

CP Series Product Brief

Pressure Sensor Subsystem for Sleep Apnea Applications

Key Features

- Dual-sensor air flow controller sub-system designed for BiPAP, APAP and CPAP machines
- Highly Integrated, combining two pressure sensors in one device: differential and gage
- Multi-Range™ – 4 calibrated ranges per sensor
- CP Series Subsystem Enables Selectable:
 - Differential Range (± 250 Pa to ± 2.5 kPa)
 - Gage Range (± 2 kPa to ± 6 kPa)
 - Bandwidth (25Hz to 250Hz)
- 16-bit resolution each channel range
- Ultra low noise, 17.5-bit Effective Resolution
- Very High Accuracy $\pm 0.05\%$ of Selected Range
- Excellent Long Term Stability
- Output Update Rate up to 500Hz
- Temperature Compensated 5°C to 50°C
- Supply Voltage Compensation
- Standard I2C and SPI Interface
- 3-port (CP2xx) and 4-port (CP3xx) configurations
- Snore detection (CP203 and CP303)
- Integrated closed loop control (CP202 and CP302)
- Overpressure indicator (CP202 and CP302)
- Advanced multi-order filter eliminates fan noise

Product Summary

Superior's CP Series sensor module family employs *NimbleSense™*, a proprietary architecture integrating two advanced piezoresistive sensing elements, ADC, DSP, and processor intelligence in one package. Available in shared 3-port and dedicated 4-port configurations for maximum design flexibility, the CP Series is a true sub-system that integrates two distinct pressure sensors (Differential & Gage). With the industry's best performance, highest integration, and lower system BOM, the CP Series is ideal for Sleep Apnea and other respiratory applications.

The *NimbleSense™* architecture creates the industry's widest dynamic range and highest performing products. The CP Series

supports ranges as low as ± 250 Pa for the differential pressure sensor to as high as ± 6 kPa for the gage pressure sensor. Competing solutions degrade as the pressure ranges are lowered; but the CP Series with Multi-Range capability maintains optimal performance down to even ± 250 Pa.

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	✓	✓

Industry leading performance – The CP Series measures dry air and non-aggressive gas pressure with very high accuracy and a stable zero point. Non-linearity is also industry leading and typically within $\pm 0.15\%$ of selected range.

Snore Detection – The CP203 and CP303 offer the ability to detect snoring, enabling the PAP machines to improve patient treatment.

Integrated closed loop control – The CP202 and CP302 provide integrated closed loop control that typically cuts the pressure response time by 50%.

Overpressure indicator – The CP202 and CP302's overpressure indicator simplifies manufacturing by eliminating the need for an external indicator.

Optional advanced filtering – With advanced filtering to remove unwanted noise from the fan output, noise induced mixing errors are virtually eliminated.

Constructed with a high reliability plastic enclosure, the CP Series family provides the ideal combination of very high performance and reliability while ensuring customers have a high volume, extremely cost-effective solution optimized for their Sleep Apnea system requirements.

NOTE: CP202 and CP302 are development platforms that are used for creating custom closed loop solutions.

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