

# EP1

## Single-Phase SCR Power Control

Phase Angle Control, 10 - 1000A



### Design Features

- Multiple Control Options
- Compact Package
- Low Cost
- LED Indicators
- Adjustable Soft Start

### Optional Features

- I<sup>2</sup>T Fuse
- Current Limit
- Current Trip
- Load Voltage Regulation
- Soft Start On Signal or Lockout Changes

### Typical Applications

- Heater Control
- Power Supplies
- Quartz Lamps
- Wire Annealing
- Oven & Furnace Control
- Solid State Autotransformer

# Description

Phasetronics EP1 series of single-phase SCR power control features phase angle control to provide smooth proportional output power from 0-100%. The model EP1 was designed to make available low cost high quality SCR phase control.

The EP1 series is available in load currents from 10 to 1000 amperes and at line voltages from 120 through 575 volts AC. These units are ideally suited for all resistive and inductive loads. A soft start feature assures a slow rising output voltage to prevent inrush currents on inductive loads. The standard soft start is active on power up and is reset after a power loss. Option S is available to provide soft start on input control signal change or lockout release. Lockout (external shutdown) can be activated by an external dry contact closure.

The control input is configurable to match all standard temperature and process controllers. The control signal sensitivity is adjustable by gain and offset potentiometers. The unit can also be controlled manually from an external potentiometer. MOVs protect the SCRs from voltage surges or transient voltages. False firing (dv/dt) protection is also included. I<sup>2</sup>T fuses are available as an option.

Nema enclosures, circuit breakers, contactors and disconnect switches are available. Contact the factory for additional information.

## Control Features

### Automatic Signal Control Input

Accepts conventional voltage and milliamp input signals from a temperature controller for automatic operation. A shorting plug is provided for user selection of a 0-10V DC, 0-5V DC or 4-20ma input signal. (Factory set for 4-20ma input.) Gain and Offset potentiometers are provided to adjust for the maximum and minimum desired output levels. If both manual and automatic signals are used, the larger value signal will override the smaller unless a customer supplied Auto/Manual switch is installed.

### Manual Input

Accepts a 10k ohm potentiometer for local manual control. If both the manual and the automatic inputs are used, the larger signal will override unless a customer supplied Auto/Manual switch is installed.

### Soft Start

When initial power is applied, unit output voltage is ramped to desired output level over an adjustable interval. The interval can be field adjusted for up to 20 seconds.

## Control Options

### Soft Start on Signal Change (optional) Option S

Provides soft start on a signal change or when lockout is released. The unit is set up so that either of these two soft start modes can be disabled if desired. The unit will ramp up on a signal change if this signal was already at zero value.

### Current Limit (optional) Option C

Adjustable from 0-110% of unit rating. Current limit will override control input signal to limit the output current. Current transformer included.

### Current Trip (optional) Option T

Adjustable from 75-200% for instantaneous trip if current exceeds set level. Manual reset with dry contract. Current transformer included.

### Load Voltage Regulation (optional) Option R

Will maintain output within 2% with a +/- 10% line variation.

## Specifications

### AC Supply Voltage

+10% to -10% of 120, 208, 240, 277, 380, 415, 480 and 575 Vac, 50/60Hz line voltages, single phase.

### Control Input

Manual -10k potentiometer  
Automatic - 4-20mA / 0-10 volts or 0-5V DC

**Output Voltage:** Approx. 2 volts  
below input voltage

**Load Voltage Regulation (optional):**  
2% with a +/- 10% line variation

### Input Impedance

4-20ma	249 ohms
0-5V DC	100k ohms
0-10V DC	100k ohms

### Protective Features

MOV transient suppressors  
dv/dt network  
PIV rating of SCRs is 2.5 times  
i<sup>2</sup>T fuse (optional)

