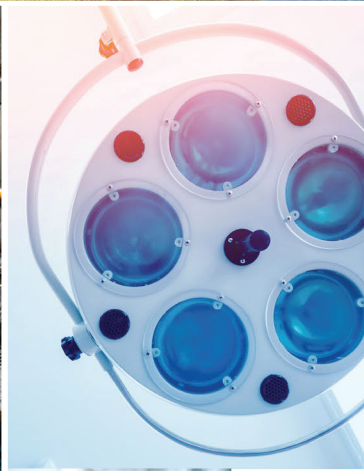


The background of the entire page is a complex network visualization. It consists of numerous white nodes of varying sizes connected by thin, glowing blue lines. The nodes are scattered across the frame, with a higher density in the lower half. A bright, glowing orange and yellow light source is positioned in the lower center, creating a lens flare effect that illuminates the network. The overall color palette is dominated by deep blues and oranges, with a dark blue gradient at the top and bottom edges.

TE CONNECTIVITY SENSORS

TE CONNECTIVITY SENSORS

TE Connectivity (TE) is a global technology leader, providing connectivity and sensor solutions essential in today's increasingly connected world. As one of the largest sensor companies in the world, our sensors are vital to the next generation of data-driven technology. TE's portfolio of intelligent, efficient and high-performing sensor solutions are used for customers across several industries, including Automotive, Industrial, Medical, Appliance, Aerospace & Defense, and Industrial & Commercial Transportation. Our technologies enable measurement capabilities such as pressure, temperature, position, vibration, humidity and fluid property, to name a few. Our engineers help transform concepts into creations — redefining what's possible, using technologies capable of measuring most physical characteristics contributing to a safe, green and connected world, even in harsh conditions.



MARKETS SERVED



AEROSPACE & DEFENSE



INDUSTRIAL & COMMERCIAL TRANSPORTATION



APPLIANCES



INTELLIGENT BUILDINGS



AUTOMATION & CONTROL



MEDICAL



AUTOMOTIVE



OIL & GAS



DATA & DEVICES



RAIL



INDUSTRIAL



TEST & MEASUREMENT

SENSOR TECHNOLOGIES



DIGITAL COMPONENT SENSOR DEVELOPMENT TOOLS
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FLOW SENSORS
PAGE 8



FORCE SENSORS
PAGE 10



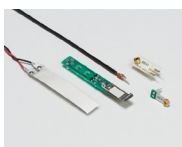
HUMIDITY SENSORS
PAGE 16



LIQUID LEVEL SENSORS
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PHOTO OPTIC SENSORS
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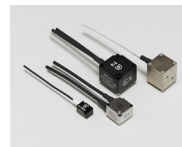
PIEZO FILM SENSORS
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POSITION SENSORS
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PRESSURE SENSORS
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RATE AND INERTIAL SENSORS
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SCANNERS AND SYSTEMS
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SPEED SENSORS
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TEMPERATURE SENSORS
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TORQUE SENSORS
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ULTRASONIC SENSORS
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VIBRATION SENSORS
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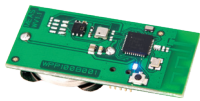


WATER LEVEL SENSORS
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DIGITAL COMPONENT SENSOR DEVELOPMENT TOOLS



WIRELESS DEMO AND DEVELOPMENT KITS



Environmental Sensor Tag

Type	Humidity, Temperature, Pressure
Specifications	<ul style="list-style-type: none"> • 0 - 100% RH • 300 to 1,200 mbar
Communication Interface	Standard 2.4 GHz wireless communication
Application	iOS 7.0+ Android™ 4.3+
Operating Temp.	20°C to 85°C



M5600

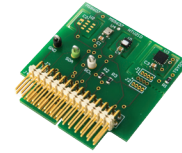
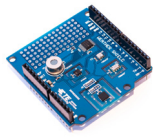
Type	Pressure
Specifications	<ul style="list-style-type: none"> • 50 - 15K psi • Type G/S/C
Communication Interface	Standard 2.4 GHz wireless communication
Application	iOS 7.0+ Android™ 4.3+
Operating Temp.	-20°C to 85°C



U5600

Type	Pressure
Specifications	<ul style="list-style-type: none"> • 2 - 10K psi • Type G/S/C/A
Communication Interface	Standard 2.4 GHz wireless communication
Application	iOS 7.0+ Android™ 4.3+
Operating Temp.	-20°C to 85°C

SHIELDS AND HATS



	Arduino Weather Shield
Type	Humidity, Temperature, Pressure
Sensors	HTU21D, MS5637, MS8607, TSY501*, TSD305
Specifications	<ul style="list-style-type: none"> • 0 - 100% RH • 20°C to 85°C • 300 to 1,200 mbar
Communication Interface	I ² C
Partner Board	Arduino / Genuino

	Raspberry Pi™ Sensors Weather Hat
Type	Humidity, Temperature, Pressure
Sensors	HTU21D, MS5637, TSY501*, TSD305
Specifications	<ul style="list-style-type: none"> • 0 - 100% RH • 20°C to 85°C • 300 to 1,200 mbar
Communication Interface	I ² C
Partner Board	Raspberry Pi™

	PicTail Plus
Type	Humidity, Temperature, Pressure
Sensors	HTU21DF, MS5637, TSY501*, MS8607
Specifications	<ul style="list-style-type: none"> • 0 - 100% RH • -20°C to 85°C • 300 to 1,200 mbar
Communication Interface	I ² C
Partner Board	Microchip Explorer 16

WING BOARDS



	HTU21D	MS5637	MS8607	TSYS01*	TSYS02D*	KMA36(A)
Type	Humidity	Pressure	Pressure, Temperature, Humidity	Temperature	Temperature	Angular Position
Specifications	<ul style="list-style-type: none"> • 0 to 100% RH • -40°C to 125°C • 3.3 to 5.5 V 	<ul style="list-style-type: none"> • 10 to 2,000 mbar • -40°C to 85°C • 1.5 to 3.6 V 	<ul style="list-style-type: none"> • 10 to 2,000 mbar • -40°C to 85°C • 0 to 100% RH • 1.5 to 3.6 V 	<ul style="list-style-type: none"> • -40°C to 125°C • 2.2 to 3.6 V 	<ul style="list-style-type: none"> • -40°C to 125°C • 1.5 to 3.6 V 	<ul style="list-style-type: none"> • 0 to 360° • -25°C to 85°C • 2.9 to 6.0 V
Accuracy	±3% RH	±2 mbar	±3% RH, ±2 mbar, ±1.0°C	±0.1°C	±0.2°C	±0.1°
Communication Interface	I ² C	I ² C	I ² C	I ² C	I ² C	I ² C
Compatibility	Configured to operate with the Xplained Pro development platform	Configured to operate with the Xplained Pro development platform	Configured to operate with the Xplained Pro development platform	Configured to operate with the Xplained Pro development platform	Configured to operate with the Xplained Pro development platform	Configured to operate with the Xplained Pro development platform

*Temperature System Sensor (TSYS)

PERIPHERAL MODULES

Digilent Pmod™



HTU21D

Type	Humidity
Specifications	<ul style="list-style-type: none"> • 0 to 100% RH • -40°C to 125°C • 3.3 to 5.5 V
Accuracy	±3% RH
Communication Interface	I ² C
Compatibility	Development systems compatible with Digilent Pmod™ connections



MS5637

Type	Pressure
Specifications	<ul style="list-style-type: none"> • 10 to 2,000 mbar • -40°C to 85°C • 1.5 to 3.6 V
Accuracy	±2 mbar
Communication Interface	I ² C
Compatibility	Development systems compatible with Digilent Pmod™ connections



MS8607

Type	Pressure, Temperature, Humidity
Specifications	<ul style="list-style-type: none"> • 10 to 2,000 mbar • -40°C to 85°C • 0 to 100% RH • 1.5 to 3.6 V
Accuracy	±3% RH, ±2 mbar, ±1.0°C
Communication Interface	I ² C
Compatibility	Development systems compatible with Digilent Pmod™ connections



TSYS01*

Type	Temperature
Specifications	<ul style="list-style-type: none"> • -40°C to 125°C • 2.2 to 3.6 V
Accuracy	±0.1°C
Communication Interface	I ² C
Compatibility	Development systems compatible with Digilent Pmod™ connections



TSYS02D*

Type	Temperature
Specifications	<ul style="list-style-type: none"> • -40°C to 125°C • 1.5 to 3.6 V
Accuracy	±0.2°C
Communication Interface	I ² C
Compatibility	Development systems compatible with Digilent Pmod™ connections



KMA36(A)

Type	Angular Position
Specifications	<ul style="list-style-type: none"> • 0° to 360° • -25°C to 85°C • 2.9 to 6.0 V
Accuracy	±0.1°
Communication Interface	I ² C
Compatibility	Development systems compatible with Digilent Pmod™ connections



MS5611

Type	Pressure
Specifications	<ul style="list-style-type: none"> • 10 to 1,200 mbar • -40°C to 85°C • 1.5 to 3.6 V
Accuracy	±2 mbar
Communication Interface	I ² C
Compatibility	Development systems compatible with Digilent Pmod™ connections



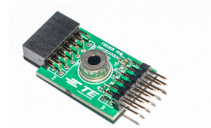
MS5837

Type	Pressure
Specifications	<ul style="list-style-type: none"> • 10 to 2,000 mbar • -40°C to 85°C • 1.5 to 3.6 V
Accuracy	±2 mbar
Communication Interface	I ² C
Compatibility	Development systems compatible with Digilent Pmod™ connections



