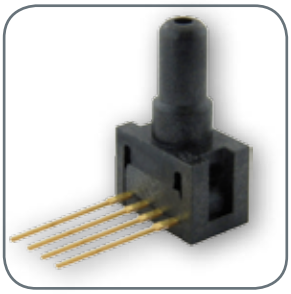
Honeywell



Miniature Low Pressure Sensors

24PC Series, Uncompensated/Unamplified

0.5 psi to 250 psi



Datasheet

Miniature Low Pressure Sensors

The 24PC Series Miniature Pressure Sensors are small, cost-effective devices intended for use with wet or dry media. 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 24PC sensors are designed to accommodate pressures from 0.5 psi to 250 psi and have an operating temperature range of -40 ºC to 85 ºC [-40 ºF to 185 ºF].

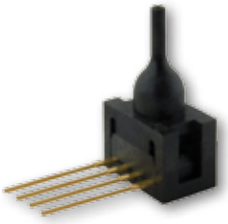
The 24PC sensors have the flexibility to be excited with constant current or constant voltage. When driven by constant current, the pressure sensor's terminal voltage will rise with increasing temperature. The rise in voltage not only temperature compensates the span but also provides an indication of the sensor's temperature.

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 24PC sensors are RoHS compliant. They are designed and manufactured according to ISO 9001 standards.

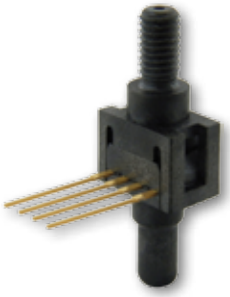
What makes our sensors better?

- Wet/Wet capability (i.e., liquids on both ports)
- Selectable seals available to match media used
- Higher pressure ranges for use in high pressure applications
- Wide variety of pressure port types
- Available in both SIP and DIP packages

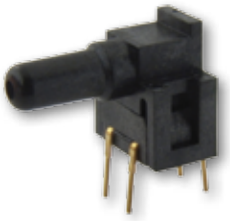
24PCXXJ6G



24PCXXH6D



24PCXXK2G



For all available configurations, see Table 4.

Features and Benefits

One sensor does the work of two!

TRUE WET/WET DIFFERENTIAL MEDIA SENSING

Provides liquid sensing in differential applications

WIDE OPERATING TEMPERATURE RANGE OF -40 ºC TO 85 ºC [-40 ºF TO 185 ºF]

Allows use in a wide variety of applications

By matching pressure ranges to the application, we optimize resolution and improve system accuracy.

VARIETY OF PRESSURE RANGES WITHIN 0.5 PSI TO 250 PSI

Provides flexibility in customers' pneumatic designs

ABSOLUTE, DIFFERENTIAL, AND GAGE MEASUREMENT TYPES

Allows customers to choose the sensor that fits their application

Gives customers greater system flexibility in their designs.

VARIETY OF PRESSURE PORT TYPES AND LEAD TERMINATIONS

Provides application flexibility

ALSO AVAILABLE IN SMT AND FLOW-THROUGH PACKAGE STYLES

Provides added design flexibility

Potential Applications



MEDICAL

OXYGEN CONENTRATORS

May be used to measure the sieve bed pressure to optimize system performance

DENTAL CHAIRS

May be used to control the pneumatic pressure in the various dental instruments

HEMODIALYSIS

May be used to monitor the correct pressure to help ensure optimum blood filtration



INDUSTRIAL

WATER CONTROL VALVES

May be used to monitor the water consumption in homes and buildings

IRRIGATION EQUIPMENT

May be used to control the water pressure and flow being delivered

FILTER MONITORING

May be used to detect when the filters are clogged and need to be replaced

PRESSURE VALVES

May be used to measure and control pressure in industrial processes



AIR COMPRESSORS

May be used to control the pressure being delivered to the end user equipment

BREATHALIZERS

May be used to measure the exhalation pressure to ensure proper breath analysis

24PC Series, Uncompensated/Unamplified

Table 1. Absolute Maximum Ratings[1]

Characteristic	Min.	Typ.	Max.	Unit	Note
Supply voltage	2.5	10	12	Vdc	–
Input resistance	4	5	6	kOhm	–
Output resistance	4	5	6	kOhm	–
Time response	–	–	1	ms	2

[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

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]
Storage temperature range	-55 °C to100 °C [-67 °F to 212 °F]
Soldering terminal temperature/time	315 °C [599 °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.

Miniature Low Pressure Sensors

Table 3. Performance Characteristics (Vcc =10.00 ±0.01 Vdc; Ta = 25 °C [77 °F])

Characteristic	Operating Pressure Range														Unit	Note
	0 psi to 0.5 psi		0 psi to 1 psi		0 psi to 5 psi		0 psi to 15 psi		0 psi to 30 psi		0 psi to 100 psi		0 psi to 250 psi			
	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.		
Span	–	35 ±10	–	45 ±15	–	115 ±30	–	225 ±60	–	330 ±90	–	225 ±69	–	212 ±68	mV	1
Null offset	–	0 ±30	–	0 ±30	–	0 ±30	–	0 ±30	–	0 ±30	–	0 ±30	–	0 ±30	mV	2
Linearity (Best Fit Straight Line, P2>P1)	±0.2	±1.0	±0.2	±1.0	±0.2	±1.0	±0.2	±1.0	±0.2	±1.0	±0.2	±1.0	±0.2	±1.0	%span	3
Null shift (0 °C to 25 °C, 25 °C to 50 °C)	±1.0	–	±1.0	–	±1.0	–	±1.0	–	±1.0	–	±1.0	–	±1.0	–	mV	4
Span shift (0 °C to 25 °C, 25 °C to 50 °C)	±5.0	–	±5.0	–	±5.0	–	±5.0	–	±5.0	–	±5.0	–	±5.0	–	%span	5
Repeatability and hysteresis	±0.5	–	±0.5	–	±0.5	–	±0.5	–	±0.5	–	±0.5	–	±0.5	–	mV	6
Overpressure	–	20	–	20	–	20	–	45	–	60	–	200	–	250	psi	7

[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 ("least-squares" method).

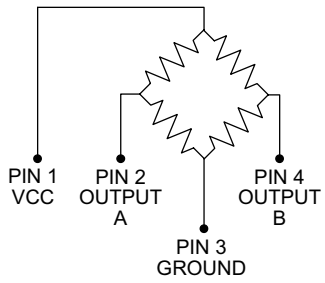
[4]The maximum deviation in offset due to changes in temperature over the compensated temperature range, relative to offset measured at a reference temperature of 25 °C.

[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.

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

24PC Series, Uncompensated/Unamplified

Figure 2. Nomenclature and Order Guide[1, 4]

For example, a **24PCBEJ6G** catalog listing defines a 24PC Series Miniature Low Pressure Sensor, Uncompensated/Unamplified, 5 psi pressure range, EPDM seal material, needle pressure port type, 1 x 4 SIP, 15,2 mm [0.60 in] long termination configuration, with normal polarity output and gage pressure measurement type.

24PC	B	E	J	2G
Product Series	Pressure Range	Seal Material	Pressure Port Type	Termination Configuration, Output, Pressure Measurement Type
24PC Series Miniature Low Pressure Sensors, Uncompensated/ Unamplified				

	Pressure Range
A	1 psi
B	5 psi
C	15 psi
D	30 psi
E	0.5 psi
F	100 psi
G	250 psi

	Seal Material
F	fluorosilicone
E	EPDM
N	neoprene[2]
S	silicone

	Pressure Port Type
A	Straight
B	Barbed
C	Luer
D	Modular
H	M5 thread port
I	90° (opposite Pin 1)
J	Needle
K	90° (toward Pin 1)
M	1/4-28 thread
S	Manifold mount
T	Long barbed

	Termination Configuration, Output, Pressure Measurement Type
6A	1 x 4 SIP, 15,2 mm [0.60 in] long, normal polarity, absolute[3]
6D	1 x 4 SIP, 15,2 mm [0.60 in] long, normal polarity, differential
6G	1 x 4 SIP, 15,2 mm [0.60 in] long, normal polarity, gage
1G	1 x 4 SIP, 10,2 mm [0.40 in] long, normal polarity, gage
2G	2 x 2 DIP, normal polarity, gage

[1]Every combination may not be possible. Contact customer service.

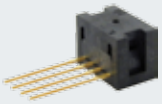
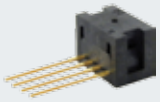
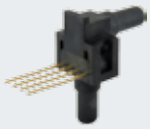
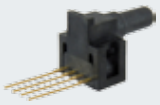
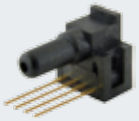
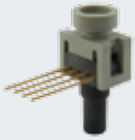
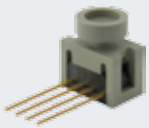
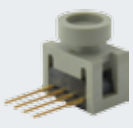
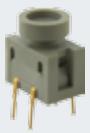
[2]Available in 0.5 psi, 1 psi, 5 psi and 15 psi pressure ranges only.

