

# FCI Aerospace Division

## Pressure Element Series: Model AS-PE

### Aerospace and Military Applications



#### FCI'S Technology Advantage

FCI is a world market leader in sensors for use in the aerospace, military, industrial and process control services. Precision, highly reliable and repeatable sensing includes liquid and gas flow, liquid level, temperature and pressure.

#### Pressure Element Applications

FCI Aerospace Division Pressure Elements meet the demanding requirements of aerospace and military customers with full qualification compliance, while maintaining the flexibility and capability necessary to meet the special needs of a variety of applications, including:

- » Hydraulics
- » ECS
- » Coolant Systems
- » Lubrication
- » Fuel Systems

#### FCI's Pressure Element Features

- » No Moving Parts
- » High Reliability
- » Wide Range
- » Simple Installation
- » Durable Sensor Solution
- » Military Standard Connections
- » Corrosion and Abrasion Resistance
- » Available Temperature Option

#### Sensing Technology

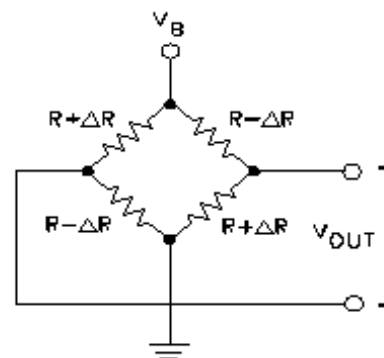
FCI pressure elements use piezoresistive sensors (strain gage sensors) fabricated using silicon processing techniques common in the semiconductor industry.

Piezoresistive sensors are often referred to as IC sensors (integrated circuit), solid state sensors, monolithic sensors (formed from single crystal silicon) or just silicon sensors.

FCI elements consist of four strain sensitive resistors ion implanted into silicon wafers. These resistors are connected in a wheatstone bridge configuration. Two resistors increase in ohmic value as pressure increases while the other two decrease.

When pressure is applied, the resistors in the arms of the bridge change by an amount  $\Delta R$ . Alignment of the resistors on the silicon determines which resistors increase and which decrease with pressure.

FCI's Aerospace design team uses the latest in computer aided engineering technology and has access to FCI's extensive test and calibration facilities to fully analyze and test sensor under a variety of conditions. Custom designs are available for any application. FCI fully tests each sensor to your requirements before shipping them to you. After all, we strive to continually meet and exceed our customer expectations and requirements for products and services.



The resulting differential output voltage is:

$$V_{out} = (S \times P \times V_B) \pm V_{os}$$

Where:

$V_{out}$  is the output voltage in mV.

S is the sensitivity in mV/V per psi

P is the pressure in psi

$V_B$  is the bridge voltage in volts

$V_{os}$  is the offset error ( $V_{out}$  at 0 psi)

Visit FCI Aerospace Division on the Web: [www.fluidcomponents.com](http://www.fluidcomponents.com)

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## Pressure Element Series: Model AS-PE

### Specifications

**Service:** Pressure monitoring of liquid and gas

**Material of Construction:** All-welded, 300 series stainless steel, aluminum, titanium or other alloys optionally available with hermetically sealed connectors.

**Electrical Connection:** Military, commercial connector or pigtail cable.

**Process Connection:** Threaded or flanged:  
AS930-03  
AS4395E8  
MS33656E8

**Accuracy:**

Repeatability:  $\pm 0.1\%$  of reading  
Interchangeability:  $\pm 1\%$  of reading

**Temperature Environment:**

Operating Temperature:  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$   
Survival Temperature:  $-80^{\circ}\text{C}$  to  $200^{\circ}\text{C}$

**Time Response Constant:** .5 Seconds

**Qualification:**

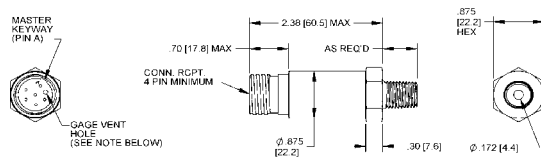
MIL-STD-130	Marking
MIL-STD-810	Environmental Testing
MIL-STD-461/462	EMI

**Quality System Approval:** ISO 9001, AS 9000

**Pressure Performance Properties:**

Operating Pressure Ranges	Proof Pressure	Burst Pressure
0 - 3 psig	9 psig	15 psig
0 - 10 psig	30 psig	50 psig
0 - 30 psig	90 psi	150 psi
0 - 100 psi	300 psi	500 psi
0 - 500 psi	1200 psi	2400 psi

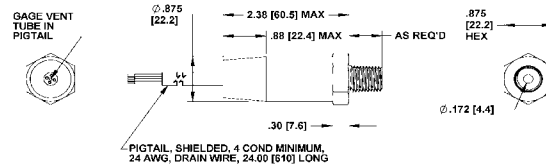
**Weight:** .2 lbs - .7 lbs



CONNECTOR PIN-OUT			
CONN PIN	mV OPTION	mA OPTION	V1 & V2 OPTION
A	-IN	+IN	+IN
D	-IN	-IN	-IN
B	+OUT	N/C	+OUT
C	-OUT	N/C	N/C
E & F	SPARES		

NOTE: MATING CONNECTOR PLUG MUST ALLOW GAGE HOLE TO VENT (GAGE UNITS ONLY REMOVE O-RING)

DIMENSIONS IN BRACKETS [ ] ARE IN MILLIMETERS



WIRING			
COND COLOR	mV OPTION	mA OPTION	V1 & V2 OPTION
RED	+IN	+IN	+IN
BLACK	-IN	-IN	-IN
GREEN	+OUT	N/C	+OUT
WHITE	-OUT	N/C	N/C
BARE	SHIELD		

DIMENSIONS IN BRACKETS [ ] ARE IN MILLIMETERS

**Typical Pressure Element with Electrical Connector**

**Typical Pressure Element with Pigtail Cable**



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