M2I Corporation

Industrial HMI Touch Panel

TOPRH(Wired)

Hardware Manual

Thank you for using Industrial HMI Touch panel series of M2I corporation.

Please read this manual carefully to know installing, wiring, operating, servicing and inspecting this equipment.

M2I Corporation   1 / 27

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Contents

M2I Corporation   **2 / 27**

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Chapter 1. Safety Precaution

■ **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 Precaution** ⚠ Caution

🚫 Do not press the screen using hard or sharp objects (drill, pen, drive etc.) or too strong.
It may cause malfunction of touch due to damage of the front sheet.

🚫 Do not operate or store in an environment with high vibration.

❗ Do not allow foreign objects such as water, liquids, or metal powders to enter the product.
It may cause breakage or electric shock.

🚫 Do not allow foreign objects such as water, liquids, or metal powders to enter the product.
The screen may not be clear or the touch may malfunction.

🚫 Use the radio or mobile phone at least 30cm away from the body.
High-frequency radiation equipment, such as mobile phones, around the body may cause malfunctions in the plant.

🚫 Two or fewer bright spots may appear on the LCD screen, and certain areas may appear brighter.
It is not a defect but LCD characteristic.

🚫 Do not store or operate this product in direct sunlight. Direct sunlight can change the properties of the LCD.

■ **Design Precautions** ⚠ Warning

Install protection circuit on the outside of Products to protect the entire control system when external power supply or Products have problems.

❗ When computer or other controllers communicate and exchange data with products or change operation mode of products, set up protective sequence program in PC or Controller for protecting system from communication error.

❗ The output signal or communication lines should be separated from the power line or high tension wire.
They should be installed 100mm(3.94 Inch) or more from each other.

■ **Installation Precaution** ⚠ Warning

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 45℃ 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.

🚫 Do not block the vents of the cradle to improve water retention and ventilation.

🚫Indoor use only.

■ **Wiring Precautions** ⚠Warning

❗Be sure the wiring is done correctly by checking the product's rated voltage and the terminal layout. Incorrect wiring could result in fire, damage or malfunctions.

❗Tighten the terminal screw with the specified torque. If the screws of terminal are loose, it could result in short circuit, fire, malfunctions. FG Terminal must be used a dedicated ground. Not doing so could result in malfunctions.

❗a. Grounding should be the Class 3 grounding. The cable for grounding should be more than 4㎟.

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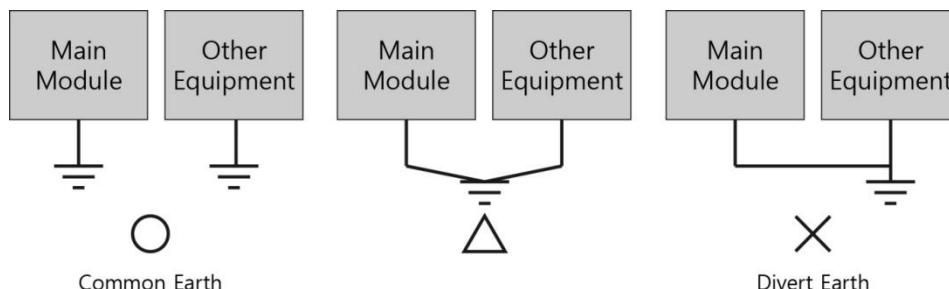
Fig. Grounding Example Diagram

■ **Operation Precautions**

🚫Strong shock or force may interfere with operation of the unit.

🚫After a strong machine operation, check that the main unit and safety related parts operate normally. Simultaneous operation of equipment systems with multiple units installed is not recommended. Block simultaneous operation with proper configuration.

❗High-frequency radiation equipment, such as mobile phones, around the body may cause malfunctions in the plant.

■ **Disposal Precautions** ⚠ Caution

🚫When disposing of the product and battery pack, treat it as industrial waste. **There is a risk of toxic** material formation or explosion.

■ **Specification and Exchanging of Battery for RTC** ⚠ Caution

The MS920SE rechargeable battery, which is fixed to the main board, is not intended to be replaced by the user.

Item	Content
Battery Voltage	DC 3V (MS920SE)
Battery Name	MS920SE (lithium ion battery / not replaceable)
Battery Life	Permanent (When the ambient temperature is 25 ° C)
Battery discharge	About 7 days after power off

＊ Depending on the model specifications are subject to change.

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

Chapter 2. Overview

2.1 Product Introduction

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). This product is running at DC24V. It is ergonomically designed to optimally support the operator for safe and consistent operation in plant system operation and monitoring.

2.2 Package Contents

Package contents of product are as follows.

Please make sure that all of components are in the package before using the product.

Item	Figure	Quantity
product and Manual (*Cable Pack option)		1
Other accessories	USB Memory USB Cable SD Card Front Protect Sheet Cable Pack (3M/5M/10M)	User Options
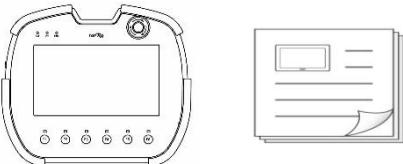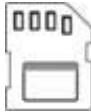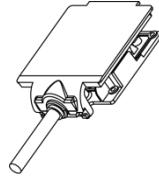
2.3 Explanation of Model name

TOPRH	07	00	W	D	-	W	□□
Series	Display Size	Option	LCD	Power		Type	EMG SW Position
	07: 7.0"	00: Standard	W : Wide	D : DC		W : Wireless	FE : Front
		10: Premium		A : AC		blank : Wired	blank : Top

M2I Corporation   **5 / 27**

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Chapter 3. General Specifications

3.1 Power Specifications

Power	Input Voltage	DC 24V
	Input Voltage Range	DC 20~28V
	Consumption	20W or less

3.2 Display Specifications

Display Type	7" TFT Color
Resolution(dot)	1024 X 600
Color	16M Colors
Brightness Level	10 Level(by software)
Backlight Type	LED
Backlight Life	50,000 hours
Display Character Type	Supporting Vector Font for Windows, Free Scaling Image Character
Front LED Display	Power, Operation, Link State Display

3.3 Touch Specifications

Touch Type	Analog Resistive Touch Method
기계적 수명(회)	1 million times or more

3.4 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)

3.5 Environment Specifications

Operation Temperature (℃)	-10 ~ +45
Storage Temperature (℃)	-20 ~ +60
Operation Humidity (%RH)	0 ~ 90 (No dew)
Atmosphere	No corrosive gas
Vibration Endurance	Amplitude: $10 \leq F < 25$ Hz(2G) X,Y,Z each direction(for 30 minutes)
Noise Immunity	1000Vp-p(Pulse width 1 μs)
Static Electricity Discharge	Connective discharge from EN61000-4-2: ±4 kV
Shock Endurance	10G X,Y,Z each direction(for 3 times)
Surge Voltage	500V(Line-Line)
Ground Connection	Class 3(100Ω under)
Protection Classification	Conform to IP4X

3.6 Structure Specifications

Weight(Kg)	1.1Kg (*Except Cable Pack)
Cooling System	Natural air circulation
Case Material	PC(Resistance to flame)

