

## Three Phase Zero-Cross SCR Power Controller



### Description

The model 3027 is a three-phase, zero-cross SCR power controller. The controller provides control of electrical power to resistive loads by means of silicon controlled rectifiers connected in two of the three lines. Control of power is linear with respect to a command signal. The command signal is electrically isolated from the line and load voltage.

The model 3027 controller features a compact design, a single plug-in circuit card for ease of operation and an electrically isolated heatsink. All three line leads are fused. The unit accepts 4-20mA, 0-5Vdc, 0-10Vdc or potentiometer command signals.

### Applications

- Resistive Loads

### Approvals



LISTED 3L32  
INDUSTRIAL  
CONTROL  
EQUIPMENT  
E136219



CERTIFIED  
BY UL TO  
CANADIAN  
NATIONAL  
STANDARDS

## Features

**Electrical isolation of command signal from load and line voltages.**

**Linear power with respect to command signal plus line voltage compensation.**

**SCR Protection**

**Compact size**

**Sync-guard™**

**Trans-Guard™**

**Diagnostic Indicator**

**Very fast cycle rate**

**Underwriters Laboratories Listed**

**Load & Line Fused**

**Thermostat**

**Internal Control Fuses**

## Advantages

Eliminates potential ground loops. Provides safe operation with inexpensive, non-isolated process controllers.

Provides a stable control loop because load power is proportional to command signal and is not affected by line voltage variations.

High Voltage Peak Rating with dV/dT Snubber and MOVs.

Size of enclosure and panel space are reduced.

Reduces synchronous operation of multiple SCR controllers to obtain a smoother power demand.

Eliminates DC load currents and therefore transformer overheating due to saturation from induced DC primary voltages.

Light emitting diode (LED) provides visual indication of controller operation.

Rapid on-off operation provides a nearly continuous flow of power.

Nationally Recognized Testing Facility.

Three primary legs fused.

Senses the heatsink temperature.

Protects circuit and control transformer.

## Benefits

A less costly, more reliable means to achieve good process control.

Product quality remains constant.

SCR less likely to fail. Snubber and MOV to protect against high frequency Transients and voltage spikes.

Valuable space is saved, enclosure costs are reduced.

Cooler operation of supply transformers, circuit breakers, etc., greatly reduces the possibility of voltage variations resulting multiple controllers cycling on and off at the same time.

Eliminates supply transformer problems caused by SCR controller operation. Increased transformer life.

Provides and easily understood means to troubleshoot by inexperienced personnel. Reduces down time.

Provides uniform heating, longer heater life and allows use with fast responding loads.

Tested for your safety.

Type "T" fuses protect SCRs and load.

Prevents overheating by shutting the unit off.

Removes power from control circuit on detection of high temperature.

## Specifications

**Control Mode** Three-phase, Two-leg, zero-cross control.

<b>Command Signal</b>	Range	Input Resistance
	4-20mA	300 ohms
	0-5Vdc	120K
	0-10Vdc potentiometer (1K to 10K 1/2w)	240K

**Power Circuit** Inverse parallel Silicon Controlled Rectifiers (SCR's).

**Operating Voltage** 208/240/380/415/480/575 (+10%, -20%), 50/60 Hertz. Consult factory for other voltages.

<b>Ambient Temperature</b>	Operating:	0° to 55°C
	Storage:	-40° to 80°C

**Humidity** 0 to 90%, non-condensing.

**SCR protection** 1400 Volt Peak dV/dT 200 Volts/second.

**Isolation** Isolation between power circuit, command signal and ground is greater than 2500 volts RMS.

**Linearity and Voltage Compensation** Load power is linear with respect to the command signal. Variations in load power resulting from supply voltage variations are reduced by an average voltage feedforward technique.

**Control Range** 0 to 99.5% of supply voltage. dV/dT snubber circuits and MOV's are used to protect against high frequency transients (dV/dT) and voltage spikes.

**Zero and Span** Multiturn potentiometers provide adjustment of ±20% of span.

**Mounting** Controllers with fans (145 Amps and larger) may be mounted in any direction. Smaller controllers must be mounted with fins vertical.

**Diagnostic Indicator**

The frequency of operation of the LED is proportional to the command signal. It is "ON" when power is applied to the load.

**Physical**

Weight: 85, 145 & 175 Amp = 20 lbs.  
 240, 295, 370 & 425 = 50 lbs.  
 Dimensions: Refer to installation dwg.

