

## Microstructure Pressure Sensors

Compensated 0 psi to 1psi up to 0 psi to 150 psi

*SCX Series*

### FEATURES

- Precision Temperature Compensation
- Calibrated Zero & Span
- Small Size
- Low Noise
- Low Cost (SCX\_NC)
- High Accuracy (SCX\_N)
- High Impedance for Low Power Applications

### TYPICAL APPLICATIONS

- Medical Equipment
- Barometry
- Computer Peripherals
- Pneumatic Controls
- HVAC

### ELECTRICAL CONNECTION



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

Note: The polarity indicated is for pressure applied to port B. (For absolute devices pressure is applied to port A and the output polarity is reversed)



The SCX series sensors provide a very cost-effective solution for pressure applications that require operation over 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 [32 °F to 158 °F] 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 gage pressures from 1 psi (SCX01) up to 150 psi (SCX150). The Absolute (A in model number) devices have an internal vacuum reference and an output voltage proportional to absolute pressure. The Differential (D in model number) devices allow application of pressure to either side of the pressure-sensing diaphragm and can be used for gage or differential measurements.

The SCX series devices feature an integrated circuit (IC) sensor element and laser trimmed thick film ceramic housed in a compact solvent resistant case. This package provides excellent corrosion resistance and provides isolation to external packaging stresses. The package has convenient mounting holes and pressure ports for ease of use with standard plastic tubing for pressure connection.

If the application requires extended temperature range operation, beyond 0 °C to 70 °C [32 °F to 158 °F], two pins which provide an output voltage proportional to temperature are available for use with external circuitry. The 100 microsecond response time makes this series an excellent choice for computer peripherals and pneumatic control applications.

The output of the bridge is ratio metric to the supply voltage. Operation from any dc supply voltage up to 20 Vdc is acceptable.

Contact your local honeywell representative, or go to Honeywell's website at [www.honeywell.com/sensing](http://www.honeywell.com/sensing) for additional details.

### **⚠ WARNING**

#### **PERSONAL INJURY**

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

### **⚠ WARNING**

#### **MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

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## PRESSURE RANGE SPECIFICATIONS

Model *	Operating Pressure	Proof Pressure <sup>(2)</sup>	Sensitivity	Full-Scale Span <sup>(1)</sup>		
				Min.	Typ.	Max.
SCX01DN	0 psid to 1 psid	20 psid	18 mV/psi	17.82 mV	18.00 mV	18.18 mV
SCX01DNC				17.00 mV	18.00 mV	19.00 mV
SCX05DN	0 psid to 5 psid	20 psid	12 mV/psi	59.40 mV	60.00 mV	60.60 mV
SCX05DNC				57.50 mV	60.00 mV	62.50 mV
SCX15AN	0 psid to 15 psia	30 psia	6.0 mV/psi	89.10 mV	90.00 mV	90.90 mV
SCX15ANC				85.00 mV	90.00 mV	95.00 mV
SCX15DN	0 psid to 15 psid	30 psid	6.0 mV/psi	89.10 mV	90.00 mV	90.90 mV
SCX15DNC				85.00 mV	90.00 mV	95.00 mV
SCX30AN	0 psid to 30 psia	60 psia	3.0 mV/psi	89.10 mV	90.00 mV	90.90 mV
SCX30ANC				85.00 mV	90.00 mV	95.00 mV
SCX30DN	0 psid to 30 psid	60 psid	3.0 mV/psi	89.10 mV	90.00 mV	90.90 mV
SCX30DNC				85.00 mV	90.00 mV	95.00 mV
SCX100AN	0 psid to 100 psia	150 psia	1.0 mV/psi	99.00 mV	100.0 mV	101.0 mV
SCX100ANC				95.00 mV	100.0 mV	105.0 mV
SCX100DN	0 psid to 100 psid	150 psid	1.0 mV/psi	99.00 mV	100.0 mV	101.0 mV
SCX100DNC				95.00 mV	100.0 mV	105.0 mV
SCX150AN	0 psid to 150 psia	150 psia	0.6 mV/psi	89.00 mV	90.00 mV	91.00 mV
SCX150ANC				85.00 mV	90.00 mV	95.00 mV
SCX150DN	0 psid to 150 psid	150 psid	0.6 mV/psi	89.00 mV	90.00 mV	91.00 mV
SCX150DNC				85.00 mV	90.00 mV	95.00 mV

\* **Ordering information:** Order model number.

