

Thank you for using the HGW1 three-phase series power regulator. As a new energy-saving power control device developed by our company with advanced foreign technologies, it integrates the control, main, protection, and feedback circuits. Lightweight, compact, and easy to install, it also offers soft start, commutation cut-off, constant current, current limiting, phase loss protection, overcurrent protection, and overheating protection. In recent years, it has been widely used in many applications.

1. Appearance and Product Features

Appearance:



Product Features:

- Adopts the highly reliable TCA785 dedicated phase-shifting control chip, ensuring precise phase locking and strong anti-interference capability.
- Standard configuration includes power phase-loss alarm, HOT over-temperature alarm, FUSE blowout indicator, and CURRENT overcurrent alarm.
- Comes with standard soft start and soft shutdown functions to protect the SCR module and load.
- Supports switching between closed-loop constant current and open-loop control modes for accurate temperature control.

2. Safety, Warnings and Precautions



Safety

1. Read the safety precautions carefully before use. The precautions marked here are critical for safety and must be followed.
2. When this product is used in scenarios involving personal safety risks or major property damage risks, it must be used with dual or triple protection devices installed.
3. When the SCR is not in the output state, it is not completely isolated. It is recommended to install a branch switch (NFB) without fail.
4. In addition to turning off the SCR, other operation is required to isolate the main power supply. As the output terminals are still live, it poses an electric shock hazard.



Warnings

1. To ensure the product's long-term use, use the standard input voltage correctly.
2. Arbitrary disassembly, processing, modification, and repair of this product are prohibited, as such actions may lead to electric shock, fire, or other hazards.

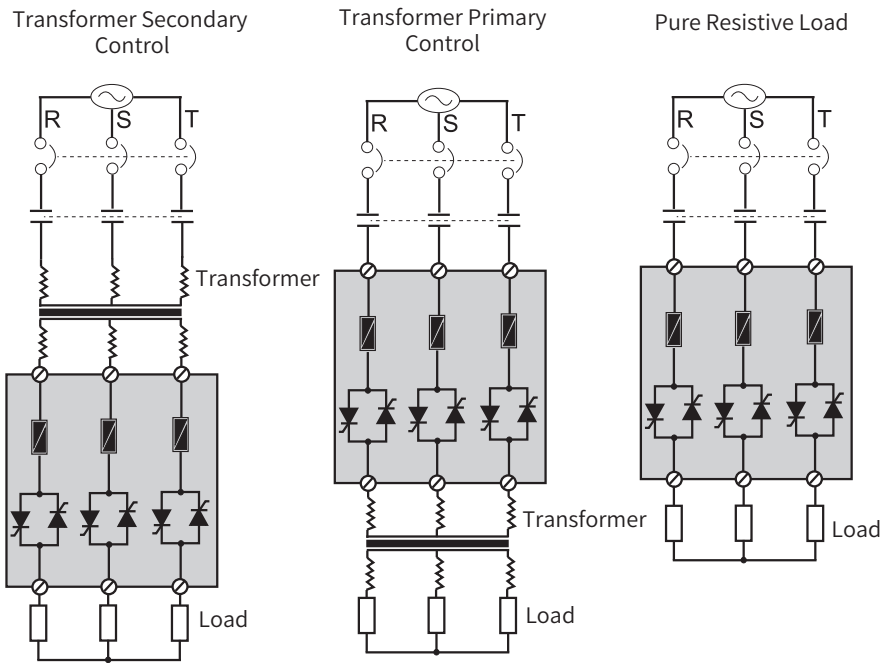


Precautions

1. Before use, confirm the product is undamaged from transportation.
2. Product's performance and service life would be directly effected by operating environment, which should be avoid: High-temperature areas with poor air circulation; Locations with corrosive or harmful gases (use a control box or control room for effective isolation in such cases).
3. When installing in a control box, drill holes in the box's upper part and fit an exhaust fan.
4. Operating humidity: Below 90% RH (no condensation).
5. Operating ambient temperature: 0°C~+40°C (max. 60°C). For temperatures between +40°C and +60°C, derate the rated current by 1.2% per 1°C increase.
6. Ensure all input/output wiring is tight. The SCR is a high-current device—loose terminals may cause arcing, leading to a sharp current spike and component burnout.
7. Do not touch the heatsink (it operates at high temperatures).
8. Input/output terminals pose an electric shock risk; avoid direct contact with conductors.

