



TE SENSOR SOLUTIONS FOR HVACR

TE SENSOR SOLUTIONS FOR HVACR

TE Connectivity (TE) is a global technology leader, providing connectivity and sensor solutions essential in today's increasingly connected world. With the acquisition of Measurement Specialties (MEAS), a global designer and manufacturer of sensors and sensor-based systems, TE is one of the largest sensor companies in the world. Our broad portfolio of sensor technologies is designed for a wide range of applications. We collaborate with engineers to help transform concepts into creations—redefining what's possible using intelligent, efficient and high-performing TE products and solutions proven in harsh environments.



SENSOR SOLUTIONS

- PRESSURE
- TEMPERATURE
- HUMIDITY
- POSITION
- VIBRATION
- FLOW
- MASS AIR FLOW
- ULTRASONIC

QUALITY STATEMENTS

- ISO 13485
- ISO 14001
- ISO 9001
- Measuring Instruments Directive 2004/22/EC annex D
- TS 16949
- UL/CSA



HVACR APPLICATION SOLUTIONS

Alternative Energy and Solar

- Room air temperature
- Flue temperature for efficiency
- Outside air temperature to modulate damper
- Water inlet and outlet for solar water heaters
- Solar refrigerators

Boiler Controls

- Inlet and outlet water temperature
- Level sensing
- Outside air temperature for reset control
- Heat and cooling rate for boiler mass
- Boiler lead and lag timing temperature

Building and Energy Management

- Room air temperature for thermostats
- Duct air temperature
- Duct air pressure
- Room air humidity
- Outside air temperature
- Mass air flow sensors

Commercial Chillers

- Inlet and outlet refrigerant temperature
- Suction line temperature
- Room and outside air temperature
- Compressor high side and low side pressure
- Room humidity
- Variable volume valve position
- Sump water level sensors

Commercial Cooking Equipment

- Non-contact temperature sensors for flame detection
- Temperature sensors for monitoring
- Vibration sensors for fan motors

Compressors and Motors

- Motor winding temperature
- Compressor discharge
- Compressor suction temperature
- Compressor high side and low side pressure
- Compressor oil pressure
- Compressor staging—pressure
- Vibration and acoustic sensors for machine health monitoring

Container Storage

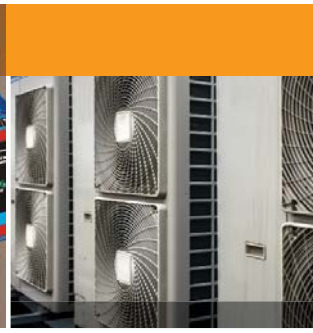
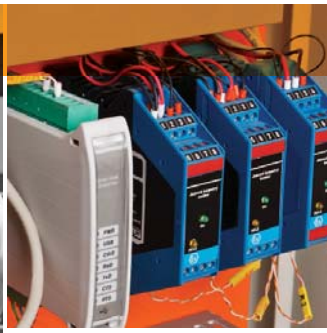
- Evaporator inlet and outlet water temperature
- Compressor gas temperature
- Condenser inlet and outlet water temperature
- Compressor motor temperature
- Container air temperature
- Outside air temperature
- Evaporator line pressure
- Condenser line pressure
- Container humidity
- Defrost control—humidity or temperature
- Anti-sweat heater control—humidity

Electronic Expansion Valves

- Expansion valve pressure
- Expansion valve temperature

Forced Air Furnaces

- Inlet and outlet air temperature
- Room and outside air temperature
- Room humidity
- Air inlet and outlet pressure



HVACR APPLICATION SOLUTIONS

Heat Pumps

- Cabinet entering and leaving air temperature
- Compressor high side and low side pressure
- Compressor discharge, compressor suction temperature
- Entering and leaving hot water temperature
- Load entering and leaving water temperature
- Source entering and leaving water temperature
- Water coil and air coil temperature

Humidifiers and Dehumidifiers

- Room air humidity
- Water temperature for humidification

HVACR Diagnostic Equipment

- Digital manifold pressure
- Temperature for superheat monitoring

Ice Machines

- Bin level sensor temperature
- Discharge water temperature
- Water inlet temperature

Packaged Terminal Air Conditioner (PTAC) and Small A/C

- Coil temperature
- Defrost termination temperature
- Room temperature
- Room humidity

