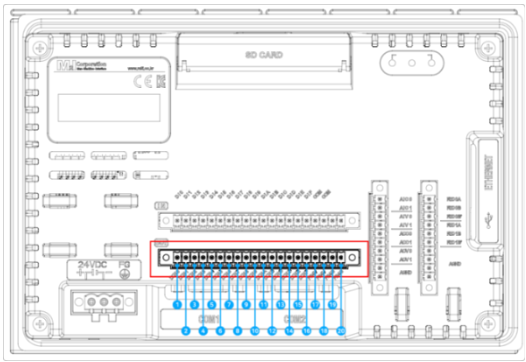
No	Name	Description	No	Name	Description
1	DI0	No.0 Channel Contact Input	11	DIA	A Channel Contact Input
2	DI1	No.1 Channel Contact Input	12	DIB	B Channel Contact Input
3	DI2	No.2 Channel Contact Input	13	DIC	C Channel Contact Input
4	DI3	No.3 Channel Contact Input	14	DID	D Channel Contact Input
5	DI4	No.4 Channel Contact Input	15	DIE	E Channel Contact Input
6	DI5	No.5 Channel Contact Input	16	DIF	F Channel Contact Input
7	DI6	No.6 Channel Contact Input	17	COM	Common Terminal *Field Power (24Vdc or 0V) Connection
8	DI7	No.7 Channel Contact Input	18	COM	
9	DI8	No.8 Channel Contact Input	19	COM	
10	DI9	No.9 Channel Contact Input	20	COM	

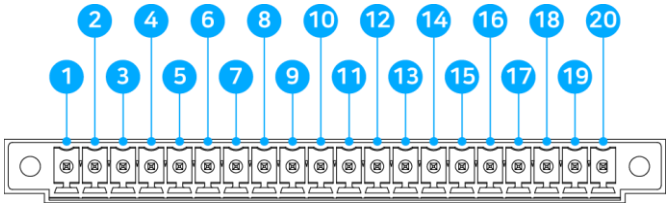
6.1.2 Digital Input Terminal Specification

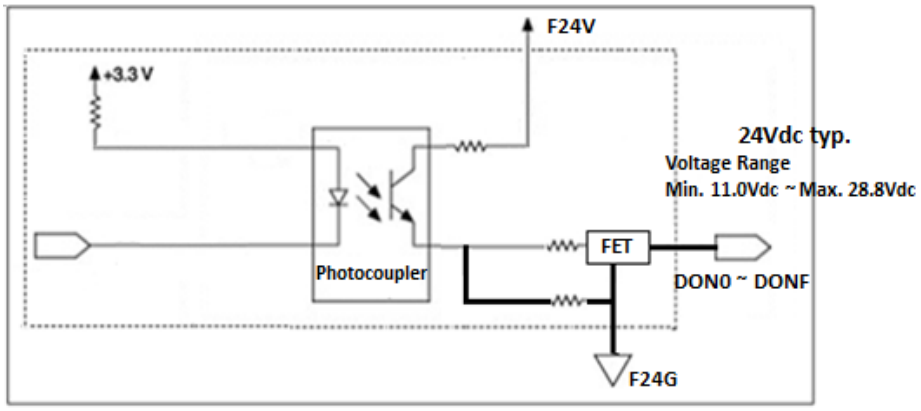
Item	Description
Number of Inputs	16 channels Sink and Source Type
Input Voltage Range	24Vdc typ., ON-state: Min. 10.2Vdc~Max. 28.8Vdc, OFF-state: Max. 5Vdc
Input Current in On State	Max. 6mA/channel@28.8Vdc
Typ. Input Impedance	Typ. 4.7KΩ
Input Signal Delay	OFF to ON: Max. 0.1ms, ON to OFF: Max. 0.5ms
Input filter(digital)	0.5ms
System Power Dissipation	Max. 70mA
Isolation	I/O to Logic: Photocoupler isolation
Field Power	Typ. 24Vdc (11.0Vdc ~ 28.8Vdc)
Pin No.	Removable Terminal Block 20P

