



Ranges and Resolution

abs: Absolute reference (atmospheric pressure to zero at full vacuum)
 vac: Vacuum gauge, minus sign not used unless specified
 Resolution is fixed as indicated in table
 Contact factory for engineering units not listed

-30.0 inHg/15.0 psig	200.0 inHg abs	1600 mmHg	20.00 bar	2100 g/cm ²
-30.0 inHg/100.0 psig	200.0 inHg	3200 mmHg	35.00 bar	1.000 kg/cm ² abs
-30.0 inHg/200.0 psig	50.00 oz/in ²	760.0 torr abs	70.00 bar	1.000 kg/cm ² vac
3.000 psig	80.0 oz/in ²	1600 torr abs	140.0 bar	±1.000 kg/cm ²
5.000 psig	240.0 oz/in ² abs	2100 mmH ₂ O	200.0 bar	1.000 kg/cm ²
15.00 psi abs	240.0 oz/in ² vac	3500 mmH ₂ O	350.0 bar	2.000 kg/cm ² abs
15.00 psig vac	±240.0 oz/in ²	210.0 cmH ₂ O	20.00 kPa	2.000 kg/cm ²
±15.00 psig	240.0 oz/in ²	350.0 cmH ₂ O	35.00 kPa	4.000 kg/cm ²
15.00 psig	85.0 inH ₂ O	1000 cmH ₂ O	100.0 kPa abs	7.000 kg/cm ² abs
30.00 psi abs	140.0 inH ₂ O	2100 cmH ₂ O	100.0 kPa vac	7.000 kg/cm ²
30.00 psig	400.0 inH ₂ O abs	200.0 mbar	±100.0 kPa	14.00 kg/cm ²
60.00 psig	400.0 inH ₂ O vac	350.0 mbar	100.0 kPa	20.00 kg/cm ²
100.0 psi abs	±400 inH ₂ O	1000 mbar abs	200.0 kPa abs	35.00 kg/cm ²
100.0 psig	400.0 inH ₂ O	1000 mbar vac	200.0 kPa	70.00 kg/cm ²
200.0 psig	850 inH ₂ O abs	±1000 mbar	400.0 kPa	140.0 kg/cm ²
300.0 psig	850 inH ₂ O	1000 mbar	700.0 kPa abs	200.0 kg/cm ²
500.0 psig	7.000 ftH ₂ O	2000 mbar abs	-100 to 700 kPa	350.0 kg/cm ²
1000 psig	12.00 ftH ₂ O	2000 mbar	700.0 kPa	1.000 atm abs
2000 psig	35.00 ftH ₂ O	4000 mbar	1500 kPa	±1.000 atm
3000 psig	70.00 ftH ₂ O	1.000 bar abs	2000 kPa	1.000 atm
5000 psig	140.0 ftH ₂ O	1.000 bar vac	3500 kPa	2.000 atm
6.000 inHg	230.0 ftH ₂ O	±1.000 bar	7000 kPa	4.000 atm
10.00 inHg	480.0 ftH ₂ O	1.000 bar	3.500 MPa	7.000 atm
30.00 inHg abs	150.0 mmHg	2.000 bar abs	7.000 MPa	14.00 atm
30.00 inHg vac	260.0 mmHg	2.000 bar	14.00 MPa	20.00 atm
±30.00 inHg	760.0 mmHg abs	4.000 bar	20.00 MPa	35.00 atm
30.00 inHg	760.0 mmHg vac	7.000 bar abs	35.00 MPa	70.00 atm
60.00 inHg abs	±760 mmHg	-1.00 to 7.00 bar	1000 g/cm ² abs	135.0 atm
60.00 inHg	760.0 mmHg	7.000 bar	1000 g/cm ²	200.0 atm
120.0 inHg	1600 mmHg abs	14.00 bar	2100 g/cm ² abs	340.0 atm

Accuracy

Includes linearity, hysteresis, repeatability
 Standard: ±0.25% of full scale ±1 least significant digit
 Optional: **-HA** ±0.1% FS ±1LSD (most ranges)
CD Factory 5-point calibration data
NC NIST traceable test report and 5-point calibration data

