

Ranges and Resolution

Use range codes below to build model number.
Engineering units and resolution are factory set.
20, 200, 2000 ranges display 19.99, 199.9, 1999 respectively.
See **F16DR** for more ranges, resolution, high accuracy options.

PSI	Res	inHg	Res	mbar	Res
3PSIG	0.01	6INHG	0.01	200MBARG	0.1
5PSIG	0.01	10INHG	0.01	350MBARG	1
15PSIA	0.01	30INHGA	0.1	1000MBARA	1
15PSIVAC	0.01	30INHGVAC	0.1	1000MBARVAC	1
15PSIG	0.01	30INHGG	0.1	1000MBARG	1
30PSIA	0.1	60INHGA	0.1	2000MBARA	1
30PSIG	0.1	60INHGG	0.1	2000MBARG	1
60PSIG	0.1	120INHGG	0.1	bar	Res
100PSIA	0.1	200INHGA	0.1	1BARA	0.001
100PSIG	0.1	200INHGG	0.1	1BARVAC	0.001
200PSIG	0.1	400INHGG	1	1BARG	0.001
300PSIG	1	600INHGG	1	2BARA	0.001
500PSIG	1	1000INHGG	1	2BARG	0.001
1000PSIG	1	2000INHGG	1	4BARG	0.01
2000PSIG	1	Torr	Res	7BARA	0.01
oz/in2	Res	760TORRA	1	7BARG	0.01
48ZING	0.1	760TORRVAC	1	14BARG	0.01
50ZING	0.1	1600TORRA	1	20BARG	0.01
80ZING	0.1	mmHg	Res	35BARG	0.1
240ZINA	1	150MMHGG	0.1	70BARG	0.1
235ZINVAC	1	260MMHGG	1	140BARG	0.1
240ZING	1	760MMHGA	1	200BARG	0.1
480ZINA	1	760MMHGVAC	1	350BARG	1
480ZING	1	760MMHGG	1	MPa	Res
960ZING	1	1600MMHGA	1	1.4MPAGVAC	0.001
1600ZING	1	1600MMHGG	1	1.4MPAG	0.001
inH2O	Res	kPa	Res	2MPAG	0.001
85INH20G	0.1	20KPAG	0.01	3.5MPAG	0.01
140INH20G	0.1	35KPAG	0.1	7MPAG	0.01
400INH20A	1	100KPAA	0.1	14MPAG	0.01
400INH20VAC	1	100KPAVAC	0.1	20MPAG	0.01
400INH20G	1	100KPAG	0.1	35MPAG	0.1
850INH20A	1	200KPAA	0.1	g/cm2	Res
850INH20G	1	200KPAG	0.1	200GCMG	0.1
1700INH20G	1	400KPAG	1	350GCMG	1
ftH2O	Res	700KPAA	1	1000GCMG	1
7FTH2O	0.01	700KPAG	1	1000GCMVAC	1
12FTH2O	0.01	1400KPAG	1	1000GCMG	1
35FTH2O	0.1	2000KPAG	1	2000GCMG	1
70FTH2O	0.1	atm	Res	2000GCMG	1
140FTH2O	0.1	1ATMA	0.001	kg/cm2	Res
200FTH2O	0.1	1ATMVAC	0.001	1KGCMG	0.001
230FTH2O	1	1ATMG	0.001	1KGCMVAC	0.001
460FTH2O	1	2ATMA	0.001	1KGCMG	0.001
700FTH2O	1	2ATMG	0.001	2KGCMG	0.001
1150FTH2O	1	4ATMG	0.01	2KGCMG	0.001
mmH2O	Res	7ATMA	0.01	4KGCMG	0.01
2000MMH20G	1	7ATMG	0.01	7KGCMG	0.01
cmH2O	Res	14ATMG	0.01	7KGCMG	0.01
200CMH20G	0.1	20ATMG	0.01	14KGCMG	0.01
350CMH20G	1	34ATMG	0.1	20KGCMG	0.01
1000CMH20A	1	70ATMG	0.1	35KGCMG	0.1
1000CMH20VAC	1	136ATMG	0.1	70KGCMG	0.1
1000CMH20G	1	140ATMG	1.1	140KGCMG	0.1
2000CMH20A	1	200ATMG	0.1	200KGCMG	0.1
2000CMH20G	1	340ATMG	1	350KGCMG	1

