

# 13mm Compensated Series

0 to 500, 1,000, 2,000, 3000 and 5,000 psia Pressure Sensors

Low Cost, Stainless Steel Isolated Pressure Sensors



## General Description

These SenSym ICT compensated 13mm stainless steel devices were developed for high pressure applications that involve measurement of hostile media in harsh environments. These sensors will accommodate any media that will not adversely attack 316 stainless steel. This series uses SenSym ICT's proven piezoresistive semiconductor sensor chip in an oil isolated housing with an integral ceramic for temperature compensation and calibration. This design has proven to be highly reliable, stable, and accurate.

These sensors feature a weld ring collar and special back support ring for high cycle life capability. Parts are available with pressure ranges from 1,000 through 5,000 psi and can be used with voltage or current supplies.

Contact your local SenSym ICT representative or the SenSym ICT factory for additional details.

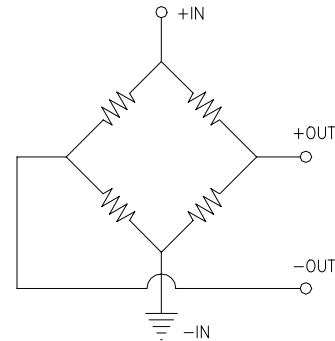
## Features

- Calibrated and Temperature Compensated
- Voltage or Current Supply Options
- Rugged-Isolated Stainless Steel Package
- Small Size
- Absolute & Sealed Gauge Pressures
- Reliable Semiconductor Technology

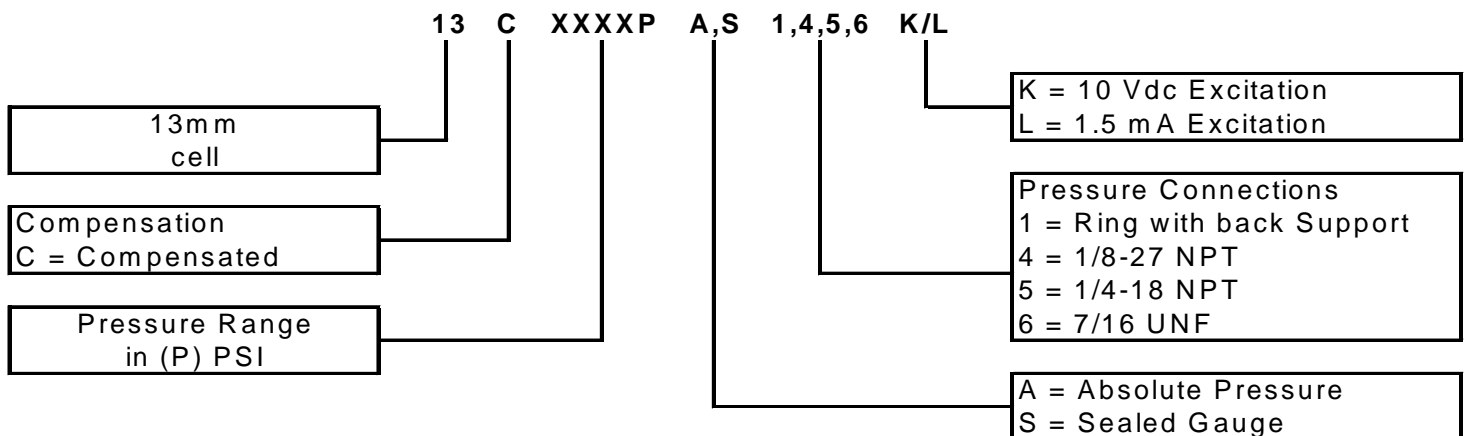
## Applications

- Industrial Controls

## Equivalent Circuit



## Ordering Information - Part # Description



For example: Part #**13C3000PS4K** = 13 mm Cell, Compensated, 3000 psi, Sealed Gauge, 1/8NPT Port, with 10 Vdc excitation.