6.2 Digital Output

- Digital Sink, Output 16ch: DON0 ~ DONF







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6.2.1 Digital Output Contact Terminal

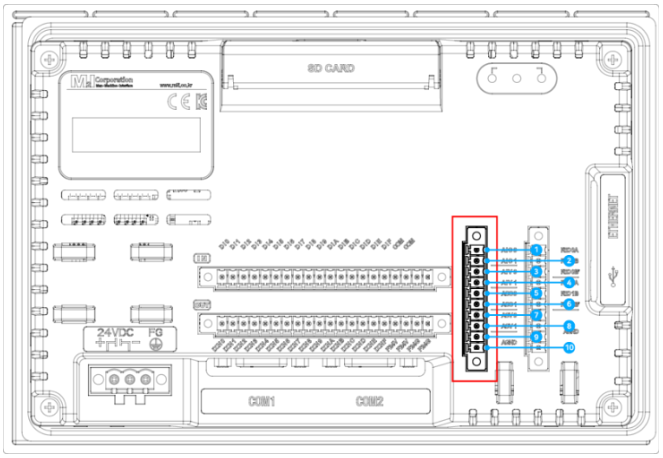
No	Name	Description	No	Name	Description
1	DON0	No. 0 Channel Contact Output	11	DONA	A Channel Contact Output
2	DON1	No. 1 Channel Contact Output	12	DONB	B Channel Contact Output
3	DON2	No. 2 Channel Contact Output	13	DONC	C Channel Contact Output
4	DON3	No. 3 Channel Contact Output	14	DOND	D Channel Contact Output
5	DON4	No. 4 Channel Contact Output	15	DONE	E Channel Contact Output
6	DON5	No. 5 Channel Contact Output	16	DONF	F Channel Contact Output
7	DON6	No. 6 Channel Contact Output	17	F24V	Common Terminal
8	DON7	No. 7 Channel Contact Output	18	F24V	*Field Power (24VdcV) Connection
9	DON8	No. 8 Channel Contact Output	19	F24G	Common Terminal
10	DON9	No. 9 Channel Contact Output	20	F24G	*Field Power (0V) Connection

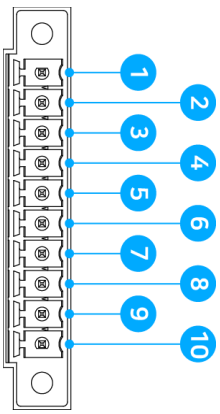
6.2.2 Digital Input Terminal Specification

Item	Description
Number of Outputs	16 channels Sink Type
Output Voltage Range	24Vdc typ., Min. 11Vdc~Max. 28.8Vdc, ON-state Voltage Drop: Max. 0.3Vdc@25℃, OFF-state Leakage Current: Max. 50uA
Output Current in On State	Max. 0.5A /channel @28.8Vdc
Max. On-state Voltage Drop	Max. 0.3Vdc@25℃
OFF-State Leakage Current	Max. 50uA
Output Signal Delay	OFF to ON: Max. 0.3ms, ON to OFF: Max. 0.5ms
System Power Dissipation	Max. 120mA
Isolation	I/O to Logic: Photocoupler isolation
Field Power	Typ. 24Vdc(11.0Vdc ~ 28.8Vdc)
Pin No.	Removable Terminal Block 20P

6.3 Analog Input / Output Specification

- Analog Current, Input 2ch: AIC0, AIC1
- Analog Voltage, Input 2ch: AIV0, AIV1
- Analog Current, Output 2ch: AOC0, AOC1
- Analog Voltage, Output 2ch: AOV0, AOV1





