# Falcon Low Voltage-Powered 4-Wire Indicating Pressure Transmitters

# DPG1000DR
# DPG1000DRBL

## Electrical Specifications

### Ranges and Resolution

**Bold**: Standard ranges, price adder for all others
abs: Absolute reference (atmospheric pressure to zero at full vacuum)
vac: Vacuum gauge, minus sign not used unless specified
**DRBL** (display backlighting) not available in 3000 and 5000 psi ranges
Resolution is fixed as indicated in table below

| | | | | |
|---|---|---|---|---|
| Contact factory for other engineering units | **120.0 inHg** | 1600 mmHg | 35.0 bar | 1.000 kg/cm² abs |
| | 199.9 inHg abs | 760 torr abs | 70.0 bar | 1.000 kg/cm² vac |
| | **199.9 inHg** | 1600 torr abs | 140.0 bar | ±1.000 kg/cm² |
| **3.00 psig** | 50.0 oz/in² | 2100 $mmH_2O$ | 199.9 bar | 1.000 kg/cm² |
| **5.00 psig** | 80.0 oz/in² | 3500 $mmH_2O$ | 350 bar | 1.999 kg/cm² abs |
| 15.00 psi abs | 240 oz/in² abs | 199.9 $cmH_2O$ | 19.99 kPa | 1.999 kg/cm² |
| **15.00 psig vac** | 240 oz/in² vac | 350 $cmH_2O$ | 35.0 kPa | 4.00 kg/cm² |
| ±15.00 psig | ±240 oz/in² | 1000 $cmH_2O$ | 100.0 kPa abs | 7.00 kg/cm² abs |
| **15.00 psig** | 240 oz/in² | 2100 $cmH_2O$ | 100.0 kPa vac | 7.00 kg/cm² |
| 30.0 psi abs | 85.0 $inH_2O$ | 199.9 mbar | ±100.0 kPa | 14.00 kg/cm² |
| **30.0 psig** | 140.0 $inH_2O$ | 350 mbar | 100.0 kPa | 19.99 kg/cm² |
| **60.0 psig** | 400 $inH_2O$ abs | 1000 mbar abs | 199.9 kPa abs | 35.0 kg/cm² |
| 100.0 psi abs | 400 $inH_2O$ vac | 1000 mbar vac | 199.9 kPa | 70.0 kg/cm² |
| **100.0 psig** | ±400 $inH_2O$ | ±1000 mbar | 400 kPa | 140.0 kg/cm² |
| **199.9 psig** | 400 $inH_2O$ | 1000 mbar | 700 kPa abs | 199.9 kg/cm² |
| **300 psig** | 850 $inH_2O$ | 1999 mbar abs | 700 kPa | 350 kg/cm² |
| **500 psig** | 7.00 $ftH_2O$ | 1999 mbar | 1500 kPa | 1.000 atm abs |
| **1000 psig** | 12.00 $ftH_2O$ | 4000 mbar | 1999 kPa | ±1.000 atm |
| **1999 psig** | 35.0 $ftH_2O$ | 1.000 bar abs | 3500 kPa | 1.000 atm |
| 3000 psig | 70.0 $ftH_2O$ | 1.000 bar vac | 5000 kPa | 4.00 atm |
| 5000 psig | 140.0 $ftH_2O$ | ±1.000 bar | 3.50 MPa | 7.00 atm |
| **6.00 inHg** | 230 $ftH_2O$ | 1.000 bar | 7.00 MPa | 14.00 atm |
| **10.00 inHg** | 480 $ftH_2O$ | 1.999 bar abs | 14.00 MPa | 19.99 atm |
| 30.0 inHg abs | 150.0 mmHg | 1.999 bar | 19.99 MPa | 35.0 atm |
| **30.0 inHg vac** | 260 mmHg | 4.00 bar | 35.0 MPa | 70.0 atm |
| ±30.0 inHg | 760 mmHg abs | 7.00 bar abs | 1000 g/cm² abs | 135.0 atm |
| **30.0 inHg** | 760 mmHg vac | 7.00 bar | 1000 g/cm² | 199.9 atm |
| 60.0 inHg abs | 760 mmHg | 14.00 bar | 2100 g/cm² abs | 340 atm |
| **60.0 inHg** | 1600 mmHg abs | 19.99 bar | 2100 g/cm² | |

### Accuracy (linearity, hysteresis, repeatability)

Standard: ±0.25% of full scale ±1 least significant digit
Optional:
**-HA** ±0.1% FS ±1LSD (most ranges)
**-4A** ±0.4% FS ±1LSD
**CD** Factory calibration data
**NC** NIST traceable test report and calibration data

### Display (update rate, type, size)

3 readings per second nominal display update rate
**DR** in ranges up to 1999: 3½ digit LCD, ½" digit height
**DR** in 3000 and 5000 psi ranges: 4 digit LCD, 0.4" digit height
**DRBL** ranges up to 1999: 3½ digit LCD, ½" digit height, red LED backlight

