



### XCXL010DNC



**Pressure Sensors: Measurement Type: Differential, Gage, Vacuum Gage; Signal Conditioning: Unamplified; Pressure Range:  $\pm 10.0$  inches of water; Port Style: Barbed: Commercial Grade**

*Actual product appearance may vary.*

#### Features

- Pressure Ranges from 4 in H<sub>2</sub>O, 10 in H<sub>2</sub>O 1 psi through 150 psi
- Calibrated offset to  $\pm$ mV
- Calibrated Full Scale Span to  $\pm 1.0$  % FS over Compensated Temperature Range
- Temperature Compensated over 0 °C to +70 °C
- Gage, Differential, and Absolute Pressure
- Burst Pressure 3X Rated
- Ratiometric mV Output

#### Potential Applications

- Medical Applications
- Applications Requiring Small Size
- Applications Requiring Vacuum, Positive Pressure or Both

#### Description

The XCXL, XCX Series integrates silicon micromachined sensing technology, temperature compensation, and calibration in an improved performance industry standard package. A unique stress isolating design protects against torque induced errors typically found in competitive products. Additional stability and long term accuracy improvements are gained through simplified compensation techniques, which eliminate temperature dependent thermal compensation. This series is available in a commercial (XCX-DNC) performance level. This performance level provides the calibration accuracy of offset thermal compensation, and linearity providing added flexibility to meet critical performance budgets. The XCA and XCR Series provide amplified output as well as integrated compensation.

| Product Specifications |  |
|------------------------|--|
| Measurement Type       | Differential, Vacuum Gage, Gage            |
| Signal Conditioning    | Unamplified                                |
| Pressure Range         | $\pm 10.0$ in H <sub>2</sub> O             |
| Maximum Overpressure   | 5.0 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-XCX                           |

|                               |  |
|-------------------------------|--|
| Typical Sensitivity           | 2 mV/in H <sub>2</sub> O   |
| Full Scale Span               | 20 mV typ.   |
| Null Offset                   | 0 mV typ.  |
| Null Shift over Temperature   | ± 1 mV   |
| Span Shift Over Temperature   | ± 2% span  |
| Linearity, Hysteresis Error   | ± 0.5 % Span Typ.; ± 1 % Span Max.   |
| Repeatability                 | 0.1% span typ.   |
| Input Resistance              | 15.0 kOhm  |
| Shock                         | 10 g   |
| Weight                        | 7.6 g [0.27 oz]  |
| Operating Temperature Range   | -25 °C to 85 °C [-13 °F to 185 °F]   |
| Compensated Temperature Range | 0 °C to 70 °C [32 °F to 158 °F]  |
| Storage Temperature Range     | -40 °C to 125 °C [-40 °F to 257 °F]  |
| Media Compatibility           | Port 1: Dry gases only. Media must be compatible with epoxy-based adhesive. Port 2: Wetted materials. Media must be compatible with nylon housing, epoxy adhesive and silicon. |
| UNSPSC Code                   | 411121   |
| UNSPSC Commodity              | 411121 Transducers   |
| Availability                  | Global   |
| Series Name                   | XCXL   |

| REV | DOCUMENT | CHANGED BY  | CHECK |
|-----|----------|-------------|-------|
| 1   | 201373   | TRF 22SEP00 | SAV   |
| 2   | 203123   | GJW 01JUN01 | SAV   |

