



**BEC CONTROLS CORP.**

**Bulletin B-1630**

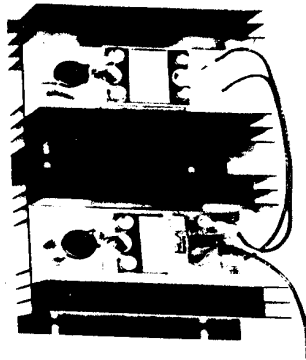
**SERIES PC30**

## **POWER CONTROLLER** (FOR RESISTANCE LOADS)

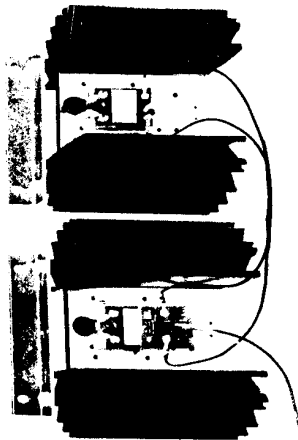
### **4-20mA Command Signal**

### **Three Phase, 120, 240, 480V; 10-70 Amp Loads**

**CONTROLS POWER TO A LOAD PROPORTIONAL TO COMMAND SIGNAL**



**10-40 AMP**



**70 AMP**

### **Description**

Model PC30 controls the power to a three-phase electrical load proportional to a 4-20 Milliamp command signal.

The circuit of the PC30 powered by the command signal, determines the ratio of ON to OFF time of a zero cross solid state relay, causing the load power to be directly proportional to the command signal. The fast ON/OFF solid state switching provides superior performance over that achieved by relays, contactors or other solid state time proportional controls.

The PC30 has proven to be an economical power control solution for industrial applications requiring high reliability and long life. It is an ideal choice for fast responding loads and/or systems using digital controllers.

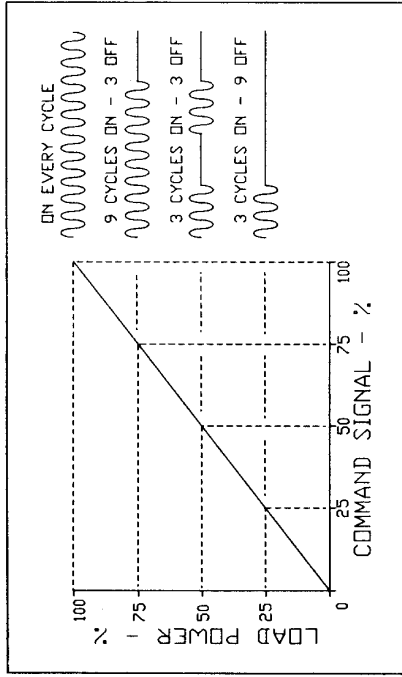
### **Design Features**

- Zero cross, solid state control
- Compact size for best space utilization
- Powered by 4-20 mA current loop
- Zero and Span Adjustments
- Electrically isolated command signal
- Linear power control with respect to the command signal
- Electrically isolated heat sink
- Solid State Relay On/Off Indicator

### **Applications**

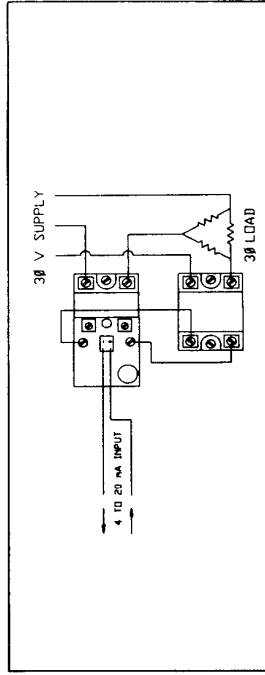
- Environmental Chambers
- Contactor Replacement
- Electric Furnaces
- Resistance Heating
- Extruders
- Platen Heaters

### **Operation**



In the diagram above, the duty cycle of a zero cross solid state relay is adjusted by removing Off cycles below 50% and adding On cycles above 50%. From 4-12 mA the minimum On time is approximately 3 cycles. From 12 to 20 mA the minimum Off time is approximately 3 cycles. At 12 mA, 50% power is applied to the load.

### **Electrical Connections**



The PC30 is designed to be mounted on a vertical surface. An insulation displacement connector for 22 AWG wire is provided for connection of the

4-20ma command signal. (Accidental reversal of the 4-20ma input will not harm the circuit.)

