SENSOR SOLUTIONS FOR APPLIANCES FROM TE CONNECTIVITY

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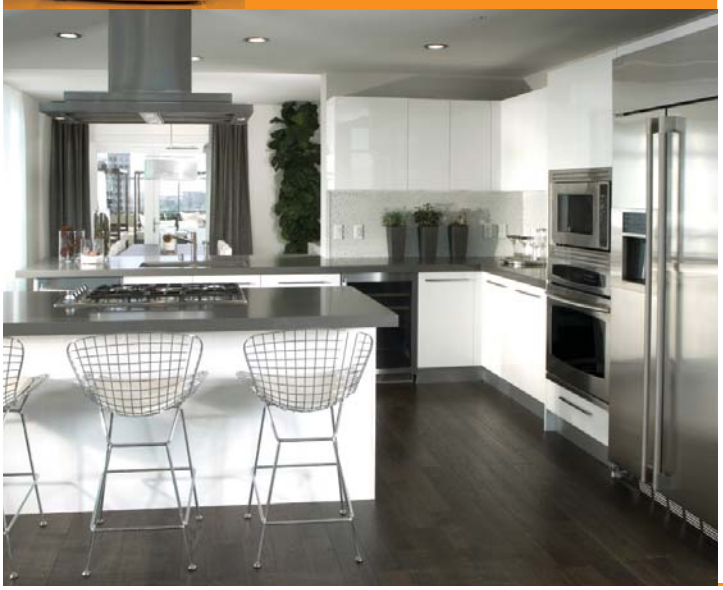
TE Connectivity (TE) is a global technology leader, providing connectivity and sensor solutions essential in today's increasingly connected world. TE is one of the largest sensor companies in the world. Our sensors are vital to the next generation of data-driven technology.

Today's smart and green appliances are built using more efficient designs, meeting the latest regulations while saving energy, water and time. Customers rely on our sensor technologies to enable appliances to respond to human touch, sense vibration, adjust to loads, and operate more efficiently. We work to develop custom solutions that can monitor humidity, water levels, position and temperature. Our products contribute to new levels of convenience and productivity in a wide range of household appliances.



SENSOR SOLUTIONS

- PRESSURE
- HUMIDITY
- TEMPERATURE
- FORCE
- FLOW
- PIEZO FILM
- POSITION
- PHOTO OPTIC
- LIQUID LEVEL

QUALITY STATEMENTS

- AS/EN 9100
- EN 13980
- ESA 266
- ESCC266E
- ESCC 400C
- ISO 13485
- ISO 14001
- ISO 9001
- PART21G
- TS 16949



APPLIANCE APPLICATION SOLUTIONS

Clothes Dryer

- Humidity sensor monitors process humidity and stops the dryer when clothes are dry
- Thermopile measures clothing temperature to prevent overheating and fabric damage
- Force sensors measure payload weight at the beginning of the cycle

Cooktop

- Temperature sensor monitors glass surface temperature for cooking control and “hot” indication lights for user safety

Dishwasher

- Magneto-resistive (MR) sensor and magnet verifies spray arm rotation
- Temperature sensor measures water temperature and controls heating elements
- Liquid level sensor monitors water level and detergent dispenser level

Household Oven

- Temperature probe monitors cooking temperature
- Temperature sensor monitors pyrolytic cleaning temperature and controls door latch

Microwave Oven

- Humidity sensor monitors food moisture content during cooking
- Thermopile measures food temperature without the need to make physical contact
- Force sensor measures food weight on the turntable

Refrigerator

- Temperature sensors monitor the freezer and refrigerator cabinets as part of the control system
- Humidity sensor monitors humidity in produce drawers and compartments
- Humidity sensor monitors ambient room humidity to help manage frost prevention and doorframe condensation

Small Appliances

- Temperature sensors measure liquid and heating element temperatures in toaster ovens, coffee makers, popcorn poppers, etc.
- Humidity sensor monitors relative humidity and steam production for espresso machines, clothes steamers, etc.

