

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

Calibration

User settable pass code 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

Output Characteristics

4-20 mA DC 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 (aluminum bezel optional), front and rear gaskets, polycarbonate label

F16LSCN: ABS/polycarbonate NEMA 4X case, rear gasket, polycarbonate label

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: 1--- or /---
Vacuum service: 15 psia, ±15 psig, 15 psig, 30 psia, 100 psig, 100 psia, 200 psig sensors

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)

- 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



F16LSC




NEMA 4X Housing F16LSCN

Sensor Ranges and Engineering Units				± -HA option not available					
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	1KGCMMVAC	.001	30PSIG	.01	-400V270INH20G	1	700FTH20	.1
210GCMG	.1	1ATMVAC	.001	60INHGG	.01	-240V1600ZING	1	2000KPAG	1
150MMHGG	.1	15 psig	Res	850INH20G	1	-760V5200MMHGG	1	2MPAG	.001
150TORRG	.1	15PSIG	.01	480ZING	.1	-760V5200TORRG	1	20BARG	.01
200MBARG	.1	30INHGG	.01	2100GCMG	1	-100V700KPAG	1	20KGCMMG	.01
200CMH20G	.1	400INH20G	.1	1600MMHGG	1	-0.1V0.7MPAG	.001	20ATMG	.01
2000MMH20G	1	240ZING	.1	1600TORRG	1	-1V7BARG	.01	500 psig	Res
7FTH20	.001	1000GCMG	1	2000MBARG	1	-1V7KGCMMG	.01	500PSIG	.1
20KPAG	.01	760MMHGG	.1	2100CMH20G	1	-1V7ATMG	.01	1020INHGG	1
5 psig ±	Res	760TORRG	.1	70FTH20	.01	100 psig	Res	1150FTH20	1
5PSIG	.001	1000MBARG	1	200KPAG	.1	100PSIG	.1	3500KPAG	1
10INHGG	.01	1000CMH20G	1	0.2MPAG	.0001	200INHGG	.1	3.5MPAG	.001
140INH20G	.1	35FTH20	.01	2BARG	.001	2770INH20G	1	35BARG	.01
80ZING	.1	100KPAG	.1	2KGCMMG	.001	1600ZING	1	35KGCMMG	.01
350GCMG	.1	0.1MPAG	.0001	2ATMG	.001	7000GCMG	1	35ATMG	.01
260MMHGG	.1	1BARG	.001	60 psig	Res	5200MMHGG	1	1000 psig	Res
260TORRG	.1	1KGCMMG	.001	60PSIG	.01	5200TORRG	1	1000PSIG	1
350MBARG	.1	1ATMG	.001	120INHGG	.1	7000MBARG	1	2040INHGG	1
350CMH20G	.1	±15 psig ±	Res	1660INH20G	1	7000CMH20G	1	2300FTH20	1
3500MMH20G	1	±15PSIG	.01	960ZING	1	230FTH20	.1	7000KPAG	1
12FTH20	.01	-30INHG/15PSIG	.01	4200GCMG	1	700KPAG	.1	7MPAG	.001
35KPAG	.01	±30INHGG	.01	3100MMHGG	1	0.7MPAG	.0001	70BARG	.01
15 psia	Res	±400INH20G	1	3100TORRG	1	7BARG	.001	70KGCMMG	.01
15PSIA	.01	±240ZING	.1	4100MBARG	1	7KGCMMG	.001	70ATMG	.01
30INHGA	.01	±1000GCMG	1	4200CMH20G	1	7ATMG	.001	2000 psig	Res
400INH20A	.1	±760MMHGG	1	140FTH20	.1	-15V200 psig ±	Res	2000PSIG	1
240ZINA	.1	±760TORRG	1	400KPAG	.1	-15V200PSIG	.1	4070INHGG	1
1000GMA	1	±1000MBARG	1	0.4MPAG	.0001	-30INHG/200PSIG	.1	4600FTH20	1
760MMHGA	.1	±1000CMH20G	1	4BARG	.001	-30V400INHGG	.1	14MPAG	.01
760TORRA	.1	±100KPAG	.1	4KGCMMG	.001	-400V5500INH20G	1	140BARG	.1
1000MBARA	1	±0.1MPAG	.0001	4ATMG	.001	-240V3200ZING	1	140KGCMMG	.1
1000CMH20A	1	±1BARG	.001	100 psia	Res	-100V1400KPAG	1	140ATMG	.1
100KPAA	.1	±1KGCMMG	.001	100PSIA	.1	-0.1V1.4MPAG	.001	3000 psig	Res
0.1MPAA	.0001	±1ATMG	.001	200INHGA	.1	-1V14BARG	.01	3000PSIG	1
1BARA	.001	30 psia	Res	2770INH20A	1	-1V14KGCMMG	.01	6100INHGG	1
1KGCMA	.001	30PSIA	.01	1600ZINA	1	-1V 14ATMG	.01	6900FTH20	1
1ATMA	.001	60INHGA	.01	7000GMA	1	200 psig	Res	20MPAG	.01
15 psig vac ±	Res	850INH20A	1	5200MMHGA	1	200PSIG	.1	200BARG	.1
15PSIVAC	.01	480ZINA	.1	5200TORRA	1	400INHGG	.1	200KGCMMG	.1
30INHGVAC	.01	2100GMA	1	7000MBARA	1	5500INH20G	1	200ATMG	.1
400INH20VAC	.1	1600MMHGA	1	7000CMH20A	1	3200ZING	1	5000 psig	Res
240ZINVAC	.1	1600TORRA	1	700KPAA	.1	480FTH20	.1	5000PSIG	1
1000GCMVAC	1	2000MBARA	1	0.7MPAA	.0001	1400KPAG	1	35MPAG	.01
760MMHGVAC	.1	2100CMH20A	1	7BARA	.001	1.4MPAG	.001	350BARG	.1
760TORRVAC	.1	200KPAA	.1	7KGCMA	.001	14BARG	.01	350KGCMMG	.1
1000MBARVAC	1	0.2MPAA	.0001	7ATMA	.001	14KGCMMG	.01	340ATMG	.1
1000CMH20VAC	1	2BARA	.001	14ATMG	.01				