Pool Heater and Equipment

- Flue temperature
- Inlet and outlet water temperature
- Outside air temperature
- Pressure sensor for clogged filter monitoring

Refrigerators

- Dewpoint measurement for anti-sweat control
- Compartment humidity for food conservation
- Humidity monitoring for defrost control
- Zone air temperature

Refrigerated Beverage Dispensing

- Cabinet air temperature
- Condenser inlet and outlet temperature
- Compressor discharge, compressor suction temperature
- Compressor high side and low side pressure

Refrigeration Controls

- Compressor head pressure
- Compressor high side and low side pressure
- Defrost termination temperature
- Inlet and outlet refrigerant temperature
- Suction line temperature

Underfloor Heating and Ice Melting

- Floor temperature monitoring
- Liquid temperature
- Room air temperature

VAV Systems and Air Handlers

- Damper position
- Differential pressure
- Fan pressure optimization
- Inlet and outlet air temperature

Water Heater

- Water flow sensor
- Water inlet and outlet temperature

Zone Controls

- Air temperature
- Damper position
- Duct temperature

TE SENSOR SOLUTIONS FOR HVACR

PRESSURE SENSORS

Transducers and Transmitters



M7100, U7100

Package	Automotive grade, stainless steel hermetic pressure ports and integral electrical connector
Type	Gage, no vent gage (M7100) Gage, sealed gage, absolute (U7100)
Pressure Range	0 - 10 thru 0 - 689 bar / 0 - 150 thru 0 - 10K psi (M7100) 0 - 1 thru 0 - 10 bar / 0 - 15 thru 0 - 150 psi (U7100)
Output/Span	0.5 - 4.5 VDC [Ratiometric output], 1 - 5 VDC [Regulated] (M7100) 0.5 - 4.5 VDC [Ratiometric output] (U7100)
Unique Features	<ul style="list-style-type: none"> • 1% total error band (-20°C to 85°C) • Solid state reliability • Survives high vibration and immersion • Microfused technology (M7100) • UltraStable technology (U7100) • Copper tube for HVACR (M7100)
Accuracy	±0.25% FSO
Operating Temp.	-40°C to 125°C
Dimensions (mm)	26.7 x 26.7 x 50.0
Typical Apps	HVACR refrigeration controls, compressors, hydraulic, energy and water management
Agency Approvals	CE [EMC], UL 508



M5200, U5200, D5100

Package	Industrial stainless steel housing with a large selection of threaded fittings, electrical connectors, cable options and customized housings
Type	Gage (M5200) Gage, sealed gage, absolute (U5200), Differential wet-wet (D5100)
Pressure Range	0 - 3 bar thru 0 - 2K bar / 0 - 50 psi thru 0 - 30K psi (M5200) 0 - 0.14 bar thru 0 - 700 bar / 0 - 2 psi thru 0 - 10K psi (U5200) 0 - 0.07 bar thru 0 - 34 bar / 0 - 1 psi thru 0 - 500 psi (D5100)
Output/Span	0.5 - 4.5 VDC, 1 - 5 VDC, 0 - 5 VDC, 0 - 10 VDC, 4 - 20 mA
Unique Features	<ul style="list-style-type: none"> • Microfused technology (M5200) • UltraStable technology (U5200, D5100) • High performance at a low cost • Solid state reliability • 1% total error band (-20°C to 85°C all possible errors combined) (M5200, D5100) • 0.75% total error band (-20°C to 85°C all possible errors combined) (U5200) • Line pressure max. 1000 psi (D5100)
Accuracy	±0.25% FSO (M5200, D5100), ±0.1% FSO (U5200)
Operating Temp.	-40°C to 125°C
Dimensions (mm)	M5200: 22.23 x 22.23 x 80.77 / U5200: 22.23 x 22.23 x 98.04 / D5100: 25.4 x 58.4 x 72.0
Typical Apps	HVACR controls, energy and water management, pumps, compressors, pneumatic equipment, filter blockage, pressurized tank level
Agency Approvals	CE [EMC] (M5200, D5100), CE [EMC], UL 508 (U5200)