Accuracy

Accuracy includes linearity, hysteresis, repeatability
Accuracy: $\pm 0.25\%$ of full scale ± 1 least significant digit
Sensor hysteresis: $\pm 0.015\%$ FS, included in accuracy
Sensor repeatability: $\pm 0.01\%$ FS, included in accuracy

Display

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

Controls

Non-interactive zero and span, $\pm 10\%$ 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

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** 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: NEMA 2 gray coated extruded aluminum case, ABS/polycarbonate bezel, front and rear gaskets, polycarbonate label.

F4DR: NEMA 4X UV stabilized ABS/polycarbonate case, polycarbonate display window, polycarbonate front label, rear gasket, six stainless steel cover screws. Not intended for permanent outdoor installations.

Connection, Material, Media Compatibility

1/4" NPT male fitting, Wetted parts are 316L stainless steel

Overpressure, Burst, Vacuum

Ranges using 3000 psig sensor: 5000 psig
Ranges using 5000 psig sensor: 7500 psig
All others: 2 X pressure range

Sensor burst: 4 X sensor pressure rating, or 10,000 psi, whichever is less

Vacuum service: 15 psia, ± 15 psig, 15 psig, 30 psia, 100 psig, 100 psia, 200 psig sensors

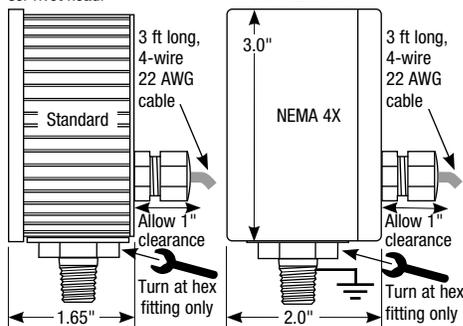
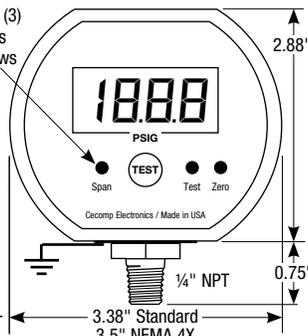
Environmental Temperatures

Storage temperature: -40 to 203°F (-40 to 95°C)
Operating temperature: -4 to 180°F (-20 to 82°C)
Sensor compensated range: 32 to 158°F (0 to 70°C)

Potentiometer covers (3)

Standard: plastic caps
NEMA 4X: nylon screws with o-rings

Non-metallic system installations require connecting gauge sensor to earth ground to avoid static electricity damage to gauge. Attach ground wire using a ring terminal and a #2 x 1/4" long sheet metal screw driven into sensor rivet head.



- $\pm 0.25\%$ Test Gauge Accuracy
- 316 Stainless Steel Wetted Parts
- Low Voltage Powered
- 4-20 mA or 0-2 V Analog Output
- Output Test Function



DPG1000DR



NEMA 4X Housing

F4DR

Standard Housing	Output	Display
DPG1000DR range - I - options	4-20 mA	Standard
DPG1000DR range - V - options	0-2 V	Standard
DPG1000DRBL range - I - options	4-20 mA	Backlit
DPG1000DRBL range - V - options	0-2 V	Backlit
NEMA 4X Housing	Output	Type
F4DR range - I - options	4-20 mA	Standard
F4DR range - V - options	0-2 V	Standard
F4DRBL range - I - options	4-20 mA	Backlit
F4DRBL range - V - options	0-2 V	Backlit

Range Codes: See table at left

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

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

If vacuum gauge requires a minus sign, please specify. Range codes listed as 2, 20, 200, or 2000 display 1.999, 19.99, 199.9, or 1999 respectively.