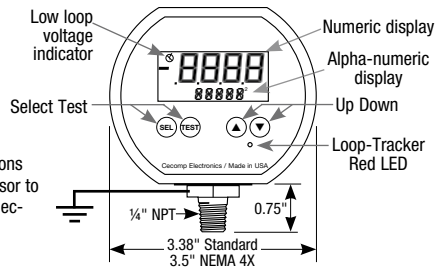
How to Specify	Type
F16LSC range - options	Standard housing
F16LSCN range - options	NEMA 4X housing

Range—see table at left
 psi = PSI torr = TORR mbar = MBAR
 inHg = INHG mmH2O = MMH2O bar = BAR
 oz/in² = ZIN kg/cm² = KGCM cmH2O = CMH2O
 inH2O = INH2O g/cm² = GCM atm = ATM
 ftH2O = FTH2O kPa = KPA
 mmHg = MMHG MPa = MPA
 G = gauge reference pressure
 VAC = gauge reference vacuum
 A = absolute reference

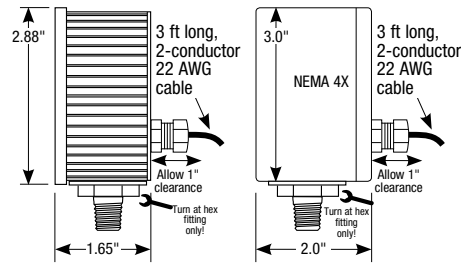
Options	add to end of model number
HA	High accuracy, ±0.1% FS ±1 LS See table at left for availability
MC	Metal front cover instead of plastic, n/a NEMA 4X
PM	Panel mount, 4.1" x 4.1", n/a NEMA 4X
CC	Moisture resistant circuit board conformal coating
CD	Calibration data; 5 test points and date
NC	NIST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

Dimensions



Non-metallic system installations require connecting gauge sensor to earth ground to avoid static electricity damage to gauge.



