Honeywell

SENSOR PRODUCTS

Precision Pressure Transducers

PPT / PPT-R

APPLICATIONS

- Avionics
- Instrumentation and Analytical Equipment
- Flow and Pressure Calibrators
- Meteorology
- Laboratory and Medical Instruments
- Process Control
- Flight Test

Honeywell offers extraordinary value with our family of accurate and very competitively priced smart pressure transducers. The PPT couples proven silicon sensors with microprocessor-based signal conditioning to provide a powerful combination of features. Standard models cover a range of applications for gas or liquid pressure measurements and special configurations can be supplied.

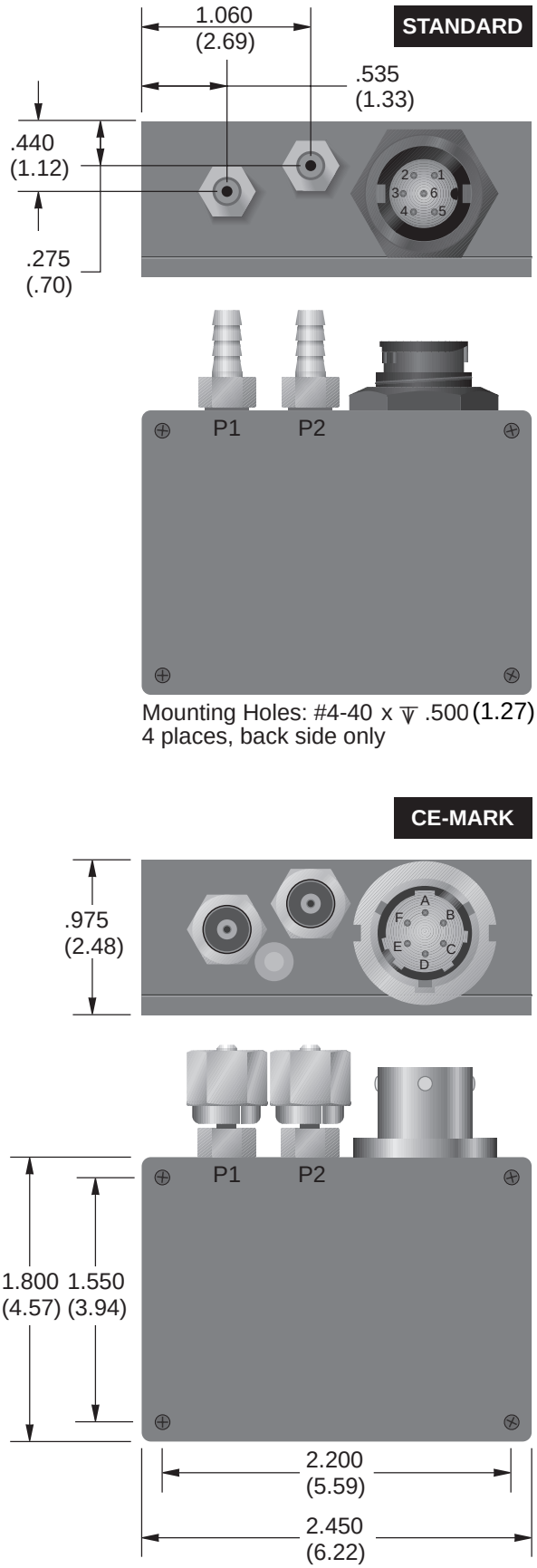
CE Qualified

FEATURES AND BENEFITS

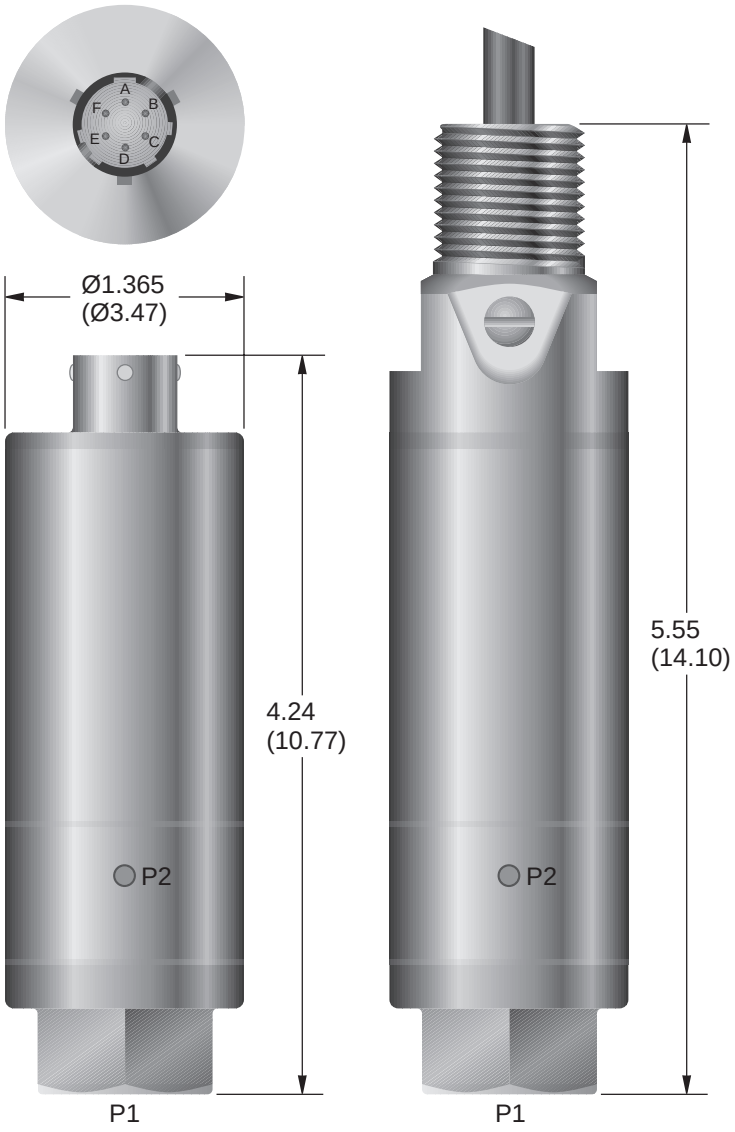
High Accuracy: 0.05% FS typical error *includes temperature effects*	**Simplifies system design**—no additional signal compensation needed to gain the benefits of a very accurate sensor.
Smart, Digital Sensing & Control	**Efficient data acquisition**—connect up to 89 units on a multidrop bus using built-in RS485 capability. **Easy interface** directly to a PC via RS232 communication port. **Closes the loop**—smart PPT makes control decisions.
Versatile and Configurable	**Works with existing and new systems**—all units have 0-5V analog and RS232 or RS485 digital outputs. **Handles most media**—dry gas to harsh liquids. **Optimizes output**—user-configurable pressure units, sampling, update rate. **Flags problems**—internal diagnostics set flags, provide alarms.

CASE OUTLINES AND CONNECTORS

PPT



PPT-R



Dimensions: inches (cm)

PPT	PPT-R	Signal Name
1	A	RS-232 (TD) / RS-485 (A)
2	B	RS-232 (RD) / RS-485 (B)
3	C	Case Ground
4	D	Common Ground (GD)
5	E	DC Power In
6	F	Analog Output

P1 – Pressure Port
P2 – Reference Port (not used on absolute)

Note for PPT: Either barbed or Swagelok™ connector is available for ports on standard and CE-Mark models.

SPECIFICATIONS

		PPT		PPT-R	
		Typical [2] [11]	Maximum	Typical [2]	Maximum
