Cecomp® DSG SaniGauge® Battery Powered Digital Sanitary Pressure Gauges — DSGB3

- *±0.25% Test Gauge Accuracy*
- *316L Stainless Steel Wetted Parts*
- *1.5" or 2.0" Tri-Clamp®*
- *Keypad Setup with Pass Code Protection*
- *Selectable Units*
- *Store Minimum and Maximum Readings*
- *Food Processing*
- *Dairy and Breweries*
- *Pharmaceutical*

Specifications

Ranges and Resolution
See table below for standard ranges and units
See table on next page for available engineering units
Resolution is fixed for each engineering unit

Accuracy
Accuracy includes linearity, hysteresis, repeatability
Accuracy: ±0.25% of full scale ±1 least significant digit
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
Red LED backlight active for 1 minute (user configurable)

Batteries, Battery Life, Low Battery Indication
2 AA alkaline
Up to 1500 hours depending on backlight usage
Low battery symbol on display

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

Controls and Functions
Three front buttons: zero/clear, on/off, min/max memory
Zero button is for gauge reference models only

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

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

Sanitary Seal
3-A certified Tri-Clamp flush diaphragm sanitary seal
NEOBEE® M-20 fill
All 316L stainless steel construction
Optional electropolish passivation

Weight (approximate)
1.5" gauge: 2 lbs shipping: 3 lbs
2.0" gauge: 2.5 lbs shipping: 3.5 lbs

Housing and Materials
NEMA 4X ABS/polycarbonate case, polycarb. label, rear gasket
Conformal coating on circuit boards for moisture resistance.

Maximum Working Pressure
1.5": 2 X pressure range
2.0": 2 X pressure range or 550 psi for 300 psi sensor
Maximum pressure dependent on type of clamping device
112.5% FS out-of-range display: I – – – or I –.–.–.–

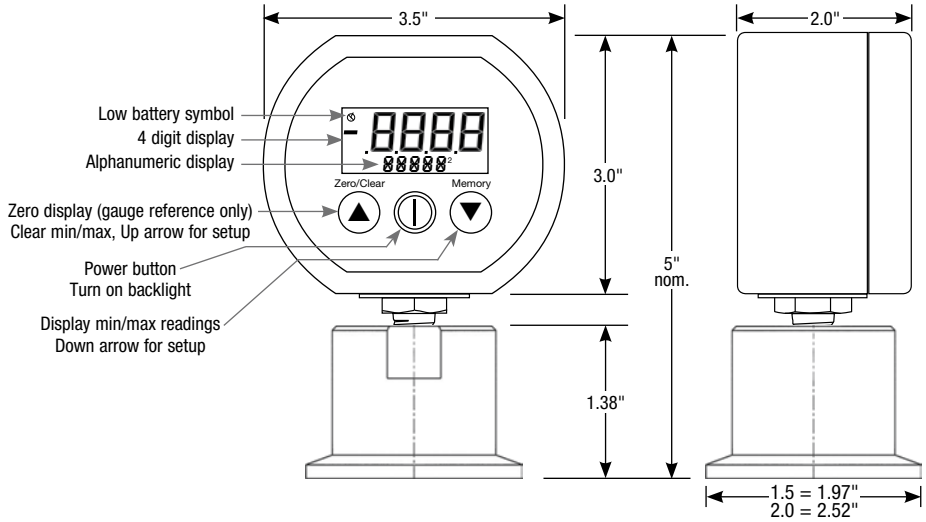
Environmental
Storage temperature: –40 to 203°F (–40 to 95°C)
Operating temperature: –4 to 185°F (–20 to 85°C)
Compensated temperature: 32 to 158°F (0 to 70°C)
Thermal effect due to fill: Up to 1.2 psi from 0 to 70°C
Positional effect: Up to 0.14 psi

