

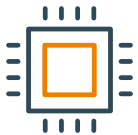


VENTILATOR SENSOR SOLUTIONS

SENSORS THAT MAKE A DIFFERENCE.

TE Connectivity (TE) partners with medical manufacturers worldwide to help bring device concepts to reality. Our technical experts have worked on thousands of medical projects and understand many of the challenges that engineers face. Decades of medical expertise, an expansive sensor portfolio and reliable manufacturing scale helps our partners develop next-generation devices and improve patient lives.

As a partner to the world's leading medical technology companies, we provide the latest technology solutions, help align with regulatory requirements, and tackle aggressive timelines without sacrificing quality or confidence. **It is our goal to help you make a difference.**



Industry Leading Technologies

TE Connectivity is a leader in engineering groundbreaking technological innovations that are making possible the world's most advanced technologies. With our vast portfolio of ventilator sensor solutions, we help engineers make the best choice to unleash the potential of their designs.



Supply and Sourcing Availability

Providing an extraordinary customer experience begins with our commitment to providing high quality products, on-time delivery and cost-effective service, all while adhering to or exceeding industry standards and regulations.



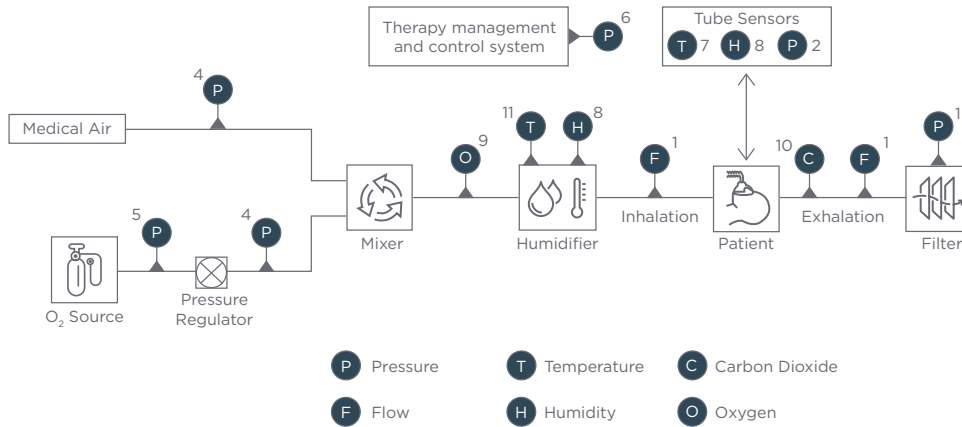
Regulatory and Standards Expertise

Our technical experts have worked on thousands of projects and hold decades of medical industry experience. TE supports its partners through design to execution, helping to propose and provide best fit solutions, while considering regulatory certification requirements, for all sensor needs.

INVASIVE AND NON-INVASIVE VENTILATOR APPLICATIONS

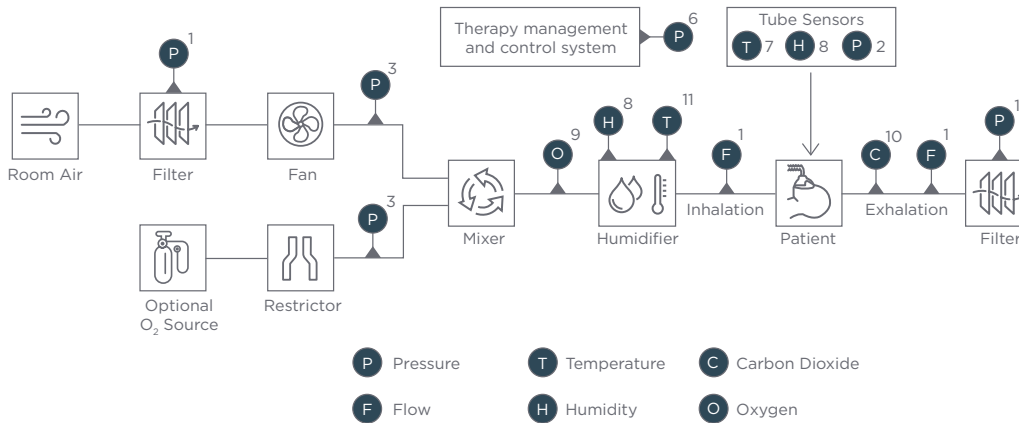
Healthcare professionals and patients rely on medical manufacturers to treat respiratory conditions with simple, easy-to-use devices and help promote patient comfort. TE's breadth of sensor solutions helps ensure your ventilator design is optimized at each critical measurement step to meet your customer's needs. Our sensor technologies strive to provide **highly reliable and accurate measurements** that help to support long-term device reliability and stability with optimized care for patient comfort.

