Cecomp® *Test +* Battery Powered Digital Pressure Gauges, User Configurable

cecomp.com/plus **CTP1B**

Ranges and Resolution
See table below for ranges and resolution
User configurable for listed engineering units
Resolution is fixed for each engineering unit

Accuracy
±0.1% full scale ±1 least significant digit
Accuracy includes linearity, hysteresis, repeatability
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
4 digit LCD, 0.5"H and 5 character 0.25"H alphanumeric
White LED backlight active for 1 minute with button keypress
Backlight user configurable for AUTO (1 minute), ON, or OFF

Batteries, Battery Life, Low Battery Indication
2 AA alkaline included
Approx. 150-1500 hours depending on backlight usage
Low battery symbol on display

Controls, Functions
Front button powers gauge on/off, activates backlighting for 1 minute if enabled, zeros gauge reference gauges, and cycles through min/max functions

Internal buttons for selection of engineering units and auto shutoff time. Passcode protected calibration, min/max setup.

Min/Max Memory
Minimum and/or maximum readings stored in memory
Readings cleared or stored at shutoff
User configurable

Calibration
Zero button for gauge reference ranges
Non-interactive zero, span, and linearity, ±10% of range

Auto Shutoff
Factory default: 5 minutes
User selectable: 1 minute to 8 hours or manual on/off

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

Housing Materials
Epoxy powder coated aluminum case with case stiffener, ABS/ polycarbonate bezel, coated circuit boards for humidity resistance, front and rear rubber gaskets, polycarbonate label
NEMA 2 (IP51)
Includes rubber boot

Connection and Material
1/4" NPT male fitting
All wetted parts are 316L stainless steel

Overpressure, Burst, Vacuum Service
3000 psig sensor: 5000 psig overpressure
5000 psig sensor: 7500 psig overpressure
All others: 2 X pressure range overpressure
Burst pressure: 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 temperature: –4 to 185°F (–20 to 85°C)
Sensor compensated range: 32 to 158°F (0 to 70°C)

Dimensions
3.67"W x 3.19"H x 2"D with boot, not including fitting

- *±0.1% Test Gauge Accuracy*
- *Ruggedized Design*
- *Red Rubber Boot Included*
- *316L Stainless Steel Wetted Parts*
- *Selectable Units and Auto Shutoff Times*
- *White LED Display Backlight*
- *Min/Max Memory*

