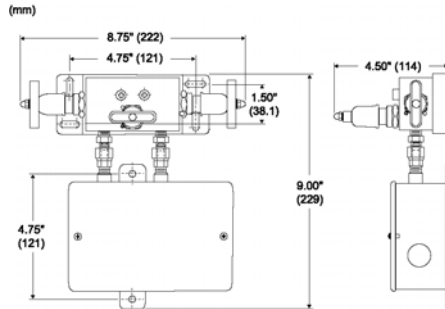
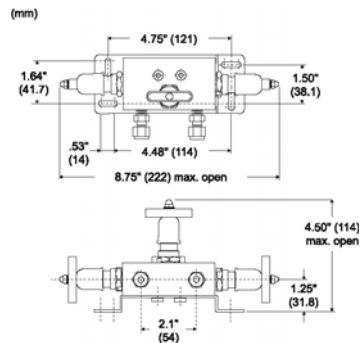


For additional information, see the accompanying data sheet for this transducer.

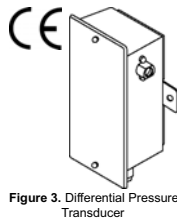
**Ordering Information**

RANGE	OUTPUT
<b>R1</b> (psig) 0 to 5.0 / 0 to 10 / 0 to 20	<b>mA</b> 4 - 20 mA two-wire
<b>R2</b> (psig) 0 to 25 / 0 to 50 / 0 to 100	<b>VDC</b> 0 - 5 or 0 - 10 VDC (field selectable)
<b>R3</b> (psig) 0 to 75 / 0 to 150 / 0 to 300	
<b>R4</b> (kPa) 0 to 35 / 0 to 70 / 0 to 140	
<b>R5</b> (kPa) 0 to 175 / 0 to 350 / 0 to 700	
<b>R6</b> (kPa) 0 to 500 / 0 to 1000 / 0 to 2000	

**Dimensions**

**Figure 1. Differential Pressure Transducer and Manifold Dimensions**

**Figure 2. Manifold (VM-705) Dimensions**
**Specifications**

- Accuracy:**  $\pm 1\%$  FS
- Overpressure:** 300% of rated range
- Burst Pressure:** 500% of rated range
- Maximum Static Pressure:** 200% of DP range
- Supply Voltage:** 12 - 40 VDC;  
12 - 35 VAC (VDC output transducers only)
- Supply Current:** 10 mA maximum VDC output transducers;  
20 mA maximum mA output transducers
- Enclosure:** 18 gage C.R. steel NEMA 4 (IP 65)
- Finish:** Baked-on enamel PMS2GR88B
- Conformance:** EMC Standards EN50082-1(1992), EN55014(1993)/EN60730-1(1992), AS/NZ 3548 (1995) EN55022:IEC/CISPR 22 (1993)
- Compensated Temperature Range:** 0°F to 180°F (-18°C to 82°C)
- T. C. Error:**  $\pm 0.025\%/^{\circ}\text{F}$  (0.03%/°C)
- Media Compatibility:** Liquids and gases compatible to 316L stainless steel
- Port Connection:** 1/8-inch NPT
- Environmental:** 10 to 90% RH non-condensing
- Termination:** Unpluggable screw terminal block
- Wire Size:** 12 gage maximum
- Load Impedance:** 3,000 ohms maximum at 40 VDC (mA output transducers);  
1,000 ohms minimum (VDC output transducers)
- Weight:** 1.0 lb. (.45 kg)

\* Includes nonlinearity, hysteresis, and non-repeatability.


**Figure 3. Differential Pressure Transducer**
**Installation**
**Inspection**

Inspect the transducer packaging for signs of damage. If damaged, notify the carrier immediately.

**Requirements**

- Tools (not provided):
  - Digital volt-ohm meter (DVM)
  - Appropriate screwdriver for mounting screws
  - Appropriate drill and drill bit for mounting screws
- Appropriate accessories
- Six #10 mounting screws (not provided)
- Training: Installer must be a qualified and experienced technician


**WARNING!**

- Do not use on oxygen service, in an explosive or hazardous environment, or with flammable or combustible material.
- Disconnect the power supply before installing the transducer. Failure to do so can result in electrical shock and equipment damage.
- Make all connections in accordance with the job wiring diagram and national and local electrical codes.
- Use electrostatic discharge precautions such as wrist straps when installing and wiring the transducer.
- Avoid installing the transducer in locations where severe shock, vibration, excessive moisture, or corrosive fumes are present. NEMA 4 housings are primarily intended for outdoor use to provide a degree of protection against windblown dust, rain, and hose-directed water.
- Do not exceed ratings for the transducer.