9. Do not connect unused terminals.
10. The load common line can connect to the neutral line.
11. When installing, follow gas thermodynamics principles and install in a vertical (top-to-bottom) direction.
12. This product (including components) has a 1-year warranty under normal use.
13. If the load is disconnected or current is below 0.6A, the SCR cannot be tested normally (ensure load current exceeds 0.6A).

3. Main Circuit Power Wiring



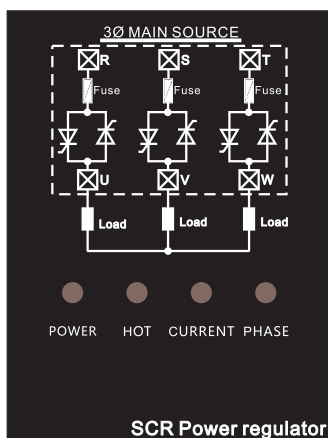
NFB → Cuts off power to prevent electric shock during maintenance or servicing.

MC → Cuts off power supplied to the load. If the power regulator malfunctions or temperature exceeds the set value significantly, shut down power to avoid equipment burnout or accidents caused by high temperatures.

SCR → Adjusts output current based on the control signal magnitude to achieve temperature control.

LOAD → Depending on the control mode, the load can be resistive, inductive, or variable-resistance (e.g., transformers, silicon carbide rods, silicon molybdenum rods).

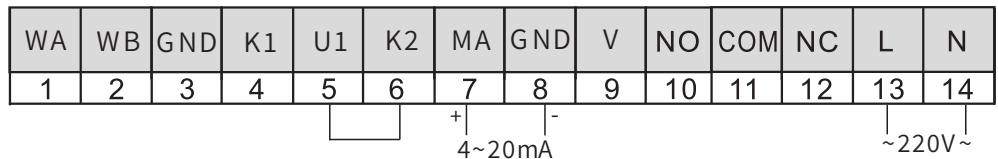
4. Panel Function Description



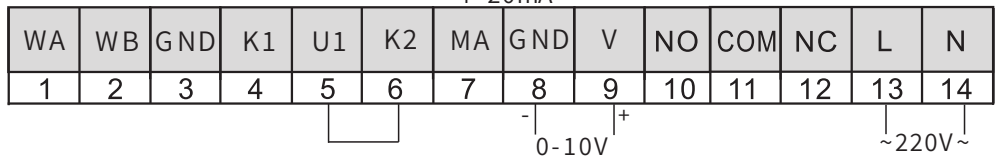
Name	Function Description
Power	Power Indicator. Illuminates during normal operation.
Hot	Over-temperature Alarm Indicator. Illuminates when the heatsink temperature exceeds 80°C caused by high ambient temperature or fan shutdown; turns off during normal operation.
Current	Overcurrent Alarm Indicator. Illuminates when the peak operating current is twice the peak rated current; turns off and the relay activates during normal operation.
Phase	Phase Loss Alarm Indicator. Illuminates when one phase of the three-phase input power to the power controller is disconnected; turns off and the relay activates during normal operation.

5. Terminal Wiring Diagram

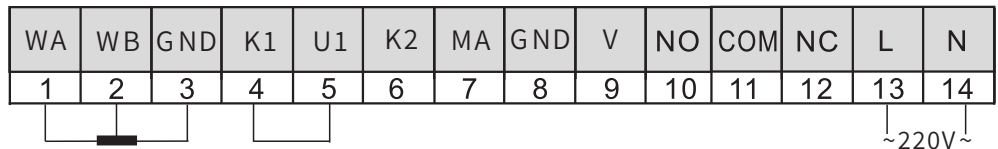
DC 4-20mA Wiring Method:



DC 0-10V Wiring Method:



Manual Potentiometer Wiring Method:



	Terminal Name	Function Description	Remarks
1	WA	Manual Potentiometer Terminal	User wiring for manual adjustment
2	WB	Center Tap Terminal of Manual Potentiometer	
3	GND	Manual Potentiometer Terminal	
4	K1	Terminal for Manual/Auto Changeover Switch. Manual adjustment is activated when K1 is connected to U1 and K2 is disconnected from U1. Automatic adjustment is activated when K2 is connected to U1 and K1 is disconnected from U1.	User wiring for manual/auto changeover adjustment 1. GND is the common terminal for automatic signals. 2. Only one of the three control signals can be used at a time; two or three signals cannot be used simultaneously.
5	U1		
6	K2		
7	MA	Positive Terminal for 4-20mA Automatic Control Signal Input	
8	GND	Negative Terminal for Automatic Control Signal Input	
9	V	Positive Terminal for 0-10V Automatic Control Signal Input	
10	NO	Alarm Output Normally Open (NO) Contact when NO is connected to COM. Alarm Output Normally Closed (NC) Contact when NC is connected to COM.	User wiring for alarm output device Load capacity: 240V AC/5A, 24V DC/5A NO: Normally Open Contact NC: Normally Closed Contact
11	COM		
12	NC		
13	L	Connect to 220V AC / 50Hz	User wiring
14	N		

6. Potentiometer Function Description (All potentiometers are pre-adjusted at the factory; no adjustment is needed unless specified requirement.)

P1: Overcurrent Potentiometer

Adjustment of the power regulator's overcurrent shutdown upper limit (clockwise rotation raises the overcurrent threshold). The regulator comes factory-set to 200% of the peak rated current—exceeding this peak operating current triggers automatic output cutoff.

P3, P4, P5: A, B, C Three-Phase Sawtooth Wave Adjustment Potentiometers

Balancing three-phase output voltage. These potentiometers are factory-pre-adjusted for balance, eliminating the need for user adjustment.

P6: Phase Loss Adjustment Potentiometer

Factory-adjusted to optimal settings; no user adjustment necessary.

P7: Current Limiting Potentiometer

Setting the upper limit of the power regulator's current output when the control signal is at maximum (clockwise rotation increases the current limiting threshold). The regulator's current limiting threshold is factory-set to 100% of the rated current; exceeding this value automatically reduces the conduction angle, maintaining the current upper limit. During operation, users are advised to ensure the output current does not exceed the regulator's current limiting threshold (100% of the rated current); failure to do so may overload the regulator.

Note: Avoid adjustment except under special circumstances—otherwise, the current limiting threshold could shift to a higher level.

7. Specification Selection Table

Model Identification:

HGW 1

Specification Table:

Specification	Current	Load Power (KW)		Overall Dimensions (mm)			Mounting Dimensions (mm)		Weight	Screws and Locking Torque		Cooling Method
		220V	380V	Length	Width	Height	Length	Width				
HGW1-4-4-030-P	30A	9.5	16.5	290	134	224	275	104	6	M8	40kgfcm	Forced air cooling
HGW1-4-4-040-P	40A	12.5	20	290	134	224	275	104	6	M8	40kgfcm	Forced air cooling
HGW1-4-4-050-P	50A	15.5	27	290	134	224	275	104	6	M8	50kgfcm	Forced air cooling
HGW1-4-4-060-P	60A	19	33	290	134	224	275	104	6	M8	50kgfcm	Forced air cooling
HGW1-4-4-075-P	75A	23.5	41	290	134	224	275	104	6	M8	70kgfcm	Forced air cooling
HGW1-4-4-080-P	80A	25.5	44	290	134	224	275	104	6	M8	75kgfcm	Forced air cooling
HGW1-4-4-090-P	90A	28.5	49	290	134	224	275	104	6	M8	85kgfcm	Forced air cooling
HGW1-4-4-100-P	100A	32	55	290	134	224	275	104	6	M8	85kgfcm	Forced air cooling
HGW1-4-4-125-P	125A	40	68.5	325	164	208	316	104	10	M8	95kgfcm	Forced air cooling
HGW1-4-4-150-P	150A	45	75	325	164	208	316	104	10	M8	170kgfcm	Forced air cooling
HGW1-4-4-175-P	175A	53	88	325	164	208	316	104	11	M8	200kgfcm	Forced air cooling
HGW1-4-4-200-P	200A	58	100	420	244	236	401	160	13	M10	220kgfcm	Forced air cooling
HGW1-4-4-250-P	250A	73	125	420	244	236	401	160	13	M10	220kgfcm	Forced air cooling
HGW1-4-4-300-P	300A	87	150	435	263	248	416	160	15	M10	250kgfcm	Forced air cooling
HGW1-4-4-350-P	350A	100	177	435	263	248	416	160	18	M10	250kgfcm	Forced air cooling
HGW1-4-4-400-P	400A	115	200	435	263	290	416	160	22	M10	250kgfcm	Forced air cooling

* The above parameters are for reference only. The actual parameters are subject to the material.