Board Mountable Digital Output



MS4515DO, MS4525DO

Unique Features	<ul style="list-style-type: none"> • 14-bit digital sensor • Pressure and temperature measurement • Single supply of 3.3 or 5.0 VDC • Top, side barbed or manifold O-ring port • J lead or thru hole pins
Options	Gel coat, low power
Linearity/Absolute Accuracy	±0.25% / ±1% TEB
Output / Span	14-bit digital word SPI or I ² C protocol
Type	Gage, differential (MS4515DO) Gage, absolute, differential, compound (MS4525DO)
Pressure Range	0 - 2, 4, 5, 10, 20, 30" H ₂ O (MS4515DO) 0 - 0.07, 0.14, 0.35, 1, 2, 3, 10 bar / 0 - 1, 2, 5, 15, 30, 50, 150 psi (MS4525DO)
Overpressure	0.69 bar / 10 psi (MS4515DO) 3X range (MS4525DO)
Operating Temp.	-25°C to 125°C
Dimensions (mm)	12.5 x 9.9
Typical Apps	Air flow measurements, process control, leak detection

Board Mountable Amplified Output



MS4515, MS4525

Unique Features	<ul style="list-style-type: none"> • Ratiometric analog output sensor • Single supply of either 3.3 or 5.0 VDC • Top, side barbed or manifold O-ring port • J lead or thru hole pins • Optional gel coat
Options	Gel coat
Linearity/Absolute Accuracy	0.25% Non-linearity / 1% TEB
Output / Span	10% to 90% or 5% to 95% of supply
Type	Gage, differential (MS4515) Gage, absolute, differential, compound (MS4525)
Pressure Range	0 - 2, 4, 5, 10, 20, 30" H ₂ O (MS4515) 0 - 0.07, 0.14, 0.35, 1, 2, 3, 10 bar / 0 - 1, 2, 5, 15, 30, 50, 150 psi (MS4525)
Overpressure	0.69 bar / 10 psi (MS4515) 3X range (MS4525)
Operating Temp.	-25°C to 105°C
Dimensions (mm)	12.5 x 9.9
Typical Apps	Air flow measurements, process control, leak detection

Combination Module Digital Output



MS8607

Unique Features	<ul style="list-style-type: none"> • QFN package pressure, temperature and humidity sensor • High resolution module: 0.016 mbar, 0.04% RH, 0.01°C • Supply voltage: 1.5 to 3.6 V • Integrated pressure, humidity and temperature • Fully factory calibrated
Options	—
Linearity/Absolute Accuracy	±2 mbar / ±0.03 psi, ±3.0% RH at 25°C, ±1.0°C
Output / Span	Digital 24-bit I ² C
Type	Absolute
Pressure Range	10 - 2K mbar, 0 - 100% RH, -40°C to 85°C
Overpressure	6 bar / 87 psi
Operating Temp.	-40°C to 85°C
Dimensions (mm)	5 x 3 x 1
Typical Apps	Energy management systems, thermostats, humidifiers, dehumidifiers, home automation

PRESSURE SENSORS

Media Isolated Modules
Digital Output



85BSD, 86BSD

Package	<ul style="list-style-type: none"> • 13 mm diaphragm diameter with weldable or process fittings (85BSD) • 16 mm diaphragm diameter with O-ring mount (86BSD)
Accuracy	±0.25% span
Output/Span	Digital 14-bit I ² C or SPI
Total Error Band	±1.0% FSO
Type	Gage, absolute
Pressure Range	0 - 0.35, 1, 2, 3, 7, 10, 14, 20 bar / 0 - 5, 15, 30, 50, 100, 150, 200, 300 psi (85BSD) 0 - 0.07, 0.14, 0.35, 1, 2, 3, 7, 10, 14, 20 bar / 0 - 1, 2, 5, 15, 30, 50, 100, 150, 200, 300 psi (86BSD)
Overpressure	2X
Operating Temp.	-40°C to 125°C
Dimensions (mm)	Ø 15.9 x 7.9 (85BSD), Ø 15.9 x 9.3 (86BSD)
Typical Apps	Level controls, tank level measurement, corrosive fluids and gas measurement systems, sealed systems, submersible depth monitoring



89BSD

<ul style="list-style-type: none"> • 9 mm diaphragm diameter • Threaded/weldable • Pressure and temperature read-out • Low power: 1 µA (Standby < 0.15 µA)
±0.3% span
Digital 24-bit I ² C
±3.0% FSO Max
Absolute, sealed gage
0 - 6, 12, 18, 28, 30 bar / 0 - 87, 174, 261, 406, 435 psi
2X
-40°C to 85°C
Ø 9.0 x 7.5
Level controls, tank level measurement, corrosive fluids and gas measurement systems, sealed systems, manifold pressure measurement, dive computers