Accuracy (%FS) [1]	Digital	±0.05	±0.10	±0.10	±0.20
	Analog	±0.06	±0.12	±0.12	±0.24
Ranges [3]	Absolute	0-15 psi to 0-500 psi		0-15 to 0-3000 psi	
	Gauge	0-1 psi to 0- 500 psi		0-10 to 0-3000 psi	
	Differential	0-1 psi to 0-500 psi		NA	
	Vacuum	0-1 psi to 0-500 psi		NA	
	Compound	±1 psi to ±500 psi		NA	
Overpressure [4]		3x full scale or 600 psi, whichever is less		3x full scale or 6000 psi, whichever is less	
Burst pressure [5]		3x full scale or 700 psi, whichever is less		3x full scale or 8500 psi, whichever is less	
Static pressure [6]	≤150 psi	No effect on accuracy of device		NA	
	>150 psi [7]	Out of spec but will return to spec value when ≤150 psi		NA	
Media compatibility		Suitable for non-condensing, non-corrosive, non-combustible gases		Suitable for media compatible with 316 stainless steel	
Power requirements	Supply voltage	5.5 to 30 VDC		6.0 to 30 VDC	
	Operating current	17-30 mA depending on configuration [8]		19-27 mA depending on configuration	
	Standby current	11 mA		11 mA	
Weight		5 oz. (without fittings)		22 oz. w/NPT and 4 ft. pigtail 14 oz. w/6-pin military-style connector	
Temperature range	Storage	-55 to +90°C			
	Operating	-40 to +85°C [9]			
Resolution	Digital	Up to 10 PPM			
	Analog	0.024% FS over 0-5V, 1.22mV steps (12 bits)			
Temperature readings		Within ±1.0°C (at sensing element)			
Analog output	Voltage range	0-5V (User adjustable within this range)			
	Short circuit current	10mA, maximum			
	Operating output current	0.5mA, maximum			
	Load resistance	10K ohm, minimum			
Bus addressing		Address up to 89 units (user-assignable)			
Pressure units		15 user-selectable units			
Response delay		Response delay in milliseconds = (1000/update rate) + 1ms, or 17 ms, whichever is less [10]			
Sample rate		1 sample every 51.2 minutes to 120 samples/sec			
Mechanical shock		1500g for 0.5 msec half sine (per MIL-STD-883D, M2002.3, Cond B)			
Thermal shock		24 cycles from -40 to +85°C, 1 hour cycles			
Vibration		0.5 in. or 20 G's between 20 Hz-2KHz (per MIL-STD-883D, M2007.2, Cond A)			

