
EXPLORE OUR RANGE OF TE SENSORS FOR OPTIMIZED PERFORMANCE OF YOUR COMMERCIAL AND RESIDENTIAL HVAC APPLICATIONS

- Building Automations Systems Solution Guide
- Industrial Heat Pumps Solution Guide
- Mechanical Ventilation Solution Guide
- Variable Air Volume Solution Guide
- Furnaces and Boilers Solution Guide
- Fire Systems Solution Guide

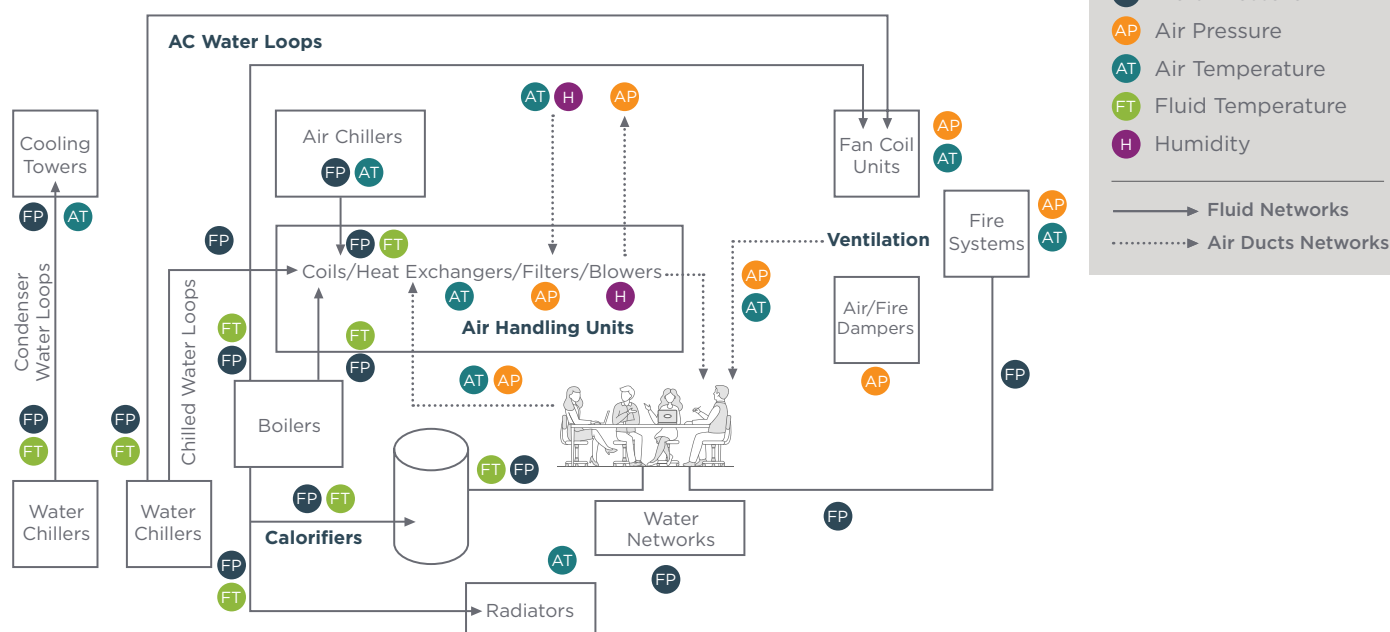
SENSORS FOR BUILDING AUTOMATION SYSTEMS

Tightening regulations on efficiency and mounting environmental concerns have driven improvements in building automation systems. Applications in Building Automation include heating, ventilation, air conditioning and refrigeration (HVACR), with control interfaces as well as monitoring and diagnostic systems – all with the help of sensors and connectivity solutions. Sensors provide the data to one or more processing units that uses that information to drive heating and cooling equipment as well as actuators, dampers, fans and other components to control a building's operation. Over time advances in technology have made it possible to greatly increase the number of control points, improved system accuracy and provided the ability to fine tune the system based on occupancy, specific zones as well as outdoor heat loads and much more.

TE CONNECTIVITY ADVANTAGES

- Sensing Element Portfolio Breadth
- Industrial Technology Leadership
- Manufacturing Scale
- Customization Capability

