

**Ranges and Resolution**

See table below. Resolution is fixed as indicated in table.

Consult factory with special requirements or engineering units. For ranges greater than 2000, see F16L series.

abs: absolute reference indicates atmospheric pressure with port open and zero at full vacuum

vac: vacuum gauge, minus sign not used unless specified

|                            |                          |                                 |
|----------------------------|--------------------------|---------------------------------|
| 3.00 psig                  | 230 ftH <sub>2</sub> O   | 199.9 kPa abs                   |
| 5.00 psig                  | 480 ftH <sub>2</sub> O   | 199.9 kPa                       |
| 15.00 psi abs              | 150.0 mmHg               | 400 kPa                         |
| 15.00 psig vac             | 260 mmHg                 | 700 kPa abs                     |
| ±15.0 psig                 | 760 mmHg abs             | 700 kPa                         |
| 3.00-15.00 psig            | 760 mmHg vac             | 1500 kPa                        |
| 15.00 psig                 | 760 mmHg                 | 1999 kPa                        |
| 30.0 psi abs               | 1600 mmHg abs            | 3.50 MPa                        |
| 30.0 psig                  | 1600 mmHg                | 7.00 MPa                        |
| 60.0 psig                  | 760 torr abs             | 14.00 MPa                       |
| 100.0 psi abs              | 1600 torr abs            | 19.99 MPa                       |
| 100.0 psig                 | 1999 mmH <sub>2</sub> O  | 35.0 MPa                        |
| 199.9 psig                 | 199.9 cmH <sub>2</sub> O | 1000 g/cm <sup>2</sup> abs      |
| 300 psig                   | 350 cmH <sub>2</sub> O   | 1000 g/cm <sup>2</sup>          |
| 500 psig                   | 1000 cmH <sub>2</sub> O  | 1999 g/cm <sup>2</sup> abs      |
| 1000 psig                  | 1999 cmH <sub>2</sub> O  | 1999 g/cm <sup>2</sup>          |
| 1999 psig                  | 199.9 mbar               | 1.000 kg/cm <sup>2</sup> abs    |
| 6.00 inHg                  | 350 mbar                 | 1.000 kg/cm <sup>2</sup> vac    |
| 10.00 inHg                 | 1000 mbar abs            | ±1.000 kg/cm <sup>2</sup>       |
| 30.0 inHg abs              | 1000 mbar vac            | 1.000 kg/cm <sup>2</sup>        |
| 30.0 inHg vac              | ±1000 mbar               | 1.999 kg/cm <sup>2</sup> abs    |
| ±30.0 inHg                 | 1000 mbar                | 1.999 kg/cm <sup>2</sup>        |
| 30.0 inHg                  | 1999 mbar abs            | 4.00 kg/cm <sup>2</sup>         |
| 60.0 inHg abs              | 1999 mbar                | 7.00 kg/cm <sup>2</sup> abs     |
| 60.0 inHg                  | 1.000 bar abs            | 7.00 kg/cm <sup>2</sup>         |
| 120.0 inHg                 | 1.000 bar vac            | 14.00 kg/cm <sup>2</sup>        |
| 199.9 inHg abs             | ±1.000 bar               | 19.99 kg/cm <sup>2</sup>        |
| 199.9 inHg                 | 1.000 bar                | 35.0 kg/cm <sup>2</sup>         |
| 50.0 oz/in <sup>2</sup>    | 1.999 bar abs            | 70.0 kg/cm <sup>2</sup>         |
| 80.0 oz/in <sup>2</sup>    | 1.999 bar                | 140.0 kg/cm <sup>2</sup>        |
| 240 oz/in <sup>2</sup> abs | 4.00 bar                 | 199.9 kg/cm <sup>2</sup>        |
| 240 oz/in <sup>2</sup> vac | 7.00 bar abs             | 350 kg/cm <sup>2</sup>          |
| ±240 oz/in <sup>2</sup>    | 7.00 bar                 | 1.000 atm abs                   |
| 240 oz/in <sup>2</sup>     | 14.00 bar                | ±1.000 atm                      |
| 85.0 inH <sub>2</sub> O    | 19.99 bar                | 1.000 atm                       |
| 140.0 inH <sub>2</sub> O   | 35.0 bar                 | 4.00 atm                        |
| 400 inH <sub>2</sub> O abs | 70.0 bar                 | 7.00 atm                        |
| 400 inH <sub>2</sub> O vac | 140.0 bar                | 14.00 atm                       |
| ±400 inH <sub>2</sub> O    | 199.9 bar                | 19.99 atm                       |
| 400 inH <sub>2</sub> O     | 350 bar                  | 35.0 atm                        |
| 850 inH <sub>2</sub> O     | 19.99 kPa                | 70.0 atm                        |
| 7.00 ftH <sub>2</sub> O    | 35.0 kPa                 | 135.0 atm                       |
| 12.00 ftH <sub>2</sub> O   | 100.0 kPa abs            | 199.9 atm                       |
| 35.0 ftH <sub>2</sub> O    | 100.0 kPa vac            | 340 atm                         |
| 70.0 ftH <sub>2</sub> O    | ±100.0 kPa               | For 4-digit ranges see our F16L |
| 140.0 ftH <sub>2</sub> O   | 100.0 kPa                |                                 |

