ATO

Series Three-phase Power Regulator

SCR POWER REGULATOR

Thank you for using our product! Please read this instruction manual carefully before use.

Product Features

★ Novel appearance, optimized heat dissipation, high performance and high quality.
★ Adopts single-chip microcomputer control, intelligent and modular design, high voltage resistance and anti-interference.
★ Multi-function LED indicators for clear viewing of operating status.
★ Built-in fast fuse and thermistor, with overcurrent / overheat protection.

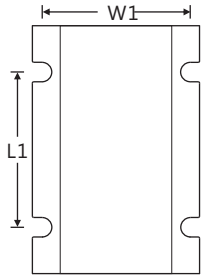
Product Performance

Rated Voltage	Three-phase 180-440VAC, 50/60Hz (3-phase 3-wire)	
Rated Current	120A 150A 200A 250A	
Auxiliary Power Supply	AC220V(50/60Hz) ±15%	
Output Mode	Phase-angle Output	
Control Signal	4-20mA , 1-5VDC , 2-10VDC 0-20mA , 0-5VDC , 0-10VDC	6 types of signals selectable.
Input Impedance	4-20mA (250Ω) , 1-5VDC (>8KΩ) , 2-10VDC (>8KΩ) 0-20mA (250Ω) , 0-5VDC (>8KΩ) , 0-10VDC (>8KΩ)	
Protection Function	1.Phase loss 2.Overtemperature (85℃)	
Display Function	LED panel displays SCR operating status and fault causes.	
Operating Environment	Temperature: 45 , Humidity: 90%RH	



F1

Mounting Dimensions



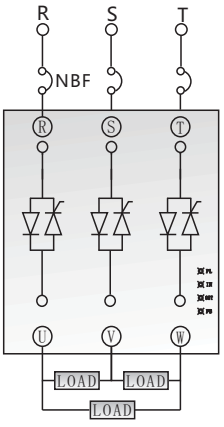
F2

Product model

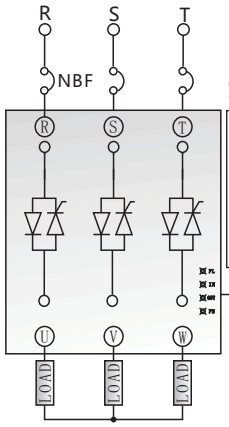
Model		HNSCR-□□LA-ZQ+		
Rated Current		120A 150A	200A	250A
Overall Dimensions mm	Figure	F1		
	L	245	315	315
	W	145	145	145
	H	210	210	225
Mounting Dimensions mm	Figure	F2		
	L1	150	205	205
	W1	135	135	135
Main Power Mounting Screws		M8		

Examples of connecting circuit

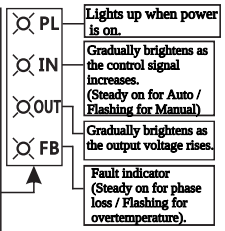
Three-phase (180-440VAC) Delta Connection



Three-phase (180-440VAC) Star Connection



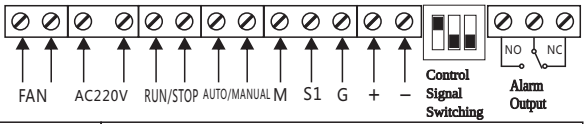
Indication Function Description



PL	Lights up when power is on.
IN	Gradually brightens as the control signal increases. (Steady on for Auto / Flashing for Manual)
OUT	Gradually brightens as the output voltage rises.
FB	Fault indicator (Steady on for phase loss / Flashing for overtemperature).

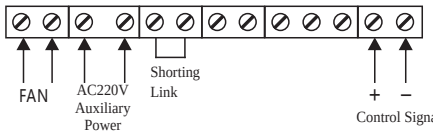
Caution: The neutral point of this product must NOT be connected to zero line!

