

# PRESSURE SENSOR PRODUCT CATALOG



**Intelligent  
System-in-a-Sensor  
Solutions**

*When Superior Performance Matters*

# CONTENTS

## THE INDUSTRY'S MOST ADVANCED PRESSURE SENSOR SOLUTIONS

Superior Sensor Technology is revolutionizing the high performance pressure sensor market by developing integrative, highly intelligent solutions for industrial, HVAC and medical applications. Based on our NimbleSense™ architecture, the industry's first smart System-in-a-Sensor, Superior's pressure sensors provide:

- 5 to 10x performance improvement
- Significant design flexibility
- Reduced design cycle time
- Unique functionality via application-specific features

Pressure sensors from Superior are extremely accurate and stable, offering unique design flexibility to easily fit a wide variety of applications. Each product family is optimized for specific end user applications, making them an ideal match. Customers may choose to further optimize the pressure sensors using programmable features such as bandwidth filtering and variable pressure ranges.

These fully calibrated and temperature compensated pressure sensors offer vast improvements in usable output resolution while maintaining the industry's highest level of overall accuracy and TEB performance, especially at very low differential pressures.

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NimbleSense™ Architecture

Medical Solutions

HVAC Solutions

Industrial Solutions

Auto Zero Valves

Custom Solutions

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# NimbleSense™ – The Superior Architecture for Sensing Pressure

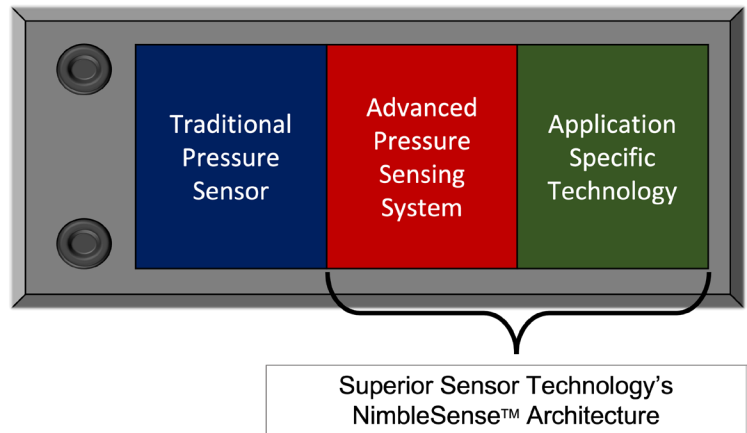
## Introduction

Superior Sensor Technology has created an innovative architecture enabling product designers to move beyond a piece-meal approach to a fully integrated module that combines the MEMS sensor with additional circuitry and software. This modular approach is driven by intelligent software that is programmable for each end application. We call this architecture NimbleSense, and it is the industry's first System-in-a-Sensor. This approach is the same as IC designers have used in designing many of the complex SoCs that power today's smartphones, automobiles, data centers, etc.

Using the NimbleSense architecture enables product designers to create highly differentiated advanced pressure sensing systems from a technology toolbox consisting of many building blocks. This methodology greatly improves system performance in the end application, while providing enhanced features and cost-optimized manufacturing solutions.

The NimbleSense architecture combines processing intelligence with signal path integration and proprietary algorithms to enable a much simpler system design and a higher level of sensor performance. Choosing from a wide array of proven and tested building blocks, product designers integrate the appropriate modules to create a pressure system optimized for their specific application requirements.

These different modules provide significant design flexibility and greatly speed up time to market. With this System-in-a-Sensor method, a product designer can quickly and easily develop the pressure sensing solution required in their specific end product.



*System-in-a-Sensor Block Diagram*

## Core Technology

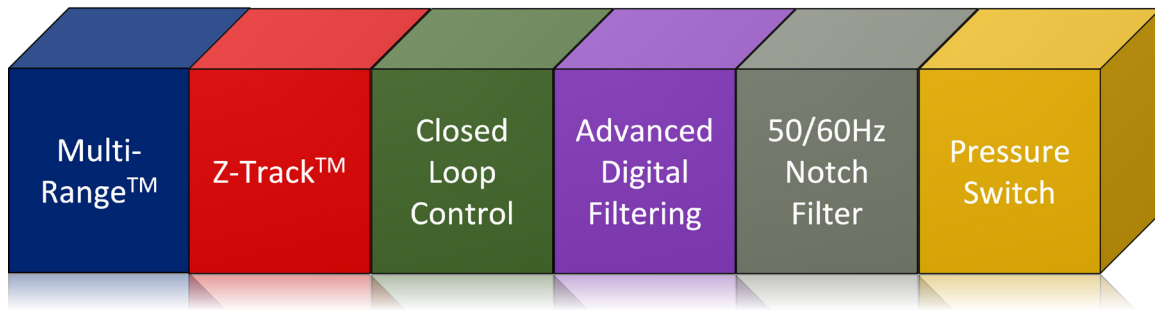
The NimbleSense architecture was developed with the overarching goal to knock out every bit of noise before reaching the host system. To be clear, noise is anything that is not the ideal sensor information, including long-term drift, thermal errors, thermal or pressure hysteresis, etc. The NimbleSense architecture has been designed to maximize performance while also being flexible to easily insert 'building blocks' that add application specific functionality. The result is a pressure sensor architecture having a very clear signal and practically no noise. This leads to the incredible accuracy, TEB and long-term stability performance throughout our entire product portfolio.

The net result is that we typically see a 5 to 10x performance increase over other solutions. From this advantage we then move on to the flexibility of our NimbleSense architecture by adding unique building blocks that provide application specific features for various industrial, HVAC and medical devices.

