

# 3037

## Three Phase Two-Leg, Zero-Cross SCR Power Controller

### 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
- Phase Rotation
- Sync-guard™
- Trans-Guard™
- Diagnostic Indicator
- Very fast cycle rate
- Underwriters Laboratories Listed
- Fused Line Input
- Thermostat
- Fused Control Circuit



LISTED 3L32  
INDUSTRIAL  
CONTROL  
EQUIPMENT  
E136219



CERTIFIED  
BY UL TO  
CANADIAN  
NATIONAL  
STANDARDS

### APPLICATIONS

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

### DESCRIPTION

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



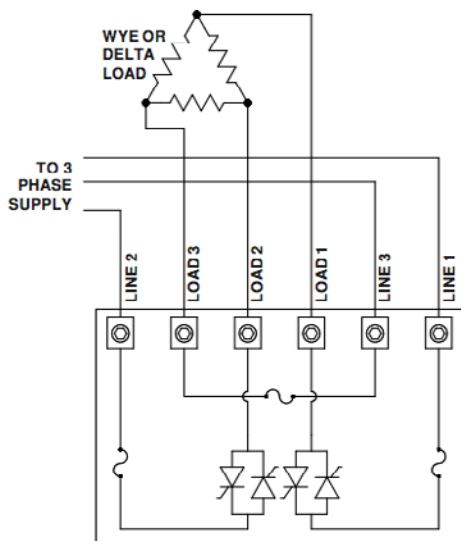
## ADVANTAGES

- 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

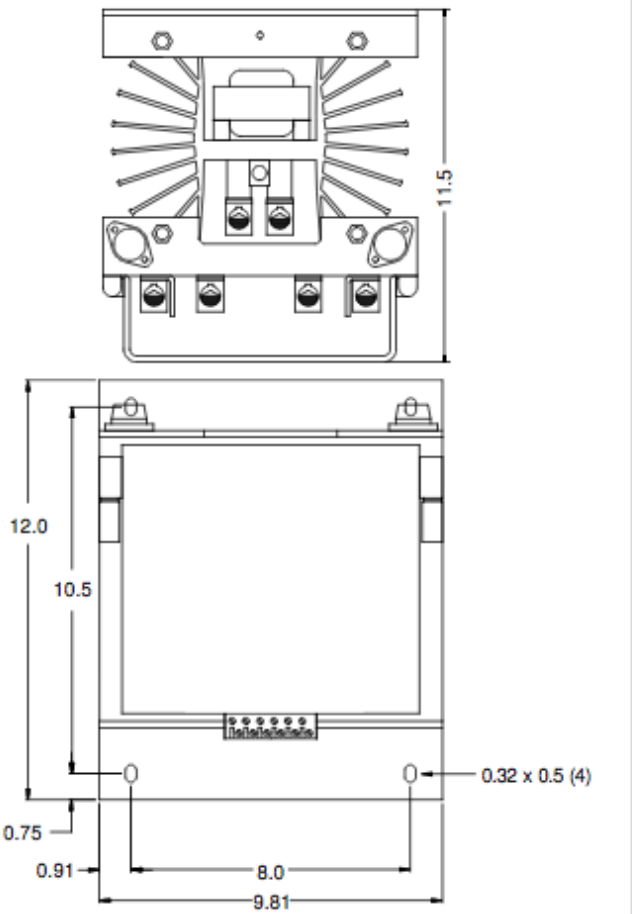
- A less costly, more reliable means to achieve good process control.
- Product quality remains constant. SCR less likely to fail.
- Snubber and MOV to protect against high frequency Transients and voltage spikes.
- A relay with form "C" contacts rated at 120 Vac @ 5A changes state when a Shorted SCR 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.

