

Thyristor Power Regulator

TPR-2N (25 A/35 A)

INSTRUCTION MANUAL

Thank you for purchasing HANYOUNG product.
Please check whether the product is the exactly same as you ordered.
Before using the product, please read this instruction manual carefully.
Please keep this manual where you can view at any time

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HANYOUNG NUX



Safety information

Before using the product, please read the safety information thoroughly and use it properly. Alerts declared in the manual are classified to Danger, Warning and Caution by their criticality

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

⚠ 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

- If this product is used with the machinery which may be caused human injury or serious property damage then use it after surely installing the protection equipment for two or three times.
- To prevent deflection or malfunction of this product, supply proper power voltage in accordance with the rating.
- To prevent electric shock or malfunction of product, do not supply the power until the wiring is completed.
- Do not decompose, modify, revise or repair this product. This may be a cause of malfunction, electric shock or fire.
- Reassemble this product while the power is OFF. Otherwise, it may be a cause of malfunction or electric shock

⚠ CAUTION

- The place of operating this product affect to the its functions and life cycle so that avoid to use it in the following circumstance.
 - A place of having high humidity and not circulating air
 - A place of piling dust or impurity or having high ambient temperature or high vibration
- The contents of this manual may be changed without prior notification.
- Make sure that there is no damage or abnormality of the product during delivery.
- After turning OFF power sources of all instruments, please wire them.
- The Thyristor Power Regulator shall be installed perpendicularly.
- Install exhausting fan in internal and upside of the panel.
- Tighten BOLT of the input and output wire enough.
- Do not use this product at any place with corrosive (especially noxious gas or ammonia) or flammable gas.
- Do not use this product at any place with direct vibration or impact.
- Do not use this product at any place with liquid, oil, medical substances, dust, salt or iron contents. (Use at Pollution level 1 or 2)
- Do not polish this product with substances such as alcohol or benzene.
- Do not use this product at any place with a large inductive difficulty or occurring static electricity or magnetic noise.
- Do not use this product at any place with possible thermal accumulation due to direct sunlight or heat radiation.
- Install this product at place under 2,000 m in altitude.
- When the product gets wet, the inspection is essential because there is danger of an electric leakage or fire.
- Do not connect anything to the unused terminals.
- After checking the polarity of terminal, connect wires at the correct position.
- The warranty period for this product including parts is one year if this product is properly used

※ This Product satisfies CE safety standard (EMC Directive) when using with a Noise Filter which is specified by Hanyoung Nux co.,Ltd. A few megahertz or low area noise are distributed inside of noise frequency components which are available on the market cannot reduce Noise sufficiently. Please refer to manual for the further information.

※ How to Operate

- When installing the unit, the input and output terminals shall be attached in the direction of facing downward perpendicularly for the natural cooling.
- Certainly, install high-speed breaking fuse between terminal R and power source

Suffix code

Model	Code	Description
TPR	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Thyristor Power Regulator
Phase	2N	Single Phase
Power supply voltage	110	110 V a.c 50/60 Hz
	220	220 V a.c 50/60 Hz
Rated current	25	25 A
	35	35 A

※ Control Method : Phase control (factory default)

Feature

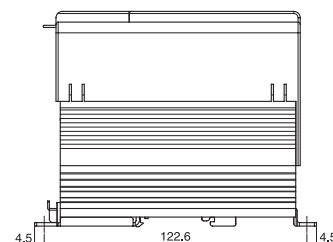
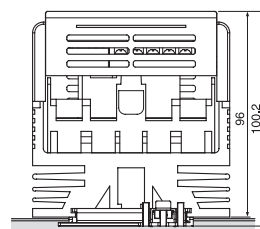
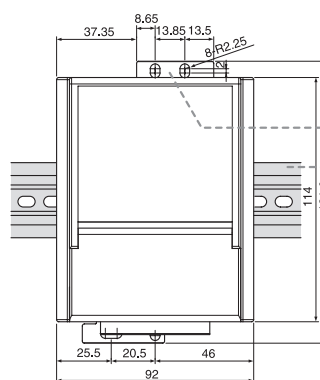
- set the max output voltage by setting the slope
- various input signals
- Phase control and cycle control are internally selectable

