

## SCX Series

# Precision Compensated Pressure Sensors



The SCX series sensors provides a very cost effective solution for pressure applications that require high accuracy over a wide temperature range. These internally calibrated and temperature compensated sensors were specifically designed to provide an accurate and stable output over a 0°C to 70°C temperature range. This series is intended for use with non-corrosive, non-ionic working fluids such as air, dry gases and the like.

Devices are available to measure absolute, differential and gauge pressures from 1 psi (SCX01) up to 150 psi (SCX150). The Absolute (A) devices have an internal vacuum reference and an output voltage proportional to absolute pressure. The Differential (D) devices allow application of pressure to either side of the pressure sensing diaphragm and can be used for gauge or differential pressure measurements.

The SCX devices feature an integrated circuit sensor element and laser trimmed thick film ceramic housed in a compact nylon case. This package provides isolation to external package stresses and has convenient mounting holes and pressure ports for ease of use with standard plastic tubing for pressure connection.

All SCX devices are calibrated for span to within  $\pm 1\%$  and provide a very low zero pressure output of  $\pm 300$  microvolts maximum. Thus, for many applications, no trimming networks are required in the signal conditioning circuitry. If the application requires extended temperature range operation beyond 0°C to 70°C, two pins which provide an output voltage proportional to temperature are available for use with external circuitry.

The output of the bridge is ratiometric to the supply voltage and operation from any DC supply voltage up to +20V is acceptable.

Because these devices have very low noise and excellent temperature compensation, they are ideal for medical and other high performance applications. The 100 microsecond response time also makes this series an excellent choice for computer peripherals and pneumatic control applications.

Contact your local SenSym ICT representative, the factory, or go to Sensym ICT's Web site at [www.sensym-ict.com](http://www.sensym-ict.com) for additional details.

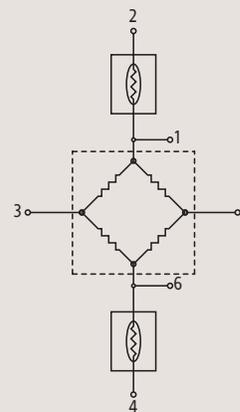
## APPLICATIONS

- Medical Equipment
- Computer Peripherals
- Pneumatic Controls
- HVAC

## FEATURES

- Precision Temperature Compensation
- Calibrated Zero and Span
- Low Noise
- Small Size
- High Impedance for Low Power Applications

## EQUIVALENT CIRCUIT



PIN 1) TEMPERATURE OUTPUT (+)  
 PIN 2)  $V_s$   
 PIN 3)  $+V_o$   
 PIN 4) Gnd  
 PIN 5)  $-V_o$   
 PIN 6) TEMPERATURE OUTPUT (-)



Sensor Systems

## SCX Series

### PRESSURE SENSOR CHARACTERISTICS (all devices)

#### Maximum Ratings (For All Devices)

Supply Voltage, $V_S$	+20Vdc
Common Mode Pressure	50 psig
Lead Soldering Temperature	250°C (2 to 4 seconds)

#### Environmental Specifications (For All Devices)

Temperature Range	
Compensated	0°C to +70°C
Operating	-40°C to +85°C
Storage	-55°C to +125°C
Humidity Limits	0 to 100% RH, non-condensing

### STANDARD PRESSURE RANGES (all devices)

Part Number	Operating Pressure	Burst Pressure*	Typical Full-Scale Span (FSS)
SCX01DN or DNC	0-1 psid	20 psid	18 mV
SCX05DN or DNC	0-5 psid	20 psid	60 mV
SCX15AN or ANC	0-15 psia	45 psia	90 mV
SCX15DN or DNC	0-15 psid	45 psid	90 mV
SCX30AN or ANC	0-30 psia	90 psia	90 mV
SCX30DN or DNC	0-30 psid	90 psid	90 mV
SCX100AN or ANC	0-100 psia	150 psia	100 mV
SCX100DN or DNC	0-100 psid	150 psid	100 mV
SCX150AN or ANC	0-150 psia	150 psia	90 mV
SCX150DN or DNC	0-150 psid	150 psid	90 mV

\* Maximum pressure above which causes permanent sensor failure.

### SCX PRIME GRADE PERFORMANCE CHARACTERISTICS<sup>(1)</sup>

Characteristics	Operating Pressure (psi)	Sensitivity (mV/psi) Typ	Full-Scale Span <sup>(2)</sup> (mV)		
			Min	Typ	Max
SCX01DN	0-1	18.0	17.82	18.0	18.18
SCX05DN	0-5	12.0	59.4	60.0	60.6
SCX15AN or DN	0-15	6.0	89.1	90.0	90.9
SCX30AN or DN	0-30	3.0	89.1	90.0	90.9
SCX100AN or DN	0-100	1.0	99.0	100.0	101.0
SCX150AN or DN	0-150	0.6	89.0	90.0	91.0

SPECIFICATION  
NOTES (all devices)

Note 1: Reference Conditions:  
Unless otherwise noted:  
Supply Voltage,  $V_S=12\text{Vdc}$ ,  
 $T_A=25^\circ\text{C}$ , Common Mode  
Line pressure=0 psig,  
Pressure Applied to Port B.  
For absolute devices only,  
pressure is applied to Port A  
and the output polarity is  
reversed.

