

## Interactive Catalog Replaces Catalog Pages

Honeywell Sensing and Control has replaced the PDF product catalog with the new **Interactive Catalog**. The **Interactive Catalog** is a power search tool that makes it easier to find product information. It includes more installation, application, and technical information than ever before.



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### **Sensing and Control**

Honeywell Inc.

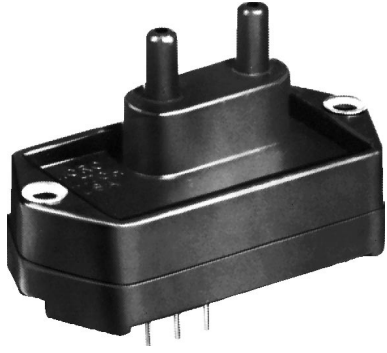
11 West Spring Street

Freeport, Illinois 61032

# Pressure Sensors

160PC Series

## Low Pressure Differential, Gage, Vacuum Gage/Amplified



### FEATURES

- Low pressure measurement
- PCB terminals on opposite side from the ports
- Fully signal conditioned

### 160PC SERIES PERFORMANCE CHARACTERISTICS at 8.0 ±0.01 VDC Excitation, 25°C (Exception 163PC at 10 ±0.01 VDC Excitation, 25°C)

|   | Min.   | Typ.  | Max. | Units |
|---|--|-------|------|-------|
| Excitation                              | 6.00   | 8.00  | 16   | VDC   |
| Supply Current                          | ---  | 8.00  | 20   | mA    |
| Current Sourcing Output                 | ---  | ---   | 10   | mA    |
| Null Offset (161/162/164PC) *           | 0.95   | 1.00  | 1.05 | V     |
| Null Offset (163PC) **                  | 3.45   | 3.50  | 3.55 | V     |
| Output at Full Pressure (161/162/164PC) | 5.90   | 6.00  | 6.10 | V     |
| Output at Full Vacuum (163PC)           | 0.80   | 1.00  | 1.20 | V     |
| Span (161/162/164PC)                    | 4.85   | 5.00  | 5.15 | V     |
| Span (163PC) **                         | ---  | 5.00  | ---  | V     |
| Ratiometricity Error                    |  |       |      |       |
| 7 to 8 V or 8 to 9 V                    | ---  | ±0.50 | ---  | %Span |
| 9 to 12 V                               | ---  | ±2.00 | ---  |       |
| Stability over One Year                 | ---  | ±0.50 | ---  | %Span |
| Response Time                           | ---  | ---   | 1.00 | msec  |
| Weight                                  | ---  | 28    | ---  | grams |
| Short Circuit Protection                | Output may be shorted indefinitely to ground |       |      |       |
| Output Ripple                           | None, DC device                              |       |      |       |
| Ground Reference                        | Supply and output are common                 |       |      |       |

\*Positive (or negative) pressure measurement.

\*\*Positive AND negative pressure measurement.

### ENVIRONMENTAL SPECIFICATIONS

|                         |  |
|-------------------------|--|
| Operating Temperature   | -40° to +85°C (-40° to +185°F)   |
| Storage Temperature     | -55° to +125°C (-67° to +257°F)  |
| Compensated Temperature | -18° to +63°C (0° to +145°F)   |
| Shock                   | MIL-STD-202, Method 213 (50 g, half sine, 6 msec)  |
| Vibration               | MIL-STD-202, Method 204 (10 to 2000 Hz at 10 g)  |
| Media                   | P2 port Wetted materials; polyester housing, epoxy adhesive, silicon, borosilicate glass, and silicon-to-glass bond* |
|                         | P1 port Dry gases only   |

\*Liquid media containing some highly ionic solutions could potentially neutralize the chip-to-glass tube bond.

