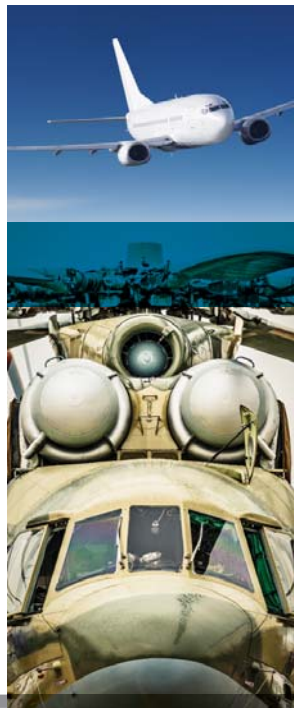


SENSOR SOLUTIONS FOR AEROSPACE & DEFENSE FROM TE CONNECTIVITY

SENSOR SOLUTIONS FOR AEROSPACE & DEFENSE FROM TE CONNECTIVITY

TE Connectivity (TE) is one of the largest connectivity and sensor companies in the world. Our broad portfolio of sensor technologies is designed for a wide range of mission critical applications in Aerospace and Defense and other industries. By leveraging our core competencies in high reliability sensors for harsh environments such as Temperature, RFI, EMI, Vibration, and Lightning, we enable our customers to transform their concepts into creations — redefining what's possible using intelligent, efficient and high-performing TE products and solutions.

SENSOR SOLUTIONS

- FLOW
- FLUID PROPERTY
- FORCE/TORQUE
- HUMIDITY
- LIQUID LEVEL
- RATE/INERTIAL
- POSITION
- PRESSURE
- TEMPERATURE
- ULTRASONIC
- VIBRATION/SHOCK

QUALITY STATEMENTS

- AS/EN 9100
- ATEX
- ESA/ESCC QUALIFIED
- NADCAP
- ISO 14001
- ISO 9001
- MEASURING INSTRUMENTS DIRECTIVE 2004/22/EC ANNEX D
- NASA/GSFC QUALIFIED
- PART21G
- TS 16949

DESIGN/DEVELOPMENT

- DO-160
- DO-254
- MIL-STD-810
- GRESS

APPLICATION SOLUTIONS FOR AEROSPACE & DEFENSE

Long development cycles and high qualification costs require aerospace companies to identify stable, reliable, cost-effective partners. TE Connectivity has design engineering groups, as well as AS9100 certified sensor manufacturing facilities, in North America, Europe and Asia Pacific which support Tier 1, 2 and 3 providers with a wide variety of critical sensor solutions for aerospace and defense applications. Regional design and manufacturing allows TE to furnish ITAR free designs and supply products close to our customers' assembly facilities.

Cockpit Controls

- Automatic autopilot disconnect force sensors
- Motorized potentiometers for position feedback
- Brake pedal position sensors
- Rotary panel switches and sensors
- Force sensors for flight data recording of pilot inputs
- Throttle quadrant position sensors
- Flap and spoiler lever position sensors

Flight Controls & Actuation

- High lift load sensors
- THSA secondary load path engagement sensors
- Aileron LVDT position sensors
- Resolvers for flap and slat position monitoring
- Force and position sensors for spoiler electro-mechanical actuation
- Brake actuator force sensors for rotorcraft

Landing Gear & Brakes

- Brake torque sensors
- Pressure sensors for Nose Wheel steering feedback
- Resolvers for steering position
- Load on wheels force sensors
- Centre of gravity force sensors

Cabin, Galley & Cargo

- Cabin pressure indicator
- Waste tank level sensors
- Environmental cabin control pressure sensors
- Cargo humidity sensors
- Galley temperature sensors
- Air quality temperature sensors
- Oxygen generation pressure transducers

Launch & Space

- Payload monitoring vibration sensors
- Thrust vectoring LVDT position sensors
- Electrical actuator position resolvers
- Booster separation potentiometers
- Cryogenic fuel pressure transducers
- Satellite temperature sensors
- Mirror/antenna position LVDT sensors

Engine, Turbine & APU

- Thermocouple harnesses for exhaust gas temperature
- LVDT for thrust reverser position monitoring
- Platinum 200 air temperature sensors
- Variable bleed valve LVDT position sensors
- Rotor track and Balance accelerometers
- Health and Usage Monitoring Systems(HUMS) accelerometers
- Thermistor heater fuel tank level and flow

Military (Missile, Ground Vehicle, Marine, UAV...)

