

XCA Series

Fixed Output, Amplified Calibrated with Ratiometric Output Voltage Pressure Sensors



DESCRIPTION

The XCA Series of pressure sensors use state-of-the-art silicon micromachined pressure sensors in conjunction with stress free packaging techniques to provide highly accurate, amplified, calibrated and temperature compensated pressure sensors for the most demanding applications.

When operated from a fixed 5.0 Vdc supply, the XCA4 gage and absolute sensors provide a 0.25 Vdc to 4.25 Vdc output (4.0 Vdc span).

FEATURES

- Precise temperature compensation
- Low cost
- High performance
- Gage, absolute and differential versions
- Constant voltage excitation
- Calibrated output
- Ratiometric output voltage

The XCA5 Series offers an industry standard 1 Vdc to 6 Vdc output (5 Vdc span) when operated from a fixed 8.0 Vdc supply.

All other features are the same for both the XCA4 and the XCA5, incorporating stress isolation and factory calibration to achieve optimum accuracy in this industry standard package.

POTENTIAL APPLICATIONS

- Ventilators
- Continuous positive airway pressure (CPAP) systems
- Audiometers
- Air compressors
- Chemical analyzers
- Variable air volume (VAV) controllers
- Airflow

XCA Series

XCA4 ELECTRICAL SPECIFICATIONS (At 5 Vdc Excitation, 25 °C [77 °F].)

Characteristic	Min.	Typ.	Max.	Unit
Excitation voltage	3.0	5.0	16.0	Vdc
Null XCA4 (except differential)	0.15	0.25	0.35	Vdc
Null XCA4 (differential)	2.20	2.25	2.30	Vdc
Span XCA4 (except differential)	3.90	4.00	4.10	Vdc
Span XCA4 (differential, changes with \pm pressure applied)	± 1.95	± 2.00	± 2.05	Vdc
Temperature change span 0 °C to 50 °C [32 °F to 122 °F] ⁽¹⁾	–	± 0.6	± 1.0	% span
Temperature change offset 0 °C to 50 °C [32 °F to 122 °F] ⁽¹⁾	–	± 0.6	± 1.0	% span
Linearity, hysteresis error ⁽³⁾	–	± 0.30	± 0.50	% span
Repeatability	–	± 0.1	–	% span
Input resistance	–	15.0	–	k Ω
Output resistance	–	3.0	–	k Ω
Operating temperature	-25 [-13]	–	85 [185]	°C [°F]
Storage temperature	-40 [-40]	–	125 [257]	°C [°F]
Common mode pressure	–	–	50	psi

Notes:

1. Shift is relative to 25 °C [77 °F].
2. Measured at ½ full scale rated pressure using BFSL.

XCA5 ELECTRICAL SPECIFICATIONS (At 8 Vdc Excitation, 25 °C [77 °F].)

Characteristic	Min.	Typ.	Max.	Unit
Excitation voltage	3.0	8.0	16.0	Vdc
Null XCA5 (except differential)	0.95	1.00	1.05	Vdc
Null XCA5 (differential)	2.45	3.50	3.55	Vdc
Span XCA5 (except differential)	4.90	5.00	5.10	Vdc
Span XCA5 (differential, changes with \pm pressure applied)	± 2.45	± 2.50	± 2.55	Vdc
Temperature change span 0 °C to 50 °C [32 °F to 122 °F] ⁽¹⁾	–	± 0.6	± 1.0	% span
Temperature change offset 0 °C to 50 °C [32 °F to 122 °F] ⁽¹⁾	–	± 0.6	± 1.0	% span
Linearity, hysteresis error ⁽²⁾	–	± 0.30	± 0.50	% span
Repeatability	–	± 0.1	–	% span
Input resistance	–	15.0	–	k Ω
Output resistance	–	3.0	–	k Ω
Operating temperature	-25 [-13]	–	85 [185]	°C [°F]
Storage temperature	-40 [-40]	–	125 [257]	°C [°F]
Common mode pressure	–	–	50	psi

Notes:

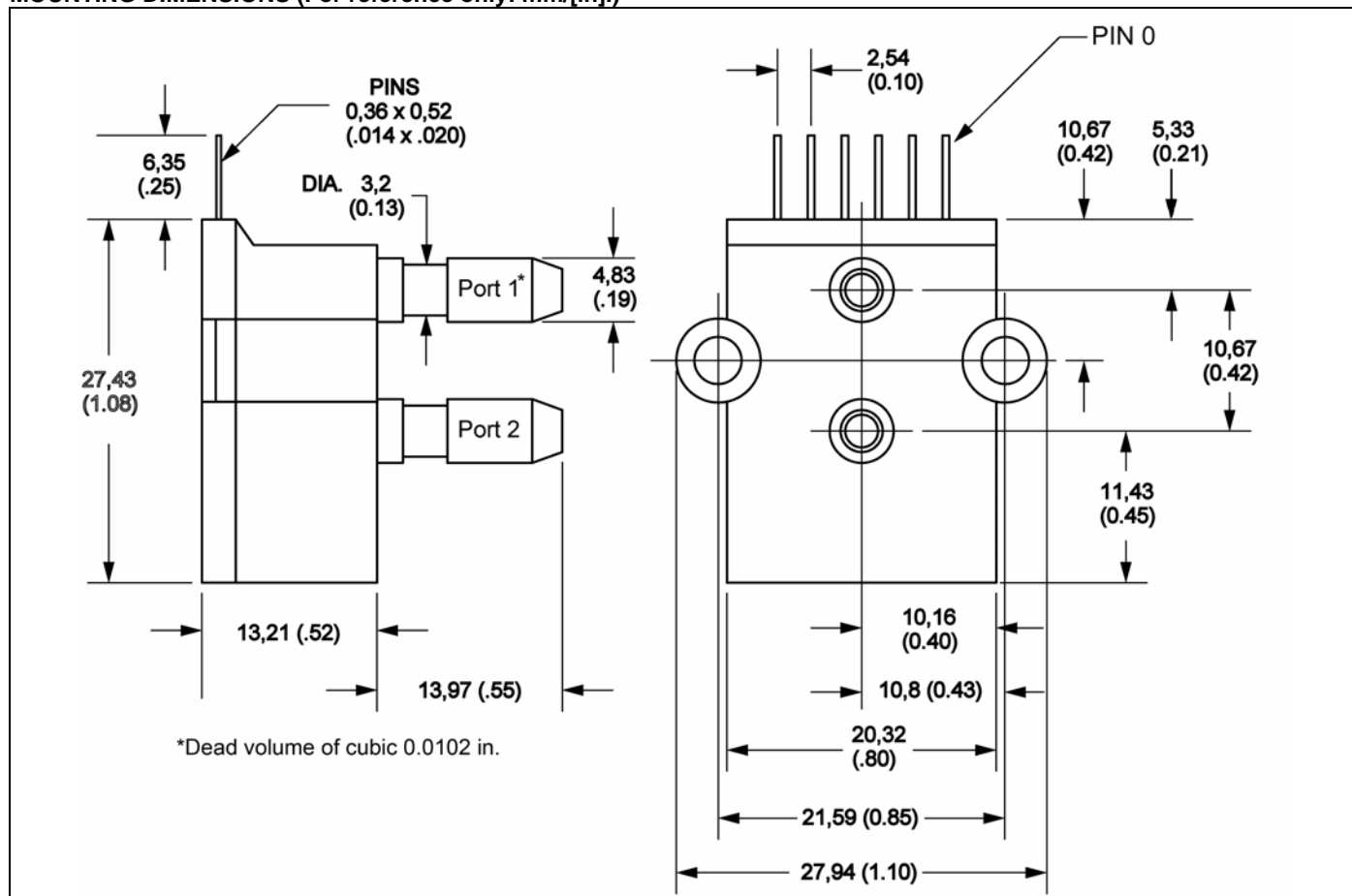
1. Shift is relative to 25 °C [77 °F].
2. Measured at ½ full scale rated pressure using BFSL.

