



**CONTROL
CONCEPTS**

3037

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



Description

3037 CONTROLLER

The model 3037 is a two-leg, 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

Certification



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

Fused line input

Thermostat

Fused Control Circuit

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.

Fuses in 3 legs on line side. See page 4 (85 to 425 Amps only.)

Senses the heatsink temperature.

Protects control circuit and its transformer.

Benefits

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

Product quality remains constant.

SCR is 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.

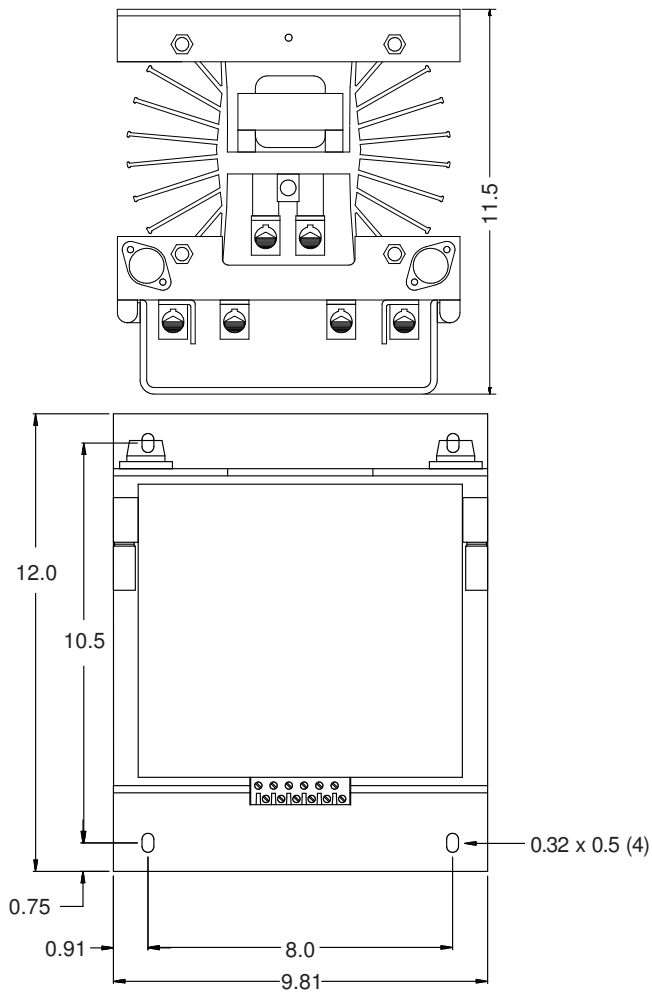
Prevents overheating by shutting the unit off.

Removes power from control circuit on detection of high circuit or transformer current.

