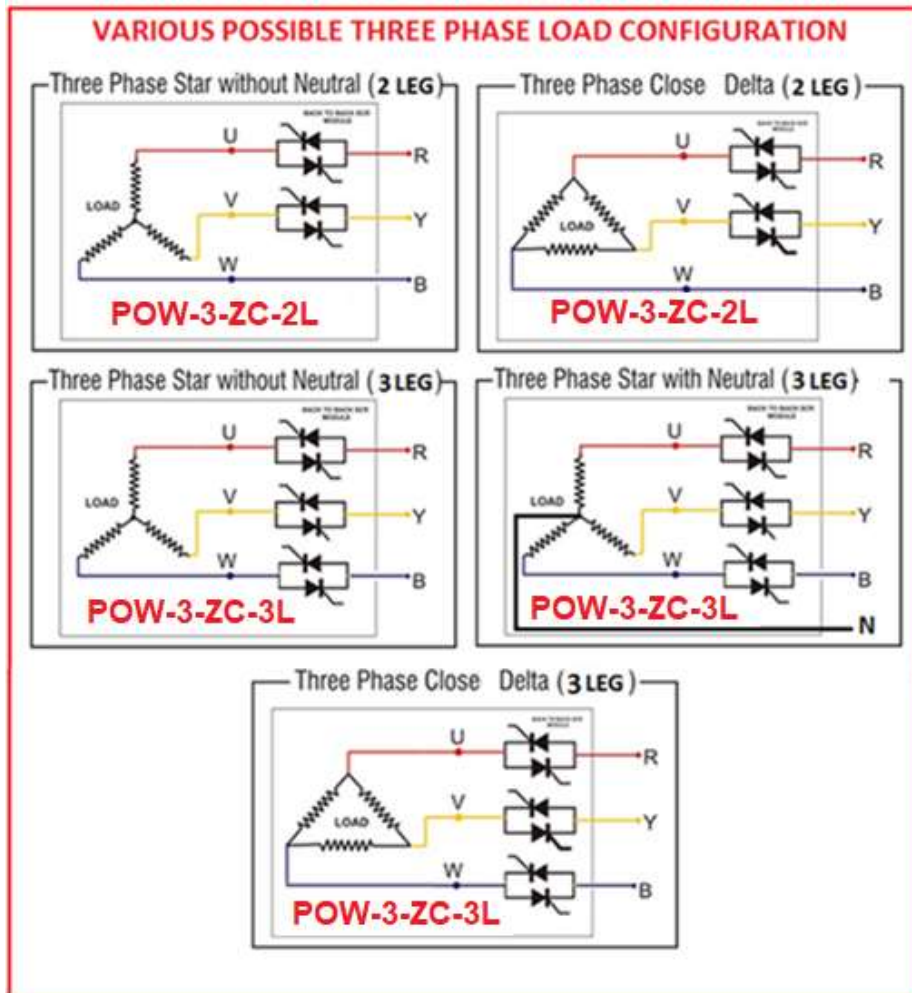
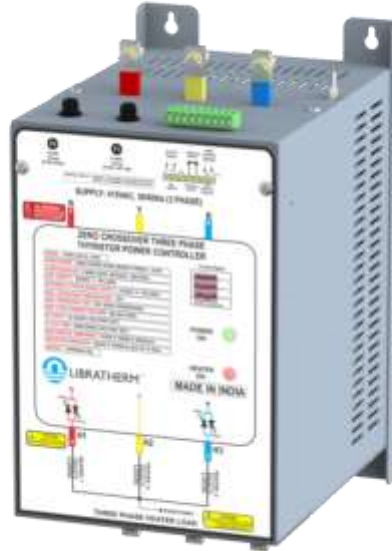