**Accuracy**

Includes linearity, hysteresis, repeatability

Standard: ±0.25% of full scale ±1 least significant digit

Optional: **-HA** ±0.1% FS ±1 LSD (most ranges)

**CD** Factory calibration data

**NC** NIST traceable test report and calibration data

**Display**

3.5 digit LCD, 0.5" digit height (indicates to 1999)  
3 readings per second nominal display update rate

**Controls**

Non-interactive zero and span, ±10% range

Output test adjustment: 0-100% range

Retransmission zero and span: Internal potentiometers

**Loop Supply Voltage**

Any DC supply/loop resistance that maintains 8 to 32 VDC at gauge terminals

Gauge is reverse polarity protected

3 ft long, 2-conductor 22 AWG cable with stripped and tinned wire ends

Use with 9046-24-008 loop power supply

**Output Characteristics**

True analog output, 50 millisecond typical response time  
For proper operation gauge terminal voltage must be above 7.8 VDC at all times.

**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.

**Weight**

9 ounces (approx.), shipping wt. 1 pound (approx.)

**Housing**

Standard: Epoxy powder coated aluminum case and rear cover. ABS/polycarbonate bezel. Front and rear rubber gaskets. Polycarbonate label.

NEMA 4X: UV stabilized ABS/polycarbonate case and rear cover. Gasketed rear cover with six captive stainless steel screws. Polycarbonate label.

**Dimensions**

Standard: 3.38" W x 2.88" H x 1.65" D housing

NEMA 4X: 3.5" W x 3.0" H x 2.0" D housing

Add approximately 0.75" to height for pressure fitting

Add approx. 1" to depth for strain relief and wire clearance

**Connection and Material**

1/4" NPT male fitting

Sensor and all wetted parts are 316L stainless steel

**Overpressure**

Ranges using 3000 psig sensor: 5000 psig

Ranges using 5000 psig sensor: 7500 psig

All others: 2 X pressure range

Vacuum: all 15 psi, 30 psia, all 100 psi, all 200 psi sensors

**Burst Pressure**

4 X 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)

- ±0.25% Test Gauge Accuracy
- 316 Stainless Steel Wetted Parts
- 4-20 mA Analog Output
- Output Test Function



Quick Link  
[cecomp.com/loop](http://cecomp.com/loop)

**How to Order**

Standard: DPG1000L  
NEMA 4X: F4L

Range: See table

Units: See below for codes

Reference: G=gauge, A=absolute, VAC=vacuum

Options: See below

Example: DPG1000L100PSIG-HA

20, 200, 2000 ranges indicate 19.99, 199.9, 1999.

Minus sign not normally used with gauge reference vacuum ranges. If needed, please state on order "Minus sign required."