# Technology Building Blocks

Flexibility is at the core of the NimbleSense architecture. This unique technology allows you to quickly prototype and design the sensor into your product, support multiple product lines with one particular sensor, add new capabilities and features via software updates and reduce system cost through lower component count and greater product reliability.

Based on customer feedback, the Superior Sensor Technology engineering team is constantly innovating and introducing new building blocks in the NimbleSense architecture. Here is a listing of the currently available blocks.



*Example of NimbleSense Architecture Building Blocks*

- 1. Multi-Range™:** Multi-range capability allows a single sensor to be factory calibrated and performance optimized to support up to 8 different pressure ranges.
- 2. Z-Track™:** Z-Track employs a proprietary algorithm to virtually eliminate zero drift. Zero error reduction is critical in medical devices such as Spirometers, where an inaccurate reading can have life changing effects.
- 3. Closed Loop Control:** Integrated closed loop control adds capabilities within the module to set and maintain flow rates via pressure management by directly controlling motors, valves and actuators.
- 4. Advanced Digital Filtering:** Advanced digital filtering is optimized for each application to ensure mixed sampling noise is kept well below the noise floor. By removing the mechanical noise, we maximize overall system performance.
- 5. 50/60Hz Notch Filter:** Integrated notch filter allows designers to easily remove noise at either 50Hz or 60Hz that can impact overall system performance. Commonly used in HVAC and certain industrial applications, our integrated notch filter simplifies system design.
- 6. Pressure Switch:** Integrated pressure switch activates when a certain pressure threshold or set point is reached. Implemented as a fast failsafe feature for overpressure conditions or other simplified on/off system feedback. Includes three modes for setting the threshold pressure, one fixed and two variable.

# MEDICAL SOLUTIONS

## CPAP / BiPAP / APAP



Pressure sensors are crucial for monitoring and regulating the airflow and air pressure of CPAP, BiPAP and APAP machines. Used for many applications including sleep apnea, COPD, asthma and home ventilators, Superior Sensor Technology's innovative CP Series includes 2 pressure sensors in one device. A gage sensor measures patient airway pressure and a differential sensor for system flow measurement. This dual sensor solution eliminates the need for a second physical sensor.

Both sensors offer the highest levels of accuracy due to their extremely low noise floor and very fast 2 millisecond response time. An advanced multi-order filter further simplifies design and increases system performance. Available in shared 3-port and dedicated 4-port configurations, the CP Series is highly flexible as both sensors support multiple pressure ranges and there's a selectable bandwidth filter. In total there are 64 possible configurations!

The level of integration achieved in the CP Series greatly improves the performance of the PAP machine, ensuring the system efficiently operates so patients with sleep apnea are assured a good night sleep with no interruptions or lack of oxygen. In addition, the CP Series has a very fast feedback loop, is able to effectively block out noise from fans and motors, can support multiple pressures without any degradation in performance, and has a high-resolution to ensure a very strong signal-to-noise (SNR) ratio.

This fully integrated dual sensor solution enables manufacturers to simplify their product design, speed time to market, reduce PCB space and lower system costs. For consumers, the technology in the CP Series results in better measurement and feedback on patient breathing. This leads to greater comfort and much lower possibility of having an apnea episode during the night. By also offering richer diagnostic information, medical care providers can better assess the condition of their patient and adjust treatment to better serve them.

There are 6 products in the CP Series, with the main differentiating features highlighted below:

Feature	CP201	CP301	CP202	CP302	CP203	CP303
Number of Ports	3	4	3	4	3	4
Closed Loop Control	X	X	✓	✓	X	X
Overpressure Indicator	X	X	✓	✓	X	X
Snore Detection	X	X	X	X	✓	✓



## Key Features of the CP Series:

- Combines differential and gage sensors in 1 device
- Three-port (CP2xx) and four-port (CP3xx) configurations
- Flexibility with Selectable:
  - Differential Pressure Range ( $\pm 250$  Pa to  $\pm 2.5$  kPa)
  - Gage Pressure Range ( $\pm 2$  kPa to  $\pm 6$  kPa)
  - Bandwidth Filter (25Hz to 250Hz)
- Very High Accuracy within  $\pm 0.05\%$  of Selected Range
- First-rate Total Error Band (TEB) of 0.10% of FSS
- Excellent Long Term Stability of 0.10% of FSS in the first year
- Ultra low noise, 17.5-bit Effective Resolution
- Very fast Output Update Rate up to 500Hz
- Advanced multi-order digital filter
- Integrated closed loop control (CP202 and CP302)
- Overpressure indicator (CP202 and CP302)
- Snore detection (CP203 and CP303)
- Optional advanced digital filtering
- Optional integrated pressure switch

# CP201, CP202, CP203 CP301, CP302 & CP303

## CP Series Product Family

Product	Sensor	Ports	Multi-Range Full Scale Pressure Limits			Number of Pressure Ranges	Output Characteristics			Performance						
			Min FSS	Max FSS	Update Rate		BW Corner Frequency	Digital Vs Analog	Accuracy	Long-Term Stability	Short Term Error Band	Total Error Band				
CP201, CP202, CP203	Differential	Shared	$\pm 250$ Pa	$\pm 2500$ Pa	4	2 ms	25-250 Hz	Digital	0.05%	2 Pa	1.25 Pa	4 Pa				
	Gage		$\pm 2$ kPa	$\pm 6$ kPa	4					12 Pa	6 Pa	10 Pa				
CP301, CP302, CP303	Differential	Dedicated	$\pm 250$ Pa	$\pm 2500$ Pa	4									2 Pa	1.25 Pa	4 Pa
	Gage		$\pm 2$ kPa	$\pm 6$ kPa	4									12 Pa	6 Pa	10 Pa

To download the CP Series Data Sheet, scan the QR code below or [click here](#)



CP Series



## Ventilators

Next-generation ventilators need to prioritize patient comfort and reduce the potential for complications. This requires very good synchrony, coordination between patient's breathing effort and mechanical ventilation provided. If there is poor synchrony, the patient may feel uncomfortable and the ventilator may not deliver the right amount of support. This can lead to lung injury, increased effort to breathe, or extended time to wean off the ventilator. To achieve good synchrony, the ventilator must have fast response times and eliminate the impact of system noise.

