

SCR POWER REGULATORS & HEATING CONTROL PANELS

1/2/3-PHASE, 30 ~ 750+ AMPS, 220 ~ 480 V AC

radix®



www.radix.co.in

SCR POWER REGULATORS & HEATING CONTROL PANELS

Radix offers a full range of SCR Power Regulators as well as SCR Heater Control Panels. The Panels are manufactured in-house at the new Radix Automation Centre at Mahape, Navi Mumbai.

Radix SCR (thyristor) Power Regulators are compact in size, robust in design, easy to install and maintain. Radix power regulator does not require specialized training for operation and maintenance.

Radix Power Regulators control power to the resistive or inductive heating loads which can be single-phase, two-phase or three-phase. They can switch load power extremely fast, providing the means to respond rapidly to command changes, load changes and power supply changes. This feature allows the control of fast responding loads and eliminates the negative effects of variations in load or supply voltages that can occur with other types of control.

Radix Power Regulators comprise of a triggering circuit and suitably rated back-to-back connected SCR modules mounted on special aluminium-alloy heat sinks duly isolated electrically .

The cooling is either natural cooling or forced air cooling using high speed noiseless air circulating fans.

Input and output terminals are clip-on type heavy duty connectors or copper bus bars type. For safety / protection suitably rated semiconductor fuses and thermal cut-outs are provided.

The entire assembly is mounted on a compact and easy to install anodized aluminium enclosure with safety ABS removable covers.

Features

- Phase Angle and Cycle Control with Zero Crossover technology
- 30 Amps to 750 Amps current carrying capacity
- 1-phase / 2-phase / 3-phase versions
- Suitable for 3 phase star without neutral / closed delta configuration
- Provision for Auto / Manual operation
- Accepts 4~20 mA /1~5 VDC /0~5 VDC / 0~10 VDC/ 2~10 VDC control input, pulse control input.
- Soft start for smooth control
- Adjustable power output - voltage / current control.
- Isolated heat sink for safety with NTC
- Simple & modular design for easy servicing of cards & thyristors
- Ideally suitable for resistive, transformer, inductive or heating loads like Silicon Carbide & Molybdenum Disilicide which exhibit significant changes of resistance with increase in temperature
- LED indicators for status
- Cooling fan for temperature control which extends its life
- Relay output for remote supervision under following conditions : phase failure, fuse blown and heat sink over-temperature
- Ideal replacement for traditional mechanical contactor/ relay accepting DC logic input signal

SPECIFICATIONS All specifications at ambient of 25 °C, 220 VAC, 50Hz unless specified otherwise

Main power voltage	220VAC, 380VAC, 440VAC, 480VAC, ±10%
Supply voltage	230VAC ±15%, 50/60Hz
Rated current	35A, 50A, 60A, 80A, 100A, 125A, 160A, 200A, 250A, 300A, 350A, 400A, 600A, 750A
Working frequency	50 / 60Hz
Output type	Phase Angle control or Zero Crossover control
Input control signal	Phase Angle 4-20mA, 1-5V, 0-10V, 2-10V, 0-5V Zero crossover 4-20mA, 1-5V, 0-10V, 2-10V, 0-5V Pulse input, 18 seconds Soft start Manual/Auto operation
Linearity	±2% of the full range
Output voltage range	0-100%
Operating environment	10~50 °C, humidity under 90% RH without condensation.
Insulation resistance	Over 20M (Power & external cover) Over 20M (Input Signal & external cover)
Isolation voltage	2500VAC/1min between power & Heat sink 2000VAC/1min between input, output, supply, relay

ACCESSORIES

10K potentiometer with knob and dial

SCR POWER REGULATORS & HEATING CONTROL PANELS

ADVANTAGES

SCR Power Regulators provide a relatively economical means of power control. SCR Power Regulators cost less and are more efficient than saturable core reactors and variable transformers. Compared to contactors, SCR Power Regulators offer a much finer degree of control and do not suffer from the maintenance problems of mechanical devices. Features and benefits of SCR Power Regulators over other forms of control include

- High Reliability : No inherent wear-out (being solid state device)
- Infinite resolution : Power, current or voltage can be controlled from 0 to 100% with infinite resolution
- Selectable control parameters : Current & voltage limiting, adjustable power
- Economical : Reduced power consumption due to better regulation of temperature
- Finer control
- Zero maintenance cost

Note : Due to constant improvement specifications and dimensions are subject to change without notice.