MS5805

Type	Pressure
Specifications	<ul style="list-style-type: none"> • 10 to 2,000 mbar • -40°C to 85°C • 1.8 to 3.6 V
Accuracy	±2 mbar
Communication Interface	I ² C
Compatibility	Development systems compatible with Digilent Pmod™ connections



TSD305

Type	Temperature
Specifications	<ul style="list-style-type: none"> • -10°C to +85°C • 1.68 to 3.6 V
Accuracy	±1°C
Communication Interface	I ² C
Compatibility	Development systems compatible with Digilent Pmod™ connections

GROVE SYSTEM



KMA36
 Angular Position
 Specifications
 • 0 to 360°
 • -25°C to 85°C
 • 5.0 V
 Accuracy
 ±0.1°
 Comm. Interface
 I²C
 Compatibility
 Development platform compatible with grove systems



TSYS01*
 Temperature
 Specifications
 • -40°C to 125°C
 • 5.0 V
 Accuracy
 ±0.1°C
 Comm. Interface
 I²C
 Compatibility
 Development platform compatible with grove systems



TSYS02*
 Temperature
 Specifications
 • -40°C to 125°C
 • 5.0 V
 Accuracy
 ±0.2°C
 Comm. Interface
 I²C
 Compatibility
 Development platform compatible with grove systems



MS5637
 Pressure
 Specifications
 • 10 to 2,000 mbar
 • -40°C to 85°C
 • 5.0 V
 Accuracy
 ±2 mbar
 Comm. Interface
 I²C
 Compatibility
 Development platform compatible with grove systems



MS8607
 Pressure, Temperature, Humidity
 Specifications
 • 10 to 2,000 mbar
 • -40°C to 85°C
 • 0 to 100% RH
 • 5.0 V
 Accuracy
 ±3% RH, ±2 mbar, ±1.0°C
 Comm. Interface
 I²C
 Compatibility
 Development platform compatible with grove systems



HTU21D
 Humidity
 Specifications
 • 0 to 100% RH
 • -40°C to 125°C
 • 5.0 V
 Accuracy
 ±3% RH
 Communication Interface
 I²C
 Compatibility
 Development platform compatible with grove systems



MS5611
 Pressure
 Specifications
 • 10 to 1,200 mbar
 • -40°C to 85°C
 • 5.0 V
 Accuracy
 ±2 mbar
 Comm. Interface
 I²C
 Compatibility
 Development platform compatible with grove systems



MS5837
 Pressure
 Specifications
 • 10 to 2,000 mbar
 • -40°C to 85°C
 • 5.0 V
 Accuracy
 ±2 mbar
 Comm. Interface
 I²C
 Compatibility
 Development platform compatible with grove systems



MS5805
 Pressure
 Specifications
 • 10 to 2,000 mbar
 • -40°C to 85°C
 • 5.0 V
 Accuracy
 ±2 mbar
 Comm. Interface
 I²C
 Compatibility
 Development platform compatible with grove systems

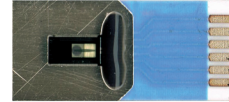
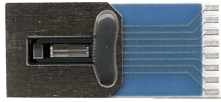


TSD305
 Temperature
 Specifications
 • -10°C to +85°C
 • 5.0 V
 Accuracy
 ±1°C
 Comm. Interface
 I²C
 Compatibility
 Development platform compatible with grove systems

FLOW SENSORS



MASS AIR FLOW SENSORS



Package	LMM-H03 Hybrid
Type	<ul style="list-style-type: none"> Hot film anemometer component Bidirectional
Operating Temp.	-40°C to 125°C
Unique Features	High sensitivity at low heater temperatures, fast response time, true air temperature sensor
Calibration/Accuracy	Dependent on electronics
Dimensions (mm)	23 x 10.15 x 1.1
Typical Applications	Air intake of combustion engine, spirometer, industrial gas flow

Package	LMM-H04 Hybrid
Type	<ul style="list-style-type: none"> Hot film anemometer component Unidirectional
Operating Temp.	-40°C to 125°C
Unique Features	High sensitivity at low heater temperatures, fast response time, true air temperature sensor
Calibration/Accuracy	Dependent on electronics
Dimensions (mm)	24 x 10.15 x 1.1
Typical Applications	Air intake of combustion engine, spirometer, industrial gas flow

FLOW SWITCHES



Package	FS-01 Noryl®
Type	Flow switch for direction of liquid and gas flow
Max. Pressure	10 bar at 20°C
Operating Temp.	-30°C to 85°C
Unique Features	Triac, normally open, close on flow
Dimensions (mm)	106 x 32 x 32
Typical Applications	Mains water control, power shower, central heating systems, circulation pump protection, cooling systems

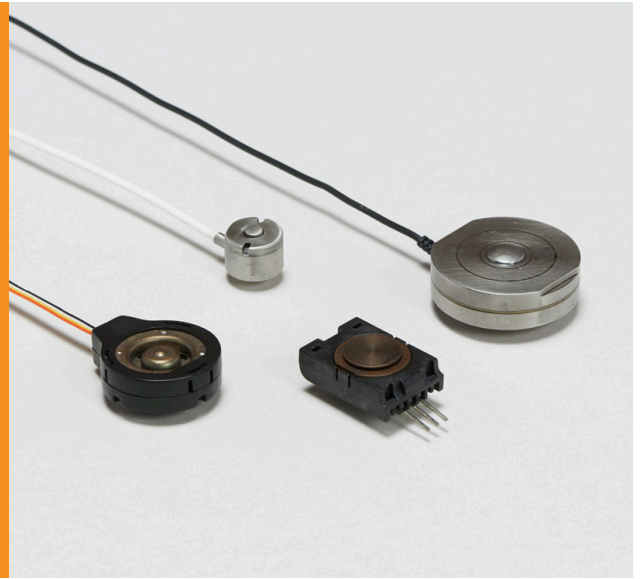
Package	FS-02 Noryl®
Type	Flow switch for direction of liquid and gas flow
Max. Pressure	10 bar at 20°C
Operating Temp.	-30°C to 85°C
Unique Features	SPST reed switch, normally open, close on flow
Dimensions (mm)	106 x 32 x 32
Typical Applications	Mains water control, power shower, central heating systems, circulation pump protection, cooling systems

Package	FS-05 Brass
Type	Flow switch for direction of liquid and gas flow
Max. Pressure	10 bar at 20°C
Operating Temp.	-30°C to 100°C
Unique Features	Triac, normally open, close on flow
Dimensions (mm)	113 x 53 x 36
Typical Applications	Mains water control, power shower, central heating systems, circulation pump protection, cooling systems

Package	FS-06 Brass
Type	Flow switch for direction of liquid and gas flow
Max. Pressure	10 bar at 20°C
Operating Temp.	-30°C to 100°C
Unique Features	SPST reed switch, normally open, close on flow
Dimensions (mm)	113 x 53 x 36
Typical Applications	Mains water control, power shower, central heating systems, circulation pump protection, cooling systems

Package	FS-90/1 Copper
Type	Flow switch for direction of liquid and gas flow
Max. Pressure	10 bar at 20°C
Operating Temp.	-30°C to 85°C
Unique Features	SPST reed switch, normally open, close on flow
Dimensions (mm)	153 x 25 x 15
Typical Applications	Leak detection, flow sensing, mains water control, cooling systems, circulation pump protection

FORCE SENSORS



LOAD CELLS

Low Cost OEM



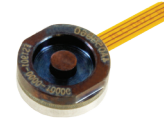
FX19

Package	Low profile "coin cell" design
Operating Mode	Compression
Unique Features	<ul style="list-style-type: none"> • Low cost, low strain design • Essentially unlimited cycle life
FS Ranges	10 to 200 lbf 50 to 100 Newton
Max. Over-range	2.5X FS
Output/Span	100 mV
Combined Linearity & Hysteresis	±1.0% FSO
Operating Temperature	0°C to 50°C
Dimensions (mm)	Ø25.00 x 8.00
Typical Applications	Consumer OEM, exercise machines, physical therapy, vending machines, appliances, pumps, medical devices



FX29

Package	Welded miniature compression load cell, Analog and Digital options
Operating Mode	Compression
Unique Features	<ul style="list-style-type: none"> • Best price to performance • Designed for unlimited cycles and high over-range
FS Ranges	10 to 100 lbf 50 to 500 Newton
Max. Over-range	2.5X FS
Output/Span	100 mV, 0.5-4.5 VDC, Digital (I ² C)
Combined Linearity & Hysteresis	±1.0% FSO
Operating Temperature	0°C to 50°C
Dimensions (mm)	Ø19.70 x 4.95
Typical Applications	Consumer OEM, exercise machines, physical therapy, vending machines, appliances, pumps, medical devices



FS19

Package	Stainless steel housing with flexible PCB
Operating Mode	Compression
Unique Features	<ul style="list-style-type: none"> • Low cost • Small size and light weight
FS Ranges	500 to 3,000 grams-force 5 to 30 Newton
Max. Over-range	2X FS
Output/Span	100 mV
Combined Linearity & Hysteresis	±1.0% FSO
Operating Temperature	0°C to 40°C
Dimensions (mm)	Ø9.5 x 3.45
Typical Applications	Infusion pump, load sensing, contact sensing, weighing, household appliances



FS20

Package	Miniature, drop in replacement for industry standard
Operating Mode	Compression
Unique Features	<ul style="list-style-type: none"> • Load cell design operates at very low strains • Not subject to lead die fatigue
FS Ranges	500 to 5,000 grams-force 5 to 50 Newton
Max. Over-range	2.5X FS
Output/Span	0.5-4.5 VDC, 1.0-4.0 VDC
Combined Linearity & Hysteresis	±1.0% FSO
Operating Temperature	-40°C to 85°C
Dimensions (mm)	30.708 x 17.272 x 8.255
Typical Applications	Infusion pumps, contact sensing, medical devices, consumer appliances