Specification

Power supply voltage	110 V a.c, 220 V a.c
Operating Frequency	50/60 Hz (Dual usage)
Rated Current	25 A, 35 A
Protection Circuit	Protected by high-speed breaking fuse (external attachment)
Applied Load	Resistive Load/ Inductive Load (use as a switch conversion)
Control Input	Input Current : 4 - 20 mA d.c, Input Voltage : 1 - 5 V d.c Input Contact Point : ON - OFF, External V. R (10 kΩ)
Control Method (By switch Conversion)	Phase control, Cycle control, ON/OFF control
Movement type	Soft start / Soft down. (Time : 0 ~ 50 sec)
Output Adjusting Range	Above 95 % input voltage (when putting maximum of input voltage)
Cooling Method	Natural Cooling
Indicator Function	Output display LED lighting
Insulation Resistance	100 MΩ min (500 V d.c mega standard)
Output Range	0 ~ 100 %
Dielectric Strength	2000 V a.c at 50/60 Hz for 1 minute
Line Noise	Noise by noise simulator (pulse width 1 μs : ±2 KV)
Ambient temperature	0 ~ 50 °C (But, Without condensation)
Ambient Humidity	30 ~ 85 % R.H.
Storage Temperature	-25 ~ 70 °C
Weight	Approx. 960 g

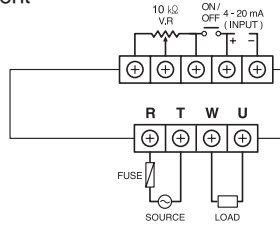
Dimension and panel cutout

Size	W	H	D
Capacity			
25 A, 35 A	92	100	131



Connection Diagram

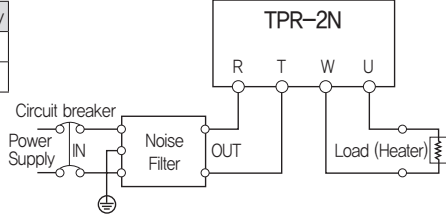
Terminal Arrangement



Noise Filter (Option)

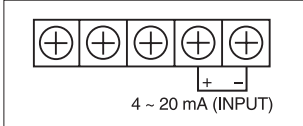
Noise Filter Connection Diagram

Type	Current capacity
HHD-2025B	25 A
HHD-2035B	35 A



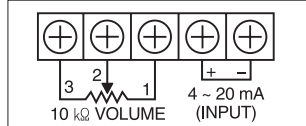
How to wire the input signal terminal

• Using 4 ~ 20 mA d.c., OUT ADJ (internal volume)



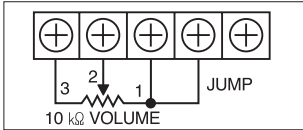
According to the input 4 ~ 20 mA d.c., the output is limited by OUT ADJ.

• Using 4 ~ 20 mA d.c., External V.R (10 kΩ)

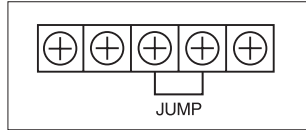


According to the input 4 ~ 20 mA d.c., the output is limited by external V.R.

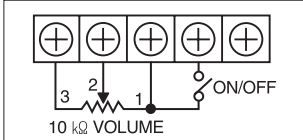
• Using External V.R(10kΩ), OUT ADJ(internal volume) [Manual Control]



• Using only OUT ADJ(internal volume) [Manual Operation Control]

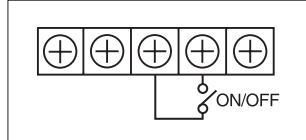


• Using ON/OFF, External V.R(10kΩ)



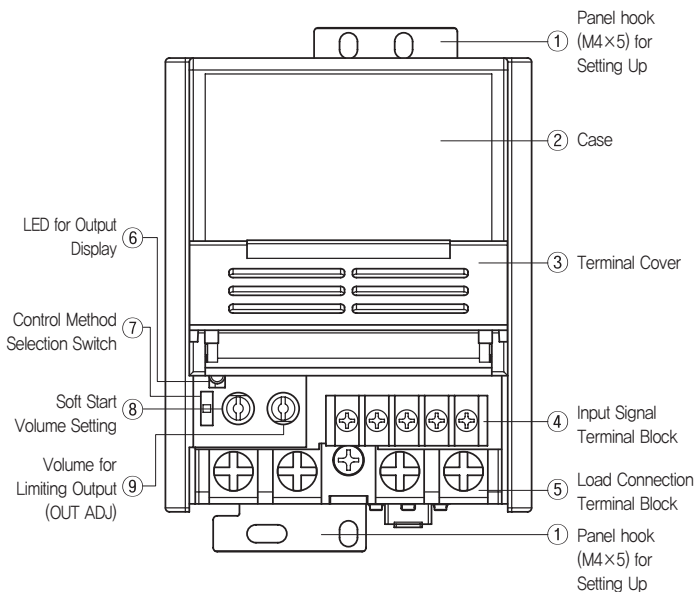
By external V.R, the output voltage is limited.

