

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 **F16AD** for higher ranges, resolution, and accuracy.

PSI	Res	inH2O	Res	bar	Res
3PSIG	0.01	85INH2OG	0.1	1BARA	0.001
5PSIG	0.01	140INH2OG	0.1	1BARVAC	0.001
15PSIA	0.01	400INH2OA	1	±1BARG	0.001
15PSIVAC	0.01	400INH2OVAC	1	1BARG	0.001
±15PSIG	0.1	±400INH2OG	1	2BARA	0.001
15PSIG	0.01	400INH2OG	1	2BARG	0.001
30PSIA	0.1	850INH2OA	1	4BARG	0.01
30PSIG	0.1	850INH2OG	1	7BARA	0.01
60PSIG	0.1	1700INH2OG	1	7BARG	0.01
100PSIA	0.1	ftH2O	Res	-1V7BARG	0.01
-15V100PSIG	0.1	7FTH2O	0.01	14BARG	0.01
100PSIG	0.1	12FTH2O	0.01	-1V14BARG	0.01
-15V200PSIG	0.1	35FTH2O	0.1	20BARG	0.01
200PSIG	0.1	70FTH2O	0.1	35BARG	0.1
300PSIG	1	140FTH2O	0.1	70BARG	0.1
500PSIG	1	200FTH2O	0.1	140BARG	0.1
1000PSIG	1	230FTH2O	1	200BARG	0.1
2000PSIG	1	460FTH2O	1	350BARG	1
oz/in2	Res	700FTH2O	1	g/cm2	Res
48ZING	0.1	1150FTH2O	1	200GCMG	0.1
50ZING	0.1	mmH2O	Res	350GCMG	1
80ZING	0.1	2000MMH2OG	1	1000GCMG	1
240ZINA	1	cmH2O	Res	1000GCMVAC	1
235ZINVAC	1	200CMH2OG	0.1	±1000GCMG	1
±240ZING	1	350CMH2OG	1	1000GCMG	1
240ZING	1	1000CMH2OA	1	2000GCMG	1
480ZINA	1	1000CMH2OVAC	1	2000GCMG	1
480ZING	1	±1000CMH2OG	1	kg/cm2	Res
960ZING	1	1000CMH2OG	1	1KGCMA	0.001
-235V1600ZING	1	2000CMH2OA	1	1KGCMVAC	0.001
1600ZING	1	2000CMH2OG	1	±1KGCMG	0.001
inHg/PSI	Res	kPa	Res	1KGCMG	0.001
-30V15PSIG	0.1	20KPAG	0.01	2KGCMA	0.001
-30V100PSIG	0.1	35KPAG	0.1	2KGCMG	0.001
-30V200PSIG	0.1	100KPAA	0.1	4KGCMG	0.01
inHg	Res	100KPAVAC	0.1	7KGCMA	0.01
6INHGG	0.01	±100KPAG	0.1	7KGCMG	0.01
10INHGG	0.01	100KPAG	0.1	-1V7KGCMG	0.01
30INHGA	0.1	200KPAA	0.1	14KGCMG	0.01
30INHGVAC	0.1	200KPAG	0.1	-1V14KGCMG	0.01
±30INHGG	0.1	400KPAG	1	20KGCMG	0.01
30INHGG	0.1	700KPAA	1	35KGCMG	0.1
60INHGA	0.1	-100V700KPAG	1	70KGCMG	0.1
60INHGG	0.1	700KPAG	1	140KGCMG	0.1
120INHGG	0.1	-100V1400KPAG	1	200KGCMG	0.1
200INHGA	0.1	1400KPAG	1	350KGCMG	1
-30V200INHGG	0.1	2000KPAG	1	atm	Res
200INHGG	0.1	MPa	Res	1ATMA	0.001
-30V400INHGG	1	1.4MPAGVAC	0.001	1ATMVAC	0.001
400INHGG	1	-0.1V1.4MPAG	0.001	±1ATMG	0.001
600INHGG	1	1.4MPAG	0.001	1ATMG	0.001
1000INHGG	1	2MPAG	0.001	2ATMA	0.001
2000INHGG	1	3.5MPAG	0.01	2ATMG	0.001
Torr	Res	7MPAG	0.01	4ATMG	0.01
760TORRA	1	14MPAG	0.01	7ATMA	0.01
760TORRVAC	1	20MPAG	0.01	-1V7ATMG	0.01
1600TORRA	1	35MPAG	0.1	7ATMG	0.01
mmHg	Res	mbar	Res	-1V14ATMG	0.01
150MMHGG	0.1	200MBARG	0.1	14ATMG	0.01
260MMHGG	1	350MBARG	1	20ATMG	0.01
760MMHGA	1	1000MBARA	1	34ATMG	0.1
760MMHGVAC	1	1000MBARVAC	1	70ATMG	0.1
±760MMHGG	1	±1000MBARG	1	136ATMG	0.1
760MMHGG	1	1000MBARG	1	140ATMG	1.1
1600MMHGA	1	2000MBARA	1	200ATMG	0.1
1600MMHGG	1	2000MBARG	1	340ATMG	1

