
Hardware Manual



Industrial HMI Touch Panel iRis Standard Series



Thank you for purchasing the iRis HMI touch panel series from IMO Precision Controls Ltd.

Please read this manual carefully to understand the proper installation, wiring, and operation of the equipment, ensuring safe and correct use of the product.





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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 follow the safety precautions 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 product in locations where the temperature exceeds the allowable limit, as this may damage the product or shorten its lifespan.
-  Do not press the screen with hard or sharp objects (such as an awl, screwdriver, or pen), or apply excessive force. This may damage the front sheet and cause touch malfunction.
-  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 water, liquids, or metal particles to come into contact with the front (screen) protective sheet, as this may affect visibility or cause touch malfunction. Use the radio or mobile phone at least 30 cm away from the main unit.
-  Up to two bright spots may appear on the LCD screen, and some areas may appear brighter. This is a normal characteristic of LCD panels and not a defect.
-  Do not store or operate in direct sunlight. Direct sunlight can change the properties of the LCD.

■ Design Precautions Warning

-  Install a protection circuit outside the product to safeguard the entire control system in case of problems with the external power supply or the product itself.
-  Product malfunctions can compromise system stability and create safety risks. To prevent this, install interlock circuits such as emergency stops, upper and lower limit switches, forward/reverse operation interlocks, and other protective safety circuits.
-  When a computer or other controllers communicate with the product, exchange data, or change its operation mode, implement a protective sequence in the PC or controller to prevent system damage due to communication errors.
-  Keep output signals and communication lines separate from power lines or high-voltage wires. Maintain a minimum distance of 100 mm (3.94 inches) between them.

■ 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 meet Class 3 standards. Use a grounding cable of at least 2 mm².
- ❗ b. Position the grounding point as close to the product as possible, keeping the ground cable short.

Please see below.

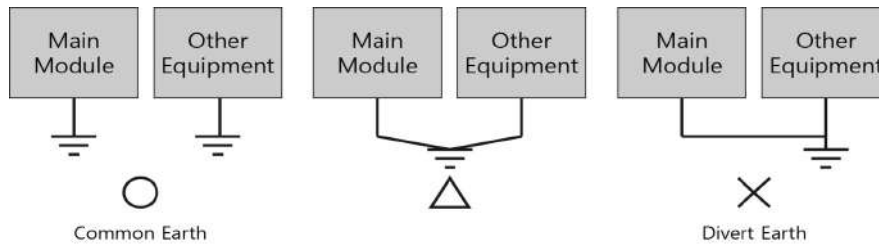


Fig. Grounding Example Diagram

■ Installation Precautions  Caution

- ⊘ The equipment must be used only in areas with at least Pollution Degree 2, as defined in IEC/EN 60664-1.
- ⊘ Do not install the product in locations where the temperature exceeds the specified limits, as this can damage the product or reduce its lifespan. Avoid the following environments.
 - Ambient temperatures outside the range of -10°C to 50°C.
 - Surfaces of control boards with high-pressure equipment installed.
 - Areas exposed to strong or continuous shocks or vibrations.
- ⊘ Do not store or operate the product under direct sunlight. This may damage to the quality of LCD.
- ⊘ Use the product indoors only.
- ⊘ The product is designed for use at altitudes up to 2,000 meters.

■ Disposal Precautions  Caution

When disposing the product or its battery, treat them as industrial waste. Improper disposal may release toxic substances or cause an explosion.

■ Cell Type Battery Specifications and Exchange  Caution

The battery mounted on the mainboard is not user replaceable. If the battery has reached the end of its service life, please contact our Customer Support Center for replacement and inspection.

Items	Content
Battery Voltage	DC 3 V
Battery Model	MS920SE (Lithium / Rechargeable)
Battery lifetime	Permanent (In case of ambient temperature 25 °C)

* Depending on the model specifications the above are subject to change.

- All field-wiring connections to this unit must be made from a Limited Voltage/Limited Current source, with a maximum of 24 VDC, using an isolated secondary source with an output fuse, or from a Class 2 power source.

Chapter 2 Overview




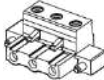
2.1 Introduction of Products

The iRis HMI touch panel is an industrial control device designed for use in industrial environments. It supports RS-232C, RS-422/485, and Ethernet interfaces, primarily for communication with other devices such as PLCs.

2.2 Components

The components of the product are as follows.

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

Components	Figure			Quantity
	IR04S-SEAP	IR07S-SEBP	IR10S-SEBP	
Product and Manual				1 each
Clamp				4
Power Connector				1

2.3 Explanation of Model Name

IR	□□	□	□	□	□	□
Series	Screen Size	Sub Series	Options	Ethernet	Serial	Material
iRis	04: 4.3 inch 07: 7 inch 10: 10 inch	S: Standard	S: Standard	E: Ethernet	A: 1 Port (COM1/COM2) B: 2 Ports (COM1, COM2)	P: Plastic

Chapter 3 General Specifications

3.1 Power Specifications

Input Voltage	DC 24 V, Class 2	
Input Voltage Range	DC 20 ~ 28 V, Class 2	
Power Consumption	IR04S-SEAP	12 W
	IR07S-SEBP	
	IR10S-SEBP	15 W
Voltage endurance	DC 24 V, within 10 ms	
Insulation Resistance	500 V DC, 10 MΩ	

3.2 Memory Specifications

Model	IR04S-SEAP	IR07S-SEBP	IR10S-SEBP
Screen Memory	64 MB	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

Model	IR04S-SEAP	IR07S-SEBP	IR10S-SEBP
Screen Resolution	WQVGA (480 * 272)	WVGA (800 * 480)	WSVGA (1024 * 600)
Color	16 M Colors		
Brightness	10 Level (by software)		
Backlight	LED		
Backlight Lifetime	50,000 hours		
Display Font	MS Windows Vector font, Free Resolution Font		
Front LED Indicate	Built in		

3.4 Touch Specifications

Touch Type	Built-in, Analog resistive touch sensor
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3.5 Environment Specifications

