

Ranges and Resolution

Resolution is fixed and limited by number of display digits. 2, 20, 200, or 2000 ranges display 1.999, 19.99, 199.9, or 1999 respectively. Please specify if vacuum gauge requires a minus sign. Contact factory for special engineering units. For models with more display resolution or HA availability see F16AD series.

G	gauge reference pressure	* 4 digit range			
VAC	gauge reference vacuum	‡ HA option not available			
A	absolute reference				
	PSI	Res	inHg/PSI	Res	mmH ₂ O
	3PSIG [‡]	.01	-30V15PSIG [‡]	.1	2000MMH2O [‡]
	5PSIG [‡]	.01	-30V100PSIG [‡]	.1	cmH ₂ O
	15PSIA [‡]	.01	-30V200PSIG [‡]	.1	200CMH2O [‡]
	15PSIVAC [‡]	.01	inH ₂ O	Res	350CMH2O [‡]
	±15PSIG [‡]	.1	85INH20G [‡]	.1	1000CMH20A
	15PSIG	.01	140INH20G [‡]	.1	1000CMH20VAC [‡]
	30PSIA [‡]	.1	400INH20A	1	±1000CMH20G [‡]
	30PSIG [‡]	.1	400INH20VAC [‡]	1	1000CMH20G
	60PSIG	.1	±400INH20G [‡]	1	2000CMH20A [‡]
	100PSIA	.1	400INH20G	1	2000CMH20G
	-15V100PSIG [‡]	.1	830INH20A [‡]	1	kPa
	100PSIG	.1	830INH20G	1	20KPAG [‡]
	-15V200PSIG [‡]	.1	ftH ₂ O	Res	35KPAG [‡]
	200PSIG	.1	7FTH20 [‡]	.01	100KPAA
	300PSIG [‡]	1	12FTH20 [‡]	.01	100KPAVAC [‡]
	500PSIG	1	35FTH20 [‡]	.1	±100KPAG [‡]
	1000PSIG	1	70FTH20	1	100KPAG
	2000PSIG	1	140FTH20	.1	200KPAA [‡]
	3000PSIG [‡]	1	230FTH20 [‡]	1	200KPAG
	5000PSIG [‡]	1	460FTH20	1	400KPAG
	oz/in ²	Res	700FTH20	1	700KPAA
	48ZING [‡]	.1	1150FTH20	1	700KPAG
	80ZING [‡]	.1	mmHg	Res	-100V700KPAG [‡]
	240ZINA [‡]	1	150MMHGG [‡]	.1	1400KPAG
	240ZINVAC [‡]	1	260MMHGG [‡]	1	-100V1400KPAG [‡]
	±240ZING [‡]	1	760MMHGA	1	2000KPAG
	240ZING [‡]	1	760MMHGVAC [‡]	1	MPa
	480ZINA [‡]	1	±760MMHGG [‡]	1	1.4MPAG
	480ZING	1	760MMHGG	1	-0.1V1.4MPAG [‡]
	inHg	Res	1600MMHGA	1	2MPAG
	6INHGG [‡]	.01	1600MMHGG	1	3.5MPAG [‡]
	10INHGG [‡]	.01	Torr	Res	7MPAG
	30INHGA [‡]	.1	760TORRA	1	14MPAG
	30INHGVAC [‡]	.1	760TORRVAC [‡]	1	20MPAG
	±30INHGG [‡]	.1	1600TORRA [‡]	1	35MPAG [‡]
	30INHGG [‡]	.1	mbar	Res	g/cm ²
	60INHGA [‡]	.1	200MBARG [‡]	.1	200GCMG [‡]
	60INHGG	.1	350MBARG [‡]	1	350GCMG [‡]
	120INHGG	.1	1000MBARA	1	1000GMA
	200INHGA	.1	1000MBARVAC [‡]	1	1000GCMVAC [‡]
	-30V200INHGG [‡]	.1	±1000MBARG [‡]	1	±1000GCMG [‡]
	200INHGG	.1	1000MBARG	1	1000GCMG
	-30V400INHGG [‡]	.1	2000MBARA [‡]	1	2000GMA [‡]
	400INHGG	1	2000MBARG	1	2000GCMG
	600INHGG	1	bar	Res	kg/cm ²
	1000INHGG	1	1BARA	.001	1KGMA
	2000INHGG	1	1BARVAC [‡]	.001	1KGCMVAC [‡]
	atm	Res	±1BARG [‡]	.001	±1KGCMG [‡]
	1ATMA	.001	1BARG	.001	1KGCMG
	±1ATMG [‡]	.001	2BARA [‡]	.001	2KGMA [‡]
	1ATMG	.001	2BARG	.001	2KGCMG
	2ATMA [‡]	.001	4BARG	.01	4KGCMG
	2ATMG	.001	7BARA	.01	7KGMA
	4ATMG	.01	7BARG	.01	7KGCMG
	7ATMA	.01	-1V7BARG [‡]	.01	-1V7KGCMG [‡]
	7ATMG	.01	14BARG	.01	14KGCMG
	14ATMG	.01	-1V14BARG [‡]	.01	-1V14KGCMG [‡]
	20ATMG	.01	20BARG	.01	20KGCMG
	34ATMG [‡]	.1	35BARG [‡]	.1	35KGCMG [‡]
	70ATMG	.1	70BARG	.1	70KGCMG
	140ATMG	.1	140BARG	.1	140KGCMG
	200ATMG	.1	200BARG	.1	200KGCMG
	340ATMG [‡]	1	350BARG [‡]	1	350KGCMG [‡]

