Cecomp Battery Powered Digital Pressure Gauges with Selectable Units

- ±0.25% Test Gauge Accuracy
- 316 Stainless Steel Wetted Parts
- Capture Minimum and Maximum Readings

Specifications

Ranges and Resolution
See table below. Any engineering units equivalent to the PSI range can be ordered as the default range. Resolution is fixed for each engineering unit

Accuracy
Includes linearity, hysteresis, repeatability.
Standard: ±0.25% of full scale ±1 least significant digit
- HA: ±0.1% FS ±1 LSD (see Options for availability)

Display
3 readings per second nominal display update rate
4 digit LCD, 0.5" H and 5 character 0.25" H alphanumeric
BL models: red LED backlight

Batteries, Battery Life, Low Battery Indication
B: 2 AA alkaline, approx. 2000 hours
BL: 2 AA alkaline, approx. 15 to 1500 hours depending on backlight usage
Low battery symbol on display

Controls & Functions
Front button turns gauge on or off, zeros gauge reference gauges, and cycles through min/max functions
Internal push buttons for calibration and selection of engineering units and auto shutoff times
BL: Front button activates backlighting for 1 minute

Min/Max Functions
Minimum and maximum readings stored 4 times per second
Front button cycles through min display, max display, clear
Configurable for min only, max only, both, or none
Configure to clear min/max at power off or retain min/max at power off

Calibration
Pass code protected calibration
Non-interactive zero, span, and linearity, ±10% of range

How to Order

Please Specify
Model Range - Shutoff* - Options
Specify pressure or vacuum range and units. Include gauge or absolute reference as applicable.
If vacuum gauge requires a minus sign, please specify.
*Only specify if default time is to be other than 5 minutes

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>F18B</td>
<td>Standard housing</td>
</tr>
<tr>
<td>F18BBL</td>
<td>Standard housing, backlit display</td>
</tr>
<tr>
<td>F18BN</td>
<td>NEMA 4X housing</td>
</tr>
<tr>
<td>F18BNBL</td>
<td>NEMA 4X housing, backlit display</td>
</tr>
</tbody>
</table>

Auto Shutoff
User selectable 1 minute to 8 hours or front button on/off
Factory default 5 minutes, unless other time is specified

Weight
Gauge: 9 ounces (approximately)
Shipping: 1 pound (approximately)

Material
F18B: Extruded aluminum case, epoxy powder coated,
ABS/polycarbonate bezel (aluminum bezel optional),
front and rear gaskets, polycarbonate label
F18BN: ABS/polycarbonate NEMA 4X case, rear gasket,
polycarbonate label

Connection, Material, Media Compatibility
1/4" NPT male fitting, 316L stainless steel
All wetted parts are 316L stainless steel
Compatible with most liquids and gases

Overpressure
3000 psig range: 5000 psig
5000 psig range: 7500 psig
All others: 2X pressure range
112.5% FS out-of-range display: i – – –
or 1 – – – – – – –

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

Storage Temperature
–40 to 203°F (–40 to 95°C)

Operating Temperature
–4 to 185°F (–20 to 85°C)

Compensated Temperature
32 to 158°F (0 to 70°C)

Zero Function
Selectable Units
Selectable Auto Shutoff Times
Zero Function

Options—add to end of model number
- HA: High accuracy, ±0.1% FS ±1 LSD. Not available with vacuum, compound, bipolar, absolute, or 3 psi sensor ranges.
- PM: Panel mount, 4.1” x 4.1”. Not available with NEMA 4X models.
- MC: Metal front cover. Machined aluminum, epoxy powder coated. Synthetic oil resistant. Not available with NEMA 4X models.
- CS: Case stiffener strengthens case bottom for tire pressure applications.
- CC: Conformal coating on circuit board for moisture resistance.
- SM: Surface mount plate. Battery gauges only. Not available with NEMA 4X models.
- TP: Top port, gauge port on top of case. Used primarily for tire pressure applications.

Accessories
- CD: Calibration data, 5 test points, test date.
- NC: NIST certificate with traceability documentation, 5 test points and date.