Options: add to end of model number. Factory installed only. See cecomp.com/accessories for details.

PM	Panel mount, 4.1" x 4.1", n/a NEMA 4X
CC	Moisture resistant circuit board conformal coating
Calibration Certificate: add to end of model number	
NC	NIST traceability documentation, 5 points and date

Accessories: Order separately

WMPSK Power Supply Kit

UL listed 100-240 VAC (50/60 Hz) to 12 VDC, 700 mA output wall-mount power supply with US-style 2-prong plug and a 6 ft long two-conductor wire. Includes a moisture-resistant crimp connector.



SCR14SS Filter Screen

Filter screen fitting keeps debris out of gauge sensor. Use for food vacuum packaging applications. 303 SS body, 100 micron 304 SS screen.



Precautions

- ✓ Read and understand all instruction sheet information. Contact us for help, instructions, or repairs.
- ✓ **Use specified power only.** Improper voltages will damage the gauge. NEVER connect the gauge power wires directly to an electrical outlet or permanent damage will result.
- ✓ Gauges are not intended for permanent outdoor use. Protect from weather and excessive humidity. NEMA 4X models are available for temporary outdoor use and wash down areas.
- ✓ Install gauge so it is protected from impact damage.
- ✓ Media temperature and gauge ambient temperature must be within specified ranges.
- ✓ Use a screen or filter to avoid clogging gauge port when measuring contaminated media.
- ✓ Use thread sealant to ensure leak-free operation.
- ✓ Media being measured must be compatible with 316L SS.
- ✓ Avoid sensor damage! Sensor diaphragm is thin 316L SS foil. Never insert objects into the gauge port or blow out with compressed air.
- ✓ Avoid sensor damage! Hydraulic or liquid pumping systems must include a shock suppressor to protect gauge sensor from damaging pressure spikes or water hammer.
- ✓ Avoid sensor damage! Do not apply vacuum to non-vacuum gauges or hydraulic vacuum to any gauge.
- △ Do not exceed pressure range indicated on gauge label.
- △ Remove system pressure before removing or installing gauge.
- △ Use fittings appropriate for the pressure range of the gauge.
- △ Gauges are not for oxygen service. Accidental rupture of sensor diaphragm may cause silicone oil inside sensor to react with oxygen.
- △ Only gauges marked as Intrinsically Safe can be used in hazardous locations or in the presence of flammable or explosive substances, or atmospheres.



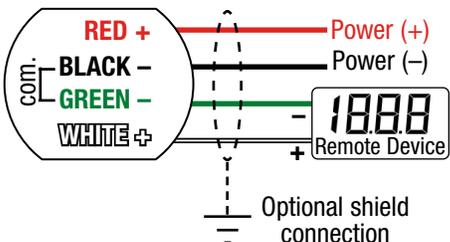
Cecomp maintains a constant effort to upgrade and improve its products. Specifications are subject to change without notice. See cecomp.com for latest product information. Consult factory for your specific requirements.

Types of Gauges

Gauge reference types read zero with the gauge port open. 500 psi and higher sensor are a sealed reference type. They read zero with the gauge port open are internally referenced to 14.7 psi and are functionally similar to gauge reference models. Absolute reference gauges read zero at full vacuum and atmospheric pressure with the gauge port open. Open port readings will vary continuously due to the effects of barometric pressure.

Electrical Connections

These models can be powered by any 9 to 32 VDC or 8 to 24 VAC 50/60 Hz power source. For -I current output models, see "Using the Retransmission Output" above right to ensure the supply voltage is sufficient to drive the 4-20 mA output over its entire range. Do not allow the gauge supply voltage to fall below 9 VDC or 8 VAC_{RMS}. Operation below these values may cause erratic or erroneous readings or output. The 4-20 mA output version powers the current loop. Use a power source with sufficient voltage to operate the current loop throughout its entire range. The four conductor cable at the gauge rear accommodates both the gauge power supply and retransmission output. Connect power as shown. When using low voltage AC power, either polarity may be used. Use the correct polarity with a DC supply. Connect the output as shown. 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 (-) is tied to the retransmission output ground. Therefore, if a DC supply is used, the power supply (-) should be considered common with the retransmission output (-) connection. If the analog output is not being used, protect the output wires to prevent a short circuit.