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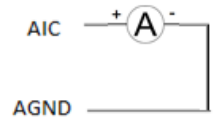
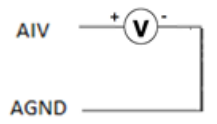
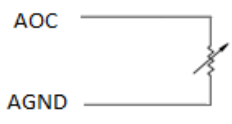
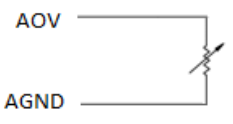
AIC	AIV	AOC	AOV
			

6.3.1 Analog Input / Output Contact Terminal

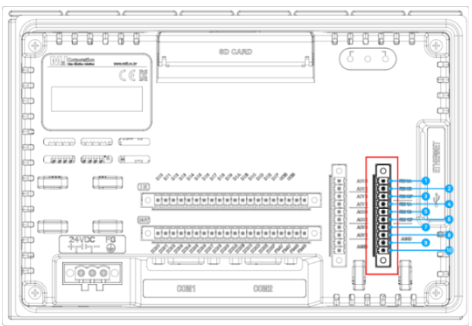
No.	Name	Description
1	AIC0	0 Channel Contact Analog Current Input
2	AIC1	1 Channel Contact Analog Current Input
3	AIV0	0 Channel Contact Analog Voltage Input
4	AIV1	1 Channel Contact Analog Voltage Input
5	AOC0	0 Channel Contact Analog Current Output
6	AOC1	1 Channel Contact Analog Current Output
7	AOV0	0 Channel Contact Analog Voltage Output
8	AOV1	1 Channel Contact Analog Voltage Output
9	AGND	Analog Ground
10	AGND	Analog Ground

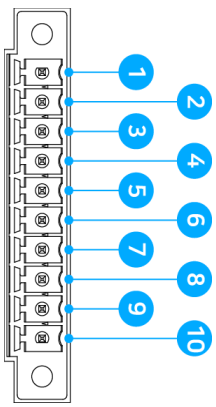
6.3.2 Analog Input / Output Terminal Specification

Item	AIC0, AIC1	AIV0, AIV1	AOC0, AOC1	AOV0, AOV1
Number of Inputs	2 channels, Input Analog current Type	2 channels, Input Analog voltage Type	2 channels, Output Analog current Type	2 channels, Output Analog voltage Type
Typ. Input Impedance	Max.250Ω	Min.500KΩ	N/A	N/A
Load	N/A	N/A	Max.350Ω	Min.5KΩ
Sensor Type and Input Range / Output Range	Input, 0~20mA	Input, 0~5 Vdc	Output, 0~20mA	Output, 0~5 Vdc
DATA Format	16bits Integer			
Resolution	16bits, 0.3uA/Bit	16bits, 0.076mV/1bit	16bits, 0.3uA/Bit	16bits, 0.076mV/1bit
Conversion Time	4ms / All channel			
Module Error	±0.1% Full Scale @25℃, ±0.3% Full Scale @0℃, 60℃			
Isolation	Capacitive isolation			
Common Type	2 COM (Single Common)			
System Power Dissipation	Max. 200mA			
Field power	Max. 60mA@24Vdc			
Pin No.	Removable Terminal Block 10P (3.5mm pitch)			

6.4 RTD Input

- Analog RTD, Input 2ch: RTD0*, RTD1*





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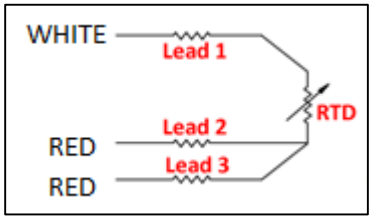


6.4.1 RTD Input Contact Terminal

No.	Name	Description
1	RTD0A	PT100 No.0 Channel A Terminal Input (WHITE)
2	RTD0B	PT100 No.0 Channel B Terminal Input (RED)
3	RTD0B'	PT100 No.0 Channel B' Terminal Input (RED)
4	RTD1A	PT100 No.1 Channel A Terminal Input (WHITE)
5	RTD1B	PT100 No.1 Channel B Terminal Input (RED)
6	RTD1B'	PT100 No.1 Channel B' Terminal Input (RED)
7	AGND	Analog Ground
8	AGND	Analog Ground
9	AGND	Analog Ground
10	AGND	Analog Ground