BUILDING AUTOMATION SYSTEMS



SENSORS FOR BUILDING AUTOMATION SYSTEMS

Sensor Technology		Application	Key Product Features	Benefits
MS5839		<ul style="list-style-type: none"> Miniature, high performance and precise embedded sensor for HVAC equipment in harsh environments 	<ul style="list-style-type: none"> MEMS based sensor offering advanced shielding for harsh HVAC environments Low power consumption and digital interconnectivity in an ultra-compact Low profile package 	<ul style="list-style-type: none"> Low power consumption to help facilitate IoT applications and condition monitoring practices Highly precise even in harsh industrial environments
SM9000		<ul style="list-style-type: none"> Monitoring very low pressure properties for ventilation, VAV and filter monitoring within HVAC systems 	<ul style="list-style-type: none"> Low pressure MEMS transducer technology and CMOS mixed signal processing technology Pressure and temperature compensated with high accuracy and repeatability 	<ul style="list-style-type: none"> Accurate, reliable and repeatable operation over the life of the part The pressure sensor can be mounted directly onto a standard PCB Compensation and calibration eliminates need for additional circuitry or separate calibration
SM7000		<ul style="list-style-type: none"> Monitoring low air pressure within ventilation systems 	<ul style="list-style-type: none"> Low pressure MEMS transducer technology and CMOS mixed signal processing technology to produce either an analog and/or digital output fully conditioned Multi-order pressure and temperature compensated 	<ul style="list-style-type: none"> Accurate, reliable and repeatable operation over the life of the part The pressure sensor can be mounted directly onto a standard PCB Compensation and calibration eliminates need for additional circuitry or separate calibration
HCLA		<ul style="list-style-type: none"> Measure low pressure properties within HVAC systems 	<ul style="list-style-type: none"> Miniature calibrated and temperature compensated low pressure sensors that perform precision digital signal conditioning and provide analog and digital output at the same time 	<ul style="list-style-type: none"> Space-saving sensor packaging for PCB-mounting and maximum OEM design flexibility Special compensation technique to achieve very high offset stability and virtually no position sensitivity
LMI		<ul style="list-style-type: none"> Monitors extremely low pressure of VAVs Filter monitoring Burner control and other areas of the HVAC system 	<ul style="list-style-type: none"> Extremely low full scale pressure range Accuracy is a percent of reading not a percent of full scale Provides temperature and humidity data also I²C output only 	<ul style="list-style-type: none"> High immunity to dust Extremely high accuracy at very low pressures Longterm stability Small footprint and low profile for space savings
LHD		<ul style="list-style-type: none"> Large dynamic range monitoring found in airflow applications within VAVs Filter monitoring Burner control and other areas of the HVAC system 	<ul style="list-style-type: none"> Extremely low full scale pressure range Accuracy is a percent of reading not a percent of full scale Provides temperature and humidity data also I²C output only 	<ul style="list-style-type: none"> High immunity to dust Extremely high accuracy at very low pressures Low profile surface
MS8607		<ul style="list-style-type: none"> Digital sensor is optimal for applications in which key requirements such as ultra low power consumption and high PHT accuracy, such as in HVAC 	<ul style="list-style-type: none"> Integrated pressure Humidity and temperature sensor Compact sensor packaging I²C interface 	<ul style="list-style-type: none"> Product is well suited for applications with ultra low power consumption High PHT accuracy Compact Multi-sensing design
MSP100		<ul style="list-style-type: none"> Water leak detection or pressure monitoring Single piece construction Suitable for harsh environments 	<ul style="list-style-type: none"> Digital output pressure transducer Stainless steel media compatibility Low cost Small profile solution 	<ul style="list-style-type: none"> Very compact, compatible with harsh media and suitable for harsh environments and freeze/thaw applications
M3200		<ul style="list-style-type: none"> Compact industrial pressure transducer suitable for measurement of gas pressure, refrigerants, and media such as contaminated water, steam, and mildly corrosive fluids 	<ul style="list-style-type: none"> Rugged Microfused design Variety of ports Analog or digital output configurations 17-4PH stainless wetted surfaces Low cost 	<ul style="list-style-type: none"> Compact Customizable Weatherproof CE Compliant
TSYS Series		<ul style="list-style-type: none"> Providing accurate temperature data for HVAC applications 	<ul style="list-style-type: none"> Ultra compact Digital temperature sensor that provides factory calibrated highly accurate temperature data 	<ul style="list-style-type: none"> Very small and have low thermal mass which provides a quick response to temperature changes Ideal for mobile and battery power applications
SERIES II DISCRETE NTC THERMISTORS		<ul style="list-style-type: none"> Temperature sensing, control and compensation within HVAC applications 	<ul style="list-style-type: none"> Thermally conductive epoxy coated thermistor 30 AWG Solid Silver-Plated Copper Leads with White PTFE Insulation Four Temperature Tolerance Classifications Available RoHS Compliant 	<ul style="list-style-type: none"> Rapid time response Proven stability and reliability Interchangeability PTFE insulated lead wires
HTU21		<ul style="list-style-type: none"> Humidity and temperature combination sensors for HVAC applications 	<ul style="list-style-type: none"> Calibrated, linearized signals in digital I²C format Humidity and temperature plug and play transducers Direct interface with a micro-controller with the module for humidity and temperature digital outputs Low power sensor 	<ul style="list-style-type: none"> Relative Humidity and Temperature Digital Output, I²C interface; low power consumption for IoT applications; fast response time; Full interchangeability with no calibration required in standard conditions
HTU31		<ul style="list-style-type: none"> Humidity and temperature combination sensors for HVAC applications 	<ul style="list-style-type: none"> High performance humidity and temperature combination sensor Compact and accurate Available in digital and analog versions 	<ul style="list-style-type: none"> Provides fast response time Precision measurement Low hysteresis and sustained performance even in the harshest environments

SENSORS FOR BUILDING AUTOMATION SYSTEMS

HTU35		<ul style="list-style-type: none"> Humidity and temperature combination sensors for HVAC applications 	<ul style="list-style-type: none"> High performance humidity and temperature combination sensor Compact and accurate Analog output 	<ul style="list-style-type: none"> Relative Humidity and Temperature analog output Low power consumption Fast response time Full interchangeability with no calibration required in standard conditions
HTG35		<ul style="list-style-type: none"> Humidity and temperature combination sensors designed for high volume and demanding applications where power consumption is critical 	<ul style="list-style-type: none"> Humidity and temperature plug and play transducers Direct interface with a micro-controller with the module for humidity linear voltage and direct NTC outputs Low power sensor 	<ul style="list-style-type: none"> Suitable for small bulk assembly RoHS compliant Full interchangeability Demonstrated reliability and long term stability Reliability not affected by repeated condensation
KMT		<ul style="list-style-type: none"> Position sensing for motor motion control within HVAC applications 	<ul style="list-style-type: none"> Magnetic non-contact 360° range Low cost 	<ul style="list-style-type: none"> Ideal for harsh environments Contactless absolute angular measurement
KMXB		<ul style="list-style-type: none"> Contactless linear or angular position measurement in applications like industrial HVAC equipment 	<ul style="list-style-type: none"> Sensor that performs well, even when exposed to oil, dirt and dust Provide reliable and accurate measurements in harsh environments including high temperatures 	<ul style="list-style-type: none"> Superior performance even within harsh industrial environments High resolution and high precision with contactless measurement
820M1		<ul style="list-style-type: none"> Accelerometer designed for embedded condition monitoring and predictive maintenance applications 	<ul style="list-style-type: none"> Low cost; board mountable accelerometer Designed and qualified for machine health monitoring and has superior resolution, dynamic range and bandwidth to MEMS devices. 	<ul style="list-style-type: none"> Proven track record for offering the reliable and long-term stable output required for condition monitoring applications
830M1		<ul style="list-style-type: none"> Embedded Piezoelectric (PE) accelerometer offering advanced acceleration sensing for machine health monitoring 	<ul style="list-style-type: none"> Embedded Piezoelectric (PE) accelerometer offering advanced acceleration sensing Wide bandwidth Small size Low power, and robust performance are essential 	<ul style="list-style-type: none"> Optimized for critical machine health monitoring the 830M1 offers an outstanding measurement bandwidth (up to 15 kHz) Superior resolution and is designed with highly stable PE sensing technology, to provide long-term, reliable, stable and accurate performance for condition monitoring applications in harsh environments
8911		<ul style="list-style-type: none"> Wireless accelerometer sensor for Proof of concept (POC) is designed for vibration monitoring in applications such as predictive maintenance and condition monitoring 	<ul style="list-style-type: none"> Compact LoRaWAN™ Wireless accelerometer for POC with edge computing for condition monitoring Corrosion resistant stainless steel case and plastic covering 	<ul style="list-style-type: none"> Rugged, IP66 rated O-ring seal allows the sensor to perform well in harsh environments Piezo sensing element which has the advantage of high bandwidth and ultra low power vs MEMS solutions Longer battery life of up to 10 years and ultra low sleep power usage
8711-01		<ul style="list-style-type: none"> Shielded rugged IEPE accelerometers designed for industrial condition monitoring 	<ul style="list-style-type: none"> Available in four standard dynamic ranges from ±5g to ±80g Wide bandwidth up to greater than 10kHz Designed to operate in ambient temperature ranges from -55°C to +125°C 	<ul style="list-style-type: none"> Rugged, IP67 rated seal allows the sensor to perform well in harsh environments Piezo sensing element which has the advantage of high bandwidth and ultra low power vs MEMS solutions

