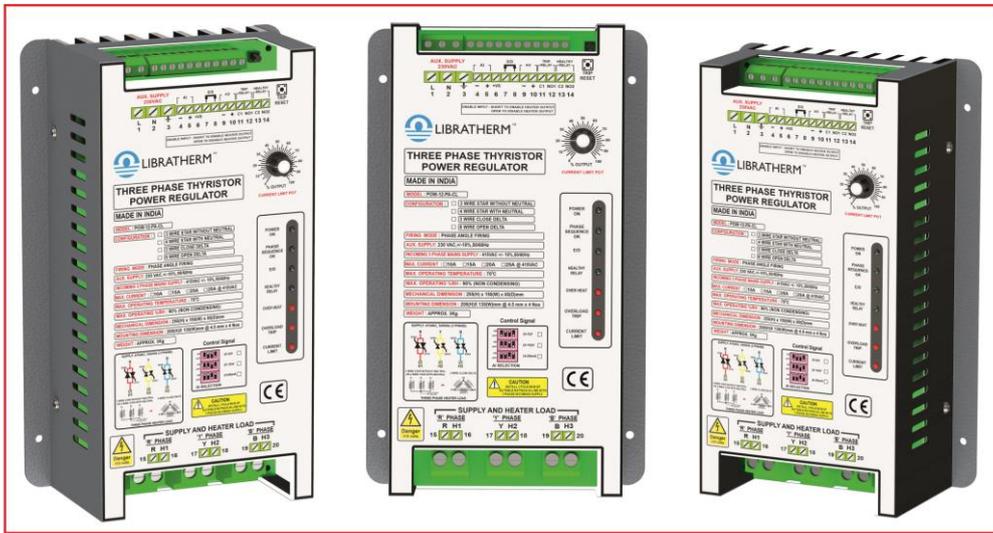
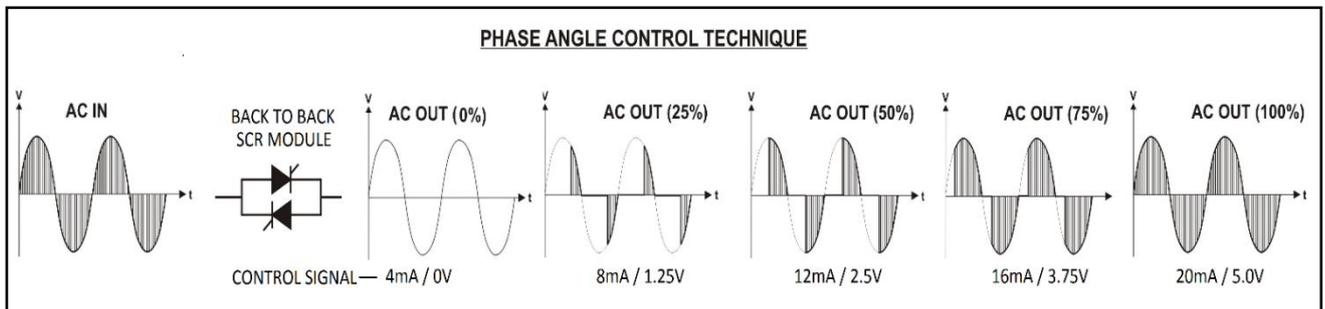


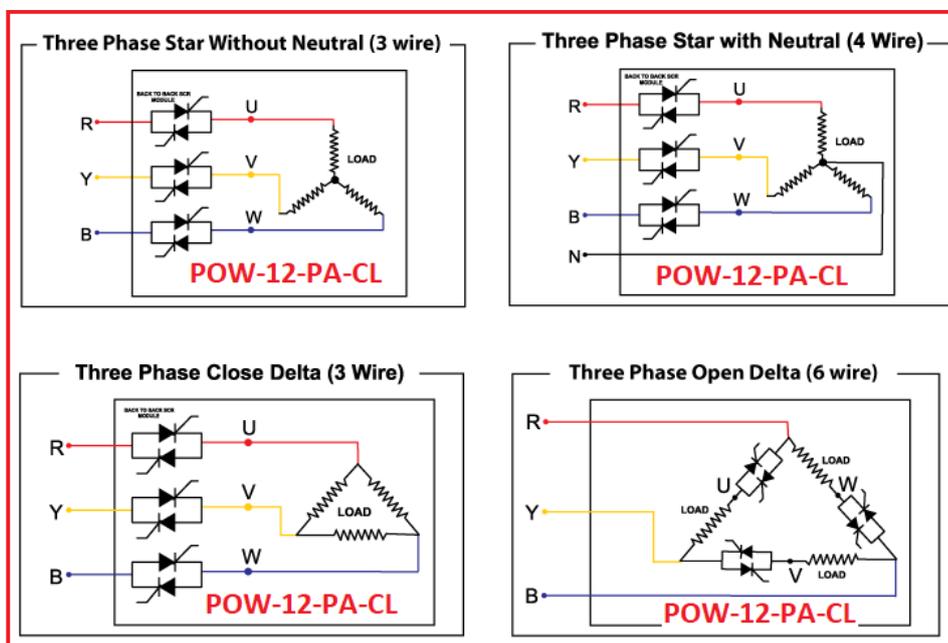
Three Phase Thyristor based Heater Power Regulator (6 to 27KW)



POW-12-PA-CL-XX



Various Three-Phase Heater Load Configuration



Partners In Measurement and Control (02092023)

401-403, Diamond Industrial Estate, Ketki Pada Road, Dahisar east, Mumbai 400068, Maharashtra, India.