Quick Link: cecomp.com/san

NEMA 4X Housing

3-A Sanitary Seal

MADE IN USA



Default Range and Units See next page for additional units	Vacuum Service	1" or 1.5" Tri-Clamp	Max. psi*	2" Tri-Clamp	Max. psi*
–14.70 to 15.00 psig	Yes	**DSGB315N±15PSIG**	30 psig	**DSGB320N±15PSIG**	30 psig
–29.9 inHg to 15.0 psig	Yes	**DSGB315N30V15PSIG**	30 psig	**DSGB320N30V15PSIG**	30 psig
15.00 to 0 psi absolute	Yes	**DSGB315N15PSIA**	30 psig	**DSGB320N15PSIA**	30 psig
0 to 14.70 psig vacuum	Yes	**DSGB315N15PSIGVAC**	30 psig	**DSGB320N15PSIGVAC**	30 psig
0 to 15.00 psig	Yes	**DSGB315N15PSIG**	30 psig	**DSGB320N15PSIG**	30 psig
30.00 to 0 psi absolute	Yes	**DSGB315N30PSIA**	60 psig	**DSGB320N30PSIA**	60 psig
0 to 30.00 psig	No	**DSGB315N30PSIG**	60 psig	**DSGB320N30PSIG**	60 psig
0 to 60.00 psig	No	**DSGB315N60PSIG**	120 psig	**DSGB320N60PSIG**	120 psig
100.0 to 0 psi absolute	Yes	**DSGB315N100PSIA**	200 psig	**DSGB320N100PSIA**	200 psig
–29.9 inHg to 100.0 psig	Yes	**DSGB315N30V100PSIG**	200 psig	**DSGB320N30V100PSIG**	200 psig
0 to 100.0 psig	Yes	**DSGB315N100PSIG**	200 psig	**DSGB320N100PSIG**	200 psig
–29.9 inHg to 200.0 psig	Yes	**DSGB315N30V200PSIG**	400 psig	**DSGB320N30V200PSIG**	400 psig
0 to 200.0 psig	Yes	**DSGB315N200PSIG**	400 psig	**DSGB320N200PSIG**	400 psig
0 to 300.0 psig	No	**DSGB315N300PSIG**	600 psig	**DSGB320N300PSIG**	550 psig

Option—add to end of model number	
-E	Electropolished sanitary fitting
Calibration certificates—order separately	
CD	Calibration data, 5 test points, test date
NC	NIST certificate with traceability documentation, 5 test points and date

*Maximum pressure dependent on type of clamping device

NEOBEE—Reg TM Stepan Specialty Products, LLC
Tri-Clamp—Reg TM Alfa Laval Inc.

Ranges and Selectable Units

Range Codes
The range code in the gauge model number indicates the default range when the gauge is ordered. Any listed engineering unit may be ordered as the default.

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

Conversion
Engineering unit conversions are calculated from the factory default unit to the newly selected units.

Range Codes	Selectable Units
15PSIA	15.00 to 0 psia
30INHGA	30.00 to 0 inHg abs
400INH2OA	400.0 to 0 inH2O abs
240ZINA	240.0 to 0 oz/in² abs
1000GCMA	1000 to 0 g/cm² abs
760MMHGA	760.0 to 0 mmHg abs
760TORRA	760.0 to 0 torr abs
1000MBARA	1000 to 0 mbar abs
1000CMH2OA	1000 to 0 cmH2O abs
100KPAA	100.0 to 0 kPa abs
0.1MPAA	.1000 to 0 MPa abs
1BARA	1.000 to 0 bar abs
1KGCMA	1.000 to 0 kg/cm² abs
1ATMA	1.000 to 0 atm abs
Range Codes	**Selectable Units**
15PSIVAC	0 to 15.00 psig vac
30INHGVAC	0 to 30.00 inHg vac
400INH2OVAC	0 to 400.0 lnH20 vac
240ZINVAC	0 to 240.0 oz/in² vac
1000GCMVAC	0 to 1000 g/cm² vac
760MMHGVAC	0 to 760.0 mmHg vac
760TORRVAC	0 to 760.0 torr vac
1000MBARVAC	0 to 1000 mbar vac
1000CMH2OVAC	0 to 1000 cmH2O vac
100KPAVAC	0 to 100.0 kPa vac
0.1MPAVAC	0 to .1000 MPa vac
1BARVAC	0 to 1.000 bar vac
1KGCMVAC	0 to 1.000 kg/cm² vac
1ATMVAC	0 to 1.000 atm vac
Range Codes	**Selectable Units**
15PSIG	0 to 15.00 psig
30INHGG	0 to 30.00 inHg
400INH2OG	0 to 400.0 inH2O
240ZING	0 to 240.0 oz/in²
1000GCMG	0 to 1000 g/cm²
760MMHGG	0 to 760.0 mmHg
760TORRG	0 to 760.0 torr
1000MBARG	0 to 1000 mbar
1000CMH2OG	0 to 1000 cmH2O
35FTH2O	0 to 35.00 ftH2O
100KPAG	0 to 100.0 kPa
0.1MPAG	0 to .1000 MPa
1BARG	0 to 1.000 bar
1KGCMG	0 to 1.000 kg/cm²
1ATMG	0 to 1.000 atm

