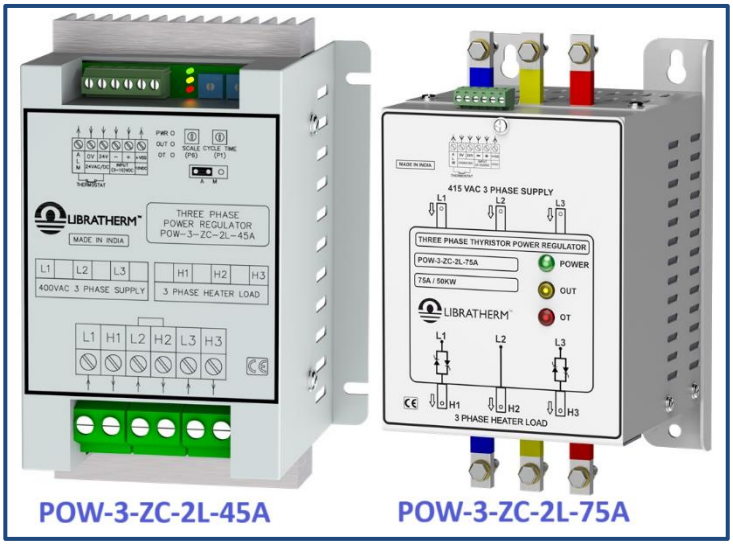
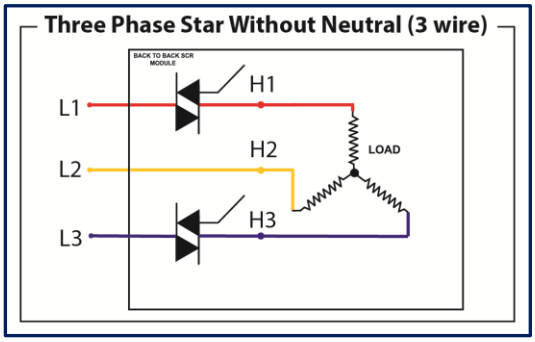
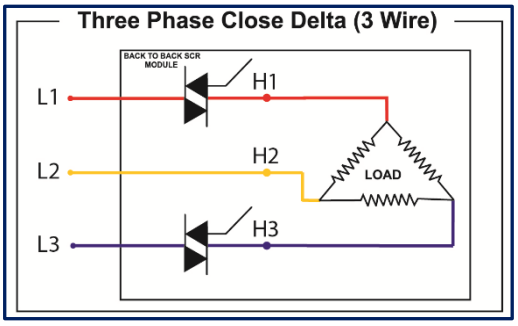
LIBRATHERM
INSTRUMENTS PVT LTD

ISO 9001
BUREAU VERITAS
Certification

Three-phase thyristor Power Regulators (Switch) for Duct Heaters (24KW to 54KW)







Model Wise Description:

Model	Product Description	Size (W x H x D) mm
POW-3-ZC-2L-35A	Three Phase Heater power regulators for 24KW @ (380-440) VAC	130 x 225 x 120
POW-3-ZC-2L-40A	Three Phase Heater power regulators for 27KW @ (380-440) VAC	130 x 235 x 120
POW-3-ZC-2L-45A	Three Phase Heater power regulators for 30KW @ (380-440) VAC	130 x 245 x 120
POW-3-ZC-2L-50A	Three Phase Heater power regulators for 36KW @ (380-440) VAC	150 x 240 x 160
POW-3-ZC-2L-60A	Three Phase Heater power regulators for 42KW @ (380-440) VAC	150 x 240 x 160
POW-3-ZC-2L-75A	Three Phase Heater power regulators for 54KW @ (380-440) VAC	150 x 240 x 160

Partners In Measurement and Control (03032024)
401-403, Diamond Industrial Estate, Ketki Pada Road, Dahisar East, Mumbai 400068, Maharashtra, India.
Tel: 91-22-42555334,42555353. Email: libratherm@libratherm.com; sales@libratherm.com

Features:

- Solid-state, field-proven, rugged and reliable design.
- Operates on 24VAC/DC
- Control signal 4-20mA/0-5V/0-10V/Potentiometer (Factory set to 0-10V)
- Three phase two leg - zero cross-over Burst fire switching control
- LED indications for Power ON, Input Command and Over temperature of the heatsink.
- Built-in thermostat for Auto-Reset Over-Temperature protection
- Built-in 24VDC operated cooling fan on Heat-Sink.
- Designed for three-phase heater load of 24KW to 54KW@ 415VAC

Applications:

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

Description:

Libratherm offers a three-phase heater power regulator model **POW-3-ZC-2L-XXA** for electric power control of resistive heating loads operating on three-phase 415VAC. This regulator accepts the user-selectable DC control signal of 0-5V, 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 proportionally to the input 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 overheating. Under normal conditions, the built-in thermostat switch will remain closed and go open when the device or heat-sink temperature crosses around 90^{o}C. The user can connect an external alarm relay to the interlock. Auto control through an external control signal or Manual control using a card preset is user-selectable.