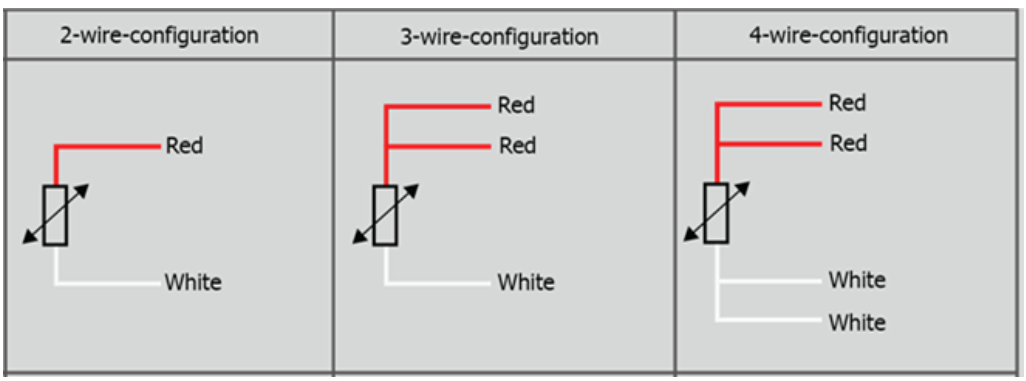
6.4.2 RTD Input Terminal Specification

Item	Description
Number of Inputs	2 channels analog RTD Type
Sensor Type and Input Range	PT100 / -200.0 to +850.0°C
DATA Format	16bits Integer
Resolution	0.0312°C/1bit
Conversion Time	Approx.70ms, All channel @50hz
Module Error	±0.1% Full Scale @25℃, ±0.3% Full Scale @0℃, 60℃
Isolation	Capacitive isolation
Common Type	2 COM (1 common / 1 channel)
System Power Dissipation	Max. 70mA
Field power	N/A
Pin No.	Removable Terminal Block 10P (3.5mm pitch)

* 3-wire Only.

** Compatible only for "PT100", "PT1000" is not available.

*** A lead wire's color is defined by IEC 60751-2008 Standard (*Request for Industrial Platinum Temperature Sensor), and all of wire colors are shown as below.



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6.4.3 Rated Input Range (℃) and Data (DEC) Range

TEMPERATURE (°C)	RTD RESISTANCE (Ω)	RTD DATA REG (01h–02h) (hex)	ADC CODE (dec)	ADC CODE/32-256 (°C)
-200	18.52	0BDAh	1517	-208.59
-175	29.22	12B4h	2394	-181.19
-150	39.72	196Ch	3254	-154.31
-125	50.06	200Ah	4101	-127.84
-100	60.26	2690h	4936	-101.75
-75	70.33	2D04h	5762	-75.94
-50	80.31	3366h	6579	-50.41
-40	84.27	35EEh	6903	-40.28
-30	88.22	3876h	7227	-30.16
-20	92.16	3AFCh	7550	-20.06
-10	96.09	3D7Eh	7871	-10.03
0	100.00	4000h	8192	0.00
10	103.90	4280h	8512	10.00
20	107.79	44FCh	8830	19.94
30	111.67	4778h	9148	29.88
40	115.54	49F2h	9465	39.78
50	119.40	4C6Ah	9781	49.66
60	123.24	4EE0h	10096	59.50
70	127.08	5154h	10410	69.31
80	130.90	53C6h	10723	79.09
90	134.71	5636h	11035	88.84
100	138.51	58A4h	11346	98.56
110	142.29	5B12h	11657	108.28
120	146.07	5D7Ch	11966	117.94
130	149.83	5FE4h	12274	127.56
140	153.58	624Ch	12582	137.19
150	157.33	64B0h	12888	146.75
160	161.05	6714h	13194	156.31
170	164.77	6974h	13498	165.81
180	168.48	6BD4h	13802	175.31
190	172.17	6E30h	14104	184.75
200	175.86	708Ch	14406	194.19
225	185.01	7668h	15156	217.63
250	194.10	7C3Ah	15901	240.91
275	203.11	81FEh	16639	263.97
300	212.05	87B6h	17371	286.84
325	220.92	8D64h	18098	309.56
350	229.72	9304h	18818	332.06
375	238.44	989Ah	19533	354.41
400	247.09	9E24h	20242	376.56
425	255.67	A3A2h	20945	398.53
450	264.18	A914h	21642	420.31
475	272.61	AE7Ah	22333	441.91
500	280.98	B3D4h	23018	463.31
525	289.27	B922h	23697	484.53
550	297.49	BE64h	24370	505.56