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 is  
ratiometric to the supply  
voltage.

Note 3: Pressure Hysteresis – the  
maximum output difference  
at any point within the  
operating pressure range for  
increasing and decreasing  
pressure.  
Pressure Non-Linearity – the  
maximum deviation of  
measure output, at constant  
temperature ( $25^\circ\text{C}$ ), from  
“best straight line” through  
three points (offset pressure,  
full-scale pressure, one-half  
full-scale pressure).

Note 4: Maximum error band of the  
offset voltage and the error  
band of the span, relative to  
the  $25^\circ\text{C}$  reading.

Note 5: Maximum difference in  
output at any pressure  
within the operating pressure  
range and the temperature  
within  $0^\circ\text{C}$  to  $+70^\circ\text{C}$  after:  
a) 100 temperature  
cycles,  $0^\circ\text{C}$  to  $+70^\circ\text{C}$   
b) 1 million pressure  
cycles, 0 psi to full-scale  
span.

Note 6: Input resistance is the  
resistance between pins 2  
and 4.

Note 7: Output resistance is the  
resistance between pins 3  
and 5.

Note 8: Common Mode voltage of  
the output arms (Pins 3 and  
5) for  $V_S=12\text{Vdc}$ .

Note 9: Response time for a 0 psi to  
full-scale span pressure step  
change, 10% to 90% rise time.

Note 10: Long term stability over a  
one year period.

Note 11: Maximum zero pressure  
offset for absolute device is  
 $0 \pm 500\mu\text{V}$ .

SCX PERFORMANCE CHARACTERISTICS, all ranges<sup>(1)</sup>

Characteristics	Min	Typ	Max	Unit
Zero Pressure Offset <sup>(1) (11)</sup>	-300	0.0	+300	$\mu\text{V}$
Combined Pressure Non-Linearity and Pressure Hysteresis <sup>(3)</sup>	–	$\pm 0.1$	$\pm 0.5$	%FSS
Temperature Effect on Offset ( $0^\circ\text{C}$ to $70^\circ\text{C}$ ) <sup>(4)</sup>	–	$\pm 100$	$\pm 500$	$\mu\text{V}$
Temperature Effect on Span ( $0^\circ\text{C}$ to $70^\circ\text{C}$ ) <sup>(4)</sup>	–	$\pm 0.2$	$\pm 1.0$	%FSS
Repeatability <sup>(5)</sup>	–	$\pm 0.2$	$\pm 0.5$	%FSS
Input Resistance <sup>(6)</sup>	–	4.0	–	$\text{k}\Omega$
Output Resistance <sup>(7)</sup>	–	4.0	–	$\text{k}\Omega$
Common Mode Voltage <sup>(8)</sup>	5.8	6.0	6.2	Vdc
Response Time <sup>(9)</sup>	–	100	–	$\mu\text{sec}$
Long Term Stability of Offset & Span <sup>(10)</sup>	–	$\pm 0.1$	–	mV

SCX C GRADE PERFORMANCE CHARACTERISTICS<sup>(1)</sup>

Characteristics	Operating Pressure (psi)	Sensitivity (mV/psi)	Full-Scale Span <sup>(2)</sup> (mV)		
		Typ	Min	Typ	Max
SCX01DNC	0-1	18.0	17.0	18.0	19.0
SCX05DNC	0-5	12.0	57.5	60.0	62.5
SCX15ANC or DNC	0-15	6.0	85.0	90.0	95.0
SCX30ANC or DNC	0-30	3.0	85.0	90.0	95.0
SCX100ANC or DNC	0-100	1.0	95.0	100.0	105.0
SCX150ANC or DNC	0-150	0.6	85.0	90.0	95.0