MADE IN USA

Vacuum	Range/Resolution	Selectable Units
CTP1B15PSIVAC	0 to 14.70 psig vacuum	psi, inHg, torr, mmHg, inH20, ftH20, oz/in2 cmH20, g/cm2, kg/cm2, atm, bar, mbar, MPa, kPa
Vacuum/Pressure	**Range/Resolution**	**Selectable Units**
CTP1B±15PSIG	–14.70 to 15.00 psig	psi, inHg/psi, inHg, torr, mmHg, inH20, ftH20, oz/in2, cmH20, g/cm2, kg/cm2, atm, bar, mbar, MPa, kPa
CTP1B30V15PSIG	–29.92 inHg to 15.00 psig	psi, inHg/psi, inHg, torr, mmHg, inH20, ftH20, oz/in2, cmH20, g/cm2, kg/cm2, atm, bar, mbar, MPa, kPa
CTP1B15V100PSIG	–14.7 to 100.0 psig	psi, inHg/psi, inHg, torr, mmHg, inH20, ftH20, oz/in2, cmH20, g/cm2, kg/cm2, atm, bar, mbar, MPa, kPa
CTP1B30V100PSIG	–29.9 inHg to 100.0 psig	psi, inHg/psi, inHg, torr, mmHg, inH20, ftH20, oz/in2, cmH20, g/cm2, kg/cm2, atm, bar, mbar, MPa, kPa
CTP1B15V200PSIG	–14.7 to 200.0 psig	psi, inHg/psi, inHg, torr, inH20, ftH20, oz/in2, kg/cm2, atm, bar, MPa, kPa
CTP1B30V200PSIG	–29.9 inHg to 200.0 psig	psi, inHg/psi, inHg, torr, inH20, ftH20, oz/in2, kg/cm2, atm, bar, MPa, kPa
Pressure	**Range/Resolution**	**Selectable Units**
CTP1B3PSIG	0 to 3.000 psig	psi, inHg, torr, mmHg, inH20, ftH20, oz/in2, mmH20, cmH20, g/cm2, kg/cm2, atm, bar, mbar, kPa
CTP1B5PSIG	0 to 5.000 psig	psi, inHg, torr, mmHg, inH20, ftH20, oz/in2, mmH20, cmH20, g/cm2, kg/cm2, atm, bar, mbar, kPa
CTP1B15PSIG	0 to 15.00 psig	psi, inHg, torr, mmHg, inH20, ftH20, oz/in2, cmH20, g/cm2, kg/cm2, atm, bar, mbar, MPa, kPa
CTP1B30PSIG	0 to 30.00 psig	psi, inHg, torr, mmHg, inH20, ftH20, oz/in2, cmH20, g/cm2, kg/cm2, atm, bar, mbar, MPa, kPa
CTP1B60PSIG	0 to 60.00 psig	psi, inHg, torr, mmHg, inH20, ftH20, oz/in2, cmH20, g/cm2, kg/cm2, atm, bar, mbar, MPa, kPa
CTP1B100PSIG	0 to 100.0 psig	psi, inHg, torr, mmHg, inH20, ftH20, oz/in2, cmH20, g/cm2, kg/cm2, atm, bar, mbar, MPa, kPa
CTP1B200PSIG	0 to 200.0 psig	psi, inHg, inH20, ftH20, oz/in2, kg/cm2, atm, bar, MPa, kPa
CTP1B300PSIG	0 to 300.0 psig	psi, inHg, ftH20, oz/in2, kg/cm2, atm, bar, MPa, kPa
CTP1B500PSIG	0 to 500.0 psig	psi, inHg, ftH20, kg/cm2, atm, bar, MPa, kPa
CTP1B1000PSIG	0 to 1000 psig	psi, inHg, ftH20, kg/cm2, atm, bar, MPa, kPa
CTP1B2000PSIG	0 to 2000 psig	psi, inHg, ftH20, kg/cm2, atm, bar, MPa
CTP1B3000PSIG	0 to 3000 psig	psi, inHg, ftH20, kg/cm2, atm, bar, MPa
CTP1B5000PSIG	0 to 5000 psig	psi, kg/cm2, atm, bar, MPa
Absolute Reference	**Range/Resolution**	**Selectable Units (absolute reference)**
CTP1B15PSIA	15.00 to 0 psi absolute	psi, inHg, torr, mmHg, inH20, ftH20, oz/in2, cmH20, g/cm2, kg/cm2, atm, bar, mbar, MPa, kPa
CTP1B30PSIA	30.00 to 0 psi absolute	psi, inHg, torr, mmHg, inH20, ftH20, oz/in2, cmH20, g/cm2, kg/cm2, atm, bar, mbar, MPa, kPa
CTP1B100PSIA	100.0 to 0 psi absolute	psi, inHg, torr, mmHg, inH20, ftH20, oz/in2, cmH20, g/cm2, kg/cm2, atm, bar, mbar, MPa, kPa

Calibration Documentation Option—add to end of model number	
NC	NIST traceability documentation, 5 points and date

Accessories—order separately

DPG-OK2, DPG-OK3, DPG-OK6

Pelican® brand high visibility orange heavy duty waterproof cases. Models available for storing 2, 3, or 6 gauges.

CON14SS

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

SCR14SS

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

1220 American Way Libertyville, IL 60048
800-942-0315
cecomp.com

Types of Gauges

Gauge reference sensors always read zero with an open gauge port. Ranges 1000 psi and higher use a 14.7 psi sealed reference sensor. They are functionally similar to gauge reference sensors.

Bipolar sensors read positive pressure and vacuum in the same units, and zero with the gauge port open.

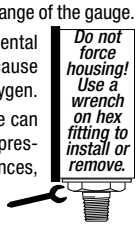
Compound ranges read inHg for vacuum and psig for pressure.