**Three Phase Zero Cross Over Thyristor Power Switch
Model: POW-3-ZC - (2 Leg and 3 Leg Control)**

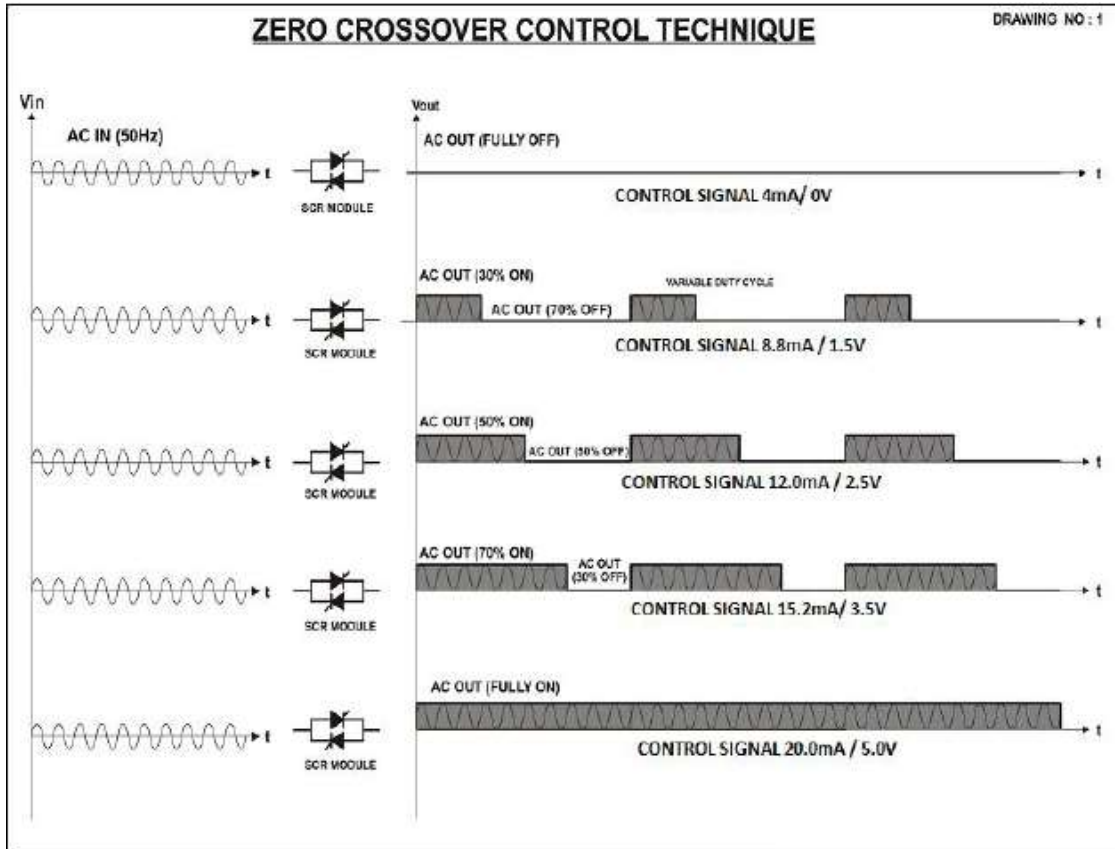


Model Wise Description:

Model	Product Description
POW-3-ZC-2L	Three Phase Thyristor Power Switch suitable for 3 phase heaters connected in 3 wire Star without Neutral or in Close Delta (2 leg control mode) (20 KW/30A to 720KW/1000A @ 415VAC)
POW-3-ZC-3L	Three Phase Thyristor Power Switch suitable for 3 phase heaters connected in 3 wire Star / 4 wire Star / with or without neutral (3 leg control mode) (20 KW/30A to 720KW/1000A @ 415VAC)
POW-3-ZC-3L	Three Phase Thyristor Power Switch suitable for 3 phase heaters connected in 3 wire Star or Close Delta (3 leg control mode) (20 KW/30A to 720KW/1000A @ 415VAC)

Key Features:

- Digital zero cross over Firing Cards for single phase/two phase/three phase are Field-proven for 25+ years.
- True zero cross over firing prevents generation of high voltage spikes and surges.
- Semikron - Germany / Proton - Russia make SCR Modules - SKKT / MT5 Series are used for AC to AC control and SKKT / SKKH Series are used for AC to DC control.
- Heatsinks are mounted with thermistors to protect against overheating and auto cut-off of firing in case of over temperature.
- Separate auxiliary supply of 230 VAC with built in RFI/EMI filter – Thereby electronics is safe against line voltage fluctuations and RFI/EMI electrical noise.
- SCR Modules are protected by suitable RC snubbers and surge suppressors.
- High-speed ball bearing type cooling fan/blower – To keep Thyristor stack cool within the acceptable limits.
- Built-in safety fuse for cooling fan and Auxiliary supply.
- Rugged metal enclosure & modular design - easy to install & easy to maintain.
- Libratherm Thyristors are time tested & field-proven in all major industries since last 25+ years.
- More than 1000 installations have taken place across India & abroad and the number is growing rapidly.
- Usage of best in quality components since we understand that downtime and service cost is more expensive than the cost of the product.



