

Ranges and Resolution

See table below. Consult factory for special engineering units. Resolution is fixed as indicated in table.

Accuracy

Accuracy includes linearity, hysteresis, repeatability Standard accuracy: ±0.25% of full scale ±1 least significant digit HA accuracy option: ±0.1% FS ±1 LSD, see ranges for availability Sensor hysteresis: ±0.015% FS, included in accuracy Sensor repeatability: ±0.01% FS, included in accuracy

Display

4 readings per second nominal display update rate Up to 40 minute display operating time if loop power is lost 4 digit LCD, 0.5" H and 5 character 0.25" H alphanumeric

Controls and Functions

SEL: Press to momentarily display pressure if loop power is lost Press and hold to display pressure for up to 40 minutes depending on state of charge

TEST: Used with SEL button to set loop current to allow testing of system operation. May be passcode protected.

Up/down: When in setup used to set test values, enter pass code, units, scaling and calibration values

Calibration

User settable passcode required to enter calibration mode All pressure and absolute models: zero, midpoint, span All vacuum models: -span, -midpoint, zero Vacuum/pressure models: -span, zero, +midpoint, +span ±15 psi models: -span, -midpoint, zero, +midpoint, +span

Loop Supply Voltage

Any DC supply/loop resistance that maintains 10-32 VDC at gauge terminals

Reverse polarity protected

Approx. 2 hours required to charge backup capacitor Sensor Ranges and Engineering Units

Output Characteristics

4-20 mADC current output

Passive transmitter, requires external loop power Output drive (compliance) determined by power source Output updated approximately 16 times per second 12,000 counts over sensor range

Weight

9 ounces (approx.), shipping wt. 1 pound (approx.)

Housing

F16LSC: Extruded aluminum case, epoxy powder coated, ABS/ polycarbonate bezel, front and rear gaskets, polycarbonate label F16LSCN: UV stabilized ABS/polycarbonate case, polycarbonate display window, polycarbonate front label, rear gasket, six stain-

less steel cover screws. NEMA 4X, not intended for permanent outdoor installations.

See other side for dimensions

Connection, Material, Media Compatibility

1/4" NPT male fitting, all wetted parts are 316L stainless steel

Overpressure, Burst, Vacuum

Overpressure: 2X pressure sensor range Overpressure 3000 psig sensor: 5000 psig Overpressure 5000 psig sensor: 7500 psig

Burst pressure: 4X sensor rating, or 10,000 psi, whichever is less Under-range display (non-vacuum sensors): -Err

Over-range display at 112.5% full scale: Vacuum service: 15 psia, ±15 psig, 15 psig, 30 psia, 100 psig, 100 psia, 200 psig sensors

Environmental Temperatures

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

lacktriangle	Display Pressure Even if Loop is Disconnected

- ±0.25% Test Gauge Accuracy
- 316L Stainless Steel Wetted Parts
- Scalable 4-20 mA Analog Output
- **Output Test Function**
- Selectable Engineering Units



Quick Link cecomp.com/loop





How to Specify	Туре
16LSC range - options	Standard housing
16LSCN range - options	NEMA 4X housing

Range-see table at left

psi = PSI	torr = TORR	mbar = MBAR
inHg = INHG	$mmH_2O = MMH2O$	bar = BAR
$oz/in^2 = ZIN$	$kg/cm^2 = KGCM$	$cmH_2O = CMH2O$
$inH_2O = INH2O$	$g/cm^2 = GCM$	atm = ATM
$ftH_20 = FTH20$	kPa = KPA	
mmHg = MMHG	MPa = MPA	

G = gauge reference pressure VAC = gauge reference vacuum A = absolute reference

Options—add to end of model number							
на	High accuracy, ±0.1% FS ±1 LS						
ПА	See table at left for availability						
MC	MC Metal front cover instead of plastic, n/a NEMA 4X						
PM	Panel mount, 4.1" x 4.1", n/a NEMA 4X						
CC	Moisture resistant circuit board conformal coating						
NC	NIST traceability documentation, 5 points and date						