FC22

Package	Plastic housing, button, flange mounting
Operating Mode	Compression
Unique Features	<ul style="list-style-type: none"> • Low cost button shape • Essentially unlimited cycle life
FS Ranges	10 to 100 lbf 50 to 500 Newton
Max. Over-range	2.5X FS
Output/Span	100 mV, 0.5-4.5 VDC
Combined Linearity & Hysteresis	±1.0% FSO
Operating Temperature	-40°C to 85°C
Dimensions (mm)	Ø26.00 x 42.00 x 19.50
Typical Applications	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	<ul style="list-style-type: none"> • Industry standard low profile all stainless steel design • Resistant to off-axis loads
FS Ranges	50 to 2,000 lbf 250 to 1,000 Newton
Max. Over-range	2.5X FS
Output/Span	100 mV, 0.5-4.5 VDC
Combined Linearity & Hysteresis	±1.0% FSO
Operating Temperature	-40°C to 85°C
Dimensions (mm)	Ø31.75 x 10.20
Typical Applications	Batch weighing, robotics, assembly line force, printing presses, pumps, winch and hoist

LOAD CELLS

Standard



FMT

Package	Washer
Operating Mode	Compression
Unique Features	<ul style="list-style-type: none"> • High stiffness • Clamping and bolt forces • High temperature option
FS Ranges	4K to 64K lbf 20K to 320K Newton
Max. Over-range	1.5X FS
Output/Span	±20 mV
Combined Linearity & Hysteresis	±1.5% FS
Operating Temperature	-20°C to 80°C
Dimensions (mm)	Range dependent
Typical Applications	Robotics, process control, bolt clamping for bridges



FN1010

Package	Load pin design
Operating Mode	Tension and compression
Unique Features	<ul style="list-style-type: none"> • Keyed anti-rotation slot • Bidirectional available • Optional watertight construction
FS Ranges	2K to 400K lbf 10K to 2,000K Newton
Max. Over-range	1.5X FS
Output/Span	±20 mV, 0.5-4.5 VDC, 4-20 mA
Combined Linearity & Hysteresis	±1% FS
Operating Temperature	-20°C to 80°C
Dimensions (mm)	Range dependent
Typical Applications	Crane monitoring, offshore, load-limited devices



FN2420

Package	Very high capacity load button
Operating Mode	Compression
Unique Features	<ul style="list-style-type: none"> • High stiffness • Optional load button • Optional high level output module
FS Ranges	4K to 1000K lbf 20K to 5,000K Newton
Max. Over-range	1.5X FS
Output/Span	±20 mV, 0.5-4.5 VDC
Combined Linearity & Hysteresis	±0.25% FS
Operating Temperature	-40°C to 150°C
Dimensions (mm)	Range dependent
Typical Applications	Calibration presses, robotics and effectors, laboratory and research



FN3000, FN3050

Package	Pan-cake
Operating Mode	Tension and compression
Unique Features	<ul style="list-style-type: none"> • High stability • All FN3050 have same housing • Optional high level output
FS Ranges	20 to 200K lbf 100 to 1,000K Newton
Max. Over-range	1.5X FS (10X FS with stops)
Output/Span	±20 mV, 0.5-4.5 VDC
Combined Linearity & Hysteresis	±0.1% FS
Operating Temperature	-40°C to 150°C
Dimensions (mm)	Range dependent
Typical Applications	Static fatigue tests, laboratory and research, robotics



FN3002

Package	Very high capacity dual stud
Operating Mode	Tension and compression
Unique Features	<ul style="list-style-type: none"> • Threaded male fitting • Integrated amplifier • Optional rod end
FS Ranges	2K to 400K lbf 10K to 2,000K Newton
Max. Over-range	1.5X FS
Output/Span	±20 mV, 0.5-4.5 VDC
Combined Linearity & Hysteresis	±0.25% FS
Operating Temperature	-40°C to 150°C
Dimensions (mm)	Range dependent
Typical Applications	Assembly forces, tool force, offshore



FN3030

Package	S-beam
Operating Mode	Tension and compression
Unique Features	<ul style="list-style-type: none"> • Optional rod ends • Optional high level output • Optional high compensation temperature
FS Ranges	10 to 20K lbf 50 to 100K Newton
Max. Over-range	1.5X FS
Output/Span	±20 mV, 0.5-4.5 VDC
Combined Linearity & Hysteresis	±0.1% FS
Operating Temperature	-40°C to 150°C
Dimensions (mm)	Range dependent
Typical Applications	Laboratory and research, process control, customized options



FN3148

Package	S-beam with stops
Operating Mode	Tension and compression
Unique Features	<ul style="list-style-type: none"> • Very high accuracy • High resolution • Mechanical stops
FS Ranges	2 to 400 lbf 10 to 2,000 Newton
Max. Over-range	5X to 100X FS
Output/Span	±20 mV, 0.5-4.5 VDC
Combined Linearity & Hysteresis	±0.05% FS
Operating Temperature	-40°C to 120°C
Dimensions (mm)	Range dependent
Typical Applications	Product validation tests, medical instruments, weighing



FN9620

Package	S-beam
Operating Mode	Tension and compression
Unique Features	<ul style="list-style-type: none"> • High accuracy • IP68 • Entry level
FS Ranges	100 to 2,000 lbf 500 to 10K Newton
Max. Over-range	1.5X FS
Output/Span	±10 mV to ±20 mV
Combined Linearity & Hysteresis	±0.05% FS
Operating Temperature	-40°C to 90°C
Dimensions (mm)	56 x 20 x 60
Typical Applications	Test bed, dynamic fatigue testing, robotics and effectors



FN9630, FN9635

Package	Very high accuracy pan-cake
Operating Mode	Tension and compression
Unique Features	<ul style="list-style-type: none"> • High stability & accuracy • Connection flange supplied for model FN9635 • Minimal cross effect
FS Ranges	2K to 40K lbf 10K to 200K Newton
Max. Over-range	3X FS
Output/Span	±20 mV
Combined Linearity & Hysteresis	±0.08% FS
Operating Temperature	-40°C to 90°C
Dimensions (mm)	Range dependent
Typical Applications	Static fatigue tests, weighing calibration, robotics

FORCE LOAD CELLS

Miniature Load Cells



	ELAF	XFC200R	XFL212R	XFTC300	XFU400
Package	Button, dual stud	Small diameter load button	Low profile load button	Low/high capacity dual stud	Miniature rod end
Operating Mode	Tension and compression	Compression	Compression	Tension and compression	Tension and compression
Unique Features	<ul style="list-style-type: none"> • Low cost, small profile • Microfuse technology • Low off-axis response 	<ul style="list-style-type: none"> • High stiffness • High overload capacity • Static and dynamic 	<ul style="list-style-type: none"> • Extremely flat • Integrated load button • Small diameter 	<ul style="list-style-type: none"> • High stiffness • High overload capacity • Threaded male/female fitting 	<ul style="list-style-type: none"> • High stiffness • High accuracy • High temperature
FS Ranges	10 to 2,000 lbf 50 to 10K Newton	0.4 to 2,000 lbf 2 to 10K Newton	1 to 100 lbf 5 to 500 Newton	0.4 to 400 lbf 2 to 2,000 Newton	100 to 1,000 lbf 500 to 5,000 Newton
Max. Over-range	2.5X FS	2X FS	2X FS	2X FS	1.5X FS
Output/Span	±100 mV, 0.5-4.5 VDC	±100 mV	±100 mV	±100 mV, 0.5-4.5 VDC	±100 mV
Combined Linearity & Hysteresis	±0.25% FS	±0.5% FS	±1% FS	±0.5% FS	±0.3% FS
Operating Temperature	-40°C to 120°C	-40°C to 120°C	-40°C to 120°C	-40°C to 150°C	-20°C to 120°C
Dimensions (mm)	Range dependent	Ø10 to Ø16	Ø12.5 x 3.5	Range dependent	Range dependent
Typical Applications	Theatrical rigging loads, assembly forces, weighing, thrust measurements, product validation testing	Material test, measuring tools, robotics and effectors	Dental and biomechanical, surface mount assembly system, production validation test	Material test, tool forces, robotics end effectors	Spherical rod end bearings, engine & suspension testing, machinery equipment

FORCE LOAD CELLS

Multiaxial Load Cells



	FN7110	FN7325
Package	Dual S-beam range	Custom design and ranges available upon request
Operating Mode	Tension and compression	Multiaxial force and torque
Unique Features	<ul style="list-style-type: none"> • High resolution • Optional high level output • Double range 	<ul style="list-style-type: none"> • Measures load and torque in 3 directions, 6DOF total • Fatigue rated • Minimal cross effects
FS Ranges	2 to 2,000 lbf 10 to 10K Newton	1K to 50K lbf 5K to 250K Newton
Max. Over-range	1.2X FS	1.2X FS
Output/Span	±20 mV, 0.5-4.5 VDC	±150 mV, 0.5-4.5 VDC
Combined Linearity & Hysteresis	±0.1% FS	±1% FS
Operating Temperature	-20°C to 80°C	-20°C to 80°C
Dimensions (mm)	60 x 30 x 100	Range dependent
Typical Applications	Process control, assembly forces, weighing, thrust measurements, product validation testing	Structure testing, crash testing, industrial test benches, robotic joints

