

## SURSENSE<sup>®</sup> Ultra Low Pressure Sensors

### Millivolt Output

### High Accuracy Compensation

### Full Scale Pressure Ranges

## DCXL Series

#### FEATURES

- Position sensitivity to  $\pm 5$  mV/g, typical
- Offset Warm-up drift  $< \pm 50$  mV, typical
- Temperature Compensated over  $0^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$
- Available in Gage and Differential Pressure Ranges
- Long Term Stability  $< \pm 100$   $\mu\text{V}$ , typical
- Combined Linearity and Hysteresis Error  $< \pm 0.25$  % Span

#### TYPICAL APPLICATIONS

- Medical Instrumentation
- HVAC
- Industrial Instrumentation
- Environmental Controls

#### **⚠ 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 DCXL line of ultra low pressure sensors is based upon SURSENSE<sup>®</sup>, a proprietary technology, which reduces all 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.

The DCXL Series sensors provide a precision calibrated ratiometric millivolt output using the enhanced stability of SURSENSE<sup>®</sup> technology. Each sensor features calibrated offset, full scale span and thermal error calibration to ensure the highest possible 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.

Product is patented by US patent 6023978.

#### **⚠ WARNING**

##### **MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as product installation information.
- 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.**

# SURSENSE<sup>®</sup> Ultra Low Pressure Sensors

## Millivolt Output

*DCXL Series*

### DCXL Electrical Specifications at 12 Vdc Excitation, 25 °C

	Min.	Typ.	Max.	Units
Excitation Voltage	3.0	12.0	16.0	Vdc
Common Mode Voltage, % Excitation	--	50	--	%
Span*except DCXL01DN	19	20.0	21.0	mV
Span*DCXL01DN	9.0	10.0	11.0	mV
Null*	- 500	0	+500	µV
Offset Temperature Shift (0 °C to +50 °C [+32 °F to +122 °F])** except DCXL01DN	-150	--	+150	µV
Offset Temperature Shift (0 °C to +50 °C [+32 °F to +122 °F])** DCXL01DN	- 250	0	+250	µV
Span Temperature Shift (0 °C to +50 °C [+32 °F to +122 °F])**	-200	0	+200	µV
Linearity, Hysteresis Error***	--	0.05	0.25	%Span
Operating Temperature	-25		+85	°C
Storage Temperature	-40		+125	°C
Offset Warm-up Shift****except DCXL01DN	--	± 50	--	µV
Offset Warm-up Shift****DCXL01DN	--	± 100	--	µV
Offset Position Sensitivity (±1g) except DCXL01DN, DCXL05DN and DCXL10DN	--	± 5	--	µV
Offset Position Sensitivity (±1g) DCXL01DN	--	± 50	--	µV
Offset Position Sensitivity (±1g) DCXL05DN, DCXL10DN	--	± 10	--	µV
Offset Long Term Stability (1 year) except DCXL01DN	--	± 100	--	µV
Offset Long Term Stability (1 year) DCXL01DN	--	± 200	--	µV

\*Note 1: The voltage added to the offset voltage at full scale pressure. Nominally the output voltage range is 1.0 V to 6.0 V.

\*\*Note 2: Shift is relative to 25 °C

\*\*\*Note 3: Measured at ½ full scale rated pressure using BFSL

\*\*\*\*Note 4: Shift is within the first hour of excitation applied to the device.

### DCXL Series Pressure Ratings in H<sub>2</sub>O (by Catalog Listing)

DCXL-	01D	05D	10D	20D	30D
<b>OPERATING PRESSURE RANGE</b>	1.0	5.0	10.0	20.0	30.0
<b>PROOF</b>	100	150	150	300	450
<b>BURST</b>	200	300	300	450	750
<b>COMMON MODE</b>	50	50	50	50	50