Chapter 4. Parts Identification and Functions

4.1 Body

TOP

LEFT   FRONT   RIGHT   REAR

BOTTOM
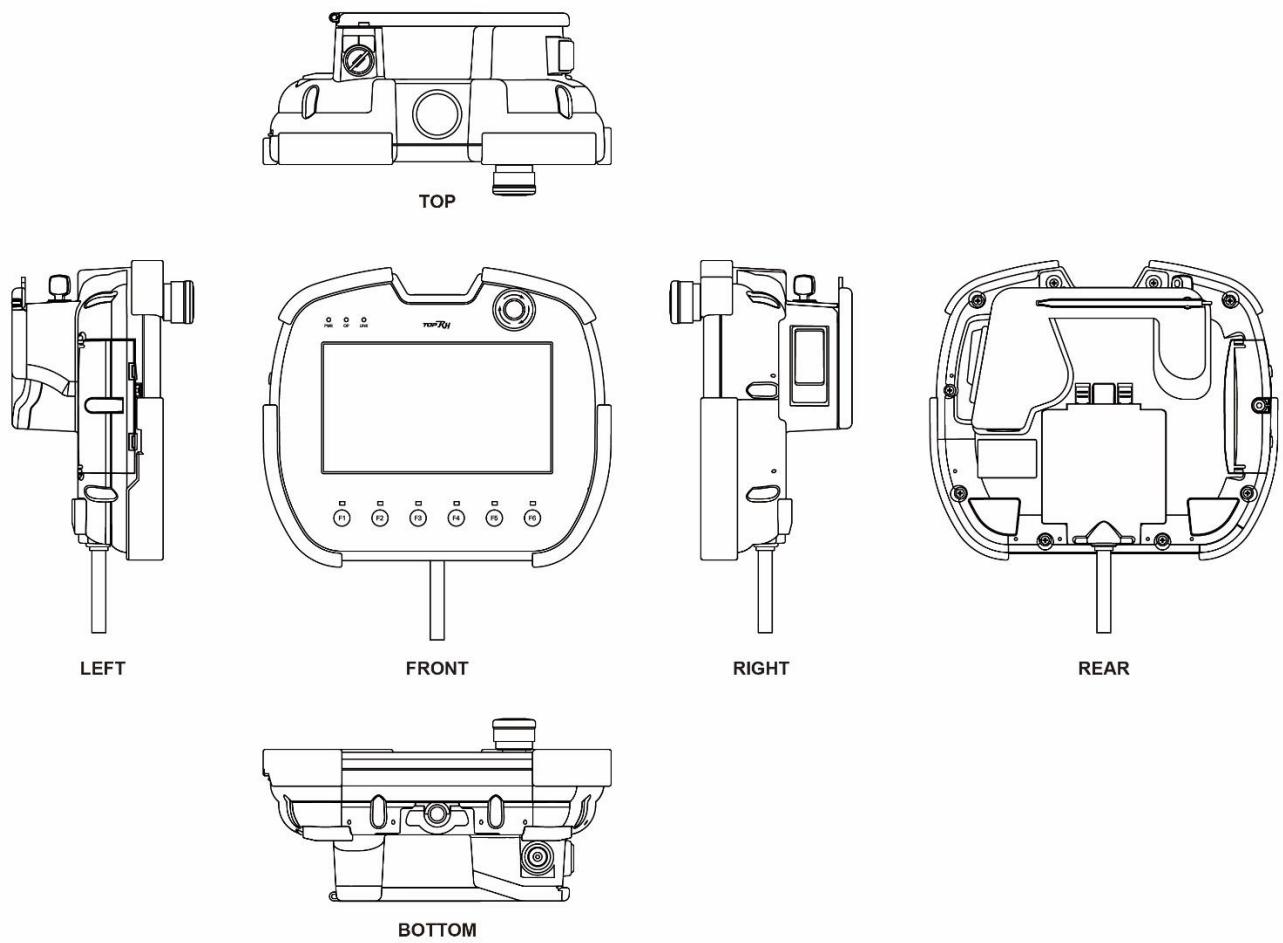
4.1.1 External Dimension

F2

F1

S1
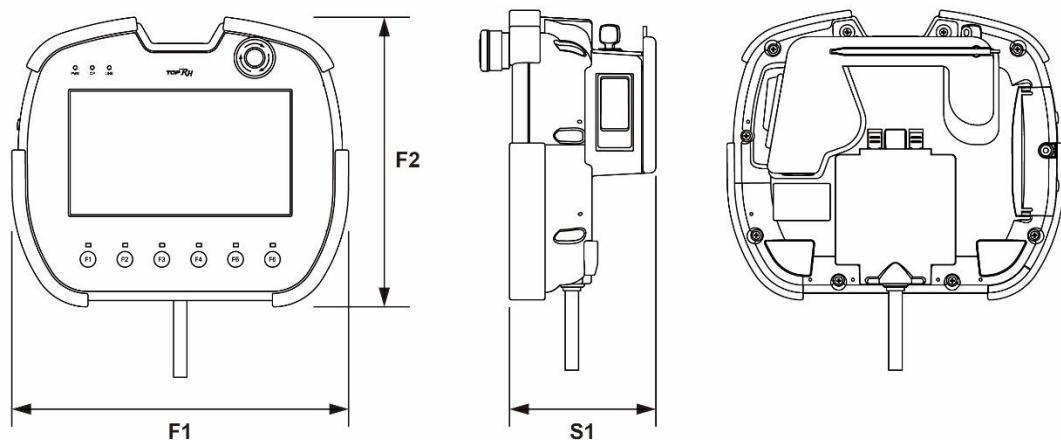
F1(mm)	F2(mm)	S1 (mm)
237	205	103

4.1.2 Front part names and specifications
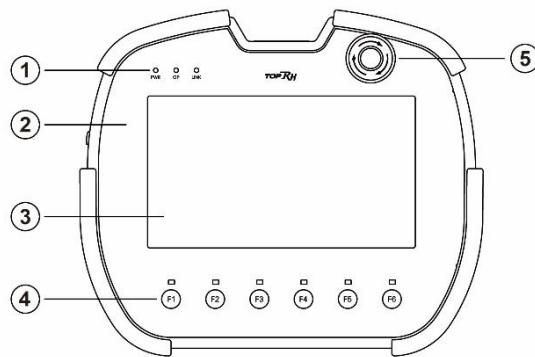
No.	Name	Description	Note
①	Display LED	Power, operation, link state display	
②	Front Sheet	Front vinyl cover sheet for damp proof and dust proof	
③	Touch Panel	Analog touch	
④	Function Switch	Connect to external device terminal such as PLC and control contact point	
⑤	Emergency Switch	Emergency switch	

4.1.3 Left, right part names and specifications
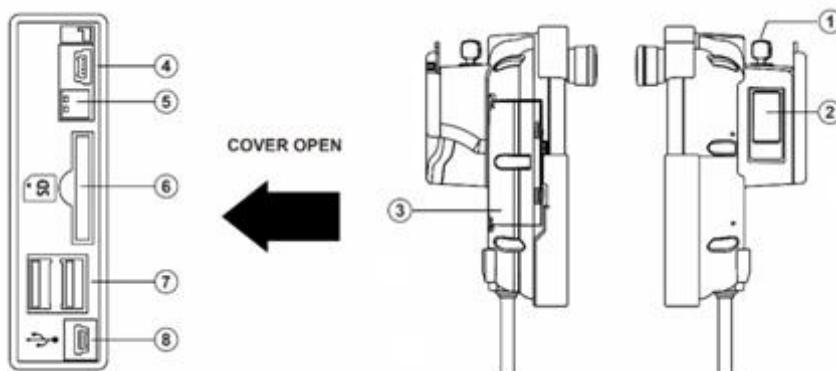
No.	Name	Description	Note
①	Key Switch	Connect to external device terminal such as PLC and control contact point	
②	3 position enable Switch	3 state handles on the right, Three-stage operation switch	
③	Side Cover	Including SD Card port, USB Device/Host port, Mode Switch	
④	Diagnostic Port	Manufacturing and maintenance port	Manufacturers Only
⑤	Mode Switch	System mode setting switch	
⑥	SD Card	SD card Connection port	
⑦	USB Host	Connector for USB memory stick	
⑧	USB Device	Project file or data transfer USB cable Connection port	

