

measurement

SPECIALTIES™

sensing your world™



Embedded Sensing Technologies

Our sensors often play mission critical roles within the end device in which they are embedded. Accordingly, our customers rely on MEAS sensors to operate accurately, every time. At MEAS, we place the highest emphasis on quality in terms of design standards, process control and customer feedback/integration and back up our products with an industry leading warranty.

MEAS maintains the highest quality certifications, including:

Quality Statements:

- ◆ AS/EN 9100
- ◆ ATEX
- ◆ ATEX 949EC
- ◆ CE-MDD
- ◆ CMDR – Health Canada
- ◆ EN 13980
- ◆ ESA 266
- ◆ ESCC266E
- ◆ ESCC 400C
- ◆ FDA
- ◆ ISO 13485
- ◆ ISO 14001
- ◆ ISO 9001
- ◆ MID
- ◆ Measuring Instruments Directive 2004/22/EC annex D
- ◆ NASA Qualified
- ◆ NSF-61 Water Quality
- ◆ PART21G
- ◆ TS 16949

Measurement Specialties (MEAS) designs and manufactures sensors that measure pressure/force, position, flow, level, vibration, temperature, humidity, torque, water quality and fluid properties. Used as embedded devices by original equipment manufacturers (OEMs) or as stand alone sensors for test and measurement, our products are critical for feedback and control to enhance product functionality, efficiency and safety. We are the heart of many everyday products and provide a vital link to the physical world.

MEAS is an applications company and understands that embedded often means custom. Our portfolio includes technologies capable of measuring most physical characteristics and allows us to design the right sensor for the right application, including multi-parameter sensors. Physical property, electrical input/output and packaged configuration are all considerations when developing products that meet our customers' needs.

We have expanded our technology portfolio and geographic reach, in part through the acquisition of strategically complementary companies. Our operations in the US, Europe and China provide resources close to our customers. This global footprint allows us to offer the lowest cost of ownership to OEMs.

Our business is understanding your sensing needs and developing solutions that meet your performance and cost objectives. At MEAS, we are Sensing Your World.

About the Cover: Several technologically exciting products are featured. From top to bottom are the Trican pressure, temperature and relative humidity sensor--our industrial fluid/fuel properties sensor--Manta water quality multiprobe--SG series string pot for mobile construction equipment--M7100 stainless steel, hermetic pressure sensor for HVAC and rugged environments--the 3801A accelerometer for HUMS applications--a robust temperature sensor--LS309-21 sensor for low fuel level--front/back view of a 24-bit altimeter--16 channel pressure scanner for wind tunnel research-- our patented Piezo Film used in tamper, traffic and dynamic measurement applications--and ultrasonic sensor for bubble detection.



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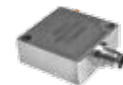
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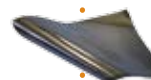
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Auto Braking System

Pressure sensors are used in Electronic Stability Control systems to detect and measure applied brake pedal pressure to distinguish between normal and emergency braking.



Engine and

Measurement Specialties offers competitive programs for high volume automotive sensors using our TS 16949 certified facilities in France, Germany, Scotland and China. We understand the rigors and demands of on- and off-road vehicles used in the trucking, commercial vehicle, construction, agriculture, forestry and mining markets. Our sensors are manufactured to exacting specifications to tolerate the high temperature, vibration, shock, pressure and long life requirements for these working vehicles.

Fluid Quality Monitoring

Fluid property sensors directly monitor the key characteristics of oils, fuels and urea. They detect harmful contaminants and fluid condition in order to improve vehicle up-time and performance. Urea concentration and quality monitoring support proper operation of urea SCR systems to insure NOx emissions compliance.



Temperature Monitoring

Stand alone or combined with other sensors, Measurement Specialties offers the largest range of temperature probes based on NTC, RTD Platinum or Nickel and Thermopile.

Engine Control

Humidity and temperature sensors are located at the air intake of internal combustion engines. The sensors are key components in systems designed to improve fuel efficiency and reduce emissions.



Vehicle

Sensors for Engine and Vehicle applications are RoHS compliant and are matched with applications to ensure appropriate ingress protection designed into every product. Signal outputs are provided with protection against EMI/RFI interference and cable interfacing specified to reduce risk of failure due to fatigue or accident. Selection of all materials of construction and fittings is made carefully to minimize installation and routine inspection costs.

Electronic Braking

Tilt sensors measure inclination of vehicle and automatically apply parking brake.



Oil and Fuel Levels

Stand alone or combined with temperature and/or fluid quality sensors, Measurement Specialties' level sensors are designed for off-highway, gear box, transmission and tank applications.



SCR

SCR sensors measure the level, quality and temperature and as required provide heating of DEF tanks to help emission control.



Fogging Prevention and Cabin Energy Control

Humidity and temperature sensors are used to prevent windshield fogging, critical for safety, cabin comfort and energy management.



Off-Road Mobile Hydraulics Control

Linear position and pressure sensors used in hydraulic pumps, valves and actuators provide closed loop control and monitoring in electro-hydraulic systems, for such applications as excavators, vehicle lifts and cranes.

Medical

Measurement Specialties has proven capabilities supplying to the OEM medical marketplace that include applications for life-sustaining, implantable medical devices. We are FDA registered for medical device manufacturing and ISO 13485 certified. We work closely with our customers to pioneer the use of sensor technology in medical equipment, devices and probes. This technology is used for the diagnosis or treatment of many pathologies including heart disease, high blood pressure, respiratory illness, renal failure and sleep apnea.

Patient Monitoring

FDA-registered reusable and disposable temperature and pulse oximetry (SpO2) probes continuously monitor patient core body temperature, pulse and blood oxygen saturation. Pressure sensors provide continuous, intravenous blood pressure measurement while MEAS piezo sensing technology is used to measure breathing patterns and patient movement.



Respiratory Devices

Temperature, humidity, pressure, position and flow sensors are used to provide precise feedback for inspired, expired and tank/wall-supplied gases in respiratory devices including sleep therapy (CPAP), oxygen concentrators and critical care and anesthesia ventilators. Our sensors improve patient comfort and device accuracy and reliability.



Cardiovascular Devices

Temperature, pressure and vibration sensors are used for invasive cardiac monitoring, cardiac rhythm management, angioplasty and ventricular assist devices (VAD).



Infusion and Syringe Pumps

Pressure, force, ultrasonic bubble and position sensors are used to detect occlusions, bubbles, medication bag voids and flow rates.



Pulse Oximeter

Photo Optic sensors provide continuous, non-invasive measurements of blood oxygen saturation.

Water Quality Data Collection

Multiparameter water-quality multiprobes measure your choice of temperature, dissolved oxygen, conductivity, pH, turbidity and a dozen other parameters manually or unattended.



Water Level Monitoring

Level data loggers and digital submersible level transducers with SDI-12 output for highly accurate and precise water level measurements for water resource management.



Environmental Monitoring

Measurement Specialties supports customers in the Environmental Monitoring markets; including government agencies, research institutions, academia, engineers and consultants, contractors, integrators, distributors and OEMs. Highly accurate and precise, rugged and reliable instruments meet the most demanding requirements for monitoring surface waters, groundwater, estuary and ocean waters and for managing drinking water, wastewater, storm water, landfill leachate, agricultural and hydropower systems. Our broad technology portfolio and easy-to-use products make us the supplier of choice for professionals responsible for monitoring natural waters or managing water processes.



Data Telemetry

Telemetry systems deliver real time water quality and/or water level data to your PC or smart phone.



Water Level Transducers

Analog submersible level transducers for water management applications, such as pump control, lift station operation, tank level monitoring, remediation and weir and flume measurement.

Transport and Case Refrigeration Systems

Temperature sensors are used to measure air supply to control compartments while immersion probes measure refrigerant temperature. Rugged sensors designed specifically for measuring refrigerant pressure are used in conjunction with variable speed compressors to improve system efficiency.

Industrial Paint Sprayer

Custom designed pressure sensor is used to monitor and precisely control the pressure in the paint canister to prevent splatter due to pressure pikes.

Hot Water Boilers

Low cost temperature probes with fast response time and rugged brass housings provide accurate temperature measurements for industrial grade boiler systems.

General OEM/Industry

Measurement Specialties supports OEM customers in many industries, including Industrial, Consumer and Commercial. Our engineered sensing solutions meet the unique requirements of a wide variety of applications within the building products, HVAC, refrigeration, energy, process control, automation, altitude and depth measurements and beverage flow control markets. Our broad technology portfolio and willingness to customize make us the sensor supplier of choice for industrial OEMs. From VAV/HVAC to process control, pool and spa to gas pumps, we understand the need for sensors designed to meet challenging OEM specifications.

Traffic/Smart Highway

Piezoelectric axle detectors are used to collect data on highways, as well as providing the timing mechanism for speed and red light cameras.

Wind Farm

Inclinometer is used to level wind turbines during construction and operation. Vibration sensors monitor the gearbox and provide early warning for maintenance.

Gas Pump

Rugged electromagnetic rotary encoders provide tamper proof shaft rotation measurements which are converted into gallons or liters of fuel dispensed.

Assembly Lines

Gage heads with ultra-precision capabilities and user-adjustable pretravel and overtravel settings ensure reliable assembly line performance.

Navigation

Height measurement based on a miniature barometric pressure sensor enables route profile calculation and logging for outdoor devices. Difference in height measurements are used in automotive after-market GPS.



Cycle Computers

Altimeters based on barometric pressure sensors enable measurement of route profiles and contribute to energy monitoring and fitness estimation.



Sport Watches

Water depth for diving is accurately measured by gel-filled digital pressure sensors. Altimeter watches use barometric pressure variation for height measurement and longer trend pressure trends for weather prediction.



Printers

The drying process of ink jet printers is improved by monitoring air and paper humidity content. Measuring air and toner humidity guarantees print quality in laser printers/copiers.



Consumer Goods and Home Appliance

Sensors are being used in a variety of consumer and recreational products to bring enhanced functionality and safety. Measurement Specialties has partnered with many manufacturers to break new ground in offering features and user benefits. Those devices are often selected due to their low power consumption.

Sensors are increasingly being used by the home appliance industry to improve functionality and energy management. Measurement Specialties has partnered with many major appliance manufacturers to break new ground in the creation of "smart" appliances that can respond to human touch, sense vibration, adjust automatically to different loads and improve efficiency.



Microwave Oven

Measurement Specialties' infrared temperature sensors monitor heating functions by directly sensing food temperature.

Refrigerator

Humidity control inside refrigerator keeps vegetables fresh while humidity monitoring outside refrigerator improves efficiency by avoiding costly defrost cycles.



Washer/Dryer

Low cost/low power vibration sensor measures load imbalance to avoid "walking". Humidity or thermopile sensors are used in dryers to automatically shut off when clothes are dry, extending the life of clothes and improving efficiency.



Test and

Flutter Testing

Silicon MEMS, Plug and Play accelerometers for high accuracy over temperature.



Flight Testing

Aircraft manufacturers are constantly pushing the flight envelope of their designs to the new frontier. Unexpected test parameters become the norm rather than the exception, and standard off-the-shelf solutions are usually inadequate. These mission-critical test applications often require the best in DC accelerometers, load cells and miniature pressure transducers, especially when it comes to thermal stability. Measurement Specialties has partnered with many major aerospace suppliers to come up with customized sensing solutions.

Scanners and Systems

Aerodynamic testing of aircraft, automobiles and civil engineering structures requires high numbers of pressure measurements, often within confined spaces inside wind tunnel models. The ESP line of miniature pressure scanners combines 16, 32 or 64 pressure sensors with a calibration valve within the industry's smallest package. Individual temperature sensors provide active digital temperature compensation to virtually eliminate thermal sensitivity.

Turbo Machinery

Gas turbine engine and component testing requires high numbers of pressure and temperature measurements. The testing environment is often demanding with high vibration, acoustic noise and presence of harsh fluids. The NetScanner instrumentation brand provides a rugged, networkable system solution of multi-channel instruments to measure gas pressure, liquid pressure, temperatures and barometric pressure.



Wind Tunnel

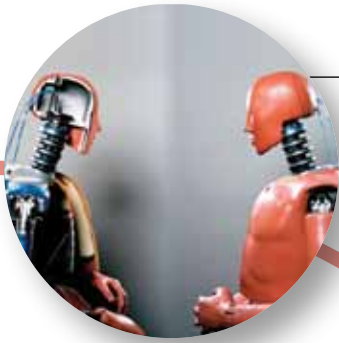
Miniature pressure sensors for airflow measurements.

Turbo Machinery

Engine test cell measurements.



Measurement



Crash Testing

SAE J2570 and ISO-6487 compliant sensors for anthropomorphic instrumentation.

Safety Testing

A five-star-rated vehicle can only be designed when the test engineers have accurate crash test data. Measurement Specialties is the largest sensor supplier for auto safety testing, supplying high quality accelerometers, string pots, miniature pressure sensors and other state-of-the-art technologies, we lead the way in product innovations and customer satisfaction.

Automotive Design & Test

From engine and transmission development to vehicle NVH testing, sensors are an integral part of the research and development cycle. Measurement Specialties provides the automotive industry with pressure transducers, load cells, accelerometers, LVDT's, torque meters, temperature sensors and fluid property analyzers for a wide variety of applications. The broad spectrum of sensing technologies available at our disposal has served our customers especially well in a cost-conscious economic environment.

Motorsports

In auto racing, sensors provide real-time, critical feedback about vehicle dynamics to the engineering team that can often affect the outcome of a race. The high vibration and temperature test environments in an engine or drive train have always been challenging for typical sensing devices. Measurement Specialties has long been a favored supplier to Formula One teams for acceleration, pressure, force, position and other dynamic sensors. We offer the most advanced lines of accelerometers and pressure transducers and back them up with impeccable reliability records and customer service.



Pedestrian Safety Testing

Sensors with precise damping characteristic provide reliable measurements.



Component Design/Road Simulation

Rugged IEPE Accelerometers for suspension testing. Standard off-the-shelf accelerometers, wheel torque sensors and brake/pedal force sensors.



Racing Sensors

High accuracy silicon MEMS triaxial accelerometers for track mapping.

Satellite/Space

Measurement Specialties is the only sensor company who maintains both NASA and ESA qualifications. We developed the interchangeable glass encapsulated thermistor which today is a standard for aerospace high reliability applications. MEAS LVDT's are used for mirror and antenna positioning.



Load Path Monitoring

Force sensors for load monitoring on control surfaces and secondary load path. Torque transducers for brake system monitoring.



Aerospace

Long development cycles and high qualification costs require aerospace firms to identify stable, reliable, cost-effective partners. Measurement Specialties' AS9100 certified facilities in Virginia, Ohio, France and China support various Tier 1, 2 and 3 providers with a wide variety of critical sensor solutions for aerospace applications.



Engine Thrust Reverser

MEAS rugged LVDT's provide feedback to the cockpit to ensure thrust reversers have properly deployed.



Fuel Tank Level/Flow

MEAS custom glass thermistor/heater assemblies are an industry standard in fuel systems used to monitor and control fuel level, position and flow.



Flight Controls/Instrumentation

MEAS LVDT's and RVDT's are used in cockpit controls and actuation systems. Flight recorders detect loss of cabin pressure. Pitot tubes measure air speed. Variometers indicate rate of ascent/descent. Force sensors convey information for flight data recording and autopilot disconnection.



Gearbox Monitoring

MEAS high frequency accelerometers are used for critical Health and Usage Monitoring Systems (HUMS) for Helicopters.

Trican

Multi-parameter modules measure pressure, temperature and relative humidity for engine management applications.



Force and Torque

The multi-axial FN7325 measures force along three axes as well as the corresponding torque.



Pressure and Temperature

Combined pressure and temperature sensing saves weight, space and reduces plumbing and electrical connections in various auto racing, aerospace and industrial applications.



Combination Sensors

Measurement Specialties is a global innovator in the design and manufacture of two or more sensing technologies into one compact package. Our combination sensors provide OEMs and end-users with significant cost savings that start with the initial purchase and flow through their respective systems, as they realize economies of time, reduced space requirements and simpler assembly processes.

Fluid Properties Sensor

Novel fluid properties sensor that directly and simultaneously measures the viscosity, density, dielectric constant and temperature of fluids for advanced fluid quality monitoring applications.



Water Quality Multiprobes

Water quality probes can utilize a wide range of measurement technologies for spot checking/profiling or for deployment in real time web-to-water monitoring.



P

Measurement Specialties leads the industry with a wide array of standard and custom pressure products ranging from board level components to fully amplified and packaged transducers, based on piezoresistive microelectromechanical (MEMS) and silicon strain gauge (Microfused™) technology. Our products measure pressure ranging from inches of water (<5 mbar) to 60k psi (>4 kbar), making us ideally suited for medical, HVAC, off-road/heavy equipment and general industrial applications. We manufacture the world's lowest power and smallest package pressure sensors for altimeter/NAV applications. Our sensors are signal conditioned, calibrated over temperature and include digital or analog outputs. Customized packaging and electronics make MEAS the supplier of choice for OEMs.



Silicon Die and Microstructures

For OEM Applications

All use piezoresistive silicon technology.



MS72xx

Unique Features	- Piezoresistive pressure die - Top cavity - hermetic sensor - For harsh environment
Linearity	±0.05% FSO (MS7212A)
Output / Span	150 mV @ 5 V
Type	Absolute
Pressure Range	0 - 1, 2, 4, 7, 12, 18, 28, 36 bar
Overpressure	FS range dependent 5 bar (MS7201-A2) 170 bar (MS7236-A)
Operating Temp	-40°C to 125°C
Dimensions (mm)	1.35 x 1.79 (MS7201-A2) 1.95 x 1.63 (MS7236-A)
Typical Apps	Braking systems, transmission systems, engine controls



MS73xx

Unique Features	- Piezoresistive pressure die - Low pressure sensor - High sensitivity
Linearity	±0.3% FSO (MS7305)
Output / Span	110 mV @ 5 V
Type	Differential
Pressure Range	0 - 50 mbar (MS7305) 0 - 100 mbar (MS7310)
Overpressure	6 bar
Operating Temp	-40°C to 125°C
Dimensions (mm)	2.45 x 2.45
Typical Apps	Heating ventilation and air conditioning, medical, industrial controls



P6393

Unique Features	- Piezoresistive pressure die - Silicon-pyrex construction - Open bridge
Linearity	±0.1% FSO
Output / Span	110 mV @ 1.5 mA
Type	Differential, absolute
Pressure Range	0 - 2, 5, 10, 15, 30, 50, 250, 500 psi
Overpressure	5X
Operating Temp	-40°C to 125°C
Dimensions (mm)	3.0 x 4.0
Typical Apps	Process control, automation, refrigeration



P7405

Unique Features	- Piezoresistive pressure die for high pressure applications - Open bridge
Linearity	±0.25% FSO
Output / Span	125 mV @ 1.5 mA
Type	Absolute
Pressure Range	0 - 1000, 3000, 5000, 10000 psi
Overpressure	3X
Operating Temp	-40°C to 125°C
Dimensions (mm)	1.80 x 1.80
Typical Apps	Can be packaged in an isolated oil-filled transmitter for harsh media

Disposable Medical Products

mV Outputs

All use piezoresistive silicon technology.



1620, 1630

Package	Invasive blood pressure monitoring
Type	Gage
Pressure Range	-30 to 300 mmHg
Output / Span	5 uV/V/mmHg
Unique Features	- Low cost, disposable design - Supplied in tape and reel - Compliant to AAMI spec
Accuracy	1.0% FSO
Operating Temp	10°C to 40°C
Dimensions (mm)	1620: 8.13 x 11.43 x 4.20 1630: 5.08 x 12.7 x 3.94
Typical Apps	Disposable blood pressure, surgical procedures, ICU, kidney dialysis machines, medical instrumentation



Fully Assembled 1620

(Customized per customer specification)

Package	Invasive blood pressure monitoring
Type	Gage
Pressure Range	-30 to 300 mmHg
Output / Span	5 uV/V/mmHg
Unique Features	- Low cost, disposable design - Compliant to AAMI spec - ISO13485 Certified - Custom designs available
Accuracy	1.0% FSO
Operating Temp	10°C to 40°C
Dimensions (mm)	42.8 x 30.3 x 19.0
Typical Apps	Disposable blood pressure, kidney dialysis machines, surgical procedures and intensive care units. Ready to use, fully assembled disposable sensor units with cable, connector, stop cock, flush device in a plastic housing.

Board Mounted Pressure Sensors

Board Level with mV Output

All use piezoresistive silicon die technology, are temperature compensated and are suitable for use with non-corrosive gases.



1210, 1220, 1230, 1240



MS4425, MS4426

Package	8 pin DIL	Package	6 pin DIL
Type	Gage, absolute, differential	Type	Gage, absolute, differential
Pressure Range	0 - 5 & 10" H ₂ O 0 - 1, 2, 5, 15, 30, 50, 100 psi	Pressure Range	0 - 1, 5, 15, 30, 50, 100, 150, 300 psi
Output / Span	50 mV and 100 mV typical	Output / Span	60 mV, 90 mV, and 100 mV typical
Unique Features	- Temperature compensated - High performance UltraStable™ die (1230, 1240) - Current excitation(1210, 1230) - Voltage excitation(1220, 1240)	Unique Features	- Temperature compensated - High performance UltraStable™ die - Voltage excitation
Accuracy	±0.1% Non-linearity	Accuracy	±0.1% Non-linearity
Operating Temp	-40°C to 125°C	Operating Temp	-25°C to 85°C
Dimensions (mm)	15.2 x 20.3	Dimensions (mm)	15.2 x 13.7
Typical Apps	Medical instruments, air flow measurement, HVAC, process control, factory automation, leak detection	Typical Apps	Drop-in for 6 pin industrial sensor for PCB mounted medical, HVAC

Board Level with mV Output

All use piezoresistive silicon die technology and are suitable for use with non-corrosive gases.



13, 23, 33, 43, 17, 27, 37, 47



50

Package	TO-8	Package	TO-5
Type	Gage, absolute, differential	Type	Absolute
Pressure Range	0 - 1, 2, 5, 10, 15, 30, 50, 100, 250 psi	Pressure Range	0 - 15, 30, 50, 100, 250, 500 psi
Output / Span	100 mV typical	Output / Span	60 mV typical
Unique Features	- Temperature compensated - High performance UltraStable™ die (17, 27, 37, 47) - Can gel fill for humid conditions	Unique Features	- Low cost - Solid state reliability - Good for through hole - Can gel fill for humid conditions
Accuracy	±0.1% Non-linearity	Accuracy	±0.25% Non-linearity
Operating Temp	-40°C to 125°C	Operating Temp	-40°C to 125°C
Dimensions (mm)	Ø 11.4, height model dependent	Dimensions (mm)	Ø 8.2 x 4.14
Typical Apps	Medical instruments, air flow measurement, HVAC, process control, factory automation, leak detection	Typical Apps	Tire pressure sensor, consumer appliances, medical instruments, barometric pressure, altitude measurement

Board Mounted Pressure Sensors

Miniature Board Level with mV Output

All use piezoresistive silicon die technology and are suitable for use with non-corrosive gases.