**SERIES**  
UNAMPLIFIED COMPENSATED AND CALIBRATED (mV)

**ACCURACY GRADE**  
**C** - COMMERCIAL (1.0%)  
**H** - HIGH GRADE (0.50%)

**PRESSURE RANGE**  $\Delta$   
**004, 010** IN H<sub>2</sub>O D  
**00.3, 01, 05, 15, 30, 60, 100, 150, 240** PSID

**PACKAGE TYPE**  
**N** - PLASTIC

**PRESSURE REFERENCE**  
**D** - DIFFERENTIAL

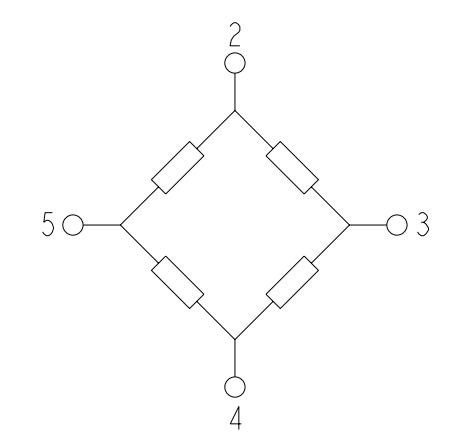
**NOTES**

$\Delta$  ALL PARAMETERS ARE MEASURED AT 12 VDC EXCITATION. APPLY POSITIVE PRESSURE TO PORT 2 FOR POSITIVE GOING OUTPUT SHIFT IS RELATIVE TO 25°C

$\Delta$  LINEARITY IS DETERMINED USING BEST STRAIGHT LINE FIT THROUGH ZERO, 1/2 FULL SCALE, AND FULL SCALE; HYSTERESIS IS MECHANICAL ONLY