The VN Series is a family of pressure sensors for ventilator and high flow oxygen devices. The series includes sensors for measuring inlet (wall and tank), flow, inspiratory, expiratory and barometric pressures. VN Series pressure sensors utilize proprietary oversampling which effectively eliminates all noise outside the band of interest. This allows the ventilator to acquire data without the need to oversample sensor outputs, resulting in much faster system response times. The higher bandwidth virtually eliminates sampling mixing noise, and along with a faster system response time, are key factors in overall patient synchrony improvement.

With 24-bit output resolution, advanced filtering, selectable bandwidth filters, exceptional zero stability and support for greater than 1 kHz update rate, the sensors have been designed to maximize system accuracy and reduce error rates, greatly benefitting patients in life critical, respiratory situations. Multi-Range technology enables each sensor to support up to eight factory calibrated pressure ranges, allowing manufacturers to optimize the pressure range without the need for custom calibrated solutions. Optional integrated capabilities such as advanced digital filtering and a 3-mode pressure switch, turn the VN Series into an advanced pressure sensing sub-system.

The various products in the VN Series have been optimized for the applications as show below. Devices with two checks are better suited for that application versus those with one check.

Application	VN025CM	VN026CM	VN130CM	VN131CM	VN150D	VN150A	VN-BARO
Inlet Pressure					✓	✓	
Inspiratory Pressure			✓✓	✓			
Expiratory Pressure			✓✓	✓			
Expiratory Flow	✓	✓✓					
Flow (Blower based)	✓	✓✓					
Flow (Wall & Tank based)			✓	✓✓			
Volumetric to Mass Flow							✓



## Key Features of the VN Series:

- Family of inspiratory, expiratory, flow, inlet & barometric pressure sensors
- Pure oxygen (O<sub>2</sub>) compatible
- Highly reliable with over 100 million pressure cycles tested
- Eliminates need for ventilator to oversample sensor outputs as pressure sensors provide clean 1kHz+ data rate
- 24-bit resolution (each selected range)
- Output data rate up to 1.09kHz
- Up to 8 selectable pressure ranges per device
- Exceptional zero stability
- Selectable bandwidth filter from 1.0Hz to 500Hz
- Total Error Band less than 0.15% FSS
- Very high accuracy ±0.05% of Selected Range
- Long Term Stability ±0.10% FSS
- Sensors for flow available in high and extreme resolution
- Inlet & Barometric pressure sensors include silicon gel protection
- Advanced multi-order digital filter
- Optional closed loop control
- Optional 3-mode pressure switch

*VN025CM, VN026CM, VN130CM, VN131CM, VN150A, VN150D & VN-BARO*

## VN Series Product Family

Product	Sensor	Application	Multi-Range Full Scale Pressure Limits		Number of Pressure Ranges	Output Characteristics			Performance			
			Min FSS	Max FSS		Update Rate	BW Corner Frequency	Digital Vs Analog	Accuracy	Long-Term Stability	Short Term Error Band	Total Error Band
VN025CM	Differential	Flow	±5 cmH <sub>2</sub> O	±25 cmH <sub>2</sub> O	6	1 ms	20-500 Hz	Digital	0.05%	1,75 Pa	1.0 Pa	2.5 Pa
VN026CM	Differential		±2.5 cmH <sub>2</sub> O	±25 cmH <sub>2</sub> O	7					1.5 Pa	0.75 Pa	2.0 Pa
VN130CM	Differential	Inspiratory	±80 cmH <sub>2</sub> O	±130 cmH <sub>2</sub> O	6					9 Pa	5 Pa	15 Pa
VN131CM	Differential	Expiratory Flow	±60 cmH <sub>2</sub> O	±130 cmH <sub>2</sub> O	8					7.5 Pa	4 Pa	10 Pa
VN150A	Absolute	Inlet	80 to 150 psia		8		1.0-300 Hz			2.5 kPa	750 Pa	1.5 kPa
VN150D	Diff/Gage		±80 psi	±150 psi	8					2.5 kPa	750 Pa	1.5 kPa
VN-BARO	Barometric	Volumetric to Mass Flow	350 mBar	1100 mBar	6					250 Pa	75 Pa	150 Pa

To download the VN Series Data Sheet, scan the QR code below or [click here](#)





## Spirometry

Used to screen for ailments that affect the airways such as COPD and asthma, and vital in the diagnosis and treatment plan of many other different types of lung diseases, spirometers require high performance differential pressure sensors to accurately diagnose a patient's lung functions. Superior Sensor Technology's SP Series is an innovative line of differential pressure sensors designed specifically for improving the accuracy and stability of spirometers.

The SP Series is based on our NimbleSense architecture, which has an extremely low noise floor resulting in the industry's highest levels of accuracy and lowest error rates. Our Multi-Range technology enables each device to support up to 4 calibrated pressure ranges. Further, the SP Series has lightning-fast warm-up and response times, along with extremely low power consumption.

Spirometry handheld units must also provide highly accurate readings regardless of how the unit is positioned when it is being held. While positional sensitivity remains an ongoing issue in the industry, the SP210 has a position insensitivity feature that makes it unsusceptible to changes in device orientation. Regardless of placement or movement during measurements, the SP210 maintains the highest levels of accuracy.