These POW-3-ZC-2L-XXA models are available in a rugged powder-coated metallic enclosure with an extruded aluminum heat sink and can be easily fitted inside the panel. A high-speed cooling fan operating on 24VDC is provided within the assembly to keep the heat-sink material cool against overheating.

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Technical Specifications:

Item	Three Phase 2 Leg Control Thyristor-based heater power regulator
Model	POW-3-ZC-2L-XXA (As specified in the above table)
Control Signal Input (Linear)	0-5V, 0-10V, 4-20mA or using an external 10K potentiometer. (Factory set to 0-10V)
Control Technique	Zero Cross Over Burst Firing control
Aux. Supply Voltage	24VAC/DC +/-10% @ max 10 Watt. (including supply to the FAN)
Heater Supply Voltage	380 to 440VAC three phase @ 50/60Hz
Max. Load Current	35A to 75A @ 380 to 440VAC (As per the model specified in the above table)
Auto/Manual Control	The on-card jumper is selectable. The heater output voltage is scalable using the on-card single-turn preset marked SCALE.
Over Temperature Protection	A thermostat of 90^{o}C is mounted on a heatsink. (NC type).
Alarm Output	24VAC/DC supply point is available at the terminal in series with the NC contact of the Thermostat.
Mounting	Base plate mounting using four screws.
Connections	5A Terminal PCB connectors for Auxiliary Supply and control signal, heavy-duty Terminal PCB connectors for Heater Supply and Heater load. (For the models up to POW-3-ZC-2L-45A or 30KW/45A. For the higher current rating models, suitable sizes of Aluminum bus bars are provided for heater supply and heater load connections.
Cooling	Forced Air cooling using a 3-inch FAN, operated on 24VDC @ 3Watt
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.

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Ordering Information:

Model	Product Description	Part Number
POW-3-ZC-2L-35A	Three-phase heater power regulator for max. 24KW @ (380-440) VAC	2757
POW-3-ZC-2L-40A	Three-phase heater power regulator for max. 27KW @ (380-440) VAC	2758
POW-3-ZC-2L-45A	Three-phase heater power regulator for max. 30KW @ (380-440) VAC	2759
POW-3-ZC-2L-50A	Three-phase heater power regulator for max. 36KW @ (380-440) VAC	2760
POW-3-ZC-2L-60A	Three-phase heater power regulator for max. 42KW @ (380-440) VAC	2761
POW-3-ZC-2L-75A	Three-phase heater power regulator for max. 54KW @ (380-440) VAC	2762