4 - SPAN IS THE ALGEBRAIC DIFFERENCE BETWEEN OFFSET VOLTAGE AND THE VOLTAGE AT FULL SCALE PRESSURE

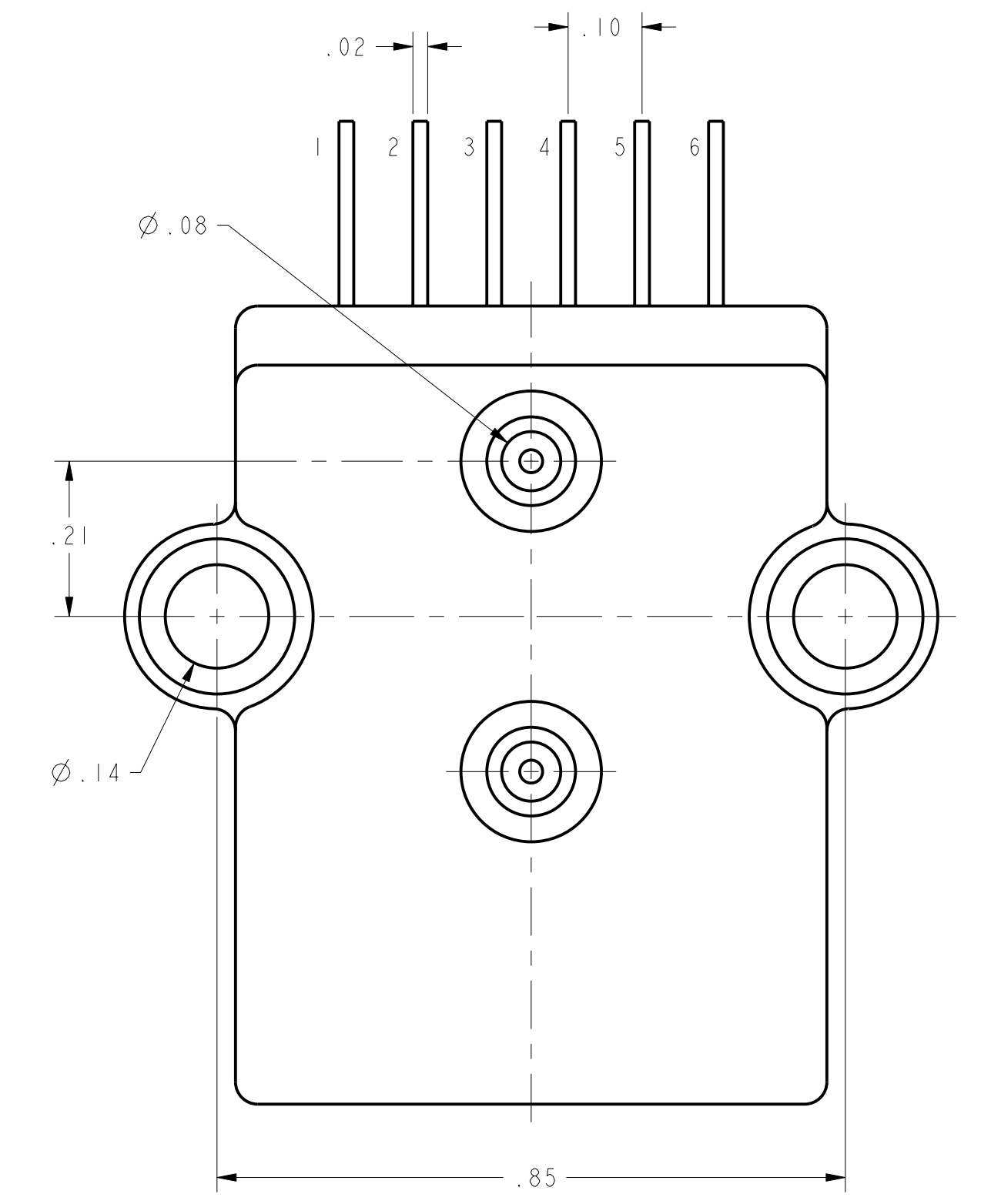
