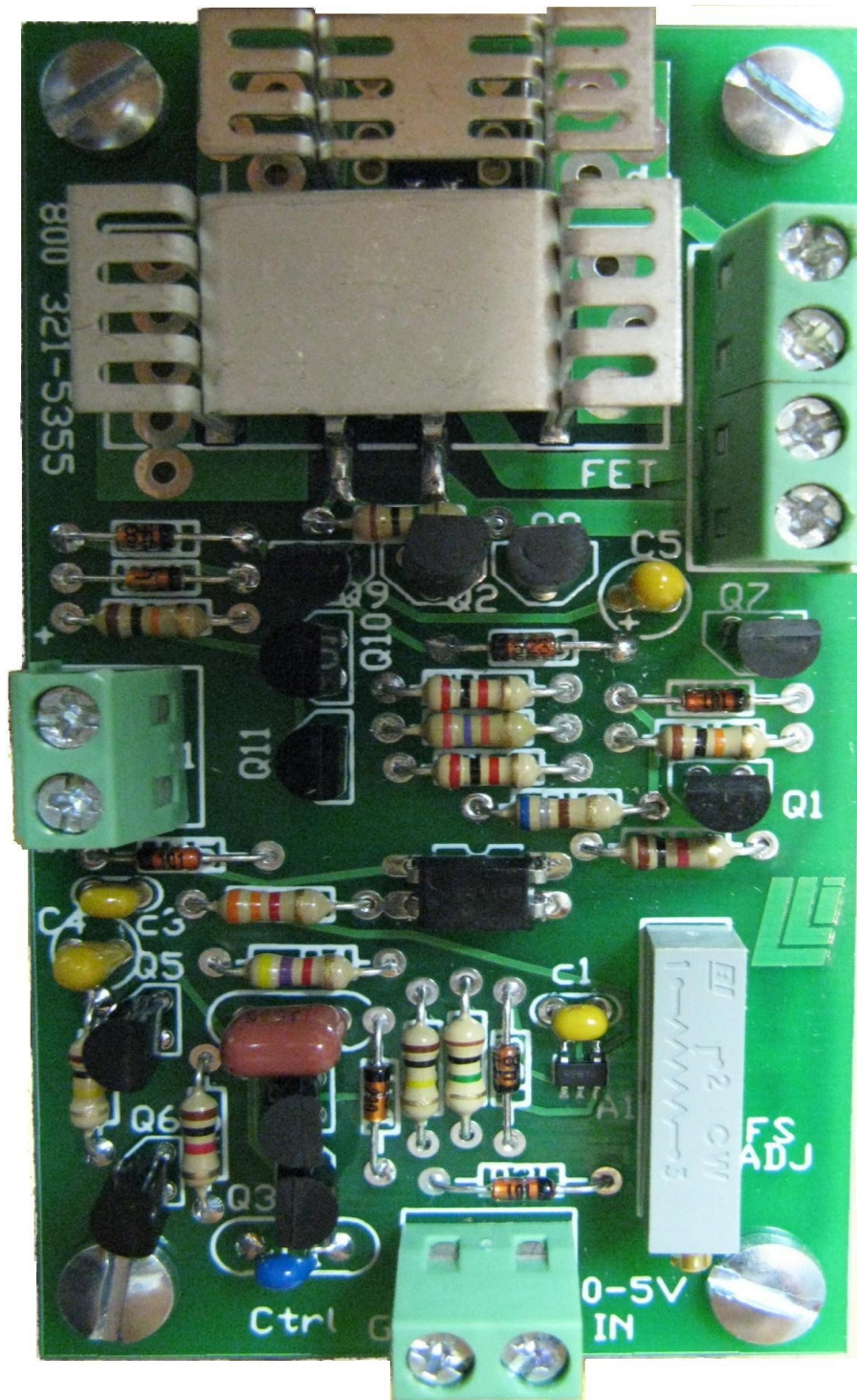# INSTRUCTION MANUAL

Proportional Drive   PDr4 Rev A

Preliminary 5/16/2017

Optically isolated power driver for DC Motors, proportional valves, solenoids, heaters, and other DC loads.

Suitable for 1/4 HP DC motors operating at 48 VDC

PDr4 SPECIFICATIONS

Continuous output current up to 4 amps at 8 to 48 volts

Peak output current 25 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 20K Ohms