APPLICATIONS

Radix Thyristor Power Regulators have varied applications and can be used with heating elements like Nichrome, Kanthal - A1, Super Kanthal, Silicon Carbide/Molybdenum Di-Silicide, Infra Red, etc where precise and accurate temperature control is desired. They can also be used in DC rectification applications.

A few of the industrial applications where Radix Power Regulators are used :

1. Heat Treatment
2. Automobile Industry
3. Stress Relieving
4. Jewellery Industry
5. Wax Burn Out
6. DC Rectifiers
7. Low Voltage - High Current Heating Systems using Transformers
8. Injection Moulding Machines
9. Extruders
10. Plastic Industries
11. Environmental Chambers
12. Upsetting machines for Engine Valve manufacturing
13. Electromagnetic Cranes
14. Multizone Heating Systems
15. Electrolysis
16. Research Laboratories, Atomic Power Stations ... and many more applications

SCR Heating Control Panels from Radix - for Precise Temperature Control & Energy Saving

RADIX offers ready-to-use SCR Heating Control Panels for electrical furnaces, ovens or any other electrical heating system for OEMs and end users.

The panels are fabricated using CRC MS sheet duly powder coated / EPOXY coated (usually Siemens Grey color - other color shades are also available on request) or in Stainless Steel.

These control panels come fitted with accessories depending on the application, eg highly accurate and versatile controller, safety controller, PLC, HMI, Current meters, Energy regulator, MCB / MCCBs, safety contactors, etc.

The front facia of the panel incorporates switch gear components, meters, etc for easy access and user friendly and safe operation of the panel.

The incoming power line MCBs or MCCBs of suitable ratings are used for switching the electrical supply to the SCR Heating Control Panel. Suitably rated fuses are incorporated per phase or per heating arm. Digital or Analog current meters are installed on the panel to monitor the current flowing through the load.

SCR POWER REGULATORS & HEATING CONTROL PANELS

DIMENSIONS

TABLE 1
SINGLE PHASE RESISTIVE LOAD - PHASE ANGLE - WITHOUT PROTECTION - 220 VAC

Sr No	Model	Amps	Mains Supply (VAC)	L(mm)	W(mm)	H(mm)
1	TPR935	35	220	95	125	92
2	TPR950	50	220	95	125	92

TABLE 2
SINGLE PHASE RESISTIVE LOAD - PHASE ANGLE - WITH PROTECTION - 220 VAC

Sr No	Model	Amps	Mains Supply (VAC)	L(mm)	W(mm)	H(mm)
1	TPR-SP-22030	30	220	232	93	120
2	TPR-SP-22050	50	220	232	93	120
3	TPR-SP-22060	60	220	220	142	154
4	TPR-SP-22080	80	220	220	142	154
5	TPR-SP-22100	100	220	220	142	154
6	TPR-SP-22125	125	220	243	142	154
7	TPR-SP-22160	160	220	243	142	154
8	TPR-SP-22180	180	220	243	142	154