Ranges and Selectable Units

Range Codes

The gauge model range code indicates the default range. Alternate default engineering units may be ordered.

Selectable Ranges

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

Conversion

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

Sensor Range and Units	psi	kPa	MPa	mbar	bar	atm	kg/cm ²	g/cm ²	mmH ₂ O	cmH ₂ O	oz/in ²	ftH ₂ O	inH ₂ O	mmHg	torr	inHg
-14.7 to 15.0 psig	-14.7 to 15.0	-101.3 to 103.4	-1013 to 1034	-1013 to 1034	-1.013 to 1.034	-1.000 to 1.021	-1.033 to 1.055	-1033 to 1055		-1033 to 1055	-235.1 to 240.0	-33.90 to 34.61	-407 to 415	-760 to 776	-760 to 776	-29.92 to 30.54
-29.9 inHg to 15.0 psig	-14.7 to 15.0	-101.3 to 103.4	-1013 to 1034	-1013 to 1034	-1.013 to 1.034	-1.000 to 1.021	-1.033 to 1.055	-1033 to 1055		-1033 to 1055	-235.1 to 240.0	-33.90 to 34.61	-407 to 415	-760 to 776	-760 to 776	-29.92 to 30.54
-29.9 inHg to 100.0 psig	-14.7 to 100.0	-101 to 690	-101 to 690		-1.01 to 6.90	-1.00 to 6.81	-1.03 to 7.03				-235 to 1600	-33.9 to 230.7	-407 to 2767	-760 to 5171	-760 to 5171	-29.9 to 203.6
-29.9 inHg to 200.0 psig	-14.7 to 200.0	-101 to 1379	-101 to 1379		-1.01 to 13.79	-1.00 to 13.61	-1.03 to 14.06				-235 to 3200	-33.9 to 461.4	-407 to 5534			-29.9 to 407.2
0 to 3.000 psig	3.000	20.68		206.8	.2068	.2041	.2109	210.9	2109	210.9	48.00	6.921	83.0	155.1	155.1	6.108
0 to 5.000 psig	5.000	34.47		344.7	.3447	.3402	.3515	351.5	3515	351.5	80.0	11.54	138.4	258.6	258.6	10.18
15.00 to 0 psi abs	15.00 abs	103.4 abs	.1034 abs	1034 abs	1.034 abs	1.021 abs	1.055 abs	1055 abs		1055 abs	240.0 abs	34.61 abs	415.1 abs	775.7 abs	775.7 abs	30.54 abs
0 to 14.70 psig vac	14.70 vac	101.3 vac	.1013 vac	1013 vac	1.013 vac	1.000 vac	1.033 vac	1033 vac		1033 vac	235.1 vac	33.90 vac	406.8 vac	760 vac	760 vac	29.92 vac
0 to 15.00 psig	15.00	103.4	.1034	1034	1.034	1.021	1.055	1055		1055	240.0	34.61	415.1	775.7	775.7	30.54
30.00 to 0 psi abs	30.00 abs	206.8 abs	.2068 abs	2068 abs	2.068 abs	2.041 abs	2.109 abs	2109 abs		2109 abs	480.0 abs	69.21 abs	830 abs	1551 abs	1551 abs	61.08 abs
0 to 30.00 psig	30.00	206.8	.2068	2068	2.068	2.041	2.109	2109		2109	480.0	69.21	830	1551	1551	61.08
0 to 60.00 psig	60.00	413.7	.4137	4137	4.137	4.083	4.218	4218		4218	960	138.4	1660	3103	3103	122.2
100.0 to 0 psi abs	100.0 abs	689.5 abs	.6895 abs	6895 abs	6.895 abs	6.805 abs	7.031 abs	7031 abs		7031 abs	1600 abs	230.7 abs	2767 abs	5171 abs	5171 abs	203.6 abs
0 to 100.0 psig	100.0	689.5	.6895	6895	6.895	6.805	7.031	7031		7031	1600	230.7	2767	5171	5171	203.6
0 to 200.0 psig	200.0	1379	1.379		13.79	13.61	14.06				3200	461.4	5534			407.2
0 to 300.0 psig	300.0	2068	2.068		20.68	20.41	21.09				4800	692.1				610.8
0 to 500.0 psig	500.0	3447	3.447		34.47	34.02	35.15					1154				1018
0 to 1000 psig	1000	6895	6.895		68.95	68.05	70.31					2307				2036
0 to 3000 psig	3000		20.68		206.8	204.1	210.9					6921				6108
0 to 5000 psig	5000		34.47		344.7	340.2	351.5									

