TPR-2M

Single-phase compact power regulator

- Various control methods are realized according to the load
- Various protection functions (Heater Break, Overcurrent, Overheating of heat sink, Short circuit of SCR etc.)
- Improved safety by separation of power supply of circuit and power supply of load
- Soft start (60 sec), Soft up/down (15 sec)

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 ㎃ d.c. (Impedance : 100 Ω) (Basic packages)	4 - 20 ㎃ 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 ㏀) 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		approx. 322g		

Suffix code

Model	Code				Information
TPR-2M	☐	☐	☐	☐	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

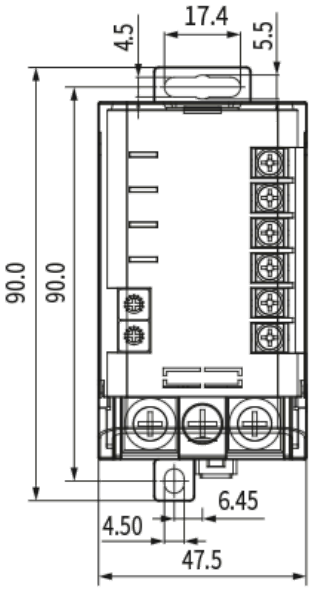
	35			35 A	
Load voltage		L		90 - 240 V a.c	
		H		90 - 440 V a.c. (Applicable only to high-performance S type)	
Control input (Option)			C	4 - 20 ㎃ d.c.	Economical(E) : Standard Advanced(S) : Option
			V	1 - 5 V d.c.	
			O	ON / OFF	

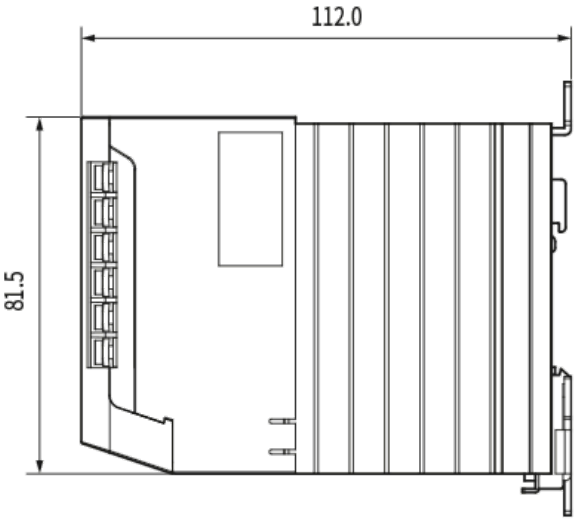
※ **Please supply power separately for circuit input.**

- 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.

Dimension

[Unit : ㎜]