Accuracy

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

Display

3 readings per second nominal display update rate
3-1/2 digit (1999) LCD, 0.5" H digits
BL option: LED backlight on whenever gauge is on

Controls

Front button turns gauge on/off

Power

8 to 24 VAC 50/60 Hz or 9 to 32 VDC

AD: Approx. 5 mA

ADBL: Approx. 80 mA

3 ft long, 2 conductor 22 AWG cable

All models are designed for continuous operation

Use WMPSK 12 VDC power supply kit to operate on 120 VAC

Calibration

Front calibration potentiometers, non-interactive zero and span, ±10% range

Housing

DPG1000AD: NEMA 2 gray coated extruded aluminum case, ABS/polycarbonate bezel, front and rear gaskets, polycarbonate label.

F4AD: 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.

Weight

Approximately 9.5 ounces

Shipping weight 1 pound

Connection and Material

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

All 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)

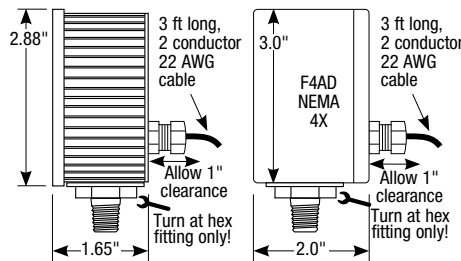
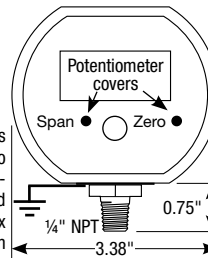
Operating: -4 to 180°F (-20 to 82°C)

Sensor compensated range: 32 to 158°F (0 to 70°C)

Models with standard housing use plastic caps on potentiometers.

F4 covers are 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.



- ±0.25% Test Gauge Accuracy
- 316L Stainless Steel Wetted Parts
- Pressure, Vacuum, or Compound Ranges
- Ruggedized Design, Simple Operation



DPG1000AD



F4AD NEMA 4X



How to Specify	Type
DPG1000AD range - options	Standard housing
DPG1000ADBL range - options	Standard housing, backlight display
F4AD range - options	NEMA 4X housing
F4ADBL range - options	NEMA 4X housing, backlight display

Range Codes: See table at left

psi = PSI Torr = TORR mbar = MBAR
inHg = INHG mmH2O = MMH2O bar = BAR
oz/in2 = ZIN kg/cm2 = KCGM 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. 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

1/4 NPTM x 1/4 NPTF filter screen fitting keeps debris out of gauge sensor. 303SS body, 100 micron 304SS 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.

We maintain a constant effort to upgrade and improve products. Specifications are subject to change without notice. Contact us for latest product information.

Do not force housing! Use a wrench on hex fitting to install or remove.



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. Compound ranges read inHg for vacuum, psig for positive pressure, and zero with the gauge port open. 500 psi and higher sensors are a sealed reference type. They 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. The open port readings will vary due to fluctuating barometric pressure. They will not display the same reading as a weather barometer. Weather barometers are referenced to sea level for consistent weather reports at various altitudes.

Power

NEVER connect the wires directly to a wall outlet or damage will occur. The AD series is powered by 8-24 VAC 50/60 Hz or 9-32 VDC. The supply voltage has negligible effect on the gauge calibration as long as it is within the stated voltage ranges. No polarity needs to be observed when connecting a power supply. Note that standard 24 VAC transformers often operate at voltages well over the gauge's 24 VAC limit. An inexpensive unregulated low voltage AC or DC power supply can be used. Route the wires away from heat sources and moving equipment. Ensure that the gauge supply voltage does not fall below 8 VAC_{RMS} if AC power is used, or 9 VDC if DC power is used. Operation with less than these values may cause erratic or erroneous readings. When operating multiple gauges from the same power supply, refer to the mA rating in the specifications to ensure adequate power.

Operation

Press the front button to power up the gauge if it does not turn on when power is connected. The gauge can be shut off at any time by pressing the button again. If the gauge is in the power-on state and the power is disconnected, the gauge will turn on when power is reapplied. The display indicates the pressure reading updated approximately 3 times per second. The gauge can be left on continuously or turned off when not in use. Display backlighting for BL models is on whenever the gauge is on. Backlighting may not be apparent under bright lighting conditions.

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 recalibration is customary. Calibration should be performed by qualified individuals using appropriate calibration standards and procedures.

Gauges can 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.

Connect gauge to a 8-24 VAC 50/60 Hz or 9-32 VDC power supply. The supply voltage has negligible effects on the gauge calibration as long as it is within the stated voltage ranges. 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 DPG1000AD models remove the black front potentiometer covers to access the zero and span calibration potentiometers.

