

(K) SCR / TRIAC TRIGGERING CARDS & THYRISTOR POWER PACKS



MODEL WISE DESCRIPTIONS :

STD. SERIES - METAL ENCLOSURE

SR.NO.	MODEL	DESCRIPTION	SIZE (mm)
12.1	LTC-12	SCR triggering card (single or two phase)	115 x 115 x 70
12.2	LTC-13	SCR triggering card with Current Limit and Current Trip feature (single or two phase)	125 x 165 x 55
12.3	LTC-14	SCR / Triac triggering module in DIN RAIL ABS enclosure- For Max. 25 Amps SCR and 40A Triac (single phase)	65 x 80 x 125
12.4	LTC-15	3 Phase SCR / Triac Triggering Card	125 x 160 x 70
12.5	LTC-15/CL	3 Phase Triggering Card (With Current Limit and Current Trip feature)	125 x 160 x 150
12.6	POW-1	Single Phase Power Controller module (with Triac or SCR)	As per std.
12.7	POW-2	Two Phase Power Controller module	As per std.
12.7	POW-3S	Three Phase SCR Power Controller Module (Configuration in 3 wire Star or 4 wire Star with Neutral)	As per std.
12.8	POW-3D	Three Phase SCR Power Controller Module (Configuration 6 wire open Delta)	As per std.

DESCRIPTION OF TRIGGERING CARDS :

Libratherm make SCR triggering cards model LTC-12, LTC-13 and LTC-14 are designed to fire or trigger back to back connected SCRs using synchronized phase angle control technique. The card accepts analogue control signals of (0-5)VDC or (4-20)mA and provides proportional gate/cathode triggering pulses G1K1 + G2K2. These pulses can be used to trigger back-to-back connected SCRs of as high as 350Amperes. The card also provides built in regulated 5VDC supply to connect external potentiometer to manually control the SCR firing.

LTC-12 and LTC-13 are same in all respect, except the card LTC-13 accepts the feed back signal from the external current transformer for the current limit and trip features. This feature is useful for transformers load or inductive loads or

heating loads like Silicone Carbide and Molybdenum, which exhibits significant changes of resistance with increase in temperature. This feature will restrict the load current to the value set using the on card current limit (CL) potentiometer. On sudden increase in the current the current trip feature will over ride over the current trip feature and the firing of the thyristor will stop instantly. The trip contacts are available on the terminals.

These cards can be used for heating control applications to control the AC power to the heating coils or to the transformers. Three such cards can be used for both 4-wire STAR and 6-wire DELTA configurations of the load.

LTC-14 SCR triggering card is available in DIN rail compatible module, which can also be used to trigger Triacs since Gate pulses with respect to the MT are generated.

Three Phase SCR / Triac triggering card model **LTC-15** is used to fire three pairs of back to back connected SCRs or three numbers triacs configured as three phase 4 wire star with neutral or 6 wire open delta. The entire assembly is available on either MS powder coated plate or on 6-mm. thick Bakelite sheet, which can be mounted inside the panel using 4 screws.

Libratherm also offers ready to use Thyristor power pack modules ranging from 15 amps up to 350 amps for single phase, 2-phase and 3-phase heater load (From 2 KW/Single phase to 180 KW/3-phase). The power pack module comprises of triggering card, suitably rated back to back connected SCR module - mounted on the appropriately rated air cool or forced cool heat sink, input and output clip-on type heavy duty connectors, etc. The entire assembly is mounted on either MS powder coated plate or on heavy-duty Bakelite sheet, which can be easily mounted inside the panel as desired. Complete ready to use control panel with suitable PID / Program temperature controller can also be supplied as per the user's specifications and requirement.

FEATURES :

- 15 Amps to 350 Amps capacity (1KW to 180KW).
- Single phase / 2 phase / 3 phase versions.
- Suitable for 4 wire star with neutral / open delta 6 wire configuration.
- Auto / Manual operation.
- Accepts (4-20)mA / (0-5)VDC / (0-10)VDC control input.
- Soft start for smooth control.
- Adjustable power and current limit.
- Isolated heat sink for safety.
- Modular design for easy servicing.
- Ideally suitable for resistive, transformer, inductive or heating loads like Silicone Carbide and Molybdenum which exhibits significant changes of resistance with increase in temperature.
- Other features like partial load failure detection can also be optionally provided.

APPLICATION :

The Thyristor Power Pack has a varied application and can be used with heating elements like Kanthal, Super Kanthal, Silicon Carbide, Molybdenum, Infra Red, etc. where precise and accurate power control is required. There is significant power savings with respect to conventional contactor type temperature control system, which also depends on various other factors.

- ▶ The single card can be used to trigger SCR module suitable for Single-phase 230VAC supply (phase + neutral).
- ▶ The single card can also be used to trigger SCR module suitable for Two Phase 415/440VAC supply. (Phase1 + phase2).
- ▶ Three cards (230VAC operated) together can be used to trigger 3 SCR modules for 3 phase load in Star (4 wire) configuration and also Three cards (415/440VAC operated) together can be used to trigger 3 SCR modules for 3 phase load in Open Delta (6 wire) configuration. Only one card is required while using LTC 15 modules.
- ▶ The card can be used to control back-to-back connected SCR used for both Inductive and resistive load.