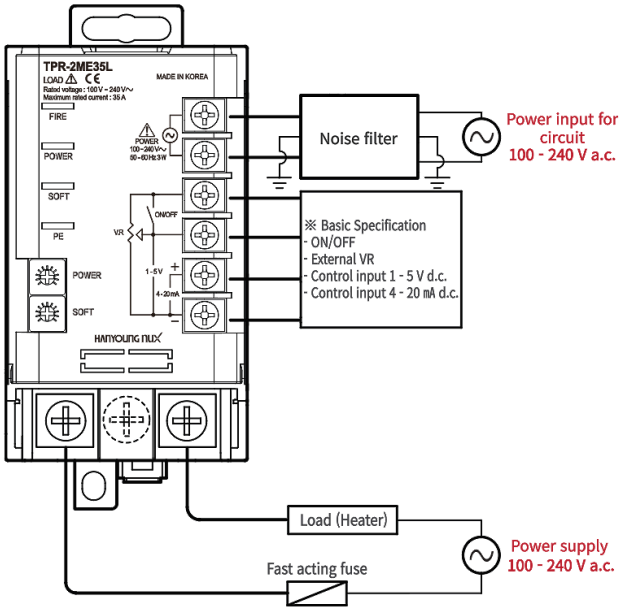
Connection diagram

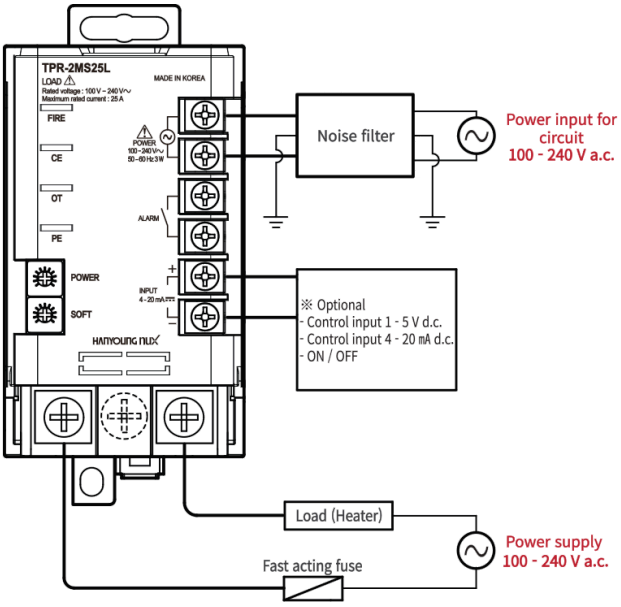
▪ Example

- 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

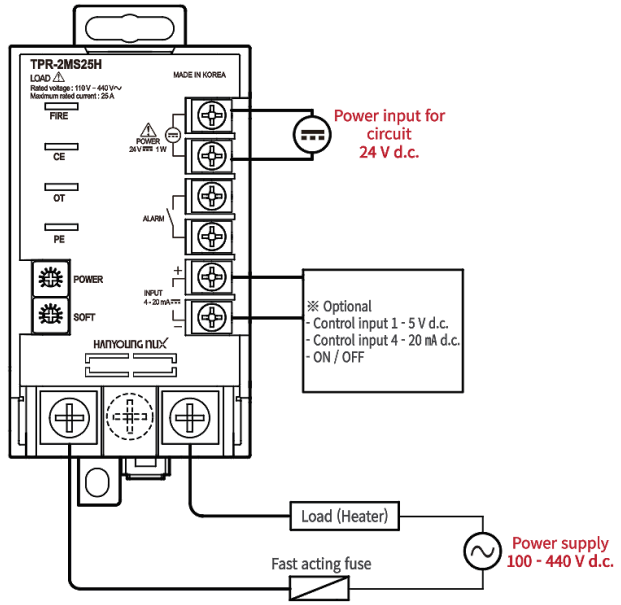
■ **TPR-2ME (If the load voltage is L)**

