

TEMPERATURE SENSORS

TE Connectivity is a leader in the design and manufacture of NTC thermistors, RTDs, thermocouples, thermopiles, digital output and customized sensor assemblies. Building on our long standing experience, we offer solutions for a wide range of temperature measurement, control and compensation applications. Our broad selection of temperature products meet the specific sensing demands of critical OEM applications, including medical, aerospace, automotive, instrumentation appliances, motor control and HVACR. You can count on us to provide engineering expertise and deliver high quality, cost-effective products and solutions for your application.



SENSING ELEMENTS—NTC

Analog Output



MEAS Thermistor Chips

Package	Leadless chips, SMD 0402, 0603, 0805
Type	Gold or silver electrodes, surface mounted
Resistance Range	Chip: 100 to 1MΩ / SMD: 40 to 500KΩ
Unique Features	• Wire bonding compatible • End band SMD
Accuracy	±1% to 10%
Operating Temp.	-40°C to 125°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
Typical Applications	Temperature compensation, communication (DWDM), infrared sensing systems, PCB mounting temperature measurement



MEAS Radial Leaded Thermistors

Package	Radial, beads
Type	Epoxy or glass coated
Resistance Range	100 to 1MΩ
Unique Features	• Interchangeable • Moisture resistant • Stability
Accuracy	0.25% to 20%
Operating Temp.	-55°C to 280°C
Dimensions (mm)	0.4 to 4.9
Typical Applications	Temperature sensing for OEM, automotive, medical, HVACR



MEAS Axial Leaded Thermistors

Package	DO-35
Type	Glass coated
Resistance Range	5KΩ to 100KΩ
Unique Features	• 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 Applications	Refrigeration including cabinet sensing and evaporator coil, white goods, fire detection units, air-conditioning systems, PCB temp. sensing



MEAS Space Qualified (Hi-Rel)

Package	Radial, bead, custom
Type	NTC, epoxy, glass, probes
Resistance Range	1KΩ to 100KΩ
Unique Features	• ESA and NASA approved • High reliability and accuracy
Accuracy	0.5% to 10%
Operating Temp.	-55°C to 160°C
Dimensions (mm)	From 2.4
Typical Applications	Instrumentation and compensation for aerospace applications

SENSING ELEMENTS—DIGITAL

Digital Output



MEAS Temperature System Sensor (TSYS) Series

Package	QFN16, TDFN8
Type	I ² C, SPI, PWM, SDM (Convertible to analog voltage)
Unique Features	• 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 Applications	Industrial control, replacement of precision RTDs, thermistors and NTCs, heating and cooling systems, HVACR

SENSING ELEMENTS—RTD

Analog Output



MEAS Nickel RTD

Package	• SOT 23 • Bare die on request
Type	• Thin film nickel structure on silicon substrate, protected with a passivation layer • SOT 23 package for SMT • Bare die for COB assembly
Resistance Range	1000Ω
Unique Features	• Harsh environment compatible • Automotive qualified • Very small dimensions • Very short response time • Good linearity • High temperature coefficient • Low power consumption • Good thermal connection of sensing element through leadframe-pin
Accuracy	Class B, according to former DIN 43760 standard
Operating Temp.	-55°C to 160°C
Dimensions (mm)	2.1 x 2.5 x 2.1 (SOT 23), 0.7 x 0.7 x 0.4 (Bare die)
Typical Applications	Automotive, industrial, OEM, thermal compensation, thermal management



MEAS Platinum Thin Film Chips

Package	Leadless chips, SMD 1206
Type	• Thin film platinum deposited on ceramic substrate • Contact pads on top and bottom side for NTC chip like assembly • Contact pads on both ends for SMT
Resistance Range	100Ω, 1000Ω (Other values on request)
Unique Features	• Long term stability • Interchangeability • Assembly like NTC chips • Very small dimensions • Short response time
Accuracy	According to DIN EN 60751
Operating Temp.	-50°C to 400 °C
Dimensions (mm)	1.5 x 1.5 (Top / bottom pads), 1.2 x 3.6 (SMT)
Typical Applications	White goods, automotive, industrial, aerospace, medical, test and measurement



MEAS Platinum Thin Film Sensors

Package	Wired component
Type	• 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	• 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 1,000°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 Applications	White goods, automotive, industrial, aerospace, medical, test and measurement