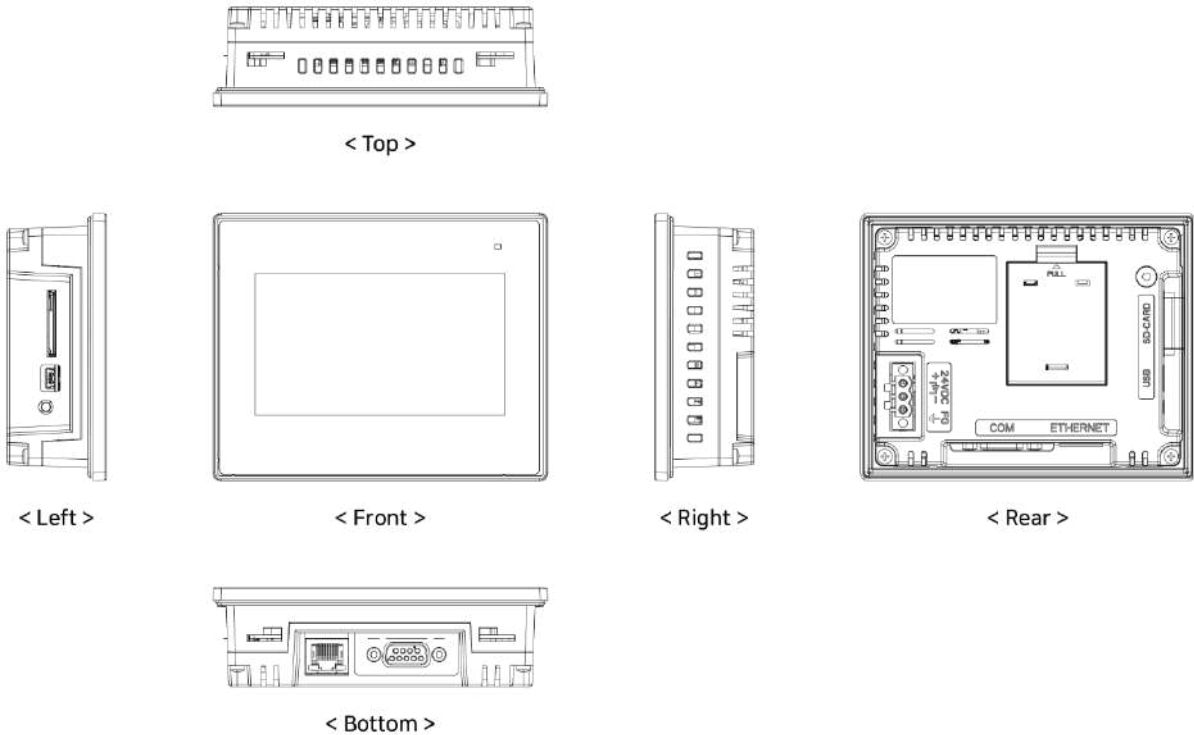
Operation Temperature (°C)	-10 ~ +50
Storage Temperature (°C)	-20 ~ +60
Operation Humidity (%RH)	0 ~ 90 (No dew)
Atmosphere	No corrosive gas
Vibration Endurance	Amplitude: $10 \leq F < 25$ Hz (2G) X, Y, Z each direction (for 30 minutes)
Noise Immunity	1000 Vp-p (Pulse width 1 μs)
Electrostatic Discharge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

3.6 Structure Specifications

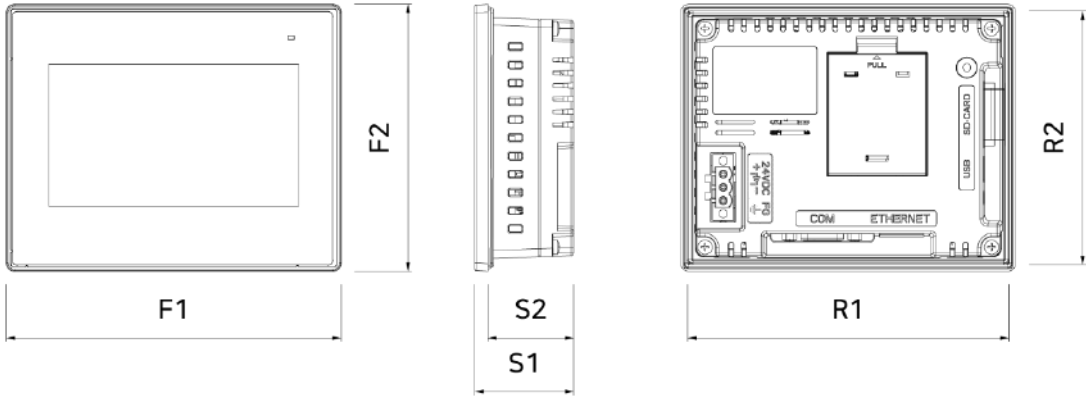
Model Name	IR04S-SEAP	IR07S-SEBP	IR10S-SEBP
Weight (Kg)	0.28	0.72	1.7
Cooling System	Natural Air Circulation		
Case Material	Plastic		

Chapter 4 Part Names and General Specifications

4.1 IR04S-SEAP



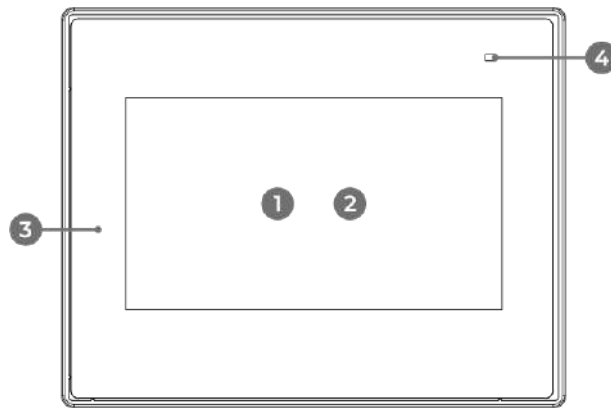
4.1.1 External Dimensions



(mm)

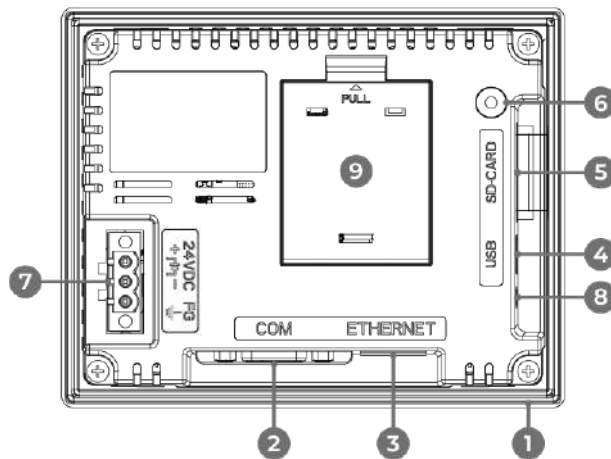
Model	F1	F2	S1	S2	R1	R2
IR04S-SEAP	128.6	102.6	38	32	118.7	92.7