[3]Absolute pressure sensors require pressure port types A or D.

[4]Various wire harnesses with end connector options are available. Contact customer service.

Miniature Low Pressure Sensors

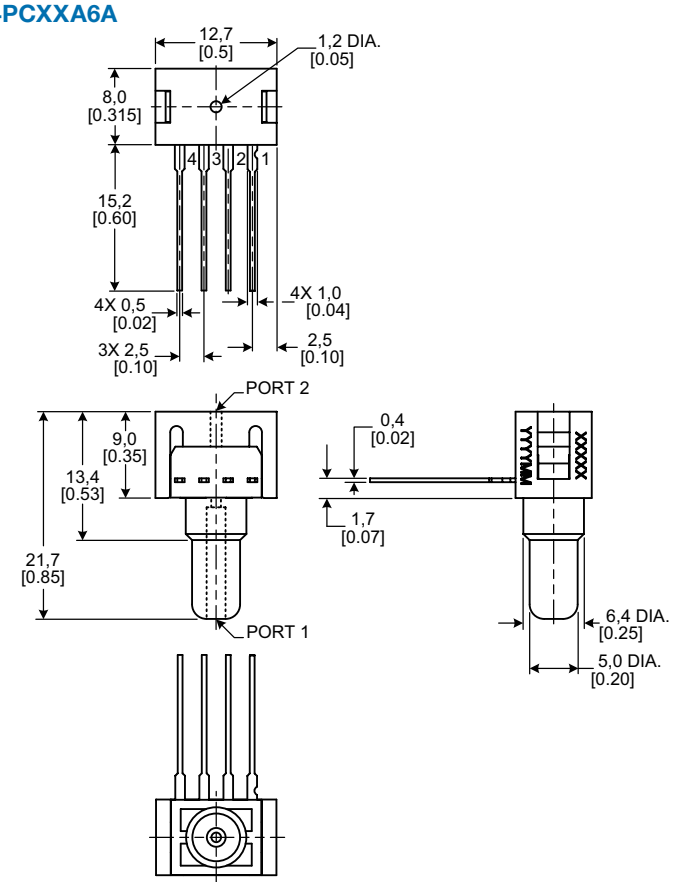
Table 4. All Available Standard Configurations (See Figure 2)

		Termination Configuration, Output, Pressure Measurement Type				
		6A	6D	6G	1G	2G
Pressure Port Type	A Straight				N/A	
	B Barbed	N/A				
	C Luer	N/A				
	D Modular				N/A	
	H M5 Thread	N/A				
	I 90° (Opposite Pin 1)	N/A			N/A	N/A
	J Needle	N/A			N/A	
	K 90° (Toward Pin 1)	N/A			N/A	
	M 1/4-28 Thread	N/A				
	S Manifold Mount	N/A				
	T Long Barbed	N/A			N/A	

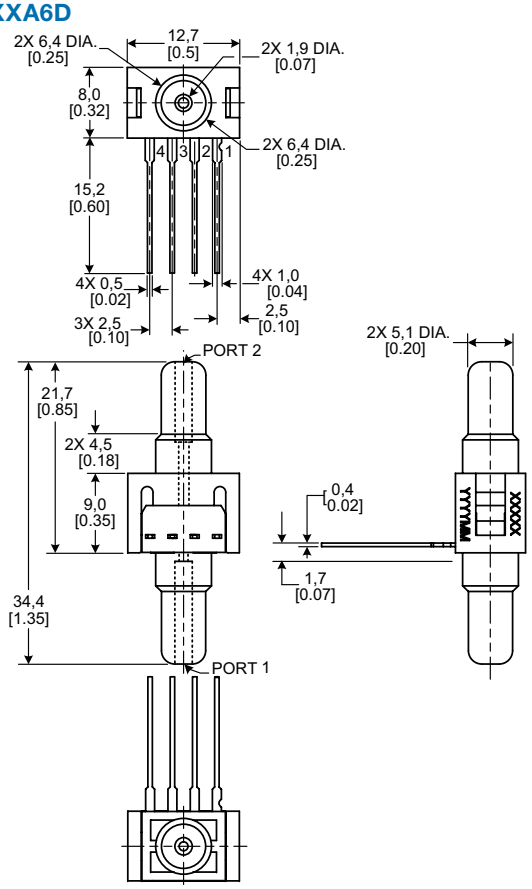
24PC Series, Uncompensated/Unamplified

Figure 3. Mounting Dimensions (For Reference Only: mm/[in].)

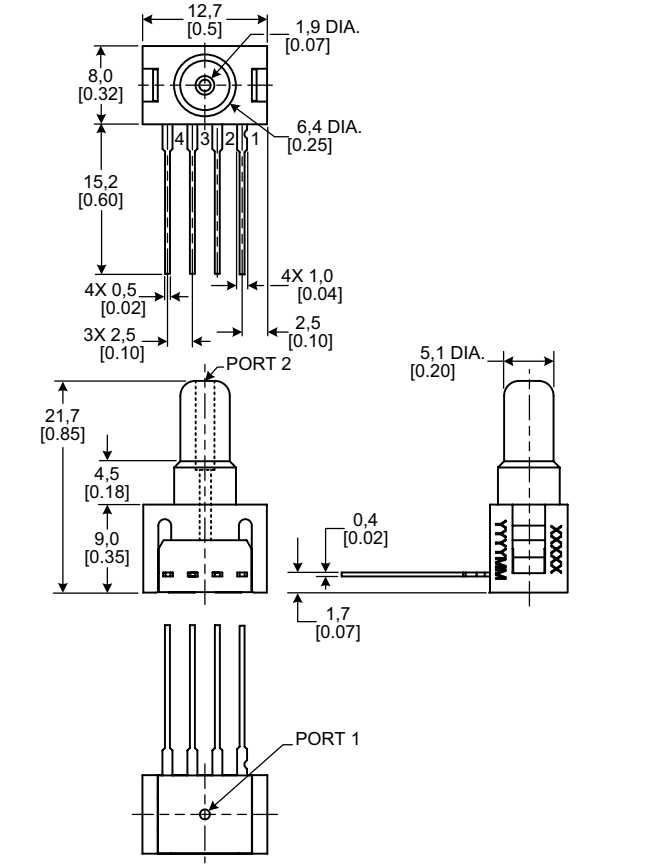
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24PCXXA6D