Description:

Libratherm offers ready to use thyristor power switch for On-Off switching of electrical heating loads ranging from 20KW to 720KW 3-phase. This power switch modules comprises Libratherm make SCR triggering card model LZF-3 or TSC-307, suitably rated back to back or inverse parallel connected SCR modules (with electrically isolated base)- mounted on the suitable size of Aluminum heat sink duly fitted with the cooling fan/blower, 3 phase AC Supply Input and Load Output Aluminum/Copper bus bars and over temperature thermal cutouts. The entire assembly is mounted in an MS enclosure, which in turn can be easily mounted inside the closed control panel as desired.

All models of thyristor power switch accept both analogue and digital control signal from DDC, PLC or PID controller to switch the AC power. The PWM duty cycle is adjustable by the user using on board potentiometer. Following diagram shows the switching pattern of thyristor with respect to the analogue control signal.

Complete ready to use control panel with suitable PID / Program temperature controllers can also be supplied as per the user specifications and requirement.

Technical Specifications:

Available Ratings	20KW to 720KW @ 415VAC/440VAC, 3 phase.
Available Configuration	Three phase (2 leg or 3 leg control) 3 or 4 wire star or 3 wire close delta.
Control Action	Zero cross over Burst firing, time proportional with variable duty cycle.
Control Signal	(4-20) mA / (0-5) VDC / (0-10) VDC / Potentiometer or 12-36 VDC pulse or potential free contact.
On/Off PWM Duty cycle	2 to 20 seconds (user adjustable) using on card potentiometer proportional to the Linear control signal.
Output	0 to 230VAC or 0 to 415/440 VAC variable on/off duty cycle proportional to input control signal.
Other accessories provided with each Thyristor power switch Module	<ul style="list-style-type: none"> a) RC Snubber / MOV across the SCRs to protect against voltage transients dv/dt b) Thermal cut-out switch on the heat sink – to protect thyristors against overheating. c) Cooling fan/blower on the heat sinks d) Heavy-duty input/output Copper or Aluminum Bus bars for incoming supply and heater connections.
Load Type	Suitable for 3 phase resistive or inductive / transformer load.
Aux. Supply Voltage	230 VAC +/- 10%, 50/60 Hz.
Sizes	As per the table given below
Mounting	Using 4 x M6 bolts on the base plate of the control panel

Ordering Information:

1	POW-3-ZC-2L	THREE PHASE THYRISTOR POWER SWITCH FOR 3 WIRE STAR/CLOSE DELTA CONNECTED LOAD (2 Leg Control)	SIZE (H x W x D) mm	Part No.
1.1	POW-3-ZC-2L-50 (36KW)	Three phase Zero Cross over PWM based thyristor power switch - 2 leg control suitable for max. 36 KW @ 415/440 VAC in star or delta configuration,	305 x 185 x 220	2903-2-1
1.2	POW-3-ZC-2L-100 (68KW)	Three phase Zero Cross over PWM based thyristor power switch - 2 leg control suitable for max. 68 KW @ 415/440 VAC in star or delta configuration.	325 x 185 x 245	2903-2-2
1.3	POW-3-ZC-2L-150 (104KW)	Three phase Zero Cross over PWM based thyristor power switch - 2 leg control suitable for max. 104 KW @ 415/440 VAC in star or delta configuration.	345 x 185 x 285	2903-2-3
1.4	POW-3-ZC-2L-200 (144KW)	Three phase Zero Cross over PWM based thyristor power switch - 2 leg control suitable for max. 144 KW @ 415/440 VAC in star or delta configuration (PANEL MOUNT)	425 x 285 x 300	2903-2-4
1.5	POW-3-ZC-2L-250 (178KW)	Three phase Zero Cross over PWM based thyristor power switch - 2 leg control suitable for max. 178 KW @ 415/440 VAC in star or delta configuration.	425 x 285 x 300	2903-2-5
1.6	POW-3-ZC-2L-300 (215KW)	Three phase Zero Cross over PWM based thyristor power switch - 2 leg control suitable for max. 215 KW @ 415/440 VAC in star or delta configuration.	450 x 350 x 350	2903-2-6
1.7	POW-3-ZC-2L-400 (287KW)	Three phase Zero Cross over PWM based thyristor power switch - 2 leg control suitable for max. 287 KW @ 415/440 VAC in star or delta configuration.	450 x 350 x 350	2903-2-7
1.8	POW-3-ZC-2L-500 (360KW)	Three phase Zero Cross over PWM based thyristor power switch - 2 leg control suitable for max. 360 KW @ 415/440 VAC in star or delta configuration.	625 x 350 x 350	2903-2-8
1.9	POW-3-ZC-2L-600 (430KW)	Three phase Zero Cross over PWM based thyristor power switch - 2 leg control suitable for max. 430 KW @ 415/440 VAC in star or delta configuration.	625 x 350 x 350	2903-2-9
1.10	POW-3-ZC-2L-800 (575KW)	Three phase Zero Cross over PWM based thyristor power switch - 2 leg control suitable for max. 575 KW @ 415/440 VAC in star or delta configuration.	Size available on request	2903-2-10
1.11	POW-3-ZC-2L-1000 (720KW)	Three phase Zero Cross over PWM based thyristor power switch - 2 leg control suitable for max. 720 KW @ 415/440 VAC in star or delta configuration.	Size available on request	2903-2-11