FORCE LOAD CELLS

Automotive Load Cells



FN2114

Package	Brake pedal
Operating Mode	Compression
Unique Features	<ul style="list-style-type: none"> • High accuracy • Extra flat • Compact
FS Ranges	40 to 500 lbf 200 to 2,500 Newton
Max. Over-range	1.5X FS
Output/Span	±20 mV, 0.5-4.5 VDC
Combined Linearity & Hysteresis	±1% FS
Operating Temperature	-20°C to 80°C
Dimensions (mm)	Range dependent
Typical Applications	Brake pedal, clutch pedal, test bed



FN2317

Package	Hand brake
Operating Mode	Compression
Unique Features	<ul style="list-style-type: none"> • Easily installed • Ergonomic design • Fits most vehicles
FS Ranges	100 to 200 lbf 500 to 1,000 Newton
Max. Over-range	1.5X FS
Output/Span	±20 mV, 0.5-4.5 VDC
Combined Linearity & Hysteresis	±0.5% FS
Operating Temperature	-20°C to 80°C
Dimensions (mm)	100 x 20 x 15
Typical Applications	Hand brake, test bed



FN2570

Package	Brake pedal
Operating Mode	Compression
Unique Features	<ul style="list-style-type: none"> • High accuracy • Compact and extra flat • Rugged, stainless steel design
FS Ranges	40 to 500 lbf 200 to 2,500 Newton
Max. Over-range	1.5X FS
Output/Span	±20 mV
Combined Linearity & Hysteresis	±2.5% FS
Operating Temperature	-20°C to 80°C
Dimensions (mm)	59 x 59 x 12.5
Typical Applications	Brake pedal, clutch pedal, test bed



FN4055

Package	Seat belt sensor
Operating Mode	Tension
Unique Features	<ul style="list-style-type: none"> • Low operating ranges • Protected against overload • Compatible with most seat belts
FS Ranges	20 to 60 lbf 100 to 300 Newton
Max. Over-range	10X FS
Output/Span	±20 mV
Combined Linearity & Hysteresis	±0.25% FS
Operating Temperature	-20°C to 80°C
Dimensions (mm)	63.5 x 63.5 x 12.7
Typical Applications	Auto crash testing, tension at the belt receptacle



FN4070 & FN4080

Package	Seat belt buckle sensor
Operating Mode	Tension
Unique Features	<ul style="list-style-type: none"> • High operating ranges • Detachable tongue and cable • Compatible with most seat belts
FS Ranges	200 to 8,000 lbf 1K to 40K Newton
Max. Over-range	1.5X FS
Output/Span	±20 mV
Combined Linearity & Hysteresis	±0.5% FS
Operating Temperature	-20°C to 80°C
Dimensions (mm)	Range dependent
Typical Applications	Auto crash testing, tension at the belt receptacle



FN7080

Package	Gear stick design
Operating Mode	Multi-axial
Unique Features	<ul style="list-style-type: none"> • Measures force in three directions • Replaces gear knob • Ease of mounting
FS Ranges	40 to 100 lbf 200 to 500 Newton
Max. Over-range	1.2X FS
Output/Span	±20 mV, 0.5-4.5 VDC
Combined Linearity & Hysteresis	< ±0.3% FS
Operating Temperature	-20°C to 80°C
Dimensions (mm)	Ø25 spherical
Typical Applications	Change gear force measurement, roughness of material



EL20-S458

Package	Special purpose seat belt load cell for automotive crash testing
Operating Mode	Seat belt tension
Unique Features	<ul style="list-style-type: none"> • Mass optimized to minimize acceleration induced errors during SAE J2570 ATD and ISO 6487 • Optional high level and linearized outputs • Smoothed design and slotted titanium axles eliminate drag errors and dummy damage
FS Ranges	1,000 to 5,000 lbf 5K to 25K Newton
Max. Over-range	2X FS
Output/Span	±20 mV, 0.5-4.5 VDC
Combined Linearity & Hysteresis	±0.5% FS
Operating Temperature	-40°C to 120°C
Dimensions (mm)	66 x 35 x 16.5
Typical Applications	Seat belt forces, safety and restraint system crash test, parachute tether and riser forces

FORCE LOAD CELLS

Digital Display Meters



ARD154

Package	Din rail mountable
Type	Signal conditioning for wheatstone bridge sensors
No. of Channels	Four
Unique Features	<ul style="list-style-type: none"> • Suited for full bridge strain gage sensors • Test stands and process industries • 2 kHz or 20 kHz max. bandwidth
Output/Span	±10 VDC or 4-20 mA current output
Accuracy	±0.01% FS
Operating Temperature	-10°C to 60°C
Dimensions (mm)	99 x 17.5 x 112
Typical Applications	Test stands, power plants, manufacturing systems, test and measurement, test bed regulation, automat interfaces



CPA150

Package	Hand held indicator
Type	Portable display suited for strain gage type sensors
No. of Channels	Two
Unique Features	<ul style="list-style-type: none"> • Suited for 1 or 2 sensors • 45 hour life battery • Calibration pushbutton from 0.1 to 10 mV/V
Output/Span	Display only
Accuracy	±0.005% FS
Operating Temperature	-10°C to 50°C
Dimensions (mm)	90 x 34 x 152
Typical Applications	Outdoor punctual measurements, test and measurement, portable calibration device



M210

Package	Front panel or housed in case
Type	Signal conditioning and display meter
No. of Channels	One
Unique Features	<ul style="list-style-type: none"> • Red LED display: ±2,000 count • High bandwidth: 1,000 Hz at -3 dB • Low noise level
Output/Span	±10 VDC
Accuracy	±0.05% FS
Operating Temperature	0°C to 50°C
Dimensions (mm)	96 x 48 x 155
Typical Applications	High bandwidth test bed display, monitoring, laboratory and research, process control equipment



M905

Package	Front panel or housed in case
Type	Display suited for process or strain gage type sensors
No. of Channels	One
Unique Features	<ul style="list-style-type: none"> • Suited for process or strain gage type sensors • 5 digits: -19999 to 19999 • Front panel programming
Output/Span	±10 VDC or 4-20 mA current output
Accuracy	±15 bits, 20 sample/sec
Operating Temperature	-10°C to 60°C
Dimensions (mm)	96 x 48 x 60
Typical Applications	Display on test bed, monitoring, laboratory and research



121

Package	Bench top
Type	DC amplifier and signal conditioner
No. of Channels	Three
Unique Features	<ul style="list-style-type: none"> • 0.001 to 9999 • Low noise operation with auto-zero • For bridge type sensors • μP controlled, programmable • Low pass filter options
Output/Span	±10 VDC
Accuracy	±0.1% FS
Operating Temperature	0°C to 50°C
Dimensions (mm)	301 x 258 x 102
Typical Applications	Instrumentation labs, test benches, R&D facilities



140A / 142A

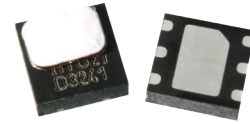
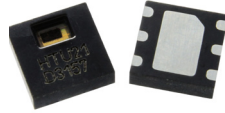
Package	Inline amplifier
Type	DC amplifier and auto-zero
No. of Channels	one
Unique Features	<ul style="list-style-type: none"> • ±1.5 mV auto-zero • For bridge type sensor (140A) • For strain gage (142A) • x10, x25, x50, x100, x200 gain • 5 to 30 VDC excitation
Output/Span	0.5-4.5 VDC, ref to 2.5 VDC
Accuracy	±0.5% FS
Operating Temperature	-10°C to 50°C
Dimensions (mm)	56.9 x 25.4 x 12.7
Typical Applications	Instrumentation labs, test benches, R&D facilities

HUMIDITY SENSORS



HUMIDITY AND TEMPERATURE (NTC) COMPONENTS

Analog Voltage and Digital Output



	HS1101LF	HTU2X	HTU2XF
Package	Through hole TO39 with side opening plastic cap	DFN type	DFN type
Type	Capacitive humidity	Digital RH and NTC temperature	Digital RH and NTC temperature
Operating RH Range	0 to 100% RH	0 to 100% RH	0 to 100% RH
Operating Temp.	-60°C to 140°C	-40°C to 125°C	-40°C to 125°C
Unique Features	<ul style="list-style-type: none"> • Robust and recognized component • Suitable for most humidity applications • Cost effective solution 	<ul style="list-style-type: none"> • Low power consumption • Fast response time • Very low temperature coefficient • I²C interface or PWM interface or SDM interface 	<ul style="list-style-type: none"> • Low power consumption • Fast response time • Very low temperature coefficient • I²C interface or PWM interface or SDM interface • Optimal filter
Accuracy	180 pF, ±3 pF at 55% RH	±3% RH at 25°C (10 to 95% RH) ±0.3°C at 25°C	±3% RH at 25°C (10 to 95% RH) ±0.3°C at 25°C
Dimensions (mm)	10 x 10 x 19	3.0 x 3.0 x 1.0	3.0 x 3.0 x 1.0
Typical Applications	Applications requiring a robust humidity sensor in appliance, HVACR, consumer electronics, printing, meteorology	Humidity and temperature plug and play transducers for OEM demanding applications in appliance, printer, medical, HVACR	Humidity and temperature plug and play transducers for OEM demanding applications in appliance, printer, medical, HVACR