24PCXXA6G



24PCXXA2G

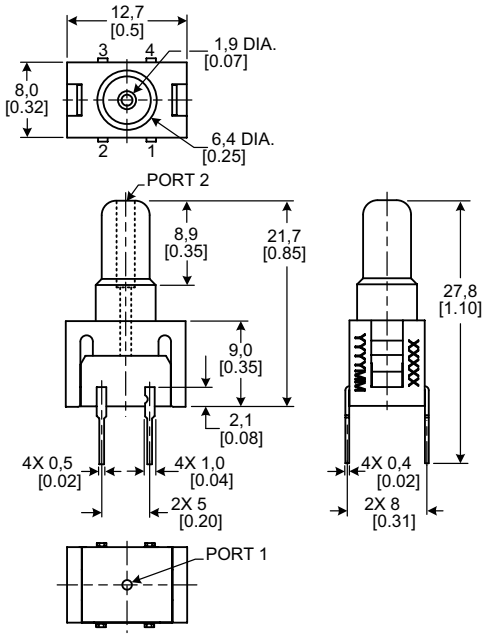
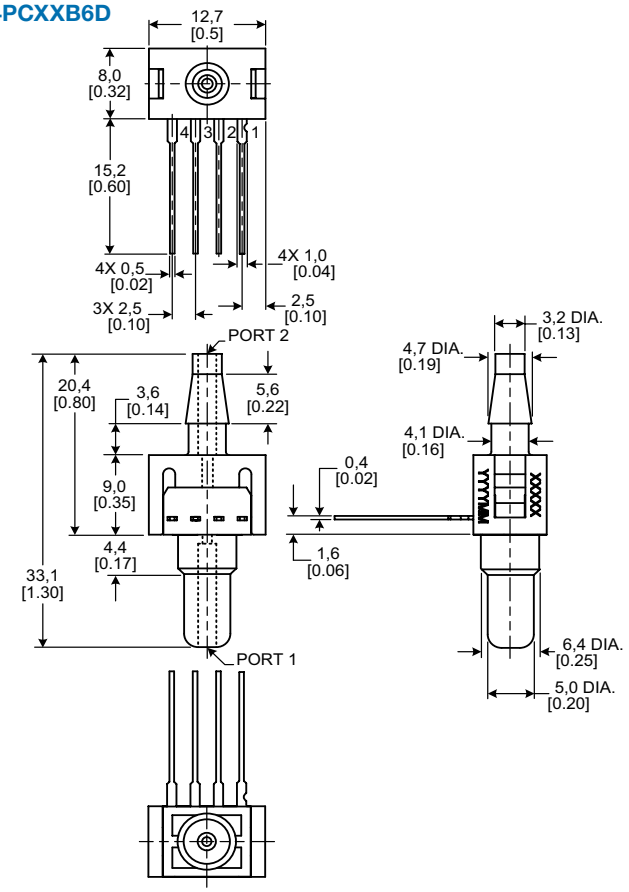
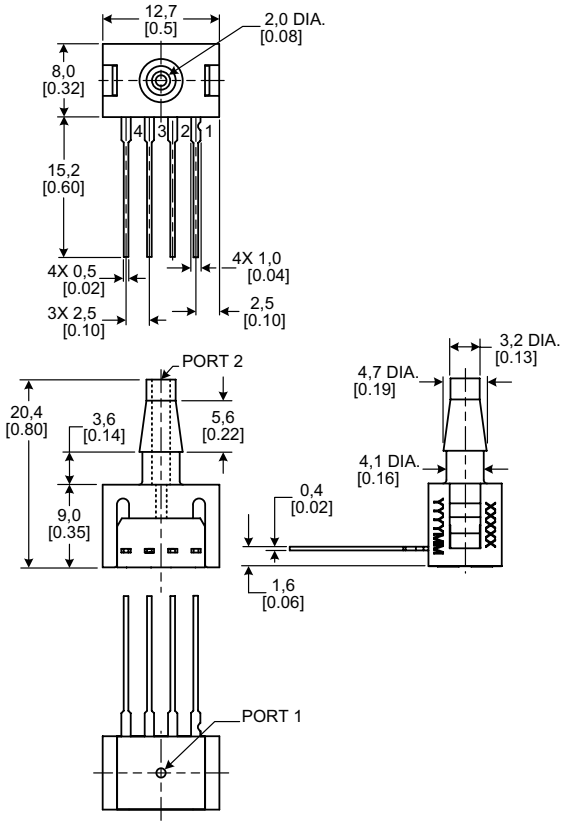


Figure 3. Mounting Dimensions (continued)

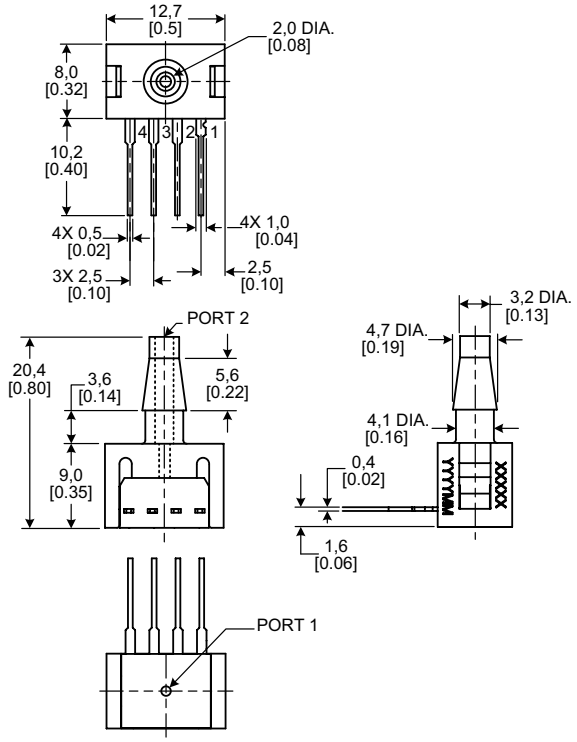
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24PCXXB6G



24PCXXB1G



24PCXXB2G

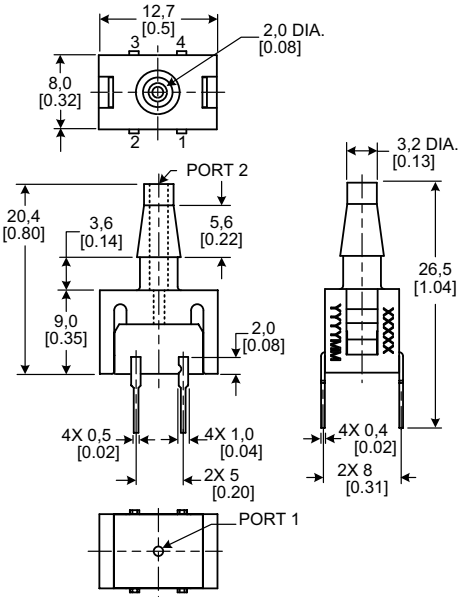
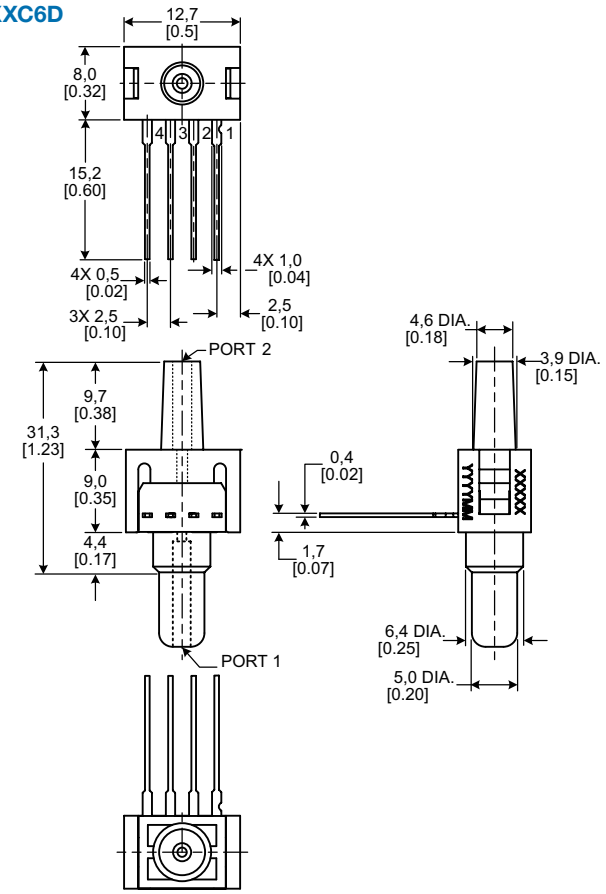
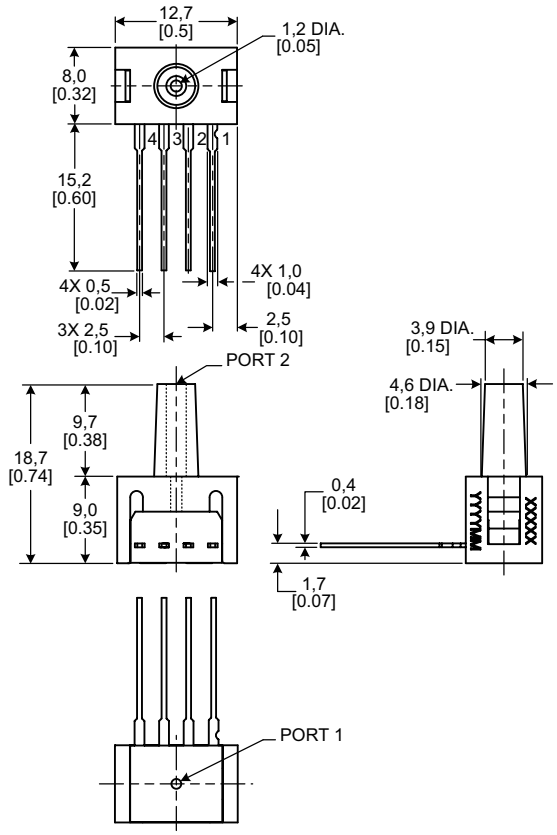


