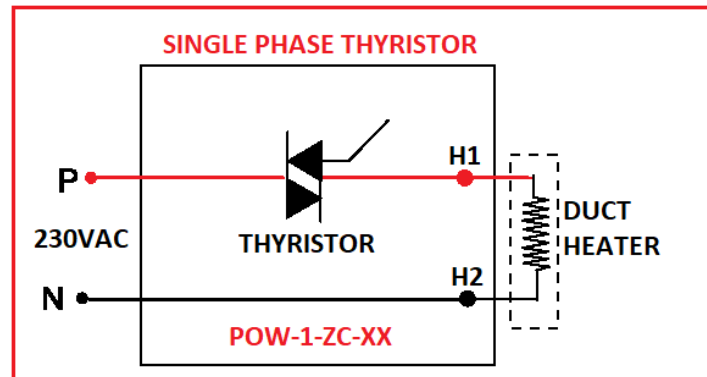
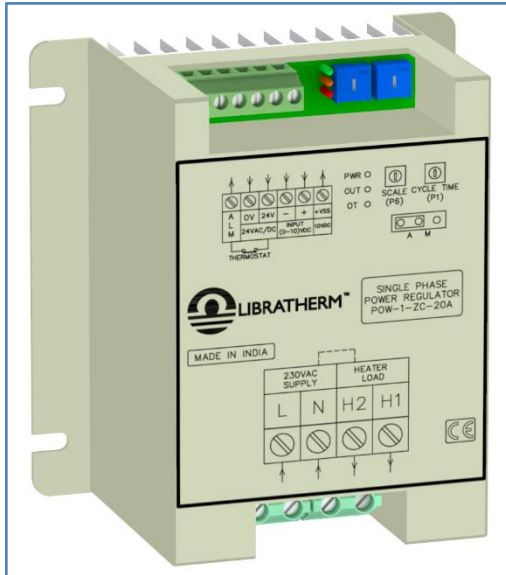


Single Phase Thyristor Power Regulators (Switch) for Duct Heaters



Model Wise Description:

Model	Product Description	Size (mm) (W x H x D)
POW-1-ZC-10A	Single Phase Heater power regulator for max. 2KW @220-280VAC	120 x 125 x 65
POW-1-ZC-20A	Single Phase Heater power regulator for max. 4KW @220-280VAC	120 x 125 x 65
POW-1-ZC-30A	Single Phase Heater power regulator for max. 6KW @220-280VAC	130 x 125 x 85
POW-1-ZC-40A	Single Phase Heater power regulator for max. 8KW @220-280VAC	130 x 175 x 85
POW-1-ZC-50A	Single Phase Heater power regulator for max. 10KW @220-280VAC	130 x 200 x 85

Note: All max. Current calculations are done for heaters designed at 220VAC. For example, for 4KW @ 220VAC, the max. Current is $4000/220 = 18.18A$. Similarly, for 4KW@280VAC, the max current is $4000/280 = 14.28A$

Features:

- Solid-state, field-proven, rugged and reliable design.
- Operates on 24VAC/DC
- Control signal 4-20mA/0-10V (Factory set to 0-10V)
- Zero cross-over Burst fire switching control
- PWM in proportion to the control signal
- Adjustable ON-OFF duty cycle time
- LED indications for Power ON, Input Command and Over temperature of the heatsink.
- Built-in thermostat for Auto-Reset Over-Temperature protection
- Designed for single-phase heater load 2 to 10KW @ 220VAC-280VAC

Applications:

- Air Heater power control in AHU duct
- Power control of Resistive heaters used in Industrial Applications

Description:

Libratherm offers a single-phase heater power regulator model POW-1-ZC-XX for electric power control of resistive heating loads operating on single-phase 230VAC. This regulator accepts the user-selectable DC control signal of 0-10V and 4-20mA and can be easily interfaced with BMS, DDC, PID, or PLC. An external potentiometer can also be used for manual control. The On-Off duty cycle of voltage across the heaters can gradually vary proportional to the control signal. For a preset cycle time of 4 seconds, 50% power will be delivered by keeping the heater ON for 2 seconds and OFF for 2 seconds.

The facility is also provided to protect against the regulator's overheating. Under normal conditions, the built-in thermostat switch will remain closed and will open when the device or heat sink temperature crosses around 90°C. The user can connect an external alarm relay to the interlock. Under normal conditions, the external relay will remain energized, and in case of overtemperature, the relay will de-energize.

Auto control is done through an external signal of 0-10V, and manual control is done using an on-card preset that is user-selectable using a jumper link.

This model POW-1-ZC-XX is available in a rugged powder-coated metal enclosure and can be easily fitted inside the panel. The terminal connection diagram and other settings on the top surface are lasers marked to facilitate the user for the wiring and operation of POW-1-ZC-XX.

