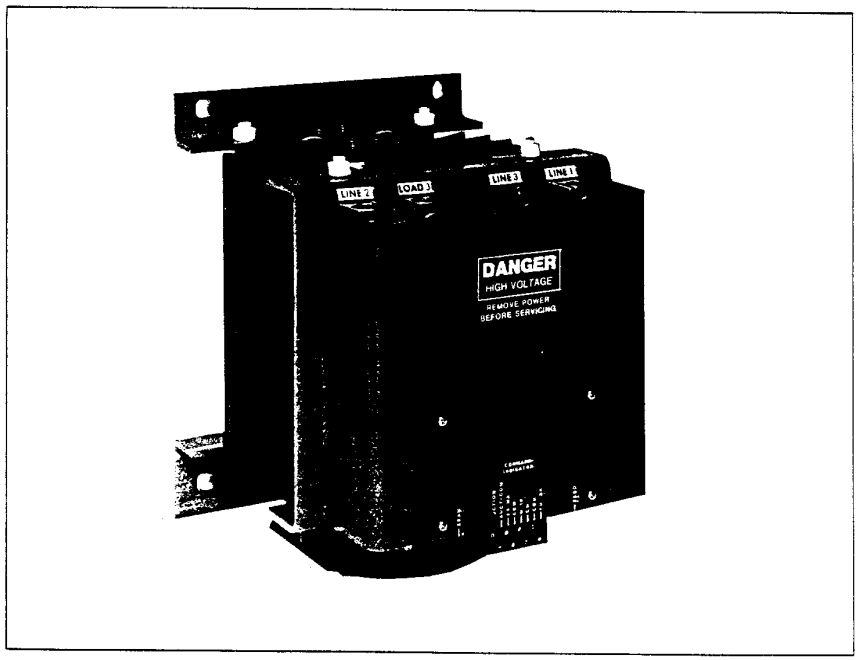
BEC CONTROLS CORP.

B-1637

MODEL PC-37 SCR POWER CONTROLLER 3ϕ Zero-Cross



Description

The Bec Model PC-37 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 Bec Model PC-37 controller features a compact design, a single plug-in circuit card for ease of operation and an electrically isolated heat sink. All three line leads are fused. The unit accepts 4-20 mA, 0-5 Vdc, 0-10 Vdc or potentiometer signals.

Applications

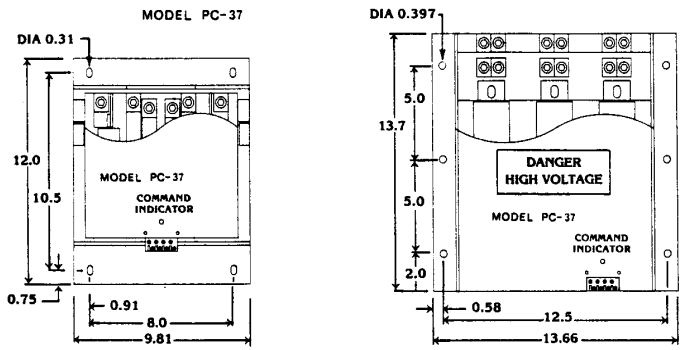
Resistive Loads

Feature	Advantages	Benefits
Electrical isolation of command signal from load and line voltages.	Eliminates potential ground loops. Provides safe operation with inexpensive, non-isolated process controllers.	A less costly, more reliable means to achieve good process control.
Linear power with respect to command signal plus line voltage compensation.	Provides a stable control loop because load power is proportional to command signal and is not affected by line voltage variations.	Product quality remains constant.
Compact Size	Size of enclosure and panel space are reduced.	Valuable space is saved, enclosure costs are reduced.
Sync-Guard	Reduces synchronous operation of multiple SCR controllers to obtain a smoother power demand.	Better power factor & lower KVA can be obtained, resulting in cooler operation of supply transformers, circuit breakers, etc.
Trans-Guard	Eliminates DC load currents and therefore transformer overheating due to saturation from induced DC primary voltages.	Eliminates supply transformer problems caused by SCR controller operation. Increased transformer life.
Diagnostic Indicator	Light emitting diode (LED) provides visual indication of controller operation.	Provides an easily understood means to troubleshoot by inexperienced personnel. Reduces down-time.
Very fast cycle rate.	Rapid on-off operation provides a nearly continuous flow of power.	Provides uniform heating, longer heater life and allows use with fast responding loads.