MS1451, MS1471

Package	Surface mount
Type	Gage, absolute
Pressure Range	0 - 5, 15, 30, 50, 100, 250, 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
Accuracy	±0.25% Non-linearity
Operating Temp	-40°C to 125°C
Dimensions (mm)	7.6 x 7.6, height model dependent
Typical Apps	Altitude measurement, barometric pressure, medical instrumentation, consumer appliances, tire pressure

MS52xx, MS54xx

Package	Surface mount
Type	Gage, absolute
Pressure Range	0 - 1, 12 bar (MS52xx) 0 - 1, 7, 12 bar (MS54xx)
Output / Span	150 mV, 240 mV
Unique Features	- Small size (MS54xx) - High linearity or high sensitivity options - Plastic tube or metal ring options - With gel to protect against moisture
Accuracy	±0.05% or ±0.2% Non-linearity
Operating Temp	-40°C to 125°C
Dimensions (mm)	7.6 x 7.6, height model dependent (MS52xx) 6.4 x 6.2 (MS54xx)
Typical Apps	Absolute pressure sensor systems, engine controls, high resolution altimeters, variometers, waterproof watches, divers' computers, barometers, tire pressure monitoring systems (TPMS), medical instrumentation, pneumatic controls

Board Level Digital Output Modules



MS58xx

Unique Features	24-bit digital sensor, software calibration and temperature compensation (I ² C & SPI), no external components. Supply voltage 1.8 to 3.6V.
Linearity / Absolute Accuracy	±1.5 mbar @ 25°C (MS5803-01BA) ±250 mbar @ 0°C to 40°C (MS5803-30BA)
Output / Span	Digital 24-bit SPI and I ² C
Resolution	12 µbar (MS5803-01BA) 0.5 mbar (MS5803-30BA)
Type	Absolute
Pressure Range	1, 2, 5, 14, 30 bar
Overpressure	10 bar (for 1 & 2 bar modules) 30 bar (for 5 & 14 bar modules) 50 bar (for 30 bar modules)
Operating Temp	-40°C to 85°C
Dimensions (mm)	6.4 x 6.2 x 2.9
Typical Apps	Precision altimeter, diving and multi-mode watches, in-building navigation, variometers / flight instruments

MS55xx

Unique Features	16-bit digital sensor, very low noise (±0.1 mbar), software calibration and temperature compensation, pressure and temperature measurement (35 ms / meas.). Low power, low voltage (2.2 to 3.6 V / < 4 / 0.1 µA). No external components required, small SMD ceramic carrier. Gel provides water protection.
Linearity / Absolute Accuracy	±1.5 mbar @ 25°C 750 to 1100 mbar (MS5534, MS5540) -25 to +20 mbar @ 0°C to 40°C 0 to 5 bar (MS5535, MS5541)
Output / Span	Digital 16-bit data word, 3-wire SPI-like serial interface
Resolution	0.1 mbar (MS5534, MS5540) 1.2 mbar (MS5535, MS5541)
Type	Absolute
Pressure Range	10 to 1100 mbar (MS5534, MS5540) 0 to 14 bar (MS5535, MS5541)
Overpressure	10 bar (for 1 bar modules) 30 bar (for 14 bar modules)
Operating Temp	-40°C to 85°C
Dimensions (mm)	6.4 x 6.2 x 2.9
Typical Apps	Mobile altimeter, barometer systems, weather monitoring systems, adventure or multi-mode watches, GPS receivers, diving computers and divers' watches

Board Mounted Pressure Sensors

Board Level Digital Output Modules / Amplified High Level Output Modules



MS5536-CPJU, MS5536-CNJU

Unique Features	- 16-bit differential digital sensor - Software calibration and temperature compensation - Pressure and temperature measurement (35 ms / meas.) - Low power, low voltage (2.2 to 3.6 V / 5µA) - No external components required - Small SMD ceramic carrier
Options	--
Linearity / Absolute Accuracy	±2.5 mbar @ 10°C to 40°C -100 to +700 mbar (MS5536CPJU) ±2.5 mbar @ 10°C to 40°C (0.04psi) -700 to +100 mbar (MS5536CNJU)
Output / Span	Digital 16-bit data word, 3-wire SPI-like serial interface
Resolution	0.1 mbar
Type	Gage
Pressure Range	-400 to 1000 mbar (-5.8 to 14.5 psi) (MS5536-CPJU) -1000 to 400 mbar (-14.5 to 5.8 psi) (MS5536-CNJU)
Overpressure	10 bar
Operating Temp	-40°C to 85°C
Dimensions (mm)	13.4 x 10.16 x 10.6
Typical Apps	Medical application, blood pressure meter, HVAC application



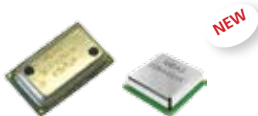
MS4515DO, MS4525DO MS4515HRD, MS4525HRD

- 14-bit digital sensor (MS4515 / 25DO) - 24-bit digital sensor (MS4515 / 25HRD) - Pressure and temperature measurement - Single supply of 3.3 or 5.0Vdc (MS4515 / 25DO) - Single supply of 1.8 or 3.6Vdc (MS4515 / 25HRD) - Top, side barbed or manifold O-ring port - J lead or thru hole pins - Fast conversion up to 0.54ms (MS4515 / 25HRD) - Ultra low power consumption (MS4515 / 25HRD)	Gel coat, low power (MS4515 / 25DO) 0.25% / 1% TEB
14-bit digital word SPI or I ² C protocol (MS4515 / 25DO) 24-bit digital word SPI or I ² C protocol (MS4515 / 25HRD)	--
Gage, differential (MS4515DO, MS4515HRD) Gage, absolute, differential, compound (MS4525DO, MS4525HRD)	--
0 - 2, 4, 5, 10, 20, 30" H ₂ O (MS4515 / 25DO) 0 - 1, 5, 15, 30, 50, 150 psi (MS4515 / 25HRD)	10% to 90% or 5% to 95% of supply
10 psi (MS4515DO, MS4515HRD) 3X range (MS4525DO, MS4525HRD)	--
-25°C to 125°C	--
12.5 x 9.9	--
Medical instruments, air flow measurements, process control, leak detection	--



MS4515, MS4525

- 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	Gel coat 0.25% / 1% TEB
10% to 90% or 5% to 95% of supply	--
Gage, differential (MS4515) Gage, absolute, differential, compound (MS4525)	--
0 - 2, 4, 5, 10, 20, 30" H ₂ O (MS4515) 0 - 1, 5, 15, 30, 50, 150 psi (MS4525)	10% to 90% or 5% to 95% of supply
10 psi (MS4515) 3X range (MS4525)	--
-25°C to 105°C	--
12.5 x 9.9	--
Medical instruments, air flow measurements, process control, leak detection	--



MS56xx

Unique Features	- 24-bit digital sensor - Software calibration and temperature compensation (I²C & SPI) - Pressure and temperature measurement - No external components required
Options	--
Linearity / Absolute Accuracy	±1.5 mbar @ 25°C (MS5607)
Output / Span	Digital 24-bit SPI and I ² C (MS5607, MS5611) Digital 24-bit I ² C (MS5637)
Resolution	24 µbar (MS5607, MS5637) 12 µbar (MS5611)
Type	Absolute
Pressure Range	10 to 1200 mbar (MS5607, MS5611, MS5637)
Overpressure	10 bar (MS5607, MS5611)
Operating Temp	-40°C to 85°C
Dimensions (mm)	5 x 3 x 1 (MS5607, MS5611) 3 x 3 x 1 (MS5637)
Typical Apps	Smart phones, barometric compensation, air density compensation

Stainless Steel Media-Isolated Pressure Sensors

O-Ring Mount

All use UltraStable™ piezoresistive silicon die technology in a stainless steel package with oil-filled diaphragm and are suitable for use with liquids and gases. For other material, such as hastelloy, titanium etc, please contact factory.

					
	82, 154N	86	86A Amplified	DP86 O-Ring Mount	85 Flush Mount
Package	3/4" (19 mm) diameter O-ring mount	5/8" (16 mm) diameter O-ring mount	5/8" (16 mm) diameter O-ring mount	5/8" (16 mm) diameter O-ring mount Wet/Wet	1/2" (13 mm) diameter O-ring flush mount
Type	Gage, absolute, vacuum gage	Gage, absolute, vacuum gage	Gage, absolute	Differential	Gage, absolute
Pressure Range	0 - 1, 5, 15, 30, 50, 100, 300, 500 psi	0 - 5, 15, 30, 50, 100, 300, 500 psi	0 - 1, 2, 5, 15, 30, 50, 100, 150 psi	0 - 1, 5, 15, 30, 50, 100, 300, 500 psi	0 - 15, 30, 50, 100, 300, 500 psi
Output / Span	100 mV typical	100 mV typical	0.5 - 4.5 Vdc	100 mV typical	100 mV typical
Unique Features	- High performance, high stability for OEM applications - Pressure as low as 1psi	- High performance, high stability for OEM applications - Small diameter	- Small diameter, amplified output - Bar ranges available	- Wet / wet differential pressure	- Minimizes trapped volume
Accuracy	±0.3% Non-linearity (1 psi) ±0.2% Non-linearity (5 psi) ±0.1% Non-linearity (≥ 15 psi)	±0.2% Non-linearity (5 psi) ±0.1% Non-linearity (≥ 15 psi)	±0.25% FSO	±0.3% Non-linearity (1 psi) ±0.25% Non-linearity (5 psi) ±0.1% Non-linearity (≥ 15 psi)	±0.1% Non-linearity
Operating Temp	-40°C to 125°C	-40°C to 125°C	-20°C to 85°C	-20°C to 125°C	-20°C to 125°C
Dimensions (mm)	82: Ø 19 x 6.35 154N: Ø 19 x 13.72	Ø 15.9 x 9.14	Ø 15.9 x 9.3, height model dependent	Ø 15.9 x 17.8	Ø 17.2 x 11.43
Typical Apps	Process control, oceanography, refrigeration/compressors, pressure transmitters, level systems	Hydraulic controls, process control, oceanography, refrigeration/compressors, pressure transmitters, level systems	Level measurement, OEM transmitters and transducers, process control	Level controls, tank level measurement, corrosive fluids and gas measurement systems, flow measurement	Dialysis machines, infusion pumps, medical systems, pressure transmitters, level systems

Threaded/Weldable

All use UltraStable™ piezoresistive silicon die technology in a stainless steel package with oil-filled diaphragm and are suitable for use with liquids and gases. For other material such as hastelloy, titanium etc, please contact factory.

				
	82, 85 with Fittings	89 Button, 89 with Fittings	DP86 with Fittings/Cable	U86B
Package	Weldable or process fitting	Weldable or process fitting	5/8" (16 mm) diameter, threaded process fittings or O-ring mount	Mountable with O-ring seal
Type	Gage, absolute, vacuum gage	Sealed gage, absolute	Differential	Sealed gage, absolute
Pressure Range	0 - 5, 15, 30, 50, 100, 300, 500 psi	0 - 1000, 3000, 5000 psi	0 - 1, 5, 15, 30, 50, 100, 300, 500 psi	0 - 100, 300 psi
Output / Span	100 mV typical	100 mV typical	100 mV typical / sensitivity dependent	0.5 - 4.5 V
Unique Features	- Modular design	- High pressure, modular design	- Wet/Wet differential pressure - Line pressure max 1000 lbs	- Amplified
Accuracy	±0.2% Non-linearity (5 psi) ±0.1% Non-linearity (≥ 15 psi)	±0.25% Non-linearity	±0.3% Non-linearity (1 psi) ±0.25% Non-linearity (5 psi) ±0.1% Non-linearity (≥ 15 psi)	±0.5% Non-linearity
Operating Temp	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C	-7°C to 105°C
Dimensions (mm)	82: Ø 22.23 x 24.89 85: Ø 22.23 x 25.15	89 Button: Ø 9.04 x 7.42 89 with Fittings: Ø 22.23 x 23.62	55.88 x 26.67 x 25.4	Ø 15.82 x 13.6 Socket spacing: 31.75
Typical Apps	Medical, process control, refrigeration compressor, oceanography, level systems	Air tank pressure, hydraulics, process control, robotics, refrigeration compressors, oceanography	Level controls, tank level measurement, corrosive fluids and gas measurement systems, flow measurement	Urea level, urea pressure, air brakes, corrosive fluid measurement for E&V applications

Transducers and Transmitters

Base Level and Custom Transducers and Transmitters

Microfused™ and UltraStable™ Technologies



MSP100, MSP120

Package	Small housing with O-ring and proprietary "Snap in" feature that lowers the total installed cost and customized housings for OEM applications
Type	Gage
Pressure Range	0 - 100 psi thru 0-500 psi
Output / Span	100 mV typical
Unique Features	- Microfused™ Technology - Low cost stainless steel isolated transducer - No threads needed for pressure connect - Highly customized for OEM application - Small size - Solid state reliability
Accuracy	0.5% FSO
Operating Temp	0°C to 55°C
Dimensions (mm)	12.7 x 24.38 x 20.32
Typical Apps	Beverage dispensing systems, automation, HVAC controls, energy and water management, pumps, compressors, pneumatic equipment
Agency Approvals	



MSP300, MSP340

Package	Small housing with a large selection of threaded fittings, electrical connectors, cable options and customized housings for OEM applications
Type	Gage
Pressure Range	0 - 50 psi thru 0 - 30K psi (MSP300) 0 - 100 psi thru 0 - 30K psi (MSP340)
Output / Span	0 - 100 mV, 0.5 - 4.5 Vdc, 1 - 5 Vdc, 4 - 20 mA
Unique Features	- Microfused™ technology - High reliability at a low cost - Highly customized for OEM applications - Small size - Solid state reliability - Various total error band choices 1% thru 4.5% typical (all possible errors combined)
Accuracy	<1% FSO
Operating Temp	-20°C to 85°C
Dimensions (mm)	MSP300: 22.23 x 22.23 x 55.88 MSP340: 15.88 x 15.88 x 75.44
Typical Apps	Paint sprayers, braking systems, HVAC controls, energy and water management, pumps, compressors, pneumatic equipment, off road heavy equipment, agriculture equipment
Agency Approvals	UL 508 (MSP300)



M5100, U5100, D5100

Package	Industrial stainless steel housing with a large selection of threaded fittings, electrical connectors, cable options and customized housings for T&M applications
Type	Gage (M5100) Gage, sealed gage, absolute (U5100) Differential wet-wet (D5100)
Pressure Range	0 - 50 psi thru 0 - 30K psi (M5100) 0 - 1 psi thru 0 - 5K psi (U5100) 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	- Microfused™ technology (M5100) - UltraStable™ technology (U5100, D5100) - High performance at a low cost - Solid state reliability - 1% total error band (-20°C to 85°C all possible errors combined) (M5100, D5100) - 0.75% total error band (-20°C to 85°C all possible errors combined) (U5100) - Line pressure max 1000 lbs. (D5100)
Accuracy	0.25% FSO (M5100, D5100), 0.1% FSO (U5100)
Operating Temp	-40°C to 125°C
Dimensions (mm)	M5100: 22.23 x 22.23 x 80.77 U5100: 22.23 x 22.23 x 98.04 D5100: 25.4 x 58.4 x 72.0
Typical Apps	HVAC controls, energy and water management, pumps, compressors, pneumatic equipment, off road heavy equipment, trucks, agriculture equipment, braking systems, filter blockage, pressurized tank level
Agency Approvals	CE, UL 508



US300

Package	Small housing with a large selection of threaded fittings, electrical connectors, cable options and customized housings for OEM applications
Type	Gage, absolute
Pressure Range	0 - 5 psi thru 0 - 5K psi
Output / Span	0 - 100 mV, 0.5 - 4.5 Vdc, 1 - 5 Vdc, 4 - 20 mA
Unique Features	- UltraStable™ technology - High reliability at a low cost - Highly customized for OEM applications - Small size - Solid state reliability - Various total error band choices 0.75% thru 3% typical (all possible errors combined)
Accuracy	0.15% FSO
Operating Temp	-40°C to 105°C
Dimensions (mm)	15.88 x 115.88 x 98.00
Typical Apps	HVAC controls, refrigeration, energy and water management, pumps, compressors, pneumatic equipment, agriculture equipment
Agency Approvals	



M7100, U7100

Package	Automotive grade, stainless steel hermetic pressure ports and integral electrical connector
Type	Gage, absolute
Pressure Range	0 - 15 psi thru 0 - 43K psi
Output / Span	0.5 - 4.5 Vdc
Unique Features	- 1% total error band (-20°C to 85°C) - 2% total error band (-20°C to 125°C) - Solid state reliability - Survives high vibration and immersion - Microfused™ technology (M7100) - UltraStable™ technology (U7100)
Accuracy	0.25% FSO (M7100), 0.5% FSO (U7100)
Operating Temp	-40°C to 125°C
Dimensions (mm)	26.7 x 26.7 x 50.0
Typical Apps	HVAC refrigeration controls, off road vehicles engine control, compressors, hydraulic, energy and water management
Agency Approvals	CE



US10000

Package	Environmentally protected stainless steel housing with a large selection of threaded fittings, electrical connectors, cable options and customized housings for OEM applications
Type	Gage, absolute
Pressure Range	0 - 5 psi thru 0 - 10K psi
Output / Span	0 - 5 V, 0 - 10 V, 4 - 20 mA
Unique Features	- UltraStable™ technology - High accuracy 0.05% (typical) - Digitally compensated - Pressure calibration standard - IP65 rated - 0.25% total error band from -25°C to 85°C
Accuracy	0.1% FSO (Max)
Operating Temp	-25°C to 85°C
Dimensions (mm)	25.4 x 25.4 x 104.65
Typical Apps	Aerospace testing, calibration, high end machinery, automotive, industry
Agency Approvals	

Transducers and Transmitters

Miniature Pressure Transducers

				
	XPM	EPXO	EPXN	EB, EPRB
Unique Features	- Dynamic and passive output - Miniature threaded - All titanium, flush diaphragm - Bonded silicon gage, high frequency response (to 750 KHz) - Optional integrated amplifier	- Dynamic and passive output - High performance miniature threaded - Stainless steel flush diaphragm - Bonded foil gage, high frequency response (to 230 KHz)	- UltraStable™ long term stability - Miniature threaded - Recessed silicon diaphragm	- High accuracy - Miniature design - UltraStable™ technology - EMI protected - Combined pressure & temperature
Non linearity	±0.25% to ±0.5% FSO	±0.75% FSO	±0.3 to ±0.5% FSO	±0.25% FSO
Output / Span	30 to 100 mV (4 V; 5 V optional)	9 mV or 5 Vdc	50 to 75 mV or 5 Vdc	0.5 to 4.5 Vdc
Pressure Range	0 - 15, 30, 75, 150, 300, 500, 750, 1.5K, 3K, 5K, 7.5K, 15K psi	0 - 150, 200, 300, 500, 1000, 1500, 2000, 3000, 5000, 7500 psi	0 - 5, 15, 30, 75, 150 psi	0 - 300, 500, 1000, 1500, 3000, 5000 psi
Overpressure	2X	1.5X	3X	2X to 3X
Operating Temp	-40°C to 120°C (available option up to 150°C)	-40°C to 125°C (available option up to 220°C)	-40°C to 120°C	-40°C to 125°C (available option up to 150°C)
Dimensions (mm)	Hex 8 to Hex 15	Hex 15	15 outside dia.	11 body dia.
Typical Apps	Mil-aero, hydraulic pressure systems, air bag testing, air pressure systems, depth measurements, engine inlet and turbine, biomedical fluid sample analysis equipment	Hydraulic pressure systems, air or gas pressure systems, general purpose use in dry and wet media, off-road equipment	Long term stability applications for static pressure monitoring of dry media, satellites, atmospheric flight tests	Motor sport, hydraulic/pneumatic systems, automotive test stands, mil-aero test stands

Sub-Miniature Pressure Transducers

		
	EPIH	EPB, EPL
Unique Features	- Diffused silicon diaphragm with a large variety of sizes and shapes available as small as 0.05" outside diameter - High frequency response (to 1.7 MHz)	- Miniature flush mountable - Flush stainless steel diaphragm, flanged and / or non-flanged - Bonded silicon gage, high frequency response (to 400 KHz)
Non linearity	±1.0% FSO	±0.5 to ±1% FSO
Output / Span	12 mV to 75 mV	10 mV to 125 mV
Pressure Range	0 - 5, 10, 15, 25, 50, 75, 100, 200, 300 psi	0 - 5, 10, 15, 25, 50, 100, 250, 500, 1000, 2500, 5000 psi
Overpressure	2X to 5X	2X to 10X
Operating Temp	-40°C to 120°C	-40°C to 120°C
Dimensions (mm)	Application dependent	3.2 to 7 outside dia.
Typical Apps	Aerospace testing, wind tunnels, biomedical testing, aircraft body and wing dynamics, high frequency measurements	Air flow testing, hydraulic pressure systems, air pressure systems, bearing studies, ballistics, water hammer, miniature scale model testing

Heavy-duty Industrial Transducers and Transmitters

			
	P900, P981, P1200, P700, P9000	P101, P105, P125	KPSI LT Transmitter Series
Package	Threaded ports with stainless steel housing and various heavy duty electrical connections, various electrical outputs	Threaded port	Welded stainless steel watertight housing
Type	Gage, absolute	Gage	Gage, vented, absolute
Pressure Range	0 - 75 psi to 0 - 10K psi	0 - 10 bar to 0 - 7000 bar	Standard ranges from 0 - 1 psi to 0 - 500 psi. Custom ranges available.
Output / Span	0 - 5 Vdc, 0 - 10 Vdc, 4 - 20 mA	7.5 to 15 mV (4 V; 5 V optional)	4 - 20 mA
Unique Features	- High overpressure (10X over pressure) - Shock & vibration resistant - Heavy Industrial grade transducer (P9000) - Advanced digital compensation / calibration - Mechanical over pressure stops - High temperature operation	- Stainless steel diaphragm - Pressure connector M20 x 1.5 - Metal / metal seal	- Stainless steel with watertight cable - UltraStable™ technology - IP 68 submersible to 200 meters - For applications where flooding is problem
Accuracy	0.1% to 0.2% FSO	±0.3% FSO	0.25% FSO
Operating Temp	-54°C to 120°C	-20°C to 80°C	-20°C to 60°C
Dimensions (mm)	Application dependent	Ø 29 x 85	Ø 25.4 x 170.5 (depending on fitting type)
Typical Apps	Steel mills, hydraulic controls, power generation equipment, torpedo depth, mil-aero, vehicle braking systems	Hostile environments, aggressive liquids	Submersible tank liquid level, pump control, liquid line pressure, dewatering, and construction bypass pumping
Agency Approvals	CE, CENELEC (Intrinsically Safe)		CE, WEEE, RoHS; with optional UL and FM (intrinsically safe) pending

Measurement Specialties leads the water-resources monitoring market with over thirty-five years of industry experience in the design and manufacture of water-quality and water-level sensors and systems. Our expertise in media-isolated pressure sensors provides our customers with unique advantages in creative product development and consistent product performance.

Water-level transducers are available in custom ranges and a wide choice of accuracies, materials, and cabling. With your choice of analog or digital output, our sensors are easily adapted to any data system. Or, use self-powered units with onboard memory for long term deployment.

We also provide multiparameter, water-quality instrumentation for the most demanding analyses of lakes, rivers, estuaries, and aquifers worldwide. Our multiprobes measure your choice of temperature, dissolved oxygen, conductivity, pH, water depth or level, ORP, turbidity, chlorophyll, crude oil, blue-green algae, ammonium, nitrate and a dozen other parameters critical to water-resources improvement and preservation. Call our water-quality specialists today to discuss our solutions to your monitoring problems.



Manta2 Water Quality Multiprobes

NEW

Sensors for Multiprobes Are Customer-selectable and Easily Configured



Measurement Specialties' Manta2 line of water-quality multiprobes has a configuration to meet any demanding application. With your choice of 24 different sensors, they can be used as unattended water-quality data loggers with the optional battery pack, or with the rugged field display for spot checking/profiling. Connected to our Eagle Eye telemetry system they can be deployed for real-time water-to-web monitoring or to other data collection systems. Our water-quality specialists carefully review all monitoring applications prior to making equipment recommendations to ensure all customers receive exactly what is required for their projects.