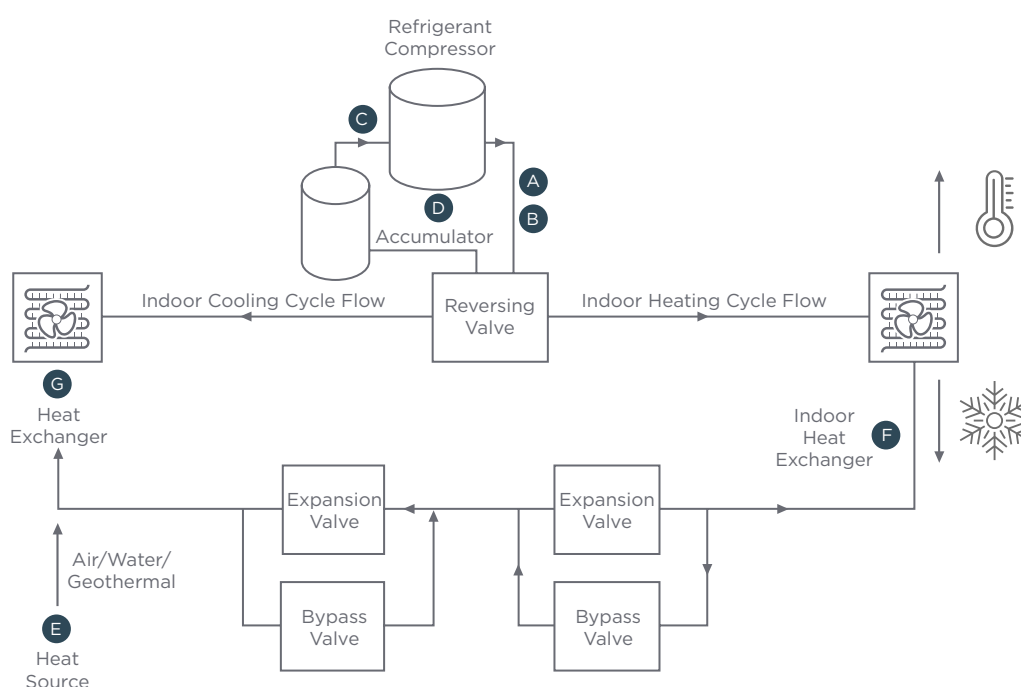
SENSORS FOR INDUSTRIAL HEAT PUMPS

Creating comfortable indoor spaces in buildings cost effectively is a common challenge for modern HVAC systems. Heat pumps are one energy-effective solution that can provide both heating and cooling in a single unit. Sensors for pressure, temperature, flow, and humidity are making these systems smarter and more efficient. However, sensors must be cost effective, accurate and reliable as part of heat pump systems as the environments they operate in can be quite harsh.

TE CONNECTIVITY ADVANTAGES

- Portfolio Breadth
- Industrial Technology Leadership
- Manufacturing Scale
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HEAT PUMPS



- A** High Pressure Sensor
- B** Refrigerant Vapour Temp
- C** Low Pressure Sensor
- D** Compressor crank case Temperature
- E** Water or Air Temp Sensor
- F** Inside air Temp
- G** Defrost Temperature Sensor

