



BEC CONTROLS CORP.

Bulletin B-1610

SERIES PC10

POWER CONTROLLER (FOR RESISTANCE LOADS)

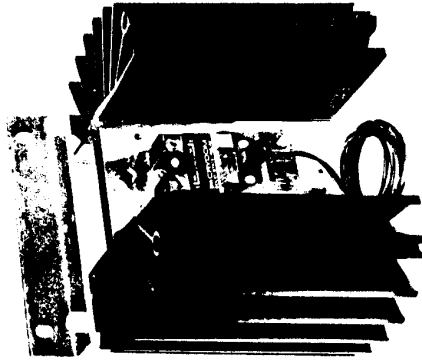
4-20mA Command Signal

Single Phase, 120, 240, 480V; 10-70 Amp Loads

CONTROLS POWER TO A LOAD PROPORTIONAL TO COMMAND SIGNAL



10-40 AMP



70 AMP

Description

Model PC10 controls the power to a single-phase electrical load proportional to a 4-20 Milliamp command signal.

The circuit of the PC10, 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 PC10 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.

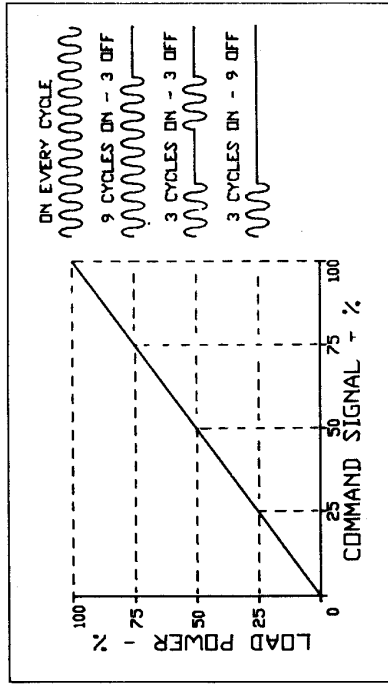
Design Features

- 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
- Solid State Relay On/Off Indicator

Applications

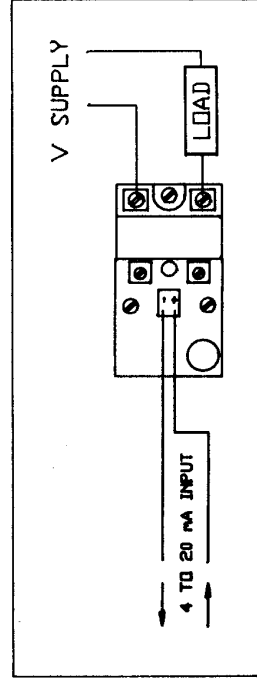
- Environmental Chambers
- Contractor Replacement
- Electric Furnaces
- Resistance Heating
- Extruders
- Platen Heaters

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 1020 is designed to be mounted on a vertical surface. An insulation displacement connector for the 4-20ma input will not harm the circuit. The 1020 is provided for connection of the 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 PC 10

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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/ μ 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.

Installation Drawings

MODEL	CURRENT (AMPS)		SURGE
	CONTINUOUS RMS	Peak	
PC10-10	10	120	1 cycle 1 second
PC10-20	20	250	22
PC10-30	30	625	80
PC10-40	40	625	80
PC10-70	70	1000	150

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.

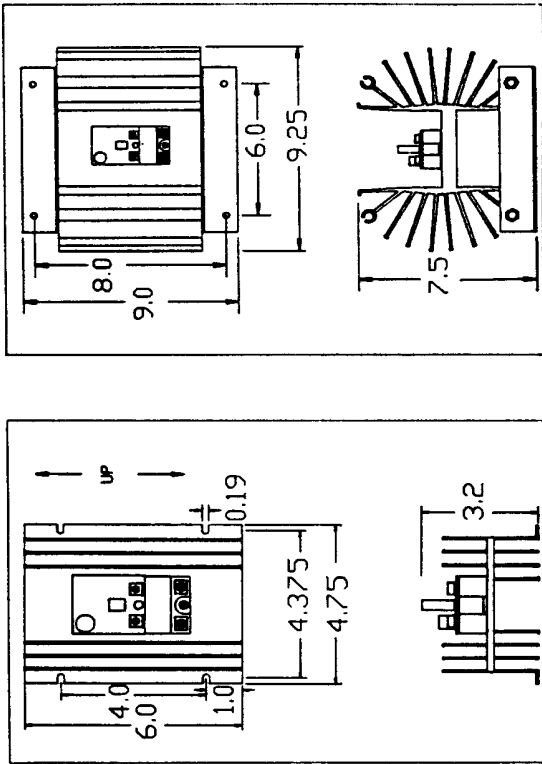
Physical:

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)



10, 20, 30, & 40 AMP

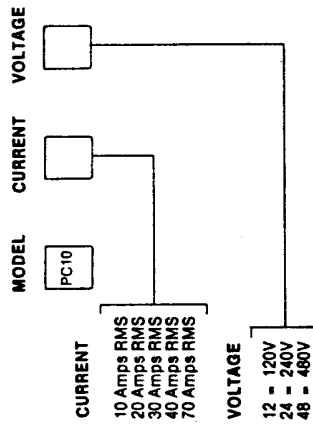
70 AMP

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Ordering Guide



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