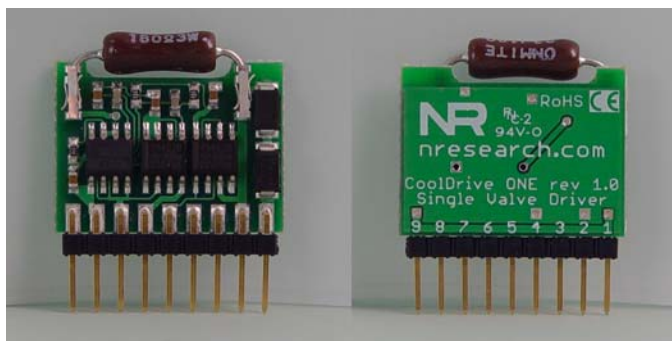


# CoolDrive® ONE Single Valve Drivers

The CoolDrive® ONE Single Valve Driver circuits by NResearch Inc.® complement NResearch Inc.® solenoid operated valves. Main applications include valves with extended energized periods, and/or high duty cycle.

The CoolDrive® ONE Single Valve Driver drives one single solenoid, eliminating the need

to purchase the Original 5 Channel CoolDrive® board - perfect for smaller applications or prototyping, offering unmatched flexibility in creating new or expanding existing valve networks.



The CoolDrive® ONE Single Valve Driver provides full power management, including automatically applied holding voltage. A high logic level signal at the control input will energize the connected valve. The holding voltage is one third of the full rated voltage for most standard solenoid valves, achieved by interchangeable resistors, within approximately 110 ms of activating the solenoid.

The CoolDrive® ONE Single Valve Driver circuit significantly reduces valve turn-off delays (response time) compared to commonly used valve-driving techniques. The CoolDrive® ONE Single Valve Driver circuit in conjunction with NResearch Inc.® solenoid valves will result in extended valve life and reduced overall power consumption required to operate your valves. By utilizing a holding voltage, over-heating the solenoid valve is eliminated, extending the valves' probable life, while reducing the risk of transferring heat to process media. In addition, the holding voltage lowers overall power consumption by not requiring the full rated voltage to hold the solenoid open or energized.

Using NResearch Inc.® CoolDrive® valve drivers in conjunction with NResearch Inc.® solenoid operated valves will give you the most dependable, compact, and cost effective valving solution available anywhere. Save time and resources designing your own driving electronics, rely on a proven bulletproof design, our CoolDrive® Valve Driver Modules.

Voltage	Pressure	161 series	225 series	360 series	648 series
12 VDC	Standard	161D1X250	225D1X180	360D1X75R	648D1X40R
24 VDC	Standard	161D1X1K0	225D1X750	360D1X270	648D1X150

For pricing information please visit our Website at [www.nresearch.com](http://www.nresearch.com) or call / email our office.

Use chart for most standard valves only! For HP (high pressure) models or special valves please consult factory.

## ORDERING INFORMATION:

Neptune Research & Development, Inc.  
267 Fairfield Avenue, West Caldwell, NJ, U.S.A.  
Phone: 973-808-8811 Fax: 973-808-0086

Email: [sales@nresearch.com](mailto:sales@nresearch.com) Website: [www.nresearch.com](http://www.nresearch.com)

Specifications	12 VDC	24 VDC
<b>161D1Xxxx</b>	161D1X250 Power requirement at pin#1: 94 mA minimum at 12 VDC Required solenoid resistance: 127 Ohms	161D1X1K0 Power requirement at pin#1: 48 mA minimum at 24 VDC Required solenoid resistance: 500 Ohms
<b>225D1Xxxx</b>	225D1X180 Power requirement at pin#1: 133 mA minimum at 12 VDC Required solenoid resistance: 90 Ohms	225D1X750 Power requirement at pin#1: 70 mA minimum at 24 VDC Required solenoid resistance: 345 Ohms
<b>360D1Xxxx</b>	360D1X75R Power requirement at pin#1: 353 mA minimum at 12 VDC Required solenoid resistance: 34 Ohms	360D1X270 Power requirement at pin#1: 171 mA minimum at 24 VDC Required solenoid resistance: 140 Ohms
<b>648D1Xxxx</b>	648D1X40R Power requirement at pin#1: 600 mA minimum at 12 VDC Required solenoid resistance: 20 Ohms	648D1X150 Power requirement at pin#1: 308 mA minimum at 24 VDC Required solenoid resistance: 78 Ohms

**Pinout (1 to 9):**

The pin numbers are marked on the flat (non-component) side of the board.