SENSORS FOR INDUSTRIAL HEAT PUMPS

Sensor Technology		Application	Key Product Features	Benefits
M3200		<ul style="list-style-type: none"> Compact industrial pressure transducer suitable for measurement of gas pressure, refrigerants, and media such as contaminated water, steam, and mildly corrosive fluids 	<ul style="list-style-type: none"> Rugged Microfused design Variety of ports Analog or digital output configurations 17-4PH stainless steel wetted surfaces 	<ul style="list-style-type: none"> Compact Customizable Weatherproof CE Compliant
U7100		<ul style="list-style-type: none"> High volume low pressure transducer suitable for measurement of liquid or gas pressure in HVAC refrigeration controls 	<ul style="list-style-type: none"> Stainless steel wetted surfaces Gage, absolute, sealed gage Hermetic Pressure Ports Water Resistant 1M Immersion 	<ul style="list-style-type: none"> Rugged for heavy equipment and outdoor use such as HVAC refrigeration systems ±0.25% accuracy Exceeds the latest industrial CE requirements Survives high vibration
U5200		<ul style="list-style-type: none"> Low Pressure transducer for demanding industrial applications such as advanced HVAC systems and refrigeration systems 	<ul style="list-style-type: none"> Gage, Sealed, Absolute, Compound ranges Variety of pressure ports and electrical configurations 316L stainless steel 	<ul style="list-style-type: none"> Compact CE Compliant and Weatherproof Suitable for measurement for difficult, corrosive media Up to ±0.1% Accuracy Durable
PIPE PROBE		<ul style="list-style-type: none"> Overmolded NTC surface temperature sensor designed for fast and accurate non-invasive temperature tracking of fluids such as refrigerants or heating/cooling liquids inside HVAC tubing 	<ul style="list-style-type: none"> PRO4-overmolded probe consists of a NTC thermistor soldered to a 24 AWG Stranded TPE cable with integrated clip Supplied with connector, and RoHS Compliant 	<ul style="list-style-type: none"> Robust Compact design Improved overall reliability Fast response time
TPE OVERMOLDED PROBE		<ul style="list-style-type: none"> Building management, heater control, and air conditioning within HVAC applications 	<ul style="list-style-type: none"> Temperature sensor assembly consists of a NTC thermistor soldered to a single insulated TPE extension cable with an IP 67 rating 	<ul style="list-style-type: none"> High degree of protection against water/moisture ingress Customized tolerances and resistances
HTU21		<ul style="list-style-type: none"> Humidity and temperature combination sensors for HVAC applications 	<ul style="list-style-type: none"> Calibrated, linearized signals in digital, I²C format Humidity and temperature plug and play transducers Direct interface with a micro-controller with the module for humidity and temperature digital outputs Low power sensor 	<ul style="list-style-type: none"> Relative Humidity and Temperature Digital Output I²C interface Low power consumption for IoT applications Fast response time Full interchangeability with no calibration required in standard conditions
HTU31		<ul style="list-style-type: none"> Humidity and temperature combination sensors for HVAC applications 	<ul style="list-style-type: none"> High performance humidity and temperature combination sensor Compact and accurate Available in digital and analog versions 	<ul style="list-style-type: none"> Provides fast response time Precision measurement Low hysteresis and sustained performance, even in the harshest environments
HTU35		<ul style="list-style-type: none"> Humidity and temperature combination sensors for HVAC applications 	<ul style="list-style-type: none"> High performance humidity and temperature combination sensor Compact and accurate Analog output 	<ul style="list-style-type: none"> Relative Humidity and Temperature analog output Low power consumption Fast response time Full interchangeability with no calibration required in standard conditions
HTG35		<ul style="list-style-type: none"> Humidity and temperature combination sensors designed for high volume and demanding applications where power consumption is critical 	<ul style="list-style-type: none"> Humidity and temperature plug and play transducers Direct interface with a micro-controller with the module for humidity linear voltage and direct NTC outputs Low power sensor 	<ul style="list-style-type: none"> Suitable for small bulk assembly RoHS compliant Full interchangeability Demonstrated reliability and long term stability Reliability not affected by repeated condensation

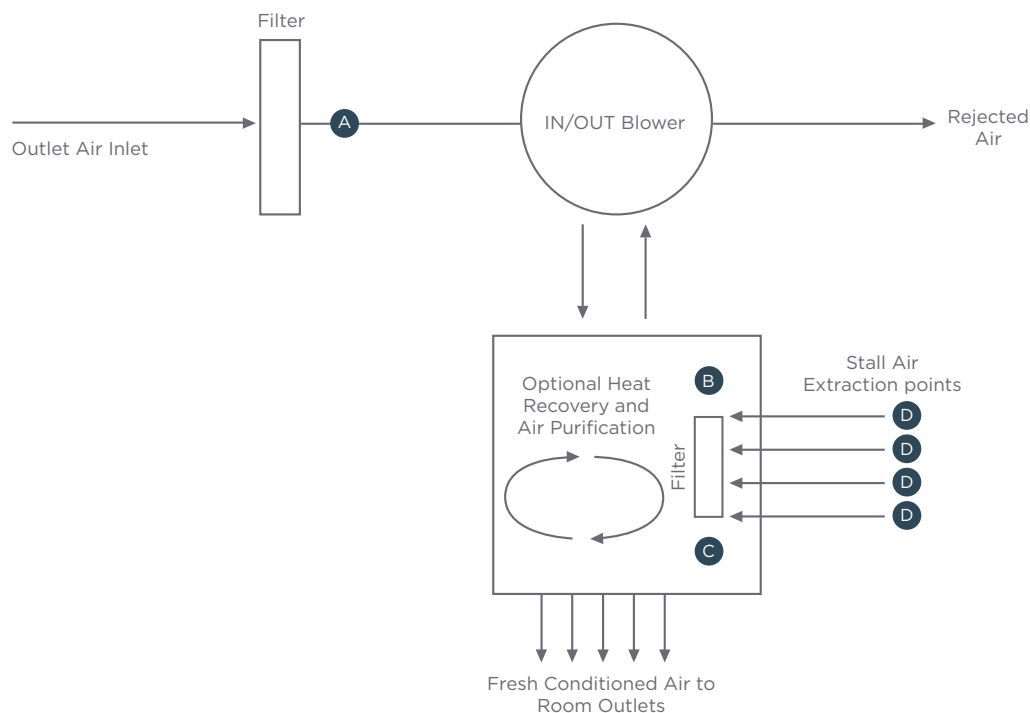
SENSORS FOR MECHANICAL VENTILATION

Reducing a building's energy and cost while improving comfort isn't just about efficient heating and air conditioning. Ventilation is required for both HVAC comfort and good air quality. Without enough ventilation, users will eventually experience comfort issues and even health problems. Mechanical ventilation uses ducts and fans to draw in and distribute fresh air throughout a space, and to exhaust air from specific areas. Mechanical ventilation is beneficial not only for energy efficiency, but to provide more control over the amount of outdoor air added, as well as its source. To accomplish this level of control and efficiency, mechanical ventilation requires data to determine what vents to open or close, and when to extract air based on air quality.