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Model Wise Descriptions: TABLE 1

Model	Product Description
POW-12-PA-CL-10A	Three-phase thyristor power regulator - suitable for max. 6KW/10A @ 415/440VAC with current control and overload protection.
POW-12-PA-CL-15A	Three-phase thyristor power regulator - suitable for max. 12KW/15A @ 415/440VAC with current control and overload protection.
POW-12-PA-CL-20A	Three-phase thyristor power regulator - suitable for max. 15KW/20A @ 415/440VAC with current control and overload protection.
POW-12-PA-CL-25A	Three-phase thyristor power regulator - suitable for max. 18KW/25A @ 415/440VAC with current control and overload protection.
POW-12-PA-CL-30A	Three-phase thyristor power regulator - suitable for max. 21KW/30A @ 415/440VAC with current control and overload protection.
POW-12-PA-CL-35A	Three-phase thyristor power regulator - suitable for max. 24KW/35A @ 415/440VAC with current control and overload protection.
POW-12-PA-CL-40A	Three-phase thyristor power regulator - suitable for max. 27KW/40A @ 415/440VAC with current control and overload protection.

Key Features :

- Self-synchronized six-pulse SCR firing card
- Semikron – Germany brand 3 phase SCR device.
- 1 x AI, 1 x AO, 1 x DI, 2 x DO
- User selectable control signal (4-20)mA/(0-5)VDC/(0-10)VDC/Potentiometer(1 x AI)
- Auto-detection of phase sequence and auto-synchronization
- Built-in cooling fan for 21KW to 27KW models.
- Heatsinks are mounted with thermistors – protection against over-heating
- Facility to start/stop thyristor using external potential free contact (1 x DI)
- Front Panel LEDs indicate the status of over current, over temperature, phase reversal etc...
- Built-in Current Control and Overcurrent Trip facility to limit the desired current through heaters
- Retransmission of 4-20mA or 0-10V proportional to the load current (1 x AO)
- Trip Contact Relay and Healthy Relay Contacts (2 x DO)
- Gradual Soft increases and decreases of voltage across the load, unlike the ON-OFF type.
- Separate auxiliary supply of 230VAC, 50/60Hz
- SCR devices are protected by RC snubbers and surge suppressors
- Current control feature avoids needing an external Fuse in series with the load.
- Rugged metal enclosure & modular design - easy to install & easy to maintain.
- Libratherm Thyristor power regulators are time-tested & field-proven in all major industries.
- More than 2000 installations have taken place across India & abroad and the number is growing rapidly.
- CE Certified

Application Areas:

- **Furnace/Oven control**
- **AHU and De-Humidifier**
- **Hot Air Generator**
- **Industrial Heating control**

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Description of Thyristor Power Regulator:

Thyristor-based Power Regulator has varied applications and is commended for smooth and steady-state control. It can be used with heating elements like Nichrome, Tungsten, Kanthal, Infra-Red, Ceramic, etc., where precise, accurate, and continuously variable temperature/power control is required. Compared to conventional contactor-based temperature/power control systems, there is a significant advantages of a Thyristor-based control system, such as consistent heating, enhanced heater life, power saving, accurate control and reduced maintenance cost. The POW-12 can be used for small laboratory ovens, furnaces, Air heaters, etc....

Libratherm offers a ready-to-use compact 3-phase power regulator for electrical heating loads ranging from 6 KW to 27KW @ 380/415/440VAC 3-phase supply. This power pack module comprises SCR-triggering card, a rightly rated back-to-back connected SCRs (with electrically isolated base)- mounted on the Aluminum heat sink. Suitable RC snubbers are provided to protect SCR devices.