Amplified

## Low Pressure Differential, Gage, Vacuum Gage/Amplified

### 160PC SERIES ORDER GUIDE, VACUUM GAGE AND GAGE TYPE

| Catalog Listing | Pressure Range<br>"H <sub>2</sub> O | Shift<br>Null, Sensitivity, Combined** |                           |                          | Sensitivity<br>V/"H <sub>2</sub> O | Overpressure<br>psi<br>Max. | Linearity, B.F.S.L. |         | Repeatability<br>& Hysteresis<br>% Span<br>Typ. |
|-----------------|-------------------------------------|--|---------------------------|--------------------------|------------------------------------|-----------------------------|---------------------|---------|---|
|                 |                                     | 25 to 5°<br>25 to 45°C                 | 25 to -18°<br>25 to +63°C | 25 to -40°<br>25 to 85°C |                                    |                             | P2 > P1             | P2 < P1 |   |
|                 |                                     | %Span                                  |                           |                          |                                    |                             |                     |         |   |
|                 |                                     | Max.                                   | Max.                      | Max.                     |                                    |                             | Max.                | Max.    |   |
| 161PC01D        | 0-27.68                             | ---                                    | ±1.00                     | ±2.00                    | 0.18                               | 5                           | ---                 | ±1.00   | ±0.15 Vacuum<br>Gage                            |
| 162PC01G        | 0-27.68                             | ---                                    | ±1.00                     | ±2.00                    | 0.18                               | 5                           | ---                 | ±1.00   | ±0.15 Gage                                      |

### 160PC SERIES ORDER GUIDE, DIFFERENTIAL TYPE

| Catalog Listing | Pressure Range<br>"H <sub>2</sub> O | Shift<br>Null, Sensitivity, Combined** |                           |                          | Sensitivity<br>V/"H <sub>2</sub> O | Overpressure<br>psi<br>Max. | Linearity, B.F.S.L. |         | Repeatability<br>& Hysteresis<br>% Span<br>Typ. |
|-----------------|-------------------------------------|--|---------------------------|--------------------------|------------------------------------|-----------------------------|---------------------|---------|---|
|                 |                                     | 25 to 5°<br>25 to 45°C                 | 25 to -18°<br>25 to +63°C | 25 to -40°<br>25 to 85°C |                                    |                             | P2 > P1             | P2 < P1 |   |
|                 |                                     | %Span                                  |                           |                          |                                    |                             |                     |         |   |
|                 |                                     | Max.                                   | Max.                      | Max.                     |                                    |                             | Max.                | Max.    |   |
| 162PC01D        | 0-27.68                             | ---                                    | ±1.00                     | ±2.00                    | 0.18                               | 5                           | ±2.00               | ---     | ±0.15   |
| 163PC01D36      | ±5                                  | ±1.00                                  | ---                       | ---                      | 0.50                               | 5                           | ±2.00               | ±1.00   | ±0.25   |
| 164PC01D37      | 0-10                                | ±1.00                                  | ---                       | ---                      | 0.50                               | 5                           | ±2.00               | ---     | ±0.25   |
| 163PC01D75      | ±2.5                                | ±1.25                                  | ---                       | ---                      | 1.00                               | 5                           | ±2.00               | ±1.00   | ±0.25   |
| 164PC01D76      | 0-5                                 | ±1.25                                  | ---                       | ---                      | 1.00                               | 5                           | ±2.00               | ---     | ±0.25   |

### 160PC SERIES ORDER GUIDE, DIFFERENTIAL TYPE @ 10 VDC ±0.01 EXCITATION, 25°C

| Catalog Listing | Pressure Range<br>cmH <sub>2</sub> O | Shift<br>Null, Sensitivity, Combined** |                           |                          | Sensitivity<br>V/cmH <sub>2</sub> O | Overpressure<br>cmH <sub>2</sub> O<br>Max. | Linearity, B.F.S.L. |         | Repeatability<br>& Hysteresis<br>% Span<br>Typ. |
|-----------------|--------------------------------------|--|---------------------------|--------------------------|-------------------------------------|--|---------------------|---------|---|
|                 |                                      | 25 to 5°<br>25 to 45°C                 | 25 to -18°<br>25 to +63°C | 25 to -40°<br>25 to 85°C |                                     |  | P2 > P1             | P2 < P1 |   |
|                 |                                      | %Span                                  |                           |                          |                                     |  |                     |         |   |
|                 |                                      | Max.                                   | Max.                      | Max.                     |                                     |  | Max.                | Max.    |   |
| 163PC01D48      | -20 to +120                          | ±0.75*                                 | ---                       | ---                      | 0.36                                | 350  | ±1.5                | ---     | ±0.15   |