Another concern with spirometer accuracy is drift from zero that may impact measurements. This often requires the healthcare worker to recalibrate the device between readings. To resolve this issue, Superior Sensor has developed its proprietary **Z-Track™ technology** that virtually eliminates zero drift. Z-Track provides greater accuracy resulting in more effective diagnosis and better treatment plans. Z-Track eliminates the need for spirometer calibration and maintains minimal zero-point deviation with results that are consistent regardless of elapsed time. When combined with Superior Sensor's position insensitivity capability, the company's differential pressure sensors provide the most accurate readings for all types of spirometry equipment including handheld and desktop units. Not only are you certain that the device has virtually eliminated all zero errors, but you can be sure of accurate readings regardless of how the spirometer is positioned or used.

The many differentiating features of the SP Series help medical device makers distinguish their products and allow health professionals to better diagnose lung performance and obtain the most precise readings.



## Key Features of the SP Series:

- Virtually eliminate zero drift with Z-Track technology
- Multi-Range, as each device supports 4 calibrated ranges
- Best in class position insensitivity
- Enhanced EMI immunity
- Programmable Ranges from  $\pm 250$  Pa to  $\pm 40$  kPa
- Selectable Bandwidth Filter from 25Hz to 250Hz
- Very High Accuracy within  $\pm 0.05\%$  of Selected Range
- First-rate Total Error Band (TEB) of 0.10% of FSS
- Excellent Long Term Stability of 0.10% of FSS in the first year
- Exceptional zero stability
- Ultra low noise, 19-bit Effective Resolution
- Very fast Output Update Rate up to 500Hz
- Advanced multi-order digital filter

# SP110, SP160 & SP210

## SP Series Product Family

Product	Z-Track	Positional Insensitivity	Multi-Range Full Scale Pressure Limits		Number of Pressure Ranges	Output Characteristics			Performance			
			Min FSS	Max FSS		Update Rate	BW Corner Frequency	Digital Vs Analog	Accuracy	Long-Term Stability	Short Term Error Band	Total Error Band
SP110	Yes	No	$\pm 250$ Pa	$\pm 2500$ Pa	4	2 ms	25-250 Hz	Digital	0.05%	2 Pa	1.25 Pa	4 Pa
SP160			$\pm 5$ kPa	$\pm 40$ kPa						20 Pa	10 Pa	25 Pa
SP210		Yes	$\pm 250$ Pa	$\pm 2500$ Pa						2 Pa	1.25 Pa	4 Pa

To download the SP Series Data Sheet, scan the QR code below or [click here](#)





# HVAC SOLUTIONS

HVAC systems rely on pressure sensors for many critical functions including managing temperature, controlling airflow, measuring air quality and ensuring overall system efficiency. Specifically, pressure sensors can measure airflow and pressure throughout complex HVAC implementations to maintain comfortable indoor climate, warn if there are contaminants in the air and increase efficiency to reduce energy consumption. These sensors also enable HVAC systems to seamlessly interface with advanced building automation platforms.

Superior Sensor Technology provides both differential pressure sensor solutions and differential pressure transmitter sub-systems optimized specifically for HVAC systems and other air handling applications.

## Differential Pressure Sensors

Superior Sensor Technology's HV Series of differential pressure sensors were designed specifically for the unique requirements of HVAC systems and air handling applications, including:

- Variable Airflow Volume (VAV)
- Air Filter Monitoring
- Positive Pressure Modules/Rooms
- Negative Pressure Modules/Rooms
- Handheld Test Systems
- Air Quality Monitoring

The HV Series has an extremely low noise floor resulting in the industry's highest levels of accuracy, steadiest long-term stability and lowest error rates. Our unique Multi-Range technology enables the HV Series to support up to 8 pressure ranges in one device. And these sensors support pressure ranges as low as 25 Pascal.

With Multi-Range, pressure ranges can be programmed once or changed 'on the fly' so that one product in the field can be used for many purposes. The HV Series' flexibility provides design engineers the ability to simplify product design as one sensor can replace multiple competing sensors. Multi-Range also enables manufacturers to bring new product variants to market quickly and reduces inventory costs and product obsolescence. The HV Series can easily be implemented into a wide array of products, simplifying both product design and manufacturing.



## Key Features of the HV Series:

- Multi-Range supports 4 to 8 calibrated ranges per device
- Integrated 50/60Hz Notch Filter
- Exceptional zero stability
- Best in class position insensitivity for handheld units
- Selectable pressure ranges from  $\pm 25$  Pa to  $\pm 15$  kPa ( $\pm 0.1$  inH<sub>2</sub>O to  $\pm 60$  inH<sub>2</sub>O)
- Selectable Bandwidth Filter from 0.1Hz to 10Hz
- Very High Accuracy within  $\pm 0.05\%$  of Selected Range
- First-rate Total Error Band (TEB) of 0.10% of FSS
- Excellent Long Term Stability of 0.10% of FSS in the first year
- Ultra low noise, 19-bit Effective Resolution
- Output Data Rate from 0.5Hz to 111Hz
- Advanced multi-order digital filter
- Optional integrated closed loop control
- Optional advanced digital filtering
- Optional integrated pressure switch

# HV110, HV120, HV160 & HV210

## HV Series Product Family

Product	50/60 HZ Notch Filter	Positional Insensitivity	Multi-Range Full Scale Pressure Limits		Number of Pressure Ranges	Output Characteristics			Performance			
			Min FSS	Max FSS		Update Rate	BW Corner Frequency	Digital Vs Analog	Accuracy	Long- Term Stability	Short Term Error Band	Total Error Band
HV110	Yes	No	$\pm 125$ Pa	$\pm 2500$ Pa	5	9 ms	0.1-10 Hz	Digital	0.05%	2 Pa	1.25 Pa	4 Pa
HV120			$\pm 625$ Pa	$\pm 5$ kPa	4					5 Pa	3 Pa	5 Pa
HV160			$\pm 625$ Pa	$\pm 15$ kPa	8					8 Pa	5 Pa	15 Pa
HV210		Yes	$\pm 25$ Pa	$\pm 2500$ Pa	7					1.25 Pa	0.75 Pa	1.75 Pa

