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SAMWON TECH

TEMI2000 - SERIES

INSTALLATION MANUAL

TEMPERATURE & HUMIDITY
PROGRAMMABLE CONTROLER

※ This manual applies to TEMI2300, TEMI2500 and TEMI2700.
The model stated the manual content is TEMI2500.

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1 Safety Precautions

Thank you for purchasing TEMI2500, programmable temperature & humidity controller.
This Operation Manual describes operating procedures of the TEMI2500 controller.

SAFETY SYMBOL MARKS

(A) Symbolizes 'Caution' and 'Warnning'. The information with this symbol is especially important for preventing from user injury and protecting the product and system.

(1) Product : This symbol indicates an imminently hazardous situation which if not avoided, will result in serious injury or system damage.

(2) Operation Manual : This symbol indicates potential hazard that may cause personal injury by electrical shock.

(B) Symbolizes 'Protective Earth (PE) Terminal.'

This symbol indicates that the terminal must be connected to the Ground prior to operating.

(C) Symbolizes 'Supplementary Explanation.'

The information with this symbol describes additional explanation for features.

(D) Symbolizes 'Reference.'

☞ This symbol indicates further information and page to refer.

Precautionary Remarks on this Operation Manual

(A) This manual should be passed on the End- User and kept at a suitable place for easy review in time.

(B) Read and understand this Operation Manual carefully before using the product.

(C) This Operation Manual describes functions and features of the product in detail, and SAMWONTECH can not guarantee against over applications would suit a customer's particular purpose which is not described in this manual.

(D) Unauthorized duplication and modification of this Operation Manual are strongly prohibited.

(E) The contents of this manual may be modified without prior notice.

(F) If any errors or omissions in this manual should come to the attention of the user, feel free to contact our sales representatives or our sales office.

Precautions for Safety and Unauthorized Modification

(A) For protecting and ensuring the safety of this product and relevant system, all of the safety instructions and precautions should be well recognized and strictly observed by all users.

(B) SAMWONTECH does not guarantee against damage resulting from unauthorized alteration, misuse, or abuse.

(C) When using additional safety circuit or part such as Noise Filter to protect this product and relevant system, it is strongly required to install that to outside of this product. Additional installation and modification inside of this product are prohibited.

(D) Do not try to disassemble, repair, or modify the product. It may become the cause of a trouble such as malfunction, electric shock, fire.

(E) Contact our sales dept. for part replacement or consumables.

(F) Keep the product away from water inflowing. This may become a critical cause of trouble.

(G) External shock on the product may lead to damage and malfunction.

Limitation of Liability

(A) SAMWONTECH does not guarantee or accept responsibility for this product other than the clauses stated in our warranty policy.

(B) SAMWONTECH assumes no liability to any party for any loss or damage, direct or indirect, caused by the use or any unpredictable defect of the product.

Warranty Policy

(A) Warranty term of this TEMI2500 is one year after delivery to the first purchaser for being free of defects in materials and faulty workmanship under the condition that the product has been applied according to this manual.

(B) The repairing cost will be charged for defective product out of warranty period. This charge will be the actual cost estimated by SAMWONTECH.

(C) Repairing cost may be charged even if within warranty period for following cases.

(1) Damage due to USER FAULT (Ex.: Product initialization by password loss)

(2) Damage due to natural disaster (Ex : fire, flood)

(3) Damage due to additional removal and re-installation after the first one.

(4) Damage due to unauthorized disassemble, modification and alternation.

(5) Damage due to unexpected power failure caused unstable power supply.

(6) Others

(D) If any A/S is required, feel free to contact our sales office or a representative.

1.1 Package Checkpoint.

▶ Please check any damage to the product by inspecting the appearance of the delivered product first. In addition, check the following items.

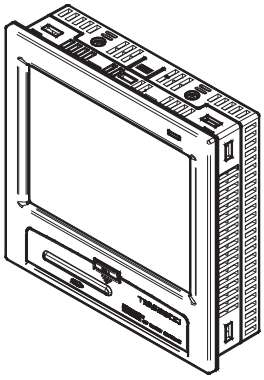
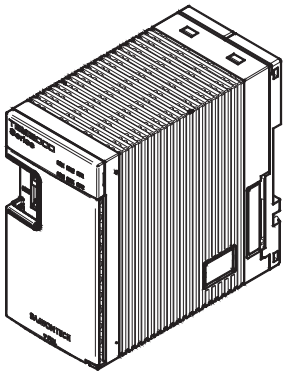
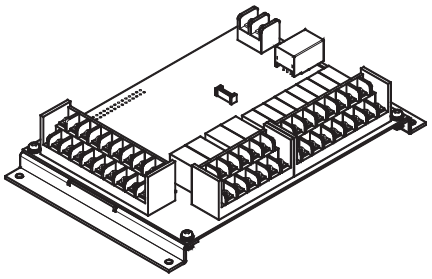
1.1.1 Verify the model suffix code

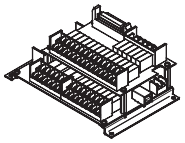
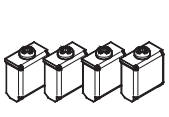
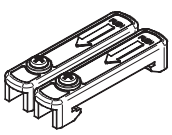
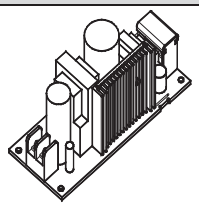
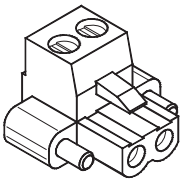
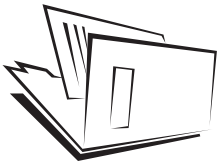
▶ Check to see if specifications of the delivered product are the same as those of your order. Verify model suffix code printed on labels at the right of packing box and the left of product case

Model	Display LCD Size	Option	Descriptions
TEMI2300	3.7 inch	/SD: SD card adaptor support /IO2 : Option is available for selection	I/O1 BOARD (Basic) : Relay 12 points + DI 16 points I/O2 BOARD (Optional): max. relay 20 points
TEMI2500	5.7 inch		
TEMI2700	7.5 inch		

1.1.2 How to Check Components in the Package

▶ Check to see if the following components are included.

DISPLAY UNIT	CONTROL UNIT	I/O1 BOARD
		

SD CARD (Optional)	I/O2 BOARD (Optional)	Fixture	End Bar	Cable (2m) PC ⇔ C.U or DISPLAY	Cable (1m) C.U ⇔ I/O1	Cable (3m) DISAPLAY ⇔ C.U
						
SMPS (Separated sales)	POWER SOCKET For TEMI2300	MANUAL				
						

1.1.3 How to Handle Any Damaged Product

▶ Contact your product supplier or our sales representative for assistance in case of any damage to the product or any missing parts as a result of check in the appearance of products as described above.

Exchange Cycle for Parts with Limited Lifetime

▶ Check the exchange cycle of the following parts with limited lifetime and replace them before their exchange cycle if necessary.

- FUSE 2A/250VAC or equivalent : Semi-permenant
- RELAY JQ1P-DC24V, ALD24V equivalent : ON/OFF 300,000 times
- BATTERY CR2030 3V or equivalent : 200,000 HOUR

☞ **Contact your product supplier (agents) or our sales representative for the exchange of parts with limited lifetime.**

1.2 Dimension and Installation

1.2.1 Environments for Installation

Environmental Precautions

(A) Be sure to power on and operate the controller after installation on a panel to prevent electric shock

(B) Do not install the controller at following places or environment.

- ■ Anybody may touch the terminal inadvertently
- ■ Mechanical vibration or shock
- ■ Corrosive gas or combustible gas
- ■ Temperature fluctuation
- ■ Too hot (> 50℃) or Cold (< 10℃)
- ■ Direct rays of light or heat radiation
- ■ Magnetic or electromagnetic noise
- ■ High humidity (> 85%)
- ■ Flammable materials
- ■ Wind blow, Dust with salt
- ■ Ultra violet rays

☞ **Avoid installing the product in such places with combustible objects upon fire although the case of this product is made from fire retardant materials with ABS/PC.**

Precautions before Installation

(A) Keep the controller away from possible noise sources.

(B) Keep the controller in 10～50℃, 20～90%RH (non condensing) and be careful not to expose heat generating sources.

(C) Do not mount with a position that the front panel facing downward.

(D) Storage should be within -25～70℃, 5～95%RH (non condensing). At a cold condition below 10℃, sufficient warming-up should be preceded by the control operation.

(E) Turn off the main power of the controller before wiring to prevent electric shock

(F) The power rating of the controller is DC24V30VAmax. Be sure to use suitable power source to prevent overheating or electric shock.

(G) Do not work with wet hands to prevent electric shock.

(H) The precautions and procedures in the manual should be kept to avoid a hazard such as fire, injury, and electric shock.

(I) Installation and Operation procedures should be done just as in this manual.

(J) Make the grounding connection according to the way in manual. Do not use a tap water piping, a gas pipe, a telephone line, a lightning rod to avoid possible accidents such as explosion or inflammation.

(K) Do not power on the controller before the wiring procedure is not completed..

