

## Configurable Pressure Transducer

Model FP5000

**008927**

Issue 1

**Datasheet**



### DESCRIPTION

The Honeywell Model FP5000 Series is a media-isolated piezoresistive silicon pressure sensor offering multiple output options (0 V to 5 V, 0 V to 10 V or 4 mA to 20 mA) for reading pressure over the specified full-scale pressure span and temperature range. It is compensated for sensor offset, sensitivity, temperature effects, and non-linearity to offer improved thermal stability and accuracy. Hastelloy® C276 and 316L stainless steel wetted parts provide durability with abrasive or corrosive media.

### VALUE TO CUSTOMERS

- Built on the Honeywell history of higher-quality pressure sensing technologies
- Next-gen design of the popular FP2000 pressure sensor
- Offers more repeatable, reliable, and accurate pressure measurements over time
- Rugged, stainless steel pressure sensors are built and tested to perform and survive in many demanding environments
- Configurable platform creates a wide range of standard configurations
- Stocked components enable shipping within 10 business days on most configurations

### FEATURES

- Pressure ranges from 10 in-H<sub>2</sub>O [0.36 psi] up to 5000 psi
- Gage and absolute pressure types
- Higher accuracy to 0.1 %FSS BFSL
- Multiple output types: 0 Vdc to 5 Vdc, 0 Vdc to 10 Vdc, 4 mA to 20 mA
- Multiple electrical and pressure connection options
- Zero adjustment through potentiometer
- Operating temperature ranges from -40°C to 125°C [-40°F to 250°F]
- Multiple compensation temperature ranges
- Faster response and higher resolution
- Fully analog reduced-noise signal path provides continuous output resolution
- Stainless steel construction
- Ha C276 and 316L stainless steel wetted parts offer more enhanced durability with abrasive or corrosive media
- CE approved

### DIFFERENTIATION

- Offers improved accuracy and reliability
- Configurable platform enables a sensor to be built to customer requirements. Simplified nomenclature and order codes makes ordering easier
- Many pressure and operating temperature range options
- Built from stocked components; most configurations are shipped within 10 business days
- Extensive history of pressure measurement know-how

### POTENTIAL APPLICATIONS

- Test stands (Automotive, Aerospace, Industrial, and Medical)
- R&D test labs
- Hydraulic and pneumatic system monitoring
- Leak detection
- Manufacturing mold pressure control
- Pump and compressor control
- Liquid level measurement

### PORTFOLIO

Model FP5000 pressure transducers are part of a comprehensive line of Honeywell pressure sensors.

# Configurable Pressure Transducer, Model FP5000

**Table 1. Performance Specifications**

Characteristic	Measure
Operating pressure ranges	Gage: 10 in-H <sub>2</sub> O [0.36 psi] to 5000 psi Absolute: 5 psi to 5000 psi Equivalent ranges are available in other pressure units also: kPa, bar, mm-Hg, in-Hg, mbar, torr, in-H <sub>2</sub> O
Accuracy <sup>1</sup>	0.2 %FSS BFSL (Standard accuracy) 0.1 %FSS BFSL (High accuracy)
Output (selectable)	0 Vdc to 5 Vdc, 0 Vdc to 10 Vdc, or 4 mA to 20 mA (two wire)
Resolution	Continuous (Fully analog signal path)

**Table 2. Environmental Specifications**

Characteristic	Measure
Temperature, operating	See Table 3 (Electrical connectors)
Temperature, compensated	See Table 4 (Temperature error band)
Temperature error band (TEB) <sup>2,3</sup>	See Table 4 (Temperature error band)
Sealing	See Table 3 (Electrical connectors)

Notes:

1. Accuracies stated are with respect to best fit straight line (BFSL) for all errors including linearity, hysteresis, and non-repeatability through zero.
2. Temperature error band (TEB) includes shift in output (zero and full scale) across compensated temperature range with respect to output observed at room temperature.
3. Temperature error band (TEB) increases pro-rata for pressure ranges below 5 psi [0.35 bar].

**Table 3. Electrical Connectors**

Connector	Temperature, operating	Sealing
PT-02A-10-6P	-40°C to 125°C [-40°F to 250°F]	IP67
DIN FORM A	-40°C to 125°C [-40°F to 250°F]	IP65
DIN FORM C	-40°C to 90°C [-40°F to 194°F]	IP65
Integral cable	-40°C to 80°C [-40°F to 176°F]	IP67

