



### DCXL01DS



**Pressure Sensors: Measurement Type: Differential, Signal Conditioning: Unamplified; Pressure Range:  $\pm 1.0$  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	$\pm 1.0$ 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	10 mV/in H <sub>2</sub> O
Full Scale Span	10 mV typ.
Null Offset	0 mV typ.
Null Shift over Temperature	-250 •V min., +250 •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

**SERIES**  
COMPENSATED (mV)

**DCXL**    **D**

**PACKAGE TYPE**  
S - SNAP

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

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

**CATALOG LISTINGS**

DCXL01DS
DCXL05DS
DCXL10DS
DCXL20DS
DCXL30DS

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

**ELECTRICAL SPECIFICATIONS**

PARAMETER $\Delta$	PRESSURE RANGE (in H <sub>2</sub> O)	MIN	NOM	MAX	UNITS
OFFSET VOLTAGE	ALL	-0.50	0.00	+0.50	mV
SPAN (P <sub>2</sub> > P <sub>1</sub> ) $\Delta$	01	9.00	10.00	11.00	mV
	05, 10, 20, 30	19.00	20.00	21.00	
TEMPERATURE EFFECT ON OFFSET (0°C-50°C) $\Delta$	01	---	---	±.250	mV
	05, 10, 20, 30	---	---	±.150	
TEMPERATURE EFFECT ON SPAN (0°C-50°C) $\Delta$	01, 05	---	---	±.200	mV
	10, 20, 30	---	---	±.150	
	01	---	.100	---	
OFFSET WARM-UP SHIFT $\Delta$	01	---	.050	---	mV
	05, 10, 20, 30	---	.050	---	
	01	---	.010	---	
OFFSET POSITION SENSITIVITY (±1g)	01	---	.050	---	mV
	05, 10	---	.010	---	
	20, 30	---	.005	---	
OFFSET LONG TERM DRIFT (ONE YEAR)	01	---	.200	---	mV
	05, 10, 20, 30	---	.100	---	
COMBINED LINEARITY AND MECHANICAL HYSTERESIS ERROR $\Delta$ $\sqrt{8}$	ALL	---	---	0.25	mV
	01	---	---	---	
INPUT RESISTANCE	01	---	4.5	---	k $\Omega$
	05, 20	---	10	---	
	10	---	13	---	
	30	---	12	---	
OUTPUT RESISTANCE	01, 05, 10, 30	---	1.5	---	k $\Omega$
	20	---	2	---	