## GENERAL SPECIFICATIONS

Characteristic	Description (Maximum Ratings) All Devices
Supply Voltage (Vs)	20 Vdc
Common Mode Pressure	50 psig
Lead Soldering Temperature (2 seconds to 4 seconds)	250 °C [482 °F]

## ENVIRONMENTAL SPECIFICATIONS

Characteristic	Description (Maximum Ratings) All Devices
Compensated Operating Temperature	0 °C to 70 °C [32 °F to 158 °F]
Operating Temperature	-40 °C to 85 °C [-40 °F to 185 °F]
Storage Temperature	-55 °C to 125 °C [-67 °F to 257 °F]
Humidity Limits	0 % RH to 100 % RH

## ACCURACY

Model	Accuracy
SCX01 through SCX150	Calibrated for span to within ±1 % (Highest accuracy)
SCX01_C through SCX150_C	Calibrated for span to within ±5 % (Fine adjustments of zero and span can be provided in external circuitry)

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## SCX PERFORMANCE CHARACTERISTICS <sup>(3)</sup>

Characteristic	Min.	Typ.	Max.	Unit
Zero Pressure Offset <sup>(4)</sup>	-300	0.0	300	Microvolt
Combined Pressure Non-Linearity and Pressure Hysteresis <sup>(5)</sup>	–	±0.1	±0.5	% FSO
Temperature Effect on Span 0 °C to 70 °C [32 °F to 158 °F] <sup>(6)</sup>	–	±0.2	±0.1	% FSO
Temperature Effect on Offset 0 °C to 70 °C [32 °F to 158 °F] <sup>(6)</sup>	–	±100	±500	Microvolt
Repeatability <sup>(7)</sup>	–	±0.2	±0.5	% FSO
Input Resistance <sup>(8)</sup>	–	4.0	–	kOhm
Output Resistance <sup>(9)</sup>	–	4.0	–	kOhm
Common Mode Voltage <sup>(10)</sup>	5.8	6.0	6.2	Vdc
Response Time <sup>(11)</sup>	–	100	–	Microsec.
Long Term Stability of Offset and Span <sup>(12)</sup>	–	±0.1	–	mV

## SCX\_C SERIES PERFORMANCE CHARACTERISTICS <sup>(3)</sup>

Characteristic	Min.	Typ.	Max	Unit
Zero Pressure Offset	-1.0	0.0	±1.0	mV
Combined Pressure Non-Linearity and Pressure Hysteresis <sup>(5)</sup>	–	±0.1	±1.0	% FSO
Models: SCX05DNC, SCX15ANC, and SCX15DNC, Models: SCX01DNC, SCX30ANC, SCX30DNC, SCX100ANC, SCX100DNC, SCX150ANC, and SCX150DNC	–	±0.2	±1.0	% FSO
Temperature Effect on Span 0 °C to 70 °C [32 °F to 158 °F] <sup>(6)</sup>	–	±0.4	±2.0	% FSO
Temperature Effect on Offset 0 °C to 70 °C [32 °F to 158 °F] <sup>(6)</sup>	–	±0.2	±1.0	mV
Repeatability <sup>(7)</sup>	–	±0.2	±0.5	% FSO
Input Resistance <sup>(8)</sup>	–	4.0	–	kOhm
Output Resistance <sup>(9)</sup>	–	4.0	–	kOhm
Common Mode Voltage <sup>(10)</sup>	5.7	6.0	6.3	Vdc
Response Time <sup>(11)</sup>	–	100	–	Microsec.
Long Term Stability of Offset and Span <sup>(12)</sup>	–	±0.1	–	mV

## SPECIFICATION NOTES

- Note 1: 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 2: Maximum pressure above which causes permanent sensor failure.
- Note 3: Reference Conditions: (Unless otherwise noted)  
T<sub>A</sub> = 25°C, Supply V<sub>S</sub> = 12 Vdc, 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 4: For models SCX15AN, SCX30AN, SCX100AN, and SCX150AN, the Maximum zero pressure offset for absolute devices is 0 to ±500 Microvolt.
- Note 5: Pressure Hysteresis – the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.
- Note 6: Maximum error band of the offset voltage and the error band of the span, relative to the 25 °C [77 °F] reading.
- Note 7: Maximum difference in output at any pressure within the operating pressure range and the temperature within 0 °C to 70 °C [32 °F to 158 °F] after:  
a) 1,000 temperature cycles, 0 °C to 70 °C [32 °F to 158 °F]  
b) 1.5 million pressure cycles, 0 psi to Full-Scale Span.
- Note 8: Input resistance is the resistance between pins 2 and 4.
- Note 9: Output resistance is the resistance between pins 3 and 5.
- Note 10: Common Mode voltage of the output arms (Pins 3 and 5) for V<sub>S</sub>=12 Vdc.
- Note 11: Response time for a 0 psi to Full-Scale Span pressure step change, 10 % to 90 % rise time.
- Note 12: Long term stability over a one-year period.