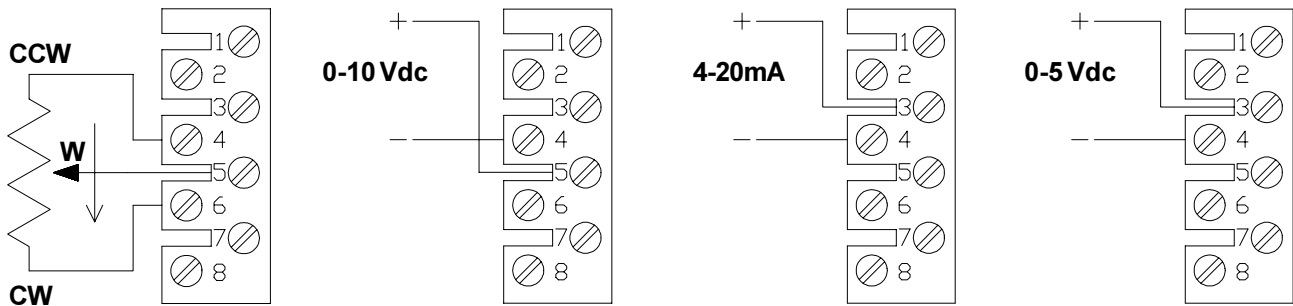
**Heat Dissipation**

Watts dissipated = 3 watts x line current.

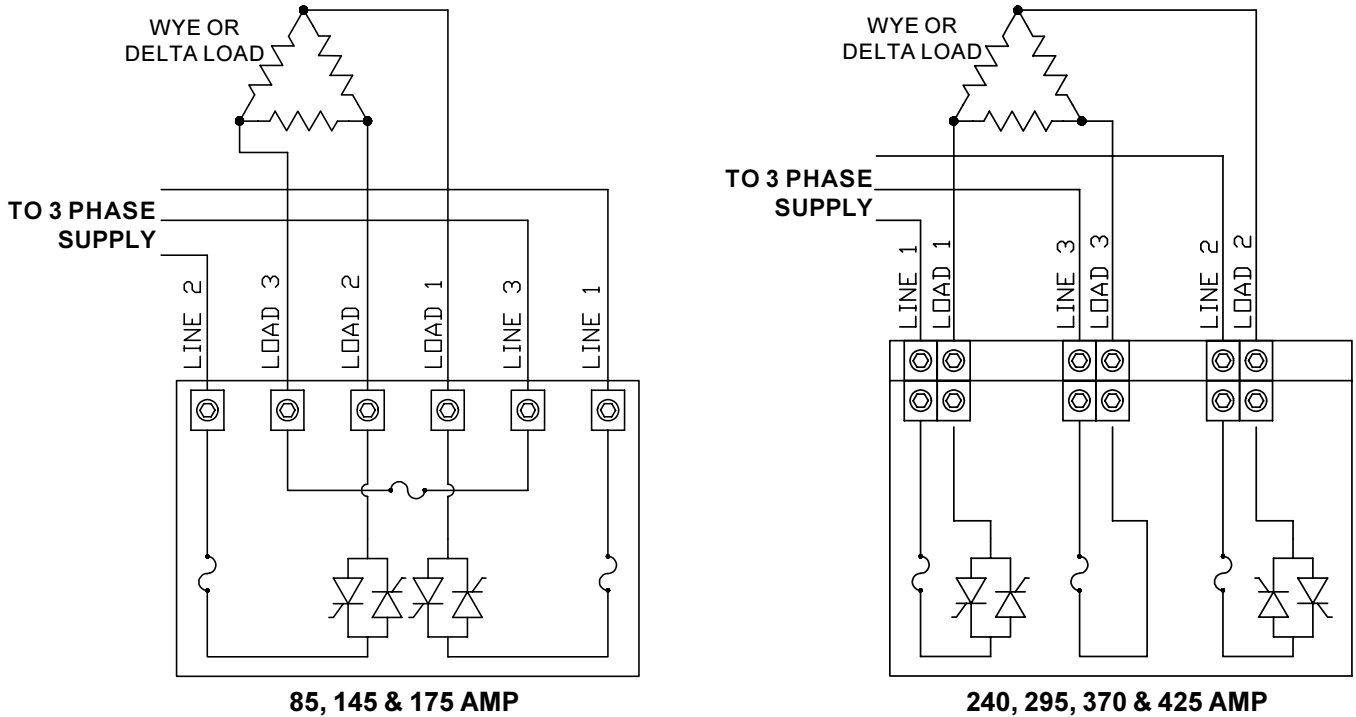
Current rating Continuous RMS amps at 55°C	KW						Controller load fuses
	208Vac	240Vac	380Vac	415Vac	480Vac	575Vac	
85	30.6	35.3	55.9	61.1	70.7	84.7	110A
145	52.2	60.3	95.4	104.2	120.6	144.4	175A
175	63.0	72.7	115.2	125.8	145.5	174.3	200A
240	86.5	99.8	158.0	172.5	199.5	239.0	300A
295	106.3	122.6	194.2	212.0	245.3	293.8	350A
370	133.3	153.8	243.5	266.0	307.6	368.5	450A
425	153.1	176.7	279.7	305.5	353.3	423.3	500A

Units over 425 Amps are not UL listed, and do not have internal line fuses.  
 Separate 120 Volt power may be required to power the firing circuit and cooling fan(s).

