26PC SERIES

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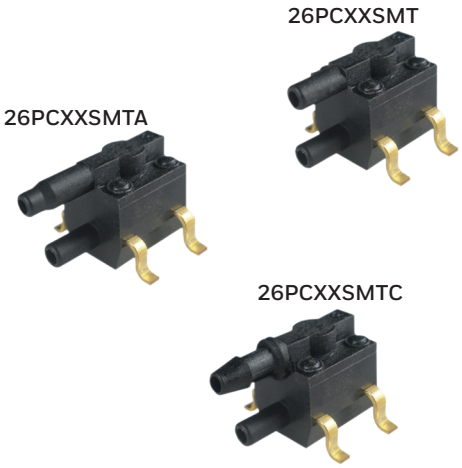
Issue B

Miniature SMT Low Pressure Sensors



DESCRIPTION

The 26PC Series Miniature Surface Mount Technology (SMT) Low Pressure Sensors are small, cost effective devices intended for use with wet/wet differential sensing. Based on the long established reliability and accuracy of the 26PC Miniature Pressure Sensor single in-line package, the SMT version's smaller configuration reduces the footprint area on the printed circuit board (PCB), thereby reducing overall PCB size and cost. The sensor is capable of being board mounted with other common SMT devices, helping to eliminate secondary board mounting operations and improving manufacturing productivity.

These sensors feature proven sensing technology that uses a specialized piezoresistive micromachined sensing element to offer high performance, reliability, and accuracy. Each sensor contains four active piezoresistors that form a Wheatstone bridge. When pressure is applied, the resistance changes and the sensor provides a milliVolt output signal that is proportional to the input pressure.

The low power 26PC sensors are designed to measure pressures from ±1 psi to ±15 psi and have an operating temperature range of -40°C to 85°C [-40°F to 185°F].

These sensors can accommodate a variety of wet and dry media that are compatible with polyphthalamide (PPA) plastics and media seals specified in the Nomenclature and Order Guide (see Figure 2). The 26PC sensors are RoHS compliant. They are designed and manufactured according to ISO 9001 standards.

DIFFERENTIATION

- Wet/wet capability (i.e., liquids on both ports)
- Media compatible with many liquids and gases
- Variety of port configurations gives the customer flexibility in making pneumatic connections
- Small size reduces PCB layout

APPLICATIONS

MEDICAL

- Respirators and ventilators
- Oxygen conservers and concentrators
- Nebulizers

INDUSTRIAL

- Water control valves
- Irrigation equipment
- Filter monitoring
- Pressure valves
- Air compressors
- Soft drink dispensing
- Breathalizers

PORTFOLIO

The 26PC Series is part of an extensive line of small, cost-effective pressure sensors. To learn more about the product, or the many other Honeywell pressure sensors in this series, click here.

FEATURES

- Allows differential liquid sensing with one sensor
- True wet/wet differential media sensing
- Wide operating temperature range of -40°C to 85°C [-40°F to 185°F]
- Variety of pressure ranges from 1 psi, 5 psi, 15 psi
- Differential and gage pressure measurement types in one package
- Reduces costs by freeing up PCB space
- Compact SMT profile
- 3,18 mm [0.125 in] diameter pick up feature
- Maximum peak temperature of 260°C [500°F] for 10 s max
- Available in SIP, DIP, and flow-through packages

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TABLE 1. ABSOLUTE MAXIMUM RATINGS[1] – COMPENSATED/AMPLIFIED

Characteristic	Minimum	Typical	Maximum	Units
Supply voltage	2.5	10	16	Vdc
Input resistance	5.5	7.5	11.5	kOhm
Output resistance	1.5	2.5	3	kOhm
Response time[2]	–	–	1	ms

1. Absolute maximum ratings are the extreme limits the device will withstand without damage.
2. Time required for the output to increase from 10% to 90% of span in response to a step change in input pressure from the specified min. to max. operating pressure.