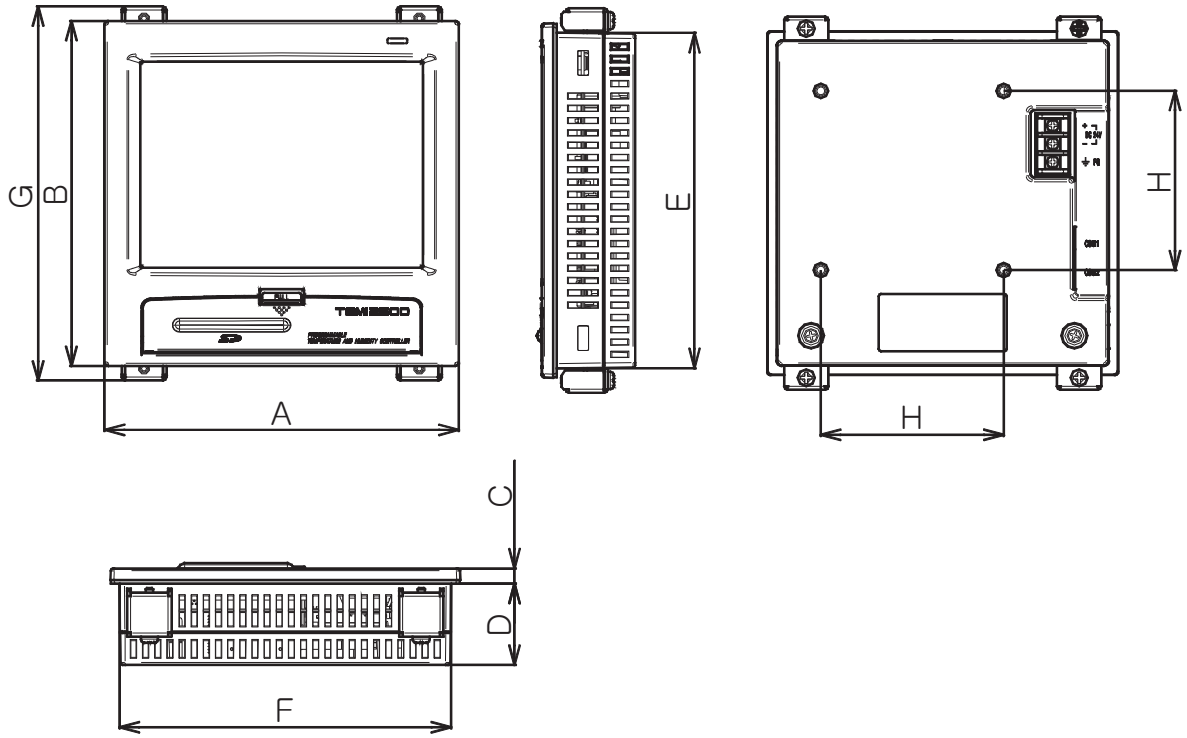
(L) Do not block or wrap the heat vent holes in the case of the controller. That may cause a failure.

(M) Install I/O BOARD necessarily with no slope inside a thermo-hygrostat, while fixing firmly with bolts and nuts to holes on the board.

(N) Over-voltage protection category II and Pollution Degree II are rated for the controller.

1.2.2 External Dimension (mm)

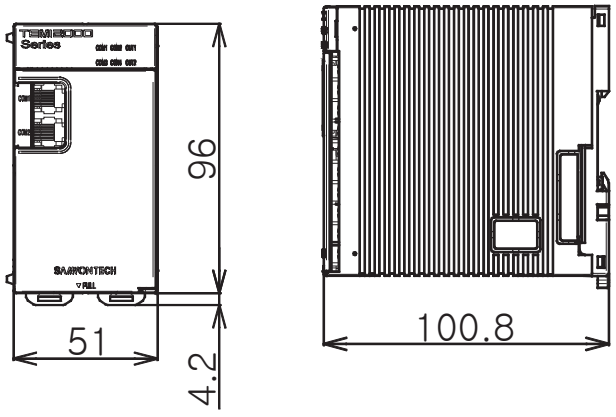
1.2.2.1 External Dimension of DISPLAY UNIT according to each model



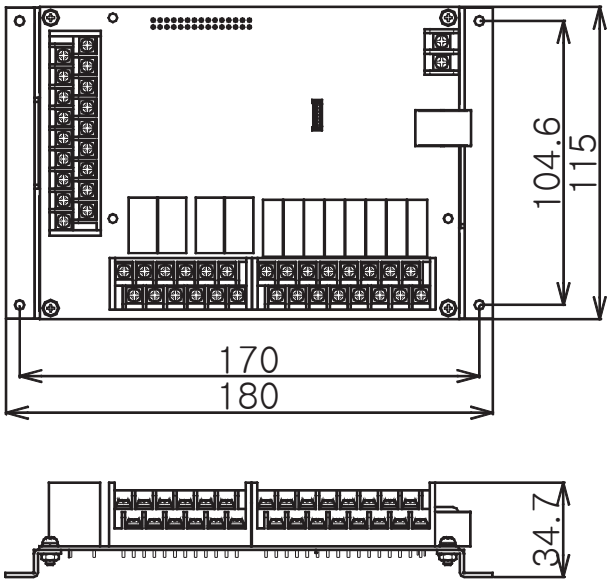
(mm)

Model	A	B	C	D	E	F	G	H
TEMI2300	112	105	6.5	33.5	97.5	104.5	117	75
TEMI2500	144	144	6.5	33.5	136.5	136.5	156	75
TEMI2700	201	164	6.5	35	156.5	193.5	176	75

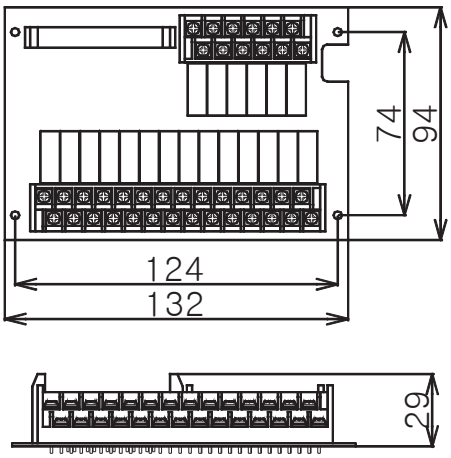
1.2.2.2 External Dimension of CONTROL UNIT



1.2.2.3 External Dimension of I/O1 BOARD

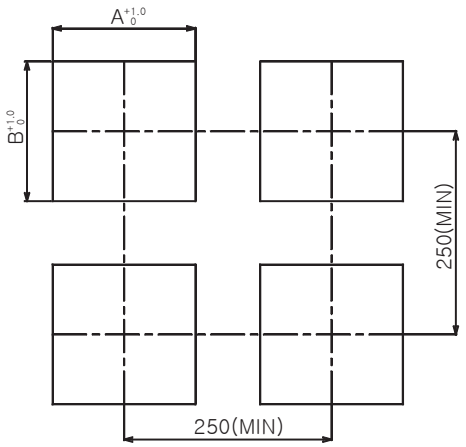


1.2.2.4 External Dimension of I/O2 BOARD



1.2.3 PANEL CUTOUTS

▶ Normal Panel Cutting



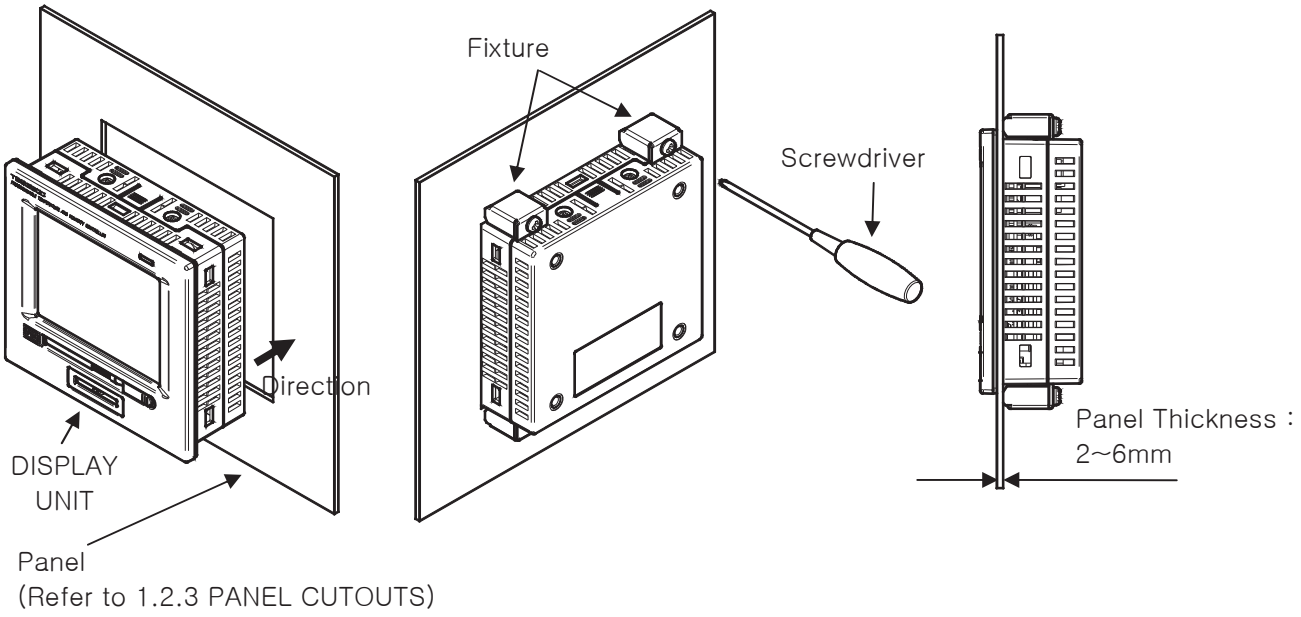
※ Panel Cutouts (mm)

