

### FEATURES

- 0...5 and 0...10 "H<sub>2</sub>O
- Low cost DIP
- Temperature compensated
- Calibrated zero and span
- Small size
- Low noise
- High impedance for low power applications

### APPLICATIONS

- Medical equipment
- Computer peripherals
- Pneumatic controls
- HVAC

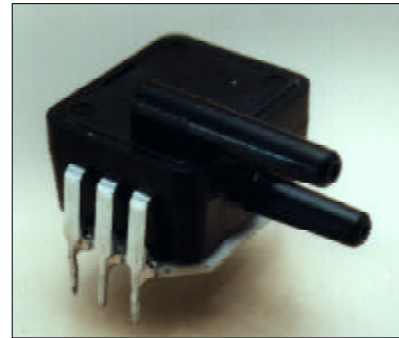
### GENERAL DESCRIPTION

The SDX...IND4 sensors will 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.

The SDX...IND4 devices are specifically designed to measure low pressures. They feature a 0 to 5 or 0 to 10 "H<sub>2</sub>O full scale range.

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

The SDX...IND4 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 that it has a pressure port(s).

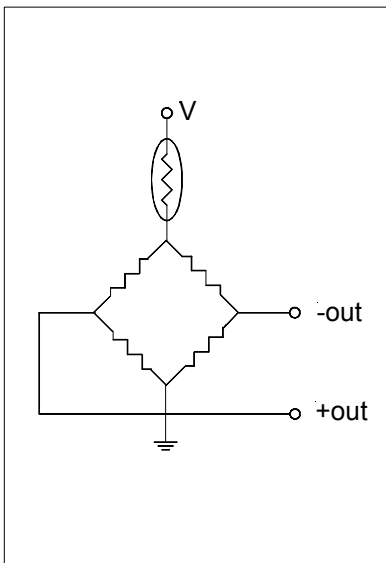


Scale: 1 cm  
1/2 inch

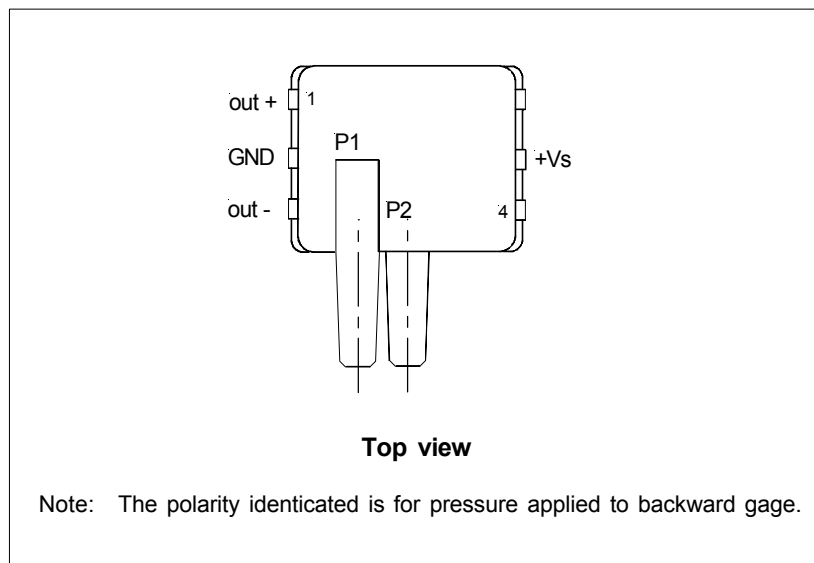
The PC board area used by each DIP is approximately 0.26 square inches. This extremely small size enables the use of multiple sensors in limited available space. The DIP provides excellent corrosion resistance and isolation to external package stress.

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.