## TYPICAL FRAME WIRING & CONNECTIONS

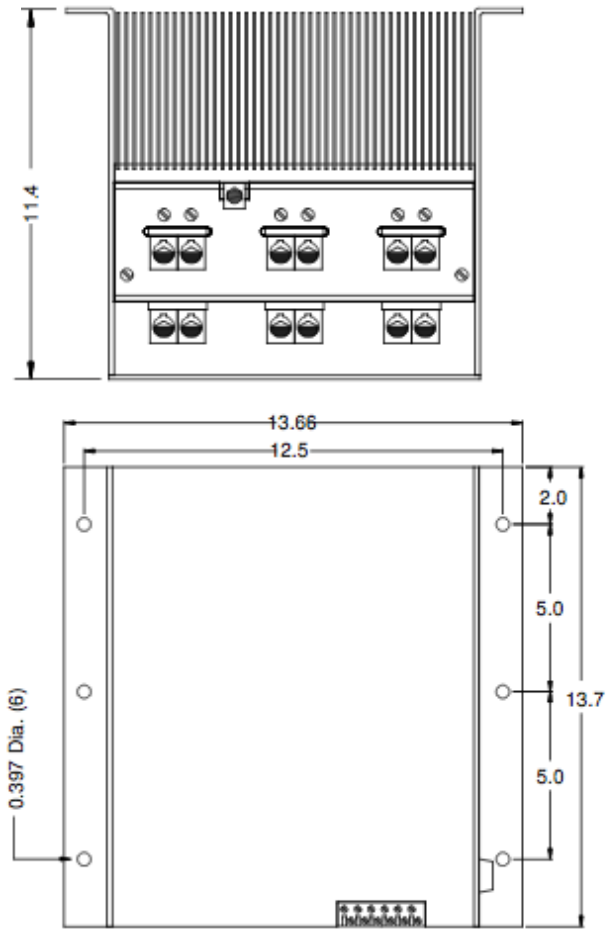


Due to internal space limitations, Units rated 425 Amps or more do not have internal line fuses. It is recommended that the user install fuses in the power lines ahead of the controller. Size the fuses at about 125% of the maximum current load.

