



PHASETRONICS™

SCR Power Control Specialists

1P1

Series

**Single-Phase SCR Power Control
Phase Angle Control, 20 - 600A**

Design Features

- Digital Electronics
- Dual SCR Output
- Adjustable Soft Start
- Line Voltage Regulation
- Multiple Control Inputs
- Hard Firing Gate Pulse
- Subcycle I²T Fuse
- Transient Voltage Protection
- Isolated Heatsink Design (75A)
- Small Compact Package

Typical Applications

- Temperature Control
- Heater Control
- Variable Autotransformer
- Oven & Furnace Control
- Wire Annealing
- Power Supplies
- Quartz Lamps
- Transformer Control

Description

Phasetronics Model 1P1 Series of single-phase SCR Power Controllers feature phase angle control to provide smooth proportional output power from 0 – 100%. The model 1P1 controllers are available with load current ratings ranging from 120 through 575Vac. These units are ideally suited for all resistive, inductive and lamp type loads. With a variety of standard pre-engineered options, they are the ideal choice for system designers, panel builders and end users.

Standard features on all Model 1P1 units include isolated heatsink design through 75 amperes, fast blow fuses and transient voltage protection networks, and high PIV rated SCR's. State-of-the-art digital electronics with hard firing gate pulse and associated logic control circuitry allows these units to accept a variety of input control signals.

Control Options

Milliamp Input

Accepts conventional milliamp input signals from a process controlled instrument for automatic operation. Gain and offset potentiometers are provided to adjust for maximum and minimum desired output levels. If both manual and milliamp inputs are used, the manual control will override the milliamp input unless a customer supplied Auto/Manual switch is placed in the automatic position.

Current Limit

Adjustable from 10-125% of unit rating. Current Limit will control input signal to limit the output current. Current transformer included.

Soft Start

When initial power is applied, unit output voltage is ramped to desired output level. Can be field adjusted for up to 25 seconds.

Manual & 0-10 Vdc Input

Accepts 10K ohm potentiometer for manual control or a 0-10 Vdc input control signal for automatic control. If both manual and dc voltage inputs are used the manual control will override the dc input unless a customer supplied Auto/Manual switch is placed in the automatic position.

Current Trip

Adjustable from 75-200% for instantaneous trip if current exceeds set level. Unit can be connected for manual or automatic reset. Current transformer included.

Line Voltage Regulation

Will maintain output within a $2\% \pm 10\%$ line variation.

Computer Control Interface

Provides a 0 to 10 Vdc output signal proportional to load voltage and a 0 to 10 Vdc output signal proportional to load current for computer interface.

Voltage & Current Regulation

Independent voltage and current adjustments with automatic crossover provides $\pm 0.75\%$ voltage and current regulation of dc SCR power supplies.

Specifications

AC Supply Voltage

Operates within + 10% to – 15% of 120, 208, 240, 277, 380, 480 and 575 Vac, Single Phase, 60Hz line voltages. (50Hz available if specified).

Control Input

Manual	10k ohm potentiometer
Automatic	0-10 Vdc analog signal
Milliamp	4-20mA analog signal

Ambient Temperature

0 to 50° C at rated current

Output Stage:

Back-to-back SCR configuration

Load Types: Resistive, inductive and lamp.

Output Voltage: 0 to 100%

Regulation

Maintains output within 2% with a $\pm 10\%$ line

variation

Milliamp Input Impedance

4-20 mA 510 Ohms

Adjustments

Soft Start - 0.5 to 25 seconds

Gain & Offset - Accommodates most milliamp inputs

Current Limit (optional) - 10 to 125%

Current Trip (optional) - 75 to 200%

Protective Features

I²T Fuse (fast-blown)

Transient voltage supressor (MOV)

dv/dt Networks

PIV rating of SCR's 1500V

Model Number Selector

How To Select a Model Number

To order units with 120, 240 and 480 Vac line ratings, select the model number with the desired current rating from Table A and add the appropriate Option Designator from Table B for the desired control options.

Example:

Model 1P1-1220-V is a single phase 120Vac, 20Amp unit with the voltage and current regulation option.

