

## Single Phase SCR Triggering Cards for Phase Angle Control



### LTC-13

### MODEL WISE DESCRIPTION

Model	Product Description	Size (w x h x d) mm.
LTC-13-1	Single phase SCR triggering card with Current Limit & Current Trip feature (w.r.t. Neutral)	110 x 135 x 70
LTC-13-2	SCR triggering card with Current Limit & Current Trip feature (Two phase w.r.t. Phase 2)	110 x 135 x 70
LTC-13-DCR	Single & Two phase SCR Triggering card suitable for DC full wave bridge rectifier with shunt feedback (full wave half control)	110 x 135 x 70

## FEATURES

- Designed to fire 25 Amps to 1000 Amps SCR-SCR/SCR-Diode modules of Semikron, IXYS, IR, Proton, Eupac, Hind Rectifier, Ruttonsha ...
- Single phase
- Suitable for single phase, two phase or three phase Heaters, Transformers, DC rectifiers
- Soft starter for 3 phase AC induction motor. (Our card MSST-15)
- Auto / Manual operation.
- Accepts (4-20)mA / (0-5)VDC / (0-10)VDC / Potentiometer control inputs
- Soft start and stop for smooth control.
- Adjustable power and current limit.

## DESCRIPTION

Libratherm offers SCR triggering cards model LTC-13 and LTC-15 and LTC-18, which are designed to fire or trigger back to back connected SCRs or SCR/Diodes using synchronized phase angle control technique. The card accepts analogue control signals of (0-5)/(0-10)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 upto 1000Amps with gate current upto 300mA. The card also provides built in regulated 5VDC supply to connect external potentiometer to manually control the SCR firing. The on card ramp up and ramp down settings allows gradual rise and fall of the voltage levels across the load. Many times it is required to limit the current flowing through the load. Such current limiting feature is available in LTC-13 – for single phase and two phase load. Whereas for 3 phase load, common three phase current limiting is achieved by LTC-18 card. The load current or Line current feedback is derived from the external CTs. This feature is useful for transformer load or inductive loads or for heating elements like Silicone Carbide and Molybdenum Disilicide, which exhibits significant change of resistance with increase in temperature. This feature will restrict the maximum 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 the current limit feature and the firing of the thyristor will stop instantly. The trip contacts are available on the terminals.

These cards are designed for heating control applications to control the single phase, two phase and three phase AC power across the heating coils to control the star or delta connected transformer loads.

These cards can also be used for half wave, full wave or bridge rectifiers using SCR-DIODE or SCR-SCR Bridge, where the rectified DC output can be gradually varied to the desired level using the control signal or the potentiometer.

## TECHNICAL SPECIFICATIONS

Available Configurations	a)Single phase, Two phase, Three phase (3 or 4 wire star and 3 or 6 wire delta) for AC load and b)Single, Two or Three Phase rectifiers for DC load.
Control Action	Phase angle control (self synchronized)
Control Signal	(4-20)mA / (0-5)VDC / (0-10)VDC External potentiometer (User selectable)
Output	Suitable Triggering Gate – Cathode pulses to fire back-to-back connected SCRs. 4 pulses (G1K1+ G2K2) for single or two phase control &12 pulses for 3 phase control. Max. gate current = 300mA
Smooth Control	Adjustable Ramp Up and Ramp Down Time for soft increase and decrease of output voltage
Current Control	Current Limit and Current Trip settings using on card presets. Feedback is taken from external CT or Shunt (LTC-13 and LTC-18)

Settings	For adjusting maximum and minimum voltage per phase.
Digital I/O	Potential free Input contact to Enable/Disable the firing. Potential free Output contact for Over load current trip status.
Load Type	Suitable for both resistive and inductive loads (25A to 500A @ 230/415 VAC)
Direction of Current Flow	LTC-13-1 : P to N (Phase to Neutral – single phase) LTC-13-2 : P1 to P2 (Phase to Phase – two phase) LTC-15-3/LTC-18-3 : R to Y, Y to B and B to R (Three phase)
Aux. Supply Voltage	230VAC (Single phase) for LTC-13-1, LTC-15 and LTC-18 415 or 440VAC (Two phase) for LTC-13-2.
Sizes in mm. / Mounting	As given in the above table