Range Codes	Selectable Units
±15PSIG	–15.00 to 15.00 psig
–30INHG/15PSIG	–30.00 inHg to 15.00 psig
±30INHGG	–30.00 to 30.00 inHg
±400INH2OG	–400 to 400 inH2O
±240ZING	–240.0 to 240.0 oz/in²
±1000GCMG	–1000 to 1000 g/cm²
±760MMHGG	–760 to 760 mmHg
±760TORRG	–760 to 760 torr
±1000MBAR	–1000 to 1000 mbar
±1000CMH2OG	–1000 to 1000 cmH2O
±100KPAG	–100.0 to 100.0 kPa
±0.1MPAG	–.1000 to .1000 MPa
±1BARG	–1.000 to 1.000 bar
±1KGCMG	–1.000 to 1.000 kg/cm²
±1ATMG	–1.000 to 1.000 atm
Range Codes	**Selectable Units**
30PSIA	30.00 to 0 psia
60INHGA	60.00 to 0 inHg abs
850INH2OA	850 to 0 inH2O abs
480ZINA	480.0 to 0 oz/in² abs
2100GCMA	2100 to 0 g/cm² abs
1600MMHGA	1600 to 0 mmHg abs
1600TORRA	1600 to 0 torr abs
2000MBARA	2000 to 0 mbar abs
2100CMH2OA	2100 to 0 cmH2O abs
200KPAA	200.0 to 0 kPa abs
0.2MPAA	0 to .2000 to 0 MPa abs
2BARA	0 to 2.000 to 0 bar abs
2KGCMA	0 to 2.000 to 0 kg/cm² abs
2ATMA	0 to 2.000 to 0 atm abs
Range Codes	**Selectable Units**
30PSIG	0 to 30.00 psig
60INHGG	0 to 60.00 inHg
850INH2OG	0 to 850 inH2O
480ZING	0 to 480.0 oz/in²
2100GCMG	0 to 2100 g/cm²
1600MMHGG	0 to 1600 mmHg
1600TORRG	0 to 1600 torr
2000MBARG	0 to 2000 mbar
2100CMH2OG	0 to 2100 cmH2O
70FTH2O	0 to 70.00 ftH2O
200KPAG	0 to 200.0 kPa
0.2MPAG	0 to .2000 MPa
2BARG	0 to 2.000 bar
2KGCMG	0 to 2.000 kg/cm²
2ATMG	0 to 2.000 atm

Range Codes	Selectable Units
60PSIG	0 to 60.00 psig
120INHGG	0 to 120.0 inHg
1660INH2OG	0 to 1660 inH2O
960ZING	0 to 960 oz/in2
4200GCMG	0 to 4200 g/cm²
3100MMHGG	0 to 3100 mmHg
3100TORRG	0 to 3100 torr
4100MBARG	0 to 4100 mbar
4200CMH2OG	0 to 4200 cmH2O
140FTH2O	0 to 140.0 ftH2O
400KPAG	0 to 400.0 kPa
0.4MPAG	0 to .4000 MPa
4BARG	0 to 4.000 bar
4KGCMG	0 to 4.000 kg/cm²
4ATMG	0 to 4.000 atm
Range Codes	**Selectable Units**
100PSIA	100.0 to 0 psia
200INHGA	200.0 to 0 inHg abs
2770INH2OA	2770 to 0 inH2O abs
1600ZINA	1600 to 0 oz/in² abs
7000GCMA	7000 to 0 g/cm² abs
5200MMHGA	5200 to 0 mmHg abs
5200TORRA	5200 to 0 torr abs
7000MBARA	7000 to 0 mbar abs
7000CMH2OA	7000 to 0 cmH2O abs
700KPAA	700.0 to 0 kPa abs
0.7MPAA	0 to .7000 to 0 MPa abs
7BARA	0 to 7.000 to 0 bar abs
7KGCMA	0 to 7.000 to 0 kg/cm² abs
7ATMA	0 to 7.000 to 0 atm abs
Range Codes	**Selectable Units**
100PSIG	0 to 100.0 psig
200INHGG	0 to 200.0 inHg
2770INH2OG	0 to 2770 inH2O
1600ZING	0 to 1600 oz/in²
7000GCMG	0 to 7000 g/cm²
5200MMHGG	0 to 5200 mmHg
5200TORRG	0 to 5200 torr
7000MBARG	0 to 7000 mbar
7000CMH2OG	0 to 7000 cmH2O
230FTH2O	0 to 230.0 ftH2O
700KPAG	0 to 700.0 kPa
0.7MPAG	0 to .7000 MPa
7BARG	0 to 7.000 bar
7KGCMG	0 to 7.000 kg/cm²
7ATMG	0 to 7.000 atm

