

**Three Phase Zero-Cross
SCR Power Controller with
Shorted SCR detection**



Description

The model 3037 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 3037 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.

The model 3037 controller has shorted SCR detection built in as an added feature.

Applications

- Resistive Loads
- Electric Ovens
- Furnaces
- Kilns
- Environmental Chambers

Approvals



LISTED 3L32
INDUSTRIAL
CONTROL
EQUIPMENT



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

Shorted SCR Protection

Compact size

Phase Rotation

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.

Tests for shorted SCR every 5 seconds.

Size of enclosure and panel space are reduced.

The 3037 is not sensitive to phase rotation.

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.

A relay with form "C" contacts rated at 120 Vac @ 5A changes state when a Shorted SCR is detected.

Valuable space is saved, enclosure costs are reduced.

Exchange of line leads is unnecessary.

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 an 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.		Isolation	Isolation between power circuit, command signal and ground is greater than 2500 volts RMS.
Command Signal	Range	Input Resistance	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.
	4-20mA	249 ohms		
	0-5Vdc	500K		
	0-10Vdc	200K		
	1K - 20K pot	200K		
Power Circuit	Inverse parallel Silicon Controlled Rectifiers (SCR's).		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.
Operating Voltage	208/240/380/415/480/575 (+10%, -20%), 50/60 Hertz. Consult factory for other voltages.		Zero and Span	Multiturn potentiometers provide adjustment of ±20% of span.
Ambient Temperature	Operating:	0° to 55°C		
	Storage:	-40° to 80°C		
Humidity	0 to 90%, non-condensing.		Mounting	Controllers with fans (145 Amps and larger) may be mounted in any direction. Smaller controllers must be mounted with fins vertical.
SCR protection	1400 Volt Peak dV/dT 200 Volts/second.		Physical	Weight: 85, 145 & 175 Amp = 20 lbs. 240, 295, 370 & 425 = 50 lbs.
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.			Dimensions: Refer to installation dwg.
Heat Dissipation	Watts dissipated = 3 watts x line current.			

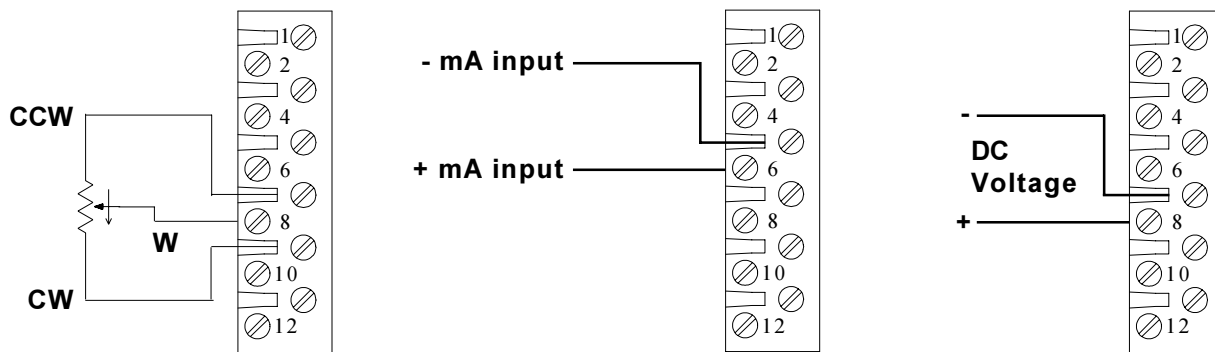
Specifications (Cont.)