Temperature

Range	-5°C to 50°C
Accuracy	±0.1°C
Resolution	0.01°C
Comments	Never needs calibration

Dissolved Oxygen (mg/L)

0 to 25 mg/L	25 to 50 mg/L
1% of reading or 0.2 mg/L, whichever is greater	±0.2 mg/L ≤20 mg/L ±0.6 mg/L >20 mg/L
0.01 mg/L	0.01 mg/L
Salinity corrected	Salinity corrected

Conductivity

0 to 100 mS/cm
1% reading ±1 count
4 digits
Automatic temperature compensated; graphite electrodes

Salinity

Range	0 to 70 PSU (PPT)
Accuracy	±1% of reading or 0.1 PSU, whichever is greater
Resolution	4 digits
Comments	Calculated from conductivity

TDS

0 to 65 g/L
±5% of reading
4 digits
Calculated from conductivity

Turbidity

0 to 400 NTU	400 to 3000 NTU
±1% of reading ±1 count	±2% of reading
4 digits	4 digits
ISO 7027	ISO 7027

pH

Range	0 to 14 units
Accuracy	±0.2 units
Resolution	0.01 units
Comments	Automatic temperature compensated

ORP

- 999 to 999 mV
±20 mV
1 mV
Platinum electrode

Depth

0 to 10 m, 0 to 25 m, 0 to 50 m, 0 to 100 m, 0 to 200 m
±0.1% Full Scale
0.01 m

Level

0 to 10 m
0.003 m
0.001 m
Vented transducer; requires vented cable

Ammonium

0 to 100 mg/L Nitrogen
±10% of reading or 2 mg/L, whichever is greater
0.1 mg/L - N
Ion Selective Electrode with replaceable plasticized tips

Nitrate

Range	0 to 100 mg/L Nitrogen
Accuracy	±10% of reading or 2 mg/L, whichever is greater
Resolution	4 digits
Comments	Ion Selective Electrode with replaceable plasticized tips

Chloride

0.5 to 18,000 mg/L
±10% of reading or 2 mg/L, whichever is greater
4 digits
Ion Selective Electrode with replaceable plasticized tips

Chlorophyll a

0.03 to 500 µg/L
±3% of full scale
0.01 µg/L
Turner sensor

Rhodamine

0.04 to 1000 ppb
±3% of full scale
0.01 ppb
Turner sensor

Blue Green Algae

150 to 300,000 cells/mL
±3% of full scale
10 cells/mL
Fresh or marine available, turner sensor

Water Resources Monitoring

NEW

Level Data Loggers

				
	TruBlue 555 Level	TruBlue 565 Level	TruBlue 575 Baro	TruBlue 585 CTD
Accuracy	±0.1% FS TEB	±0.01 ft H ₂ O	±0.1% FS TEB	1% of reading or 20 µs/cm
Range	10 - 692 ft	10 - 50 ft	8 - 16 psia	5 - 200,000 µs/cm
Max Over-range	2X FS	2X FS	32 psia	2X FS
Output	RS-485	RS-485	RS-485	RS-485
Data Logging Memory	8 MB	8 MB	8 MB	8 MB
Operating Temp	0°C to 50°C	0°C to 50°C	0°C to 50°C	0°C to 50°C
Dimensions (mm)	19 x 390	19 x 390	19 x 390	19 x 390
Typical Apps	Groundwater monitoring, surface water monitoring, oceanographic research	Groundwater monitoring, surface water monitoring, oceanographic research	Barometric pressure, atmospheric pressure	Groundwater monitoring, surface water monitoring, oceanographic research

Digital Level Transducers

					
	KPSI 500	KPSI 501	KPSI 351	KPSI 353	KPSI 355
Accuracy	±0.05% FS TEB	±0.01 ft H ₂ O	±0.01 ft H ₂ O	±0.10% FS TEB	±0.05% FS TEB
Range	10 - 230 ft	10 - 50 ft	10 - 50 ft	10 - 230 ft	10 - 230 ft
Max Over-range	2X FS	2X FS	2X FS	2X FS	2X FS
Output	SDI-12	SDI-12	SDI-12	SDI-12	SDI-12
Data Logging Memory	--	--	--	--	--
Operating Temp	-20°C to 60°C	-20°C to 60°C	-20°C to 60°C	-20°C to 60°C	-20°C to 60°C
Dimensions (mm)	25.4 x 197	25.4 x 197	19 x 243	19 x 243	19 x 243
Typical Apps	Groundwater monitoring, surface water monitoring, oceanographic research	Groundwater monitoring, surface water monitoring, oceanographic research	Groundwater monitoring, surface water monitoring, oceanographic research	Groundwater monitoring, surface water monitoring, oceanographic research	Groundwater monitoring, surface water monitoring, oceanographic research

Digital Temperature Transducers

	
	KPSI 380
Accuracy	±0.1°C
Range	-20°C to 60°C
Max Over-range	N/A
Connection	open port nosepiece
Output	SDI-12, RS-485
Operating Temp	-20°C to 60°C
Dimensions (mm)	19.0 x 127.0
Typical Apps	Groundwater monitoring, surface water monitoring, storm water, dam operations, and stream gauging

Telemetry Communication Systems

		
	TruBlue Remote Monitoring System Gateway	TruBlue Remote Monitoring System Node
Power	7 - 28 Vdc (externally sourced)	8 x Alkaline D-cell (internal)
Environmental	IP67	IP67
Sensor Ports	--	4
Communication	900MHz FHSS GPRS Cellular	900MHz FHSS 802.11 b/g WiFi
Supported Hardware	RMS Nodes	MEAS TruBlue, 50x, 35x SDI-12 transducers
Typical Apps	Monitoring of multiple level transducers within a given geographical area	Monitoring of multiple level transducers within a given geographical area

Water Resources Monitoring

Analog Level Transducers – 1" Bore

				 NEW	 NEW
	KPSI 700, 710, 720, 730, 735	KPSI 705	KPSI 750	KPSI LTA	KPSI LTB
Level Accuracy	±0.10%, ±0.05% FSO (KPSI 730, 735) ±0.25%, ±0.50%, ±1.00% FSO (KPSI 700, 710, 720)	±0.25% FSO	±0.25% FSO	0.25% FSO	0.25% FSO
Range	Custom ranges from: 5 - 700 ft H ₂ O (vented, KPSI 730, 735) 35 - 700 ft H ₂ O (sealed, KPSI 730, 735) 2.3 - 700 ft H ₂ O (vented, KPSI 700, 710, 720) 10 - 700 ft H ₂ O (sealed, KPSI 700, 710, 720) 35 - 700 ft H ₂ O (absolute, KPSI 700, 710, 720)	Custom ranges from: 6 - 115 ft H ₂ O	Custom ranges from: 10 - 115 ft H ₂ O	Nine standard ranges from: 0 - 1 psi up to 0 - 500 psi. Custom ranges available	Four standard ranges from: 0 - 11.5, 34.6, 69.2, 115.4 ft H ₂ O. Custom ranges available
Max Over-range	2X FS	2X FS	2X FS	2X FS	2X FS
Output	4 - 20 mA, 0 - 5 Vdc, 0 - 2.5 Vdc, 0 - 4 Vdc, 0 - 10 Vdc, 1.5 - 7.5 Vdc	4 - 20 mA, 0 - 5 Vdc, 0 - 2.5 Vdc, 0 - 4 Vdc, 0 - 10 Vdc, 1.5 - 7.5 Vdc	4 - 20 mA, 0 - 5 Vdc, 0 - 2.5 Vdc, 0 - 4 Vdc, 0 - 10 Vdc, 1.5 - 7.5 Vdc	4 - 20 mA	4 - 20 mA
Operating Temp	-20°C to 60°C	-20°C to 60°C	-20°C to 60°C	-20°C to 60°C	-20°C to 60°C
Dimensions (mm)	25.4 x 86.6	104.1 x 279.4	104.1 x 279.4	25.4 x 93.0	104.1 x 206.5
Typical Apps	Groundwater monitoring, surface water monitoring, oceanographic research, pump control, life stations, landfill leachate	Wastewater, lift stations, tank level	Wastewater, lift stations, tank level	Pump control, tank liquid level, landfill leachate monitoring, construction bypass pumping, dewatering	Lift station monitoring, pump control
Agency Approvals	CE, WEEE, RoHS; UL and FM (Intrinsically safe)	CE, WEEE, RoHS; UL and FM (Intrinsically safe)	CE, WEEE, RoHS; UL and FM (Intrinsically safe)	CE, WEEE, RoHS; with optional UL and FM (Intrinsically safe)	CE, WEEE, RoHS; with optional UL and FM (Intrinsically safe)

Analog Level Transducers – 0.75" Bore

			
	KPSI 320, 330, 335	KPSI 300DS	KPSI 342
Level Accuracy	±0.10%, ±0.05% FSO (KPSI 330, 335) ±0.25% FSO (KPSI 320)	±0.50% FSO	±0.25% FS TEB
Range	Custom ranges from: 5 - 700 ft H ₂ O (vented, KPSI 330, 335) 35 - 700 ft H ₂ O (sealed, KPSI 330, 335) 35 - 700 ft H ₂ O (absolute, KPSI 330, 335) 5 - 700 ft H ₂ O (vented, KPSI 320) 10 - 700 ft H ₂ O (sealed, KPSI 320) 35 - 700 ft H ₂ O (absolute, KPSI 320)	Custom ranges from: 700 - 4614 ft H ₂ O	Custom ranges from: 2.3 - 700 ft H ₂ O (vented) 10 - 700 ft H ₂ O (sealed) 35 - 700 ft H ₂ O (absolute)
Max Over-range	2X FS	2X FS	2X FS
Output	4 - 20 mA, 0 - 5 Vdc, 0 - 2.5 Vdc, 0 - 4 Vdc, 0 - 10 Vdc, 1.5 - 7.5 Vdc	4 - 20 mA, 0 - 5 Vdc, 0 - 2.5 Vdc, 0 - 4 Vdc, 0 - 10 Vdc, 1.5 - 7.5 Vdc	4 - 20 mA, 0 - 5 Vdc
Operating Temp	-20°C to 60°C	-20°C to 60°C	-20°C to 60°C
Dimensions (mm)	19 x 151	19 x 215	19 x 151
Typical Apps	Groundwater monitoring, surface water monitoring, oceanographic research, pump control, life stations, landfill leachate	Down hole, level control, pump control	Surface water monitoring, groundwater monitoring, tailrace and forebay monitoring
Agency Approvals	CE, WEEE, RoHS; UL and FM (Intrinsically safe)	CE, WEEE, RoHS	CE, WEEE, RoHS

Measurement Specialties is a pioneer in the design and manufacture of precision sensors for electro-mechanical flight control applications, test and measurement applications and ultra-low cost OEM load cells for high volume applications. We are experts in developing sensors that require high performance or unique packaging.

Based on our proprietary piezoresistive silicon strain gauge (Microfused™) technology our OEM load cells combine outstanding durability and long-term stability in extremely low cost packages, perfectly suited for medium and high volume applications.

Our flight-qualified sensors monitor secondary load path engagement and supply real time information from primary flight control forces to the Flight Data Recorder (Black Box). Other applications include force feedback for autopilot automatic disconnect function and flap jam detection systems.

MEAS' OEM and T&M load cells are tailored for specific customer applications including custom packaging and electronics with analog or digital outputs, suited for both low and high force environments.



Load Cells

Low Cost OEM



FX1901-0001

Package	Low profile "coin cell" design
Operating Mode	Compression
Unique Features	- Ultra low cost, low strain design - Essentially unlimited cycle life
Ranges (Lbf)	10, 25, 50, 100
Max Over-range	2.5X
Output / Span	100 mV
Combined Linearity & Hysteresis	±1.0% FSO
Operating Temp	-40°C to 85°C
Dimensions (mm)	Ø 25.00 x 29.50 x 8.00
Typical Apps	Consumer OEM, exercise machines, physical therapy, vending machines, appliances, pumps, medical devices



FS20

Package	Miniature; drop in replacement for industry standard
Operating Mode	Compression
Unique Features	- Load cell design operates at very low strains - Not subject to lead die fatigue
Ranges (Lbf)	1.5, 3
Max Over-range	10 lbf
Output / Span	1.0 to 4.0 V
Combined Linearity & Hysteresis	±1.0% FSO
Operating Temp	0°C to 70°C
Dimensions (mm)	30.708 x 17.272 x 8.255
Typical Apps	Infusion pumps, contact sensing, medical devices, consumer appliances



FC22

Package	Plastic housing, button, flange mounting
Operating Mode	Compression
Unique Features	- Low cost button shape - Essentially unlimited cycle life
Ranges (Lbf)	25, 50, 100
Max Over-range	2.5X
Output / Span	100 mV, 0.5 to 4.5 Vdc
Combined Linearity & Hysteresis	±1.0% FSO
Operating Temp	-40°C to 85°C
Dimensions (mm)	Ø 26.00 x 42.00 x 19.50
Typical Apps	Infusion pumps, robotics end-effectors, exercise machines, contact sensing, appliances



FC23

Package	Stainless steel housing button shape for higher weight loads
Operating Mode	Compression
Unique Features	- Industry standard low profile all stainless steel design - Resistant to off-axis loads.
Ranges (Lbf)	250, 500, 1000, 2000
Max Over-range	1.5X and 2.5X
Output / Span	100 mV
Combined Linearity & Hysteresis	±1.0% FSO
Operating Temp	-40°C to 85°C
Dimensions (mm)	Ø 31.75 x 10.20
Typical Apps	Batch weighing, robotics, assembly line force, printing presses, pumps, winch and hoist

Test and Measurement



ELPF

Package	Dual stud
Operating Mode	Tension and compression
Unique Features	- Low cost - High immunity to off axis loads - Low deflection design for fast response and high cycle life - Optional external amplifier module - NIST traceable calibration provided
Ranges N (Lbf)	50 to 2.5K (10 to 500)
Max Over-range	2.5X F.S.
Output / Span	100 mV (0.5 - 4.5 V optional)
Non-linearity	±0.25% F.S.
Hysteresis	±0.25% F.S.
Operating Temp	-40°C to 120°C (-40°F to 248°F)
Dimensions (mm)	T1 Ø 19.00 x 25.40 T2 Ø 25.40 x 29.10 T3 Ø 25.40 x 33.16

Typical Apps Research, materials test, medical instrumentation, physical therapy, weighing, thrust, biomechanical measurements, product validation test



ELWF

Package	Dual stud
Operating Mode	Tension and compression
Unique Features	- Low cost - Optional high level output - Small, low profile design - Low deflection - NIST traceable calibration provided
Ranges N (Lbf)	50 to 500 (10 to 100)
Max Over-range	2.5X F.S.
Output / Span	100 mV (0.5 - 4.5 V optional)
Non-linearity	±0.5% F.S.
Hysteresis	±0.5% F.S.
Operating Temp	-40°C to 120°C (-40°F to 248°F)
Dimensions (mm)	B4 Ø 12.70 x 4.05 T2 Ø 12.70 x 16.35 T4 Ø 12.70 x 22.80

Typical Apps Robotics and effectors, dental and biomechanical parameter measurements, satellite and aerospace force feedback



ELWF

Package	Through hole
Operating Mode	Compression
Unique Features	- Low cost - Through-hole design - Low profile - Essentially unlimited life cycle - NIST traceable calibration provided
Ranges N (Lbf)	25 to 10K (5 to 2K)
Max Over-range	1.5X to 2X F.S.
Output / Span	100 mV (0.5 - 4.5 V optional)
Non-linearity	±5% F.S.
Hysteresis	±1% F.S.
Operating Temp	-40°C to 120°C (-40°F to 248°F)
Dimensions (mm)	B1 Ø 25.40 x 3.80 B2 Ø 25.40 x 5.50 D1 Ø 25.40 x 6.35 D2 Ø 25.40 x 9.00 D3 Ø 25.40 x 12.70

Typical Apps Bolt loads, thrust measurements, product validation test



ELAF

Package	Button
Operating Mode	Compression
Unique Features	- Low cost - Small, low profile design - Low off-axis response - Essentially unlimited life cycle - NIST traceable calibration provided
Ranges N (Lbf)	50 to 25K (10 to 5K)
Max Over-range	2.5X F.S.
Output / Span	100 mV (0.5 - 4.5 V optional)
Non-linearity	±0.25% F.S.
Hysteresis	±0.25% F.S.
Operating Temp	-40°C to 120°C (-40°F to 248°F)
Dimensions (mm)	B0 Ø 12.70 x 9.53 B2 Ø 31.75 x 11.20 B3 Ø 38.10 x 18.00

Typical Apps Theatrical rigging loads, assembly forces, weighing, thrust measurements, product validation testing

Load Cells

Test and Measurement



XFC200R

Package	Small diameter load button
Operating Mode	Compression
Unique Features	- High stiffness - High overload capacity - Static and dynamic
Ranges N (Lbf)	2 to 10K (0.4 to 2K)
Max Over-range	2X to 4X F.S.
Output / Span	100 mV
Non-linearity	≤ ±0.5% F.S.
Hysteresis	≤ ±0.5% F.S.
Optional Operating Temp	-40°C to 150°C (-40°F to 302°F)
Dimensions (mm)	Ø10 to Ø16
Typical Apps	Material test, measuring tools, robotics and effectors



XFL212R

Package	Low profile load button
Operating Mode	Compression
Unique Features	- Extremely flat - Integrated load button - Small diameter
Ranges N (Lbf)	5 to 500 (1 to 100)
Max Over-range	2X F.S.
Output / Span	100 mV
Non-linearity	≤ ±0.5% F.S.
Hysteresis	≤ ±0.5% F.S.
Optional Operating Temp	-40°C to 150°C (-40°F to 302°F)
Dimensions (mm)	Ø12.5 x 3.5
Typical Apps	Dental and biomechanical, surface mount assembly system, production validation test



XFL225D

Package	Through hole
Operating Mode	Compression
Unique Features	- Strain relief spring - Very flat - Static and dynamic
Ranges N (Lbf)	10 to 5K (2 to 1K)
Max Over-range	2X F.S.
Output / Span	100 mV
Non-linearity	≤ ±0.5% F.S.
Hysteresis	≤ ±0.5% F.S.
Optional Operating Temp	-40°C to 150°C (-40°F to 302°F)
Dimensions (mm)	Ø25
Typical Apps	Bolt loads, tool forces, biomechanical force measurement



XFTC300 Series

Package	Low/high capacity dual stud
Operating Mode	Tension and compression
Unique Features	- High stiffness - High overload capacity - Threaded male / female fitting
Ranges N (Lbf)	2 to 2K (0.4 to 400)
Max Over-range	2X to 4X F.S.
Output / Span	100 mV (4 V; ±5 V optional)
Non-linearity	≤ ±0.5% F.S.
Hysteresis	≤ ±0.5% F.S.
Optional Operating Temp	-40°C to 150°C (-40°F to 302°F)
Dimensions (mm)	Application dependent
Typical Apps	Material test, tool forces, robotics end effectors

Standard



ELHM, ELHS

Package	High capacity dual stud or button style
Operating Mode	Tension and compression
Unique Features	- Tension and compression or compression only - High stability metal foil strain gage (ELHM) - High output semiconductor strain gage (ELHS) - NIST traceable calibration provided
Ranges N (Lbf)	1K to 50K (200 to 10K)
Max Over-range	1.5X F.S.
Output / Span	10 mV (ELHM), 200 mV FSO (ELHS)
Non-linearity	0.3% to 0.5% FSO
Hysteresis	Combined with linearity
Optional Operating Temp	-50°C to 120°C (ELHM), -20°C to 80°C (ELHS)
Dimensions (mm)	Application dependent
Typical Apps	Robust general purpose, low deflection design: machine tool, linkage forces



FN3002

Package	Very high capacity dual stud
Operating Mode	Tension and compression
Unique Features	- Threaded male fitting - Integrated amplifier - Optional rod end
Ranges N (Lbf)	10K to 2,000K (2K to 400K)
Max Over-range	1.5X F.S.
Output / Span	±20 mV (4 V; ±5 V optional)
Non-linearity	±0.25% F.S.
Hysteresis	Combined with linearity
Optional Operating Temp	-40°C to 150°C (-40°F to 302°F)
Dimensions (mm)	Application dependent
Typical Apps	Assembly forces, tool force, offshore



FN2420

Package	Very high capacity load button
Operating Mode	Compression
Unique Features	- High stiffness - Optional load button - Optional high level output module
Ranges N (Lbf)	20K to 5,000K (4K to 1,000K)
Max Over-range	1.5X F.S.
Output / Span	20 mV (4 V; 5 V)
Non-linearity	±0.1% F.S.
Hysteresis	±0.1% F.S.
Optional Operating Temp	-40°C to 150°C (-40°F to 302°F)
Dimensions (mm)	Application dependent
Typical Apps	Calibration presses, robotics and effectors, laboratory and research



FN1010

Package	Load pin design
Operating Mode	Tension and compression
Unique Features	- Keyed antirotation slot - Bidirectional available - Optional watertight construction
Ranges N (Lbf)	10K to 2,000K (2K to 400K)
Max Over-range	1.5X F.S.
Output / Span	±20 mV (4 V; ±5 V; 4 - 20 mA optional)
Non-linearity	±1% F.S.
Hysteresis	Combined with linearity
Optional Operating Temp	-20°C to 80°C (-4°F to 176°F)
Dimensions (mm)	Application dependent
Typical Apps	Crane monitoring, offshore, load-limited devices

Load Cells

S-Beam Standard



FN3030



FN3060



FN3280



FN3148



FN7110

Package	S-beam	S-beam	S-beam with stops	S-beam with stops	Dual S-beam range
Operating Mode	Tension and compression	Tension and compression	Tension and compression	Tension and compression	Tension and compression
Unique Features	- Optional rod ends - Optional high level output - Low cost	- Fatigue rated - Optional high level output - S-beam technology	- Very low range - High resolution - Mechanical stops	- Very high accuracy - High resolution - Mechanical stops	- High resolution - Optional high level output - Double range
Ranges N (Lbf)	50 to 100K (10 to 20K)	250 to 2.5K (50 to 500)	1 to 5 (0.2 to 1)	10 to 2K (2 to 400)	10 / 100 to 1K / 10K (2 / 20 to 200 / 2K)
Max Over-range	1.5X F.S.	1.5X F.S.	40X to 100X F.S.	5X to 100X F.S.	1.2X F.S. of the higher range
Output / Span	±20 mV (4 V; ±5 V optional)	±15 mV (4 V; ±5 V optional)	±10 to 20 mV	±20 mV (4 V; ±5 V optional)	±20 mV (4 V; ±5 V optional)
Non-linearity	±0.1% F.S.	±0.1% F.S.	±0.1% F.S.	< ±0.05% F.S.	±0.1% F.S. of each range
Hysteresis	Combined with linearity	Combined with linearity	Combined with linearity	Combined with linearity	
Optional Operating Temp	-40°C to 150°C (-40°F to 302°F)	-40°C to 120°C (-40°F to 248°F)	-20°C to 80°C (-4°F to 176 °F)	-40°C to 120°C (-40°F to 248°F)	-20°C to 80°C (-4°F to 176°F)
Dimensions (mm)	Application dependent	50 x 25 x 60	Application dependent	Application dependent	60 x 30 x 100
Typical Apps	Laboratory and research, process control, robotics and effectors	Test bed, dynamic fatigue testing, robotics and effectors	Product validation tests, medical instruments, weighing	Product validation tests, medical instruments, weighing	Product validation tests, process control, robotics and effectors

Low Profile and Pan-Cake



FMT



FN3050



FN3000



FN3042



FN7325

Package	Washer	Pan-Cake	Very high capacity Pan-Cake	Pan-Cake	Custom design / ranges on request
Operating Mode	Compression	Tension and compression	Tension and compression	Tension and compression	Multiaxial force and torque
Unique Features	- High stiffness - 1.5X over-range - High temperature	- Connector or cable gland output - Same housing all ranges - Optional high level output - Optional compression stops	- High stability - Aluminum or stainless steel - Optional high level output	- Integrated amplifier - Optional Skydrol compatibility - Fatigue rated	- Measures Load / Torque in 3 directions - Fatigue rated - Minimal cross effects
Ranges N (Lbf)	20K to 320K (4K to 64K)	100 to 20K (20 to 4K)	10K to 1000K (2K to 200K)	5K to 500K (1K to 100K)	5K to 250K (1K to 50K)
Max Over-range	1.5X F.S.	1.5X F.S. (10X F.S. with stops)	1.5X F.S.	2X F.S.	1.2X F.S.
Output / Span	15 to 20 mV	±15 mV (4 V; ±5 V optional)	±20 mV (4 V; ±5 V optional)	±15 mV (4 V; ±5 V optional)	±100 to 150 mV (4 V; ±5 V optional)
Non-linearity	1 to 5% F.S.	±0.1% F.S.	±0.1% F.S.	±0.25% F.S.	±1% F.S.
Hysteresis	Combined with linearity	±0.1% F.S.	±0.1% F.S.	Combined with linearity	Combined with linearity
Optional Operating Temp	-40°C to 150°C (-40°F to 302°F)	-40°C to 150°C (-40°F to 302°F)	-40°C to 150°C (-40°F to 302°F)	-40°C to 120°C (-40°F to 248°F)	-20°C to 80°C (-4°F to 176°F)
Dimensions (mm)	Application dependent	Ø70 x 25	Application dependent	Application dependent	Application dependent
Typical Apps	Robotics, process control, blot clamping for bridges	Regulation, laboratory and research, robotics	Static fatigue tests, weighing calibration, robotics	Aerospace test bed, dynamic fatigue tests, robotics and effectors	Structure testing, crash testing, industrial test benches

