

Ranges and Resolution

See table below for popular ranges. Consult factory for special engineering units. Resolution is fixed as indicated. For ranges requiring 4 digits or more display resolution use F16L. For pressure ranges greater than 2000 psi use model F16L3000PSIG or F16L5000PSIG. See www.cecomp.com/loop

† -HA option is for output only and not supported by display
‡ -HA option not available

PSI	Res	inHg	Res	mmH ₂ O	Res
3PSIG†	.01	6INHG‡	.01	2000MMH2O‡	1
5PSIG†	.01	10INHG‡	.01	cmH ₂ O	Res
15PSIA	.01	30INHG†	.1	200CMH2O‡	.1
15PSIVAC‡	.01	30INHG‡	.1	350CMH2O‡	1
±15PSIG†	.1	±30INHG‡	.1	1000CMH2O†	1
3-15PSIG†	.01	30INHG‡	.1	1000CMH2O‡	1
15PSIG	.01	60INHG†	.1	±1000CMH2O‡	1
30PSIA†	.1	60INHG‡	.1	1000CMH2O‡	1
30PSIG†	.1	120INHG‡	.1	2000CMH2O†	1
60PSIG	.1	200INHG†	.1	2000CMH2O‡	1
100PSIA	.1	200INHG‡	.1	g/cm ²	Res
100PSIG	.1	400INHG‡	1	200GCMG†	.1
200PSIG	.1	600INHG‡	1	350GCMG†	1
300PSIG†	1	1000INHG‡	1	1000GCM†	1
500PSIG	1	2000INHG‡	1	1000GCMVAC‡	1
1000PSIG	1	mbar	Res	±1000GCMG†	1
2000PSIG	1	200MBARG†	.1	1000GCMG	1
oz/in ²	Res	350MBARG†	1	2000GCM†	1
50ZING†	.1	1000MBARA	1	2000GCMG	1
80ZING†	.1	1000MBARVAC‡	1	kg/cm ²	Res
240ZINA	1	±1000MBARG†	1	1KGCMA	.001
240ZINVAC‡	1	1000MBARG	1	1KGCMVAC‡	.001
±240ZING†	1	2000MBARA	1	±1KGCMG†	.001
240ZING†	1	2000MBARG	1	1KGCMG	.001
480ZINA	1	bar	Res	2KGCMA	.001
480ZING	1	1BARA	.001	2KGCMG	.001
inH ₂ O	Res	1BARVAC‡	.001	4KGCMG	.01
85INH20G†	.1	±1BARG†	.001	7KGCMA	.01
140INH20G†	.1	1BARG	.001	7KGCMG	.01
400INH20A	1	2BARA	.001	14KGCMG	.01
400INH20VAC†	1	2BARG	.001	20KGCMG	.01
±400INH20G†	1	4BARG	.01	35KGCMG†	.1
400INH20G	1	7BARA	.01	70KGCMG	.1
850INH20A	1	7BARG	.01	140KGCMG	.1
850INH20G	1	14BARG	.01	200KGCMG	.1
ftH ₂ O	Res	20BARG	.01	350KGCMG†	1
7FTH20†	.01	35BARG†	.1	kPa	Res
12FTH20†	.01	70BARG	.1	20KPAG†	.01
35FTH20†	.1	140BARG	.1	35KPAG†	.1
70FTH20	.1	200BARG	.1	100KPAA	.1
140FTH20	.1	350BARG†	1	100KPAVAC†	.1
230FTH20†	1	atm	Res	±100KPAG†	.1
480FTH20	1	1ATMA	.001	100KPAG	.1
700FTH20	1	1ATMVAC†	.001	200KPAA	.1
1150FTH20	1	±1ATMG†	.001	200KPAG	.1
mmHg	Res	1ATMG	.001	400KPAG	1
150MMHG‡	.1	2ATMA	.001	700KPAA	1
260MMHG‡	.1	2ATMG	.001	700KPAG	1
760MMHGA	1	4ATMG	.01	1400KPAG	1
760MMHG‡	1	7ATMA	.01	2000KPAG	1
±760MMHG‡	1	7ATMG	.01	MPa	Res
760MMHG	1	14ATMG	.01	1.4MPAG	.001
1600MMHGA	1	20ATMG	.01	2MPAG	.001
1600MMHG	1	34ATMG†	.1	3.5MPAG†	.01
Torr	Res	70ATMG	.1	7MPAG	.01
760TORRA	1	140ATMG	.1	14MPAG	.01
760TORRVAC†	1	200ATMG	.1	20MPAG	.01
1600TORRA	1	340ATMG†	1	35MPAG†	.1