TABLE 3
TWO-PHASE RESISTIVE LOAD - PHASE ANGLE - WITH PROTECTION - 380 / 440 / 480 VAC

Sr No	Model	Amps	Mains Supply (VAC)	L(mm)	W(mm)	H(mm)
1	TPR-2P-38030	30	380 / 440 / 480	232	93	120
3	TPR-2P-38050	50	380 / 440 / 480	232	93	120
4	TPR-2P-38060	60	380 / 440 / 480	220	142	154
5	TPR-2P-38080	80	380 / 440 / 480	220	142	154
6	TPR-2P-38100	100	380 / 440 / 480	220	142	154
7	TPR-2P-38125	125	380 / 440 / 480	243	142	154
8	TPR-2P-38160	160	380 / 440 / 480	243	142	154
9	TPR-2P-38180	180	380 / 440 / 480	243	142	154

TABLE 4
THREE-PHASE RESISTIVE LOAD - PHASE ANGLE - WITH PROTECTION - 480 VAC

Sr No	Model	Amps	Mains Supply (VAC)	L(mm)	W(mm)	H(mm)
1	TPR-3P-48025-H	25	480	220	142	154
2	TPR-3P-48035-H	35	480	220	142	154
3	TPR-3P-48050-H	50	480	243	142	154
4	TPR-3P-48060-H	60	480	243	142	154
5	TPR-3P-48080-H	80	480	243	142	154
6	TPR-3P-48100-H	100	480	243	142	154
7	TPR-3P-48125-H	125	480	305	141	172
8	TPR-3P-48160-H	160	480	305	141	172
9	TPR-3P-48180-H	180	480	365	142	200
10	TPR-3P-48200-H	200	480	365	142	200
11	TPR-3P-48225-H	225	480	400	263	210
12	TPR-3P-48250-H	250	480	400	263	210
13	TPR-3P-48300-H	300	480	400	263	210
14	TPR-3P-48350-H	350	480	530	306	247
15	TPR-3P-48400-H	400	480	530	306	247
16	TPR-3P-48600-H	600	480	710	365	285
17	TPR-3P-48700-H	700	480	710	365	285

TABLE 5
THREE-PHASE TRANSFORMER LOAD - PHASE ANGLE - WITH PROTECTION - 480 VAC

Sr No	Model	Amps	Mains Supply (VAC)	L(mm)	W(mm)	H(mm)
1	TPR-3P-48035-T	35	480	220	142	154
2	TPR-3P-48050-T	50	480	243	142	154
3	TPR-3P-48060-T	60	480	243	142	154
4	TPR-3P-48080-T	80	480	243	142	154
5	TPR-3P-48100-T	100	480	243	142	154
6	TPR-3P-48125-T	125	480	305	141	172
7	TPR-3P-48160-T	160	480	305	141	172
8	TPR-3P-48180-T	180	480	365	142	200
9	TPR-3P-48200-T	200	480	365	142	200
10	TPR-3P-48225-T	225	480	400	263	210
11	TPR-3P-48250-T	250	480	400	263	210
12	TPR-3P-48300-T	300	480	400	263	210

TABLE 6
THREE-PHASE 3 - WIRE ZERO CROSS - 2 LEG CONTROL - WITH PROTECTION - 480 VAC

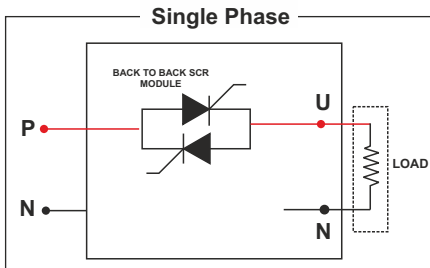
Sr. No.	Model	Amps	Mains Supply (VAC)	L(mm)	W(mm)	H(mm)
1	TPR-3P-48035-2Z	35	480	220	142	154
2	TPR-3P-48050-2Z	50	480	243	142	154
3	TPR-3P-48060-2Z	60	480	243	142	154
4	TPR-3P-48080-2Z	80	480	243	142	154
5	TPR-3P-48100-2Z	100	480	243	142	154
6	TPR-3P-48125-2Z	125	480	305	141	172
7	TPR-3P-48160-2Z	160	480	305	141	172
8	TPR-3P-48180-2Z	180	480	365	142	200
9	TPR-3P-48200-2Z	200	480	365	142	200
10	TPR-3P-48250-2Z	250	480	400	263	210
11	TPR-3P-48300-2Z	300	480	400	263	210
12	TPR-3P-48350-2Z	350	480	530	306	247
13	TPR-3P-48400-2Z	400	480	530	306	247
14	TPR-3P-48600-2Z	600	480	710	365	285
15	TPR-3P-48700-2Z	700	480	710	365	285