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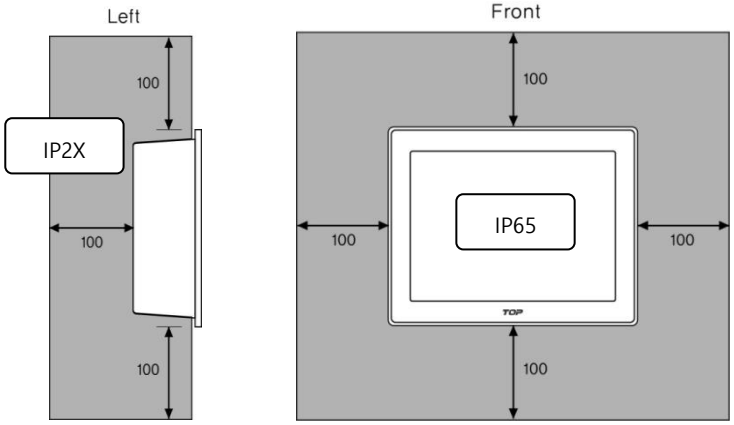
Chapter 7 Installation ⚠Warning

7.1 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.

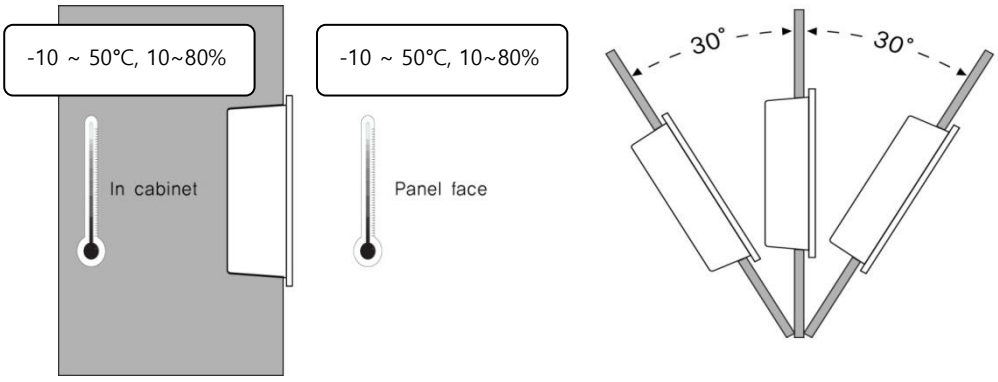


(2) It should be installed within -10 ~ 50℃ and 10~80% relative-humidity, otherwise the screen may be changed or cause malfunction and damage.

(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.



7.2 Installation Procedure ⚠Warning

In order to install this product, please follow the following procedure.