**MAXIMUM RATINGS**

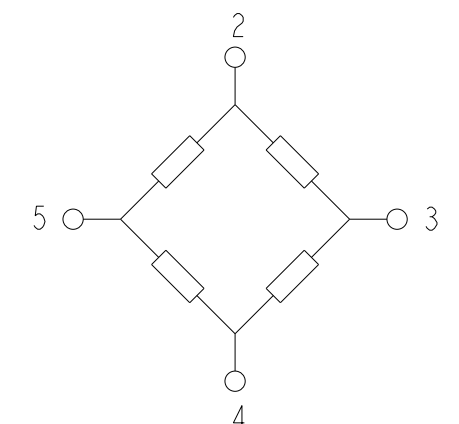
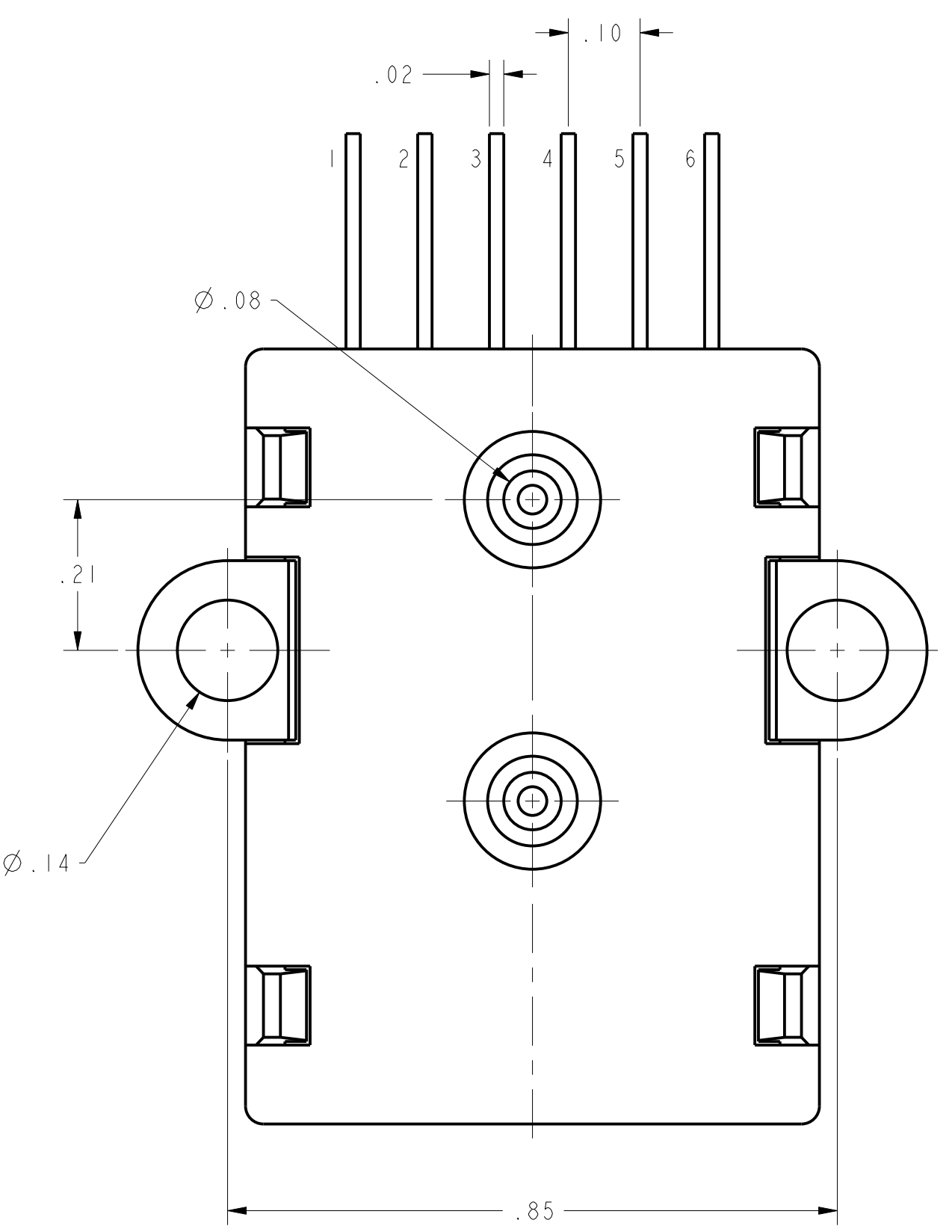
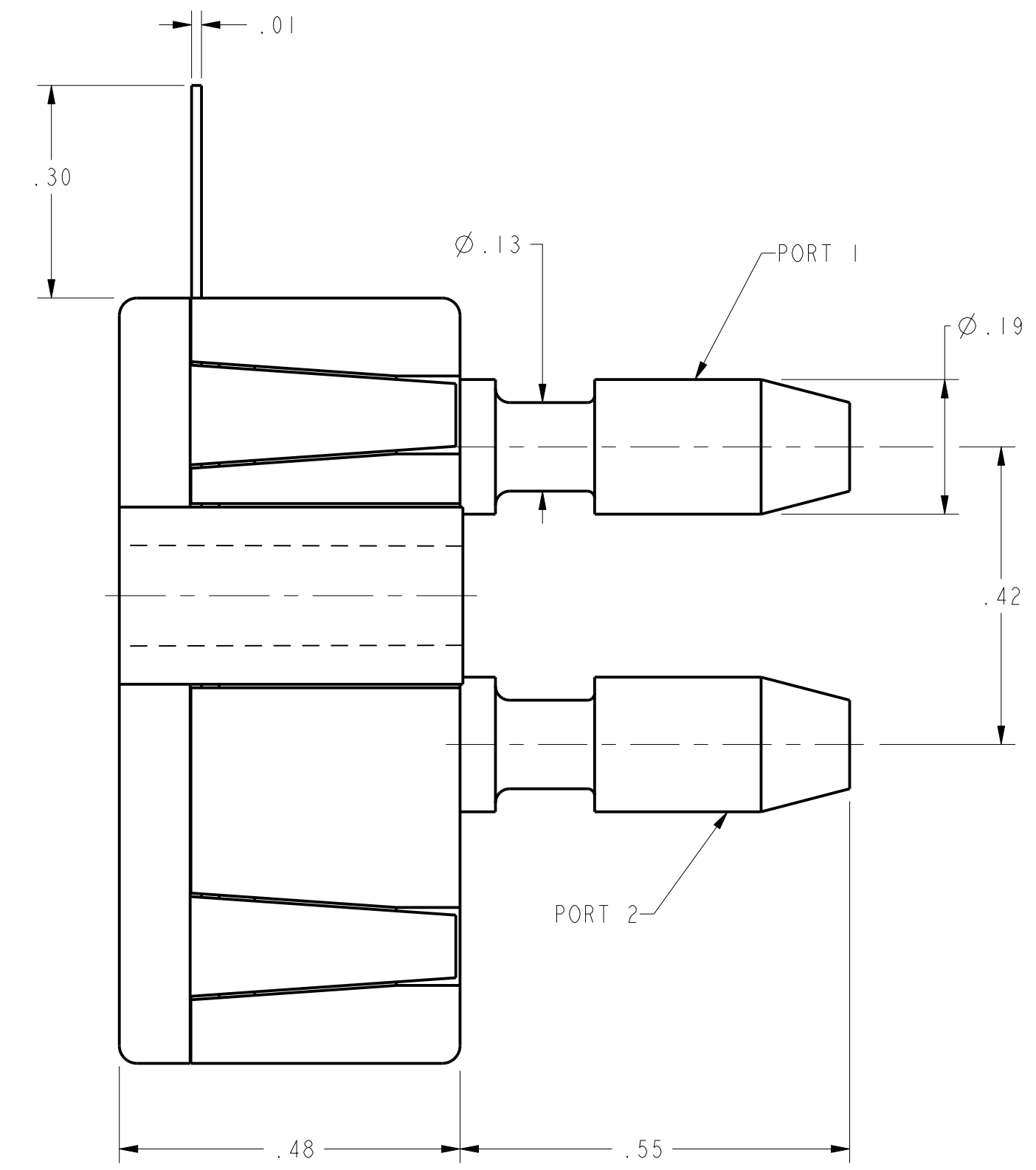
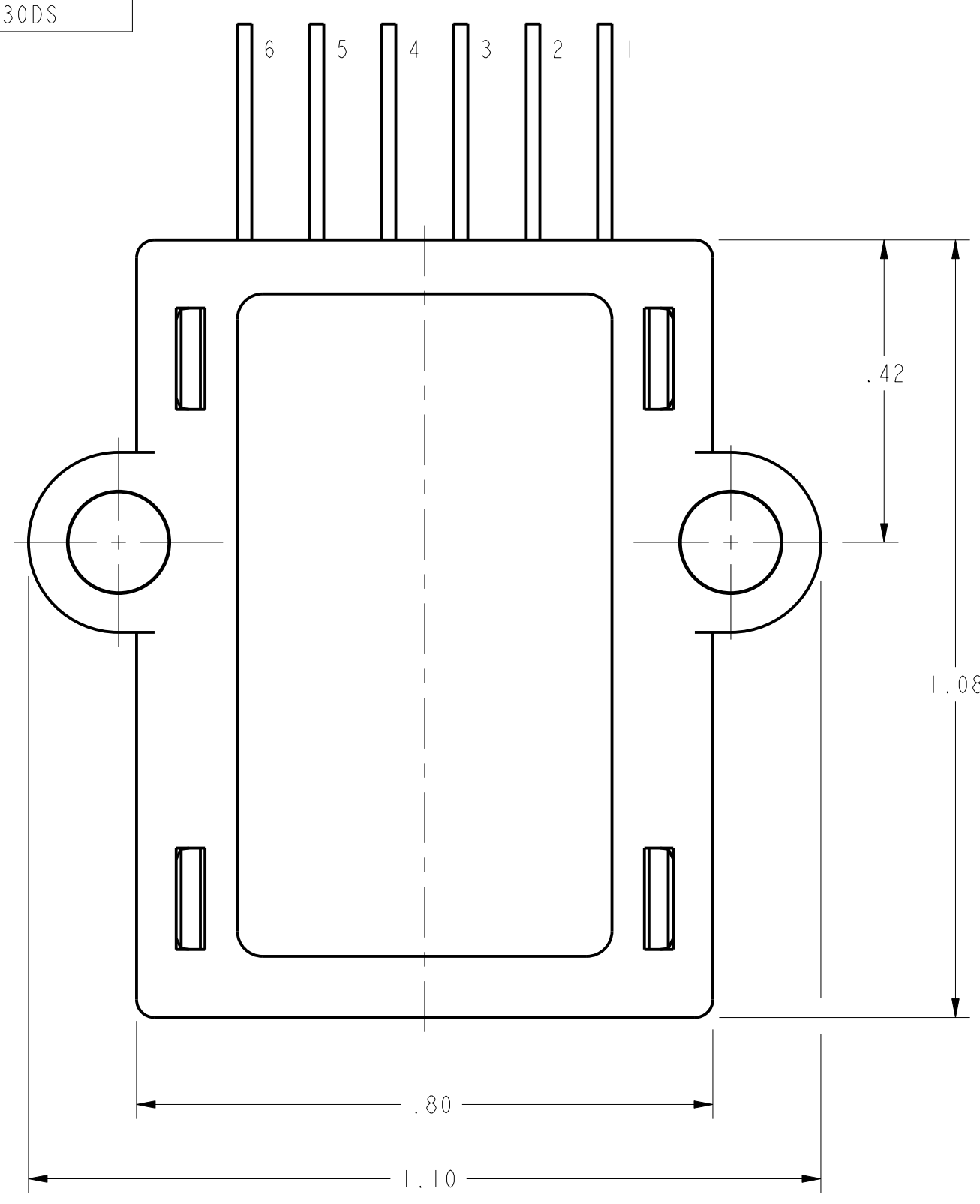
PARAMETER	PRESSURE RANGE (in H <sub>2</sub> O)	MIN	MAX	UNITS
OPERATING TEMPERATURE RANGE	ALL	-25	85	°C
STORAGE TEMPERATURE	ALL	-40	125	°C
PROOF PRESSURE (VERIFIED BY TEST)	ALL	---	5	PSI
BURST PRESSURE (VERIFIED BY DESIGN)	01	---	7	PSI
	05, 10	---	10	
	20	---	15	
	30	---	25	
EXCITATION VOLTAGE	ALL	0	16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