Absolute reference gauges read zero at full vacuum. With an open gauge port, their readings will vary due to continuously changing barometric pressure.

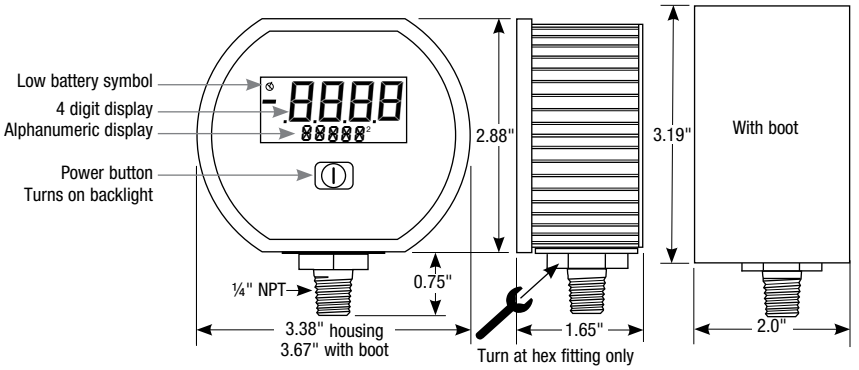
psi	Compound	inHg	torr	mmHg	inH_2O	ftH_2O	oz/in^2	mmH_2O	cmH_2O	g/cm^2	kg/cm^2	atm	mbar	bar	kPa	MPa
0 to 14.70 psig vac	n/a	29.92 vac	760.0 vac	760.0 vac	406.8 vac	33.90 vac	235.1 vac	n/a	1034 vac	1033 vac	1.033 vac	1.000 vac	1013 vac	1.013 vac	101.3 vac	.1013 vac
–14.70 to 15.00 psig	–29.92 inHg to 15.00 psi	–29.92 to 30.54	–760.0 to 775.7	–760.0 to 775.7	–406.8 to 415.2	–33.90 to 34.61	–235.1 to 240.0	n/a	–1034 to 1055	–1033 to 1055	–1.033 to 1.055	–1.000 to 1.021	–1013 to 1034	–1.013 to 1.034	–101.3 to 103.4	–.1013 to .1034
–14.7 to 100.0 psig	–29.9 inHg to 100.0 psi	–29.9 to 203.6	–760 to 5171	–760 to 5171	–407 to 2768	–33.9 to 230.7	–235 to 1600	n/a	–1034 to 7031	–1033 to 7031	–1.033 to 7.031	–1.000 to 6.805	–1013 to 6895	–1.013 to 6.895	–101.3 to 689.5	–.1013 to .6895
–14.7 to 200.0 psig	–29.9 inHg to 200.0 psi	–29.9 to 407.2	n/a	n/a	–407 to 5536	–33.9 to 461.4	–235 to 3200	n/a	n/a	n/a	–1.03 to 14.06	–1.00 to 13.61	n/a	–1.01 to 13.79	–101 to 1379	–.101 to 1.379
0 to 3.000 psig	n/a	6.108	155.1	155.1	83.0	6.921	48.00	2109	210.9	210.9	.2109	.2041	206.8	.2068	20.68	n/a
0 to 5.000 psig	n/a	10.18	258.6	258.6	138.4	11.54	80.0	3515	351.5	351.5	.3515	.3402	344.7	.3447	34.47	n/a
0 to 15.00 psig	n/a	30.54	775.7	775.7	415.2	34.61	240.0	n/a	1055	1055	1.055	1.021	1034	1.034	103.4	.1034
0 to 30.00 psig	n/a	61.08	1552	1552	830	69.21	480.0	n/a	2109	2109	2.109	2.041	2068	2.068	206.8	.2068
0 to 60.00 psig	n/a	122.2	3103	3103	1661	138.4	960	n/a	4218	4218	4.218	4.083	4137	4.137	413.7	.4137
0 to 100.0 psig	n/a	203.6	5171	5171	2768	230.7	1600	n/a	7031	7031	7.031	6.805	6895	6.895	689.5	.6895
0 to 200.0 psig	n/a	407.2	n/a	n/a	5536	461.3	3200	n/a	n/a	n/a	14.06	13.61	n/a	13.79	1379	1.379
0 to 300.0 psig	n/a	610.8	n/a	n/a	n/a	692.0	4800	n/a	n/a	n/a	21.09	20.41	n/a	20.68	2068	2.068
0 to 500.0 psig	n/a	1018	n/a	n/a	n/a	1153	n/a	n/a	n/a	n/a	35.15	34.02	n/a	34.47	3447	3.447
0 to 1000 psig	n/a	2036	n/a	n/a	n/a	2307	n/a	n/a	n/a	n/a	70.31	68.05	n/a	68.95	6895	6.895
0 to 2000 psig	n/a	4072	n/a	n/a	n/a	4614	n/a	n/a	n/a	n/a	140.6	136.1	n/a	137.9	n/a	13.79
0 to 3000 psig	n/a	6108	n/a	n/a	n/a	6921	n/a	n/a	n/a	n/a	210.9	204.1	n/a	206.8	n/a	20.68
0 to 5000 psig	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	351.5	340.2	n/a	344.7	n/a	34.47
15.00 to 0 psi abs	n/a	30.54 abs	775.7 abs	775.7 abs	415.1 abs	34.61 abs	240.0 abs	n/a	1055 abs	1055 abs	1.055 abs	1.021 abs	1034 abs	1.034 abs	103.4 abs	.1034 abs
30.00 to 0 psi abs	n/a	61.08 abs	1552 abs	1552 abs	830 abs	69.21 abs	480.0 abs	n/a	2109 abs	2109 abs	2.109 abs	2.041 abs	2068 abs	2.068 abs	206.8 abs	.2068 abs
100.0 to 0 psi abs	n/a	203.6 abs	5172 abs	5172 abs	2767 abs	230.7 abs	1600 abs	n/a	7031 abs	7031 abs	7.031 abs	6.805 abs	6895 abs	6.895 abs	689.5 abs	.6895 abs