4.1.4 Rear part names and specifications
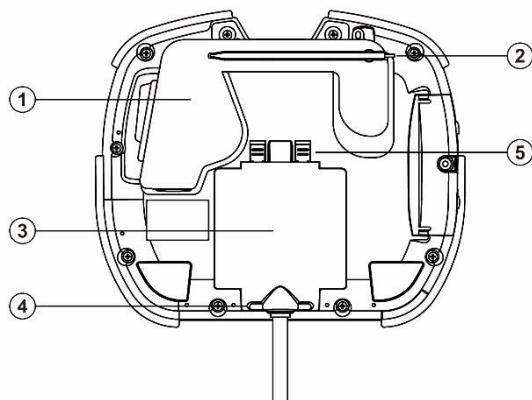
No.	Description
①	Handle
②	Touch pen
③	Option pack
④	Option pack conclusion slot
⑤	Option Pack Lock

4.1.5 Upper, lower part names and specifications
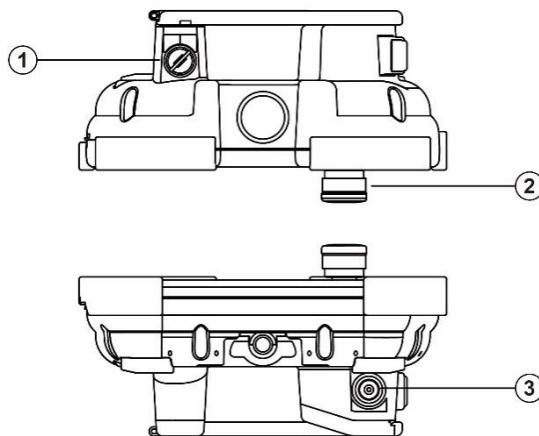
No.	Name	Description	Note
①	Key Switch	Connect to external device terminal such as PLC and control contact point	
②	Emergency Switch	Emergency switch in case of abnormal occurrence	
③	Power Switch	Switch for Power On/Off	

4.1.6 Keylock switch contact

KEY LOCK   KEY UNTIED

M2I Corporation   **9 / 27**

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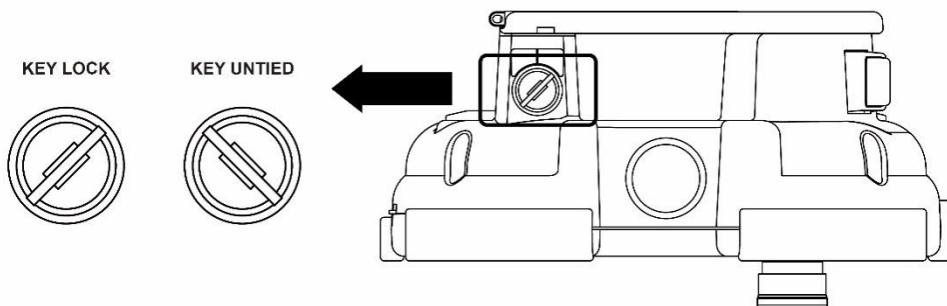
Chapter 5. Interface

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 Interface

5.1.1 RS-232C

Items		Contents
Protocol		Half Duplex
Synch.		Asynchronous
Communication distance		About 15m
Type of connection		1:1
Control code		ASCII Code or HEXA Code
Baud rate		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
Connection wire no.		COM1: 1(SD), 3(RD), 24 or 25(Signal GND)
		COM2: 10(SD), 9(RD), 24 or 25(Signal GND)

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
Baud rate		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
Connection wire no.		COM1: 1(RX+), 3(RX-), 5(TX+), 7(TX-)
		COM2: 10(RX+), 9(RX-), 12(TX+), 11(TX-)

5.1.3 COM1 connector pin number and signal name

Type	Pin no.	Signal	Direction	contents
Wire	1	SD	Output	RS-232C Send Data
		RX+	Input	RS-422/485 Receive Data(RX+)
	3	RD	Input	RS-232C Receive Data
		RX-	Input	RS-422/485 Receive Data(RX-)
	5	CTS	Output	RS-232C Send Possible Signal
		TX+		RS-422/485 Send Data(TX+)
	7	RTS	Input	RS-232C Receive Request Signal
		TX-		RS-422/485 Send Data(-)
	24, 25	SG	GND	Signal Ground

5.1.4 COM2 connector pin number and signal name

Type	Pin no.	Signal	Direction	contents
Wire	10	SD	Output	RS-232C Send Data
		RX+	Input	RS-422/485 Receive Data(RX+)
	9	RD	Input	RS-232C Receive Data
		RX-	Input	RS-422/485 Receive Data(RX-)
	12	Eth_Link_LED	Output	Ethernet link status LED
		TX+	Output	RS-422/485 Send Data(TX+)
	11	Eth_SPD_LED	Output	Ethernet speed status LED
		TX-	Input	RS-422/485 Send Data(TX-)
	24, 25	SG	GND	Signal Ground

● For Serial Communication with RS-232C, Twisted Pair Cable must be used to communication cable corresponding to each Signal Pins such as RD & SD and SG. SG must be wired direct connection.

● For Serial Interface with RS-422/485, Twisted Pair Cable must be used to communication cable corresponding to each Signal Pins such as RX+ & RX- and TX+ & TX+.

● The shield cable of communication should not be used to signal ground. It may cause failure of communication.

5.2 Ethernet Interface

5.2.1 Ethernet

Item	Specification
Ethernet Method	IEEE802.3i/IEEE802.3u, 10BaseT / 100BaseT
Speed	10M / 100Mbps
Communication Method	Base Band
Switching Method	AUTO MDIX
Maximum Segment Length	100m (Hub 사이 기기)
Communication Cable	UTP (Unshielded Twisted Pair)
Connection wire no.	Wire 1(TXP), 3(TXN), 5(RXP), 7(RXN)

In case of using HUB, straight cable should be used.

Ex) Straight cable: Connect by one to one according to above RJ-45 Pin Layout.

In case of do not using HUB, when it is connected directly, cross cable should be used.

Ex) Cross cable: Change the Pins of TD+ and RD+, TD- and RD- with above RJ-45 Pin layout and connect.

* RJ-45 Pin layout
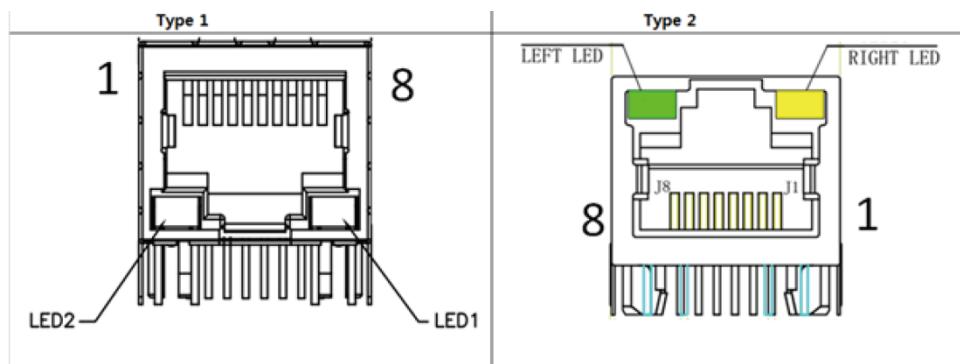
RJ 45 Pin No.	UTP Cable Color	Signal	TOPRH Pin No.	Wire Color
1	White Orange	TD+ (Twisted Pair Output +)	1	ORANGE
2	Orange	TD- (Twisted Pair Output -)	3	ORANGE/BLACK
3	White Green	RD+ (Twisted Pair Input +)	5	GREEN
4	Blue	Reserve	-	-
5	White Blue	Reserve	-	-
6	Green	RD- (Twisted Pair Input -)	7	GREEN/WHITE
7	White Brown	Reserve	-	-
8	Brown	Reserve	-	-
9	N/A	LINK state (option)	12	BLUE/WHITE
10			-	-
11	N/A	Speed state (option)	11	BLUE
12			-	-

M2I Corporation 12 / 27

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5.3 USB Interface

5.3.1 USB Host
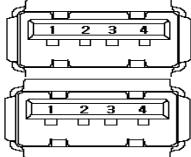
Type	Item	Specification
	USB Interface	EHCI/OHCI Specification Version 1.0, USB2.0/1.1 Compatible
	Communication Method	Control/Bulk
	Transfer Speed	480Mb/s
	Support Device	USB Storage (FAT16/FAT32 format Compatible)
	Connector Type	Type A(2ch)

5.3.2 USB Device
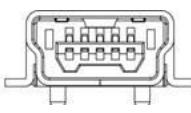
Type	Item	Specification
	USB Interface	USB 2.0
	Communication Method	Interrupt/Bulk/Isochronous
	Transfer Speed	480Mb/s
	Support OS	Windows 98SE/2000/XP/VISTA/7/10(32/64bit)
	Cable length	1.5M(recommended to use M2I's Option Cable)
	Connector Type	MINI USB B, Female
	Connection method	Connection to USB mini port of side cover

Chapter 6. Installation Diagram

The connection diagram is as shown below. Connects using a 26-pin wired connection cable or a 38-pin wired connection cable or by directly connecting.