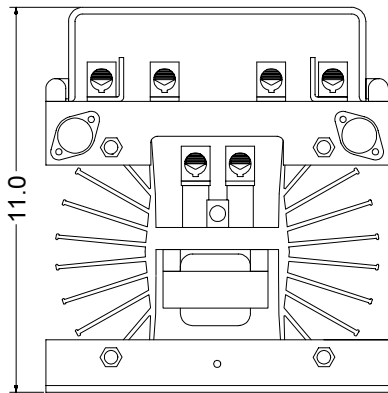
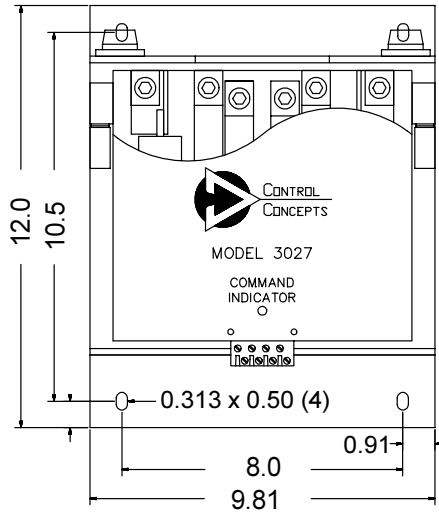
**Command Signal Connections**



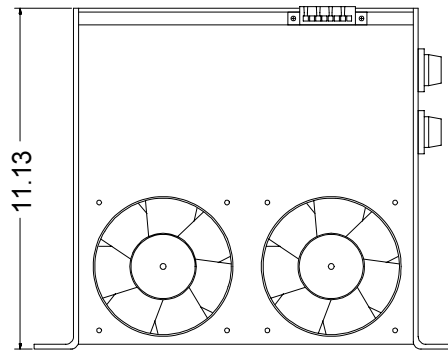
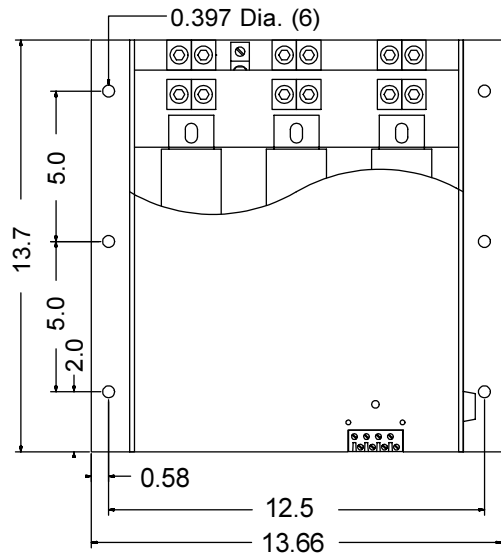
**Electrical Connections**



# Installation Drawings



**85, 145 & 175 AMP**



**240, 295, 370 & 425 AMP**

## Ordering Information

**3027 - (XXX)V - (XXX)A - (XXXXXX)**

**Voltage:**

208, 240, 380, 415, 480 or 575  
Substitute voltage for X's in this field.

**Current:**

85, 145, 175, 240, 295, 370 or 425  
Substitute current for X's in this field.  
Larger size frames are available, consult factory.

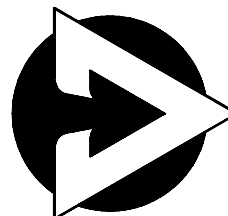
**Command:**

0/5V, 0/10V, 4/20mA or potentiometer  
Substitute command for X's in this field

## Complementary Products

Control Concepts, Inc., offers a wide variety of phase angle and zero cross power controllers designed for your toughest process control applications. Power controllers range from 10 to 1000 amps in either single or three phase. In addition, Control Concepts, Inc. offers custom SCR power controllers to meet your unique requirements.

Control Concepts, Inc. has the expertise and the products to meet your specific control needs. Call us today for answers that work. **1-800-765-2799**



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