Torque Meters

Reaction and Rotary



CS1060

Package	Square male coupling
Operating Mode	Reaction
Unique Features	- Optional high level output - Static measurements
Ranges Nm (Lbf-ft)	± 5 to $\pm 7K$ (± 4 to $\pm 5.6K$)
Max Over-range	1.5X F.S.
Output / Span	± 20 mV (4 V; ± 5 V optional)
Combined Non-linearity & Hysteresis	$< \pm 0.25\%$ F.S.
Optional Operating Temp	-20°C to 100°C (-4°F to 212°F)
Dimensions (mm)	Application dependent
Typical Apps	Non-rotating parts torque measurement, robotics and effectors, laboratory and research



CS1120

Package	Keyed shaft connections
Operating Mode	Reaction
Unique Features	- Optional high level output - Excellent temp. stability
Ranges Nm (Lbf-ft)	± 5 to $\pm 2.5K$ (± 4 to $\pm 2K$)
Max Over-range	1.5X F.S.
Output / Span	± 20 mV (4 V; ± 5 V optional)
Combined Non-linearity & Hysteresis	$< \pm 0.25\%$ F.S.
Optional Operating Temp	-20°C to 100°C (-4°F to 212°F)
Dimensions (mm)	Application dependent
Typical Apps	Non-rotating parts torque measurement, robotics and effectors, laboratory and research



CS1210

Package	Collar mechanical fittings
Operating Mode	Reaction
Unique Features	- High stiffness - Optional high level output
Ranges Nm (Lbf-ft)	± 160 to $\pm 10K$ (± 128 to $\pm 8K$)
Max Over-range	1.5X F.S.
Output / Span	± 20 mV (4 V; ± 5 V optional)
Combined Non-linearity & Hysteresis	$< \pm 0.25\%$ F.S.
Optional Operating Temp	-40°C to 150°C (-40°F to 302°F)
Dimensions (mm)	Application dependent
Typical Apps	Non-rotating parts torque measurement, robotics and effectors, laboratory and research



CD1050

Package	Square male couplings
Operating Mode	Dynamic rotary
Unique Features	- Optional high level output - Rugged
Ranges Nm (Lbf-ft)	± 5 to $\pm 7K$ (± 4 to $\pm 5.6K$)
Max Over-range	1.5X F.S.
Output / Span	± 20 mV (4 V; ± 5 V optional)
Combined Non-linearity & Hysteresis	$< \pm 0.25\%$ F.S.
Optional Operating Temp	-20°C to 80°C (-4°F to 176°F)
Dimensions (mm)	Application dependent
Typical Apps	Engine efficiency, robotics and effectors, laboratory and research



CD1095

Package	Keyed shaft connections
Operating Mode	Dynamic rotary
Unique Features	- Optional high level output
Ranges Nm (Lbf-ft)	± 5 to $\pm 2.5K$ (± 4 to $\pm 2K$)
Max Over-range	1.5X F.S.
Output / Span	± 20 mV (4 V; ± 5 V optional)
Combined Non-linearity & Hysteresis	$< \pm 0.25\%$ F.S.
Optional Operating Temp	-20°C to 80°C (-4°F to 176°F)
Dimensions (mm)	Application dependent
Typical Apps	Engine efficiency, process control equipment, laboratory and research

Load Cells

Automotive Sensors



FN4070 - FN4080

Package	Seat belt buckle sensor
Operating Mode	Tension
Unique Features	- High operating ranges - Detachable tongue and cable - Compatible with most seat belts
Ranges N (Lbf)	250 to 50K (50 to 10K)
Max Over-range	1.5X F.S.
Output / Span	15 to 20 mV
Non-linearity	$\pm 0.5\%$ F.S.
Hysteresis	Combined with linearity
Optional Operating Temp	-20°C to 80°C (-4°F to 176°F)
Dimensions (mm)	Application dependent
Typical Apps	Auto crash testing, tension at the belt receptacle



FN2317

Package	Hand brake
Operating Mode	Compression
Unique Features	- Easily installed - Ergonomic design - Fits most vehicles
Ranges N (Lbf)	500 to 1K (100 to 200)
Max Over-range	1.5X F.S.
Output / Span	± 20 mV (4 V optional)
Non-linearity	$\pm 0.5\%$ F.S.
Hysteresis	Combined with linearity
Optional Operating Temp	-20°C to 80°C (-4°F to 176°F)
Dimensions (mm)	100 x 20 x 15
Typical Apps	Hand brake, test bed



FN2114 - FN2570

Package	Brake pedal
Operating Mode	Compression
Unique Features	- High accuracy - Extra flat - Compact - Rugged design
Ranges N (Lbf)	200 to 3K (40 to 600)
Max Over-range	1.5X F.S.
Output / Span	15 to 20 mV (4 V optional)
Non-linearity	$< \pm 1\%$ F.S. (FN2114); $< \pm 2.5\%$ F.S. (FN2570)
Hysteresis	Combined with linearity
Optional Operating Temp	-20°C to 80°C (-4°F to 176°F)
Dimensions (mm)	Application dependent
Typical Apps	Brake pedal, clutch pedal, test bed

Automotive Design and Test Sensors



FN7080

Package	Gear stick design
Operating Mode	Multi-axial
Unique Features	- Measures force in three directions - Replaces gear knob - Ease of mounting
Ranges N (Lbf)	50 to 500 (10 to 100)
Max Over-range	1.2X F.S.
Output / Span	±7.5 mV (4 V; ±5 V optional)
Non-linearity	< ±0.3% F.S.
Hysteresis	Combined with linearity
Optional Operating Temp	-20°C to 80°C (-4°F to 176°F)
Dimensions (mm)	Ø 25 (0.98) spherical
Typical Apps	Change gear force measurement, roughness of material



FCA7300

Package	Steering wheel adaptable
Operating Mode	Multi-sensing
Unique Features	- Dual torque / Angle range - Steering velocity measurement - Fits all road vehicles
Ranges N (Lbf)	10 to 200 Nm (7 lbf-ft to 150 lbf-ft)
Max Over-range	10X F.S.
Output / Span	±10 V
Non-linearity	±0.1% F.S.
Hysteresis	±0.1% F.S.
Optional Operating Temp	-20°C to 80°C (-4°F to 176°F)
Dimensions (mm)	Ø 195 x 50
Typical Apps	On car road test, truck and buses steering test, armored vehicles steering test



EL20-S458

Package	Special purpose design optimized for automotive crash test environments
Operating Mode	Seat-belt tension
Unique Features	- Low mass titanium design for use in high shock environments - Mass optimized to minimize acceleration induced errors during SAE J2570 ATD and ISO 6487 - Optional high level and linearized outputs - Smoothed edge design and optional slotted titanium axles eliminate drag errors and dummy damage - Ultra robust cable is user replaceable
Ranges N (Lbf)	5K and 15K (1000 and 3200)
Max Over-range	2X
Output / Span	10 mV (0.5 - 4.5 V optional)
Non-linearity	1.0% to 3.0% F.S.O.
Hysteresis	Combined with linearity
Optional Operating Temp	-40°C to 120°C (-40°F to 248°F)
Dimensions (mm)	Application dependent
Typical Apps	Seat belt forces, safety and restraint system crash test, parachute tether/riser forces

Electronics /Displays



ARD154

Package	Din rail mountable
Operating Mode	Signal conditioning for Wheatstone bridge sensors
Unique Features	- Suited for 1 to 4 strain gage sensors - 120 to 10000 Ohm bridge Impedance - ±10 V Analogue or 0 / 4 - 20 mA current output - 2 kHz or 20 kHz max. bandwidth - Calibration pushbutton from 0.1 to 10 mV/V
Ranges N (Lbf)	Application dependent
Output / Span	±10 V max; 4 - 20 mA or 0 - 20 mA
Accuracy	0.01% F.S.
Optional Operating Temp	-10°C to 60°C (14°F to 140°F)
Dimensions (mm)	99 x 17.5 x 112
Typical Apps	Test stands, power plants, manufacturing systems, test and measurement, test bed regulation, automat interfaces



M210

Package	Front panel or housed in case
Operating Mode	Signal conditioning and display meter
Unique Features	- Analog output : ±10 V - Red LED display : ±2,000 count - High bandwidth: 1,000 Hz at -3 dB - Low noise level
Ranges N (Lbf)	Application dependent
Output / Span	±10 Vdc
Accuracy	±0.05% F.S.
Optional Operating Temp	0°C to 50°C (32°F to 122°F)
Dimensions (mm)	96 x 48 x 155
Typical Apps	High bandwidth test bed display, monitoring, laboratory and research, process control equipment



M905

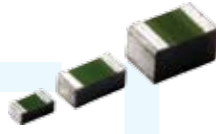
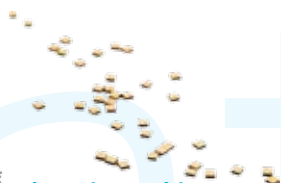
Package	Front panel or housed in case
Operating Mode	Display suited for process or strain gauge type sensors
Unique Features	- Suited for process or strain gauge type sensors - 5 digits: -19999 to 19999 - Front panel programming - 11 point scaling - Plug-in option boards
Ranges N (Lbf)	Application dependent
Output / Span	±10 Vdc or 4 - 20 mA with option
Accuracy	±15 bits, 20 sample/sec
Optional Operating Temp	-10°C to 60°C (14°F to 140°F)
Dimensions (mm)	96 x 48 x 60
Typical Apps	Display on test bed, monitoring, laboratory and research

Measurement Specialties is the market leader in temperature measurement. We manufacture NTC thermistors, RTD components, thermocouples, thermopiles, digital output and customized probe assemblies. Building on over 100 years of experience, we put to use our unique know-how to cover the largest range of temperature measurement, control and compensation applications in the industry. We offer the widest selection of products to meet the specific demands of temperature sensing OEM applications, including medical, aerospace, automotive, instrumentation appliances and HVAC. Our long, extensive and successful experience supporting industries with very high quality and service expectations, as well as aggressive cost competitiveness, make Measurement Specialties the number one choice for your application.



NTC Thermistor and Nickel and Platinum RTD Components

Analog Output



NTC	Thermistor Chips	Thermistor SMDs	Leaded Thermistors	Space Qualified (Hi-Rel)
Package	Leadless Chips	SMD 0402, 0603, 0805	Radial, axial, beads	Radial, bead, custom
Type	Gold or silver electrodes	Surface mounted	Epoxy or glass coated	Epoxy, glass, probes
Resistance Range	100 to 1M Ω	40 to 500k Ω	100 to 1M Ω	1k Ω to 100k Ω
Unique Features	- Wire bonding compatible	- End band SMD	- Interchangeable - Moisture resistant - Stability	- ESA and NASA approved - High reliability and accuracy
Accuracy	$\pm 1\%$ to 10%	$\pm 1\%$ to 10%	0.25% to 20%	0.5% to 10%
Operating Temp.	-40°C to 125°C	-40°C to 125°C	-55°C to 280°C	-55°C to 115°C
Dimensions (mm)	1 x 1 x 0.25	0402: 1 x 0.5 x 0.7 0603: 1.6 x 0.8 x 1 0805: 2 x 1.25 x 1.2	0.4 to 4.9	From 2.4
Typical Apps	Temperature compensation, communication (DWDIM), infrared sensing systems	Temperature compensation, PCB mounting temperature measurement	Temperature sensing for OEM, automotive, medical, HVAC, etc.	Instrumentation and compensation for aerospace applications



RTD	Nickel-RTD SMD	Thin Film Sensors	Glass Wire Wound Sensors	Ceramic Wire Wound Sensors	TSYS Series
Package	SOT 23	TFC, TFS, TFHT	GO, GX	CWW600, CWW850, CWW1000	QFN16
Type	Surface mounted	Thin-film platinum deposited on ceramic substrate, glass coated, radial leads	Glass rod, radial leads	Ceramic rod, radial leads	SPI / I ² C interface
Resistance Range	1k Ω	100 Ω , 500 Ω , 1000 Ω	100 Ω (2x100 Ω on few versions)	100 Ω (2x100 Ω on few versions)	--
Unique Features	- Harsh environment compatible	- Small dimensions - High electrical insulation - Short response time - Interchangeability	- Aggressive environments (acid, oil, solvent) - Small dimensions - Stability - No hysteresis - Short response time - Interchangeability	- High temperature - Stability - No hysteresis - Small dimensions - Interchangeability	- Low power - 16 / 24 bit resolution - Internal calibration
Accuracy	Class B according to DIN 43760	Class F0.6, F0.3, F0.15, F0.1 according to IEC60751	Class W0.3, W0.15, W0.1 according to IEC60751	Class W0.3, W0.15, W0.1 according to IEC60751	$\pm 0.1^\circ\text{C}$ @ -5°C to 50°C
Operating Temp.	-55°C to 160°C	-200°C to 150°C (TFC) -70°C to 500°C (TFS) -70°C to 850°C (TFHT)	-200°C to 400°C	-200°C to 600°C (CWW600) -200°C to 850°C (CWW850) -200°C to 1000°C (CW1000)	-40°C to 125°C
Dimensions (mm)	2.1 x 2.5 x 2.1	Width 0.8 to 2.5 mm Length 2 to 10 mm Thickness ≤ 1 mm Typical leads length = 10 mm	$\varnothing 1.8$ / Length 5mm to $\varnothing 4.5$ / Length 48mm	$\varnothing 1.5$ / Length 8 mm to $\varnothing 4.5$ / Length 30 mm $\varnothing 2.7$ / Length 45 mm (CWW1000)	4 x 4 x 0.85
Typical Apps	Automotive, compensation, OEM	OEM, automotive, aerospace, medical	Oil and chemical industry, aviation, aeronautic, food industry	Process industry, laboratories, reference sensors	Industrial control, replace thermistors and NTCs, heating / cooling systems, HVAC

Probe Assemblies

     						
	Ring Probe	Push-in Probe	Screw-in Probe	Pipe Clamp Probe	Pipe Probe	Urea Temperature Sensor
Package	Ring for surface assembly	Brass, copper or stainless steel closed-end tube	Brass, copper or stainless steel housing, integrated connector	Plastic housing with metal insert	Copper housing	Plastic housing with screw hole mountings
Type	Epoxy potted	Sensitive element potted into housing and cable prolongation or connection head	Sensitive element potted into housing and cable prolongation or connection head	Overmolded or epoxy potted	Over molded	Overmolded plastic housing with integrated 2 pin connector
Sensor Range	NTC, Pt, Ni sensor	NTC, Pt, Ni sensor	NTC, Pt, Ni sensor	NTC, Pt sensor	NTC Thermistor	
Unique Features	- Surface mount temperature sensing	- Corrosion resistant - Available with mounting tabs or clips	- Corrosion resistant - Different types of treads - O-rings and connectors available	- Different pipe diameters available	- Fast response time	- Temperature measurement of urea liquid used in selective catalytic reduction (SCR) systems - Suitable for high pressure applications
Accuracy	- Custom tolerances available (NTC) - Class B, A, AA according to IEC60751 (Pt)	- Custom tolerances available (NTC) - Class B, A, AA according to IEC60751 (Pt)	- Custom tolerances available (NTC) - Class B, A, AA according to IEC60751 (Pt)	- Custom tolerances available (NTC)	- ±2% Beta tolerance	- Custom tolerances available (NTC) - ±2%, 3% and 5%. Beta 25/85 : 3976
Operating Temp.	-40°C to 150°C	-40°C to 260°C	-40°C to 260°C	-40°C to 105°C	-40°C to 125°C	-40°C to 125°C
Dimensions (mm)	Ring hole dia. from 3 to 5 (custom dimensions available)	Custom lengths and diameters available	Custom lengths, diameters and thread available	Custom diameters available	1000 x 10	Sensor tip 8mm Dia.
Typical Apps	Surface plates, heat exchangers, and fluid pumping systems	Boiler, liquid, evaporator, HVACR, Industrial processes control, district heating/cooling, automotive	Boiler, liquid, HVACR, Industrial processes control, district heating/cooling, automotive	Pipe surface temperature sensing, HVACR	Industrial process, boiler control	Temperature measurement of urea liquid used in selective catalytic reduction (SCR) systems
    						
	Over Molded Probe	Patient Monitoring Probe	TLH Reference Probe	Flexible Surface Probe	Boiler Probe	
Package	PVC or TPE	Sensor with cable and connector	TLH100 / TLH600	SP683	Brass housing	
Type	Overmolded	Reusables, disposables	Rigid protective external sheath of Inconel600 and stainless steel handle, unique internal design to insure stability	Flexible silicone molding CPE option: silicone molding on cable GAL option: rigid aluminum protection	Screw	
Sensor Range	NTC, Pt sensor	400 Series, 700 Series	Pt100 sensor	Pt100 sensor	NTC thermistor	
Unique Features	- Mounting clips available	- Autoclavable reusables - Sterile disposables	- Stability - Provided with calibration report or option of calibration certificate by national committee for accreditation (COFRAC)	- Small thickness - Curved surface radius ≥ 25 mm	- Integrated connector	
Accuracy	- Custom tolerances available (NTC) - Class B, A, AA according to IEC60751 (Pt)	EN-12470 ±0.1°C 25°C to 45°C	Class B (TLH600), A (LTH100) according to IEC60751	Class B, A, AA according to IEC60751	±1% tolerance on Beta	
Operating Temp.	-40°C to 125°C	Lab -40°C to 100°C, patient 0°C to 50°C	-80°C to 350°C (TLH100) -180°C to 600°C (TLH600)	-70°C to 200°C	-40°C to 125°C	
Dimensions (mm)	8 x 30, 6.5 x 25, 6 x 50, 6 x 5 x 15	Reusables 3 m	OD Ø 5 x 500 + handle Ø 15 x 100 typical cable length = 2 m	L 23 x W 10 x TH 1.5 custom cable length	41.8 x 11.5	
Typical Apps	HVACR, industrial processes control	Patient monitoring, laboratory	Laboratory, temperature sensors calibration by comparison	Chemical and pharmaceutical industry, process industry, laboratory, aerospace	Industrial process, boiler control	

Probe Assemblies



	Stator Winding Probe	Oven Probe	Exhaust Gas Temperature Probe	Thermocouple Probe
Package	TPE / CPME	OVN	EGT thermocouple probe	T01 / T11 / Spike / Profile / C01 / C06
Type	- Rigid flat/slot sensor with cable prolongation	- Pt element encapsulated into ceramic tube, with rigid stainless steel housing - High temperature cable and connector	- Mineral insulated alloy sheath, screwed mechanical interface, cable extension and automotive connector - Option: CAN bus interface (from 1 to 4 thermocouples, fully configurable)	- Bendable sheath: Mineral Insulated and alloy sheath (T01) - Flexible cable with plastic or composite insulation (T11) - Rigid protection sheath: ceramic (Spike, C06), quartz (Profile) or alloy sheath (C01) - Option: connector
Sensor Range	Pt100 sensor	Pt100, Pt500, Pt1000 sensor	Type K or N	Type T, J, K, N, R, S, B (according to TC type and insulation type)
Unique Features	- Dielectric strength 3 KV(TPE), 5 KV (CPME) - ATEX EExi according to type	- High temperature - Easy integration/installation - Higher dielectric strength according to type	- High temperature - Robust design - Vibration and corrosion withstand - Fast respond time	- High temperature - For MI cable: robust design, vibration withstand, small diameters, fast respond time, collapsible (radius $\geq 5^{\circ}\text{OD}$) - Apparent hot junction, disposable for flexible cable
Accuracy	Class B, A according to IEC60751	Class B, C according to IEC60751	Class 1 according to IEC584	Class 1 according to IEC584
Operating Temp.	-20°C to 180°C	-20°C to 750°C (according to version)	-40°C to 900°C	-40°C to 1700°C (according to TC type and insulation type)
Dimensions (mm)	- 150 x 8 x 2 (TPE) - 60 x 10 x 2, 80 x 10 x 2.3, 80 x 7.5 x 2 (CPME) - Typical cable lengths = 5, 10, 15, 25 m	- OD $\varnothing$ 4 mm to $\varnothing$ 6 mm - Immersion length 35 mm to 100 mm - Custom mechanical interface and cable length	- $\varnothing$ OD 4 to $\varnothing$ OD8 mm - Custom immersion length and cable length	- OD $\varnothing$ 0.3 mm to $\varnothing$ 8 mm for MI - Custom immersion length (from few centimeters to many meters) - Custom cable length - Multipoints (from 1 to 6) for Profile
Typical Apps	Power plants, measurement in stator windings (alternator, motor)	Drying oven, domestic oven	Automotive, truck, mining, Power unit, racing.	Aeronautic, process industry, semiconductor industry (spike, profile), medical process industry, manufacture based on composite materials

Thermopiles



	TS Series TS318-3B0814, TS318-5C50, TS305-10C50	TSEV Series TSEV01CL55	TSEV Series TSEV0108L39	TPT Series TPT300V
Package	TO-18, TO-18, TO-5	OEM-module	OEM-module	IP65 stainless steel tube
Type	Thermopile sensor components	Single-pixel thermopile module with integrated lens	8-pixels-linear array thermopile module	Thermopile system for industrial use
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 1000°C)	Object temperature range 0°C to 300°C	Object temperature range -20°C to 120°C	Object temperature range 0°C to 300°C
Unique Features	- High signal output - Accurate reference sensors	- Calibrated and ready to use - Digital output - Small field of view	- Calibrated and ready to use - Digital output - Small field of view	- Calibrated and ready to use - Digital or analogue outputs - Small field of view
Accuracy	Depends on applied electronics and calibration	Depends on temperature range, typical 1.5% full scale	Depends on temperature range, typical 2% full scale	Depends on temperature range, typical 1% full scale
Operating Temp.	Ambient temperature range: -20°C to 85°C	Ambient temperature range: -20°C to 85°C	Ambient temperature range: -20°C to 85°C	Ambient temperature range: 0°C to 85°C
Dimensions (mm)	9 x 9 x 17.6	36 x 18 x 16.15	25 x 35 x 15.2	111 x 17 x 17
Typical Apps	Medical thermometer (ear, forehead), pyrometer	Contactless temperature measurement, e.g. on moving parts or heated rolls, laminators, people detection, microwave oven, air conditioner	Contactless temperature measurement, e.g. on moving parts or heated rolls, laminators, people detection, microwave oven, air conditioner	Contactless temperature measurement, e.g. on moving parts or heated rolls, control of assembly lines, paper fabrication, drying applications

Based on a robust patented capacitive technology, Measurement Specialties offers a complete range of calibrated and amplified products measuring relative humidity. Accurate dew point and absolute humidity measurements are made possible through the combination of relative humidity and temperature measurements. Our products are qualified for the most demanding applications including automotive, heavy truck, aerospace and home appliance. We offer a variety of output signals including digital (frequency, I²C) and analog voltage, as well as customized and proprietary output including PWM, PDM, LIN and CAN.



