

Power regulator

TPR-2M

INSTRUCTION MANUAL

Thank you for purchasing Hanyoung Nux products.
Please read the instruction manual
carefully before using this product, and use the product correctly.
Also, please keep this instruction manual where you can see it any time.

HANYOUNG NUX

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Safety information

	DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury
	WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
	CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor injury or property damage

- DANGER**
 - To prevent electric shock while it is running, put to earth with the fixed screw of the unit and do not touch the radiator panel since it is very hot. Do not touch or contact the input/output terminals because they cause electric shock
- WARNING**
 - Please install appropriate protective circuit on the outside if malfunction or an incorrect operation may be a cause of failure to a serious accident.
 - If you use the product with methods other than specified by the manufacturer, there may be bodily injuries or property damages.
 - Since this product is not designed as a safety device if it is used with systems, machines and equipment that could lead to a risk of life or property damage, please implement safety devices and protections for both lives and the applications and plan for preventing accidents.
 - To prevent damage or failure of this product, please supply the rated power voltage.
 - To prevent electric shock or equipment failure, please do not turn on the power until completing wiring.
 - Never disassemble, modify, or repair the product. There is a possibility of malfunction, electric shock, or a risk of fire.
 - Please turn off the power when mounting / dismounting of the product. This is a cause of electric shock, malfunction, or failure.
- Caution**
 - Avoid the following places because the installation place has many obstacles to the performance and life of the product.
 - Where there is a lot of moisture and poor air circulation.
 - Dust and debris accumulate, and the ambient temperature is high or vibration is severe.
 - When wiring, turn off (turn off) please give it to me.
 - Be sure to install the power regulator vertically.
 - Install inside the panel and install the exhaust fan on the top of the panel.
 - Use in locations where corrosive gases (especially harmful gases, ammonia, etc.) and flammable gases are not generated.
 - Use in places where vibration and shock are not applied directly to the body, please give it to me
 - Where there is no water, oil, medicine, heavy equipment, dust, salt, iron, etc. 1 or 2) Please use in.
 - Do not wipe this unit with alcohol, benzene, or other organic solvents (wipe with a mild detergent).
 - Avoid locations with large induction disturbances and static electricity and magnetic noise.
 - Avoid locations where heat accumulation occurs due to direct sunlight or radiant heat.
 - When water enters, be sure to check for any danger of short circuit or fire.
 - Be careful that the corner of the heat sink may be sharp.
 - When mounting the product, install it in an enclosed space with a cover, and then close the cover.
 - For the external circuit connected to the product, connect a circuit that is insulated above the basic insulation.

Suffix code

Model	Code	Information
TPR-2M	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Slim type Single phase power regulator
Type	E	Economical type (Circuit operating voltage 90 ~ 240 V a.c. 50/60 Hz)
	S	Advanced type (Circuit operating voltage Power Supply 24 V d.c.)
Load current	25	25 A
	35	35 A
Load voltage	L	90 ~ 240 V a.c.
	H	90 ~ 440 V a.c. (Applicable only to high-performance S type)
Control input (Option)	C	4 ~ 20 mA d.c.
	V	1 ~ 5 V d.c.
	O	ON / OFF
		Economical(E) : Standard Advanced(S) : Option

※ Please supply power separately for circuit input.
(load voltage L : circuit supply voltage 90 ~ 240 V a.c. / load voltage H : circuit supply voltage 12 ~ 24 V d.c.)
(load voltage H : Option 90 ~ 240 V a.c.)