Table A. Model Selection Guide for 120, 240 and 480 Vac Units

AMPS	120V AC		240V AC		480V AC	
	KVA	MODEL NUMBER *	KVA	MODEL NUMBER *	KVA	MODEL NUMBER *
20	2	1P1-1220	4	1P1-2420	9	1P1-4820
40	4	1P1-1240	9	1P1-2440	19	1P1-4840
75	9	1P1-1275	18	1P1-2475	36	1P1-4875
110	13	1P1-12110	26	1P1-24110	52	1P1-48110
140	16	1P1-12140	33	1P1-24140	67	1P1-48140
175	21	1P1-12175	42	1P1-24175	84	1P1-48175
225	27	1P1-12225	54	1P1-24225	108	1P1-48225
300	36	1P1-12300	72	1P1-24300	144	1P1-48300
400	48	1P1-12400	96	1P1-24400	192	1P1-48400
500	60	1P1-12500	120	1P1-24500	240	1P1-48500
600	72	1P1-12600	144	1P1-24600	288	1P1-48600

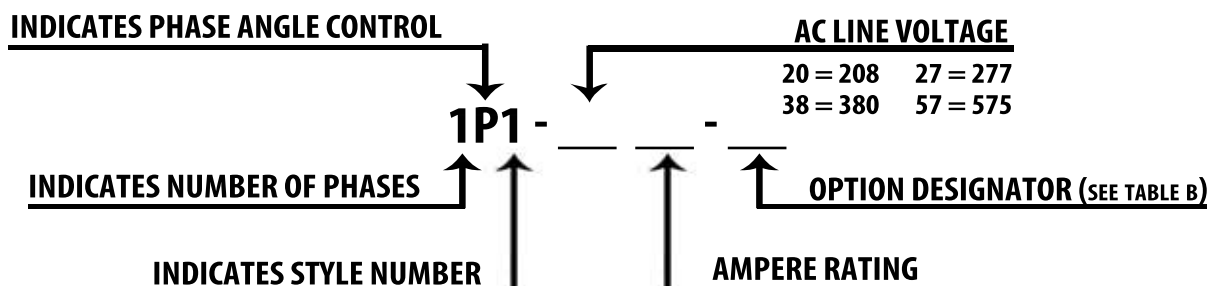
*Add desired Option Designator Letter to the end of the model number when ordering.