Display

4 readings per second nominal display update rate
 4½ digit LCD, 0.5" H main display
 5 character 0.25" H alphanumeric lower display for units, functions, and setup
BL models: Red LED backlight on whenever gauge is on.
 LCD Alarm 1 and Alarm 2 indicators and bi-color (red/green) LEDs on front panel

Controls and Functions

SEL Select and display alarm trip points
TEST Alarm acknowledge, or toggle alarm states when in test mode
 ▲ Increase alarm setpoint when in setpoint adjust mode
 ▼ Decrease alarm setpoint when in setpoint adjust mode

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

Alarm Outputs and Deadband

Dual form C (SPDT) relay contacts; 1A/24VDC, 0.5A/115VAC, non-inductive
 3 ft long 6-conductor 22 AWG cable with stripped and tinned wire ends
 Available configurations: HI/LO, HI/Hi, LO/LO, normal or reverse acting
 120 milliseconds typical response time
 Hysteresis factory set at 1% of full scale

Power

Gauge is on whenever power is applied. Designed for continuous operation.
 Any AC source of 8 to 24 VAC 50/60 Hz or any DC source of 9 to 32 VDC
 1.0 watt maximum power consumption
 3 ft long 2-conductor 22 AWG power cable with stripped and tinned wire ends
 Order optional **WMPSK** 12 VDC wall mount power supply kit to operate on 115 VAC

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)

- Dual SPDT Alarms with Programmable Setpoints
- NEMA 4X and Display Backlighting Optional
- Bi-Color Red/Green Alarm LEDs
- Alarm Test Function



Size

F16ADA: 3.38" W x 2.88" H x 1.65" D housing
F16ADAN: 3.5" W x 3.0" H x 2.0" D housing
 Add approximately 0.75" to height for pressure fitting
 Add approximately 1" to depth for strain relief and wire clearance

Weight

Gauge: 9 ounces (approx.)
 Shipping wt.: 1 pound (approx.)

Housing

F16ADA: Extruded aluminum case, light gray epoxy powder coated, black ABS/ polycarbonate bezel (gray aluminum bezel optional), front and rear gaskets, black/gold polycarbonate label
F16ADAN: Light gray ABS/polycarbonate NEMA 4X case, rear gasket, black/gold polycarbonate label

Pressure/Vacuum Connection Size and Material

1/4 NPT male
 All wetted parts are 316 stainless steel

Overpressure

3000 psig range and metric equivalents: 5000 psig
 5000 psig range and metric equivalents: 7500 psig
 All others 2 times sensor pressure
 112.5% out-of-range display: / - - - or / - - - - depending on model

Burst Pressure

4 times sensor pressure rating, or 10,000 psi, whichever is less

Models and Options

Standard	F16ADA	range units ref - alarm
Backlit	F16ADABL	range units ref - alarm
NEMA 4X	F16ADAN	range units ref - alarm
Backlit + NEMA 4X	F16ADANBL	range units ref - alarm

Pressure/Vacuum Range ————▲
 Units ————▲
G=Gauge, A=Absolute, VAC=Vacuum

Alarm Options ————▲
1N = Hi/Lo Normal action (Std) **1R** = Hi/Lo Reverse action
2N = Hi/Hi Normal action **2R** = Hi/Hi Reverse action
3N = Lo/Lo Normal action **3R** = Lo/Lo Reverse action

Example: **F16ADABL500PSIG-1N**
 F16ADA with BL display backlighting, 500 psig, HI/LO normal action alarms

Unit Abbreviations			
psi = PSI	ftH ₂ O = FTH2O	kg/cm ² = KGCM	mbar = MBAR
inHg = INHG	mmHg = MMHG	g/cm ² = GCM	bar = BAR
oz/in ² = ZIN	torr = TORR	kPa = KPA	cmH ₂ O = CMH2O
inH ₂ O = INH2O	mmH ₂ O = MMH2O	MPa = MPA	atm = ATM



F16ADA Series Instructions

INSTALLATION AND PRECAUTIONS

Install or remove gauge using wrench on hex fitting only. Do not turn using housing or any other part of the gauge. Use fittings appropriate for the pressure range of the gauge. Do not apply vacuum to gauges not designed for vacuum operation. Due to the hardness of 316 stainless steel, it is recommended that a thread sealant be used to ensure leak-free operation. **NEVER** insert objects into the gauge port or blow out with compressed air. Permanent damage not covered by warranty will result if the sensor.