INVASIVE VENTILATOR




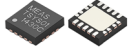

- 1 Diff. Pressure 0 to 5 cmH₂O or Flow +300 slpm
- 2 Gage Pressure 30 to 45 cmH₂O
- 4 Gage Pressure 35 to 90 PSI
- 5 Gage Pressure 3500 PSI
- 6 Barometric Air Pressure
- 7 Temperature 60 to 120 F
- 8 Humidity 0 to 100% RH
- 9 O₂ Sensors
- 10 CO₂ Level 30,000 to 40,000 ppm
- 11 Temperature 120 to 220 F

NON-INVASIVE VENTILATOR



- 1 Diff. Pressure 0 to 5 cmH₂O or Flow +300 slpm
- 2 Gage Pressure 30 to 45 cmH₂O
- 3 Gage Pressure 60 to 100 cmH₂O
- 5 Gage Pressure 3500 PSI
- 6 Barometric Air Pressure
- 7 Temperature 60 to 120 F
- 8 Humidity 0 to 100% RH
- 9 O₂ Sensors
- 10 CO₂ Level 30,000 to 40,000 ppm
- 11 Temperature 120 to 220 F

Sensor Technology	Application	Key Product Features	Benefits
Pressure SM9000 SM7000	 <ul style="list-style-type: none">Air flow and respiration controlFilter cleanliness monitoring	<ul style="list-style-type: none">MEMS board mount pressure sensorInsensitive to mounting orientationPCB mountableUltra-low pressure ranges as low as 125 Pa16-bit digital outputSM7000 analog and digital output in single productConsistent reliability and accuracy	<ul style="list-style-type: none">Easy integration and design flexibilityDetects minute breathing variationsMinimizes risk of error and uncertaintySimplified signal read-out is intuitive and improves development timing(SM7000 only) Able to read both analog and digital output and compare to detect potential faults
Pressure SM6000	 <ul style="list-style-type: none">Fan pressure	<ul style="list-style-type: none">MEMS board mount pressure sensorDigital or dual (digital and analog) outputInsensitive to mounting orientationCalibrated for temperature variationsAnalog and digital output in single productCompact modular designConsistent reliability and accuracy	<ul style="list-style-type: none">Easy integration and design flexibilitySimplified signal read-out is intuitive and improves development timingMinimizes risk of error and uncertaintyOptional cleaning for oxygen serviceAble to read both analog and digital output and compare to detect potential faults
Pressure LMI LME	 <ul style="list-style-type: none">Air flow and respiration controlFilter cleanliness monitoring	<ul style="list-style-type: none">SMD hybrid ultra low pressure sensor25 to 2500 PaI²C and SPI outputsLow power for battery operationHigh resolution and accuracyHigh immunity to dustSmall footprint, low profile (9 mm in height)Offset long term stability better than 0.1 Pa year	<ul style="list-style-type: none">Easy integration and design flexibilityAccommodates low-power designs needsAble to easily detect minute changes in pressure
Pressure HDI	 <ul style="list-style-type: none">Oxygen flow control for compressed air and gas pressure	<ul style="list-style-type: none">MEMS board mount pressure sensor12-bit ADCI²C and analog output+0.5% FS accuracy	<ul style="list-style-type: none">Easy integration and design flexibilityAble to easily detect minute changes in pressureMinimized risk of error with high reliability and accuracy over time
Pressure HMA-Series	 <ul style="list-style-type: none">Oxygen flow control for compressed air and gas pressure	<ul style="list-style-type: none">MEMS board mount pressure sensorAmplified output±0.75% FS total accuracy	<ul style="list-style-type: none">Easy integration and design flexibilityOptimized for patient air flow control with extreme precisionMinimized risk of error with high reliability and accuracy over time
Pressure HCLA	 <ul style="list-style-type: none">Oxygen flow control for compressed air and gas pressure	<ul style="list-style-type: none">MEMS board mount pressure sensorRobust to anesthesiaLow pressure as low as 250 PaAnalog and I²C output, 12-bit ADCMiniature package	<ul style="list-style-type: none">Easy integration and design flexibilityEnables extreme precision for patient air flow controlSuitable for use in small/portable ventilatorsSignal read-out is intuitiveMinimized risk of error with high reliability and accuracy over time
Pressure M3200	 <ul style="list-style-type: none">Tank pressure oxygen side	<ul style="list-style-type: none">Industrial pressure transducermV, amplified or digital output interfaceMedia compatibleStainless steel constructionCompact package	<ul style="list-style-type: none">Easy integration and design flexibilitySuitable for use in small/portable ventilatorsOptional cleaned for oxygen service
Pressure M5200	 <ul style="list-style-type: none">Tank pressure oxygen side	<ul style="list-style-type: none">Analog pressure transducerMedia compatible±0.25% accuracy±1.0% total error bandWide variety of electrical port connection optionsHigh EMI protectionCompact modular designmV, amplified or digital output interface	<ul style="list-style-type: none">Excellent durability and accuracy even while exposed to the pressure mediaHigh system design flexibility and integrationOptional cleaned for oxygen serviceReduced risk of signal interference
Pressure AST4300	 <ul style="list-style-type: none">Tank pressure oxygen side	<ul style="list-style-type: none">Non-incendive pressure transducerMedia compatibility	<ul style="list-style-type: none">Usable in hazardous locationsResistant to corrosion and compatible with various gases and liquids

