

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.

† -HA option is for output only and not supported by display					
± -HA option not available					
PSI	Res	inH ₂ O	Res	mmH ₂ O	Res
3PSIG [†]	.01	85INH20G [†]	.1	2000MMH20G [†]	1
5PSIG	.01	140INH20G	.1	cmH ₂ O	Res
15PSIA [†]	.01	400INH20A [†]	1	200CMH20G [†]	.1
15PSIAC [†]	.01	400INH20AC [†]	1	350CMH20G [†]	1
±15PSIG [†]	.1	±400INH20G [†]	1	1000CMH20A [†]	1
15PSIG	.01	400INH20G	1	1000CMH20AC [†]	1
30PSIA [†]	.1	850INH20A [†]	1	±1000CMH20G [†]	1
30PSIG [†]	.1	850INH20G	1	1000CMH20G	1
60PSIG	.1	ftH ₂ O	Res	2000CMH20A [†]	1
100PSIA [†]	.1	7FTH20 [†]	.01	2000CMH20G	1
100PSIG	.1	12FTH20	.01	kPa	Res
200PSIG	.1	35FTH20 [†]	.1	20KPAG [†]	.01
300PSIG [†]	1	70FTH20	.1	35KPAG [†]	.1
500PSIG	1	140FTH20	.1	100KPAA [†]	.1
1000PSIG	1	230FTH20 [†]	1	100KPAVAC [†]	.1
2000PSIG	1	480FTH20	1	±100KPAG [†]	.1
oz/in ²	Res	700FTH20	1	100KPAG	.1
50ZING [†]	.1	1150FTH20	1	200KPA [†]	.1
80ZING	.1	mmHg	Res	200KPAG	.1
240ZINA [†]	1	150MMHG [†]	.1	400KPAG	1
240ZINAC [†]	1	260MMHG [†]	1	700KPA [†]	1
±240ZING [†]	1	760MMHGA [†]	1	700KPAG	1
240ZING [†]	1	760MMHG [†]	1	1400KPAG	1
480ZINA [†]	1	±760MMHG [†]	1	2000KPAG	1
480ZING	1	760MMHGG	1	MPa	Res
inHg	Res	1600MMHGA [†]	1	1.4MPAG	.001
6INHGG [†]	.01	1600MMHGG	1	2MPAG	.001
10INHGG	.01	Torr	Res	3.5MPAG [†]	.01
30INHGA [†]	.1	760TORRA [†]	1	7MPAG	.01
30INHGVAC [†]	.1	760TORRVAC [†]	1	14MPAG	.01
±30INHGG [†]	.1	1600TORRA [†]	1	20MPAG	.01
30INHGG [†]	.1	mbar	Res	35MPAG [†]	.1
60INHGA [†]	.1	200MBARG [†]	.1	g/cm ²	Res
60INHGG	.1	350MBARG [†]	1	200GCMG [†]	.1
120INHGG	.1	1000MBARA [†]	1	350GCMG [†]	1
200INHGA [†]	.1	1000MBARVAC [†]	1	1000GCGMA [†]	1
200INHGG	.1	±1000MBARG [†]	1	1000GCMVAC [†]	1
400INHGG	1	1000MBARG	1	±1000GCMG [†]	1
600INHGG	1	2000MBARA [†]	1	1000GCMG	1
1000INHGG	1	2000MBARG	1	2000GCGMA [†]	1
2000INHGG	1	bar	Res	2000GCMG	1
atm	Res	1BARA [†]	.001	kg/cm ²	Res
1ATMA [†]	.001	1BARVAC [†]	.001	1KGCMA [†]	.001
1ATMVAC [†]	.001	±1BARG [†]	.001	1KGCMVAC [†]	.001
±1ATMG [†]	.001	1BARG	.001	±1KGCMG [†]	.001
1ATMG	.001	2BARA [†]	.001	1KGCMG	.001
2ATMA [†]	.001	2BARG	.001	2KGCMA [†]	.001
2ATMG	.001	4BARG	.01	2KGCMG	.001
4ATMG	.01	7BARA [†]	.01	4KGCMG	.01
7ATMA [†]	.01	7BARG	.01	7KGCMA [†]	.01
7ATMG	.01	14BARG	.01	7KGCMG	.01
14ATMG	.01	20BARG	.01	14KGCMG	.01
20ATMG	.01	35BARG [†]	.1	20KGCMG	.01
34ATMG [†]	.1	70BARG	.1	35KGCMG [†]	.1
70ATMG	.1	140BARG	.1	70KGCMG	.1
140ATMG	.1	200BARG	.1	140KGCMG	.1
200ATMG	.1	350BARG [†]	1	200KGCMG	.1
340ATMG [†]	1			350KGCMG [†]	1