## Pressure Sensor Characteristics (all devices)

### Environmental Specifications

Compensated: 0°C to +82°C

Operating: -40°C to +125°C

Storage: -40°C to +125°C

Vibration: 10G at 20-2000 Hz

Shock: 100G for 11 msec

Life: 1 Million cycles minimum

Insulation Resistance 100MΩ at 50 Vdc

### Maximum Ratings (all devices)

Voltage Version "K": Supply Voltage  $V_S = +15$  Vdc

Current Version "L": Supply Current  $I_S = +2.0$  mA

### Pressure Range Specifications

SenSym/ICT PART # *	PRESSURE RANGE	Full Scale Span (2)	PROOF PRESSURE (7)	BURST PRESSURE (8)
13C 0500P (A,S) (1,4,5,6) (K,L)	0-500 psi	98mV to 102mV	1200 psi	2400 psi
13C 1000P (A,S) (1,4,5,6) (K,L)	0-1000 psi	98mV to 102mV	3000 psi	5000 psi
13C 2000P (A,S) (1,4,5,6) (K,L)	0-2000 psi	98mV to 102mV	6000 psi	10,000 psi
13C 3000P (A,S) (1,4,5,6) (K,L)	0-3000 psi	98mV to 102mV	9000 psi	10,000 psi
13C 5000P (A,S) (1,4,5,6) (K,L)	0-5000 psi	148mV to 152mV	10,000 psi	10,000 psi

### Performance Characteristics <sup>(1)</sup>

Characteristic	Min	Typical	Max	Units
Zero pressure offset	-2	0	+2	mV
Nonlinearity <sup>(3)</sup>	--	±0.1	±0.25	%FSS
Pressure hysteresis <sup>(3)</sup>	--	±0.015	±0.030	%FSS
Repeatability	--	±0.010	±0.030	%FSS
Temp. effect on span <sup>(4)</sup>	--	±0.5	±1.0	%FSS
Temp. effect on offset <sup>(4)</sup>	--	±0.5	±1.0	%FSS
Thermal hysteresis (0 to 82°C)	--	±0.1	±0.3	%FSS
Long term stability of offset & Span <sup>(5)</sup>	--	±0.1	±0.3	%FSS
Response time (10% to 90%) <sup>(6)</sup>	--	0.1	--	ms
Common Mode Voltage (Voltage Version "K") <sup>(9)</sup>	.50	1.25	2.0	Vdc
Input impedance (Current Version "L")	2.0	4.5	8.0	kΩ
Input impedance (Voltage Version "K")	8.0	25	50	kΩ
Output impedance	3.0	4.5	6.0	kΩ

### Specification Notes:

**Note 1:** Reference Conditions (unless otherwise noted): Supply,  $V_S = 10$  Vdc ± 0.01 Vdc or  $I_S = 1.5$  mA ± 0.0015 mA;  $T_a = 25^\circ\text{C}$ .

**Note 2:** Span is the algebraic difference between the output voltage at full scale pressure and the output at zero pressure. Full Scale Span (FSS) is ratiometric to the supply voltage.

**Note 3:** Linearity is based on best-fit straight line from the zero to the full scale pressure. Hysteresis is the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.

**Note 4:** Maximum error band of the offset voltage or span over the compensated temperature range, relative to the 25°C reading.