Range Codes	Selectable Units
–15V100PSIG	–15.0 to 100.0 psig
–30INHG/100PSIG	–30.0 inHg to 100.0 psig
–30V200INHGG	–30.0 to 200.0 inHg
–400V2770INH2OG	–400 to 2770 inH2O
240V1600ZING	–240 to 1600 oz/in²
760V5200MMHGG	–760 to 5200 mmHg
760V5200TORRG	–760 to 5200 torr
–100V700KPAG	–100 to 700 kPa
–0.1V0.7MPAG	–.100 to .700 MPa
–1V7BARG	–1.00 to 7.00 bar
–1V7KGCMG	–1.00 to 7.00 kg/cm²
–1V7ATMG	–1.00 to 7.00 atm
Range Codes	**Selectable Units**
–15V200PSIG	–15.0 to 200.0 psig
–30INHG/200PSIG	–30.0 inHg to 200.0 psig
–30V400INHGG	–30.0 to 400.0 inHg
400V5500INH2OG	–400 to 5500 inH2O
240V3200ZING	–240 to 3200 oz/in²
–100V1400KPAG	–100 to 1400 kPa
–0.1V1.4MPAG	–.100 to 1.400 MPa
–1V14BARG	–1.00 to 14.00 bar
–1V14KGCMG	–1.00 to 14.00 kg/cm²
–1V 14ATMG	–1.00 to 14.00 atm
Range Codes	**Selectable Units**
200PSIG	0 to 200.0 psig
400INHGG	0 to 400.0 inHg
5500INH2OG	0 to 5500 inH2O
3200ZING	0 to 3200 oz/in²
480FTH2O	0 to 480.0 ftH2O
1400KPAG	0 to 1400 kPa
1.4MPAG	0 to 1.400 MPa
14BARG	0 to 14.00 bar
14KGCMG	0 to 14.00 kg/cm²
14ATMG	0 to 14.00 atm
Range Codes	**Selectable Units**
300PSIG	0 to 300.0 psig
610INHGG	0 to 610.0 inHg
4800ZING	0 to 4800 oz/in²
700FTH2O	0 to 700.0 ftH2O
2000KPAG	0 to 2000 kPa
2MPAG	0 to 2.000 MPa
20BARG	0 to 20.00 bar
20KGCMG	0 to 20.00 kg/cm²
20ATMG	0 to 20.00 atm

Installation Precautions

- ✔ Read these instructions before using the gauge. Configuration may be easier before installation. 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.
- ✔ Use clamp appropriate for the pressure range of the gauge.
- ✔ Use a pressure or vacuum range appropriate for the application.
- ✔ Remove system pressures before removing or installing gauge.
- ✔ 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 damage! NEVER touch surface of diaphragm.
- ⚠ Gauges are not for oxygen service. Accidental rupture of sensor diaphragm may cause oil inside seal to react with oxygen.

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 lead, nickel and chromium, which are 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

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 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 the battery holder. 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.
5. 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.
6. Replace battery retainer and back cover, including the rubber gasket and reinstall the six screws.

Power-Up and Normal Operation

Your gauge is ready to use. It was factory calibrated just prior to shipment with batteries installed.

Press and hold the center power button for approximately 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, then the full scale range in the selected engineering units is displayed.

The display test is briefly shown again.

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

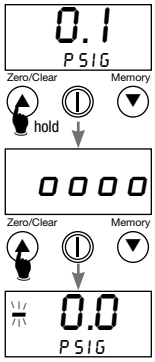
At zero pressure, occasional flashing of the minus sign is normal and indicates the gauge is at zero pressure.