TABLE 7
THREE-PHASE 3 - WIRE ZERO CROSS - 3 LEG CONTROL - WITH PROTECTION - 480 VAC

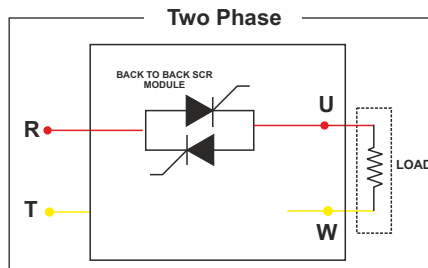
Sr. No.	Model	Amps	Mains Supply (VAC)	L(mm)	W(mm)	H(mm)
1	TPR-3P-48050-3Z	50	480	243	142	154
2	TPR-3P-48060-3Z	60	480	243	142	154
3	TPR-3P-48080-3Z	80	480	243	142	154
4	TPR-3P-48100-3Z	100	480	243	142	154
5	TPR-3P-48125-3Z	125	480	305	141	172
6	TPR-3P-48160-3Z	160	480	305	141	172
7	TPR-3P-48180-3Z	180	480	365	142	200
8	TPR-3P-48200-3Z	200	480	365	142	200

SCR POWER REGULATORS & HEATING CONTROL PANELS

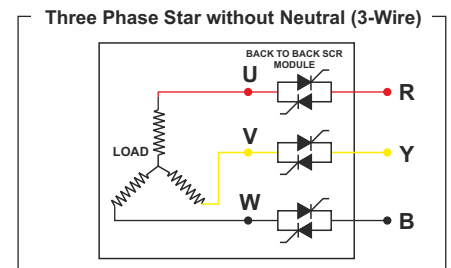
CONNECTION DIAGRAM FOR RESISTIVE HEATER LOADS