Model	A	B
TEMI2300	105	98
TEMI2500	137	137
TEMI2700	194	157

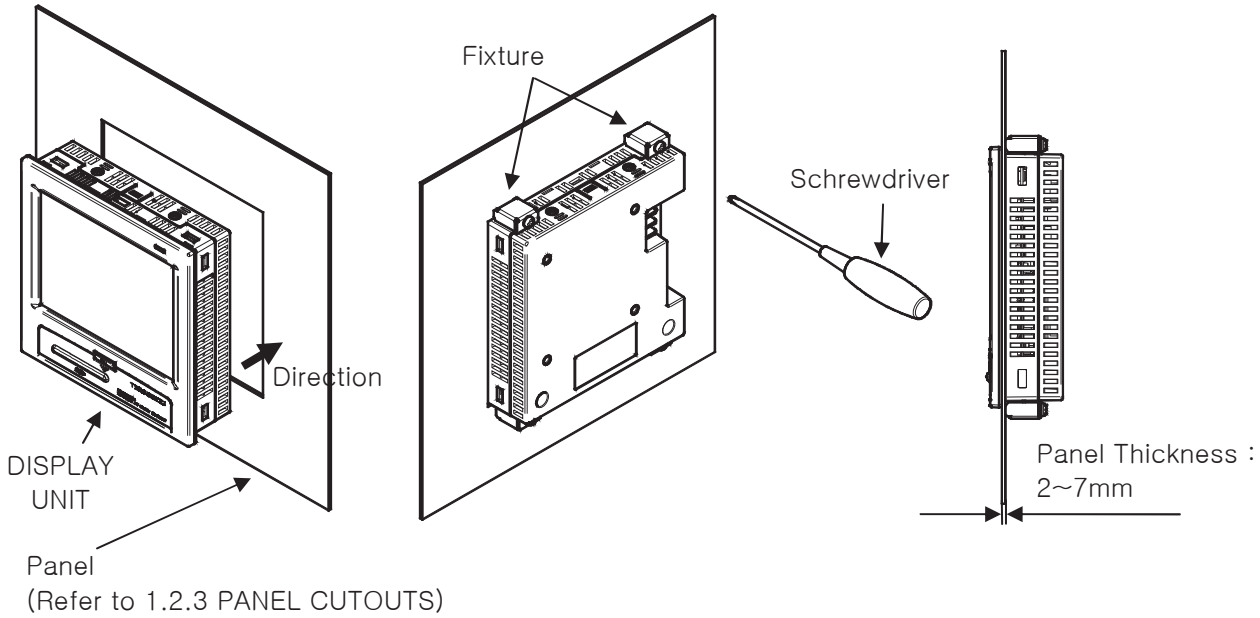
1.2.4 MOUNT Installation

1.2.4.1 DISPLAY UNIT Mount

▶ TEMI2300 DISPLAY UNIT Panel Mount



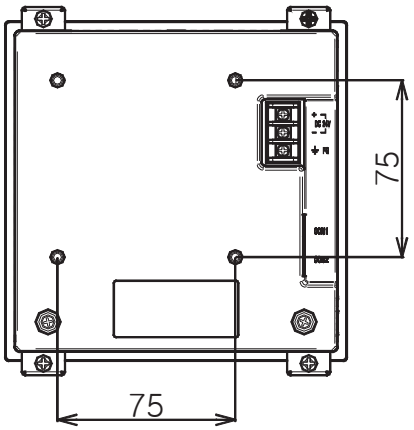
▶ TEMI2500/2700 DISPLAY UNIT Panel Mount



① Cut the panel according to the table at [1.2.3 PANEL CUTOUTS]
② Put the DISPLAY UNIT into the panel from the back shown as above picture.
③ Tie-up the main body of DISPLAY UNIT on the panel with Fixture shown as above picture.

▶ VESA Mount installation

☞ 75*75, VESA standard size applies to all TEMI2000 series.

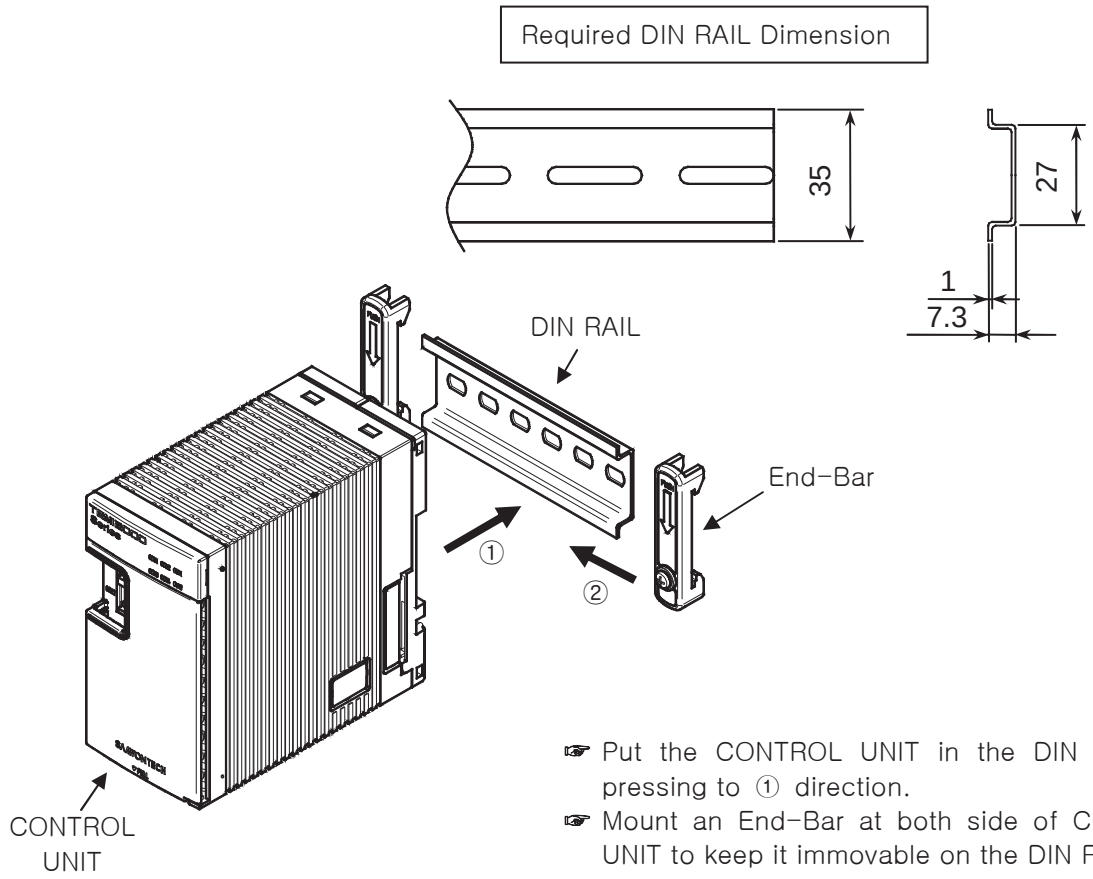


VESA Standard (75*75)

※Required bolt for jointing
VESA HOLE is M4*4L ~ 6L

1.2.4.2 CONTROL UNIT Mount

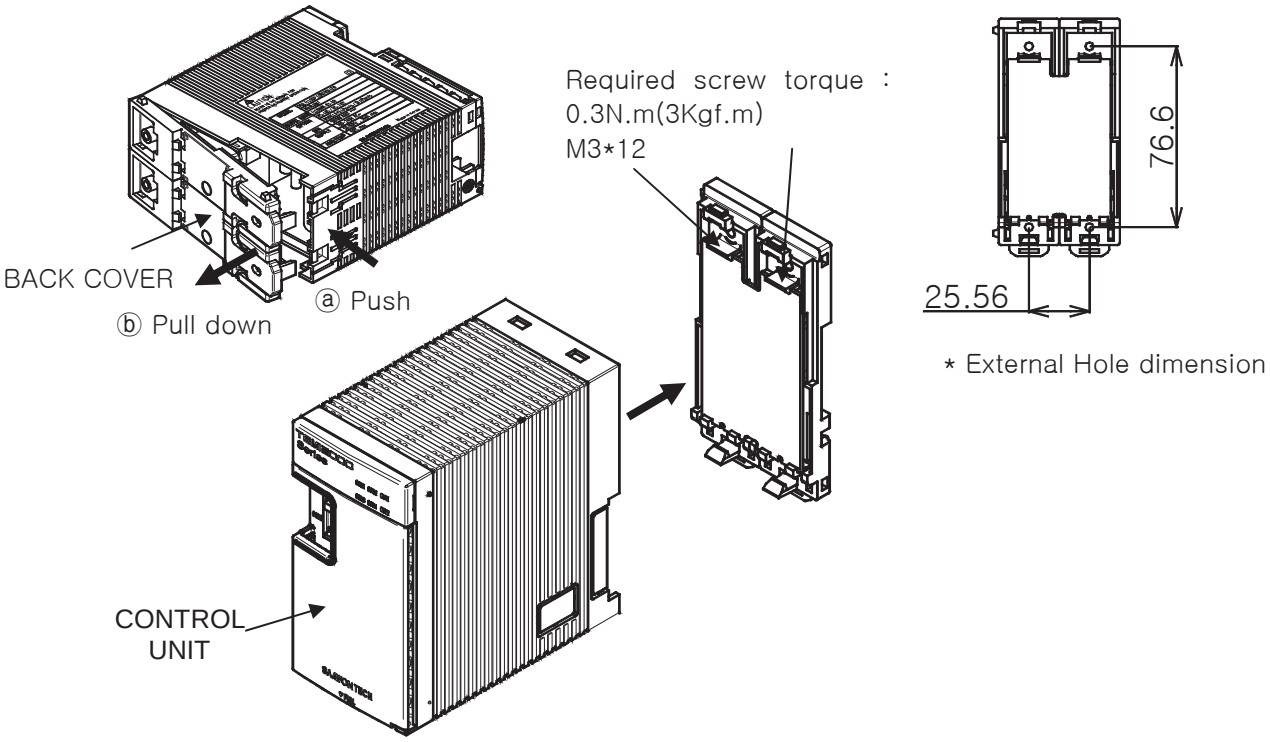
▶ DIN RAIL Mount



☞ Put the CONTROL UNIT in the DIN RAIL by pressing to ① direction.

☞ Mount an End-Bar at both side of CONTROL UNIT to keep it immovable on the DIN RAIL.

▶ Mounting on surface of the wall



☞ Detach the BACK COVER by pulling down ⓑ part from main body, while pushing ⓐ part.
☞ Mount the BACK COVER on sureface of the wall with screw.
☞ Put and fix the main body of CONTROL UNIT into the mounted BACK COVER.

1.3 Wiring

Precaution

- ▶ Switch off the main power supply and make sure that no current flows in all the circuits before the wiring work.
- ▶ Do not touch the real terminal part while the power is on.
- ▶ Main circuit breaker must be kept in OFF state until all the wiring work is done.

