

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.



**Click this icon to try the new
Interactive Catalog.**

Sensing and Control

Honeywell Inc.

11 West Spring Street

Freeport, Illinois 61032

Pressure Sensors

140PC Series

Absolute, Differential, Gage, Vacuum Gage/Amplified



FEATURES

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

140PC SERIES PERFORMANCE CHARACTERISTICS at 8.0 ±0.01 VDC Excitation, 25°C

| | Min. | Typ. | Max. | Units |
|--------------------------|--|-------|------|-------|
| Excitation | 7.00 | 8.00 | 16.0 | VDC |
| Supply Current | --- | 8.00 | 20.0 | mA |
| Current Sourcing Output | --- | --- | 10 | mA |
| Null Offset (141/142PC) | 0.95 | 1.00 | 1.05 | V |
| Null Offset (143PC)* | 3.45 | 3.50 | 3.55 | V |
| Null Offset | | | | |
| 142PC15A @ 2 psia | 1.62 | 1.67 | 1.72 | V |
| 142PC30A @ 2 psia | 1.28 | 1.33 | 1.38 | V |
| Output at Full Pressure | 5.90 | 6.00 | 6.10 | V |
| Span† (141/142PC) | 4.95 | 5.00 | 5.05 | V |
| Span† (143PC)* | --- | 5.00 | --- | V |
| Span | | | | |
| 142PC15A (2 to 15 psia) | 4.28 | 4.33 | 4.48 | V |
| 142PC30A (2 to 30 psia) | 4.62 | 4.67 | 4.72 | V |
| Ratiometricity Error | | | | %Span |
| 7 to 8 V or 8 to 9 V | --- | ±0.50 | --- | |
| 9 to 12 V | --- | ±2.00 | --- | |
| Stability over One Year | --- | ±0.50 | --- | %Span |
| Response Time | --- | --- | 1.00 | msec |
| Common Mode Pressure** | --- | --- | 40 | psi |
| 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 and negative pressure measurement.

**Higher common mode pressures possible if sensor is not used over entire operating temperature range.

†Span is defined as the algebraic difference between end points. Please note: actual output is 1 V to 6 V (at 8.00 ±0.01 VDC). Span is then 5V.

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

Pressure Sensors

140PC Series

Absolute, Differential, Gage, Vacuum Gage/Amplified

140PC SERIES ORDER GUIDE, VACUUM GAGE TYPE

| Catalog Listing | Pressure Range psi | Shift Null, Sensitivity, Combined** | | | | Sensitivity V/psi | Overpressure psi Max. | Linearity, B.F.S.L. | | Repeatability & Hysteresis %Span Typ. |
|-----------------|--------------------|--|-------|---------------------------|--------------------------|-------------------|-----------------------|---------------------|---------|---------------------------------------|
| | | 25 to 5° 25 to 45°C | | 25 to -18° 25 to +63°C | 25 to -40° 25 to 85°C | | | P2 > P1 | P2 < P1 | |
| | | %Span | | | | | | | | |
| | | Typ. | Max. | Max. | Max. | | | Max. | Max. | |
| 141PC01G | 0--1 | --- | ±1.50 | --- | --- | 5.000 | 20 | --- | ±0.75 | ±0.30 |
| 141PC05G | 0--5 | ±0.50 | --- | ±1.00 | ±2.00 | 1.000 | 20 | --- | ±0.75 | ±0.25 |
| 141PC15G | 0--15 | ±0.50 | --- | ±1.00 | ±2.00 | 0.333 | 45 | --- | ±0.40 | ±0.15 |