Display Backlighting Operation

Display backlighting can be turned on by momentarily pressing the power button whenever the gauge is on. This also restarts the auto shutoff timer. The backlighting will turn on for 1 minute and then automatically shut off. The factory default on-time is 1 minute, but in user configuration it can be set from 0 (disabled) to 255 minutes.

The red LED display backlighting will not be apparent under bright lighting conditions.

Zero the Display



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 is in the normal operating mode. The gauge port must be exposed to normal atmospheric pressure with no pressure or vacuum applied.

Press and hold the Zero/Clear button.

Continue to press the Zero/Clear button until 0000 is displayed.

Release the button.

The gauge in now zeroed.

Occasional flashing of the minus sign with zero pressure/vacuum is normal.

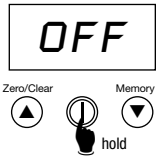
The stored zero correction is erased when the gauge is shut off.

Shutoff

The auto shutoff timer starts when the gauge is powered and resets whenever any button is pressed. The factory default time is 5 minutes. The setup procedure allows setting it to a variety of times, or disabling it for on/off operation.

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

To shut off the gauge manually at any time, press and hold the center power button until the display indicates *OFF* (about 3 seconds) and then release.



If the gauge is set up without auto shutoff (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.

Error Indications

Attempting to zero the gauge with pressure greater than approximately 3% of full-scale pressure or vacuum applied will result in an error condition

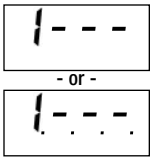
The display will alternately indicate *Err 0* and the actual pressure.

The gauge must be powered down to reset the error condition.

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.

Over Pressure Indications

If excessive pressure is applied (112.5% over range), an out-of-range indication of 1 – – – or 1.–.–.– will be displayed depending on model.



Min/Max Memory

The gauge may be configured to capture any combination of maximum and/or minimum values. Only the configured values will be displayed when the memory button is pressed.

Depending on the user configuration, the readings may be erased when the gauge powers down or retained in memory.

The Min/Max readings are captured at the rate of 3 times per second. The readings are captured any time the gauge is on in normal operating mode. Note that if a brief pressure deviation occurs, it may not be captured. In may situations it may be advantageous to clear the Min/Max memory after your process is at normal operating pressure.

Press and release the Memory button to view the maximum stored value.

The center power button may be pressed at any time to return to the normal display mode.

The gauge may be left in the maximum display mode if desired. The maximum reading will be continuously displayed, stored and updated.

Press and release the Memory button to view the minimum stored value.

The gauge may be left in the minimum display mode if desired. The minimum reading will be continuously displayed, stored and updated.

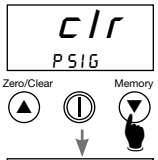
Press and release the center power button to return to the normal display mode.

Manually Clear Min or Max

While in the Max or Min display mode, a captured maximum or minimum value can be cleared.

Press and hold the Zero/Clear button while the value to be cleared is being displayed.

Release the button when *clr* is displayed.



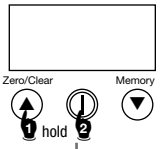
To effectively use the minimum function it may be necessary to have the gauge at the normal operating pressure and then clear the minimum stored reading (usually zero).

Press and release the center power button to return to normal readings.

Enter Gauge Configuration Mode

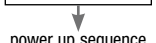
The gauge is designed to use a 4 digit pass code to enter the configuration modes. This is to prevent unauthorized changing of settings.

With the gauge off, press and hold the ▲ button. Then press the center power button.

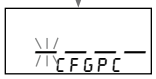


Release all buttons when the display indicates *CFG*. The gauge firmware version is also displayed.

The gauge then goes through the normal power up sequence.



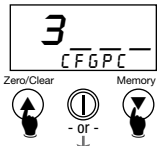
The display prompts for entry of the configuration pass code (*CFGPC*), with the first underscore blinking.



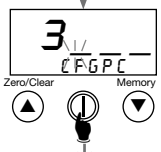
Note: The gauge will automatically revert to normal operation if no buttons are pressed for approximately 15 seconds. To cancel and return to normal operation, press and release the power button without entering any pass code characters.

Enter the pass code. 3510 is the factory default, but it is user-modifiable.

Use the ▲ or ▼ buttons to set the left-most digit to 3.

