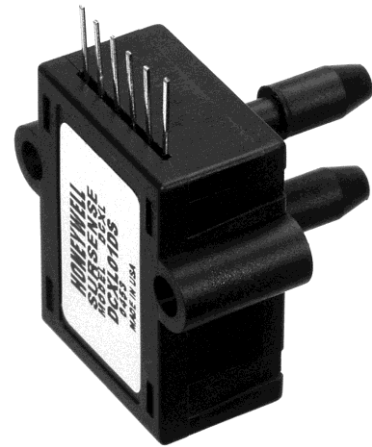


## DCXL-DS Series

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### SURSENSE™ Ultra Low Silicon Pressure Sensors



#### DESCRIPTION

The SURSENSE line of ultra low pressure sensors is based upon a proprietary technology designed to reduce output offset or common mode errors.

These sensors use a silicon micromachined sensing element which features a unique stress concentration-enhanced structure to provide a highly stable linear output that is proportional to applied pressure. Output offset errors due to changes in temperature, warm-up, long-term stability and position sensitivity have all been significantly reduced when compared to conventional sensors.

#### FEATURES

- Temperature compensated 0 °C to 50 °C [32 °F to 122 °F]
- Available in gage and differential pressure ranges
- Combined linearity and hysteresis error  $\leq \pm 0.25\%$  span

The DCXL-DS Series provides a precision calibrated, ratiometric mV output with SURSENSE-enhanced stability. Each sensor features calibrated offset, full scale span and thermal error calibration to promote accuracy for flow pressure measurement. These highly stable sensors feature an industry-standard, ported package with improved stress isolation for printed circuit board mount applications. The housing design incorporates a snap together cover and housing leading to improved quality and performance.

Product is patented by US patent 6023978.

#### POTENTIAL APPLICATIONS

- Medical
- HVAC
- Industrial instrumentation
- Environmental controls

# DCXL-DS Series

**Table 1. Electrical Specifications (12 Vdc Excitation at 25 °C [77 °F].)**

Characteristic	Min.	Typ.	Max.	Unit
Excitation voltage	3.0	12.0	16.0	Vdc
Null offset	-500	0	500	μV
Span except DCXL01DS	19.0	20.0	21.0	mV
Span DCXL01DS	9.0	10.0	11.0	mV
Offset temperature shift 0 °C to 50 °C [32 °F to 122 °F] <sup>1</sup> except DCXL01DS	-150	–	150	μV
Offset temperature shift 0 °C to 50 °C [32 °F to 122 °F] <sup>1</sup> DCXL01DS	-250	0	250	μV
Span temperature shift 0 °C to 50 °C [32 °F to 122 °F] <sup>1</sup>	-200	0	200	μV
Linearity, hysteresis error <sup>2</sup>	–	0.05	0.25	% span
Compensated temperature	0 [32]	–	50 [122]	°C [°F]
Operating temperature	-25 [-13]	–	85 [185]	°C [°F]
Storage temperature	-40 [-40]	–	125 [257]	°C [°F]
Offset warm-up shift <sup>3</sup> except DCXL01DS	–	±50	–	μV
Offset warm-up shift <sup>3</sup> DCXL01DS	–	±100	–	μV
Offset position sensitivity (±1 g) DCXL01DS	–	±50	–	μV
Offset position sensitivity (±1 g) DCXL05DS, DCXL10DS	–	±10	–	μV
Offset position sensitivity (±1 g) DCXL20DS, DCXL30DS	–	±5	–	μV

**Notes:**

1. Shift is relative to 25 °C [77 °F].
2. Measured at ½ full scale rated pressure using BFSL.
3. Shift is within the first hour of excitation applied to the device.

