

## Ranges and Resolution

See table below. Contact factory for special engineering units.  
Resolution is fixed and limited by number of display digits.

\* 4 digit range

† -HA option requires 4 digit version for higher resolution

‡ -HA option not available

PSI	Res	inHg/PSI	Res	mmH <sub>2</sub> O	Res
3PSIG*	.01	-30V15PSIG†	.1	2000MMH20G‡	1
5PSIG	.01	-30V100PSIG†	.1	3500MMH20G*	1
15PSIA*	.01	-30V200PSIG†	.1	cmH <sub>2</sub> O	Res
15PSIVAC‡	.01	inH <sub>2</sub> O	Res	200CMH20G‡	.1
±15PSIG†	.1	85INH20G‡	.1	350CMH20G†	1
15PSIG	.01	140INH20G	.1	1000CMH20A*	1
30PSIA*	.1	400INH20A*	1	1000CMH20VAC‡	1
30PSIG†	.1	400INH20VAC‡	1	±1000CMH20G*	1
60PSIG	.1	±400INH20G†	1	1000CMH20G	1
100PSIA*	.1	400INH20G	1	2000CMH20A*	1
-15V100PSIG†	.1	850INH20A*	1	2000CMH20G	1
100PSIG	.1	850INH20G	1	kPa	Res
-15V200PSIG†	.1	ftH <sub>2</sub> O	Res	20KPAG*	.01
200PSIG	.1	7FTH20*	.01	35KPAG†	.1
300PSIG†	1	12FTH20	.01	100KPAA*	.1
500PSIG	1	35FTH20†	.1	100KPAVAC‡	.1
1000PSIG	1	70FTH20	.1	±100KPAG†	.1
2000PSIG	1	140FTH20	.1	100KPAG	.1
3000PSIG	1	230FTH20†	1	200KPAA*	.1
5000PSIG	1	480FTH20	1	200KPAG	.1
oz/in <sup>2</sup>	Res	700FTH20	1	400KPAG	1
50ZING†	.1	1150FTH20	1	700KPAA*	1
80ZING	.1	2300FTH20*	1	700KPAG	1
240ZINA*	1	4600FTH20*	1	-100V700KPAG†	1
240ZINVAC‡	1	6900FTH20*	1	1400KPAG	1
±240ZING†	1	mmHg	Res	-100V1400KPAG†	1
240ZING†	1	150MMHG†	.1	2000KPAG	1
480ZINA*	1	260MMHG†	1	3500KPAG*	1
480ZING	1	760MMHGA*	1	7000KPAG*	1
inHg	Res	760MMHGVAC‡	1	MPa	Res
6INHGG†	.01	±760MMHG†	1	1.4MPAG	.001
10INHGG	.01	760MMHG	1	-0.1V1.4MPAG†	.001
30INHGA*	.1	1600MMHGA*	1	2MPAG	.001
30INHGVAC‡	.1	1600MMHG	1	3.5MPAG†	.01
±30INHGG†	.1	Torr	Res	7MPAG	.01
30INHGG†	1	760TORRA*	1	14MPAG	.01
60INHGA*	.1	760TORRVAC‡	1	20MPAG	.01
60INHGG	.1	1600TORRA*	1	35MPAG†	.1
120INHGG	.1	mbar	Res	g/cm <sup>2</sup>	Res
200INHGA*	.1	200MBARG†	.1	200GCMG†	.1
-30V200INHGG†	.1	350MBARG†	1	350GCMG†	1
200INHGG	.1	1000MBARA*	1	1000GCMGA*	1
-30V400INHGG†	1	1000MBARVAC‡	1	1000GCMVAC‡	1
400INHGG	1	±1000MBARG†	1	±1000GCMG†	1
600INHGG	1	1000MBARG	1	1000GCMG	1
1000INHGG	1	2000MBARA*	1	2000GCMGA*	1
2000INHGG	1	2000MBARG	1	2000GCMG	1
4000INHGG*	1	bar	Res	kg/cm <sup>2</sup>	Res
atm	Res	1BARA*	.001	1KGCMGA*	.001
1ATMA*	.001	1BARVAC‡	.001	1KGCMVAC‡	.001
1ATMVAC‡	.001	±1BARG†	.001	±1KGCMG†	.001
±1ATMG†	.001	1BARG	.001	1KGCMG	.001
1ATMG	.001	2BARA*	.001	2KGCMGA*	.001
2ATMA*	.001	2BARG	.001	2KGCMG	.001
2ATMG	.001	4BARG	.01	4KGCMG	.01
4ATMG	.01	7BARA*	.01	7KGCMGA*	.01
7ATMA*	.01	7BARG	.01	7KGCMG	.01
7ATMG	.01	-1V7BARG†	.01	-1V7KGCMG†	.01
-1V7ATMG†	.01	14BARG	.01	14KGCMG	.01
14ATMG	.01	-1V14BARG†	.01	-1V14KGCMG†	.01
-1V14ATMG†	.01	20BARG	.01	20KGCMG	.01
20ATMG	.01	35BARG†	.1	35KGCMG†	.1
34ATMG†	.1	70BARG	.1	70KGCMG	.1
70ATMG	.1	140BARG	.1	140KGCMG	.1
140ATMG	.1	200BARG	.1	200KGCMG	.1
200ATMG	.1	350BARG†	1	350KGCMG†	1
340ATMG†	1				