4.1.2 Front Panel Parts and Specifications



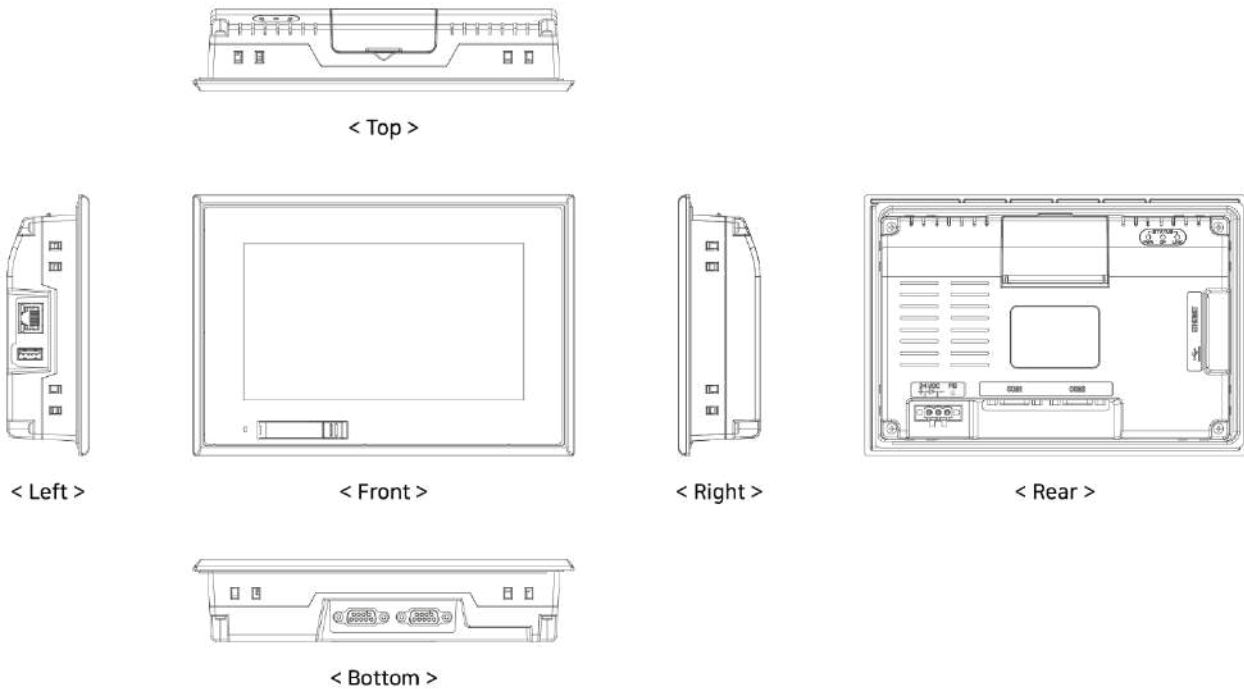
No.	Components	Description
①	LCD	TFT 16 M Color LCD
②	Touch Panel	Analog Touch
③	Front Film	Front film for moisture and dust protection
④	Operation LED	Product operation status LED

4.1.3 Rear Panel Parts and Specifications

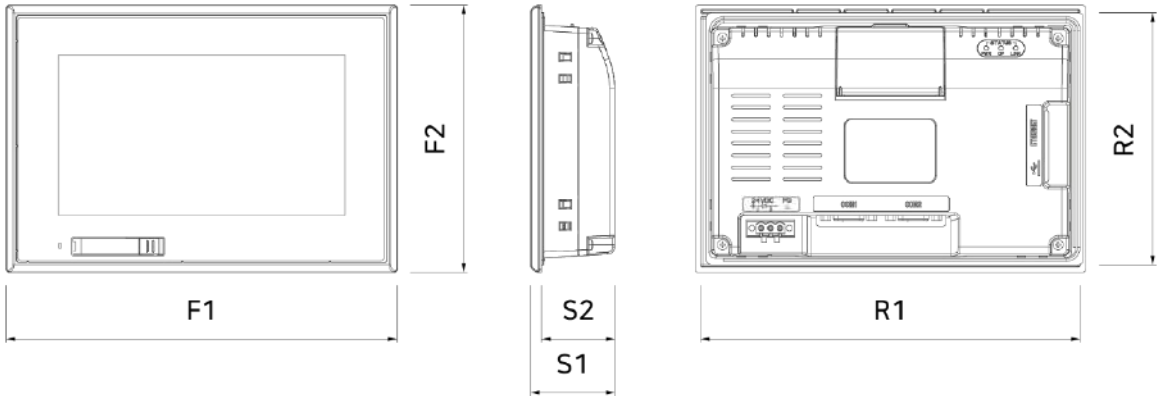


No.	Components	Type	Description
①	Rubber Packing	-	Silicone gasket for impact absorption and IP protection when mounting the unit on a wall.
②	COM Connector (COM1 / COM2)	D-sub 9P	COM1: RS-232C, COM2: RS-422 / 485 Serial Comm. with PLC (COM2 Switchable Via Software)
③	ETHERNET Connector	RJ-45 x 1ch	10BASE-T / 100BASE-Tx, Auto-MDIX
④	USB Connector	USB Mini-B (Female) x 1 port	USB Connectors for Storage Options
⑤	SD Card Slot	SD Card Slot	SD Card Insert Connector
⑥	SD Card LED	LED	SD Card operation status LED
⑦	Power Input Terminal	TB 5 mm 3P	Power Supply of Main Unit (DC 24 V)
⑧	Reset Switch	Tact Switch	System Reset Switch
⑨	Built-in cover	-	Cover for manufacturer maintenance

4.2 IR07S-SEBP



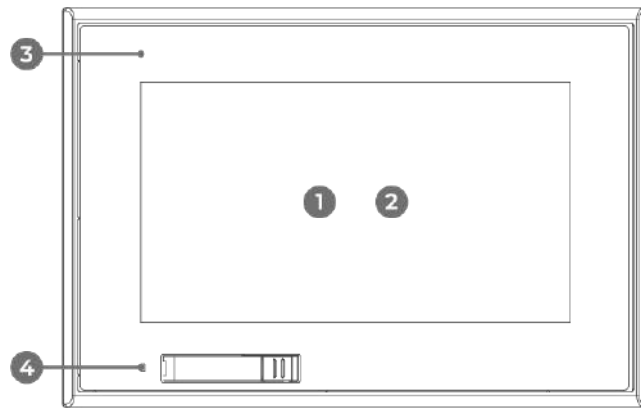
4.2.1 External Dimensions



(mm)