140PC SERIES ORDER GUIDE, GAGE TYPE

| Catalog Listing | Pressure Range psi | Shift Null, Sensitivity, Combined** | | | | Sensitivity V/psi | Overpressure psi Max. | Linearity, B.F.S.L. | | Repeatability & Hysteresis %Span Typ. |
|-----------------|--------------------|--|-------|---------------------------|--------------------------|-------------------|-----------------------|---------------------|---------|---------------------------------------|
| | | 25 to 5° 25 to 45°C | | 25 to -18° 25 to +63°C | 25 to -40° 25 to 85°C | | | P2 > P1 | P2 < P1 | |
| | | %Span | | | | | | | | |
| | | Typ. | Max. | Max. | Max. | | | Max. | Max. | |
| 142PC01G | 0-1 | --- | ±1.50 | --- | --- | 5.000 | 20 | ±0.75 | --- | ±0.30 |
| 142PC02G | 0-2 | --- | ±1.50 | --- | --- | 2.500 | 20 | ±0.75 | --- | ±0.30 |
| 142PC05G | 0-5 | ±0.50 | --- | ±1.00 | ±2.00 | 1.000 | 20 | ±1.50 | --- | ±0.25 |
| 142PC15G | 0-15 | ±0.50 | --- | ±1.00 | ±2.00 | 0.333 | 45 | ±0.75 | --- | ±0.15 |
| 142PC30G | 0-30 | ±0.50 | --- | ±1.00 | ±2.00 | 0.167 | 60 | ±0.75 | --- | ±0.15 |
| 143PC03G | ±2.5 | --- | --- | ±1.00 | ±1.50 | 1.000 | 20 | ±0.75 | --- | ±0.25 |
| 143PC05G | ±5 | --- | --- | ±1.00 | ±1.50 | 0.500 | 30 | ±0.75 | --- | ±0.15 |
| 143PC15G | ±15 | --- | --- | ±1.00 | ±1.50 | 0.177 | 50 | ±0.75 | --- | ±0.15 |

140PC SERIES ORDER GUIDE, DIFFERENTIAL TYPE

| Catalog Listing | Pressure Range psi | Shift Null, Sensitivity, Combined** | | | | Sensitivity V/psi | Overpressure psi Max. | Linearity, B.F.S.L. | | Repeatability & Hysteresis %Span Typ. |
|-----------------|--------------------|--|-------|---------------------------|--------------------------|-------------------|-----------------------|---------------------|---------|---------------------------------------|
| | | 25 to 5° 25 to 45°C | | 25 to -18° 25 to +63°C | 25 to -40° 25 to 85°C | | | P2 > P1 | P2 < P1 | |
| | | %Span | | | | | | | | |
| | | Typ. | Max. | Max. | Max. | | | Max. | Max. | |
| 142PC01D | 0-1 | --- | ±1.50 | --- | --- | 5.000 | 20 | ±0.75 | ±0.40 | ±0.30 |
| 142PC02D | 0-2 | --- | ±1.50 | --- | --- | 2.500 | 20 | ±0.75 | ±0.40 | ±0.30 |
| 142PC05D | 0-5 | ±0.50 | --- | ±1.00 | ±2.00 | 1.000 | 20 | ±1.50 | ±0.75 | ±0.25 |
| 142PC15D | 0-15 | ±0.50 | --- | ±1.00 | ±2.00 | 0.333 | 45 | ±0.75 | ±0.40 | ±0.15 |
| 142PC30D | 0-30 | ±0.50 | --- | ±1.00 | ±2.00 | 0.167 | 60 | ±0.75 | ±0.40 | ±0.15 |
| 143PC03D | ±2.5 | --- | --- | ±1.00 | ±1.50 | 1.000 | 20 | ±0.75 | ±0.40 | ±0.25 |
| 143PC05D | ±5 | --- | --- | ±1.00 | ±1.50 | 0.500 | 30 | ±0.75 | ±0.40 | ±0.15 |
| 143PC15D | ±15 | --- | --- | ±1.00 | ±1.50 | 0.177 | 50 | ±0.75 | ±0.40 | ±0.15 |

140PC SERIES ORDER GUIDE, ABSOLUTE TYPE *

| Catalog Listing | Pressure Range psia | Shift Null, Sensitivity, Combined** | | | | Sensitivity V/psi | Overpressure psi Max. | Linearity, B.F.S.L. | | Repeatability & Hysteresis %Span Typ. |
|-----------------|---------------------|--|------|---------------------------|--------------------------|-------------------|-----------------------|---------------------|---------|---------------------------------------|
| | | 25 to 5° 25 to 45°C | | 25 to -18° 25 to +63°C | 25 to -40° 25 to 85°C | | | P2 > P1 | P2 < P1 | |
| | | %Span | | | | | | | | |
| | | Typ. | Max. | Max. | Max. | | | Max. | Max. | |
| 142PC15A | 0-15 | ±0.50 | --- | ±1.00 | ±2.00 | 0.333 | 45 | --- | ±0.40 | ±0.15 |
| 142PC30A | 0-30 | ±0.50 | --- | ±1.00 | ±2.00 | 0.167 | 60 | --- | ±0.40 | ±0.15 |