TECHNICAL SPECIFICATIONS:

Available Ratings	3KW Single phase to 300KW Three phase
Available Configuration	Single phase, Two phase, Three phase (3 or 4 wire star and 3 or 6 wire delta)
Control Action	Phase angle control (self synchronized)
Control Signal	(4-20)mA / (0-5)VDC / Potentiometer
Output	Suitable Triggering pulses to fire back-to-back connected SCRs or Triac.
Smooth Control	Adjustable Ramp Up and Ramp Down Time for soft increase and decrease of output voltage
Current Control	Using Current Limit and Trip settings on card. (LTC-13 and LTC-15/CL)
Settings	For adjusting voltage and current per phase
Load Type	Suitable for both resistive and inductive load (15A to 300A @ 230/415 VAC)
Availability	In the form of 1, 2 & 3 phase triggering cards, complete Thyristor power pack or ready to use control panel with suitable PID or Program controller. Triggering cards are also suitable for 1 & 3 phase rectifiers.
Supply Voltage	230/380/415 VAC, 50/60 Hz.
Size (Triggering Card) in mm.	230 x 80 x 180 (LTC-12)
	230 x 80 x 180 (LTC-13)
	65 x 80 x 125 (LTC-14)
	125 x 160 x 70 (LTC-15) and 125 x 160 x 120 (LTC-15/CL)
Size (Power Pack)	As per Std.

ORDERING INFORMATION :			
SR. No.	Products Description	Cooling Method	Model
1	Single Phase SCR Power Controller Module (Specify for Current Limit & Current Trip)		POW-1
1.1	10A / 230VAC Module: 26 Amp	Natural Cool	POW-1
1.2	15A / 230VAC Module: 26 Amp	Natural Cool	POW-1
1.3	25A / 230VAC Module: 26 Amp	Natural Cool	POW-1
1.4	40A / 230VAC Module: 57 Amp	Natural Cool	POW-1
1.6	50A / 230VAC Module: 57 Amp	Natural Cool	POW-1
1.7	70A / 230VAC Module: 91 Amp	Air Cool	POW-1
1.8	100A / 230VAC Module: 162 Amp	Air Cool	POW-1
1.9	150A / 230VAC Module: 162 Amp	Air Cool	POW-1
1.10	250A / 230VAC Module: 300 Amp	Air Cool	POW-1
1.11	300A / 230VAC Module: 350 Amp	Air Cool	POW-1
2	TWO Phase SCR Power Controller Module (Specify for Current Limit & Current Trip)		POW-2
2.1	10A / 415VAC / 440VAC Module: 26 Amp	Natural Cool	POW-2
2.2	15A / 415VAC / 440VAC Module: 26 Amp	Natural Cool	POW-2
2.3	25A / 415VAC / 440VAC Module: 26 Amp	Natural Cool	POW-2
2.4	40A / 415VAC / 440VAC Module: 57 Amp	Natural Cool	POW-2
2.5	50A / 415VAC / 440VAC Module: 57 Amp	Natural Cool	POW-2
2.6	70A / 415VAC / 440VAC Module: 91 Amp	Air Cool	POW-2
2.7	100A / 415VAC / 440VAC Module: 162 Amp	Air Cool	POW-2
2.8	150A / 415VAC / 440VAC Module: 162 Amp	Air Cool	POW-2
2.9	250A / 415VAC / 440VAC Module: 300 Amp	Air Cool	POW-2
2.10	300A / 415VAC / 440VAC Module: 350 Amp	Air Cool	POW-2
3	Three Phase SCR Power Controller Module configuration in 3-wire STAR or 4-wire STAR with Neutral	230 x 80 x 180	POW-3S
3.1	15A / 230VAC per phase w. r. t. Neutral	Natural Cool	POW-3S
3.2	25A / 230VAC per phase	Natural Cool	POW-3S
3.3	40A / 230VAC per phase	Natural Cool	POW-3S
3.4	50A / 230VAC per phase	Natural Cool	POW-3S
3.5	70A / 230VAC per phase	Air Cool	POW-3S
3.6	100A / 230VAC per phase	Air Cool	POW-3s
3.7	150A / 230VAC per phase	Air Cool	POW-3S
3.8	250A / 230VAC per phase	Air Cool	POW-3S
3.9	300A / 230VAC per phase	Air Cool	POW-3S
4	Three Phase SCR Power Controller Module configuration 6-wire open Delta	230 x 80 x 180 POW-3D	
4.1	15A / 415VAC / 440VAC phase to phase	Natural Cool	POW-3D
4.2	25A / 415VAC / 440VAC phase to phase	Natural Cool	POW-3D
4.3	40A / 415VAC / 440VAC phase to phase	Natural Cool	POW-3D
4.4	50A / 415VAC / 440VAC phase to phase	Natural Cool	POW-3D
4.5	70A / 415VAC / 440VAC phase to phase	Air Cool	POW-3D
4.6	100A / 415VAC / 440VAC phase to phase	Air Cool	POW-3D
4.7	150A / 415VAC / 440VAC phase to phase	Air Cool	POW-3D
4.8	250A / 415VAC / 440VAC phase to phase	Air Cool	POW-3D
4.9	300A / 415VAC / 440VAC phase to phase	Air Cool	POW-3D
5	SCR Triggering Card		LTC-12
6	SCR Triggering Card (With Current Limit and Current Trip)		LTC-13
7	SCR/Triac Triggering Module in DIN RAIL ABS enclosure		LTC-14
8	3 phase SCR Triggering Card		LTC-15
9	3 phase SCR Triggering Card with Current Limit & Trip		LTC-15/CL