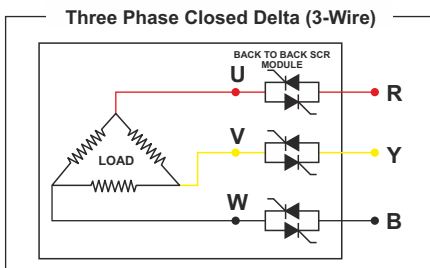
REFER TABLE 1 & 2 FOR MODEL SELECTION



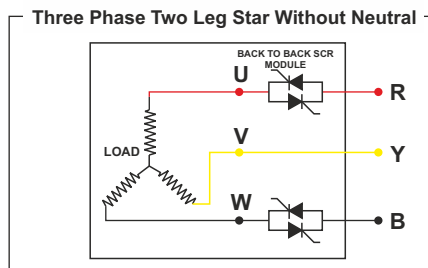
REFER TABLE 3 FOR MODEL SELECTION



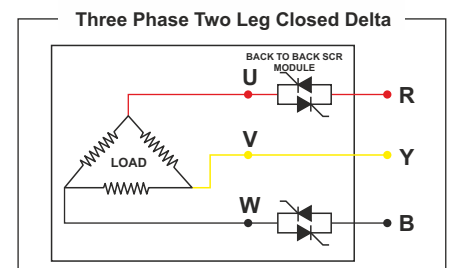
REFER TABLE 4 & 5 FOR MODEL SELECTION



REFER TABLE 4 & 5 FOR MODEL SELECTION



REFER TABLE 6 FOR MODEL SELECTION



REFER TABLE 6 FOR MODEL SELECTION

ORDERING INFORMATIONS

MODEL	RATED CURRENT (A)	ORDER CODE
TPR935	35	2395 - V64
TPR950	50	2395 - V70
TPR-SP-22030	30	2395 - V67
TPR-SP-22050	50	2395 - V38
TPR-SP-22060	60	2395 - V36
TPR-SP-22080	80	2395 - V50
TPR-SP-22100	100	2395 - V39
TPR-SP-22125	125	2395 - V45
TPR-SP-22160	160	2395 - V51
TPR-SP-22180	180	2395 - V88
TPR-SP-22200	200	2395 - V87
TPR-2P-38030	30	2395 - V42
TPR-2P-38040	40	2395 - V81
TPR-2P-38050	50	2395 - V43
TPR-2P-38060	60	2395 - V33
TPR-2P-38080	80	2395 - V44
TPR-2P-38100	100	2395 - V34
TPR-2P-38125	125	2395 - V47
TPR-2P-38160	160	2395 - V35
TPR-2P-38180	180	2395 - V57
TPR-3P-48035-H	35	2395 - V19
TPR-3P-48050-H	50	2395 - V14
TPR-3P-48060-H	60	2395 - V15

MODEL	RATED CURRENT (A)	ORDER CODE
TPR-3P-48080-H	80	2395 - V16
TPR-3P-48100-H	100	2395 - V17
TPR-3P-48125-H	125	2395 - V18
TPR-3P-48160-H	160	2395 - V20
TPR-3P-48180-H	180	2395 - V21
TPR-3P-48200-H	200	2395 - V82
TPR-3P-48225-H	225	2395 - V22
TPR-3P-48250-H	250	2395 - V23
TPR-3P-48300-H	300	2395 - V24
TPR-3P-48350-H	350	2395 - V25
TPR-3P-48400-H	400	2395 - V26
TPR-3P-48600-H	600	2395 - V27
TPR-3P-48035-T	35	2395 - V46
TPR-3P-48050-T	50	2395 - V48
TPR-3P-48060-T	60	2395 - V52
TPR-3P-48080-T	80	2395 - V54
TPR-3P-48100-T	100	2395 - V30
TPR-3P-48125-T	125	2395 - V49
TPR-3P-48160-T	160	2395 - V31
TPR-3P-48180-T	180	2395 - V61
TPR-3P-48200-T	200	2395 - V78
TPR-3P-48225-T	225	2395 - V32
TPR-3P-48250-T	250	2395 - V60
TPR-3P-48300-T	300	2395 - V80

MODEL	RATED CURRENT (A)	ORDER CODE
TPR-3P-48035-ZZ	35	2493 - V9
TPR-3P-48050-ZZ	50	2493 - V6
TPR-3P-48060-ZZ	60	2493 - V16
TPR-3P-48080-ZZ	80	2493 - V5
TPR-3P-48100-ZZ	100	2493 - V19
TPR-3P-48125-ZZ	125	2493 - V3
TPR-3P-48160-ZZ	160	2493 - V7
TPR-3P-48180-ZZ	180	2493 - V8
TPR-3P-48200-ZZ	200	2493 - V20
TPR-3P-48225-ZZ	225	2493 - V12
TPR-3P-48250-ZZ	250	2493 - V15
TPR-3P-48300-ZZ	300	2493 - V4
TPR-3P-48350-ZZ	350	2493 - V13
TPR-3P-48400-ZZ	400	2493 - V14
TPR-3P-48600-ZZ	600	2493 - V17
TPR-3P-48050-3Z	50	2881 - V1
TPR-3P-48060-3Z	60	2881 - V2
TPR-3P-48080-3Z	80	2881 - V3
TPR-3P-48100-3Z	100	2881 - V4
TPR-3P-48125-3Z	125	2881 - V5
TPR-3P-48160-3Z	160	2881 - V6
TPR-3P-48180-3Z	180	2881 - V7
TPR-3P-48200-3Z	200	2881 - V8

