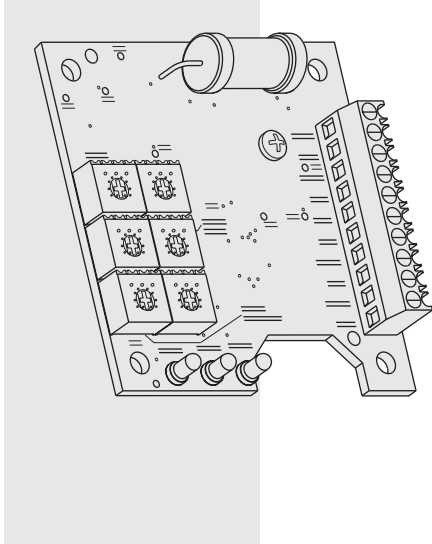# ELECTRONIC CONTROLS

Proportional Valve Controller—PCB Only—

DESCRIPTION   *0–10 VDC 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 0–10 VDC source.

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.
• 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: $R_{COIL} \leq (V_{SUPPLY} - 1.5\ V) / I\text{-Max.}$
Control Input Signal: 0–10 VDC
Input Resistance: 250K Ohms
Output Current: up to 2000 mA (see ordering info.)
Minimum Current Range: 0–500 mA (adjustable)
Maximum Current Range: 600–2000 mA (adjustable)
Ramp Up and/or Down: 0.01–5.0 seconds (independently adjustable)
Dither Frequency: 70–350 Hz (±10%)
Dither Amplitude: 0–10% of maximum current (adjustable)
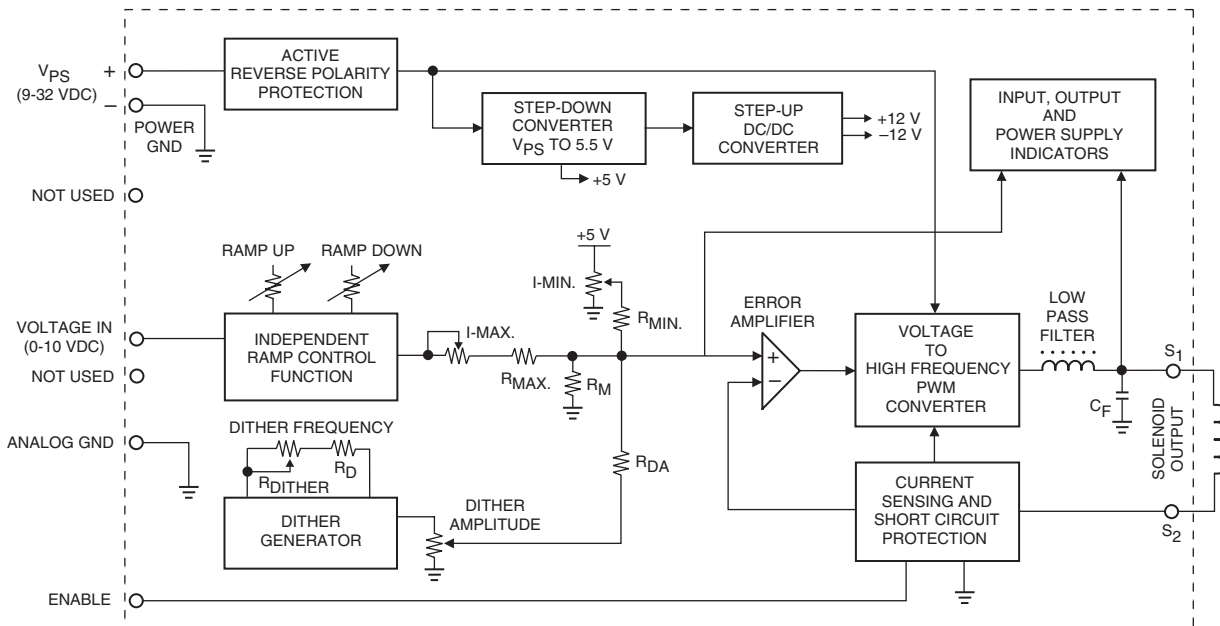**Operating Conditions:** –40° to 85°C; 0 to 85% relative humidity