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.
- ✗ Avoid permanent sensor damage! Do not apply vacuum to non-vacuum gauges or hydraulic vacuum to any gauges.
- ✗ Avoid permanent sensor damage! NEVER insert objects into gauge port or blow out with compressed air.
- ⚠ Gauges are not for oxygen service. Accidental rupture of sensor diaphragm may cause silicone oil inside sensor to react with oxygen.
- ✗ 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.



WARNING: This product can expose you to chemicals including 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

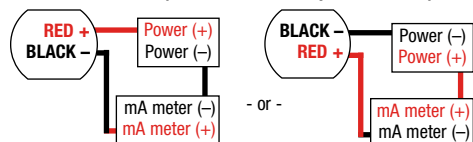
Electrical Connection

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:

$$V_{min} = 10V + (20mA \times \text{Total loop resistance})$$



To use the transmitter as a low voltage powered gauge connect it to any 10-32 VDC power supply.

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 for 15 seconds.

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	"0" 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

Calibration Preparation

Gauges are calibrated at the factory using equipment traceable to NIST. There is no need to calibrate the gauge before putting it into service. Calibration 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.

Calibration intervals depend on your quality control program requirements and as-found data. Many customers calibrate their equipment annually.

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 gauges.

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

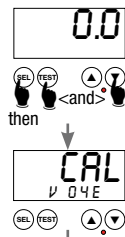
Allow the gauge to equalize to normal room temperature for at least 20 minutes before calibration.

Enter Calibration Pass Code

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.

The display prompts for entry of the calibration pass code (**CALPC**), with the first underscore blinking. To enter the 4 digit pass code, see the Enter Configuration Pass Code 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**.

Zero Calibration

Apply zero pressure.

The lower display segments will alternate between **CAL** and **ZERO**.

Use the **▲** or **▼** 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's pressure 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's pressure 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 between **CAL** and **-SPAN**.

Use the **▲** or **▼** buttons to adjust the display to match the calibrator's pressure 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's pressure reading.

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

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

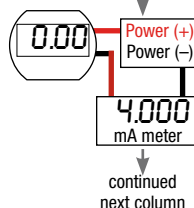
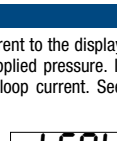
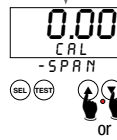
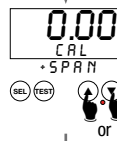
Press and release the **SEL** button until the display briefly indicates **LCAL**.

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.



Loop Current Calibration—continued

20 mA Loop Current

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 **CAL** and **20 MA**.

Use the **▲** or **▼** buttons to adjust the actual loop current to 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 Pass Code Configuration

The factory default 3510 pass code may be changed to a different value.

Configuration Pass Code

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

Calibration Pass Code

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 Pass Code (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 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**, **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 pass code characters to exit.

Enter access code 1220:

Use the **▲** and **▼** 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 Pass Code

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

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 **SEL** 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 **SEL** button until the gauge restarts.