SCR POWER REGULATORS & HEATING CONTROL PANELS

APPLICATION



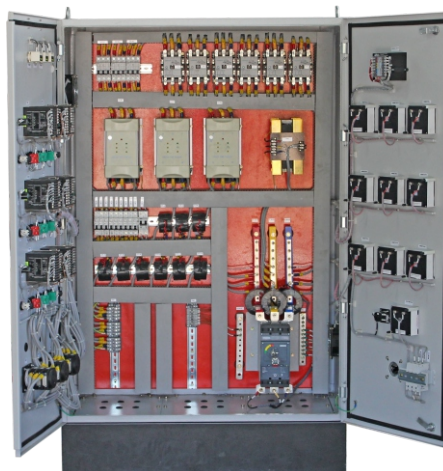
3-phase, 3-zone, SCR heating control panel with bypass facility
 Type of load : Transformer (primary)
 Capacity : 270kva
 Application : SS wiring drawing annealing furnace



5-zone, 3-phase, SCR heating control panel
 Type of load : Resistive
 Capacity : 375kw
 Application : Multi zone - SS wire drawing annealing furnace



3-phase, 3-zone, SCR heating control panel in stainless steel
 Type of load : Resistive heater
 Capacity : 90kw
 Application : Rotary kiln



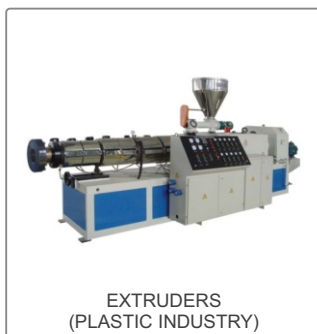
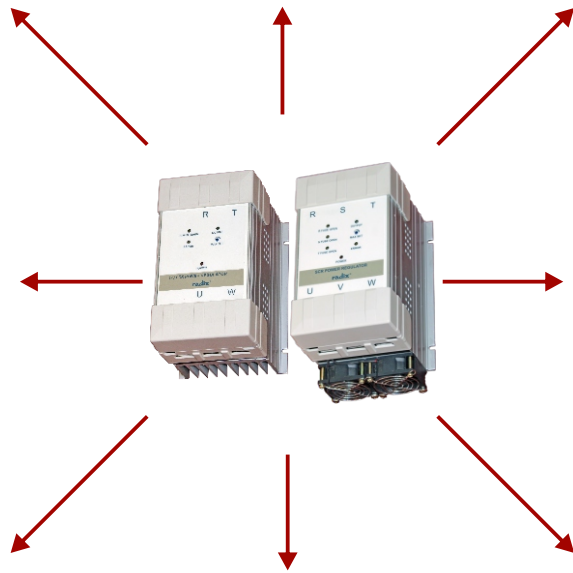
3-zone, 3-phase, SCR heating control panel internal view with bypass facility
 Type of load : Transformer (primary)
 Capacity : 270kw
 Application : SS wiring drawing annealing furnace



10-zone, single-phase SCR heating control panel
 Type of load : Resistive
 Capacity : 50kw
 Application : Lead - lithium test bench - research institute

SCR POWER REGULATORS & HEATING CONTROL PANELS

APPLICATION



ENQUIRIES

Instruments : sales@radix.co.in
 Sensors : sensors@radix.co.in
 Gauges : gauges@radix.co.in
 Automation : automation@radix.co.in
 Level : level@radix.co.in

RADIX ELECTROSYSTEMS PVT LTD
 EL-135/136/137, Electronics Zone
 TTC Indl. Area, MIDC, Mahape
 Navi Mumbai - 400 710, India
 Tel : + 91 22 42537707
 Cell : + 91 8879517740 · sales@radix.co.in