**Mounting**

Mount the differential pressure transducer on a vertical surface with the 1/8-inch NPT connection pointing downwards. See Figures 1 and 2 for the transducer's mounting dimensions.

1. Mount the valve manifold on the wall using four #10 screws (not provided).
2. Run piping into the valve manifold.
3. Slide the transducer's male fittings into the compression fittings on the valve manifold.
4. Fasten the transducer to the wall using two #10 screws (not provided).
5. Tighten the valve manifold compression nut until finger tight. Scribe the compression nut at the 6 o'clock position and then tighten the nut one and one-quarter turns to the 9 o'clock position.
6. The connection can be disconnected and retightened many times. When retightening the nut, tighten only until light resistance is felt (original tight position).
7. Run conduit and wiring to the transducer. Connect wiring as shown in Figures 4 through 7, and set the switch to the correct position.
8. Open the nulling valve (center valve), low pressure valve, high pressure valve, and then close the nulling valve.

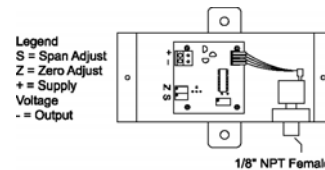
**Wiring**

Use 12 AWG wire maximum for wiring terminals and copper or stainless steel tubing for the transducer connections. See Figures 4 through 7 for wiring diagrams and Figures 8 and 9 for jumper designations.

**Wiring for mA Output**

The mA output differential pressure transducer must be powered with a 12 - 40 VDC power supply.

1. Remove the blue terminal block by carefully pulling it off the circuit board. See Figure 4.
2. Locate the [+] and [-] terminal markings on the board.
3. Attach the supply voltage to the [+] lead.
4. Connect the 4 - 20 mA output (-) terminal to the controller's input terminal.
5. Ensure that the power supply common is attached to the common bus of the controller.
6. Reinsert the terminal block to the circuit board and apply power to the transducer.
7. Check for the appropriate output signal by using a DVM set to DC milliamps connected in series to the [-] terminal.


**Figure 4. Differential Pressure Transducer With mA Output**
**Wiring for VDC Output**

The VDC output differential pressure transducer is field selectable for 0 - 5 VDC or 0 - 10 VDC output and can be powered with either 12 - 40 VDC or 12 - 35 VAC.

1. Remove the blue terminal block by carefully pulling it off the circuit board. See Figure 5.
2. Locate the [+], [-], and [0] terminal markings on the board.
3. Attach the power wires to the [+] and [-] terminals. The [-] terminal is also the negative output terminal.
4. Connect the [0] terminal, which is the positive VDC output terminal, to the controller's input.
5. Reinsert the terminal block to the circuit board and apply power to the transducer.
6. Check the appropriate VDC output by using a DVM set to DC volts connected to the [0] and [-] terminals.


**CAUTION!**

- If using grounded AC, ensure that the hot wire is on the [+] terminal. In addition, if using a controller without built-in isolation, use an isolation transformer to supply the transducer.
- This transducer contains a half-wave rectifier power supply and must not be powered from transformers powering other devices with non-isolated full-wave rectifier power supplies.
- When multiple transducers are powered from the same transformer, damage will result unless all 24-gage power leads are connected to the same power lead on all transducers. Maintain the correct phasing when powering more than one transducer from a single transformer.

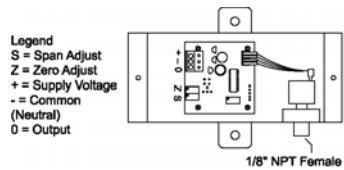


Figure 5. Differential Pressure Transducer With VDC Output

### Typical Applications (wiring diagrams)

Figures 6 and 7 illustrate typical wiring diagrams for the mA output differential pressure transducer.

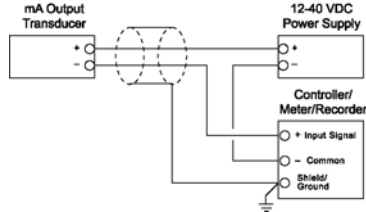


Figure 6. Wiring the mA Output Differential Pressure Transducer With an External DC Power Supply

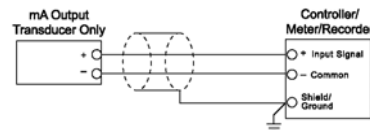


Figure 7. Wiring the mA Output Differential Pressure Transducer Where the Controller or Meter Has an Internal DC Power Supply

Figures 8 and 9 illustrate typical wiring diagrams for the VDC output differential pressure transducer.