Media Isolated Modules
Analog Output



U86B

Package	Mountable with O-ring seal
Type	Sealed gage, absolute
Pressure Range	0 - 5, 10, 12, 13 bar / 0 - 50, 100, 150, 200 psi
Output/Span	0.5 - 4.5 VDC (Ratiometric output)
Unique Features	• Amplified
Accuracy	±0.5% span
Operating Temp.	-7°C to 105°C
Dimensions (mm)	Ø 15.82 x 13.6 Socket spacing: 31.75
Typical Apps	Liquid level, liquid pressure

Transducers and Transmitters
Industrial



MSP100

Small housing with O-ring and proprietary 'snap-in' feature that lowers the total installed cost and customized housings for OEM applications
Gage
0 - 7 bar thru 0 - 34 bar / 0 - 100 psi thru 0 - 500 psi
100 mV typical
<ul style="list-style-type: none"> • Microfused technology • Low cost stainless steel isolated transducer • No threads needed for pressure connect • Highly customized for OEM application • Solid state reliability
±0.5% FSO
0°C to 55°C
12.7 x 24.38 x 20.32
Beverage dispensing systems, automation, HVACR controls, energy and water management, pumps, compressors, pneumatic equipment

TE SENSOR SOLUTIONS FOR HVACR

TEMPERATURE SENSORS

Sensor Assemblies



Push-in Sensors

Package	Brass, copper or stainless steel closed-end tube
Type	Epoxy potted element, miniature design
Sensor Range	<ul style="list-style-type: none"> • NTC • RTD: Pt, Ni • Thermocouple: Type J, K, T, E
Unique Features	<ul style="list-style-type: none"> • High moisture resistant • Available with mounting tabs or clips
Accuracy	<ul style="list-style-type: none"> • NTC: Custom tolerances available • Pt RTD: Class AA, A, B according to IEC60751
Operating Temp.	Varies: -50°C to 250°C
Dimensions (mm)	Case specific dimensions
Typical Apps	Boiler, liquid, evaporator, HVACR, industrial processes control, district heating/cooling, gear boxes



Screw-in Sensors

Package	Brass, copper or stainless steel housing with integrated connector
Type	Epoxy potted element, rigid sheath
Sensor Range	<ul style="list-style-type: none"> • NTC • RTD: Pt, Ni, Cu • Thermocouple: Type J, K, T, E
Unique Features	<ul style="list-style-type: none"> • Moisture resistant • Different threads types • Connectors available
Accuracy	<ul style="list-style-type: none"> • NTC: Custom tolerances available • Pt RTD: Class AA, A, B according to IEC60751
Operating Temp.	Varies: -50°C to 250°C
Dimensions (mm)	Custom lengths, diameters and threads available
Typical Apps	Boiler, liquid, industrial processes control, district heating/cooling, immersion



Refrigeration Molded Sensors

Package	PVC or TPE
Type	Overmolded
Sensor Range	<ul style="list-style-type: none"> • NTC • RTD: Pt
Unique Features	<ul style="list-style-type: none"> • High moisture resistant
Accuracy	<ul style="list-style-type: none"> • NTC: Custom tolerances available • Pt RTD: Class AA, A, B according to IEC60751
Operating Temp.	-40°C to 125°C
Dimensions (mm)	8 x 30, 6.5 x 25, 6 x 50, 6 x 5 x 15
Typical Apps	Industrial processes control

Sensor Assemblies



Boiler Sensors

Package	Brass housing
Type	• Screw
Sensor Range	<ul style="list-style-type: none"> • NTC • RTD: Pt, Ni, Cu
Unique Features	<ul style="list-style-type: none"> • Integrated connector • Moisture resistant • Different threads types • Connectors available
Accuracy	<ul style="list-style-type: none"> • NTC: Custom tolerances available • Pt RTD: Class AA, A, B according to IEC60751
Operating Temp.	Varies: -50°C to 250°C
Dimensions (mm)	Custom lengths, diameters and threads available
Typical Apps	Boiler control, liquid, industrial processes control, district heating and cooling, immersion