6.1 Connection diagram
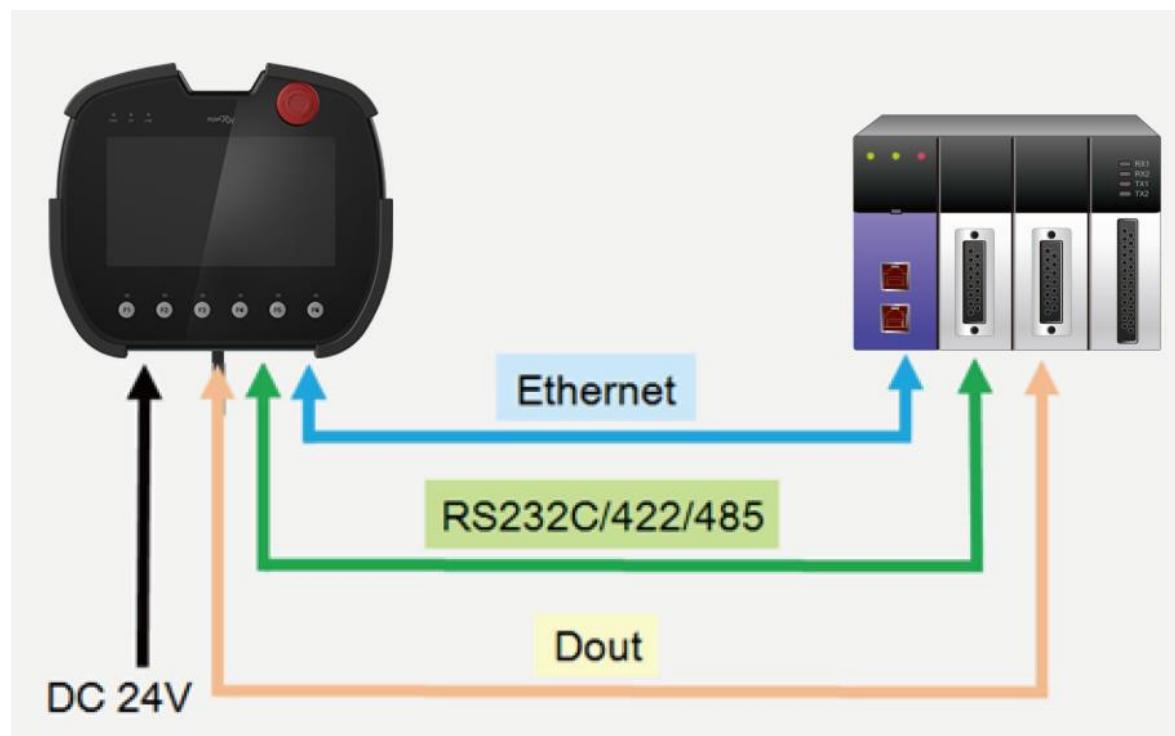
6.2 Cable Diagram

6.2.1 Pin assignment of cable pack

Pin no.	SIGNAL NAME	Description	CONNECT (SMH200-26C)	wire	Color	Note	Available
1	COMM_0	COM1 or Ethernet SEL #1	AWG #22~#28	AWG24	ORANGE	232C SD 422 RX+ TXP	RS-232C RS-422/485 Ethernet
2	VCC_IN	**TOPRH Power IN DC 24V**	AWG #22~#28	AWG24	RED	PWR	Input Range 24V
3	COMM_1	COM1 or Ethernet SEL #2	AWG #22~#28	AWG24	ORANGE/BLACK	232C RD 422 RX- TXN	RS-232C RS-422/485 Ethernet
4	VCC_IN	**TOPRH Power IN DC 24V**	AWG #22~#28	AWG24	BROWN	PWR	Input Range 24V
5	COMM_2	COM1 or Ethernet SEL #3	AWG #22~#28	AWG24	GREEN	232C CTS 422 TX+ RXP	COM2 RS-232C CTS RS-422/485 Ethernet
6	PGND	**TOPRH Power GND**	AWG #22~#28	AWG24	RED/WHITE	PWR	GND
7	COMM_3	COM1 or Ethernet SEL #4	AWG #22~#28	AWG24	GREEN/WHITE	232C RTS 422 TX- RXN	COM2 RS-232C RTS RS-422/485 Ethernet
8	PGND	**TOPRH Power GND**	AWG #22~#28	AWG24	BROWN/WHITE	PWR	GND
9	COMM_5	COM2 SEL #2	AWG #22~#28	AWG24	LIGHT BLUE	232C RD 422 RX-	RS-232C RS-422/485
10	COMM_4	COM2 SEL #1	AWG #22~#28	AWG24	LIGHT BLUE/BLACK	232C SD 422 RX+	RS-232C RS-422/485
11	COMM_7	COM2 SEL #4	AWG #22~#28	AWG24	BLUE	Eth_SPD 422 TX-	Eth_Speed_LED RS-422/485
12	COMM_6	COM2 SEL #3	AWG #22~#28	AWG24	BLUE/WHITE	Eth_Link 422 TX+	Eth_Link_LED RS-422/485
13	COMM_9	DOUT3,EMG A0_com	AWG #22~#28	AWG24	GRAY	**SW12 Select**	Function Key_F4,Emergency_A com
14	COMM_8	DOUT2,EMG A0 contact	AWG #22~#28	AWG24	GRAY/BLACK		Function Key_F3,Emergency_A Out

15	EXT0_EMG_B1	EMG B1_com	AWG #22~#28	AWG24	BLACK		Emergency_B1 Contact com
16	EXT0_EMG_A1	EMG B1 contact	AWG #22~#28	AWG24	BLACK/WHITE		Emergency_B1 Contact Out
17	COMM_13	DOUT5,KEY Lock_com,EMG B2_com	AWG #22~#28	AWG24	YELLOW	**SW13 Select**	Function Key_F6,KEY Lock,Emergency_B2 com
18	COMM_12	DOUT4,KEY Lock contact, EMG B2 contact	AWG #22~#28	AWG24	YELLOW/BLACK		Function Key_F5,KEY Lock,Emergency_B2 Out
19	3P_SW_A1_COM	3Position Switch A1_com	AWG #22~#28	AWG24	WHITE		3Position A1 Contact com1
20	3P_SW_A1	3Position Switch A1_contact	AWG #22~#28	AWG24	WHITE/BLACK		3Position A1 Contact Out1
21	DOUT0/3P_SW_ A2_COM	DOUT0,3Position Switch A2_com	AWG #22~#28	AWG24	LIGHT CYAN	**SW14 Select**	Function Key_F1, 3Position A2 Contact com2
22	DOUT1/3P_SW_ A2	DOUT1,3Position A2_contact	AWG #22~#28	AWG24	LIGHT CYAN/BLACK		Function Key_F2, 3Position A2 Contact Out2
23	COM0	DOUT_com	AWG #22~#28	AWG24	PINK		Function Key_com
24	COM_SG	COM1,2 Signal GND	AWG #22~#28	AWG24	PINK/BLACK		RS-232C/422/485 Signal GND
25	COM_SG	COM1,2 Signal GND	AWG #22~#28	AWG24	VIOLET		RS-232C/422/485 Signal GND
26	F.G	TOPRH F.G	AWG #22~#28	AWG24	VIOLET/WHITE		F.G