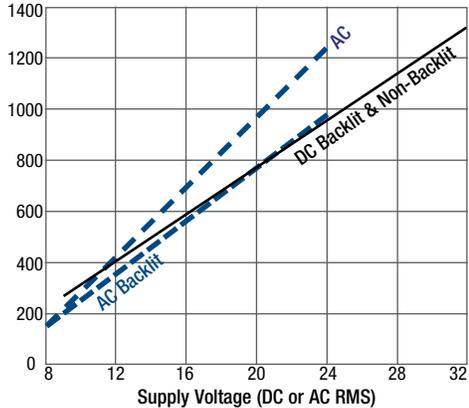
Retransmission Output

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



Test Function

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.

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.

Operation

The DPG100DR 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 the output signal corresponds to the pressure.

DPG100DRBL and F4DRBL display backlighting are on whenever the power is on. The display backlighting may not be apparent under bright lighting conditions.

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. are not achievable, but prevents running out of range at whatever full vacuum is reached.

Range Type	Output Option	Full vacuum	"0" on display	Full pressure
Gauge ref. pressure	-I	n/a	4 mA	20 mA
Gauge ref. vacuum	-I	20 mA	4 mA	n/a
Absolute reference	-I	4 mA	4 mA	20 mA
Gauge ref. pressure	-V	n/a	0 V	2 V
Gauge ref. vacuum	-V	2 V	0 V	n/a
Absolute reference	-V	0 V	0 V	2 V

Calibration Preparation

Gauges are factory calibrated at approximately 23°C using NIST traceable calibration equipment. Calibration is not required before using the gauge.

Calibration intervals depend on your quality standards, but annual re-calibration is customary. Calibration should be performed by qualified individuals using appropriate calibration standards and procedures.

Gauges may be returned to the factory for recalibration and repairs. NIST traceability is available.

The calibration equipment should be at least four times more accurate than the gauge being calibrated and 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. Warning: Never apply vacuum to gauge not designated for vacuum service. Permanent sensor damage may result.

Use a 9 to 32 VDC or 8 to 24 VAC 50/60 Hz power supply and an accurate mA meter for calibration of 4-20 mA transmitters and an accurate volt meter for calibration of voltage transmitters. For -I current output models, see "Retransmission Output" above left to ensure the supply voltage is sufficient to drive the 4-20 mA output over its entire range. Over voltage may cause damage.

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

For an as-found report, record readings at three to five points over the range of gauge.

For DPG1000DR models remove the black front potentiometer covers to access the zero and span calibration potentiometers.

F4DR models use white nylon screws with an o-ring to protect the potentiometers. These must be removed first to access the zero and span calibration potentiometers.

Calibration

1. See the rear label of gauge for the range.
2. 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.
3. Zero calibration must be done before span calibration. If desired, gauge can be zeroed without doing span calibration.

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. If not, adjust the rear internal Output Zero potentiometer.

Zero for absolute reference gauges: Apply full vacuum to the gauge. Adjust the Zero potentiometer to match the gauge's display to your calibrator's absolute vacuum reading. It may be zero or close to it depending on the ability of the vacuum pump.

At zero, the output should be 4.0 milliamps for mA output models or 0 volts for 0-2 volt output models. If not, adjust the rear internal Output Zero potentiometer.

4. **Span for all gauges:** A setting that is 75% of full scale vacuum or pressure (depending on gauge type) works well to minimize mid-range non-linearity. Adjust the Span potentiometer to match the gauge's display to your calibrator's reading. At 75% of full scale, output should be 16.0 milliamps for mA output models or 1.5 volts for voltage output models. If not, adjust the rear internal Output Span potentiometer.
5. 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.
6. Replace the potentiometer covers, rear cover and screws.