### Controls

Non-interactive zero and span: ±10% range
Test calibration level: 0-100% range
Retransmission zero and span: Internal potentiometers

### Retransmission Output

True analog output, 50 milliseconds typical response time.
**-I** option: Current output, 4-20 mA DC,
Output drive (compliance) determined by power source. See graph.
**-V** option: Voltage output, 0-2 VDC into 5k Ohm or greater

### Test Function

Holding front panel TEST button sets display and retransmission output to "test calibration" level, independent of pressure input to allow testing of system operation. Test level is set by multiturn potentiometer to any value from 0 to 100% of full scale.

### Power

Any AC source of 8 to 24 VAC 50/60 Hz or any DC source of 9 to 32 VDC
**DR**: 30 mA maximum
**DRBL**: approximately 40 mA maximum
3 ft long, 2-conductor 22 AWG cable
All models are designed for continuous operation
Order optional **WMPSK** 12 VDC wall mount power supply kit to operate on 115 VAC

## Environmental Specifications

**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)

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- ***±0.25% Test Gauge Accuracy***
- ***316 Stainless Steel Wetted Parts***
- ***4-20 mA or 0-2 V Analog Output***
- ***4-20 mA Models Power Current Loop***
- ***DRBL Includes Backlit Display***
- ***Output Test Function***




***DPG1000DR200PSIG***
***199.9 psig range***




***DPG1000DR5000PSIG***
***5000 psig range***

## Mechanical Specifications

### Size

3.38" W x 2.88" H x 1.65" D housing
Add approximately 0.75" to height for pressure fitting
Add approximately 1" to depth for strain relief and wire clearance

### Weight (approximate)

Gauge: 9 ounces
Shipping weight: 1 pound

### Material and Color

Extruded aluminum case, epoxy powder coated
Polycarbonate cover. Front and rear gaskets
Light gray body, light gray/blue front

### Pressure/Vacuum Connection and Material

¼" NPT male, 316 stainless steel

### Media Compatibility

All wetted parts are 316 SS
Compatible with most liquids and gases

### Overpressure

3000 psig range and metric equivalents: 5000 psig
5000 psig range and metric equivalents: 7500 psig
All others 2x rated pressure minimum

### Burst Pressure

4x rated pressure minimum or 10,000 psi, whichever is less

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## Installation and Precautions

Install or remove the gauge using wrench on hex fitting only. Do not attempt to tighten by turning housing or any other part of the gauge. Use fittings appropriate for the pressure range of the gauge. Do not apply vacuum to gauges not designed for vacuum operation. Due to the hardness of 316 stainless steel, it is recommended that a thread sealant be used to ensure leak-free operation.

**NEVER** insert objects into the gauge port or blow out with compressed air. Permanent damage not covered by warranty will result to the sensor.

## Electrical Connection

**NEVER** connect the gauge wires directly to 115 VAC or permanent damage not covered by warranty will result.

The **DPG1000DR** and **DPG1000DRBL** 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 4-conductor cable at the gauge rear. This cable accommodates both the gauge power supply and retransmission output. This cable has one RED and one BLACK lead. If using a 9 to 32 VDC power source, connect the (+) supply to the RED lead and the (–) supply to the BLACK lead. If using a 8 to 24 VAC 50/60 Hz power source, connect to the RED and BLACK leads. When using low voltage AC power, there is of course, no polarity consideration.

The (+) retransmission output appears on the WHITE lead, and the (–) retransmission output appears on the GREEN lead. Use of the shield (drain) wire of the retransmission output 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 output is a continuous analog signal based on the transducer output rather than the display. This output is filtered to improve noise immunity and has a response time of about 50 milliseconds.

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 (–) connection.

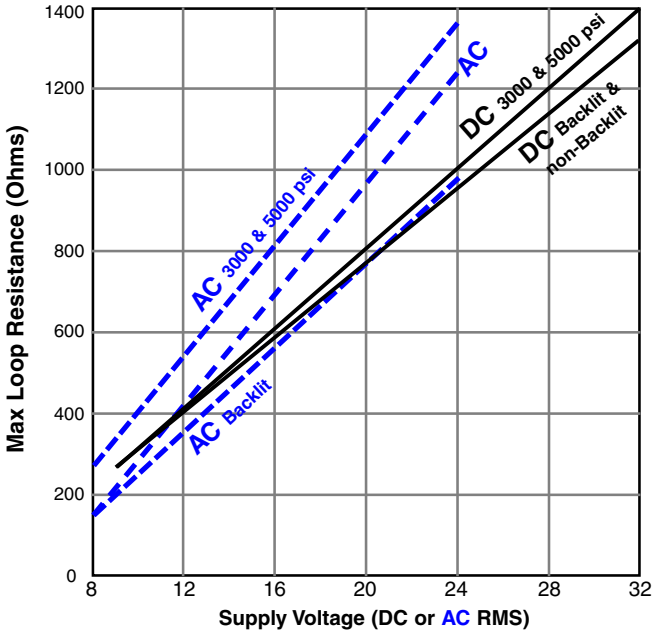
## Using the Retransmission Output

**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 at right for maximum loop resistance vs. gauge 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 5K ohms. Also, avoid large capacitive loads (greater that 1000 pF) such as those caused by long runs of shielded cable. For long retransmission runs, use the 4-20 mA output model instead.