Sensor Technology	Application	Key Product Features	Benefits
Board Mount Temperature TSYS01 	• Air and gas temperature management	<ul style="list-style-type: none"> • Low Current, <12.5 μA (standby < 0.14 μA) • Small Package: QFN16 • SPI / I2C Interface • TSYS01-1: \pm0.1°C @ Temp.: -20°C ... +70°C 	<ul style="list-style-type: none"> • Easy integration and design flexibility • Suitable for use in small/portable ventilators • Accommodates low-power designs needs
Board Mount Temperature TSYS02 	• Air and gas temperature management	<ul style="list-style-type: none"> • Low Current, <12.5 μA (standby < 0.14 μA) • I2C Interface up to 400kHz • Small IC-Package TDFN8 2.5mm x 2.5mm 	<ul style="list-style-type: none"> • Easy integration and design flexibility • Suitable for use in small/portable ventilators • Accommodates low-power designs needs
Temperature TSYS03 	• Air and gas temperature management	<ul style="list-style-type: none"> • Digital temperature measurement • Available in super small 1.5 x 1.5 mm package • Resolution up to 0.01°C • Supply voltage range from 2.4 V to 5.5 V 	<ul style="list-style-type: none"> • Easy integration and design flexibility • Suitable for use in small/portable ventilators • Accommodates low-power designs needs
Temperature 44000 Series 	• Air and gas temperature management	<ul style="list-style-type: none"> • NTC (Negative Temperature Coefficient) thermistor • Miniaturized components • Rapid time response • High sensitivity • Long-term stability and reliability 	<ul style="list-style-type: none"> • Easy integration and design flexibility • Suitable for use in small/portable ventilators • Optimized for device response to minute temperature changes • Improves control of ventilator parameters to maintain patient comfort • Eliminates recalibration requirements
Humidity and Temperature HTU31 	• Air and gas mixture humidity and temperature management	<ul style="list-style-type: none"> • Digital or analog output available • Fast response time: 5 sec for τ63% and 10 sec recovery after condensation • Optional filter membrane for protection 	<ul style="list-style-type: none"> • Easy integration and design flexibility • Suitable for use in small/portable ventilators • Optimized for device response to minute temperature changes • Improves control of ventilator parameters to maintain patient comfort • Allows the calculation of dew point
CO ₂ Detection TS418 	<ul style="list-style-type: none"> • Exhalation carbon dioxide concentration level measurement • Component of CO₂ Gas Sensor 	<ul style="list-style-type: none"> • Filter for NDIR CO₂ gas detection • Small TO-18 package • Accurate reference sensor • Very high signal • Compact design • 4.26 μm narrow band pass 	<ul style="list-style-type: none"> • Easy integration and design flexibility • Suitable for use in small/portable ventilators • Able to specifically measure CO₂ concentration

te.com/ventilator-sensors

CONTACT US 

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