How to Order

Please Specify
Model Range - Shutoff* - Options
Specify pressure or vacuum range and units. Include gauge or absolute reference as applicable.
If vacuum gauge requires a minus sign, please specify.
*Only specify if default time is to be other than 5 minutes

<table>
<thead>
<tr>
<th>Range Code</th>
<th>Default Range</th>
<th>Selectable Engineering Units</th>
<th>See table on next page for specific ranges.</th>
</tr>
</thead>
<tbody>
<tr>
<td>–30V15PSIG*</td>
<td>±30.0 inHg to 15.0 PSIG</td>
<td>±mbar</td>
<td>±bar</td>
</tr>
<tr>
<td>–30V100PSIG*</td>
<td>±30.0 inHg to 100.0 PSI</td>
<td>±mbar</td>
<td>±bar</td>
</tr>
<tr>
<td>–30V200PSIG*</td>
<td>±30.0 inHg to 200.0 PSI</td>
<td>±mbar</td>
<td>±bar</td>
</tr>
<tr>
<td>3PSIG</td>
<td>0 to 3.000 PSIG</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>5PSIG</td>
<td>0 to 5.000 PSIG</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>15PSIA</td>
<td>15.00 to 0 PSI</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>15PSIAC</td>
<td>0 to –15.000 PSI</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>±15PSIG</td>
<td>±15.00 PSIG</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>30PSIA</td>
<td>0 to 30.000 PSIG</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>30PSIG</td>
<td>0 to 30.000 PSIG</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>60PSIG</td>
<td>0 to 60.000 PSIG</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>100PSIA</td>
<td>0 to 100.0 PSIG</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>100PSIG</td>
<td>0 to 100.0 PSIG</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>200PSIG</td>
<td>0 to 200.0 PSIG</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>300PSIG</td>
<td>0 to 300.0 PSIG</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>500PSIG</td>
<td>0 to 500.0 PSIG</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>1000PSIG</td>
<td>0 to 1000.0 PSI</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>2000PSIG</td>
<td>0 to 2000.0 PSI</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>3000PSIG</td>
<td>0 to 3000.0 PSI</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
<tr>
<td>5000PSIG</td>
<td>0 to 5000.0 PSI</td>
<td>inHg</td>
<td>mmHg</td>
</tr>
</tbody>
</table>

*Compound ranges can be set up as either compound (inHg/psig only) or bipolar (±) with selectable units in pass code protected user configuration mode only.
## Ranges and Engineering Units, Installation Precautions

### Range Codes

The range code is part of the gauge model number and indicates the default range when the gauge is ordered. Consult factory with special requirements or engineering units.

### Selectable Ranges

Engineering units may be changed to any of those listed in the same Selectable Units group as shown in the table below.

### Conversion

Engineering units are calculated from the factory default unit to the newly selected units. The ranges listed under Selectable Units are rounded off.

#### Range Codes

<table>
<thead>
<tr>
<th>Model</th>
<th>Selectable Units</th>
<th>Model</th>
<th>Selectable Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 15 psi g</td>
<td>0 to 30 psi</td>
<td>0 to 200 bar</td>
<td>0 to 1000 bar</td>
</tr>
<tr>
<td>0 to 30 psi g</td>
<td>0 to 60 psi</td>
<td>0 to 300 bar</td>
<td>0 to 1500 bar</td>
</tr>
<tr>
<td>0 to 60 psi</td>
<td>0 to 0.02 inHg</td>
<td>0 to 150 psi</td>
<td>0 to 750 psi</td>
</tr>
<tr>
<td>0 to 0.02 inHg</td>
<td>0 to 1 mmHg</td>
<td>0 to 100 psi</td>
<td>0 to 500 psi</td>
</tr>
<tr>
<td>0 to 1 mmHg</td>
<td>0 to 10 mmHg</td>
<td>0 to 75 psi</td>
<td>0 to 375 psi</td>
</tr>
</tbody>
</table>

#### Engineering Units

<table>
<thead>
<tr>
<th>Model</th>
<th>Selectable Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 15 psi g</td>
<td>0 to 30 psi</td>
</tr>
<tr>
<td>0 to 30 psi g</td>
<td>0 to 60 psi</td>
</tr>
<tr>
<td>0 to 60 psi</td>
<td>0 to 0.02 inHg</td>
</tr>
<tr>
<td>0 to 0.02 inHg</td>
<td>0 to 1 mmHg</td>
</tr>
<tr>
<td>0 to 1 mmHg</td>
<td>0 to 10 mmHg</td>
</tr>
</tbody>
</table>

#### Installation Precautions

- Read these instructions before installing the gauge. The configuration options may be easier to set up before the gauge is installed.
- Due to the hardness of 316 stainless steel, it is recommended that a thread sealant be used to ensure leak-free operation.
- Install or remove gauge using a wrench on the hex fitting only.
- For contaminated media use an appropriate screen or filter to keep debris out of gauge port.