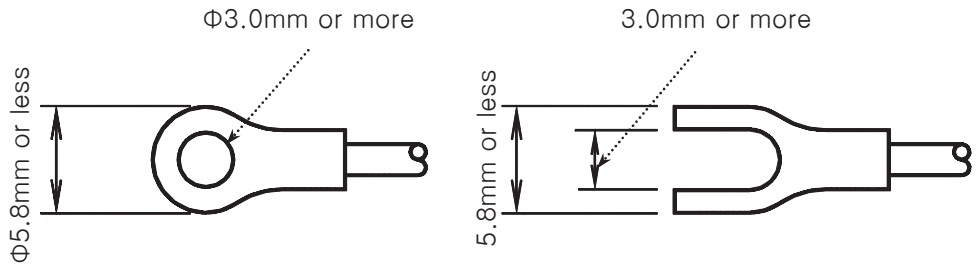
1.3.1 Wiring Specifications

1.3.1.1 Power cable specification

- ▶ Vinyl-insulated shielding cable KSC 3304 0.9 ~ 2.0 ㎟

1.3.1.2 Terminal connector specification

- ▶ A terminal with PVC insulating sleeve for M3 screw as shown in the following figure.



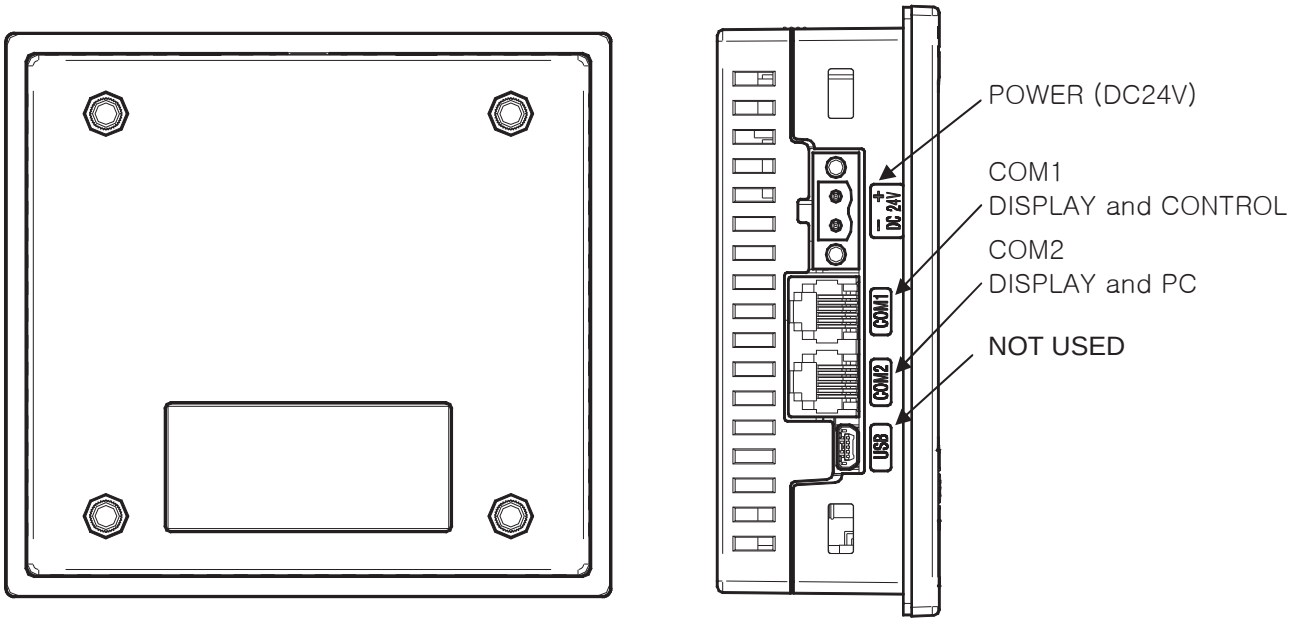
1.3.1.3 Countermeasures against noise

- ▶ Noise source
  - (A) Relay and Electrical contacts
  - (B) SOLENOID COIL, SOLENOID VALVE
  - (C) Power Line
  - (D) Inductive load
  - (E) INVERTOR
  - (F) Rectifier of a Motor
  - (G) Phase-angle controlled SCR
  - (H) Wireless communication devices
  - (I) Welding machines
  - (J) High-tension magneto-Ignition system

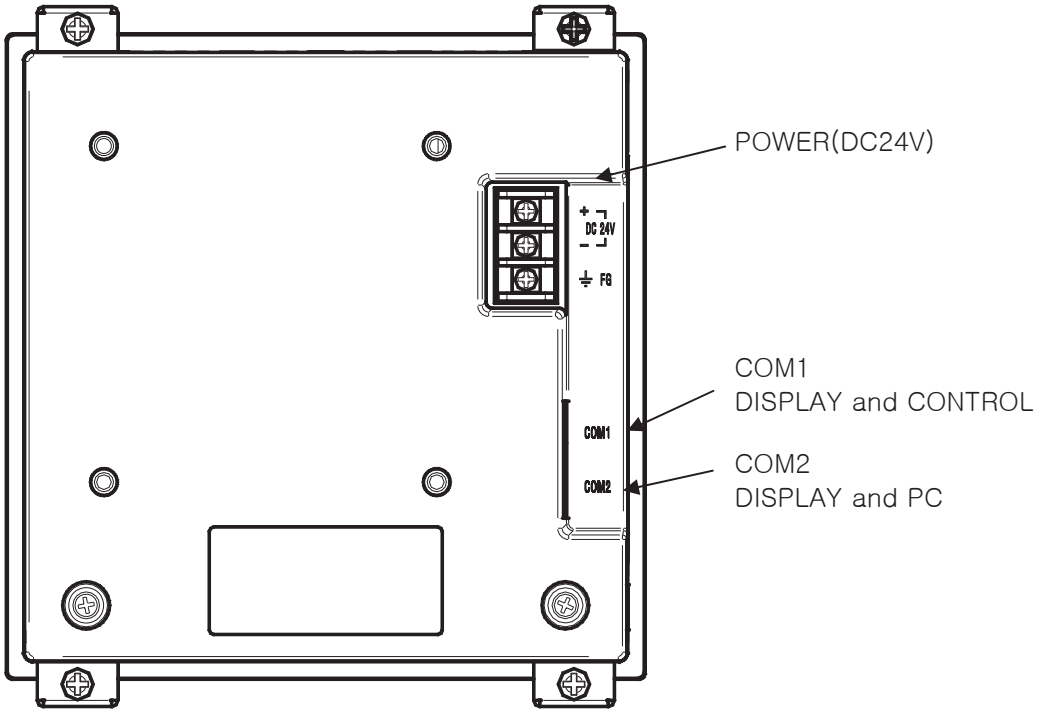
- ▶ Countermeasures against noise
  Notice following guide while wiring work.
  - (A) The wires of input signal should be apart from power line and grounding line.
  - (B) Use a shielded wire to guard against a noise from electrostatic induction. Multi-point grounding should be avoided and connect the shield wire to ground terminal if necessary.
  - (C) It is effective to make the input wires as a twisted pair to prevent an electromagnetic noise.
  - (D) When using an auxiliary relay, refer to section 2-1-4-5.