SCR14SS

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



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3 psig ‡	Res	15 psig vac ‡	Res	30 psia	Res	-15V100psig ‡	Res	300 psig	Res
3PSIG	.001	100KPAVAC	.1	2KGCMA	.001	-15V100PSIG	.1	300PSIG	.1
6INHGG	.001	0.1MPAVAC	.0001	2ATMA	.001	-30INHG/100PSIG	.1	610INHGG	.1
85INH20G	.1	1BARVAC	.001	30 psig	Res	-30V200INHGG	.1	4800ZING	1
50ZING	.01	1KGCMVAC	.001	30PSIG	.01	-400V2770INH20G	1	700FTH20	.1
210GCMG	.1	1ATMVAC		60INHGG	.01	-240V1600ZING	1	2000KPAG	
150MMHGG	.1	15 psig	Res	850INH20G	1	-760V5200MMHGG	1	2MPAG	.001
150TORRG	_	15PSIG	.01	480ZING	.1	-760V5200TORRG	1	20BARG	.01
200MBARG		30INHGG		2100GCMG	1		1	20KGCMG	
200CMH20G		400INH20G		1600MMHGG	1		.001	20ATMG	
2000MMH20G	_	240ZING		1600TORRG	1		.01	500 psig	Res
7FTH20	_	1000GCMG		2000MBARG	1		.01	500PSIG	
20KPAG		760MMHGG		2100CMH20G	1		.01	1020INHGG	
5 psig ‡	Res	760TORRG		70FTH20	.01	100 psig	Res	1150FTH20	_
5PSIG		1000MBARG		200KPAG	.1	100PSIG		3500KPAG	
10INHGG		1000CMH20G		0.2MPAG	.0001	200INHGG	.1	3.5MPAG	_
140INH20G	_	35FTH20		2BARG	.001	2770INH20G	1	35BARG	
80ZING		100KPAG		2KGCMG	.001		1	35KGCMG	
350GCMG		0.1MPAG		2ATMG	.001		1	35ATMG	
260MMHGG		1BARG		60 psig	Res		1	1000 psig	Res
260TORRG	_	1KGCMG		60PSIG	.01		1	1000 psig	
350MBARG		1ATMG		120INHGG	.1		1	2040INHGG	
350CMH20G	_	±15 psig ‡	Res	1660INH20G	1	7000MBARG 7000CMH20G	1	2300FTH20	
3500MMH20G		±15 psig + ±15PSIG		960ZING	1	230FTH20	.1	7000KPAG	
12FTH20		-30INHG/15PSIG		4200GCMG	1		.1	7MPAG	
35KPAG	_	±30INHGG		3100MMHGG	1		.0001	70BARG	_
15 psia	Res	±400INH20G	-	3100TORRG	1		.0001	70KGCMG	
15 psia 15PSIA		±240ZING		4100MBARG	1	7KGCMG	.001	70ATMG	_
30INHGA	_	±1000GCMG		4200CMH20G	1	7ATMG		2000 psig	Res
400INH20A	_	±760MMHGG		140FTH20	.1	-15V200 psig ‡	Res	2000 psig 2000PSIG	
240ZINA		±760TORRG			.1		.1	4070INHGG	
				400KPAG			.1		
1000GCMA 760MMHGA		±1000MBARG		0.4MPAG	.0001	-30INHG/200PSIG -30V400INHGG		4600FTH20	
		±1000CMH20G		4BARG	.001		.1	14MPAG	
760TORRA	_	±100KPAG		4KGCMG	.001		1	140BARG	
1000MBARA		±0.1MPAG		4ATMG	.001		1	140KGCMG	
1000CMH20A		±1BARG		100 psia	Res		1	140ATMG	
100KPAA	_	±1KGCMG		100PSIA	.1		.001	3000 psig	Res
0.1MPAA		±1ATMG		200INHGA	.1	-1V14BARG	_	3000PSIG	
1BARA		30 psia	Res	2770INH20A	_		.01	6100INHGG	
1KGCMA		30PSIA		1600ZINA	_		.01	6900FTH20	
1ATMA		60INHGA		7000GCMA	1	200 psig	Res	20MPAG	
15 psig vac ‡	Res	850INH20A		5200MMHGA		200PSIG		200BARG	
15PSIVAC	_	480ZINA		5200TORRA	_		.1	200KGCMG	
30INHGVAC	.01	2100GCMA		7000MBARA	_	5500INH20G		200ATMG	
	.1	1600MMHGA		7000CMH20A		3200ZING		5000 psig	Res
240ZINVAC	_		1	700KPAA	_		.1	5000PSIG	_
1000GCMVAC		2000MBARA		0.7MPAA		1400KPAG		35MPAG	
760MMHGVAC		2100CMH20A		7BARA			.001	350BARG	_
760TORRVAC		200KPAA		7KGCMA			.01	350KGCMG	
1000MBARVAC		0.2MPAA		7ATMA	.001		.01	340ATMG	.1
1000CMH20VAC	1	2BARA	.001			14ATMG	.01		

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.