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

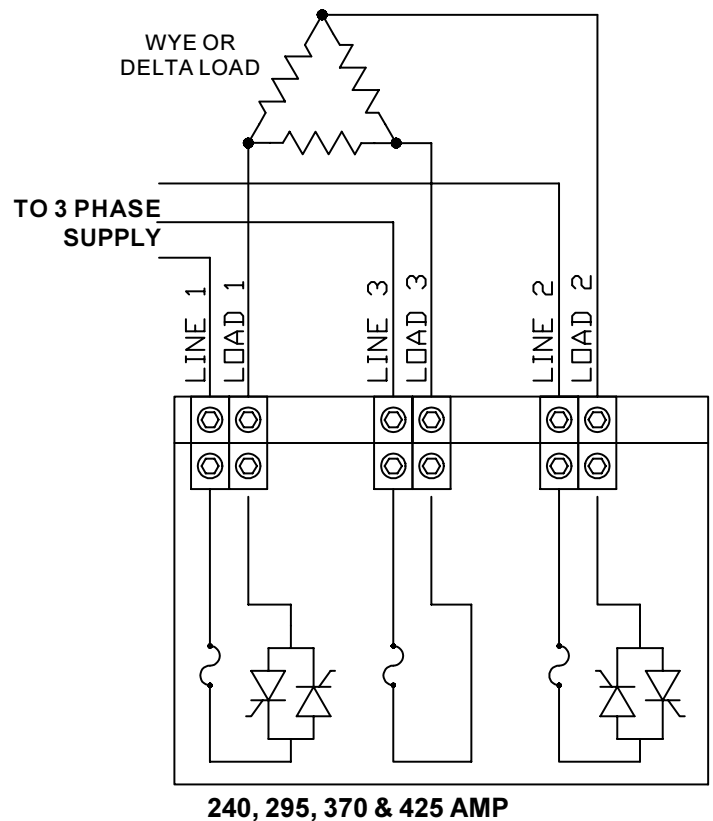
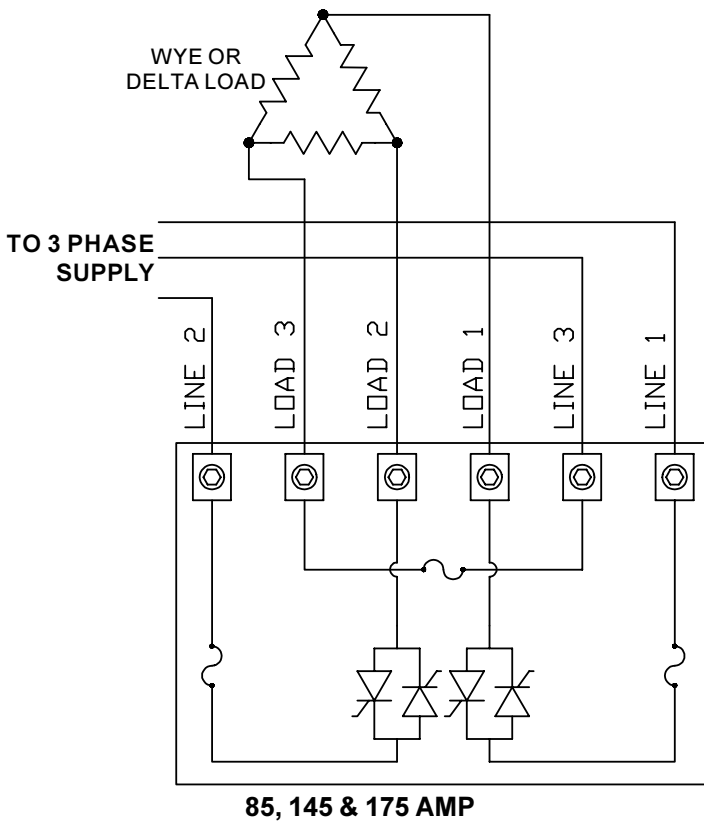
Units over 425 Amps are not UL listed, and do not have internal line fuses.

Separate 120 Volt power may be required to power the firing circuit and cooling fan(s) on some controllers.