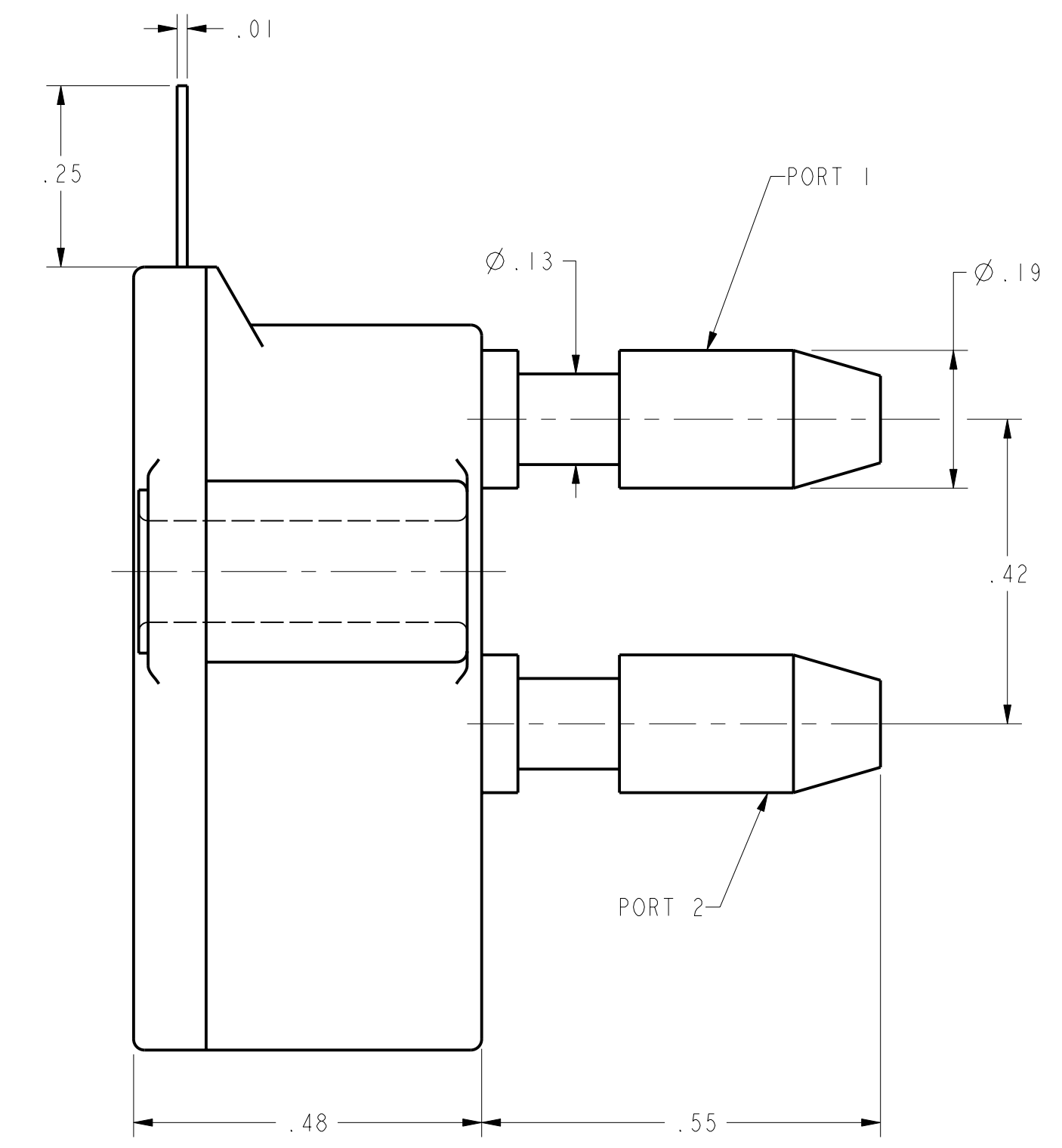
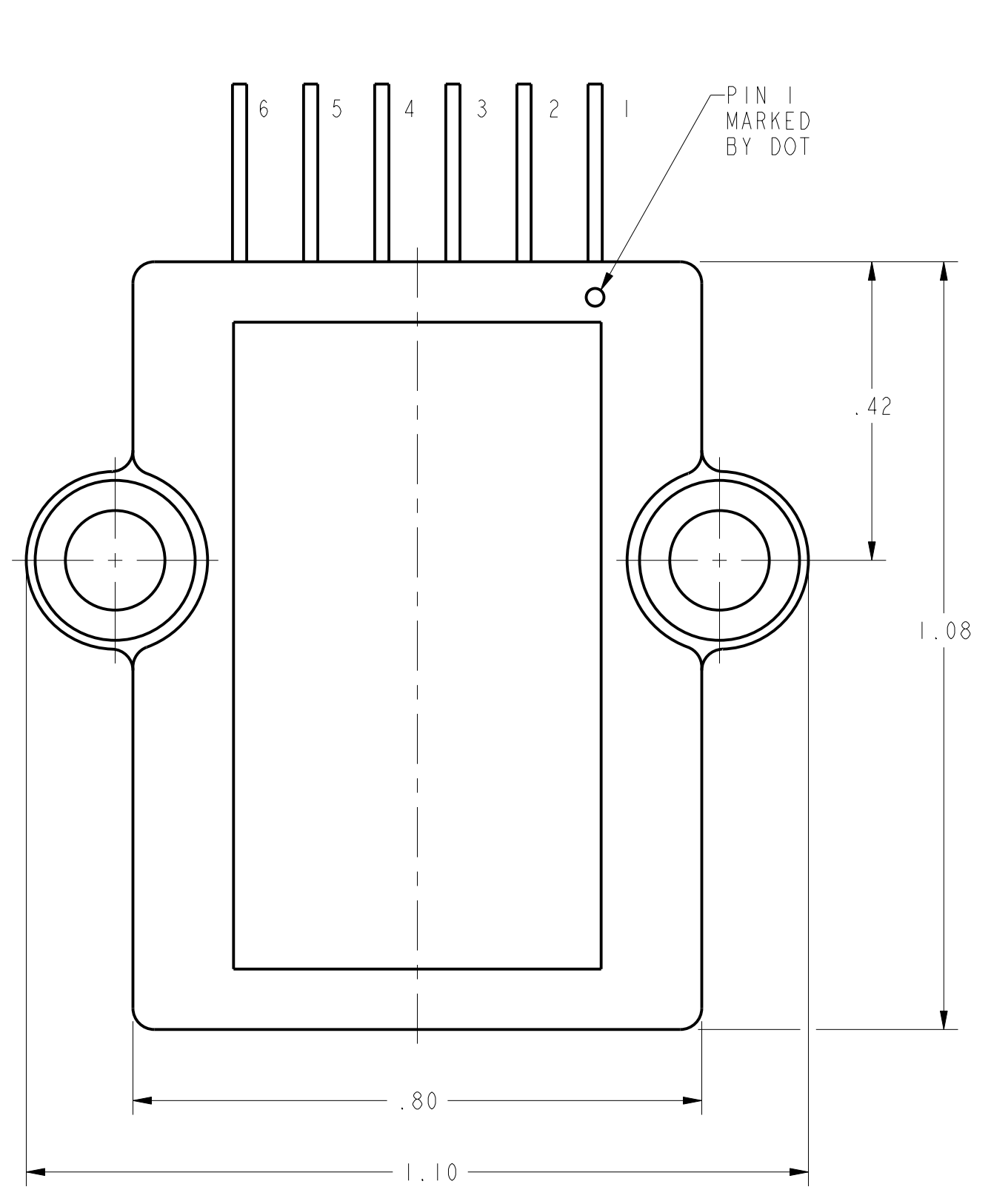
$\Delta$  PRESSURE RANGE DEPICTS THE FULL SCALE PRESSURE OF THE SENSOR



