DM3801
DC INPUT
PROPORTIONAL VALVE DRIVER
PULSE WIDTH MODULATED OUTPUT

DESCRIPTION

The **DM3801** Valve Driver provides a bipolar current drive to a current controlled valve.

The unit uses a pulse-width modulated square wave output that switches at a high frequency. The duty cycle of the output wave changes to create an average DC current through the valve magnet winding.

The **DM3801** Valve Driver is housed in an aluminum DIN rail mountable case with a stainless steel mounting plate and a plastic front panel.

Connections are made via 2 4-pin plug-in terminal blocks. These plug-in blocks allow a product to be removed without unwiring the connections.

CAUTION

THE DIN RAIL MUST BE EARTH GROUNDED *(GREEN WIRE)* TO ENSURE SAFEST OPERATION AND TO PROVIDE OPTIMUM PERFORMANCE. BEFORE PROCEEDING, REMOVE ALL POWER TO THE WIRES AND MODULE TO AVOID THE DANGER OF SHOCK AND/OR DAMAGE TO THE UNIT.

INSTALLATION

The **DM3801** mounts on standard DIN Rail. Install it by hooking the top of the module's latch onto the top of the rail, then use a downward rotating motion to snap the module onto the rail. To remove the module, insert a screwdriver into the slot on the spring loaded snap which is located on the lower backside of the unit. Apply a downward pressure on the release and rotate the module up and off of the rail.

1. Remove the front panel by spanning the top and bottom edges between the thumb and index finger. Use a rocking motion to pull the front panel away from the module.

2. Input: Connections are labeled on the top terminals. Output and power connections are labeled on the bottom terminals.

The terminal blocks unplug. They may be wired in alone or on the product. The connecting wires are inserted into the top of the top terminal block, and into the bottom of the bottom terminal block. The screw on the front of the block loosens *(counter-clockwise)* and tightens *(clockwise)* the wire in the terminal. Recommended wire sizes are 22-14 AWG Cu, with a strip length of 0.25 inches.

The output of the **DM3801** should be wired to the valve with two conductor, twisted, shielded wire. The shield should be connected to an earth ground at the valve end of the wiring.

The input wiring should be kept away form the output wiring. The best wiring method is to use two conductor, twisted, shielded wire from the signal source to the DM3801 input. Connect the input shield to on of the DM3801 - input terminals *(circuit common)*.

3. Replace the front panel by inserting the pins into the slotted holes located on the bezel and pushing it into position.

4. The front panel label can be written on with a pencil or pen. It provides space for the user to make application notes.

CALIBRATION

Field changes can be made using the following procedure.
The product has two inputs -10/+10 VDC and 4/20 mA. Connect the input signal wire to the correct terminal on the top terminal block. Place the jumper on the range PCB *(behind the front panel)* to the matching input.

The output has two ranges. Place the jumper on the range that includes the desired output. The ranges overlap so the output full scale can be any value between 35 mA and 100 mA. The output must have a proper load. The unit can drive a short circuit.

The DM3801 is factory calibrated to the input and output noted on the side label.

To change:

1. Remove the front panel.
Position range jumpers.

2. Connect a signal source to the proper input and a meter to the *output test points. Apply power to the module.

** The test points are across a silicon diode and the meter must not drop more than 250 mV or it will not read accurately.*

3. Set the input to mid scale.

4. Observe the output meter. Use the ZERO adjustment to raise or lower the output to 0.000 mA.

5. Set the input + full scale.

6. Set the input to mid scale.

7. Observe the output meter. Use the ZERO adjustment to raise or lower the output to 0.00 mA.

8. Set the input + full scale.

9. Observe the output monitor. Use the SPAN adjustment to raise or lower the output to the desired + full scale output current.

10. Repeat steps 4 to 7 to fine tune the output. Usually 3 repetitions will give the desired results.

11. Check output for - full scale output.

12. Remove power, disconnect test equipment and install the module for operation. Replace the front panel.

SPECIFICATIONS

INPUT
4/20 mA
(62 ohms shunt)
-10/+10V
(> 500 K impedance)

Span adjustment
±15% of span

Zero adjustment
±15% of span

OUTPUT
Range
-35/+35 mA to -60/+60 mA
-60/+60 mA to -100/+100 mA
Accuracy
±0.1% of span

Step response time
inductive load dependent
< 10 ms typical

3 dB response resistive load
DC to 300 Hz

Ripple (*peak-to-peak)*
0.1% of span

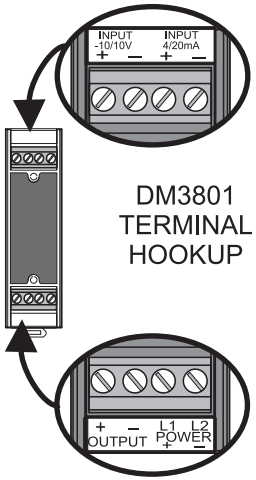
Input to Output Linearity
±0.02% of span

COMMON MODE REJECTION
120 dB DC to 60 Hz

OPERATING TEMPERATURE
14° to 140°F (-10° to 60°C)

TEMPERATURE STABILITY
±(0.02% of span)/°C

POWER
AC (standard)
115 VAC ±10%, 50/60 Hz 2.5 W max
230 VAC ±10%, 50/60 Hz 2.5 W max
24 VAC ±10%, 50/60 Hz 2.5 W max
DC (optional)
12 VDC nominal (10 to 15 VDC)
24 VDC nominal (21 to 28 VDC)



DM3801
TERMINAL
HOOKUP

MOUNTING

The module mounts on a standard H-35 DIN rail. A spring latch holds it in place. The module is removed by using a screw driver to release the latch. The latch is accessible at the bottom of the module.

LABELS

The label on the right side of the module provides information to guide the user with calibrating **DM3801**. It shows the factory set-up and provides space to write field set-up information.

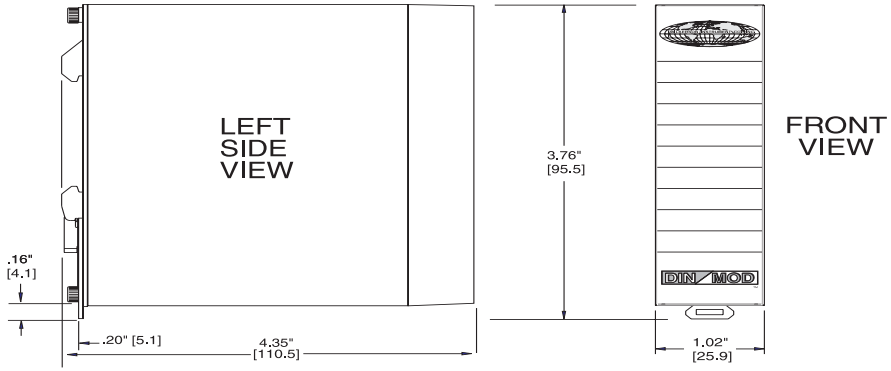
Labels under the front cover identify the input, output and power terminals.

A blank label on the front panel provides the user a place to note set-up and application information.

WARRANTY

The DIN/MOD Series of products carry a limited permanent warranty. In the event of a failure due to defective material or workmanship, the unit will be repaired or replaced at no charge.

CASE DIMENSIONS INCHES [mm]



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