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Power-Up
Press and hold the front button for approximately 1 second. The display segments are tested.
The full-scale range is indicated and the display segments are briefly shown again.
The actual pressure and units are displayed.

Power-Up With Zero
This applies to gauge reference models only. Absolute reference gauges do not use the zero feature since they read atmospheric pressure under normal conditions.
Be sure the gauge port is exposed to normal atmospheric pressure and no pressure is applied. The zeroing function is only activated at each power-up and the stored zero correction is erased when the gauge is shut off.
Press and hold the front button. The display segments are tested.
Continue to press the button until ooo0 is displayed. Release the button. The gauge is now zeroed.
The full-scale range is indicated and the display segments are briefly shown again.

Auto shutoff timer. The display backlighting will not be apparent for one minute and then automatically shut off. This also restarts Display Backlighting (BL models only)

Normal Operation
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 pressed, unless the gauge shutoff time was set to zero for on/off operation.
If excessive vacuum is applied to a pressure-only gauge, the display will indicate -Err until the vacuum is released.

Display Backlighting (BL models only)
Display backlighting can be turned on by momentarily pressing the front button whenever the gauge is on. The backlighting 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.

Minimum and Maximum Readings
Gauges are normally configured with minimum and maximum capture functions enabled. One or both can be disabled in the User Configuration mode.

Advanced Configuration

User Configuration
User configuration allows a pass code for access and allows more features to be configured.
Remove the rear cover to gain access to the buttons located near the lower right and left corners of the circuit board. With the gauge off, press and hold the UP button. Then press the front button. Release all buttons when the display indicates CFG and the program version then the full-scale range is indicated and the display segments are tested.
The display then indicates _ _ _ _ with the first underscore blinking and with CF5PC (configuration pass code) on the character segments.

The gauge will automatically revert to normal operation if no buttons are operated for approximately 15 seconds. To cancel and return to normal operation, press and release the front button without entering any pass code characters.

User Configuration Pass Code Entry
The factory default is 5150, but this may be changed by the user under the Pass Code Configuration section.

1. Use the UP or DOWN buttons to set the left-most digit to 3.
2. Press and release the front button to move to the next position.
3. The 3 will remain, and the second position will be blinking.
4. Use the UP or DOWN buttons to select 5.
5. Press and release the front button to index to the next position.

The minimum and maximum readings are continuously stored and updated whenever the gauge is on. The stored readings can be manually cleared if desired. The MAX and MIN memory is also cleared whenever the gauge is off until configured to save the readings.

Press and hold the front button for about 1 second until MAX is displayed alternating with the units. The maximum reading will be continuously updated. The gauge may be left in this mode. If excessive vacuum is applied to a pressure-only gauge while in this mode, the display will indicate -Err until the MAX/MIN readings are cleared.

After MIN is displayed, press and hold the button again for about 1 second until *** is displayed. The MAX and MIN memory is not erased and the gauge returns to normal operation with the display indicating the current reading.

Press and continue to hold the button until the display indicates cfr M/MN (about 3 seconds total) and then release the button. Both maximum and minimum values are cleared and the gauge returns to the normal mode and displays the current pressure.

Shut-Down
To shut off the gauge manually at any time, press and hold the button until the display indicates OFF (about 5 seconds) and then release.
When an auto shut off timer is used, the display indicates OFF five seconds prior to auto shut off. The button can be pressed to keep the gauge on. The auto shut off and backlight (if equipped) timers are reset whenever the button is pressed and released.
If the gauge set up without auto shut off (on/off operation) 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.

Engineering Unit Selection
Engineering unit selection is done via internal buttons to help prevent accidental or unauthorized changes. The selected engineering unit is stored in non-volatile memory and will be retained even with the gauge off or batteries removed. The available engineering units depend on the sensor range and display resolution.