GENERAL SPECIFICATIONS
Weight: 25 g (0.88 oz.)
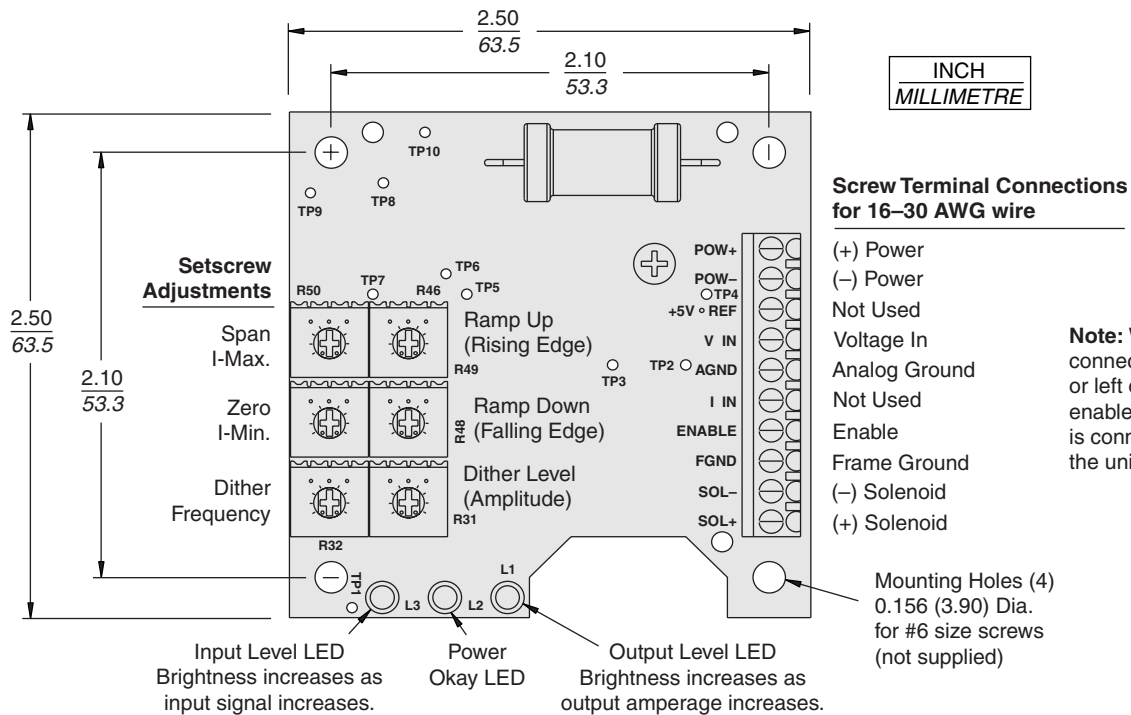**Connections:** Screw terminals for 16–30 AWG wire

CSA Listing:
CSA C22.2 No. 14-M91

SCHEMATIC

0–10 VDC Input

DIMENSIONS

2.50 / 63.5

2.10 / 53.3

INCH
MILLIMETRE

2.50 / 63.5

2.10 / 53.3

Setscrew Adjustments

Span I-Max.

Zero I-Min.

Dither Frequency

Ramp Up (Rising Edge)

Ramp Down (Falling Edge)

Dither Level (Amplitude)

POW+
POW–
+5V REF
V IN
AGND
I IN
ENABLE
FGND
SOL–
SOL+

Screw Terminal Connections for 16–30 AWG wire

(+) Power
(–) Power
Not Used
Voltage In
Analog Ground
Not Used
Enable
Frame Ground
(–) Solenoid
(+) Solenoid

Note: When Enable is connected to (+) Power or left open, the unit is enabled. When Enable is connected to (–) Power, the unit will be disabled.

Input Level LED Brightness increases as input signal increases.

Power Okay LED

Output Level LED Brightness increases as output amperage increases.

Mounting Holes (4) 0.156 (3.90) Dia. for #6 size screws (not supplied)

CONNECTIONS For Complete Set-Up Instructions, see page 3.439.1

Basic Setup: Controller is shipped with ramp trim pots 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.

0 to 10 VDC Control

Supplied by User		Screw Terminal
(+) Power	⊘	(+) Power
(–) Power	⊘	(–) Power
Not Used ✕	⊘	(+) 5V Reference
(+) 0–10V	⊘	Voltage In
(–) 0–10V	⊘	Analog Gnd.
Not Used ✕	⊘	Current In
Enable	⊘	Enable
Frame Gnd.	⊘	Frame Gnd.
(–) Coil	⊘	(–) Solenoid
(+) Coil	⊘	(+) Solenoid

TO ORDER

Part Number	Output	I-Min. Setting	I-Max. Setting
4000141	2000 mA Max.	0 to 500 mA	600 to 2000 mA