- Missile fin actuation
- Fuel tank level & flow sensors
- Gun stabilization and shock measurement
- Tamper detection for missiles
- Electronic safe arm and fire
- Oil pressure and temperature sensors
- Airspeed and altitude sensors

PRESSURE SENSORS

Board Mounted mV Output

MEAS 1230

Package	8 pin DIL
Type	Gage, absolute, differential
Pressure Range	0 - 5 & 10" H_2O 0 - 0.07, 0.14, 0.35, 1, 2, 3, 7 bar / 0 - 1, 2, 5, 15, 30, 50, 100 psi
Output/Span	50 mV and 100 mV typical
Unique Features	• Temperature compensated • High performance UltraStable die Current excitation
Accuracy	±0.1% Non-linearity
Operating Temp	-40°C to 125°C
Dimensions (mm)	15.2 x 20.3
Typical Apps	Air flow measurement, leak detection, cabin control, ventilation

MEAS MS52xx, MS54xx

Package	Surface mount
Type	Gage, absolute
Pressure Range	0 - 1, 12 bar / 0 - 15, 174 psi (MS52xx) 0 - 1, 7, 12 bar / 0 - 15, 102, 174 psi (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 • High endurance (Option HM)
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, barometers

Media Isolated Modules Analog Output

MEAS 89 Button, 89 with Fittings

Package	O-ring mount and threaded / weldable or process fitting
Type	Sealed gage, absolute
Pressure Range	0 - 69, 207, 345 bar / 0 - 1K, 3K, 5K psi
Output/Span	100 mV typical
Unique Features	• High pressure, modular design
Accuracy	±0.25% FSO Non-linearity
Operating Temp	-40°C to 125°C
Dimensions (mm)	89 Button: Ø 9.0 x 7.5 89 with Fittings: Ø 22.2 x 23.6
Typical Apps	Air tank pressure, hydraulics, process control, oxygen generation, inerting systems

Transducers and Transmitters

MEAS P900

Package	Threaded ports with stainless steel housing and various heavy duty electrical connections, various electrical outputs
Type	Gage, absolute
Pressure Range	0 - 5 bar to 0 - 689 bar / 0 - 75 psi to 0 - 10K psi
Output/Span	0 - 5 Vdc, 0 - 10 Vdc, 4 - 20 mA
Unique Features	• High overpressure (10X over pressure) • Shock & vibration resistant • Heavy Industrial grade transducer • Advanced digital compensation / calibration • Mechanical over pressure stops • High temperature operation
Accuracy	0.1% to 0.2% FSO
Operating Temp	-54°C to 120°C
Dimensions (mm)	Application dependent
Typical Apps	Hydraulic controls / steering, torpedo depth, vehicle braking systems, drones, weapon systems
Agency Approvals	CE, CENELEC (Intrinsically Safe)

MEAS M7100, U7100

Package	Automotive grade, stainless steel hermetic pressure ports and integral electrical connector, heavy duty
Type	Gage, no vent gage (M7100) Gage, sealed gage, absolute (U7100)
Pressure Range	0 - 10 thru 0 - 689 bar / 0 - 150 thru 0 - 10K psi (M7100) 0 - 1 thru 0 - 10 bar / 0 - 15 thru 0 - 150 psi (U7100)
Output/Span	0.5 - 4.5 Vdc [Ratiometric Output]; 1 - 5 Vdc [Regulated] (M7100) 0.5 - 4.5 Vdc [Ratiometric Output] (U7100)
Unique Features	• 1% total error band (-20°C to 85°C) • Solid state reliability • Survives high vibration and immersion • Microfused technology (M7100) • UltraStable technology (U7100)
Accuracy	0.25% FSO
Operating Temp	-40°C to 125°C
Dimensions (mm)	26.7 x 26.7 x 50.0
Typical Apps	Military vehicles engine control, compressors, hydraulic
Agency Approvals	CE (EMC), UL 508

