Technology Advantages

Unique Features for Medical Applications

Superior Sensor Technology

The Architecture

Superior Sensors' proprietary NimbleSense™ architecture is the industry's first System-in-a-Sensor integrated platform. Incorporating a highly differentiated advanced pressure sensing system with application-specific building blocks provides a combination of the highest accuracy and reliability with exclusive medical specific features.

The NimbleSense architecture was developed with the overarching goal to knock out every bit of noise before reaching the sensing subsystem. Noise is anything that is not the ideal sensor information, including long-term drift, thermal errors, thermal or pressure hysteresis, etc. The result is a pressure sensor architecture having a very clear signal and practically no noise. The entire product line offers the following core technology attributes:

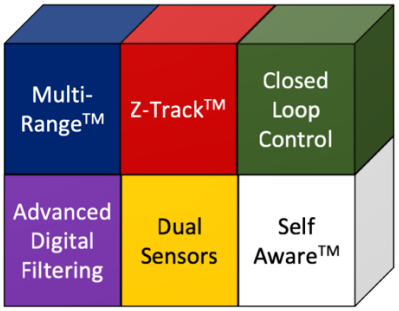
Industry's Lowest Noise Floor

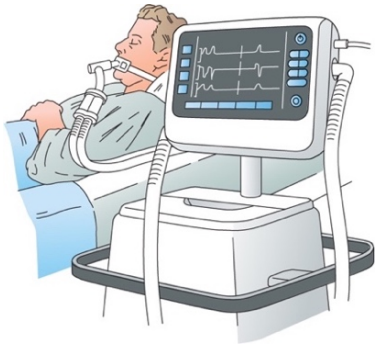
Utilizing advanced digital filtering technology, Superior's pressure sensors eliminate noise created fans, motors, etc. prior to their reaching the sensor sub-system. This results in the neutralization of noise before it becomes an error signal.

Highest Levels of Accuracy

Sensor accuracy is critical in medical care, as even a small error can have a life changing effect. Superior's pressure sensors have typical accuracy within 0.05% of the selected range, and typical TEB (total error band) and long-term stability within 0.10% of the FSS.

Application Specific Features





Ventilators

As it is often a matter of life and death, medical ventilators are carefully designed to ensure single points of failure do not harm patients. Superior Sensors offers several building blocks that significantly improve the reliability and accuracy of ventilators, while lowering overall system costs:

Self Aware™ Technology

Implementing only in close collaboration with select ventilator manufacturers, Self Aware ensures maximum uptime by tracking error level changes. The technology eliminates a single point of failure service interruption and reduces false positives with respect to error notifications. With Self Aware, ventilators can reduce pressure sensor related alarm rates by up to 1000x.

Integrated Multi Order Filter

An optional advanced multi order filter can be implemented to eliminate critical noise from the fan output. This filter will simplify product design and reduce the number of components needed. The integrated solution also reduces system overhead and loop delay, greatly improving response times up to 100x relative to non-integrated system solutions.

Multi-Range™ Technology

Allowing one sensor solution to replace several, Multi-Range simplifies product design, reduces inventory costs and product obsolescence. Each pressure range is factory calibrated and optimized, eliminating the complexity of working with multiple sensors. By standardizing on one sensor, manufacturers can quickly bring new products to market.

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Superior SENSOR TECHNOLOGY

Spirometry

Vital in the treatment plan of many different types of lung diseases, spirometers require high performance differential pressure sensors to accurately diagnose a patient's lung functions. Superior Sensors offers several features that significantly improve the calibration, real-time accuracy and usability of these mostly portable handheld devices:

Z-Track™ Auto Zero

Superior's Z-Track technology virtually eliminates zero drift by maintaining minimal zero-point deviation. Results remain consistent regardless of elapsed time. This removes the need to calibrate the spirometer prior to each use, or to wait for the device to reset between readings.

Position Insensitivity

Superior's unique dual-die implementation maintains consistent and highly accurate handheld readings regardless of physical orientation of the spirometry device. Rated with a positional sensitivity to within 0.25 pascal, spirometers can provide extremely accurate measurements regardless of how a patient holds the device.

Fastest Warm-Up/Response

Superior essentially eliminates warm-up time as the device is ready in just 60 msec. In addition, the amount of time it takes to update measurement data is just as vital. The faster you receive updated measurements, the more accurate your spirometry readings. While user configurable, Superior's sensors support update rates as fast as 2 msec.

CPAP / BiPAP / APAP

Addressing the needs of many sleep disorders, including sleep apnea, CPAP/BiPAP/APAP machines ensure proper breathing during sleep. Superior Sensors offers several building blocks that significantly improve the accuracy and capabilities of these devices, while lowering overall system costs:

Integrated Dual Sensor Solution

Superior provides an air flow controller sub-system combining two pressure sensors in one device: differential (airflow) and gage (patient pressure). This tight integration simplifies product design, speeds time to market and reduces product cost. By combining two sensors into one, PCB space and overall product dimensions can be reduced to lower manufacturing costs and make the devices more attractive to consumers.

Closed Loop Control

Integrated closed loop control improves CPAP/BiPAP/APAP design and performance by ensuring accurate targeted pressure. Directly controlling motors, valves and actuators, this feature simplifies product design, reduces system overhead and provides a modest improvement in accuracy. By implementing the loop control directly in the sensor, the sub-system also reduces CPU load.

Flexible with 64 Configurations

Superior's solution is highly flexible as each sensor supports 4 pressure ranges and the bandwidth filter has 4 selectable options. This provides a total of 64 factory calibrated and optimized configurations for implementation. A manufacturer can easily standardize on one sensor, and quickly bring a whole family of new products to address a larger market opportunity.

For more information, please contact: info@SuperiorSensors.com