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

PRESSURE PORT 2 (HIGH)	SILICON DIAPHRAGM, GLASS FILLED NYLON, AND ALUMINA CERAMIC
PRESSURE PORT 1 (LOW)	SILICON DIAPHRAGM, GLASS 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<sub>EXCITATION</sub>/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



**EQUIVALENT CIRCUIT**

**PIN OUT**

1	NC
2	+V <sub>SUPPLY</sub>
3	+V <sub>OUTPUT</sub>
4	-V <sub>SUPPLY</sub>
5	-V <sub>OUTPUT</sub>
6	NC

DESIGN UNITS: INCH TOLERANCES UNLESS NOTED:	DRAWN: BM 21APR05 CHECK: AK 21APR05	<b>Honeywell</b>		
NO PLACE .x ± 0.040 ONE PLACE .x ± 0.030 TWO PLACE .xx ± 0.015 THREE PLACE .xxx ± 0.005 FOUR PLACE .xxxx ± 0.0005 ANGLES x ± 3	THIS DRAWING COVERS A PROPRIETARY ITEM AND IS THE PROPERTY OF HONEYWELL. THIS DRAWING IS NOT TO BE COPIED OR USED WITHOUT THE PERMISSION OF HONEYWELL.			<b>PRESSURE SENSOR</b>
THIRD ANGLE PROJECTION	INTERPRET PER ASME Y14.5M-1994 OTHER HONEYWELL ENGINEERING STANDARDS MAY APPLY.	SIZE: <b>D</b> TYPE: <b>I</b>	DRAWING NAME: <b>DCXL SERIES CHART 2</b>	REV: <b>A</b>
Pro/ENGINEER 3D SCALE: 5:1		SHEET 1 OF 1		