Air Temperature Sensors

Package	Flange mount, snap-in, ring terminal
Type	• Epoxy potted element with rigid sheath or with snap-in ring and overmold
Sensor Range	<ul style="list-style-type: none"> • NTC • RTD: Pt
Unique Features	<ul style="list-style-type: none"> • Easy mounting features • Moisture resistant designs • Fast response time • Excellent thermal tracking
Accuracy	<ul style="list-style-type: none"> • NTC: Custom tolerances available • Pt RTD: Class A, B or custom
Operating Temp.	-40°C to 105°C or higher
Dimensions (mm)	Varies by design
Typical Apps	Cabinet air, leaving air, duct air, VAV air, inlet/outlet air, room air, outside air



Pipe Mount Sensors

Package	Copper or stainless steel housing
Type	<ul style="list-style-type: none"> • Overmolded • Epoxy potted
Sensor Range	• NTC
Unique Features	<ul style="list-style-type: none"> • Fast response time • Moisture resistant construction
Accuracy	• NTC: Custom tolerances available
Operating Temp.	-40°C to 125°C
Dimensions (mm)	Custom configurations available
Typical Apps	Industrial process, boiler control, refrigeration, food service, energy management, test equipment

TEMPERATURE SENSORS

Sensor Assemblies



Handy Box Sensors

Package	Duct mount or metal housing with PVC sun shield with or without weatherproof box
Type	Fully potted subassembly
Sensor Range	<ul style="list-style-type: none"> • NTC • RTD: Pt
Unique Features	<ul style="list-style-type: none"> • Easy mounting features • Moisture resistant designs • Fast response time • Excellent thermal tracking
Accuracy	<ul style="list-style-type: none"> • NTC: Custom tolerances available • Pt RTD: Class A, B or custom
Operating Temp.	-40°C to 105°C High temp. models also available
Dimensions (mm)	Varies by design
Typical Apps	Residential and commercial building controls, energy management systems



Motor Temperature Sensors

Package	Epoxy case or plastic tube with PTFE extension leads
Type	Epoxy potted element
Sensor Range	<ul style="list-style-type: none"> • NTC • RTD: Pt, Ni-Fe (Other options also available on request)
Unique Features	<ul style="list-style-type: none"> • Very rugged design • Epoxy case design provides rigidity and electrical isolation • Withstand varnish and bake operations with hermetic motors • PTFE insulated lead wires for extended temp range
Accuracy	<ul style="list-style-type: none"> • NTC: Custom tolerances available • Pt RTD: Class A, B or custom
Operating Temp.	-40°C to 175°C High temp. models also available
Dimensions (mm)	Varies by design
Typical Apps	Hermetic motor winding, general purpose motor winding

Sensing Elements—NTC, RTD



Radial Leaded Thermistors

Package	Radial, beads
Type	<ul style="list-style-type: none"> • NTC • Epoxy or glass coated
Resistance Range	100 to 1MΩ
Unique Features	<ul style="list-style-type: none"> • Interchangeable • Moisture resistant • Stability • UL/CSA certified models available
Accuracy	0.25% to 20%
Operating Temp.	-55°C to 280°C
Dimensions (mm)	0.4 to 4.9
Typical Apps	Environmental temperature, general purpose sensing element for HVACR applications



Axial Thermistors

Package	DO-35
Type	<ul style="list-style-type: none"> • NTC • Glass coated
Resistance Range	5kΩ to 100kΩ
Unique Features	<ul style="list-style-type: none"> • Tight tolerance (±1%) • Max stability using high density (HD) chip • Hermetically sealed • Tinned and nickel plated leads
Accuracy	±1% to ±3%
Operating Temp.	-40°C to 300°C
Dimensions (mm)	2.0 x 4.0 body
Typical Apps	Refrigeration including cabinet sensing and evaporator coil, fire detection units, air-conditioning systems, PCB temp sensing, general purpose sensing element for HVACR applications



Platinum Thin Film Sensors

Package	Wired component
Type	<ul style="list-style-type: none"> • RTD thin film platinum deposited on ceramic substrate, glass coated • Tube outline available • Connection via radial leads
Resistance Range	100Ω, 1000Ω (Other values on request)
Unique Features	<ul style="list-style-type: none"> • Long term stability • Interchangeability • Small dimensions • Short response time • High electrical insulation
Accuracy	Class T (F0.1), A (F0.15), B (F0.3) according to DIN EN 60751
Operating Temp.	-50°C to 600°C (Standard) Down to -200 °C or up to 1000 °C (On request)
Dimensions (mm)	2.0 x 2.3 x 1.1 (Standard) 1.2 x 4.0 x 1.1 (Standard) Other dimensions (On request)
Typical Apps	General purpose sensing element for HVACR applications (Element selection will depend upon many factors including accuracy, temperature range and mounting configuration)