Accuracy

Includes linearity, hysteresis, repeatability
 Standard: ±0.25% of full scale ±1 least significant digit
 Optional: **HA** ±0.1% FS ±1 LSD, see table for availability
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
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
-I version: Current output, 4-20 mA DC, output drive (compliance) determined by power source. See graph on other side.
-V version: Voltage output, 0-2 VDC into 5k ohm or greater. Output is 0-1-2 V with ±15 psi sensor.
-BV version: Voltage output, ±2 VDC into 5k 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
DR: 30 mA maximum
DRBL: Approximately 40 mA maximum

Weight

9.5 ounces (approx.)
 Shipping wt. 1 pound (approx.)

Housing

DPG1000DR: Extruded aluminum case, epoxy powder coated, ABS/polycarbonate bezel (aluminum bezel optional), front and rear gaskets, polycarbonate label
F4DR: ABS/polycarbonate NEMA 4X case, rear gasket, polycarbonate label

Connection, Material, Media Compatibility

1/4" NPT male fitting, 316L stainless steel
 All wetted parts are 316L stainless steel
 Compatible with most liquids and gases

Overpressure

2 X pressure range for 3 psi to 2000 psi sensors
 5000 psig for ranges using 3000 psig sensor
 7500 psig for ranges using 5000 psig sensor
 Vacuum service: ±15 psi, 15 psig, 30 psia, 100 psig, 100 psia, 200 psig, 200 psia 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
- Low Voltage Powered
- 4-20 mA or 0-2 V Analog Output
- Output Test Function



DPG1000DR



F4DR

Quick Link
cecomp.com/xmtr

How to Specify	Type
DPG1000DR range - output - options	Standard housing
DPG1000DRBL range - output - options	Standard housing, backlit display
F4DR range - output - options	NEMA 4X housing
F4DRBL range - output - options	NEMA 4X housing, backlit display

Range—see table at left

psi = PSI torr = TORR mbar = MBAR
 inHg = INHG mmH₂O = MMH2O bar = BAR
 oz/in² = ZIN kg/cm² = KGCM cmH₂O = CMH2O
 ftH₂O = INH2O g/cm² = GCM atm = ATM
 inH₂O = FTH2O kPa = KPA
 mmHg = MMHG MPa = MPA

G = gauge reference pressure
 VAC = gauge reference vacuum
 A = absolute reference