**Table 2. Pressure Ratings in H<sub>2</sub>O (By Catalog Listing)**

Parameter	01D	05D	10D	20D	30D	Unit
Operating pressure	1	5	10	20	30	in H <sub>2</sub> O
Maximum overpressure	5	5	5	5	5	PSI
Common mode	50	50	50	50	50	PSI

**Table 3. Typical Resistance Values (By Catalog Listing)**

Parameter	01D	05D	10D	20D	30D	Unit
Input resistance	4.5	10	13	10	12	kΩ
Output resistance	1.5	1.5	1.5	2	1.5	kΩ

# SURSENSE™ Ultra Low Pressure Sensor Pressure Sensors

Figure 1. Mounting Dimensions (For reference only: mm/[in.] )

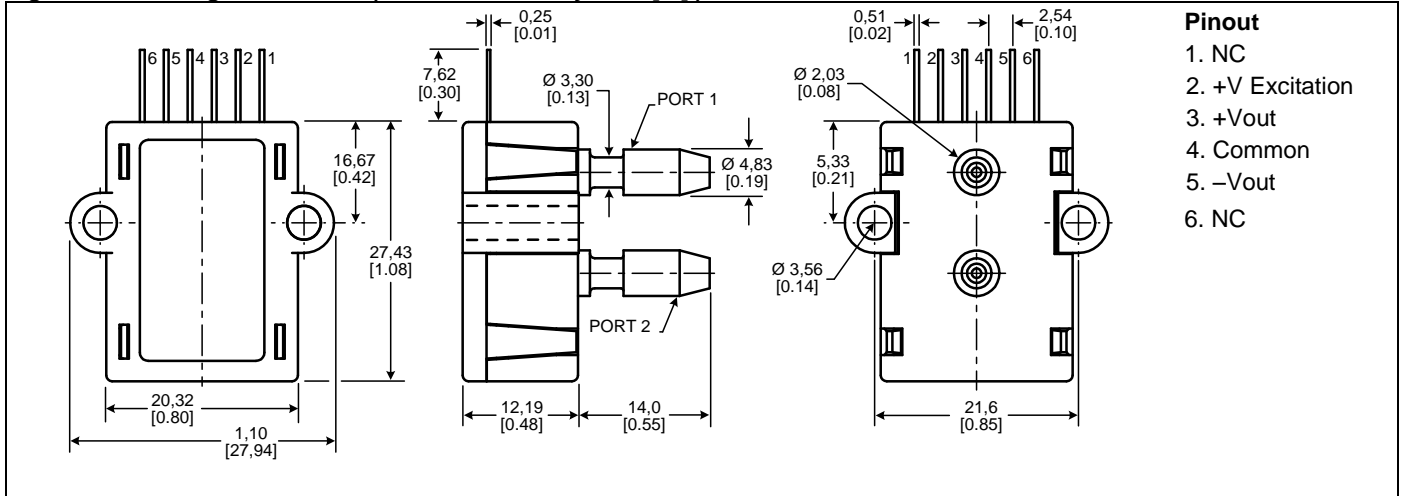


Figure 2. Equivalent Circuit

	<p><b>MEDIA COMPATIBILITY</b></p> <p><b>Clean, dry gases only</b></p> <p><b>Port 1:</b> Media must be compatible with epoxy-based adhesive, silicon, silicone, gold, nylon and alumina.</p> <p><b>Port 2:</b> Media must be compatible with epoxy-based adhesive, silicon, silicone, gold, nylon and alumina.</p>	<p><b>PRESSURE COMPATIBILITY</b></p> <p>Measures differential or gage pressure and vacuum. Pressure may be applied to either port. For pressure to the low pressure port, the output polarity is reversed.</p>	<p><b>RATIOMETRIC OUTPUT</b></p> <p>The output voltage of the sensor is ratiometric (proportional) to the excitation voltage. All specifications will change proportionally to any changes in the excitation voltage, which may vary between 3 Vdc to 16 Vdc. All specifications will nominally be changed by a ratio of V Excitation/12.0 Vdc. For example: if the excitation voltage is 5.0 Vdc, then both the full scale output voltage and the offset voltage nominal would be 5/12th the specified value.</p>
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