(1) Panel Cut-out

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

(2) The Size of Panel Cut

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

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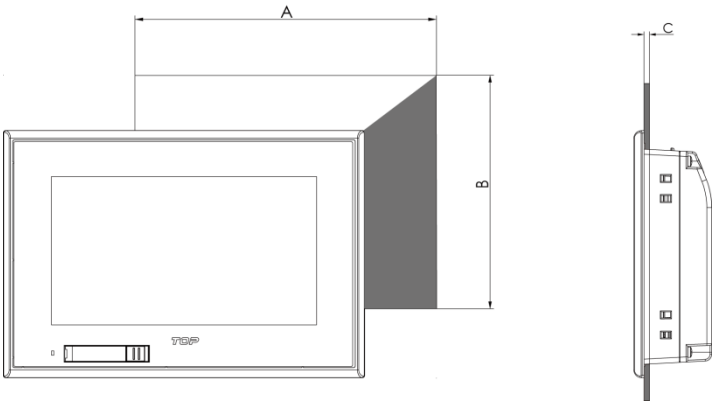
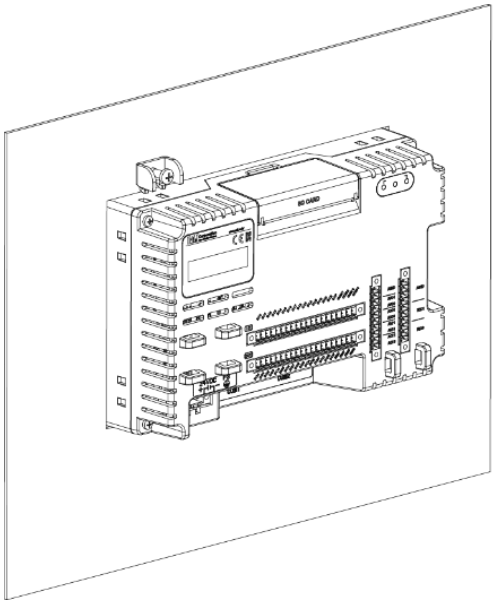


Model	A (mm)	B (mm)	C (mm)
TOPRW0700WD-IO	197(+1.0/0)	127(+1.0/0)	1.6~5.0(+1.0/0)

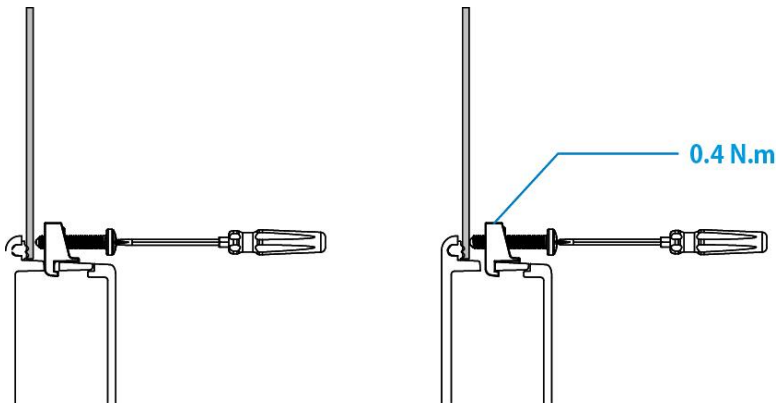
(3) Clamp Fixing Warning

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

a. Insert the clamp into the slot of the product.



b. Screw the unit into the panel cut with a screwdriver.