HUMIDITY AND TEMPERATURE (NTC) MINI-MODULES

Analog Voltage and Digital Output



	HTU3535PVBM/Wire	HTU383X/Wire	HTG351xCH
Package	Cost effective, small size mini-module	Cost effective small size mini-module	Cost effective small size mini-module
Type	Analog voltage RH and NTC temperature	Digital RH and NTC temperature	Analog voltage RH and NTC temperature
Operating RH Range	0 to 100% RH	0 to 100% RH	0 to 100% RH
Operating Temp.	-40°C to 110°C	-40°C to 110°C	-40°C to 110°C
Unique Features	<ul style="list-style-type: none"> • PTFE filter (Optional) • Electronics fully protected (5 V) • Multiple connector choices (JST, Samtec board to board through hole) • Based on HTU21 	<ul style="list-style-type: none"> • PTFE filter (Optional) • Electronics fully protected (5 V) • Multiple connector choices (JST, Samtec board to board through hole) • Based on HTU21 	<ul style="list-style-type: none"> • Electronics fully protected with potting material (3.3 V or 5 V) • Multiple connector choices (JST, Samtec board to board through hole)
Calibration	±3% RH at 55% RH; ±0.25°C at 25°C	±3% RH at 55% RH; ±0.25°C at 25°C	±3% RH at 55% RH; ±0.25°C at 25°C
Dimensions (mm)	27 x 11.9 x YY (Depending on the connector, from 6 to 10.8 mm length)	27 x 11.9 x YY (Depending on the connector, from 6 to 10.8 mm length)	27 x 11.9 x 6.7
Typical Applications	Humidity and temperature plug and play transducers for OEM demanding applications in HVACR, home appliance, printer and medical	Humidity and temperature plug and play transducers for OEM demanding applications in HVACR, home appliance, printer and medical	Humidity and temperature plug and play transducers for OEM applications in HVACR, appliance, printer and medical

HUMIDITY AND TEMPERATURE (NTC) PROBES

Analog Output



HM1500LF

Package	Probe, RH only
Type	Cost effective analog voltage RH probe
Operating RH Range	0 to 100% RH
Operating Temp.	-40°C to 60°C
Unique Features	<ul style="list-style-type: none"> • Electronics fully protected with potting material • Optional wiring length and connectors
Calibration	±3% RH at 55% RH
Dimensions (mm)	57 x 11 x 11 (Standard wire length of 200 mm)
Typical Applications	Medical, telecommunication cabinets, green houses, process control, industrial



HM1520LF

Package	Probe, RH only
Type	Dedicated to low RH accurate measurement
Operating RH Range	0 to 100% RH
Operating Temp.	-40°C to 60°C
Unique Features	<ul style="list-style-type: none"> • Electronics fully protected with potting material • Optional wiring length and connectors
Calibration	±3% RH at 10% RH
Dimensions (mm)	57 x 11.5 x 11.5 (Standard wire length of 200 mm)
Typical Applications	Medical, drying cabinets, low humidity, meteorology



HTM2500LF

Package	Probe, RH and temperature
Type	Cost effective analog voltage RH
Operating RH Range	0 to 100% RH
Operating Temp.	-40°C to 85°C
Unique Features	<ul style="list-style-type: none"> • Electronics fully protected with potting material • Optional wiring length and connectors
Calibration	±3% RH at 55% RH; ±0.25°C at 25°C
Dimensions (mm)	86 x 11.5 x 11.5 (Standard wire length of 200 mm)
Typical Applications	Hygrostat, data loggers, cabinets

HUMIDITY AND TEMPERATURE (NTC) SENSORS

Frequency Output Systems (Digital)



HTF3000LF

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

LIQUID LEVEL SENSORS



LIQUID LEVEL SWITCHES

Side Entry



	LS304-31	LS509-51	LS809-31	LDS309-11N	LCS-03	RCS01-10
Package	Glass filled nylon 6.6	Glass filled PPS	Glass filled polypropylene	Glass filled nylon 6.6	Acetal/Polypropylene	Polypropylene
Type	Level sensor	Level sensor	Level sensor	Level sensor	Level sensor	Level sensor
Unique Features	1/2" NPT horizontal mount SPDT	M16 horizontal mount SPST	1/2" NPT horizontal mount SPST	M16 horizontal mount SPST	Push fit horizontal mount SPST	M16 Horiz mount SPST
Max. Pressure	4.7 bar	4.7 bar	2.0 bar	4.7 bar	0.34 bar	4.7 bar
Operating Temp.	-30°C to 130°C	-30°C to 110°C	-30°C to 105°C	-30°C to 130°C	-30°C to 60°C	-30°C to 70°C
Dimensions (mm)	103 x 29 x 29	88 x 27 x 27	103 x 29 x 29	100 x 27 x 27	100 x 36 x 36	67 x 30 x 30
Typical Applications	Chemical high or low level, diesel fuel, fuel low level, alcohols, low oil detection	Coolant level indication, water high or low level, boiler heating element protection, drinking water level, boiling water	Continuous 80°C in water, water high or low level, condensate level alarm, drinking water level, cooling systems	Chemical high or low level, diesel fuel, fuel low level, alcohols, low oil detection	Water high or low, unpressurized central heating systems, fuel level, organic solvents	Waste water level, coolant, water

LIQUID LEVEL SWITCHES

Top & Bottom Entry



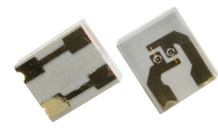
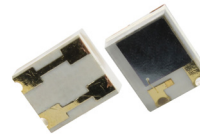
	VS309-51N	VS804-21	VCS-04	VCS-06	EVS312-11N	EVS722-51
Package	Glass filled nylon 6.6	Glass filled polypropylene	Polypropylene	Nylon 6.6	Nylon 6.6	Brass/ Polypropylene
Type	Level sensor	Level sensor	Level sensor	Level sensor	Level sensor	Level sensor
Unique Features	M16 vertical mount SPST	M16 vertical mount SPDT	M8 vertical mount SPST	M8 vertical mount SPST	M16 vertical mount 2 X SPST	M16 vertical mount 16 X SPST
Max. Pressure	4.7 bar	4.7 bar	1.3 bar	1.3 bar	4.7 bar	4.7 bar
Operating Temp.	-30°C to 130°C	-30°C to 105°C	-30°C to 70°C	-30°C to 105°C	-30°C to 110°C	-30°C to 80°C
Dimensions (mm)	87 x 22 x 22	87 x 22 x 22	59 x 22 x 22	59 x 22 x 22	224 x 22 x 22	224 x 22 x 22
Typical Applications	Chemical high or low level, diesel fuel, fuel low level, alcohols, low oil detection	Continuous 80°C in water, water high or low level, condensate level alarm, drinking water level, cooling systems	Water high or low, condensate level, cooling systems	Chemical high or low level, diesel fuel, fuel low level, alcohols, low oil detection	Chemical high or low level, diesel fuel, fuel low level, alcohols, low oil detection	Coolant level indication, water high or low level, boiler heating element protection, sump level

PHOTO OPTIC SENSORS



PHOTO OPTIC SENSORS

Photo Optic Components



	ELM-4000	EPM-4001	ELM-5000	EPM-5000
Package	Lead frame	Lead frame	Surface mount	Surface mount
Type	Emitter assembly	Detector assembly	Emitter assembly	Detector assembly
Range	660 nm / 880-940 nm	—	660 nm / 890-905 nm	—
Unique Features	<ul style="list-style-type: none"> • Low cost • Dual drive • Clear epoxy lens 	<ul style="list-style-type: none"> • Low cost • Fast response • High efficiency 	<ul style="list-style-type: none"> • Reflow solderable • Dual drive • Clear epoxy lens 	<ul style="list-style-type: none"> • Reflow solderable • Fast response • High efficiency
Accuracy	Sensor dependent	Sensor dependent	Sensor dependent	Sensor dependent
Operating Temp.	-20°C to 80°C	-20°C to 80°C	-20°C to 80°C	-20°C to 80°C
Dimensions (mm)	4.4 x 5.1 x 1.9	4.4 x 5.1 x 1.8	4.0 x 4.8 x 1.3	4.0 x 4.8 x 1.3
Typical Applications	Pulse oximetry, finger and ear probes, disposable	Pulse oximetry, finger and ear probes, disposable	Pulse oximetry, finger and ear probes, disposable	Pulse oximetry, finger and ear probes, disposable

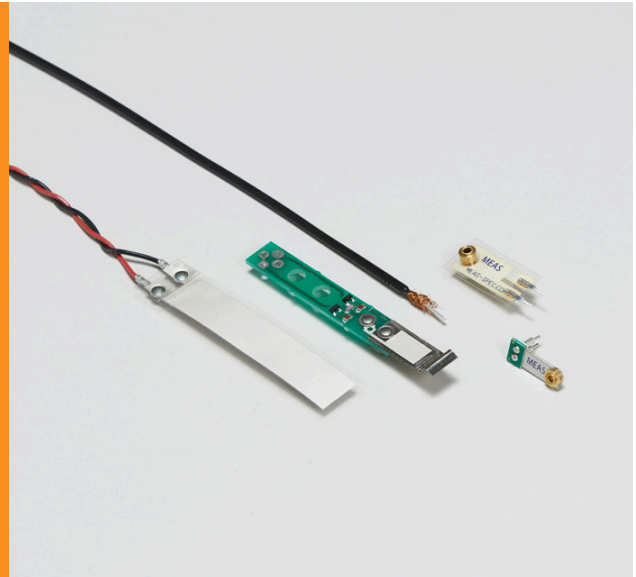
PHOTO OPTIC SENSORS

Pulse Oximetry (SpO₂) Probe Platforms



	Disposable Sensor	Finger Clip Sensor	Soft Sensor
Package	Biocompatible	Biocompatible	Silicon boot
Type	Sensor platform	Sensor platform	Sensor platform
Range	Adult/neonatal	Adult	Adult/pediatric
Unique Features	<ul style="list-style-type: none"> • Latex free • Lightweight • Microfoam/cloth 	<ul style="list-style-type: none"> • Soft pads • Lightweight • Easily cleaned 	<ul style="list-style-type: none"> • Ease of use • Lightweight • Latex free
Accuracy	Sensor dependent	Sensor dependent	Sensor dependent
Operating Temp.	-20°C to 80°C	-20°C to 80°C	-20°C to 80°C
Typical Applications	Pulse oximetry	Pulse oximetry	Pulse oximetry