Humidity and Temperature (NTC) Components

Analog Output



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	- Very robust and recognized component capable of withstanding most of the applications in the humidity world in very cost effective ways
Accuracy	180 pF $\pm$ 3 pF @55% RH
Dimensions (mm)	10 x 10 x 19
Typical Apps	Applications requiring a robust humidity sensor in automotive, home appliance, outdoor, HVAC, consumer, printer, meteorology

Digital Output



HTU2X Series

DFN type
Digital RH and temperature
0 to 100% RH
-40°C to 125°C
- Low power consumption
- Fast response time
- Very low temperature coefficient
- I ² C interface or PWM interface or SDM interface
$\pm$ 3% RH @ 25°C (10 to 95% RH)
$\pm$ 0.3°C @ 25°C
3.0 x 3.0 x 1.0
Humidity and temperature plug and play transducers for OEM demanding applications in automotive, home appliance, printer, medical, humidifier

Humidity and Temperature (NTC) Mini-Modules

Analog Voltage and Digital Output



HTG353xCH/PVBL/WxGy

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 - Electronics fully protected with potting material (3.3 Volt or 5 Volt) - Multiple connector choices (JST, samtec board to board through hole)
Calibration	$\pm$ 3% RH @ 55% RH; $\pm$ 0.25°C @ 25°C
Dimensions (mm)	27 x 11.9 x YY (depending on the connector, from 6 to 10.8 mm length)
Typical Apps	Humidity and temperature plug and play transducers for OEM demanding applications in HVAC, home appliance, printer, medical, and outdoor

HTG383xCH/PVBL/WxGy

Package	Cost effective small size mini-module
Type	Digital RH and temperature
Operating RH Range	0 to 100% RH
Operating Temp	-40°C to 85°C
Unique Features	- PTFE filter - Electronics fully protected with potting material - Multiple connector choices (JST, samtec board to board through hole and SMD)
Calibration	$\pm$ 3% RH @ 55% RH; $\pm$ 0.4°C @ 25°C
Dimensions (mm)	27 x 11.9 x YY (depending on the connector, from 6 to 10.8 mm length)
Typical Apps	Humidity and temperature plug and play transducers for OEM demanding applications in home appliance, consumer, printer

HTG351xCH

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	- Electronics fully protected with potting material (3.3 Volt or 5 Volt) - Multiple connector choices (JST, samtec board to board through hole)
Calibration	$\pm$ 3% RH @ 55% RH; $\pm$ 0.25°C @ 25°C
Dimensions (mm)	27 x 11.9 x 6.7
Typical Apps	Humidity and temperature plug and play transducers for OEM low cost consumer applications

Humidity and Temperature (NTC) Sensors

Frequency Output Systems (Digital)



HTF3000LF

Package	PCB for Board to Board
Type	Frequency output for RH, direct NTC for T
Operating RH Range	0 to 100% RH
Operating Temp	-40°C to 85°C
Unique Features	- Voltage supply from 3 to 8 Vdc - Through hole or SMD - T&R available
Calibration	±3% RH @55% RH and ±0.25°C @25°C
Dimensions (mm)	12.5 x 18.5 x 11.2
Typical Apps	Passenger comfort improvement, hygostat, HVAC, printer

Humidity and Temperature (NTC) Probes

Analog Voltage



HM1500LF

Probe / RH only
Cost effective analog voltage RH probe
0 to 100% RH
-40°C to 60°C
- Electronics fully protected with potting material - Optional wiring length and connectors
±3% RH @ 55% RH
57 x 11 x 11 (standard wire length of 200 mm)
Medical, telecommunication cabinets, green houses, process control, industrial



HM1520LF

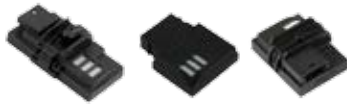
Probe / RH only
Dedicated to low RH accurate measurement
0 to 100% RH
-40°C to 60°C
- Electronics fully protected with potting material - Optional wiring length and connectors
±3% RH @ 10% RH
57 x 11.5 x 11.5 (standard wire length of 200 mm)
Medical, drying cabinets, low humidity, meteorology



HTM2500LF

Probe RH and T
Cost effective analog voltage RH
0 to 100% RH
-40°C to 85°C
- Electronics fully protected with potting material - Optional wiring length and connectors
±3% RH @ 55% RH; ±0.25°C @ 25°C
86 x 11.5 x 11.5 (standard wire length of 200 mm)
Hygostat, data loggers, baby cabinets

E&V Humidity and Temperature Modules



H2TG / H2TD Series *

Package	Cost effective module for automotive defogging application
Type	- Dew point and windshield temperature measurement - Analog or digital (LIN) output
Operating RH Range	0 to 100% RH
Operating Temp	-40°C to 85°C
Pressure Range	--
Unique Features	- Electronics fully protected with potting material - Optional wiring length and connectors
Calibration	±2% RH @ 80% RH ±1°C @ 25°C
Dimensions (mm)	27 x 32 x YY (depending on the connector, from 6 to 10.8 mm length)
Typical Apps	Fogging and cabin energy control



HTM2500B6Cy *

Engine probe for truck and automotive
- Dew point measurement - Analog output
0 to 100% RH
-40°C to 105°C
--
- Electronics fully protected with potting material - Optional wiring length and connectors
±3% RH @ 55% RH ±0.8°C @ 25°C
70 x 64.5 x 54.5 (integrated connector)
Humidity and temperature engine control



HTD2800B11C6 *

Engine probe for truck and automotive
- Temperature, RH, pressure measurement - CAN output
0 to 100% RH
-40°C to 125°C
0 - 15kPa to 115kPa
- Configurable outputs available as SH or DP parameters - Self diagnostic capabilities to comply with J1939, EPA / Euro and CARB requirements
RH: ±3% RH @ 55% RH Temp: ±0.5°C @ 25°C Pressure: ±1% FS
76.3 x 64.3 x 55.9 (integrated connector)
Emission control application such as NOx control with air intake measurements



HTM4300B14C8 *

Engine probe for truck and automotive
- Dew point measurement - Analog output
0 to 100% RH
-40°C to 105°C
--
- Electronics fully protected with potting material - Optional wiring length and connectors
±3% RH @ 55% RH ±0.25°C @ 25°C
46.8 x 40.4 x 36.6 (integrated connector)
Humidity and temperature automotive engine control

* Please consult us for specific request

Measurement Specialties manufactures Mass Air Flow (MAF) sensors for a variety of Automotive, Medical and Industrial Gas Flow applications where reliable and accurate measurements are specified. They are typically mounted in a well-defined channel, directly in the flowing media. Our Flow Switches are designed for water control, power shower, central heating systems, circulation pump protection, cooling and leak detection. They feature reed switch reliability and are easily installed. Suitable for hot and cold potable water, these sensors have rugged brass housings and operate from a small head of water.



Mass Air Flow Sensors



LMM-H04

Package Type	Hybrid Anemometer film component
Range	650 Ω to 1050 Ω
Operating Temp	-40°C to 125°C
Unique Features	Fast response time, adaptable, constant power or constant voltage operation
Calibration / Accuracy	Dependent on electronics
Dimensions (mm)	23 x 10.15 x 1.1
Typical Apps	Combustion engine air intake, spirometer, leak detection, industrial gas flow

Flow Switches

For Direction of Liquid and Gas Flow



FS-01

Package Type	Noryl Flow switch
Range	10 Bar @ 20°C
Operating Temp	-30°C to 85°C
Unique Features	SPST reed switch, normally open, close on flow
Calibration / Accuracy	N/A
Dimensions (mm)	106 x 32 x 32
Typical Apps	Mains water control, power shower, central heating systems, circulation pump protection, cooling systems



FS-02

Package Type	Noryl Flow switch
Range	10 Bar @ 20°C
Operating Temp	-30°C to 85°C
Unique Features	Triac, normally open, close on flow
Calibration / Accuracy	N/A
Dimensions (mm)	106 x 32 x 32
Typical Apps	Mains water control, power shower, central heating systems, circulation pump protection, cooling systems



FS-05

Package Type	Brass Flow switch
Range	10 Bar @ 20°C
Operating Temp	-30°C to 100°C
Unique Features	SPST reed switch, normally open, close on flow
Calibration / Accuracy	N/A
Dimensions (mm)	113 x 53 x 36
Typical Apps	Mains water control, power shower, central heating systems, circulation pump protection, cooling systems



FS-06

Package Type	Brass Flow switch
Range	10 Bar @ 20°C
Operating Temp	-30°C to 100°C
Unique Features	Triac, normally open, close on flow
Calibration / Accuracy	N/A
Dimensions (mm)	113 x 53 x 36
Typical Apps	Mains water control, power shower, central heating systems, circulation pump protection, cooling systems



FS-90/1

Package Type	Copper Flow switch
Range	10 Bar @ 20°C
Operating Temp	-30°C to 85°C
Unique Features	SPST reed switch, normally open, close on flow
Calibration / Accuracy	N/A
Dimensions (mm)	153 x 25 x 15
Typical Apps	Leak detection, flow sensing, mains water control, cooling systems, circulation pump protection

NEW

Position

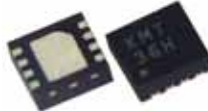
Measurement Specialties is a leading manufacturer of industrial linear and angular position, tilt and fluid level sensors. Both off-the-shelf and custom position sensing solutions are available featuring our core technologies including inductive, potentiometric, magneto-resistive, Hall effect, reed switch, electrolytic and capacitive sensing. Sophisticated designs and state-of-the-art manufacturing techniques provide reliable and cost effective solutions for a broad range of applications. MEAS applications range from automotive, power generation, subsea, hydraulics, medical, HVAC/R, process controls, factory automation, security systems and many other industrial areas, to the most severe environments in Military/Aerospace and Nuclear. Measurement Specialties position sensors are available with analog and digital outputs. Our comprehensive range of signal conditioning instrumentation allows us to meet the specific needs of both OEMs and end users.



Anisotropic Magnetoresistive (or AMR) Sensor Components

Magnetoresistive

Anisotropic magnetoresistive or AMR sensors offer robust non-contact measurement of changes in the angle of the magnetic field as seen by the sensor. This effect allows for the creation of sensors that can detect disturbance in extremely weak fields, as found in traffic detection sensors, to strong field sensors that are used in precision encoders.

						
Package	SOT-223, E-line 4 pin	TDFN 2.5 x 2.5	TDFN 2.5 x 2.5, SO-8	TDFN 2.5 x 2.5	Die, hybrid	TSSOP
Type	Linear low field sensor	Low field switch sensor	Angle sensor	Angle sensor	Linear displacement sensor	Angle sensor
Range	-2 to +2 kA/m magnetic field	1 to 3 kA/m magnetic switching field	180° angle	360° angle	Absolute within pole pitch, else incremental	360° angle
Unique Features	- High sensitivity - Low hysteresis - Linear to uniaxial field strength	- Linearized ratiometric output - Temperature compensated switching point	- High accuracy - High resolution	- High accuracy - High resolution - 360° full turn	- For pole pitch MLS-1000: p=1 mm MLS-2000: p=2 mm MLS-5000: p=5 mm	- Low cost MR encoder for rotational and incremental measurements
Output	Ratiometric with output voltage range 20 mV/V	Ratiometric with output voltage range 10 mV/V	Sine / cosine signals with output voltage range 20 mV/V	Three 120° phase shifted output signals with output voltage range 20 mV/V	Sine / cosine signals with output voltage range 20 mV/V	Voltage 0 - 5 V I ² C Customer specific
Resolution	typ. 0.1% of range	typ. 0.1 kA/m	typ. 0.01° .. 0.1°	typ. 0.01° .. 0.1°	0.01% .. 0.1% of pole pitch	typ. 0.1°
Accuracy	typ. 1% of range	typ. 0.1 kA/m	typ. 0.1° .. 1°	typ. 0.1° .. 1°	0.1% .. 1% of pole pitch	typ. 0.3°
Operating Temp	-40°C to 150°C	-25°C to 85°C	-40°C to 150°C (175°C on request)	-40°C to 150°C	-40°C to 125°C	-25°C to 85°C
Dimensions (mm)	SOT: 6.6 x 7.0 x 1.6 E-line: 16 x 4.2 x 2.4	TDFN: 2.5 x 2.5 x 0.8	TDFN: 2.5 x 2.5 x 0.8 SO-8: 5 x 4 x 1.75	TDFN: 2.5 x 2.5 x 0.8	Die: 5.2 x 1.2 x 0.5 HK: 7.6 x 5.3 x 1.4 HS: 18 x 8 x 2	TSSOP20: 6.5 x 6.4 x 1.2
Typical Apps	Non-destructive material testing, spray arm detection in dish washers, magnetic imaging, brake pedal position	Piston position switch, reed switch replacement	Steering position, flow meters, rpm meters, rotary encoders	Steering position, gauge readings, rotary encoders	Roller conveyors, circular saws, bending machines etc.	Knobs, small robotics, angular / linear position

Angular Position Transducers, Inductive

Absolute

Measurement Specialties offers many different OEM and end-user, non-contact angular position solutions. We have a technology for virtually any automotive, industrial or mil-aero application. Absolute angular technologies include RVDT and RVIT, with outputs and packaging to match most application requirements.

			
Package	PCB for OEM volumes	Servo mount with ball bearing	Servo mount with ball bearing
Resolution	Infinite	Infinite	Infinite
Excitation	DC Voltage	DC symmetrical ±15 VDC	AC operated
Output	DC voltage , DC current , digital	±7.5 VDC	AC voltage
Range	Up to ±75°	±60°	±30° to ±60°
Unique Features	- Absolute position	- Absolute position - Low momentum of inertia	- Absolute position
Operating Temp	-25°C to 85°C	-25°C to 85°C	-55°C to 150°C
Dimensions (mm)	Custom	Aluminum case size 11 (Ø 27 mm)	Aluminum case size 11 (Ø 27 mm)
Typical Apps	Viscometers, valve position, robotics, HVAC vane position, ATM's, joysticks	Dancer arm position, rotary actuator position feedback, throttle lever position feedback, ballvalve position, textile manufacturing equipment, printing presses	Machine tool equipment, rotary actuator feedback, valve positioning, power generation valve position

Many other models available, Please see MEAS web site library.

Angular Position Sensors, Encoders

Measurement Specialties designs and manufactures many absolute and incremental angular encoders based on our Magneto-Resistive and Potentiometric technology. These encoders are designed to OEM specifications or standard off-the-shelf. Outputs are either analog or digital and we also have submersible packages.

Absolute



ED-18



ED-22



R36



RT8, RT9

Package	Medium duty with sleeve or ball bearing	Medium duty with sleeve bearing	Heavy duty shaftless	Aluminum or stainless IP67, IP68
Resolution	Analog 1.4°	Analog 1.4°	Analog 0.7°	±0.15% to ±1.25%
MAX Speed	300RPM (sleeve bearing) 3000RPM (ball bearing)	300RPM	NA	--
Excitation	5 Vdc	5 Vdc	5 Vdc	--
Unique Features	- Low profile - Excellent stability - No optical degradation	- Encapsulated electronics / sealed unit - Highly resistant to vibration - No optical degradation	- Rugged housing - Shaftless - No optical degradation	- Absolute rotary - Designed for heavy industrial applications - CSA, CENELEC certification for hazardous area applications
Output	Voltage or current	Voltage	Voltage	Voltage divider, 0 - 5V, 0 - 10V, 4 - 20 mA, incremental encoder, CANbus, DeviceNET
Range	360°	270°	180°	0 - 0.125 to 0 - 200 turns
Operating Temp	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 90°C
Dimensions (mm)	25.4 x 25.4 x 33.78	Ø 19.05 x 38.1	38.1 x 25.4 x 7.62	Ø 65 x 100 (RT8) Ø 115 x 60 (RT9)
Typical Apps	Feedback sensor or human machine interface device, servomotor position and speed control	Low-cost non-contact HMI potentiometer replacement	Feedback sensor or human machine interface device, rudder control, servomotor position and speed control	Valve control, airport passenger loading bridge, water management, factory automation

Incremental



ED-19



ED-20

Package	Medium duty with sleeve or ball bearing	Medium duty with ball bearing
Resolution/Accuracy	1024, 400, 256 CPR (others on request)	1024, 400, 256 CPR (others on request)
MAX Speed	300 RPM (sleeve bearing) 3000 RPM (ball bearing)	3000 RPM
Excitation	5 Vdc	5 Vdc (NPN and LVD) 12 - 32 Vdc (HVD)
Unique Features	- Sleeve or ball bearing - No optical degradation	- Resistant to contamination - Metallic threaded bushing mounting - Custom housings, shafts, connectors available - No optical degradation
Output	Quadrature (TTL level, open collector)	Quadrature (NPN, LVD and HVD)
Range	360°	360°
Operating Temp	-40°C to 85°C	-40°C to 85°C
Dimensions (mm)	25.4 x 25.4 x 33.78	Ø 31.75 x 33.78
Typical Apps	Feedback sensor or human machine interface device, servo/stepper motor position and speed control	Feedback sensor or human machine interface device, servo/stepper motor position and speed control

Many other models available. Please see MEAS website library.

Tilt Sensors

Single Axis

Measurement Specialties offers both capacitive and electrolytic tilt sensing technology in rugged die-cast aluminum or ceramic packaging. These products are available in ranges up to ± 60 degrees and are provided with many analog as well as digital I/O options. Linearized and temp-compensated outputs are available. OEM and end-user packaging is available as well as raw sensors for high volume OEM applications.

						
	E-Series	AccuStar®	APS System	G-Series	AccuStar® IP66	IT9000
Package	Ceramic housing	LCP housing	Plastic housing	AL housing IP 67	AL housing IP 66	Aluminum or stainless
Type	Inclination sensor module	Inclination sensor module	Inclination system	Inclinometer	Inclinometer	Inclinometer
Range	$\pm 5^\circ$, $\pm 15^\circ$	$\pm 45^\circ$ to $\pm 60^\circ$	$\pm 20^\circ$, $\pm 45^\circ$, $\pm 90^\circ$	$\pm 10^\circ$	$\pm 3^\circ$ to $\pm 45^\circ$	$\pm 45^\circ$ to $\pm 240^\circ$
Output	Voltage	Voltage	Analogue / digital	Switch	Current	Voltage divider, 4 - 20 mA
Unique Features	- Easy to handle - Minimal temperature drift - Good long term stability	- Compact - Low power - Vertical and horizontal mount	- Stand alone system - Separate system and sensor	- Programmable - EMC standard - High switch accuracy	- EMI + RFI rated - CE pending - Water tight enclosure	- Rugged industrial design, IP67 / 68 - Submersible - Designed for brutal environments - CSA, CENELEC certification for hazardous area applications
Accuracy	$\pm 0.2^\circ$ to $\pm 0.5^\circ$	0° to 10° $\pm 0.1\%$ accuracy 10° to 45° $\pm 1\%$ of reading	0° to 10° $\pm 0.1\%$ accuracy 10° to 45° $\pm 1\%$ of reading	$\pm 0.25^\circ$	0° to 10° $\pm 0.1\%$ linearity 10° to 45° $\pm 1\%$ linearity	$\pm 0.04\%$ to $\pm 0.25\%$
Operating Temp	-25°C to 85°C	-30°C to 65°C	-25°C to 65°C	-25°C to 85°C	-25°C to 60°C	-34°C to 90°C
Dimensions (mm)	29 x 17 x 16.5	65.91 x 51.56 x 30.5	127.5 x 88 x 32.2	80 x 75 x 57.5	98.04 x 63 x 35.05	Ø 130 x 100
Typical Apps	Road construction, building monitoring, weighing systems, mobile and stationary cranes, platform leveling	Wheel alignment, construction, equipment, antenna positioning, robotics, crane / boom angle	Tower crane safety, RV and mobile trailer leveling, water and oil well drilling rigs, mining equipment	Lift platforms, building device control, train inclination monitoring, position switch	Tower crane safety, RV and mobile trailer leveling, water and oil well drilling rigs, mining equipment	Waste water control, tainter gates, draw bridges, heavy industrial applications

Dual Axis

All of the same features of the Measurement Specialties' single axis sensors and modules in a dual axis package.

				
	DPL/DPN-Series	DOG2-Series	DPG-Series	D-Series
Package	PCB board	Plastic PA 6.6 housing, IP 67	AL housing IP 67	AL housing IP 67
Type	Inclination board module	Inclinometer	Inclinometer	Inclinometer
Range	$\pm 2^\circ$ to $\pm 30^\circ$	$\pm 25^\circ$, $\pm 45^\circ$, $\pm 90^\circ$	$\pm 5^\circ$ to $\pm 30^\circ$	$\pm 5^\circ$ to $\pm 30^\circ$
Output	Voltage / RS 232 / SPI	Voltage	RS232 / Voltage	RS232 / Voltage / Current / Switch / PWM / CAN open
Unique Features	- High resolution - Minimal temperature drift - User configurable	- Plug & play - Wide measurement range - Cost-efficient - Cable out w. Tyco Ampseal 1.5 4pos connector - Fast MEMS sensor	- CE approved - Rugged housing - Easy to use - User configurable	- High accuracy - Rugged housing - Programmable - CE approved
Accuracy	$\pm 0.05^\circ$ to $\pm 0.8^\circ$	$\leq \pm 0.5^\circ$ (full temp. range)	$\pm 0.3^\circ$	$\pm 0.04^\circ$ to $\pm 0.8^\circ$
Operating Temp	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Dimensions (mm)	45 x 45 x 14	70.5 x 45 x 15	84 x 70 x 30.2	84 x 70 x 46
Typical Apps	Laser leveling, weighing systems, mobile and stationary cranes, hydraulic leveling, building monitoring, wind power	Off-road vehicle, fork lift, truck leveling, man lift, harvester, farm machine, tip over protection, solar panel control	Platform leveling, road construction machines, tunnel drilling, mobile leveling	Drilling machines, mobile and stationary cranes, wind power, antenna / radar leveling

Proximity Magnet

Proximity Magnet for Use with Proximity Sensors

NEW



PM101

Package	Glass filled nylon 6.6
Type	Proximity magnet
Unique Features	Housed magnet
Operating Temp	-30°C to 105°C
Dimensions (mm)	29 x 7 x 20
Typical Apps	Door interlocks, hook switches, security systems, safety interlocks, position indication



PM50

Package	Glass filled nylon 6.6
Type	Proximity magnet
Unique Features	Housed magnet
Operating Temp	-30°C to 70°C
Dimensions (mm)	Ø 6 x 32
Typical Apps	Door interlocks, hook switches, security systems, safety interlocks, position indication



PM81

Package	Nylon 6.6
Type	Proximity magnet
Unique Features	Housed magnet
Operating Temp	-30°C to 120°C
Dimensions (mm)	Ø 10 x 38
Typical Apps	Door interlocks, hook switches, security systems, safety interlocks, position indication



PM83

Package	Stainless steel
Type	Proximity magnet
Unique Features	Housed magnet
Operating Temp	-30°C to 120°C
Dimensions (mm)	Ø 12 x 32
Typical Apps	Door interlocks, hook switches, security systems, safety interlocks, position indication

Proximity Sensors

Proximity Sensing When Used with a Proximity Magnet



PS2011AB

Package	Glass filled nylon 6.6
Type	Proximity sensor
Unique Features	SPST reed switch, normally open
Operating Temp	-30°C to 105°C
Dimensions (mm)	29 x 7 x 20
Typical Apps	Door interlocks, hook switches, security systems, safety interlocks, position indication



PS2021AB

Package	Glass filled nylon 6.6
Type	Proximity sensor
Unique Features	SPST reed switch, normally closed
Operating Temp	-30°C to 105°C
Dimensions (mm)	29 x 7 x 20
Typical Apps	Door interlocks, hook switches, security systems, safety interlocks, position indication



PS2031AB

Package	Glass filled nylon 6.6
Type	Proximity sensor
Unique Features	SPDT reed switch
Operating Temp	-30°C to 105°C
Dimensions (mm)	29 x 7 x 20
Typical Apps	Door interlocks, hook switches, security systems, safety interlocks, position indication



PS501

Package	Glass filled nylon 6.6
Type	Proximity sensor
Unique Features	SPST reed switch, normally open
Operating Temp	-30°C to 130°C
Dimensions (mm)	Ø 6 x 32
Typical Apps	Door interlocks, hook switches, security systems, safety interlocks, position indication



PS801

Package	Stainless steel
Type	Proximity sensor
Unique Features	SPST reed switch, normally open
Operating Temp	-30°C to 120°C
Dimensions (mm)	Ø 12 x 65
Typical Apps	Door interlocks, hook switches, security systems, safety interlocks, position indication



PS811

Package	Nylon 6.6
Type	Proximity sensor
Unique Features	SPST reed switch, normally open
Operating Temp	-30°C to 110°C
Dimensions (mm)	Ø 10 x 38
Typical Apps	Door interlocks, hook switches, security systems, safety interlocks, position indication



PS831

Package	Stainless steel
Type	Proximity sensor
Unique Features	SPST reed switch, normally open
Operating Temp	-30°C to 130°C
Dimensions (mm)	Ø 12 x 32
Typical Apps	Door interlocks, hook switches, security systems, safety interlocks, position indication

Linear Position Transducers

NEW

Cable Extension Transducers

Commonly called stringpots or draw-wire sensors, cable extension transducers provide a linear position feedback signal for both short and long stroke measurement ranges. These sensors have been designed to provide the utmost in flexibility, long life and high accuracy. The benefits of string pots are that they are easy to install, don't require precise alignment and the retractable spring loaded measuring eliminates the need for the extra space required by most rod-type position sensors.