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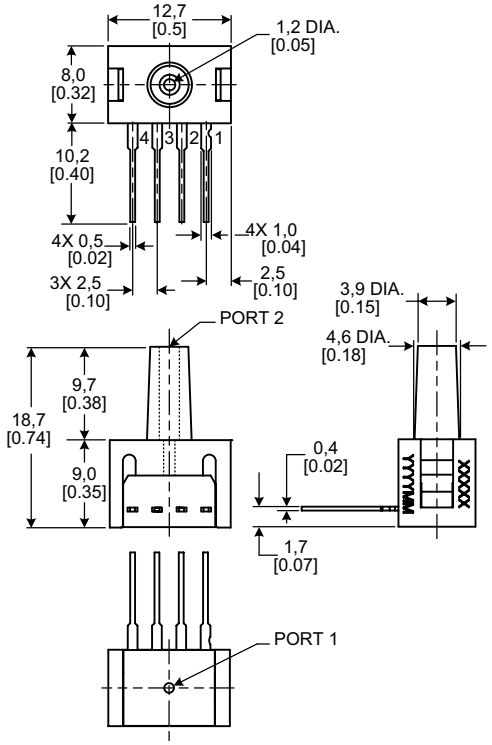
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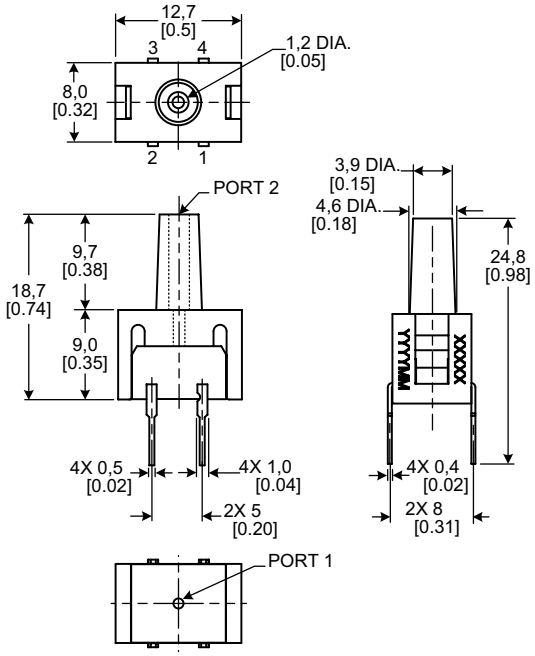
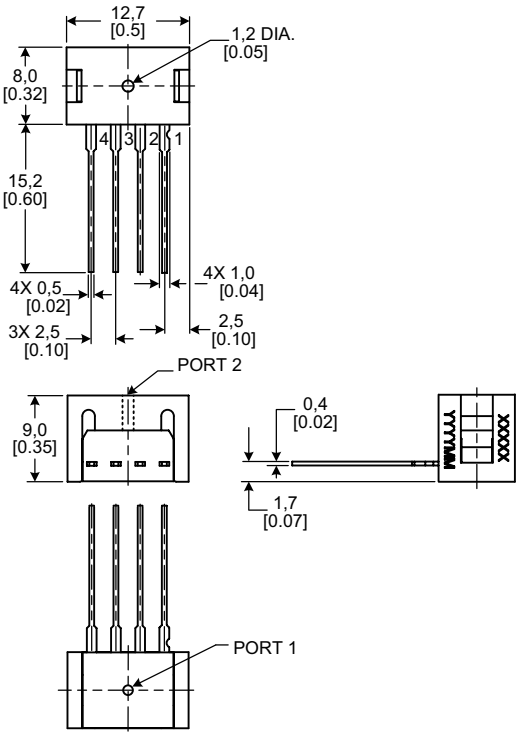
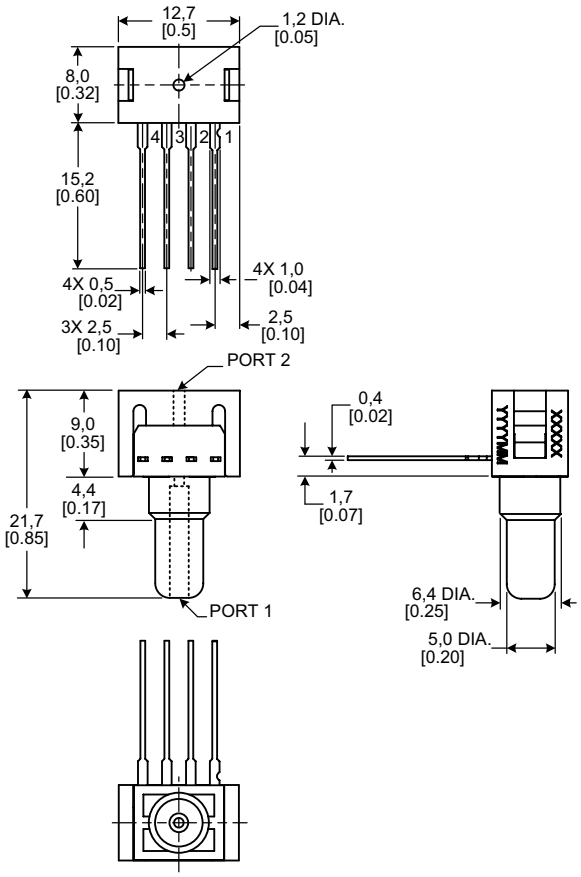


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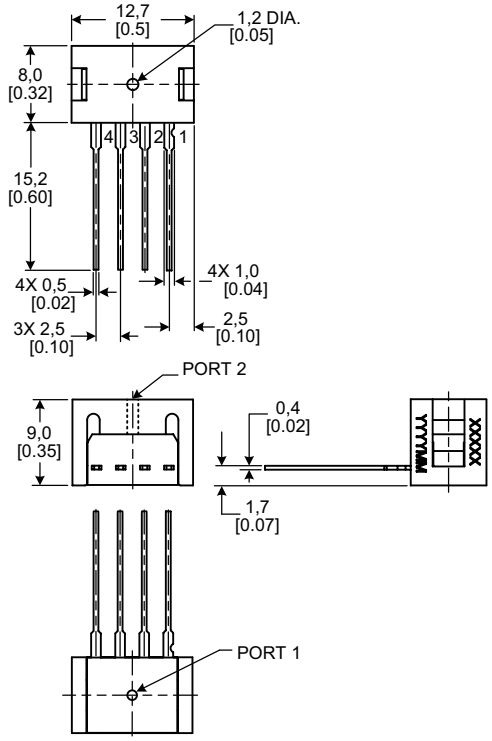
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24PCXXD6D



24PCXXD6G



24PCXXD2G

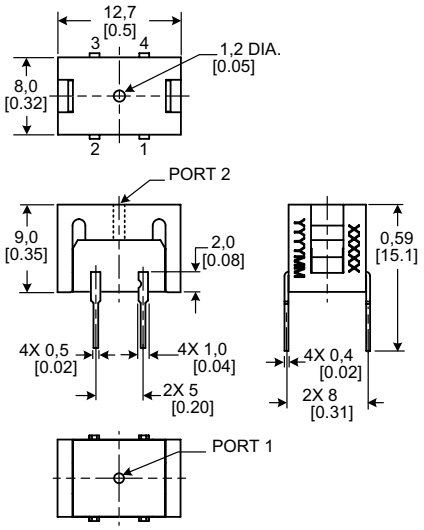
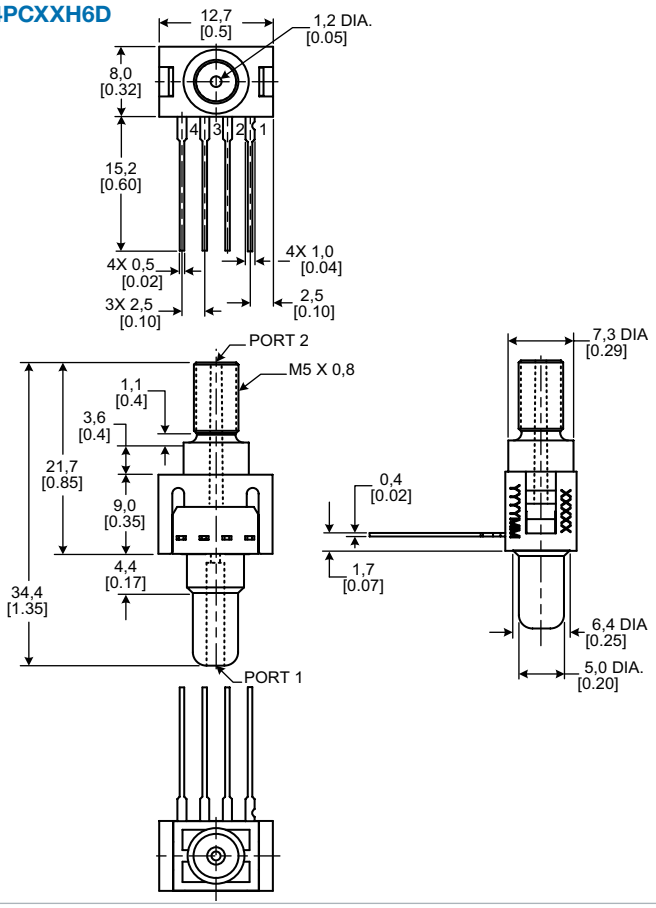
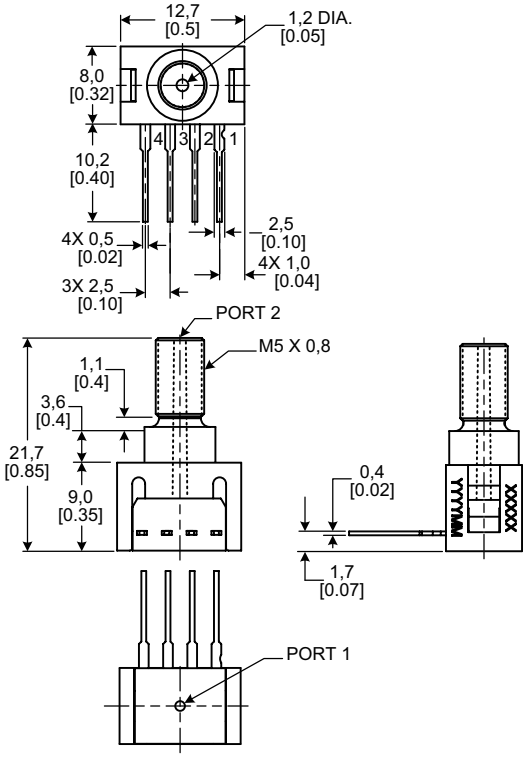


