Cecomp® Battery Powered Digital Pressure Gauges — DPG1000B, F4B

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. If vacuum gauge requires a minus sign, please specify. Contact factory for special engineering units.

G gauge reference pressure
VAC gauge reference vacuum
A absolute reference
* 4 digit range
‡ HA option not available

PSI	Res	inHg/PSI	Res	mmH_2O	Res
3PSIG‡	.01	–30V15PSIG‡	.1	2000MMH20G‡	1
5PSIG‡	.01	–30V100PSIG‡	.1	3500MMH20G*‡	1
15PSIA	.01	–30V200PSIG‡	.1	**cmH_2O**	Res
15PSIVAC‡	.01	**inH_2O**	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_2O**	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/in²	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	150MMHGG‡	.1	2000KPAG	1
480ZINA	1	260MMHGG‡	1	3500KPAG*	1
480ZING	1	760MMHGA	1	7000KPAG*	1
inHg	Res	760MMHGVAC‡	1	**MPa**	Res
6INHGG‡	.01	±760MMHGG‡	1	1.4MPAG	.001
10INHGG‡	.01	760MMHGG	1	–0.1V1.4MPAG‡	.001
30INHGA‡	.1	1600MMHGA	1	2MPAG	.001
30INHGVAC‡	.1	1600MMHGG	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^2**	Res
200INHGA	.1	200MBARG‡	.1	200GCMG‡	.1
–30V200INHGG‡	.1	350MBARG‡	1	350GCMG‡	1
200INHGG	.1	1000MBARA	1	1000GCMA	1
–30V400INHGG‡	1	1000MBARVAC‡	1	1000GCMVAC‡	1
400INHGG	1	±1000MBARG‡	1	±1000GCMG‡	1
600INHGG	1	1000MBARG	1	1000GCMG	1
1000INHGG	1	2000MBARA	1	2000GCMA	1
2000INHGG	1	2000MBARG	1	2000GCMG	1
4000INHGG*	1	**bar**	Res	**kg/cm^2**	Res
atm	Res	1BARA	.001	1KGCMA	.001
1ATMA	.001	1BARVAC‡	.001	1KGCMVAC‡	.001
1ATMVAC‡	.001	±1BARG‡	.001	±1KGCMG‡	.001
±1ATMG‡	.001	1BARG	.001	1KGCMG	.001
1ATMG	.001	2BARA	.001	2KGCMA	.001
2ATMA	.001	2BARG	.001	2KGCMG	.001
2ATMG	.001	4BARG	.01	4KGCMG	.01
4ATMG	.01	7BARA	.01	7KGCMA	.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

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 display backlight

Batteries, Low Battery Indication, Battery Life

Two AA alkaline included
Low battery indication on display (battery life is approximate)
B ranges to 2000: 2500 hours
B ranges >2000: 2000 hours
BBL ranges to 2000: 180 hours
BBL ranges >2000: 150 to 1500 hours

Controls

B ranges to 2000: Front button turns gauge on/off, starts auto shutoff timer
BL ranges to 2000: Front button turns gauge on/off, starts auto shutoff timer, backlight is on when gauge is on.
B ranges >2000: Front button turns gauge on/off, starts auto shutoff timer, zeros display (gauge ref. only)
BL ranges >2000: Front button turns gauge on/off, starts auto shutoff timer, activates backlighting for one minute, zeros display (gauge ref. only)

Auto Shutoff

Factory set to 5, 10, 30 minutes, or on/off
Ranges >2000 can be factory set to custom minutes or hours

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

DPG1000B: Extruded aluminum case, epoxy powder coated, ABS/polycarbonate bezel (aluminum bezel with MC option), front and rear gaskets, polycarbonate label

F4B: UV stabilized ABS/polycarbonate NEMA 4X case, clear polycarbonate display window, polycarbonate front label, rear gasket, six captive stainless steel cover screws

Weight

Approximately 9 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

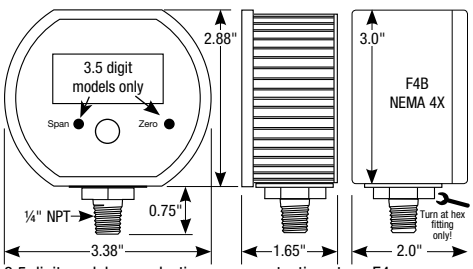
Ranges using 3000 psig sensor: 5000 psig
Ranges using 5000 psig sensor: 7500 psig
All others: 2 X pressure range
3000 psi, 5000 psi, and 4 digit ranges 112.5% full scale out-of-range display: 1– – – or I –.–.–.–

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



3.5 digit models use plastic caps on potentiometers, F4 covers are nylon screws with o-rings. 4 digit models use internal buttons.