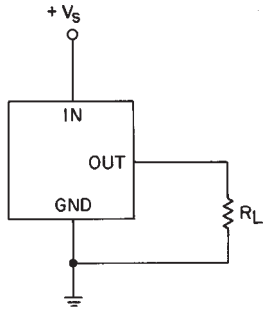
* Tested at 2 psia reference

** % Span specification applies to each shift independently. (Null, sensitivity, or combined).

Absolute, Differential, Gage, Vacuum Gage/Amplified

ELECTRICAL CONNECTION

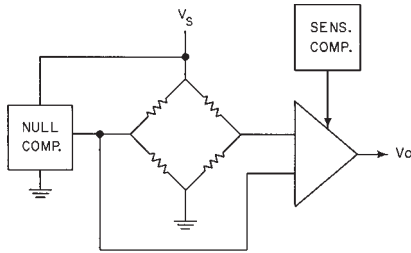
Voltage Excitation



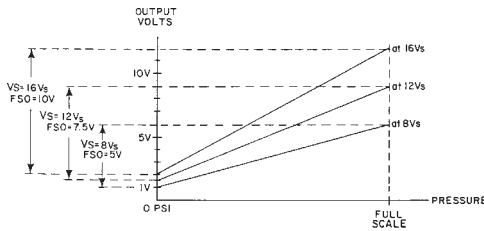
NOTES

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.

INTERNAL CIRCUITRY



RATIOMETRICITY



Ratiometricity refers to the output voltage being directly proportional to the supply voltage. 140PC sensors in this catalog are calibrated at 8 VDC supply voltage to provide a 1-6 volt (5V Span) output swing. For example, if supply increases by 50% to 12 VDC, the output voltage increases by 50% to 1.5-9 volts (7.5 V Span).

NOTE

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

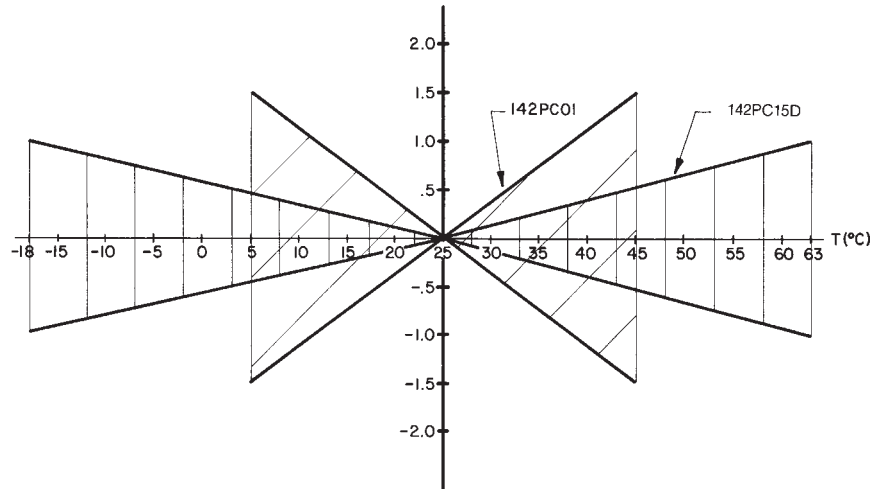
NULL AND SENSITIVITY TEMPERATURE SHIFT

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.

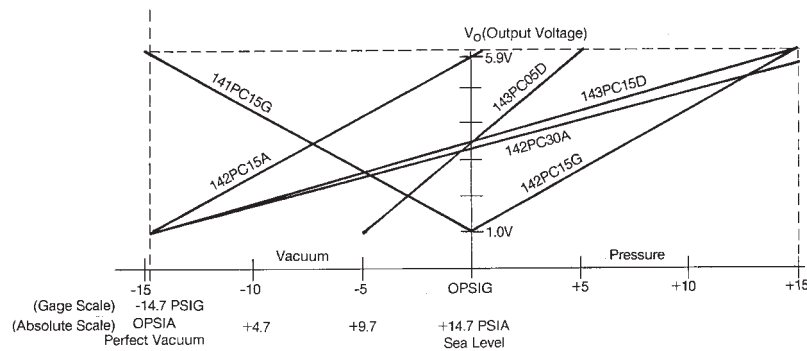
This diagram indicates the temperature shift pertaining to a few listings. Maximum null and sensitivity shift varies from listing to listing.

