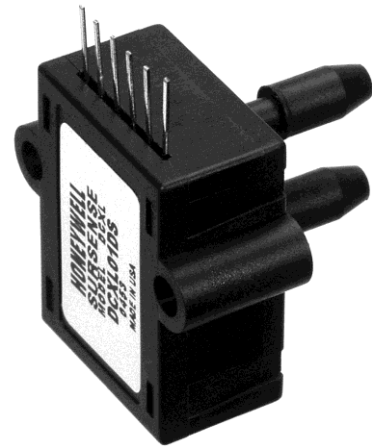


DCXL-DS Series

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] ¹ except DCXL01DS	-150	–	150	μV
Offset temperature shift 0 °C to 50 °C [32 °F to 122 °F] ¹ DCXL01DS	-250	0	250	μV
Span temperature shift 0 °C to 50 °C [32 °F to 122 °F] ¹	-200	0	200	μV
Linearity, hysteresis error ²	–	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 ³ except DCXL01DS	–	±50	–	μV
Offset warm-up shift ³ 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 H₂O (By Catalog Listing)

Parameter	01D	05D	10D	20D	30D	Unit
Operating pressure	1	5	10	20	30	in H ₂ 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.])

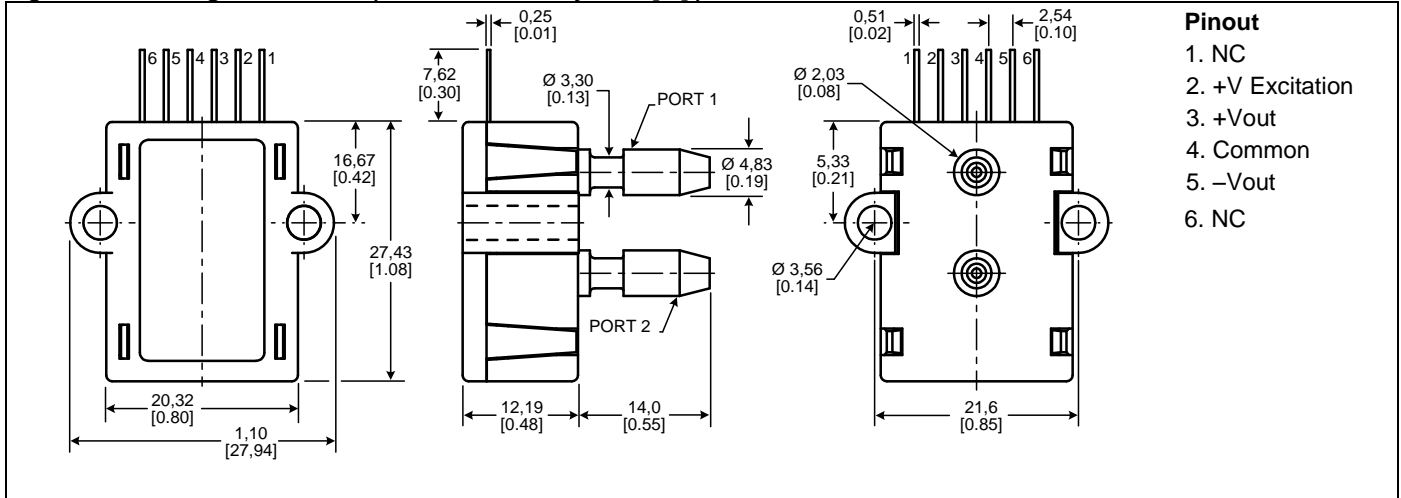
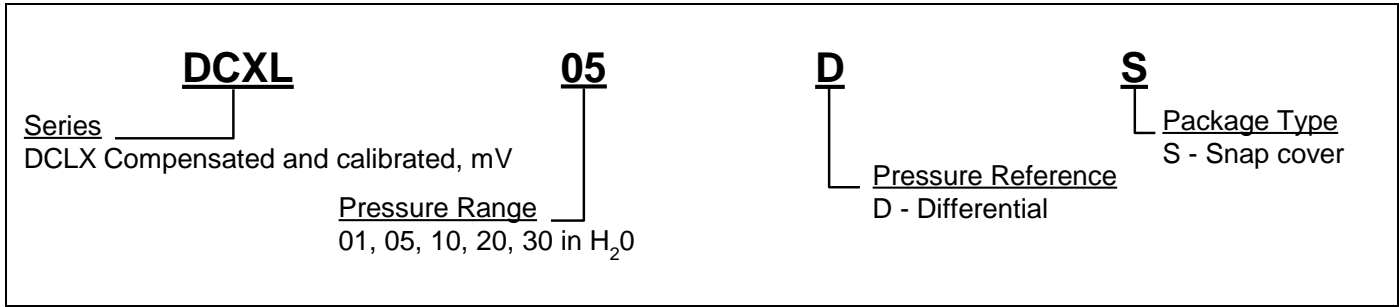


Figure 2. Equivalent Circuit

	<p>MEDIA COMPATIBILITY</p> <p>Clean, dry gases only</p> <p>Port 1: Media must be compatible with epoxy-based adhesive, silicon, silicone, gold, nylon and alumina.</p> <p>Port 2: Media must be compatible with epoxy-based adhesive, silicon, silicone, gold, nylon and alumina.</p>	<p>PRESSURE COMPATIBILITY</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>RATIOMETRIC OUTPUT</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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ORDER GUIDE



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.

WARRANTY/REMEDY

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Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

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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008139-4-EN IL50 GLO Printed in USA
May 2010
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