Precautions

- ✔ Read and understand all instruction sheet information. Contact us for help, instructions, or repairs.
- ✔ Batteries should be replaced when the low battery indicator comes to prevent unreliable readings. If gauge is used infrequently, remove batteries to prevent damage from leaky batteries. Inspect batteries at least annually.
- ✔ 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.

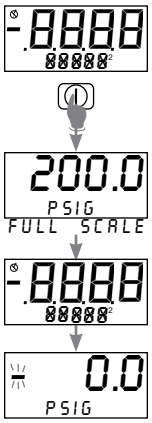


Cecomp maintains a constant effort to upgrade and improve its products. Specifications are subject to change without notice. See cecomp.com for latest product information. Consult factory for your specific requirements.



OPERATION

Power-Up



Your gauge is ready for use. Batteries are installed and it has been calibrated on NIST traceable equipment.

Press and hold the power button for approx. 1 second. The display is tested.

The full-scale range in the factory default units is indicated. If the units were changed by the user, the full scale range in the selected units is then displayed.

The display test is briefly shown again.

The actual pressure and units are displayed. The gauge is ready for use and readings are updated approximately 3 times per second.

Occasional flashing of the minus sign is normal for gauge reference models and indicates the gauge is at zero pressure. Absolute gauges normally read atmospheric pressure and zero at full vacuum.

Display Backlighting

In user configuration, the backlight can be set for

AUTO: On for 1 minute (factory default)

ON: On whenever the gauge is on

OFF: Disabled, to increase battery life

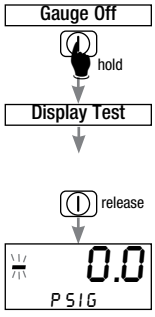
AUTO mode will turn on the backlighting for 1 minute when the gauge is powered up. It can be turned on at any time by momentarily pressing the power button whenever the gauge is on. This also restarts the auto shutoff timer.

The display backlighting may not be apparent under bright lighting conditions.

Zero Display at Power Up (Gauge Reference Only)

Note: Absolute reference gauges do not use the zero feature.

The gauge port must be open to normal atmospheric pressure with no pressure or vacuum applied.