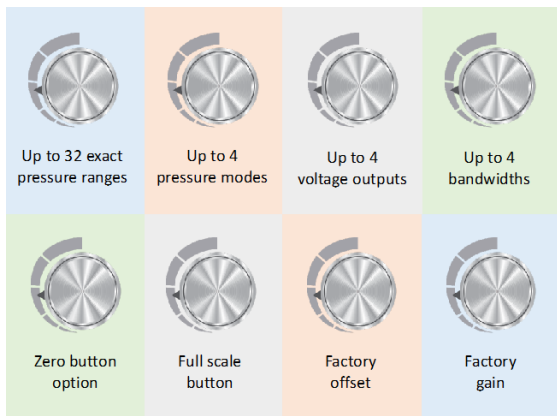
To download the HV Series Data Sheet, scan the QR code below or [click here](#)





## Differential Pressure Transmitters (DPT)

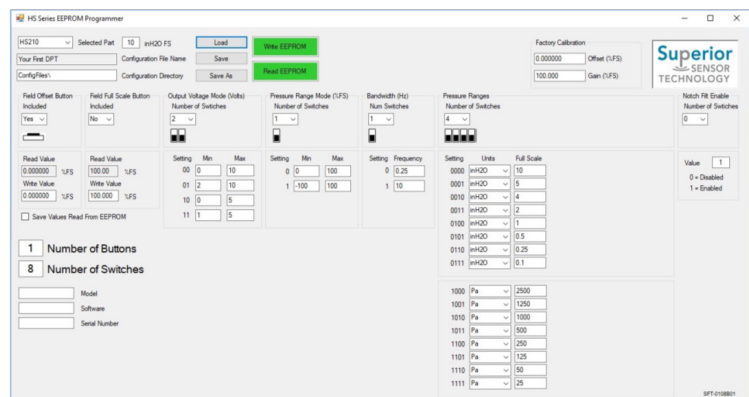
Superior Sensor Technology's HS Series of differential pressure transmitter sub-systems is an advanced family of DPT sub-systems based on the HV Series of differential pressure sensors. Enabling you to design your DPT system in just a few minutes and with the same outstanding levels of performance as the HV Series, the HS is completely configurable with 8 parameters that can be set via a very intuitive user interface.



*HS Series Configurable Parameters*

Your entire system is implemented in 3 simple steps. First you choose your hardware configuration. Next you select the desired DPT features via our software. And finally, you have these features instantly programmed via the on-board EEPROM and DIP switches.

Manufacturing is just as easy. You program the EEPROM and set the DIP switches. Then you are ready to pack and ship. No device calibration required. Designed for HVAC and industrial air handling systems, the HS DPT sub-system is the fastest, most easily configurable, efficient and accurate solution available.



*HS Series Software Interface*



## Key Features of the HS Series:

- Full featured pressure transmitter sub-system
- Support any pressures from  $\pm 25$  Pa to  $\pm 15$  kPa ( $\pm 0.1$  inH<sub>2</sub>O to  $\pm 60$  inH<sub>2</sub>O)
- Up to 12 field selectable DIP switch functions
- Up to 2 push button functions
- Up to 32 exact field selectable pressure ranges
- Up to 4 field selectable bandwidths
- Supports Bidirectional/Unidirectional/Asymmetric outputs
- 0-5/0-10/1-5/2-10 voltage outputs
- Integrated 50/60Hz Notch Filter
- Exceptional zero stability
- Very High Accuracy within  $\pm 0.05\%$  of Selected Range
- First-rate Total Error Band (TEB) of 0.10% of FSS
- Excellent Long Term Stability of 0.10% of FSS in the first year
- Configuration software included
- Hardware reference platforms available