TE CONNECTIVITY ADVANTAGES

- Portfolio Breadth
- Industrial Technology Leadership
- Manufacturing Scale
- Customization Capability

MECHANICAL VENTILATION



- A Temperature Sensor
- B Humidity Sensor
- C Differential Pressure/Airflow Sensor/Filter Clogging
- D Temperature Sensor

SENSORS FOR MECHANICAL VENTILATION

Sensor Technology		Application	Key Product Features	Benefits
SM9000		<ul style="list-style-type: none"> Monitoring very low pressure properties for ventilation VAV and filter monitoring within HVAC systems 	<ul style="list-style-type: none"> Compact low cost, and low power board mount differential microflow pressure sensor that is immune to dust and fumes and are known for long-term stability 	<ul style="list-style-type: none"> Accurate, reliable and repeatable operation over the life of the part The pressure sensor can be mounted directly onto a standard PCB Compensation and calibration eliminates need for additional circuitry or separate calibration
SM7000		<ul style="list-style-type: none"> Monitoring low air pressure within ventilation systems 	<ul style="list-style-type: none"> Low pressure MEMS transducer technology and CMOS mixed signal processing technology to produce either an analog and or digital output fully conditioned Multi-order pressure and temperature compensated 	<ul style="list-style-type: none"> Accurate, reliable and repeatable operation over the life of the part The pressure sensor can be mounted directly onto a standard PCB Compensation and calibration eliminates need for additional circuitry or separate calibration
HCLA		<ul style="list-style-type: none"> Measure low pressure properties within HVAC systems 	<ul style="list-style-type: none"> Miniature calibrated and temperature compensated low pressure sensors that perform precision digital signal conditioning and provide analog and digital output at the same time 	<ul style="list-style-type: none"> Space-saving sensor packaging for PCB-mounting and maximum OEM design flexibility Special compensation technique to achieve very high offset stability and virtually no position sensitivity
LMI		<ul style="list-style-type: none"> Monitors extremely low pressure of VAVs Filter monitoring burner control and other areas of the HVAC system 	<ul style="list-style-type: none"> Extremely low full scale pressure range Accuracy is a percent of reading not a percent of full scale Provides temperature and humidity data also I²C output only 	<ul style="list-style-type: none"> High immunity to dust Extremely high accuracy at very low pressures Longterm stability Small footprint and low profile for space savings
LHD		<ul style="list-style-type: none"> Large dynamic range monitoring found in airflow applications within VAVs Filter monitoring Burner control and other areas of the HVAC system 	<ul style="list-style-type: none"> Extremely low full scale pressure range Accuracy is a percent of reading not a percent of full scale Provides temperature and humidity data also I²C output only 	<ul style="list-style-type: none"> High immunity to dust Extremely high accuracy at very low pressures Low profile surface
HTU21		<ul style="list-style-type: none"> Humidity and temperature combination sensors for HVAC applications 	<ul style="list-style-type: none"> Calibrated, linearized signals in digital I²C format Humidity and temperature plug and play transducers Direct interface with a micro-controller with the module for humidity and temperature digital outputs Low power sensor 	<ul style="list-style-type: none"> Relative Humidity and Temperature Digital Output I²C interface Low power consumption for IoT applications Fast response time Full interchangeability with no calibration required in standard conditions
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820M1		<ul style="list-style-type: none"> Accelerometer designed for embedded condition monitoring and predictive maintenance applications 	<ul style="list-style-type: none"> Low cost Board mountable accelerometer Designed and qualified for machine health monitoring and has superior resolution, dynamic range and bandwidth to MEMS devices 	<ul style="list-style-type: none"> Proven track record for offering the reliable and long-term stable output required for condition monitoring applications
830M1		<ul style="list-style-type: none"> Embedded Piezoelectric (PE) accelerometer offering advanced acceleration sensing for machine health monitoring 	<ul style="list-style-type: none"> Embedded Piezoelectric (PE) accelerometer offering advanced acceleration sensing Wide bandwidth Small size Low power, and robust performance are essential 	<ul style="list-style-type: none"> Optimized for critical machine health monitoring the 830M1 offers an outstanding measurement bandwidth (up to 15 kHz) Superior resolution and is designed with highly stable PE sensing technology, to provide long-term, reliable, stable and accurate performance for condition monitoring applications in harsh environments

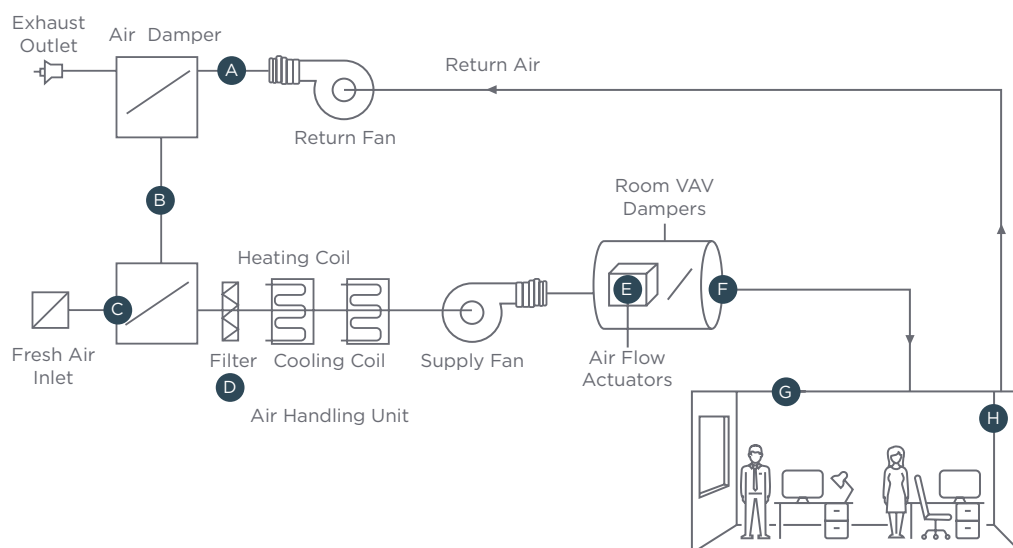
SENSORS FOR VARIABLE AIR VOLUME SYSTEMS

As technology advanced and the costs of heating and cooling increased, innovative solutions were necessary to improve HVAC efficiency. Today, accurate, reliable sensor technology provides data for increased building efficiency and control with variable air volume (VAV) systems. In larger buildings with multiple zones and changing occupancy, VAV controllers are more effective than previous constant air volume designs. VAV uses a constant temperature and varies the air volume to keep spaces comfortable while saving energy. The volume flow is controlled through dampers. When an individual space's load changes, the damper in a VAV system will adjust to compensate.