**Table 6. Electrical Specifications**

Specifications	4 mA to 20 mA (2 wire)	0 V to 5 V (3 wire) <sup>4</sup>	0 V to 10 V (3 wire) <sup>4</sup>
Input power (Voltage)	9 Vdc to 28 Vdc	9 Vdc to 28 Vdc	14 Vdc to 28 Vdc
Input power (Current)	4 mA to 24 mA	< 6 mA	< 6 mA
Output at null pressure	4 mA ±0.5 %FSS	0 V ±0.5 %FSS	0 V ±0.5 %FSS
Full scale span (FSS)	16 mA ±1 %FSS	5 V ±1 %FSS	10 V ±1 %FSS
Frequency response	3500 Hz	3500 Hz	3500 Hz
Reverse voltage protection	Yes, 28 V	Yes, 28 V	Yes, 28 V
Load impedance	< 950 Ohm @ 28 V decreasing linearly to 0 Ohm @ 9 V	> 10K Ohms	> 10K Ohms
Insulation resistance	>500 MOhm to case GND	>500 MOhm to case GND	>500 MOhm to case GND
Overvoltage protection	>32 V	>32 V	>32 V
Power up time	< 1 sec	< 1 sec	< 1 sec
Zero adjustment potentiometer	Yes, > ±5 %FS adjustment, accessible from top after demounting connector	Yes, > ±5 %FS adjustment, accessible from top after demounting connector	Yes, > ±5 %FS adjustment, accessible from top after demounting connector

**Table 4. Temperature Error Band (TEB)**

Compensated Temperature (Temp Comp) Range	TEB for standard accuracy	TEB for high accuracy
0°C to 60°C [40°F to 140°F]	< ±0.75 %FSS	< ±0.5 %FSS
-20°C to 80°C [0°F to 180°F]	< ±1.5 %FSS	< ±1 %FSS
-40°C to 85°C [-40°F to 185°F]	< ±2.25 %FSS	< ±1.5 %FSS
-40°C to 125°C [-40°F to 250°F]	< ±2.25 %FSS	< ±1.5 %FSS

**Table 5. Mechanical Specifications**

Characteristic	Measure
Media	Gas, liquid
Overload – safe	
Operating ranges ≤ 15 psi (1 bar):	6X FS
15 psi (1 bar) < Operating ranges ≤ 1000 psi (70 bar):	4X FS
1000 psi (70 bar) < Operating ranges ≤ 5000 psi (350 bar):	3X FS or 10000 psi (700 bar) whichever is less
Overload – burst	
Operating ranges ≤ 15 psi (1 bar):	10X FS
15 psi (1 bar) < Operating ranges ≤ 1000 psi (70 bar):	6X FS
1000 psi (70 bar) < Operating ranges ≤ 5000 psi (350 bar):	4X FS or 10000 psi (700 bar) whichever is less
Weight (approx.)	5.3 oz [150 g]
Wetted parts material	Ha C276 and 316L stainless steel
Labels	Laser engraved

4. **True Zero Output:** The voltage output versions have onboard circuitry that allows the output signal to swing all the way to ground (True Zero) and even a little below (~-0.2 V). This mitigates increased error at lower voltage measurements.

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Table 7. DIN Form A, DIN Form C Wiring

PIN	STANDARD		ALTERNATIVE	
	4 mA to 20mA Designation	0 V to 5 V/0 V to 10 V Designation	4 mA to 20mA Designation	0 V to 5 V/0 V to 10 V Designation
1	(+) Supply	(+) Supply	(+) Supply	(+) Supply
2	(+) Output	(+) Output	(+) Output	Supply return/ (-) Output
3	No connection	Supply return/ (-) Output	No connection	(+) Output
E	No connection	No connection	Case GND	Case GND

Table 8. PT02A-10-6P, 6-Pin Wiring

PIN	STANDARD		ALTERNATIVE	
	4 mA to 20mA Designation	0 V to 5 V/0 V to 10 V Designation	4 mA to 20mA Designation	0 V to 5 V/0 V to 10 V Designation
A	(+) Supply	(+) Supply	(+) Supply	(+) Supply
B	No connection	Supply return	(+) Output	(+) Output
C	No connection	(-) Output	No connection	No connection
D	(+) Output	(+) Output	No connection	Supply return/ (-) Output
E	No connection	No connection	No connection	No connection
F	No connection	No connection	No connection	No connection

Table 9. Integral Cable Wiring

WIRE COLOR	STANDARD		ALTERNATIVE	
	4 mA to 20mA Designation	0 V to 5 V/0 V to 10 V Designation	4 mA to 20mA Designation	0 V to 5 V/0 V to 10 V Designation
Red	(+) Supply	(+) Supply	(+) Supply	(+) Supply
Black	(+) Output	Supply return	Not available	Supply return/ (-) Output
Green	Not available	(-) Output	Not available	Not available
White	Not available	(+) Output	(+) Output	(+) Output