PRESSURE SENSORS

Miniature Transducers and Transmitters

	MEAS XP Series	MEAS XPC10	MEAS EPIH
Unique Features	• Titanium construction (XP5, XPM4) • Stainless steel housing (XPM6, XPM10) • Amplified output options (XP5, XPM6, XPM10) • Cable and connector options (XPM4) • For static and dynamic applications	• Amplified output available • For static and dynamic applications • Optional IP67 ingress protection • High temperature operation	• 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)
Non Linearity	Up to ±0.25% FSO (XP5, XPM6, XPM10) Up to ±0.35% FSO (XPM4)	Up to ±0.25% F.S.	±1.0% FSO
Output/Span	20, 30, 75, 100mV (XP5) 30mV, 60mV, 100mV (XPM4) 100mV (XPM6) 50, 100mV (XPM10)	12mV FSO, 4V FSO (amplified)	12 mV to 75 mV
Pressure Range	1 - 345 bar / 15 - 5K psi (XP5, XPM10) 5 - 207 bar / 75 - 3K psi (XPM4) 103 - 1K bar / 1.5K - 15K psi (XPM6)	0 - 10, 21, 34, 52, 69, 103, 207, 345, 517 bar / 0 - 150, 300, 500, 750, 1K, 1.5K, 3K, 5K, 7.5K psi	0 - 0.35, 0.69, 1, 2, 3, 5, 7, 14, 21 bar / 0 - 5, 10, 15, 25, 50, 75, 100, 200, 300 psi
Overpressure	2X	1.5X	2X to 5X
Operating Temp	-40°C to 120°C	-40°C to 220°C	-40°C to 120°C
Dimensions (mm)	XP5: Hex 10 XPM4: Hex 8 XPM6: Hex 12 XPM10: Hex 15	Hex 15	Application dependent
Typical Apps	Military and aerospace, explosive test benches, space	Aerospace, test benches, high frequency / high temperature pressure applications	Aerospace testing, wind tunnels, aircraft body and wing dynamics

FORCE / TORQUE SENSORS

	MEAS FN HL Series	MEAS FN TH Series	MEAS FN PC Series
Package	Flange mount	Load pin	Tail stock/control rod
Operating Mode	Tension/Compression	Tension	Tension/Compression
Unique Features	• Extremely robust design • Very high EMC/RFI immunity	• Built in test feature • Dual redundant • Very high ultimate load	• Compact • Extremely high performance design • Mono or dual channel
Ranges N (Lbf)	Airframe dependent	Airframe dependent	Airframe dependent
Output	4/20 mA	0.5 to 5.5Vdc or 4/20mA	0.5 to 10.5Vdc
Temperature Range	-70°C to +90°C	-70°C to +90°C	-55°C to +55°C
Dimensions	Airframe dependent	Airframe dependent	Airframe dependent
Typical Apps	Measurement of force between geared rotary actuator and slat on high lift systems	Detection of secondary load path engagement on trimmable horizontal stabilizer actuator	Monitoring of pilot input forces for flight data recording

SENSOR SOLUTIONS FOR AEROSPACE & DEFENSE

FORCE / TORQUE SENSORS

	MEAS FN EM Series	MEAS VR BT Series	MEAS FN AF Series
Package	Pancake	Pin	Load pin
Operating Mode	Compression	Torque	Compression
Unique Features	• Ultra-flat for integration directly into electro-mechanical actuators	• High temperature variable reluctance technology	• Built in test feature, dual redundant • Very high ultimate load
Ranges N (Lbf)	Airframe dependent	Airframe dependent	Airframe dependent
Output	0.5 to 10.5Vdc	50mV rms (AC)	0.5 to 5.5Vdc or 4/20mA
Temperature Range	-55°C to 55°C	-40°C to 150°C	-70°C to 90°C
Dimensions	Airframe dependent	Airframe dependent	Airframe dependent
Typical Apps	Compression force measurement electro-mechanical actuators	Monitoring of force brakes	Monitoring of force between the electrical actuator and the ailerons