6.3 Selection of mechanical switch

6.3.1 Select Switch

Optionally can be used only necessary operation.
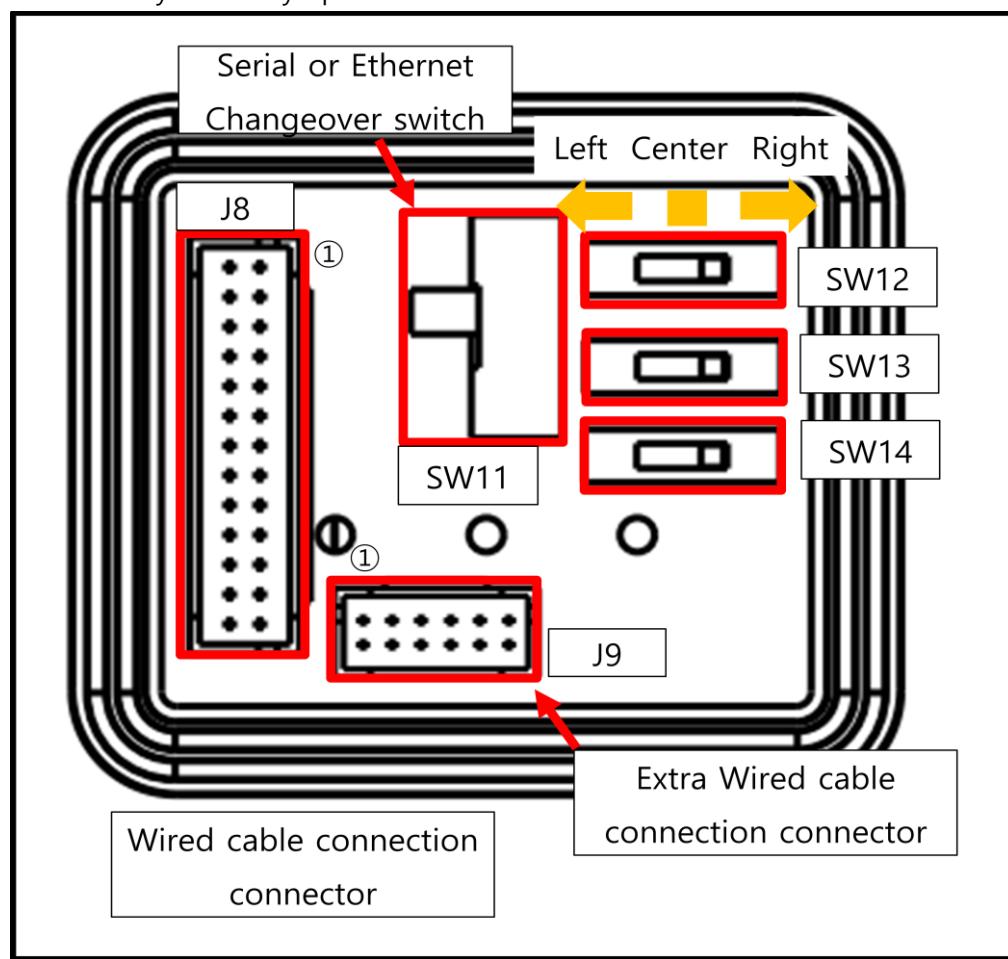
6.3.2 Operation allocation of SW12, SW13, SW14

Pin No.	Left	Center	Right	Setting switch
13	Function_3 (F4)		EMG SW A1 contact_com	SW12
14	Function_2 (F3)		EMG SW A1 contact	
15	EMG SW B1 contact_com			Fixed
16	EMG SW B1 contact			
17	Function_5 (F6)	Keylock_com	EMG SW B2 contact_com	SW13
18	Function_4 (F5)	Keylock	EMG SW B2 contact	
19	3Position SW A1 Contact_com1			Fixed
20	3Position SW A1 Contact Out1			
21	Function_0 (F1)		3Position SW A2 Contact_Com2	SW14
22	Function_1 (F2)		3Position SW A2 Contact Out2	
23	Function_COM			Fixed

M2I Corporation   **16 / 27**

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* When using Function_0 ~ 5 function, make function setting in TDS (Top Design Studio).
  - It operates as S/W, so please refer to the TDS manual to specify the touch operation.
  - When setting normally, touch the object or press the button to turn the LED ON or OFF.
  - If it does not work properly after setting in TDS, reconfirm the setting switch (SW12, SW13, SW14).

6.3.3 Available at the same time table of SW12, SW13, SW14

Select			available			
SW12	SW13	SW14	Emergency	3Position	Function	KeyLock
Left	Left	Left	B1	A1	0,1,2,3,4,5	N/A
Left	Left	Center	B1	A1	0,1,2,3,4,5	N/A
Left	Left	Right	B1	A1,A2	2,3,4,5	N/A
Left	Center	Left	B1	A1	0,1,2,3	USE
Left	Center	Center	B1	A1	0,1,2,3	USE
Left	Center	Right	B1	A1,A2	2,3	USE
Left	Right	Left	B1,B2	A1	0,1,2,3	N/A
Left	Right	Center	B1,B2	A1	0,1,2,3	N/A
Left	Right	Right	B1,B2	A1,A2	2,3	N/A
Center	Left	Left	B1	A1	0,1,2,3,4,5	N/A
Center	Left	Center	B1	A1	0,1,2,3,4,5	N/A
Center	Left	Right	B1	A1,A2	2,3,4,5	N/A
Center	Center	Left	B1	A1	0,1,2,3	USE
Center	Center	Center	B1	A1	0,1,2,3	USE
Center	Center	Right	B1	A1,A2	2,3	USE
Center	Right	Left	B1,B2	A1	0,1,2,3	N/A
Center	Right	Center	B1,B2	A1	0,1,2,3	N/A
Center	Right	Right	B1,B2	A1,A2	2,3	N/A
Right	Left	Left	A1,B1	A1	0,1,4,5	N/A
Right	Left	Center	A1,B1	A1	0,1,4,5	N/A
Right	Left	Right	A1,B1	A1,A2	4,5	N/A
Right	Center	Left	A1,B1	A1	0,1	USE
Right	Center	Center	A1,B1	A1	0,1	USE
Right	Center	Right	A1,B1	A1,A2	N/A	USE
Right	Right	Left	A1,B1,B2	A1	0,1	N/A
Right	Right	Center	A1,B1,B2	A1	0,1	N/A
Right	Right	Right	A1,B1,B2	A1,A2	N/A	N/A

6.3.4 Extra wiring the J9

If you want to use the duplicated function at the same time, you can use it by connecting the function auxiliary connector (J9).

Set SW12, SW13, and SW14 to the right as shown in the table below, and refer to the J9 connector pin map for additional wiring.

- J8 Connector settings

J8 Conn. Pin No. (SMH200-26C)	SW12,13,14 SW -> <u>Right</u>
13	EMG SW A1 contact_com
14	EMG SW A1 contact
15	EMG SW B1 contact_com
16	EMG SW B1 contact
17	EMG SW B2 contact_com
18	EMG SW B2 contact
19	3Position SW A1 Contact_com1
20	3Position SW A1 Contact Out1
21	3Position SW A2 Contact_Com2
22	3Position SW A2 Contact Out2
23	Function_COM

- J9 Connector settings

J9 Conn. Pin No. (SMH200-12C)	Explanation
1	KEYLOCK
2	KEYLOCK_COM
3	N/A
4	N/A
5	Function_COM
6	Function_COM
7	Function_5 (F6 Key)
8	Function_4 (F5 Key)
9	Function_3 (F4 Key)
10	Function_2 (F3 Key)
11	Function_1 (F2 Key)
12	Function_0 (F1 Key)

- Available at the s**ame time table of J8 and J9**

Select			available			
SW12	SW13	SW14	Emergency	3Position	Function	KeyLock
Right	Right	Right	A1,B1,B2	A1,A2	0,1,2,3,4,5	USE

	J9						
Conn. Pin	1 - 2	7 - 5	8 - 5	9 - 5	10 - 5	11 - 5	12 - 5
Feature	KeyLock	F6	F5	F4	F3	F2	F1

## 6.4 Communication switch of Serial and Ethernet

6.4.1 Communication and I/F setting

Using the SW11 switch, can set different use of the 1,3,5,7 lines.

    a.   Possible serial communication or Ethernet communication.

    b.   Select serial communication, possible RS-232C/422/485 communication.