With the power off, press and hold the front power button. The display is tested and then is displayed.

Release the button and the full-scale range in the selected units are indicated, the display is tested again, then zero pressure and the units are displayed. The gauge in now zeroed.

Occasional flashing of the minus sign with zero pressure/vacuum is normal. The stored zero correction is erased when the gauge shuts off.

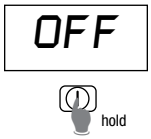
If occurs make sure all pressure is removed and press the power button to restart the gauge.

Shutoff

The auto shutoff timer starts at power up and restarts if the power button is pressed. The default time is 5 minutes but can be user configured for a variety of times.

If on/off operation is selected, the gauge will stay on until manually shut off or when the batteries are depleted. Turn gauge off when not in use.

When an auto shutoff timer is used, the display indicates OFF five seconds prior to shutoff. Press the Power button to keep the gauge on.



To shut the gauge off manually, press and hold the center power button (about 5 seconds) until OFF is displayed and then release the button. The gauge shuts off.

continued on next page >>

Minimum and Maximum Readings

The default configuration is with minimum and maximum capture functions enabled. One or both can be disabled in the Advanced Configuration mode.

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

Press and hold the button for about 1 second until MAX is displayed alternating with the units. The maximum reading will be displayed and updated. The gauge may be left in this mode.

After MAX is displayed, press and hold the button for about 1 second until MIN is displayed alternating with the units. The minimum reading will be displayed and updated. The gauge may be left in this mode. If excessive vacuum is applied to a pressure-only gauge, will be stored until the memory is cleared.

After MIN is displayed, press and hold the button for about 1 second until is displayed. The MAX and MIN memory is not erased and the gauge returns to normal operation.

Function	Button	Prompt (Release Button)
Hi reading	Press/hold	MAX > max. reading & units
Lo reading	Press/hold	MIN > min. reading & units
Exit Hi/Lo	Press/hold	***** > actual reading
Clear Hi/Lo	Press/hold	MAX > CLR MX/MN > actual reading
Clear, off	Press/hold	MAX > CLR MX/MN > OFF

Clear Min/Max Memory

Press and continue to hold the button until the display indicates (about 3 seconds total) and then release the button.

Both max. and min. values will be cleared and then the gauge will return to the normal operating mode.

With a gauge reference models if no pressure is applied, the reading will return to zero. As pressure or vacuum is applied new readings will be stored in memory.

Absolute reference models will store the current atmospheric pressure reading if the gauge port is open to atmosphere. Note that atmospheric pressure changes constantly.

For some applications it may be desirable to bring the system up to normal pressure and then clear the minimum or maximum values.

ERROR INDICATIONS

Zero Error

Attempting to zero gauge reference models with more than approximately 3% of full-scale pressure or vacuum applied will result in an error zero condition. The display will alternately indicate the reading and .

If your intent was to zero the gauge, make sure to remove all pressure from the gauge port.

To clear the error, press the power button to turn the gauge off and restart it.

Excessive Vacuum

Excessive vacuum applied to a pressure-only gauge will display as until the vacuum is released. Note: A pressure-only gauge will be damaged by excessive vacuum.

Excessive Pressure

If 112.5% over range pressure is applied, an out-of-range indication of or will be displayed depending on model. Use gauge within the appropriate pressure range to prevent damage.

- or -

GAUGE CONFIGURATION

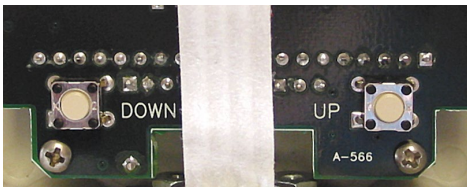
Accessing the Internal Configuration Buttons

1. Remove the 6 Phillips screws on the back of the unit.
2. Lift up the battery holder remove it leaving the wires connected.
4. Remove the battery cradle as needed to gain access to the two internal buttons located near the lower right and left corners of the circuit board.

Both internal buttons can easily be finger operated with the front of the gauge facing the user.