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 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
 Use WMPSK 12 VDC 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

DPG1000AD: Extruded aluminum case, epoxy powder coated,
 ABS/ polycarbonate bezel (aluminum bezel optional), front and
 rear gaskets, polycarbonate label, NEMA 2
 F4AD: 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.

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

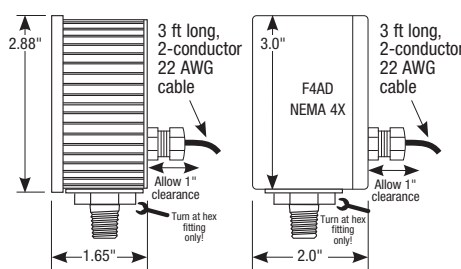
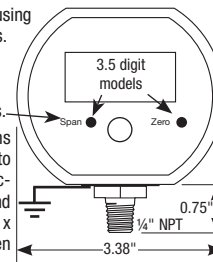
Environmental Temperatures

Storage temperature: -40 to 203°F (-40 to 95°C)
 Operating (3.5 digit versions): -40 to 185°F (-40 to 85°C)
 Operating (4 digit versions): -4 to 185°F (-20 to 85°C)
 Sensor compensated range: 32 to 158°F (0 to 70°C)

3.5 digit models with standard housing
 use plastic caps on potentiometers.
 F4 covers are nylon screws with
 o-rings.

4 digit models use internal buttons.

Non-metallic system installations
 require connecting gauge sensor to
 earth ground to avoid static electric-
 ity 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



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
 - inHg = INHG
 - oz/in² = ZIN
 - inH₂O = INH2O
 - ftH₂O = FTH2O
 - mmHg = MMHG
 - torr = TORR
 - mmH₂O = MMH2O
 - kg/cm² = KGCM
 - g/cm² = GCM
 - kPa = KPA
 - MPa = MPA
 - mbar = MBAR
 - bar = BAR
 - cmH₂O = CMH2O
 - atm = ATM
- G = gauge reference pressure
 VAC = gauge reference vacuum
 A = absolute reference

Range codes listed as 2, 200, 200, or 2000 display 1.999, 19.99, 199.9, or 1999 respectively.

If vacuum gauge requires a minus sign, please specify.

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. Option	—add to end of model number
NC	NIST traceability documentation, 5 points and date
Accessories	—order separately
WMPSK	Wall mount power supply kit, 115 VAC/12 VDC

SCR14SS

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 suitable 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 Intrinsicly 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.

WARNING: This product can expose you to chemicals including nickel which is 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

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 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.

Power

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. 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 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. 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 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. 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 `0000` 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 `ErrD` 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 `1---` or `1-.-.-` 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

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.

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.

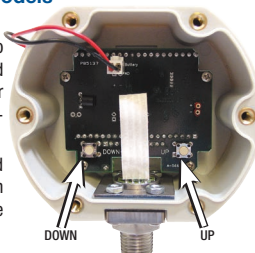
Calibration, 3.5 Digit Models

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



Calibration, 4 Digit Models - continued

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. Adjust the gauge's display 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.

Note: At this point you may re-zero the gauge without doing any other calibration. Press and hold the Power button until the display indicates `- - - -` then release the button to store the new zero in non-volatile memory and restart the gauge.

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 (±) Ranges using a 15 psig sensor (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.

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.

Compound Ranges (4 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.

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.