

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-H₂O [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 ₂ 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 ₂ O
Accuracy ¹	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) ^{2,3}	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) ⁴	0 V to 10 V (3 wire) ⁴
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.

Configurable Pressure Transducer, Model FP5000

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

in-H ₂ O		in-Hg	
WA*	10 in-H ₂ O	UG	30 in-Hg
WC*	20 in-H ₂ O		
WE*	30 in-H ₂ O		
WG*	50 in-H ₂ 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

6BO¹ DIN C, 4-pin

6Q Integral cable, 5 feet

¹Option 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]

1Y¹ -20°C to 80°C [0°F to 180°F]

1AP¹ -40°C to 85°C [-40°F to 185°F]

1BA² -40°C to 125°C [-40°F to 250°F]

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

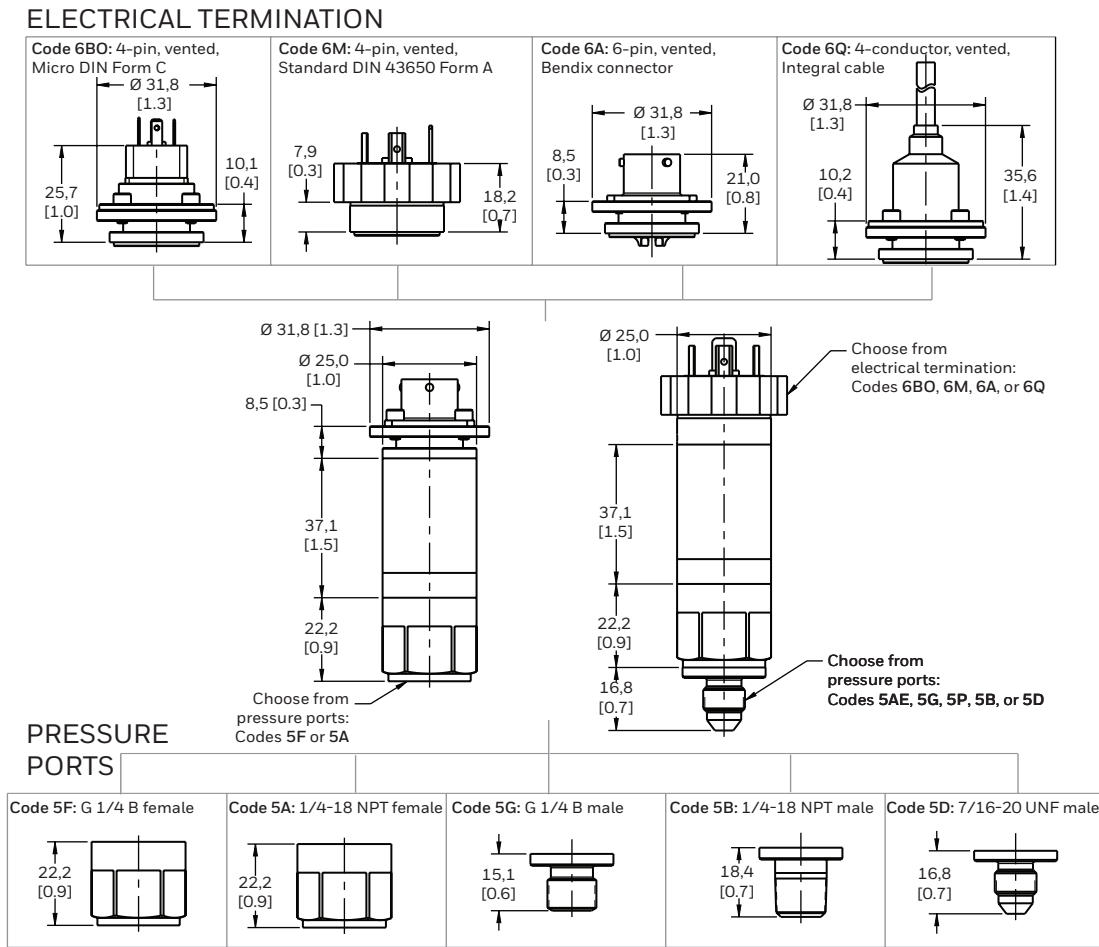
² 1BA not available for pressure ranges below 50 psi [3.5 bar]

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



STOP 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

Honeywell Sensing and Internet of Things services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing or the nearest Authorized Distributor, visit sensing.honeywell.com or call:

Asia Pacific +65 6355-2828
Europe +44 1698 481481
USA/Canada +1-800-537-6945

Honeywell Sensing and Internet of Things

9680 Old Bailes Road
Fort Mill, SC 29707
www.honeywell.com

⚠ 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.

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.**

While Honeywell may provide application assistance personally, through our literature and the Honeywell web site, it is buyer's sole responsibility 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 writing. However, Honeywell assumes no responsibility for its use.

Hastelloy® is a registered trademark of Haynes International, Inc.

008927-1-EN | 1 | 11/18
© 2018 Honeywell International Inc.

Honeywell