Washing Machine

- Temperature sensor measures water temperature and controls heating elements
- Pressure sensor monitors water level
- Vibration sensor detects out-of-balance conditions during spin
- Proximity sensor verifies door closed and latched before start-up
- Force sensors measure payload weight at the beginning of the wash cycle

Water Heater

- Temperature sensor measures water temperature and controls heating element
- Flow switch detects “Flow on” condition

SENSOR SOLUTIONS FOR APPLIANCES

FLOW SENSORS

	MEAS FS Series	MEAS FCS Series
Package	PPE or brass	PPE or PPS
Type	Flow switch	Flow switch
Unique Features	• Polymer or brass housing • Reed switch reliability • Minimum pressure drop • Operates from small head of water • Vertical mount ±15° • Suitable for water or air • Interface options available • NO with no flow	• Mount in any axis • Reed switch reliability • Minimum pressure drop • Operates from small head of water • Suitable for fuels and oils, solvents, water (Potable, boiling, deionized), acids, alcohols, and air • Meets UL 94-HB flammability rating • Food grade material • Interface options available • NO with no flow
Max. Pressure	10 bar	10 bar
Operating Temp.	-30°C to 85°C	0°C to 85°C
Switch Closure Flow	1.0 L/min	0.6 ± 0.5 L/min
Dimensions (mm)	112 X 51 X 42	75 x 26 x 16
Typical Applications	Mains water control, central heating systems, flow sensing, circulating pump protection, cooling systems	Leak detection, mains water control, instant water heater control, central heating systems, flow sensing, circulating pump protection, cooling systems

FORCE SENSORS

	MEAS FX19	MEAS FS20	MEAS FC22
Package	Low profile “coin cell” design	Miniature; drop in replacement for industry standard	Plastic housing, button, flange mounting
Operating Mode	Compression	Compression	Compression
Unique Features	• Ultra low cost, low strain design • Essentially unlimited cycle life	• Load cell design operates at very low strains • Not subject to lead-die fatigue	• Low cost button shape • Essentially unlimited cycle life
Ranges (Lbf)	10, 25, 50, 100	1.5, 3	25, 50, 100
Max. Over-range	2.5X	10 lbf	2.5X
Output / Span	100 mV	1.0 to 4.0 V	100 mV, 0.5 to 4.5 VDC
Combined Linearity & Hysteresis	±1.0% FSO	±1.0% FSO	±1.0% FSO
Operating Temp.	-40°C to 85°C	0°C to 70°C	-40°C to 85°C
Dimensions (mm)	Ø25.00 x 29.50 x 8.00	30.708 x 17.272 x 8.255	Ø26.00 x 42.00 x 19.50
Typical Applications	Consumer OEM, exercise machines, physical therapy, vending machines, appliances, pumps, medical devices	Infusion pumps, contact sensing, medical devices, consumer appliances	Infusion pumps, robotics end-effectors, exercise machines, contact sensing, appliances

HUMIDITY SENSORS

MEAS HS1101LF

Package	Through hole TO39 with side opening plastic cap
Type	Capacitive humidity
Operating RH Range	0 to 100% RH
Operating Temp.	-60°C to 140°C
Unique Features	• Robust and recognized component • Suitable for most humidity applications • Cost effective solution
Accuracy	180 pF, ±3 pF at 55% RH
Dimensions (mm)	10 x 10 x 19
Typical Applications	Applications requiring a robust humidity sensor in automotive, home appliance, outdoor, HVACR, consumer, printer, meteorology

MEAS HTU2X Series

Package	DFN type
Type	Digital RH and NTC temperature
Operating RH Range	0 to 100% RH
Operating Temp.	-40°C to 125°C
Unique Features	• Low power consumption • Fast response time • Very low temperature coefficient • I²C interface or PWM interface or SDM interface
Accuracy	±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 Applications	Humidity and temperature plug and play transducers for OEM demanding applications in automotive, home appliance, printer, medical, humidifier