1.3.2 Terminal Assignment

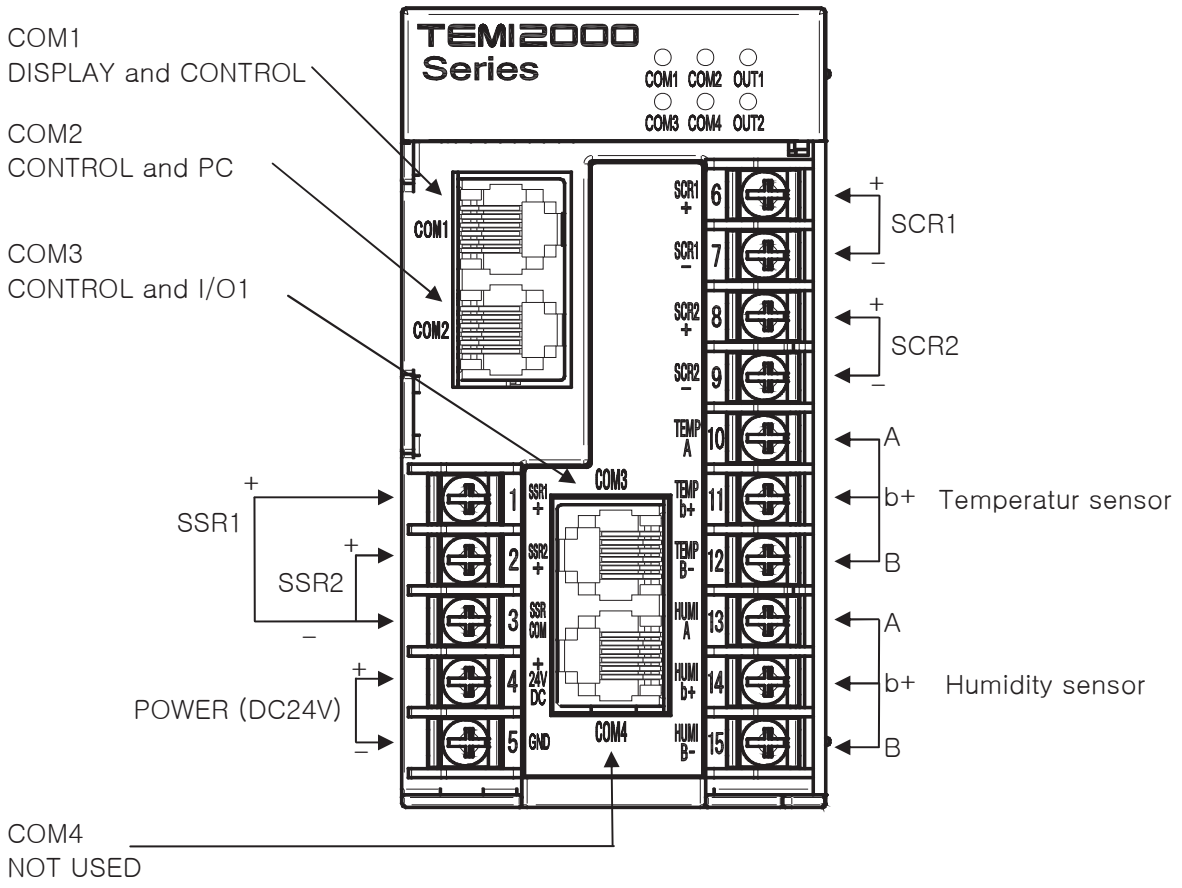
1.3.2.1 TEMI2300 DISPLAY UNIT Terminals



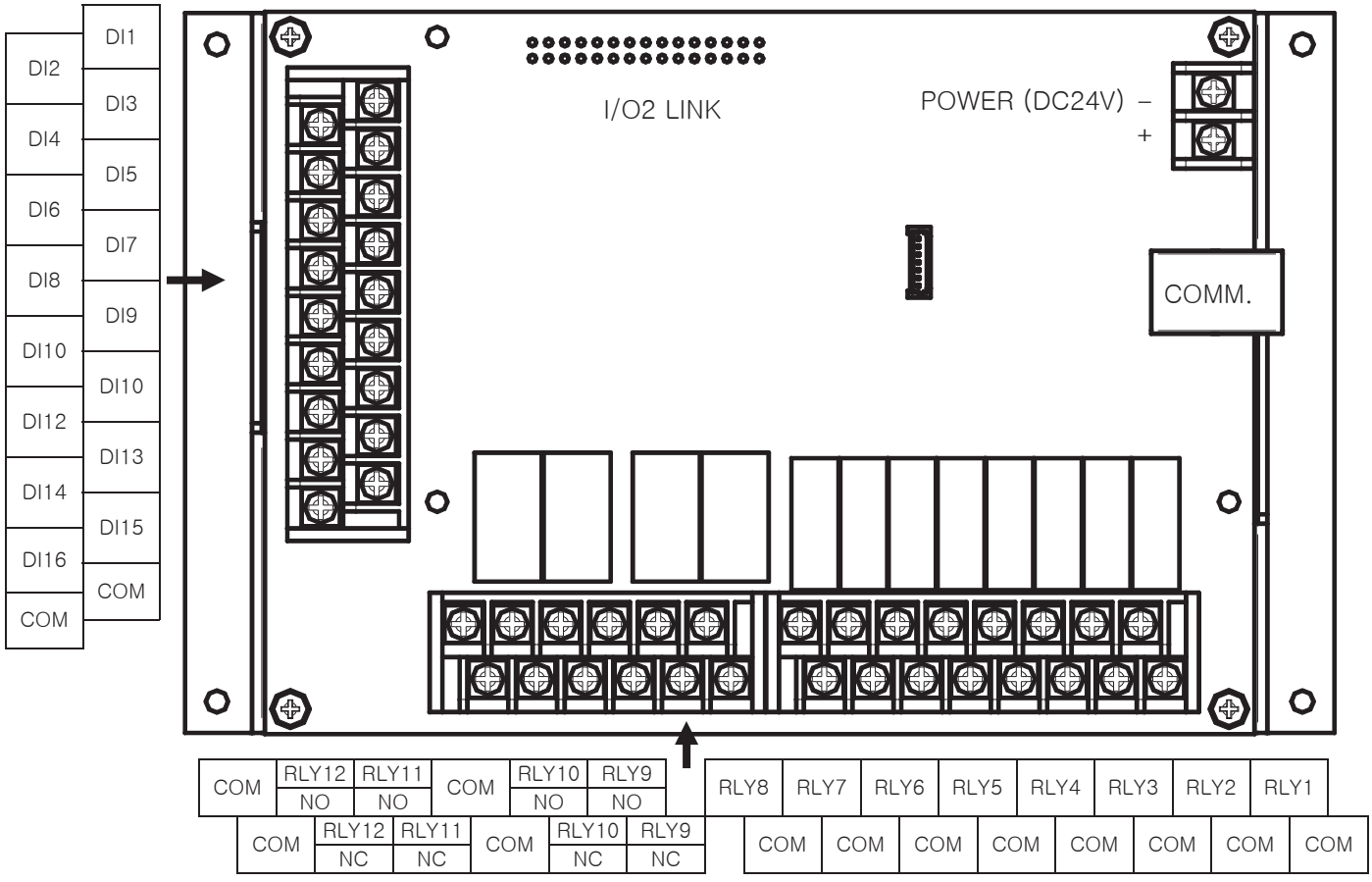
1.3.2.2 TEMI2500/2700 DISPLAY UNIT Terminals



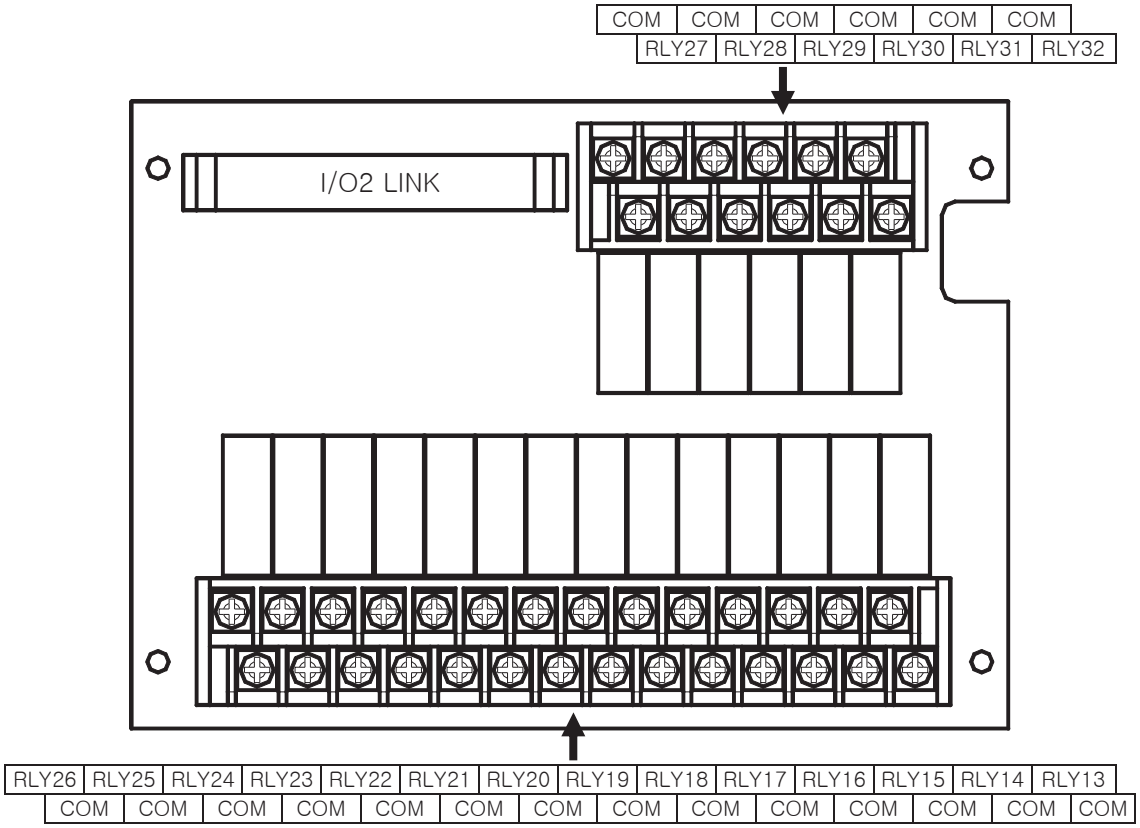
1.3.2.3 CONTROL UNIT Terminals



1.3.2.4 I/O1 BOARD Terminals



1.3.2.5 I/O2 BOARD Terminals

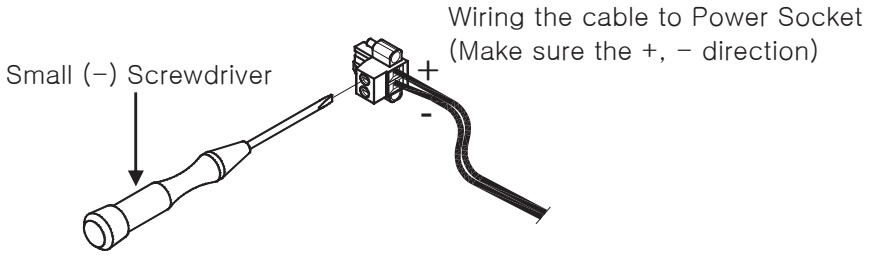


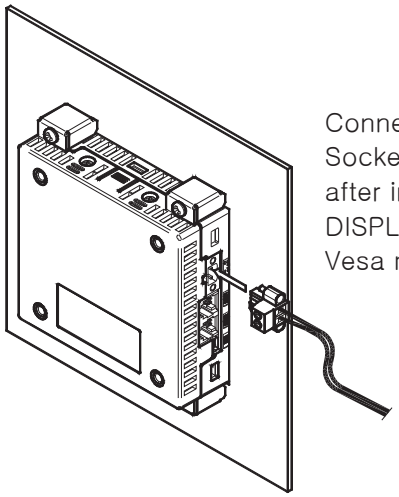
1.3.3 Power source wiring

▶ For power source wiring, use a vinyl-insulated wire (KSC 3304 or better)..