M150, MTA

Range 0 - 1.5 to 0 - 5 inches
Output Voltage divider

Environment / IP Rating IP50

Enclosure Aluminum

Accuracy $\pm 0.4\%$ to $\pm 1\%$

Unique Features

- M150, world's smallest stringpot
- Designed for space-critical and testing applications

Operating Temp -40°C to 85°C (M150)
-55°C to 100°C (MTA)

Dimensions (mm) 19 x 19 x 10 (M150)

Typical Apps Aerospace, automotive instrumentation, crash testing, auto and motorcycle racing



MT2, MT3

Range 0 - 3 to 0 - 30 inches
Output Voltage divider, incremental encoder

Environment / IP Rating IP50, IP67 (MT3A)

Enclosure Aluminum and polycarbonate

Accuracy $\pm 0.25\%$ to $\pm 1.1\%$

Unique Features

- Designed for test applications
- Dual-axis measuring cable alignment
- Tracks high-acceleration linear position up to 136g's
- High-frequency response
- GAM EG 13 certification

Operating Temp -55°C to 125°C

Dimensions (mm) 55 x 45 x 55

Typical Apps Automotive crash testing, aerospace and flight testing



SM, SP

Range 0 - 2.5 to 0 - 50 inches
Output Voltage divider, 0 - 10 Vdc, 4 - 20 mA

Environment / IP Rating IP50

Enclosure Polycarbonate with stainless steel bracket

Accuracy $\pm 0.25\%$ to $\pm 1\%$

Unique Features

- In stock
- Compact design
- Low cost, high value stringpot
- Versatile stainless steel mounting bracket
- Free-release tolerant
- Custom configurations available for OEM customers

Operating Temp -18°C to 70°C

Dimensions (mm) 43 x 45 x 68

Typical Apps Factory automation, light industrial, seismic testing, racing instrumentation, medical imaging systems, fume hood position



SG, SR

Range 0 - 80 to 0 - 175 inches
Output Voltage divider, 0 - 5 Vdc, 0 - 10 Vdc, 4 - 20 mA, incremental encoder, CANbus

Environment / IP Rating IP67

Enclosure Polycarbonate with stainless steel bracket

Accuracy $\pm 0.35\%$ to $\pm 0.5\%$

Unique Features

- In stock
- Low cost, high value stringpot
- Versatile stainless steel mounting bracket
- Simple one-button user scalable stroke range (SR)
- Custom configurations available for OEM customers

Operating Temp -40°C to 85°C

Dimensions (mm) 100 x 120 x 200

Typical Apps Outdoor mobile construction equipment, outrigger positioning, hydraulic lifts, water and power controls



Z115, Z250

Range 0 - 100 to 0 - 2400 mm
Output Voltage divider

Environment / IP Rating IP50

Enclosure Aluminum

Accuracy $\pm 0.15\%$ to $\pm 0.25\%$

Unique Features

- Customer specific for OEM applications
- Short design time
- Fast turnaround
- Cost effective
- Contact factory for more information

Operating Temp Design specific

Dimensions (mm) Design specific

Typical Apps Vehicle lift systems, medical imaging systems including x-ray, mammography, CT's and oncology devices, fume hood and HVAC controls



PTX, PT101

Range 0 - 2 to 0 - 100 inches
Output Voltage divider, 0 - 5 Vdc, 0 - 10 Vdc, 4 - 20 mA, incremental encoder, velocity output (DV301)

IP Rating IP50

Enclosure Aluminum

Accuracy $\pm 0.04\%$ to $\pm 0.25\%$

Unique Features

- Original classic design
- High precision
- Proven track record

Operating Temp -40°C to 90°C

Dimensions (mm) Model and range specific

Typical Apps Aerospace testing, architectural and structural testing, factory automation



PT1, PT5

Range 0 - 2 to 0 - 250 inches
Output Voltage divider, 0 - 5 Vdc, 0 - 10 Vdc, 4 - 20 mA, incremental encoder, CANbus, DeviceNET, RS-232

IP Rating IP65, IP67 (PT5)

Enclosure Aluminum and abs plastic (PT1)

Accuracy $\pm 0.04\%$ to $\pm 0.25\%$

Unique Features

- Designed for most factory environments
- Industry standard output signals
- User serviceable
- Compact design (PT1)

Operating Temp -40°C to 90°C

Dimensions (mm) 85 x 100 x 70 (PT1)
100 x 175 x 80 (PT5)

Typical Apps Factory automation, industrial, die casting, injection molding



PT8000

Range 0 - 2 to 0 - 60 inches
Output Voltage divider, 0 - 5 Vdc, 0 - 10 Vdc, 4 - 20 mA, incremental / absolute encoder, CANbus, DeviceNET, RS-232

IP Rating IP67, IP68

Enclosure Aluminum or stainless

Accuracy $\pm 0.04\%$ to $\pm 0.25\%$

Unique Features

- Heavy duty, submersible
- Designed for extreme industrial and marine environments
- CSA, CENELEC certification for hazardous area applications
- High accuracy, high acceleration
- Free-release proof with VLS option
- M12 and Deutsch connector options

Operating Temp -40°C to 90°C

Dimensions (mm) 90 x 140 x 135

Typical Apps Steel mills, lumber and paper mills, factory automation, die-casting, injection molding, mobile construction and mining



PT9000

Range 0 - 75 to 0 - 1700 inches
Output Voltage divider, 0 - 5 Vdc, 0 - 10 Vdc, 4 - 20 mA, incremental / absolute encoder, CANbus, DeviceNET, RS-232

IP Rating IP67, IP68

Enclosure Aluminum or stainless

Accuracy $\pm 0.04\%$ to $\pm 0.25\%$

Unique Features

- Heavy duty, submersible
- Proven workhorse for long stroke applications
- Designed for extreme industrial and marine environments
- CSA, CENELEC certification for hazardous area applications
- Free-release proof with VLS option
- M12 and Deutsch connector options

Operating Temp -40°C to 90°C

Dimensions (mm) 200 x 135 x 125

Typical Apps Mobile hydraulic boom position, water resource management, mining and tunnel boring equipment, telescoping mechanism position, theatre stage control

Linear Position Transducers

Absolute

Linear absolute technologies include LVDT's for OEM and end-user applications and LCIT's for low-cost OEM requirements. All of these sensors feature friction-free, non-contact inductive magnetic coupling for extremely long cycle life and virtually infinite resolution. Various off-the-shelf and custom packaging options are available for the most demanding application requirements.

						
	HR	M12	HC	XS-C	DC-SE	XS-D
Package	AISI-400 Series Stainless steel	AISI-304 Series Stainless steel	AISI-400 Series Stainless steel	AISI-304 Series Stainless steel	AISI-400 Series Stainless steel	AISI-400 Series Stainless steel
Linearity	±0.25% of range	±0.25% of range	±0.25% of range	±0.25% of range	±0.25% of range	±2% of range
Excitation	AC operated	AC operated	AC and DC operated versions	AC operated	8.5 to 28 VDC	AC operated
Output	AC voltage	AC voltage	AC or DC voltage, 4 - 20 mA loop or RS-485	AC voltage	0 - 5 VDC (4 wire) 1 - 6 VDC (3 wire)	AC voltage
Range	±0.05 to ±10 inches	±10 to ±100 mm	±0.05 to ±10 inches	±0.25, ±0.5 & ±1 inch	0 - 0.1 to 0 - 6 inches	±1 to ±10 inches
Unique Features	- Large bore to core clearance - Broad range of excitation frequencies - Many options - Mild radiation resistance option	- Metric series - High stroke to length ratio - Constant sum of secondaries - Excellent temperature coefficient	- Hermetically sealed - Welded connector - Double shielding - Intrinsically safe version - CE mark for DC versions	- High pressure - Bulkhead mounting - Hermetically sealed welded assembly	- CE mark - Low current consumption (6 mA typical) - Synchronous demodulation - Shielded cable	- Very high stroke to body length ratio
Operating Temp	-55°C to 150°C (220°C optional)	-55°C to 150°C (220°C optional)	-55°C to 150°C (AC); 0°C to 70°C (DC)	-55°C to 150°C	-25°C to 85°C	-55°C to 150°C
Diameter (mm)	20.6	12	19	19	19	20.6
Typical Apps	General industrial	Hydraulic spool valve position feedback, flight simulators, aircraft flight control feedback	Harsh environments, submersible applications, process controls, valve position feedback	Hydraulic actuators, other pressurized vessels	Positioning sensing feedback, battery operated systems, test labs, ram guide, platen position	Where sensor installation length is restricted, ideal replacement for linear potentiometers

Many other models available. Please see MEAS website library.

Dimensional Gauging Products

Gage heads are spring loaded or air actuated position sensors (LVDTs) with contact tips. Our precision gauge heads are classified into several categories based on size, repeatability, accuracy and input/output.

					
	LBB, spring-extend	LBB air-extend	PCA 375	GC	Ultimate-Precision Digital LBB
Linearity	±0.2% of range	±0.2% of range	±0.5% of range	±0.25% (Voltage) to ±0.5% (4 - 20 mA) of range	Accuracy ±0.2%
Excitation	AC operated	AC operated	AC operated	AC or DC voltage	5 VDC USB (bus or external)
Output	AC voltage	AC voltage	AC voltage	AC or DC voltage, RS-485, or 4 - 20 mA loop	RS485 Orbit® compatible; USB
Range	±0.02 to ±0.20 inches	±0.04 & ±0.1 inches	±0.02 to ±1 inches	±0.05 to ±2 inches	1, 2, 5 and 10 mm
Unique Features	- 0.000004 inch (0.1 µm) repeatability - Removable tungsten carbide contact tip - Double shielded LVDT - Repairable	- 0.000004 inch (0.1µm) repeatability - Removable tungsten carbide contact tip - Double shielded LVDT - Repairable	- Longer strokes - IP65 cable exit - Accepts industry standard contact tips - Heavy duty return spring	- Hermetically sealed - Welded MS connector (MIL-C-5015) - CE mark for DC Versions - Special tips available - Air extend spring retract available	- Plug-and-play compatible with Orbit® bus - 14-bit resolution - COM libraries provided - CE mark - USB adapter and power supply available
Operating Temp	-40°C to 70°C	-40°C to 70°C	-20°C to 70°C	-55°C to 150°C (AC); 0°C to 70°C (DC)	0°C to 60°C
Diameter (mm)	8 or 9.5	8 or 9.5	9.5	19 mm body, 1/2 - 20 threads	Stackable gage system
Typical Apps	Process standards, manufacturing on-line inspection, robotics, replaces dial indicators in manual measurement systems	Process standards, manufacturing on-line inspection, robotics, replaces dial indicators in manual measurement systems	High density gaging fixtures, resistance weld verification, pressing applications, X-Y stage position feedback, rough casting inspection	Harsh environments, environments requiring hermetic seal, high temperatures (150°C for AC units)	Multi-channel electronic dimensional gauging, precision dimensional measurement, optics inspection systems, SPC data collection, hand tools

Many other models available. Please see MEAS web site library. Orbit® is a registered trademark of Solartron Metrology.

Linear Position Sensors

Incremental

Linear incremental encoders provide rugged low cost, non-contacting position feedback for demanding applications. This technology is not affected by dirt, oil, dust or other contaminants. It is also not affected by changes in ambient lighting conditions.



ED32i

Package	IP67 aluminum
Range	Magnetic scale, 5mm pole pitch, typically up to 100 m absolute version up to 100 mm range on request
Excitation	5 VDC
Output	5 V TTL ABZ differential quadrature; RS-485
Resolution	Resolution: $\geq 10 \mu\text{m}$; field programmable
Maximum Speed	4 m/s
Unique Features	- Contactless incremental measurement - Very high accuracy, programmable resolution - High speed up to 4 m/s - Error detection, missing scale function - Adapter plate for easy mounting
Operating Temp	-25°C to 85°C
Dimensions (mm)	60 x 20 x 10
Typical Apps	Linear displacement measurement in industrial and medical applications

Linear Potentiometers



MLP, CLP

Aluminum body, steel rod, IP65 / 67
0 - 0.5 to 0 - 11.5 inches
Up to 40 VDC max.
Voltage divider
$\pm 0.1\%$ to 0.5%
10 m/s
- Extended temperature range, miniature design - First choice for auto racing applications - Perfect for high cycle applications
-40°C to 90°C
diameter / cross section: $\varnothing 9.5 \text{ mm}$ (MLP), 15 mm x 15 mm (CLP)
Vehicle testing, autosport instrumentation, structural and architectural testing and robotics.

LVDT / RVDT Instrumentation

Our OEM and end-user oriented LVDT/RVDT instrumentation signal conditioners and read-out devices are specifically designed to be compatible with all our Linear and Angular AC inductive sensors. These instruments provide everything needed to interface with our AC devices to control or data acquisition systems.



LVM-110 LIM-420

Package	Open circuit board
Supply	DC voltage
Output	DC voltage or current
Operating Temp	0°C to 55°C
Unique Features	- Master / slave for multi-up applications - Dip switch selectable excitation frequencies - Plug-in PCB or wire termination - Small form factor
Dimensions (mm)	63 x 56 x 21
Typical Apps	OEM applications



LDM-1000

DIN rail mount
10 to 30 VDC
DC voltage and current
-25°C to 85°C
- Operates with 4, 5 & 6 wire LVDT / RVDTs - Adjustable zero, span and phase - Status LEDs - CE mark
115 x 99 x 23
Automotive test track instrumentation, gas and steam turbine controls, factory automation



ATA-2001

1/8 DIN panel mount
115 and 220 VAC, 50 - 400 Hz
DC voltage and current
-40°C to 85°C
- Push button programmable - Splash proof front panel - LED status lights - Mounting hardware included - CE mark
267 x 99 x 49
Precision metrology labs, power generation valve position monitoring



PML 1000

1/8 DIN panel mount
90 to 265 VAC, 50 - 60 Hz or 24 VDC
DC voltage and current (RS-485 optional)
10°C to 55°C
- 5 digit LED display - Auto-calibration - Programmable - Splash proof front panel - Mounting hardware included - CE mark
173 x 97 x 49
Remote monitoring stations, measurement test stands, process monitoring



MP 2000

1/4 DIN panel mount
100 to 240 VAC, 47 - 63 Hz
DC voltage and RS-232
0°C to 55°C
- Programmable set point controller - Dual channel with math functions - Digital I/O - Large LCD display - Splash proof front panel
178 x 92 x 92
LVDT based weighing systems, pass / fail parts sorting, quality inspection

Measurement Specialties' range of liquid level products addresses the sensing requirements of the construction, off-road, automotive industries. Our solutions include level sensors for power steering, coolant, windscreen wash, fuel and oil. We pride ourselves on our experience in serving the heavy duty vehicle markets: Truck and Bus, Emergency, Military, Recreational, Luxury and Coach.

We also offer level sensors for use in demanding applications such as storage and collection tanks, vending machines, showers for the disabled, heat exchangers, washing machines, central heating systems and boilers.

To meet the requirements of the food and beverage industry, MEAS offers a range of standard products which provide cost-effective solutions. We also provide thousands of sensors annually to marine engine manufacturers.

For complex OEM applications, we work closely with customers to ensure the appropriate sensing solution is delivered.



Liquid Level Sensors

High or Low Level Sensing

NEW



LS304-31

Package	Glass filled nylon 6.6
Type	Level sensor
Unique Features	SPDT reed switch
Max. Pressure	2.0 bar
Operating Temp	-30°C to 130°C
Dimensions (mm)	103 x 29 x 29
Typical Apps	Chemical high or low level, diesel fuel, fuel low level, alcohols, low oil detection



LS304-51N

Package	Glass filled nylon 6.6
Type	Level sensor
Unique Features	SPDT reed switch
Max. Pressure	4.7 bar
Operating Temp	-30°C to 130°C
Dimensions (mm)	88 x 27 x 27
Typical Apps	Chemical high or low level, diesel fuel, fuel low level, alcohols, low oil detection



LS309-31

Package	Glass filled nylon 6.6
Type	Level sensor
Unique Features	SPST reed switch
Max. Pressure	2.0 bar
Operating Temp	-30°C to 130°C
Dimensions (mm)	103 x 29 x 29
Typical Apps	Chemical high or low level, diesel fuel, fuel low level, alcohols, low oil detection



LS309-51N

Package	Glass filled nylon 6.6
Type	Level sensor
Unique Features	SPST reed switch
Max. Pressure	4.7 bar
Operating Temp	-30°C to 130°C
Dimensions (mm)	88 x 27 x 27
Typical Apps	Chemical high or low level, diesel fuel, fuel low level, alcohols, low oil detection



LS504-31

Package	Glass filled PPS
Type	Level sensor
Unique Features	SPDT reed switch
Max. Pressure	2.0 bar
Operating Temp	-30°C to 110°C
Dimensions (mm)	103 x 29 x 29
Typical Apps	Coolant level indication, water high or low level, boiler heating element protection, drinking water level, boiling water



LS504-51

Package	Glass filled PPS
Type	Level sensor
Unique Features	SPDT reed switch
Max. Pressure	4.7 bar
Operating Temp	-30°C to 110°C
Dimensions (mm)	88 x 27 x 27
Typical Apps	Coolant level indication, water high or low level, boiler heating element protection, drinking water level, boiling water



LS509-31

Package	Glass filled PPS
Type	Level sensor
Unique Features	SPST reed switch
Max. Pressure	2.0 bar
Operating Temp	-30°C to 110°C
Dimensions (mm)	103 x 29 x 29
Typical Apps	Coolant level indication, water high or low level, boiler heating element protection, drinking water level, boiling water



LS509-51

Package	Glass filled PPS
Type	Level sensor
Unique Features	SPST reed switch
Max. Pressure	4.7 bar
Operating Temp	-30°C to 110°C
Dimensions (mm)	88 x 27 x 27
Typical Apps	Coolant level indication, water high or low level, boiler heating element protection, drinking water level, boiling water



LS804-31

Package	Glass filled polypropylene
Type	Level sensor
Unique Features	SPDT reed switch
Max. Pressure	2.0 bar
Operating Temp	-30°C to 105°C
Dimensions (mm)	103 x 29 x 29
Typical Apps	Continuous 80°C in water, water high or low level, condensate level alarm, drinking water level, cooling systems



LS804-51

Package	Glass filled polypropylene
Type	Level sensor
Unique Features	SPDT reed switch
Max. Pressure	4.7 bar
Operating Temp	-30°C to 105°C
Dimensions (mm)	88 x 27 x 27
Typical Apps	Continuous 80°C in water, water high or low level, condensate level alarm, drinking water level, cooling systems



LS809-31

Package	Glass filled polypropylene
Type	Level sensor
Unique Features	SPST reed switch
Max. Pressure	2.0 bar
Operating Temp	-30°C to 105°C
Dimensions (mm)	103 x 29 x 29
Typical Apps	Continuous 80°C in water, water high or low level, condensate level alarm, drinking water level, cooling systems



LS809-51

Package	Glass filled polypropylene
Type	Level sensor
Unique Features	SPST reed switch
Max. Pressure	4.7 bar
Operating Temp	-30°C to 105°C
Dimensions (mm)	88 x 27 x 27
Typical Apps	Continuous 80°C in water, water high or low level, condensate level alarm, drinking water level, cooling systems

Measurement Specialties' range of level sensors is now expanded to include sensors using Ultrasonic Technology.

Using ultrasonic technology opens a wider variety of applications where liquid level needs to be measured despite transparency, viscosity, color or dielectric. Our ultrasonic sensors are deployed in numerous applications including, air bubble detection in as small as 1mm tube, contact and non-contact and high accuracy for container fill verification through air and liquid, 316L stainless steel sensor material construction for pump protection and non-invasive solutions for pipeline fluid/type detection.

To meet the requirements of our customer's level applications, MEAS offers a range of standard products which provide a system with no moving parts, no adjustments, no maintenance, robust and cost-effective reliable level sensing solution. With ranges in temperature from -240°C to 288°C , pressures to 1000 psi, various input/output configurations and multiple sensing points. MEAS also provide sensors annually for custom complex OEM applications and work closely with our customers to insure the appropriate sensing solution is delivered.

Please visit our website or call us for the special point level and custom sensors.

Ultrasonic Sensors

Standard Contact Point Level



LL-01

Type

Gap

Unique Features

- All 316L SS
- Integral electronics
- Miniature threads
- Single machined
- No adjustment for viscosity, density

Input

6 - 24VDC

Output

1/2A contact

Pressure

250 psi

Temperature

100°C

Actuation point

0.25"

Process Connection

1/4"NPT & 1/2"NPT

Cable

12"

Approvals

CE

Typical Apps

Medical waste tanks, histology processors, compressors, chillers, coolant reservoirs



LL-10

Type

- All 316L SS
- Integral electronics
- No adjustment for viscosity, density

9 - 24VDC

1A SPDT

1000 psi

100°C

2.25" standard

3/4"NPT

12"

CE

Hydraulic reservoirs, storage tanks, pipe lines, sewage systems



LL-100

Type

- All 316L SS
- Integral electronics
- No adjustment for viscosity, density

DC and AC options

10A DPDT or analog

1000 psi

150°C

Custom

3/4"NPT

Terminal block

FM, CSA, CE

Industrial tanks, pump protection, hydraulic supply lines, storage tanks



LL-101

Type

- High / normal fail-safe
- Integral electronics
- Plastic for chemical compatibility
- No adjustment for viscosity, density
- Demand self-test

DC and AC options

10A DPDT

1000 psi

150°C

Custom

3/4"NPT

Terminal block

FM, CSA, CE

Food processing tank, chemical tanks, oil & fuel level, liquid pharmaceuticals



LL-104

Type

- Integral electronics
- Plastic for chemical compatibility
- No adjustment for viscosity, density

DC and AC options

Analog (4 - 20 mA)

1000 psi

150°C

Custom

3/4"NPT

Terminal block

FM, CSA, CE

Unstable chemicals, oil & fuel level, flammable liquids

NEW

Air-Bubble and Non-Invasive Point Level



AD-101



SL-630



SE-600



SL-611

Type	Non-invasive	Non-invasive	Non-invasive	Non-invasive
Unique Features	- Bubble detection from 1mm tube - Temperature option - Occlusion option - Fluid differentiation - 3.3 & 5 V input option	- Stick on dry contact - Flange mount - Point level detection	- Metal tubing - Up to 0.75" thick - Air-in-line detection	- Metal tubing - Multiple points - Air-in-line detection
Input	6 - 24 VDC standard	6 - 24 VDC	DC and AC options	DC and AC options
Output	Open collector	Open collector	5 A SPDT	1/2 A contact
Pressure	--	--	--	--
Temperature	--	70°C	82°C	82°C
Actuation point	--	Variable	Variable	Variable
Process Connection	--	Reusable sensor Disposable tape	Clamp-on	Clamp-on
Cable	12"	12"	10'	10'
Approvals	CE	CE	--	--
Typical Apps	Infusion pumps, dialysis machines, apheresis, auto-transfusion	Chromatography, chemical analyzer, hemodialysis, reagent vessels	Process control lines, alarm in sight glass, heating / HVAC, factory automation	Semiconductor lines, metal tubing apps, chemical flow lines, HVAC systems

Continuous Level



2 Wire



4 Wire



LL-1101



SL-700



ML Series

Type	Continuous transmitter through air	Continuous transmitter through air	Continuous transmitter through air	Continuous transmitter through liquid	Continuous transmitter through air
Unique Features	- Non-contact - Integral electronics - Explosion proof - 316 SS or Tefzel sensor material - BCD switch program	- Non-contact - Integral electronics - Explosion proof - 316 SS or Tefzel sensor material - BCD switch program	- Non-contact - Remotely mounted - 316 SS or Tefzel sensor material - Push button program	- Contact / non-invasive - Remotely mounted - 316 SS sensor - RS-232 program	- Non-contact - Remotely mounted - 316 SS or Epoxy sensor material - RS-232 program
Input	18 - 30 VDC	24 VDC	DC and AC options	24 VDC	24 VDC
Output	Loop power, 4 - 20 mA	4 - 20 mA isolated	Analog, display, relay setpoints	RS-232, analog, relay setpoints	RS-232, analog, relay setpoints
Pressure	100 psi	100 psi	100 psi	250 psi	Atmosphere
Temperature	82°C	82°C	82°C	100°C	40°C
Sensing Range	6" to 120" - 3/4"NPT 12" to 300" - 2" NPT	6" to 120" - 3/4"NPT 12" to 300" - 2" NPT	6" to 120" - 3/4"NPT 12" to 360" - 2" NPT	Range up to 36"	Range up to 6"
Process Connection	3/4"NPT, 2"NPT	3/4"NPT, 2"NPT	3/4"NPT, 2"NPT	--	--
Accuracy	1/4% of full scale	1/4% of full scale	1/4% of full scale	± 0.005"	± 0.0005"
Elect Connection	Terminal block	Terminal block	Terminal block	Terminal block	Terminal block
Approvals	CSA, CE	CSA, CE	CE	--	--
Typical Apps	Liquid level monitoring, unstable chemicals, fuel storage tanks, flammable liquids	Food processing, pharmaceutical tanks, high purity fluid tanks, chemical storage	Large storage tanks, factory automation, process control tanks, power plants	Semiconductor tanks, ampoules & bubblers, high purity fluids, level in vacuum	Microplate well level, test tubes & vials, bottle fill level, surface flaw detection

Measurement Specialties brings more than twenty years experience in the design and manufacture of accelerometers and vibration sensors based on our proprietary Micro-ElectroMechanical System (MEMS), bonded gage and piezoelectric ceramic/film technologies.