TEMPERATURE SENSORS

Sensing Elements—Digital Output



TSYS Series

Package	QFN16, TDFN8
Type	I ² C, SPI, PWM, SDM (Convertible to analog voltage)
Temp. Range	—
Unique Features	<ul style="list-style-type: none"> • Low power • Small size • Calibrated and ready to use • 16 bit resolution
Accuracy	Up to ±0.1°C at -5°C to 50°C
Operating Temp.	-40°C to 125°C
Dimensions (mm)	QFN16: 4 x 4 x 0.85 TDFN8: 2.5 x 2.5 x 0.75
Typical Apps	Industrial control, replacement of precision RTDs, thermistors and NTCs, heating and cooling systems

Thermopiles



TSEV

Package	Single or multi pixel series
Type	OEM-module
Temp. Range	Single pixel or multi pixel thermopile module
Unique Features	<ul style="list-style-type: none"> • Object temperature range 0°C to 300°C (Other temperature ranges available upon request) • Calibrated, interfaces: I²C, SPI • Different field of views: 5° at 50%, 10° at 50%, 90° at 50%, others on request
Accuracy	Depends on temperature range, typical 1% full scale, max. accuracy 0.1°C
Operating Temp.	Ambient temperature range: 0°C to 85°C
Dimensions (mm)	35 x 25 x 13 to 31
Typical Apps	Contactless temperature measurement on moving parts, heated rolls, microwave oven, air conditioner

HUMIDITY SENSORS



HTU2X Series

Package	DFN type
Type	Digital RH and temperature
Operating Range	0 to 100% RH
Operating Temp.	-40°C to 125°C
Unique Features	<ul style="list-style-type: none"> • Low power consumption • Fast response time • I²C interface or PWM interface or SDM interface
Calibration	±3% RH at 25°C (10 to 95% RH) ±0.3°C at 25°C
Dimensions (mm)	3.0 x 3.0 x 1.0
Typical Apps	Building automation systems, thermostats, humidifiers, dehumidifiers



HTU3535PVBM/Wire

Package	Cost effective small size mini-module
Type	Analog or digital voltage RH and NTC temperature
Operating Range	0 to 100% RH
Operating Temp.	-40°C to 110°C
Unique Features	<ul style="list-style-type: none"> • PTFE filter (Optional) • Electronics fully protected (5 V) • Multiple connector choices • Based on HTU21
Calibration	±3% RH at 55% RH; ±0.25°C at 25°C
Dimensions (mm)	27 x 11.9 x YY (Depending on the connector, from 6 to 10.8 mm length)
Typical Apps	Building automation systems, thermostats, humidifiers, dehumidifiers



HS1101LF

Package	Through hole with side opening plastic cap
Type	Capacitive humidity
Operating Range	0 to 100% RH
Operating Temp.	-60°C to 140°C
Unique Features	<ul style="list-style-type: none"> • Very robust and recognized component capable of withstanding most of the applications in the humidity world in very cost effective ways
Calibration	180 pF, ±3 pF at 55% RH
Dimensions (mm)	10 x 10 x 19
Typical Apps	Building automation systems, thermostats, humidifiers, dehumidifiers



HTG351xCH

Package	Cost effective small size mini-module
Type	Analog voltage RH and NTC temperature
Operating Range	0 to 100% RH
Operating Temp.	-40°C to 110°C
Unique Features	<ul style="list-style-type: none"> • Electronics fully protected with potting material (3.3 V or 5 V) • Multiple connector choices
Calibration	±3% RH at 55% RH; ±0.25°C at 25°C
Dimensions (mm)	27 x 11.9 x 6.7
Typical Apps	Building automation systems, thermostats, humidifiers, dehumidifiers



HTF3000LF

Package	PCB for board to board
Type	Frequency output for RH, direct NTC for temperature
Operating Range	0 to 100% RH
Operating Temp.	-40°C to 85°C
Unique Features	<ul style="list-style-type: none"> • Voltage supply from 3 to 8 VDC • Through hole or SMD • T and R available
Calibration	±3% RH at 55% RH ±0.25°C at 25°C
Dimensions (mm)	12.5 x 18.5 x 11.2
Typical Apps	Building automation systems, thermostats, humidifiers, dehumidifiers