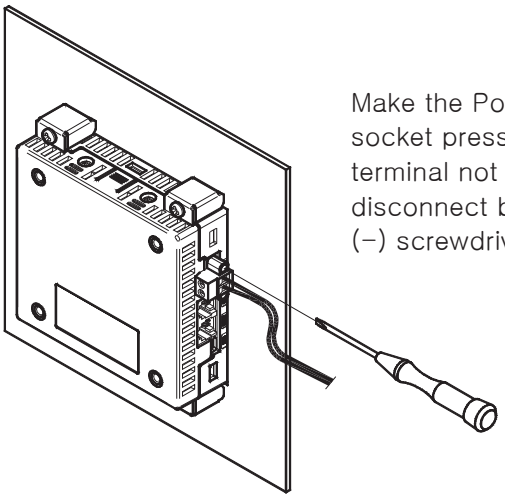
① TEMI2300 Wiring

☞Power wiring



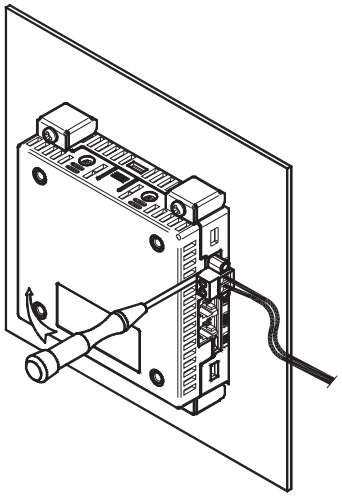


Connect the Power Socket to the terminal after installing DISPLAY on Panel or Vesa mount



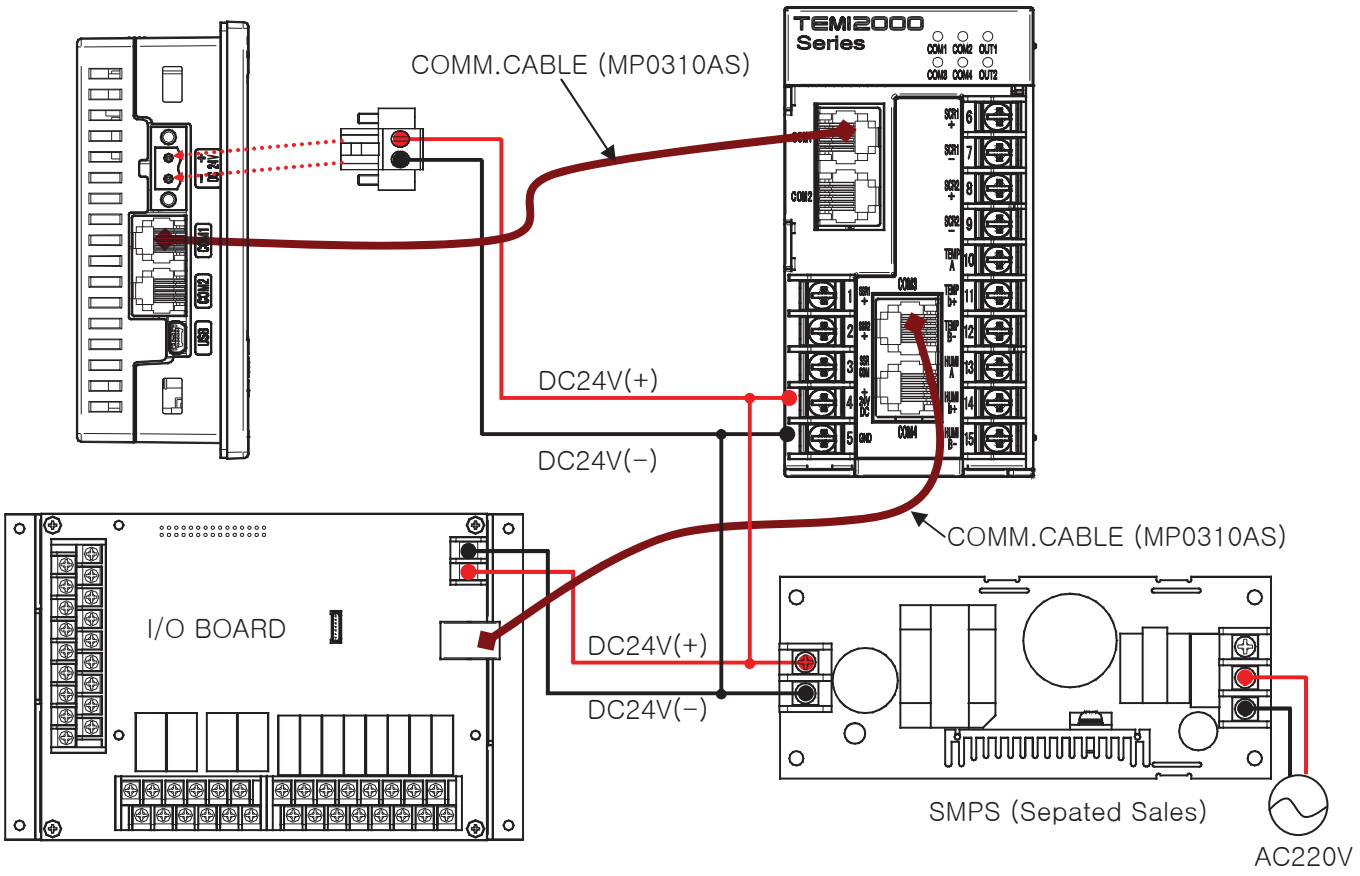
Make the Power socket press into the terminal not to be disconnect by using (-) screwdriver

☞Disassemble the Power Socket

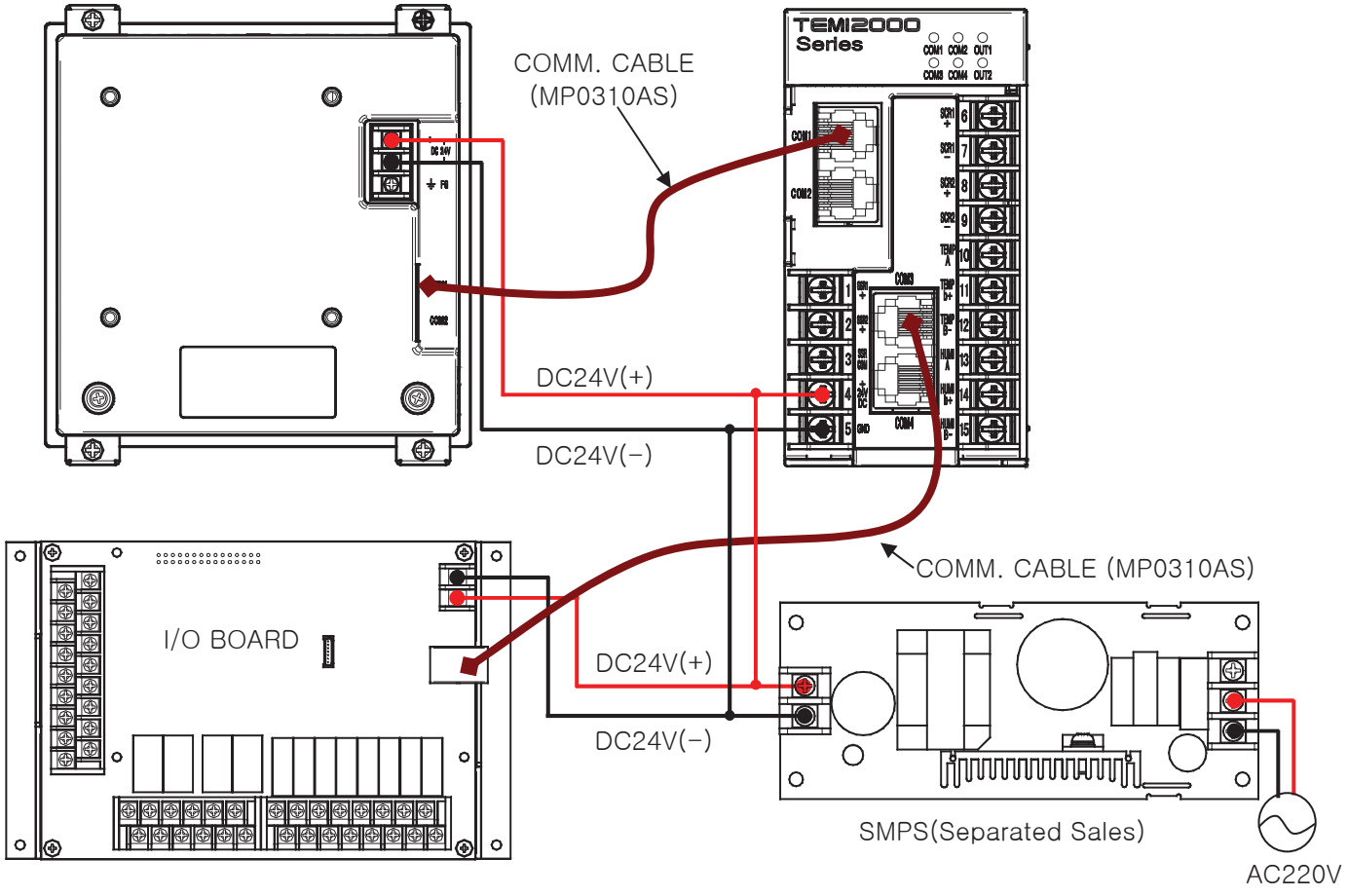


① Make loose the screw on Power Socket with (-) screwdriver.
② Using (-) screwdreiver to space shown as left is helpful to detach the Power Socket from the terminal

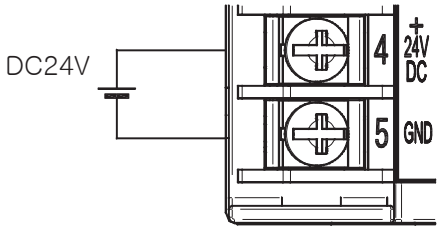
☞Wiring diagram of TEMI2300 with other UNITs



② TEMI2500/2700 Wiring



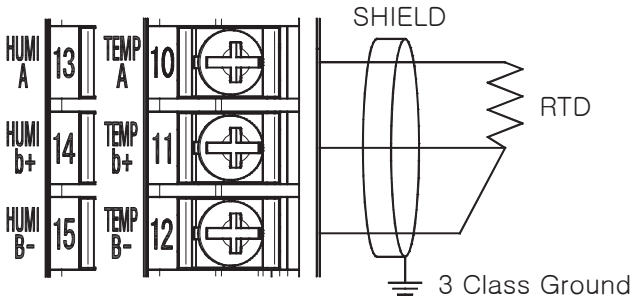
③ CONTROL UNIT Power Wiring



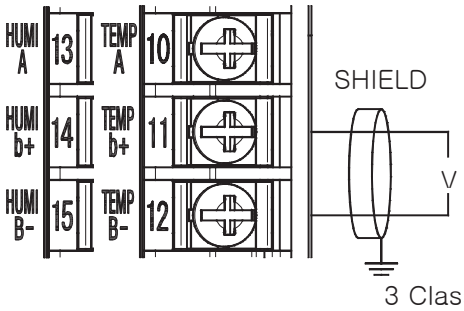
1.3.3.1 ANALOG INPUT Wiring

- ▶ Be careful of the polarity of the signal. The wrong connection may cause a trouble.
- ▶ Use a shielded wire for analog input and the shield should be 1-point grounded.
- ▶ The wires of input signal should be apart from power line and grounding line..
- ▶ Use a wire of low resistance. The resistance difference between the wires is unfavorable especially for a resistive sensor.