Specifications

Control Mode	Three phase, two-leg, distributive zero cross control of load power.	
Command Signal	4-20mA 0-10 Vdc 0-5 Vdc potentiometer	**Input Resistance:** 4-20mA: 300 ohms 0-10 Vdc: 240 K 0-5 Vdc: 120 K Potentiometer: 240 K (1 K to 10 K ½ watt)
Power Circuit	Inverse parallel silicon controlled rectifiers (SCRs).	
Operating Voltage	208/240/380/415/480 (+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 100% non-condensing	
Isolation	Isolation between power circuit, command signal and ground is greater that 2500 volts RMS.	
Linearity and Voltage Compensation	The load power is linear within 2% of span for line voltage changes of +10%, −20% line variations.	
Control Range	0 to 99.5% of supply voltage. dV/dT snubber circuits and MOVs are used to protect against high frequency transients (dV/dT) and voltage spikes.	
Zero and Span Adjustment	Multiturn potentiometers providing adjustment of ± 20% of span.	
Mounting	Controllers with fans (140 amps and larger) may be mounted in any direction. Others must be mounted with fins vertical.	

Installation Drawings



90, 140, & 180 AMP

225, 300, 375, & 450 AMP

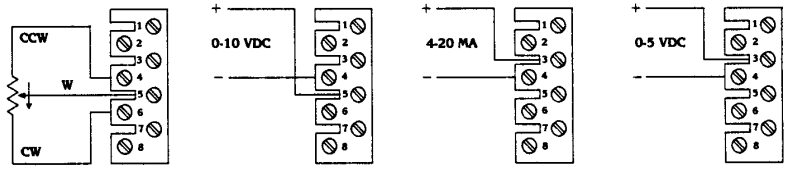
To Order: PC-37 - 180 - 480 - 4/20 mA

Current	Voltage	Command Signal
90	208	4-20 mA
140	240	0-5 Vdc
180	277	0-10 "
225	480	Potentiometer
300		
375		
450		

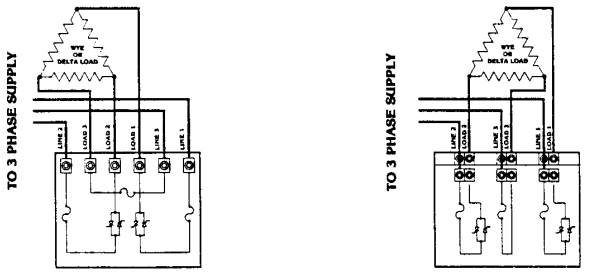
Status Indicator	The operation of the LED is proportional to the command signal. This feature provides the means for personnel to quickly and safely determine if the controller is operating correctly and to diagnose problems should they occur.
Heat Dissipation:	Watts dissipated = 3 watts x line current
Physical	Weight: 90, 140, 180 amp = 20 lbs. 225, 300, 375, 450 = 40 lbs. Dimensions: Refer to installation drawing.

Current Rating Continuous RMS amps at 55°C	**KW**				
	208VAC	240VAC	380VAC	415VAC	480VAC
90	32.4	37.4	59.2	64.7	74.8
140	50.4	58.2	92.1	100.6	116.4
180	64.8	74.8	118.5	129.4	149.6
225	81.1	93.5	148.1	161.7	187.1
300	108.1	124.7	197.5	215.6	249.4
375	135.1	155.9	246.8	269.6	311.8
450	162.1	187.1	296.2	323.5	374.1

Command Signal Connections



Electrical Connections



90, 140, & 180 AMP

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