13mm Series

Low Cost, Stainless Steel Isolated Pressure Sensors

0 to 500, 1,000, 2,000 3,000 and 5,000 psi Pressure Sensors

These SenSym ICT 13mm stainless steel devices are designed for high pressure applications that involve measurement of hostile media in harsh environments. This series uses SenSym ICT's proven piezoresistive semiconductor sensor chip in an oil isolated housing with or without 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 as they are designed for further package integration in OEM applications. Parts are available with pressure ranges from 500 through 5,000 psi and can be used with voltage or current supplies.

Contact your local SenSym ICT representative, the factory, or go to Sensym ICT's Web site at www.sensym-ict.com for additional details.

APPLICATIONS

13C and 13U

- Industrial Controls
- Hydraulic Controls
- Tank Pressure Transmitter

FEATURES

13C and 13U

- Rugged - Isolated Stainless Steel Package
- Reliable Semiconductor Technology

13C Compensated Series

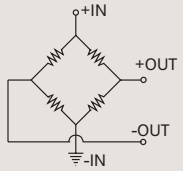
- Calibrated and Temperature Compensated
- Voltage or Current Supply Options
- Absolute & Sealed Gauge Pressures

13U Uncompensated Series

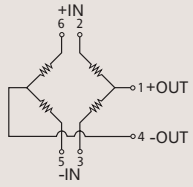
- Low Cost Cell Package
- Absolute Pressure

EQUIVALENT BASIC CIRCUIT

13mm COMPENSATED SERIES



13mm UNCOMPENSATED SERIES



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Sensor Systems

LOW COST, STAINLESS STEEL ISOLATED PRESSURE SENSORS
SenSym ICT

13mm Compensated Series

PRESSURE SENSOR CHARACTERISTICS (all devices)

Environmental Specifications (all devices)

Temperature Ranges

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 No.	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	1500 psi	2500 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[1]

Characteristic	Min	Typical	Max	Units
Zero Pressure Offset	-2	0	+2	mV
Pressure Non-Linearity[3]	–	±0.1	±0.25	%FSS
Pressure Hysteresis[3]	–	±0.015	±0.030	%FSS
Repeatability	–	±0.010	±0.030	%FSS
Temp. Effect on Span[4]	–	±0.5	±1.0	%FSS
Temp. Effect on Offset[4]	–	±0.5	±1.0	%FSS
Thermal Hysteresis (0 to 82°C)	–	±0.1	±0.3	%FSS
Long Term Stability of Offset & Span[5]	–	±0.1	±0.3	%FSS
Response Time[6]	–	0.1	–	ms
Common Mode Voltage (Voltage Version "K")[9]	.50	1.25	2.0	Vdc
Input Resistance (Current Version "L")	2.0	4.5	8.0	kΩ
Input Resistance (Voltage Version "K")	8.0	25	50	kΩ
Output Resistance	3.0	4.5	6.0	kΩ

13mm COMPENSATED SERIES SPECIFICATION NOTES

Note 1: Reference Conditions (unless otherwise noted): T_A=25°C Supply V_S=10Vdc±0.01Vdc or I_S=1.5mA±0.0015mA.

Note 2: Full-Scale 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: Pressure Non-Linearity is based on best-fit straight line from the zero to the full-scale pressure. 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 0 psi to Full-Scale Span pressure step change, 10% to 90% rise time.

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

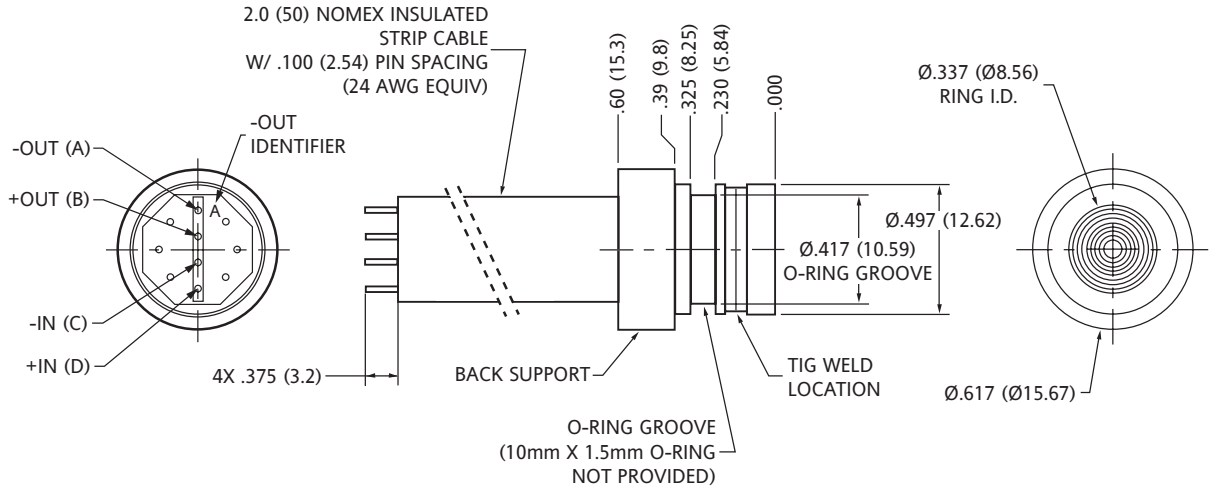
Note 8: The maximum pressure that can be applied to a transducer without rupture of either the sensing element or transducer case.