\*Null shift. Span shift is ±1.00/Span

\*\*% Span specification applies to each shift independently (Null, Sensitivity, or Combined)

## Low Pressure Differential, Gage, Vacuum Gage/Amplified

### INTERNAL CIRCUITRY



### NULL AND SENSITIVITY TEMPERATURE SHIFT

Amplified pressure sensors are 100% tested to insure that the maximum null and sensitivity temperature shift does not exceed the specification. The diagram below illustrates how null and sensitivity shift relates to temperature. Note that the maximum shift occurs at temperature extremes. Therefore, if a sensor is not ex-

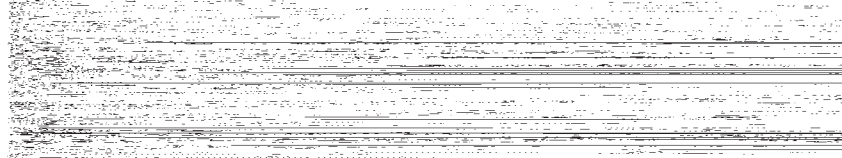
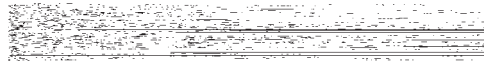
posed to the entire temperature range, the maximum null and sensitivity shift will actually be less than the value specified.

This diagram indicates the temperature shift pertaining to a few listings. Maximum null and sensitivity shift varies from listing to listing.

### NOTES

1. Terminals are labeled on the sensor.
2. Input and output share a common ground.
3.  $R_L$  must be greater than or equal to 3000 ohms.

### RATIOMETRICITY



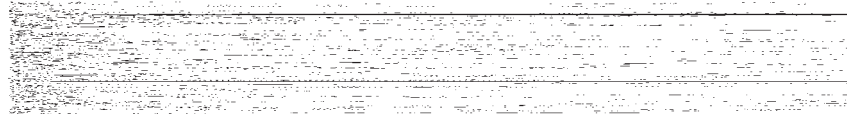
Amplified

Ratiometricity refers to the output voltage being directly proportional to supply voltage. 160PC sensors in this catalog are calibrated at 8 VDC supply voltage (except 163PC) to provide a 1-6 volt (5 V Span) output swing. For example, if supply increases by 50% to 12 VDC, the output voltage increased by 50% to 1.5-9 volts (7.5 V Span).

### NOTE

The output is not perfectly ratiometric. See Accuracy specifications for the degree of error.

### SCALING OF 160PC SERIES SENSORS WITH 8V EXCITATIONS



|            |              |   |
|------------|--------------|---|
| 161PC01D   | Vacuum Gage  | $V_o = 1 \text{ V at } 0 \text{ psig \& } 6 \text{ V at } -1 \text{ psig}$                    |
| 162PC01D   | Differential | $V_o = 1 \text{ V at } 0 \text{ psig \& } 6 \text{ V at } 1 \text{ psig}$                     |
| 163PC01D36 | Differential | $V_o = 1 \text{ V at } -5'' \text{ H}_2\text{O \& } 6 \text{ V at } -5'' \text{ H}_2\text{O}$ |

**NOTE:** 161PC sensors are scaled for greater pressure on the P1 side of the chip. 162PC sensors are scaled for greater pressure on the P2 side of the chip. Other scalings available upon request.

# Pressure Sensors

160PC Series

## Low Pressure Differential, Gage, Vacuum Gage/Amplified

**MOUNTING DIMENSIONS** (For reference only)

### 160PC CONSTRUCTION