**Unit Ordering Codes**

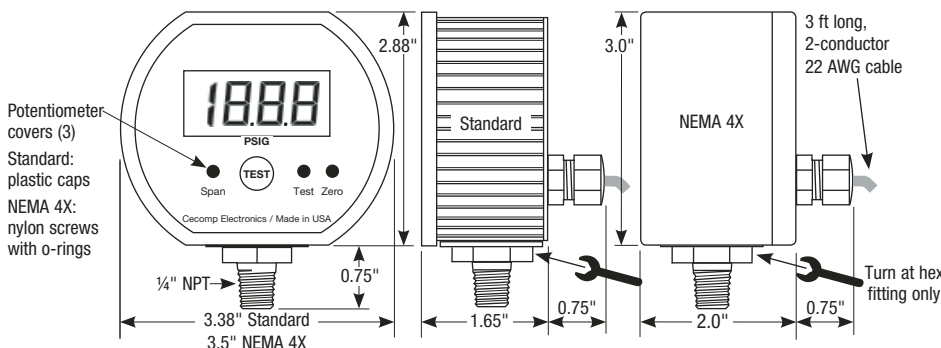
|                            |                            |
|----------------------------|----------------------------|
| psi = PSI                  | kg/cm <sup>2</sup> = KGCM  |
| inHg = INHG                | g/cm <sup>2</sup> = GCM    |
| oz/in <sup>2</sup> = ZIN   | kPa = KPA                  |
| inH <sub>2</sub> O = INH2O | MPa = MPA                  |
| ftH <sub>2</sub> O = FTH2O | mbar = MBAR                |
| mmHg = MMHG                | bar = BAR                  |
| torr = TORR                | cmH <sub>2</sub> O = CMH2O |
| mmH <sub>2</sub> O = MMH2O | atm = ATM                  |

**Options**

|           |  |
|-----------|--|
| <b>HA</b> | High accuracy, ±0.1% FS ±1 LSD. Not available with 3 psi sensor, absolute, or vacuum ranges. |
| <b>PM</b> | Panel mount, 4.1" x 4.1". Not for F4 models.   |
| <b>MC</b> | Metal front cover. Not for F4 models.  |
| <b>CC</b> | Circuit board conformal coating for moisture resistance.                                     |

**Accessories**

|           |   |
|-----------|---|
| <b>CD</b> | Calibration data; 5 test points and date                |
| <b>NC</b> | NIST traceability documentation, 5 test points and date |



## 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 installing the gauge. Configuration may be easier before the gauge is installed. Contact the factory if you have any questions.
- ✓ These products do not contain user-serviceable parts except for batteries. 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.
- ✓ Remove system pressures before removing or installing gauge.
- ✓ Install or remove gauge using a wrench on the hex fitting only. Do not attempt to turn gauge by forcing the housing.
- ✗ Avoid permanent sensor damage! Do not apply vacuum to gauges not designed for vacuum operation.
- ✗ Avoid permanent sensor damage! NEVER insert objects into gauge port or blow out with compressed air.
- ⚠ Gauges are not for oxygen service. Accidental rupture of sensor diaphragm may cause silicone oil inside sensor to react with oxygen.
- ⚠ Hazardous locations as defined by the National Electrical Code (NEC—see nfp.org) require the use of Intrinsically Safe gauges. See cecomp.com or consult factory for assistance.

## Description

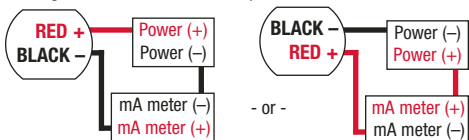
All operating power is supplied by the 4-20 mA current loop. The 2-wire connection allows the DPG100L and F4L to be used as an indicating transmitter in any 4-20 mA current loop application or as a DC powered gauge.

The output is a continuous analog signal based on the transducer output rather than the display. The output is filtered to improve noise immunity and has a response time of about 50 msec. The temperature compensated piezoresistive transducer features 316 stainless steel wetted parts.

The TEST button, when depressed, switches the display and output loop to a preset level determined by the setting of a Test potentiometer. This is useful for testing the 4-20 mA output signal without having to alter system pressure.

## Electrical Connection

Connection to the DPG100L or F4L is made with the 2-wire cable at the gauge rear. Reversing the connections will not harm the gauge but the DPG100L and F4L will not operate with incorrect polarity. See the wiring examples below for connecting to a 4-20 mA current loop.



If the 4-20 mA analog output is not required, the transmitter will function as a low voltage powered pressure gauge when connected to any 8 to 32 VDC power supply. Connect the loop (+) supply to the RED lead and the loop (-) supply to the BLACK lead.