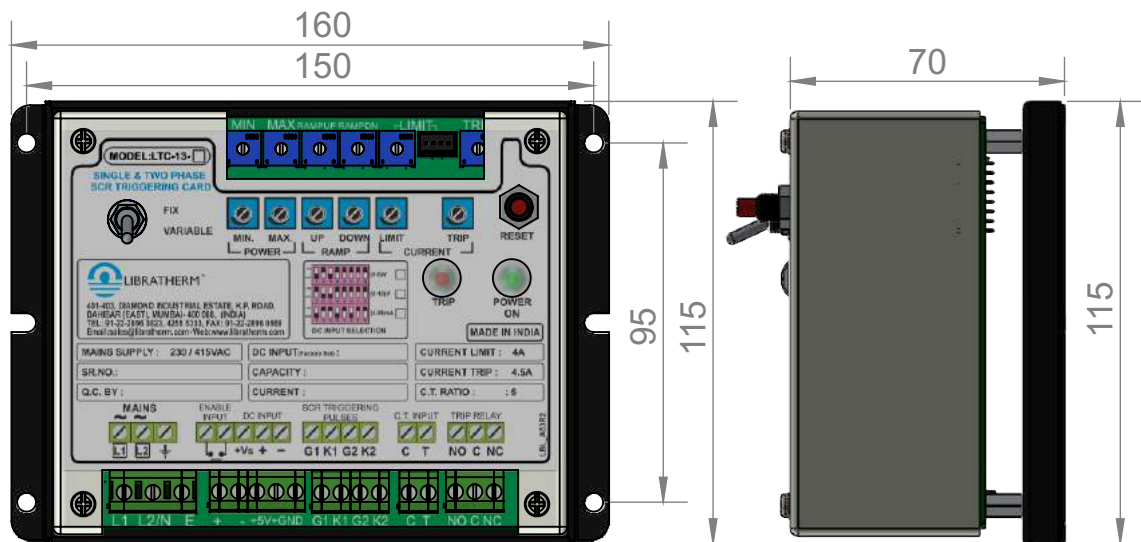
## ORDERING CODE

Sr. No.	Model	Product Description	Part no.
1	LTC-13-1	Single phase SCR triggering card with Current Limit and Current Trip feature 230VAC operated	2101
2	LTC-13-2	Two phase SCR triggering card with Current Limit and Current Trip feature 415VAC operated	2102
3.1	LTC-13-1-DCR	Single phase SCR Triggering card suitable for DC full wave bridge rectifier with shunt feedback (full wave half control (2 SCRs + 2 DIODEs)	2103-1
3.2	LTC-13-2-DCR	Two phase SCR Triggering card suitable for DC full wave bridge rectifier with shunt feedback (full wave half control (2 SCRs + 2 DIODEs)	2103-2

Please note that, load supply can be derived from either step up or step down transformer as per application demand and auxiliary supply for the firing card can be derived from the mains source.