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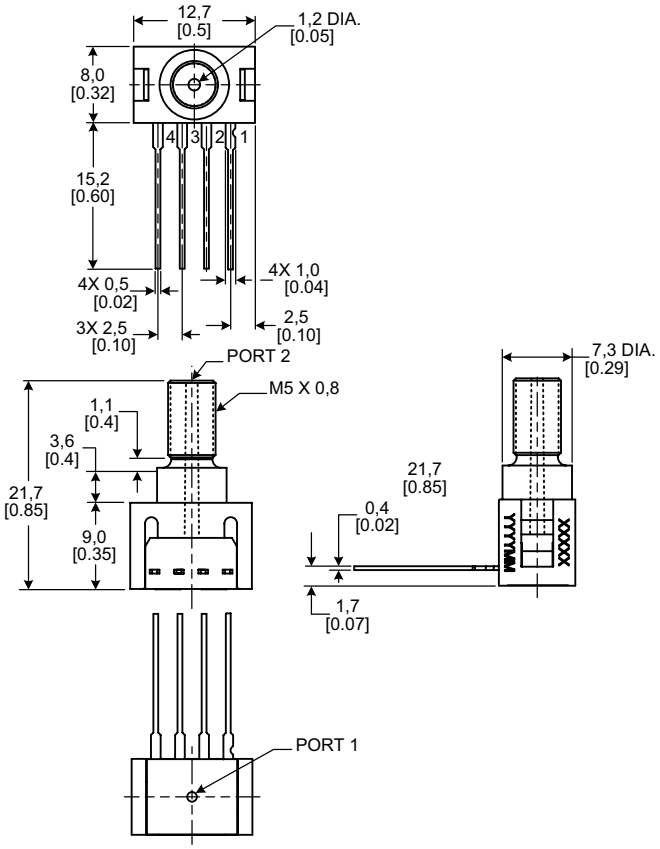
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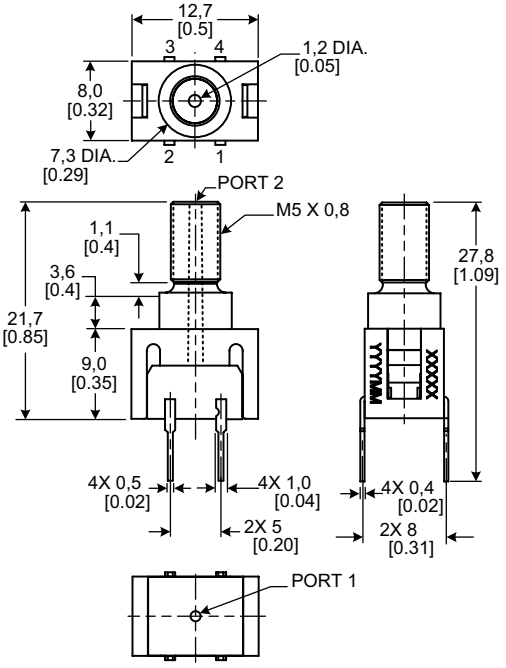
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24PCXXH1G



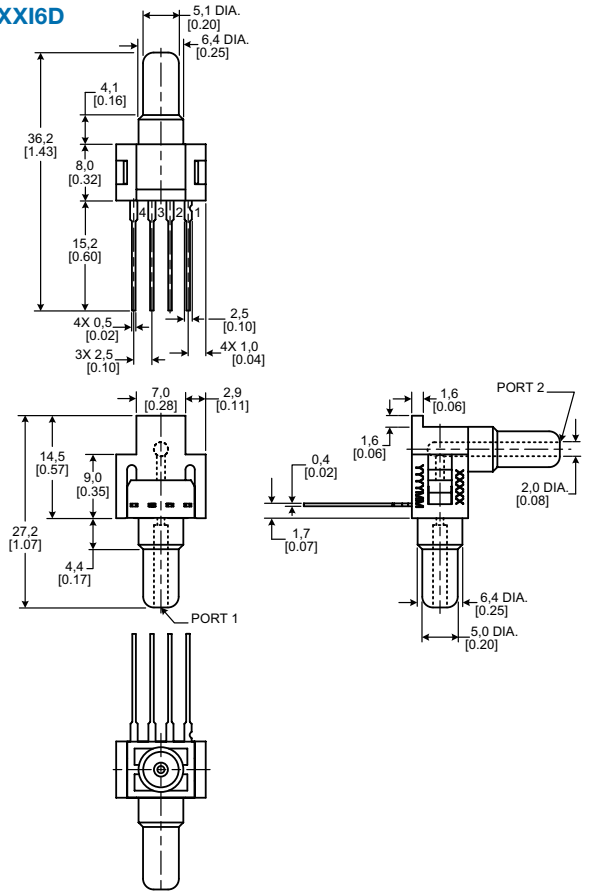
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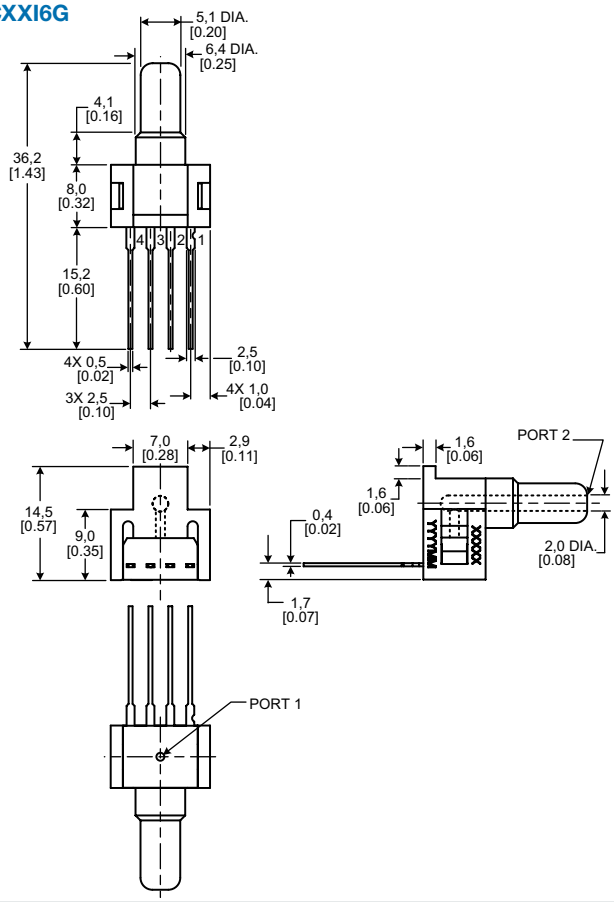
Miniature Low Pressure Sensors

Figure 3. Mounting Dimensions (continued)

