



CONTROL CONCEPTS

3337

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



Description

3337 CONTROLLER

The model 3337 is a three-leg, three-phase, zero-cross SCR power controller. The model 3337 provides control of electrical power to resistive loads by means of silicon controlled rectifiers. 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 3337 controller features a compact design and a single plug-in circuit card for ease of operation. All three line leads of the 200 to 320 Amp frames are fused. It is recommended that fuses be installed ahead of the line inputs for the 500, 600 and 750 Amp frames.

The unit accepts 4/20mA, 0-5Vdc, 0-10Vdc or potentiometer command signals.

The model 3337 controller has shorted SCR detection.

Applications

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

Certification



Features

Electrical isolation of command signal from load and line voltages.

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

SCR Protection

Shorted SCR Protection

Compact size

Phase Rotation

Sync-guard™

Trans-Guard™

Diagnostic Indicators

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 3337 is not sensitive to phase rotation.

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

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

Light emitting diodes (LED's) provide 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. (200 to 320 Amps only.) See page 4.

Senses the heatsink temperature.

Protects control circuit and 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 from 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-leg, Three-phase, zero-cross control.

Command Signal	Range	Input Resistance
	4/20mA	249 ohms
	0-5Vdc	500K
	0-10Vdc	200K
	1K - 20K pot	200K

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

Operating Voltage 208/240/277/380/415/480/575 (+10%, -20%), 50/60 Hertz. Consult factory for other voltages.

Ambient Temperature 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.

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.

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.

Heat Dissipation 1.5 watts per leg, per Amp of load current. For example: the 500 Amp frame at full load would produce 2250 Watts heat dissipation.

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

Control Range 0 to 99.5% of supply voltage.

Transient Protection dV/dT snubber circuits and MOV's are used to protect against high frequency transients (dV/dT) and voltage spikes.

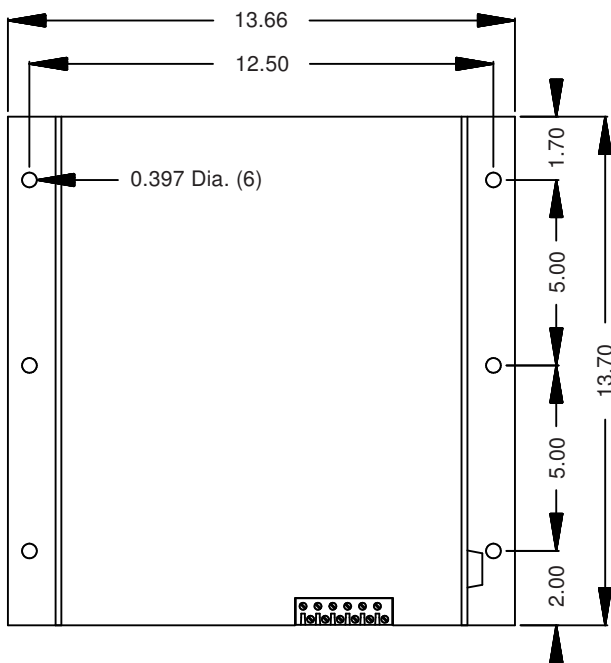
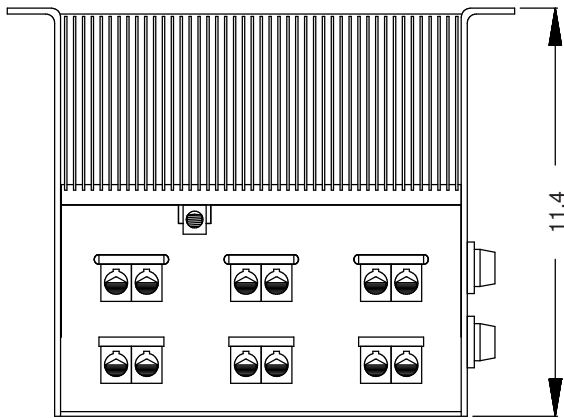
Zero and Span Multiturn potentiometers provide adjustment of zero and span. (Range approx. ±20%)

Mounting Although controllers with fans may be mounted in any position, it is recommended that these controllers be mounted on a vertical panel with the fans on the bottom.