### EQUIVALENT CIRCUIT



### ELECTRICAL CONNECTION



### PRESSURE SENSOR CHARACTERISTICS (all devices)

#### Maximum ratings

Supply voltage $V_s$	+20 $V_{DC}$
Lead temperature (soldering 4 sec.)	250°C

#### Environmental specifications

Temperature ranges	
Compensated	0°C to 50°C
Operating	-20°C to +85°C
Storage	-40°C to +125°C
Humidity limits (non condensing)	0 to 95% RH

### STANDARD PRESSURE RANGES

Part number	Operating pressure	Proof pressure	Burst pressure	Common mode pressure
SDX005IND4	0...5 "H <sub>2</sub> O	200 "H <sub>2</sub> O	7 psi	50 psig
SDX010IND4	0...10 "H <sub>2</sub> O	200 "H <sub>2</sub> O	7 psi	50 psig

### PERFORMANCE CHARACTERISTICS<sup>1</sup>

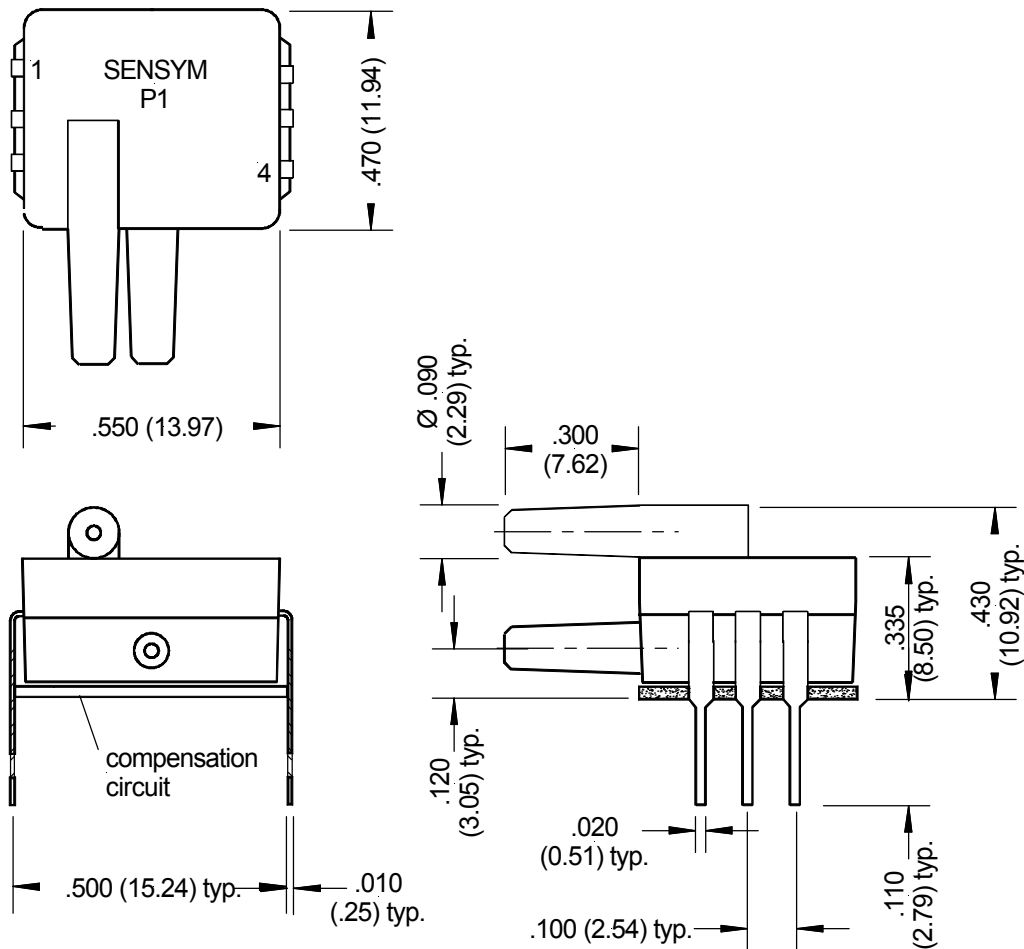
Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset		-1.0	0	±1.0	mV
Full scale span <sup>2</sup>	SDX005IND4	19.5	20.0	20.5	
	SDX010IND4	24.5	25.0	25.5	
Temp. effects (0°C to 50°C) <sup>4</sup>	Offset	---	±0.2	±0.6	%FSO
	Span	---	±0.4	±2.0	
Combined linearity and hysteresis <sup>3</sup>		---	±0.2	±1.0	
Repeatability <sup>5</sup>		---	±0.1	---	mV
Long term stability of offset and span <sup>10</sup>		---	±0.1	---	
Response time <sup>9</sup>		---	100	---	µs
Input impedance <sup>6</sup>		---	4.0	---	kΩ
Output impedance <sup>7</sup>		---	4.0	---	
Common mode voltage <sup>8</sup>		1.5	3.0	5.0	$V_{DC}$