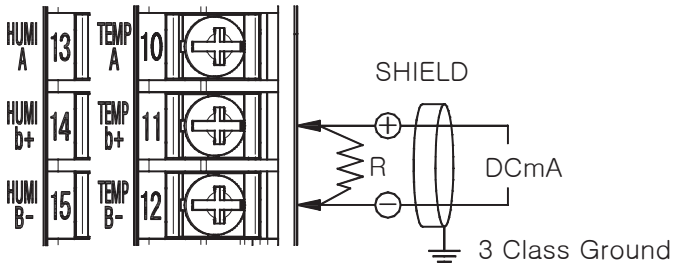
(A) RTD INPUT



(B) DC VOLTAGE INPUT



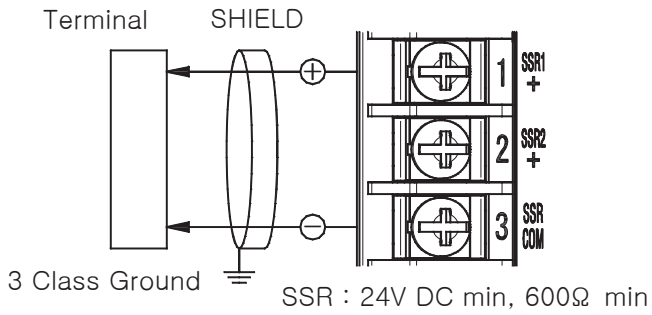
(C) DC CURRENT INPUT



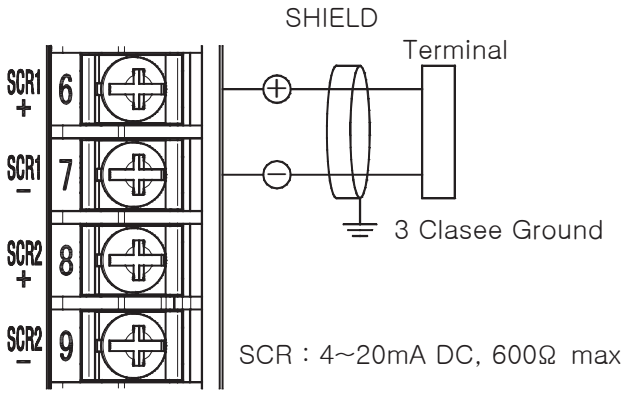
1.3.3.2 ANALOG OUTPUT

- ▶ Be careful of the polarity. The wrong wiring may cause a trouble in the product.
- ▶ Use a shielded wire for analog input and the shield should be 1-point grounded.

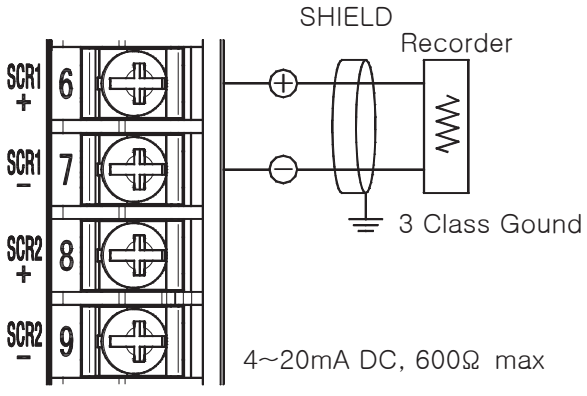
(가) Voltage Pulse output (SSR) - The same Wiring of Temperature (SSR1) and Humidity (SSR2).



(나) Current output (SCR) - The same Wiring of Temperature (SCR1) and Humidity (SCR2).



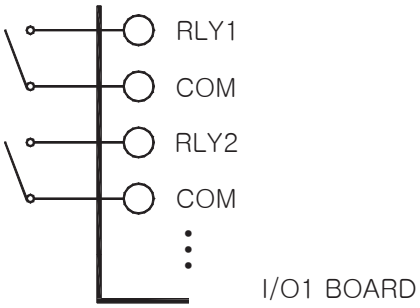
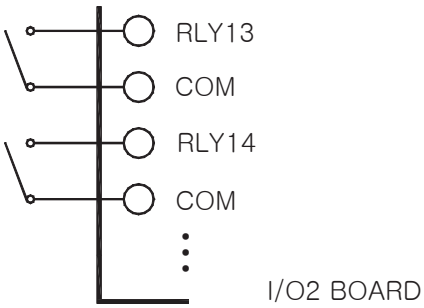
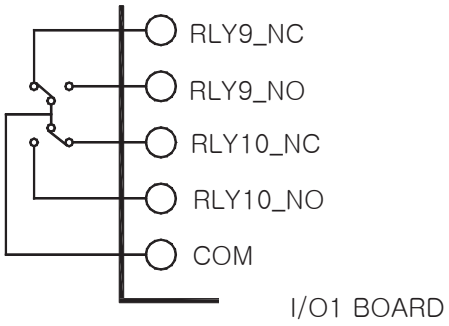
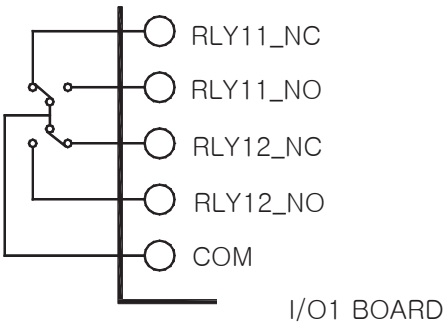
(다) Retransmission output (RET) - The same Wiring of Temperature (SCR1) and Humidity (SCR2)..



※ In case of one SCR Control output, another one can be used for retransmission.

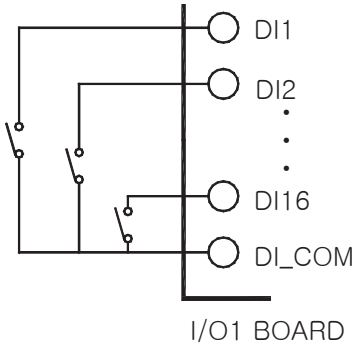
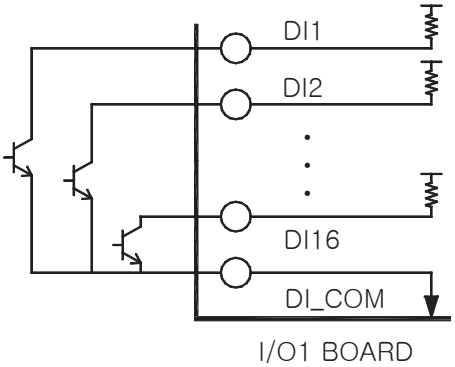
1.3.3.3 Digital Output RELAY wiring

- ▶ Make sure POWER OFF before wiring DO REALY.
- ▶ RELAY rating : Normal Open 30VDC 1A max, 250VAC 1A max.

30V DC 1A Max이하, 250V AC 1A Max	30V DC 1A Max, 250V AC 1A Max
	
NO(NORMAL OPEN):30V DC 3A Max, 250V AC 3A Max NC(NORMAL CLOSE):30V DC 0.5A Max, 250V AC 1A Max	NO(NORMAL OPEN):30V DC 3A Max, 250V AC 3A Max NC(NORMAL CLOSE):30V DC 0.5A Max, 250V AC 1A Max
	

1.3.3.4 Digital Input wiring

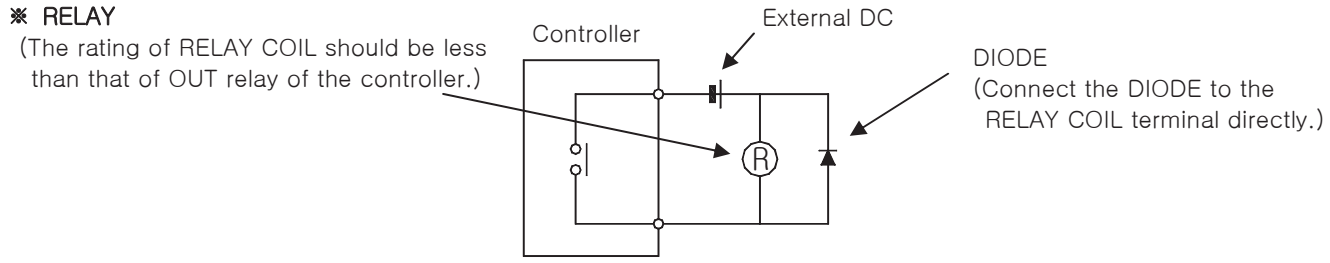
- ▶ Use a mechanical contactor (non-voltage type) as relay for the digital input (DI)..
- ▶ The relay for DI must have sufficient on-off repeatability at 5V open voltage and 1 mA short circuit current.
- ▶ The OPEN COLLECTOR for DI should have low ON state voltage (<2V) and low leakage current less than 100μA at OFF state.

