



# Proportional Control Unit (PCU)

HQ-015 thru HQ-300  
Basic unit, and LCU-B Controls

## [Installation & Maintenance Manual](#)

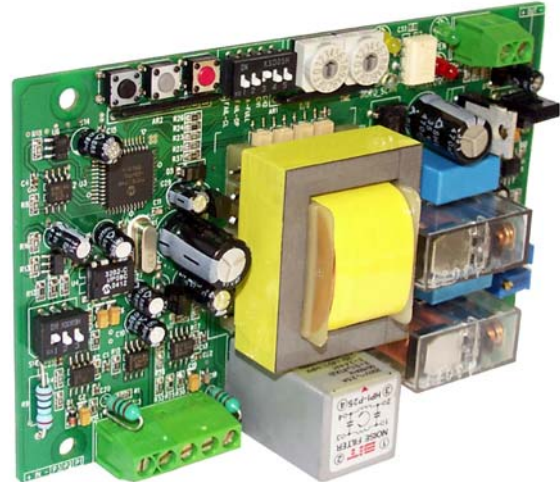




## Proportional Control Unit

The EIM HQ Series PCU-01A is a Digital positioner with Microprocessor and 12-bit A/D converter. By moving the actuator to mid position and pressing the auto scan button, the positioner automatically cycles the unit, which calibrates the positioner.

The PCU module controls valves by comparing two inputs (the desired position from process controller or computer and actual valve position feedback). If the two are within BANDWIDTH, the valve will not move. When the set point moves outside the BANDWIDTH, the valve moves in the direction to make control signal and valve position feedback position inputs



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## User Safety

**Warning: Use caution when working in, with, or around valves and actuators. High pressures, forces, voltages and flammable media can be present**

**Warning: Failure to follow instructions for proper electrical wiring, storage, set-up and maintenance may cause serious injury, damage equipment, or void warranty.**



## Table of Contents:

PCU Layout	1.0
PCU Function and setup	2.0
Select Input signal	2.1
Select fail position	2.2
Delay time / Dead band	2.3
Local operation	2.4
Auto Calibration	2.5
Split Range	2.6
Reverse Acting	3.0
Standard Specifications	4.0
EIM Office Locations	5.0