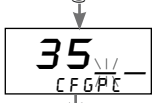


Press and release the power button to index to the next position. The 3 will remain, and the second position will be blinking.



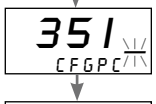
Use the ▲ or ▼ buttons to select 5.

Press and release the power button to index to the next position. 3 5 will remain, and the third position will be blinking.



Use the ▲ or ▼ buttons to select 1.

Press and release the power button to index to the next position. 3 5 1 will remain, and the fourth position will be blinking.



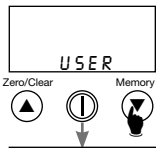
Use the ▲ or ▼ buttons to select 0.

Press and release the power button to proceed with configuration procedures.

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

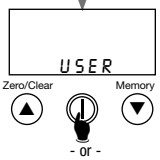
Gauge Configuration—User or Factory

Upon successful pass code entry, the lower display will indicate *USER*.



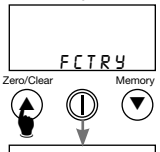
If *USER* is not displayed. Press and release the ▼ button. With *USER* selected, the gauge configuration can be modified as described in the following sections.

Press and release the power button to continue with *USER* configuration.

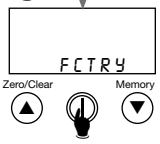


If Factory (*FCTRY*) is selected, the user configuration will be replaced by the configuration as it left the factory.

To select Factory, press and release the ▲ button. The lower display will indicate *FCTRY*.



Press and release the power button to restore the factory configuration and restart the gauge.



Min/Max Setup

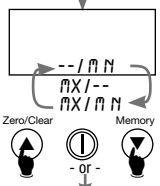
After the center power button is pressed when in user configuration mode, the display indicates *MX/MN*.

Use the ▲ or ▼ buttons to select the desired configuration.

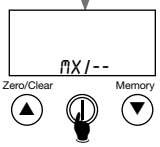
MX/MN to capture both maximum and minimum readings.

--/MN to capture minimum readings only.

MX/-- to capture maximum readings only.



Press and release the power button to save the user configuration and move to the next setup parameter.



Min/Max Setup—Auto or Manual Clear

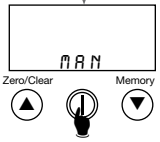
After the center power button is pressed when in user *MX/MN* configuration mode, the upper display indicates *clr*.

Use the ▲ button to select *AUTO* and the or ▼ button to select *MAN*.

When the lower display indicates *MAN*, the maximum and/or minimum readings will be retained in memory after the gauge is powered off. The readings can be cleared manually.

When the lower display indicates *AUTO*, the maximum and/or minimum readings will be automatically cleared when the gauge is powered off.

Press and release the power button to save the user configuration and move to the next setup parameter.



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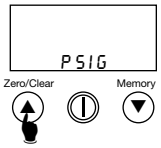
Engineering Unit Selection

With the gauge in the user configuration mode, the upper display will be blank with the engineering units in the lower display.

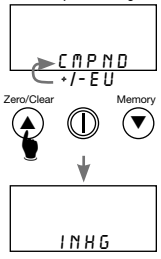


Use the ▲ and ▼ buttons to navigate through the list of engineering units. Available engineering units depend on the sensor range.

- or -

For Compound Gauges

If the gauge was ordered as a compound gauge, the lower display will indicate *+/-EU* or *CMPND*.



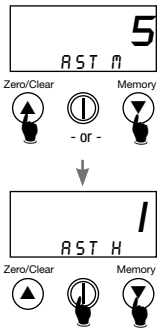
Selecting *CMPND* will set the gauge for inHg for vacuum and PSIG for pressure.

Selecting *+/-EU* and then pressing the center button will allow selection of engineering units.

When the desired units are displayed, press and release the power button to save your selection and move to the next parameter.

Auto Shutoff Time Selection

The auto shutoff time is shown on the upper display. The lower display will indicate *AST M* if the time displayed is in minutes or *AST H* if it is in hours.



Use the ▲ and ▼ buttons to select 0 (manual shutoff), 1, 2, 5, 10, 15, 20, or 30 minutes, or 1, 2, 4, or 8 hours.