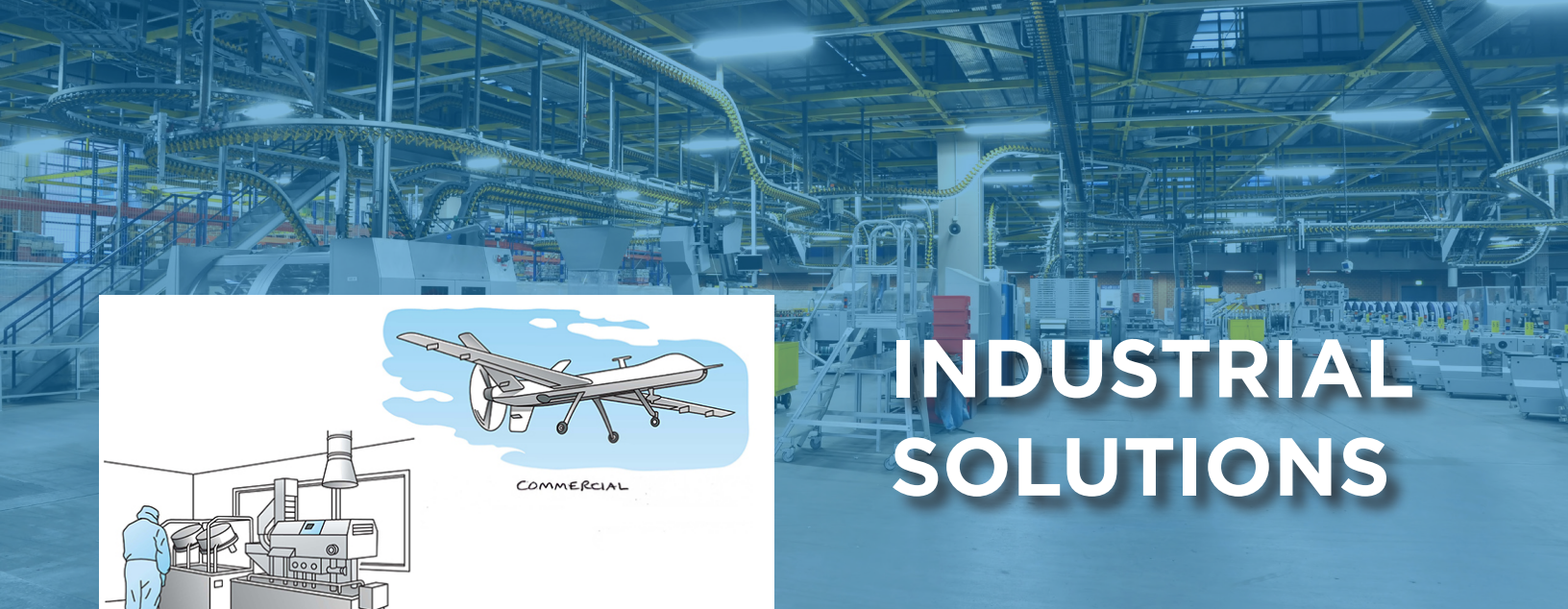
# HS110, HS120, HS160 & HS210

## HS Series Product Family

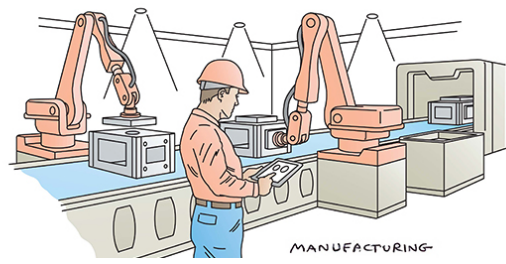
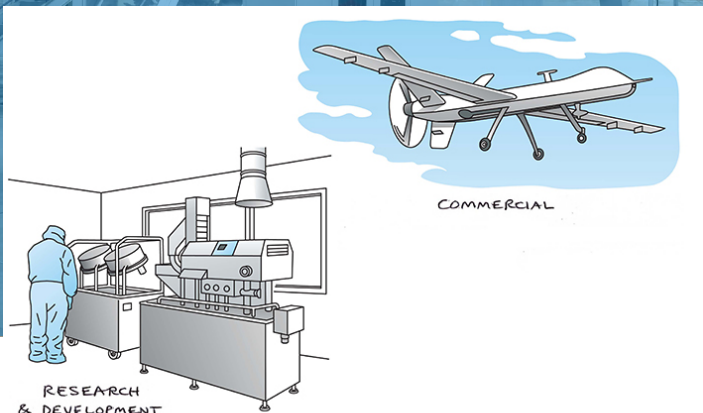
Product	50/60 HZ Notch Filter	Positional Insensitivity	Multi-Range Full Scale Pressure Limits		Number of Pressure Ranges	Output Characteristics			Performance			
			Min FSS	Max FSS		Update Rate	BW Corner Frequency	Digital Vs Analog	Accuracy	Long- Term Stability	Short Term Error Band	Total Error Band
HS110	Yes	No	$\pm 125$ Pa	$\pm 2500$ Pa	32	9 ms	0.1-10 Hz	Analog	0.05%	2 Pa	1.25 Pa	4 Pa
HS120			$\pm 625$ Pa	$\pm 5$ kPa						5 Pa	3 Pa	5 Pa
HS160			$\pm 625$ Pa	$\pm 15$ kPa						8 Pa	5 Pa	15 Pa
HS210		Yes	$\pm 25$ Pa	$\pm 2500$ Pa						1.25 Pa	0.75 Pa	1.75 Pa

To download the HS Series Data Sheet, scan the QR code below or [click here](#)

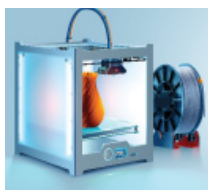




# INDUSTRIAL SOLUTIONS



The ND Series of pressure sensors supports many applications by measuring differential, gage and absolute pressures from as low as 62.5 pascal to as high as 150 psi. Having an expanded operating temperature to go along with the industry's lowest noise floor and the ability to support up to 7 pressure ranges in one device (differential sensors), the ND Series is ideal for a wide range of applications including:



3D Printing



Advanced Manufacturing



Air Quality Monitoring



Auto Smog Testing



Aviation Instrumentation



Chemical Monitoring



Clean Rooms



Industrial Monitoring



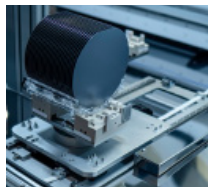
Lab Equipment Calibration



Leak Detection



UAVs/Drones



Wafer Fabrication

Flexibility is at the core of the ND Series. Not only can its multiple pressure ranges be changed 'on the fly,' there's also an advanced programmable bandwidth filter, integrated notch filter, optional integrated closed loop control capability and optional integrated 3-mode pressure switch.

What does this flexibility mean? Engineers can design one, or a whole series of products, much faster and more efficiently than with competing pressure sensors. A company can standardize on one sensor and quickly release many innovative solutions across various markets. And procurement and manufacturing can standardize on one part, resulting in greater purchasing leverage, lower inventory costs and reduced manufacturing complexities.

Superior Sensor Technology offers three ND Series product lines supporting various types of pressure measurements and pressure ranges.