Voltage mode piezoelectric is the most popular accelerometer design due to its high level output and its wide bandwidth. We offer voltage mode accelerometers in the traditional 3-wire or 2-wire (IEPE) configurations. Charge mode piezoelectric accelerometers are designed for measuring shock and vibration in high temperature environments. In addition to its high temperature operating capability when used with a high quality charge amplifier, a charge mode accelerometer offers its users unmatched dynamic range scalability. To measure motion (velocity, displacement) accurately, an accelerometer with DC response is required. Incorporating state-of-the-art MEMS technologies and the latest analog and digital ASICs, Measurement Specialties' DC accelerometers offer the best-in-class performance and exceptional value.



MEMS DC Accelerometers

CE, RoHS, EAR99 Compliant

Embedded

Uses patented piezoresistive silicon die technology with high over-range protection and broad frequency response.

						
3022		3052	3031	3038	EGHS-M	3255A
Package	Pins or pads	Pins or pads	SMD	SMD	SMD	SMD
Type	Board level	Board level	Board level	Board level	Board level	Board level
F.S. Range (g)	±2, 5, 10, 20, 50, 100, 200	±2, 5, 10, 20, 50, 100	±50, 100	±50, 100, 200, 500, 2000, 6000	±30K, 60K	±25, 50, 100, 250, 500
Unique Features	- mV output - Gas damping - Pin or pad option	- Temperature compensated - Gas damping - Pin or pad option	- Miniature DC response - Gas damping - Low power consumption	- Hermetically sealed - High over-range protection - Gas damping	- Low power - Hermetically sealed - >200 kHz resonant frequency	- Self test enabled - Gas damping - Bi-directional mounting
Accuracy	±0.5% Non-linearity	±0.5% Non-linearity	±0.5% Non-linearity	±0.5% Non-linearity	±2.0% Non-linearity	±1.0% Non-linearity
Operating Temp	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C	-54°C to 125°C	-55°C to 125°C	-40°C to 125°C
Dimensions (mm)	22.86 x 15.24 x 5.33	22.86 x 15.24 x 5.33	7.62 x 7.62 x 3.18	7.62 x 7.62 x 3.3	6.35 x 6.35 x 1.78	13.46 x 7.62 x 3.81
Typical Apps	Vibration / shock monitoring, tilt applications, motion control, impact testing	Vibration / shock monitoring, tilt applications, motion control, impact testing	Vibration / shock monitoring systems, motion control, impact testing	Vibration / shock monitoring, embedded systems, shock testing, safe and arm	Impact and shock testing, fuzing, safe and arming	Vibration / shock monitoring, aerospace testing, impact testing, transportation

Piezoelectric Accelerometers

Embedded Single Axis

Uses piezo-electric technology with broad frequency response for harsh applications.

					
805/805M1		808/808M1	LDT Family	832/832M1	834/834M1
Package	TO - 5	TO - 8	Piezo Film elements with or without mass and pins	SMD	SMD
Type	Adhesive (Stud mount option)	Adhesive (Stud mount option)	Cantilever beam with vertical or horizontal pins	Board mount	Board mount
F.S. Range (g)	±50, 500 / ±20, 200	±10, 50 / ±4, 20	±10 (typical)	±25, 50, 100, 200, 500	±2000, 6000
Unique Features	- Hermetically sealed - Case grounded design - Bandwidth to 12 kHz	- Hermetically sealed - Case grounded design - Bandwidth to 8 kHz	- Very low cost - High sensitivity (1V/g) - Ultra-low power (self generating)	- Low cost - Hermetically sealed - Piezo-ceramic	- Low cost - Hermetically sealed - Piezo-ceramic
Accuracy	±1% Non-linearity	±1% Non-linearity	±20% (typical)	±2% Non-linearity	±2% Non-linearity
Operating Temp	-50°C to 100°C	-50°C to 100°C	-40°C to 70°C	-20°C to 80°C / -40°C to 125°C	-20°C to 80°C / -40°C to 125°C
Dimensions (mm)	Ø 8.9 x 10.16	Ø 15.2 x 16.6	19.05 x 6.35 x 6.35	18.8 x 14.22 x 4.32	18.8 x 14.22 x 4.32
Typical Apps	Machine monitoring, data loggers, permanent structures	Machine monitoring, data loggers, embedded applications	Wake-up switch, load imbalance, anti-theft devices, impact sensing, vital signs monitoring	Data logging, asset monitoring, impact monitoring	Data logging, asset monitoring, impact monitoring

DC Accelerometers

CE, RoHS, EAR99 Compliant

Plug and Play, Unamplified

Uses piezoresistive MEMS technology with high over-range protection and application-specific packaging.

						
	40A/40B	52F	52/52M30	64B/64C	58	1201/1201F
Package	Anodized aluminum	Anodized aluminum	Plastic / anodized aluminum	Anodized aluminum	Anodized Aluminum	Anodized aluminum
Type	Screw mount	Screw mount	Adhesive mount	Screw mount	Adhesive mount	Adhesive / screw mount
F.S. Range (g)	±100, 250, 500, 1000, 2000	±50, 200, 500, 2000	±50, 200, 500, 2000	±50, 100, 200, 500, 2000, 6000	±50, 100, 200, 500, 2000	±50, 100, 200, 500, 1000
Unique Features	- Critically damped - SAE J211 / 2570 compliant - Compact	- Low cost - Gas damping - Over-range stops	- Low cost - Gas damping - Over-range stops	- SAE J211 / 2570 compliant - Flexible, rugged cable - Over-range stops	- Low noise cable - Small package - light weight	- Small size - Flexible, rugged cable - Over-range stops
Accuracy	±1.0% Non-linearity	±1.0% Non-linearity	±1.0% Non-linearity	±1.0 % Non-linearity	±1% non-linearity	±1.0 % Non-linearity
Operating Temp	-20°C to 80°C	-40°C to 90°C	-40°C to 90°C	-40°C to 121°C	-20°C to 85°C	-20°C to 85°C
Dimensions (mm)	16.7 x 10.0 x 5.0	11.2 x 10.2 x 3.8	9.65 x 4.83 x 3.3	12.19 x 4.83 x 4.83	14.0 x 6.35 x 6.35	8.89 x 8.89 x 9.4
Typical Apps	In-dummy and pedestrian crash testing	Vibration / shock monitoring, shock testing, safety impact testing, side-impact testing	Vibration / shock monitoring, shock testing, safety impact testing, side-impact testing	In-dummy crash and impact testing	Crash testing, impact testing, off-road testing	On-vehicle crash and impact testing, vibration and shock monitoring

DC Accelerometers

Plug and Play, Unamplified

Uses piezoresistive MEMS technology with high over-range protection and application-specific packaging.

					
	3801A	3700	EGAXT	EGCS-D0 EGCS-D1S	EGCS-S425
Package	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Anodized aluminum
Type	Stud mount	Screw mount	Adhesive / screw mount	Screw / stud mount	Screw mount
F.S. Range (g)	±2, 10, 20, 50, 100, 200, 500, 2000	±50, 200, 500, 2000, 6000	±5 through 2500	±5 through 10,000	±50, 100, 250, 500, 1000, 2000
Unique Features	- Hermetically sealed sensor - Gas damping - 10,000 g over-range protection	- No zero shift - mV output - 20,000 g over-range protection	- Sub-miniature - Lightweight - 10,000 g over-range protection	- Rugged housing - Critically damped - 10,000 g over-range protection	- Critically damped - Compact - Mechanical stops
Accuracy	±0.5% Non-linearity	±2.0% Non-linearity	±1.0 % Non-linearity	±1.0 % Non-linearity	±1.0 % Non-linearity
Operating Temp	-54°C to 121°C	-54°C to 121°C	-40°C to 120°C	-40°C to 120°C	-20°C to 80°C
Dimensions (mm)	15.88 x 15.24	14.22 x 8.13 x 3.81	7.2 x 4.6 x 4.6	D0: 19.05 x 19.05 x 7.62 D1S: 12.7 x 12.7 x 15.24	14.73 x 9.9 x 4.83
Typical Apps	Impact testing, structural testing, test and instrumentation, environmental testing	Impact and shock testing, structural testing, drop testing, aerospace testing	Flight test and control, launch, crash, impact testing, robotics	General purpose, machine control, destructive testing, engine testing	Auto safety testing for side impact, on-vehicle, sled and in-dummy

MEMS DC Accelerometers

CE, RoHS, EAR99 Compliant

Plug and Play, Amplified

Uses piezoresistive MEMS technology with digital temperature compensation.

						
	201	4000A/4001A	4600/4602	4610	4801A	4807A
Package Type	Anodized aluminum Screw mount	Anodized aluminum Screw mount	Anodized aluminum Screw mount	Anodized aluminum Screw mount	Stainless steel Stud mount	Stainless steel Screw mount
F.S. Range (g)	±2, 5, 10, 20, 30, 50, 100	±2, 5, 10, 20, 50, 100, 200	±2, 10, 30, 50, 100, 200, 500	±2, 5, 10, 20, 50, 100, 200, 500	±2, 10, 20, 50, 100, 200, 500, 2000	±2, 5, 10, 20, 30, 50, 100, 200, 500
Unique Features	- Low noise - Low current consumption - 2 pole electronic filtering	- Integral connector option - Gas damping - Low power	- Exceptional temperature compensation - High over-range protection - Hermetically sealed sensor	- Advanced temperature compensation - Signal conditioned - 10,000 g over-range protection	- Hermetically sealed sensor - Integral connector - Signal conditioned	- Ultra low noise - Micro-g resolution - Hermetically sealed - Detachable cable
Accuracy	±1.0% Non-linearity	±0.5% Non-linearity	±0.5% Non-linearity	±0.5% Non-linearity	±0.5% Non-linearity	±0.5% Non-linearity
Excitation Voltage	5 - 30 Vdc	8 - 32 Vdc	8 - 36 Vdc	8 - 36 Vdc	8 - 36 Vdc	8 - 18 Vdc
Operating Temp	-40°C to 125°C	-20°C to 85°C	-55°C to 125°C	-40°C to 115°C	-55°C to 125°C	-55°C to 125°C
Dimensions (mm)	25.4 x 21.59 x 9.65	18.54 x 18.54 x 8.64	21.08 x 21.59 x 7.62	21.59 x 25.4 x 7.62	13.33 x 20.83	18.54 x 18.54 x 8.64
Typical Apps	Motorsports, seismic, wind turbine, structural monitoring	Low frequency monitoring, transportation, vibration monitoring, motion control	Flight testing, flutter testing, road test, transportation, structural testing, weapons development	Transportation, motion control, modal analysis, flight testing, flutter testing, road test, structural testing	Impact testing, structural testing, test and instrumentation, environmental testing	Seismic, structural monitoring, flight testing, trains, machine control, road test

DC Accelerometers

Plug and Play, Triaxial

Uses piezoresistive MEMS technology.

						
	EGAXT3	53/53A	63/68CM1	4630	4203	606M1
Package Type	Stainless steel Stud mount	Anodized aluminum Adhesive mount	Stainless steel Screw mount	Anodized aluminum Screw mount	Anodized aluminum Screw mount	Nitrile rubber pad Removable
F.S. Range (g)	±5 through 2500	±50, 200, 500, 2000	±500, 1000, 2000	±2, 5, 10, 20, 50, 100, 200, 500	±6, 7.5, 10, 20, 30	±25
Unique Features	- Sub-miniature - Lightweight - 10,000 g over-range protection	- Low cost - Gas damping - Low power	- World SID (68CM1) - Gas damping - Low power	- Advanced temperature compensation - Amplified output - 8 - 36Vdc excitation	- EMI / RFI protection - Custom 8-pole LP filters - Temperature compensation	- 0.7 damping ratio - Triaxial, hermetic - Seat pad accelerometer - 606M2 IEPE option
Accuracy	±1% Non-linearity	±1.0% Non-linearity	±1.0% Non-linearity	±0.5% Non-linearity	±1% Non-linearity	±1% Non-linearity
Operating Temp	-40°C to 120°C	-20°C to 85°C	-20°C to 85°C	-40°C to 115°C	-40°C to 125°C	-20°C to 85°C
Dimensions (mm)	12.7 x 12.7 x 12.7	18.29 x 13.21 x 7.11	12.7 x 12.7 x 12.7	26.16 x 26.16 x 23.37	33.02 x 35.05 x 16	199 x 4
Typical Apps	Flight test, crash, shock monitoring	Auto safety, passenger comfort, transportation, NVH analysis	Auto safety, in-dummy crash, on-vehicle crash	Road test, motion control, transportation, modal analysis, structural testing	Motorsports, seismic, shock monitoring	Off-road equipment, amusement rides, commercial aircraft

Voltage Mode, Piezoelectric (IEPE) Accelerometers

CE, RoHS, EAR99 Compliant

Plug and Play

Uses piezo-electric technology with broad frequency response for harsh applications.

						
	7100A/7101A	7102A	7108A	7104A/7105A	7131A/7132A	7120A/7122A
Package	Stainless steel / titanium	Titanium	Stainless steel	Stainless steel	Titanium	Titanium
Type	Through hole mounting	Adhesive mounting	Adhesive mounting	Stud mounting	Adhesive/stud mounting	Adhesive mounting
Sensitivity (mV/g)	100, 10	100, 10	100, 10	100, 50, 10	100, 50, 10, 2.5	1000, 100, 10
Unique Features	- Single axis, shear mode - Isolated mounting surface - Hermetically sealed - Wide bandwidth, >10 kHz	- Single axis, shear mode - Hermetically sealed - 15 kHz bandwidth - <1 gram	- Single axis, shear mode - Wide bandwidth - Welded construction - Small size	- Single axis, shear mode - Wide bandwidth - Top and side connector option	- Triaxial, shear mode - >12 kHz bandwidth - 4-pin connector - Hermetically sealed	- Single axis, shear mode - Miniature cube - 10 - 32 connector - Hermetically sealed
Operating Temp	7100A: -55°C to 150°C 7101A: -55°C to 125°C	-55°C to 125°C	-55°C to 125°C	-55°C to 125°C	-55°C to 125°C	-55°C to 125°C
Dimensions (mm)	7100A: 9.9 x 22.35 7101A: 5.84 x 14.48	4.40 x 11.94	9.53 x 10.16	7104A: 11.11 x 14.10 7105A: 11.11 x 19.05	7131A: 11 x 11 x 11 7132A: 15.24 x 20.32 x 13.46	10.16 x 10.16 x 19.16
Typical Apps	Flight testing, general purpose, vibration monitoring	Small structures monitoring, component design, high frequency applications	Vibration monitoring, modal testing, general purpose	General purpose IEPE accel, vibration monitoring, lab testing	General purpose, modal testing, vibration monitoring	Modal testing, vibration monitoring, small structures monitoring

Charge Mode, Piezoelectric Accelerometers

Plug and Play

Uses piezoelectric technology with broad frequency response for harsh applications.

						
	7500A	7501A	7502A	7508A	7514A	7530A
Package	Stainless steel	Titanium	Titanium	Stainless steel	Stainless steel	Hard anodized aluminum
Type	Through hole mount	Through hole mount	Adhesive mounting	Adhesive mounting	Stud mounting	Screw mounting
Sensitivity (pC/g)	20, 13, 7	5.6	1.8	5.6	100, 50, 30, 20, 13	5.6
Unique Features	- Single axis, shear mode - Hermetically sealed - Isolated mounting surface - Wide bandwidth	- Single axis, shear mode - Hermetically sealed - Bandwidth to >15 kHz	- Single axis, shear mode - Hermetically sealed - <1 gram - Wide bandwidth	- Single axis, shear mode - Hermetically sealed - Bandwidth to 8 kHz	- Single axis, shear mode - >12 kHz bandwidth - High sensitivity	- Triaxial, shear mode - Hermetically sealed - Isolated mounting surface - Wide bandwidth
Operating Temp	-73°C to 260°C	-73°C to 260°C	-73°C to 260°C	-73°C to 260°C	-73°C to 260°C	-73°C to 200°C
Dimensions (mm)	8.38 x 22.35	5.84 x 14.48	4.40 x 11.94	9.53 x 10.16	14.99 x 14.99	18.72 x 18.72 x 11.68
Typical Apps	Gearbox vibration monitoring, flight test, high temp applications	Gearbox vibration monitoring, flight test, high temp applications	Small structures monitoring, minimal mass loading, high temp applications	Small structures monitoring, general purpose, high temp applications	Low frequency vibration, general purpose, high temp applications	Vibration monitoring, drop testing, high temp applications

Voltage Mode, Piezoelectric Accelerometers

CE, RoHS, EAR99 Compliant

Plug and Play

Uses piezoelectric technology with broad frequency response for harsh applications.

						
	7202A	7204A	8011/8021-01	8032-01	8011/8021-AR/AP	8011/8021-VR/VP
Package Type	Stainless steel Through hole mount	Stainless steel Through hole mount	Stainless steel Stud / through hole mount	Stainless steel Stud mount	Stainless steel Stud / through hole mount	Stainless steel Stud / through hole mount
Sensitivity (mV/g)	100,10	100, 10	500, 100, 10	100, 10	4 - 20 mA RMS or peak	4 - 20 mA RMS or peak
Unique Features	- Annular shear mode - Integral strain relief - Case isolated, internally shielded	- Annular shear mode - 3-pin connector - Case isolated, internal shielding - +150°C option	- Industrial accelerometer - Case isolated, internal shielding - Reverse wiring protection - ±1% Non-linearity	- Industrial accelerometer - Case isolated, internal shielding - Low cost - Molded strain relief	- Industrial accelerometer - Case isolated, internal shielding - 50, 20, 10, 5 g ranges	- Velocity transmitter - Case isolated, internal shielding - 0.5 to 5.0 in/sec
Operating Temp	-55°C to 130°C	-55°C to 130°C	-55°C to 125°C	-55°C to 100°C	-40°C to 85°C	-40°C to 85°C
Dimensions (mm)	13.34 x 19.05	13.34 x 19.05	22.23 x 48.26	14.3 x 45.3	22.23 x 48.26	22.23 x 48.26
Typical Apps	HUMS applications, machinery monitoring, harsh environments	HUMS applications, flight testing, high frequency applications	Industrial applications, machine monitoring, intrinsic safety	Industrial applications, machine monitoring	Industrial applications, machine monitoring, intrinsic safety	Industrial applications, machine monitoring, intrinsic safety

Electronics

Signal Conditioners

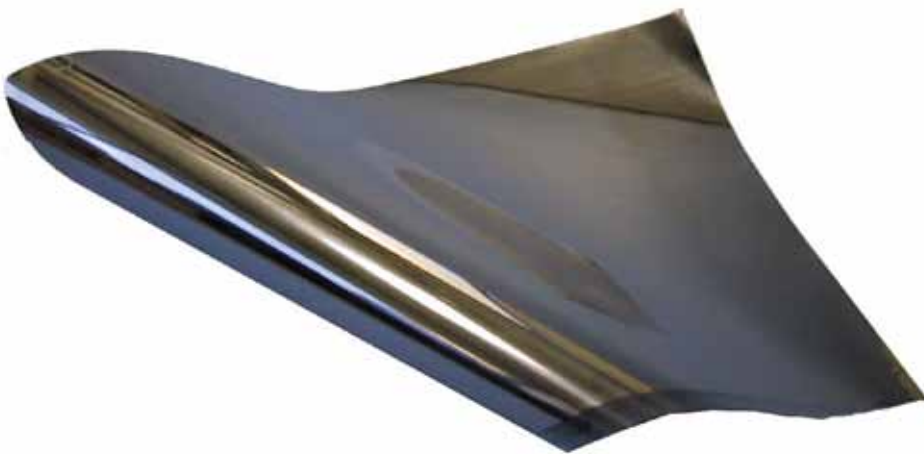
Easy-to-use instrumentation that ensures data integrity.

				
	101	161	130	140
Type	Bench top	Bench top	Inline charge converter	Auto-zero inline amplifier
# of Channels	3	4	1	1
Gain Range	0.001 to 999.9	0.001 to 999.9	0.1, 1, 10	10, 25, 50, 100, 200
Unique Features	- DC signal conditioner - 0 - 12 Vdc excitation - Micro-processor controlled - 10 V peak linear output - 4-pole LP filter options	- Charge and IEPE conditioner - Sensitivity normalization - LCD display - Support IEEE 1451.4 TEDS - 10 V peak linear output - Selectable LP filter	- Low noise - Small package - Wide bandwidth - BNC male or female	- ±1.5 mV auto-zero - For PR sensors - 100 kHz bandwidth - 5 to 30 V excitation
Dimensions (mm)	235 x 210 x 84	310 x 180 x 115	Ø13.8 x 52.2	56.9 x 25.4 x 12.7
Typical Apps	Instrumentation labs, test stands, process monitoring	Instrumentation labs, PE/IEPE sensors	Instrumentation labs, high temperature testing PE accelerometer	Instrumentation labs, test stands, strain measurement

Piezo

Piezoelectric fluoropolymer film produces voltage or charge proportional to strain. Exceptionally high strain sensitivity ($15 \text{ mV}/\mu\epsilon$), in-plane strain bandwidth from $< 0.1 \text{ Hz}$ to $>100 \text{ kHz}$, ultrasound transmit and receive functionality to $>100 \text{ MHz}$, and dynamic range of 280 dB characterize the very unique capabilities of Piezo Film. A highly versatile, enabling sensor technology, Piezo Film has thin cross-section ($28 \mu\text{m} - 110 \mu\text{m}$ in thickness), is flexible, very robust, chemically inert and can withstand temperatures up to 85°C (125°C with special processing). Piezo Film is also pyroelectric, capable of generating $> 8\text{V}/^\circ\text{C}$. Simple printing with conductive ink defines the active electrode areas. This may be easily customized to give either single elements or complex arrays.

Piezo Cable is a coaxial sensor utilizing piezo film as the sensing material. Available in continuous lengths of 1km or longer, Piezo Cable possesses many of the attributes of Piezo Film in an extremely rugged and shielded form factor that is easy to deploy.



