

Thyristor Power Regulator

TPR-2N (50 A / 70 A)

INSTRUCTION MANUAL

HEAD OFFICE

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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.

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.

Table with 3 columns: Alert Type (DANGER, WARNING, CAUTION), Description of the hazardous situation, and Potential consequences.

Danger

- The input/output terminals are subject to electric shock risk. Never let the input/output terminals come in contact with your body or conductive substances.

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. When installing several units, install them with space at least 30mm in the horizontal direction and at least 100mm in the vertical direction. When using a coil load or inductive load that have big inrush current, there is a high risk of damaging the internal parts. So please be sure to use them below the rated current.

Suffix Code

Table with 3 columns: Model, Content, and Rated Current. It lists different power supply voltages (110V, 220V, 380V, 440V) and current ratings (50A, 70A).

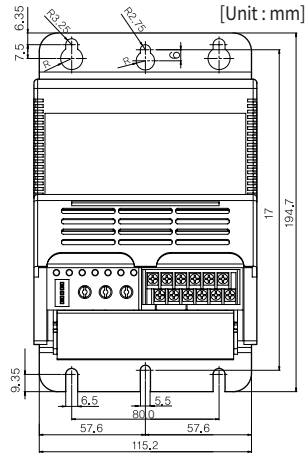
Specification

Table with 2 columns: Specification (Power supply voltage, Power frequency, Rated current, Applying load) and Value (110 VAC / 220 VAC / 380 VAC / 440 VAC, 50/60 Hz, 50 A, 70 A, Resistive load / Inductive load).

Table with 3 columns: Control Input, Control method, Movement type, Output voltage, Cooling method, Display method, Insulation resistance, Output control range, Dielectric strength, Line noise, Ambient temperature, Ambient RH, Storage temperature, Weight.

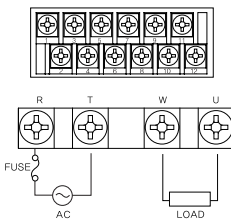
Dimension

Table with 4 columns: Capacity (Standard), W, H, D. Values: 50 A, 70 A; 115.2; 194.7; 131.



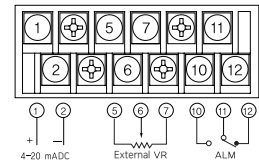
Connection Diagram

Terminal layout

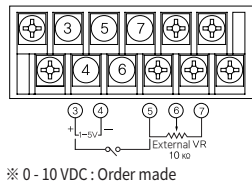


Connection diagram of input signal

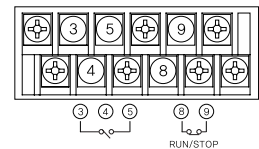
4 - 20 mA DC



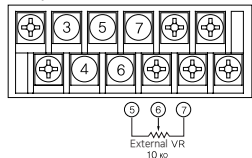
1 - 5 VDC / 0 - 10 VDC



ON/OFF connection diagram of terminal

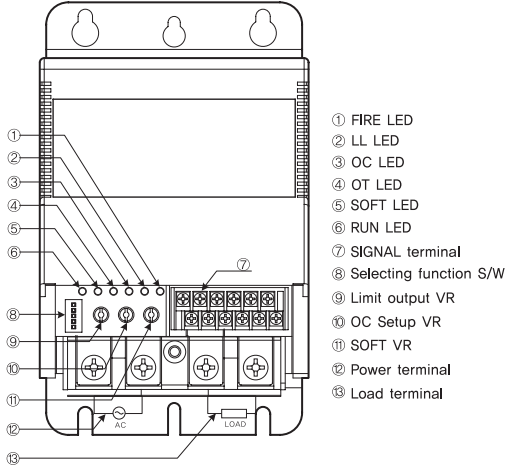


REMOTE connection diagram of input terminal



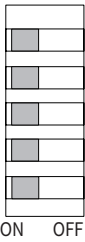
- Set internal jump to 1-5 V with regular type when doing ON/OFF. (Initial mode)
ON/OFF : 100% output when the contacts are connected. (ON)
RUN/STOP : RUN when the contact is disconnected. Stop when the contact is connected.