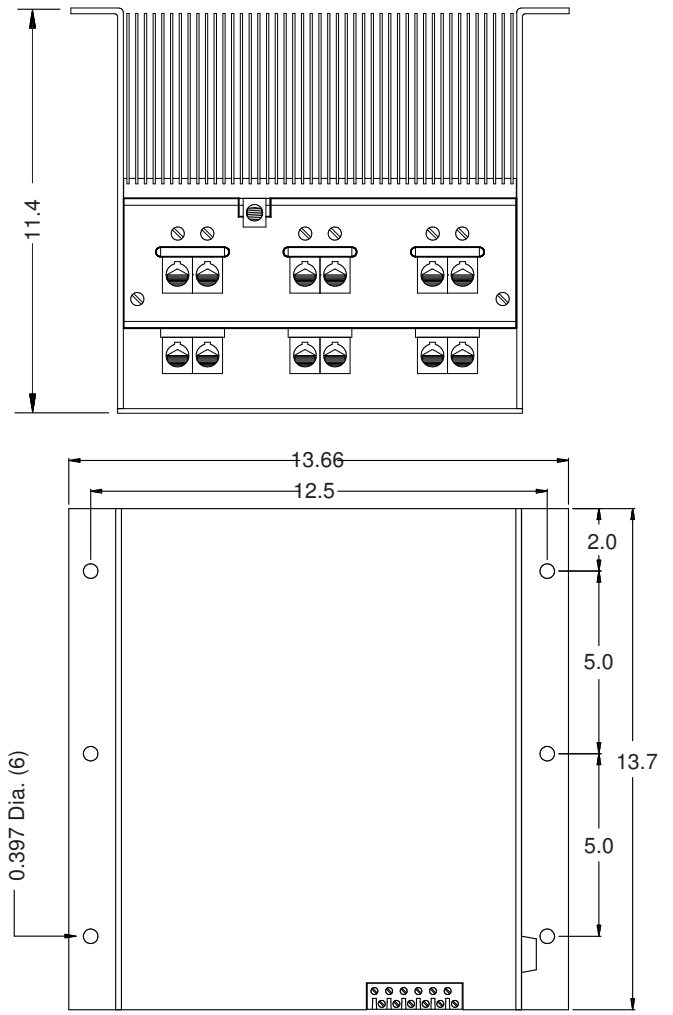
Specifications

Control Mode	Three-phase, zero-cross Two-leg control.	Isolation	Isolation between power circuit, command signal and ground is greater than 2500 volts RMS.
Command Signal	Range 4-20mA 0-5Vdc 0-10Vdc 1K - 20K pot	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.
Power Circuit	Inverse parallel Silicon Controlled Rectifiers (SCR's).	Control Range	0 to 99.5% of supply voltage.
Operating Voltage	208/240/380/415/480/575 (+10%, -20%), 50/60 Hertz. Consult factory for other voltages.	Transient Protection	dV/dT snubber circuits and MOV's are used to protect against high frequency transients (dV/dT) and voltage spikes.
Ambient Temperature	Operating: 0° to 55°C Storage: -40° to 80°C	Zero and Span	Multiturn potentiometers provide adjustment of zero and span. (Range approx. ±20%)
Humidity	0 to 90%, non-condensing.	Mounting	Controllers with fans (145 Amps and larger) may be mounted in any direction. 85A Controllers have no fans and must be mounted with fins vertical.
SCR protection	1400 Volt Peak dV/dT 200 Volts/second.	Physical	Weight: 85 thru 175 Amps = ~20 lbs. 240 thru 425 Amps = ~50 lbs. 500 thru 750 Amps = ~85 lbs. Dimensions: Refer to installation dwgs Page 3.
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.		
Heat Dissipation	3 watts per amp of load current. 500 A = 1500 Watts heat dissipation.		