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




## Operation

The gauge is powered on whenever a supply voltage is applied. Warm-up time is negligible. In normal operation, the system pressure is displayed on the LCD and an output signal will be present. DPG1000DRBL model display backlighting will be on whenever power is on. The display backlighting will not be apparent under bright lighting conditions.

## TEST Button

When the front-panel TEST button is held depressed, the display and retransmission output 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 output and any external device(s) connected to it 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 retransmitted output to the desired test level.

## Calibration

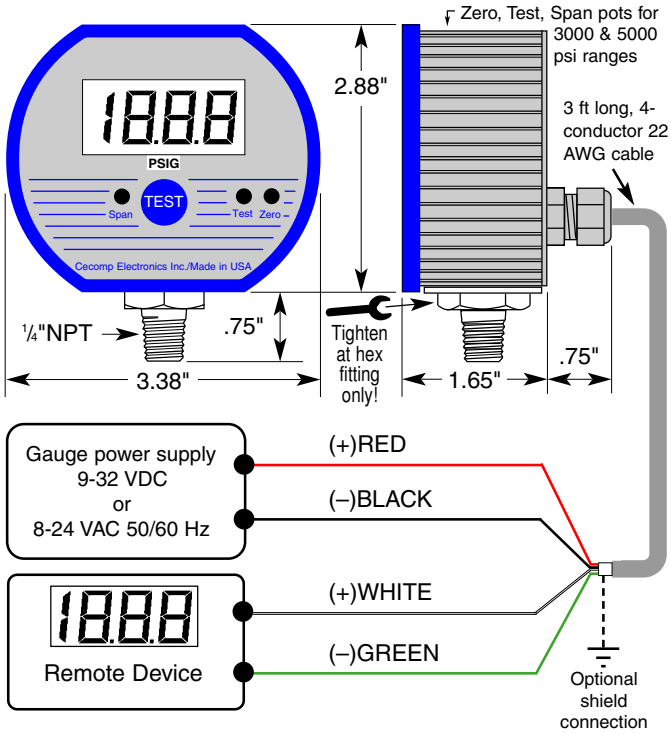
See gauge label for location of controls to adjust the zero and span of the display.

GAUGE reference units may be re-zeroed without affecting the span calibration. The gauge port must be open to the ambient with no pressure/vacuum applied. Adjust the Zero control until the gauge reads zero with the minus (–) sign occasionally flashing.

Span calibration should only be attempted if the user has access to a pressure reference of known accuracy. The quality of the calibration is only as good as the accuracy of the calibration equipment and ideally should be at least four times the gauge accuracy. Zero calibration must be done before span calibration. Record readings at three to five points over the range of gauge and adjust span control to minimize error and meet specifications.

ABSOLUTE reference gauges require vacuum generation and atmospheric pressure measurement equipment for accurate calibration and thus are more difficult to calibrate in the field. Gauges may be returned to Cecomp Electronics for factory certified recalibration. NIST traceability is available.

Internal potentiometers adjust the agreement between the displayed value and the analog output. These are set at the factory and should not normally be adjusted. If adjustment is required, consult factory. Accurate pressure generation and measurement and current measurement equipment are required to successfully complete this calibration.




## Part Numbers

**DPG1000DR or DPG1000DRBL range units ref - output**

Pressure/Vacuum Range (see table)
Units (see table)
**G**=Gauge, **A**=Absolute, **VAC**=Vacuum

**I** = Current 4-20 mA
**V** = Voltage 0-2 V

**Example:** DPG1000DR100PSIG-I = DPG1000DR, 100.0 psig, Current (4-20 mA) output

| Unit Abbreviations | | | |
|---|---|---|---|
| psi = PSI | $ftH_2O$ = FTH2O | $kg/cm^2$ = KGCM | mbar = MBAR |
| inHg = INHG | mmHg = MMHG | $g/cm^2$ = GCM | bar = BAR |
| $oz/in^2$ = ZIN | torr = TORR | kPa = KPA | $cmH_2O$ = CMH2O |
| $inH_2O$ = INH2O | $mmH_2O$ = MMH2O | MPa = MPA | atm = ATM |



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