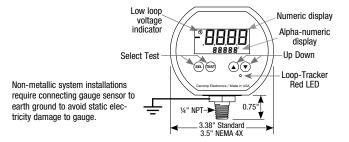
Bipolar sensors read positive pressure and vacuum in the same units, and zero with the gauge port open.

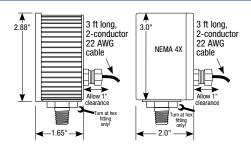
Compound ranges read in Hg for vacuum and psig for pressure.

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 ₂ O	ftH ₂ O	oz/in²	mmH ₂ O	cmH ₂ O	g/cm²	kg/cm²	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

Dimensions





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.
- Outdoor or wash down applications require a NEMA 4X gauge or installation in a NEMA 4X housing.
- Use a pressure or vacuum range appropriate for the application.
- Use fittings appropriate for the pressure range of the gauge
- Due to the hardness of 316 stainless steel, it is recommended that a thread sealant be used to ensure leak-free operation.
- ✓ For contaminated media use an appropriate screen or filter to keep debris out of gauge port.
- Remove system pressures before removing or installing gauge.
- ✓ Install or remove gauge using a wrench on the hex fitting only. Do not attempt to turn gauge by forcing the housing.
- ✓ Good design practice dictates that positive displacement liquid pumps include protection devices to prevent sensor damage from pressure spikes, acceleration head, and vacuum extremes.
- X Avoid permanent sensor damage! Do not apply vacuum to nonvacuum gauges or hydraulic vacuum to any gauges.
- X Avoid permanent sensor damage! NEVER insert objects into gauge port or blow out with compressed air.
 - Gauges are not for oxygen service. Accidental rupture of sensor diaphragm may cause silicone oil inside sensor to react with oxygen.
- NEVER connect the gauge wires directly to 115 VAC or permanent damage will result.

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.

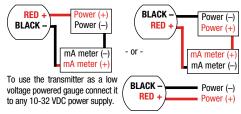
Electrical Connection

All operating power is supplied by the 4-20 mA current loop using the 2-wire cable at the gauge rear. The F16LSC can be used as an indicating transmitter in any 4-20 mA current loop or as a DC powered gauge. Reversing the connections will not harm the gauge but it will not operate with incorrect polarity.

Select a loop power supply voltage and total loop resistance so that when the loop current is 20 mA, the gauge will have at least 10 VDC at its terminals but not over 32 VDC.

For correct operation and to avoid erratic or erroneous readings, the gauge terminal voltage must not fall below 10 VDC. Too large a loop resistance will cause the gauge output to "limit" or saturate before reaching its full 20 mA output. The minimum loop supply voltage may be calculated from the formula:

V_{min} = 10V + (20mA x Total loop resistance)



Normal Operation

The F16LSC is designed for continuous operation. Warm-up time is negligible.

When loop power is applied, the gauge will power-up automatically. All active display segments are turned on for approximately 1 second

After initialization, the gauge will begin operating in the Normal Mode. The display will show the applied pressure. The loop current and the Loop-Tracker® LED brightness will correspond to the applied pressure

The output is a 12,000 count analog 4-20 mA signal. The output is filtered to improve noise immunity and is updated approximately 16 times per second.

Zero Tare, Push-To-Test, Configuration and Calibration modes are accessible from the Normal Mode.

The power supply for the Backup Power mode recharges during Normal Mode operation.

It takes approximately two hours of operation in the Normal Mode to fully charge the backup power supply from the loop supply.

If loop power is lost, the gauge will automatically switch to the Backup Power mode and continue to display the applied pressure

Below are the 4-20 mA output values for various types of sensors, assuming the output scale has not been adjusted.