### DCXL Series Resistance (by Catalog Listing)

DCXL	01D	05D	10D	20D	30D	UNIT
<b>INPUT RESISTANCE</b>	4.5	10	13	10	12	KO
<b>OUTPUT RESISTANCE</b>	1.5	1.5	1.5	2	1.5	KO

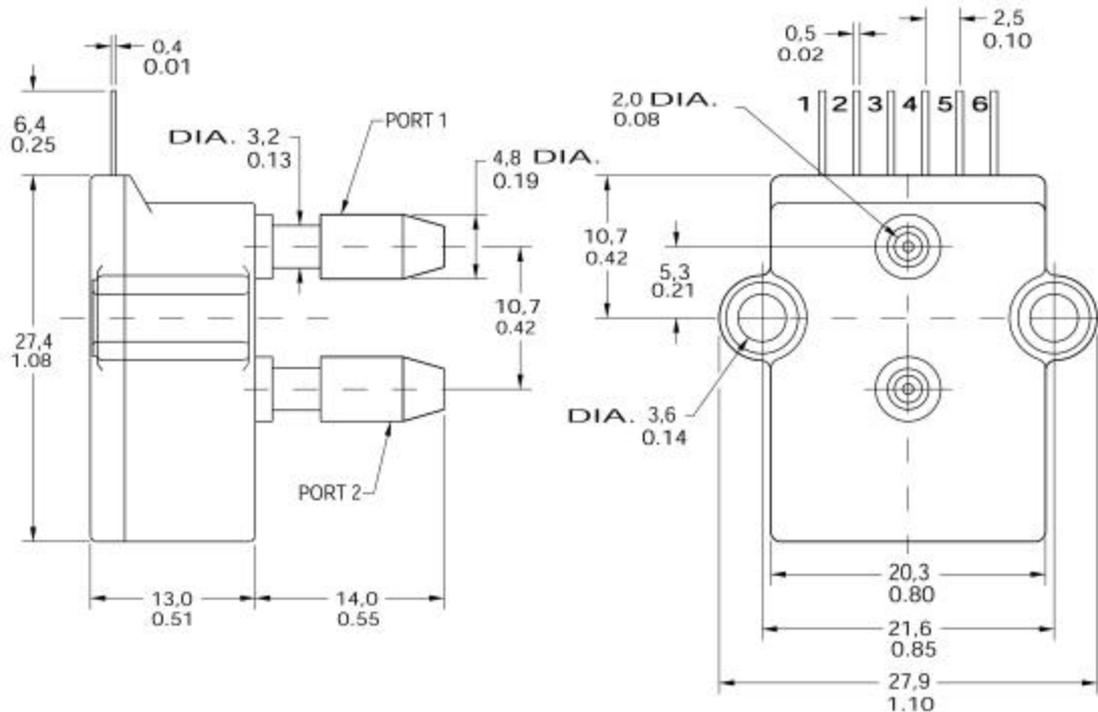
# SURSENSE<sup>®</sup> Ultra Low Pressure Sensors

## Millivolt Output

DCXL Series

### MOUNTING DIMENSIONS (for reference only) mm/in

#### DCXL SERIES, DCXL CERAMIC PACKAGE



### APPLICATION INFORMATION

#### MEDIA COMPATIBILITY, WETTED MATERIALS

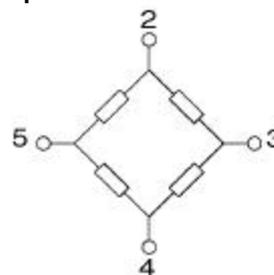
<b>Port 2</b>	<b>P2 Port:</b> Media must be compatible with nylon housing, epoxy adhesive and silicon.
<b>Port 1</b>	<b>P1 Port: Dry Gases Only.</b> Media must be compatible with epoxy based adhesive.
Testing to Non Standard Conditions, changes to:	<u>Excitation Voltage</u> <u>Common mode pressure.</u> Standard testing has positive pressure to port 2 with ambient pressure to port 1.

#### Pressure Compatibility:

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.

**Ratiometric Output:** The output voltage of the sensor is ratiometric, proportional, to the excitation voltage. For this model sensor, all specifications will change proportionally to any changes in the excitation voltage. The excitation may vary between 3vots to 16 volts. All specifications will nominally be changed by a ratio of V EXCITATION/12.0 volts. For example: if the excitation voltage is 5.0 volts, then both the full scale output voltage and the offset voltage nominals would be 5/12<sup>th</sup> the specified value.

#### Equivalent Circuit



#### Pinout

1. N/C
2. +V Supply
3. +V Output
4. -V Supply
5. -V Output
6. N/C

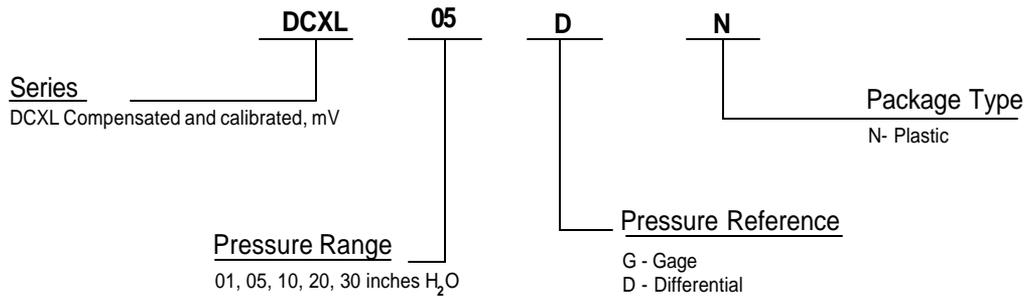
# SURSENSE® Ultra Low Pressure Sensors

## Millivolt Output

DCXL Series

### DCXL SERIES ORDER GUIDE

(Not all product combinations are released.)



### 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:

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