Specification

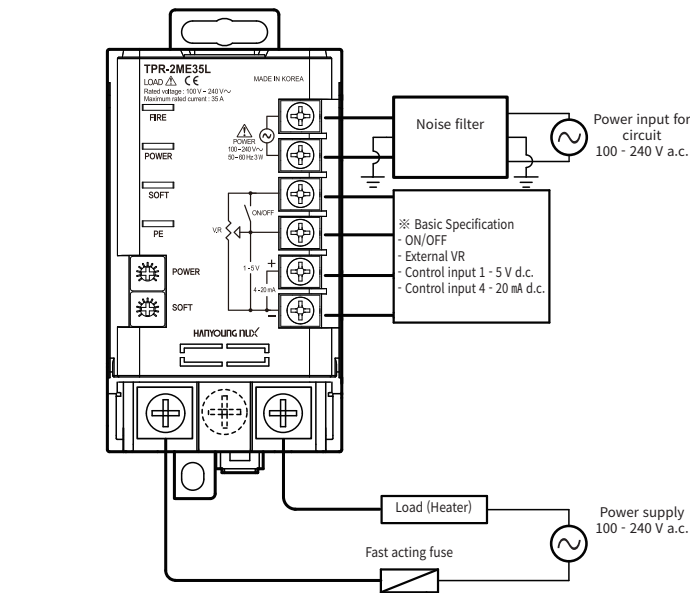
Model		Economical type	Advanced type	
		Low voltage	Low voltage	High voltage
		TPR-2ME25L	TPR-2MS25L	TPR-2MS25H
		TPR-2ME35L	TPR-2MS35L	TPR-2MS35H
Load Voltage		90 - 240 V a.c.		90 - 440 V a.c.
Circuit input power		90 - 240 V a.c. 3 W		24 V d.c. 1 W
Power frequency		50 / 60 Hz (Dual usage)		
Rated current		25 A / 35 A		
Control Input	Current input	4 - 20 mA d.c. (Impedance : 100 Ω) (Basic packages)	4 - 20 mA d.c. (Impedance : 100 Ω) (Option)	
	Voltage input	1 - 5 V d.c. (Basic packages)	1 - 5 V d.c. (Option)	
	Contact input	ON/OFF (Basic packages)	ON/OFF (Option)	
	External V.R	External V.R (10 kΩ) It is not possible to use the current and the voltage input simultaneously	—	
Control method		Phase control (Basic), Variable Cycle control (Option)		
Movement type		SOFT START (60 sec), SOFT UP/DOWN (15 sec) / Adjust start time by SOFT V.R		
Output voltage		More than 98 % of the power supply voltage (In case of maximum current input) / Output limitation control by Power V.R		
Alarm function	Current error(CE)	—	O (Relay contact output)	
	Over temperature(OT)	—		
	Power error / Heater break(PE)	O		
	SCR short (PE)	—		
Display method (LED)	Output	FIRE : Lighting in proportion of output		
	Power	Light on when power connect to circuit	—	
	Alarm	—	CE (CURRENT ERROR) : Light on when 45 A over current	
		—	OT (OVER TEMP) : Light on when Heat sink temperature is above 85 °C	
		PE (POWER ERROR) : Power error, Heater break		
Cooling method		Natural cooling		
Certification		CE		
Weight(g)		approx. 322		