MEAS Glass Wire Wound Sensors

Package	GO, GX
Type	Glass rod, radial leads
Resistance Range	100Ω (2X 100Ω on few versions)
Unique Features	• Aggressive environments (Acid, oil, solvent) • Small dimensions • Stability • No hysteresis • Short response time • Interchangeability
Accuracy	Class W0.3, W0.15, W0.1 according to IEC60751
Operating Temp.	-200°C to 400°C
Dimensions (mm)	Ø1.8 / length 5 mm to Ø4.5 / length 48 mm
Typical Applications	Oil and chemical industry, aviation, aeronautic, food industry



MEAS Ceramic Wire Wound Sensors

Package	CWW600, CWW850, CWW1000
Type	Ceramic rod, radial leads
Resistance Range	100Ω (2X 100Ω on few versions)
Unique Features	• High temperature • Stability • No hysteresis • Small dimension • Interchangeability
Accuracy	Class W0.3, W0.15, W0.1 according to IEC60751
Operating Temp.	-200°C to 600°C (CWW600) -200°C to 850°C (CWW850) -200°C to 1000°C (CWW1000)
Dimensions (mm)	Ø1.5 / length 8 mm to Ø4.5 / length 30 mm Ø2.7 / length 45 mm (CWW1000)
Typical Applications	Process industry, laboratories, reference sensors

SENSOR ASSEMBLIES



MEAS Ring Sensors

Package	• Ring for surface assembly • Threaded bolt, tube style
Type	Epoxy potted element
Sensor Range	• NTC • RTD: Pt, Ni
Unique Features	• Surface mount sensing • For use where space is limited • Simple installation
Accuracy	• 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 Applications	Surface plates, heat exchangers, fluid pumping systems, generators



MEAS Push-in Sensors

Package	Brass, copper or stainless steel closed-end tube
Type	Epoxy potted element, miniature design
Sensor Range	• NTC • RTD: Pt, Ni • Thermocouple: Type J, K, T, E
Unique Features	• Corrosion resistant • Available with mounting tabs or clips
Accuracy	• 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 Applications	Boiler, liquid, evaporator, HVACR, industrial processes control, district heating and cooling, automotive, bearing monitoring, motors, gear boxes



MEAS Screw-in Sensors

Package	Brass, copper or stainless steel housing with integrated connector
Type	Epoxy potted element, rigid sheath
Sensor Range	• NTC • RTD: Pt, Ni, Cu • Thermocouple: Type J, K, T, E
Unique Features	• Corrosion resistant • Different thread types • Connectors available
Accuracy	• 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 Applications	Boiler, liquid, HVACR, industrial processes control, district heating and cooling, immersion



MEAS Refrigeration Molded Probes

Package	PVC or TPE
Type	Overmolded
Sensor Range	• NTC • RTD: Pt
Unique Features	• Mounting clips available
Accuracy	• 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 Applications	HVACR, industrial processes control

SENSOR ASSEMBLIES



MEAS Pipe Mount Sensors

Package	Copper or stainless steel housing
Type	• Overmolded • Epoxy potted
Sensor Range	• NTC
Unique Features	• Fast response time • Moisture resistant construction
Accuracy	• NTC: custom tolerances available
Operating Temp.	-40°C to 125°C
Dimensions (mm)	Custom configurations available
Typical Applications	Industrial process, boiler control, HVACR, refrigeration, food service, energy management, test equipment



MEAS Outdoor Air Sensors

Package	Metal housing with PVC sun shield with or without weatherproof box
Type	• Fully potted subassembly
Sensor Range	• NTC
Unique Features	• Easy installation – threads into mounting hole or standard handy box • Fully potted housing protects sensing element and provides fast, accurate response
Accuracy	±0.2°C at 0°C to 70°C
Operating Temp.	-40°C to 105°C
Dimensions (mm)	Ø12 X 64
Typical Applications	Residential and commercial building controls, energy management systems



MEAS Pool and Spa Sensors

Package	Plastic or metal housing with o-ring seal designed for band clamp or backing nut
Type	• Overmolded subassembly
Sensor Range	• NTC
Unique Features	• O-ring seals • Compatible with pool and spa chemicals
Accuracy	±0.2°C
Operating Temp.	0°C to 90°C
Dimensions (mm)	6.4 x 50
Typical Applications	Pools, hot tubs



MEAS Boiler Sensors

Package	Brass housing
Type	• Screw
Sensor Range	• NTC • RTD: Pt, Ni, Cu
Unique Features	• Integrated connector • Corrosion resistant • Different threads types and connectors available
Accuracy	• 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 Applications	Boiler control, liquid, industrial processes control, district heating and cooling, immersion