**Note 5:** Long term stability over a six month period.

**Note 6:** Response time for a step change from the zero pressure to the full scale pressure.

**Note 7:** The maximum pressure that can be applied without changing the transducer's performance or accuracy.

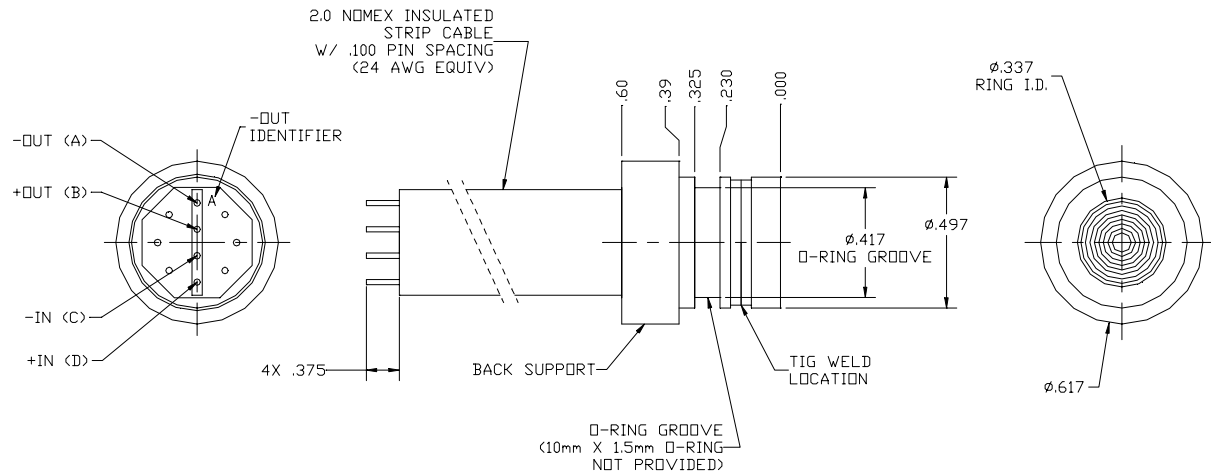
**Note 8:** The maximum pressure that can be applied to a transducer without rupture of either the sensing element or transducer case.

**Note 9:** Common Mode Voltage as measured from output to ground.

## Physical Dimensions

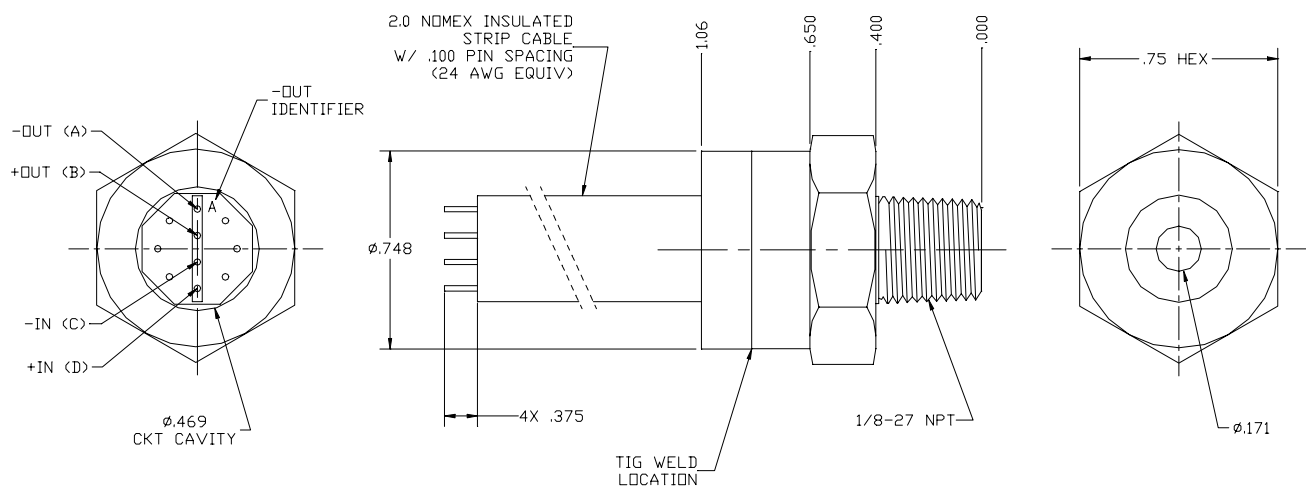
## Ring with Back Support Package “1” (See Note 1)

