



**bar** **FP5000**  
High Performance Configurable Pressure Transducer

**DIFFERENTIATION**

The Model FP5000 Series is a media-isolated piezoresistive silicon pressure sensor offering multiple output options 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. stainless steel wetted parts provide durability with abrasive or corrosive media.



**DIFFERENTIATION**

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

**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
- Oil & gas process control
- Fluid flow measurement
- Valve testing

**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 ten business days on most configurations

**FEATURES**

- Pressure ranges from 10 in-H<sub>2</sub>O [0.36 psi] up to 5000 psi
- Gage, absolute, vacuum, barometric, compound, and differential wet/wet 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, 5 Vdc ±5 Vdc, 12 mA ±8 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, RoHS, REACH compliant
- Intrinsic Safety Certifications: cFMus, ATEX, IEC Ex certified 2AR option (4 mA to 20 mA)



**HIGH PERFORMANCE CONFIGURABLE PRESSURE TRANSDUCER MODEL FP5000**

Characteristic	Measure
Operating pressure ranges	Gage: 0.36 psi to 5000 psi Absolute: 5 psi to 5000 psi Vacuum: 0.36 psi to 15 psi Barometric: 0 to 30 in-Hg, 1.6 to 32 in-Hg, 26 to 32 in-Hg Compound ranges available consult factory Differential: 0.36 psi to 1000 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>1,7</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)

Characteristic	Measure
Operating temperature range	See Table 3 (Electrical connectors)
Compensated temperature range	See Table 4 (Thermal effects error band)
Thermal effects error band (TEEB) <sup>2,3</sup>	See Table 4 (Thermal effects 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. Thermal Effects Error Band - The maximum deviation in output due to changes in temperature over the entire compensated temperature range, relative to output measured at reference temperature. Includes all errors due to: Thermal Effect on Offset and Thermal Effect on Span.
3. Thermal effects error band (TEEB) increases pro-rata for pressure ranges below 5 psi [0.35 bar].
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.
5. Over pressure: The absolute maximum rating for pressure which may be safely applied to the product for it to remain in specification once pressure is returned to the operating pressure range. Exposure to higher pressure may cause permanent damage to the product.
6. Burst pressure: The maximum pressure that may be applied to the product without causing escape of the pressure media. The product should not be expected to function after exposure to any pressure beyond the rated burst pressure.
7. All specifications apply at 25°C [77°F] and under operating conditions unless otherwise noted.
8. Full Scale Span (FSS): The algebraic difference between output signal measured at the upper and lower limits of the operating pressure range. Also known as "span".
9. Offset: The output signal obtained when the reference pressure is applied to all available pressure ports. Also known as "null" or "zero".
10. Reference pressure: The pressure used as a reference (zero) in measuring product performance. Unless otherwise specified, this is vacuum (0 psia) for absolute pressure sensors and local ambient atmospheric pressure (0 psig) for gage/vacuum pressure sensors.
11. Minimum operating pressure: The lower limit of the operating pressure range.
12. Maximum line pressure: The maximum pressure that can be applied simultaneously to both ports of a Differential Pressure Sensor without causing changes in specified performance
13. Line pressure effect on zero: The change in the output at zero pressure caused by change in line pressure on both ports of differential pressure sensor.

Connector	Operating Temperature Range	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 105°C [-40°F to 221°F]	IP67
Conduit fitting	-40°C to 105°C [-40°F to 221°F]	IP67
M12 x 1, 4-pin	-40°C to 85°C [-40°F to 185°F]	IP67

Compensated Temperature Range	For Standard Accuracy	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

