

INTEGRATED PRESSURE TRANSDUCER

Honeywell's Integrated Pressure Transducer (IPT) provides high accuracy pressure data in an industry-standard SPI digital format. The core of the IPT is a proven Honeywell silicon piezoresistive pressure sensor with both pressure and temperature-sensitive elements. The IPT is small and lightweight and can be easily integrated by the user into a wide variety of applications that require high performance in a small package. Applying the coefficients stored in the on-board EEPROM to the normalized IPT pressure and temperature output yields highly accurate and stable pressure readings over the -40 to 85°C compensated temperature range.

FEATURES AND BENEFITS

HIGH ACCURACY OVER A WIDE TEMPERATURE RANGE

- $\pm 0.04\%$ FS Total Error Band (absolute pressure units) $\pm 0.10\%$ FS Total Error Band (gauge/differential pressure) from -40 to $+85^{\circ}\text{C}$.⁽¹⁾

DIGITAL SPI OUTPUT – INDUSTRY STANDARD INTERFACE

- Ready communication between $\mu\text{Controller}/\mu\text{Processor}$ and the IPT.

STORED CORRECTION COEFFICIENTS IN EEPROM

- Ready to use: No additional pressure and temperature calibration necessary.
- No additional signal compensation needed to achieve a highly accurate pressure reading.

SMALL AND VERSATILE

- Volume $\sim 1 \text{ in}^3$ (16 cm^3)
- Lightweight – Less than 10 grams
- Media Interface – Handles most dry gas media

APPLICATIONS

- Air Data Computers
- Altimeters
- Cabin Air Pressure
- Engine Test Systems
- Flight Test Systems
- Meteorology
- Flow and Pressure Calibrators
- Instrumentation and Analytical Equipment
- Research and Developments



Honeywell

SPECIFICATIONS

PERFORMANCE ⁽¹⁾

Total Error	(from -40 to 85°C); ±0.04%FS absolute; ±0.10%FS gauge, differential; ±0.20%FS 1 psi gauge
Temperature Range	Operating -40 to 85°C (-40 to 185°F); Storage: -55 to 125°C (-67 to 257°F)
Long Term Stability	0.025% FS max per year typical

MECHANICAL

Pressure Ranges & Type	See Ordering Information
Pressure Units	PSI ⁽²⁾
Media Compatibility	Suitable for non-condensing, non-corrosive, and non-combustible gases
Weight ⁽³⁾	≈ 8.0 grams (absolute); ≈ 9.7 grams (gauge, differential)

ELECTRICAL

Output	24-bit pressure value; 16-bit temperature value; 256 x 8 EEPROM configuration
Power Requirements	Supply Voltage: 4 to 12 VDC
Current Consumption	6 mA typical, 7.5 mA max
Interface	3.3V SPI (mode 1,1) SCLK ≤5 Mhz
Sample Rate	166 samples/second

ENVIRONMENTAL ⁽³⁾

Overpressure	3x FS
Burst Pressure	3x FS
Mechanical Shock	DO-160E Section 7.0, Category A, Figure 7.2, Operational Standard
Thermal Shock	Storage Temperature Cycling per JESD22-104, Section 5.0: -55°C to +125°C
Vibration	DO-160E Section 8, Category H, Aircraft Type 2, Aircraft Zones 1 & 2
RoHS	Compliant

⁽¹⁾ Total Error is the sum of worst-case linearity, repeatability, hysteresis, thermal effects, and calibration errors over the operating temperature range. Accuracy is only achieved after applying the correction coefficients and algorithm as shown in section 3.2. of User's Manual (FS = Full Scale). For total error calculations of differential units, "Full Scale" is the pressure difference between the minimum and maximum pressures. For example, full scale for a 1 psid IPT is 2 psi (-1 to +1 psi). Pressure range 1psi gauge has total error of ±0.20% FS.

⁽²⁾ After applying the correction coefficients stored in EEPROM, the resultant pressure reading is expressed in PSI (pounds per square inch).

⁽³⁾ Not including mounting hardware.

ORDERING INFORMATION

IPT INTEGRATED PRESSURE TRANSDUCER

FULL SCALE PRESSURE RANGE

	Absolute	Gauge	Differential
0001	N/A	1 PSI ⁽¹⁾	±1 PSI
0002	N/A	N/A	±2 PSI
0005	N/A	5 PSI	N/A
0020	20 PSI	20 PSI	N/A
0050	50 PSI	N/A	N/A

TYPE		P1 PRESSURE	P2 PRESSURE
A	Absolute	0 (vacuum) to FS	n/A
G	Gauge	Reference to FS	Reference
D	Differential	+FS to -FS rel. to P2	+FS to -FS rel. to P1