# **POWER CONTROLLER** **SERIES PC30**

**Bulletin B-1630**



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## Specifications

**Operating Voltage:**  
 120/240/480 (+10-50%) 50/60 Hertz

**Command Signal:**  
 4-20 Milliamp, 7 Volt maximum voltage drop at 20 Milliamps.

The command signal and circuit are electrically isolated from the line and load voltages. The 7 Volt maximum voltage drop allows the device to be connected in series with other PC10, PC30 controllers or devices.

**Control Mode:**  
 Single-phase, solid state zero cross.

**Control Range:**  
 0 to 100%  
 Solid state zero cross operation provides transient and RFI free operation. Load power is turned On or Off only when the AC supply voltage is zero. Solid state switching eliminates contact bounce and has no inherent wear out mode. The fast On/Off solid state switching provides superior process performance over that achieved by relays, contactors or other solid state time proportional controls.

**Zero and Span Adjustment:**  
 ± 10% typical  
 Span and zero are field adjustable for precise matching to control requirements.

**dV/dT and MOV Protection:**  
 200 volts/ $\mu$ sec minimum  
 A dV/dT snubber and an MOV network are used to protect against high frequency transients (dV/dT and voltage spikes).

**Mounting:**  
 Vertical Surface with fins vertical  
 The convection cooled units must be mounted vertically, but they may be mounted adjacent to each other. The heat sink is electrically isolated.

MODEL	CURRENT (AMPS)		SURGE Peak RMS
	CONTINUOUS RMS	1 cycle 1 second	
PC30-10	10	120	22
PC30-20	20	250	40
PC30-30	30	625	80
PC30-40	40	625	80
PC30-70	70	1000	150

Controller Current = Load Power (Watts)  
 Line Voltage X 1.732

Conservatively rated solid state relays require no derating over rated temperature ranges of 0 to 55 C. High surge ratings allow operation of loads with low cold resistance. A wide choice of current and voltage ratings provide a cost effective solution for solid state control.

### Isolation:

2500 Volts RMS (Dielectric and insulation resistance measured between input and heat sink, output and heat sink)

The electrically isolated command signal and heat sink are ideal for process controllers with floating, grounded or electrically hot sensors. The heat sink may be mounted to grounded or ungrounded panels.

### Status Indicator:

LED On/Off Indicator

An LED turns on whenever the solid state relay is turned on. This feature provides the means for personnel to quickly and safely determine if the controller is operating correctly and diagnose the problems should they occur.

### Physical:

Weight: 10, 20, 30, & 40 Amp - 2 lbs.  
 70 Amp - 12 lbs.

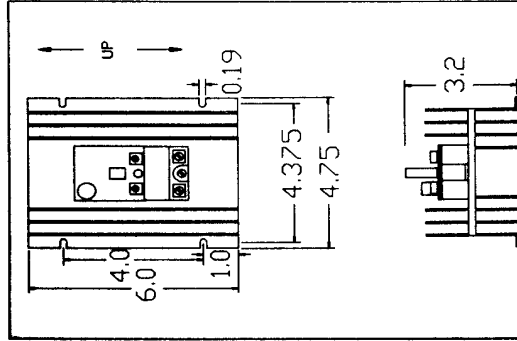
Dimensions: Refer to installation drawing.

### Environment:

#### Temperature

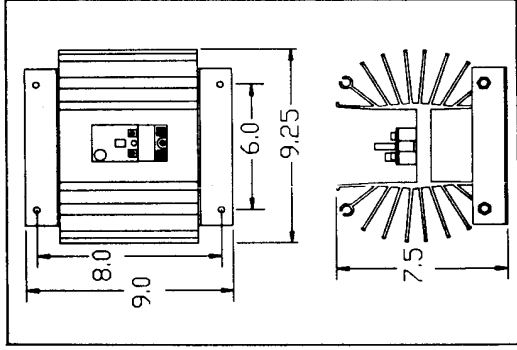
Operating: 0 to 55 C (32 to 131 F)  
 Storage: -20 to 70C (-4 to 158 F)  
 Humidity  
 0 - 90% (non-condensing)

## Installation Drawings



**10, 20, 30, & 40 AMP**

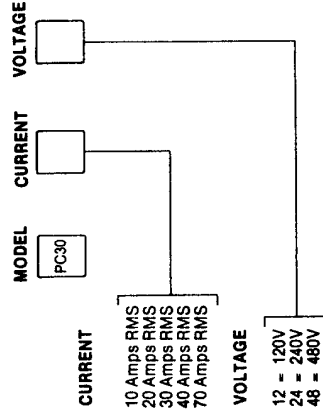
Uses TWO of the above assemblies.



**70 AMP**

Uses TWO of the above assemblies.

### Ordering Guide



Bulletin B-1630

## SERIES PC30 POWER CONTROLLER