Connection diagram

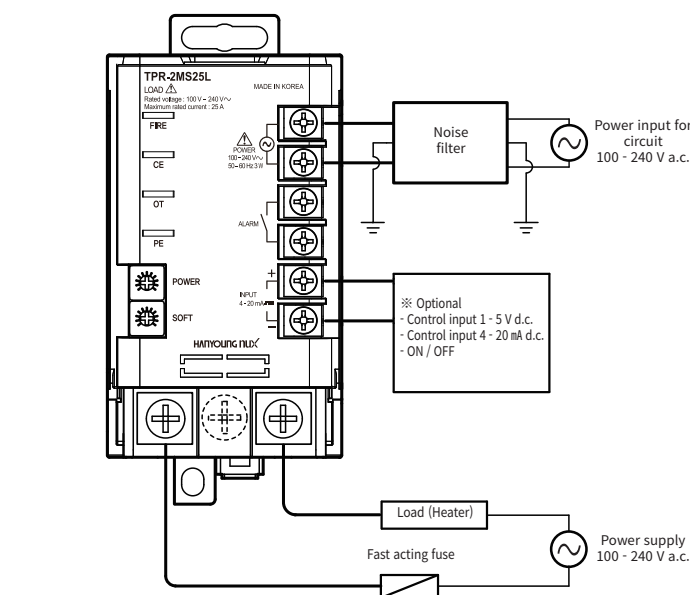
Example

- We recommend connection as shown in the picture.
- If the power supply for circuit has a lot of noise, please use noise filter as shown in the picture.
Please be sure to use correct noise filter in accordance with the rating.
- Please use correct fast acting fuse accordance with current / voltage.
Ex) Actual using current 40A : BUSSMANN FWH-40.
- This model does not have fuse inside.
- Please use solderless terminal strongly when wiring connections.
- Max space for solder less terminal connection is : 12 mm

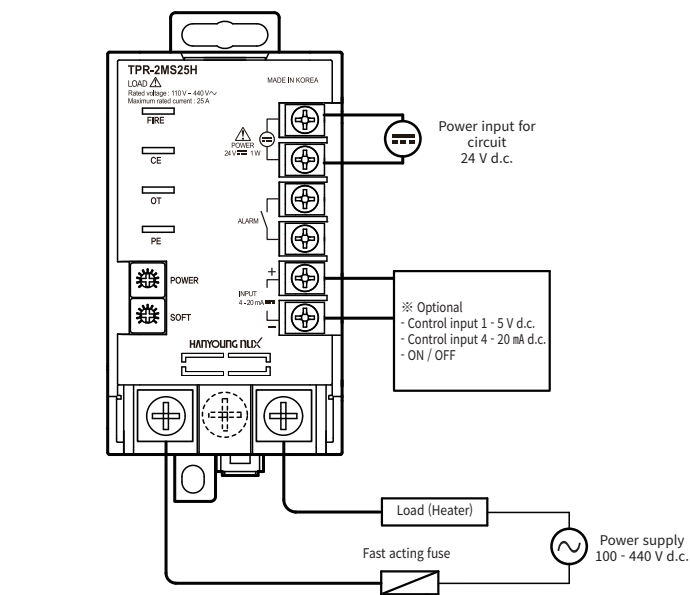
TPR-2ME (If the load voltage is L)



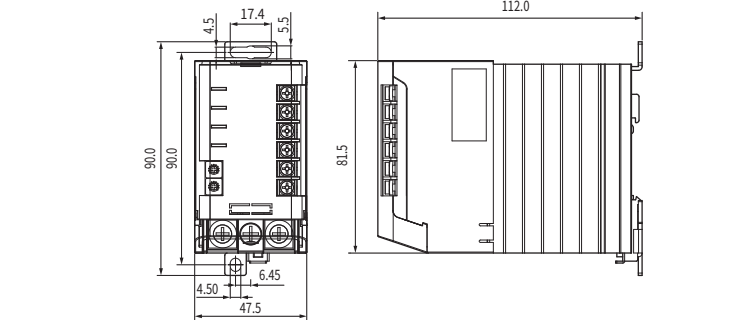
TPR-2MS (If the load voltage is L)



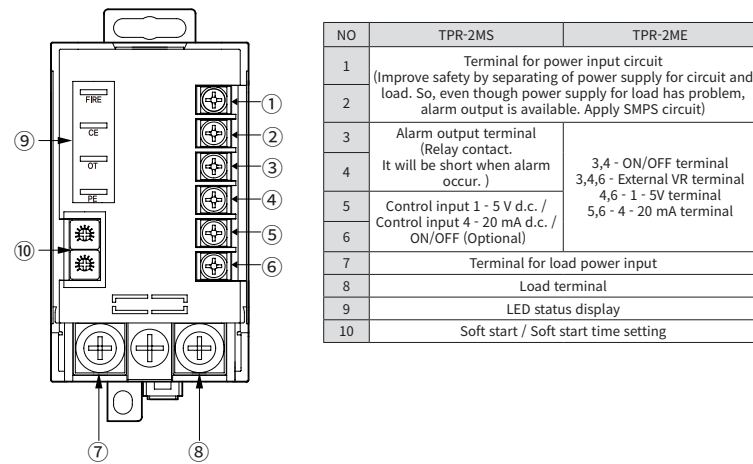
TPR-2MS (If the load voltage is H)