Sensor Range	Full vacuum	"O" on display	Full pressure
Gauge reference pressure	n/a	4 mA	20 mA
Gauge reference vacuum	20 mA	4 mA	n/a
Compound –30inHg/15psi	4 mA	12 mA	20 mA
Compound –30inHg/100psi	4 mA	5.5 mA	20 mA
Compound –30inHg/200psi	4 mA	4.8 mA	20 mA
Absolute reference	4 mA	4 mA	20 mA
Bipolar ±	4 mA	12 mA	20 mA



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Backup Power Mode Operation

The power supply for the Backup Power mode takes approximately two hours of operation in the Normal Mode to fully charge the backup power supply from the loop supply.

If loop power is lost, the gauge will automatically switch to the Backup Power mode.

The low power indicator will flash, and the Loop-Tracker LED will be off. The pressure will display for 15 seconds, then the gauge will shut off.

To power up the gauge, press and release the SEL button.

After initialization, the gauge will indicate the applied pressure for 15 seconds.

To power-up the gauge for a longer period of time and override the auto shutoff, press and hold the SEL button until the display indicates *On*.

The gauge will indicate the pressure until the backup power is depleted. A fully charged backup supply will last up to 40 minutes.

Press SEL to manually power *OFF* the gauge.

The gauge will return to Normal Mode when loop power is restored.



SEL (TEST)

OFF

 \bullet

100.0

100.0

SEL (TEST)

SEL TEST

 \bullet

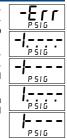
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Out-of-Range Indications

be displayed depending on model.

If excessive vacuum is applied to a pressureonly gauge, the display will indicate an out-ofrange indication of -Err. Applying vacuum to a pressure-only gauge can damage the sensor. If excessive vacuum is applied to a vacuumpressure gauge, the display will indicate an outof-range indication of -I - - - or -I - - will

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



SEL (EST)

SEL TEST

SEL (EST)

ゴン山

35 In

35

SEL (TEST)

Enter Configuration Passcode

When a passcode is required, the upper display will indicate and the lower display will indicate CFGPC, CALPC, or TSTPC depending on the feature being accessed.

To cancel, press the SEL button without entering any numbers. If no buttons are pressed, the gauge will revert to normal operation after 15 seconds. To proceed, enter the user-defined passcode. 3510 is the factory default, but it is user-modifiable.

The first position will be blinking.

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

Press and release the SEL 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 SEL button to index to the next position.

3 5 will remain, and the third position will be

Use the ▲ or ▼ buttons to select 1.

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

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

Zero/Tare Mode

Zero/Tare applies to gauge reference models only. Absolute reference gauges do not use the zero feature since they read atmospheric pressure under normal conditions.

This feature can be enabled or disabled in Gauge Configuration.

The gauge must be in the Normal Mode with the gauge port exposed to normal atmospheric pressure.

While in the Zero Tare mode, the gauge will not respond to any changes in pressure. The loop current will maintain its last value.

Press and hold both the ▲ and ▼ buttons. Then press the SEL button.

Release all buttons when acac is displayed.

The display will indicate a new zero tare value with Z DFF (zero offset) on the lower display. To exit with no changes, press SEL.

If not within approximately 3% full scale of zero, ErrD will be displayed and no changes are allowed.

Pressure must be removed from the gauge, or it must be recalibrated

To remove the existing zero tare value, press and release the ▼ button. The display changes to zero. The Normal Mode may indicate a non-zero value since zero correction has been removed.

To restore the newly calculated zero tare value, press and release the **A** button.

To exit the Zero Tare mode and return to the Normal Mode, press and release the SEL button.

0.1 P 5 1 G SET (EST) \bullet then hold ₩ 0000 SEL TEST \bullet

0. I SEL (TEST) \bullet

> SEL (TEST) or 🖠 ZOFF (SEL) (TEST)

0.0 SEL (TEST) \bullet

50.0

50.0

 \bullet

 \bullet

P 510

hold

Test Function

The Test Mode will allow setup and testing of the current loop without having to alter the system pressure.

From the Normal Mode with applied pressure being displayed, press and hold the TEST button.

While holding the TEST button, press the SEL

When the display indicates - - - - , release both buttons.

If a passcode is required, the upper display will with the left-most position blinking, and the lower section will indicate TSTPC (Test Passcode). See the "Enter Configuration Passcode" section of this manual to enter the passcode and continue.

Next, the upper display will indicate the applied pressure and the units display will be blinking.