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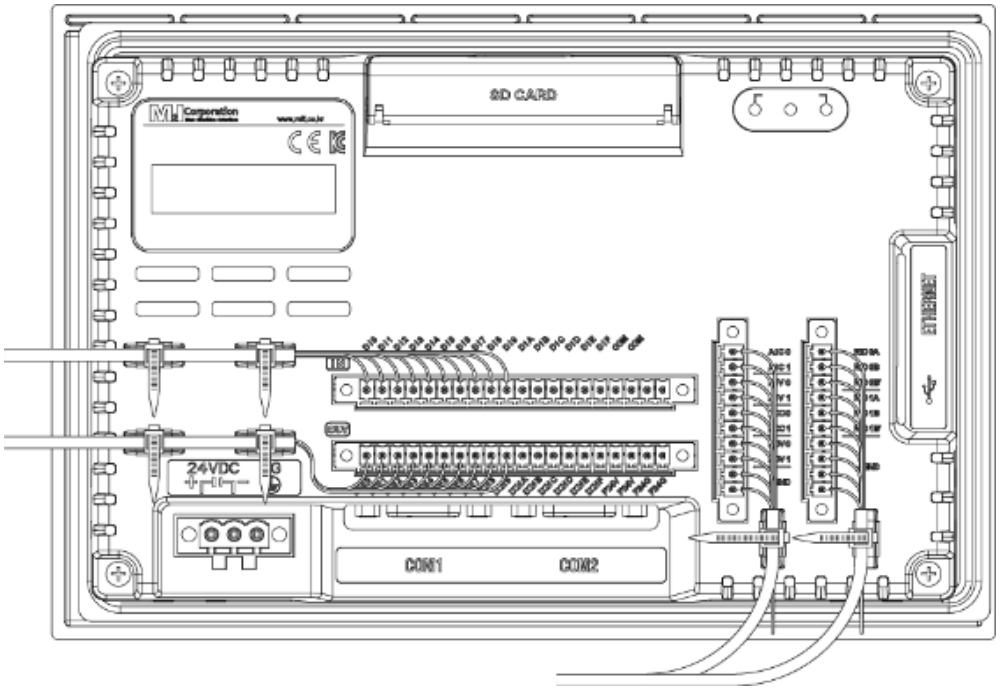
If the screw is over tightened, it may cause the front deformation, thus resulting the touch sensor can't work properly Tighten the screws to a torque of 0.2N.m.

Caution: If the torque of screwing is not 0.4N.m, IP specification will not be secured.

(4) I/O Terminal Cable Finishing ⚠Warning

After wiring the I/O cables to the product, tighten the cables with a fixing hole on product side and cable tie.

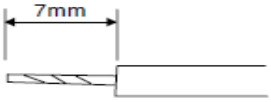


Chapter 8 Wiring ⚠Warning

8.1 Power Wiring

Caution: With a power and ground cables' wiring, using Pin Terminal is important for maintaining product's performance. Without using specified Pin Terminals as below, it can cause electric shocks from abnormal cable connection. Users and managers should must be well-informed of following instructions.

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

Power Cable Specification	0.75~2.5mm^2(18~12AWG)
F.G Cable Specification	Over 4mm^2(11AWG)
Conductor Type	Simple or Standard Wire
Bolt tightening force	≥ 0.4 N.m ⚠Warning
Conductor Length	
Temperature rating of the field installed conductors	65℃ or under

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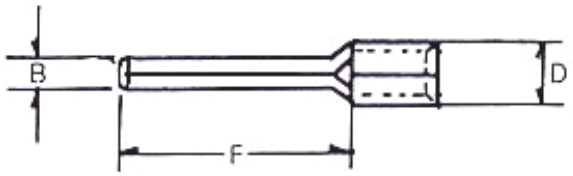
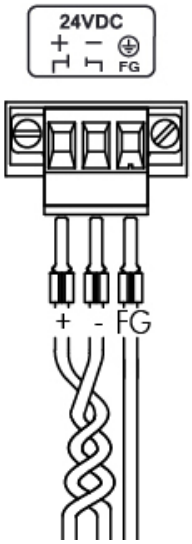
(2) I/O Terminal Block's wiring of Pin Terminal Warning



	B	F	D	AWG Spec.
Available Range	1.1 ~ 1.5mm	8 ~ 10mm	3mm or less	26 ~ 20
Recommended Spec.	1.5mm	10 mm		20

(3) Wiring of power is as follows. Warning



8.2 Ground Wiring Warning

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 100Ω.)
3) When you cannot do the exclusive ground, do common ground like figure B).