Appearance

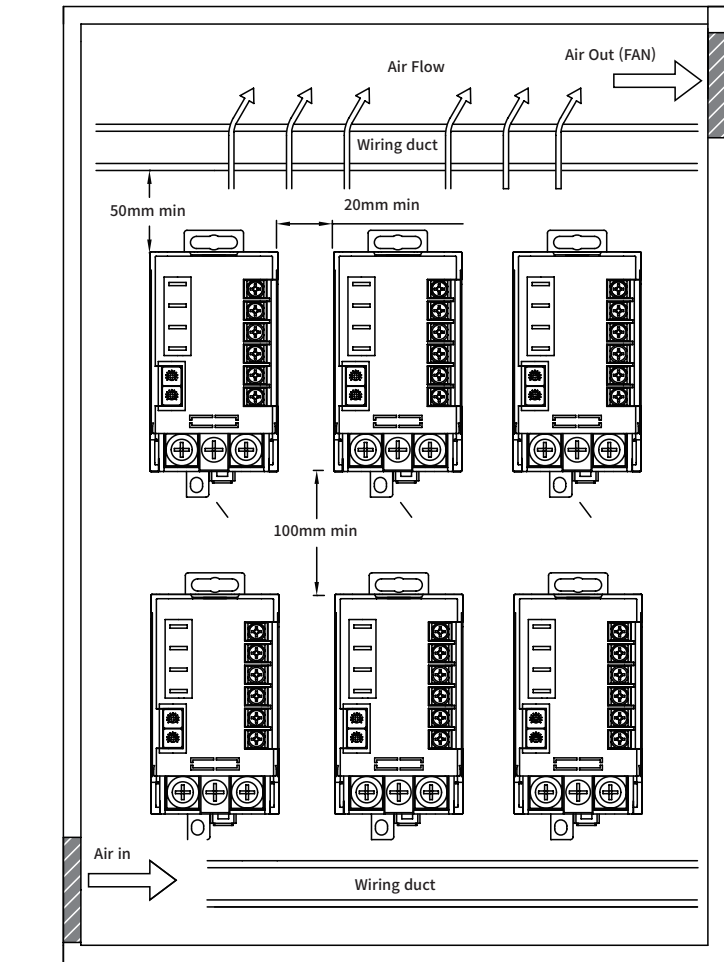


Name of each part



Installation

- Please install it perpendicularly. If the product is installed vertically in unavoidable circumstances, please use 50 % of rated current.
- When multiple products are closely installed, please install them with keeping a distance of more than a width of 2 cm and a length of 10 cm as shown in the picture.
- In order to not block the air flow, please install the wiring duct less than the half of the heat sink height.
- Please consider whether the air flow is good enough when installing the product. If the ambient temperature is as low as possible in the inside then the life span of the product is increasing as the durability and reliability of the product are improving. The operating ambient temperature is 40 °C.
- When connecting R and U, please securely fasten them with using crimp connectors since high current flows into these terminals. If the contact surface of the connectors and terminals are poor, it may lead to a fire since the wires and terminal gets overheated.
- Before applying power, this model need more than the third class grounding to prevent electric shock.This model does not have separate grounding terminal so we suggest using grounding terminal and bracket together when install this model to a panel.



