Custom Digital Pressure Sensors

For particularly demanding pressure sensing applications, e.g. in medical and instrumentation devices, Sensortechnics now offers custom piezoresistive pressure sensors with very high resolution and accuracy from 2.5 mbar (1 inH2O) full scale. A high-quality, low noise amplifier and subsequent 24 bit A/D converter provide for high resolution digital signals comparable to analog signals and high signal-to-noise-ratios. The sensors utilize a microcontroller which allows correction algorithms for temperature compensation and linearization to be programmed flexibly. Sensortechnics microcontroller-based pressure sensors achieve very high accuracies with a typical total error band of 0.1 % and fast response times of up to 250 µs.
Sensortechnics' pressure sensors with integrated microcontrollers offer various possibilities for custom specific adaptions. These can include the calibration, signal conditioning and signal transmission of the sensor. Within the overall pressure range certain sub ranges with different resolution and accuracy can be calibrated. This functionality is especially valuable for medical ventilators or patient monitors which determine respiratory flow by means of differential pressure measurement. For these devices, an increased sensitivity at very low pressure is essential for the early and precise detection of the patient's inhaling phase. Furthermore, Sensortechnics offers modifications of the digital sensor interface (I^2C, SPI) according to customers' requirements and programs custom communication protocols as well as additional functionality such as status requests, diagnostic messages or an auto-zero function.

Important features of the microcontroller-based pressure sensors:

- Pressure ranges from 2.5 mbar (1 inH2O) full scale
- Low noise amplifier and subsequent 24 bit A/D converter

- Total error band of typical 0.1 %
- Customization of digital sensor interface and communication protocol

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[1] http://www.sensortechnics.com/