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

PHYSICAL DIMENSIONS

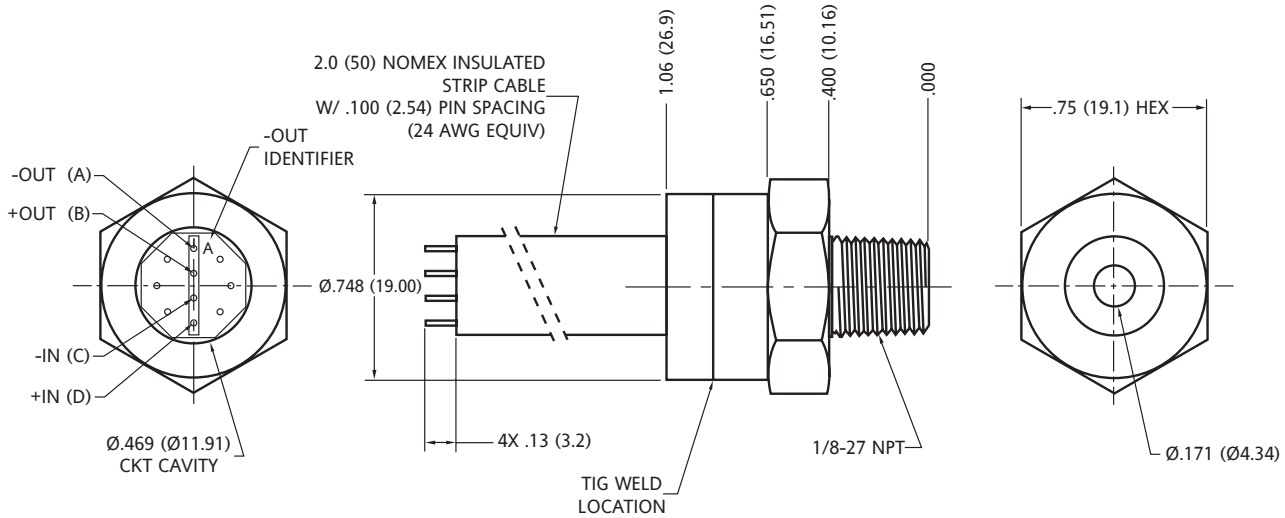
Dimensions in inches (mm)

PACKAGE 1 (See Note)
RING WITH BACK SUPPORT



Note: Non-concentricity effects at the diaphragm weld area may cause runout of up to ±0.006" between the upper and lower portions of the sensor body. (It is recommended to use a counter bore to mate with this device to allow for this non-concentricity.)

