

## Microstructure Pressure Sensors

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

*SCX Series*

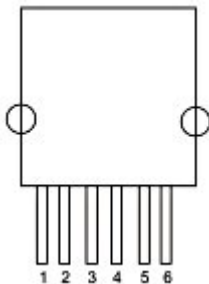
### FEATURES

- 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)



### 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.**



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

#### 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<br>(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 $\pm 1$ % (Highest accuracy)                                                        |
| SCX01_C through SCX150_C | Calibrated for span to within $\pm 5$ % (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>               | —    | —    | —    | —         |
| Models: SCX05DNC, SCX15ANC, and SCX15DNC,                                            | —    | ±0.1 | ±1.0 | % FSO     |
| 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

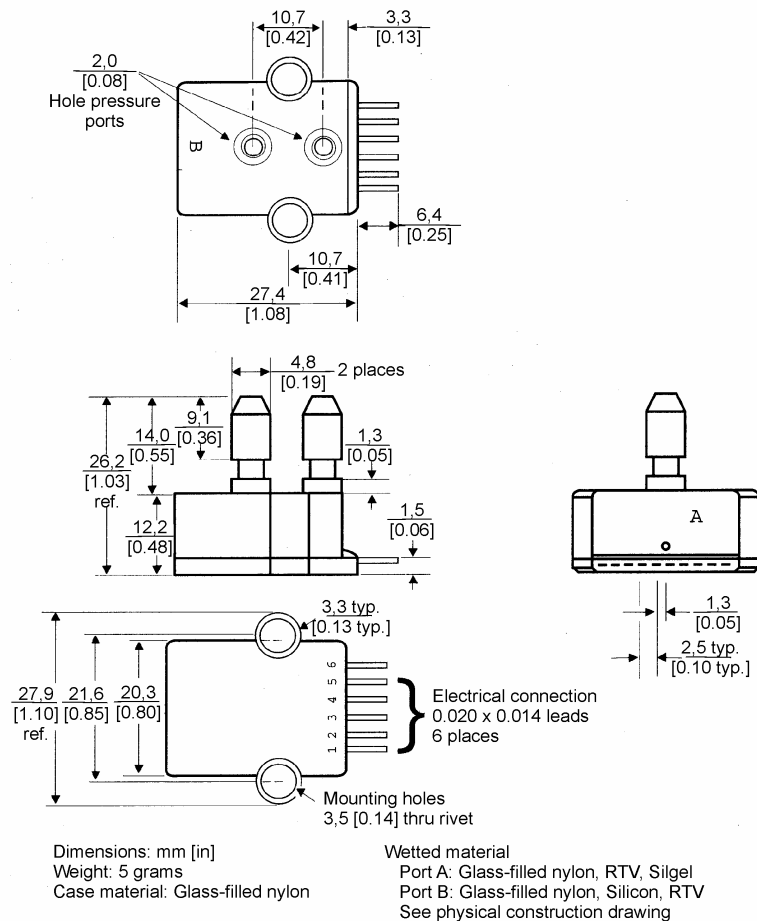
- Note 1: Full-Scale Span is the algebraic difference between the output voltage at full-scale pressure and the output at zero pressure. Full-Scale Span is ratiometric to the supply voltage.
- Note 2: Maximum pressure above which causes permanent sensor failure.
- Note 3: Reference Conditions: (Unless otherwise noted)  
 $T_A = 25^\circ\text{C}$ , Supply  $V_s = 12\text{ Vdc}$ , 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  $V_s=12\text{ Vdc}$ .
- 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.

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## PHYSICAL DIMENSIONS for Reference Only (mm/in)



## WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace without charge those items it finds defective. **The foregoing is Buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.**

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While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

For application assistance, current specifications, or name of the nearest Authorized Distributor, contact a nearby sales office. Or call:

1-800-537-6945 USA/Canada

1-815-235-6847 International

### FAX

1-815-235-6545 USA

### INTERNET

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Sensing and Control

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