MEAS HTU2XF Series

Package	DFN type
Type	Digital RH and NTC temperature
Operating RH Range	0 to 100% RH
Operating Temp.	-40°C to 125°C
Unique Features	• Low power consumption • Fast response time • Very low temperature coefficient • I²C interface or PWM interface or SDM interface • Optimal filter
Accuracy	±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 Applications	Humidity and temperature plug and play transducers for OEM demanding applications in automotive, home appliance, printer, medical, humidifier

MEAS HTU3535PVBM/Wire

Package	Cost effective, small size mini-module
Type	Analog voltage RH and NTC temperature
Operating RH Range	0 to 100% RH
Operating Temp.	-40°C to 110°C
Unique Features	• PTFE filter (Optional) • Electronics fully protected (5 V) • Multiple connector choices (JST, Samtec board to board through hole) • 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 Applications	Humidity and temperature plug and play transducers for OEM demanding applications in HVACR, home appliance, printer, medical, and outdoor

MEAS HTU383X/Wire

Package	Cost effective, small size mini-module
Type	Digital RH and NTC temperature
Operating RH Range	0 to 100% RH
Operating Temp.	-40°C to 110°C
Unique Features	• PTFE filter (Optional) • Electronics fully protected (5 V) • Multiple connector choices (JST, Samtec board to board through hole) • 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 Applications	Humidity and temperature plug and play transducers for OEM demanding applications in HVACR, home appliance, printer, medical, and outdoor

MEAS HTM2500LF

Package	Probe RH and temperature
Type	Cost effective analog voltage RH
Operating RH Range	0 to 100% RH
Operating Temp.	-40°C to 85°C
Unique Features	• Electronics fully protected with potting material • Optional wiring length and connectors
Calibration	±3% RH at 55% RH; ±0.25°C at 25°C
Dimensions (mm)	86 x 11.5 x 11.5 (Standard wire length of 200 mm)
Typical Applications	Hygrostat, data loggers, baby cabinets

LIQUID LEVEL SENSORS

	MEAS EVS722-51	MEAS LS509-31
Package	Brass stem with polypropylene float	Glass filled PPS
Type	Level sensor	Level Sensor
Unique Features	• Internal or external fitting • Suitable for a wide range of chemicals • 2-position, high and low level switching • Repeatability of operation • Reed switch reliability	• High or low level sensing • Reed switch reliability • Low cost • NO or NC switch by rotating 180° • Suitable for wide range of liquids • Interface options available
Max. Pressure	4.7 bar	4.7 bar
Operating Temp.	-30°C to 80°C	-30°C to 110°C
Dimensions (mm)	Stem: 223.5, Float Dia.: 22	103 x 29 x 29
Typical Applications	Waste water level, sump level, water high or low level, coolant level indication, boiler heating element protection	Coolant level indication, water high or low level, boiler heating element protection, potable water level, boiling water level

	MEAS LS Series Horizontal Level Sensors	MEAS LDS Series Horizontal Level Sensors	MEAS VS Series Vertical Level Sensors
Package	Glass filled PPS, nylon, or polypropylene	Glass filled PPS, nylon, or polypropylene	Glass filled Nylon or Polypropylene
Type	Level sensor	Level sensor	Level Sensor
Unique Features	• High or low level sensing • Reed switch reliability • Low cost • NO or NC switch by rotating 180° • Suitable for wide range of liquids • Interface options available	• High or low level sensing • Reed switch reliability • Low cost • Central float pivot minimizes travel • NO or NC switch by rotating 180° • Suitable for wide range of liquids • Interface options available	• High or low level sensing • Reed switch reliability • Low cost • NO or NC switching by reversing float on stem • Suitable for wide range of liquids • Interface options available
Max. Pressure	4.7 bar	4.7 bar	4.7 bar
Operating Temp.	-30°C to 130°C	-30°C to 130°C	-30°C to 130°C
Dimensions (mm)	103 x 29 x 29	98 x 29 x 29	87 x 29 x 29
Typical Applications	Coolant level indication, chemical high or low level, diesel fuel low level, sump switch, alcohols, water (Potable, waste, boiling), low oil detection	Coolant level indication, chemical high or low level, diesel fuel low level, sump switch, alcohols, water (Potable, waste, boiling), low oil detection	Coolant level indication, chemical high or low level, diesel fuel low level, sump switch, alcohols, water (Potable, waste, boiling), low oil detection