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

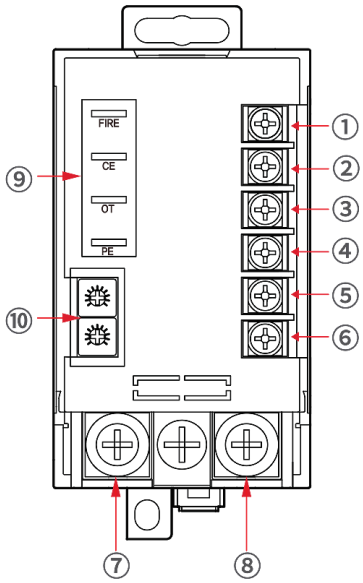




■ **TPR-2MS (If the load voltage is H)**

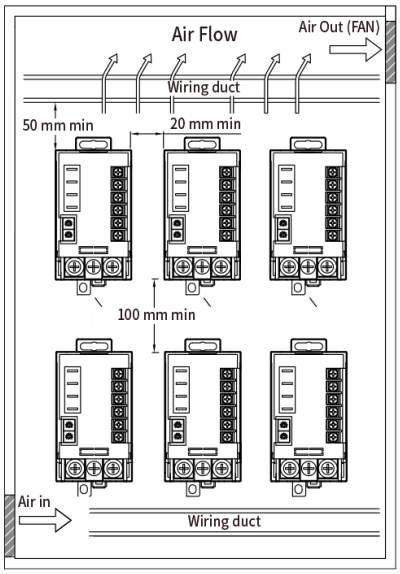


Name of each part



NO	TPR-2MS	TPR-2ME
①	Terminal for power input circuit (Improve safety by separating of power supply for circuit and load. So, even though power supply for load has problem, alarm output is available. Apply SMPS circuit)	
②		
③	Alarm output terminal (Relay contact. It will be short when alarm occur.)	3,4 - ON/OFF terminal 3,4,6 - External VR terminal 4,6 - 1 - 5V terminal 5,6 - 4 - 20 mA terminal
④		
⑤	Control input 1 - 5 V d.c. / Control input 4 - 20 mA d.c. / ON/OFF (Optional)	
⑥		
⑦	Terminal for load power input	
⑧	Load terminal	
⑨	LED status display	
⑩	Soft start / Soft start time setting	

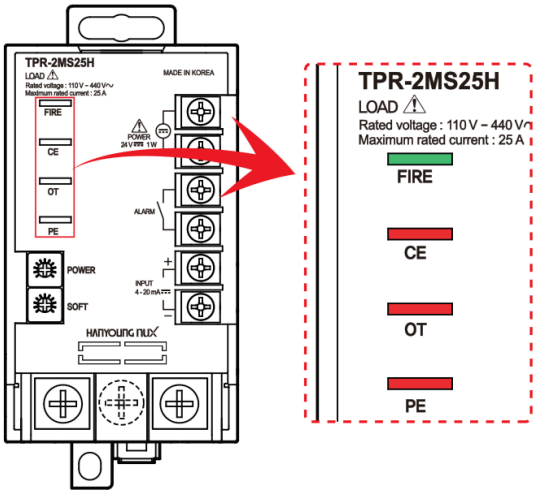
Installation



- 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 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 needs 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 installing this model to a panel.

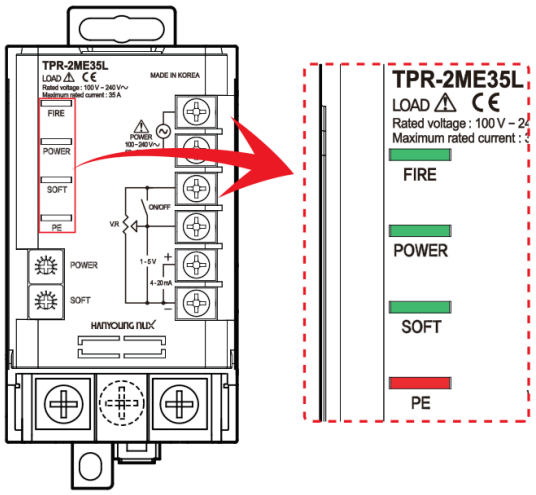
Explanation for LED status display

+ 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

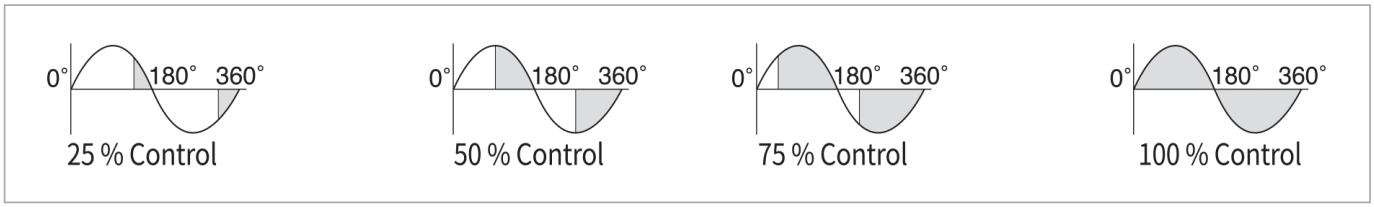
Name	Explanation
Over current	45 A (r.m.s) over current
Over temperature heat sink	Heat sink temperature is above 85 °C
Power error	Circuit power is connected but load power is not connected
Heat break	Load is disconnected
SCR short	Without control output, current flows continuously