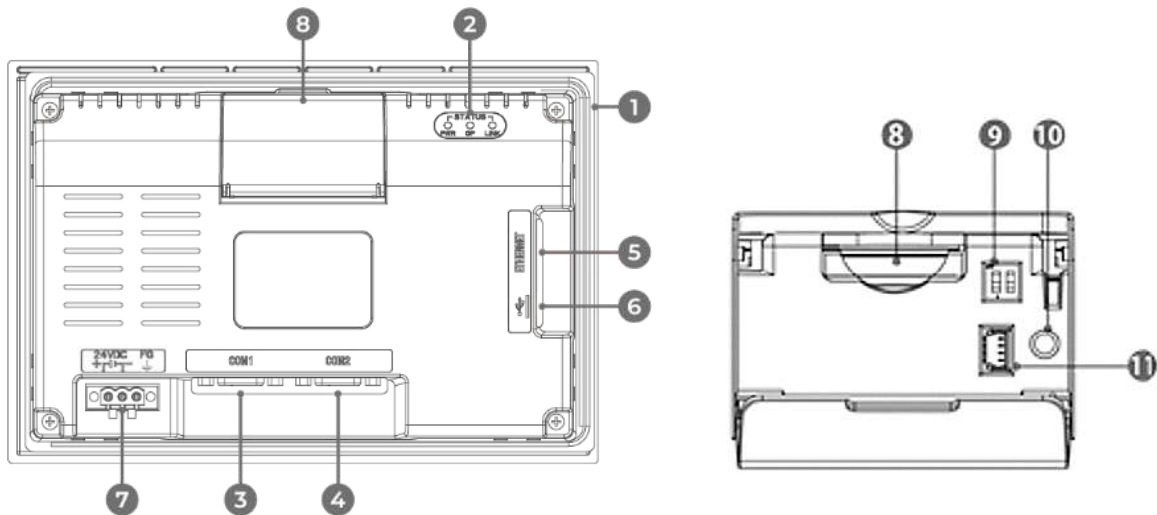
Model	F1	F2	S1	S2	R1	R2
IR07S-SEBP	212	145	45.6	39.6	196	126

4.2.2 Front Panel Parts and Specifications



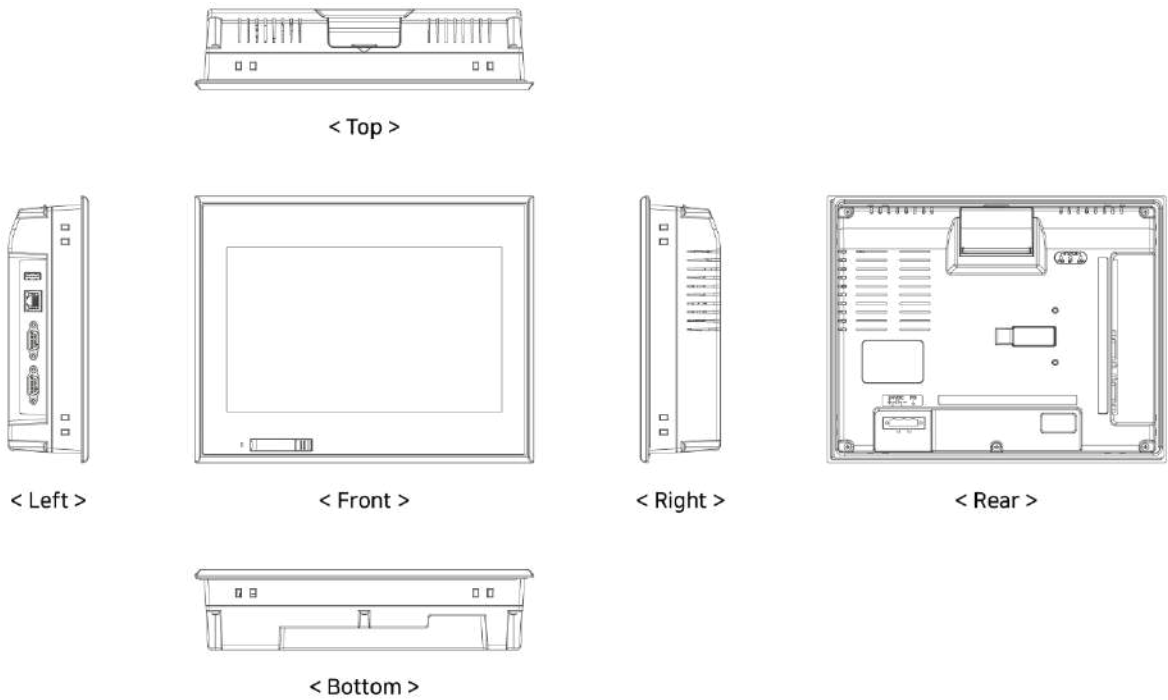
No.	Components	Description
①	LCD	TFT 16 M Color LCD
②	Touch Panel	Analog Touch
③	Front Film	Front film for moisture and dust protection
④	USB Port	Project Upload / Download

4.2.3 Rear Panel Parts and Specifications

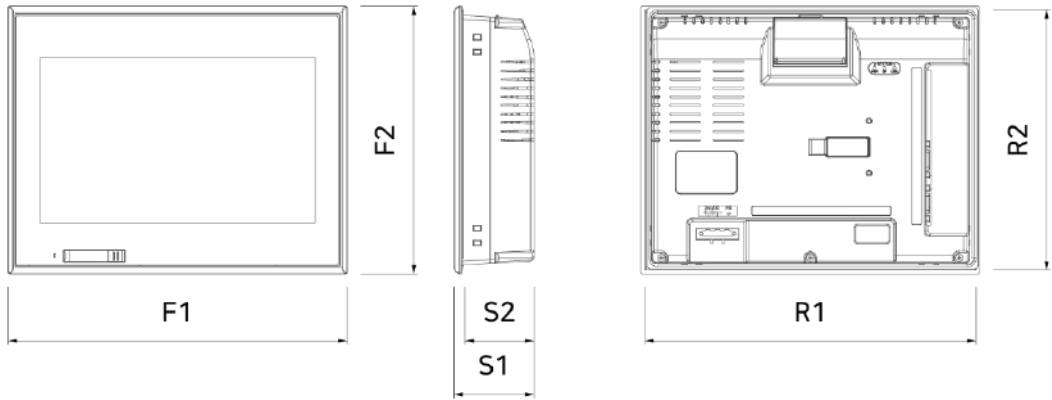


No.	Components	Type	Description
①	Rubber Packing	-	Silicone gasket for impact absorption and IP protection when mounting the unit on a wall.
②	Status LED's	3	Power Status, Communication and CPU
③	COM1 Connector	D-sub 9P	RS-232C Serial Comm. with PLC
④	COM2 Connector	D-sub 9P	RS-232C / 422 / 485 Serial Comm. with PLC (Comms. Switchable Via Software)
⑤	ETHERNET Connector	RJ-45 x 1ch	10BASE-T / 100BASE-Tx, Auto-MDIX
⑥	USB Connector	Type-A x 1port	USB Connectors for Storage Options
⑦	Power Input Terminal	TB 5 mm 3P	Power Supply of Main Unit (DC 24 V)
⑧	SD Card Slot	SD Card Slot	SD Card Insert Connector (*Option)
⑨	Mode Switch	DIP Switch 2 Digit	For Recovery and Factory Reset
⑩	Reset Switch	Tact Switch	For System Reboot & Factory Reset
⑪	Diagnosis Connector	2 mm 4P	For Diagnosing the System (Manufacturer Use Only)