PHOTO OPTIC SENSORS

	MEAS ELM-4000	MEAS EPM-4001
Package	Lead frame	Lead frame
Type	Emitter assembly	Detector assembly
Range	660 nm / 880-940 nm	—
Unique Features	• Low cost • Dual drive • Clear epoxy lens	• Low cost • Fast response • High efficiency
Accuracy	Sensor dependent	Sensor dependent
Operating Temp.	-55°C to 70°C	-55°C to 70°C
Dimensions (mm)	4.4 x 5.1 x 1.9	4.4 x 5.1 x 1.8
Typical Applications	Pulse oximetry, finger and ear probes, disposable	Pulse oximetry, finger and ear probes, disposable

PIEZO FILM SENSORS

	MEAS 40 kHz Transducers	MEAS 80 kHz Transducers
Package	Plastic cage with mounting tabs	Pin mounted
Type	Air ultrasound transducer	Air ultrasound transducer
Range	40 kHz	80 kHz
Unique Features	• Wide horizontal beam angle • Low Q resonance • Excellent impact resistance • Low cost • Lightweight	• Small size • Low mechanical Q • Shielded package
Accuracy	Application dependent	Application dependent
Operating Temp.	5°C to 60°C	-20°C to 80°C
Dimensions (mm)	Ø15 x 31.4	Ø6 x 9
Typical Applications	2D position detection, digitizer, distance measurement, object detection	Air ranging, ultrasonic mouse, digitizers

PIEZO FILM SENSORS

	MEAS DT1, SDT1	MEAS Piezo Cable	MEAS MiniSense 100
Package	Unshielded element with twisted pair or shielded element with shielded cable	Shielded coaxial 20 gage piezo cable	Piezo Film elements with or without mass
Type	Flexible film, adhesive mount	Polymer jacketing; armored jacketing	Cantilever beam with vertical or horizontal pins
Range	15 mV/με up to 1% strain	μPa sensitivity	±10 g (Typical)
Unique Features	• Thin, flexible, robust • Withstands >2% strain • Ultra-low power (Self generating)	• Continuous lengths of up to 1 km • Shielded construction	• Low cost • High sensitivity (1 V/g) • Ultra low power (Self generating)
Accuracy	±20% (Typical)	±20% (Typical)	±20% (Typical)
Operating Temp.	-40°C to 70°C (Higher available custom)	-40°C to 85°C	-40°C to 70°C
Dimensions (mm)	Application dependent	Ø3 continuous lengths	19.05 x 6.35 x 6.35
Typical Applications	Dynamic strain gage, contact microphone, acoustic pickup	Perimeter and fence security; geophone, impact sensors, intrusion detection, seat occupancy (e.g. airbag), patient bed vital signs monitor	Wake-up switch, load imbalance, anti-theft devices, impact sensing, vital signs monitoring

POSITION SENSORS

MEAS KMY, KMZ

Package	SOT-223, E-line 4 pin
Type	Linear low field sensor
Range	-2 to 2 kA/m magnetic field
Unique Features	• High sensitivity • Low hysteresis • Linear to uniaxial field strength
Output	Ratiometric with output voltage range 20 mV/V
Resolution	Typ. 0.1% of range
Accuracy	Typ. 1.0% of range
Operating Temp.	-40°C to 150°C
Dimensions (mm)	SOT: 6.6 x 7.0 x 1.6 E-line: 16 x 4.2 x 2.4
Typical Applications	Non-destructive material testing, spray arm detection in dish washers, magnetic imaging, brake pedal position