POWER CONNECTIONS

NEVER connect the gauge power wires directly to 115 VAC or permanent damage not covered by warranty will result! The **F16ADA** series can be powered by an AC source of **8 to 24 VAC 50/60 Hz** or DC source: **9 to 32 VDC**

Connect power to the smaller two-conductor cable with one RED and one BLACK lead. The gauge will operate on either AC or DC power, so there is no need to observe polarity. Operation with less than 8 VAC RMS if AC, or 9 VDC may cause erratic or erroneous readings or alarm operation.

The gauge is powered on whenever a supply voltage is applied. During power-up, the display briefly indicates the rated full-scale pressure with "FS" indicated on the lower display. This is followed by a test of all display segments. The gauge then proceeds to the normal operating mode. The gauge may be left on at all times or as required. Alarm setpoints, the calibration passcode, and calibration information are stored in non-volatile memory.

ALARM OUTPUT WIRING

The 6-conductor cable is for the 2 SPDT relay contacts.



Contact Rating and Protection - The contacts of the alarm relays are rated at 1A/24VDC or 0.5A/115VAC. Using mechanical relay contacts above their rating, or with large inductive loads, will shorten their useful life. In circuits other than low-level switching or pilot duty, the user should consider whether external contact protection such as snubber networks or arc suppression networks are required to protect the contacts. No internal fusing is included in the alarm contact circuits. The alarm outputs should be externally fused by the user in applications where good design practice dictates.

NORMAL OPERATION

In normal operation the display indicates the applied pressure with engineering units displayed on the character segments. A green LED indicates a normal or no-alarm condition. If any alarm condition is present, the relevant LCD alarm icon will be shown on the display and the corresponding bi-color LED will be red and blink at a slow rate until the alarm is acknowledged or the alarm condition clears. Press and release the TEST button to acknowledge an alarm condition.

The alarm trip point values are displayed by pressing the SEL (select) button. Press once to show TRIP 1 and press again to show TRIP 2. Pressing the SEL button again returns the gauge to the normal display.

If a particular setpoint is configured as a HI alarm, the gauge will provide a RED alarm indication when the system pressure exceeds the setpoint. If a particular setpoint is configured as a LO alarm, the gauge will provide a RED alarm indication when the system pressure falls below the setpoint. Alarm configurations are set at the factory and may be ordered as HI/LO, HI/HI, or LO/LO configurations.

USING THE TEST FUNCTION

For system setup, testing, and troubleshooting, the test function can be used to toggle the state of the alarm relays. This allows them to be switched to their opposite state on demand without the need to vary the system pressure to test devices connected to the alarms.

While in the normal operating mode, press and hold the TEST button and press the SEL button. Release both buttons when the display indicates - - - - .

While in the Test Alarms mode the display will indicate the applied pressure with engineering units blinking at a slow rate.

To invert the alarm states, press the TEST button. As long as the TEST button is held pressed, the alarm indicators and the alarm relays will be opposite to what they would normally be for the applied pressure displayed.

When the TEST button is released, the alarm indicators will return to their normal operating state corresponding to the applied pressure being displayed. To exit the Test Alarms mode and return to normal operation, press and release the SEL button.

ALARM TYPES: NORMAL VS. REVERSE ACTION

With Normal configuration (alarm options 1N, 2N, or 3N), the alarm output relays will be CLOSED (relay energized) for a non-alarm condition and OPEN (relay not energized) for an alarm condition. This produces an alarm condition if the gauge loses power.

Therefore, with the Normal configuration, in a green or non-alarm condition the relay will be energized so that continuity can be expected between the common and normally open leads. In a red or alarm condition, the relay will be open (not energized), so that continuity can be expected between the common and normally closed leads.

If no alarm condition is required when the gauge power is off specify Reverse action (alarm options 1R, 2R, or 3R). In this case, the relay will be open (not energized) in the non-alarm condition and closed for the alarm condition. In this case, continuity can be expected from common to normally closed in the green (non-alarm) condition and from common to normally open in the red (alarm) condition.

DEADBAND

The alarm circuit setpoints have built-in deadbands, also known as hysteresis, of 1% of span as standard. This is a fixed value set at the factory. This means, for example, the deadband is approximately 1 psi in a 0 to 100 psi gauge.