4.3 IR10S-SEBP



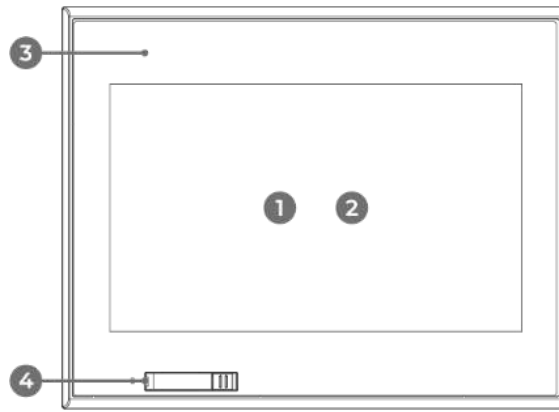
4.3.1 External Dimension



(mm)

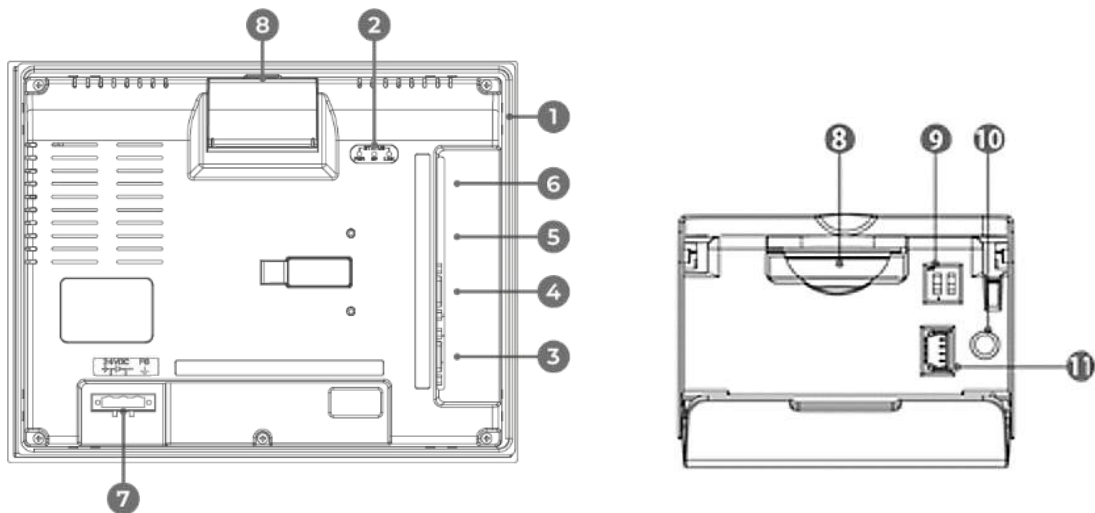
Model	F1	F2	S1	S2	R1	R2
IR07S-SEBP	274	216	64.7	58.7	260	202

4.3.2 Front Part Names and Specifications



No.	Components	Description
①	LCD	TFT 16 M Color LCD
②	Touch Panel	Analog Touch
③	Front Film	Front Film for Moisture and Dust Protection
④	USB Port	Project Upload / Download

4.3.3 Rear Part Names and Specifications



No.	Components	Type	Description
①	Rubber Packing	-	Silicone gasket for impact absorption and IP protection when mounting the unit on a wall.
②	Status LED	3	Power Status, Communication and CPU
③	COM1 Connector	D-sub 9P	RS-232C Serial Comm. with PLC
④	COM2 Connector	D-sub 9P	RS-232C / 422 / 485 Serial Comm. with PLC (Comms. can be switched Via Software)
⑤	ETHERNET Connector	RJ-45 x 1ch	10BASE-T / 100BASE-Tx, Auto-MDIX
⑥	USB Connector	Type-A x 1port	USB Connectors for Storage Options
⑦	Power Input Terminal	TB 7.6 mm 3P	Power Supply of Main Unit (DC 24 V)
⑧	SD Card Slot	SD Card Slot	SD Card Insert Connector (*Option)
⑨	Mode Switch	DIP Switch 2 Digit	For Recovery and Factory Reset
⑩	Reset Switch	Tact Switch	For System Reboot & Factory Reset
⑪	Diagnosis Connector	2 mm 4P	For Diagnosing the System (Manufacturer Use Only)

Chapter 5 External Device Interface

To enable communication between the main unit and an external device, connect the two devices as described below.

5.1 Serial Communication Specifications

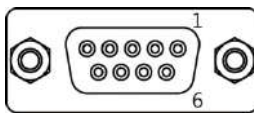
5.1.1 RS-232C

Items		Specifications
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 9 Pin

5.1.2 RS-422 / 485

Items		Specifications
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 9 Pin

5.1.3 IR04S-SEAP COM Pinouts and Signals

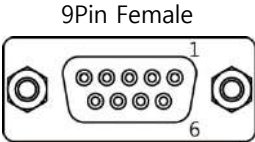
Type	Pin No.	Signal	Direction	Specifications
9Pin Female 	1	RDA (RD+)	Input	COM2: RS-422 / 485 Receive Data(+)
	2	RD (RxD)	Input	COM1: RS-232C Receive Data
	3	SD (TxD)	Output	COM1: RS-232C Send Data
	4	RDB (RD-)	Input	COM2: RS-422 / 485 Receive Data(-)
	5	SG	-	Signal Ground
	6	SDA (SD+)	Output	COM2: RS-422 / 485 Send Data(-)
	7	-	-	N/A
	8	VCC GND	GND	Power Ground
	9	SDB (SD-)	Output	COM2: RS-422 / 485 Receive Data(-)

* For RS-232C communication, connect RD and SD using a twisted pair cable, crossing them as shown, and connect SG directly.

* For RS-422/485 communication, use a twisted pair cable for RDA/RDB and another twisted pair for SDA/SDB.

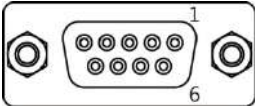
* Do not use the shield of the communication cable as the signal ground, as this may cause communication failure.