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

Power input current 12 ma typical at 20 kHz modulation frequency

Modulation frequency is preset, and can be 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 less than 1% of full scale
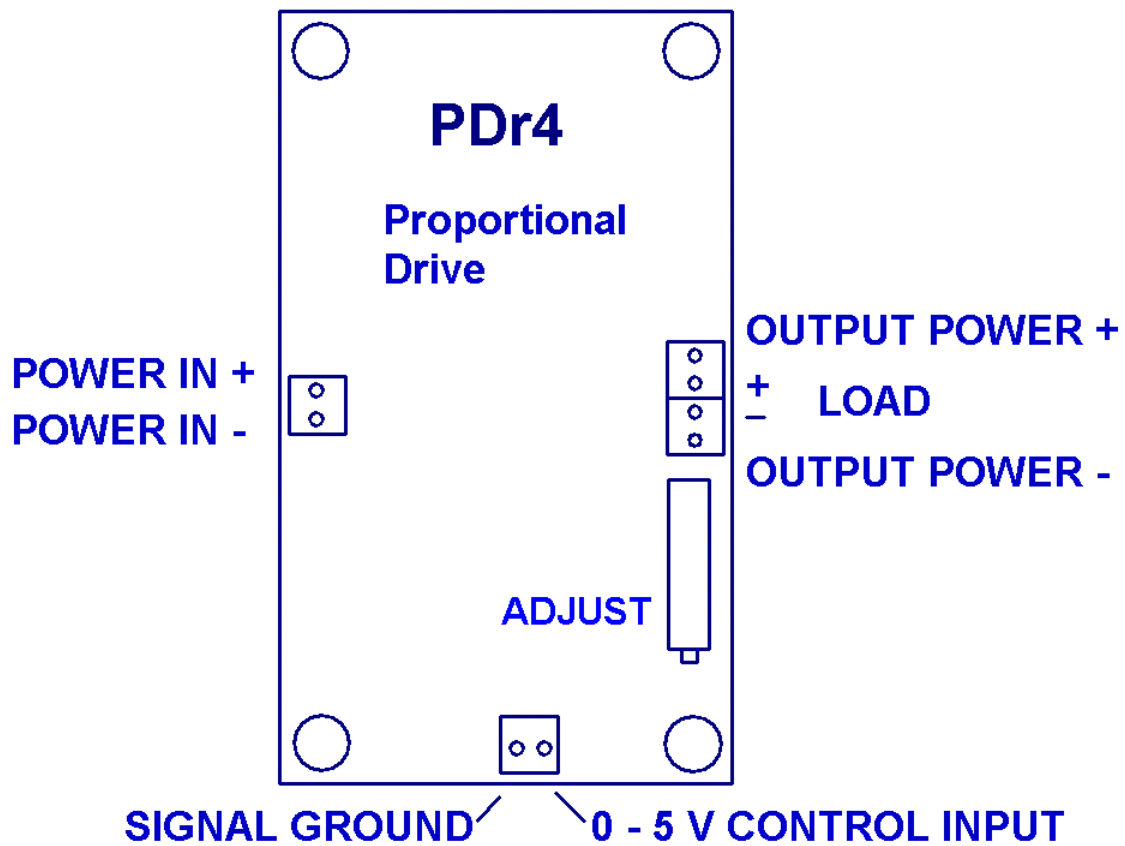
Size, 1.9" x 3.4" x 0.6"

Options:
4-20 MA input can be added
The optical isolation can be removed, if it is not needed
Ask about other variations

CONNECTIONS

PDr4

Proportional Drive

POWER IN +
POWER IN -

OUTPUT POWER +
+ LOAD
–
OUTPUT POWER -

ADJUST

SIGNAL GROUND   **0 - 5 V CONTROL INPUT**

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

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

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

OPERATION

ThePDr4 is designed for DC motor drive up to 1/4 HP at 48 volts DC. 12VDC or 24VDC motors or other DC loads are appropriate, as well.
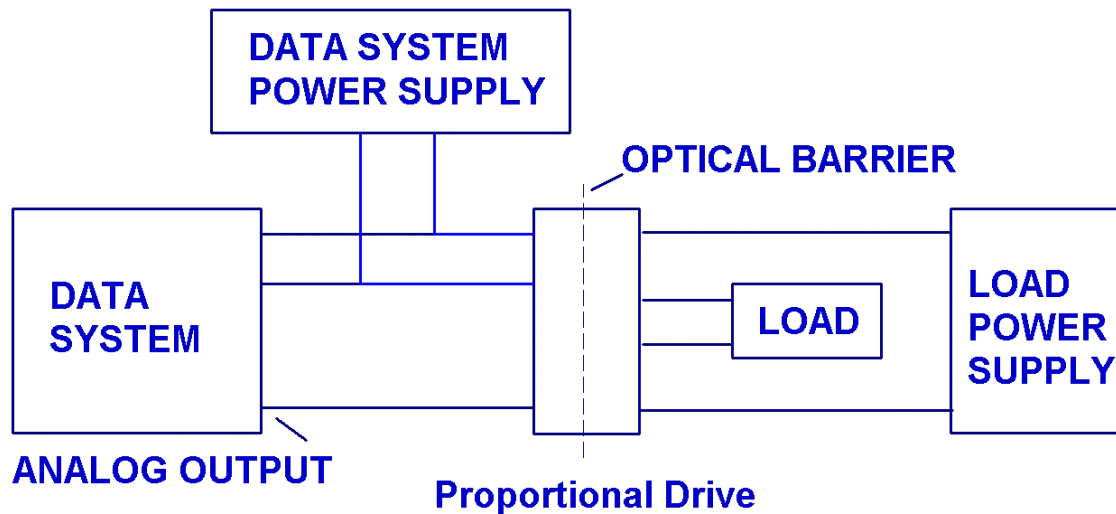
The PDR4 is optimized for use inside a control loop. The temperature, pressure, position, etc. that is being controlled can be sensed and read by the analog data system. Then, the analog output can be adjusted according to a programmed set of rules in order to keep the system in balance.

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.

SYSTEM BLOCK DIAGRAM