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

Function description

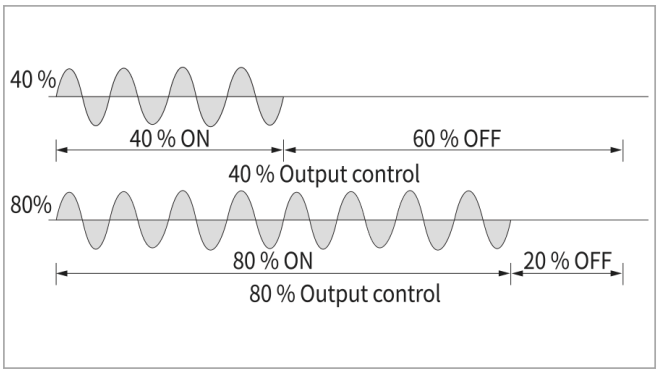
+ Phase control

- 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.

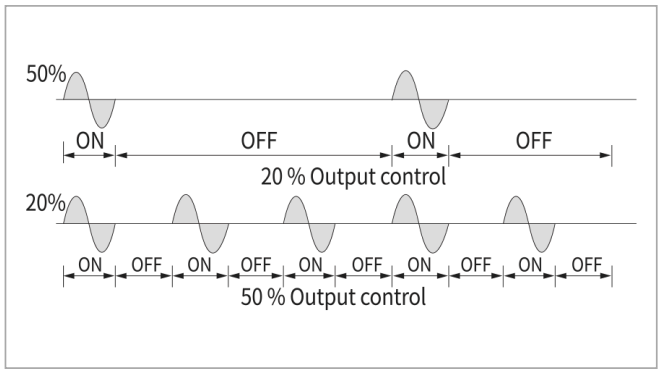


+ Fixed cycle control

+ Variable cycle controlOutput

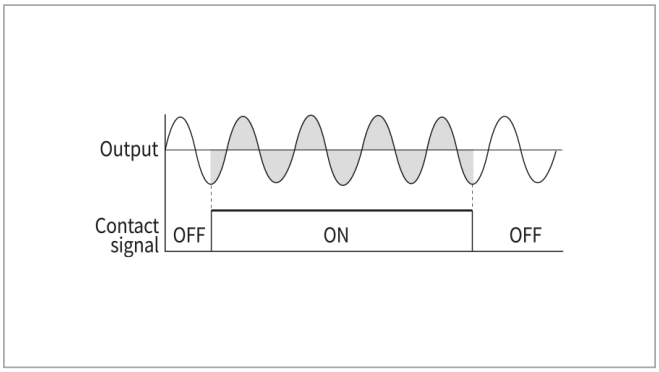


- As setting the constant cycle of the output, (1 sec), fixed cycle control is to control the AC power supply repeatedly with a constant rate of ON/OFF according to the control input.



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

+ ON/OFF control

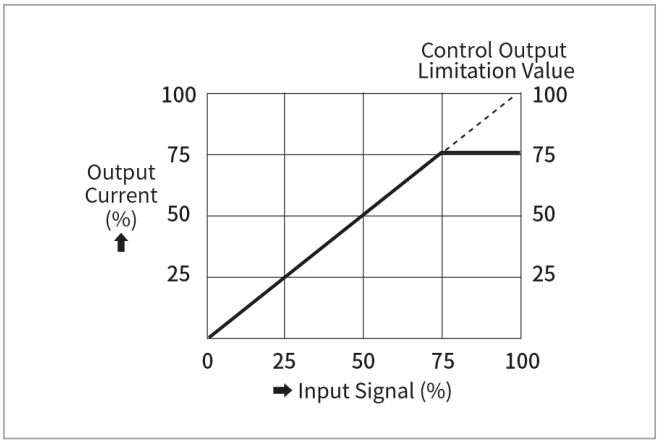


- If ON/OFF contact is ON, then the output is 100 %. ON/OFF always operates near zero point
- Even though the control input signal is ON, the output is 100 % when ON/OFF control is used.

+ 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



1. 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

2. 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.