OVERPRESSURE RATING

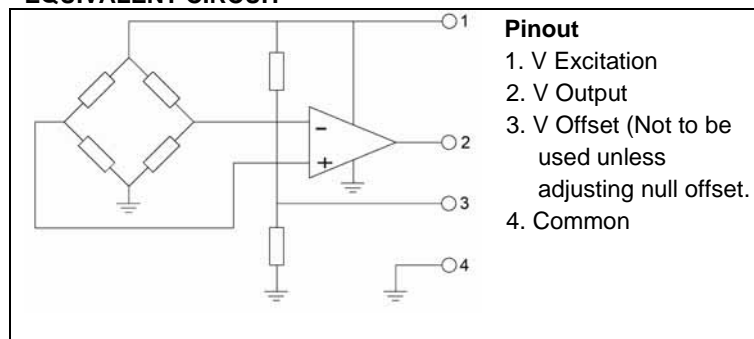
Full Scale Pressure	Overpressure (max.)
4 in H ₂ O	3 psi
10 in H ₂ O	3 psi
1 psi	3 psi
5 psi	15 psi
15 psi	45 psi
30 psi	90 psi
60 psi	180 psi
100 psi	250 psi
150 psi	250 psi

Calibrated with Ratiometric Output

MOUNTING DIMENSIONS (For reference only: mm/[in].)



EQUIVALENT CIRCUIT



MEDIA COMPATIBILITY: Clean, dry gases only

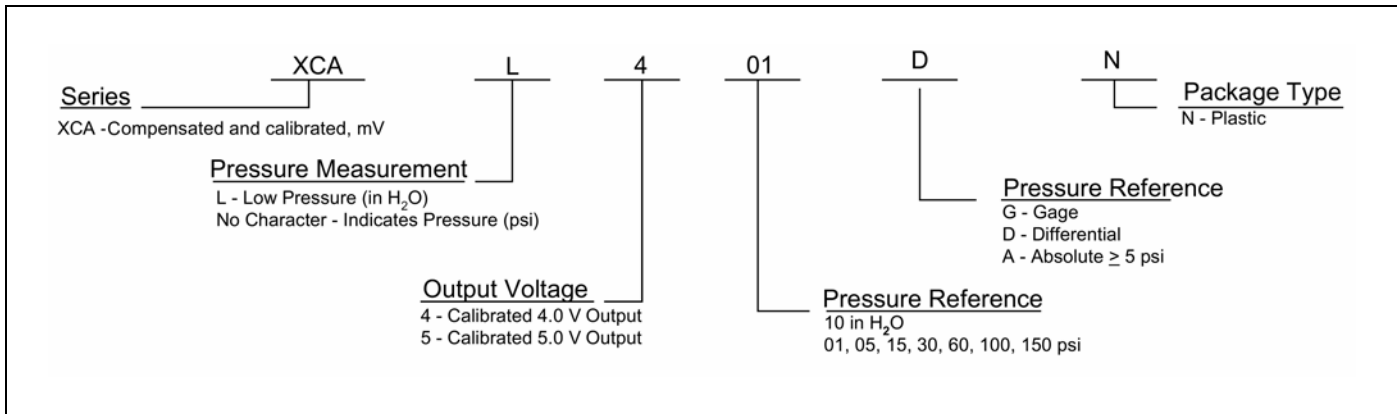
Port 1: Media must be compatible with epoxy-based adhesive.

Port 2: Media must be compatible with nylon housing, epoxy adhesive and silicon. (Port not used for absolute devices.)

PRESSURE COMPATIBILITY

- **XCA4 Gage and Absolute:** Measures gage pressure only with positive pressure to Port 2. There will be a small output voltage between the actual offset voltage and ground proportional to vacuum if applied to Port 2.
- **XCA4 Differential:** Measures differential pressure with positive pressure to Port 2 and negative pressure (vacuum) to Port 1. The offset is set to 2.25 Vdc at 0 psid. It will change slightly with changes in common mode (line) pressure.
- **XCA5 Gage and Absolute:** Measures gage pressure only with positive pressure to Port 2. There will be a small output voltage between the actual offset voltage and ground proportional to vacuum if applied to Port 2.

ORDER GUIDE



WARNING

PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

WARNING

MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

SALES AND SERVICE

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

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