TE CONNECTIVITY ADVANTAGES






- Portfolio Breadth
- Industrial Technology Leadership
- Manufacturing Scale
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VARIABLE AIR VOLUME



- A Temperature Sensor
- B Humidity Sensor
- C Inlet Temperature Sensor
- D Filter Clogging Differential Pressure Sensor
- E Actuator Position Feedback
- F Differential Pressure/Airflow Sensor
- G Humidity Sensor
- H Temperature Sensor

SENSORS FOR VARIABLE AIR VOLUME SYSTEMS

Sensor Technology		Application	Key Product Features	Benefits
SM9000		<ul style="list-style-type: none"> Monitoring very low pressure properties for ventilation VAV and filter monitoring within HVAC systems 	<ul style="list-style-type: none"> Low pressure MEMS transducer technology and CMOS mixed signal processing technology Pressure and temperature compensated with high accuracy and repeatability 	<ul style="list-style-type: none"> Accurate, reliable and repeatable operation over the life of the part The pressure sensor can be mounted directly onto a standard PCB Compensation and calibration eliminates need for additional circuitry or separate calibration
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HCLA		<ul style="list-style-type: none"> Measure low pressure properties within HVAC systems 	<ul style="list-style-type: none"> Miniature calibrated and temperature compensated low pressure sensors that perform precision digital signal conditioning and provide analog and digital output at the same time 	<ul style="list-style-type: none"> Space-saving sensor packaging for PCB-mounting and maximum OEM design flexibility Special compensation technique to achieve very high offset stability and virtually no position sensitivity
LMI		<ul style="list-style-type: none"> Monitors extremely low pressure of VAVs Filter monitoring Burner control and other areas of the HVAC system 	<ul style="list-style-type: none"> Extremely low full scale pressure range Accuracy is a percent of reading not a percent of full scale Provides temperature and humidity data also I²C output only 	<ul style="list-style-type: none"> High immunity to dust Extremely high accuracy at very low pressures Longterm stability Small footprint and low profile for space savings
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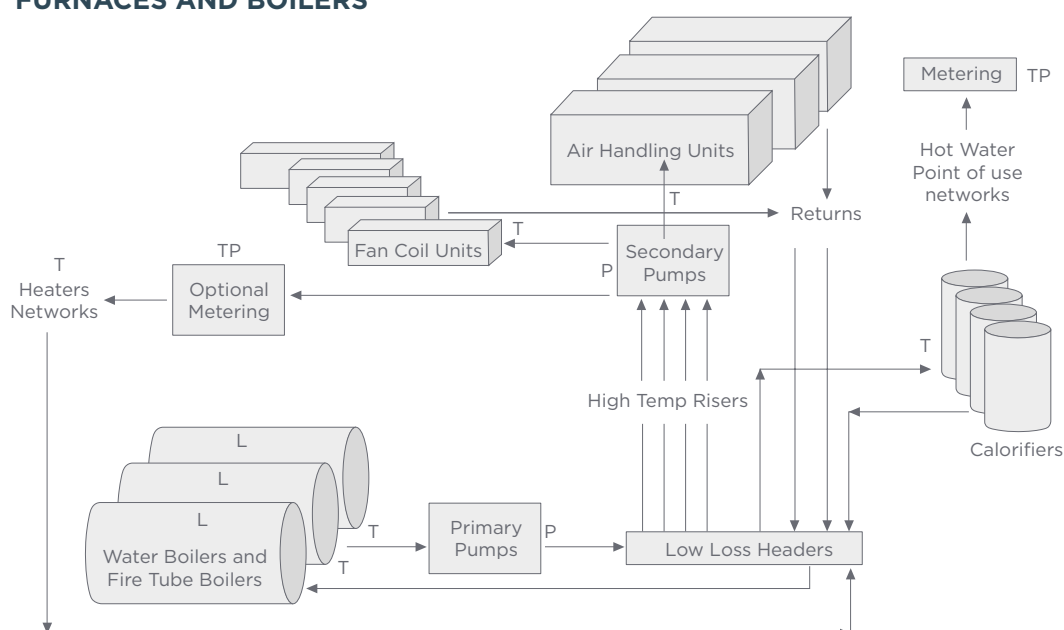
SENSORS FOR FURNACES AND BOILERS

Boilers and furnaces, like other HVAC equipment, continue to evolve and OEMs continue to add features like improved zoning control, self-diagnostics and much more while also improving system efficiencies. While boilers and furnaces have many similarities, they operate in markedly different ways. Water boilers generate hot water which is then distributed throughout a building and in turn used to warm up the air via Fan coil units and Air handling units. Hot water boilers distribute heat through water pipes using pumps and risers to heat baseboard, cast iron radiators, or radiant flooring systems. A range of sensors and controls are key to operate these systems at peak efficiencies as well as improving the overall comfort for occupants.