While the TEST button is pressed, the display and loop current are switched, independent of the actual pressure, to a level determined by the test setting. TEST is indicated on the lower display. Note: The gauge will not respond to changes in applied pressure while the TEST button is held.

Pressing the ▲ or ▼ buttons while pressing the TEST button will raise or lower the test value.

When the TEST button is released, the setting is stored in non-volatile memory and the gauge will operate normally

Press SEL to exit the Test Mode and return to the Normal Mode.

Gauge Configuration

press the SEL button.

The gauge must be powered by a loop supply during configuration.

Press and hold the TEST and ▲ buttons, then

Release all buttons when the display indicates CFG. The gauge firmware version is also dis-

The display prompts for entry of the configuration passcode (CFGPC), with the first underscore blinking. To enter the 4 digit passcode, see the Enter Configuration Passcode section.

Factory/User Configuration

Upon successful passcode entry, the upper display will be blank, and the lower will display USER. Use the ▼ or ▲ buttons to select USER or FCTRY.

With USER selected, the gauge configuration can be modified as described below.

To reset the gauge to the factory configuration. press SEL while FCTRY is displayed. The gauge will restart with the factory configuration restored.

Gauge Type Configuration

This applies to gauge reference vacuum/pressure models only.

Use the ▼ or ▲ buttons to select:

-/+F11 Vacuum is indicated as a negative number in the selected engineering units

CMPND Vacuum is displayed as negative InHq and pressure in PSIG.

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

Engineering Unit Selection

This is skipped if CMPD was selected.

Use the ▼ or ▲ buttons to select the engineering units available for the range of the gauge: Press and release the SEL button to move to the next parameter.

Zero Tare Enable/Disable

This is not used for absolute reference gauges.

Use the ▼ or ▲ buttons to select: ZTARE Zero Tare function enabled.

Zero Tare function disabled. NOZTR

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

Test Function Passcode Enable/Disable

Use the ▼ or ▲ buttons to select:

TSTPC Passcode required for Test Mode. NOTEC No passcode required for Test Mode Press and release the SEL button to move to the next parameter.

Range Lower Limit Adjust

The upper display will indicate the pressure value corresponding to 4 mA loop current. The lower section will display RNGLO.

Use the lacktriangledown or lacktriangledown buttons to display the desired pressure equal to a 4 mA output:

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

Range Upper Limit Adjust

The upper display will indicate the pressure value corresponding to 20 mA loop current. The lower section will display RNGHI.

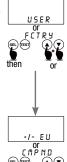
Use the ▼ or ▲ buttons to display the desired pressure equal to a 20 mA output:

Press and release the SEL button to save the user configuration and restart the gauge.

The configuration parameters will not be saved if the procedure is interrupted before completion.

















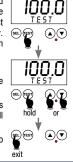












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Calibration Preparation

Calibration Preparation

Gauges are factory calibrated at approximately 23°C using NIST traceable calibration equipment. Calibration is not required before using the gauge. Calibration intervals depend on your quality standards, but annual re-calibration is customary. Calibration should only be performed by qualified individuals using appropriate calibration standards and procedures.

Gauges can be returned to factory for certified recalibration and repairs. NIST traceability is available.

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 and/or vacuum over the full range of the gauge.

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

Use a stable DC power supply and an accurate mA meter to calibrate loop powered transmitters.

Allow the gauge to equalize to normal room temperature for at least 20 minutes before calibration.

Enter Calibration Passcode

The gauge must be powered by a 10-32 VDC power supply during calibration

With the gauge powered up, press and hold the ▼ and TEST buttons

Then press the SEL button to enter the Calibration Mode

Release all buttons when the display indicates CAL. The firmware version is also displayed.



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and>

The display prompts for entry of the calibration passcode (CALPC), with the first underscore blinking. To enter the 4 digit passcode, see the Enter Configuration Passcode section. Note that it is possible to change the default 3510 value.

Calibration Mode

The gauge enters and remains in the Calibration Mode until restarted manually or power is removed.

The display will then indicate the currently applied pressure in the engineering units selected in gauge configuration.

Button Operation

Each time the ▲ or ▼ button 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 ▲ or ▼ buttons as previously described.

The SEL button is used to select LCAL (4 mA calibration), HCAL (20 mA calibration), or *CAL* (pressure calibration).