MEAS Oven Sensors

Package	Stainless steel housing
Type	• Pt element encapsulated into ceramic tube, with rigid stainless steel housing • High temperature cable
Sensor Range	Pt100, Pt500, Pt1000 sensor
Unique Features	• High temperature • Easy integration / installation • Higher dielectric strength according to type
Accuracy	Class B, C according to IEC60751
Operating Temp.	-20°C to 750°C (According to version)
Dimensions (mm)	• OD Ø4 mm to Ø6 mm • Immersion length 35 mm to 100 mm • Custom mechanical interface and cable length
Typical Applications	Drying oven, domestic oven



MEAS Urea Temperature Sensors

Package	Plastic housing with screw hole mountings
Type	• Overmolded plastic housing with integrated 2 pin connector
Sensor Range	• NTC
Unique Features	• Temperature measurement of urea liquid used in Selective Catalytic Reduction (SCR) systems • Suitable for high pressure applications
Accuracy	• NTC: custom tolerances available • ±2%, 3% and 5% • Beta 25/85: 3976
Operating Temp.	-40°C to 125°C
Dimensions (mm)	Sensor tip 8 mm diameter
Typical Applications	Temperature measurement of urea liquid used in SCR systems



MEAS Exhaust Gas Temperature Probes

Package	EGT thermocouple probe
Type	• Mineral insulated alloy sheath, screwed mechanical interface, cable extension and automotive connector • Option: CANbus interface (From 1 to 4 thermocouples, fully configurable)
Sensor Range	Thermocouple: Type K, N
Unique Features	• High temperature, robust design • Vibration and corrosion resistant • Fast response time
Accuracy	Class 1 according to IEC584
Operating Temp.	-40°C to 900°C
Dimensions (mm)	• ØOD 4 to ØOD 8 • Custom immersion length and cable length
Typical Applications	Automotive, truck, mining, power unit, racing

SENSOR ASSEMBLIES



MEAS Micro-Thermocouples

Package	Fine gage thermocouples
Type	• Micro sized thermocouple: 44 AWG, 40 AWG, 38 AWG, 36 AWG • Polymer encapsulated or bare junction
Sensor Range	Thermocouple type: T, K
Unique Features	• Welded or soldered junction • Low profile, fast response • Polyesterimide wire insulation
Accuracy	Varies by type: standard, special and custom limits or error available
Operating Temp.	Varies by type: Rated up to 240°C
Dimensions (mm)	Varies by thermocouple gage
Typical Applications	Medical, catheters



MEAS Patient Monitoring Probes

Sensor with cable and connector	Reusable: Skin; 10FR and 12FR GP Disposable: Skin; 9FR and 12FR GP; 12FR, 18FR, 24FR Esoph/Stethoscope; 14FR, 16FR, 18FR Foley catheter 400 series, 700 series (Reusable only) • Autoclavable reusables • Sterile disposables ±0.1°C at 25°C to 45°C ISO-80601-2-56: ±0.2°C at 35°C to 42°C -40°C to 100°C, Patient: 0°C to 50°C Reusable: 3 m cable with sensor Disposable: Sensor <1 m; 3 m reusable adaptor cable Patient monitoring, laboratory
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MEAS TLH Reference Probe

Package	TLH100 / TLH600
Type	Rigid protective external stainless steel sheath and stainless steel handle, unique internal design to insure stability
Sensor Range	Pt100 sensor
Unique Features	• Stability • Provided with calibration report or option of calibration certificate by national committee for accreditation (COFRAC)
Accuracy	Class B (TLH600), A (LTH100) according to IEC60751
Operating Temp.	-80°C to 350°C (TLH100) -180°C to 600°C (TLH600)
Dimensions (mm)	OD Ø5 x 500 + handle Ø15 x 100 (Typical cable length = 2 m)
Typical Applications	Laboratory, temperature sensors calibration by comparison



MEAS USB Temperature Probe

Push-in probe with handle	• Versatile push-in probe with stainless steel sheath and plastic or stainless steel handle • High precision sensing element combined with integrated electronics for signal processing, calibration and USB interface Not applicable due to direct digital output • USB conformal interface • Calibrated digital output, recalibration possible on request • Robust design for general purpose applications • Long term stability ±0.1°C for temperature range -5°C to 55°C ±0.2°C for temperature range -40°C to 160°C (Other accuracies on request) -55 °C to 160 °C for probe tip -40 °C to 85 °C for handle with electronics (Other temperature ranges on request) OD Ø6 x 200 + handle Ø19 x 100 (Typical cable length = 2,000) Laboratory, mobile research, test and measurement
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SENSOR ASSEMBLIES