This deadband serves to eliminate output oscillation or "chatter" in the process due to minor fluctuations in pressure. If, for example, the system pressure in a 0-100 psi system is 40.0 psi, and Setpoint 1 is set to 50.0 psi (HI alarm), the alarm indication will trip if the pressure exceeds 50.0 psi. After the HI alarm has tripped, pressing the SP1 button will show that the alarm indication will "release" at 1 psi lower (approximately 49 psi).

ALARM SETPOINT ADJUSTMENTS

Setpoint is defined as the value of applied pressure that will result in a change of state only from a normal to an alarm condition. Trip Point is defined as the value of applied pressure that will result in a change of state of alarm condition, and includes the effect of deadband when returning from an alarm to a normal condition.

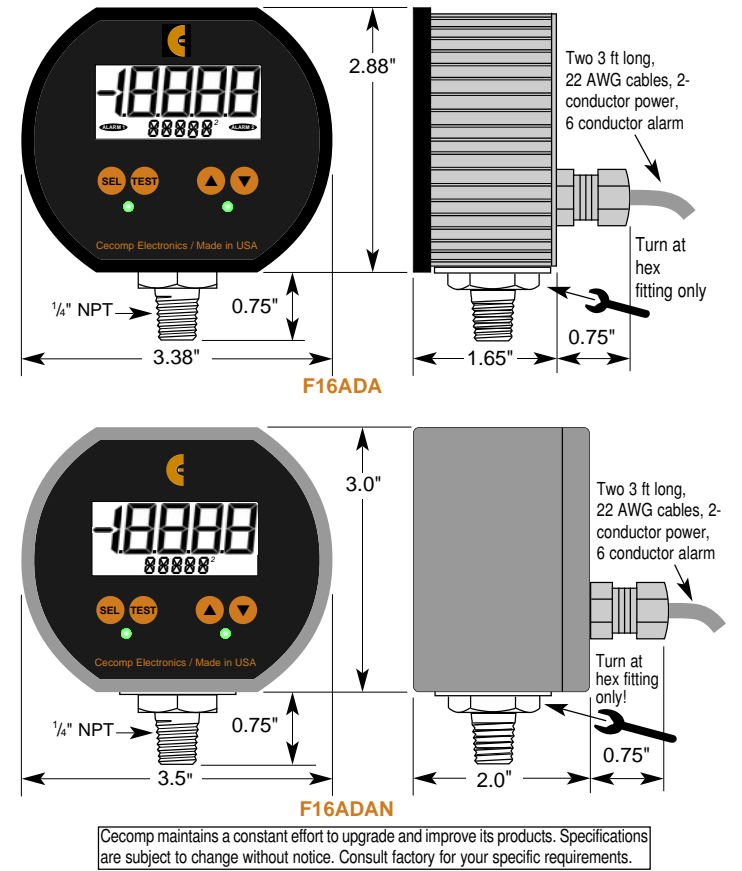
1. Make sure the gauge is in the normal operating mode. To adjust setpoint 1 press the SEL (select) button once to show TRIP 1 on the lower display.
2. While pressing and holding the TEST button, press the SEL button. Release both buttons when the display indicates - - - - .
3. The display will indicate trip point 1 with TRIP 1 blinking on the lower display.
4. To adjust the setpoint 1 value, press and hold the TEST button. The display will indicate setpoint 1 with SP 1 on the character segments.
5. Use the ▲ and ▼ buttons to adjust the setpoint to the desired value. The setpoint value is stored when the TEST button is released. The LEDs will turn off and the gauge will not respond to changes in applied pressure while the TEST button is held pressed. The alarm relays and LCD indicators will maintain their prior states until the TEST button is released.
6. To exit the setpoint adjust mode and return to normal operation, press and release the SEL button.
7. Setpoint 2 is adjusted in the same manner. Press the SEL button twice to show TRIP 2 on the lower display and follow the same procedure as setpoint 1.

CALIBRATION

The gauge is calibrated at the factory using equipment traceable to NIST. There is no need to calibrate the gauge before putting it in service.

A user-settable passcode is required to access the gauge calibration functions. Passcode information and gauge calibration instructions can be downloaded from www.cecomp.com or requested by calling us at 800-942-0315. Gauges may be also returned to Cecomp for factory certified or NIST traceable calibration.

DIMENSIONS



Pressure