SCX C GRADE PERFORMANCE CHARACTERISTICS, all ranges<sup>(1)</sup>

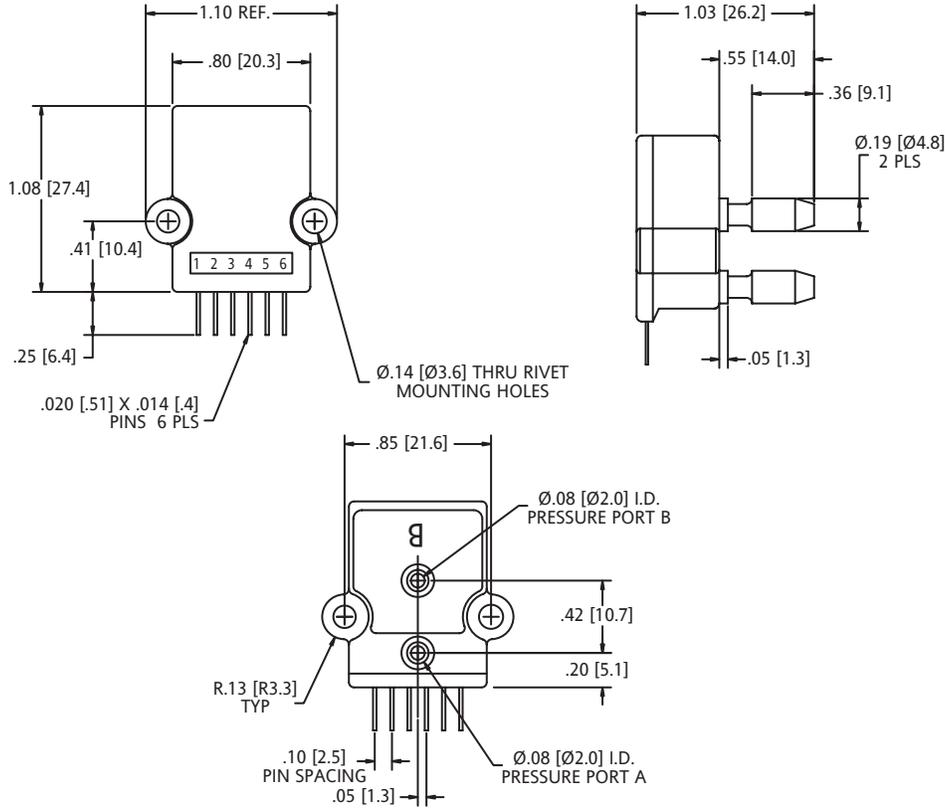
Characteristics	Min	Typ	Max	Unit
Zero Pressure Offset <sup>(1) (11)</sup>	-1	0.0	+1	mV
Combined Pressure Non-Linearity and Pressure Hysteresis <sup>(3)</sup>	–	$\pm 0.1$	$\pm 1.0$	%FSS
Temperature Effect on Offset ( $0^\circ\text{C}$ to $70^\circ\text{C}$ ) <sup>(4)</sup>	–	$\pm 0.2$	$\pm 1.0$	mV
Temperature Effect on Span ( $0^\circ\text{C}$ to $70^\circ\text{C}$ ) <sup>(4)</sup>	–	$\pm 0.4$	$\pm 2.0$	%FSS
Repeatability <sup>(5)</sup>	–	$\pm 0.2$	$\pm 0.5$	%FSS
Input Resistance <sup>(6)</sup>	–	4.0	–	$\text{k}\Omega$
Output Resistance <sup>(7)</sup>	–	4.0	–	$\text{k}\Omega$
Common Mode Voltage <sup>(8)</sup>	5.7-6.3	6.0	6.2	V <sub>DC</sub>
Response Time <sup>(9)</sup>	–	100	–	$\mu\text{sec}$
Long Term Stability of Offset & Span <sup>(10)</sup>	–	$\pm 0.1$	–	mV

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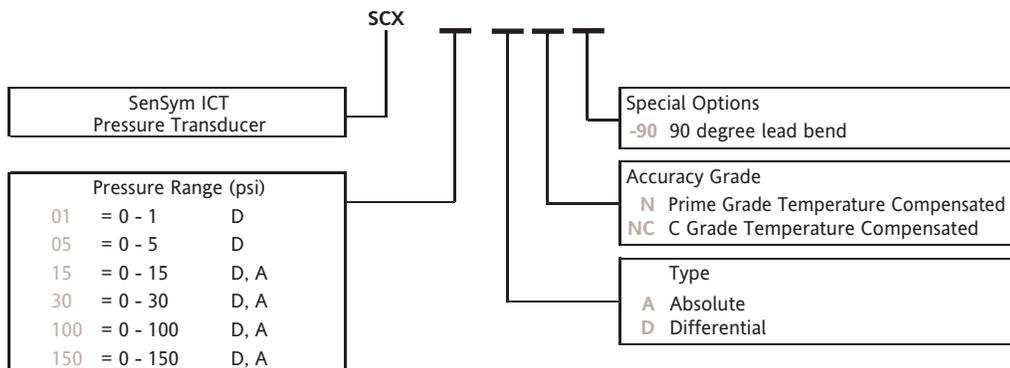
# Compensated Pressure Sensors

### PHYSICAL DIMENSIONS

Dimension in inches [mm]



### ORDERING INFORMATION



Sensor Systems [www.sensor-ic.com](http://www.sensor-ic.com)

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