Part names



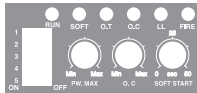
Functional Description

DIP S/W description



NO.	ON	OFF
1	RESISTOR	INDUCTANCE
2	PHASE	CYCLE
3	LOCAL(Use Inside VR)	REMOTE(Use external VR)
4	4 - 20 mA	1 - 5 V (ON/OFF), 0 - 10 V
5	-	REMOTE (Use external VR only)

Volume description



- PW.Max. : Change output value within 0 ~ 100 %
- O.C. : Set over current alarm value
- SOFT/START : Set soft start time

LED display

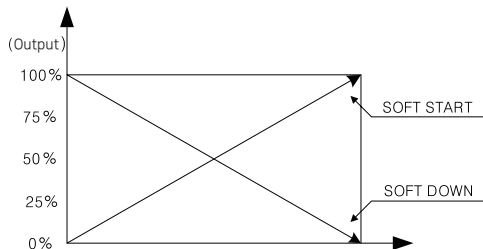
LED indicator name	Description
RUN	Lighted when power supplied
SOFT	Lighted when soft start operated
O.T	Lighted when heat sink overheated
O.C	Lighted when over current occurred
LL	Lighted when load disconnection detected
FIRE	Lighted when output become ON

※ RUN / STOP : All functions are paused and RUN LAMP is on.

SOFT-START

When using induction load and etc within capacitive load, turning ON the power switch will supply maximum electric power to the load and this may destroy power device and damage the load. This function prevents above malfunction to happen by making load voltage to increase gradually.

- Set time : 0 ~ 50 sec.
- Initial value : 0 sec.
- Soft-Start will not operate if soft-start volume is set as the minimum.
- It does not operate within the cycle control.
- It is unnecessary within the ON / OFF control mode.



Overheat alarm (O.T)

- If temperature of heat sink goes over 90 degree Celsius, then it will be lighted and alarm output will become ON.

Over current alarm (O.C)

- When value goes over the set value, then over current LED will be lighted immediately. Also, staying in this condition for more than 0.5 second will output the alarm.
- Setting range: 0 ~ max used current value.
- Initial value: Set maximum value. (70A)
- Only possible to use with phase control.

Load disconnection alarm (LL)

- Load disconnection detection: When output value is more than the set value and if the load current is less than 1A, alarm will be. Only applicable in phase control.

Display state of output quantity (FIRE)

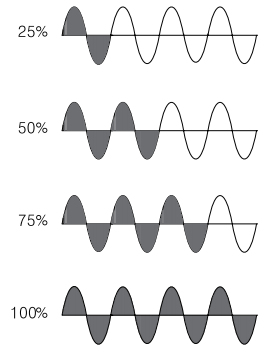
- When the output is ON, the LED will light and proportionally light according to the amount of output.

Output voltage limitation (PW. Max.)

- This is a function that limits output voltage when using input signal (mA, V) or external volume (10 kΩ) 0% of output will be yield if volume is set to the min, 50% of output will be yield if volume is set to middle of the min and max. And 100% of output will be yield if volume is set to the max.
- Initial setting is max.
- It is unnecessary within ON / OFF control mode.

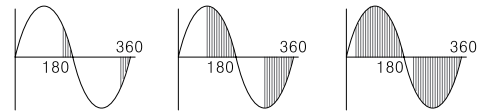
Cycle control (Zero crossing control : DIP S/W2 : OFF)

- Cycle Control method is a method of making a loaded power as proportionally repeated ON/OFF cycle by a signal of input control in a fixed cycle. This control method turns on/off at ZERO point of AC. when the load is switched on/off, so there is little NOISE occurrence and linearity compared to the phase control method.
- In Cycle Control, SOFT START function is not operating.



Phase control (PHASE : DIP S/W2 : ON)

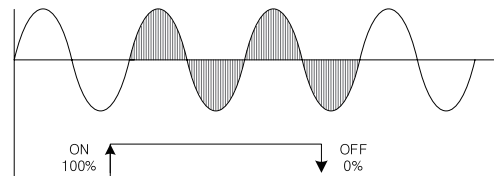
- AC power source has 50/60Hz frequency and 1/2 cycle of 60Hz frequency appears a value of 0 ~180 degree in about 8.33 ms. Phase Control is a method that after inputting 1/2 cycle into AC power source, it proportionally generates power between 0 ~ 180 degree in 8.33 ms according to the control signal. 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 (Input Contact control: DIP S/W4 : OFF)

- It is a method to control the output voltage by receiving the contact signal of relay and not voltage input and current input.

Inductance input (DIP S/W1 : OFF)



- This is a mode that is used when load contains a lot of inductance components such as coil. Max output value is limited to 50%.

[Operation Example]