File: SS60188



## 1/8-27 NPT Package “4”

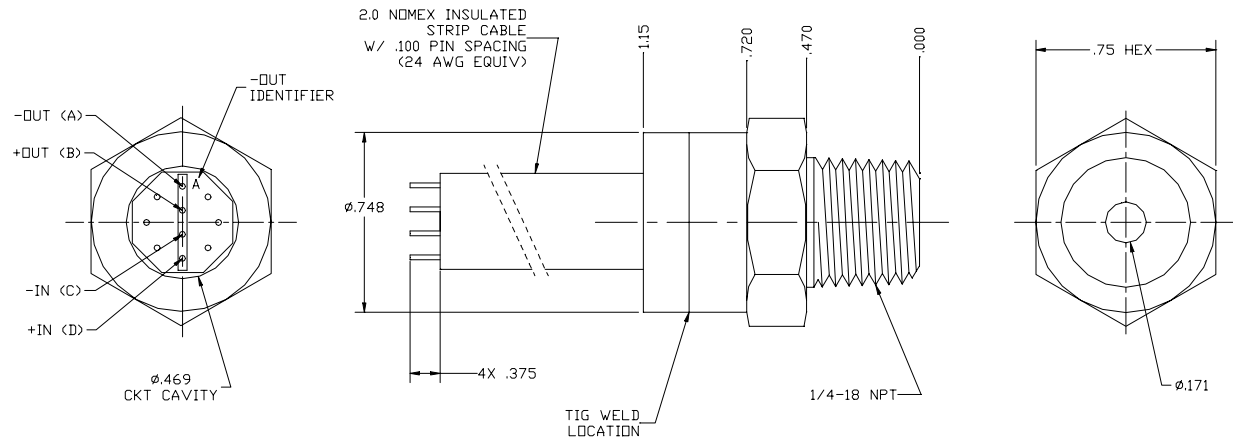
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## Physical Dimensions

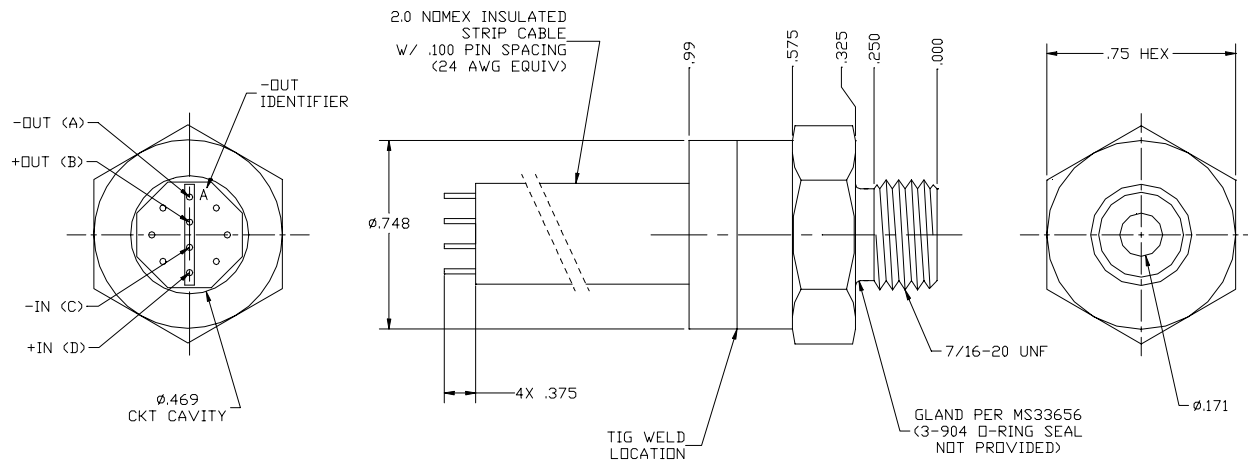
## 1/4-18 NPT Package "5"

File: SS60190



## 7/16-20 UNF Package "6"

File: SS60191



Note1: Non-concentricity effects at the diaphragm weld area may cause run out of up to  $\pm 0.006$ " between the upper and lower portions of the sensor body. (It is recommended to use a counter bore in the mating bore used with this device to allow for this non-concentricity.)

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