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

When configuration or calibration is complete, replace the battery holder assembly and rear cover taking care not to pinch the power wires.



Auto Shutoff Time Selection

Auto shutoff time selection is done via the 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.

With the gauge powered up, press and hold the DOWN button.

Release the button when the auto shutoff time is displayed on the upper display.

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

An auto shutoff time of 0 signifies that the auto shutoff 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 the selection and return to normal operation.

Engineering Unit Selection

Engineering unit selection (except compound ranges) 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 (inHg/PSI) 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 originally configured range is displayed and then the conversion with the selected engineering unit is displayed.

Power the gauge up by holding the front button for 1 second.

Press and hold the internal 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 the selection and return to normal operation.

Advanced Configuration

Advanced configuration requires a passcode 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 is tested.

The display then indicates _ _ _ _ with the first underscore blinking, and with CFGPC (configuration passcode) 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 front button without entering any passcode characters.

Passcode Entry

The factory default is 3510, but this may be changed by the user under the Passcode 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. 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 with configuration.

If an incorrect passcode is entered, the gauge will return to the start of the passcode entry sequence.

The shutoff timer is disabled and the gauge will stay in the configuration mode until the unit is powered down or batteries removed.

Gauge Configuration—User or Factory

The upper display will be blank, and the lower section will display USER. If USER is selected, the user configuration can be modified as described in the following steps.

To restore the gauge to factory default settings, press the UP button. The lower display will indicate FCTRY. Press and release the front power button. The user configuration will be replaced by the factory configuration and the gauge will restart in the normal operating mode.

If not already displayed, press and release the DOWN button to change the lower display to USER.

Press and release the front power button to continue with configuration.

Max/Min Configuration

Use the UP or DOWN buttons to select from the following:

MX/MN Both highest and lowest values will be captured

MX/--- 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 will indicate clr.

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 vacuum/pressure or 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 PSI. This setting will disable engineering unit selection.

Backlight Time Selection

The upper display will indicate to indicate backlight setup. Use the UP and DOWN buttons to select from the following.

AUTO: Display backlight enabled for 1 minute
ON: Display backlight on whenever the gauge is on
OFF: Display backlight is disabled

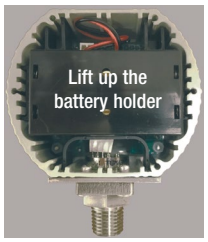
When the desired setting is displayed, press and release the power button to save your selection and restart the gauge.

Replace the rear cover taking care not to pinch the power wires between the cover and the case. Your gauge is ready for use with your new configuration.

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 batteries should be replaced when the indicator comes on or unreliable readings may result.

1. Remove the 6 Phillips screws on the back of the unit.
2. Lift up the battery holder.
3. Remove batteries by lifting up the positive end of the battery (opposite the spring) taking care not to bend the battery holder spring.
4. Discard old batteries properly, do not discard into fire, sources of extreme heat, or in any hazardous manner.
5. Always replace both batteries at the same time with high quality alkaline batteries.
6. Install batteries with correct orientation. Incorrect polarity will damage the gauge. The negative (flat) end of each battery should be inserted first facing the battery holder spring.
7. Replace battery holder face down being careful not to pinch the wires.
8. Replace the back cover, including the rubber gasket and reinstall the six screws.



CALIBRATION

Setup and 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.

The calibration system must be able to generate and measure pressure/vacuum over the full range of the gauge and should be at least four times more accurate than the gauge being calibrated.

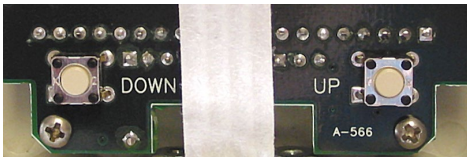
A vacuum pump able to produce a vacuum of 100 microns (0.1 torr or 100 millitorr) or lower is required for vacuum and absolute gauges.

Remove the 6 Phillips screws, open the rear cover, and remove the battery pack and cradle to access the internal buttons.

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

Entering Calibration Mode

With the gauge off, press and hold the DOWN button, then press the Power 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.

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

Enter the 3510 passcode as described in the Configuration Passcode section.