## Low Pressure Differential/Gage

### Key Features:

- Extended temperature compensated range from -20°C to +85°C
- Selectable pressure ranges from ±62.5 Pa to ±7.5 kPa (±0.1 inH<sub>2</sub>O to ±30 inH<sub>2</sub>O)
- Multi-Range supports 6 to 7 calibrated ranges per device
- Selectable Bandwidth Filter from 1Hz to 200Hz
- Integrated 50/60Hz Notch Filter
- Exceptional zero stability
- Advanced multi-order digital filter
- Very High Accuracy within ±0.05% of Selected Range
- First-rate Total Error Band (TEB) of 0.15% of FSS
- Excellent Long Term Stability of 0.10% of FSS in the first year
- Ultra low noise, 17-bit Effective Resolution
- Output Data Rate up to 444Hz
- Optional integrated closed loop control
- Optional advanced digital filtering
- Optional integrated pressure switch

# ND110, ND120, ND130 & ND210

## ND Series Low Pressure Product Family

Product	50/60 HZ Notch Filter	Positional Insensitivity	Multi-Range Full Scale Pressure Limits		Number of Pressure Ranges	Output Characteristics			Performance			
			Min FSS	Max FSS		Update Rate	BW Corner Frequency	Digital Vs Analog	Accuracy	Long-Term Stability	Short Term Error Band	Total Error Band
			ND110	Yes		No	±125 Pa	±2500 Pa	6	2.25 ms	1-200 Hz	Digital
ND120	±250 Pa	±5 kPa	7		15 Pa		10 Pa	15 Pa				
ND130	±500 Pa	±7.5 kPa	7		25 Pa		15 Pa	25 Pa				
ND210	Yes	±62.5 Pa	±2500 Pa		7		5 Pa	3.5 Pa	5 Pa			

To download the ND Series Low Pressure Data Sheet, scan the QR code below or [click here](#)



ND-L Series



## Mid Pressure Differential/Gage Key Features:

- Extended temperature compensated range from -20°C to +85°C
- Selectable pressure ranges from  $\pm 0.5$  PSI to  $\pm 150$  PSI ( $\pm 34.5$  mBar to  $\pm 10.3$  Bar)
- Multi-Range supports 6 to 7 calibrated ranges per device
- Selectable Bandwidth Filter from 1Hz to 200Hz
- Silicone gel protection
- Integrated 50/60Hz Notch Filter
- Exceptional zero stability
- Advanced multi-order digital filter
- Very High Accuracy within  $\pm 0.05\%$  of Selected Range
- First-rate Total Error Band (TEB) of 0.10% of FSS
- Excellent Long Term Stability of 0.10% of FSS in the first year
- Ultra low noise, 17-bit Effective Resolution
- Output Data Rate up to 444Hz
- Optional integrated closed loop control
- Optional advanced digital filtering
- Optional integrated pressure switch

*ND005D, ND015D, ND030D,  
ND060D, ND100D & ND150D*

### ND Series Mid Pressure Product Family

Product	50/60 HZ Notch Filter	Multi-Range Full Scale Pressure Limits		Number of Pressure Ranges	Output Characteristics			Performance			
		Min FSS	Max FSS		Update Rate	BW Corner Frequency	Digital Vs Analog	Accuracy	Long-Term Stability	Short Term Error Band	Total Error Band
ND005D	Yes	$\pm 0.5$ PSI	$\pm 5$ PSI	6	2.25 ms	1-200 Hz	Digital	0.05%	100 Pa	35 Pa	60 Pa
ND015D		$\pm 1$ PSI	$\pm 15$ PSI	6					250 Pa	75 Pa	150 Pa
ND030D		$\pm 5$ PSI	$\pm 30$ PSI	6					500 Pa	150 Pa	300 Pa
ND060D		$\pm 10$ PSI	$\pm 60$ PSI	7					1.0 kPa	300 Pa	600 Pa
ND100D		$\pm 40$ PSI	$\pm 150$ PSI	7					1.5 kPa	450 Pa	900 Pa
ND150D		$\pm 50$ PSI	$\pm 150$ PSI	6					2.5 kPa	750 Pa	1.5 kPa

To download the ND Series Mid Pressure Data Sheet, scan the QR code below or [click here](#)





## Absolute Pressures

### Key Features:

- Extended temperature compensated range from -20°C to +85°C
- Pressure ranges from 15 psia to 150 psia
- Selectable Bandwidth Filter from 1Hz to 200Hz
- Silicone gel protection
- Integrated 50/60Hz Notch Filter
- Exceptional zero stability
- Advanced multi-order digital filter
- Very High Accuracy within  $\pm 0.10\%$  of Selected Range
- First-rate Total Error Band (TEB) of 0.15% of FSS
- Excellent Long Term Stability of 0.10% of FSS in the first year
- Ultra low noise, 16.5-bit Effective Resolution
- Output Data Rate up to 444Hz
- Optional integrated closed loop control
- Optional advanced digital filtering
- Optional integrated pressure switch