Table B. Control Option Selection Guide

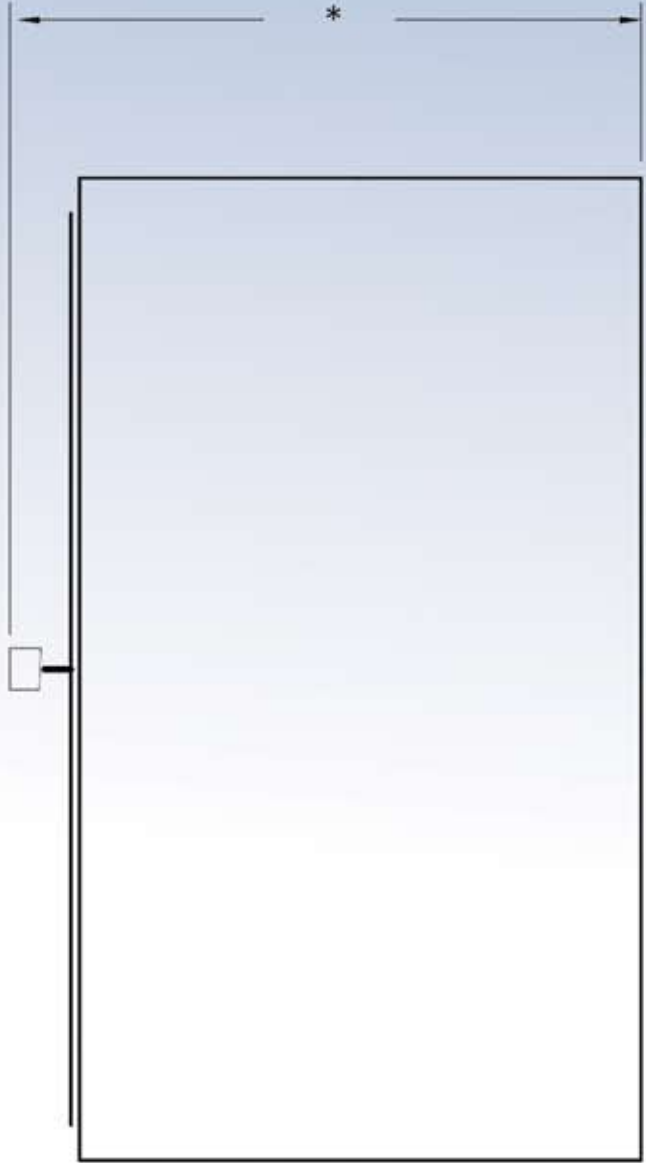
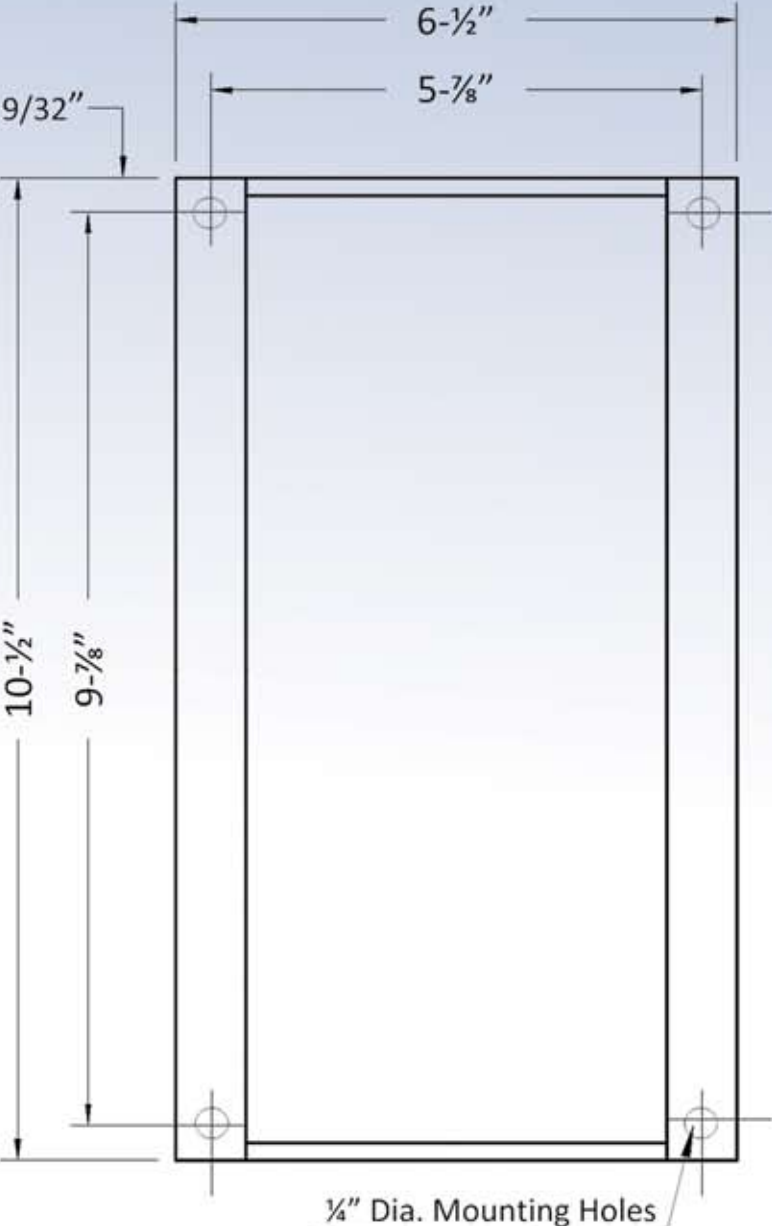
CONTROL OPTIONS	OPTION DESIGNATOR				
	B	C	D	E	V
MANUAL & 0 TO 10 V _{DC} INPUT	√	√	√	√	
MILLIAMPER INPUT	√	√	√	√	
CURRENT LIMIT		√		√	
CURRENT TRIP			√	√	
VOLTAGE & CURRENT REGULATION					√

Model Selection Guide for 208, 277, 380, 575 V_{AC} UNITS

To order units with 208, 277, 380 and 575 Vac line ratings, simply make up the appropriate number as shown in the following example.