DIGITAL INTERFACE VOLTAGE

33	3.3 Volts
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POWER SUPPLY

R	Regulated, 4-12Vdc
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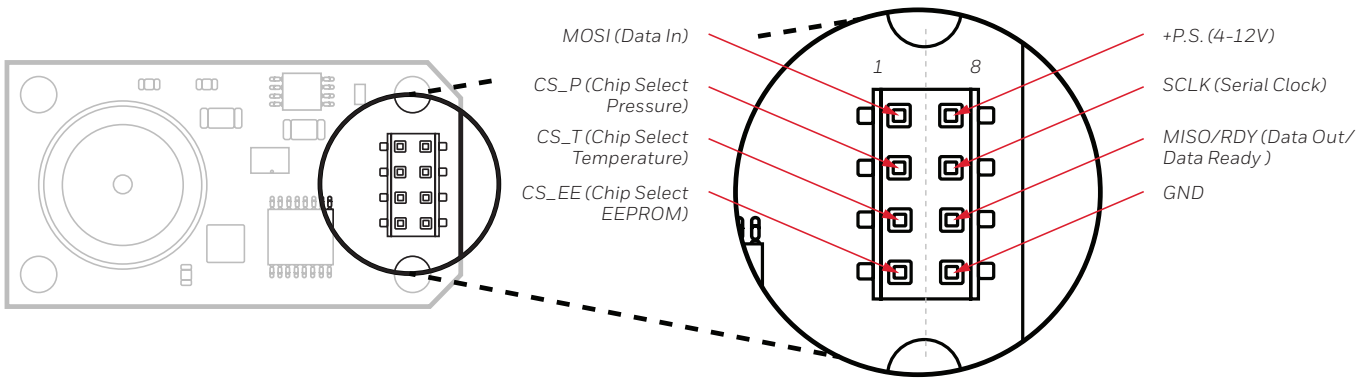
OPTIONS

A	Demonstration Kit ⁽⁴⁾
E	Certificate of Conformance

IPT 0020 A 33 R A

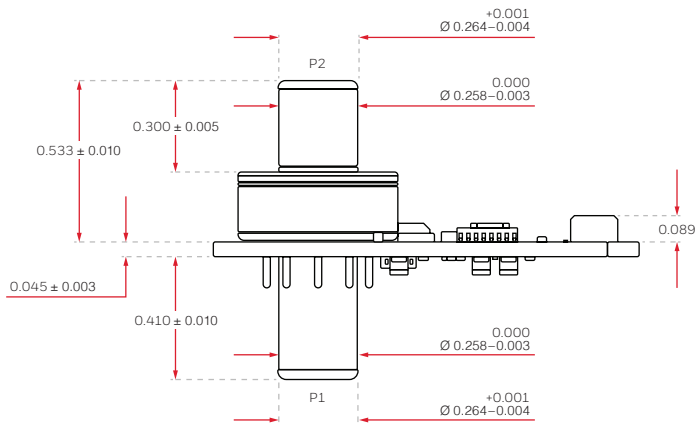
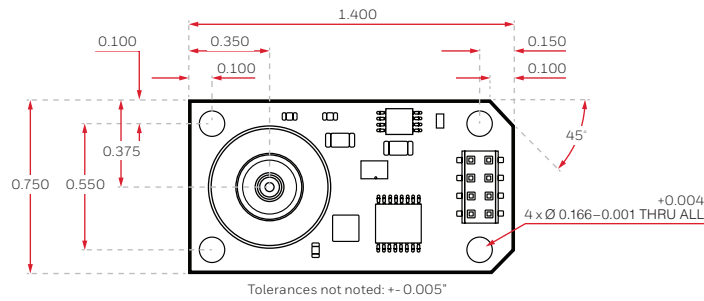
⁽⁴⁾ Demonstration kit includes RS-232 Cable, Demo Board, AC adapter, MS Windows Software, and User's Manual.

CONNECTOR DIMENSIONS

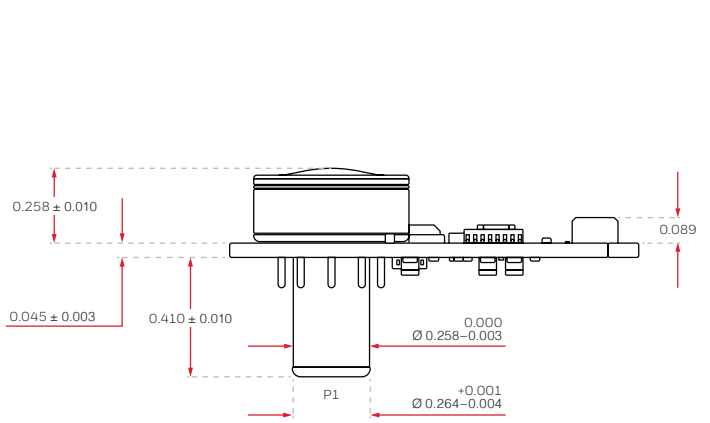
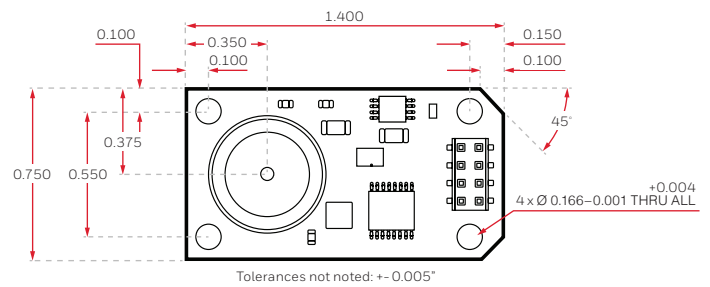


IPT DIMENSIONS

IPT0001D33R-E



IPT0020A33R-E



ESD (electrostatic discharge) sensitive device

Damage may occur when subjected to high energy ESD. Proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

EOS (electrical overstress) sensitive device

Damage may occur when subjected to EOS. Do not exceed specified ratings to avoid performance degradation or loss of functionality.

For more information

aerospace.honeywell.com/en/learn/products/sensors/precision-pressure

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THE
FUTURE
IS
WHAT
WE
MAKE IT

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