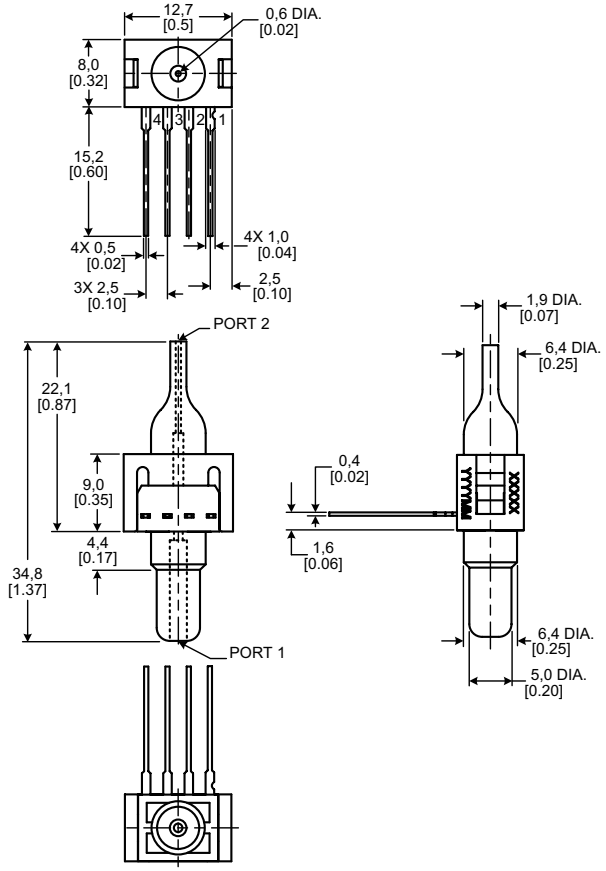
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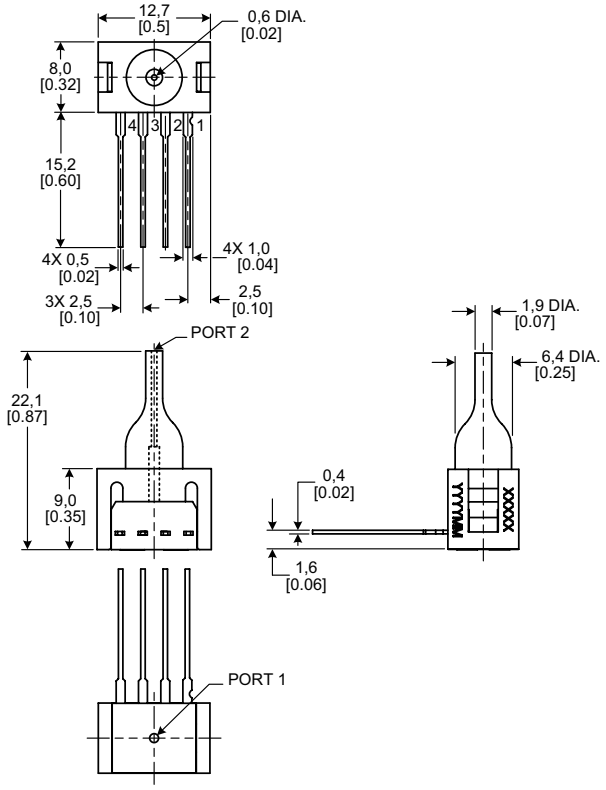
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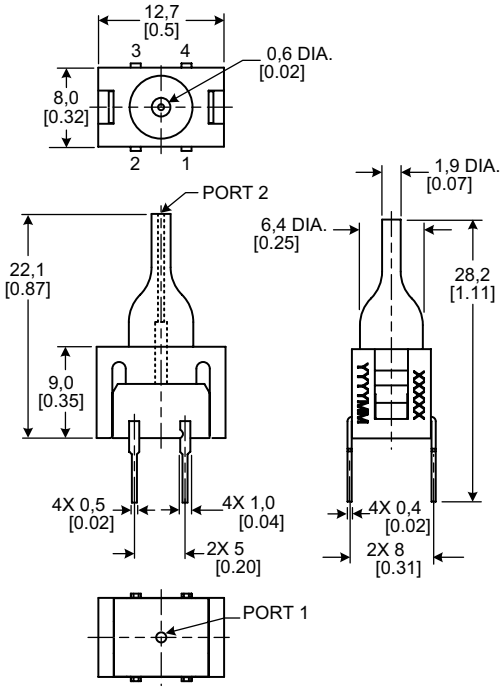
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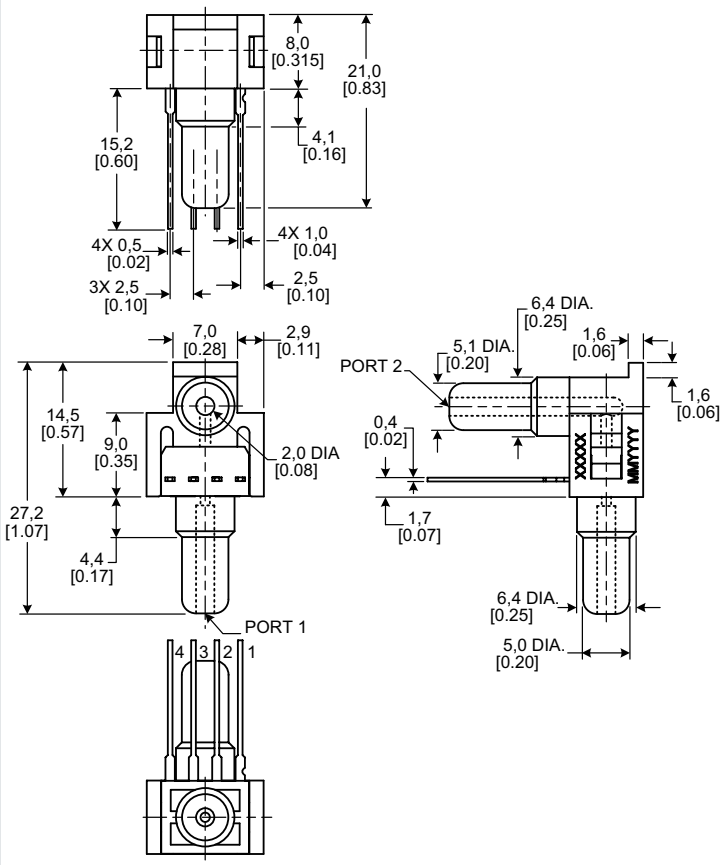
24PC Series, Uncompensated/Unamplified

Figure 3. Mounting Dimensions (continued)

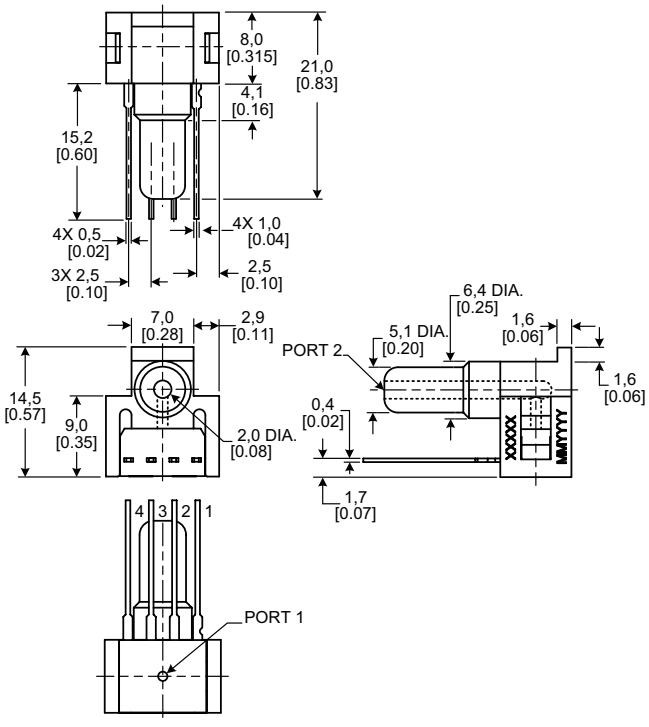
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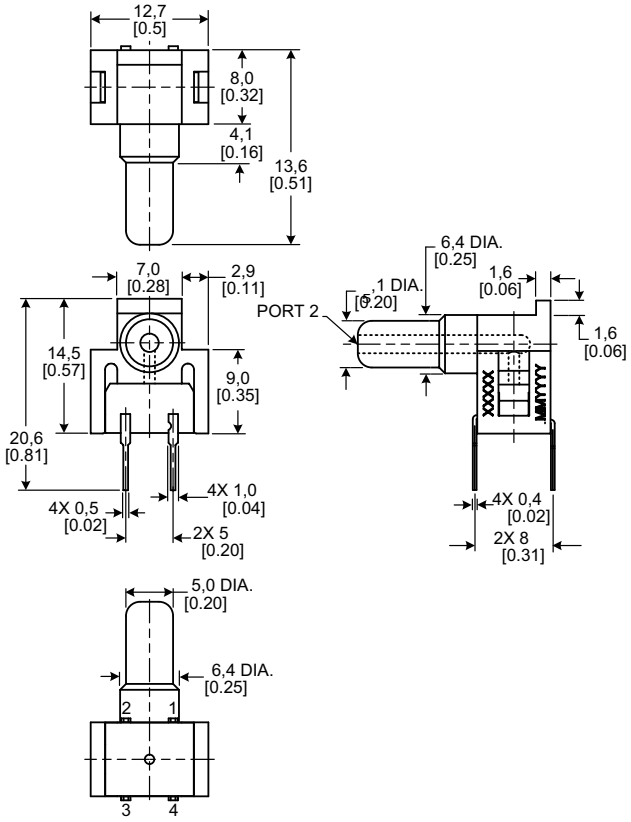
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24PCXXK6G