**EQUIVALENT CIRCUIT**

| PIN OUT |                 |
|---------|-----------------|
| 1       | N/C             |
| 2       | +V EXCITATION   |
| 3       | + OUTPUT SIGNAL |
| 4       | -V EXCITATION   |
| 5       | - OUTPUT SIGNAL |
| 6       | N/C             |

| C - GRADE LISTINGS |  |
|--------------------|--|
| XCXL004DNC         |  |
| XCXL010DNC         |  |
| XCX00.3DNC         |  |
| XCX01DNC           |  |
| XCX05DNC           |  |
| XCX15DNC           |  |
| XCX30DNC           |  |
| XCX60DNC           |  |
| XCX100DNC          |  |
| XCX150DNC          |  |
| XCX240DNC          |  |
| H - GRADE LISTINGS |  |
| XCXL004DNH         |  |
| XCXL010DNH         |  |
| XCX00.3DNH         |  |
| XCX01DNH           |  |
| XCX05DNH           |  |
| XCX15DNH           |  |
| XCX30DNH           |  |
| XCX60DNH           |  |
| XCX100DNH          |  |
| XCX150DNH          |  |
| XCX240DNH          |  |



| PARAMETERS $\Delta$                               | PRESSURE RANGE                   | C GRADE |       |      |            | H GRADE |       |      |            | PROOF PRESSURE  |
|---|----------------------------------|---------|-------|------|------------|---------|-------|------|------------|---|
|   |                                  | MIN     | NOM   | MAX  | UNITS      | MIN     | NOM   | MAX  | UNITS      |   |
| OFFSET VOLTAGE (0 IN H <sub>2</sub> O DIFF)       | ALL                              | -1.0    | 0.0   | 1.0  | mV         | -0.3    | 0.0   | 0.3  | mV         | 5 PSID<br>5 PSID<br>5 PSID<br>5 PSID<br>15 PSID<br>45 PSID<br>90 PSID<br>180 PSID<br>200 PSID<br>300 PSID<br>300 PSID |
| SPAN (P2>P1)                                      | 4 IN H <sub>2</sub> O            | 38.0    | 40.0  | 42.0 | mV         | 19.8    | 20.0  | 20.2 | mV         |   |
|   | 10 IN H <sub>2</sub> O           | 19.0    | 20.0  | 21.0 | mV         | 19.8    | 20.0  | 20.2 | mV         |   |
|   | 0.3 PSID                         | 19.0    | 20.0  | 21.0 | mV         | 19.8    | 20.0  | 20.2 | mV         |   |
|   | 1 PSID                           | 17.0    | 18.0  | 19.0 | mV         | 17.8    | 18.0  | 18.2 | mV         |   |
|   | 5 PSID                           | 57.0    | 60.0  | 63.0 | mV         | 59.0    | 60.0  | 61.0 | mV         |   |
|   | 15 PSID                          | 85.0    | 90.0  | 95.0 | mV         | 89.0    | 90.0  | 91.0 | mV         |   |
|   | 30 PSID                          | 85.0    | 90.0  | 95.0 | mV         | 89.0    | 90.0  | 91.0 | mV         |   |
|   | 60 PSID                          | 85.0    | 90.0  | 95.0 | mV         | 89.0    | 90.0  | 91.0 | mV         |   |
| 100 PSID  | 95.0                             | 100.0   | 105.0 | mV   | 99.0       | 100.0   | 101.0 | mV   |            |   |
| 150 PSID  | 85.0                             | 90.0    | 95.0  | mV   | 89.0       | 90.0    | 91.0  | mV   |            |   |
| 240 PSID  | 95.0                             | 100.0   | 105.0 | mV   | 99.0       | 100.0   | 101.0 | mV   |            |   |
| COMBINED LINEARITY AND HYSTERESIS $\Delta$        | ALL                              | ---     | 0.5   | 1.0  | %SPAN      | ---     | 0.3   | 0.5  | %SPAN      |   |
| INPUT RESISTANCE                                  | ALL                              | ---     | 15    | ---  | K $\Omega$ | ---     | 15    | ---  | K $\Omega$ |   |
| TEMPERATURE ERROR ON OFFSET (0° TO 50°C) $\Delta$ | 4 IN H <sub>2</sub> O            | ---     | ---   | 1.0  | mV         | ---     | ---   | 0.5  | mV         |   |
| TEMPERATURE ERROR ON OFFSET (0° TO 70°C) $\Delta$ | ALL EXCEPT 4 IN H <sub>2</sub> O | ---     | ---   | 1.0  | mV         | ---     | ---   | 0.5  | mV         |   |
| TEMPERATURE ERROR ON SPAN (0° TO 50°C) $\Delta$   | 4 IN H <sub>2</sub> O            | ---     | ---   | 2.0  | %SPAN      | ---     | ---   | 1.0  | %SPAN      |   |
| TEMPERATURE ERROR ON SPAN (0° TO 70°C) $\Delta$   | ALL EXCEPT 4 IN H <sub>2</sub> O | ---     | ---   | 2.0  | %SPAN      | ---     | ---   | 1.0  | %SPAN      |   |
| REPEATABILITY                                     | ALL                              | ---     | 0.1   | ---  | %SPAN      | ---     | 0.1   | ---  | %SPAN      |   |