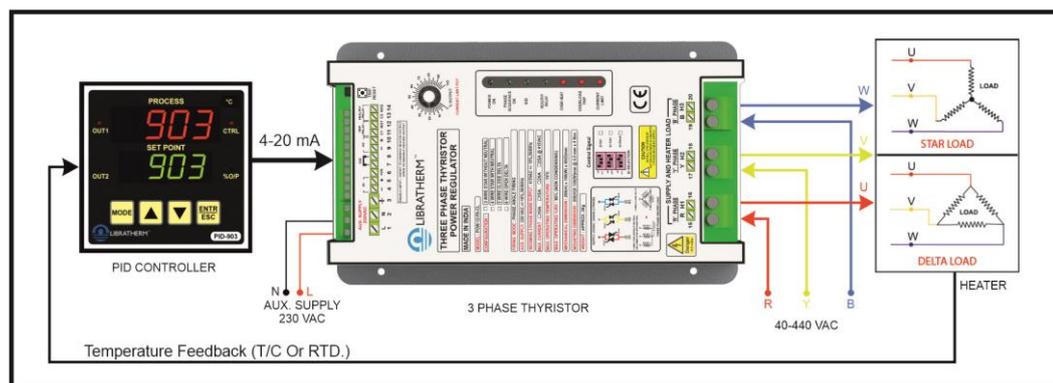
Heavy-duty Terminal connectors are provided for the 3-phase AC supply, the Heater wires at one end, and control signals at another. The complete assembly is mounted on an aluminium heat sink and enclosed with an MS powder-coated enclosure, which can be easily fixed inside the closed control panel. Potentiometric settings are accessible for on-site calibrations, max/min voltage output and ramp up / ramp down time adjustments, and current limit and overload settings. This model accepts the control signal from an external DDC, PID, or PLC controller in the form of (0-5)V, (0-10)V, or (4-20)mA, user-selectable through DIP switch settings.

Libratherm offers a ready-to-use control panel comprising PID or Ramp/Soak temperature controller, 3 phase Thyristor of required ratings and heavy-duty switch gears. Such control panels are used for AHU control, Furnace control, Hot Air dryers, Electrical Boilers, etc...

Technical Specifications:

Available Load Configurations	Three-phase (3 or 4-wire star and 3 or 6-wire delta – as shown above)
Control Action	Linear and Proportional using Phase angle control technique (self-synchronized).
Control Signal (AI)	(4-20)mA / (0-5)VDC / (0-10)VDC / Potentiometer (user selectable)
Retransmission (AO)	4-20mA or 0-10V proportional to the heater load current (Optional)
Remote On/Off control (DI)	Using external potential-free relay contacts to enable or disable the Thyristor or voltage output to the load.
Relay O/Ps (DOx2)	Relay contacts (C-NO) are provided when Thyristor power is ON and Enabled. Relay contact (C-NO) is provided when an overload condition occurs.
Front Panel LED Indications	For Power ON, Phase Sequence OK, Enable/Disable mode, Healthy Relay, Over Load, Over Heat and Current Limit mode
Voltage Output	0 to 230VAC (for star-connected loads) or 0 to 415/440VAC (for delta-connected loads) variable voltage across the heater/transformer load, proportional to the input control signal.
Smooth Control	Adjustable Ramp Up and Ramp Down Time for the soft increase and decrease output voltage. (Settable in the range of 2 to 20 seconds)
Load Type / Current	Suitable for Resistive/Inductive load (10A to 40A @ 110/230/415 VAC).
Settings	A current Limit potentiometer is accessible to the user in the front.
Current Control	Built-in current limit and overload trip features. Trip Reset switch is provided for easy access to the user.
Aux. Supply Voltage	230VAC +/- 10%, 50/60 Hz. (110VAC +/-10%, 50/60 Hz. – optional)
Load Supply Voltage	40 to 440VAC -3 phase from mains power or a step-down transformer.
Termination	Heavy-duty terminals for 2.5 to 6.0 sq. mm cable.
Dimensions / Weight	As given in the above table 1 / Approx. 3 Kg.
Mounting	POW-12 can be mounted on the base plate inside the control panel using 4 x M6 bolts.
Precautions	The user must ensure proper Air circulation inside the mounting panel using the external exhaust FANS and dust Filters.
CE Certification	Low Voltage Directives - 2014/35/EU and EMC Directives – 2014/30/EU

Proposed wiring diagram:



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Ordering Information:

Model	Product Description	Size (h x w x d) mm.	Part No.
POW-12-PA-CL-10A	Three-phase thyristor power regulator - suitable for max. 6KW/10A @ 415/440VAC with current control and overload protection.	255 x 150 x 85	2501
POW-12-PA-CL-15A	Three-phase thyristor power regulator - suitable for max. 12KW/15A @ 415/440VAC with current control and overload protection.	255 x 150 x 85	2502
POW-12-PA-CL-20A	Three-phase thyristor power regulator - suitable for max. 15KW/20A @ 415/440VAC with current control and overload protection.	255 x 150 x 85	2503
POW-12-PA-CL-25A	Three-phase thyristor power regulator - suitable for max. 18KW/25A @ 415/440VAC with current control and overload protection.	255 x 150 x 85	2504
POW-12-PA-CL-30A	Three-phase thyristor power regulator - suitable for max. 21KW/30A @ 415/440VAC with current control and overload protection.	255 x 150 x 135	2505
POW-12-PA-CL-35A	Three-phase thyristor power regulator - suitable for max. 24KW/35A @ 415/440VAC with current control and overload protection.	255 x 150 x 135	2506
POW-12-PA-CL-40A	Three-phase thyristor power regulator - suitable for max. 27KW/40A @ 415/440VAC with current control and overload protection.	255 x 150 x 135	2507

Libratherm offers ready-to-use control panels comprising PID controller, safety controller, thyristors, and other required switch gears - for the Ovens/Furnaces/Boilers/Hot air generators/Oil heaters/AHUs/De-humidifiers, etc....