Inputs: 1 to 5, outputs: 8 and 9, not connected: 6 and 7.

1. Positive voltage supply for valve (See power requirements in chart above)

2. GND

3. +5VDC supply for board (Less, than 150mA, typically 20-56mA)

4. GND

5. Logic level control input (Typically less, than +0.16mA or -6.4mA)

6. Not Connected

7. Not Connected

8. Common output to valve (If valve has two identical color wires then the two wires are interchangeable)

9. RED output to valve (In case the valve has one red and one different color wire, pin#9 is to be connected to the red valve wire.)

**Absolute Maximum Ratings:**

The following values are in relation to GND, and are not for permanent use. Anything beyond these values may result in permanent damage to the board!

Pin#1: 0 to 30V, recommended 12V or 24V

Pin#3: 0 to 7V, recommended 5.0V

Pin#5: 0 to 5.5V, but never more, than the actual voltage on Pin#3, recommended 0V or 5.0V

Lowest resistance connected to output (between Pin#8 & Pin#9): 20 Ohms at 12V, or 78 Ohms at 24V. Never short the output!

Recommended operating temperature range: between 0° and 70° Celsius.

**Logic Levels and Operation:**

LOW logic level: 0 to 0.8V, HIGH logic level: 2.0 to 5V (at 5.0V board supply voltage).

The logic level control input is to be kept LOW while inactive. (No floating or unconnected pin is allowed). Please make sure the ground of the logic level source is connected to one of the GND pins of the board.

The logic level control input is (HIGH) level sensitive. As soon as this input goes HIGH, the valve is powered at full voltage present at pin#1 for the first 110 ms. Subsequent to that initial period, it remains energized at holding voltage as long as the control input is continuously kept HIGH.

If required, it is possible to turn the valve off during the initial 110 ms period by returning the control input to LOW. However, neither this, nor a subsequent HIGH input during the same time period will reset or restart the timer. In latter case, full voltage will only be available until the original timer expires, then holding voltage is applied while the input remains continuously HIGH.

**Connector:**

The 9 male pins of the board connector are 0.025" square, 0.100" pitch. The black housing of the pins is approximately 0.1" long and the pins' mating length is approximately 0.23".

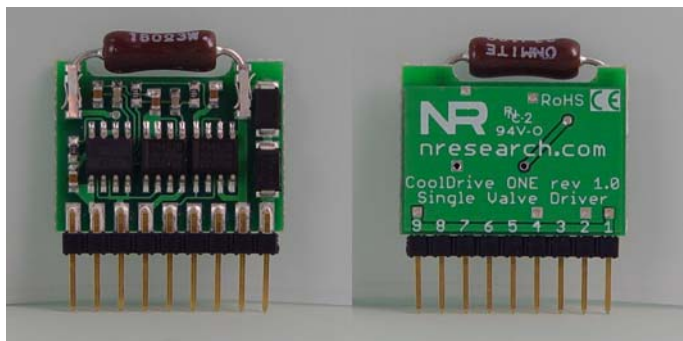
**WARNING:**

Please take extreme care while handling the board or making connections as this device and its INPUTS and OUTPUTS are generally NOT protected against Electrostatic Discharge (ESD)/ overvoltage/ overcurrent/ short circuit/ reverse polarity, etc. The device (especially the power resistor) may get hot during normal operation. Please do not attempt to touch the board!

**Mechanical:**

Mounting: via board connector; through-hole or socket. There are no mounting holes on the board. Mounting orientation: any position.

## Dimensions



The CoolDrive® ONE Single Valve Driver circuit is approximately 0.95" wide x 1.2" tall, and 0.21" thick, including the connector and the power resistor. The black housing of the connector is approximately 0.1" long and the pins' mating length is 0.23".

The board may alternatively be mounted with thick double sided tape for easy prototyping. The connector will readily accept AMP 3-644042-3 and AMP 3-644042-2 connectors. These connectors are easily serviceable using an AMP 59803-1 maintenance tool (or even a small flathead screwdriver).