Compound (inPSIG) gauges must be changed to display single-unit vacuum/pressure readings in the Advanced Configuration mode before different engineering units can be selected.
The default engineering units are mathematically converted to the newly selected engineering unit. When the gauge is powered up, the original configured range is displayed and then the conversion with the selected engineering unit is displayed.

To change engineering units remove the rear cover to gain access to the two internal buttons located near the lower right and left corners of the circuit board.
With the gauge powered up, press and hold the UP button. Release the button when the engineering units begin to flash.
Use the UP and DOWN buttons to scroll through the list of engineering units available for the pressure range of the sensor.
When the desired units are displayed, press and release the front button to save selection and return to normal operation.

Note: The gauge will automatically revert to normal operation if no buttons are operated for approximately 15 seconds.
Replace the rear cover taking care not to pinch the power wires between the cover and the case.

Auto Shutoff Time Selection
Auto shutoff time selection is done via internal buttons to help prevent accidental or unauthorized changes. The selected shut off time is stored in non-volatile memory and will be retained even with the battery off or batteries removed.

Remove the rear cover to gain access to the two internal buttons located near the lower right and left corners of the circuit board.
With the gauge powered up, press and hold the DOWN button. Release the button when the auto shut off time is displayed on the upper section.

The lower display segments will indicate AST M if the time displayed is in minutes, and AST H if it is in hours.

An auto shut off time of 0 signifies that the auto shut off feature is disabled and the front button turns the gauge on and off.
Use the UP and DOWN buttons to select 0, 1, 2, 5, 10, 15, 20 or 30 minutes, or 1, 2, 4, or 8 hours.
When the desired time is displayed, press and release the front button to save selection and return to normal operation.

Note: The gauge will automatically revert to normal operation if no buttons are operated for approximately 15 seconds.
Replace the rear cover taking care not to pinch the power wires between the cover and the case.

MAX/MN
Both highest and lowest values will be captured
MW/--- Only highest value will be captured
--MN Only lowest value will be captured
--- Capture feature is disabled

Press and release the front button to move to the next parameter.

Max/Min Memory
The upper display section will indicate cir.
Use the UP and DOWN buttons to select from the following:

AUTO Automatically clear max. and min. values when the gauge is powered off
MAN Manually clear max. and min. values
Press and release the front button to move to the next parameter.

Gauge Type Configuration
This will only appear with 15, 100, or 200 psig ranges that were originally ordered as compound gauges.
Use the UP and DOWN buttons to select from the following:

+/EU Vacuum is indicated as negative pressure in the selected engineering units
CMPND Vacuum is Negative INHG, pressure is PSIG. This setting will disable engineering unit selection.
Press and release the front button to save the user configuration and restart the gauge.
Replace the rear cover taking care not to pinch the power wires between the cover and the case.
Battery Replacement
A low battery indication will be shown in the upper left-hand corner of the display when the battery voltage falls sufficiently. The battery should be replaced soon after the indicator comes on or unreliable readings may result.

1. Remove the 6 Phillips screws on the back of the unit.
2. Remove batteries by lifting up the positive end of the battery (opposite the spring) taking care not to bend the battery holder spring.
3. Discard old batteries properly, do not discard into fire, sources of extreme heat, or in any hazardous manner.
4. Always replace both batteries at the same time with high quality alkaline batteries. Install batteries with correct orientation. The negative (-) end of each battery should be inserted first facing the battery holder spring.
5. Replace the back cover, including the rubber gasket.

Calibration
Setup
Gauges are calibrated at the factory using equipment traceable to NIST. There is no need to calibrate the gauge before putting it into service. Calibration intervals depend on your quality control program requirements, although many customers calibrate annually. Calibration should only be performed by qualified individuals using appropriate calibration standards and procedures. 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/vacuum over the full range of the gauge. A vacuum pump able to produce a vacuum of 10 microns (0.01 torr or 10 millitorr) or lower is required for vacuum gauges. Warning: application of vacuum to non-vacuum models may result in irreparable damage to the sensor.

Allow the gauge to acclimate to ambient temperature for 20 minutes. Install fresh batteries.

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.