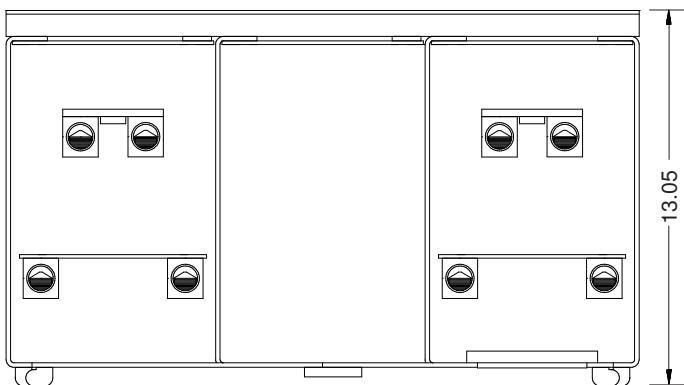
Installation Drawings



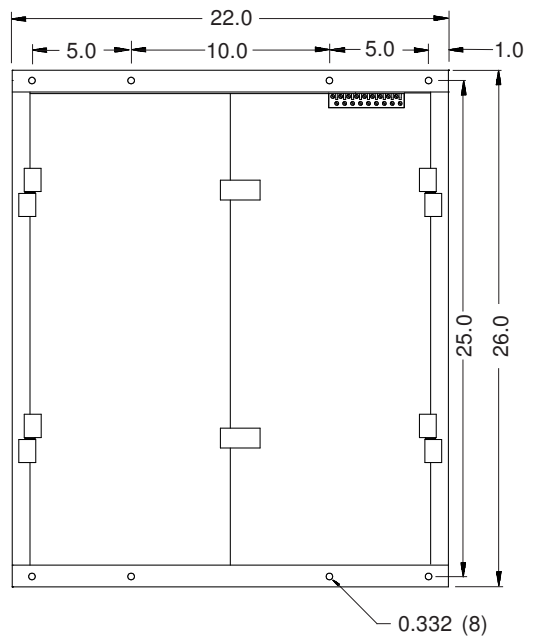
85, 145 & 175 AMP



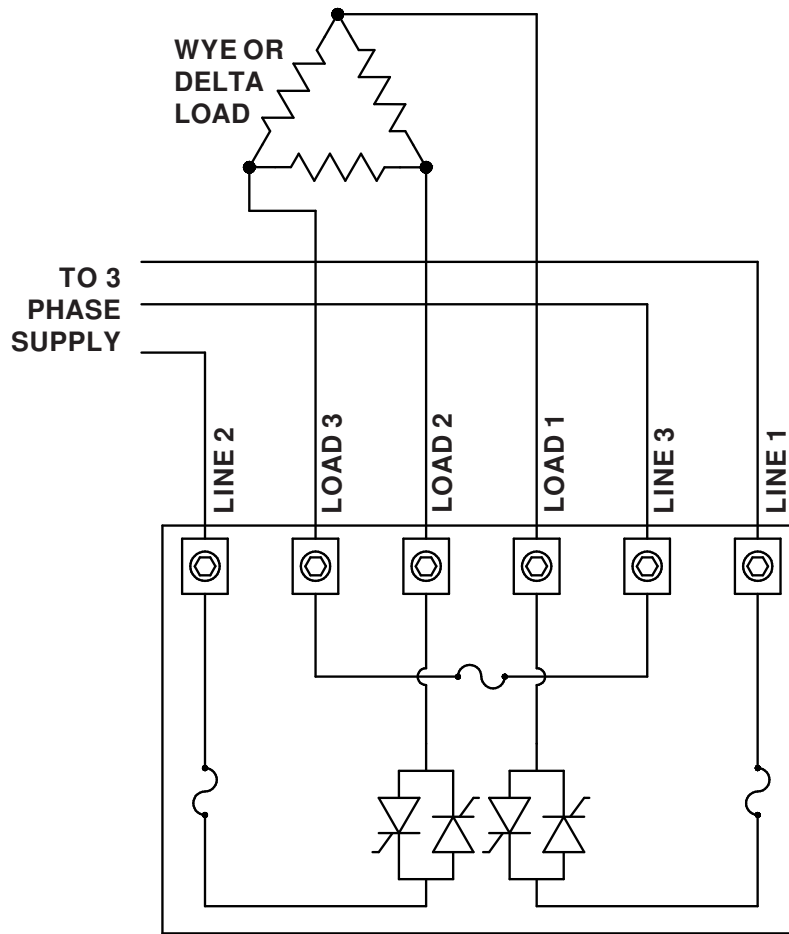
240, 295, 370 & 425 AMP



500, 600 & 750 AMP



Typical Frame Wiring & Connections



Due to internal space limitations, Units over 425 Amps do not have internal line fuses. It is recommended that the user install fuses in the power lines ahead of the controller. Size the fuses at about 125% of the maximum current load.

Ordering Information

3037 - (XXX)V - (XXX)A - XXXXXX

Voltage: _____
 208, 240, 380, 415,
 480 or 575Vac

Current: _____
 85, 145, 175, 240, 295,
 370, 425, 500, 600 & 750 A

Command: _____
 0/5V, 0/10V, 4/20mA or potentiometer.

3 LEG CONTROLLER

The Control Concepts model 3337 controller is similar to the model 3037 except that all three legs are controlled. The principle advantage of three leg control is; if one of the SCR modules should happen to short, the controller would still function. Contact factory for information.

About Control Concepts:

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**

Manufactured by



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