



Frequently Asked Questions

PROPORTIONAL VALVE DRIVERS



Q: If the the PVD3D2R is configured to drive two coils with one signal, what happens if the signal for some reason falls away due to a fault, would the card then drive one coil fully open?

A: If the signal drops to zero there are two options:

1. if db is set to 000 (factory default) then solenoid B ramps to bHI (fully open)

or

2. if db is set to 001 or more, then both solenoids ramp to ALO and bLO respectively (neutral position)

Q: What is the output voltage?

A: Our valve amplifiers are designed to control the solenoid current and not the voltage. The solenoid current will be proportional with the input signal, between the LO and HI settings. The average output voltage is calculated in such a way to cause the desired current through the solenoid. The actual output is in the shape of pulses between zero and power supply voltage, with a frequency adjustable between 50 and 500Hz and a variable duty cycle to cause the average output voltage desired.

Q: What is the input impedance of the device?

A: The 0 to 10V and 0 to 5V inputs are 100kohms impedance. The 0 to 20mA and 4 to 20mA inputs are 250ohms impedance.

Q: What is the REF pin?

A: The REF pin is a low power voltage supply that is used to feed a 10kohm potentiometer to generate input signal. REF is connected to one end of the potentiometer, GND to the other end and the wiper is connected to the IN pin.

Q: What is dither?

A: Dither is a small vibration of the solenoid current superimposed over the average value. It has the purpose of reducing the hysteresis ("sticking") of a valve by keeping its moving parts in constant motion.

Q: How do I find the best dither setting?

A: In order to reduce the valve hysteresis we have to lower the dither frequency but if the frequency is too low then the valve may actually be able to follow the signal and it may generate vibrations of the system pressure or flow; if the frequency is too high then the hysteresis may be too high, leading to poor accuracy; the best compromise is in between.

Q: How do I adjust the dither amplitude?

A: The dither amplitude depends on the power supply voltage, the solenoid resistance & inductance as well as the dither frequency. The only way to adjust the dither amplitude is to adjust the dither frequency: the lower the frequency the higher the amplitude / the higher the frequency the lower the amplitude.



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Q: Why does the output drift from 0.70A to 0.65A after 10 minutes?

A: A coil rated 0.70A will take less than that when it gets warm due to the change in resistance. Usually the proportional range of a valve is up to 10-20% less than the maximum current that the coil can take.

Q: Why does the output go only up to 0.67A even if "HI" is set to 0.90A?

A: When using a 24Volt / 36ohms coil, the maximum current that can be achieved by applying full power is 0.67A. In this case "hi" should be set to less than 0.67A in order to remain within proportional range.

Q: Can your 3A driver be used for a 700mA coil?

A: Yes, the resolution is adjusted automatically to the optimum depending on the driver settings. For example, the resolution is twice as fine if the "HI" is set to 0.80A compared with the resolution at 1.6A.

Q: How do I achieve the fastest response?

A: When set to 0.00, the ramp is disabled, that is the output voltage changes virtually instantly. Due to the inductance of the coil, the output current may take about 0.1s more to change.

Q: What is the ramp adjustment resolution?

A: The ramp is adjustable from 0.00s to 99.5s in 0.1s increments. When the ramp is set to 5.00s, it takes 5s for the output to complete transition when input steps from zero to full input but only 2.5s if the input changes from zero to half way. When the input steps back before the completion of the transition, the ramp instantly starts back towards the new value without completing the previous transition.

Q: Can the driver be used for slow shift applications?

A: Yes, if only ON slow shift is needed and instant OFF shift is acceptable, the driver's REF pin can be permanently connected to the IN pin and the shift can be achieved by applying and removing power to/from the +VDC and GND pins. If both ON and OFF shift need to be slow, then power has to be permanently connected to +VDC and GND and the shift can be achieved by closing and opening a contact between the REF and IN pins as per the schematics in the data sheet.

Q: If we reach the end of the required cylinder stroke before the ramping has finished, can we connect the output current to the coil via a relay and drop out the relay to stop the cylinder in the correct position?

A: Yes, it is possible to connect and disconnect the solenoid while the driver is powered-up. It is also possible to just cut off the power supply to the driver. It is also possible to order a custom driver with an "enable" pin.

Q: What does the readout represent when in Jog mode?

A: In Jog mode the readout shows the output current in Amps.



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Q: Does the Jog signal override the HI setting?

A: Yes, the Jog does override the HI setting.

Q: How does the deadband work? Is it strictly as described disabling the output below this level of input?

A: Yes, it is used to disable the driver in case of cable break / lost signal / stand-by mode.

Q: How does the LO setting work?

A: The LO setting is meant to take out (compensate for) the valve spool overlap / deadband.