TABLE 2. TECHNICAL SPECIFICATIONS – COMPENSATED/AMPLIFIED

Characteristic	Parameter
Operating temperature range: without EPDM seals with EPDM seals	 -40°C to 85°C [-40°F to 185°F] -20°C to 85°C [-4°F to 185°F]
Compensated temperature range	0°C to 50°C [32°F to 122°F]
Storage temperature range	-55°C to 100°C [-67°F to 212°F]
Soldering terminal temperature/time	260°C [500°F] max./10 s max.
Vibration	10 G at 20 Hz to 2000 Hz
Shock	100 G for 11 ms
Life	1 million cycles min.

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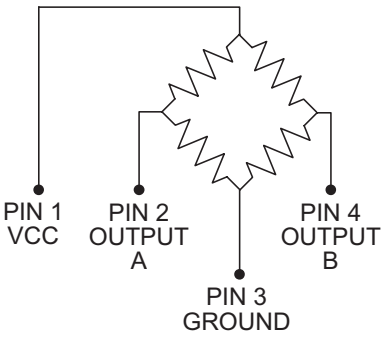
Characteristic	OPERATING PRESSURE RANGE						Unit	Note
	0 psi to 1 psi		0 psi to 5 psi Typical		0 psi to 15 psi Units			
	Typ.	Max.	Typ.	Max.	Typ.	Max.		
Span	–	16.7 ±2	–	50 ±3	–	100 ±4	mV	1
Null offset	–	0 ±2	–	0 ±2	–	0 ±2	mV	2
Linearity (Best Fit Straight Line, P2>P1)	0.5	1.75	0.5	1.5	0.5	1.0	%span	3
Null shift (0°C to 25°C; 25°C to 50°C)	–	±1.0	–	±1.0	–	±1.0	mV	4
Span shift (0°C to 25°C; 25°C to 50°C)	±1.5	±4.5	±1.0	±1.7	±0.75	±1.5	%span	5
Repeatability and hysteresis	±0.2	–	±0.2	–	±0.2	–	mV	6
Overpressure	–	20	–	20	–	45	psi	7
Maximum permissible leak Rate	–	0.1	–	0.1	–	0.1	sccm	8/9

1. Span is the algebraic difference between the output signal measured at the upper and lower limits of the operating pressure range, where Port 2 (P2) > Port 1 (P1).
2. The output signal obtained when zero pressure is applied to all available ports.
3. The maximum deviation of product output from a straight line fitted to the output measured over the specified operating pressure range, calculated according to BFSL. The straight line is fitted along a set of points that minimizes the sum of the square of the deviations of each of the points ("leastsquares" method).
4. The maximum deviation in offset due to changes in temperature over the compensated temperature range, relative to offset measured at a reference temperature of 25°C.
5. The maximum deviation in span due to changes in temperature over the compensated temperature range, relative to full-scale span measured at a reference temperature of 25°C.
6. Repeatability is the maximum difference between the output readings when the same pressure is applied consecutively, under the same operating conditions, with pressure approaching from the same direction within the specified operating pressure range. Hysteresis is the maximum difference between output readings when the same pressure is applied consecutively, under the same operating conditions, with pressure approaching from opposite directions within the specified operating pressure range.
7. Overpressure is the maximum pressure that may safely be applied to the product for it to remain in specification once pressure is returned to the operating pressure range. Exposure to higher pressures may cause permanent damage to the product. Unless otherwise specified, this applies to all available pressure ports at any temperature within the operating temperature range.
8. Maximum leakage performed at overpressure range 0.1 cc/min,
9. Leak rate measured at maximum overpressure value for each operating pressure range. Leak rate applicable to internal sensor construction only.

Figure 1. Circuit Diagram



Output "A" increases as P2 pressure increases.

Output "B" deceases as P2 pressure increases.

Symbol	Description
Vcc	Supply
OUTPUT A	Bridge positive output
GROUND	Ground
OUTPUT B	Bridge negative output

For a gauge pressure measurement the pressure port P2 should be used and port P1 left open to atmosphere.

For a differential pressure measurement the higher pressure should be connected to P2 and the lower pressure source connected to P1.