Characteristic	Measure
Media	Gas, liquid
Weight (approx.) – gage, absolute, vacuum, barometric, compound	150 g [5.3 oz]
Weight (approx.) – differential	300 g [10.6 oz]
Wetted parts material	Ha C276 and 316L stainless steel
Labels	Laser engraved
Maximum allowed line pressure <sup>12</sup>	
Operating range < 15 psi (1 bar):	50 psi
15 psi (1 bar) < Operating range ≤ 50 psi (3.5 bar):	250 psi
50 psi (3.5 bar) < Operating range ≤ 250 psi (17 bar):	Pressure range: +500 psi
250 psi (17 bar) < Operating range ≤ 1000 psi (70 bar):	Pressure range: +1000 psi
Line pressure effect on zero <sup>13</sup>	
Operating range < 15 psi (1 bar):	±1 % FSS
15 psi (1 bar) < Operating range ≤ 50 psi (3.5 bar):	±1 % FSS
50 psi (3.5 bar) < Operating range ≤ 250 psi (17 bar):	±1.5 % FSS
250 psi (17 bar) < Operating range ≤ 1000 psi (70 bar):	±1.5 % FSS



**CONFIGURABLE PRESSURE TRANSDUCER, MODEL FP5000**

**TABLE 6. ELECTRICAL SPECIFICATIONS<sup>7</sup>**

Specifications	2AM, 2AR† 4 mA to 20 mA	2AY‡ 12 mA ±8 mA	2AN 0 V to 5 V	2AP 0 V to 10 V	2AW 5 V ±5 V
Supply voltage	9 Vdc to 28 Vdc		9 Vdc to 28 Vdc	14 Vdc to 28 Vdc	
Current consumption	4 mA to 24 mA		< 6 mA		
Output at reference pressure <sup>10</sup> - (absolute, gage, vacuum, differential)	4 mA ±0.5 %FSS	12 mA ±0.5 %FSS	0 V ±0.5 %FSS	0 V ±0.5 %FSS	5 V ±0.5 %FSS
Output at minimum operating pressure <sup>11</sup> - (compound, barometric)					
Full scale span (FSS) <sup>8</sup>	16 mA ±1 %FSS	16 mA ±1 %FSS	5 V ±1 %FSS	10 V ±1 %FSS	10 V ±1 %FSS
Frequency response	3500 Hz				
Reverse voltage protection	Yes, 28 V				
Load impedance	< 950 Ohm at 28 V decreasing linearly to 0 Ohm at 9 V		> 10K Ohms		
Insulation resistance	>500 MOhm to case GND at 33 V				
Overvoltage protection	>32 V				
Power up time	< 1 sec				
Zero adjustment potentiometer	Yes, > ±5 %FS adjustment, accessible from top after demounting connector				

† 2AR not available for differential pressure sensing

‡ 2AY and 2AW are available only for bi-directional differential pressure sensing

**TABLE 7. OVERPRESSURE AND BURST PRESSURE RATINGS**

Pressure type /Port	Operating Range	Over Pressure	Burst Pressure
Gage, absolute, vacuum, barometric, compound, differential version positive (high side)	≤ 15 psi (1 bar)	6X FS	10X FS
	15 psi to 1000 psi (1 bar to 70 bar)	4X FS	6X FS
	> 1000 psi (70 bar)	3X FS or 10,000 psi (700 bar) whichever is less	4X FS or 10,000 psi (700 bar) whichever is less
Differential version negative (low side) with respect to positive (high side)	≤ 15 psi (1 bar)	6 X	10X
	15 psi to 1000 psi (1 bar to 70 bar)	4X FS or 250 psi whichever is less	6X FS or 500 psi whichever is less



**CONFIGURABLE PRESSURE TRANSDUCER, MODEL FP5000**

**TABLE 8. DIN FORM A (6M), DIN FORM C (6B0) WIRING**

PIN	STANDARD		ALTERNATIVE	
	4 mA to 20 mA / 12 mA ±8 mA (2AM, 2AR, 2AY)	0 V to 5 V/0 V to 10 V/ 5 V ± 5 V (2AN, 2AP, 2AW)	4 mA to 20 mA / 12 mA ±8 mA (2AM, 2AR, 2AY)	0 V to 5 V/0 V to 10 V/5 V ± 5 V (2AN, 2AP, 2AW)
	Designation	Designation	Designation	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 9. PT02A-10-6P, 6-PIN (6A) WIRING**