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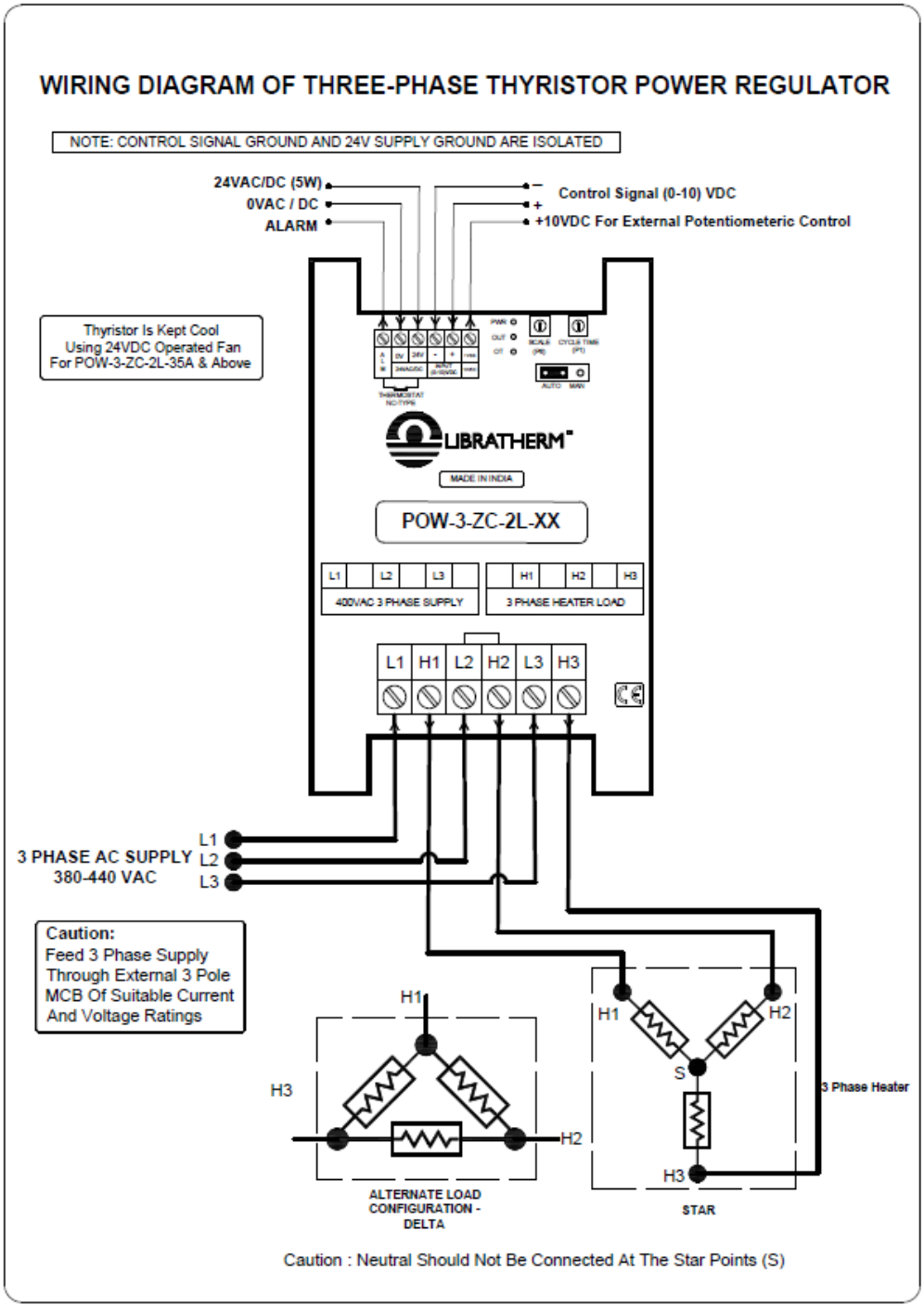
Wiring Diagram: (POW-3-ZC-2L-35A to POW-3-ZC-2L-45A)



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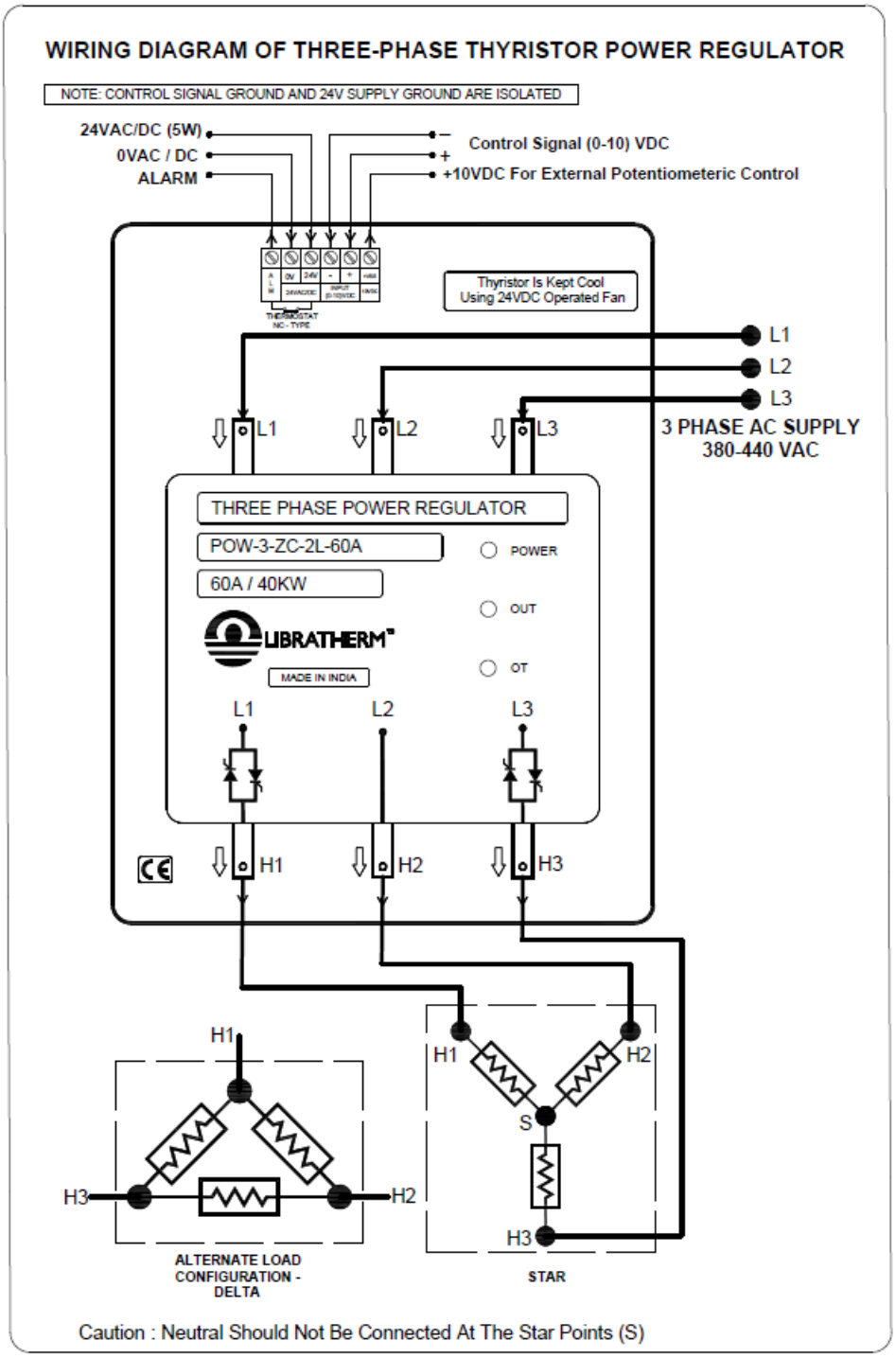
Wiring Diagram: (POW-3-ZC-2L-50A to POW-3-ZC-2L-75A)