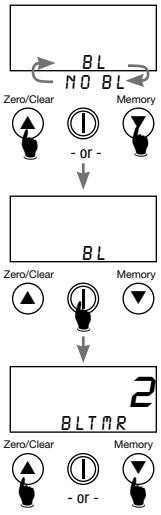
A setting of zero disables the auto shutoff timer. This requires using the power button to shut the gauge off.

If the gauge was ordered with a custom shutoff time it will become unavailable if the time is changed. Reset the gauge to the original factory configuration as described previously to restore the custom time.

When the desired time is displayed, press and release the power button to save your selection and move to the next parameter.

Backlight Time Selection

The the upper display will be blank. The lower display will indicate *BL* if the display backlight is enabled or *NO BL* if display backlight is disabled.



Use the ▲ button to enable backlighting and the ▼ button to disable backlighting.

Press the power button to save the setting.

If *NO BL* was selected the user setup is complete and the gauge will restart and be ready for use with the new configuration.

If *BL* was selected the current backlight auto shutoff time is displayed in minutes. 1 minute is the factory default.

Use the ▲ and ▼ buttons to select the minutes for backlight shutoff time.

A setting of zero disables the auto shutoff timer and the backlight will be on whenever the gauge is on. The maximum setting is 255 minutes. The gauge auto shutoff time will override the backlight time.

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

Setup Complete

Once you have cycled through the setup parameters (min/max setup, min/max memory, engineering units, shutoff time, backlight time), the gauge will restart with the new settings and be ready for use. The settings can be changed at any time by entering the pass code and following the setup sequence.

Calibration

Setup and Preparation

Gauges are calibrated at the factory using equipment traceable to NIST. Gauges are calibrated in an upright position at normal ambient temperatures (approx. 20°C). There is no need to calibrate the gauge before putting it into service unless the process temperature and gauge position deviate from normal.

Calibration should only be performed by qualified individuals using appropriate calibration standards and procedures. Calibration intervals depend on your quality control program requirements, although many customers calibrate annually.

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 gauges. Warning: application of vacuum to non-vacuum models will result in damage to the sensor.

Allow the gauge to acclimate to the calibration temperature for at least 60 minutes. Calibrate the gauge at the same temperature as the process with the gauge oriented in the same position.

Install fresh batteries before calibration.

Entering Calibration Mode

With the gauge off, press and hold the ▼ 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 pass code) on the lower display.

Enter the 3510 pass code as described in the Configuration Pass Code section.

Calibration Mode

The gauge enters and 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 greatest accuracy, use the ▲ and ▼ buttons to select engineering units for calibration with highest resolution (highest number of display counts).

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

Sensor	Suggested units for calibration
15 PSI	775.7 MMHG or TORR
30 PSI	61.08 INHG
60 PSI	60.00 PSI
100 PSI	7.031 KG/CM2
200 PSI	5534 INH2O
300 PSI	610.8 INHG

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

▲ and ▼ Button Operation

Each time one of the ▲ or ▼ buttons is pressed and released quickly, a small change is made to the digitized pressure signal. It may take more than one of these small changes to result in a single digit 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.

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 ▲ and ▼ 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 ▲ and ▼ 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 ▲ and ▼ 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 ▲ and ▼ 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 ▲ and ▼ buttons.

Calibration—continued

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 ▲ and ▼ buttons.

Absolute Reference Gauges

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

Apply full-scale pressure. The character display will alternate between *+SPAN* and *CAL*. Press the ▲ and ▼ 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 ▲ and ▼ buttons to obtain an indication equal to 50% of full-scale pressure.

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 ▲ and ▼ 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 ▲ and ▼ buttons.

Save Calibration

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

User-Defined Pass Code Configuration

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

Configuration Pass Code

With the unit off, press and hold the ▲ button to view and/or change the user configuration pass code. Then press the Power button. Release all buttons when the display indicates *CFG*.

Calibration Pass Code

With the unit off, press and hold the ▼ button to view and/or change the user calibration pass code. Then press the Power button. Release all buttons when the display indicates *CAL*.

Change Pass Code Mode

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 segments.

Note: The unit 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 without entering any pass code characters.

Enter access code 1220:

Use the ▲ and ▼ 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 ▲ and ▼ 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 ▲ and ▼ 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 ▲ and ▼ 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.

Change Pass Code

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

Press the ▲ or ▼ button to select the first character of the new pass code.

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

Repeat above until the entire pass code is complete.

To exit the User Defined Pass Code change mode, press and hold the power button.

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