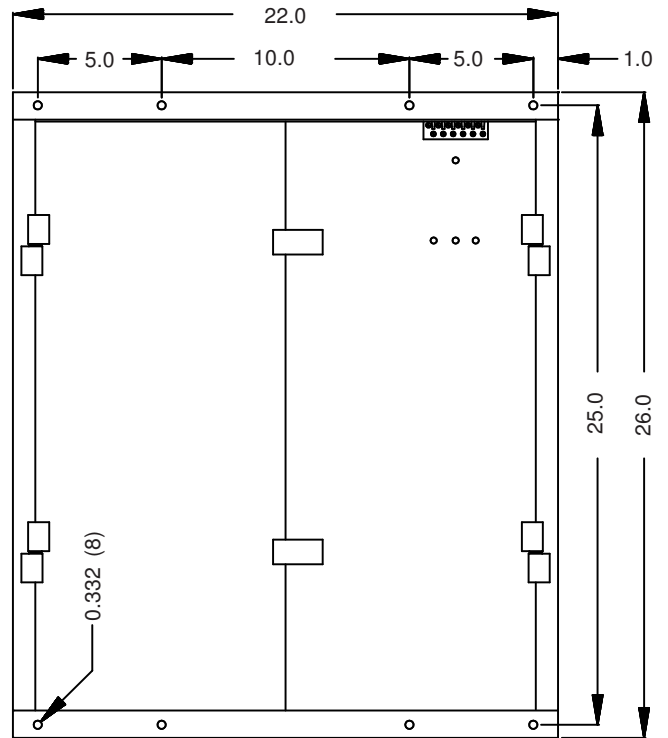
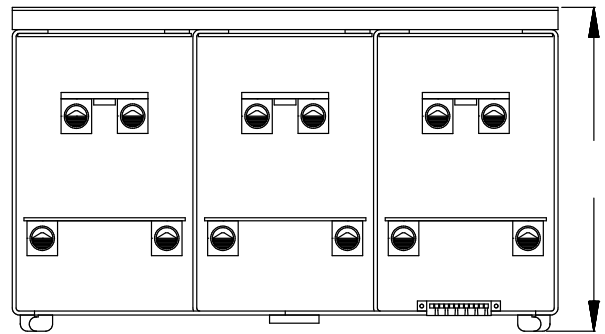
Physical Shipping 240 thru 425 Amps = ~60 lbs.
Weight: 500 thru 750 Amps = ~95 lbs.

Dimensions: Refer to installation dwgs Page 3.

Installation Drawings



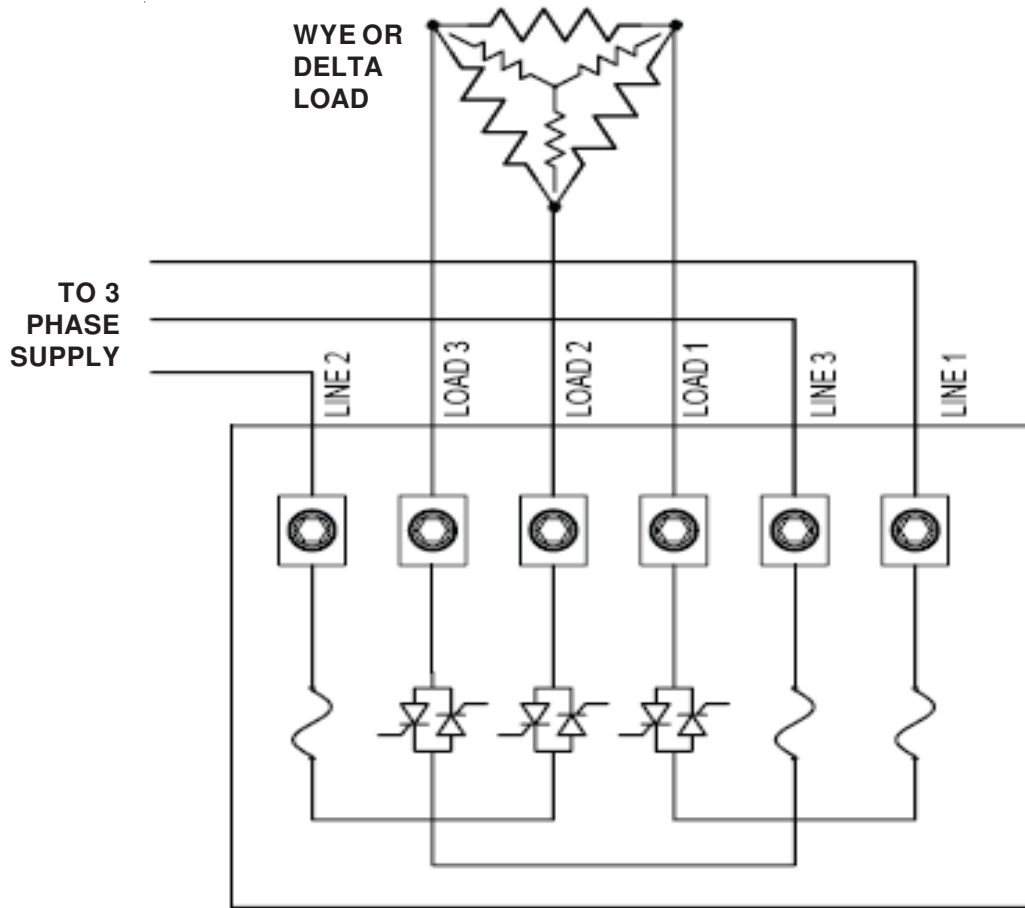
240, 295, 370 & 425 AMP



500, 600 & 750 AMP

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Typical Frame Wiring & Connections



Due to internal space limitations, Units rated 500 Amps or more 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

3337 - (XXX)V - (XXX)A - (XXXXXX)

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

Current: _____
 200, 240, 280, 320,
 500, 600 & 750 A

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

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 power controller needs. Call us today for answers that work.



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