        Select Ethernet communication, can't be used COM1 serial communication.

    c.   Serial communication setting: Main Menu of TOPRH->[Control panel]->[Serial] menu

    d.   Ethernet communication setting: Main Menu of TOPRH->[Control panel]->[Ethernet] menu

        Set PLC IP on PLC. Ethernet PLC should be extra in the Project.

Use Ethernet status check LED, Using the 11 and 12 lines.

    a.   Connect no. 11 pin (BLUE_WHITE) to RJ45 SPEED_LED Anode, and connect cathode to S.G.

    b.   Connect no. 12 pin (VIOLET _WHITE) to RJ45 SPEED_LED Anode, and connect cathode to S.G.

    c.   If you use Ethernet status check LED, should set to COM2 RS-232C at Main Menu of TOPRH->[Control panel]->[Serial] menu.

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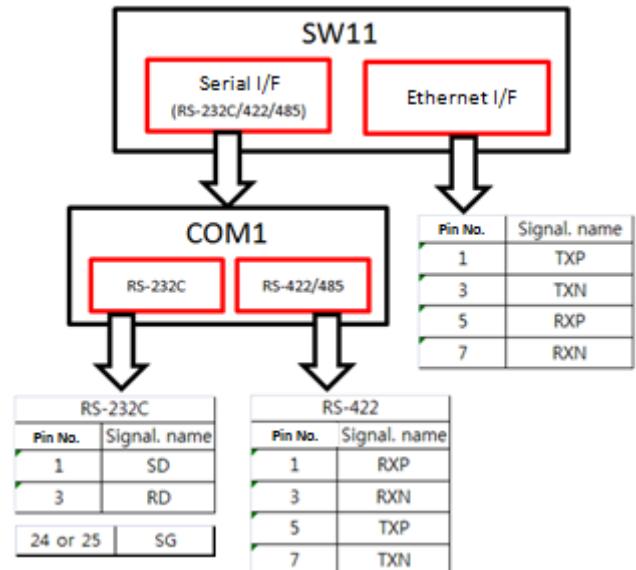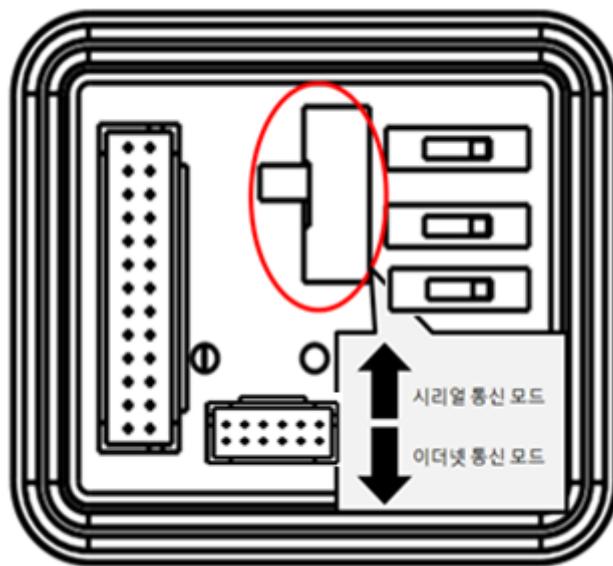
6.4.2 Switch use and sample

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.

- Wiring diagram of emergency switch
  For an emergency, the emergency stop PUSH/PULL switch. Connect with the following figure.

| Position	EMG_A1	EMG_B1	EMG_B2
Not Pressed	Open(OFF)	Short(ON)	Short(ON)
Pressed	Short(ON)	Open(OFF)	Open(OFF)

(* Mechanical switch enables operation without turning on / off the unit.)

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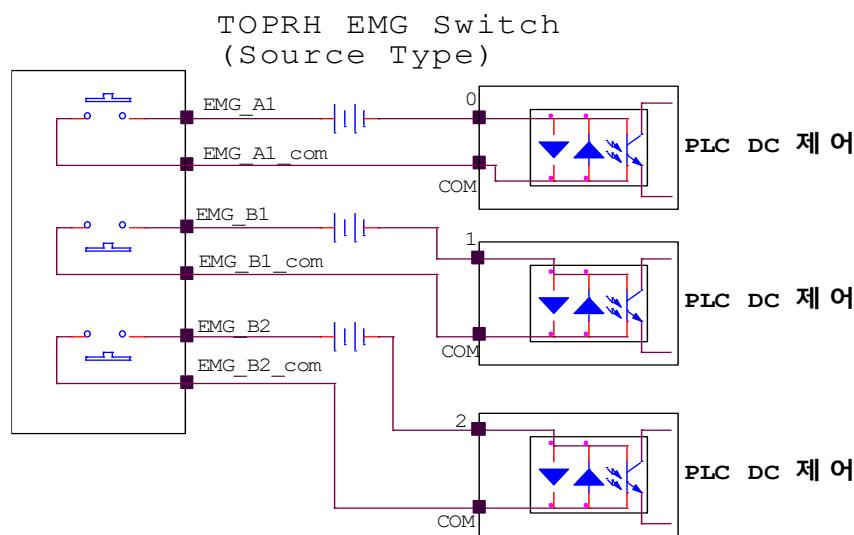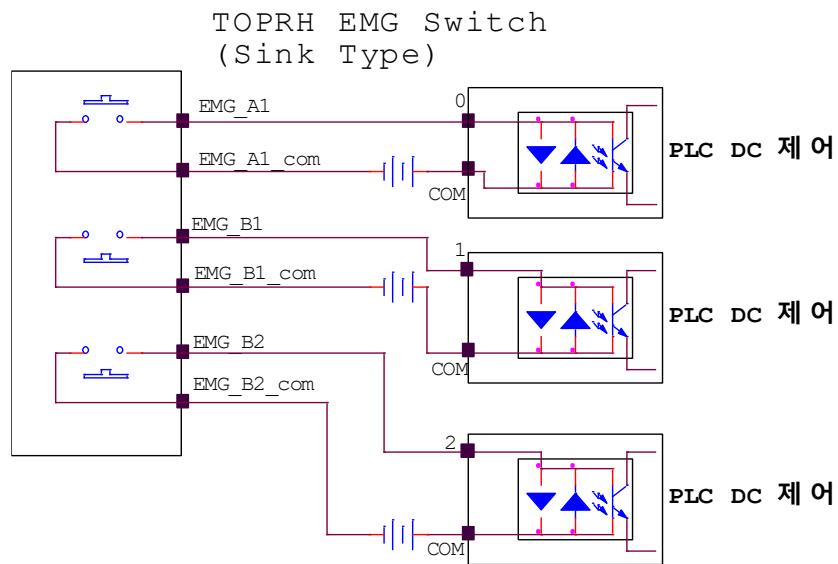
● Wiring diagram of keylock

Control status of controller for safety.