### 1.0 PCU Layout

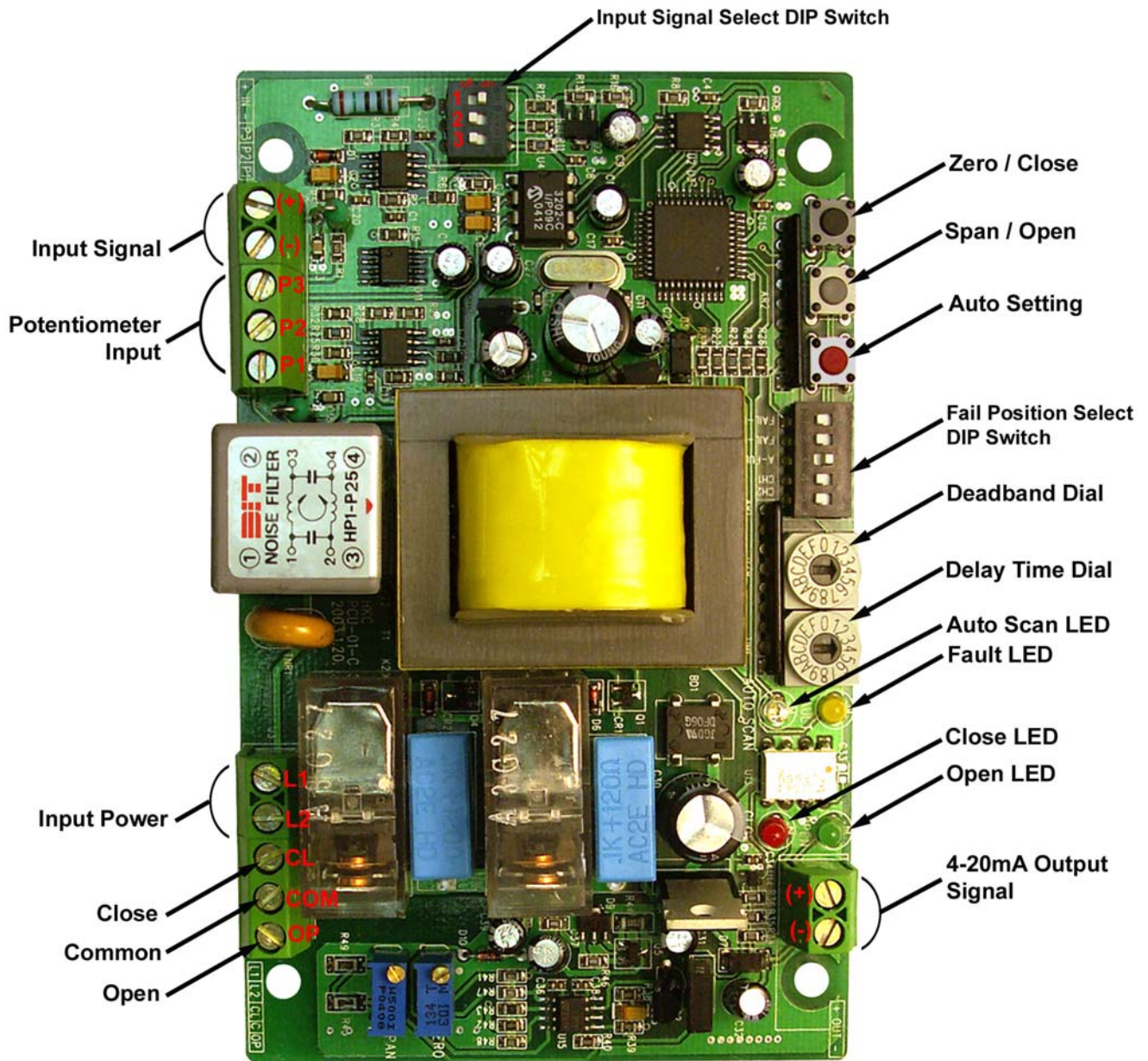


Figure 1

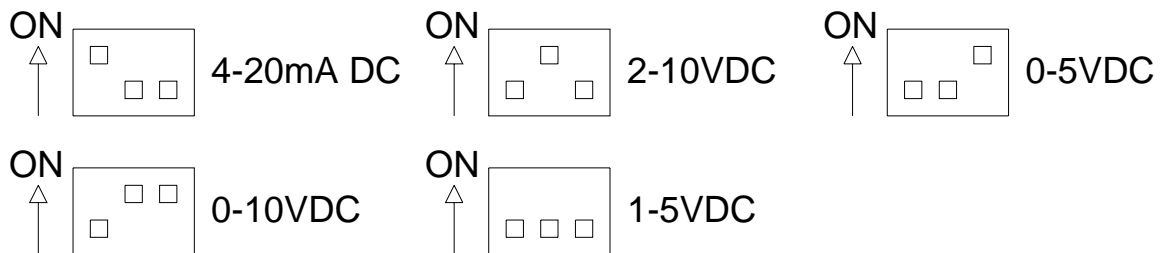


## 2.0 PCU Function and setup

Refer to Figure 1 for location of switches for set-up

### 2.1 Select input signal

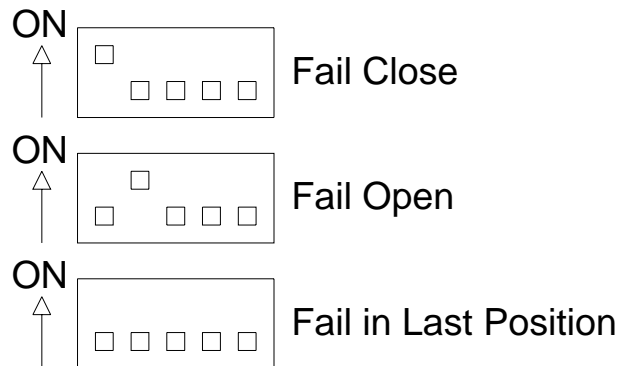
User can select input signal type by adjusting DIP switches as follows (Figure 1):



☛ If not specified, the factory default is 4-20mA.

