### Ranges and Resolution

See table below for popular ranges. Consult factory for special engineering units. Resolution is fixed as indicated. See our F16DR series for ranges greater than 2000 or if more display resolution is required.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HA</td>
<td>±0.25% Test Gauge Accuracy</td>
</tr>
<tr>
<td>NC</td>
<td>±0.1% FS ±1 LSD, see table for availability</td>
</tr>
<tr>
<td>CD</td>
<td>Factory calibration data</td>
</tr>
<tr>
<td>NC</td>
<td>NIST traceable test report and calibration data</td>
</tr>
</tbody>
</table>

### Display

| 3.5 digit LCD, 0.5” digit height (indicates to 1999) |
| 3 readings per second nominal display update rate |
| DRBL: Red LED backlight |

### Controls

| Non-interactive zero and span, ±10% range |
| Output test adjustment: 0-100% range |
| Retransmission zero and span: Internal potentiometers |

### Output Characteristics

True analog output, 50 millisecond typical response time
- Current output, 4-20 mA DC, output drive (compliance) determined by power source. See graph on other side.
- Voltage output, 0-2 VDC into 5 k ohm or greater. Output is 0-1 V with ±1.5 psi sensor.
- ±BV version: Voltage output, ±2 VDC into 5 k ohm or greater. Available with ±15 psi sensor and equivalent ranges only. Range is –2 to 0 to +2 V.

### Test Function

- Front panel TEST button, when depressed sets loop current and display to output test level, independent of pressure input, to allow testing of system operation.

### Power

- 8-24 VAC 50/60 Hz or 9-32 VDC
- Use with WMPSK 115 VAC/12 VDC power supply
- Gauge is on whenever power is applied
- Designed for continuous operation
- True analog output, 50 millisecond typical response time
- Retransmission zero and span: Internal potentiometers

### Housing

- DPG1000DR: Exuded aluminum case, epoxy powder coated, ABS/poly carbonate bezel (aluminum bezel optional), front and rear gaskets, polycarbonate label
- D4FR: ABS/polycarbonate NEMA 4X case, rear gasket, polycarbonate label

### Connection, Material, Media Compatibility

- 1/4” NPT connections
- 3 ft long 4-conductor cable
- 3.5” NEMA 4X

### Overpressure

- 2 psi pressure range for 3 psi to 2000 psi sensors
- 5000 psi for ranges using 3000 psi sensor
- 7500 psi for ranges using 5000 psi sensor
- Vacuum service: ±15 psi, 15 psig, 30 psia, 100 psig, 100 psia

### Burst Pressure

- 4 psi sensor pressure rating or 10,000 psi, whichever is less

### Environmental

- Storage temperature: –40 to 203°F (–40 to 95°C)
- Operating temperature: –4 to 185°F (–20 to 85°C)
- Compensated temperature: 32 to 158°F (0 to 70°C)

<table>
<thead>
<tr>
<th>How to Specify</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPG1000DR range - output - options</td>
<td>Standard housing</td>
</tr>
<tr>
<td>DPG1000DRBL range - output - options</td>
<td>Standard housing, backlit display</td>
</tr>
<tr>
<td>F4DR range - output - options</td>
<td>NEMA 4X housing</td>
</tr>
<tr>
<td>F4DRBL range - output - options</td>
<td>NEMA 4X housing, backlit display</td>
</tr>
</tbody>
</table>

### Range

- See table at left
- psi = PSI
- torr = TOQR
- mbar = BAR
- bar = BAR
- oz/in² = ZIN
- kg/cm² = GCMA
- inH2O = CMH2O
- mmH2O = MMH2O
- torr = TORR
- inH2O = CMH2O
- cmH2O = MMH2O
- atm = ATM
- g = gauge reference pressure
- VAC = gauge reference vacuum

### Output

- Specify: I 4-20 mA
- V 0-2 V
- BV ±2 V for bipolar (±) ranges only

### Accessories

- PM Panel mount, 4.1” x 4.1” DPG1000 only.
- MC Metal front cover. DPG1000 only.
- CC Moisture resistant circuit board conformal coating
- CD Calibration data; 5 test points and date
- NIST traceability documentation, 5 points and date

### Options

- HA High accuracy, ±0.1% FS ±1 LSD. Not available with 3 psi, bipolar, absolute, or vacuum sensors, and some 3.5 digit display ranges. See table at left for availability.
- PM Panel mount, 4.1” x 4.1” DPG1000 only.
- MC Metal front cover. DPG1000 only.
- CC Moisture resistant circuit board conformal coating
- CD Calibration data; 5 test points and date
- NIST traceability documentation, 5 points and date
- WMPSK Wall mount power supply kit, 115 VAC/12 VDC