## Accuracy

Includes linearity, hysteresis, repeatability

Standard: ±0.25% of full scale ±1 least significant digit

-HA option: ±0.1% FS ±1 LSD, see table at left for availability

## Display

3 readings per second nominal display update rate

Ranges to 2000: 3.5 digit (1999) LCD, 0.5" H digits

Ranges >2000: 4 digit LCD, 0.5" H digits,  
5 character 0.25" H alphanumeric lower display

BL models:

Red LED backlight on whenever gauge is on

## Controls

Ranges to 2000:

Front button turns gauge on/off

Ranges >2000:

Front button turns gauge on/off,  
hold at power up to zero display (gauge  
reference only)

## 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

Order optional WMPSK 12 VDC wall mount power supply kit to  
operate on 115 VAC

## Calibration

Ranges to 2000: Front calibration potentiometers,  
non-interactive zero and span, ±10% range

Ranges >2000: Internal calibration buttons, non-interactive  
zero, span, and linearity, ±10% of range

## Housing Material

DPG1000AD: Extruded aluminum case, epoxy powder coated,  
ABS/ polycarbonate bezel (aluminum bezel optional), front and  
rear gaskets, polycarbonate label

F4AD: UV stabilized ABS/polycarbonate NEMA 4X case, clear poly-  
carbonate display window, polycarbonate front label, rear gasket,  
six captive stainless steel cover screws

## 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 and Burst

3000 psig sensor range: 5000 psig

5000 psig sensor range: 7500 psig

All others: 2 X pressure range

3000 psi, 5000 psi, and 4 digit ranges 112.5% full scale out-of-  
range display: 1--- or 1---,---

4 X sensor burst pressure rating, or 10,000 psi, whichever is less  
Vacuum service: ±15 psig, 15 psig, 30 psia, 100 psig, 100 psia,  
200 psig sensors

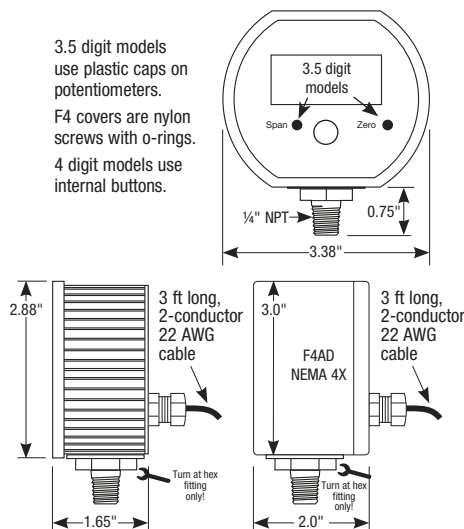
## Environmental Temperatures

Storage temperature: -40 to 203°F (-40 to 95°C)