Technical Specifications:

Item	Single Phase Thyristor based heater power regulator
Model	POW-1-ZC-XX (XX = 10A, 20A,30A,40A,50A)
Control Signal Input (Linear)	0-10V, 4-20mA – user selectable through a DIP switch or an external 10K potentiometer. (Factory set to 0-10V).
Control Technique	Zero Cross Over Burst Firing control
PWM Cycle Time	2 to 20 seconds – adjustable (Factory set to 4 seconds)
Aux. Supply Voltage	24VAC/DC +/-10% @ max 10watt.
Heater Supply	Single Phase (220-280) VAC @ 50/60Hz
Max. Load Current	20A,30A,40A,50A @ 220VAC - 280VAC (As per the model specified in the above table)
Auto/Manual Control	On-card jumper selectable. The heater output voltage is scalable using the SCALE on-card single-turn preset.
Over Temperature Protection	A 90oC thermostat (NC type) is mounted on a heatsink. If the heatsink temperature exceeds 90oC, the heater is turned off.
Alarm Output	24VAC/DC supply point is available at the terminal in series with the NC contact of the Thermostat.
LED Indication	LEDs for Power ON, Heater ON and Over Temperature
Mounting	Base plate mounting using 4 x M4 screws.
Connections	6xTerminal connectors for Auxiliary Supply and Control Signal, 4x30A/50A terminal connectors for Heater Supply and Heater Load.
Dimensions	As given in the above table.
CE Certification	Low Voltage Directives - 2014/35/EU and EMC Directives – 2014/30/EU

Specifications are subject to change due to continuous product up-gradation.

Ordering Information:

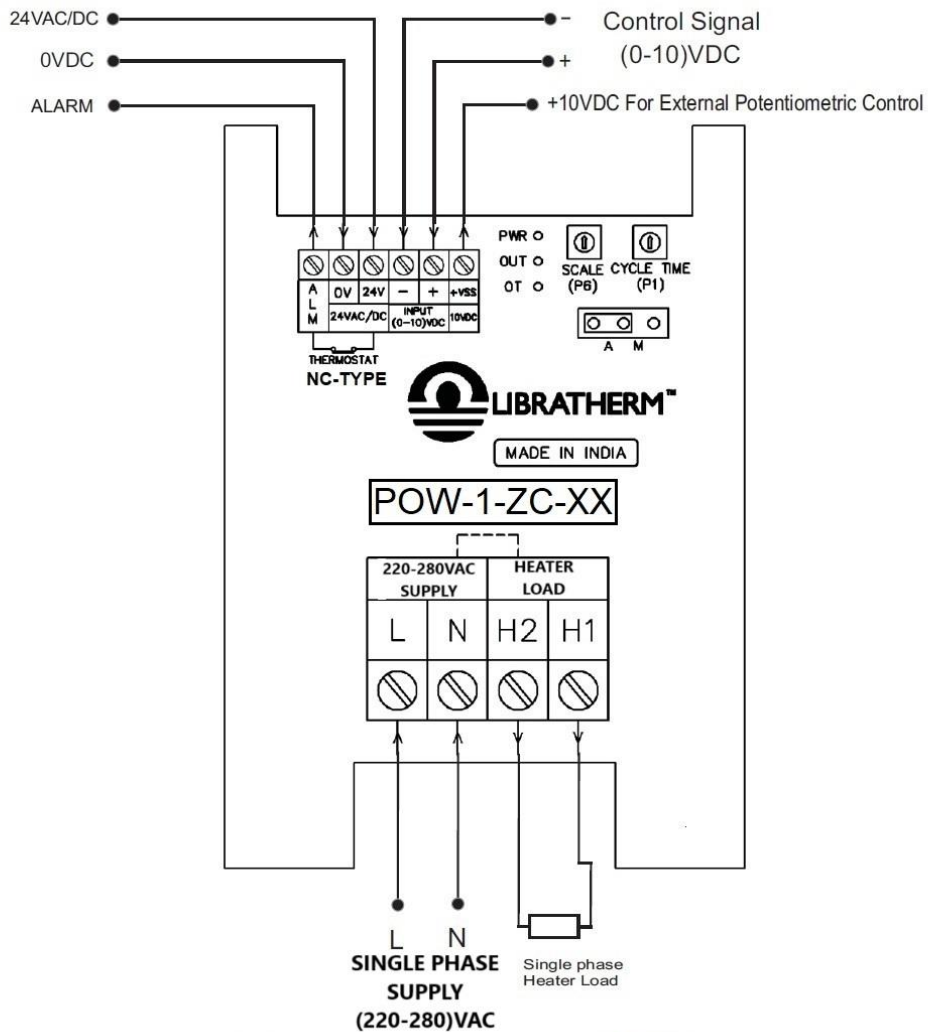
Model	Product Description	Part no.
POW-1-ZC-10A	Single Phase Heater power regulator for max. 2KW @220VAC-280VAC	2702
POW-1-ZC-20A	Single Phase Heater power regulator for max. 4KW @220VAC -280VAC	2703
POW-1-ZC-30A	Single Phase Heater power regulator for max. 6KW @220VAC – 280VAC	2704
POW-1-ZC-40A	Single Phase Heater power regulator for max. 8KW @220VAC-280VAC	2705
POW-1-ZC-50A	Single Phase Heater power regulator for max. 10KW @220VAC – 280VAC	2706