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FURNACES AND BOILERS



SENSORS FOR FURNACES AND BOILERS

Sensor Technology		Application	Key Product Features	Benefits
MS5839		<ul style="list-style-type: none"> Miniature, high performance and precise embedded sensor for HVAC equipment in harsh environments 	<ul style="list-style-type: none"> MEMS based sensor offering advanced resistance and shielding for harsh HVAC environments Low power consumption and digital interconnectivity in an ultra-compact low profile package 	<ul style="list-style-type: none"> Low power consumption to help facilitate IoT applications and condition monitoring practices Highly precise even in harsh industrial environments
SM9000		<ul style="list-style-type: none"> Monitoring very low pressure properties for ventilation VAV and filter monitoring within HVAC systems 	<ul style="list-style-type: none"> Low pressure MEMS transducer technology and CMOS mixed signal processing technology Pressure and temperature compensated with high accuracy and repeatability 	<ul style="list-style-type: none"> Accurate, reliable and repeatable operation over the life of the part The pressure sensor can be mounted directly onto a standard PCB Compensation and calibration eliminates need for additional circuitry or separate calibration
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M7100		<ul style="list-style-type: none"> Compressors Pumps Refrigeration systems 	<ul style="list-style-type: none"> Sealed design Analog and digital outputs High accuracy 	<ul style="list-style-type: none"> Lower cost Reliable Accurate sensing in harsh environments
MODEL 202M / MODEL 202H		<ul style="list-style-type: none"> Probe sensor utilized for immersion in HVAC processes 	<ul style="list-style-type: none"> Thermocouple probe-plug and jack connector is constructed with a stainless steel case 	<ul style="list-style-type: none"> Ideal for immersion in harsh mediums
KMT		<ul style="list-style-type: none"> Position sensing for motor motion control within HVAC applications 	<ul style="list-style-type: none"> Magnetic non-contact 360° range Low cost 	<ul style="list-style-type: none"> Ideal for harsh environments Contactless absolute angular measurement
KMXP		<ul style="list-style-type: none"> Contactless linear or angular position measurement in applications like industrial HVAC equipment 	<ul style="list-style-type: none"> Sensor that performs well even when exposed to oil, dirt and dust Provide reliable and accurate measurements in harsh environments including high temperatures 	<ul style="list-style-type: none"> Superior performance even within harsh industrial environments High resolution and high precision with contactless measurement
LVDT		<ul style="list-style-type: none"> Contactless linear position sensors for both OEM applications and end user requirements 	<ul style="list-style-type: none"> AC-Operated LVDT contactless position sensor with magnetically shielded SS housing 	<ul style="list-style-type: none"> Maximum linearity error for these sensors is ±0.25% High sensitivity with high repeatability
RVDT		<ul style="list-style-type: none"> Standard and custom packaging options are available for the most demanding HVAC application 	<ul style="list-style-type: none"> Rotary Variable Differential Transformer (RVDT) with precision ball bearings and non-contact inductive magnetic coupling 	<ul style="list-style-type: none"> Extremely long cycle life Virtually infinite resolution
820M1		<ul style="list-style-type: none"> Accelerometer designed for embedded condition monitoring and predictive maintenance applications 	<ul style="list-style-type: none"> Low cost; board mountable accelerometer Designed and qualified for machine health monitoring and has superior resolution Dynamic range and bandwidth to MEMS devices 	<ul style="list-style-type: none"> Proven track record for offering the reliable and long-term stable output required for condition monitoring applications
830M1		<ul style="list-style-type: none"> Embedded Piezoelectric (PE) accelerometer offering advanced acceleration sensing for machine health monitoring 	<ul style="list-style-type: none"> Embedded Piezoelectric (PE) accelerometer offering advanced acceleration sensing Wide bandwidth Small size Low power, and robust performance are essential 	<ul style="list-style-type: none"> Optimized for critical machine health monitoring the 830M1 offers an outstanding measurement bandwidth (up to 15 kHz) Superior resolution and is designed with highly stable PE sensing technology, to provide long-term, reliable, stable and accurate performance for condition monitoring applications in harsh environments

SENSORS FOR FURNACES AND BOILERS

8911		<ul style="list-style-type: none"> Wireless accelerometer sensor for Proof of concept (POC) is designed for vibration monitoring in applications such as predictive maintenance and condition monitoring 	<ul style="list-style-type: none"> Compact LoRaWAN™ Wireless accelerometer for POC with edge computing for condition monitoring Corrosion resistant stainless steel case and plastic covering 	<ul style="list-style-type: none"> Rugged, IP66 rated O-ring seal allows the sensor to perform well in harsh environments Piezo sensing element which has the advantage of high bandwidth and ultra low power vs MEMS solutions Longer battery life of up to 10 years and ultra low sleep power usage
8711-01		<ul style="list-style-type: none"> Shielded rugged IEPE accelerometers designed for industrial condition monitoring 	<ul style="list-style-type: none"> Available in four standard dynamic ranges from $\pm 5g$ to $\pm 80g$ Wide bandwidth up to greater than 10kHz Designed to operate in ambient temperature ranges from $-55^{\circ}C$ to $+125^{\circ}C$ 	<ul style="list-style-type: none"> Rugged, IP67 rated seal allows the sensor to perform well in harsh environments Piezo sensing element which has the advantage of high bandwidth and ultra low power vs MEMS solutions

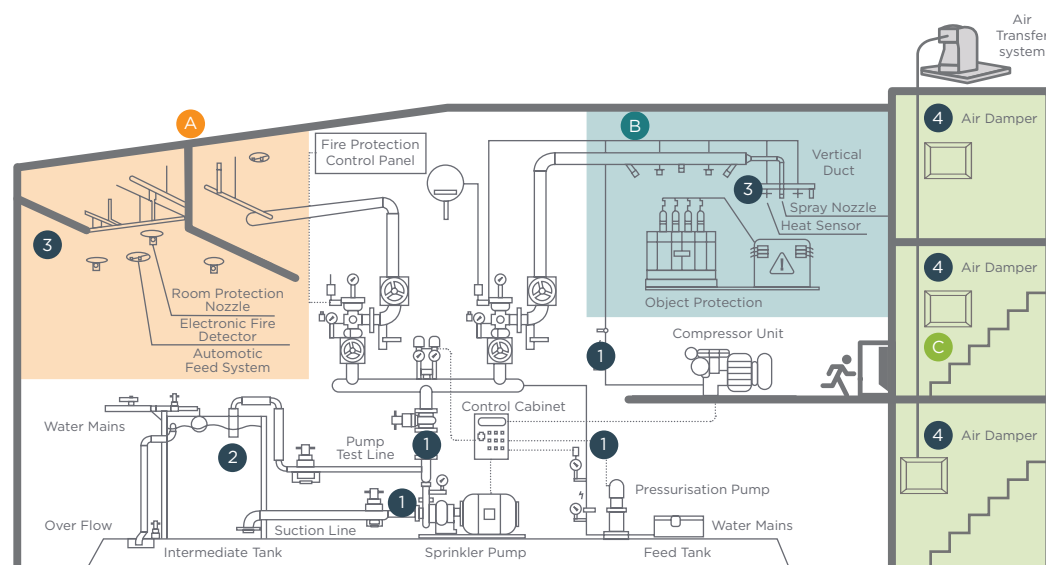
SENSORS FOR FIRE SYSTEMS

Sensors are on the front lines of HVAC management. They require stability and robust designs to endure over time and in case of unexpected harsh environments such as fumes, smoke, dust, or fire. While HVAC can make workers more comfortable and productive, the right sensors can also make them and the materials inside the building safer. Buildings often have servers, IT networks, and inventory, in addition to people, that are susceptible to high temperatures, fumes, and humidity. Sensors monitoring these data points can help alert maintenance personnel to potential environmental conditions that may damage inventory, impact workers' health, or even increase fire risks. In addition, sensors will be used to maintain desired airflow conditions in evacuation routes.