# Configurable Pressure Transducer, Model FP5000

Figure 1. Product Nomenclature

**NF G 1 BR , 1AK , 2AM , 5F , 6M , 7BA**

## Product Series

**NF** FP5000 pressure transducer

## Type

**G** Gage

**A** Absolute

## Accuracy

**1** 0.10 %

**2** 0.20 %

## Range

	kPa	bar	psi
<b>KD</b>	35 kPa	<b>ME</b> 1 bar	<b>AN*</b> 0.5 psi
<b>KF</b>	100 kPa	<b>MF</b> 2 bar	<b>AP*</b> 1 psi
<b>KG</b>	200 kPa	<b>NA</b> 3.5 bar	<b>AT</b> 5 psi
<b>KH</b>	300 kPa	<b>MG</b> 5 bar	<b>AV</b> 10 psi
<b>KJ</b>	700 kPa	<b>NB</b> 7 bar	<b>BJ</b> 15 psi
<b>KL</b>	1000 kPa	<b>MH</b> 10 bar	<b>BL</b> 25 psi
<b>KM</b>	1500 kPa	<b>MI</b> 20 bar	<b>BM</b> 30 psi
<b>KQ</b>	3000 kPa	<b>MJ</b> 30 bar	<b>BN</b> 50 psi
<b>KR</b>	5000 kPa	<b>NC</b> 35 bar	<b>BP</b> 75 psi
<b>KS</b>	7000 kPa	<b>MK</b> 50 bar	<b>BR</b> 100 psi
<b>KT</b>	10000 kPa	<b>ND</b> 70 bar	<b>CJ</b> 150 psi
		<b>ML</b> 100 bar	<b>CL</b> 200 psi
		<b>NE</b> 135 bar	<b>CN</b> 250 psi
		<b>MY</b> 200 bar	<b>CP</b> 300 psi
		<b>NG</b> 350 bar	<b>CQ</b> 400 psi
			<b>CR</b> 500 psi
			<b>CS</b> 600 psi
			<b>CT</b> 750 psi
			<b>CV</b> 1000 psi
			<b>DJ</b> 1500 psi
			<b>DL</b> 2000 psi
			<b>DM</b> 2500 psi
			<b>DN</b> 3000 psi
			<b>DR</b> 5000 psi

in-H <sub>2</sub> O		in-Hg	
<b>WA*</b>	10 in-H <sub>2</sub> O	<b>UG</b>	30 in-Hg
<b>WC*</b>	20 in-H <sub>2</sub> O		
<b>WE*</b>	30 in-H <sub>2</sub> O		
<b>WG*</b>	50 in-H <sub>2</sub> O		

More ranges are available.  
Please consult Honeywell for options.

\* Not available in absolute pressure type

## Calibration

5-point calibration at 77°F

**9A** 9-point calibration at 77°F

## Wiring

**7BA** Standard

**7BB** Alternative

## Electrical Connection

**6A** PT02A-10-6P, 6-pin

**6M** DIN A 43650, 4-pin

**6BO<sup>1</sup>** DIN C, 4-pin

**6Q** Integral cable, 5 feet

<sup>1</sup>Option not available yet. Coming soon.

## Pressure Port (others available)

**5A** 1/4-18 NPT female

**5B** 1/4-18 NPT male

**5D** 7/16-20 UNF male

**5F** G1/4 B female

**5G** G1/4 B male

## Output

**2AM** 4 mA to 20 mA

**2AN** 0 Vdc to 5 Vdc

**2AP** 0 Vdc to 10 Vdc

## Temperature Compensation

**1AK** 0°C to 60°C [40°F to 140°F]

**1Y<sup>1</sup>** -20°C to 80°C [0°F to 180°F]

**1AP<sup>1</sup>** -40°C to 85°C [-40°F to 185°F]

**1BA<sup>2</sup>** -40°C to 125°C [-40°F to 250°F]

<sup>1</sup> 1Y and 1AP not available for pressure ranges below 5 psi [0.35 bar]