PIN	STANDARD		ALTERNATIVE	
	4 mA to 20 mA / 12 mA ±8 mA (2AM, 2AR, 2AY)	0 V to 5 V/0 V to 10 V/ 5 V ± 5 V (2AN, 2AP, 2AW)	4 mA to 20 mA / 12 mA ±8 mA (2AM, 2AR, 2AY)	0 V to 5 V/0 V to 10 V/5 V ± 5 V (2AN, 2AP, 2AW)
	Designation	Designation	Designation	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 10. INTEGRAL CABLE (6Q), CONDUIT FITTING (6R) WIRING**

PIN	STANDARD		ALTERNATIVE	
	4 mA to 20 mA / 12 mA ±8 mA (2AM, 2AR, 2AY)	0 V to 5 V/0 V to 10 V/ 5 V ± 5 V (2AN, 2AP, 2AW)	4 mA to 20 mA / 12 mA ±8 mA (2AM, 2AR, 2AY)	0 V to 5 V/0 V to 10 V/5 V ± 5 V (2AN, 2AP, 2AW)
	Designation	Designation	Designation	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

**TABLE 11. M12 X 1, 4-PIN (6BJ) WIRING**

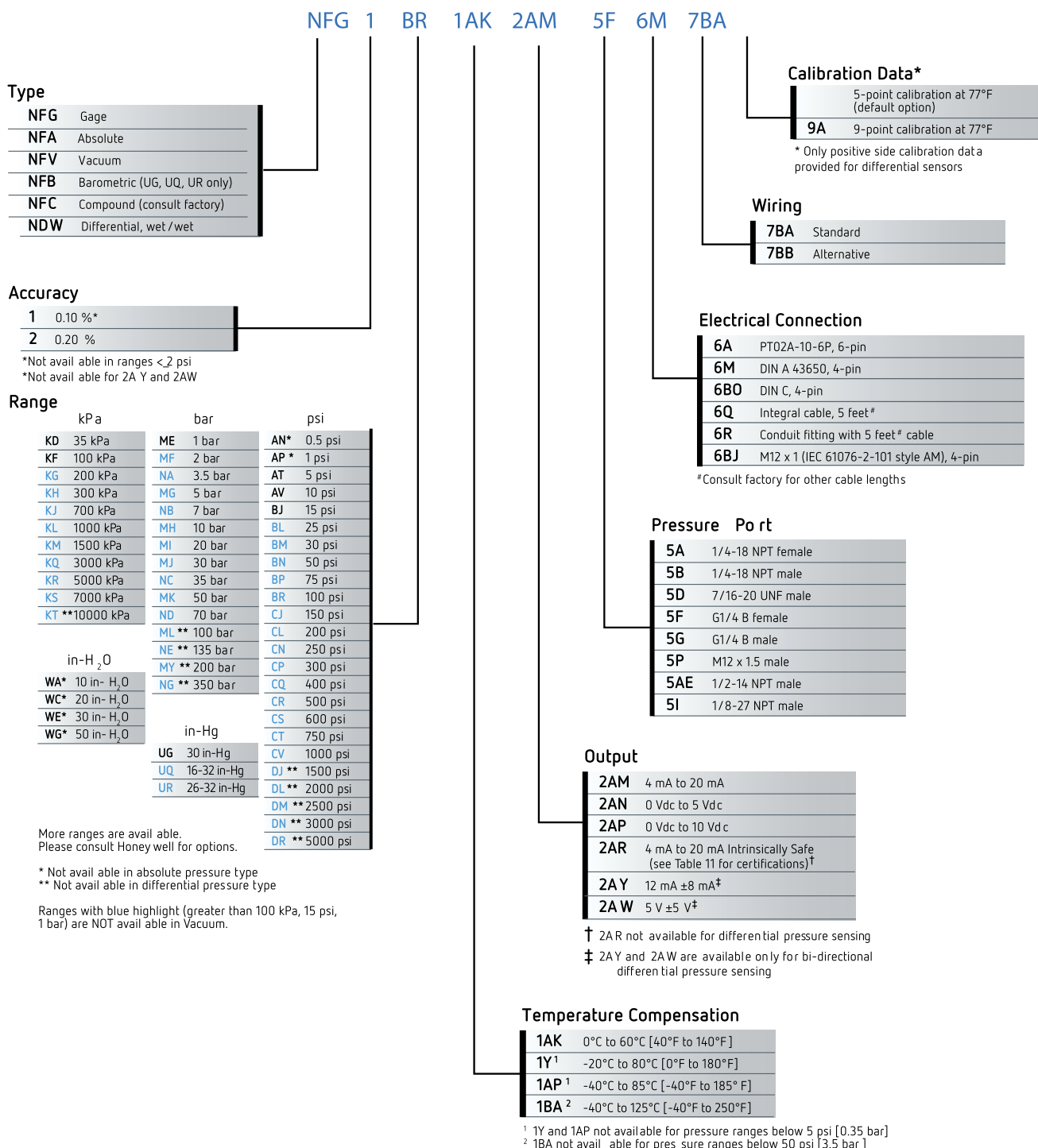
PIN	STANDARD		ALTERNATIVE	
	4 mA to 20 mA / 12 mA ±8 mA (2AM, 2AR, 2AY)	0 V to 5 V/0 V to 10 V/ 5 V ± 5 V (2AN, 2AP, 2AW)	4 mA to 20 mA / 12 mA ±8 mA (2AM, 2AR, 2AY)	0 V to 5 V/0 V to 10 V/5 V ± 5 V (2AN, 2AP, 2AW)
	Designation	Designation	Designation	Designation
1(	+) Supply(	+) Supply(	+) Supply(	+) Supply
2	No connection	(+) Output	(+) Output	No connection
3(	+) Output	Supply return/ (-) Output	No connection	Supply return/ (-) Output
4	Case GND	Case GND	Case GND	(+) Output