POSITION SENSORS



KMA36

Type	<ul style="list-style-type: none"> TSSOP Magnetic rotary position sensor, angle sensor
Linearity	—
Excitation	—
Range	360° angle
Unique Features	<ul style="list-style-type: none"> Low cost MR encoder for rotational and incremental measurements
Output	Voltage 0 - 5 V, I ² C, customer specific
Resolution	Typ. 0.1°
Accuracy	Typ. 0.3°
Operating Temp	-25°C to 85°C
Dimensions (mm)	TSSOP20: 6.5 x 6.4 x 1.2
Typical Apps	Knobs, small robotics, angular and linear position, flap location, louver control



PCI-650 Series

Type	<ul style="list-style-type: none"> Stainless steel Linear position transducer, absolute
Linearity	±1%
Excitation	12 to 28 VDC
Range	11, 40, 70, 85, 100mm
Unique Features	<ul style="list-style-type: none"> ATEX certification Vibration and shock resistant 100 bar operation Compatible with refrigerants (Incl. ammonia) and compressor oils
Output	4 to 20mA
Resolution	Infinite
Accuracy	—
Operating Temp	-40°C to 120°C
Dimensions (mm)	—
Typical Apps	Refrigerant compressor capacity control valves, refrigerant compressor oil systems



RVIT-Z

Type	<ul style="list-style-type: none"> PCB for OEM volumes Angular position transducer, inductive, absolute
Linearity	±0.5%
Excitation	DC Voltage
Range	Up to ±75°
Unique Features	<ul style="list-style-type: none"> Absolute position
Output	DC voltage, DC current, digital
Resolution	Infinite
Accuracy	—
Operating Temp	-25°C to 85°C
Dimensions (mm)	Custom
Typical Apps	Viscometers, valve position, robotics, HVACR vane position

VIBRATION SENSORS

DC and Piezoelectric Accelerometers



808/808M1

Package	TO-8
Type	Adhesive (Stud mount option)
F.S. Range (g)	±10, 50 (808) ±4, 20 (808M1)
Unique Features	<ul style="list-style-type: none"> Hermetically sealed Case grounded design Bandwidth to 8 kHz
Accuracy	±1.0% Non-linearity
Operating Temp	-50°C to 100°C
Dimensions (mm)	Ø 15.2 x 16.6
Typical Apps	Machine monitoring, data loggers, embedded applications



810M1

Package	Board level
Type	SMD
F.S. Range (g)	±25, 100
Unique Features	<ul style="list-style-type: none"> Small size, low cost Dynamic response 6 kHz bandwidth
Accuracy	±2.0% Non-linearity
Operating Temp	-40°C to 125°C
Dimensions (mm)	12.70 x 15.24
Typical Apps	Data logging, impact detection



MiniSense 100 LDTIC Family

Package	Piezo film elements with or without mass and pins
Type	Cantilever beam with vertical or horizontal pins
F.S. Range (g)	±10 (Typical)
Unique Features	<ul style="list-style-type: none"> Very low cost High sensitivity (1 V/g) Ultra-low power (Self generating)
Accuracy	±20.0% (typical)
Operating Temp	-40°C to 70°C
Dimensions (mm)	19.05 x 6.35 x 6.35
Typical Apps	Wake-up switch, load imbalance, impact sensing



8011/8021-AR/AP

Package	Stainless steel
Type	Stud/through hole mount
F.S. Range (g)	±5 to ±50
Unique Features	<ul style="list-style-type: none"> Industrial accelerometer Case isolated, internal shielding ±50, 20, 10, 5 g ranges
Accuracy	±1.0% Non-linearity
Operating Temp	-40°C to 85°C
Dimensions (mm)	22.23 x 48.26
Typical Apps	Industrial applications, machine monitoring



8032-01

Package	Stainless steel
Type	Stud mount
F.S. Range (g)	±50 to ±500
Unique Features	<ul style="list-style-type: none"> Industrial accelerometer Case isolated, internal shielding Low cost Molded strain relief
Accuracy	±1.0% Non-linearity
Operating Temp	-55°C to 100°C
Dimensions (mm)	14.3 x 45.3
Typical Apps	Industrial applications, machine monitoring