MEAS MS32

Package	TDFN
Type	Low field switch sensor
Range	1 to 3 kA/m magnetic switching field
Unique Features	• Linearized ratiometric output • Temperature compensated switching point
Output	Ratiometric with output voltage range 10 mV/V
Resolution	Typ. 0.1 kA/m
Accuracy	Typ. 0.1 kA/m
Operating Temp.	-25°C to 85°C
Dimensions (mm)	TDFN: 2.5 x 2.5 x 0.8
Typical Applications	Piston position switch, reed switch replacement

MEAS KMT36H

Package	TDFN
Type	Angle sensor
Range	360° angle
Unique Features	• High accuracy • High resolution • 360° full turn
Output	Three 120° phase shifted output signals with output voltage range 20 mV/V
Resolution	Typ. 0.01° to 0.1°
Accuracy	Typ. 0.1° to 1°
Operating Temp.	-40°C to 150°C
Dimensions (mm)	TDFN: 2.5 x 2.5 x 0.8
Typical Applications	Steering position, gage readings, rotary encoders

MEAS KMT32B, KMT37

Package	TDFN, SO-8
Type	Angle sensor
Range	180° angle
Unique Features	• High accuracy • High resolution
Output	Sine and cosine signals with output voltage range 20 mV/V
Resolution	Typ. 0.01° to 0.1°
Accuracy	Typ. 0.1° to 1.0°
Operating Temp.	-40°C to 150°C (175°C on request)
Dimensions (mm)	TDFN: 2.5 x 2.5 x 0.8 SO-8: 5 x 4 x 1.75
Typical Applications	Steering position, flow meters, rpm meters, rotary encoders

POSITION SENSORS

	MEAS KMA36	MEAS DPL, DPN-Series
Package	TSSOP	PCB board
Type	Angle sensor	Inclination board module
Range	360° angle	±2° to ±30°
Unique Features	• Low cost MR encoder for rotational and incremental measurements	• High resolution • Minimal temperature drift • User configurable
Output	Voltage 0 - 5 V I²C, Customer specific	Voltage / RS 232 / SPI
Resolution	Typ. 0.1°	—
Accuracy	Typ. 0.3°	±0.05° to ±0.8°
Operating Temp.	-25°C to 85°C	-40°C to 85°C
Dimensions (mm)	TSSOP20: 6.5 x 6.4 x 1.2	45 x 45 x 20
Typical Applications	Knobs, small robotics, angular / linear position	Laser leveling, weighing systems, mobile and stationary cranes, hydraulic leveling, building monitoring, wind power

	PS-1, PS-2	PM Series
Package	Glass filled nylon 6.6	Glass filled nylon 6/6
Type	Proximity sensor	Proximity sensor
Range	Side to side: 10 mm End to end: 3 mm	Side to side: 10 mm End to end: 3 mm
Unique Features	• Low cost • Repeatability • Direct magnet or shunt operation • Robust, fully encapsulated • Reed switch reliability • Matching magnet PM101 or PM102	• Low cost • Repeatability • Direct magnet or shunt operation • Robust, fully encapsulated • High quality magnet • Matched to operate with PS1 and PS2 series proximity sensors
Output	Max. switching 250 VAC, 1.0A, 15 watts	—
Accuracy	Application dependent	Application dependent
Operating Temp.	-30°C to 105°C	-30°C to 105°C
Dimensions (mm)	28.5 x 19.5 x 6.4	28.5 x 19.5 x 6.4
Typical Applications	Door interlocks, hook switches, security systems, safety interlocks, position indication	Door interlocks, hook switches, security systems, safety interlocks, position indication

PRESSURE SENSORS

	MEAS MS5525DSO
Package	SOIC-14
Type	Gage, absolute, differential, compound
Pressure Range	0 - 1 to 150 psi
Output / Span	24-bit ADC SPI or I²C protocol
Unique Features	• 24-bit digital small outline sensor • Pressure and temperature measurement • Single supply of 1.8 or 3.6 VDC • Top straight / barb, flat top, o-ring seal
Linearity/Absolute Accuracy	0.25% / 2.5% TEB
Overpressure	3X range
Operating Temp.	-40°C to 125°C
Dimensions (mm)	12.5 x 7.9
Typical Applications	Medical respirators, ventilators