5.1.4 IR07S-SEBP / IR10S-SEBP COM1 Pinouts and Signals

Type	Pin No.	Signal	Direction	Description
	1	NC	-	N/A
	2	RD (RxD)	Input	RS-232C Receive Data
	3	SD (TxD)	Output	RS-232C Send Data
	4	NC	-	N/A
	5	SG	-	Signal Ground
	6	NC	-	N/A
	7	¹⁾ VCC	-	+5V, 0.2A
	8	²⁾ VCC GND	-	Power Ground
	9	NC	-	N/A

¹⁾, ²⁾ When external equipment requires VCC, use pins 7 (VCC) and 8 (VCC GND), which provide an output current of 0.2 A.

5.1.5 IR07S-SEBP / IR10S-SEBP COM2 Pinouts and Signals

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

* For RS-232C communication, connect RD and SD using a twisted pair cable, crossing them as shown, and connect SG directly.

* For RS-422/485 communication, use a twisted pair cable for RDA/RDB and another twisted pair for SDA/SDB.

* Do not use the shield of the communication cable as the signal ground, as this may cause communication failure.

5.2 Ethernet Communication Specifications

5.2.1 Ethernet

Items	Specifications
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 (Product Between Hub)
Communication Cable	UTP (Unshielded Twisted Pair)
Modular Jack	RJ-45 x 1 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	Not Available in 10BASE-T
	5	Blue / White	Not Available in 10BASE-T
	6	Green	RD-
	7	Brown / White	Not Available in 10BASE-T
	8	Brown	Not Available in 10BASE-T

* When using a HUB, use a straight cable.

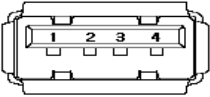
Ex) Straight cable wiring connects pins 1:1 as shown in the wiring diagram above.

* When not using a HUB and connecting devices directly, use a cross cable.

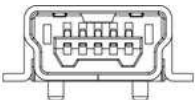
Ex) In cross cable wiring, TD+ and RD+ are swapped, and TD- and RD- are exchanged as shown in the wiring diagram.

5.3 USB Communication Specifications

5.3.1 USB Host

Type	Items	Specifications
	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

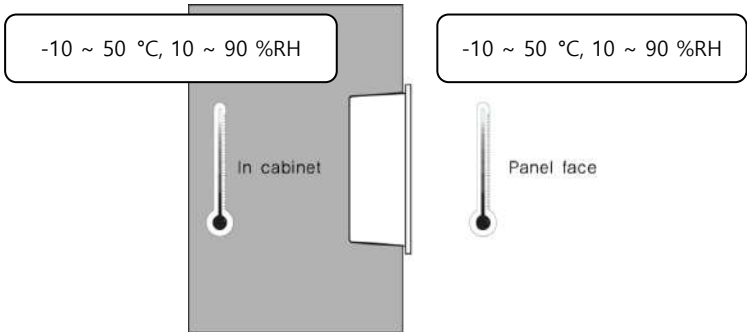
5.3.2 USB OTG

Type	Items	Specifications
	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 (32 / 64bit)
	Cable Length	Recommended: 3 m cable (manufacturer). Use \leq 1.5 m if purchased separately.
	Connect Type	USB Mini-B (Female) x 1 port
	Connect Method	IR04S-SEAP
IR07S-SEBP		
IR10S-SEBP		

Chapter 6 Installation Warning

6.1 Installation Requirement

- (1) Install the product within the temperature range of -10 to 50 °C and humidity range of 10–90 % RH. Operating outside these limits may cause screen damage, malfunction, or product failure.
- (2) Ensure that heat from surrounding equipment does not cause the product to exceed its specified operating temperature
- (3) To minimize external mechanical hazards, control the mechanical risks in the surrounding environment.



6.2 Installation Procedure Warning

To install this product, please follow the following procedure.

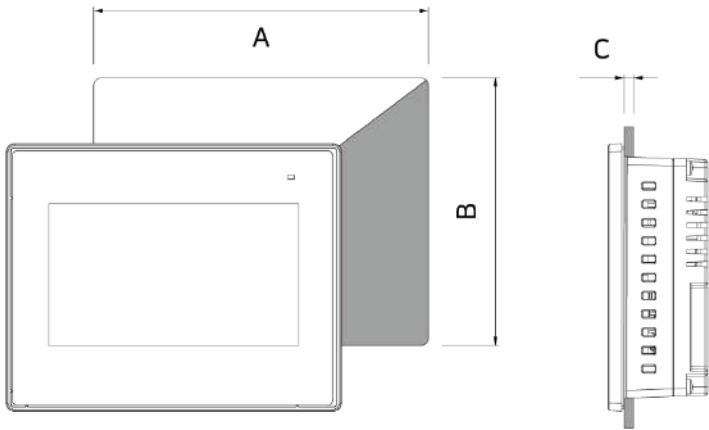
6.2.1 Panel Cut

Cut the panel where the product will be mounted and insert the product from the front side.

(1) The Size of Panel Cut

Prepare the panel cut according to the mounting dimensions specified for each iRis Standard series model in the table below before installation.

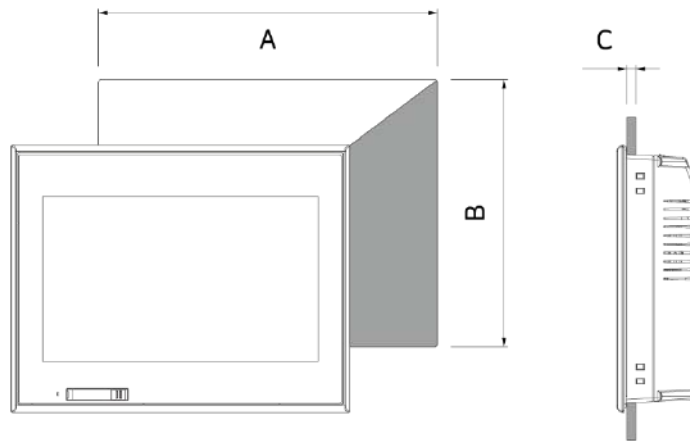
1) IR04S-SEAP



(mm)

Model	A	B	T
IR04S-SEAP	121	95	1-5

2) IR07S-SEBP / IR10S-SEBP



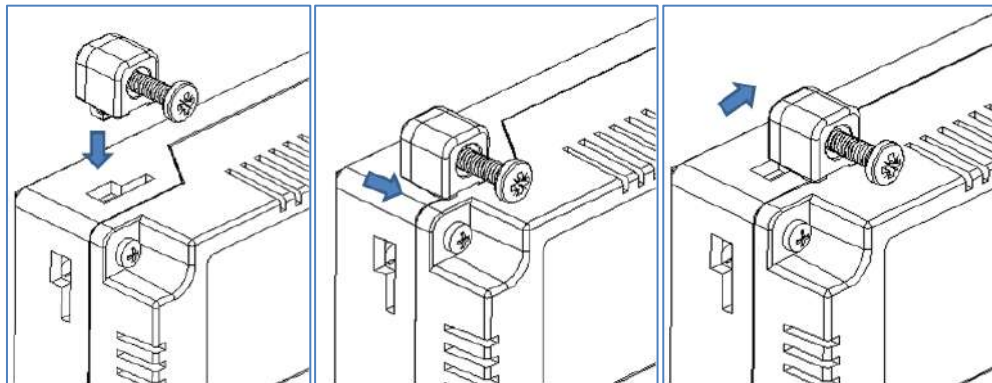
(mm)