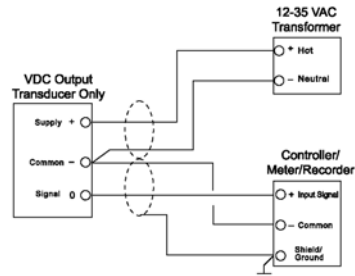


Figure 8. Wiring the VDC Output Differential Pressure Transducer

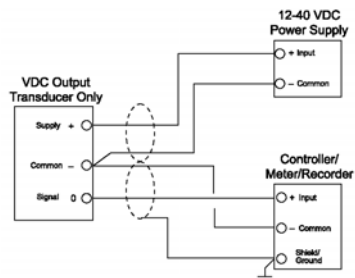


Figure 9. Wiring the VDC Output Differential Pressure Transducer With a DC Power Supply

### Adjustments

#### Jumper Configuration

Jumper configuration varies according to the output type of the differential pressure transducer. Range configurations for transducers are listed in Table 1. Jumper selections for transducers with mA output are shown in Figure 10; jumper selections for transducers with VDC output are shown in Figure 11.

Table 1. Jumper Range Configurations

Range	A	B	C
R1	0 to 5	0 to 10	0 to 20
R2	0 to 25	0 to 50	0 to 100
R3	0 to 75	0 to 150	0 to 300
R4	0 to 35	0 to 70	0 to 140
R5	0 to 175	0 to 350	0 to 700
R6	0 to 500	0 to 1000	0 to 2000

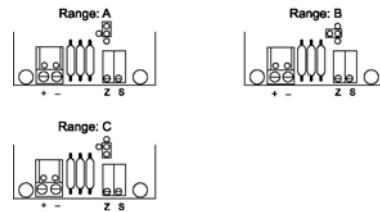


Figure 10. Jumper Selections for mA Output Differential Pressure Transducers

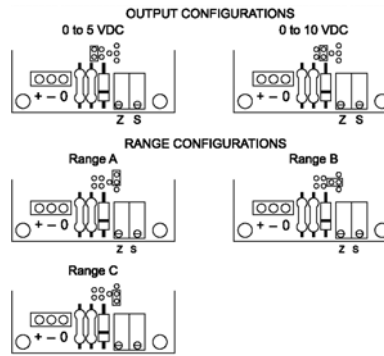


Figure 11. Jumper Selections for VDC Output Differential Pressure Transducers

### Checkout

1. Verify that the transducer is mounted in the correct position.
2. Verify the appropriate input signal and supply voltage.
3. Verify the appropriate input configuration.



CAUTION!

- Never connect 120 VAC to the differential pressure transducer. AC voltage should never be supplied to a transducer intended for DC power.

### Transducer Operation

1. Adjust the pressure to obtain the maximum output signal for the appropriate range.
2. Ensure that output is either 20 mA or 5 or 10 VDC.
3. Adjust the pressure to obtain a minimum output signal.
4. Ensure that output is either 4 mA or 0 VDC.

### Calibration

All transducers are factory calibrated to meet or exceed published specifications. If field adjustment is necessary, follow these instructions:

#### Calibration of mA Output Differential Pressure Transducers

1. Connect the [+] and [-] terminals to the appropriate power source.
2. Connect the DVM in series to the [-] terminal.
3. Apply low pressure to the transducer and carefully adjust the zero trimmer [Z] to obtain the desired low output pressure.
4. Apply high pressure to the transducer and adjust the span trimmer [S] to obtain the desired high output pressure.
5. Repeat steps 3 and 4 until the transducer is fully calibrated.

#### Calibration of VDC Output Differential Pressure Transducers

1. Connect the [+] and [-] terminals to the appropriate power source. The [-] terminal is also the negative output terminal.
2. Connect the DVM on DC volts across the [0] and [-] terminals.
3. Apply low pressure to the transducer and carefully adjust the zero trimmer [Z] to obtain the desired low output pressure.
4. Apply high pressure to the transducer and adjust the span trimmer [S] to obtain the desired high output pressure.
5. Repeat steps 3 and 4 until the transducer is fully calibrated.

### Maintenance

Perform regular maintenance on the total system to ensure the sustained optimum performance of the differential pressure transducer.

### Field Repair

Do not attempt to repair the differential pressure transducer. Replace a malfunctioning transducer with a functional transducer if necessary.

### Warranty

See the accompanying data sheet for additional information. For technical / application assistance, call your nearest office.

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