**Ambient Temperature:**  
0 to 40 °C at rated current

### Adjustments

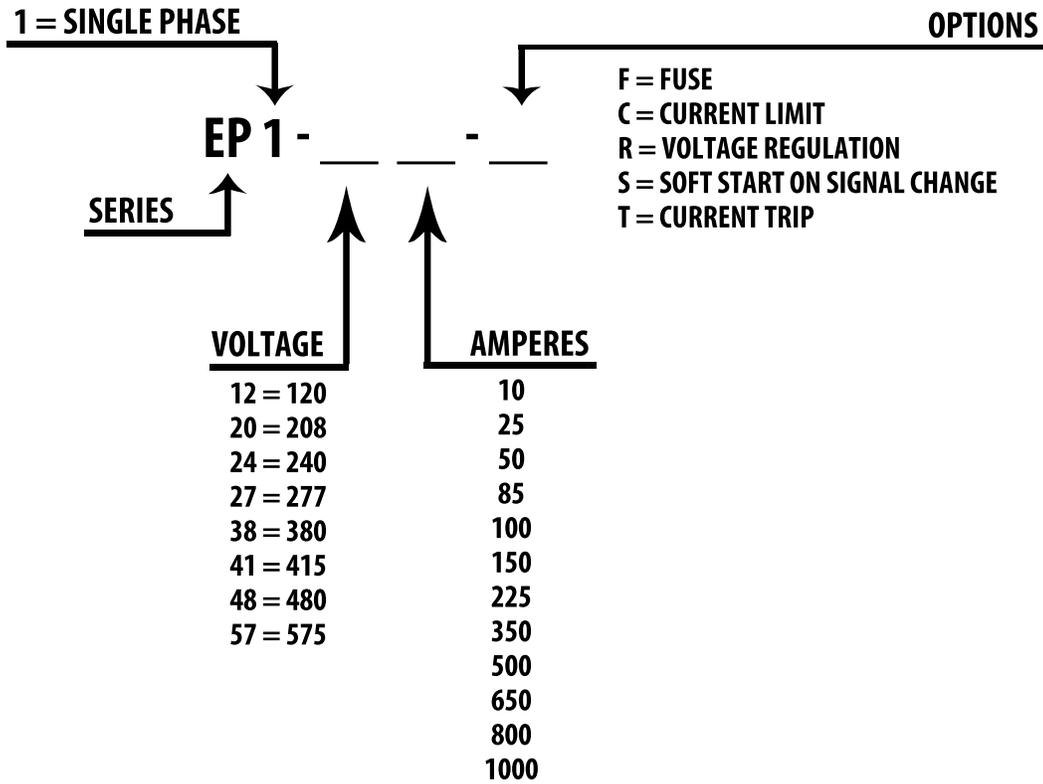
Soft Start (power on) - 0 to 20 seconds  
Soft Start (optional)  
0 to 12 sec on signal change or  
on lockout release

Gain & Offset - standard for auto signal  
Current Limit (optional) - 0 to 110%  
Current Trip (optional) - 75 to 200%

**Load Type:** Resistive, inductive and lamp.

**Output Stage:** Back-to-back SCRs

# Model Number Selector



## How to select a Model Number

1. Select the operating voltage
2. Select the amp rating to match the KVA (kW)
3. Decide if a fuse is desired
4. Select the options required

5. Example:

Voltage = 240V AC

KVA = 33 select current of 150 amps

Options

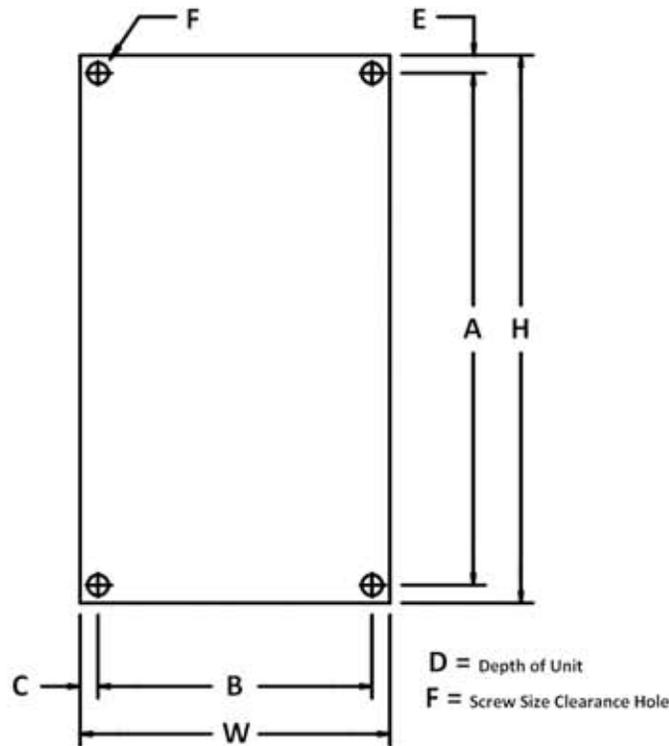
Fuse = yes

Current Limit = yes

Soft Start on Signal Change = yes

Model Number = EP1 - 24150 - FCS

AMPS	120V	240V	KVA 380V	480V	575V
10	1.2	2.4	3.8	4.8	5.7
25	3	6	9.5	12	14.3
50	6	12	19	24	28.7
85	10	20	32	40.8	48.8
100	12	24	38	48	57
150	18	36	57	72	86
225	27	54	85	108	129
350	42	84	133	168	201
500	60	120	190	240	287
650	78	156	247	312	373
800	96	192	304	384	460
1000	120	240	380	480	575



AMPS	H	W	D	A	B	F
10	6.00	5.75	4.75	5.53	5.28	#10
25	6.00	5.75	4.75	5.53	5.28	#10
50	9.00	7.00	5.50	8.25	6.37	1/4-20
85	11.5	9.88	6.25	9.5	9.00	1/4-20
100	11.5	9.88	6.25	9.5	9.00	1/4-20
150	10.50	9.50	7.50	5.31	5.31	1/4-20
25	11.50	9.50	7.50	5.38	5.38	1/4-20
350	12.00	10.00	7.38	5.30	5.30	1/4-20
500	21.00	11.00	9.50	9.50	9.50	3/8-16
650	21.00	11.00	9.50	9.50	9.50	3/8-16
800	25.63	15.63	11.30	13.88	13.88	3/8-16
1000	25.63	15.63	11.30	13.88	13.88	3/8-16

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