TEMPERATURE SENSORS

Sensing Elements

	MEAS Platinum Thin Film Chips	MEAS Platinum Thin Film Sensors	MEAS Glass Wire Wound Sensors
RTD Package	Leadless chips	Wired component	GO, GX
Type	• Thin film platinum deposited on ceramic substrate • Contact pads on top and bottom side for NTC chip like assembly • Contact pads on both ends for SMT	• Thin film platinum deposited on ceramic substrate, glass coated • Tube outline available • Connection via radial leads	• RTD • Glass rod • Radial leads
Resistance Range	100Ω, 1000Ω (Other values on request)	100Ω, 1000Ω (Other values on request)	100Ω (2x100Ω on few versions)
Unique Features	• Long term stability • Interchangeability • Assembly like NTC chips • Very small dimensions • Short response time	• Long term stability • Interchangeability • Small dimensions • Short response time • High electrical insulation	• Aggressive environments (acid, oil, solvent) • Small dimensions • Stability • No hysteresis • Short response time • Interchangeability
Accuracy	According to DIN EN 60751	Class T (F0.1), A (F0.15), B (F0.3) according to DIN EN 60751	Class W0.3, W0.15, W0.1 according to IEC60751
Operating Temp	-50°C to +400°C	-50°C to 600°C (standard) down to -200 °C or up to 1000 °C (on request)	-200°C to 400°C
Dimensions (mm)	1.5 x 1.5 (top / bottom pads) 1.2 x 3.6 (SMT)	2.0 x 2.3 x 1.1 (standard) 1.2 x 4.0 x 1.1 (standard) other dimensions (on request)	Ø 1.8 / Length 5mm to Ø 4.5 / Length 48mm
Typical Apps	Aerospace, test and measurement	Aerospace, test and measurement	Aviation and aeronautics

TEMPERATURE SENSORS

Sensing Elements

	MEAS Space Qualified (Hi-Rel)	MEAS Nickel RTD	MEAS Radial Leaded Thermistors	MEAS Axial Thermistors
Package	Radial, bead, custom	• SOT 23, bare die on request	Radial, axial, beads	DO-35
Type	• Epoxy • Glass • Probes • ESCC 4006013 • ESCC 4006014 • GSFC 319-P18 • 449900 Series	• Thin film nickel structure on silicon substrate, protected with a passivation layer • SOT23 Package for SMT • Good thermal connection of sensing element through leadframe-pin • Bare die for COB assembly	• NTC • Epoxy or glass coated	• NTC • Glass coated
Resistance Range	1kΩ to 100kΩ	1000Ω	100 to 1MΩ	5kΩ to 100kΩ
Unique Features	• ESA and NASA approved • High reliability and accuracy	• Harsh environment compatible • Automotive qualified • Very small dimensions • Very short response time • Good linearity • High temperature coefficient • Low power consumption	• Interchangeable • Moisture resistant • Stability	• Tight tolerance (±1%) • Max stability using high density (HD) chip • Hermetically sealed • Tinned & Nickel plated leads
Accuracy	0.5% to 10%	Class B, according to former DIN 43760 standard	0.25% to 20%	±1% to ±3%
Operating Temp	-55°C to 115°C	-55 °C to 160 °C	-55°C to 280°C	-40°C to 300°C
Dimensions (mm)	From 2.4	2.1 x 2.5 x 2.1 (SOT23), 0.7 x .7 x 0.4 (bare die)	0.4 to 4.9	2.0 x 4.0 body
Typical Apps	Instrumentation and compensation	Thermal compensation, thermal management	Temperature sensing for OEM	Fire detection units, PCB temp sensing

Sensor Assemblies

	MEAS Thermocouple Probes and Harnesses	MEAS Surface Sensors
Package	Screw-in or push-in design with cable extension, connector, or connecting head	Silicone rubber or polyimide laminated element, SP683
Type	• Collapsible Mineral Insulated (MI) with alloy sheath (radius≥5*OD) • Flexible cable with plastic or composite insulation • Rigid protection sheath: ceramic, quartz or alloy sheath	• Flat, flexible, rectangular sensor • Variety of designs available
Sensor Range	Type T, J, K, N, R, S, B (According to TC type and insulation type)	• RTD: Pt, Ni, Cu • Thermocouple: Type J, K, T, E
Unique Features	• High temperature and high vibration level (for MI) • Available in small diameters for fast respond time • Grounded or ungrounded or apparent hot junction • Single or multiple measuring points	• Surface sensing for curved or uneven surfaces • Noninvasive, simple installation • Adhesive backing option
Accuracy	Class 1 according to IEC584	RTD: Class A, B according to IEC60751
Operating Temp	-40°C to 1700°C (according to TC type and insulation type)	Varies: -50°C to 200°C Available up to 220°C
Dimensions (mm)	• OD Ø0.3 mm to Ø8 mm for MI • ø0.15mm for smallest flexible cable • Custom dimensions, fittings and cable lengths (from few centimeters to many meters)	Custom dimensions available
Typical Apps	Engine temperature	Aerospace, motor end windings of stator coils, generators