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26PC Series, Compensated/Unamplified

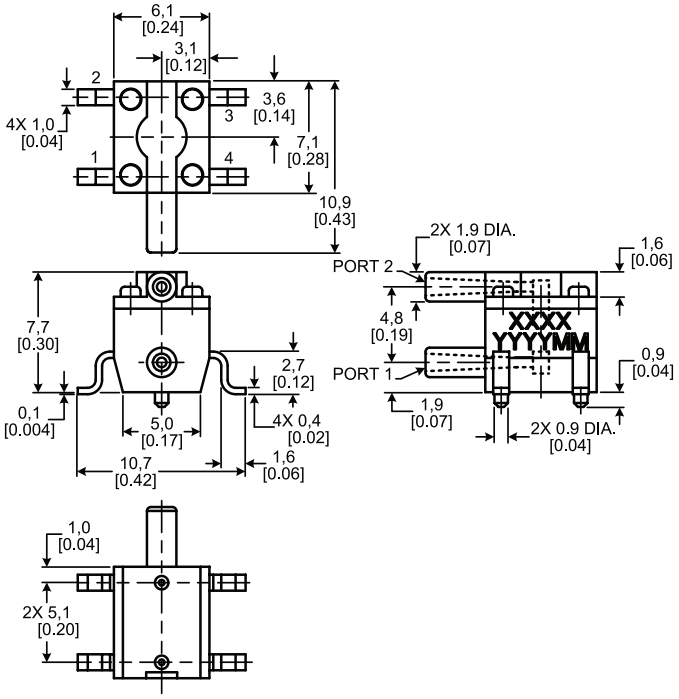
Figure 2. Nomenclature and Order Guide

26PC	01SMT	A
Product Series	Pressure Range	Port Configuration
26PC Series Miniature SMT Low Pressure Sensors with Wet/Wet Differential Sensing, Compensated/Unamplified	**01** 1 psi **05** 5 psi **15** 15 psi	**-** Port 1: Standard Port 2: Standard **A** Port 1: Standard Port 2: Special **C** Port 1: Standard Port 2: Barbed

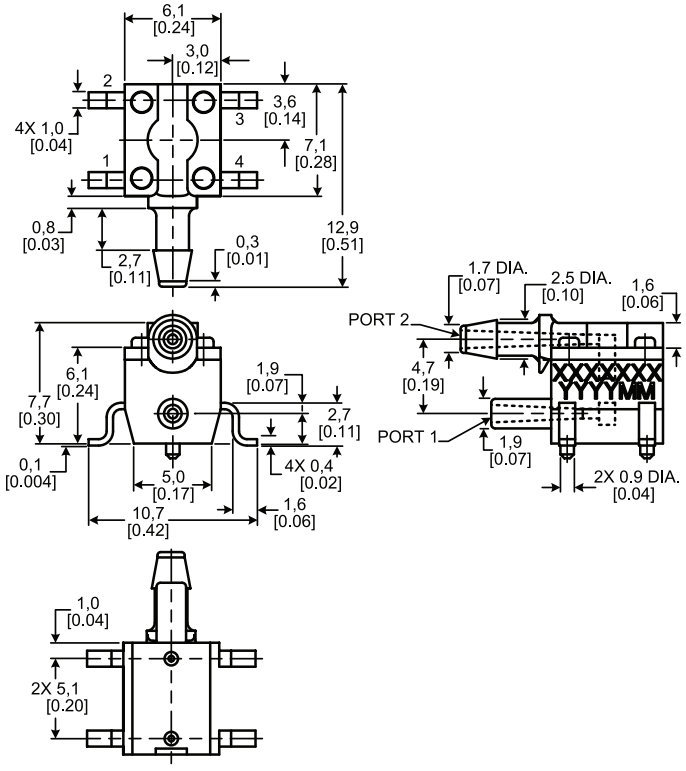
For example: a 26PC01SMTA catalog listing defines a 26PC Series Miniature SMT Low Pressure Sensor with Wet/Wet Differential Sensing, Compensated/Unamplified,1 psi pressure range, port 1 standard, and port 2 special port configuration.