• Using ON/OFF, OUT ADJ(internal volume)



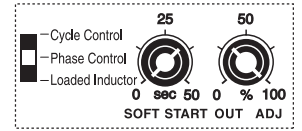
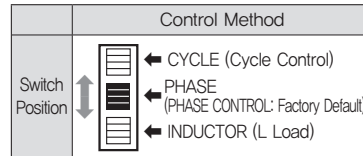
By external V.R, the output voltage is limited.

Parts Name



Function Description

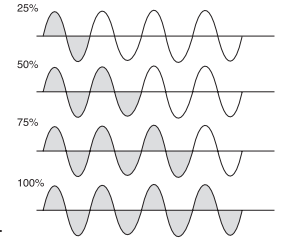
Control Method Selection



(Since the switch method can not be changed during the operation, it is important to check the position of the switch before inserting the power. Please, insert the power after checking the position of the switch.)

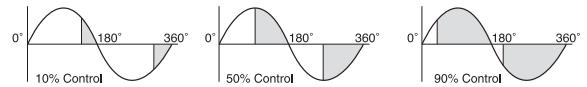
Cycle Control (Zero Crossing Control)

Cycle Control method is a method of making a loaded power as proportionally repeated ON/OFF cycle by a signal of input current in a fixed cycle. The proportionally repeated ON/OFF cycle makes the power applied to the load be regularly. This method is better than Phase Control since this control method makes the loaded power be ON/OFF at the zero point of AC when it is ON/OFF so that there is almost no noise occurrence and it is better for the linearity compared to the Phase Control.



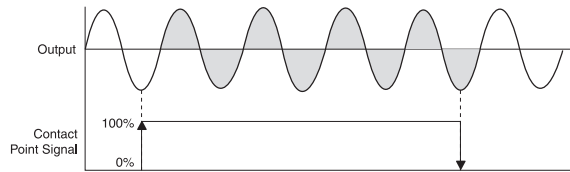
Phase Control

AC power source has 50/60 Hz frequency and 1/2 cycle of 60 Hz frequency appears a value of 0 ~ 180 degree in about 8,33 ms. Phase Control is a method that after inputting 1/2 cycle into AC power source, it proportionally generates power between 0 ~ 180 degree in 8,33 ms according to the control signal. Also, this method can be fully adjusted according to the wave form of AC so that AC motors and other variety of electronic devices are controlled easily.



ON/OFF Control (Contact Control)

ON/OFF Control is automatically set by the wiring terminal. (Refer to the wiring diagram of the input signal terminal.) Not by receiving the input voltage and input current, this method controls the output voltage by receiving contact point signal of relay and others.



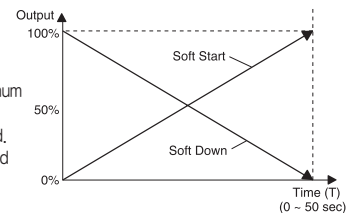
Output Voltage Limitation (OUT ADJ)

When selecting the external V.R(10kΩ), the output voltage limitation (OUT ADJ) is also operating.(Factory default Setting= Maximum) If you do not want to use the factory default then turn to the maximum.

SOFT START (DOWN)

If turn ON the power switch for the first time then there may be damaged to the load or electric power element or others since the maximum power delivers to the loads when using inductive load or etc. to capacitive load. Therefore, SOFT START function helps to increase gradually the loaded voltage.

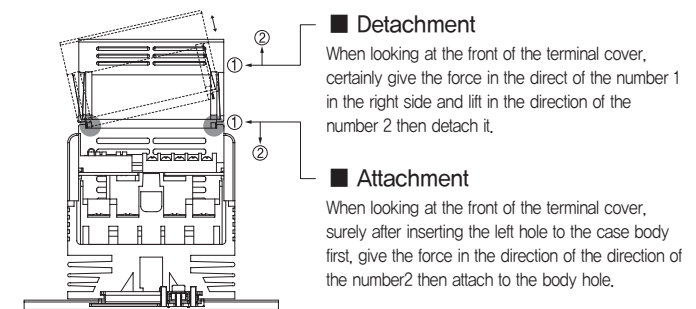
- Setting Time: 0 ~ 50 seconds (Factory default setting = 0 second)
- If SOFT START VOLUME is turned to the minimum then SOFT will not be operated.
- In the Cycle Control, SOFT will not be operated.
- All the operation, other than those, can be used by the selection.
- There is no meaning in the ON/OFF Control.



Output Display LED

If the control operation is normally operated after inserting the power supply then the LED will do the lighting operation.

How to detach the terminal cover



Detachment

When looking at the front of the terminal cover, certainly give the force in the direct of the number 1 in the right side and lift in the direction of the number 2 then detach it.

Attachment

When looking at the front of the terminal cover, surely after inserting the left hole to the case body first, give the force in the direction of the direction of the number2 then attach to the body hole.