

## Application Note

### TruStability™ Board Mount Pressure Sensors

#### RSC Series—High Resolution, High Accuracy, Compensated/Amplified

±1.6 mbar to ±10 bar | ±160 Pa to ±1 MPa | ±0.5 inH<sub>2</sub>O to ±150 psi

#### 24-bit Digital SPI-Compatible Output

### Background

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The RSC Series is a piezoresistive silicon pressure sensor offering a digital output for reading pressure over the specified full scale pressure span and temperature range. It is calibrated and temperature compensated for sensor offset, sensitivity, temperature effects, and non-linearity using a 24-bit analog-to-digital converter with integrated EEPROM. Pressure data may be acquired at rates between 20 and 2000 samples per second over an SPI interface. It is intended for use with non-corrosive, non-ionic gases, such as air and other dry gases, designed and manufactured according to ISO 9001 standards, and is REACH and RoHS compliant.

### Solutions

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#### MEDICAL

##### Spirometers

- Use in application: Designed to measure the pressure drop in a flow tube as the patient is inhaling and exhaling. This pressure measurement is used to calculate the volume of air in a patient's lung.
- Benefits to customer:
  - Extremely high accuracy at a zero and low flow condition
  - High resolution allows measurement of extremely low flows with a minimum pressure drop
  - Small size helps integration into hand-held/mobile devices
  - Cost effective solution for high volume applications

##### Ventilators

- Use in application: Designed to measure the pressure as a patient is inhaling and exhaling. A pressure measurement is used to measure the precise moment when the patient changes from inhalation and exhalation. Another pressure measurement is used to calculate the volume of the lungs to determine how much air to supply.
- Benefits to customer:
  - Extremely high accuracy and resolution at a zero and low flow condition enhances the accuracy of the trigger sensor and may allow the same pressure sensor to be used in both pediatric and general ventilators

- Small size allows the sensor to be moved closer to the patient, which improves accuracy
- Cost-effective solution for high volume applications

#### INDUSTRIAL

##### VAV Controls

- Use in application: Designed to measure the pressure drop across a restrictor in an air duct. This measurement is used to calculate the airflow in the duct.
- Benefits to customer:
  - Extremely high accuracy at a zero and low flow condition
  - High resolution allows measurement of extremely low flows with a minimum pressure drop
  - Cost-effective solution for high volume applications
  - Excellent long term stability minimizes re-zeroing
  - Tight Total Error Band minimizes errors with temperature changes in the buildings

##### Altitude Measurement for Drones, Aerial Systems and Aircraft

- Use in application: Designed to measure barometric pressure, which is used to measure altitude.
- Benefits to customer:
  - High resolution allows accurate measurement of altitudes
  - Tight Total Error Band minimizes errors due to change in air temperature
  - Small size and low mass allows for potential use in critical small drone applications
  - Cost-effective solution for high volume applications


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RSC Series	Features
	<ul style="list-style-type: none"><li>• Pressure range: ±1.6 mbar to ±10 bar   ±160 Pa to ±1 MPa   ±0.5 inH<sub>2</sub>O to ±150 psi; absolute range 1 bar to 8 bar   15 psi to 150 psi</li><li>• Pressure types: Absolute: internal vacuum reference and an output value proportional to absolute pressure; Gage: referenced to atmospheric pressure and provide an output proportional to pressure variations from atmosphere; Differential: allows measurement of pressure between the two pressure ports</li><li>• Total Error Band: As low as ±0.25 %FSS depending on pressure range (after auto zero)</li><li>• Accuracy: ±0.1 %FSS BFSL (Full Scale Span Best Fit Straight Line)</li><li>• Compensated temperature range: -40 °C to 85 °C [-40 °F to 185 °F]</li><li>• Power consumption: Less than 10 mW, typ.</li><li>• Size: Miniature 10 mm x 12,5 mm [0.39 in x 0.49 in] package</li><li>• Output: 24-bit digital SPI-compatible</li><li>• Meets IPC/JEDEC J-STD-020D.1 Moisture Sensitivity Level 1 requirements</li></ul>

### Find out more

To learn more about Honeywell Safety and Productivity Solutions' products, call +1-815-235-6847 or 1-800-537-6945, visit [sensing.honeywell.com](http://sensing.honeywell.com), or e-mail inquiries to [info.sc@honeywell.com](mailto:info.sc@honeywell.com)

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### Honeywell Safety and Productivity Solutions

9680 Old Bailes Road  
Fort Mill, SC 29707  
[honeywell.com](http://honeywell.com)

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