

SP Series Product Brief

Differential Pressure Sensor for Spirometry Applications

Key Features

- High performance low pressure sensor
- Highly integrated sensor, ADC and DSP
- Multi-range - 4 calibrated ranges each device
- Pressure ranges from ± 250 Pa to ± 40 kPa
- 16 bit resolution each range
- Ultra low noise, 19 bit Effective Resolution
- Z-Track™ virtually eliminates zero drift
- Best in class position insensitivity
- Enhanced EMI Immunity
- Selectable bandwidth filter, 25Hz to 250Hz
- Output Update Rate of 500Hz
- Total Error Band less than 0.15% FSS/year
- Accuracy better than 0.10% Range
- Temperature Compensated 0°C to 50°C
- Standard I²C and SPI interface

Product Summary

Superior's SP Series low pressure sensor module family employs *NimbleSense™* a proprietary architecture achieving very high dynamic range to create the industry's highest performing Spirometry pressure sensing device. This wider dynamic range is ideally suited to offer precise near zero measurements to support the demanding functional requirements of the Spirometry market. Selectable multiple pressure ranges are now supported in a single package. The SP110/SP210 can be user programmed to ± 250 , 500, 1k and 2.5k Pa full scale ranges while the SP160 is programmable to ± 5 , 10, 20 and 40 kPa ranges.



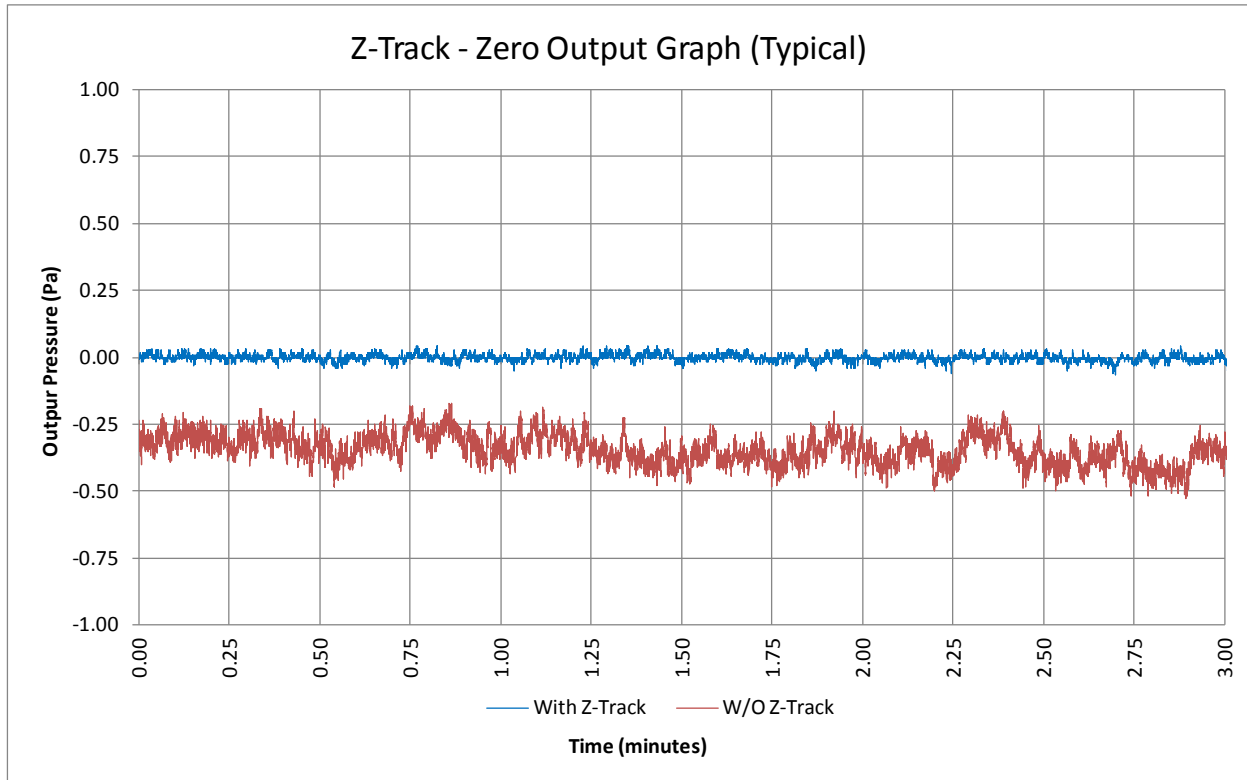
The SP Series family provides a new level of sensor integration into the Spirometry market combining an advanced piezoresistive sensing element with integrated amplification, ADC, DSP and processor intelligence to greatly simplify customer integration efforts. The SP Series leverages floating point technology to provide a highly precise digital output. This precision, when combined with the enhanced zero point and the industry's best positional immunity enables the ultimate in Spirometry system sensing performance. The SP Series optimizes performance, reliability and system cost for the challenging Spirometry market.

Industry leading accuracy performance - The SP Series measures dry air and non-aggressive gas pressure with very high accuracy better than 0.10% FS and Total Error Band is also industry leading which is typically better than 0.15% FSS.

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Beyond the industry's leading accuracy and positional insensitivity, the SP Series of devices include a proprietary Z-Track™ feature which virtually eliminates zero errors. Power on time is also a consideration and with Z-Track™, warm-up time is greatly reduced making the SP Series an excellent choice for time critical installation applications.



Additionally, Spirometry devices must function flawlessly in crowded RF environments created by a confluence of wireless transmitters. This RF immunity requirement drives the need for special design effort to be put into the product packaging. This is done to minimize the effects of spurious RF signals on the sensor module performance. The SP Series has undergone proprietary design techniques to enhance the EMI immunity, reducing the influence of close proximity EMI producing devices such as WiFi, Bluetooth and other cellular communication protocols.

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