PIEZO FILM SENSORS



PIEZO FILM



DT1, SDT1

Package	Unshielded element with twisted pair or shielded element with shielded cable
Type	Flexible film, adhesive mount
Range	15 mV/ $\mu\epsilon$ up to 1% strain
Unique Features	<ul style="list-style-type: none"> • Thin, flexible, robust • Withstands >2% strain • Ultra-low power (Self generating)
Accuracy	$\pm 20\%$ (Typical)
Operating Temp.	-40°C to 70°C (Higher available custom)
Dimensions (mm)	Application dependent
Typical Applications	Dynamic strain gage, contact microphone, acoustic pickup



Piezo Cable

Package	Shielded coaxial 20 gage piezo cable
Type	Polymer jacketing, armored jacketing
Range	μPa sensitivity
Unique Features	<ul style="list-style-type: none"> • Continuous lengths of up to 1 km • Shielded construction
Accuracy	$\pm 20\%$ (Typical)
Operating Temp.	-40°C to 85°C
Dimensions (mm)	$\varnothing 3$ (Continuous lengths)
Typical Applications	Perimeter and fence security, geophone, impact sensors, intrusion detection, seat occupancy (e.g. airbag), patient bed vital signs monitor



CM-01

Package	Metallized plastic housing
Type	Contact microphone
Range	40 V/mm; 8 Hz to 2.2 kHz
Unique Features	<ul style="list-style-type: none"> • Low noise • Shielded construction • High sensitivity
Accuracy	—
Operating Temp.	5°C to 60°C
Dimensions (mm)	$\varnothing 18 \times 11$ high
Typical Applications	Electronic stethoscope, contact microphone, vibration



FLDT1

Package	Unshielded film element with screen printed leads
Type	Flexible film, adhesive mount
Range	15 mV/ $\mu\epsilon$, up to 1% strain
Unique Features	<ul style="list-style-type: none"> • Thin, flexible • Leads screen printed on film • Connects to standard connector
Accuracy	$\pm 20\%$ (Typical)
Operating Temp.	-40°C to 70°C; (Higher available custom)
Dimensions (mm)	12 x 30 active; (Custom available)
Typical Applications	Event timing, dynamic strain, motion detection

PIEZO FILM



Sleep Monitor Strip

Package	Unshielded element with crimps
Type	Flexible film, adhesive mount
Range	15 mV/ $\mu\epsilon$ up to 1% strain
Unique Features	<ul style="list-style-type: none"> Thin, flexible, robust Withstands >2% strain Ultra-low power (Self generating)
Accuracy	$\pm 20\%$ (Typical)
Operating Temp.	-40°C to 70°C (Higher available custom)
Dimensions (mm)	28 μm PVDF; 8mm x 800mm
Typical Applications	Respiration and heart beat monitoring for mattress or seat



BL Traffic Sensor

Center Core:	16 gage copper wire
Piezoelectric Material:	Piezoelectric film cable
Outer Sheath:	0.016" thick brass
Type	Spiral wrapped PVDF piezo film cable
Range	15 mV/ $\mu\epsilon$ up to 1% strain
Unique Features	<ul style="list-style-type: none"> Flexible, durable, available in many lengths Withstands >2% strain Ultra-low power (Self generating)
Accuracy	$\pm 20\%$ (Typical)
Operating Temp.	-40°C to 70°C (Higher available custom)
Dimensions (mm)	0.260" wide x 0.063" thick; 0.005"
Typical Applications	Traffic counting, classifying, toll booths, speed detection, red light cameras



Laboratory Amplifier

Package	Bench top
Type	Piezo film lab amp
Range	0.1 Hz to 100 kHz
Unique Features	<ul style="list-style-type: none"> Voltage or charge mode settings Multi-pole high-pass and low-pass filters Adjustable gain
Accuracy	Application dependent
Operating Temp.	0°C to 40°C
Dimensions (mm)	150 x 100 x 100
Typical Applications	Low frequency dynamic strain, pyroelectric signals, machine vibration, piezo cable and traffic sensor interface



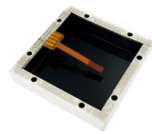
80 KHz Transducers

Package	Pin mounted
Type	Air ultrasound transducer
Range	80 kHz
Unique Features	<ul style="list-style-type: none"> Small size Low mechanical Q Shielded package
Accuracy	Application dependent
Operating Temp.	-20°C to 80°C
Dimensions (mm)	$\varnothing 6 \times 9$
Typical Applications	Air ranging, ultrasonic mouse, digitizers



NDT-1

Package	Adhesive mounted
Type	High frequency ultrasound transducer
Range	3 MHz
Unique Features	<ul style="list-style-type: none"> Flexible High bandwidth, low Q Low impedance
Accuracy	Application dependent
Operating Temp.	-20°C to 60°C
Dimensions (mm)	12 x 30
Typical Applications	Thickness measurement, speed of sound measurement, pulse/echo NDT



Tamper Box

Package	Flat film or box mounted
Type	Tamper detection sensor
Range	Application dependent
Unique Features	<ul style="list-style-type: none"> Low power Custom shapes and sizes High security
Accuracy	Application dependent
Operating Temp.	-40°C to 85°C
Dimensions (mm)	Application dependent
Typical Applications	Encryption modules, POS card readers, PIN entry devices



ACH-01

Package	Ceramic base, plastic cover, shielded cable
Type	Adhesive mount
Range	± 250 g (Typical)
Unique Features	<ul style="list-style-type: none"> Extremely high bandwidth Low cost Ultra-low power
Accuracy	$\pm 20\%$ (Typical)
Operating Temp.	-40°C to 85°C
Dimensions (mm)	18.80 x 13.21 x 6.10
Typical Applications	Vibration sensing, gear box and high speed monitoring, high speed bearings and centrifuges, speaker motional feedback



LDTC Family

Package	Piezo film elements with or without mass
Type	Cantilever beam with vertical or horizontal pins
Range	± 10 g (Typical)
Unique Features	<ul style="list-style-type: none"> Very low cost High sensitivity (1 V/g) Ultra-low power (Self generating)
Accuracy	$\pm 20\%$ (Typical)
Operating Temp.	-40°C to 70°C
Dimensions (mm)	19.05 x 6.35 x 6.35
Typical Applications	Wake-up switch, load imbalance, antitheft devices, impact sensing, vital signs monitoring

POSITION SENSORS



ANISOTROPIC MAGNETORESISTIVE (AMR) SENSOR COMPONENTS

Magnetoresistive (MR)



KMY, KMZ

Package	SOT-223, E-line 4 pin
Type	Linear low field sensor
Range	-2 to 2 kA/m magnetic field
Unique Features	<ul style="list-style-type: none"> • High sensitivity • Low hysteresis • Linear to uniaxial field strength
Output	Ratiometric with output voltage range 20 mV/V
Resolution	Typ. 0.1% of range
Accuracy	Typ. 1.0% of range
Operating Temp.	-40°C to 150°C
Dimensions (mm)	SOT: 6.6 x 7.0 x 1.6 E-line: 16 x 4.2 x 2.4
Typical Applications	Non-destructive material testing, spray arm detection in dish washers, magnetic imaging, brake pedal position



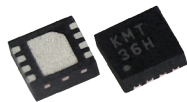
MS32

Package	TDFN
Type	Low field switch sensor
Range	1 to 3 kA/m magnetic switching field
Unique Features	<ul style="list-style-type: none"> • Linearized ratiometric output • Temperature compensated switching point
Output	Ratiometric with output voltage range 10 mV/V
Resolution	Typ. 0.1 kA/m
Accuracy	Typ. 0.1 kA/m
Operating Temp.	-25°C to 85°C
Dimensions (mm)	TDFN: 2.5 x 2.5 x 0.8
Typical Applications	Piston position switch, reed switch replacement



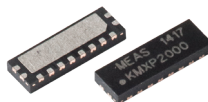
KMT39 (Former 32B), KMT37

Package	TDFN
Type	Angle sensor
Range	180° angle
Unique Features	<ul style="list-style-type: none"> • High accuracy • High resolution
Output	Sine and cosine signals with output voltage range 20 mV/V
Resolution	Typ. 0.01° to 0.1°
Accuracy	Typ. 0.1° to 1.0°
Operating Temp.	-40°C to 150°C (175°C on request)
Dimensions (mm)	TDFN: 2.5 x 2.5 x 0.8 SO-8: 5 x 4 x 1.75
Typical Applications	Steering position, flow meters, rpm meters, rotary encoders



KMT36H

Package	TDFN 2.5 x 2.5
Type	Angle sensor
Range	360° angle
Unique Features	<ul style="list-style-type: none"> • High accuracy • High resolution • 360° full turn
Output	Three 120° phase shifted output signals with output voltage range 20 mV/V
Resolution	Typ. 0.01° to 0.1°
Accuracy	Typ. 0.1° to 1°
Operating Temp.	-40°C to 150°C
Dimensions (mm)	TDFN: 2.5 x 2.5 x 0.8
Typical Applications	Steering position, gage readings, rotary encoders



KMP

Package	DFN 2 x 6
Type	Linear displacement sensor, 3 flat and 3 perpendicular versions
Range	Absolute within magnetic pole pitch, else incremental
Unique Features	<ul style="list-style-type: none"> • For pole pitch • KMP 1000: p= 1 mm • KMP 2000: p= 2 mm • KMP 5000: p= 5 mm
Output	Sine and cosine signals with output voltage range 20 mV/V
Resolution	0.01% to 0.1% of pole pitch
Accuracy	0.1% to 1.0% of pole pitch
Operating Temp.	-40°C to 125°C
Dimensions (mm)	DFN: 2 x 6 x 0.8
Typical Applications	Roller conveyors, circular saws, bending machines