### 2.2 Setting Fail Position

User can select the fail position of the actuator (when control signal is lost) by adjusting the DIP switches as follows (Figure 1):





### 2.3 Delay Time / Deadband

The adjustable delay feature prevents continuous operation of the actuator motor caused by abnormal changes in the input signal.

Clockwise rotation of the Delay Dial (Figure 1) will increase the delay time. (Range 0.5 to 8 seconds)

Seconds	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0
Dial	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

The deadband adjusts the limits of deviation of the valve's desired position to its actual position.

Clockwise rotation of the Band dial (Figure 1) will increase the deadband. (Range 0.1 to 4.6%)

%	0.1	0.4	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6
Dial	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

☛ **If the deadband is set too low, it may cause actuator hunting.**

### 2.4 Local Operation

This feature allows for temporary local operation by use of the Zero/Close and Span/Open (Figure 1) buttons on the PCU board to open and close the valve. To access this feature, push the black Zero/Close button, hold for two seconds, and release. The yellow Fault LED will be lit to indicate Local operation mode.

☛ **If no operation occurs within 15 seconds, the PCU will default to setpoint control**



## 2.5 Auto Calibration

This feature allows for automatic calibration of the PCU card to the preset limits, without the need for a signal generator. To access this feature, press the red A-Scan button one time. The white Auto Scan LED will flash. The unit will then automatically stroke to the close limit, pause, then stroke to the open limit and stop. The PCU will now be calibrated.

☛ **Unit is calibrated at the factory, and settings are saved in non-volatile memory. No recalibration required unless the limits are changed.**

## 2.6 Split Range

This feature allows a range of setpoints for full open and full close positions.

Close: 3 to 8mA DC

Open: 16 to 21mA DC

For example: If the customer would like to assign 5mA to the fully closed position, supply a 5mA signal and then allow the actuator to move to the corresponding position. Move DIP Switch (Figure 1) CH1 to the on position, and press the black Zero button one time.

## 3.0 Reverse Acting

The default rotation is Clockwise to Close. For CounterClockwise to Close rotation:

- Exchange Potentiometer input wires P1(Orange wire) and P3 (Grey wire) on PCU
- Exchange 9 and 10 in main actuator terminal block
- Exchange 11 and 12 in main actuator terminal block
- Change the direction of the indicator (HQ-200 and 300 only)
- Re Calibrate by using Auto Calibrate feature



## 4.0 Standard Specifications

- Model: PCU-01-A
- Power: 110V/220VAC  $\pm 10\%$  50/60Hz 4VA Max
- Input signal: 4-20mA DC, 2~10VDC, 0~5VDC, 0~10VDC, 1~5VDC
- Input resistance: 250 Ohm
- Output signal: 4~20-mA DC
- Output Load resistance: 750Ohm Max.
- Control output : Relay contact 250VAC 10A Max (Inductive load)
- Number of output contacts: 2 ea (Open and close contact)
- Delay time adjustment: 0.5 ~ 8 sec
- Dead band adjustment: 0.1 ~ 4.6%
- Ambient temperature:  $-10^{\circ}\text{C} \sim +60^{\circ}\text{C}$
- Ambient humidity: 90% RH Max (Non-condensating)
- Dielectric strength: 1500V AC 1Min (Input to output, Power to Ground)
- Insulation resistance: Min. 500VDC 30Mohm
- Vibration & Shock (X, Y, Z): 10g(6g based on RMF, Frequency: 0.2 ~ 34Hz, 30Min)
- On-Board LED Indication

LED	SIGNAL
Blue on	Power on
Blue Blinking	AUTOSETTING
Green on	Open
Red on	Close
Yellow on	Card Manual mode
Yellow Blinking	Loss of Signal





## 5.0 EIM Office Locations

### Head Office and Factory

EIM Controls, Inc.  
13840 Pike Road  
Missouri City, Texas 77489 USA  
(800) 679-1561 toll-free, US Only  
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