Position	Status
"A" direction	Open(OFF)
"B" direction	Short(ON)

TOPRH KEY LOCK Switch
(Sink Type)
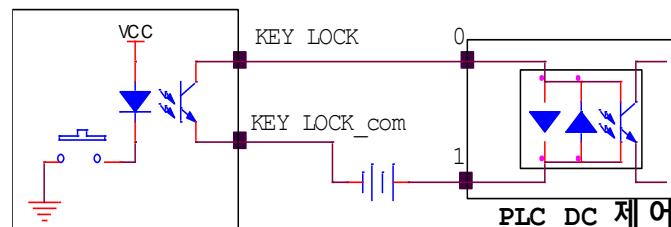
TOPRH KEY LOCK Switch
(Source Type)
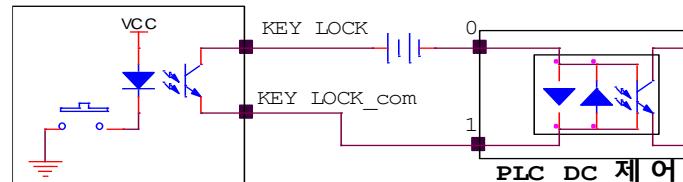
(* Operates as a photo coupler, so operation control is possible only when the main body is ON.)

● Wiring diagram of function key

a. Control status of controller additionally.

b. It can not be used for Source type.

| Signal	Fn
Dout 0	F1
Dout 1	F2
Dout 2	F3
Dout 3	F4
Dout 4	F5
Dout 5	F6
Dout_com	-

**TOPRH Fn Switch
(Sink Type)**
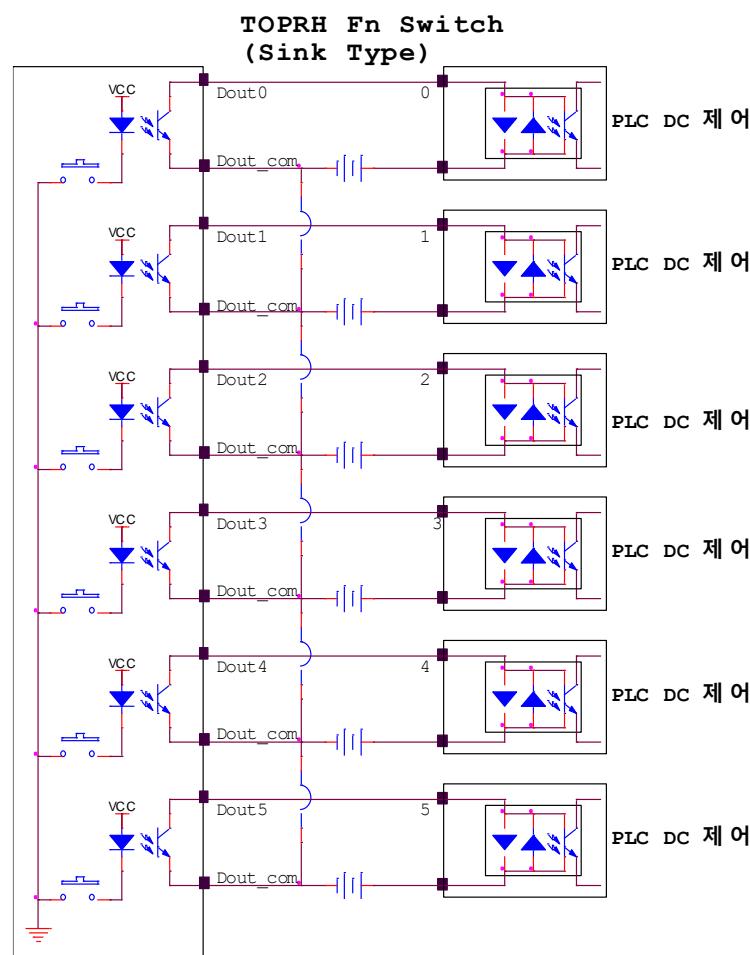
(* Operates as a photo coupler, so operation control is possible only when the main body is ON.)

●   Controls the controllable state of the controller for safety.

Position	3P_SW_A1	3P_SW_A2
NOT Pressed	Open(OFF)	Open(OFF)
HALF Pressed	Short(ON)	Short(ON)
Fully Pressed	Open(OFF)	Open(OFF)

**TOPRH 3-Position Switch
(Sink Type)**

**TOPRH 3-Position Switch
(Source Type)**

(* Mechanical switch enables operation without turning on / off the unit.)

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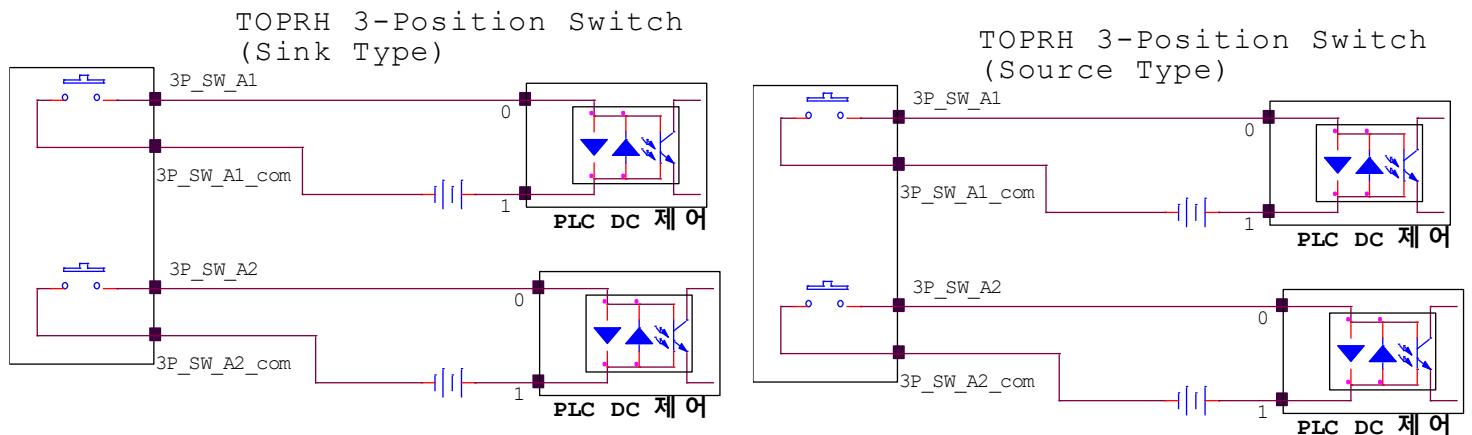
# Chapter 7. Installation and Wiring ⚠Warning

7.1 Specifying Install Location

    a.   After cable pack connection to the body, install that in a place to ensure the operation of the TOPRH.

   b.   Install where there is no sunlight exposure.

7.2 Cable pack connection to the body
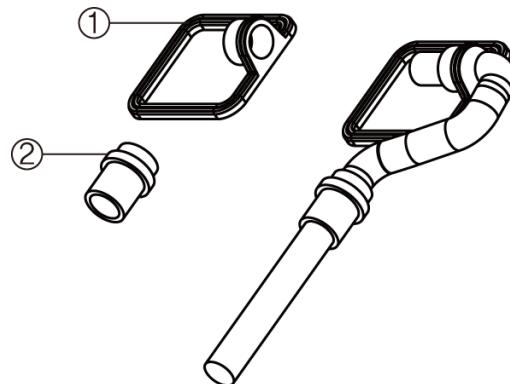
a. Parts ① and ② assembly. (*If you direct connection)
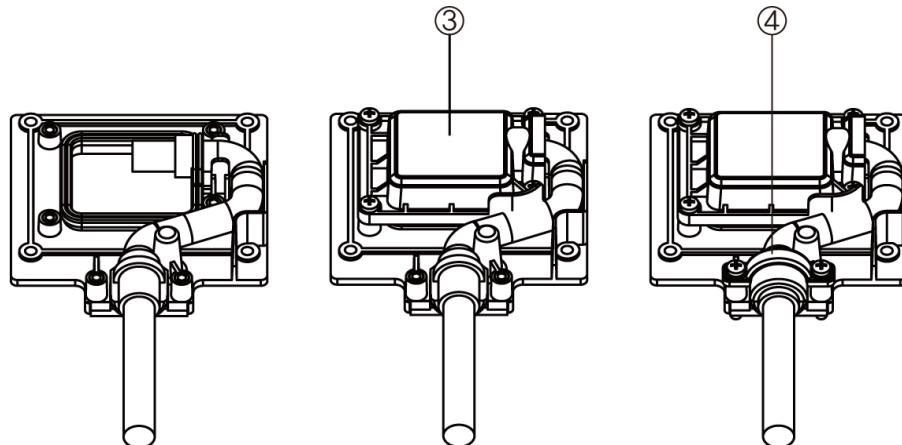
b. After put part ① to waterproof groove, insert part ③ to the cable pack and tighten the 4 screws.