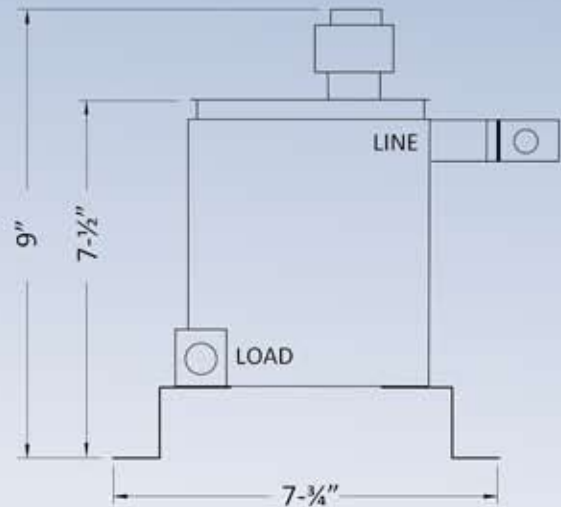
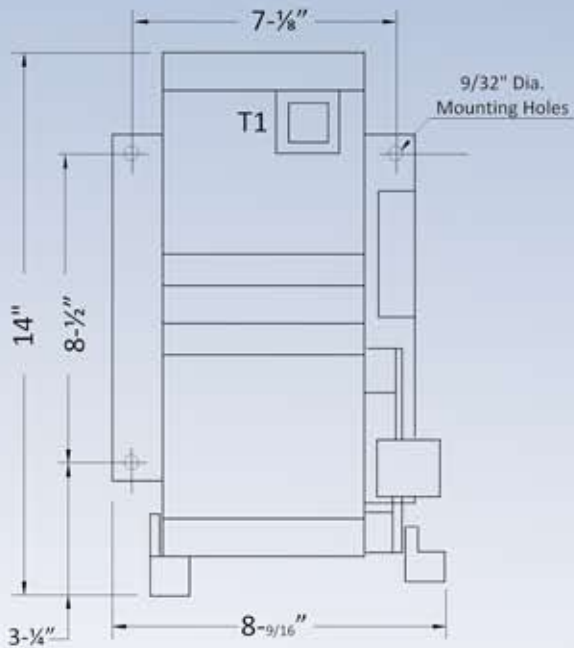


20, 40 & 75 Amp Units

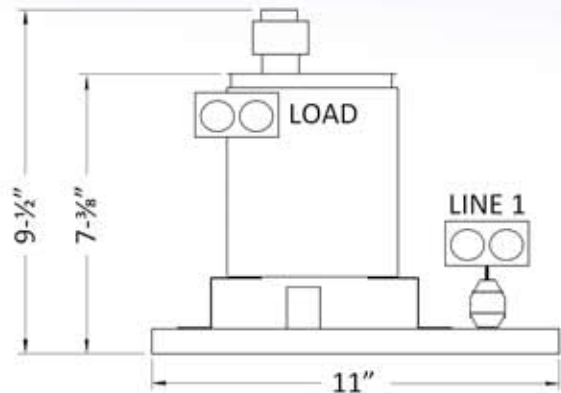
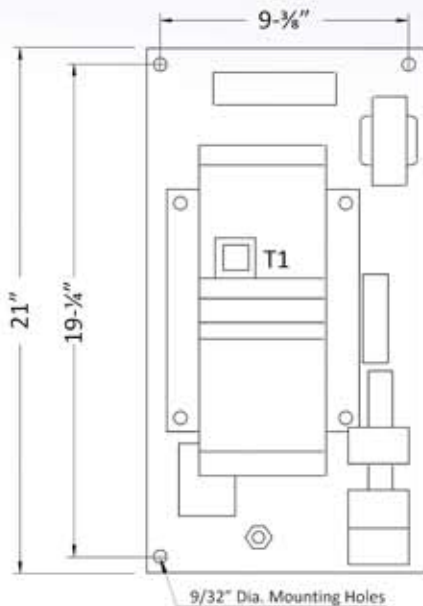


* Dimension varies with model
 $5\frac{1}{4}"$ for 20 and 40 Amp Model
 $6\frac{3}{4}"$ for 75 Amp Model

110, 140, 175 & 225 Amp Units



300, 400, 500 & 600 Amp Units



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