### Table

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>Resolution</th>
<th>Display Range</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>3psig</td>
<td>.01</td>
<td>20000psig</td>
<td>±0.25%</td>
</tr>
<tr>
<td>5psig</td>
<td>.01</td>
<td>20000psig</td>
<td>±0.25%</td>
</tr>
<tr>
<td>15psig</td>
<td>.1</td>
<td>±1500psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>20psig</td>
<td>.1</td>
<td>±2000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>25psig</td>
<td>.1</td>
<td>±2500psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>30psig</td>
<td>.1</td>
<td>±3000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>35psig</td>
<td>.1</td>
<td>±3500psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>40psig</td>
<td>.1</td>
<td>±4000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>45psig</td>
<td>.1</td>
<td>±4500psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>50psig</td>
<td>.1</td>
<td>±5000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>100psig</td>
<td>.1</td>
<td>±1000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>200psig</td>
<td>.1</td>
<td>±2000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>300psig</td>
<td>.1</td>
<td>±3000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>400psig</td>
<td>.1</td>
<td>±4000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>500psig</td>
<td>.1</td>
<td>±5000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>600psig</td>
<td>.1</td>
<td>±6000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>700psig</td>
<td>.1</td>
<td>±7000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>800psig</td>
<td>.1</td>
<td>±8000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>900psig</td>
<td>.1</td>
<td>±9000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>1000psig</td>
<td>.1</td>
<td>±10000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>1500psig</td>
<td>.1</td>
<td>±15000psig</td>
<td>±0.1%</td>
</tr>
<tr>
<td>2000psig</td>
<td>.1</td>
<td>±20000psig</td>
<td>±0.1%</td>
</tr>
</tbody>
</table>

### Diagram

- DPG1000DR
- F4DR

### Contact Information

MOD-TRONIC Instruments • Brampton, ON • 905-457-6322 or 1-800-794-5883 • sales@mod-tronic.com • www.mod-tronic.com


**Instructions**

**Types of Gauges**

Gauge reference types read zero with the gauge port open. Bipolar ranges read positive pressure and vacuum in the same units, and zero with the gauge port open.

1000 psi and higher sensor are a sealed reference type. They read zero with the gauge port open are internally referenced to 14.7 psi. Functionally similar to gauge reference sensors.

Absolute reference gauges read zero at full vacuum and atmospheric pressure with the gauge port open. With an open gauge port the readings will vary continuously due to the effects of barometric pressure.

**Precautions**

- Read these instructions before using the gauge. Configuration may be easier before installation. Contact the factory for assistance.
- These products do not contain user-serviceable parts. Contact us for repairs, service, or refurbishment.
- Gauges must be operated within specified ambient temperature ranges.
- Outdoor or wash down applications require a NEMA 4X gauge or installation in a NEMA 4X housing.
- Use a pressure or vacuum range appropriate for the application.
- Use fittings appropriate for the pressure range of the gauge.
- Due to the hardness of 316 stainless steel, it is recommended that a thread sealant be used to ensure leak-free operation.
- For contaminated media use an appropriate screen or filter to keep debris out of gauge port.
- When using low voltage AC power, either polarity may be used. Use the correct polarity with a DC supply.
- Connect the retransmission output as shown below. Use of the DC supply.

**Electrical Connection**

The DPG1000DR and F4DR series can be powered by any 9 to 32 VDC or 8 to 24 VAC 50/60 Hz power source. An inexpensive unregulated low voltage source can be used. The magnitude of the supply voltage has negligible effect on the gauge calibration as long as it is within the stated voltage ranges. Do not allow the gauge supply voltage fall below 9 VDC or 8 VAC RMS. Operation below these values may cause erratic or erroneous readings or output. Models with 4-20 mA output power the current loop. Use a power source with sufficient voltage to operate the current loop. Connection is made with the four conductor cable at the gauge rear. This cable accommodates both the gauge power supply and retransmission output.

Connect power as shown below. When using low voltage AC power, either polarity may be used. Use the correct polarity with a DC supply.

Connect the retransmission output as shown below. Use of the shield (drain) wire is optional. It is not generally needed for 4-20 mA current loops unless very long cable lengths are used in electrically noisy environments.

The power supply (−) lead is tied to the retransmission output ground. Therefore, if a DC supply is used, the power supply (−) lead should be considered common with regard to the retransmission output (−) contact.

If the analog output is not required, the transmitter will function as a low voltage powered gauge. Protect the output wires to prevent a short circuit.

**Using the Retransmission Output**

Never connect retransmission output wires together or to an external power source or permanent damage not covered by warranty will result.

For 4-20 mA output models, be sure to observe the output compliance (voltage drive) capabilities of the gauge. The compliance, and therefore the maximum loop resistance the output can drive, is a function of the supply voltage to the gauge.