Model	A	B	C
IR07S-SEBP	197 (+1.0 / 0)	127 (+1.0 / 0)	1 ~ 5
IR10S-SEBP	260 (+1.0 / 0)	202 (+1.0 / 0)	

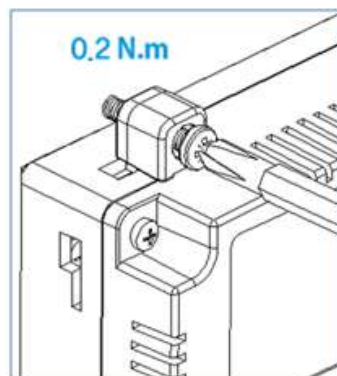
(2) Clamp Fixing  Warning

1) IR04S-SEAP

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



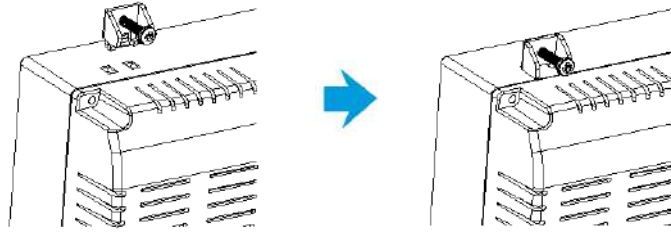
b. Screw the unit into the panel cut with a screwdriver.



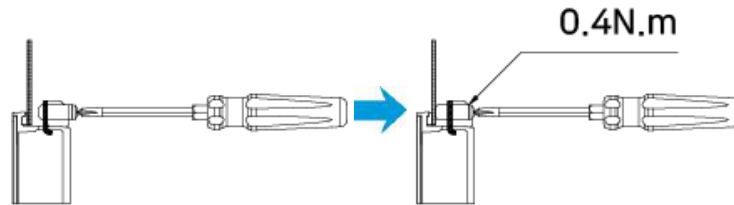
Do not overtighten the screws, as this may deform the front panel and cause the touch sensor to malfunction. Tighten the screws to a torque of 0.2 Nm.

2) IR07S-SEBP / IR10S-SEBP

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



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





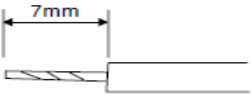
Do not overtighten the screws, as this may deform the front panel and cause the touch sensor to malfunction. Tighten the screws to a torque of 0.4 Nm.


*Caution: If the clamp is tightened to less than 0.4 N·m, the device's IP protection performance may be compromised.

Chapter 7 Wiring Warning

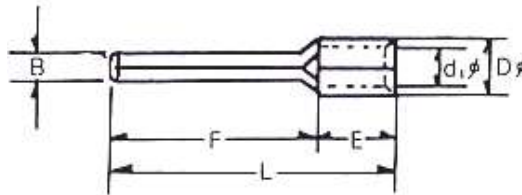
7.1 Power Cable Wiring Warning

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

Power Cable Specification	0.75 ~ 2.5 mm ² (18 ~ 13 AWG)
F.G Cable Specification	Over 2 mm ² (14 AWG)
Conductor Type	Simple or Standard Wire
Bolt tightening torque	0.6 N.m  Warning
Conductor Length	
Temperature rating of the field installed conductors	65 °C


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

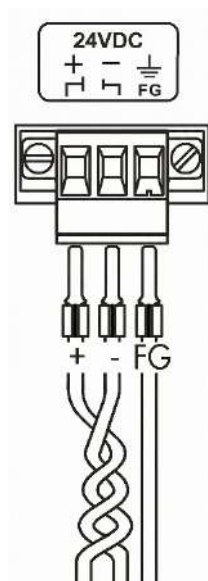
To Prevent wearing of cable and to enhance transmission, please use a pin type conductor for power cable and ground wiring.



(mm)

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

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



7.2 Ground Wiring Warning

- (1) The product is designed with sufficient anti-noise measures, but grounding is especially important in environments with high electrical noise. Follow the instructions below when grounding.
- (2) Use an exclusive ground. The ground should meet Class 3 standards, with a ground resistance of less than 100 Ω .
- (3) If an exclusive ground cannot be provided, a shared/common ground may be used, as shown in Figure B.

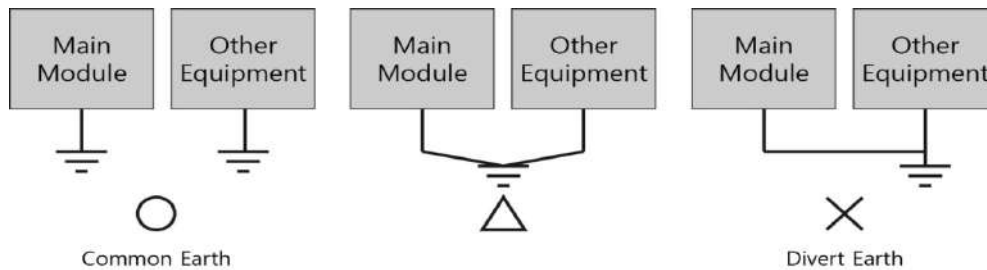


Fig. Grounding Example Diagram

- (4) Use a grounding cable with a cross-section of at least 2 mm². Place the grounding point as close to the product as possible and keep the ground line as short as possible.

Chapter 8 Maintenance Warning

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

- a. Is the operating temperature within the allowable range (-10 ~ 50 °C)?
- b. Is the operating humidity within the allowable range (10 ~ 90 %RH)?
- c. Is the surrounding environment free of corrosive gases?

(2) Power

- a. Is the input voltage within specifications?

(3) Related Items

- a. Visually check the LCD backlight to ensure it is functioning properly.
- b. Visually inspect the touchpad for any damage, scratches, or contamination.