	MEAS MS1451, MS1471
Package	Surface mountable
Type	Gage, absolute
Pressure Range	0 - 5 to 500 psi
Output / Span	60 mV typical
Unique Features	• Low cost • Coarse calibrated at room temp. (MS1471) • With gel to protect against moisture • Tube or hole
Linearity/Absolute Accuracy	±0.25% non-linearity
Overpressure	—
Operating Temp.	-40°C to 125°C
Dimensions (mm)	7.6 x 7.6, application dependent
Typical Applications	Altitude measurement, barometric pressure, medical instrumentation, consumer appliances, tire pressure

	MEAS 86BSD
Package	• 6 mm diaphragm diameter • O-ring mount
Type	Gage, absolute
Pressure Range	0 - 0.07 to 20 bar / 0 - 1 to 300 psi
Output / Span	14-bit ADC I²C or SPI
Unique Features	• Pressure and temperature read-out • Cable and connector options • Low power option
Accuracy	±0.25% span
Operating Temp.	-40°C to 125°C
Dimensions (mm)	Ø15.82 x 9.3
Typical Applications	Level controls, tank level measurement, corrosive fluids and gas measurement systems, sealed systems, manifold pressure measurement, submersible depth monitoring
Agency Approvals	—

	MEAS M7100, U7100
Package	—
Type	Gage, no vent gage (M7100) Gage, sealed gage, absolute (U7100)
Pressure Range	0 - 10 to 700 bar / 0 - 150 to 10K psi (M7100) 0 - 1 to 10 bar / 0 - 15 to 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	• ±1% FSO TEB (-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 Applications	HVACR refrigeration controls, off road vehicles engine control, compressors, hydraulic, energy and water management
Agency Approvals	CE (EMC), UL 508

PRESSURE SENSORS

	MEAS MS4515DO, MS4525DO	MEAS MS4515HRD, MS4525HRD
Package	8 pin DIL	—
Type	Gage, compound (MS4515DO) Gage, absolute, differential, compound (MS4525DO)	Gage, differential
Pressure Range	0 - 2 to 30" H_2O (MS4515DO) 0 - 1 to 150 psi (MS4525DO)	0 - 2, 4, 5, 10, 20, 30" H_2O (MS4515HRD) 0 - 0.07, 0.35, 1, 2, 3, 10 bar / 0 - 1, 5, 15, 30, 50, 150 psi (MS4525HRD)
Output / Span	14-bit ADC SPI or I^2C	24-bit digital word SPI or I^2C protocol
Unique Features	• Optional gel coat, low power • 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	• 24-bit digital sensor • Pressure and temperature measurement • Single supply of 1.8 or 3.6 VDC • Top, side barbed or manifold o-ring port • J lead or thru hole pins • Fast conversion up to 0.54 ms • Ultra-low power consumption
Linearity/Absolute Accuracy	0.25% / 1% TEB	0.25% / 1% TEB
Overpressure	300 psi	0.69 bar / 10 psi (MS4515HRD), 3X range (MS4525HRD)
Operating Temp.	-10°C to 85°C (MS4515DO), -25°C to 125°C (MS4525DO)	-25°C to 125°C
Dimensions (mm)	12.5 x 9.9	12.5 x 9.9
Typical Applications	Medical instruments, air flow measurements, process control, leak detection	Medical instruments, air flow measurements, process control, leak detection