MEAS Stator Sensors

Package	- TPE / CPME - G11 epoxy glass laminated, Class F or H
Type	- Rigid flat, slot sensor - Cable or leadwire options
Sensor Range	- RTD: Pt, Ni, Cu - Thermocouple: Type J, K, T, E
Unique Features	- Extended sensitive length - Single or dual elements - Calibration available
Accuracy	RTD: Class A, B according to IEC60751
Operating Temp.	Max. temperature: Class F, 155°C Max. temperature: Class H, 180°C Available up to 200°C
Dimensions (mm)	Custom dimensions available
Typical Applications	Monitor temperature between stator coils, electric motors, generators



MEAS Surface Sensors

Package	- Silicone rubber or polyimide laminated element - SP683
Type	- Flat, flexible, rectangular sensor - Variety of designs available
Sensor Range	- RTD: Pt, Ni, Cu - Thermocouple: Type J, K, T, E
Unique Features	- Surface sensing for curved or uneven surfaces - Noninvasive, simple installation - Adhesive backing option
Accuracy	RTD: Class A, B according to IEC60751
Operating Temp.	Varies: -50°C to 200°C Available up to 220°C
Dimensions (mm)	Custom dimensions available
Typical Applications	Chemical and pharmaceutical industry, process industry, laboratory, aerospace, motor end windings of stator coils, generators



MEAS Bearing Sensors

Package	- Copper alloy tip - Stainless steel, isolated stainless steel or epoxy glass case
Type	- Rigid sheath - Tip sensitive - Cable / leadwire options
Sensor Range	- RTD: Pt, Ni, Cu - Thermocouple: Type J, K, T, E
Unique Features	- Cut-to-length - Copper tip for fast time response - Assemblies with fluid seal and spring loading - Single or dual elements
Accuracy	RTD: Class A, B, C according to IEC60751
Operating Temp.	Sheath specific, up to 250°C
Dimensions (mm)	Custom lengths Standard sheath diameters: 4.78, 5.46, 6.35
Typical Applications	Bearing monitoring, electric motors, generators



MEAS Thermocouple

Package	Screw-in or push-in design with cable extension, connector, or connecting head
Type	- Collapsible Mineral Insulated (MI) with alloy sheath (Radius $\geq 5 \times OD$) - Flexible cable with plastic or composite insulation - Rigid protection sheath: ceramic, quartz or alloy sheath
Sensor Range	Type T, J, K, N, R, S, B (According to TC type and insulation type)
Unique Features	- High temperature and high vibration level (For MI) - Available in small diameters for fast respond time - Grounded or ungrounded or apparent hot junction - Single or multiple measuring points
Accuracy	Class 1 according to IEC584
Operating Temp.	-40°C to 1,700°C (According to TC type and insulation type)
Dimensions (mm)	- OD Ø0.3 mm to Ø8 mm for MI - Ø0.15 mm for smallest flexible cable - Custom dimensions, fittings and cable lengths (From few centimeters to many meters)
Typical Applications	Aeronautic, process industry, medical, semiconductor industry (Spike, profile)



MEAS Transmitter

Package	Brass, copper and stainless steel housing, flexible sheath with integrated connector.
Type	- Epoxy potted element - Screw-in
Sensor Range	4 - 20 mA output
Unique Features	- Compact, welded design - Highly sensitive and stable - High vibration application - Good waterproof properties
Accuracy	0.5 or 1% FS
Operating Temp.	-20°C to 120°C
Dimensions (mm)	- Customer sheath length, thread type - Probe diameter: Ø4.75 mm; Ø5 mm; Ø6 mm; Ø6.35 mm; Ø8 mm
Typical Applications	Heavy industry, general industrial monitoring

THERMOPILES



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 TSD Series

Single Pixel Digital Output Series

Package	TO-5
Type	Digital thermopile sensor component
Temp. Range	Object temperature range 0°C to 300°C (Other temperature ranges available upon request)
Unique Features	• Calibrated and ready to use, I²C interface • Direct assembly to PCB, no additional components needed
Accuracy	Depends on temperature range, typical 1% full range
Operating Temp.	Ambient temperature range: -20°C to +85°C
Dimensions (mm)	Ø9.15 x 4.4 (Body)
Typical Applications	Contactless temperature measurement, e.g. on moving parts like heated rolls, laminators, people detection, body temperature, microwave oven, air conditioner



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: 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 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-pixel-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