|                                    |     |     |     |     |      |
|------------------------------------|-----|-----|-----|-----|------|
| EXCITATION VOLTAGE                 | ALL | 3   | 12  | 16  | VDC  |
| COMPENSATED TEMPERATURE RANGE      | ALL | 0   | 25  | 70  | °C   |
| STORAGE TEMPERATURE RANGE          | ALL | -40 | --- | 125 | °C   |
| RELATIVE HUMIDITY (NON-CONDENSING) | ALL | 0   | --- | 95  | %RH  |
| SHOCK (DURATION 11 msec ANY AXIS)  | ALL | --- | --- | 10  | g    |
| COMMON MODE PRESSURE               | ALL | --- | --- | 50  | PSIG |

| MEDIA CAPABILITY, WETTED MATERIALS<br>(APPLY CLEAN DRY AIR ONLY) |  |
|--|--|
| PRESSURE PORT 2  | SILICON DIAPHRAGM, GLASS FILLED NYLON, AND ALUMINA CERAMIC. PORT NOT USED FOR ABSOLUTE DEVICES |
| PRESSURE PORT 1  | FRONTSIDE OF SILICON DIAPHRAGM, SILICONE GEL PASSIVATION, GLASS FILLED NYLON, ALUMINA.         |

|  |                  |               |                |                  |  |                                    |                                 |                   |   |   |  |
|--|------------------|---------------|----------------|------------------|--|------------------------------------|---------------------------------|-------------------|---|---|--|
| UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:                       | NO PLACE .X      | ONE PLACE .XX | TWO PLACE .XXX | THREE PLACE .XXX | ANGLES   | RAW MATERIAL - COMMERCIAL STANDARD | THIRD ANGLE PROJECTION          | DRAWN TRF 22SEP00 | CHECK SAV 22SEP00   | <b>Honeywell</b><br>Sensing and Control<br><b>PRESSURE SENSOR</b> |  |
| DIMENSIONS ARE TO BE MET BEFORE PROTECTIVE COATINGS ARE APPLIED. | SCALE 5:1        | WEIGHT        | SHEET 1 OF 1   |                  | THIS DRAWING COVERS A PROPRIETARY ITEM AND IS THE PROPERTY OF HONEYWELL SENSING AND CONTROL. THIS DRAWING IS NOT TO BE COPIED OR USED WITHOUT THE PERMISSION OF HONEYWELL. |                                    | TITLE<br><b>PRESSURE SENSOR</b> |                   | SIZE <b>D</b> DWG TYPE <b>M</b> DRAWING NAME <b>XCX DIF SERIES CHART 1</b> REV <b>2</b> |   |  |
| PTC 3D   | ASME Y14.5M-1994 |               |                |                  |  |                                    |                                 |                   |   |   |  |