Examples

DPG1000B100PSIG-5-HA: 100.0 psig, 5 min. shutoff, high accuracy

F4BBL–100V700KPAG-ON: NEMA 4X, backlit display, –100 to 700 kPa, on/off via front button

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

MADE IN USA


DPG1000B


DPG1000B 4 Digit Ranges


F4B, NEMA 4X


F4B, NEMA 4X 4 Digit Ranges

How to Specify	Type
DPG1000B *range - time - options*	Standard housing
DPG1000BBL *range - time - options*	Standard housing, backlit display
F4B *range - time - options*	NEMA 4X housing
F4BBL *range - time - options*	NEMA 4X housing, backlit display

Range: See table at left

Time—auto shutoff time	
5	5 minutes. Default if not specified.
10	10 minutes
30	30 minutes
ON	No auto shutoff. On/off via front button.
Options—add to end of model number. See price list for details.	
HA	High accuracy, ±0.1% FS ±1 LSD. See range table.
PM	Panel mount, 4.1" x 4.1". DPG1000 only.
FP	Sealed housing and CC for high humidity food processing applications. F4B in absolute reference ranges only.
MC	Metal front cover instead of plastic. DPG1000 only.
CS	Case bottom stiffener plate. DPG1000 only.
CC	Moisture resistant circuit board conformal coating
TP	Top port, gauge port on top of case. DPG1000 only.
SM	Surface mount plate. DPG1000 only.
CD	Calibration data; 5 test points and date
NC	NIST traceability documentation, 5 points and date

TP
Top gauge port. Primarily used with tire pressure applications. Not available with NEMA 4X models.

Accessories—order separately

RB
High visibility orange rubber boot protects gauge for portable applications. Not available with NEMA 4X models.

SCR14SS
Filter screen fitting keeps debris out of gauge sensor. For food vacuum packaging applications. 303SS body, 100 micron 304SS screen.

CON14SS
Quick connector to install or remove gauge without tools. 304 stainless steel, urethane seal.

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.

Battery Replacement

A low battery indication (either LOBAT or a symbol depending on the model) will be shown in the upper left corner of the display when the battery voltage falls sufficiently. The battery should be replaced soon after the indicator comes to prevent unreliable readings.

WARNING: Batteries must be changed in a non-hazardous location only. Do not mix different batteries or fresh batteries with old. Replace both batteries with new ones at the same time.

1. Remove the 6 Phillips screws on the back of the gauge.
2. Remove battery retainer clip.
3. Remove batteries by lifting up the positive end of the battery (opposite the spring) taking care not to bend the spring.
4. Discard old batteries properly. See battery manufacturer's recommendations for disposal or recycling.
5. Install batteries with correct orientation. Insert the negative (flat) end of each battery first towards the battery holder spring.
6. Replace the clip and back cover, including the rubber gasket.

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.

The gauge will stay on for a period of time determined by the auto shutoff time. If the gauge was ordered without auto shutoff (-ON) it will stay on until the button is pressed or until the batteries are depleted.

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

Turn gauge off when not in use to conserve batteries.

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

Operation, 4 Digit Models

Press and hold the front button for approximately 1 second.

The full-scale range is indicated, the display is tested, and the reading and units are displayed.

The gauge may be zeroed at power-up by following the procedure below. Absolute reference gauges do not use the zero feature since they normally read atmospheric pressure.

Make sure the gauge port is 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 *ErrO* 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. The auto shutoff timer starts when the gauge is powered up or whenever the button is pushed, unless the gauge was ordered without an auto shutoff time (-ON option).

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 can be turned on by momentarily pressing the button whenever the gauge is on. The backlight will turn on for one minute and then automatically shut off. This also restarts the auto shutoff timer. The display 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.

For gauges with auto shutoff, the display indicates *OFF* five seconds prior to auto shutoff. The button can be pressed to keep the gauge on. The auto shutoff and backlight (if equipped) timers are reset whenever the button is pressed and released.

If the gauge was ordered without auto shutoff (-ON option) it will stay on until manually shut off or until the batteries are depleted. Turn gauge off when not in use to conserve battery life.

Calibration Preparation, All Models

All gauges are factory calibrated using NIST traceable calibration equipment. Calibration is not required before using the gauge. Calibration intervals vary depending on your quality standards, but annual recalibration 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.

Install fresh batteries before calibrating battery-powered gauges.

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. F4B models use nylon cover screws.

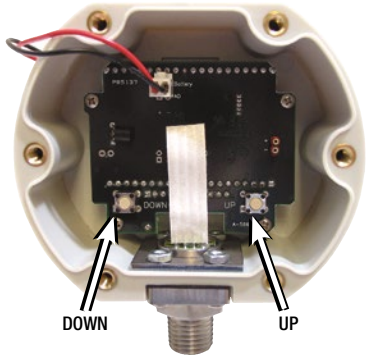
Gauges may be re-zeroed without affecting the span calibration. For gauge reference models the gauge port must be open to the ambient. For absolute reference models full vacuum must be applied. Adjust the zero control until the gauge reads zero with the minus (–) sign occasionally flashing.

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 battery pack is unplugged or the power 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 battery leads between the case and the rear cover.