4020/4030

Package	Molded plastic
Type	Screw mount
F.S. Range (g)	±2
Unique Features	<ul style="list-style-type: none"> Low cost Biaxial, with triaxial option DC response Rugged construction
Accuracy	±1.0% Non-linearity
Operating Temp	-40°C to 85°C
Dimensions (mm)	71.2 x 40.0 x 15.2
Typical Apps	Structural monitoring

FLOW SENSORS



FS-01

Package	Noryl
Type	Flow switch
Max Pressure	10 Bar at 20°C
Operating Temp	-30°C to 85°C
Unique Features	<ul style="list-style-type: none"> • SPST reed switch • Normally open, close on flow
Dimensions (mm)	106 x 32 x 32
Typical Apps	For direction of liquid and gas flow, mains water control, power shower, central heating systems, circulation pump protection, cooling systems

ULTRASONIC SENSORS

Standard Contact Point Level



LL-01

Type	Gap
Unique Features	<ul style="list-style-type: none"> • All 316L SS • Integral electronics • Miniature threads • Single machined • No adjustment for viscosity, density
Input	6 - 24 VDC
Output	1/2A contact
Pressure	250 psi
Temperature	100°C
Actuation point	0.25"
Process Connection	1/4" NPT or 1/2" NPT
Cable	12"
Approvals	CE
Typical Apps	Histology processors, compressors, chillers, coolant reservoirs

MASS AIR FLOW SENSORS



LMM-H03

Package	Hybrid
Type	Hot film anemometer component
Range	Bi-directional
Operating Temp	-40°C to 125°C
Unique Features	<ul style="list-style-type: none"> • High sensitivity at low heater temperatures • Fast response time • True air temperature sensor
Calibration / Accuracy	Dependent on electronics
Dimensions (mm)	23 x 10.15 x 1.1
Typical Apps	Industrial gas flow



LMM-H04

Package	Hybrid
Type	Hot film anemometer component
Range	Uni-directional
Operating Temp	-40°C to 125°C
Unique Features	<ul style="list-style-type: none"> • High sensitivity at low heater temperatures • Fast response time • True air temperature sensor
Calibration / Accuracy	Dependent on electronics
Dimensions (mm)	24 x 10.15 x 1.1
Typical Apps	Industrial gas flow

PRODUCT AND APPLICATION MATRIX

	Pressure	Temperature	Humidity	Position	Vibration	Flow	Mass Air Flow	Ultrasonic
Alternative Energy and Solar		●	●		●	●		●
Boiler Controls		●	●			●		
Building and Energy Management		●	●	●	●			
Cold Beverage Dispensing	●	●						
Commercial Chillers	●	●	●	●	●	●		●
Commercial Cooking Equipment		●						
Compressors and Motors	●	●			●	●		●
Container Storage	●	●						
Electronic Expansion Valves	●	●						
Forced Air Furnaces	●	●	●		●		●	
Heat Pumps	●	●	●		●	●		●
Humidifiers and Dehumidifiers		●	●			●		
HVACR Diagnostic Equipment	●	●					●	
Ice Machines	●	●				●		●
PTAC and Small A/C	●	●	●					
Pool Heater and Equipment	●	●				●		
Refrigerators		●	●			●		
Refrigerated Beverage Control	●	●						
Refrigeration Controls	●	●				●		
Underfloor Heating and Ice Melting		●				●		
VAV Systems and Air Handlers	●	●	●	●	●		●	
Water Heater		●				●		●
Zone Controls	●	●	●	●			●	

te.com/hvacrsensorsolutions

© 2015 TE Connectivity. All Rights Reserved.

Microfused, UltraStable, Measurement Specialties, TE Connectivity, TE, and the TE connectivity (logo) are trademarks of the TE Connectivity Ltd. family of companies. Other logos, product and company names mentioned herein may be trademarks of their respective owners.

While TE has made every reasonable effort to ensure the accuracy of the information in this brochure, TE does not guarantee that it is error-free, nor does TE make any other representation, warranty or guarantee that the information is accurate, correct, reliable or current. TE reserves the right to make any adjustments to the information contained herein at any time without notice. TE expressly disclaims all implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose. The dimensions in this brochure are for reference purposes only and are subject to change without notice. Specifications are subject to change without notice. Consult TE for the latest dimensions and design specifications.

SS-TS-HV100 09/2015

TE SENSOR SOLUTIONS

For More Information Contact
TE Connectivity

te.com/sensorsolutions-contact

www.te.com
www.meas-spec.com