Integrated Pressure Transducer
IPT

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.

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 Development

0.04% FS Total Error Band, -40 to 85°C, Absolute

Small and Lightweight

Excellent Pressure Stability

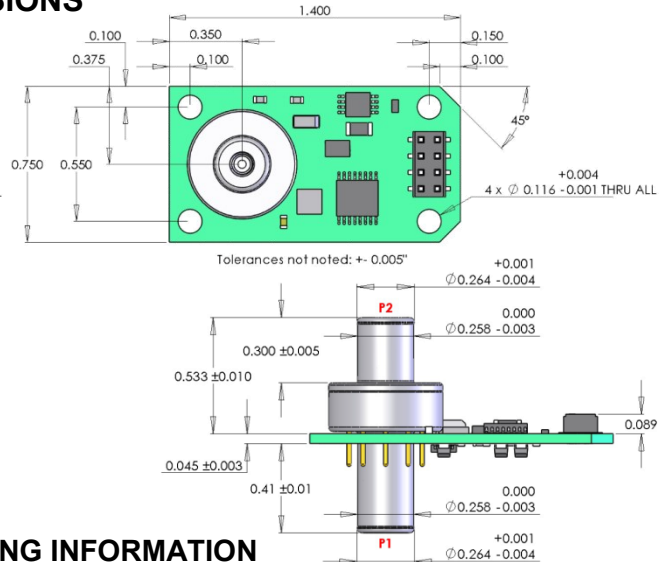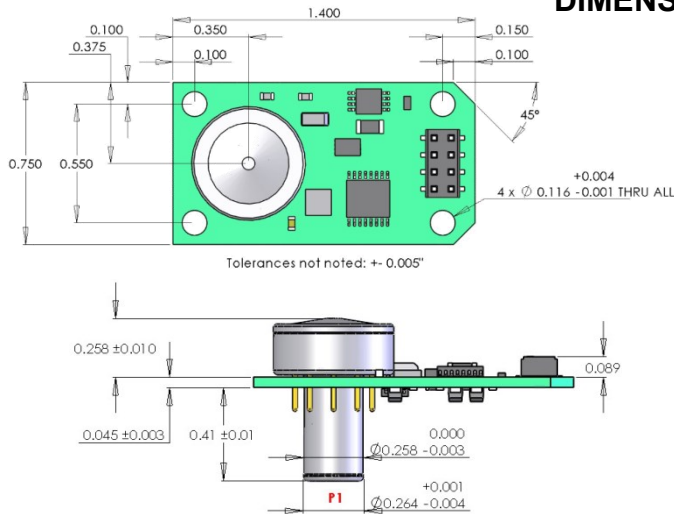±0.10% FS Total Error Band, -40 to 85ºC, Gauge/Differential

ISO-9001
ISO-14001

FEATURES AND BENEFITS

➤ **High Accuracy Over a Wide Temperature Range**
From -40 to 85°C
±0.04% FS Total Error Band (absolute pressure),
to ±0.10% FS Total Error Band (gauge/ differential pressure) [1]

➤ **Digital SPI Output**

➤ **Small and Versatile**

➤ **Stored Correction Coefficients in EEPROM –** Ready to use; No additional pressure and temperature calibration necessary.
Simplifies System Design – No additional signal compensation needed to achieve a highly accurate pressure reading.

➤ **Industry Standard Interface –** Ready communication between a µController/µProcessor and the IPT.

➤ **Volume** ~ 1 in^3 (16 cm^3)
Lightweight – Less than 10 grams.
Media Interface – Handles most dry gas media.

IPT

DIMENSIONS

Tolerances not noted: +- 0.005"

4 x Ø 0.116 +0.004 -0.001 THRU ALL

SPECIFICATIONS

Performance Specifications [1]

Total Error: (from -40 to 85ºC)
±0.04%FS absolute
±0.10%FS gauge, differential
±0.20%FS 1 psi gauge

Temperature Range:
Operating -40 to 85ºC (-40 to 185ºF)
Storage: -55 to 125ºC (-67 to 257ºF)

Long Term Stability:
0.025% FS max per year typical

Mechanical Specifications

Pressure Ranges and Type:
See Ordering Information at right

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 Specifications

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 Features [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 to +125ºC

Vibration: DO-160E Section 8, Category H, Aircraft Type 2, Aircraft Zones 1 & 2

RoHS: Compliant

Find out more

For more information visit us online at
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ORDERING INFORMATION

IPT Integrated Pressure Transducer

FULL SCALE PRESSURE RANGE			
	Absolute	Gauge	Differential
0001	N/A	1 PSI [1]	±1 PSI
0002	N/A	2 PSI	±2 PSI
0005	N/A	5 PSI	±5 PSI
0010	N/A	10 PSI	±10 PSI
0020	20 PSI	20 PSI	±20 PSI
0050	50 PSI	50 PSI	±50 PSI

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	

POWER SUPPLY		
R	Regulated, 4-12VDC	

OPTIONS		
A	Demonstration Kit [4]	

IPT	0020	A	33	R	A

CONNECTOR

MOSI (DATA IN)
CS_P (CHIP SELECT PRESSURE)
CS_T (CHIP SELECT TEMPERATURE)
CS_EE (CHIP SELECT EEPROM)

+P.S. (4-12V)
SCLK (SERIAL CLOCK)
MISO/RDY (DATA OUT/DATA READY)
GND
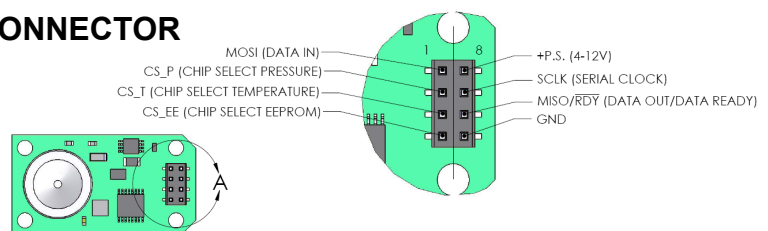
[1] Total Error is the sum of worst case linearity, repeatability, hysteresis, thermal effects, and calibration errors over the operating temperature range. Accuracy is only achieved after applying the correction coefficients and algorithm as shown in section 3.2. of Product Specification (FS = Full 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 PPT 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. [4] Demonstration kit includes RS-232 Cable, Demo Board, AC adapter, MS Windows Software, and User's Manual.

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.

Honeywell