POSITION SENSORS

Angular Position Sensors, Encoders Absolute

	MEAS Resolver	MEAS Resolver	MEAS Resolver
Package	Hollow Shaft, Size 15	Hollow Shaft, Size 21	Input Shaft, Integrated Bearing, Size 11
Range	360 degrees absolute	360 degrees absolute	360 degrees absolute
Output	Analog (sin, cos)	Analog (sin, cos)	Analog (sin, cos)
Input Voltage (VR1-R2), Typical	2V rms - 10Vrms	2V rms - 12V rms	2V rms
Input Frequency, Typical	4kHz - 20kHz	2kHz - 15kHz	2,5kHz
Operating Temperature	-55°C to 150°C	-55°C to 150°C	-55°C to 150°C
Angular Error Rang, Typical	±7 arcmin to ± 20 arcmin	±7 arcmin to ± 20 arcmin	±10 arcmin
Pairs of Pole	1 / 3	1 / 2 / 3 / 4	1
Maximum Rational Speed	20,000 rpm	20,000 rpm	10,000 rpm
Weight	Approx. 90g	Approx. 240g	Approx. 120g
Unique Feature	Robust, wear-free, EMI insensitive	Robust, wear-free, EMI insensitive	Robust, wear-free, EMI insensitive
Typical Apps	Angular position of rotary actuators, rotating shafts	Angular position of e-motors (commutation) and permanent magnet generators	Measuring angular position of cockpit controls (lever, stick and pedal)

	MEAS Synchro	MEAS Multiturn Position Sensor Unit
Package	Input Shaft, Integrated Bearing, Size 11	Input Shaft, Integrated Bearing, Customized [1]
Range	360 degrees absolute	Multiturm (50.400 to 129.600) degree
Output	Analog (3 phase)	2 x Analog (3 phase), Redundant
Input Voltage (VR1-R2), Typical	21V rms - 26V rms	21V rms - 26V rms
Input Frequency, Typical	400Hz - 2500Hz	400Hz - 2500Hz
Operating Temperature	-55°C to 150°C	-55°C to 90°C
Angular Error Rang, Typical	±5 arcmin to ±10 arcmin	±80 arcmin (400Hz) / ±25 arcmin (2.500Hz)
Pairs of Pole	1	1
Maximum Rational Speed	10,000 rpm	600 rpm
Weight	Approx. 150g	Approx. 935g [1]
Unique Feature	Robust, wear-free, EMI insensitive	Robust, DO160 qualified
Typical Apps	Angular position of cockpit controls (lever, stick and pedal)	Multiturn position of primary and secondary flight control actuators

POSITION SENSORS

Potentiometers, Angular Position Sensors

	MEAS 6000 Series Servo Mount	MEAS 6200 Series Bushing Mount	MEAS 6900 Series Element/Wiper/Insul	MEAS 6100 Series Hollow Shaft
Package	• 12.7 mm - 50.8 mm / .500 in -2.00 in housing diameter • 3.170mm - 6.34mm / .1248 in - .2498 in shaft diameter • 12.7mm - 1.74mm / .500 in -.680 in housing length • 11.11mm - 47.62mm / .438 in - 1.875 in mounting pilot diameter	• 12.7 mm - 50.8 mm / .500 in -2.00 in housing diameter • 3.170mm - 6.34mm / .1248 in - .2498 in shaft diameter • 12.7mm - 1.74mm / .500 in -.680 in housing length • 3/8 32 NEF thread / 10.31mm /.4062 in pilot diameter	• 17.81 mm - 45.85mm / .702 in -1.805 in element outside diameter • 4.724 mm - 11.05mm / .186 in - .435 in element inside diameter • 3.175 mm -6.35 mm / .125 in - .250 shaft insulator inside diameter • 4.064 mm - 7.80mm / .160 in - .307 in mating wiper inside diameter • 5.08 mm / .200 in assembled package height	• 27.94 mm - 66.5 mm / 1.100 in - 2.62 in housing diameter • 3.175 mm - 19 mm / .125 in - .752 in hollow shaft diameter
Resistance	1K - 20K	1K - 20K	1K / 5K/ 10K	1K - 20 K
Range	Up to 355 degrees	Up to 355 degrees	Up to 350 degrees	Up to 355 degrees
Linearity	± 0.5%	± 0.5%	± 0.5%	± 0.5%
Output Smoothness	<0.1%	<0.1%	< 0.1%	< 0.1%
Resolution	Infinite	Infinite	Infinite	Infinite
Operating Temp	-65°C to 125°C	-65°C to 125°C	-65°C to 125°C	-65°C to 125°C
Rotational Life	50 million cycles min.	50 million cycles min.	50 million cycles min.	50 million cycles min.
Typical Apps	Flight control actuators, missile fin actuators	Rocket engine fuel valves, brake pedals	Cargo handling systems, cockpit controls	Targeting pod gimbals, missile thrust diverters