Accuracy

Accuracy includes linearity, hysteresis, repeatability
Standard accuracy: ±0.25% of full scale ±1 least significant digit

HA accuracy option: ±0.1% FS ±1 LSD, see ranges for availability

Sensor hysteresis: ±0.015% FS, included in accuracy
Sensor repeatability: ±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

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

Output Characteristics

True analog output, 50 millisecond typical response time
For proper operation gauge terminal voltage must be above 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 2.

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

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

Burst Pressure

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

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)

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



DPG1000L

Quick Link
cecomp.com/loop



NEMA 4X Housing

F4L

How to Specify	Type
DPG1000L range - options	Standard housing
F4L range - options	NEMA 4X housing

Range—see table at left
psi = PSI mmHg = MMHG kPa = KPA
inHg = INHG torr = TORR MPa = MPA
oz/in² = ZIN mmH₂O = MMH2O mbar = MBAR
inH₂O = INH2O kg/cm² = KCGM bar = BAR
ftH₂O = FTH2O cmH₂O = CMH2O atm = ATM
g/cm² = GCM
G = gauge reference pressure
VAC = gauge reference vacuum
A = absolute reference

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.

HA	High accuracy, ±0.1% FS ±1 LSD. See range table at left for availability.
PM	Panel mount, 4.1" x 4.1", n/a NEMA 4X
CC	Moisture resistant circuit board conformal coating
Calibration Cert. Options —add to end of model number	
CD	Calibration data; 5 test points and date
NC	NIST traceability documentation, 5 points and date

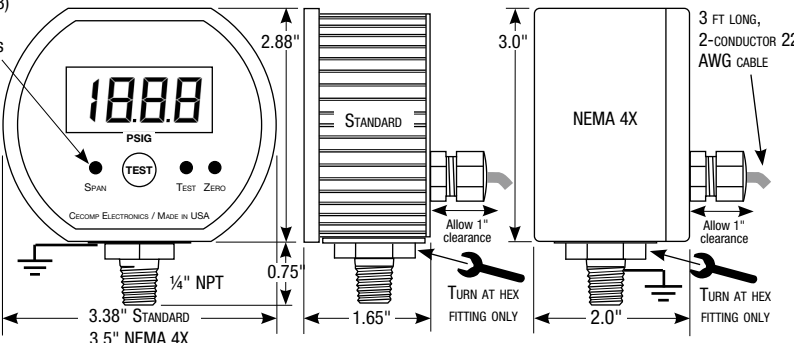
SCR14SS

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



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.



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.

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.



WARNING: This product can expose you to chemicals including nickel and chromium, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Disposal of Electrical & Electronic Equipment for the EU and other European countries with separate collections programs. This symbol, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead use a municipal electronics waste collection facility. You may also return this product to via pre-paid shipping to Absolute Process Instruments or your supplier for proper disposal.



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.

Operation

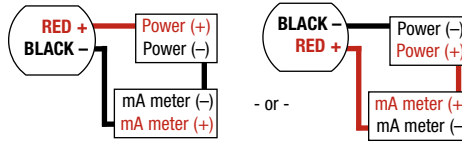
All operating power is supplied by the 4-20 mA current loop. The 2-wire connection allows the DPG1000L and F4L to be used as an indicating transmitter in any 4-20 mA current loop application or as a DC powered gauge.

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 DPG1000L or F4L is made with the 2-wire cable at the gauge rear. Reversing the connections will not harm the gauge but the DPG1000L 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

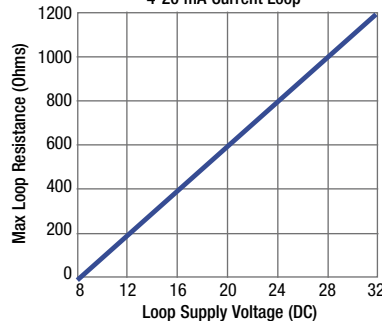
Select a loop power supply voltage and total loop resistance so that when the loop current is 20 mA, the gauge will have at least 8 VDC at its terminals and not exceed 32 VDC.

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 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.

Voltage Compliance for 4-20 mA Current Loop



Operation

The DPG1000L 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

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 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.

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. 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.