#### Specification notes:

- Reference conditions (unless otherwise noted): supply voltage,  $V_s = 12V_{DC}$ ;  $T_A = 25°C$ ; common mode line pressure = 0 psig; pressure applied to port 2.
- Span is the algebraic difference between the output voltage at full scale pressure and the output at zero pressure. Span is ratiometric to the supply voltage.
- Hysteresis is the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.
- Maximum error band of the offset voltage and the error band of the span, relative to the 25°C regarding.
- Difference in output at any pressure with the operating pressure range and temperature within 0°C to +50°C after:
  - 100 temperature cycles, 0°C to +50°C.
  - 1.0 million pressure cycles, 0 psi to full scale span.
- Input impedance is the impedance between  $V_s$  and ground.
- Output impedance is the impedance between the + and - outputs.
- This is the common mode voltage of the output arms for  $V_s = 12 V_{DC}$ .
- Response time for a 0 psi to full scale span pressure step change, 10 % to 90 % rise time.
- Long term stability over a one year period.

### PHYSICAL DIMENSIONS

#### D4-housing



mass: 2 g

dimensions in inches (mm)

### GENERAL DISCUSSION

The SDX...IND4 series devices give a voltage output which is directly proportional to applied pressure. The gage devices will give an increasing positive going output when increasing pressure is applied to the pressure port. The devices are ratiometric to the supply voltage and changes in the supply voltage will cause proportional changes in the offset voltage and full scale span.

### PNEUMATIC INTERFACE

The DIP also provides convenient mounting and pressure ports for ease of use with standard 1/16" ID, 1/8" OD, 1/32" wall, flexible plastic tubing for pressure connection.

The small tubing has several advantages over larger tubing commonly used with pressure sensors:

- 1) The tubing can be formed in a much smaller radius with-out kinking.
- 2) The tubing is easier to handle.
- 3) The tubing is available in a variety of colors such as clear, white, yellow, blue, green, etc. to enable color coding of pneumatic circuits with multiple pressure sensors in the same way that wiring harnesses are color coded in electrical circuits. This greatly simplifies troubleshooting.
- 4) Less stress is placed on the pressure sensor package resulting in less potential for offset shifts.
- 5) Less physical space is required for the small tubing.
- 6) The lower volume of air in the small tubing results in faster pressure sensor response.

### USER CALIBRATION

The SDX...IND4 devices are fully calibrated for offset and span and should therefore require little user adjustment in most applications. For more precise span and offset adjustments, contact the factory.

### MEDIA COMPATIBILITY

SDX...IND4 devices are compatible with most non-corrosive gases. For questions concerning media compatibility, contact the factory.

### APPLICATION INFORMATION

Application information found in the section "Application Notes" and on the SCX series data sheet in the "Sensortronics pressure sensors, transducers and transmitters handbook".

### ORDERING INFORMATION

Pressure range	Differential / Gage
0 - 5 "H <sub>2</sub> O	SDX005IND4
0 - 10 "H <sub>2</sub> O	SDX010IND4

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