									
DT1 & SDT1		Piezo Cable		CM-01		FLDT1		LDTC Analog PCB	
Package	Unshielded element with twisted pair or shielded element with shielded cable	Shielded coaxial 20 gage piezo cable		Metallized plastic housing		Unshielded film element with screen printed leads		Evaluation PCB platform for vibration sensor	
Type	Flexible film, adhesive mount	Polymer jacketing; armored jacketing		Contact microphone		Flexible film, adhesive mount		Amplified analog output	
Range	15 mV/ μ l up to 1% strain	μ Pa sensitivity		40 V/mm; 8 Hz to 2.2 kHz		15 mV/ μ l, up to 1% strain		1 Hz to 117 Hz	
Unique Features	- Thin, flexible, robust - Withstands up to 1% strain - Ultra-low power (self generating)	- Continuous lengths to 1km - Shielded construction		- Low noise - Vibration and impact sensing - High sensitivity		- Thin, flexible - Leads screen printed on film - Connects to standard connector		- Low power - High sensitivity - Analog and digital signal access points	
Accuracy	$\pm 20\%$ (typical)	$\pm 20\%$ (typical)		N/A		$\pm 20\%$ typical		$\pm 20\%$	
Operating Temp	-40°C to 70°C (up to 125°C available)	-40°C to 85°C (up to 100°C available)		5°C to 60°C		-40°C to 70°C; higher available custom		-20°C to 85°C	
Dimensions (mm)	Application dependent	3 mm diameter; continuous lengths		18 dia x 11 high		12 x 30 active; custom available		33 x 46	
Typical Apps	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		Electronic stethoscope, contact microphone, vibration and impact sensing		Event timing, dynamic strain, motion detection		Vibration sensing, wake-up sensor, activity sensor	

											
Laboratory Amplifier		80 KHz Transducers		NDT-1		Tamper Box		ACH01		LDTC Family	
Package	Bench top	Pin mounted		Adhesive mounted		Flat film or box mounted		Ceramic base, plastic cover, shielded cable		Piezo film elements with or without mass and pins	
Type	Piezo film lab amp	Air ultrasound transducer		High frequency ultrasound transducer		Tamper detection sensor		Adhesive mount		Cantilever beam with vertical or horizontal pins	
Range	0.1 Hz to 100 kHz	80 kHz		3 MHz		Application dependent		± 250 g (typical)		± 10 g (typical)	
Unique Features	- Voltage or charge mode settings - Multi-pole high- and low-pass filters - Adjustable gain	- Small size - Low mechanical Q - Shielded package		- Flexible - High bandwidth, low Q - Low impedance		- Low power - Custom shapes and sizes - High security		- Extremely high bandwidth - Low cost - Ultra-low power		- Very low cost - High sensitivity (1 V/g) - Ultra-low power (self generating)	
Accuracy	Application dependent	Application dependent		Application dependent		Application dependent		$\pm 20\%$ (typical)		$\pm 20\%$ (typical)	
Operating Temp	0°C to 40°C	-20°C to 80°C		-20°C to 60°C		-40°C to 85°C		-40°C to 85°C		-40°C to 70°C	
Dimensions (mm)	150 x 100 x 100	6 dia x 9		12 x 30		Application dependent		18.80 x 13.21 x 6.10		19.05 x 6.35 x 6.35	
Typical Apps	Low frequency dynamic strain, piezoelectric signals, machine vibration, piezo cable and traffic sensor interface	Air ranging, ultrasonic mouse, digitizers		Thickness measurement, speed of sound measurement, pulse/echo NDT		Encryption modules, POS card readers, PIN entry devices		Vibration sensing, gear box and high speed monitoring, high speed bearings and centrifuges, speaker motion feedback		Wake-up switch, load imbalance, anti-theft devices, impact sensing, vital signs monitoring	



The aerodynamic research group of measurement specialties provides data systems based on the electronic pressure and temperature scanners of legacy brand Pressure Systems. These products have been developed specifically for wind tunnel testing, flight testing and turbomachinery test and measurement applications. Extensive factory calibration combined with custom MEMS-like technology provide system solutions with high accuracy digital interface to host computers and networks. Pressure ranges are available from 1.3" H₂O (300 Pa) to 10,000 psi (69 MPa). Temperature inputs can be acquired from standard and custom thermocouples as well as RTD's. Software is included with each solution.

Pressure and Temperature

NetScanner™ Complete Data Acquisition Devices

NEW



9116



9146-R



9146-T



9022

Measurement Type	Pressure	Temperature	Temperature	Pressure
Media	Dry	RTD / TC / Volt	TC	Remote
Accuracy	±0.05% FS	±0.25°C	±0.25°C	±0.05% FS
# of Channels	16	16 / 32	16	12
EU Throughput Rate	500 Hz	33 Hz	33 Hz	100 Hz
Enclosure	IP66 / 30g vibration	IP66 / 30g vibration	IP54 / 30g vibration	IP64 / 30g vibration
Typical Apps	Engine testing, portable data acquisition, wind tunnel research, process monitoring	Engine testing, portable data acquisition, wind tunnel research, process monitoring	Engine testing, portable data acquisition, wind tunnel research, process monitoring	Engine testing, third party transducers, close coupled requirements, high pressure

Pressure and Temperature

NetScanner™ Complete Data Acquisition Devices

NEW



9032

Measurement Type	Barometer
Media	Dry
Accuracy	±0.01% FS
# of Channels	1
EU Throughput Rate	10 Hz
Enclosure	Laboratory grade
Typical Apps	Barometric monitor, precision reference



9034, 9038

Measurement Type	Calibrator
Media	Dry
Accuracy	±0.01% FS
# of Channels	1
EU Throughput Rate	10 Hz
Enclosure	Laboratory grade
Typical Apps	Calibration, transfer standard, verification testing



98RK-1, 9816

Measurement Type	Pressure
Media	Dry
Accuracy	±0.05% FS
# of Channels	128
EU Throughput Rate	100 Hz
Enclosure	19" rackmount / 4U
Typical Apps	Turbine engine test, control room location



90DB, 91FC

Measurement Type	Interface
Media	N/A
Accuracy	N/A
# of Channels	15 / 7 / 1
EU Throughput Rate	10 / 100 Base-T
Enclosure	19" rackmount / 1U
Typical Apps	Turbine engine test, power supply

Scanners and Data Acquisition Systems

Miniature High Density Pressure Scanners



64HD DTC

Type	Pressure
Media	Dry
Accuracy	±0.03% FS
# of Channels	64
Thermal Comp	Active (DTC)
Port Sizes	0.040 in.
Typical Apps	Wind tunnel research, flight test, on vehicle research



32HD DTC

Type	Pressure
Media	Dry
Accuracy	±0.03% FS
# of Channels	32
Thermal Comp	Active (DTC)
Port Sizes	0.040 or 0.063 in.
Typical Apps	Wind tunnel research, flight test, on vehicle research



64HD, 32HD, 16HD

Type	Pressure
Media	Dry
Accuracy	±0.05% FS
# of Channels	64, 32 or 16
Thermal Comp	Passive
Port Sizes	0.040 or 0.63 in.
Typical Apps	Wind tunnel research, flight test, on vehicle research

Multi-Scanner Data Acquisition Systems



DTC Initium

Type	Pressure scanning
Media	Dry
Accuracy	±0.05% FS
# of Channels	512
EU Throughput Rate	1200 Hz
Enclosure	Laboratory grade
Typical Apps	Wind engineering, aerospace development



8400 System

Type	Pressure scanning
Media	Dry
Accuracy	±0.03% FS
# of Channels	4096
EU Throughput Rate	200 Hz
Enclosure	Rack mount
Typical Apps	Aerospace development



Interface

Type	A/D conversion
Media	Dry
Accuracy	±0.05% FS
# of Channels	1024
EU Throughput Rate	200 Hz
Enclosure	Miniature
Typical Apps	In model placement, 8400 system interface



Pneumatics

Type	Quick disconnect
Media	Dry
Accuracy	N/A
# of Channels	19, 20, 36, 37, 52, 55, 73
EU Throughput Rate	N/A
Enclosure	Circular or square
Typical Apps	Bulkhead mounted, in-line, reducing port sizes

Measurement Specialties approaches the measurement of fluids using two distinct technologies. Its patented tuning fork technology is coupled with efficient software algorithms for accurate measurement of viscosity, density and dielectric constant. Highly reliable reed switch technology is combined with temperature measurement for level sensing. Dedicated applications include, among others, oils (engine, hydraulic, transmission), fuels and DEF/AdBlue® fluid monitoring.

Robust design enables FPS sensors to operate under diverse pressure, flow and temperature conditions to bring real time fluid monitoring to engines, fuel systems, SCR systems, compressors, transmissions, gear boxes and many other industrial applications.

Our new Water in Oil measurement sensor supplements the existing fluid quality range of products.



Fluid Property Sensors

FPS

Directly and simultaneously measures the fluid properties and temperature.



FPS2810

Package	Fully integrated, stand-alone module combines sensor and processing electronics for in-situ monitoring
Type	Engine oil quality sensor
Operating Range	Viscosity from 0.5 to 50 mPa-s Density from 0.65 to 1.5 g/cc Dielectric from 1.0 to 6.0
Operating Temp	-40°C to 150°C
Unique Features	- Rugged construction for high pressure and high flow environments - CAN communication protocol (SAEJ1939 compliant)
Calibration	Factory calibrated with NIST traceable standards
Dimensions (mm)	73.3 x 30 x 30
Typical Apps	Engine quality monitoring for on and off highway vehicles: degradation, oxidation, fuel dilution, soot contamination



FPS2840

Package	Fully integrated, stand-alone module combines sensor and processing electronics for in-situ monitoring
Type	Hydraulic oil quality sensor
Operating Range	Viscosity from 0.5 to 50 mPa-s Density from 0.65 to 1.5 g/cc Dielectric from 1.0 to 6.0
Operating Temp	-40°C to 150°C
Unique Features	- Rugged construction for high pressure and high flow environments - CAN communication protocol (SAEJ1939 compliant)
Calibration	Factory calibrated with NIST traceable standards
Dimensions (mm)	73.3 x 30 x 30
Typical Apps	Hydraulic oil quality monitoring for on and off highway vehicles, HVAC&R, compressors, industrial equipments, turbines: degradation, oxidation, water content



FPS2X60

Package	Fully integrated, stand-alone module combines sensor and processing electronics for in-situ monitoring
Type	Transmission oil quality sensor
Operating Range	Viscosity up to 20,000 mPa-s Density from 0.65 to 1.5 g/cc Dielectric from 1.0 to 6.0
Operating Temp	-40°C to 150°C
Unique Features	- Rugged construction for high pressure and high flow environments
Calibration	Factory calibrated with NIST traceable standards
Dimensions (mm)	73.3 x 30 x 30
Typical Apps	Transmission oil quality monitoring in high viscosity conditions for on and off highway vehicles, HVAC&R, compressors, industrial equipments, turbines: degradation, oxidation



HTM2500B3C4 OIL

Package	Fully integrated, stand-alone module combines sensor and processing electronics for in-situ monitoring
Type	Water content in oil and temperature sensor
Operating Range	0 to 1 aw (aw, activity = water content / water content in saturated oil)
Operating Temp	-40°C to 85°C
Unique Features	- Full interchangeability - High reliability and demonstrated long term stability in oil - Ratiometric to voltage supply - Sensitive elements with unique mechanical and chemical robustness
Calibration	Factory calibrated and tested
Dimensions (mm)	76.2 x 30 x 30
Typical Apps	Water content in oil and temperature monitoring for automotive, truck, transformers, industrial applications



FPS2X20 / FPS2X30

Package	Fully integrated sensor and processing electronics provide a single sensor solution for in-line or in-tank fuel monitoring
Type	Fuel quality sensor
Operating Range	Viscosity from 0.5 to 50 mPa-s Density from 0.65 to 1.5 g/cc Dielectric from 1.0 to 6.0
Operating Temp	-40°C to 150°C
Unique Features	- Rugged construction for high pressure and high flow environments
Calibration	Factory calibrated with NIST traceable standards
Dimensions (mm)	73.3 x 30 x 30
Typical Apps	Diesel, biodiesel, jet, gasoline and flexfuel monitoring, fuel type detection, biodiesel concentration measurement, fuel quality monitoring for engines, turbines, electric power generation, aviation, marine, etc



FPS5851

Package	Fully integrated sensor and processing electronics provide a solid state sensor for in-line urea quality monitoring
Type	Urea quality sensor
Operating Range	Urea concentration from 5 to 62.5% mass
Operating Temp	-40°C to 125°C
Unique Features	- Rugged SST-based construction for demanding environment (vibration, side-load) - Urea resistant DIN70070 / ISO22241 material - High reliability and long term stability - Integrated design to be installed directly on the pump output or on the dosing line - Optimized for OEM specifications
Calibration	Factory calibrated in compliance with DIN70070 / ISO 22241 standards
Dimensions (mm)	93 x 57 x 42 (+SAEJ2044 fluid connecting pipe)
Typical Apps	Monitoring urea concentration and urea quality of diesel exhaust fluid (DEF) used in selective catalytic reduction systems (SCR). Detection of unauthorized fluids for SCR systems applications

DEF/AdBlue® SCR Sensors

In-line DEF/AdBlue® Quality Sensor

DEF/AdBlue® SCR Sensors

NEW

DEF/AdBlue® Level Sensors

					
	FLS WH Series	FLS RB Series	FLS PC Series	FLS P Series	FLS PU Series
Package	Stainless steel header and body	Rubber header and stainless steel body	Nylon header and stainless steel body	Plastic header and stainless steel body	Plastic header and stainless steel body
Type	Combined level sensor, temperature sensor, filter, AdBlue® draw and return solenoid controlled heater, locking ring header	Combined level sensor, temperature sensor, filter, AdBlue® draw and return heater, collar header	Combined level sensor, temperature sensor, filter, AdBlue® draw and return heater, bayonet header	Combined level sensor, temperature sensor	Combined level sensor, temperature sensor, filter, AdBlue® draw and return heater, bayonet header
Operating Temp	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Features	- Available in a range of sizes - High reliability - Reed switch technology - Using coolant system to thaw frozen - DEF / AdBlue® feed and return connections can be incorporated into the header - Optional solenoid valve	- Available in a range of sizes - High reliability - Reed switch technology - Using coolant system to thaw frozen - DEF / AdBlue® feed and return connections can be incorporated into the header - Various collar adapter options	- Available in a range of sizes - High reliability - Reed switch technology - Using coolant system to thaw frozen - DEF / AdBlue® feed and return connections can be incorporated into the header	- Available in a range of sizes - High reliability - Reed switch technology	- Available in a range of sizes - High reliability - Reed switch technology - Using coolant system to thaw frozen - DEF / AdBlue® feed and return connections can be incorporated into the header

DEF/AdBlue® SCR Sensors with Quality Measurement

In-tank DEF/AdBlue® Level and Quality Sensors

					
	QLS WH Series	QLS RB Series	QLS PC Series	QLS P Series	QLS PU Series
Package	Stainless steel header and body	Rubber header and stainless steel body	Nylon header and stainless steel body	Plastic header and stainless steel body	Plastic header and stainless steel body
Type	Combined level sensor with quality measurement, temperature sensor, filter, AdBlue® draw and return solenoid controlled heater, locking ring header	Combined level sensor with quality measurement, temperature sensor, filter, AdBlue® draw and return heater, collar header	Combined level sensor with quality measurement, temperature sensor, filter, AdBlue® draw and return heater, bayonet header	Combined level sensor with quality measurement, temperature sensor	Combined level sensor with quality measurement, temperature sensor, filter, AdBlue® draw and return heater, bayonet header
Operating Temp	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Features	- Available in a range of sizes - High reliability - Reed switch technology - Using coolant system to thaw frozen - DEF / AdBlue® feed and return connections can be incorporated into the header - Optional solenoid valve - Integrated quality sensor	- Available in a range of sizes - High reliability - Reed switch technology - Using coolant system to thaw frozen - DEF / AdBlue® feed and return connections can be incorporated into the header - Integrated quality sensor - Various collar adapter options	- Available in a range of sizes - High reliability - Reed switch technology - Using coolant system to thaw frozen - DEF / AdBlue® feed and return connections can be incorporated into the header - Integrated quality sensor	- Available in a range of sizes - High reliability - Reed switch technology - Integrated quality sensor	- Available in a range of sizes - High reliability - Reed switch technology - Using coolant system to thaw frozen - DEF / AdBlue® feed and return connections can be incorporated into the header - Integrated quality sensor

The MEAS line of Photo Optic Sensors includes both photo optic components and complete sensor solutions. Our component series features dual LED, bi-wavelength emitters and spectrally paired photo detectors. MEAS optics are ideally suited for medical applications for which the selection of peak wavelength is a priority, such as pulse oximetry (SpO₂). We also package our optics into complete probe assemblies for pulse oximetry (SpO₂) monitoring applications. The MEAS OEM pulse oximetry (SpO₂) probe platform includes reusable finger clips, soft silicone boots, and a range of disposable sensors.

Photo Optic Sensors

Photo Optic Components and Pulse Oximetry Probe Platforms



ELM-4000

Package Lead frame
Type Emitter assembly
Range 660 nm / 880-940 nm

Unique Features

- Low cost
- Dual drive
- Clear epoxy lens

Accuracy Sensor dependent

Operating Temp -55°C to 70°C

Dimensions (mm) 4.4 x 5.1 x 1.9

Typical Apps Pulse oximetry, finger/ear probes, disposable



EPM-4000

Package Lead frame
Type Detector assembly

Unique Features

- Low cost
- Fast response
- High efficiency

Accuracy Sensor dependent

Operating Temp -55°C to 70°C

Dimensions (mm) 4.4 x 5.1 x 1.8

Typical Apps Pulse oximetry, finger/ear probes, disposable



Disposable Sensor

Package Biocompatible
Type Sensor platform
Range Adult / neonatal

Unique Features

- Latex free
- Lightweight
- Microfoam / cloth

Accuracy Sensor dependent

Operating Temp -55°C to 70°C

Typical Apps Pulse oximetry



Finger Clip Sensor

Package Biocompatible
Type Sensor platform
Range Adult

Unique Features

- Soft pads
- Lightweight
- Easily cleaned

Accuracy Sensor dependent

Operating Temp -55°C to 70°C

Typical Apps Pulse oximetry



Soft Sensor

Package Silicon boot
Type Sensor platform
Range Adult / pediatric

Unique Features

- Ease of use
- Lightweight
- Latex free

Accuracy Sensor dependent

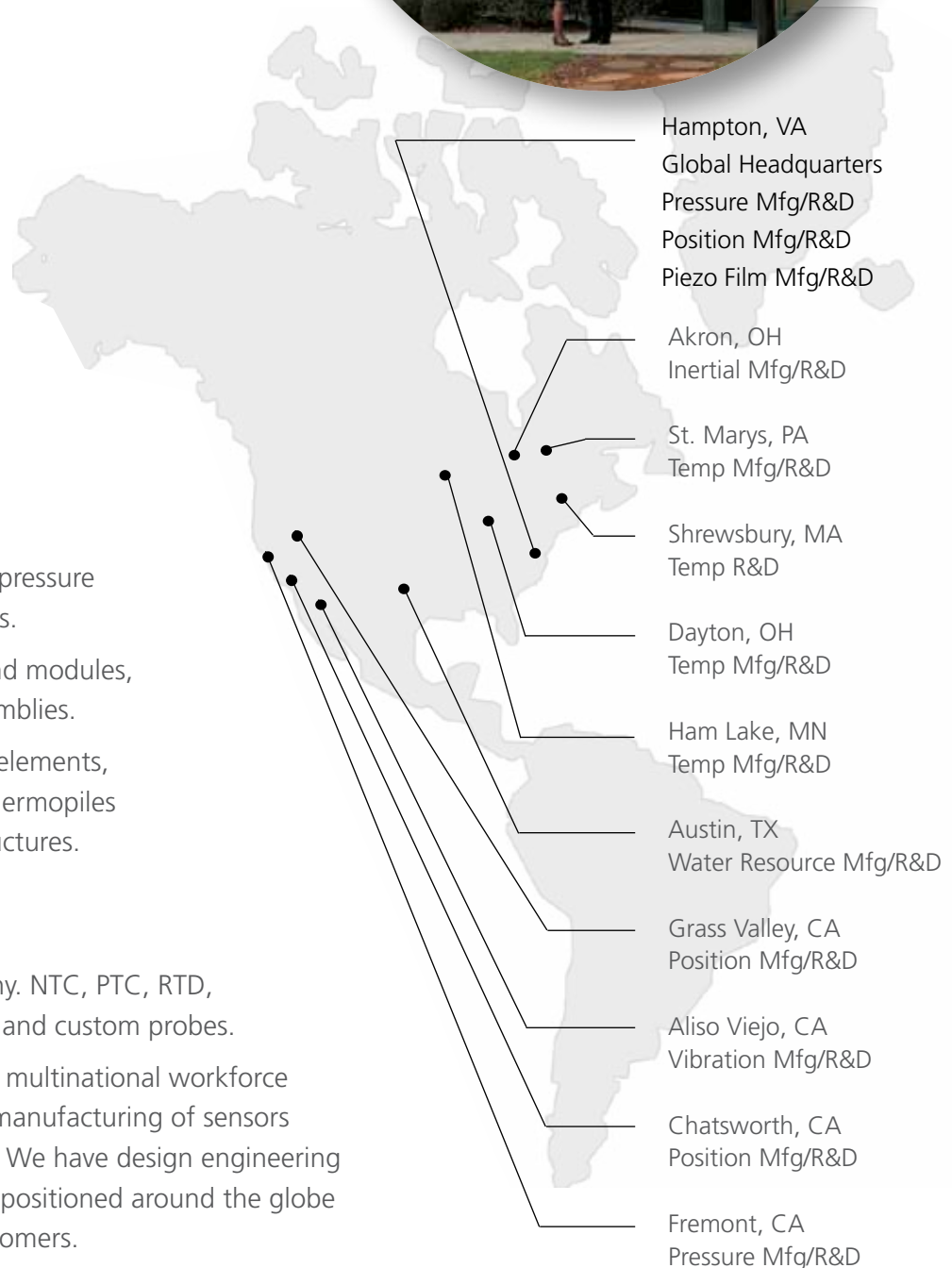
Operating Temp -55°C to 70°C

Typical Apps Pulse oximetry

Measurement Specialties is a unique sensor business that combines the strengths and experiences of several merged sensor companies to resolve challenging physical measurement problems. Our products have a proud lineage from the pioneering work of ICSensors in MEMS (micro electro-mechanical systems) technology and Schaevitz in inductive position sensing. During the last decade, we have significantly expanded our product offerings and enriched our technical capabilities through additional strategic acquisitions, including:

- Spectrum Sensors. Custom temperature probes, encoders and inertial sensors.
- Cosense. Ultrasonic sensors.
- Gentech. Liquid level, position, flow and optical sensors.
- Celesco. Rotary and linear position sensors.
- Eureka Environmental Engineering. Multiparameter instrumentation and software for water quality monitoring.
- Pressure Systems, Inc. Pressure scanners and water level measurement.
- Intersema Sensoric. Low power, MEMS pressure sensors, electronics and custom modules.
- Humirel. Capacitive humidity sensors and modules, as well as multi-parameter sensing assemblies.
- HL Planartechnik. Planar mass air flow elements, multi-layer magneto resistive sensors, thermopiles and various custom thin film MEMS structures.
- ENTRAN / FGP. Custom pressure, force, acceleration and torque sensors.
- BetaTHERM / YSI / Ataxis / RTD Company. NTC, PTC, RTD, and thermocouple temperature sensors and custom probes.

Today, united under the MEAS brand, our multinational workforce of 3000+ is dedicated to the design and manufacturing of sensors for customers in more than 60 countries. We have design engineering and manufacturing locations strategically positioned around the globe in order to put resources close to our customers.





Toulouse, France
European Headquarters
Humidity Mfg/R&D
Fluid Property Mfg/R&D

Shenzhen, China
Asian Headquarters
Various Sensors Mfg/R&D

Galway, Ireland
Temperature Mfg/R&D

Girvan, Scotland
Position - Level - Flow Mfg/R&D

Les Clayes-Sous-Bois, France
Force - Torque Mfg/R&D
Vibration - Pressure Mfg/R&D

Fontenay Tresigny, France
Temperature Mfg/R&D

Bevaix, Switzerland
Pressure Mfg/R&D

Dortmund, Germany
Position - Temperature Mfg/R&D
Foundry Services

Chengdu, China
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