

TruStability™ Board Mount Pressure Sensors

RSC Series

Figure 1. TEB Components for TruStability™ Board Mount Pressure Sensors

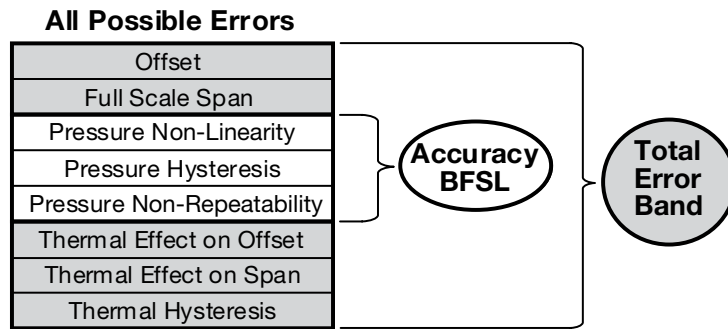


Table 1. Absolute Maximum Ratings¹

Characteristic	Min.	Max.	Unit
Supply voltage (V_{supply})	2.7	6.0	Vdc
Voltage on any pin	-0.3	$V_{supply} + 0.3$	V
Digital interface clock frequency	—	5	MHz
ESD susceptibility (human body model)	—	2	kV
Storage temperature	-40 [-40]	85 [185]	°C [°F]
Soldering time and temperature: lead solder temperature (DIP) peak reflow temperature (SMT)		4 s max. at 250 °C [482 °F] 15 s max. at 250 °C [482 °F]	

¹Absolute maximum ratings are the extreme limits the device will withstand without damage.

Table 2. Environmental Specifications

Characteristic	Parameter
Humidity (gases only)	0% to 95% RH, non-condensing
Vibration	15 g, 10 Hz to 2 Hz
Shock	100 g, 6 ms duration
Life ¹	1 million pressure cycles minimum
Solder reflow	J-STD-020-D.1 Moisture Sensitivity Level 1 (unlimited shelf life when stored at ≤ 30 °C/85 % RH)

¹Life may vary depending on specific application in which the sensor is utilized.

Table 3. Wetted Materials¹

Component	Port 1 (Pressure Port)	Port 2 (Reference Port)
Ports and covers	high temperature polyamide	high temperature polyamide
Substrate	alumina ceramic	alumina ceramic
Adhesives	epoxy, silicone	epoxy, silicone
Electronic components	plastic, silicon, glass, solder	silicon, glass, gold

¹Contact Honeywell Customer Service for detailed material information.

Table 4. Sensor Pressure Types

Pressure Type	Description
Absolute	Output is proportional to the difference between applied pressure and a built-in vacuum reference.
Differential	Output is proportional to the difference between the pressures applied to each port (Port 1 – Port 2).
Gage	Output is proportional to the difference between applied pressure and atmospheric (ambient) pressure.

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Table 5. Digital Operating Specifications

Characteristic	Min.	Typ.	Max.	Unit
Supply voltage (V_{supply}): ^{1, 2, 3} pressure ranges ≥ 60 mbar 6 kPa 1 psi: 3.3 Vdc 5.0 Vdc pressure ranges ≤ 40 mbar 4 kPa 20 inH ₂ O: 3.3 Vdc 5.0 Vdc	3.0 4.75 3.27 4.95	3.3 5.0 3.3 5.0	3.6 5.25 3.33 5.05	Vdc
Supply current: 3.3 Vdc: standby mode active mode 5.0 Vdc: standby mode active mode	— — — —	1.3 1.7 2.1 2.6	— — — —	mA
Operating temperature range ⁴	-40 [-40]	—	85 [185]	°C [°F]
Compensated temperature range: ⁵ medical industrial extended	0 [32] -20 [-4] -40 [-40]	— — —	50 [122] 85 [185] 85 [185]	°C [°F]
Startup time (power up to data ready)	—	—	0.3	ms
Data rate	20, 40, 45, 90, 175, 180, 330, 350, 600, 660, 1000, 1200, 2000			samples per second
SPI voltage level: low high	— 80	— —	20 —	%Vsupply
Pull up on MISO, SCLK, CS_ADC, CS_EE, MOSI	1	—	—	kOhm
Accuracy ⁶	—	—	0.1	%FSS BFSL ⁶
Orientation sensitivity (± 1 g): ^{7, 9} pressure ranges ≤ 40 mbar 4 kPa 20 inH ₂ O pressure ranges ≤ 2.5 mbar 250 Pa 1 inH ₂ O	— —	± 0.1 ± 0.2	— —	%FSS ⁸

¹Sensors are either 3.3 Vdc or 5.0 Vdc based on the catalog listing selected.

²Ratiometricity of the sensor (the ability of the device output to scale to the supply voltage) is achieved within the specified operating voltage.

³The sensor is not reverse polarity protected. Incorrect application of supply voltage or ground to the wrong pin may cause electrical failure.

⁴Operating temperature range: The temperature range over which the sensor will produce an output proportional to pressure.

⁵Compensated temperature range: The temperature range over which the sensor will produce an output proportional to pressure within the specified performance limits (Total Error Band).

⁶Accuracy: The maximum deviation in output from a Best Fit Straight Line (BFSL) fitted to the output measured over the pressure range. Includes all errors due to pressure non-linearity, pressure hysteresis, and non-repeatability.

⁷Orientation sensitivity: The maximum change in offset of the sensor due to a change in position or orientation relative to Earth's gravitational field.

⁸Full Scale Span (FSS): The algebraic difference between the output signal measured at the maximum (Pmax.) and minimum (Pmin.) limits of the pressure range. (See Figure 1 for ranges.)

⁹Insignificant for pressure ranges above 40 mbar | 4 kPa | 20 inH₂O.