TPR-3M

Three-phase compact power regulator

- 110(Width) mm Ultra slim size 3-phase power regulator
- Separated power supply reduces noise
  and the stable insulation design minimizes fire and exposing hazard
- 4LED display for operation status and alarm status
- Various protection functions and alarm
  (Power failure, Overcurrent, Overheating heat sink, Imbalance of load element short airauit)

Specification

Model	TPR-3M25L	TPR-3M45L	TPR-3M55L
Load voltage	90 - 240 V a.c.		
Circuit input power	24 V d.c. 8 W		
Power frequency	50 / 60 Hz		
Rated current	25 A	45 A	55 A
Applying load	Resistive load		
Control Input	4 - 20 mA d.c. (Impedance : 100 Ω)		
Control method	Phase control (Fixed Cycle control, Variable Cycle control Option)		
Output voltage	More than 98 % of the power supply voltage (In case of maximum current input)		
Cooling method	Forced cooling (24 V d.c. FAN)		
Display method	4 LED display status and alarm status		
Insulation resistance	Min 100 MΩ (Base on 500 V d.c. mega)		
Dielectric strength	2,500 V a.c. 50 / 60 Hz for 1 min		
Line noise	Noise by noise simulator (2,000 V)		
Storage temperature	-30 ~ 90 °C		
Ambient temperature	-20 ~ 80 °C (Without Condensation)		
Ambient Humidity	45 ~ 85 % R.H.		
Certification	CE		
Weight	1,756 g		

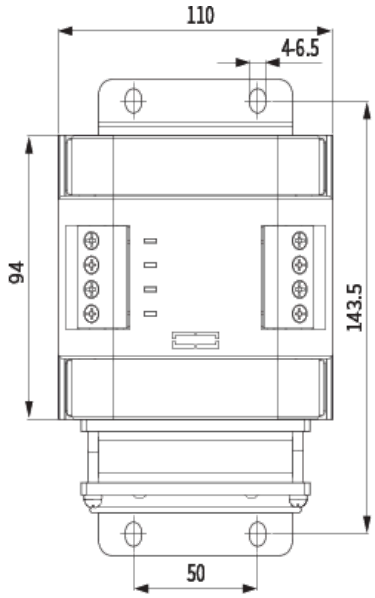
Suffix code

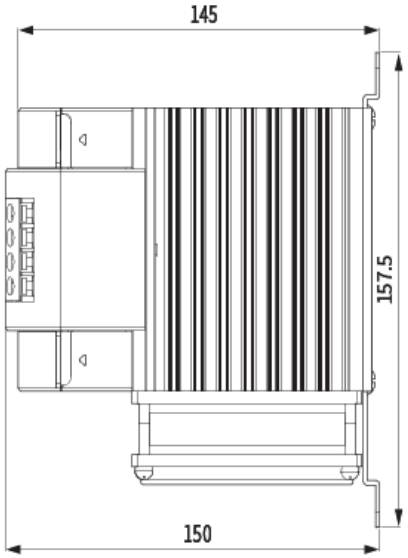
Model	Code			Information
TPR-3M	☐	☐	-☐	Slim type 3-phase power regulator
Rated current	25			25 A
	45			45 A
	55			55 A (Option)
Load voltage		L		90 - 240 V a.c. (Low)
Power supply voltage			IS	Power isolated type

- Option IS type is a product that can connect up to 5 in series with one temperature controller and power supply (SMPS).
- The general type requires a 1 to 1 connection to the temperature controller with a 24 V d.c. partial power circuit as a non-isolated type.