Linear Position Transducers
Cable Extension Transducers

	MEAS M150, MTA	MEAS MT2, MT3
Range	0 - 1.5 to 0 - 5 inches	0 - 3 to 0 - 30 inches
Output	Voltage divider	Voltage divider, incremental encoder
Environment/ IP Rating	IP50	IP50, IP67 (MT3A)
Enclosure	Aluminum	Aluminum and polycarbonate
Accuracy	±0.4% to ±1%	±0.25% to ±1.1%
Unique Features	• M150, one of the world's smallest stringpot • Designed for space-critical and testing applications	• 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	-40°C to 85°C (M150) -55°C to 100°C (MTA)	-55°C to 125°C
Dimensions (mm)	19 x 19 x 10 (M150)	55 x 45 x 55
Typical Apps	Aerospace	Aerospace and flight testing

Potentiometers, Linear Position Sensors

	MEAS 5903 / 5905 Series Linear Motion
Package	• 7.94 mm - 12.7 mm / .312 in - .500 in housing diameter • 1.98 mm - 3.18 mm / .078 in - .125 in shaft diameter
Resistance	1K / 5K / 10K
Range	5903 series - up to 50.8 mm / 2 in stroke 5905 series - up to 101.6 mm / 4 in stroke
Linearity	±1%
Output Smoothness	<0.1%
Resolution	Infinite
Operating Temp.	-65°C to 125°C
Rotational Life	50 million cycles min
Typical Apps	Flight control actuators, targeting pod gimbals, nose wheel position

POSITION SENSORS

Linear Position Transducers, Inductive Absolute

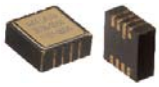
	MEAS M12
Package	AISI-304 Series Stainless steel
Linearity	±0.25% of range
Excitation	AC operated
Output	AC voltage
Range	±10 to ±100 mm
Unique Features	• Metric series • High stroke to length ratio • Constant sum of secondaries • Excellent temperature coefficient
Operating Temp	-55°C to 150°C (220°C optional)
Diameter (mm)	12
Typical Apps	Hydraulic spool valve position feedback, flight simulators, engine thrust reversers

Angular Position Sensors, Hall Effect Absolute

	MEAS H005 / H009 Series	MEAS H009–1200 Series Dual Output
Package	• 12.7 mm - 22.19 mm / .500 in - .875 in housing diameter • 3.170 mm / .1248 in shaft diameter • 16.9 mm - 17.4 mm / .670 in - .680 in housing length	• 22.23 mm / .875 in housing diameter • 3.170 mm / .1248 in shaft diameter • 26.1 mm / 1.03 in housing length
Range	Up to 359 degrees	Up to 359 degrees (dual output)
Output Options	Analog / PWM / Serial	Analog / PWM / Serial
Resolution	12 Bit - Analog / PWM 14 Bit - Serial	12 Bit - Analog / PWM 14 Bit - Serial
Linearity	± 0.2%	± 0.2% (dual output)
Nominal Supply	5 volts	5 volts (dual output)
Operating Temp	-40°C to 150°C	-40°C to 150°C
Rotational Life	> 100 million cycles (bearing life)	> 100 million cycles (bearing life)
Typical Apps	Missile fin actuation	Missile fin actuation