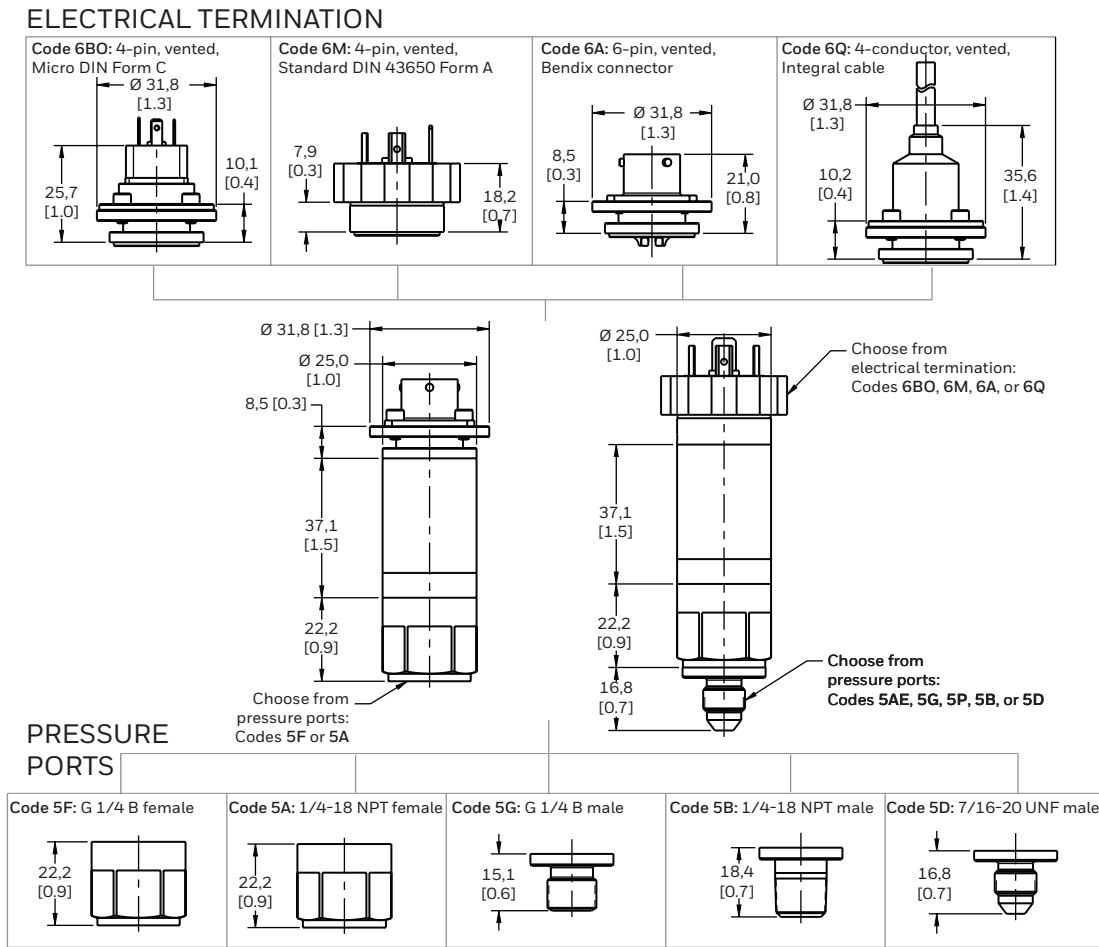
<sup>2</sup> 1BA not available for pressure ranges below 50 psi [3.5 bar]

## Sample Catalog Listings

Order Code	Description
NFA1BM,1AK,2AP,5A,6A,7BA	Model FP5000; 0.10 % accuracy; 30 psi absolute; compensated across 0°C to 60°C [40°F to 140°F]; 0 Vdc to 10 Vdc output; 1/4-18 NPT female port; PT02A-10-6P 6-pin electrical connector; standard wiring
NFG2DR,1Y,2AM,5G,6Q,7BB	Model FP5000; 0.20 % accuracy; 5000 psi gage; compensated across -20°C to 80°C [0°F to 180°F]; 4 mA to 20mA output; G 1/4 B male port; 5-ft long integral cable; alternative wiring

# Configurable Pressure Transducer, Model FP5000

Figure 2. Mounting Dimensions





## CAUTION PRODUCT DAMAGE DUE TO MECHANICAL ISSUES

- Ensure torque specifications are determined for the specific application. (Mating materials and thread sealants can result in significantly different torque values from one application to the next.)
- When using mating parts made of stainless steel, use a thread sealant with anti-seize properties to prevent thread galling. Ensure the sealant is rated for the application.
- Use appropriate tools (such as an open-ended wrench or deep-well socket) to install transducers.
- Always hand-start transducers into the hole to prevent cross threading and damage.
- Ensure that torque is not applied to the electrical connector.
- Ensure that the proper mating electrical connector with a seal is used to connect the transducer. Improper or damaged seals can compromise ingress protection, leading to short circuits.
- To ensure proper environmental sealing and electrical connections when using a connector, follow the connector manufacturer's installation guidelines.
- All terminal cavities must be sealed using the correct wire gauge and seal combination.
- If only two leads are used, any additional terminal cavities should be sealed per the connector manufacturer's installation guide.
- Honeywell recommends using a crimping tool for crimping wires to the connector terminals.
- Contact the individual connector manufacturer for connector wiring.

**Failure to comply with these instructions could result in product damage.**

### For more information

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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.**

### Warranty/Remedy

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