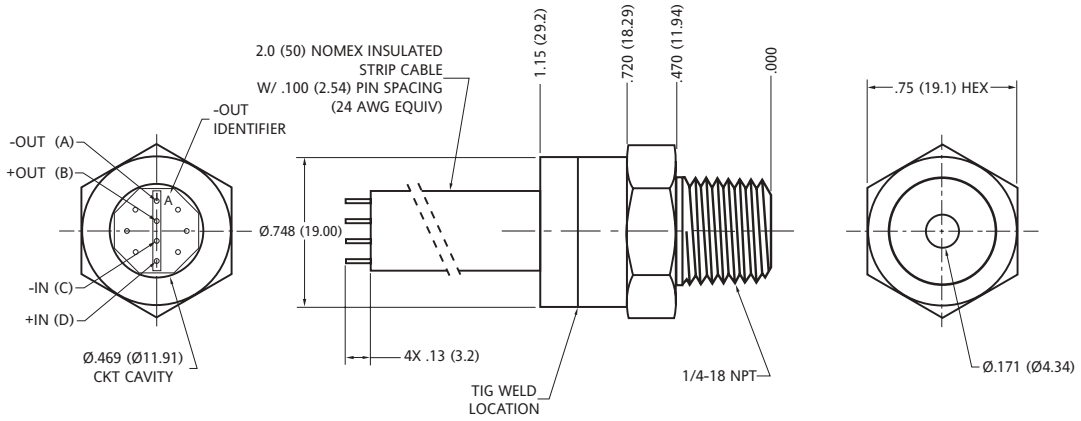
PACKAGE 4
1/8-27 NPT



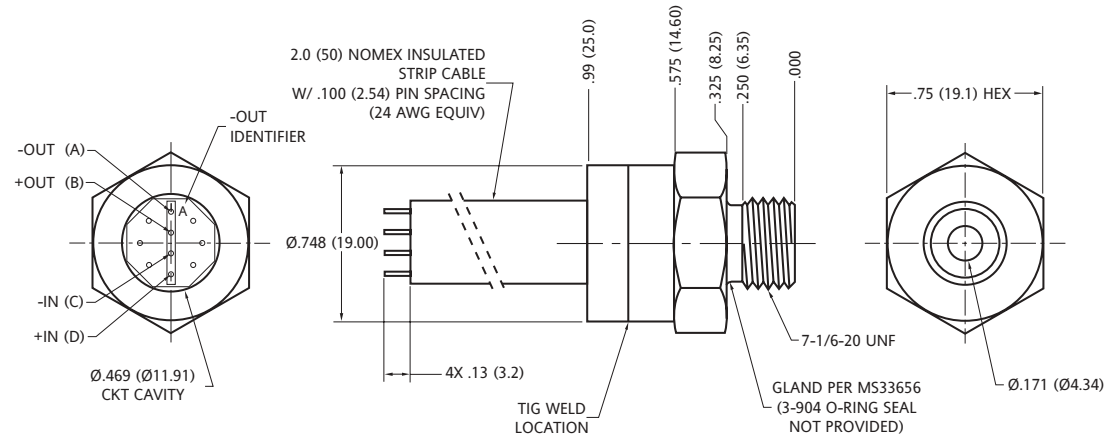
PHYSICAL DIMENSIONS (con't)

Dimensions in inches (mm)

PACKAGE 5
1/4-18 NPT



PACKAGE 6
7/16-20 UNF



PRESSURE RANGE SPECIFICATIONS

SenSym ICT Part No.	Pressure Range	Full-Scale Span[2]	Proof Pressure[7]	Burst Pressure[8]
13U 0500P A 0 K	0-500 psi	175mV to 300mV	1200 psi	2400 psi
13U 1000P A 0 K	0-1000 psi	175mV to 300mV	3000 psi	5000 psi
13U 2000P A 0 K	0-2000 psi	175mV to 300mV	6000 psi	10,000 psi
13U 3000P A 0 K	0-3000 psi	175mV to 300mV	9000 psi	10,000 psi
13U 5000P A 0 K	0-5000 psi	290mV to 500mV	10,000 psi	10,000 psi

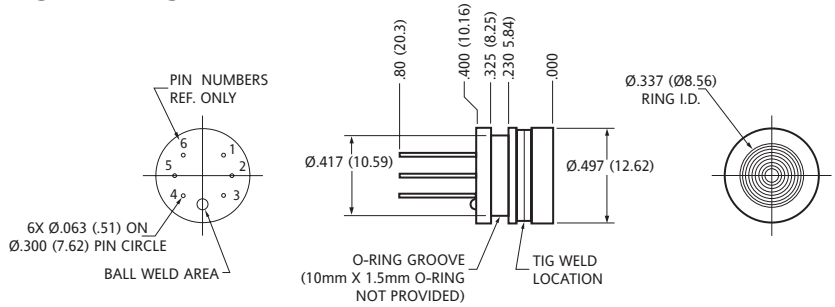
PERFORMANCE CHARACTERISTICS[1]

Characteristic	Min	Typical	Max	Units
Zero Pressure Offset	-7.5	0	+7.5	mV/V
Pressure Non-Linearity[3]	–	±0.1	±0.25	%FSS
Pressure Hysteresis[3]	–	±0.015	±0.030	%FSS
Repeatability	–	±0.010	±0.030	%FSS
Temp. Coefficient of Span[4] (0 to 82°C)	360	720	1260	ppm/°C
Temp. Coefficient of Resistance[4] (0 to 82°C)	2700	3420	4500	ppm/°C
Temp. Coefficient of Offset[4] (0 to 82°C)	–	30	–	µV/V/°C
Thermal Hysteresis (0 to 82°C)	–	±0.1	±0.3	%FSS
Long Term Stability of Offset & Span[5]	–	±0.1	±0.3	%FSS
Response Time[6]	–	0.1	–	ms
Input Resistance	4.0	4.75	6.0	kΩ
Output Resistance	4.0	4.75	6.0	kΩ

PHYSICAL DIMENSIONS

Dimensions in inches (mm)

PACKAGE 0 (See Note)
RING AND CELL



Note : Non-concentricity effects at the diaphragm weld area may cause runout of up to ±0.006" between the upper and lower portions of the sensor body. (It is recommended to use a counter bore to mate with this device to allow for this non-concentricity.)