VIBRATION SENSORS

DC Accelerometers



	MEAS 3038	MEAS EGAXT	MEAS 4602/4604HT
Package	SMD	Stainless steel	Anodized aluminum
Type	MEMS, Board level	Plug and Play, Unamplified, Adhesive / Screw mount	Plug and Play, Amplified, Screw mount
F.S. Range (g)	±50, 100, 200, 500, 2000, 6000	±5 through 2500	±2, 10, 30, 50, 100, 200, 500
Unique Features	• Hermetically sealed • High over-range protection • Gas damping	• Sub-miniature • Lightweight • 10,000 g over-range protection	• Exceptional temp compensation • HT version to 170°C • High over-range • Hermetically sealed
Accuracy	±0.5% Non-linearity	±1.0% Non-linearity	±1.0% Non-linearity
Excitation Voltage	—	—	8 - 36 Vdc / 8 - 18 Vdc (HT)
Operating Temp	-54°C to 125°C	-40°C to 120°C	-54°C to 170°C (HT)
Dimensions (mm)	7.62 x 7.62 x 3.3	7.2 x 4.6 x 4.6	21.08 x 21.59 x 7.62
Typical Apps	Vibration / shock monitoring, embedded systems, shock testing, safe and arm	Flight test and control, launch, crash, impact testing, robotics	Flight testing on engines, flutter test, weapons development

VIBRATION SENSORS

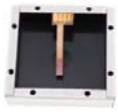
DC Accelerometers
Plug and Play

	MEAS 3420XA	MEAS 3520XA
Package	Anodized aluminum	Anodized aluminum
Type	±1 to 500	±1 to 500
F.S. Range (g)	Triaxial	1, 2, or 3
Unique Features	• Analog output • Precision aligned • Performance over temperature	• Digital output • Direct to PC • User configurable settings
Accuracy	±0.2% Non-linearity	±0.2% Non-linearity
Excitation Voltage	8.5 to 36 VDC	8.5 to 36 VDC
Operating Temp	-40°C to 85°C	-40°C to 85°C
Dimensions (mm)	24 x 24 x 28.30	52 x 36.50 x 17.50
Typical Apps	Safety system, military research and development	Impact detection, stores separation

Piezoelectric Accelerometers
Plug and Play

	MEAS 7202A/7204A
Package	Stainless steel
Type	Voltage mode plug, through hole mount
Sensitivity (mV/g)	100, 10
Unique Features	• Annular shear mode • Integral strain relief • Case isolated, internally shielded • 3-pin connector • +150°C option
Operating Temp	-55°C to 130°C
Dimensions (mm)	13.34 x 19.05
Typical Apps	HUMS applications, rotor track and balance

PIEZO FILM SENSORS



	MEAS Piezo Cable	MEAS Tamper Box
Package	Shielded coaxial 20 gage piezo cable	Flat film or box mounted
Type	Polymer jacketing; armored jacketing	Tamper detection sensor
Range	µPa sensitivity	Application dependent
Unique Features	• Continuous lengths to 1km • Shielded construction	• Low power • Custom shapes and sizes • High security
Accuracy	±20% (typical)	Application dependent
Operating Temp	-40°C to 85°C (up to 100°C available)	-40°C to 85°C
Dimensions (mm)	3 mm diameter; continuous lengths	Application dependent
Typical Apps	Geophone, impact sensors, intrusion detection	Encryption modules, POS card readers, PIN entry devices, tamper

ULTRASONIC SENSORS

Standard Contact Point Level

	MEAS LL-01	MEAS LL-10
Type	Gap	Tip
Unique Features	• All 316L SS • Integral electronics • Miniature threads • Single machined • No adjustment for viscosity, density	• All 316L SS • Integral electronics • No adjustment for viscosity, density
Input	6 - 24VDC	9 - 24VDC
Output	1/2A contact	1A SPDT
Pressure	250 psi	1000 psi
Temperature	100°C	100°C
Actuation point	0.25"	2.25" standard
Process Connection	1/4"NPT & 1/2"NPT	3/4"NPT
Cable	12"	12"
Approvals	CE	CE
Typical Apps	Compressors, coolant reservoirs	Hydraulic reservoirs, dark water

PRODUCT AND APPLICATION MATRIX	Flow	Fluid Property	Force/Torque	Humidity	Liquid Level	Rate/Inertial	Position	Pressure	Temperature	Ultrasonic	Vibration/Shock
Cockpit Controls			●				●				
Flight Controls and Actuation			●				●				
Landing Gear & Brakes			●				●	●			
Cabin, Galley & Cargo				●	●		●	●	●	●	
Launch & Space			●				●	●	●		●
Engine, Turbine & APU	●				●		●	●	●		●
Military (Missile, Ground Vehicle, Marine, UAV...)	●	●			●	●	●	●	●	●	●

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