RELAY DI	TRANSISTOR DI
	

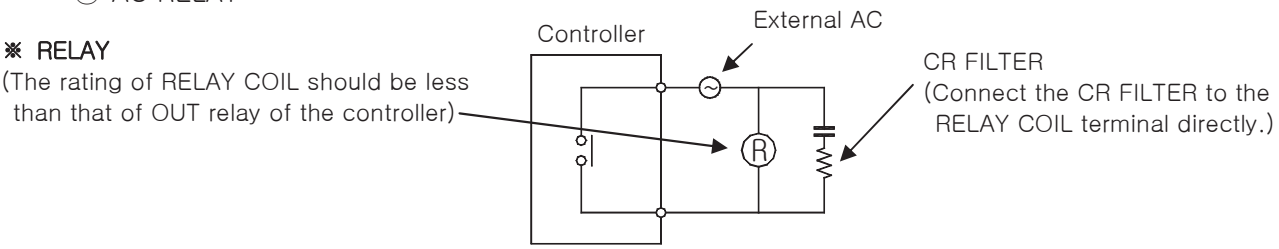
1.3.3.5 Auxiliary RELAY

- ▶ If the wattage of the load is greater than the rating of output relay, an auxiliary relay should be used to on/off power on the load.
- ▶ When an inductive switch as a relay and a solenoid valve is used, it may be a noise source. A protective circuit should be installed to suppress a surge. CR filter (AC) or Diode (DC) should be connected with the mechanical contact in parallel
- ▶ CR Filter recommanded
  - ☞ Sung Ho Electronics (Korea) : BSE104R120 25V (0.1μ+120Ω)
  - ☞ HANA PARTS CO : HN2EAC
  - ☞ Matsuo Electric Co., LTD (Japan): CR UNIT 953, 955
  - ☞ Shizuki Electric Co., Inc.(Japan):: SKV, SKVB etc
  - ☞ Rubycon Co. (Japan) :: CR-CFS, CR-U etc

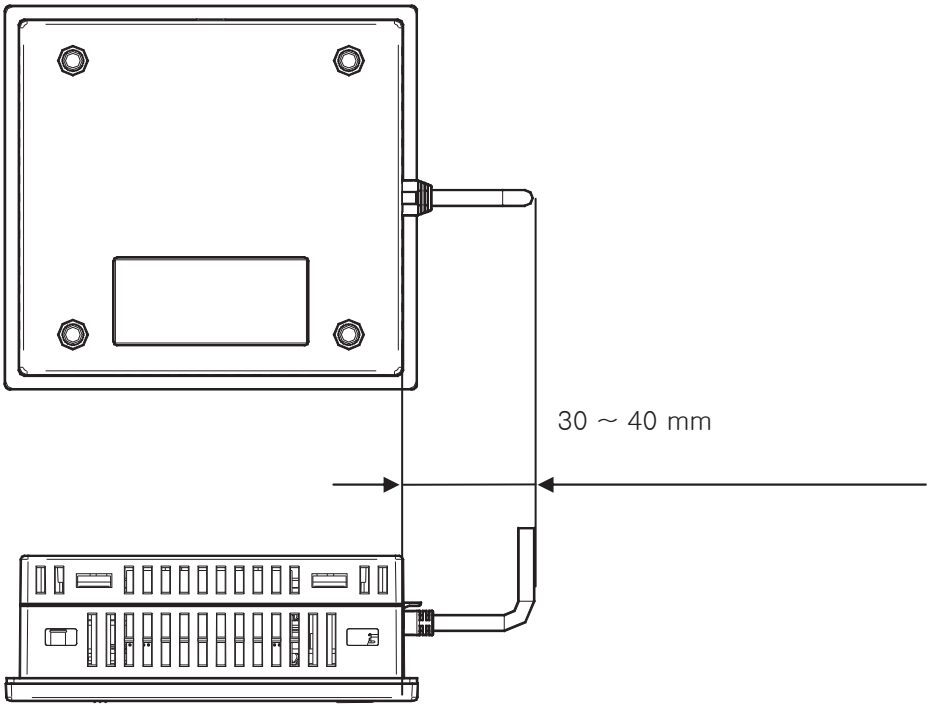
① DC RELAY



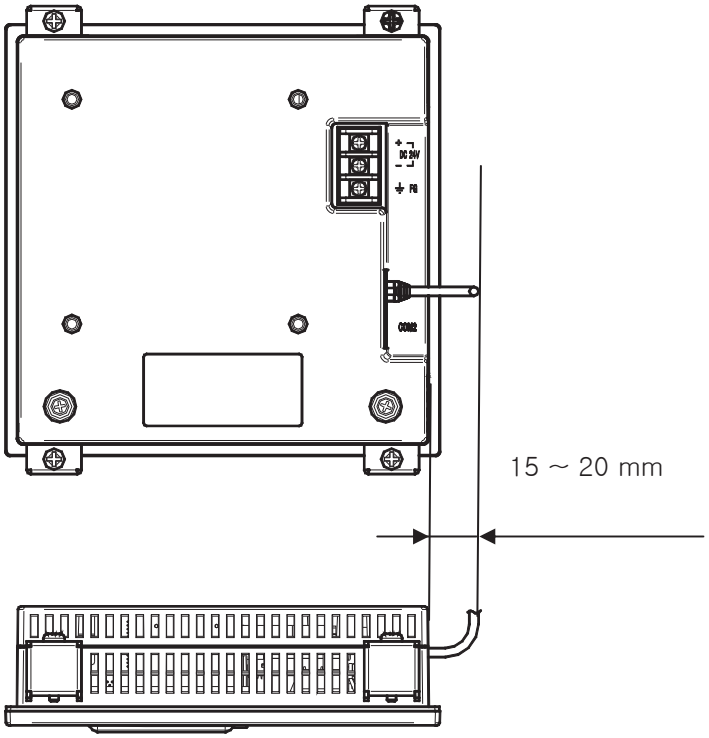
② AC RELAY



1.3.3.6 TEMI2300 DISPLAY UNIT Communication wiring

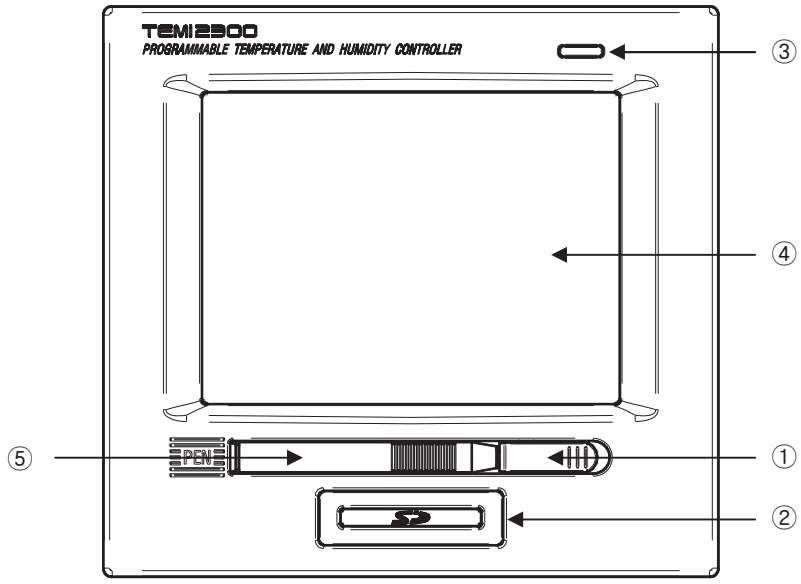


1.3.3.7 TEMI2500/2700 DISPLAY UNIT wiring



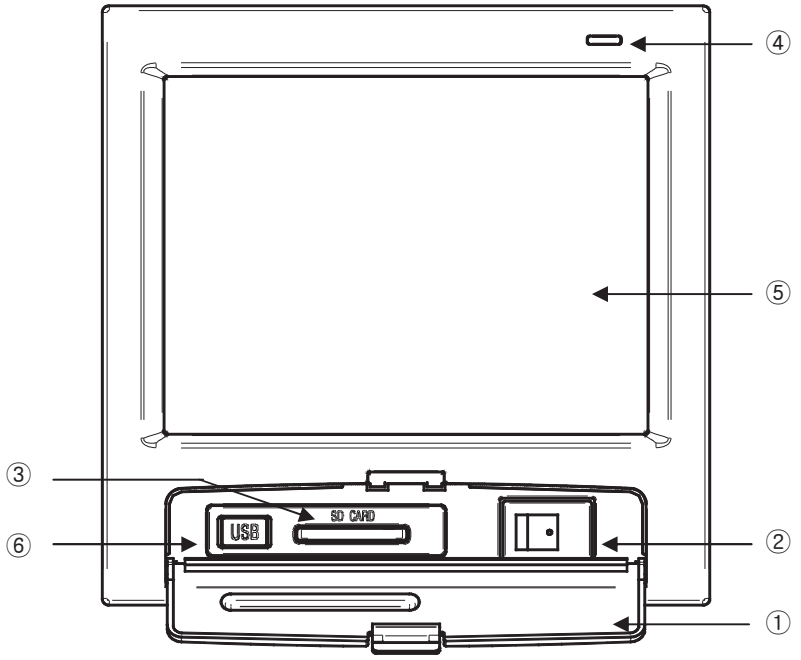
1.4 DISPLAY UNIT description

▶ TEMI2300 DISPLAY UNIT



① Touch Pen fixing lever
② SD CARD port
③ LED lamp (Turning on yellow lamp when supplying power)
④ Touch screen
⑤ Touch Pen (will be spring out by pressing fixing lever right side)

▶ TEMI2500/2700 DISPLAY UNIT



① Cover
② TEMI2500 DISPLAY UNIT Power Switch
③ SD CARD port
④ LED lamp (Turning on yellow lamp when supplying power)
⑤ Touch screen
⑥ MINI USB(Not available for user)