Terminal Function Description

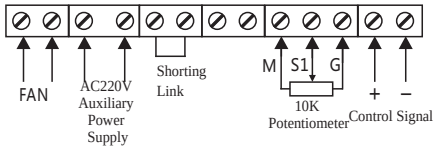


DIP Switch Setting Instructions		4-20mA / 1-5V / 2-10V / 0-20mA / 0-5V / 0-10V
FAN	Fan Connector	For 220V AC fan (cooling fan supplied as standard)
AC220V	Auxiliary Power Supply	AC220V(50/60Hz) ±15%: Power supply for PCB
RUN/STOP	Run / Stop	Short circuit: Output enabled; Open circuit: Output disabled.
AUTO/MANUAL		Selector for External Auto Signal / Internal Manual Signal Short: Manual signal; Open: Auto signal
M	Manual signal source +5V	1.External potentiometer can be connected for manual signal input. 2.The potentiometer can be used for amplitude limiting when external signal is applied.
S1	Manual signal input terminal	
G	Ground terminal	
+	Analog signal input +	Supported Input Control Signals: 4-20mA/1-5V/2-10V, 0-20mA/0-5V/0-10V. Factory default control signal: 4-20mA
–	Analog signal input –	
NO	Alarm Output	Normally Open Digital Output
NC		Normally Closed Digital Output

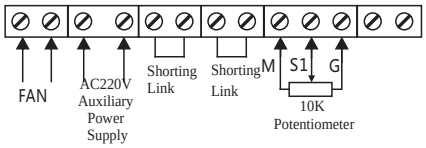
1. Automatic control via instrument



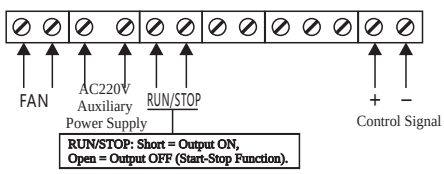
2. Instrument automatic control with potentiometer for maximum output limit



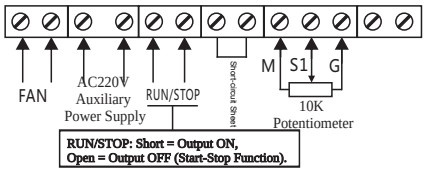
3. Manual potentiometer adjustment



4. Instrument automatic control with start-stop output



5. Manual potentiometer adjustment with start-stop output



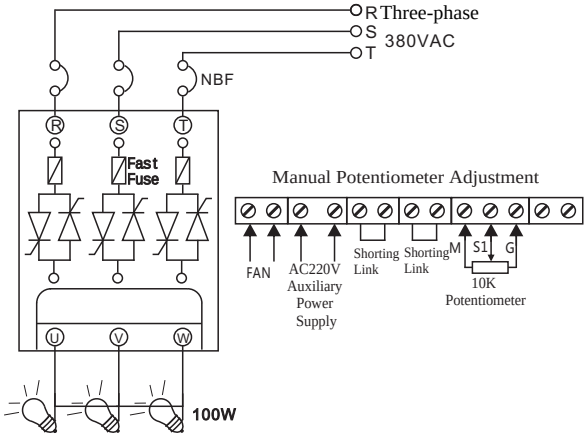
Output wave

Phase Angle Control



Debugging

If the load power is less than 50W, the SCR cannot operate normally. For reliable and smooth commissioning, a 60 – 100W bulb is generally adopted as dummy load.



Wire as shown in the figure above, apply AC220V auxiliary power, then the red "PL" indicator illuminates.
Then energize the three-phase power. Turn the potentiometer clockwise; the green "IN" and "OUT" indicators brighten gradually. Use a multimeter to measure the voltage between terminals U-V or V-W of the SCR, which varies from 0 to 380V. The brightness change of the bulb shall be continuous, uniform and smooth without sudden jump or fluctuation. Its variation is linearly proportional to the input signal.