Consult the graph shown below for maximum loop resistance vs. power supply voltage. Too large a loop resistance will cause the gauge output to “limit” or saturate before reaching its full 20 mA output.

When using the 0-2 volt retransmission output, do not allow the resistive load on the output to fall below 5 K ohms. Avoid large capacitive loads (greater than 1000 pF) such as those caused by long runs of shielded cable. For long cable runs, use a 4-20 mA output model.

**Voltage Compliance for 4-20 mA Retransmission Output**

<table>
<thead>
<tr>
<th>Supply Voltage (DC or AC RMS)</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>-15 psi</td>
<td>-I</td>
<td>n/a</td>
<td>-1</td>
<td>-2</td>
<td>-3</td>
<td>-4</td>
<td>-5</td>
<td>-6</td>
</tr>
<tr>
<td>20 mA</td>
<td>0</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
<td>24</td>
<td>28</td>
</tr>
<tr>
<td>4 mA</td>
<td>0</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
<td>24</td>
<td>28</td>
</tr>
<tr>
<td>20 mA</td>
<td>0</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
<td>24</td>
<td>28</td>
</tr>
<tr>
<td>4 mA</td>
<td>0</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
<td>24</td>
<td>28</td>
</tr>
</tbody>
</table>

**Operation**

The DPG1000DR and F4DR are designed for continuous operation.

The gauge is powered on whenever a supply voltage is applied. Warm-up time is negligible. During normal operation the system pressure is displayed on the LCD and a corresponding output signal is present.

**Calibration Preparation**

Gauges are calibrated at the factory using equipment traceable to NIST. There is no need to calibrate the gauge before putting it into service. Calibration should only be performed by qualified individuals using appropriate calibration standards and procedures. Gauges can be returned to factory for certified recalibration and repairs. NIST traceability is available.

Calibration intervals depend on your quality control program requirements and as-found data. Many customers calibrate their equipment annually.

The calibration equipment should be at least four times more accurate than the gauge being calibrated. The calibration system must be able to generate and measure pressure and/or vacuum over the full range of the gauge.

A vacuum pump able to produce a vacuum of 100 microns (0.1 torr or 100 millitorr) or lower is required for vacuum and absolute gauges.

Use a stable DC power supply and an accurate mA meter for calibration of 4-20 mA transmitters and an accurate volt meter for calibration of voltage transmitters.

Allow the gauge to equalize to normal room temperature for at least 20 minutes before calibration.

1. See rear label of gauge for range.
2. Remove the covers on the Zero and Span controls on the front of the gauge. Zero calibration must be done before span calibration. If desired, gauges can be zeroed without doing span calibration.
3. Connect gauge to a 9-32 VDC or 8-24 VAC 50/60 Hz power source. The magnitude of the supply voltage has negligible effect on the gauge calibration as long as it is within the stated voltage ranges. Over voltage may result in damage.
4. Zero for gauge reference pressure or vacuum gauges: With the gauge port open to atmospheric, adjust the Zero potentiometer for a display indication of zero with the minus (−) sign occasionally flashing. Output should be 4.0 milliamps for mA output models or 0 volts for voltage output models.
5. Zero for absolute reference gauges: Apply full vacuum to the gauge. Adjust the Zero potentiometer for a display indication of zero with the minus (−) sign occasionally flashing. Output should be 4.0 milliamps for mA output models or 0 volts for 0-2 volt output models.
6. Zero for bipolar gauges: Apply full vacuum to the gauge. Adjust the Zero potentiometer for a display indication of full vacuum. Output should be 4.0 milliamps for mA output models, 0 volts for 0-2 volt output models, or −2 V for bipolar voltage output models.
7. Span for gauge reference pressure, absolute reference, and bipolar gauges: Apply full-scale pressure and adjust the Span potentiometer for a display indication equal to full-scale pressure. Output should be 20.0 milliamps for mA output models or 2 volts for voltage output models.
8. Span for gauge reference vacuum gauges: Apply full vacuum to the gauge. Adjust the Span potentiometer for a display indication equal to full-scale vacuum. Output should be 20.0 milliamps for mA output models or 2 volts for voltage output models.
9. Verify pressure indications at 0%, 25%, 50%, 75%, and 100% of full scale and repeat calibration as needed to achieve best accuracy over desired operating range.
10. Internal Zero and Span potentiometers adjust the analog output to agree with display. These normally do not need to be adjusted. If the output does need adjustment, remove the rear cover to access the potentiometers. See image below. Adjust output Span and then Zero after gauge calibration is complete.
11. Replace the potentiometer covers, rear cover and screws, taking care not to pinch the wires between the case and the rear cover.

**Calibration**

- Use a stable DC power supply and an accurate mA meter for calibration of 4-20 mA transmitters and an accurate volt meter for calibration of voltage transmitters.
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