TE CONNECTIVITY ADVANTAGES

- Portfolio Breadth
- Industrial Technology Leadership
- Manufacturing Scale
- Customization Capability

FIRE SYSTEMS



- A Room Protection
- B Object Protection
- C Escape Route

- 1 Fluid Pressure Transmitters
- 2 Level Transmitter
- 3 Temperature Sensors
- 4 Positive and Negative Air pressure Sensors

SENSORS FOR FIRE SYSTEMS

Sensor Technology		Application	Key Product Features	Benefits
SM9000		<ul style="list-style-type: none"> Monitoring very low pressure for ventilation VAV and filter monitoring within HVAC systems 	<ul style="list-style-type: none"> Low pressure MEMS transducer technology and CMOS mixed signal processing technology Pressure and temperature compensated with high accuracy and repeatability 	<ul style="list-style-type: none"> Accurate, reliable and repeatable operation over the life of the part The pressure sensor can be mounted directly onto a standard PCB Compensation and calibration eliminates need for additional circuitry or separate calibration
SM7000		<ul style="list-style-type: none"> Monitoring low air pressure within ventilation systems 	<ul style="list-style-type: none"> Low pressure MEMS transducer technology and CMOS mixed signal processing technology to produce either an analog and/or digital output fully conditioned, multi-order pressure and temperature compensated 	<ul style="list-style-type: none"> Accurate, reliable and repeatable operation over the life of the part The pressure sensor can be mounted directly and eliminates onto a standard PCB Compensation and calibration eliminates need for additional circuitry or separate calibration
HCLA		<ul style="list-style-type: none"> Measure low pressure properties within HVAC systems 	<ul style="list-style-type: none"> Miniature calibrated and temperature compensated low pressure sensors that perform precision digital signal conditioning and provide analog and digital output at the same time 	<ul style="list-style-type: none"> Space-saving sensor packaging for PCB-mounting and maximum OEM design flexibility Special compensation technique to achieve very high offset stability and virtually no position sensitivity
LMI		<ul style="list-style-type: none"> Monitors extremely low pressure of VAVs Filter monitoring Burner control and other areas of the HVAC system 	<ul style="list-style-type: none"> Extremely low full scale pressure range Accuracy is a percent of reading not a percent of full scale Provides built-in barometric pressure compensation I²C output only 	<ul style="list-style-type: none"> High immunity to dust Extremely high accuracy at very low pressures Long-term stability Small footprint and low profile for space savings
LHD		<ul style="list-style-type: none"> Large dynamic range monitoring found in airflow applications within VAVs Filter monitoring Burner control and other areas of the HVAC system 	<ul style="list-style-type: none"> Extremely low full scale pressure range Accuracy is a percent of reading not a percent of full scale Provides built-in barometric pressure compensation I²C output only 	<ul style="list-style-type: none"> High immunity to dust Extremely high accuracy at very low pressures Low profile surface
SERIES II DISCRETE NTC THERMISTORS		<ul style="list-style-type: none"> Temperature sensing, control and compensation within HVAC applications 	<ul style="list-style-type: none"> Thermally conductive epoxy coated thermistor 30 AWG Solid Silver-Plated Copper Leads with White PTFE Insulation Four Temperature Tolerance Classifications Available RoHS Compliant 	<ul style="list-style-type: none"> Rapid time response Proven stability and reliability Interchangability PTFE insulated lead wires
TS3X SERIES/ TSD SERIES		<ul style="list-style-type: none"> Room occupancy Fire detection Remote temperature monitoring within HVAC applications 	<ul style="list-style-type: none"> Small size High accuracy Digital interface Wide temperature range 	<ul style="list-style-type: none"> Easy to integrate Complete package Reliable
TSYS Series		<ul style="list-style-type: none"> Providing accurate temperature data for HVAC applications 	<ul style="list-style-type: none"> Ultra compact Digital temperature sensor that provides factory calibrated highly accurate temperature data 	<ul style="list-style-type: none"> Very small and have low thermal mass which provides a quick response to temperature changes Ideal for mobile and battery power applications
DO-35 SERIES DISCRETE GLASS AXIAL NTC		<ul style="list-style-type: none"> Provides accurate and reliable temperature data in HVAC applications in extreme environments 	<ul style="list-style-type: none"> Glass axial NTC thermistor sensor is hermetically sealed in a DO-35 diode style glass encapsulated package with 24AWG tin/nickel plated copper leads 	<ul style="list-style-type: none"> Proven stability and reliability RoHS compliant
KMT		<ul style="list-style-type: none"> Position sensing for motor motion control within HVAC applications 	<ul style="list-style-type: none"> Magnetic non-contact 360° range Low cost 	<ul style="list-style-type: none"> Ideal for harsh environments Contactless absolute angular measurement
KMXP		<ul style="list-style-type: none"> Contactless linear or angular position measurement in applications like industrial HVAC equipment 	<ul style="list-style-type: none"> Sensor that performs well, even when exposed to oil, dirt and dust Provide reliable and accurate measurements in harsh environments including high temperatures 	<ul style="list-style-type: none"> Superior performance even within harsh industrial environments High resolution and high precision with contactless measurement
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TRUST AND RELIABILITY WHEN IT COUNTS