Entering Calibration Mode
With the gauge off, press and hold the DOWN button. Then press the front button. Release all buttons when the display indicates CAL.

The display begins by indicating the full-scale positive pressure rating of the gauge in the engineering units as configured by the factory, and then shows all display segments.

Before the gauge enters the Calibration Mode, the display initially indicates _______ _______ with the first underscore blinking, and with CALPC (calibration pass code) on the lower display.

Note: The gauge will automatically revert to normal operation if no buttons are operated for approximately 15 seconds. To cancel and return to normal operation, press and release the front button without entering any pass code characters.

Enter the User-Modifiable Pass Code
The factory default is 3510, but this is user changeable.

1. Use the UP or DOWN buttons to set the left-most digit to 3.
2. Press and release the front button to move to the next position. The 3 will remain, and the second position will be blinking.
3. Use the UP or DOWN buttons to select 5.
4. Press and release the front button to index to the next position. 35 will remain, and the third position will be blinking.
5. Use the UP or DOWN buttons to select 1.
6. Press and release the front button to index to the next position. 351 will remain, and the fourth position will be blinking.
7. Use the UP or DOWN buttons to select 0.
8. Press and release the front button to proceed.

User-Defined Pass Code Configuration
Remove the rear cover to access the buttons located near the lower right and left corners of the circuit board.

View or change user configuration pass code
With the unit off, press and hold the UP button, then press the front button.

Release all buttons when the display indicates CFG.

View or change user calibration pass code
With the unit off, press and hold the DOWN button, then press the front button.

Release all buttons when the display indicates CAL.

Enter access code 1220
Before the unit enters the view or change pass code mode, the display initially indicates _______ _______ with the first underscore blinking, and with CFGPC or CALPC on the character display.

Note: The gauge will automatically revert to normal operation if no buttons are operated for approximately 15 seconds.

To cancel and return to normal operation, press and release the DOWN button without entering any pass code characters.

1. Use the UP and DOWN buttons to set the left-most digit to 1.
2. Press and release the front button to move to the next position. The 1 will remain, and the second position will be blinking.
3. Use the UP and DOWN buttons to select 2.
4. Press and release the front button to index to the next position. 1 will remain, and the third position will be blinking.
5. Use the UP and DOWN buttons to select 2.
6. Press and release the front button to move to the next position. 1 2 will remain, and the fourth position will be blinking.
7. Use the UP and DOWN buttons to select 0.
8. Press and release the front button to proceed.

Gauge Reference Pressure Gauges
Apply zero pressure by venting the gauge port to atmosphere. The character display will alternate between ZERO and CAL. Adjust for a display indication of zero using the UP and the DOWN buttons.

Apply full-scale pressure. The character display will alternate between +SPAN and CAL. Adjust for a display indication of full-scale pressure using the UP and the DOWN buttons.

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

Gauge Reference Vacuum Gauges
Apply zero pressure by venting the gauge port to atmosphere. The character display will alternate between ZERO and CAL. Adjust for a display indication of zero using the UP and the DOWN buttons.

Apply full-scale vacuum. The character display will alternate between +SPAN and CAL. Adjust for a display indication of full-scale vacuum using the UP and the DOWN buttons.

Apply 50% full-scale vacuum. The character display will alternate between +MID and CAL. Adjust for a display indication equal to 50% of full-scale vacuum using the UP and the DOWN buttons.

Absolute Reference Gauges
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 lower display will alternate between +MID and CAL. Adjust for a display indication equal to 50% of full-scale pressure.

Compound and Bipolar Gauges
Apply 50% of full-scale vacuum. The character display will alternate between ZERO and CAL. Press the UP and DOWN buttons to obtain a display indication of actual applied vacuum using the UP and the DOWN buttons.

For bipolar and ~30.00inhg~15.00psig compound range models only, apply 50% full-scale vacuum. The character display will alternate between +MID and CAL. Adjust for a display indication equal to 50% of full-scale vacuum using the UP and the DOWN buttons.

Save Calibration
Once the adjustments are complete, press and hold the front button until the display indicates ---- then release the button to store the calibration parameters in non-volatile memory and restart the gauge.

Verify the pressure indications at 0%, 25%, 50%, 75% and 100% of full scale.

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