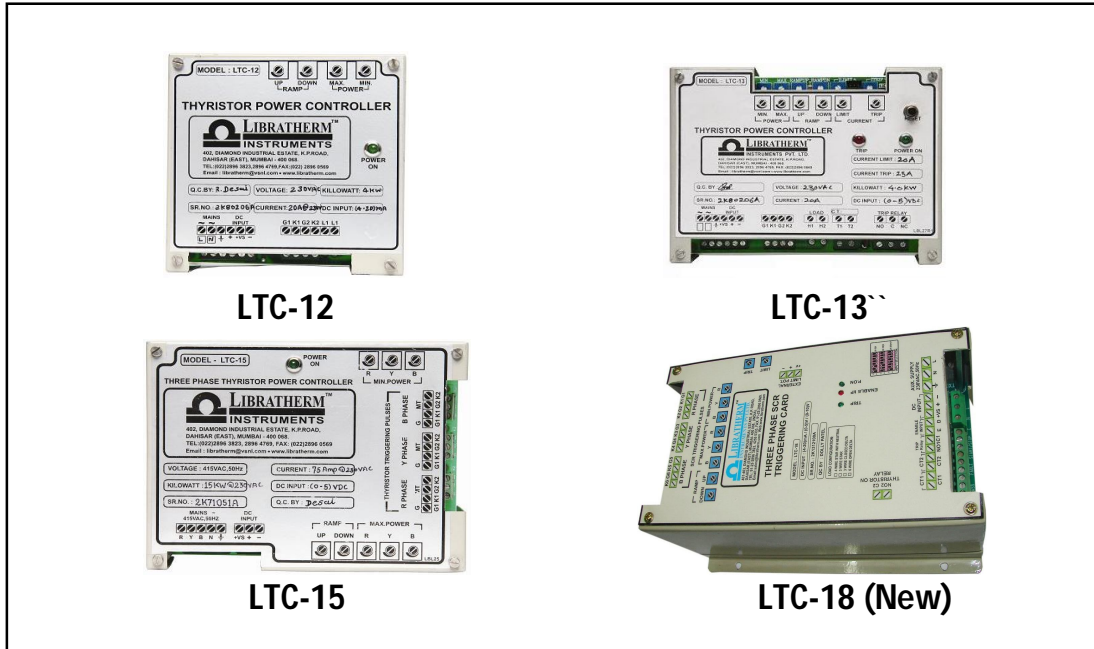
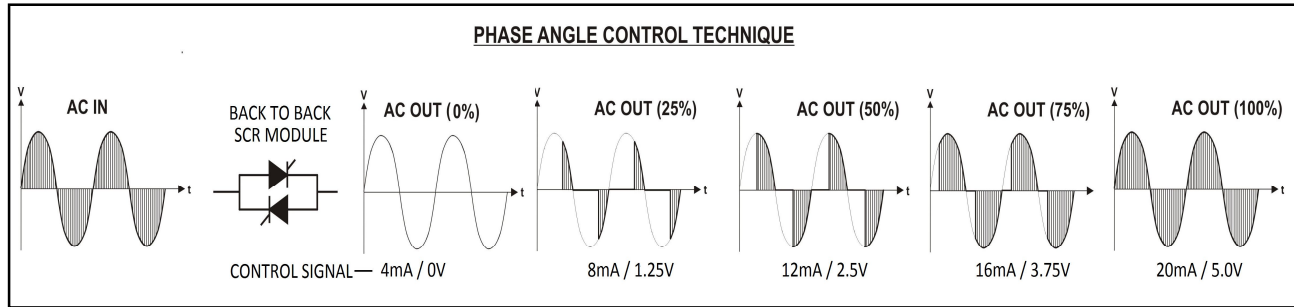


SCR Triggering Cards for Phase Angle Control (Product Code 21.1.1 - 21.1.9)



Model Wise Description:

Sr. No.	Model	Product Description	Size w x h x d mm.
21.1.1	LTC-12-1	Single phase SCR triggering card (w.r.t. Neutral)	115 x 115 x 70
21.1.2	LTC-12-2	Two phase SCR triggering card (w.r.t. Phase 2)	115 x 115 x 70
21.1.3	LTC-13-1	Single phase SCR triggering card with Current Limit and Current Trip feature (w.r.t. Neutral)	110 x 135 x 70
21.1.4	LTC-13-2	SCR triggering card with Current Limit and Current Trip feature (Two phase w.r.t. Phase 2)	110 x 135 x 70
21.1.5	LTC-13-DCR	Single and Two phase SCR Triggering card suitable for DC full wave bridge rectifier with shunt feedback	110 x 135 x 70
21.1.6	LTC-15-3	3 Phase SCR Triggering Card suitable for 3 or 4 wire star connected load and 3 or 6 wire delta connected load	125 x 160 x 70
21.1.7	LTC-15-DCR	3 Phase SCR Triggering Card suitable for 3 phase DC bridge rectifier	125 x 160 x 70
21.1.8	LTC-18-3	3 Phase SCR Triggering Card suitable for 3 or 4 wire star connected load and 3 or 6 wire delta connected load with current limit and trip features	115 x 210 x 115
21.1.9	LTC-18-DCR	3 Phase SCR Triggering Card suitable for 3 phase DC bridge rectifier with shunt feedback.	115 x 210 x 115



Features:

- ❖ Designed to fire 25 Amps to 1000 Amps SCR-SCR modules of Semikron, IXYS, IR, Eupac, Hind Rectifier and Ruttonsha or any other make.
- ❖ Single phase / 2 phase / 3 phase versions.
- ❖ Suitable for both star or delta or rectifier load configurations.
- ❖ Suitable for single 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 control inputs
- ❖ Soft start for smooth control.
- ❖ Adjustable power and current limit.

Description :

Libratherm offers SCR triggering cards model **LTC-12, LTC-13 and LTC-15 and LTC-18**, which 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)/(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. LTC-15-3 can also be used for Induction Motor soft start application to gradually control the speed of 3 phase AC induction motor our model MSST-18.

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 (any one)
Output	Suitable Triggering Gate – Cathode pulses to fire back-to-back connected SCRs. 4 pulses (G1K1+ G2K2) for single or two phase control and 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 (15A to 500A @ 230/415 VAC)
Direction of Current Flow	LTC-12-1/LTC-13-1 : P to N (Phase to Neutral) LTC-12-2/LTC-13-2 : P1 to P2 (Phase to Phase) LTC-15-3/LTC-18-3 : R to Y, Y to B and B to R
Aux. Supply Voltage	115 or 230VAC (Single phase) for LTC-12-1, LTC-13-1, LTC-15 and LTC-18 415 or 440VAC (Two phase) for LTC-12-2/LTC-13-2.
Sizes in mm. / Mounting	115 x 115 x 70 (LTC-12) - Flat plate mountable using 4 screws. 110 x 135 x 70 (LTC-13) - Flat plate mountable using 4 screws. 125 x 160 x 70 (LTC-15-3) - Flat plate mountable using 4 screws. 115 x 210 x 90 (LTC-18-3) - Flat plate mountable using 4 screws.

Ordering Information:

MODEL	A- INPUT CONTROL SIGNAL	B- CONFIGURATION	C- AUXILIARY SUPPLY	D-LOAD SUPPLY
LTC-12-1	A1- (0-5 VDC)	B1- Single Phase	C1- (110-120 VAC)/ single phase	D1- (110-120 VAC)/ single phase or lower
LTC-12-2	A2- (0-10 VDC)	B2- Two Phase		
LTC-13-1	A3- (4-20 mA)	B3- Three phase 4 wire star with neutral	C2- (220-240 VAC)/ single phase	D2- (220-240 VAC)/ single phase or lower
LTC-13-2	A4- (0-20 mA)	B4- Three phase 6 wire open delta		
LTC-15-3	A5 – All above but user selectable	B5- Three phase 3 wire star without neutral	C3-(415-440 VAC)/ 2 phase (only for LTC-12-2 and LTC- 13-2	D3-(415-440 VAC) / 2 phase or 3 phase
LTC-13-DCR		B6- Three phase 3 wire close delta		
LTC-15-DCR		B7-single phase DC rectifier		
LTC-18-DCR		B8-Two phase DC rectifier		
		B9-Three phase DC rectifier		D4-(650-690VAC) / 2 phase or 3 phase

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.

VARIOUS LOAD CONFIGURATIONS