Continued >>

Calibration Mode

The gauge remains in the Calibration Mode until restarted manually or power is removed. Features not related to calibration are disabled and compound range models are set for the same engineering units for pressure and for vacuum.

The calibration may be performed in any of the available engineering units as well as percent (PCT).

For best accuracy, use the UP and DOWN buttons to select calibration engineering units with the highest number of display counts.

Press and release the Power button when the appropriate engineering units are displayed.

Sensor	Suggested units for calibration
3 PSI	6.920 FTH2O
5 PSI	5.000 PSI
15 PSI	775.7 MMHG or TORR
30 PSI	61.08 INHG
50 PSI	50.00 PSI
60 PSI	60.00 PSI
100 PSI	7.031 KG/CM2
200 PSI	407.2 INHG
300 PSI	610.8 INHG
500 PSI	3447 KPA
1000 PSI	6895 KPA
2000 PSI	4614 FTH2O
3000 PSI	6920 FTH2O
5000 PSI	5000 PSI

The display will then indicate the currently applied pressure in the engineering units selected for calibration.

UP and DOWN Button Operation

Each time one of the UP or DOWN buttons is pressed and released quickly, a small change is made to the digitized pressure signal. It may take more than one button press to make a change on the display.

To make larger changes, press and hold the appropriate button. After about one second, the display will begin to change continuously. Release the button to stop. Then make fine adjustments by pressing and quickly releasing the buttons as previously described. Adjust the gauge's display to match the calibrator's reading.

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 DOWN buttons.

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

Press and hold the Power button until the display indicates - - - - then release the button to store the calibration parameters in non-volatile memory and restart the gauge.

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

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 DOWN buttons.

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

Press and hold the Power button until the display indicates - - - - then release the button to store the calibration parameters in non-volatile memory and restart the gauge.

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

Absolute Reference Gauges

Apply full vacuum to the gauge. The character display will alternate between and . 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. 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. Press the UP and DOWN buttons to obtain an indication equal to 50% of full-scale pressure.

Press and hold the Power button until the display indicates - - - - then release the button to store the calibration parameters in non-volatile memory and restart the gauge.

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

Compound and Bipolar Gauges

In addition to the steps described above for pressure gauges, apply full-scale vacuum. The character display will alternate between -SPAN and CAL. Adjust for a display indication of actual applied vacuum using the UP and DOWN buttons.

For bipolar and –30.00inHg to 15.00psi 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 DOWN buttons.

CHANGING PASSCODES

The factory default passcode 3510 may be changed to a different value for configuration and/or calibration.

With the gauge off, press and hold the UP button to view and/or change the user configuration passcode. Then press the Power button. Release all buttons when the display indicates CFG.

Calibration Passcode

With the gauge off, press and hold the DOWN button to view and/or change the user calibration passcode. Then press the Power button. Release all buttons when the display indicates CAL.

Change Passcode Mode

Before the gauge enters the view or change passcode mode, the display initially indicates _ _ _ _ with the first underscore blinking, and with CFGPC or CALPC on the character display.

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 Power button.

Enter access code 1220:

Use the UP and DOWN buttons to set the left-most digit to 1.

Press and release the Power button to index to the next position. The 1 will remain, and the second position will be blinking.

Use the UP and DOWN buttons to select 2.

Press and release the Power button to index to the next position. 1 2 will remain, and the third position will be blinking.

Use the UP and DOWN buttons to select 2.

Press and release the Power button to index to the next position. 1 2 2 will remain, and the fourth position will be blinking.

Use the UP and DOWN buttons to select 0.

Press and release the Power button to proceed.

Note: If an incorrect access code was entered, the gauge will return to the start of the access code entry sequence.

Once the access code has been entered correctly, the display will indicate the existing user-defined passcode with CFGPC or CALPC on the character display.

Press the UP or DOWN button to select the first character of the new passcode.

When the correct first character is being displayed, press and release the Power button to proceed to the next passcode character.

Repeat above until the entire passcode is complete.

To exit the User Defined Passcode change mode, press and hold the Power button.

Release the button when the display indicates – – – – to restart the gauge.