Explanation for LED status display

TPR-2MS

Name	LED Color	Explanation
FIRE	Green	Output lamp (Lighting in proportion of output)
CE (Current error)	Red	Light on when over current situation
OT (Over temp)	Red	Light on when heat sink over temperature
PE (Power error)	Red	Light on when Power error, Heater break or SCR short

TPR-2ME

Name	LED Color	Explanation
FIRE	Green	Output lamp (Lighting in proportion of output)
POWER	Green	Light on when power connect to circuit
SOFT	Green	Light on when SOFT VR turn right for Soft start, Soft up/down
PE (Power error)	Red	Power error, Heater break

Explanation for alarm output

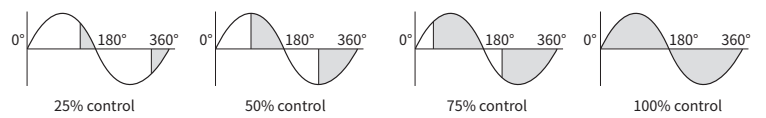
Name	Explanation
Over current	45 A (r.m.s) over current
Over temperature heat sink	Heat sink temperature is above 85°C
Power error	Circuit power is connected but load power is not connected
Heat break	Load is disconnected
SCR short	Without control output, current flows continuously

※ When the alarm output situation, operation does not stop.

Function description

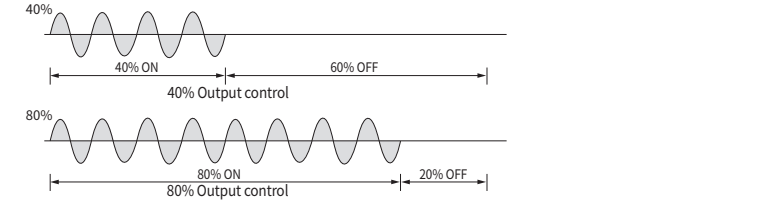
Phase control

Phase control is to control the AC power supply applied to the load proportionally according to the control input signal as changing phase angle (0 ~ 80 degree) in a each half cycle, 8.33 ms.



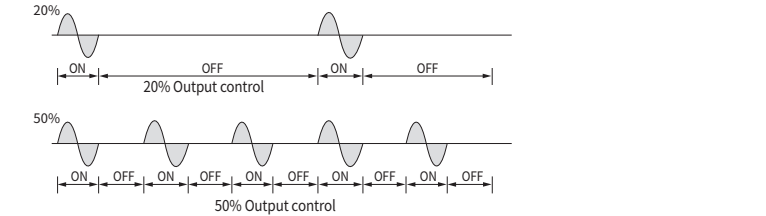
Fixed cycle control

As setting the constant cycle of the output, (1 sec), fixed cycle control is to control the AC power supply repeatedly with a constant rate of ON/OFF according to the control input.



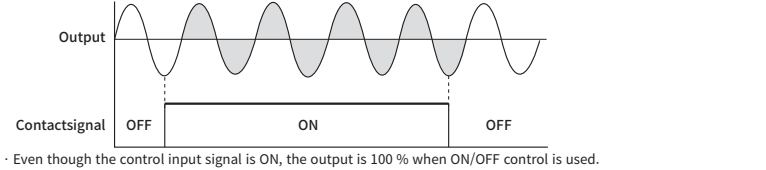
Variable cycle controlOutput

Without setting a constant cycle, variable cycle control is to control AC power supply with using the number of cycle.



ON/OFF control

If ON/OFF contact is ON, then the output is 100 %. ON/OFF always operates near zero point.



· Even though the control input signal is ON, the output is 100 % when ON/OFF control is used.

Restart Function

When an alarm situation occurs, TPR gives alarm or stop operation. This function is used to return to normal operation mode when factor caused error is eliminated.

※ V.R Explanation

- SOFT
This volume is to set time for Soft start or Soft up/down. (only applicable to phase control, ON/OFF control)
- Soft start : Protection functions against big load of start current (inrush current). It increases output softly. When control input is applied and power is on, Soft start operates when rung signal is applied. In case of maximum VR, it set 60 second. (Example : 20 mA : 60 sec, 12 mA : 30 sec)
- Soft up / down : When run signal and power are applied and if control input is applied, it will operate. It case of maximum VR, it set 15 second.
- If VR turn up to the right, the function does not work. And if VR turn right, time will be reduced.
- POWER(output limit function)
This function is to limit the output regardless of the control input amount. Even though the control input is 100 %, the output will decrease as turning POWER volume counterclockwise.