Operating (3.5 digit versions): -40 to 185°F (-40 to 85°C)

Operating (4 digit versions): -4 to 185°F (-20 to 85°C)

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



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



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

Range—see table at left

psi = PSI	torr = TORR	mbar = MBAR
inHg = INHG	mmH <sub>2</sub> O = MMH2O	bar = BAR
oz/in <sup>2</sup> = ZIN	kg/cm <sup>2</sup> = KGCM	cmH <sub>2</sub> O = CMH2O
inH <sub>2</sub> O = INH2O	g/cm <sup>2</sup> = GCM	atm = ATM
ftH <sub>2</sub> O = 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.

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
TP	Top port, gauge port on top of case. DPG1000 only.

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

DPG1000AD100PSIG-HA: 100 psig, high accuracy

F4ADBL-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. 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.

## Power

The AD series is powered by 8-24 VAC 50/60 Hz or 9-32 VDC.

The type and magnitude of the supply voltage have negligible effects on the gauge calibration as long as it is within the voltage ranges stated above. No polarity needs to be observed when connecting a power supply. An inexpensive unregulated low voltage AC or DC power supply can be used.

After the gauge is installed, route the wires away from heat sources and moving equipment and connect the low-voltage power source to the gauge wires.

Ensure that the gauge supply voltage does not fall below 8 VACRMS 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.

Note that standard 24 VAC transformers often operate at voltages well over the gauge's 24 VAC limit.

## Operation, 3.5 Digit Models

Press the button on the front of the gauge to activate the display. 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 reappplied.

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. The backlighting will not be apparent under bright lighting conditions.

## Operation, 4 Digit Models

Press and hold the front button for approximately 1 second if the gauge does not turn on when power is applied.

When the supply voltage is applied, the gauge will go through a power-up sequence. The full-scale range is indicated, display segments are tested, and then the reading and units are displayed.

The gauge may be zeroed at power-up by following the procedure below. This feature corrects small deviations from zero due to temperature changes. Absolute reference gauges do not use the zero feature since they normally read atmospheric pressure.

The gauge port must be exposed to normal atmospheric pressure with no pressure applied. The zero function is only used at power-up and the stored zero correction is erased when the gauge is shut off.

Press and hold the front button.

The full-scale range is indicated and the display is tested.

Continue to press the button until *aaaa* is displayed and then release the button.

The gauge is now zeroed and ready for use with the actual pressure is displayed.

Attempting to zero the gauge with pressure greater than approximately 3% of full-scale applied will result in an error condition, and the display will alternately indicate *E r r D* and the actual measured pressure. The gauge must be powered down to reset the error condition.

Following the start-up initialization, the display indicates the pressure reading updated approximately 3 times per second.

If excessive vacuum is applied to a pressure-only gauge, the display will indicate *-Err* until the vacuum is released. Applying vacuum to a gauge designed for pressure may damage the pressure sensor. If excessive pressure is applied (112.5% over range), an out-of-range indication of *I - - -* or *I - . - . -* will be displayed depending on model.

Display backlighting for BL models is on whenever the gauge is on. The backlighting will not be apparent under bright lighting conditions.

To shut off the gauge at any time, press and hold the button until the display indicates *OFF* (about 5 seconds) and then release.

## Calibration Preparation, All Models

All gauges are factory calibrated 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 equipment is not required to zero gauge reference ranges. Absolute reference ranges may be zeroed with application of full vacuum.

Span calibration should only be performed using appropriate calibration procedures with calibration standards that are at least four times more accurate than the gauge being calibrated.

The calibration system must be able to generate and measure pressure/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.

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

## Calibration, 3.5 Digit Models

Remove the front covers to access the zero and span calibration potentiometers. F4AD models use nylon cover screws.

