

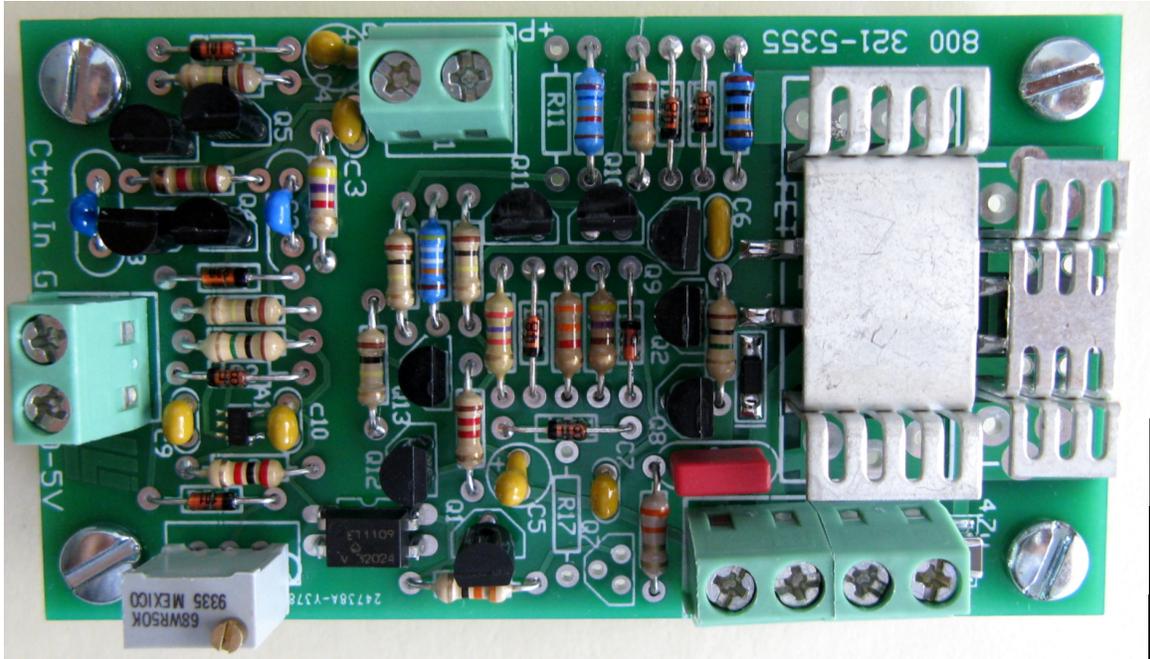
INSTRUCTION MANUAL

Proportional Drive PDr4 Rev B

9/29/2017

**Optically isolated power driver for DC
motors, proportional valves,
solenoids, heaters, and other DC
loads**

**Suitable for DC motors up to 1/3 HP
operating at up to 48 VDC**



PDr4 Rev B SPECIFICATIONS

Continuous output current up to 6 amps at 8 to 48 volts

Peak instantaneous output current 50 amps

Optical isolation provided, isolation can be bypassed, if desired

Input power supply, 8 to 20 volts

Input control voltage 0-5 volts (or 0-10 volts)

Input Impedance 50K Ohms

Up to 99% efficient, so that no extra cooling is normally needed

Power input current 12 ma typical at 22 kHz modulation frequency

Modulation frequency is preset, but can be factory adjusted to suit

Load can be inductive or resistive, freewheeling diode is built in

Gain is adjustable via on-board trim potentiometer, 0 - 100% range

Output is monotonic

Linearity is excellent above 5% of full scale

Minimum controllable current 1% of full scale

Size 1.9" x 3.4" x 0.6"

Options:

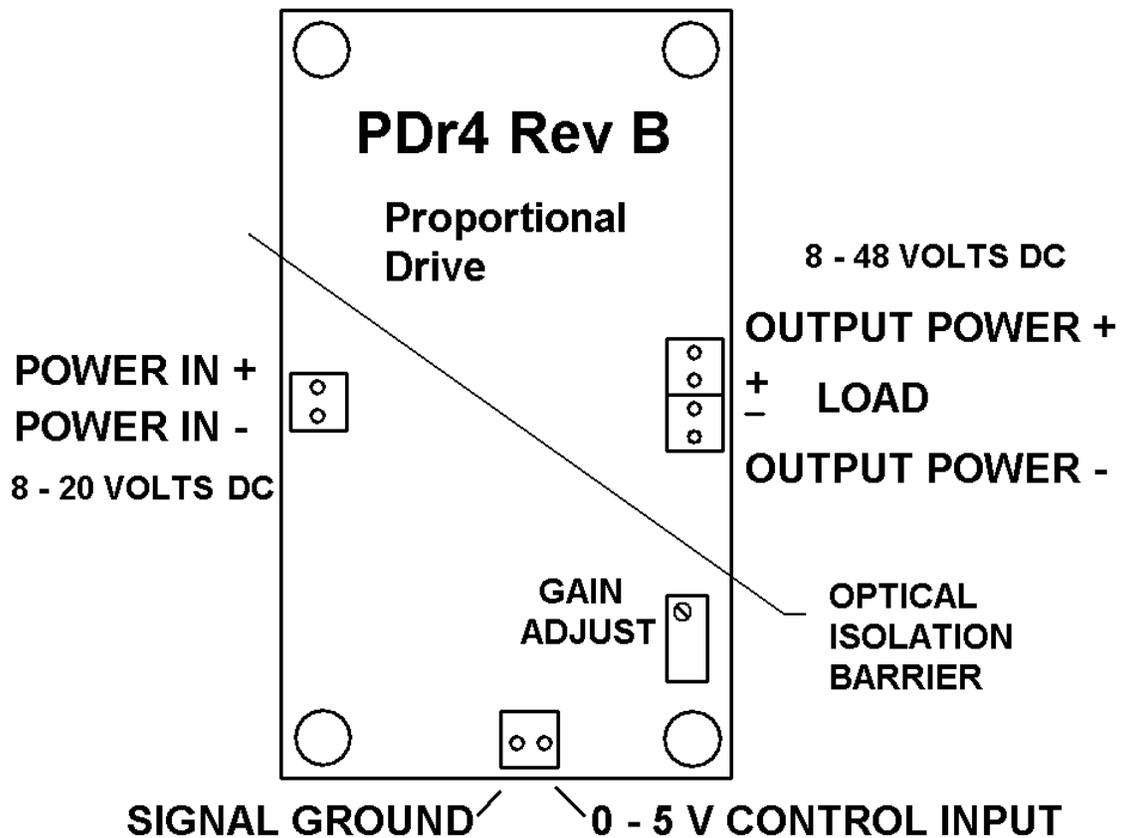
4-20 MA input can be added

Heat sinks (as shown) available for higher power operation

The optical isolation can be removed, if it is not needed

Ask about other variations

CONNECTIONS



Power In would normally be the same as the data system power. For example, the Lawson Labs Model 302 running on 15 VDC.

The output is optically isolated. Connect the output power supply between the + and – output power terminals. The load connects to the + and - LOAD terminals.

If isolation is not required, the output power - and the power in - terminals can be strapped together.

Warning: A fuse of 10 amps or less is strongly recommended in series with the output Power + connection or in series with the load itself.

OPERATION

The PDr4 is designed for DC motor drive up to 1/3 HP at up to 48 volts DC. 12VDC or 24VDC motors or other DC loads are appropriate, as well.

The PDR4 is optimized for use inside a control loop. The temperature, pressure, position, etc. that is being controlled can be sensed and read by the analog data system. Then, the analog output can be adjusted according to a programmed set of rules in order to keep the system in balance.

Adjust the trimpot for the desired maximum current output with a full-scale input voltage. If the input signal range is 0 -10 volts, turn down the sensitivity so that the desired maximum output is seen with a 10 volt input. Clockwise rotation increases sensitivity.

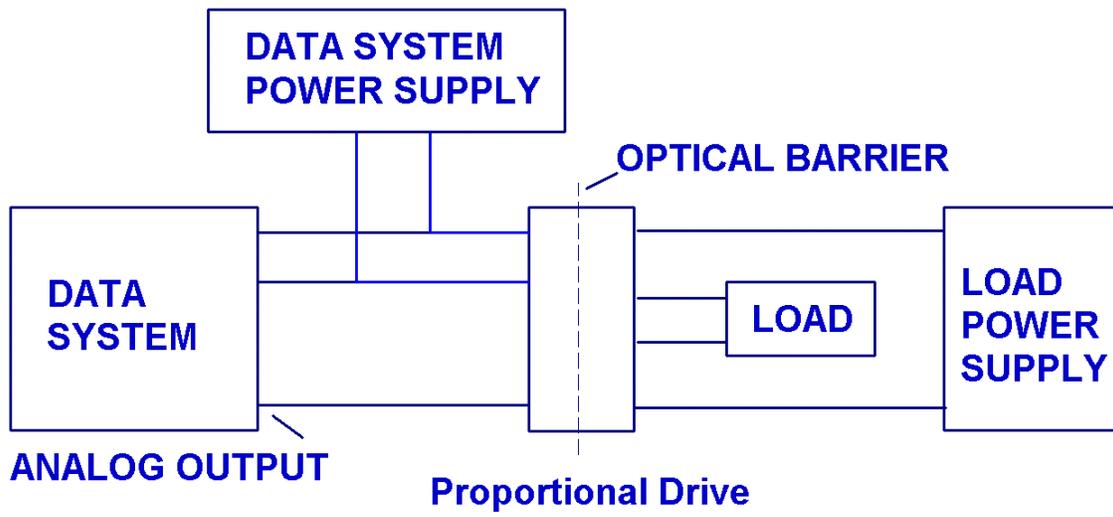
Output current will be zero with 0 volts in. There is a non-linear zone coming out of zero volts. Typically, above a 250 mv control input (0 -5 volt range), the output is fully linear.

There may be a narrow non-linear band as the maximum power is approached.

The PDr4 Rev B has thermal overload protection with hysteresis. If the temperature limit is exceeded, the PDr4 stays off until the temperature drops a few degrees. It will then restart itself without any other action required. When the thermal limit is being exceeded, expect alternating periods of normal operation and periods of cool down. A small fan will extend the range of useful power.

The Model PDr4 Rev B has transient over-voltage protection in addition to the thermal protection. When fused for over-current protection, it should survive even when stressed in difficult environments.

Contact Lawson Labs, Inc. for higher voltage or current alternatives.



SYSTEM BLOCK DIAGRAM