Malfunction and means

1. **Symptom: Yellow light ON**
   Fault Analysis: Fast fuse blown.
   Test Method: Cut off all power supplies, open the front panel. Measure both ends of the three fast fuses respectively with the multimeter resistance range. Replace the fuse with infinite resistance.

2. **Symptom: No output (load does not work)**
   1 **Fault Analysis**: No auxiliary power input
   Test Method: Measure AC220V across auxiliary power terminals with multimeter AC voltage range.
   2 **Fault Analysis:** No control signal input
   Test Method: Measure control signal terminals with multimeter DC voltage range. Red probe on + terminal, black probe on - terminal. Reading below 1.2V indicates abnormal control signal input. (DC5V at full power output normally).
   3 **Fault Analysis:** No three-phase power input
   Test Method: Measure voltage between R, S, T with multimeter AC voltage range. Absence of AC380V means no 3-phase power supply.

3. **Symptom: Partial output. Load cannot be fully turned off even after disconnecting control signal (voltmeter shows approx. 110V on load)**
   Fault Analysis: The neutral point of Y-connected load is connected to neutral wire. Disconnect the neutral wire to fix.

4. **Unbalanced output current**
   1 **Fault Analysis:** One phase load open-circuited.
   Test Method: Measure resistance of three groups of loads by multimeter resistance range. Locate the burnt load and replace it before operation.
   2 **Fault Analysis:** One SCR module breakdown
   Test Method: Disconnect the load, then check short circuit between R-U, S-V, T-W with multimeter resistance range. Short circuit indicates SCR module breakdown.

Warning

1.The main circuit adopts three-phase three-wire input, no phase sequence requirement.
2.Applicable loads: constant resistance heating wire, IR far-infrared lamp tube, etc. Do not use with load less than 50W, otherwise SCR will be out of control.
3.For Y-connected load, the neutral point must not connect to neutral wire, or the SCR will lose control. If neutral connection is required, please select our three-phase four-wire model.
4.The SCR is wall-mounted. Vertical installation achieves optimal heat dissipation.
5.The SCR is a high-current device. Tighten terminals (R, S, T) and (U, V, W) firmly; loose terminals will heat up and burn out the SCR.
6.Built-in fast fuse for overcurrent protection. When the fuse blows (yellow LED on), first inspect the load for short circuit, partial discharge or arcing faults. After troubleshooting, open the panel for replacement. Replace only with a fuse of identical specification.
7.When the heat sink temperature exceeds 85℃, the SCR stops automatically. Check whether the actual load current exceeds the rated range. Improve ventilation of the SCR installation site. Restore power only after fault removal.
8.Operating environment: Use in well-ventilated areas, away from direct sunlight and thermal radiation, free of corrosive and flammable substances.

Use power selection and accessories

Product Model	Three-phase three-wire star connection				Built-in Fast Fuse Model	Built-in Module Model	Built-in Fan Model	Trigger Board
	Maximum Operating Power		Maximum Operating Current					
	Total 3-phase Power	Per-phase Power	Total 3-phase Current	Per-phase Current				
HNSCR-120LA-ZQ+	≤40KW	≤13.3KW	≤180A	≤60A	No Fast Fuse	J3-H2-120A+Module	EC120FAN/AC220V	J3-SCR-030-A6 (Half-controlled)
HNSCR-150LA-ZQ+	≤50KW	≤16.6KW	≤225A	≤75A	No Fast Fuse	FU-H3-150A+Module	EC120FAN/AC220V	J3-SCR-030-A6 (Half-controlled)
HNSCR-200LA-ZQ+	≤66KW	≤22KW	≤300A	≤100A	No Fast Fuse	FU-H3-200A+Module	EC120FAN/AC220V	J3-SCR-030-A6 (Half-controlled)
HNSCR-250LA-ZQ+	≤83KW	≤27.6KW	≤375A	≤125A	No Fast Fuse	FU-H3-250A+Module	EC120FAN/AC220V	J3-SCR-030-A6 (Half-controlled)