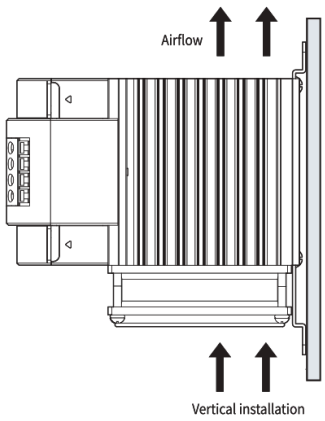
Dimension

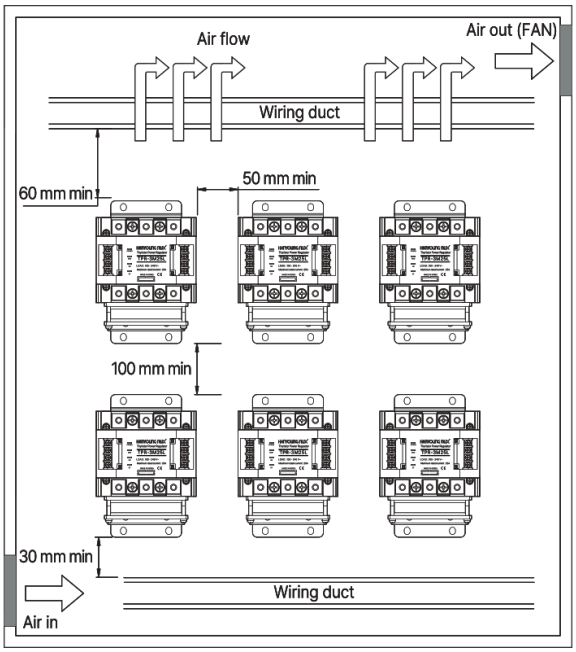
[Unit : mm]





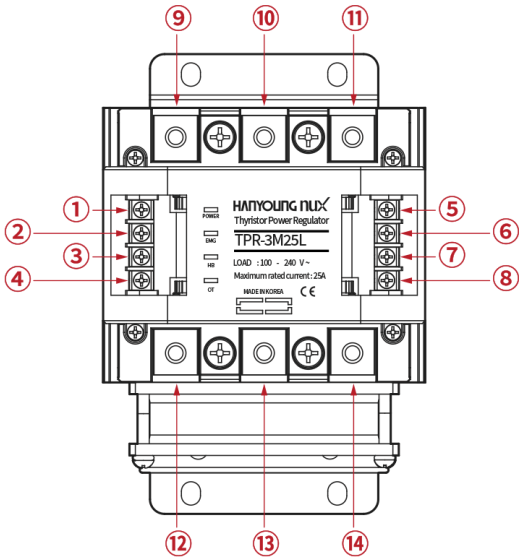
Installation





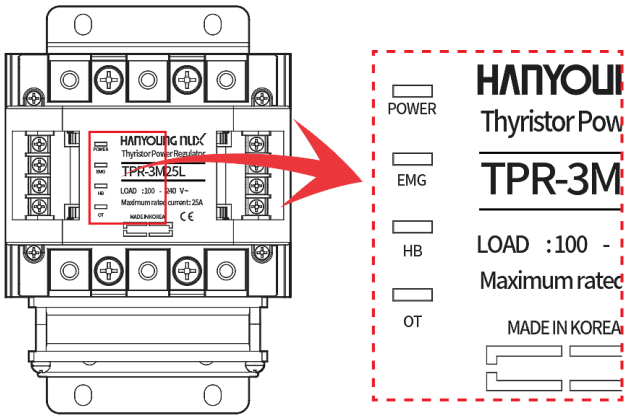
- Please install it vertically like a picture above, If the product is installed vertically in unavoidable circumstances, please use 50 % of rated current.
- When multiple products are closely installed, please install them with keeping a distance of more than a width of 5 cm and a length of 10 cm as as shown in the picture below.
- 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 0 °C ~ 40 °C.
- When wiring, please fasten with use crimp connectors for high current flows terminal. If the contact surface of the connectors and terminals are poor, it may lead to a fire since the wires and terminal get 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.

Part name and function



Number	Name	Description
①	1 Control input terminal (4 - 20 mA +)	Current input terminal from temperature controller, PLC, and etc
②	Control input terminal (4 - 20 mA -)	
③	Circuit power supply (24 V d.c. +)	Power input for circuit drive with power supply(SMPS) and et
④	Circuit power supp (24 V d.c. -)	
⑤	Alarm1 (Middle alarm) +	Alarm terminal to PLC, relay, etc
⑥	Alarm1 (Middle alarm) -	
⑦	Alarm2 (Light alarm) +	Alarm terminal to PLC, relay, etc
⑧	Alarm2 (Light alarm) -	
⑨	R, S, T load power input	3 Phase AC load power input
⑩		
⑪		
⑫	U, V, W load terminal	3 phase load connection (Delta connection, Y connection, etc)
⑬		
⑭		