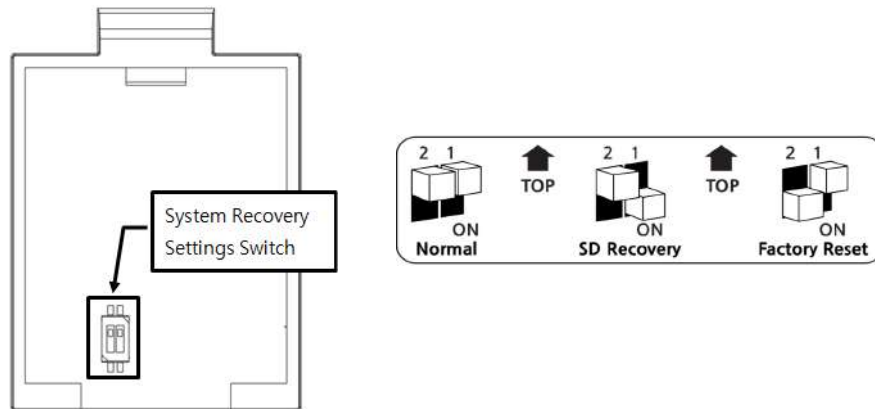
8.3 Problems with the Device Warning

- (1) If a problem occurs during operation, stop using the product immediately and contact IMO Precision Controls as indicated on the product label.
- (2) Only authorized personnel from IMO Precision Controls are permitted to inspect or repair malfunctions.
- (3) If the issue cannot be resolved on-site, the equipment may be collected and returned to IMO Precision Controls.
- (4) The manufacturer or IMO Precision Controls is not responsible for any damage or malfunction caused by usage conditions that exceed the installation and operation standards described in the manual.
- (5) In environments with high electromagnetic noise, attach ferrite cores to the main power and field cables, as power and communication cables may be affected by noise.
- (6) If a USB device malfunctions due to noise, place ferrite cores on both ends of the cable to improve noise resistance.

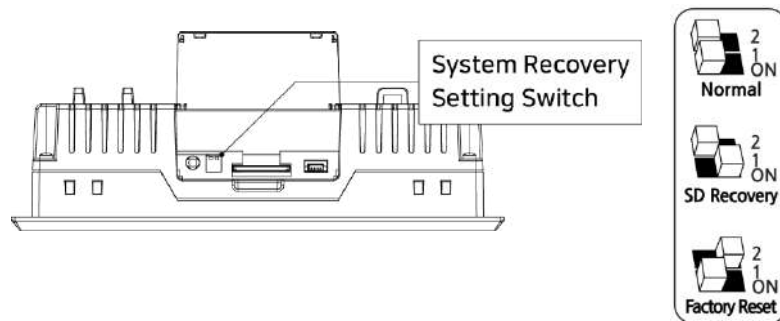
8.4 Setting System Recovery Mode

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

8.4.1 IR04S-SEAP

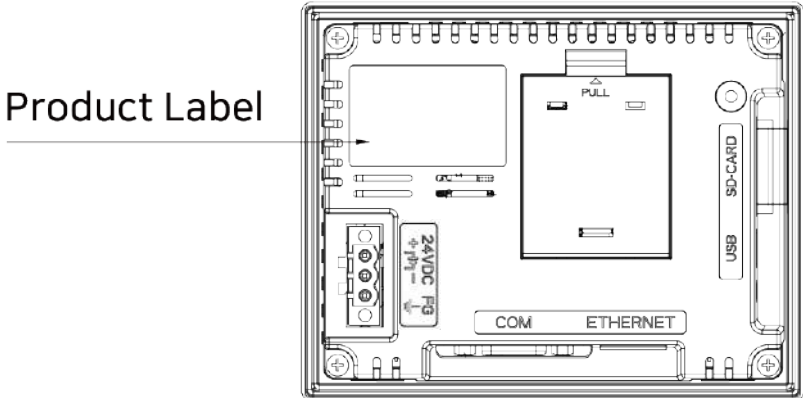


8.4.2 IR07S-SEBP / IR10S-SEBP

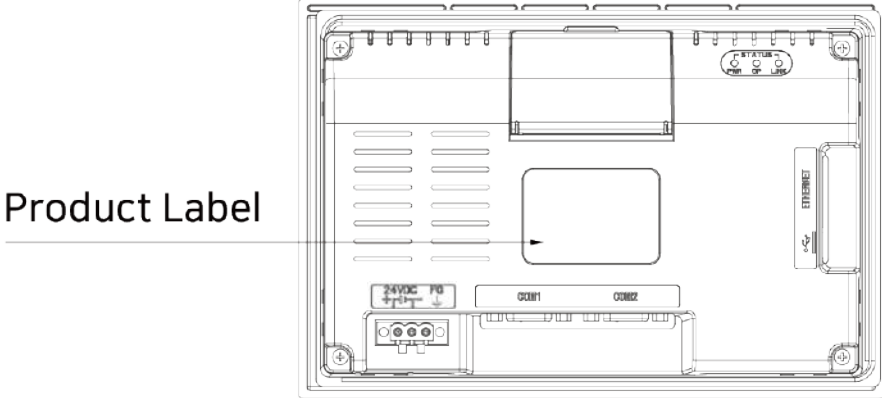


Chapter 9 Product and Warning Label Location

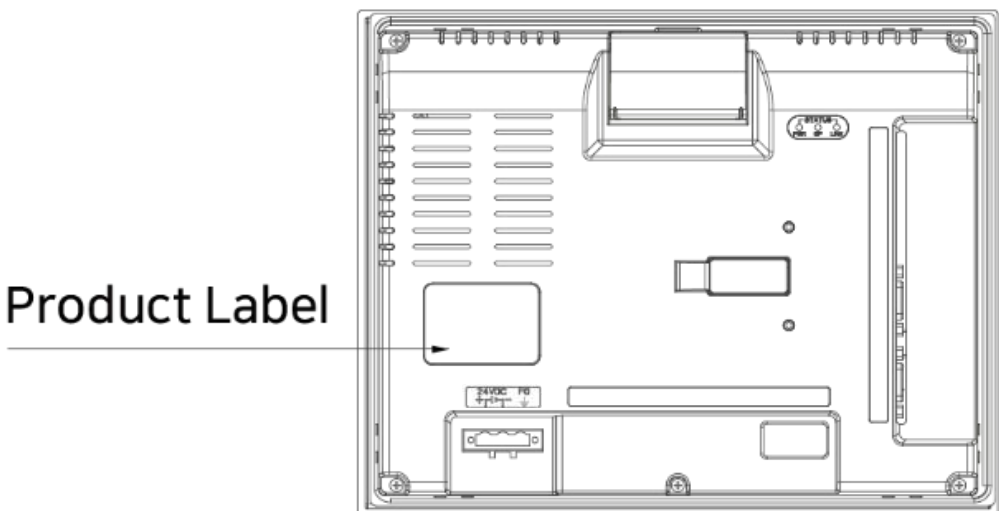
9.1 IR04S-SEAP



9.2 IR07S-SEBP



9.3 IR10S-SEBP



Chapter 10. Products Label



SS

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- Please read related contents in this manual when you use IMO 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.

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