1. Sum of worst case linearity, repeatability, hysteresis, thermal effects and calibration errors from -40 to 85°C. Consult factory for other accuracy options. Full scale for compound ranges is the sum of + and - ranges.
2. Typical is the average of absolute value of errors at all pressures and temperatures.
3. For other pressure ranges, contact factory.
4. Exposure to overpressure will not permanently affect calibration or accuracy of unit.
5. Burst pressure is the sum of the measured pressure plus the static pressure. Exceeding burst pressure rating may result in media escape. Burst pressure for absolute PPT is 700 psi, for absolute PPT-R is 8500 psi.
6. Differential, vacuum and compound units; pressure applied to both ports simultaneously.
7. Can be user-calibrated to spec in this range.
8. CE-Mark version of PPT: standby current 16 mA; operating current 22-35 mA.
9. For other temperature ranges contact factory.
10. The user-selectable update rates vary between 8.33 ms and 12 sec., 300 ms to first reading.
11. Long term stability (PPT); 0.025% FS per year or better, including all sources.

ORDERING INFORMATION

PPT transducers are ordered using an alphanumeric sequence specifying full scale pressure range, accuracy, type of pressure, pressure port configuration, serial output, analog output, electrical connector and approvals.

PPT Example: PPT100-1G-XF-2V-A (100 psi, 0.05%, gauge pressure, Swagelok, filter, RS-232, 0-5V, 6-pin plastic connector)
PPT CE-Mark Example: PPT100-1G-XF-2V-B (100 psi, 0.05%, gauge pressure, Swagelok, filter, RS-232, 0-5V, 6-pin military connector)
PPT-R Example: PPTR20-2A-P-5V-D-F (20 psi, 0.10%, absolute pressure, 1/4-18 NPT, RS-485, 0-5V, 1/2-14 NPT external w/pigtail, FM explosion proof)

	PPT	PPT-R	
Full Scale (FS) Ranges (1)	Select FS between 1 and 500 psi	Select FS between 10 and 3000 psi	Transducers operate 0 to FS or -FS to +FS
Accuracies (2)	1		0.05% FS
		2	0.10% FS
Types of Pressure Measurements	A	A	Absolute
	G	G	Gauge
	V		Vacuum
See *Pressures Applied* Table below	D		Differential
	C		Compound
Pressure Connections (3)	W		Brass barbed (1/4 inch tubing)
	X		Brass—Swagelok™ (1/8 inch)
	F		Filter (blocks debris)
	N		None
		P	1/4–18 NPT, internal
Outputs	2V	2V	RS-232 digital, 0–5 V analog
	5V	5V	RS-485 digital, 0–5 V analog
Electrical Connections (8)	A		6–pin plastic (4)
	B(7)	B	6–pin military style (5)
		D	1/2–14 NPT external w/wire pigtail (6)
Approvals (Optional) (9)		F	Factory Mutual (FM) Explosion Proof, Class I, Div I, Groups B,C,D Dust Ignition Proof, Class II, III, Div I, Groups E,F,G
		C	Canadian Standards Association (CSA) Explosion Proof, Class I, Div I, Groups B,C,D Dust Ignition Proof, Class II, III, Div I, Groups E,F,G
		L	LCIE (CENELEC) Flame Proof/CENELEC EEx d IIB T6 max ambient = 70°C

(1) Any Full Scale between these limits may be specified.
Ranges may be specified in engineering units other than psi—contact factory.
(2) Consult factory for other accuracy options.
(3) Consult factory for other pressure connection options.
(4) Mating connectors: Conxall P/N 6-282-6SG-522, Newark Stock no. 89F4115.
(5) Mil-C-26482, Shell size #10, 6-pin configuration, pin size #20.
Mating connectors: ITT Cannon P/N MS3116F10-6S, Newark Stock no. 93F3377.
Note: *Not available with approvals F, C, or L.*
(6) Provided with 4 feet of cable, Belden P/N 9315.
M20 x 1.5, PG13.5 and G 1/2 external threads w/pigtail also available on PPT-R. Consult factory.
(7) PPT CE-Marked units must be ordered with this conector style. All PPT-R units are CE-Marked.
(8) Optional connectors available, contact factory.
(9) Combinations of approvals can be requested. Consult factory.

Pressures Applied to P1 and P2 Ports

Type	P1 Pressure	P2 Pressure
Absolute	0 (vacuum) to FS	no pressure connection
Gauge	ambient to FS	ambient
Vacuum	ref. pressure	ref. pressure to 0 (vacuum)
Differential	ref. pressure to FS	ref. pressure
Compound	+FS to -FS rel. to P2	+FS to -FS rel. to P1

Notes:

For vacuum type units, the vacuum pressure reading is a positive number which measures the vacuum relative to the reference pressure at the P1 port.

For all units, digital pressure readings extend to 105% of full scale.

For gauge and differential units, digital pressure readings extend to -5% FS.

Honeywell

Customer Service Representative
612-954-2888 fax: 612-954-2582
E-Mail: clk@mn14.ssec. honeywell.com • http://www.ssec.honeywell.com
900131 Rev. I 5-99