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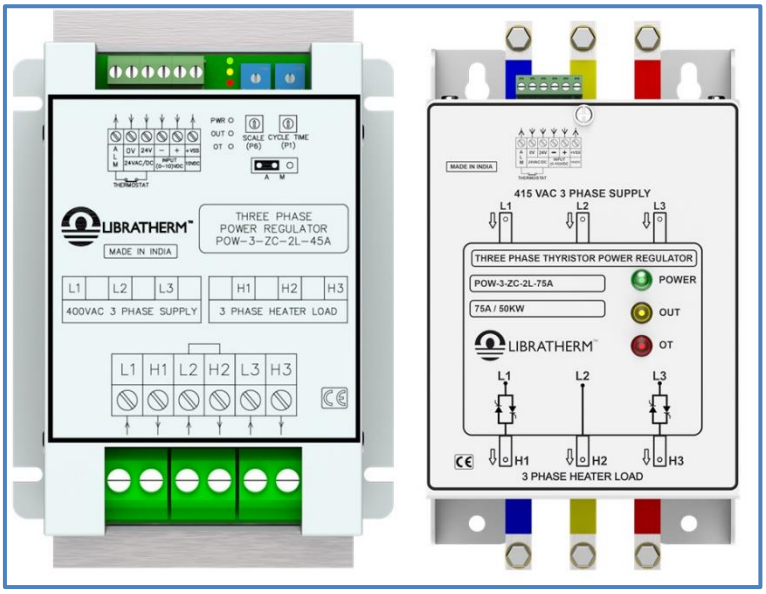
Front view of Thyristor POW-3-ZC-2L-45A and POW-3-ZC-2L-75A



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 three pole MCB or 3 x Fuse of suitable ratings 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 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 the connections.
- Avoid disturbing the on-card blue colour preset settings.
- These are all factory set (Cycle Time is fixed at around 4 sec).
- Above model uses 24VDC operated cooling fan to keep the Heatsink within safe temperature.
- Built-in thermostat will shut off the thyristor if the heatsink temperature exceeds the safe limit of 90oC due to fan failure or poor air ventilation in the panel/enclosure.
- Every effort has been made to produce this data sheet and the specified product with the same or alternate name, model number, or part number to ensure accuracy and reliability in its functions and features. Libratherm does not accept responsibility for any damage, expense, injury, loss or consequential loss resulting from errors or omissions in the datasheet or the product specifications.
- User may incorporate additional electro-mechanical safety along with the specified product to maintain redundancy in case of any malfunction in operation.
- Libratherm Instruments Pvt Ltd has a policy of continuous improvement and reserves the right to change this specification without notice.

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