2	POW-3-ZC-3L	THREE PHASE THYRISTOR POWER SWITCH FOR 3 WIRE STAR CONNECTED LOAD (3 Leg Control)	SIZE (H x W x D) mm	Part No.
2.1	POW-3-ZC-3L-50 (36KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 36 KW @ 415/440 VAC in star configuration.	305 x 185 x 220	2904-3-1
2.2	POW-3-ZC-3L-100 (68KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 68 KW @ 415/440 VAC in star configuration.	325 x 185 x 245	2904-3-2
2.3	POW-3-ZC-3L-150 (104KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 104 KW @ 415/440 VAC in star configuration.	345 x 185 x 285	2904-3-3
2.4	POW-3-ZC-3L-200 (144KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 144 KW @ 415/440 VAC in star configuration.	425 x 285 x 300	2904-3-4
2.5	POW-3-ZC-3L-250 (178KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 178 KW @ 415/440 VAC in star configuration.	425 x 285 x 300	2904-3-5
2.6	POW-3-ZC-3L-300 (215KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 215 KW @ 415/440 VAC in star configuration.	450 x 350 x 350	2904-3-6
2.7	POW-3-ZC-3L-400 (287KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 287 KW @ 415/440 VAC only in star configuration.	450 x 350 x 350	2904-3-7
2.8	POW-3-ZC-3L-500 (360KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 360 KW @ 415/440 VAC in star configuration.	500 x 400 x 300	2904-3-8
2.9	POW-3-ZC-3L-600 (430KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 430 KW @ 415/440 VAC in star configuration.	500 x 400 x 300	2904-3-9
2.10	POW-3-ZC-3L-800 (575KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 575 KW @ 415/440 VAC in star configuration.	Size available on request	2904-3-10
2.11	POW-3-ZC-3L-1000 (720KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 720 KW @ 415/440 VAC in star configuration.	Size available on request	2904-3-11

3	POW-3-ZC-3L	THREE PHASE THYRISTOR POWER SWITCH FOR 3 WIRE DELTA CONNECTED LOAD (3 Leg Control)	SIZE (H x W x D) mm	Part No.
3.1	POW-3-ZC-3L-50 (36KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 36 KW @ 415/440 VAC in star or delta configuration.	305 x 185 x 220	2905-3-1
3.2	POW-3-ZC-3L-100 (68KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 68 KW @ 415/440 VAC in star or delta configuration.	325 x 185 x 245	2905-3-2
3.3	POW-3-ZC-3L-150 (104KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 104 KW @ 415/440 VAC in star or delta configuration.	345 x 185 x 285	2905-3-3
3.4	POW-3-ZC-3L-200 (144KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 144 KW @ 415/440 VAC in star or delta configuration.	425 x 285 x 300	2905-3-4
3.5	POW-3-ZC-3L-250 (178KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 178 KW @ 415/440 VAC in star or delta configuration.	425 x 285 x 300	2905-3-5
3.6	POW-3-ZC-3L-300 (215KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 215 KW @ 415/440 VAC in star or delta configuration.	450 x 350 x 350	2905-3-6
3.7	POW-3-ZC-3L-400 (287KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 287 KW @ 415/440 VAC in star or delta configuration.	450 x 350 x 350	2905-3-7
3.8	POW-3-ZC-3L-500 (360KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 360 KW @ 415/440 VAC in star or delta configuration.	500 x 400 x 300	2905-3-8
3.9	POW-3-ZC-3L-600 (430KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 430 KW @ 415/440 VAC in star or delta configuration.	500 x 400 x 300	2905-3-9
3.10	POW-3-ZC-3L-800 (575KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 575 KW @ 415/440 VAC in star or delta configuration.	Size available on request	2905-3-10
3.11	POW-3-ZC-3L-1000 (720KW)	Three phase Zero Cross over PWM based thyristor power switch - 3 leg control suitable for max. 720 KW @ 415/440 VAC in star or delta configuration.	Size available on request	2905-3-11