If the SEL button is depressed for longer than 2 seconds, the display will change to indicate ---, and the gauge will exit the Calibration Mode when the button is released.

Pressure Calibration

The pressure calibration procedure simultaneously adjusts both the display indication and the loop current to correspond to the actual applied pressure.

Press and release the SEL button until the display briefly indicates CAL.



SEL (TEST)

Zero Calibration

Apply zero pressure.

The lower display segments will alternate between CAL and ZERO.

Use the lacktriangle or lacktriangle buttons to adjust the display to zero

Span Calibration

Apply full scale pressure.

The lower display segments will alternate between CAL and +SPAN.

Use the ▲ or ▼ buttons to adjust the display to match the calibrator reading.

Mid Point Calibration

Apply 50% of full scale pressure.

The lower display segments will alternate between CAL and +MID.

Use the ▲ or ▼ buttons to adjust the display to match the calibrator reading.

Negative Span Calibration

This applies to bipolar and compound ranges only. Apply full scale negative pressure (full vacuum).

The lower display segments will alternate (SEL) (TEST) between CAL and -SPAN

Use the ▲ or ▼ buttons to adjust the display to match the calibrator reading.

Negative Mid Point Calibration

This applies only to bipolar ranges that use the ±15 psig sensor.

Apply 50% full scale negative pressure (50% vacuum).

The lower display segments will alternate between CAL and -MID. Use the ▲ or ▼ buttons to adjust the display to

match the calibrator reading. To store the calibration parameters and exit the

Calibration Mode, press and hold the SEL button until the display indicates ---. The gauge

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

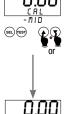
-5PRN SEL (TEST) 0.00 SEL TEST P.S

0.00











until gauge restarts

Loop Current Calibration

Loop current calibration coordinates the loop current to the display indication, and is performed independently of applied pressure. It requires a direct physical measurement of the loop current. See wiring diagrams on page 2.

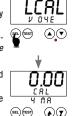
4 mA Loop Current

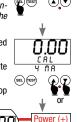
Press and release the SEL button until the display briefly indicates LCAL.

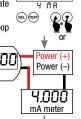
Note: If the SEL button is depressed for longer than 2 seconds, the gauge will exit the Calibration Mode.

The upper display will indicate the pre-configured pressure corresponding to a 4 mA loop current. The lower display segments will alternate

between *CAL* and *4 MA*. Use the ▲ or ▼ buttons to adjust the actual loop current to 4 mA







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Loop Current Calibration - continued

20 mA Loop Current

current to 20 mA.

Press and release the SEL button until the display briefly indicates HCAL.

Note: If the SEL button is depressed for longer than 2 seconds, the gauge will exit the Calibration Mode.

The upper display will indicate the pre-configured pressure corresponding to a 20 mA loop current.

The lower display segments will alternate between CAI and 20 MA

To store the calibration parameters and exit the Calibration Mode, press and hold the SEL button until the display indicates ---. The gauge will restart.

Verify output at 0%, 25%, 50%, 75% and 100% of full range of the gauge.

User-Defined Passcode Configuration

The factory default 3510 passcode may be changed to a different value

Configuration Passcode

With the unit on, press and hold the A and TEST buttons and then press the SEL button. Release all buttons when the display indicates CFG.

Calibration Passcode

With the unit on, press and hold the ▼ and TEST buttons and then press the SEL button. Release all buttons when the display indicates CAL

Test Function Passcode (if enabled)

With the unit on,, press and hold the TEST button and press the SEL button. Release both buttons when the upper display indicates

Change Passcode Mode

Before the unit enters the view or change passcode mode, the display initially indicates with the first underscore blinking, and with CFGPC, CALPC, or TSTPC on the lower display.

The gauge will revert to normal operation if no buttons are operated for approximately 15 seconds. Press and release the SEL button without entering any passcode characters to exit.

Enter access code 1220:

Use the \blacktriangle and \blacktriangledown buttons to set the left-most digit to 1.

Press and release the SEL 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 SEL 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 SEL 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 SEL 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 Passcode

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

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

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

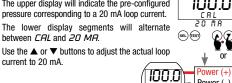
Repeat above until the entire passcode is complete

To exit the User-Defined Passcode change mode, press and hold the SEL button until the gauge restarts.











20.00

mA meter