**TABLE 12. INTRINSICALLY SAFE APPROVALS FOR OPTION 2AR (NOT AVAILABLE ON 2AM, 2AN, 2AP, 2AY, 2AW)**

Agency	Approvals
cFMus	Class I, Div 1, Groups A, B, C, D Class I, Zone 0, AEx/Ex ia IIC T4/ T5 Ga Ta= -40°C to 40°C (T5), -40°C to 85°C (T4)
ATEX	II 1 G Ex ia IIC T4/ T5 Ga Ta= -40 °C to 40 °C(T5), -40 °C to 85 °C(T4)
IEC Ex	Ex ia IIC T4/ T5 Ga Ta= -40 °C to 40 °C(T5), -40 °C to 85 °C(T4)
UKCA	II 1 G Ex ia IIC T4/ T5 Ga Ta= -40 °C to 40 °C(T5), -40 °C to 85 °C(T4) (Pending Approval)



**FIGURE 1. PRODUCT NOMENCLATURE**

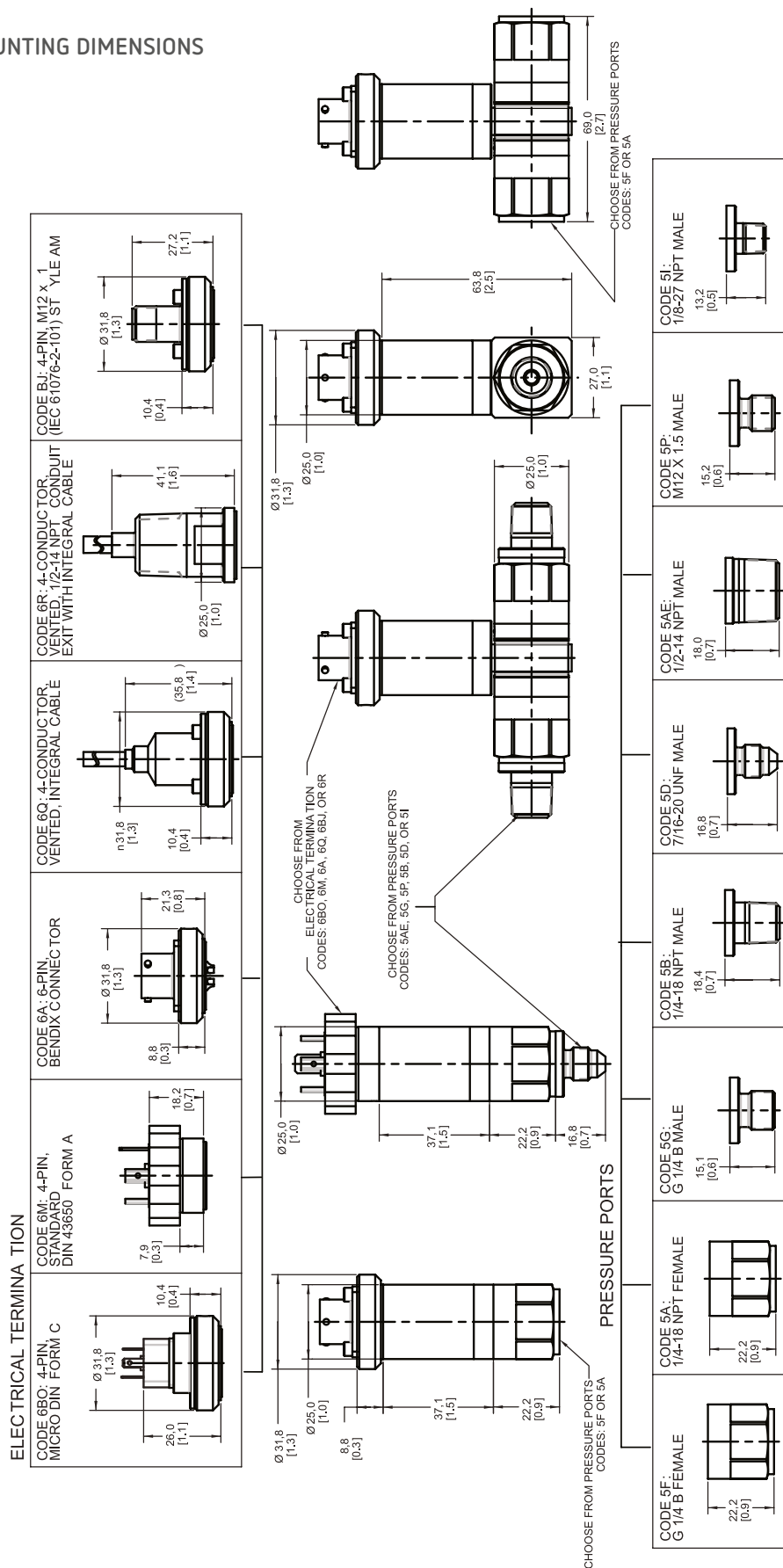


**SAMPLE CATALOG LISTINGS**

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; PTO2A-10-6P 6-pin electrical connector; standard wiring; 5-point calibration data at 77°F
NFG2DR,1Y,2AR, 5G,6Q,7BB	Model FP5000; 0.20% accuracy; 5000 psi gage; compensated across -20°C to 80°C [0°F to 180°F]; Intrinsic Safety Certifications; 4 mA to 20 mA output; G 1/4 B male port; 5 ft long integral cable; alternative wiring; 5-point calibration data at 77°F
NDW1BR,1AK,2AM,5F,6A,7BA	Model FP5000; 0.10 % accuracy; 100 psi differential; compensated across 0°C to 60°C [40°F to 140°F]; 4 mA to 20 mA output; G 1/4B female port, PTO2A-10-6P 6-pin electrical connector; standard wiring; 5-point calibration data at 77°F



**FIGURE 2. MOUNTING DIMENSIONS**



The information provided herein is to the best of our knowledge true and accurate, it is provided for guidance only. All specifications are subject to change without prior notification.

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