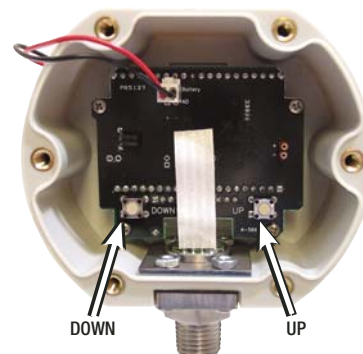
Gauges may be re-zeroed without affecting the span calibration. For gauge reference models the gauge port must be open to the ambient. For absolute reference models full vacuum must be applied. Adjust the zero control until the gauge reads zero with the minus (-) sign occasionally flashing.

Zero calibration must be done before span calibration. Using the appropriate pressure standards, record readings at three to five points over the range of gauge and adjust span control to minimize error and meet specifications.

## Calibration, 4 Digit Models

### Entering Calibration Mode

Remove the rear cover to gain access to the UP and DOWN buttons located near the lower right and left corners of the circuit board.



With the gauge off, press and hold the DOWN calibration button, and also press the front button.

The full-scale pressure range and display test is shown, and then CAL is displayed to indicate that the calibration mode is enabled.

Release all buttons. The gauge enters and remains in the calibration mode until restarted manually or power is removed. Features not related to calibration are disabled. If the power is removed during calibration, settings will not be saved.

The display will indicate the current pressure reading, updating approximately 3 times per second.

Each press of the UP or DOWN button makes a small correction, which may not always be indicated on the display. Press and hold the button for one second or longer to make larger corrections. The gauge's display is adjusted to match the calibrator's reading.

### Gauge Reference Ranges (3 Points)

With the gauge port open to atmosphere, the character display will alternate between ZERO and CAL. Press the UP and DOWN buttons to obtain a display indication of zero.

Apply full-scale pressure (or vacuum for vacuum gauges). The character display will alternate between +SPAN and CAL. Press the UP and DOWN buttons to obtain a display indication equal to full-scale pressure.

Apply 50% of full-scale pressure. The character display will alternate between +MID and CAL. Use the UP and DOWN buttons to obtain a display indication equal to 50% of full-scale pressure.

### Absolute Reference Ranges (3 Points)

Apply full vacuum to the gauge. The character display will alternate between ZERO and CAL. Press the UP and DOWN buttons to obtain a display indication of zero.

Apply full-scale pressure. The character display will alternate between +SPAN and CAL. Press the UP and DOWN buttons to obtain a display indication equal to full-scale pressure.

Apply 50% of full-scale pressure. The character display will alternate between +MID and CAL. Press the UP and DOWN buttons to obtain a display indication equal to 50% of full-scale pressure.

### Bipolar (±) and Compound Ranges (4 or 5 Points)

With the gauge port open to atmosphere, the character display will alternate between ZERO and CAL. Press the UP and DOWN buttons to obtain a display indication of zero.

Apply full-scale positive pressure. The character display will alternate between +SPAN and CAL. Press the UP and DOWN buttons to obtain a display indication equal to full-scale pressure.

Apply 50% of full-scale positive pressure. The character display will alternate between +MID and CAL. Press the UP and DOWN buttons to obtain a display indication equal to 50% of full-scale pressure.

Apply full vacuum. The character display will alternate between -SPAN and CAL. Press the UP and DOWN buttons to obtain a display indication equal to the full vacuum reading.

Gauges using a ±15 psig sensor have a -MID calibration point. Apply 50% of the full-scale vacuum range (for example, -7.4 psi for a ±15 psi gauge). The character display will alternate between -MID and CAL. Press the UP and DOWN buttons to obtain a display indication equal to 50% of full-scale vacuum.

### Exit Calibration Mode and Verify Calibration

Exit the calibration mode and save the calibration data by pressing and holding the front button until the display indicates OFF.

Verify readings at 0%, 25%, 50%, 75%, and 100% of full scale.

Replace the rear cover and screws, taking care not to pinch the wires between the case and the rear cover.

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