NULL AND SENSITIVITY SHIFT (% F.S.O.)



Amplified

SCALING OF 140PC SERIES SENSORS WITH 8V EXCITATION



| | | |
|----------|--------------|--|
| 142PC15A | Absolute | $V_o = 1 \text{ V at } 0 \text{ psia} \text{ \& } 6 \text{ V at } 15 \text{ psia}$ |
| 142PC30A | Absolute | $V_o = 1 \text{ V at } 0 \text{ psia} \text{ \& } 6 \text{ V at } 30 \text{ psia}$ |
| 142PC15G | Gage | $V_o = 1 \text{ V at } 0 \text{ psig} \text{ \& } 6 \text{ V at } 15 \text{ psig}$ |
| 141PC15G | Vacuum Gage | $V_o = 1 \text{ V at } 0 \text{ psig} \text{ \& } 6 \text{ V at } -15 \text{ psig}$ |
| 143PC05D | Differential | $V_o = 1 \text{ V at } -5 \text{ psig} \text{ \& } 6 \text{ V at } 5 \text{ psig}$ |
| 143PC15D | Differential | $V_o = 1 \text{ V at } -15 \text{ psig} \text{ \& } 6 \text{ V at } 15 \text{ psig}$ |

NOTE: 141PC sensors are scaled for vacuum pressure on P2.

142PC sensors are scaled for greater pressure on the P2 side of the chip. Input pressures on absolute units are applied to the P1 port.

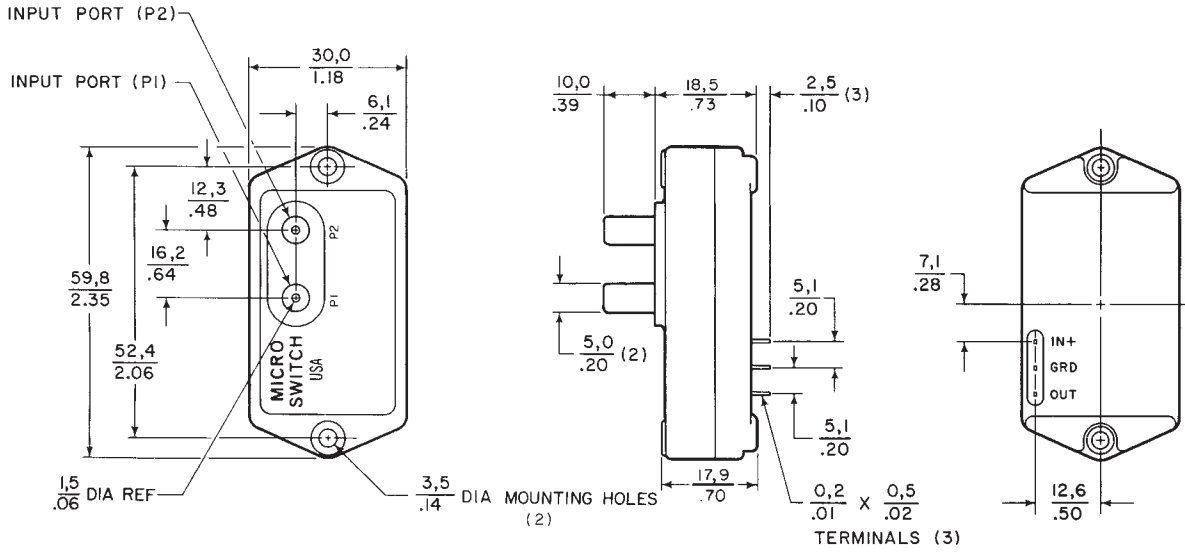
Other scalings available upon request.

Pressure Sensors

140PC Series

Absolute, Differential, Gage, Vacuum Gage/Amplified

MOUNTING DIMENSIONS (For reference only)



Dimensions shown apply to Differential and Absolute versions. Gage units are identical, except the P1 port is absent.

140PC CONSTRUCTION