## ND015A, ND030A, ND060A, ND100A & ND150A

### ND Series Absolute Product Family

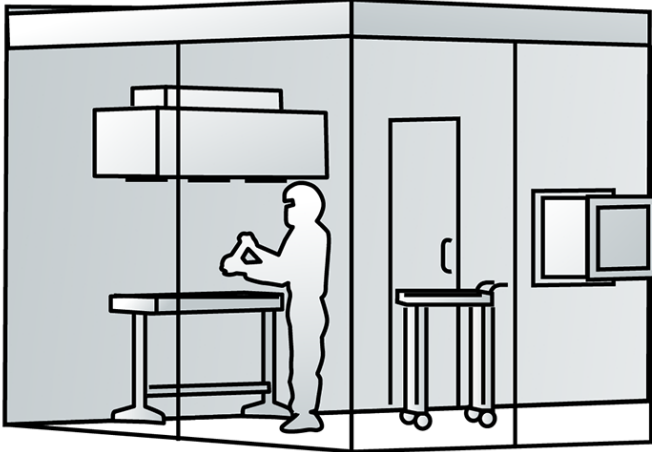
Product	50/60 HZ Notch Filter	Full Scale Pressure Range	Output Characteristics			Performance			
			Update Rate	BW Corner Frequency	Digital Vs Analog	Accuracy	Long- Term Stability	Short Term Error Band	Total Error Band
ND015A	Yes	0 to 15 PSIA	2.25 ms	1-200 Hz	Digital	0.10%	250 Pa	75 Pa	150 Pa
ND030A		0 to 30 PSIA					500 Pa	150 Pa	300 Pa
ND060A		0 to 60 PSIA					1.0 kPa	300 Pa	600 Pa
ND100A		0 to 100 PSIA					1.5 kPa	450 Pa	900 Pa
ND150A		0 to 150 PSIA					2.5 kPa	750 Pa	1.5 kPa

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# AUTO ZERO VALVES



The first product in the AZ Series, the AZ100 auto-zero valve is specifically designed for applications requiring auto-zero calibration, such as HVAC systems and medical ventilators. Engineered to integrate seamlessly with Superior Sensor Technology's pressure sensors, the AZ100 mounts directly onto the sensor and connects to the pressure sensor ports without additional tubing.

As a fully integrated valve housed in a single plastic enclosure, the AZ100 streamlines manufacturing and reduces assembly costs. Its compact design minimizes PCB space usage, allowing manufacturers to use the same PCBA for systems with or without auto-zero functionality.

Rigorously tested to exceed 1 million cycles, the AZ100 offers exceptional reliability and ensures excellent long-term performance. For instance, with an auto-zero function performed every 15 minutes, the AZ100 can deliver more than 28 years of service life. Its direct connection to the pressure ports also eliminates potential reliability concerns associated with poor sensor-to-valve connections.

The AZ100 is simply mounted on the sensor and is connected directly to the pressure sensor ports in an airtight seal. To ensure consistent operation, the valve is tightly secured to the PCB via two screws. By eliminating the need to use tubing to connect the pressure sensor to the auto zero valve, the AZ100 also simplifies the assembly process.

Built to perform consistently across a wide range of temperatures, the AZ100 operates effectively from 0°C to 60°C. Encased in a high-reliability plastic enclosure, the AZ100 provides an ideal solution for systems requiring auto zero calibration, combining performance, durability, manufacturability and ease of use.



## Key Features of the AZ Series:

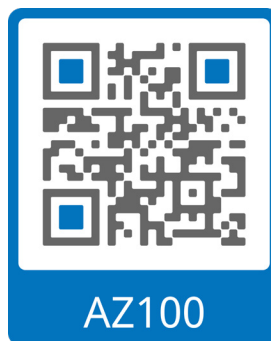
- Fully integrated auto zero valve in a single plastic enclosure
- Enclosure connects directly to sensor - no tubing required
- Highly reliable with >1M+ cycles
- 24VDC operating voltage
- Operating temperature from 0°C to 85°C
- PH2.0 2-pin connector for supply voltage
- Same PCBA can be used for systems with and without AZ100

# AZ100SC-24V

## AZ Series Product Family

Product	Package	Dimensiona (mm)	Wieght	Operating Voltage	Supply Current	Temperature Range	Life Cycle
<b>AZ100SC-24V</b>	Screw Mount	33.7 x 17.2 x 20.1	8 grams	24 VDC	65 mA	0°C to 60°C	1 million+

To download the AZ Series Data Sheet, scan the QR code below or [click here](#)



# CUSTOM SOLUTIONS

The NimbleSense architecture enables the rapid development of custom solutions. Our architectural flexibility allows for very quick prototyping of new products. We can create many possible solutions with their own unique set of features, custom packages and higher levels of system integration.

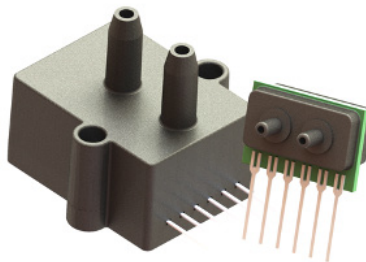
## Unique Features

Variable Pressure Ranges	Z-Track	Closed Loop Control
Advanced Digital Filtering	50/60 Hz Notch Filter	Pressure Switch
Dual Sensors	Variable Bandwidth Filters	Position Insensitivity

### Mix & Match Desired Features

- Multiple pressure ranges
- Eliminate zero drift
- Integrate closed loop control
- Advanced digital filtering
- Pressure switch capability
- Combine multiple sensors
- Selectable bandwidth filter
- Eliminate position sensitivity

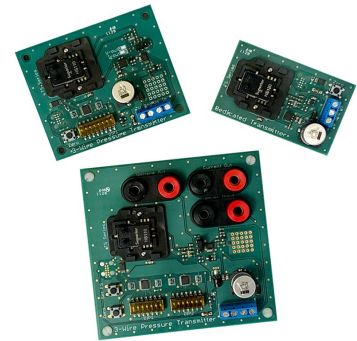
## Custom Packages



### Adapt For Project Requirements

- Fit legacy sockets
- Customize x,y,z dimensions
- Add waterproofing
- Adjust voltage output
- Modify interfaces
- Substitute materials (e.g. ceramic)
- Change port location/direction
- Alter pin-out and mounting

## System Integration



### Sub-System Development

- Custom PCB development
- Software development
- Integrate motor control
- Customize filtering for end application
- Combine mechanical and electrical elements
- Streamline manufacturing

Reach out to us at [info@superiorsensors.com](mailto:info@superiorsensors.com) to arrange a discovery call.

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