Wiring Diagram:

WIRING DIAGRAM OF SINGLE-PHASE THYRISTOR POWER REGULATOR

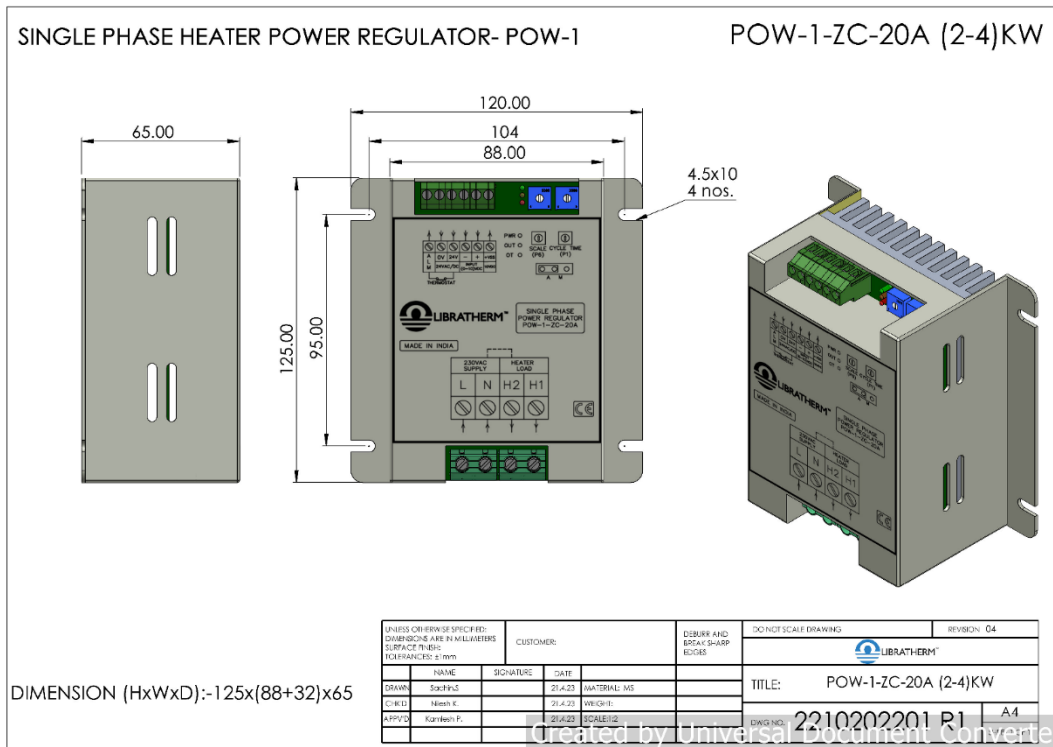
(MODELS : POW-1-ZC-10A TO 50A)

NOTE : CONTROL SIGNAL GROUND AND 24V SUPPLY
GROUND ARE ISOLATED



CAUTION :
FEED SINGLE PHASE SUPPLY
THROUGH TWO POLE MCB OF
SUITABLE VOLTAGE AND CURRENT
RATINGS

Dimensional Drawing:



Precautions: The user is advised to follow the guidelines while installing and operating this power regulator.

- Fix the unit on a flat surface using 4 x M4 screws.
- Connect two pole MCBs or fuse in series with the heater supply line.
- Heater and supply cables must be insulated, and copper conductors must be of proper gauge.
- Use a shielded cable for the control signal wiring.
- Connect the Earth lug with the mounting screw.
- Ensure the heater coil resistance should not be less than 11 ohms for a max current of 20A @ 220VAC (model POW-1-ZC-20A) and should not be less than 5.5 Ohms for a max current of 40A @ 220VAC (model POW-1-ZC-40A)
- Ensure proper air ventilation at the installation area; if required, install exhaust fans in the panel or the enclosure.
- Environment temperature should be within 55oC.
- Refer to the wiring diagram while making connections.
- Avoid disturbing the ON-CARD blue colour preset settings. (Cycle Time is fixed at around 4 sec).