

Low Cost Compensated Pressure Sensors in a DIP Package

SDX Series

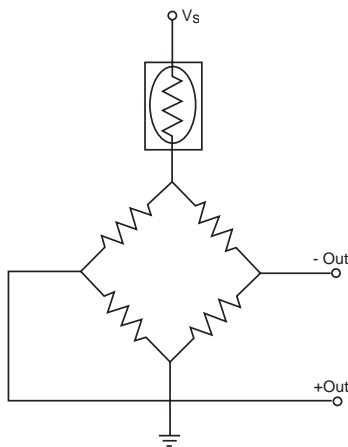
FEATURES

- Low Cost DIP
- Temperature Compensated
- Calibrated Zero & Span
- Small Size
- Low Noise
- High Impedance for Low Power Applications
- Prime Grade Available

TYPICAL APPLICATIONS

- Medical Equipment
- Computer Peripherals
- Pneumatic Controls
- HVAC

EQUIVALENT CIRCUIT



The SDX series sensors provide a very cost effective solution for pressure applications that require small size plus performance. These calibrated and temperature compensated sensors give an accurate and stable output over a 0°C to 50°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 and gauge pressures from 1 psi up to 100 psi. The absolute devices have an internal vacuum reference and an output voltage proportional to absolute pressure.

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

The SDX devices feature an integrated circuit sensor element and laser trimmed thick film ceramic housed in a compact solvent resistant case. The package is a double wide (i.e., 0.600" lead spacing) dual-inline-package. This is the same familiar package used by IC manufacturers except it is only 0.470" long and has a pressure port(s). The pc board area used by each DIP is approximately 0.26 square inches. This extremely small size enables the use of multiple sensors in limited available space. The DIP provides excellent corrosion resistance and isolation to external package stress.

The DIP mounts on a pc board like a standard IC with through-hole pins. The pins anchor the pressure sensor to the pc board and provide a more secure and stable unit than other types of packages.

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

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

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PRESSURE SENSOR CHARACTERISTICS (All Devices)

Maximum Ratings

| | |
|---------------------------------------|----------|
| Supply Voltage V_S | +20 Vdc |
| Maximum Pressure on any Port | 150 psig |
| Lead Temperature (Soldering 2-4 Sec.) | 250°C |

Environmental Specifications

| | |
|-------------------|----------------|
| Temperature Range | |
| Compensated | 0°C to 50°C |
| Operating | -40°C to 85°C |
| Storage | -55°C to 125°C |
| Humidity Limits | 0 to 100% RH |

PRESSURE RANGE SPECIFICATIONS

| Part Number | Operating Pressure | Proof Pressure | Full-Scale Span ⁽²⁾ | | |
|-------------|--------------------|----------------|--------------------------------|----------|----------|
| | | | Min | Typ | Max |
| SDX01 | 0 - 1 psi | 20 psi | 17.37 mV | 18.0 mV | 18.63 mV |
| SDX01yy-A | 0 - 1 psi | 20 psi | 17.82 mV | 18.0 mV | 18.18 mV |
| SDX05 | 0 - 5 psi | 20 psi | 57.9 mV | 60.0 mV | 62.1 mV |
| SDX05yy-A | 0 - 5 psi | 20 psi | 59.4 mV | 60.0 mV | 60.6 mV |
| SDX15 | 0 - 15 psi | 30 psi | 86.85 mV | 90.0 mV | 93.15 mV |
| SDX15yy-A | 0 - 15 psi | 30 psi | 89.1 mV | 90.0 mV | 90.9 mV |
| SDX30 | 0 - 30 psi | 60 psi | 86.85 mV | 90.0 mV | 93.15 mV |
| SDX30yy-A | 0 - 30 psi | 60 psi | 89.1 mV | 90.0 mV | 90.9 mV |
| SDX100 | 0 - 100 psi | 150 psi | 96.5 mV | 100.0 mV | 103.5 mV |
| SDX100yy-A | 0 - 100 psi | 150 psi | 99.0 mV | 100.0 mV | 101.0 mV |

SDX PERFORMANCE CHARACTERISTICS⁽¹⁾

| Characteristics | Min | Typ | Max | Unit |
|--|------|------|------|------|
| Zero Pressure Offset | -1.0 | 0 | 1.0 | mV |
| Combined Pressure Non-Linearity and Pressure Hysteresis ⁽³⁾ | - | ±0.2 | ±1.0 | %FSO |
| Temperature Effect on Span (0° - 50°C) ⁽⁴⁾ | - | ±0.4 | ±2.0 | %FSO |
| Temperature Effect on Offset (0° - 50°C) ⁽⁴⁾ | - | ±0.2 | ±1.0 | mV |
| Repeatability ⁽⁵⁾ | - | ±0.2 | ±0.5 | %FSO |
| Input Resistance ⁽⁶⁾ | - | 4.0 | - | kΩ |
| Output Resistance ⁽⁷⁾ | - | 4.0 | - | kΩ |
| Common-Mode Voltage ⁽⁸⁾ | 1.5 | 3.0 | 5.0 | Vdc |
| Response Time ⁽⁹⁾ | - | 100 | - | μsec |
| Long-Term Stability of Offset and Span ⁽¹⁰⁾ | - | ±0.1 | - | %FSO |

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SDX PRIME GRADE PERFORMANCE CHARACTERISTICS⁽¹⁾

| Characteristics | Min | Typ | Max | Unit |
|---|--------|------|-------|------|
| Zero Pressure Offset ⁽¹²⁾ | -0.300 | 0 | 0.300 | mV |
| Combined Pressure Non-Linearity and Pressure Hysteresis ^(3,11) | – | ±0.1 | ±0.25 | %FSO |
| Temperature Effect on Span (0° - 50°C) ⁽⁴⁾ | – | ±0.4 | ±1.0 | %FSO |
| Temperature Effect on Offset (0° - 50°C) ⁽⁴⁾ | – | ±0.2 | ±0.5 | mV |
| Repeatability ⁽⁵⁾ | – | ±0.1 | – | %FSO |
| Input Resistance ⁽⁶⁾ | – | 4.0 | – | kΩ |
| Output Resistance ⁽⁷⁾ | – | 4.0 | – | kΩ |
| Common Mode Voltage ⁽⁸⁾ | 1.5 | 3.0 | 5.0 | Vdc |
| Response Time ⁽⁹⁾ | – | 100 | – | μsec |
| Long Term Stability of Offset and Span ⁽¹⁰⁾ | – | ±0.1 | – | mV |

SPECIFICATION NOTES

- Note 1: 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 2. For absolute devices only, pressure is applied to port 1 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 (FSS) is ratiometric to the supply voltage.
- Note 3: 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 and the error band of the span, relative to the 25°C reading.
- Note 5: Maximum difference in output at any pressure with the operating pressure range and temperature within 0°C to 50°C after:
 a) 100 temperature cycles, 0°C to 50°C.
 b) 1.0 million pressure cycles, 0 psi to Full-Scale Span.
- Note 6: Input resistance is the resistance between V_S and ground.
- Note 7: Output resistance is the resistance between the + and - outputs.
- Note 8: This is the common mode voltage of the output arms 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 combining Pressure Non-Linearity and Pressure Hysteresis for the SDX05 Prime Grade is ±0.5%.
- Note 12: Maximum zero pressure offset for absolute devices is ±500 μV.

ELECTRICAL CONNECTIONS