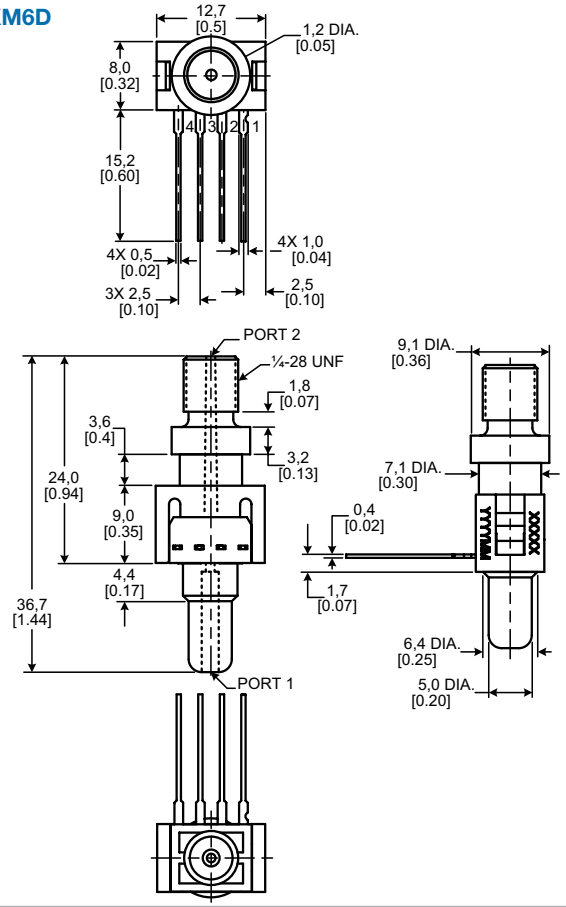
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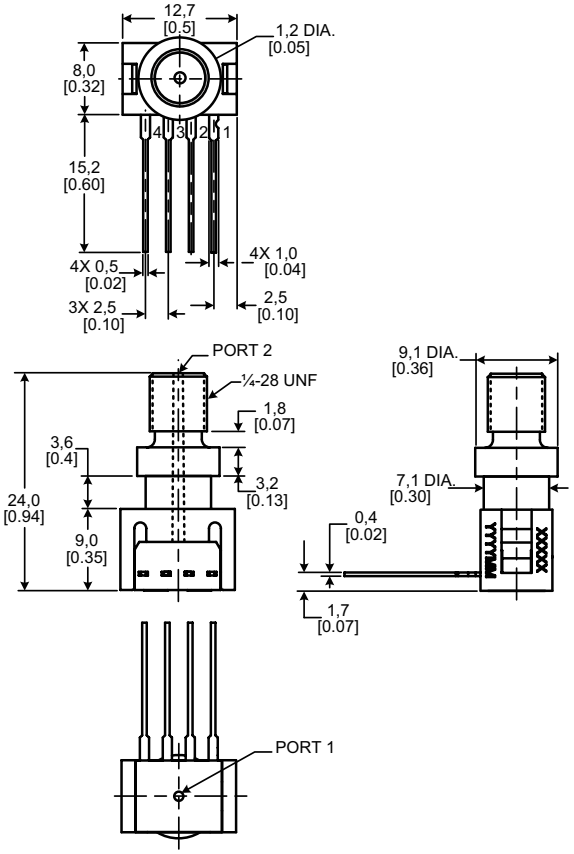
Miniature Low Pressure Sensors

Figure 3. Mounting Dimensions (continued)