TEMPERATURE SENSORS

NTC	MEAS Thermistor Chips	MEAS Radial Leaded Thermistors	MEAS Axial Leaded Thermistors
Package	Leadless Chips, SMD 0402, 0603, 0805	Radial, beads	DO-35
Type	Gold or silver electrodes, surface mounted	Epoxy or glass coated	Glass coated
Resistance Range	Chip: 100 to 1MΩ / SMD: 40 to 500KΩ	100 to 1MΩ	5KΩ to 100KΩ
Unique Features	• Wire bonding compatible • End band SMD	• Interchangeable • Moisture resistant • Stability	• Tight tolerance (±1%) • Max. stability using high density (HD) chip • Hermetically sealed • Tinned and Nickel plated leads
Accuracy	±1% to 10%	0.25% to 20%	±1% to ±3%
Operating Temp.	-40°C to 125°C	-55°C to 280°C	-40°C to 300°C
Dimensions (mm)	Chip: 0.6 - 1.0 square SMD 0402: 1 x 0.5 x 0.7 SMD 0603: 1.6 x 0.8 x 1 SMD 0805: 2 x 1.25 x 1.2	0.4 to 4.9	2.0 x 4.0 body
Typical Applications	Temperature compensation, communication (DWDM), infrared sensing systems, PCB mounting temperature measurement	Temperature sensing for OEM, automotive, medical, HVACR	Refrigeration including cabinet sensing and evaporator coil, white goods, fire detection units, air-conditioning systems, PCB temp sensing

	MEAS TSYS Series	MEAS Platinum Thin Film Sensors
Package	QFN16, TDFN8	Wired component
Type	I²C, SPI, PWM, SDM (Convertible to analog voltage)	• 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	• Low power • Small size • Calibrated and ready to use • 16-bit resolution	• Long term stability • Interchangeability • Small dimensions • Short response time • High electrical insulation
Accuracy	Up to ±0.1°C at -5°C to 50°C	Class T (F0.1), A (F0.15), B (F0.3) according to DIN EN 60751
Operating Temp.	-40°C to 125°C	-50°C to 600°C (Standard) down to -200 °C or up to 1,000 °C (On request)
Dimensions (mm)	QFN16: 4 x 4 x 0.85 TDFN8: 2.5 x 2.5 x 0.75	2.0 x 2.3 x 1.1 (Standard) 1.2 x 4.0 x 1.1 (Standard) Other dimensions (On request)
Typical Applications	Industrial control, replacement of precision RTDs, thermistors and NTCs, heating and cooling systems, HVACR	White goods, automotive, industrial, aerospace, medical, test and measurement

TEMPERATURE SENSORS

	MEAS Oven Sensors	MEAS Refrigeration Molded Probes	MEAS Air Sensor
Package	Stainless steel housing	PVC or TPE	Metal housing with PVC sun shield with or without weatherproof box
Type	• Pt element encapsulated into ceramic tube, with rigid stainless steel housing • High temperature cable	• Overmolded	• Fully potted subassembly
Sensor Range	• Pt100, Pt500, Pt1000 sensor	• NTC • RTD: Pt	• NTC
Unique Features	• High temperature • Easy integration / installation • Higher dielectric strength according to type	• Mounting clips available	• Easy installation – just threads into mounting hole or standard handy box • Fully potted housing protects sensing element and provides fast, accurate response
Accuracy	• Class B, C according to IEC60751	• NTC: Custom tolerances available • Pt RTD: Class AA, A, B according to IEC60751	• ±0.2°C at 0°C to 70°C
Operating Temp.	-20°C to 750°C (According to version)	-40°C to 125°C	-40°C to 105°C
Dimensions (mm)	• OD Ø4 mm to Ø6 mm • Immersion length 35 mm to 100 mm • Custom mechanical interface and cable length	• 8 x 30, 6.5 x 25, 6 x 50, 6 x 5 x 15	• Ø12 x 64
Typical Applications	Drying oven, domestic oven	HVACR, industrial processes control	Residential and commercial building controls, energy management systems

	MEAS Surface Sensors	MEAS Pointed Food Probe
Package	• Silicone rubber or polyimide laminated element • SP683	• Stainless steel housing
Type	• Flat, flexible, rectangular sensor • Variety of designs available	• Silicone overmolded handles • High temperature FDA silicone • Audio jack plug type
Sensor Range	• RTD: Pt, Ni, Cu • Thermocouple: Type J, K, T, E	• NTC
Unique Features	• Surface sensing for curved or uneven surfaces • Noninvasive, simple installation • Adhesive backing option	• Single or multiple sensitive elements • Cable length and handle shape on demand
Accuracy	RTD: Class A, B according to IEC60751	±2%
Operating Temp.	Varies: -50°C to 200°C (Available up to 220°C)	–40°C to 250°C
Dimensions (mm)	Custom dimensions available	Custom dimensions available
Typical Applications	Chemical and pharmaceutical industry, process industry, laboratory, aerospace, motor end windings of stator coils, generators	Home appliance (Oven, microwave oven)