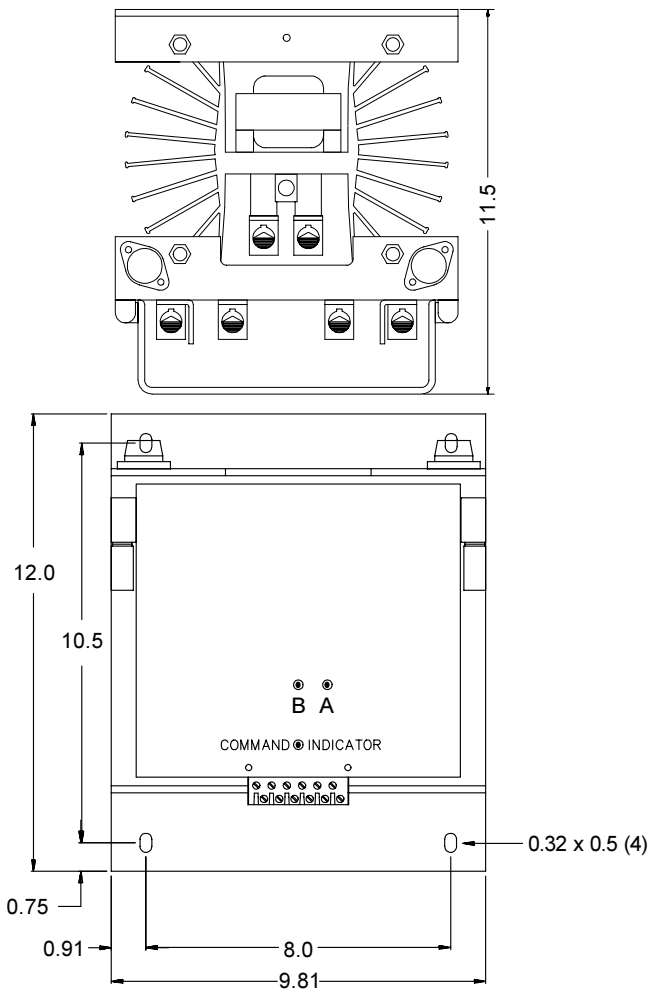
Command Signal Connections



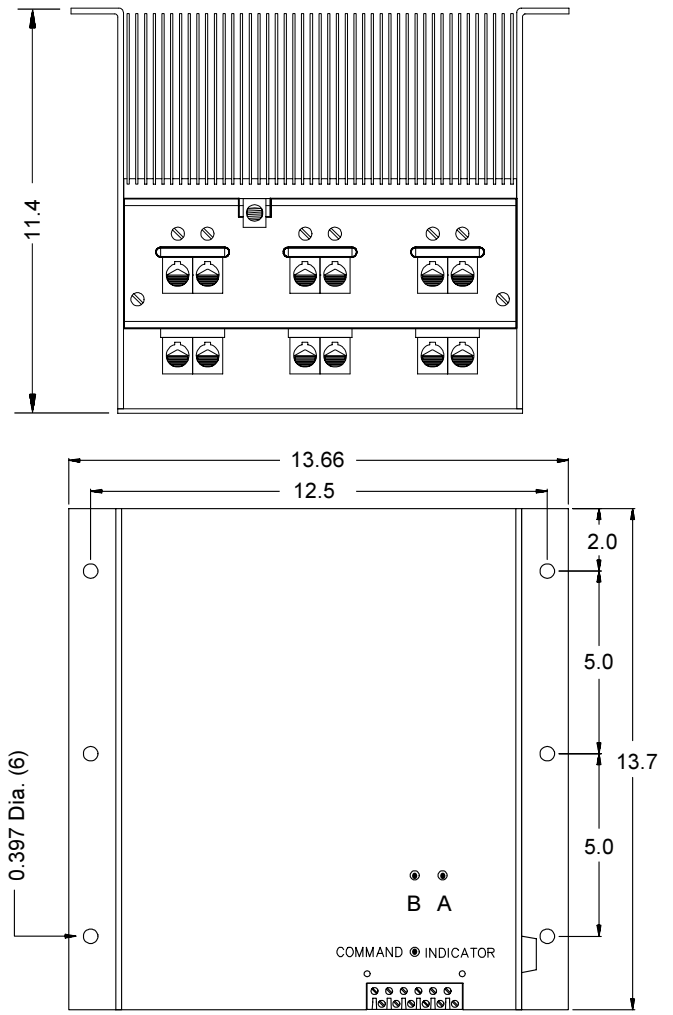
Electrical Connections



Installation Drawings



85, 145 & 175 AMP



240, 295, 370 & 425 AMP

Ordering Information

3037 - (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:

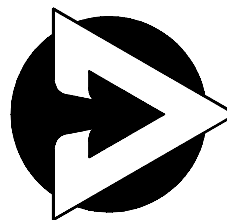
0/5V, 0/10V, 4/20mA or potentiometer
Substitute command for X's in this field

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.

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