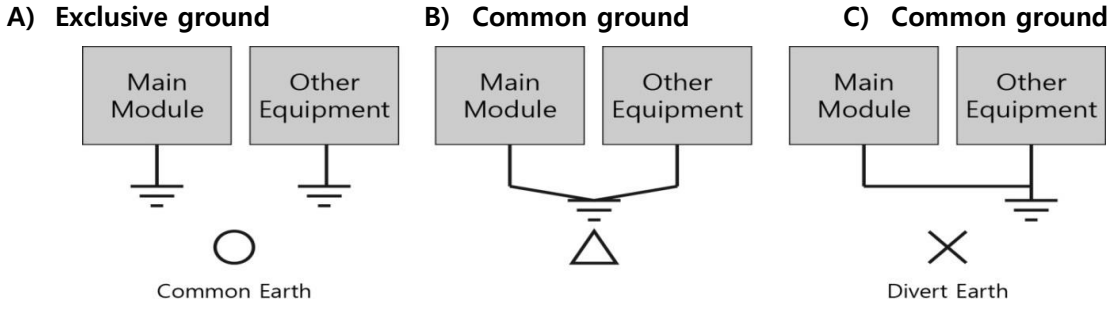


Fig. Grounding Example Diagram

(4) Use the cable more than 4mm^2. Put the point of the ground near product and shorten ground line.

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Chapter 9 Maintenance ⚠Warning

9.1 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.

9.2 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°C~50°C)?
2) Is the operating humidity within the allowable range (10%~80%RH)?
3) Is the Surrounding pollution no corrosive gas?

(2) Power

1) Is the input power in right 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.

9.3 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.

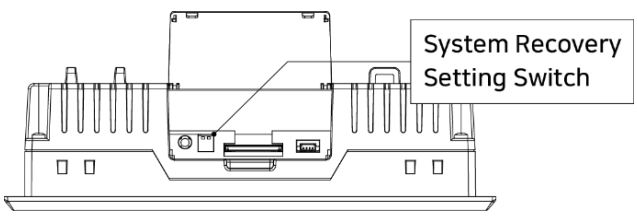
e. If there is a high electromagnetic noise, put ferrite core on main power cable and field cable. The noise of power cable and communication cables can be high under the installation circumstances.

9.4 Setting System Recovery Mode

a. 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.

b. 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".

c. When the recovery is completed, the buzzer sounds, then turn off the power and reset to "Normal" state.



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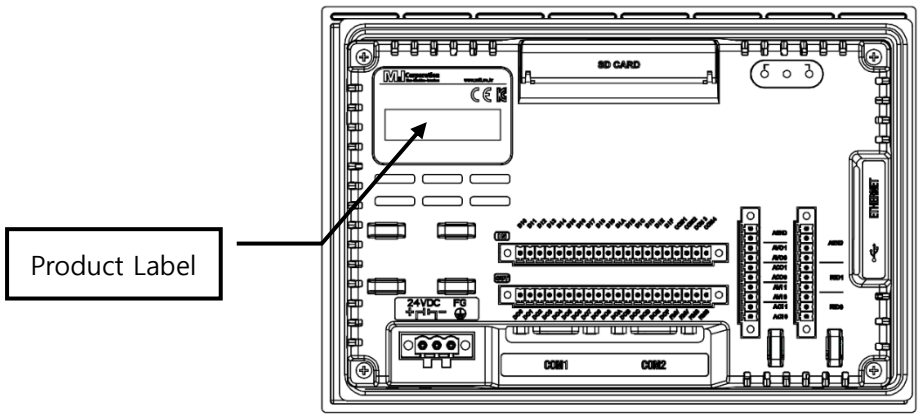
Chapter 10 Products Label



Manufacture (AS): M2I Corporation

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Tel: 82-31-465-3366

Model Name: TOPRW0700WD-IO

Operating Temp: -10 ℃ ≤ Ta ≤ +50 ℃

Power Specifications: TOPRW05/07…24Vdc, 12W, TOPRW10….24Vdc, 15W

KC Certificate No.:

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

- Please read related contents in this manual when you use M2I product, and operate the product staying safe with appropriate handling.

- This manual should be stored in secured and appointed place so that it can be read in any needs.

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