TEMPERATURE SENSORS

MEAS TS Series
TS318-3B0814, TS318-5C50, TS305-10C50

Package	TO-18, TO-5
Type	Thermopile sensor components
Temp. Range	Depends on applied electronics and calibration, filter types optimal for object temperature range -40°C to 300°C (Extended range: -60°C to 1,000°C)
Unique Features	• High signal output • Accurate reference sensors
Accuracy	Depends on applied electronics and calibration
Operating Temp.	Ambient temperature range: -20°C to 85°C
Dimensions (mm)	Ø9.15 x 4.4 (body)
Typical Applications	Medical thermometer (ear, forehead), pyrometer

MEAS TSEV
Single Pixel Series

Package	OEM-module
Type	Single-pixel thermopile module
Temp. Range	Object temperature range: 0°C to 300°C (Other temperature ranges available upon request)
Unique Features	• Calibrated, interfaces: I^2C, 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 Applications	Contactless temperature measurement, e.g. on moving parts or heated rolls, laminators, people detection, microwave oven, air conditioner

MEAS TSEV
Multi Pixel Series

Package	OEM-module
Type	8-pixels-linear array thermopile module
Temp. Range	Object temperature range -20°C to 120°C
Unique Features	• Calibrated and ready to use • Digital output • Small field of view
Accuracy	Depends on temperature range, typical 2% full scale
Operating Temp.	Ambient temperature range: -20°C to 85°C
Dimensions (mm)	25 x 35 x 15.2
Typical Applications	Contactless temperature measurement, e.g. on moving parts or heated rolls, laminators, people detection, microwave oven, air conditioner

MEAS TPT Series
TPT300V

Package	IP65 stainless steel tube
Type	Thermopile system for industrial use
Temp. Range	Object temperature range 0°C to 300°C
Unique Features	• Calibrated and ready to use • Digital or analog outputs • Small field of view
Accuracy	Depends on temperature range, typical 1% full scale
Operating Temp.	Ambient temperature range: 0°C to 85°C
Dimensions (mm)	Ø18 x 111
Typical Applications	Contactless temperature measurement, e.g. on moving parts or heated rolls, control of assembly lines, paper fabrication, drying applications

VIBRATION SENSORS

	MEAS 3022/3028	MEAS LDTC Family
Package	Pins or pads	Piezo Film elements with or without mass and pins
Type	Board level	Cantilever beam with vertical or horizontal pins
FS Range (g)	±2, 5, 10, 20, 50, 100, 200	±10 (Typical)
Unique Features	• mV output • Gas damping • Pin or pad option	• Very low cost • High sensitivity (1 V/g) • Ultra-low power (Self generating)
Accuracy	±0.5% non-linearity	±20.0% (Typical)
Operating Temp.	-40°C to 125°C	-40°C to 70°C
Dimensions (mm)	22.86 x 15.24 x 5.33	19.05 x 6.35 x 6.35
Typical Applications	Vibration and shock monitoring, tilt applications, motion control, impact testing	Wake-up switch, load imbalance, anti-theft devices, impact sensing, vital signs monitoring

PRODUCT AND APPLICATION MATRIX	Flow	Force	Liquid Level	Humidity	Photo Optic	Piezo Film	Position	Pressure	Temperature	Vibration
Clothes Dryer		●		●					●	
Cooktop									●	
Dishwasher			●				●	●	●	
Household Oven									●	
Microwave Oven		●		●					●	
Refrigerator				●					●	
Small Appliances				●					●	
Washing Machine		●	●			●		●	●	
Water Heater	●								●	

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