KMA36

Package	TSSOP
Type	Angle sensor with digital output
Range	360° angle
Unique Features	<ul style="list-style-type: none"> • Low cost MR encoder for rotational and incremental measurements • Digital output
Output	Analog and I ² C Digital
Resolution	Typ. 0.1°
Accuracy	Typ. 0.3°
Operating Temp.	-25°C to 85°C
Dimensions (mm)	TSSOP20: 6.5 x 6.4 x 1.2
Typical Applications	Knobs, small robotics, angular/linear position

ANGULAR POSITION TRANSDUCERS—INDUCTIVE

Absolute



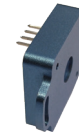
Package	PCB for OEM volumes
Resolution	Infinite
Excitation	DC voltage
Output	DC voltage, DC current, digital
Range	Up to $\pm 75^\circ$
Unique Features	<ul style="list-style-type: none"> • Absolute position
Operating Temp.	-25°C to 85°C
Dimensions (mm)	Custom
Typical Applications	Viscometers, valve position, robotics, HVACR vane position, ATM's, joysticks

R60D
Servo mount with ball bearing
Infinite
DC symmetrical ± 15 VDC
± 7.5 VDC
$\pm 60^\circ$
<ul style="list-style-type: none"> • Absolute position • Low momentum of inertia
-25°C to 85°C
Aluminum case size 11 ($\varnothing 27$ mm)
Dancer arm position, rotary actuator position feedback, throttle lever position feedback, ball valve position, textile manufacturing equipment, printing presses

R30A
Servo mount with ball bearing
Infinite
AC operated
AC voltage
$\pm 30^\circ$ to $\pm 60^\circ$
<ul style="list-style-type: none"> • Absolute position
-55°C to 150°C
Aluminum case size 11 ($\varnothing 27$ mm)
Machine tool equipment, rotary actuator feedback, valve positioning, power generation valve position

ANGULAR POSITION—ENCODERS

Absolute



H005, H009
<ul style="list-style-type: none"> • 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
Up to 359°
Analog/PWM/Serial
12-bit analog/PWM 14-bit serial (SPI)
—
—
$\pm 0.2\%$
5 volts
-40°C to 150°C
> 100 million cycles (Bearing life)
Dimensions (mm)
Critical position feedback applications in commercial, industrial, medical, aircraft and military markets

H009, 1200 Dual Output
<ul style="list-style-type: none"> • 22.23 mm/.875 in housing diameter • 3.170 mm/.1248 in shaft diameter • 26.1 mm/1.03 in housing length
Up to 359° (Dual output)
Analog/PWM/Serial
12-bit analog/PWM 14-bit serial (SPI)
—
—
$\pm 0.2\%$ (Dual output)
5 volts (Dual output)
-40°C to 150°C
> 100 million cycles (Bearing life)
Dimensions (mm)
Critical position feedback applications in commercial, industrial, medical, aircraft and military markets

R36
Heavy duty shaftless
180°
Voltage
Analog 1.4°
5 VDC
<ul style="list-style-type: none"> • Rugged housing • Shaftless • No optical degradation
—
—
-40°C to 85°C
—
37.36 x 25.4 x 7.62
Feedback sensor or human machine interface device, rudder control, servomotor position and speed control

TILT SENSORS

Single Axis



E-Series

Package	Ceramic housing
Type	Inclination sensor module
Range	±5°, ±15°
Output	Voltage
Unique Features	<ul style="list-style-type: none"> • Easy to handle • Minimal temperature drift • Good long term stability
Accuracy	±0.2° to ±0.5°
Operating Temp.	-25°C to 85°C
Dimensions (mm)	29 x 17 x 16.5
Typical Applications	Road construction, building monitoring, weighing systems, mobile and stationary cranes, platform leveling



AccuStar EA

Package	LCP housing
Type	Inclinometer sensor module
Range	±45° to ±60°
Output	Voltage
Unique Features	<ul style="list-style-type: none"> • Compact • Low power • Vertical and horizontal mount
Accuracy	0° to 10° ±0.1% accuracy 10° to 60° ±0.75% reading
Operating Temp.	-30°C to 65°C
Dimensions (mm)	65.91 x 51.56 x 30.5
Typical Applications	Wheel alignment, construction, equipment, antenna positioning, robotics, crane/boom angle



APS System

Package	Plastic housing
Type	Inclination system
Range	±45°, ±90°
Output	Analog/digital
Unique Features	<ul style="list-style-type: none"> • Stand alone system • Separate system and sensor
Accuracy	0° to 10° ±0.1% accuracy 10° to 45° ±0.75% of reading
Operating Temp.	-25°C to 65°C
Dimensions (mm)	127.5 x 88 x 32.2
Typical Applications	Tower crane safety, RV and mobile trailer leveling, water and oil well drilling rigs, mining equipment

TILT SENSORS

Single Axis



	G-Series
Package	Aluminum housing IP67
Type	Inclinometer
Range	±10°
Output	Switch
Unique Features	<ul style="list-style-type: none"> • Programmable • EMC standard • High switch accuracy
Accuracy	±0.25°
Operating Temp.	-25°C to 85°C
Dimensions (mm)	80 x 75 x 57.5
Typical Applications	Lift platforms, building device control, train inclination monitoring, position switch

	IT9000
Package	Aluminum or stainless
Type	Inclinometer
Range	±45° to ±240°
Output	Voltage divider, 4 - 20 mA
Unique Features	<ul style="list-style-type: none"> • Rugged industrial design, IP67/68 • Submersible • Designed for brutal environments • CSA, CENELEC certification for hazardous area applications
Accuracy	±1%
Operating Temp.	-34°C to 90°C
Dimensions (mm)	Ø130 x 100
Typical Applications	Waste water control, tainter gates, draw bridges, heavy industrial applications

	AccuStar IP66
Package	Aluminum housing IP66
Type	Inclinometer
Range	±3° to ±45°
Output	Current
Unique Features	<ul style="list-style-type: none"> • EMI and RFI rated • CE pending • Water tight enclosure
Accuracy	0° to 10° ±0.1% linearity 10° to 45° ±1% linearity
Operating Temp.	-25°C to 60°C
Dimensions (mm)	98.04 x 63 x 35.05
Typical Applications	Tower crane safety, RV and mobile trailer leveling, water and oil well drilling rigs, mining equipment

TILT SENSORS

Dual Axis



	DPL, DPN
Package	PCB board
Type	Inclination board module
Range	±2° to ±30°
Output	Voltage/RS 232/SPI
Unique Features	<ul style="list-style-type: none"> • High resolution • Minimal temperature drift • User configurable
Accuracy	±0.05° to ±0.8°
Operating Temp.	-40°C to 85°C
Dimensions (mm)	45 x 45 x 20
Typical Applications	Laser leveling, weighing systems, mobile and stationary cranes, hydraulic leveling, building monitoring, wind power

	DOG2
Package	Plastic PA 6.6 housing, IP67
Type	Inclinometer
Range	±25°, ±45°, ±90°
Output	Voltage/Current/J1939/CANopen®
Unique Features	<ul style="list-style-type: none"> • Plug and play • Wide measurement range • Cost-efficient • Cable with connector • Fast MEMS sensor
Accuracy	± 0.5° (Full temp. range)
Operating Temp.	-40°C to 85°C
Dimensions (mm)	70.5 x 45 x 15
Typical Applications	Off road vehicle, fork lift, truck leveling, man lift, harvester, farm machine, tip over protection, solar panel control

	DPG
Package	Aluminum housing IP67
Type	Inclinometer
Range	±5° to ±30°
Output	RS232/Voltage
Unique Features	<ul style="list-style-type: none"> • CE approved • Rugged housing • Easy to use • User configurable
Accuracy	±0.05° to ±0.3°
Operating Temp.	-40°C to 85°C
Dimensions (mm)	84 x 70 x 34.2
Typical Applications	Platform leveling, road construction machines, tunnel drilling, mobile leveling

	D-Series
Package	Aluminum housing IP67
Type	Inclinometer
Range	±5° to ±30°
Output	RS232/Voltage/Current/Switch/PWM/CANopen®
Unique Features	<ul style="list-style-type: none"> • High accuracy • Rugged housing • Programmable • CE approved
Accuracy	±0.04° to ±0.8°
Operating Temp.	-40°C to 85°C
Dimensions (mm)	84 x 70 x 46
Typical Applications	Drilling machines, mobile and stationary cranes, wind power, antenna/radar leveling

PROXIMITY SENSORS



PS801
 Stainless steel
Package
Type
 • Proximity sensor
 • Used with proximity magnet
Unique Features
 SPST reed switch, normally open
Operating Temp.
 -30°C to 120°C
Dimensions (mm)
 Ø12 x 65
Typical Applications
 Door interlocks, hook switches, security systems, safety interlocks, position indication



PS811
 Nylon 6.6
Package
Type
 • Proximity sensor
 • Used with proximity magnet
Unique Features
 SPST reed switch, normally open
Operating Temp.
 -30°C to 110°C
Dimensions (mm)
 Ø10 x 38
Typical Applications
 Door interlocks, hook switches, security systems, safety interlocks, position indication



PS831
 Stainless steel
Package
Type
 • Proximity sensor
 • Used with proximity magnet
Unique Features
 SPST reed switch, normally open
Operating Temp.
 -30°C to 130°C
Dimensions (mm)
 Ø12 x 32
Typical Applications
 Door interlocks, hook switches, security systems, safety interlocks, position indication