F4AD 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: Gauge Reference Pressure Ranges

1. See the rear label of gauge for the range.
2. **Zero:** Zero calibration must be done before span calibration. If desired, gauge can be zeroed without doing span calibration. With the gauge port open to atmosphere, adjust the Zero potentiometer for a display indication of zero with the minus (-) sign occasionally flashing.
3. **Span:** A setting that is 75% of full scale pressure works well to minimize mid-range non-linearity. Adjust the Span potentiometer to match the gauge's display to your calibrator's reading.
4. 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.
5. Replace the potentiometer covers.

Calibration: Gauge Reference Vacuum Ranges

1. See the rear label of gauge for the range.
2. **Zero:** Zero calibration must be done before span calibration. If desired, gauge can be zeroed without doing span calibration. With the gauge port open to atmosphere, adjust the Zero potentiometer for a display indication of zero with the minus (-) sign occasionally flashing.
3. **Span:** A setting that is 75% of full scale vacuum works well to minimize mid-range non-linearity. Adjust the Span potentiometer to match the gauge's display to your calibrator's reading.
4. 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.
5. Replace the potentiometer covers.

Calibration: Absolute Ranges

1. See the rear label of gauge for the range.
2. **Zero:** Zero calibration must be done before span calibration. If desired, gauge can be zeroed without doing span calibration. 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.
3. **Span:** A setting that is 75% of full scale pressure works well to minimize mid-range non-linearity. Adjust the Span potentiometer to match the gauge's display to your calibrator's reading.
4. 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.
5. Replace the potentiometer covers.

Calibration: Models Using the ±15 PSIG Sensor

1. See the rear label of gauge for the range.
2. **Zero:** Zero calibration must be done before span calibration. If desired, gauge can be zeroed without doing span calibration. With the gauge port open to atmosphere, adjust the Zero potentiometer for a display indication of zero with the minus (-) sign occasionally flashing.
3. **Span:** Span calibration for the ±15 psig bipolar sensor can be an iterative process since there one span potentiometer is used

for both positive and negative pressures. Note that full vacuum at sea level is -14.7 psig.

Apply approximately 75% full-scale positive pressure (11 psig or the equivalent engineering unit) and adjust the span pot to get an accurate display.

Then apply the corresponding negative pressure (-11 psig or the equivalent engineering unit).

The display should match the applied negative pressure. If it does not, adjust the span pot to get an indication that is about half the difference between the initial indication and the applied pressure.

Verify the accuracy of the indications at full vacuum, 50% negative pressure, zero, 50% positive pressure, and full-scale pressure.

If necessary, repeat the application of negative and positive pressures making slight adjustments to the span pot until all test points are within tolerance.

4. Replace the potentiometer covers.

Calibration: Models Using the -15V/100PSIG or -15V/200PSIG Sensor

1. See the rear label of gauge for the range.
2. **Zero:** Zero calibration must be done before span calibration. If desired, gauge can be zeroed without doing span calibration. With the gauge port open to atmosphere, adjust the Zero potentiometer for a display indication of zero with the minus (-) sign occasionally flashing.
3. **Span:** Span calibration can be an iterative process since there one span potentiometer is used for both positive and negative pressures. Note that full vacuum at sea level is -14.7 psig.

Apply approximately 75% full-scale positive pressure and adjust the span pot to get an accurate display.

Then apply full vacuum. The display should match the applied negative pressure. If it does not, adjust the span pot to get an indication that is about half the difference between the initial indication and the applied pressure.

If necessary, repeat the application of negative and positive pressures making slight adjustments to the span pot until all test points are within tolerance.

Verify the accuracy of the indications at full vacuum, 50% negative pressure, zero, 50% positive pressure and full-scale pressure.

4. Replace the potentiometer covers.

Calibration: -30inHG/15PSIG, -30inHG/100PSIG, and -30inHG/200PSIG Models

1. See the rear label of gauge for the range.
2. **Zero:** Zero calibration must be done before span calibration. If desired, gauge can be zeroed without doing span calibration. With the gauge port open to atmosphere, adjust the Zero potentiometer for a display indication of zero with the minus (-) sign occasionally flashing.
3. **Span:** Apply approximately 75% full-scale positive pressure and adjust the front span pot to get an accurate display.

Verify the accuracy of the indications at full vacuum, 50% vacuum, zero, 50% positive pressure, and full-scale pressure.

If the positive pressure indications are within tolerance but the vacuum indications are not, remove the rear cover to access the trimmer pot.

Compound range models have a rear internal single-turn trimmer pot that affects only the negative pressure indication.

Its intended function is to provide the accurate conversion from psig to inHg for vacuum. Typically, the trimmer pot will not need adjustment after it is set by the factory.

Apply approximately 75% full vacuum and adjust the trimmer pot for an accurate indication.

4. Verify the accuracy of the indications at full vacuum, 50% vacuum, zero, 50% positive pressure, and full-scale pressure, and repeat calibration as needed to achieve best accuracy over desired operating range.
5. Replace the potentiometer covers, and rear cover and screws if removed.