LED indicator and description



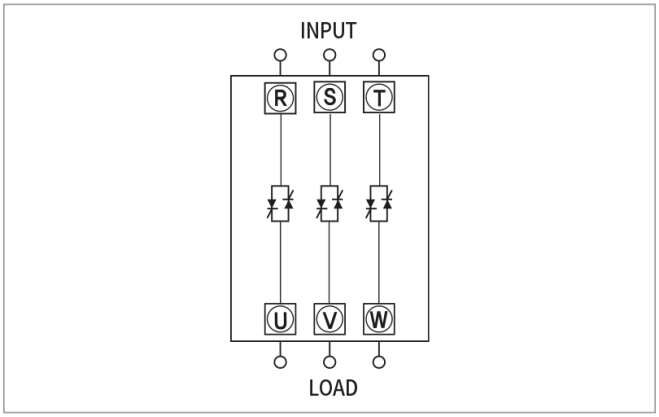
LED	Status	Alarm	Description
POWER	Flashing	When 4 - 20 mA control input is applied	
	Light on	When 24 V d.c. power is applied separately	
EMG	Flashing	Over curren (Alarm2)	Over 55 A over current
	Light on	Power failure (Alarm2)	During operation (output is going out) when load power applied to TPR is cut of
HB	Flashing	Load imbalance (Alarm2)	When the deviation of the maximum and minimum values of load connected to U, V, W is more than 10 A
	Light on	SCR error (Alarm1)	When the input current is 0 % (4 mA).
OT	Flashing	Heat sink overheated 60 °C (Alarm2)	When the heat sink temperature is above 60 °C
	Light on	Heat sink overheated 80 °C (Alarm1)	When the heat sink temperature is above 80 °C

+ Explanation for alarm output

Alarm	TPR status	Alarm output
Alarm1	Forced shutdown (alarm output, LED display)	NPN transistor open collector output (High signal at abnormal detection)
Alarm2	Normal operation (alarm output, LED display)	

Connection diagram

+ Connection diagram of load terminal



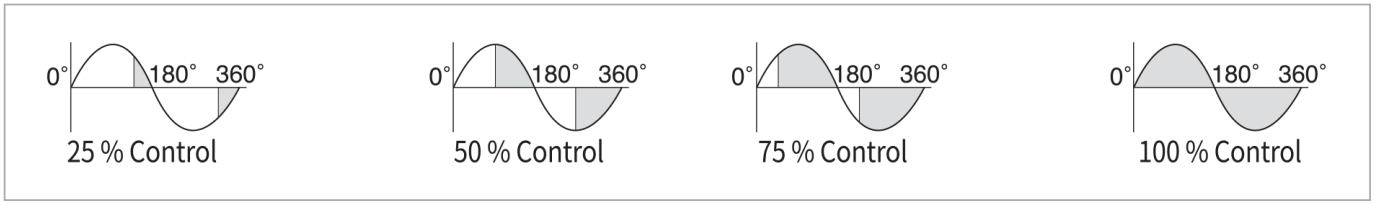
- There is no fuse inside the power regulator (TPR).
It is recommended to use an external fuse separately.

- Please use a crimp terminal to tighten the terminal when tightening the terminal due to a high current flows.
(Tightening terminal space of crimp terminal : 15 mm)

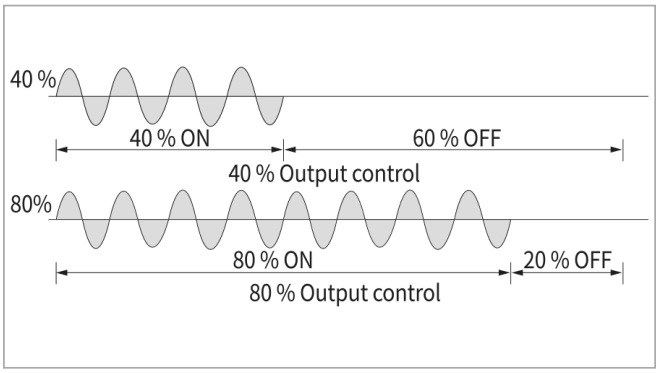
Function description

+ 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 ~ 180 degree) in a each half cycle, 8.33 ms.

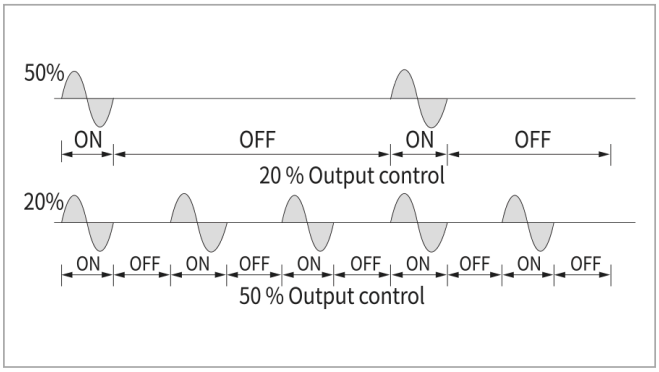


+ Fixed cycle control



- 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 control



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