



### DCXL20DS



**Pressure Sensors: Measurement Type: Differential, Signal Conditioning: Unamplified; Pressure Range:  $\pm 20.0$  in H<sub>2</sub>O; Port Style: Barbed**

*Actual product appearance may vary.*

#### Features

- Available in differential pressure ranges
- Position sensitivity to  $\pm 5$  mV/g
- Temperature compensated to 0 °C to 50 °C [32 °F to 122 °F]
- Combined linearity and hysteresis error <  $\pm 0.25$  % span

#### Potential Applications

- Medical instrumentation
- HVAC
- Industrial instrumentation
- Environmental controls

#### Description

The SURSENSE™ line of ultra low pressure sensors is based upon a proprietary, patented technology designed to reduce all output offset or common mode errors. These sensors utilize a silicon, micromachined sensing element that 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-DS Series sensors provide a precision calibrated, ratiometric mV output with SURSENSE-enhanced stability. 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. The housing design incorporates a snap together cover and housing leading to improved quality and performance.

Product is patented by US patent 6023978.

Product Specifications	
Measurement Type	Differential, Vacuum Gage, Gage
Signal Conditioning	Unamplified
Pressure Range	$\pm 20.0$ in H <sub>2</sub> O
Maximum Overpressure	5 psi
Supply Voltage	3.0 Vdc min., 12.0 Vdc typ., 16.0 Vdc max.
Compensated	Yes
Output Calibration	Yes
Termination	PCB
Port Style	Barbed

Package Style	Honeywell DI-DCXL
Typical Sensitivity	1 mV/in H <sub>2</sub> O
Full Scale Span	20 mV typ.
Null Offset	0 mV typ.
Null Shift over Temperature	-150 •V min., +150 •V max.
Span Shift Over Temperature	-200 •V min., 200 •V max.
Linearity, Hysteresis Error	0.05 % Span typ.
Operating Temperature Range	-25 °C to 85 °C [-13 °F to 185 °F]
Compensated Temperature Range	0 °C to 50 °C [32 °F to 122 °F]
Storage Temperature Range	-40 °C to 125 °C [-40 °F to 257 °F]
Media Compatibility	Ports 1 and 2: Dry gases only. Media must be compatible with epoxy-based adhesive, silicon, silicone, gold, nylon and alumina.
UNSPSC Code	411121
UNSPSC Commodity	411121 Transducers
Availability	Global
Series Name	DCXL-DS

10-55113-2  
HONEYWELL  
PART NUMBER  
DCXL SERIES CHART 2

REV	DOCUMENT	CHANGED BY	CHECK
A	0008309	BM 21APRO5	AK

**DCXL** **D**

**SERIES**  
COMPENSATED (mV)

**PACKAGE TYPE**  
S - SNAP

**PRESSURE RANGE**  $\Delta$   
01, 05, 10, 20, 30 1 in H<sub>2</sub>O

**PRESSURE REFERENCE**  
D - DIFFERENTIAL AND GAGE  $\Delta$

**CATALOG LISTINGS**

DCXL0105
DCXL0505
DCXL1005
DCXL2005
DCXL3005

**NOTES**

- $\Delta$  REFERENCE CONDITIONS (UNLESS OTHERWISE NOTED): SUPPLY VOLTAGE,  $V_s = 12$  Vdc.
- TA = 25°C. COMMON MODE LINE PRESSURE = 0 PSIG. PRESSURE MEASUREMENTS ARE WITH PRESSURE APPLIED TO PORT 2.
- SHIFT IS RELATIVE TO 25°C.
- $\Delta$  SHIFT IS WITHIN THE FIRST HOUR OF EXCITATION APPLIED TO THE DEVICE.
- LINEARITY IS DETERMINED USING BEST STRAIGHT LINE CURVE FIT THROUGH ZERO, 1/2 FULL SCALE, AND FULL SCALE; HYSTERESIS IS MECHANICAL ONLY.
- GAGE AND DIFFERENTIAL USE "D" SUFFIX. PRODUCT IS THE SAME.
- SPAN IS THE ALGEBRAIC DIFFERENCE BETWEEN OUTPUT END POINTS OF OFFSET AND OUTPUT AT STATED PRESSURE.
- PRESSURE RANGE DEPICTS THE FULL SCALE PRESSURE OF THE SENSOR.
- FS REPRESENTS THE OUTPUT VALUE AT FULL SCALE PRESSURE.