13mm UNCOMPENSATED SERIES SPECIFICATION NOTES

Note 1: Reference Conditions (unless otherwise noted): T_A=25°C Supply V_S=5Vdc±0.01Vdc or I_S=1.0 mA±0.0015mA

Note 2: Full-Scale 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: Pressure Non-Linearity is based on best-fit straight line from the zero to the full-scale pressure. Pressure Hysteresis is the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.

Note 4: The error band resulting from maximum deviation of a transducers output parameter (offset, span, or resistance) as temperature is varied from 25°C to any other temperature within the specified range (0 to 82°C). This parameter is not 100% tested and is guaranteed by process design and tested on a sample basis only. Temperature coefficient of span is evaluated using a constant current source.

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

Note 6: Response time for a 0 psi to Full-Scale Span pressure step change, 10% to 90% rise time.

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.

13mm Series

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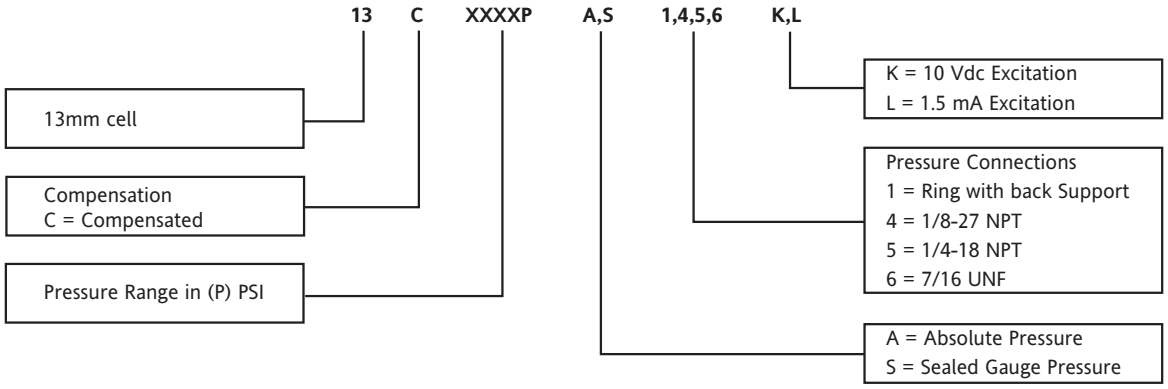
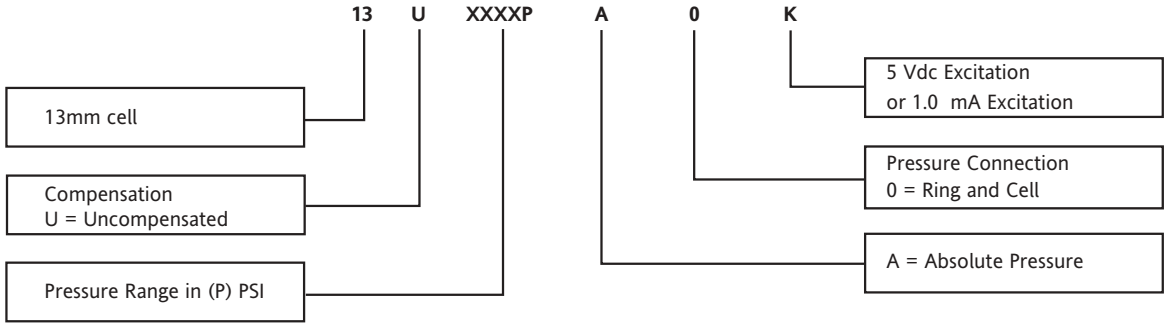
ORDERING INFORMATION - PART # DESCRIPTION

13mm Compensated Series



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

13mm Uncompensated Series



For example: **Part #13U 3000PA0K** = 13 mm Cell, Uncompensated, 3000 psi, Absolute, Ring pressure connection with 5 Vdc excitation.

invensys
Sensor Systems

1 408 954 6700
FAX: 408 954 9458

SenSym ICT
1804 McCarthy Boulevard
Milpitas, CA 95035

www.sensym-ict.com

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