Figure 3. Mounting Dimensions (For reference only: mm/[in].)

26PCXXSMT



26PCXXSMTA



Miniature SMT Low Pressure Sensors with Wet/Wet Differential

Figure 3. Mounting Dimensions (continued)

26PCXXSMTC

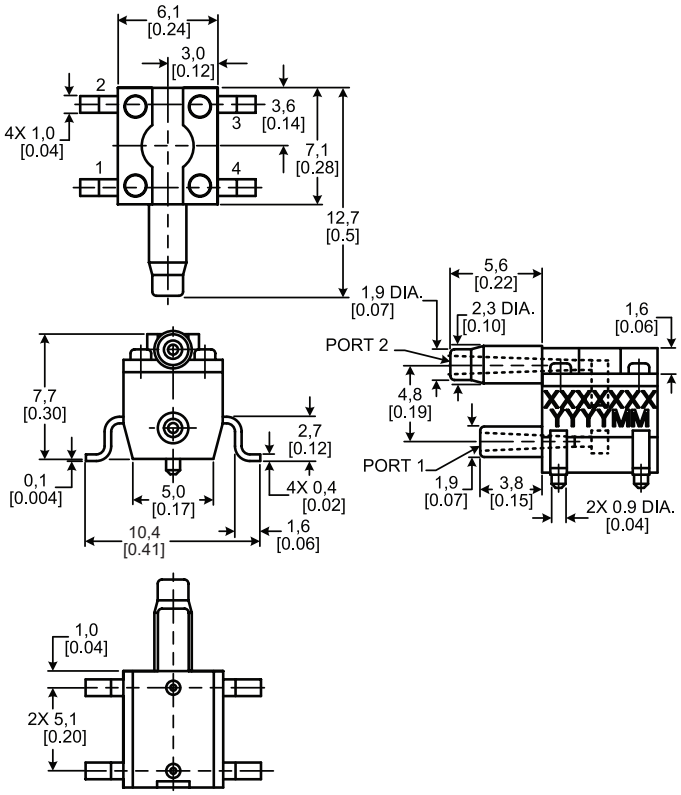
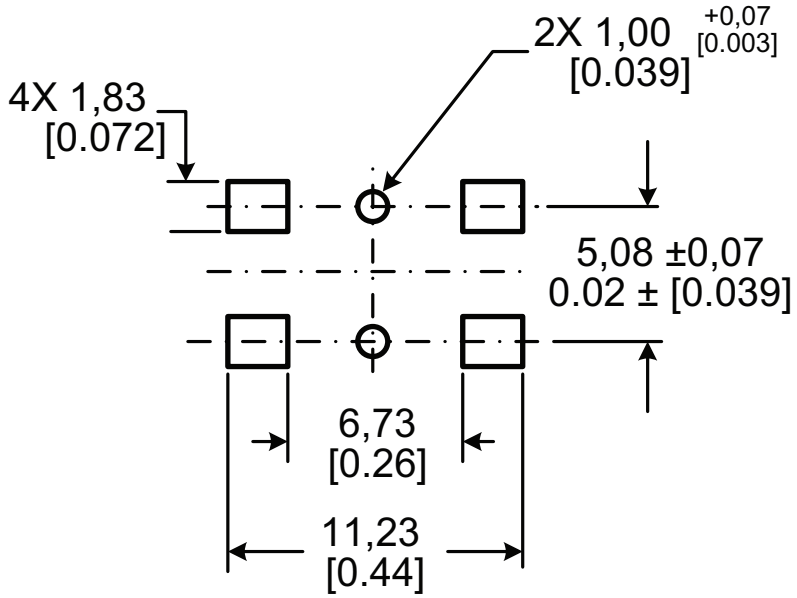


Figure 4. Recommended Land Pattern (For reference only: mm/[in].)



⚠ WARNING
IMPROPER INSTALLATION

- Consult with local safety agencies and their requirements when designing a machine-control link, interface and all control elements that affect safety.
- Strictly adhere to all installation instructions.

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

⚠ 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.

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgment 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 that Honeywell, in its sole discretion, 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.**

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