Ranges listed as 20, 200, or 2000 display 19.99, 199.9, or 1999

If vacuum gauge requires a minus sign, please specify

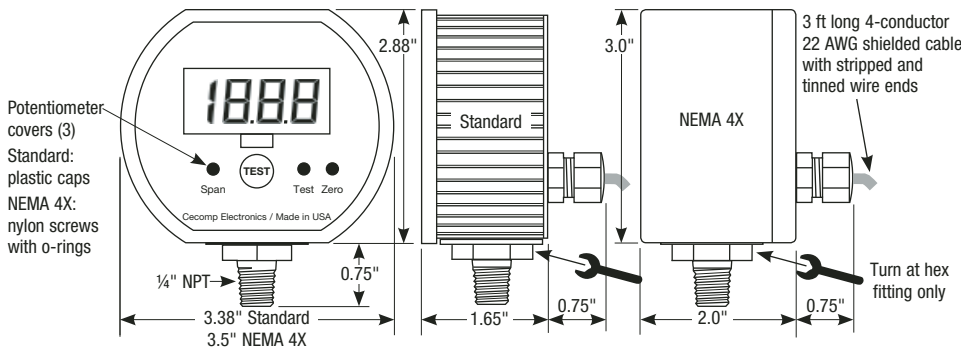
Output

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

Options	add to end of model number
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
Accessories —order separately	
CD	Calibration data; 5 test points and date
NC	NIST traceability documentation, 5 points and date
WMPSK	Wall mount power supply kit, 115 VAC/12 VDC

Examples

DPG1000DR100PSIG-HA: 100 psig, high accuracy
 F4DRBL-100V700KPAG: NEMA 4X, backlit display -100 to 700 kPa



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.
- ✓ 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.
- ✓ Good design practice dictates that positive displacement liquid pumps include protection devices to prevent sensor damage from pressure spikes, acceleration head, and vacuum extremes.
- ✗ Avoid permanent sensor damage! Do not apply vacuum to non-vacuum gauges or hydraulic vacuum to any gauges.
- ✗ 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.
- ✗ NEVER connect the gauge wires directly to 115 VAC or permanent damage will result.

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.

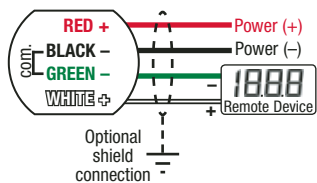
Connection is made with the four conductor cable at the gauge rear. This cable accommodates both the gauge power supply and retransmission output.

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 (-) connection.

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

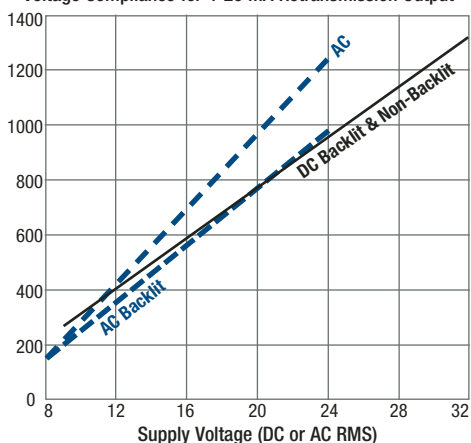
NEVER connect retransmission output wires together or to an external power source or permanent damage not covered by warranty will result.

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 5K 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



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.

DPG1000DRBL and F4DRBL display backlighting are on whenever the power is on. The display backlighting will not be apparent under bright lighting conditions.

Output Ranges

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. Characteristics of the output types are listed below. Values are factory set. Note that -15 psi, -100 kPa, etc. is not achievable, but prevents running out of range at whatever full vacuum is reached.

Range Type	Output Option	-15 psi	"0" on display	Full pressure
Gauge reference pressure	-I	n/a	4 mA	20 mA
	-V	n/a	0 V	2 V
Gauge reference vacuum	-I	20 mA	4 mA	n/a
	-V	2 V	0 V	n/a
Absolute reference	-I	4 mA	4 mA	20 mA
	-V	0 V	0 V	2 V
Vacuum/pressure ranges using ±15 psi sensor	-I	4 mA	12 mA	20 mA
	-V	0 V	1 V	2 V
	-BV	-2 V	0 V	2 V

Test Function

When the front-panel TEST button is held depressed, the display and analog 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 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. Remove the Test potentiometer cover. Press and hold the front-panel TEST button and adjust the Test potentiometer to set the display and output to the desired test level.

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

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.

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 atmosphere, 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.
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.
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.
5. **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.
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.
6. 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.
7. 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.
8. Replace the potentiometer covers, rear cover and screws, taking care not to pinch the wires between the case and the rear cover.

