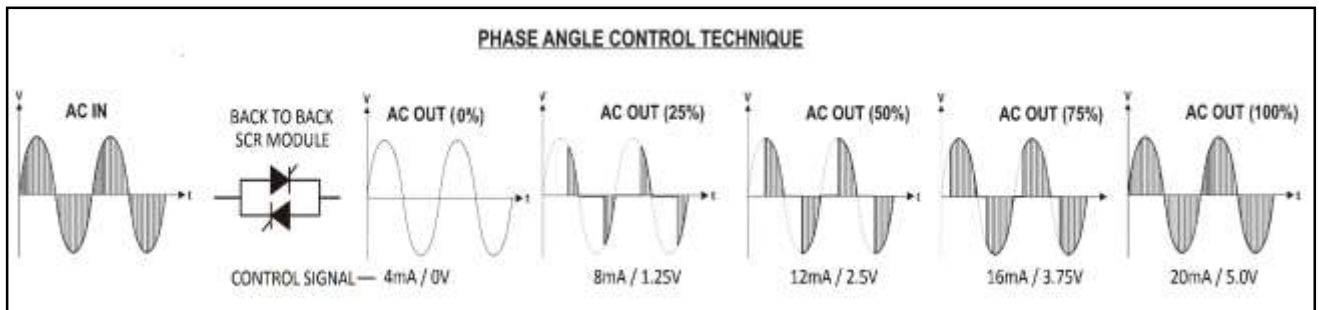


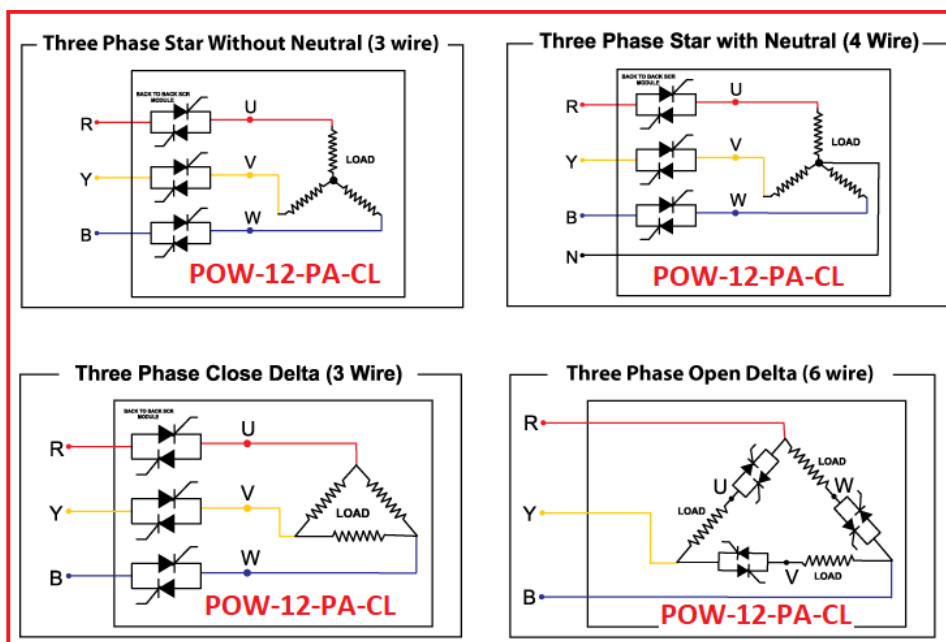
Three Phase Thyristor based Heater Power Regulator (6 to 24KW)



POW-12-PA-CL-XX



Various Three Phase Heater Load Configuration



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.

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 and 24KW 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 Healy Relay Contacts (2 x DO)
- Gradual Soft increase and Soft decrease of voltage across the load, unlike ON-OFF type.
- Separate auxiliary supply of 90-250 VAC, 50/60Hz
- SCR devices are protected by RC snubbers and surge suppressors
- Current control feature avoids the need for 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**

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 advantage 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 ready to use compact 3 phase power regulator for electrical heating loads ranging from 6 KW to 24KW @ 380/415/440VAC 3-phase supply. This power pack module comprises of SCR triggering card, rightly rated back to back connected SCRs (with electrically isolated base)- mounted on the Aluminum heat sink. SCR devices are protected by suitable RC-snubbers.

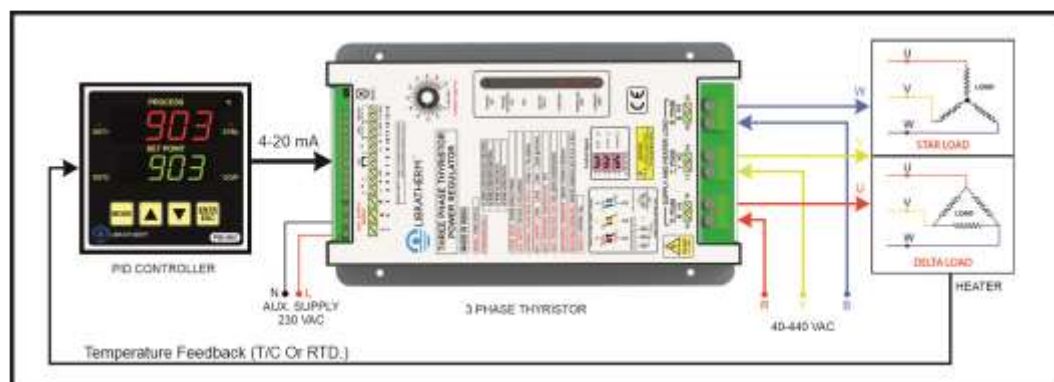
Heavy-duty Terminal connectors are provided for 3 phase AC supply as well as for the Heater wires at one end and Light duty terminals are provided for control signals at another end. The complete assembly is mounted on an aluminum heat sink and enclosed with MS powder-coated enclosure, which in turn can be easily fixed inside the closed control panel as desired. Potentiometric settings are accessible to the user for on-site calibrations, max/min voltage output and ramp up / ramp down time adjustments, and for 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 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 in use for AHU control, Furnace control, Hot Air Driers, 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) provided when Thyristor power is ON and it is Enabled. Relay contact (C-NO) provided when over load 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 control signal.
Smooth Control	Adjustable Ramp Up and Ramp Down Time for the soft increase and decrease of output voltage. (Settable in the range of 2 to 20 seconds)
Load Type / Current	Suitable for Resistive/Inductive load (10A to 35A @ 110/230/415 VAC).
Settings	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.
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

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....