c. After insert part ② to the ④, tighten the 2 screws.
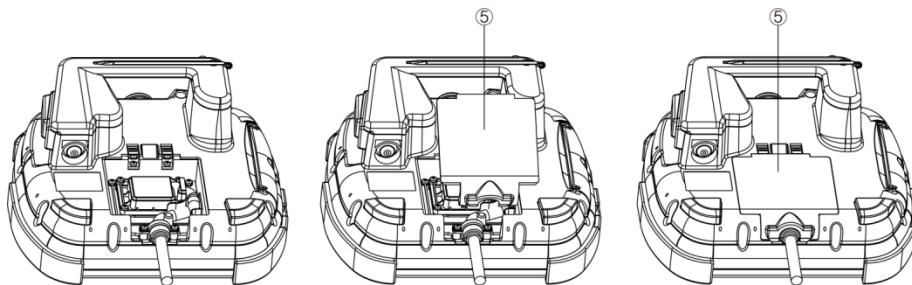
d. Connect cable pack to 26pin connector.

e. Tighten the 4 screws.

f. Insert rear cover.

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No.	Name	Description	Note
①	Sealing gasket	Cable pack component for waterproof, dustproof	
②,④	Cable cushion	Component of cable pack	
③	Inner cap	Cable pack component for waterproof, dustproof	
⑤	Rear cover	Component of cable pack	

7.3 Power wiring

(1) Standard of power cord is AWG #22~#28 2 Line.

    a. When installing the power and grounding terminals, use the pin terminals to improve electrical transmission and to prevent the power line wearing.

    b. Attach the power cord to the power terminal of the body as follows.
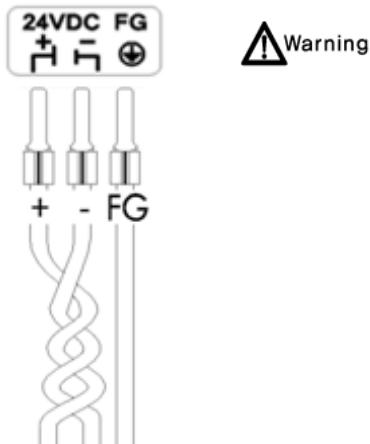
Chapter 8. Maintenance ⚠Warning

8.1 Cleaning the Display and key pad

When the surface or frame of the display, key pad or shock-absorbing cushion 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 Management of cable pack

(1) Storage

   a. Don't press on the cable.

   b. Don't heat the cable.

   c. Don't pull on the cable.

(2) Treatment

   a. Is not under tension on the cable to leisurely, please. So that it through the inside of the poles must be.

   b. Apart, try not to lose the water sealing.

   c. Pay attention not on the cable wound.

   d. Put the cover by force, the Be aware that there is a risk of damage.

   e. The external connection cable is securely connected to the device to prevent tangling. ⚠Warning

8.3 Periodic inspection

For the best condition of this product, periodic inspections are required.

(1) Environment

   a. Are you operating within the specified temperature range (-10°C~45°C)?

   b. Are you operating within the specified humidity range (10%~80%RH)?

   c. Is there any corrosive gas around?

(2) Power

   Is the input voltage range (-15%~+10%) correct?

(3) Related Topics

   a. Check to see a LCD backlight when it's time to change.

   b. Check to see a touch pad is not damaged, scratchy or dirty.

8.4 When a problem occurs with your device ⚠Warning

a. If any problem occurs during operation, stop using it and please call M2I Corporation A/S department.

b. Only authorized workers authorized by M2I Corporation can inspect and repair problems related to malfunction of this equipment.

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

d. The manufacturer, M2I Corporation, is not responsible for damage or malfunction of the equipment caused by the use conditions of the user beyond the installation and use standards described in the manual.

M2I Corporation 25 / 27

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8.5 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 drawing project may cause problems when using the recovery mode.

b. After opening the side 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.

Chapter 9. Warning Label

Warning -
Don't remove the cable pack in power is switched on.
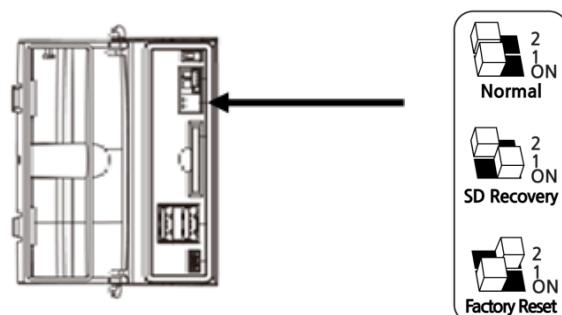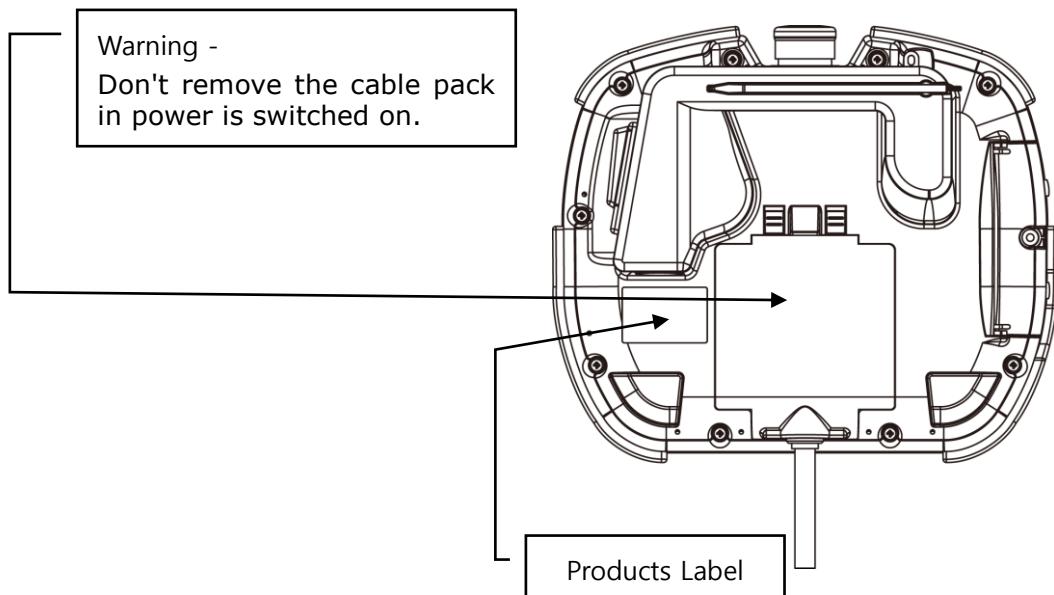
Products Label

Chapter 10. Products Label

Manufacture (AS): M2I Corporation

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

                Tel: 82-31-465-3366

Device type: Industrial HMI Touch Panel

Model: **TOPRH0700WD, TOPRH0700WD FE**

Operating Temperature: -10 ℃ ≤ Ta ≤ +45 ℃

Power Specification: 24Vdc, 20W or less

KC Approval Number:

Inside Battery: MS920SE (Rechargeable Lithium-ion Cell/Not replaceable)

Product number:

Copyright: M2I Corporation 2020.12　　　　　　　　　　　　　　　**www.m2i.co.kr**

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

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