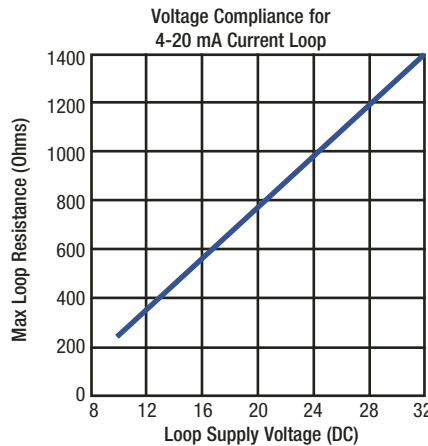
## Loop Voltage

Select a loop power supply voltage and total loop resistance so that when the loop current is 20 mA, the gauge will have at least 8 VDC at its terminals and not exceed 32 VDC.

For correct operation and to avoid erratic or erroneous readings, the gauge terminal voltage must not fall below 8 VDC. Too large a loop resistance will cause the gauge output to "limit" or saturate before reaching its full 20 mA output. The minimum loop supply voltage may be calculated from the formula:

$$V_{min} = 8V + (20mA \times \text{Total loop resistance})$$

If the terminal voltage of the gauge falls below about 7.8 VDC, erratic operation may occur. This is an indication that the loop supply/resistance may not allow adequate headroom for reliable operation. This should never occur in normal use. If it does, examine the loop supply/resistance.



## Operation

The DPG100L and F4L are designed for continuous operation. Warm-up time is negligible. The display will show the system pressure or vacuum, and the loop current also will be proportional to the system pressure/vacuum.

| Sensor                   | Full vacuum | "0" on display | Full pressure |
|--------------------------|-------------|----------------|---------------|
| Gauge reference pressure | n/a         | 4 mA           | 20 mA         |
| Gauge reference vacuum   | 20 mA       | 4 mA           | n/a           |
| Absolute reference       | 4 mA        | 4 mA           | 20 mA         |
| Bipolar ±                | 4 mA        | 12 mA          | 20 mA         |

## Test Function

When the front-panel TEST button is held depressed, the display and loop current are switched, independent of the system pressure, to a test level determined by the setting of the Test potentiometer. This test mode will allow setup and testing of the current loop by switching to this test level whenever desired without having to alter the system pressure.

To set the test output level, see gauge label for location of Test potentiometer. Press and hold the front-panel TEST button and adjust the Test potentiometer to set the display and loop current to the desired test level.

## 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 10 microns (0.01 torr or 10 millitorr) or lower is required for vacuum and absolute gauges. Warning: application of vacuum to non-vacuum models may result in irreparable damage to the sensor.

Use a stable DC power supply and an accurate mA meter for calibration of loop powered transmitters.

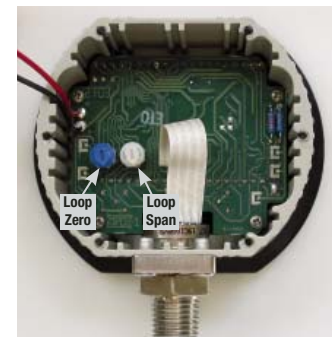
Allow the gauge to equalize to normal room temperature (about 20 minutes minimum) before calibration.

## Calibration

1. See rear label of gauge for pressure range.
2. Remove the covers on the Zero and Span controls on the front of the gauge.
3. Loop-powered gauges must be connected to 9-32 VDC during the calibration procedure. The supply voltage has negligible effects on the gauge calibration as long as it is within the stated voltage ranges. Over voltage may result in damage.
4. Internal Zero and Span potentiometers adjust the agreement between the display and the analog output. 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.
5. Zero for gauge reference pressure or vacuum gauges: With the gauge port open to atmosphere, adjust the Zero potentiometer for a display indication of zero. Output should be 4.0 milliamps.
 

Zero for absolute reference gauges: Apply full vacuum to the gauge. Adjust the Zero potentiometer for a display indication of zero. Output should be 4.0 milliamps.
6. Span for gauge reference pressure gauges and absolute reference 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.
 

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.
7. 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.
8. Replace the potentiometer covers, rear cover and screws, taking care not to pinch the wires between the case and the rear cover.



Cecomp maintains a constant effort to upgrade and improve its products. Specifications are subject to change without notice. Consult factory for your specific requirements.