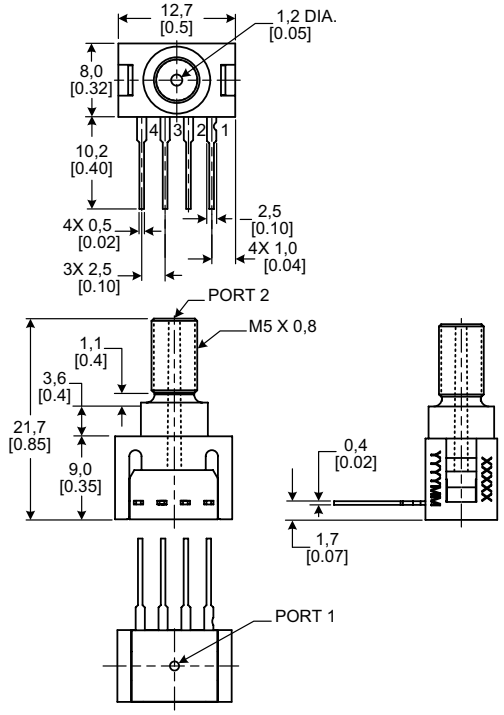
24PCXM6D



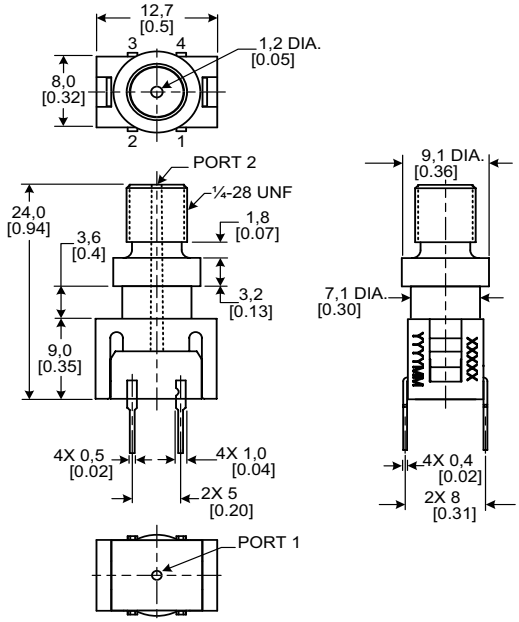
24PCXXM6G



24PCXXM1G



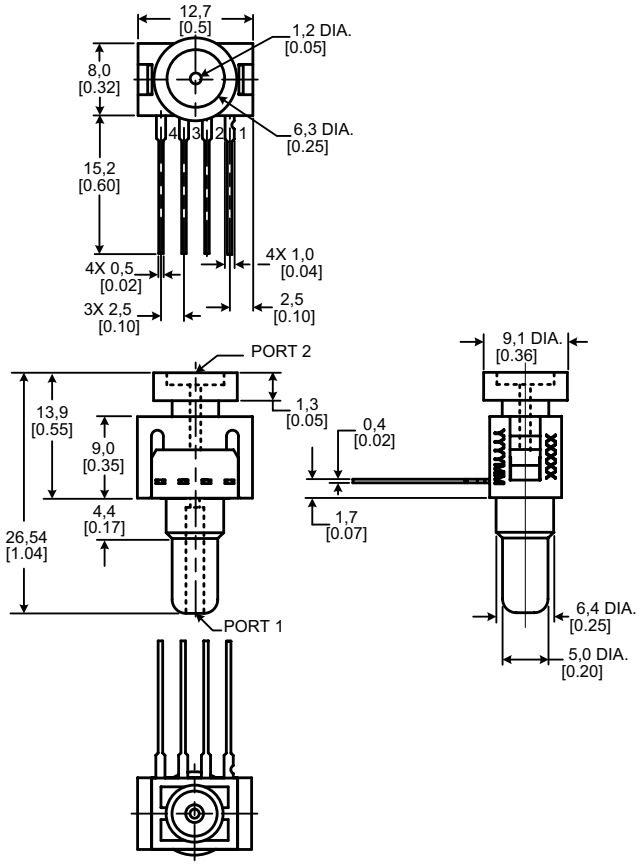
24PCXXM2G



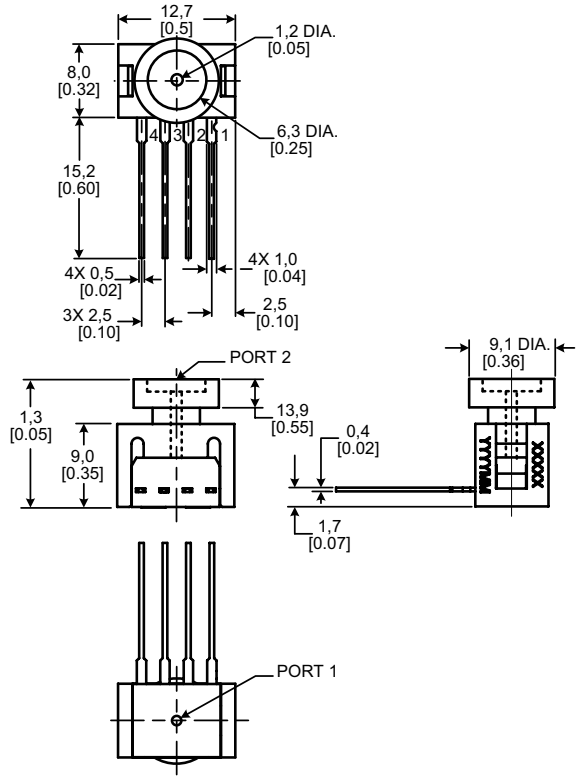
24PC Series, Uncompensated/Unamplified

Figure 3. Mounting Dimensions (continued)

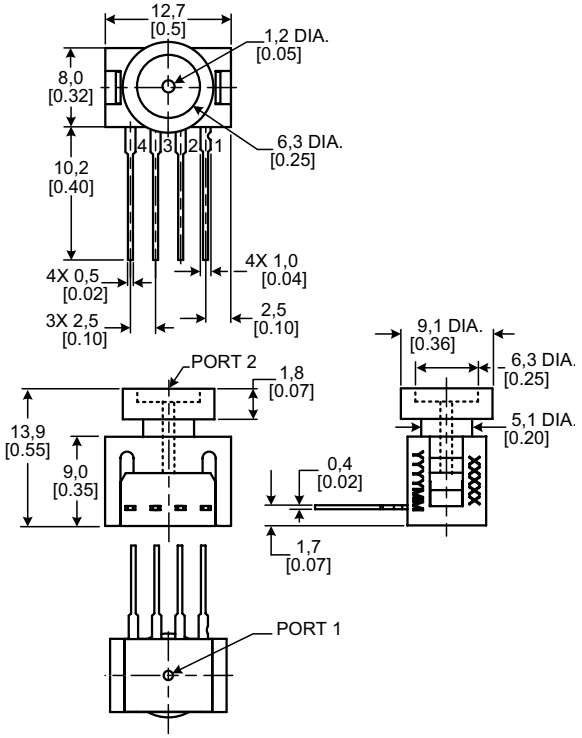
24PCXX6SD



24PCXXS6G



24PCXXS1G



24PCXXS2G

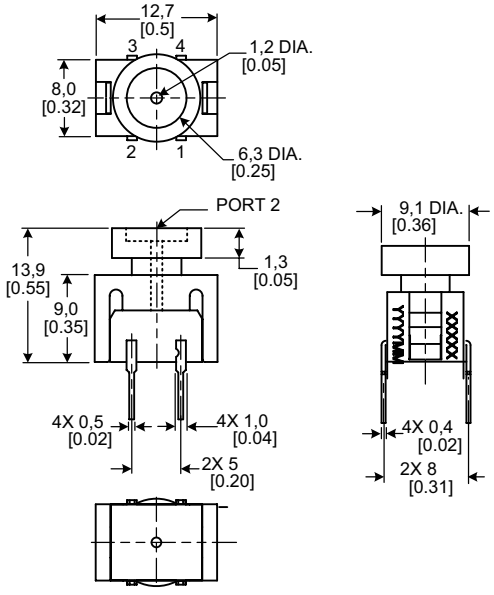
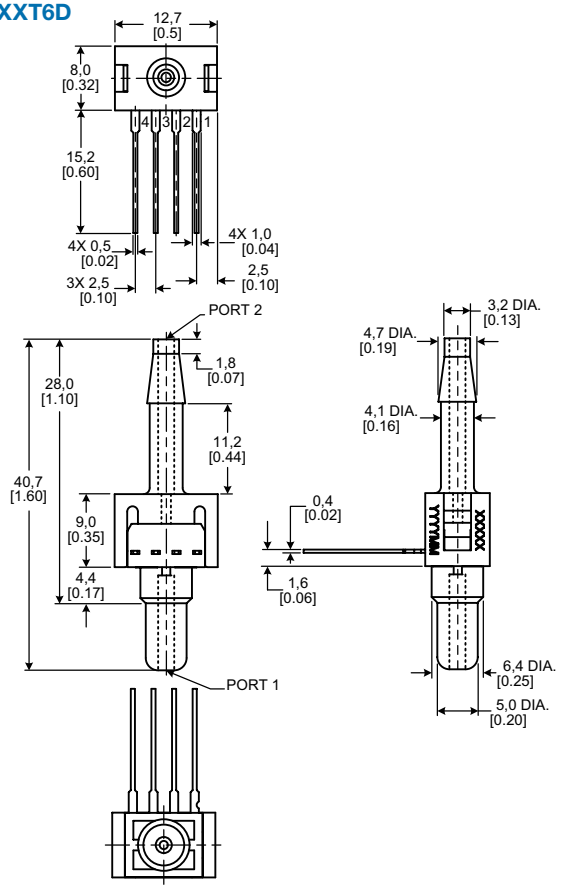
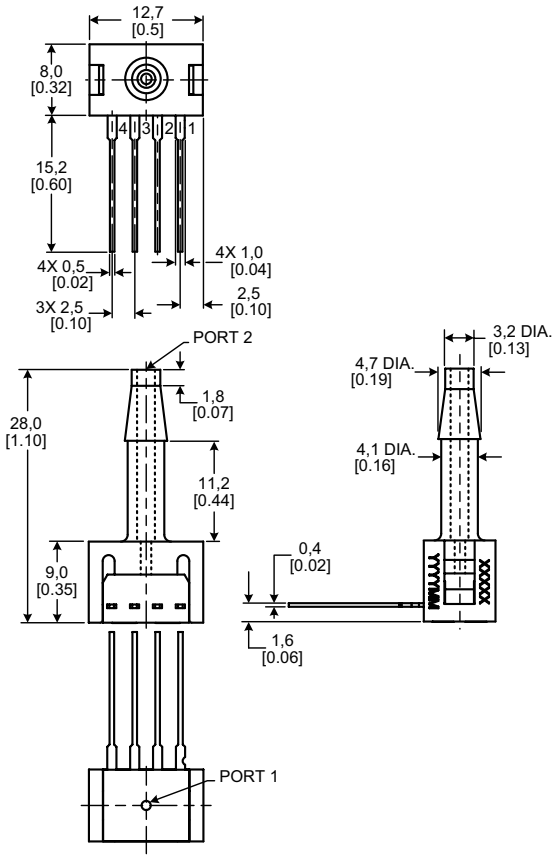


Figure 3. Mounting Dimensions (continued)

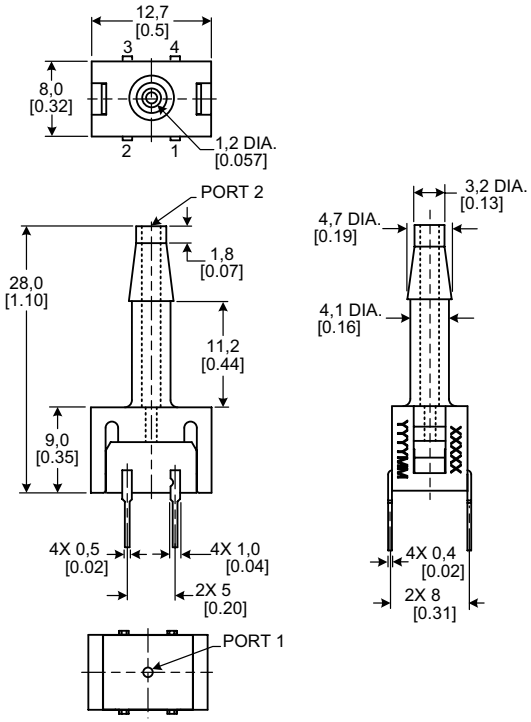
24PCXXT6D



24PCXXT6G



24PCXXT2G



ADDITIONAL INFORMATION

The following associated literature is available at sensing.honeywell.com:

- Product Line Guide
- Product Range Guide
- Product Installation Instructions
- Application-Specific Information
- Technical Notes

⚠ 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.

⚠ 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.

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