**Proportional Valve Controller—PCB Only—**

**DESCRIPTION**

0–5 VDC, 10K Pot or 0–20 mA Input

A printed circuit board-style (PCB) control amplifier for controlling HydraForce proportional valves. Remote mounting in a protected enclosure is required.

**OPERATION**

This control module uses closed-loop current control with superimposed dither to supply a proportional valve solenoid with a proportional control signal. The input signal to this controller can be from a 10K potentiometer, 0–5 VDC, 0–20 mA, or from other pre-set levels.

**FEATURES**

- Adjustments and connections clearly labeled.
- LED indication of output power level, input level and power on/off.
- One unit covers supply voltages from 9 to 32 VDC.
- No internal fuses; circuit limits current electronically.
- Short circuit proof and reverse polarity protected.
- Can be disconnected from coil when powered.
- Maximum current adjustment does not affect minimum current setting.
- Independent ramp adjustments and internal supply for potentiometer.
- Filter eliminates electrical noise.
- Dither frequency and amplitude are adjustable for maximum valve performance.

**RATINGS**

Supply Voltage: 9–32 VDC

Coil rating must be matched with supply voltage: \[ R_{COIL} \leq \frac{(V_{SUPPLY} - 1.5 \text{ V})}{I_{Max}} \]

Control Input Signal Options: 10K external potentiometer (accepts 5K to 50K pots), or 0–5 VDC signal, or 0–20 mA current signal (see connection diagrams)

Input Resistance: Voltage: 250K Ohms; Current: 33 Ohms

Output Current: up to 2000 mA (see ordering info.)

Minimum Current Range: 0–500 mA (adjustable; see ordering info.)

Maximum Current Range: 600–2000 mA (adjustable; see ordering info.)

Ramp Up and/or Down: 0.01–5.0 seconds (independently adjustable)

Dither Frequency: 70–350 Hz (adjustable)

Dither Amplitude: 0–10% of maximum current (adjustable)

Operating Conditions: –40° to 85°C; 0 to 85% relative humidity

**GENERAL SPECIFICATIONS**

Weight: 25 g (0.88 oz.)

Connections: Screw terminals for 16–30 AWG wire

**CSA Listing:**

CSA C22.2 No. 14-M91

**SCHEMATIC**

[Electronic control schematic diagram]

**ELECTRONIC CONTROLS**

[Logo and website: HydraForce.com]
0–5 VDC, 10K Pot or 0–20 mA Input

DIMENSIONS

For Complete Set-Up Instructions, see page 3.439.1

CONNECTIONS

For Either 0–20 mA or 0–5 VDC Control: Turn ramp screws fully counterclockwise to eliminate ramping. Use I-Min. screw to set minimum speed with minimum control input. Use I-Max. screw to set maximum speed with 100% of control input.

10K Potentiometer (Pot.) Control

Supplied by User Screw Terminal

(+ Power) (+ Power)
(–) Power (–) Power
(+ Pot.) (+ 5V Reference)
10K Pot. Voltage In
(–) Pot. Analog Gnd.
Not Used Current In
Enable Enable
Frame Gnd. Frame Gnd.
(–) Coil (–) Solenoid
(+ Coil) (+ Solenoid)

0 to 20 mA Control

Supplied by User Screw Terminal

(+ Power) (+ Power)
(–) Power (–) Power
Not Used (+ 5V Reference)
Not Used Voltage In
(–) 0–20mA Analog Gnd.
(+ 0–20mA Current In
Enable Enable
Frame Gnd. Frame Gnd.
(–) Coil (–) Solenoid
(+ Coil) (+ Solenoid)

0 to 5 VDC Control

Supplied by User Screw Terminal

(+ Power) (+ Power)
(–) Power (–) Power
Not Used (+ 5V Reference)
(–) 0–5V Voltage In
(+ 0–5V Analog Gnd.
Not Used Current In
Enable Enable
Frame Gnd. Frame Gnd.
(–) Coil (–) Solenoid
(+ Coil) (+ Solenoid)

TO ORDER

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Output</th>
<th>I-Min. Setting</th>
<th>I-Max. Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>4000046</td>
<td>2000 mA Max.</td>
<td>0 to 500 mA</td>
<td>600 to 2000 mA</td>
</tr>
<tr>
<td>4000194</td>
<td>1200 mA Max.</td>
<td>0 to 150 mA</td>
<td>400 to 1200 mA</td>
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