**ELECTRICAL SPECIFICATIONS**

PARAMETER $\Delta$	PRESSURE RANGE (1 in H <sub>2</sub> O)	MIN	NOM	MAX	UNITS
OFFSET VOLTAGE	ALL	-0.50	0.00	+0.50	mV
SPAN ( $V_2 > V_1$ ) $\Delta$	01	9.00	10.00	11.00	mV
	05, 10, 20, 30	19.00	20.00	21.00	mV
TEMPERATURE EFFECT ON OFFSET (0°C-50°C) $\Delta$	01	---	---	±.250	mV
	05, 10, 20, 30	---	---	±.150	mV
TEMPERATURE EFFECT ON SPAN (0°C-50°C) $\Delta$	01, 05	---	---	±.200	mV
	10, 20, 30	---	---	±.150	mV
OFFSET WARM-UP SHIFT $\Delta$	01	---	---	.100	mV
	05, 10, 20, 30	---	---	.050	mV
OFFSET POSITION SENSITIVITY ( $\pm 1g$ )	01	---	---	.050	mV
	05, 10	---	---	.010	mV
	20, 30	---	---	.005	mV
OFFSET LONG TERM DRIFT (ONE YEAR)	01	---	---	.200	mV
	05, 10, 20, 30	---	---	.100	mV
COMBINED LINEARITY AND MECHANICAL HYSTERESIS ERROR $\Delta$	ALL	---	---	0.25	mV
INPUT RESISTANCE	01	---	---	4.5	K $\Omega$
	05, 20	---	---	10	K $\Omega$
	10	---	---	13	K $\Omega$
	30	---	---	12	K $\Omega$
OUTPUT RESISTANCE	01, 05, 10, 30	---	---	1.5	K $\Omega$
	20	---	---	2	K $\Omega$

**MAXIMUM RATINGS**

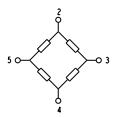
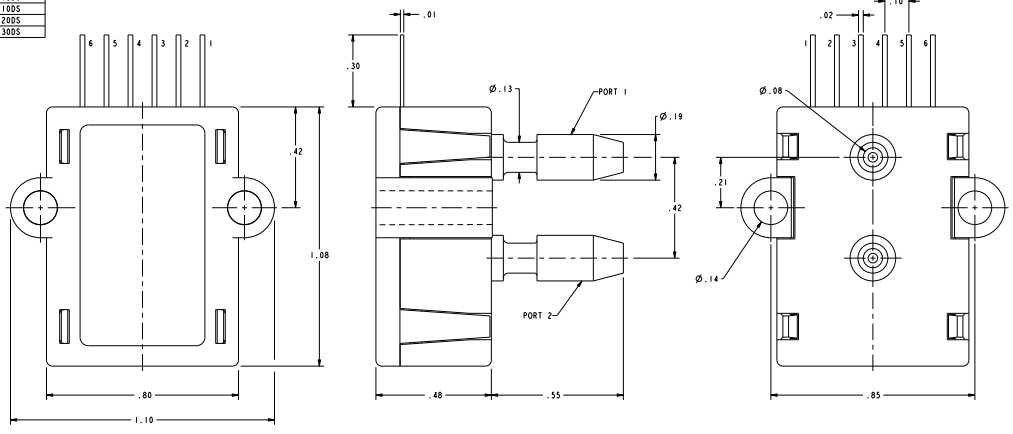
PARAMETER	PRESSURE RANGE (1 in H <sub>2</sub> O)	MIN	MAX	UNITS
OPERATING TEMPERATURE RANGE	ALL	-25	85	°C
STORAGE TEMPERATURE	ALL	-40	125	°C
PROOF PRESSURE (VERIFIED BY TEST)	ALL	---	5	PSI
BURST PRESSURE (VERIFIED BY DESIGN)	01	---	7	PSI
	05, 10	---	10	PSI
	20	---	15	PSI
	30	---	25	PSI
EXCITATION VOLTAGE	ALL	0	16	V
COMMON MODE PRESSURE	ALL	---	50	PSIG

**MEDIA CAPABILITY, WETTED MATERIALS**  
(APPLY CLEAN DRY AIR ONLY)

PRESSURE	SILICON DIAPHRAGM, GLASS
PORT 2	FILLED NYLON, AND ALUMINA CERAMIC
PORT 1	FILLED NYLON, AND ALUMINA CERAMIC

**PRESSURE COMPATIBILITY:**  
MEASURES DIFFERENTIAL OR GAGE PRESSURE AND VACUUM. PRESSURE MAY BE APPLIED TO PORT 1 OR PORT 2. FOR PRESSURE TO PORT 1 THE OUTPUT POLARITY IS REVERSED. VACUUM MAY BE APPLIED TO EITHER PORT 1 OR PORT 2. FOR VACUUM TO PORT 2 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 3 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 WOULD BE 5/12TH THE SPECIFIED VALUE.



**PIN OUT**

1	NC
2	V <sub>EXCITATION</sub>
3	V <sub>EXCITATION</sub>
4	V <sub>EXCITATION</sub>
5	V <sub>EXCITATION</sub>
6	NC

**DESIGN UNITS: INCH**

**TOLERANCES UNLESS NOTED:**

NO PLACE	± .000
ONE PLACE	± .000
TWO PLACE	± .005
THREE PLACE	± .000
FOUR PLACE	± .0005
ANGLES	± .0005

THIRD ANGLE PROJECTION

DESIGNED BY	BM	21APRO5
CHECKED BY	AK	21APRO5
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Prj/ENGINEER	D	I
SCALE	5:1	

**Honeywell**

**PRESSURE SENSOR**

DCXL SERIES CHART 2

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