## DIMENSIONAL DRAWING

LTC-13

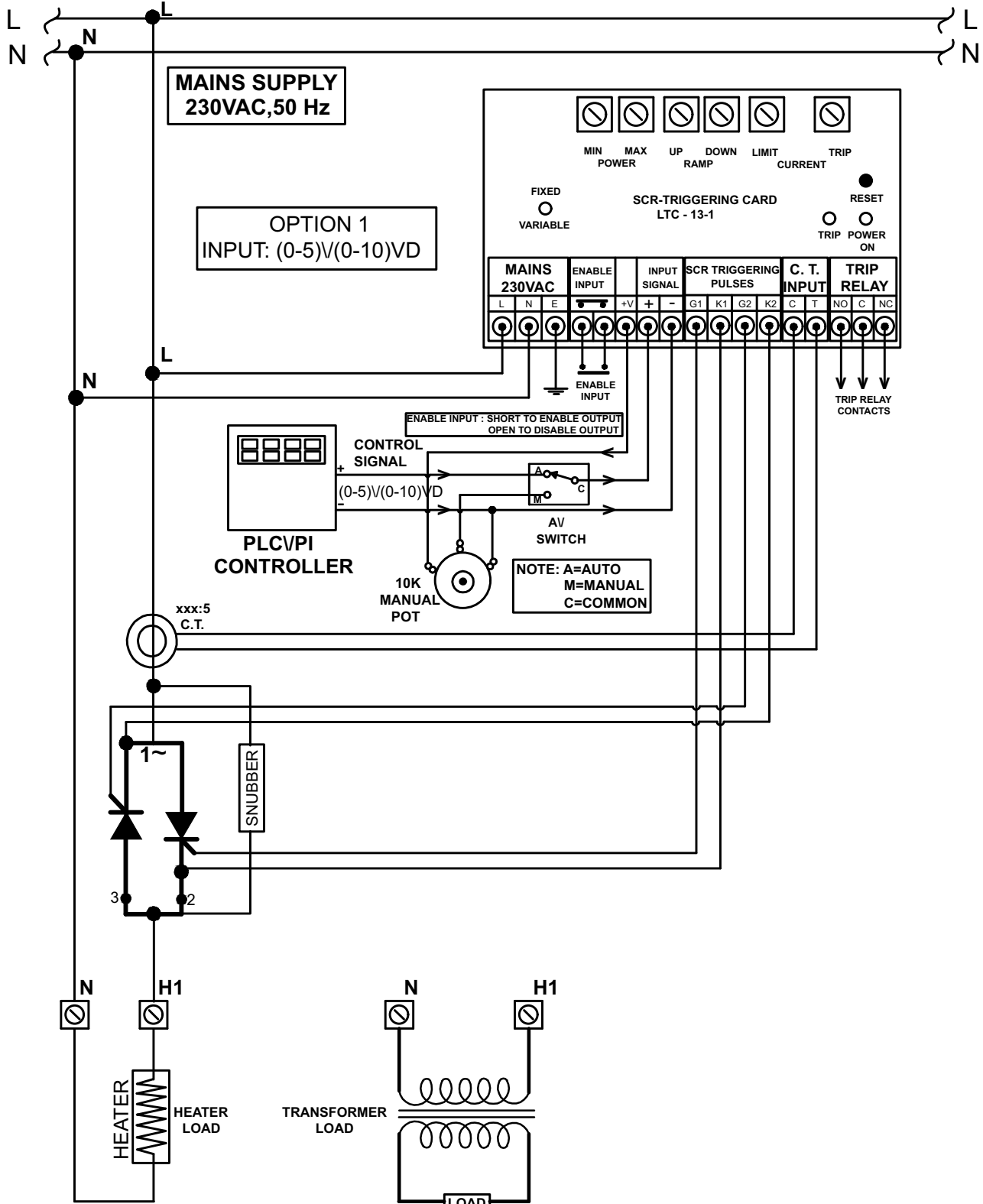


FRONT VIEW

SIDE VIEW

ALL DIMENSIONS IN mm

## WIRING DIAGRAM FOR SINGLE PHASE SCR TRIGGERING CARD



**CAUTION : BEFORE MAKING THE CONTROL SIGNAL CONNECTIONS CONFIRM THE TYPE OF INPUT & ACCORDINGLY MAKE THE DIP SWITCH SELECTIONS AS IN THE TABLE ALONGSIDE**

**FACTORY SET DIP SWITCH SELECTION IS**

INPUT SELECTION TABLE ON LTC-13/N CAR		
INPUT	SWITCHES 'ON'	SWITCHES 'OFF'
(0-5)VDC	1 and 3	2, 4, 5, 6, 7 and 8
(0-10)VDC	2 and 3	1, 4, 5, 6, 7 and 8
(4-20)mADC	1, 4 and 6	2, 3, 5, 7 and 8