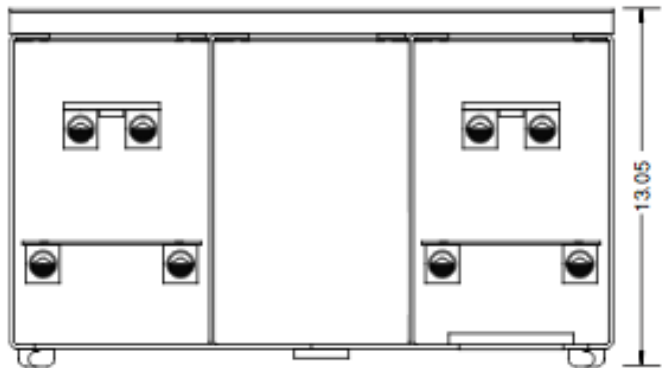
# INSTALLATION DRAWINGS



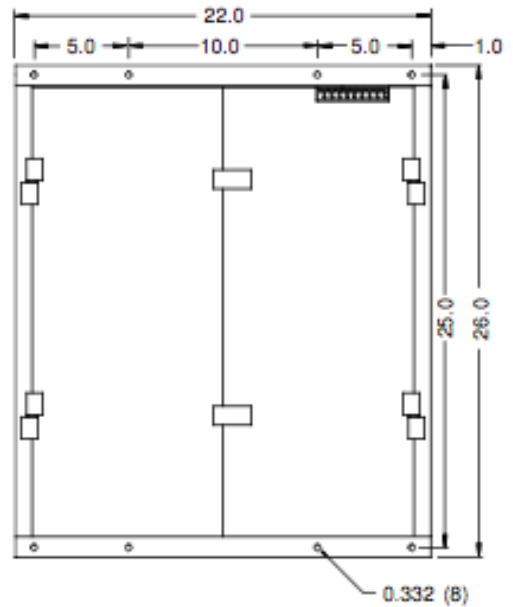
**85, 145 & 175 AMP**



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



**500, 600 & 750 AMP**



# SPECIFICATIONS

<b>Control Mode(s)</b>	Three-phase, Two-leg, zero-cross control.										
<b>Command Signal</b>	<table border="0"> <tr> <td>Range</td> <td>Input Resistance</td> </tr> <tr> <td>4-20mA</td> <td>249 ohms</td> </tr> <tr> <td>0-5Vdc</td> <td>500K</td> </tr> <tr> <td>0-10Vdc</td> <td>200K</td> </tr> <tr> <td>1K - 20K pot</td> <td>200K</td> </tr> </table>	Range	Input Resistance	4-20mA	249 ohms	0-5Vdc	500K	0-10Vdc	200K	1K - 20K pot	200K
Range	Input Resistance										
4-20mA	249 ohms										
0-5Vdc	500K										
0-10Vdc	200K										
1K - 20K pot	200K										
<b>Power Circuit</b>	Inverse parallel Silicon Controlled Rectifiers (SCR's).										
<b>Operating Voltage</b>	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										
<b>Humidity</b>	0 to 90%, non-condensing.										
<b>SCR Protection</b>	1400 Volt Peak dV/dT 200 Volts/second.										
<b>Diagnostic Indicator</b>	The frequency of operation of the LED is proportional to the command signal. It is "ON" when power is applied to the load.										
<b>Heat Dissipation</b>	Watts dissipated = 3 watts x line current. 500 A = 1500 Watts heat dissipation										
<b>Isolation</b>	Isolation between power circuit, command signal and ground is greater than 2500 volts RMS.										

<b>Linearity and Voltage Compensation</b>	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.									
<b>Control Range</b>	0 to 99.5% of supply voltage.									
<b>Transient Protection</b>	dV/dT snubber circuits and MOV's are used to protect against high frequency transients (dV/dT) and voltage spikes.									
<b>Zero and Span</b>	Multiturn potentiometers provide adjustment of zero and span. (Range approx. ±20%)									
<b>Mounting</b>	<p>Controllers with fans (145 Amps and larger) may be mounted in any direction.</p> <p>Smaller controllers must be mounted with fins vertical.</p>									
<b>Physical</b>	<table border="0"> <tr> <td>Weight</td> <td>85 - 175 Amp = ~20 lbs.</td> </tr> <tr> <td></td> <td>240 - 425 Amp = ~50 lbs.</td> </tr> <tr> <td></td> <td>500 - 750 Amp = ~85 lbs.</td> </tr> </table> <p>Dimensions: Refer to installation dwg on Page 3</p>	Weight	85 - 175 Amp = ~20 lbs.		240 - 425 Amp = ~50 lbs.		500 - 750 Amp = ~85 lbs.			
Weight	85 - 175 Amp = ~20 lbs.									
	240 - 425 Amp = ~50 lbs.									
	500 - 750 Amp = ~85 lbs.									
<b>Approximate Shipping Weight and Box Size</b>	<table border="0"> <tr> <td>240-425A</td> <td>47 Lbs</td> <td>18-18-16" Box Size</td> </tr> <tr> <td>500-1000A</td> <td>100 Lbs"</td> <td>30-30-16" Box Size</td> </tr> <tr> <td>85-175A</td> <td>20 Lbs</td> <td>14-14-14" Box Size</td> </tr> </table>	240-425A	47 Lbs	18-18-16" Box Size	500-1000A	100 Lbs"	30-30-16" Box Size	85-175A	20 Lbs	14-14-14" Box Size
240-425A	47 Lbs	18-18-16" Box Size								
500-1000A	100 Lbs"	30-30-16" Box Size								
85-175A	20 Lbs	14-14-14" Box Size								

\* ships on a pallet, weight doesn't include pallet

# ORDERING INFO

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

**Voltage:** \_\_\_\_\_  
208, 240, 380, 415, 480, or 575.

**Current:** \_\_\_\_\_  
85, 145, 175, 240, 295, 370, 425, 500, 600 & 750A

**Command:** \_\_\_\_\_  
0/5V, 0/10V, 4/20 mA, 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.

## CONTACT/ORDERING INFORMATION

TEL: (952) 474-6200 | (800) 765-2799  
 FAX: (952) 474-6070 | www.cciipower.com  
 8077 Century Blvd, Chanhassen, MN 55317, USA