PS2011AB
 Glass filled nylon 6.6
Package
Type
 • Proximity sensor
 • Used with proximity magnet
Unique Features
 SPST reed switch, normally open
Operating Temp.
 -30°C to 105°C
Dimensions (mm)
 29 x 7 x 20
Typical Applications
 Door interlocks, hook switches, security systems, safety interlocks, position indication



PS2021AB
 Glass filled nylon 6.6
Package
Type
 • Proximity sensor
 • Used with proximity magnet
Unique Features
 SPST reed switch, normally closed
Operating Temp.
 -30°C to 105°C
Dimensions (mm)
 29 x 7 x 20
Typical Applications
 Door interlocks, hook switches, security systems, safety interlocks, position indication



PS2031AB
 Glass filled nylon 6.6
Package
Type
 • Proximity sensor
 • Used with proximity magnet
Unique Features
 SPDT reed switch
Operating Temp.
 -30°C to 105°C
Dimensions (mm)
 29 x 7 x 20
Typical Applications
 Door interlocks, hook switches, security systems, safety interlocks, position indication



PS501
 Glass filled nylon 6.6
Package
Type
 • Proximity sensor
 • Used with proximity magnet
Unique Features
 SPST reed switch, normally open
Operating Temp.
 -30°C to 130°C
Dimensions (mm)
 Ø6 x 32
Typical Applications
 Door interlocks, hook switches, security systems, safety interlocks, position indication

PROXIMITY MAGNET



PM101

Package	Glass filled nylon 6.6
Type	<ul style="list-style-type: none"> • Proximity magnet • Used with proximity sensor
Unique Features	Housed magnet
Operating Temp.	-30°C to 105°C
Dimensions (mm)	29 x 7 x 20
Typical Applications	Door interlocks, hook switches, security systems, safety interlocks, position indication



PM50

Package	Glass filled nylon 6.6
Type	<ul style="list-style-type: none"> • Proximity magnet • Used with proximity sensor
Unique Features	Housed magnet
Operating Temp.	-30°C to 70°C
Dimensions (mm)	Ø6 x 32
Typical Applications	Door interlocks, hook switches, security systems, safety interlocks, position indication



PM81

Package	Nylon 6.6
Type	<ul style="list-style-type: none"> • Proximity magnet • Used with proximity sensor
Unique Features	Housed magnet
Operating Temp.	-30°C to 120°C
Dimensions (mm)	Ø10 x 38
Typical Applications	Door interlocks, hook switches, security systems, safety interlocks, position indication



PM83

Package	Stainless steel
Type	<ul style="list-style-type: none"> • Proximity magnet • Used with proximity sensor
Unique Features	Housed magnet
Operating Temp.	-30°C to 120°C
Dimensions (mm)	Ø12 x 32
Typical Applications	Door interlocks, hook switches, security systems, safety interlocks, position indication

LINEAR POSITION TRANSDUCERS

Cable Extension Transducers



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	±0.04% to ±0.25%
Unique Features	<ul style="list-style-type: none"> • 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 Applications	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	±0.04% to ±0.25%
Unique Features	<ul style="list-style-type: none"> • 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 Applications	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	±0.04% to ±0.25%
Unique Features	<ul style="list-style-type: none"> • 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 Applications	Mobile hydraulic boom position, water resource management, mining and tunnel boring equipment, telescoping mechanism position, theater stage control

LINEAR POSITION TRANSDUCERS

Cable Extension Transducers



	M150, MTA
Range	0 - 1.5 to 0 - 5 inches
Output	Voltage divider
Environment/ IP Rating	IP50
Enclosure	Aluminum
Accuracy	±0.4% to ±1%
Unique Features	<ul style="list-style-type: none"> • M150: one of the world's smallest string potentiometer • 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 Applications	Aerospace, automotive instrumentation, automotive crash testing, automotive 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	±0.25% to ±1.1%
Unique Features	<ul style="list-style-type: none"> • 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 Applications	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, IP67 (SP)
Enclosure	Polycarbonate with stainless steel bracket
Accuracy	±0.25% to ±1%
Unique Features	<ul style="list-style-type: none"> • Compact design • M12 connection • Adjustable mounting bracket • Free-release tolerant • Custom configurations for OEMs
Operating Temp.	-18°C to 70°C (SM) -40°C to 85°C (SP)
Dimensions (mm)	120 x 140 x 140
Typical Applications	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	±0.35% to ±0.5%
Unique Features	<ul style="list-style-type: none"> • Low cost, high value string potentiometer • 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 Applications	Outdoor mobile construction equipment, outrigger positioning, hydraulic lifts, water and power controls



	SK
Range	0 - 250 and 0 - 400 inches
Output	4 - 20 mA, 0 - 10 V, voltage divider, CAN J1939, CANopen®, Encoder drive
Environment/ IP Rating	IP67
Enclosure	Polycarbonate with stainless steel bracket
Accuracy	±.25% FS
Unique Features	<ul style="list-style-type: none"> • Compact design • M12 connectivity • Adjustable mounting bracket
Operating Temp.	-40°C to 85°C
Dimensions (mm)	120 x 140 x 140
Typical Applications	Mobile construction equipment, factory automation



	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)
Environment/ IP Rating	IP50
Enclosure	Aluminum
Accuracy	±0.04% to ±0.25%
Unique Features	<ul style="list-style-type: none"> • Original classic design • High precision • Proven track record
Operating Temp.	-40°C to 90°C
Dimensions (mm)	Model and range specific
Typical Applications	Aerospace testing, architectural and structural testing, factory automation

LINEAR POSITION TRANSDUCERS—INDUCTIVE

Absolute



	HR	M12	HC
Package	AISI-400 series stainless steel	AISI-304 series stainless steel	AISI-400 series stainless steel
Linearity	±0.25% of range	±0.25% of range	±0.25% of range
Excitation	AC operated	AC operated	AC and DC operated versions
Output	AC voltage	AC voltage	AC or DC voltage, 4 - 20 mA loop or RS-485
Range	±0.05 to ±10 inches	±10 to ±100 mm	±0.05 to ±10 inches
Unique Features	<ul style="list-style-type: none"> • Large bore to core clearance • Broad range of excitation frequencies • Variety of options • Mild radiation resistance option 	<ul style="list-style-type: none"> • Metric series • High stroke to length ratio • Constant sum of secondaries • Excellent temperature coefficient 	<ul style="list-style-type: none"> • Hermetically sealed • Welded connector • Double shielding • Intrinsically safe version • CE mark for DC versions
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)
Diameter (mm)	20.6	12	19
Typical Applications	General industrial	Hydraulic spool valve position feedback, flight simulators, aircraft flight control feedback	Harsh environments, submersible applications, process controls, valve position feedback



	XS-C	DC-SE	XS-D
Package	AISI-304 series stainless steel	AISI-400 series stainless steel	AISI-400 series stainless steel
Linearity	±0.25% of range	±0.25% of range	±2% of range
Excitation	AC operated	8.5 to 28 VDC	AC operated
Output	AC voltage	0 - 5 VDC (4 wire), 1 - 6 VDC (3 wire)	AC voltage
Range	±0.25, ±0.5 and ±1 inches	0 - 0.1 to 0 - 6 inches	±1 to ±10 inches
Unique Features	<ul style="list-style-type: none"> • High pressure • Bulkhead mounting • Hermetically sealed welded assembly 	<ul style="list-style-type: none"> • CE mark • Low current consumption (6 mA typical) • Synchronous demodulation • Shielded cable 	<ul style="list-style-type: none"> • Very high stroke to body length ratio
Operating Temp.	-55°C to 150°C	-25°C to 85°C	-55°C to 150°C
Diameter (mm)	19	19	20.6
Typical Applications	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

Other models available, please consult TE.com.

LINEAR POSITION TRANSDUCERS—INDUCTIVE

Absolute



MACRO HSTA/R

Package	AISI-410 stainless steel
Linearity	±0.25% of range
Excitation	AC operated
Output	AC voltage
Range	±0.050 to ±10.0 inches
Unique Features	<ul style="list-style-type: none"> • IP68 rating, hermetically sealed • Mild radiation resistant (30 Mrad) optional • Axial or radial connector with thru-bore construction
Operating Temp.	-55°C to 200°C standard (Contact factory for higher temperature)
Diameter (mm)	19
Typical Applications	High temperature steam and gas valves, nuclear power plants, harsh and corrosive environments, environments with heavy dust, dirt, and humidity



MACRO SSI/R

Package	Alloy 625
Linearity	±0.10% of range
Excitation	AC or DC operated
Output	AC or 4-20 mA loop digital CANbus available
Range	±1.0 to ±10.0 inches
Unique Features	<ul style="list-style-type: none"> • Operating pressure to 5,000 psi (7,500 psi proof) • Seawater submersible IP68 • Standard Seacon connector • Axial or radial connection
Operating Temp.	-40°C to 80°C
Diameter (mm)	23.9
Typical Applications	Off-shore drilling platforms, pipeline monitoring, choke valves, mooring cables, extensometers, pulp and paper mills



MACRO HPGS 750

Package	AISI-410 stainless steel
Linearity	±0.25% of range
Excitation	AC operated
Output	AC voltage
Range	±0.050 to ±10.0 inches
Unique Features	<ul style="list-style-type: none"> • Radial screw-on 38999 connector • IP68 rating, hermetically sealed • Designed for high vibration applications
Operating Temp.	-55°C to 200°C
Diameter (mm)	19
Typical Applications	Nuclear power generation equipment, hydraulic cylinder position, steam valve positioning, power generation equipment, corrosive environments, high-vibration environments



MACRO CD375

Package	AISI-410 stainless steel
Linearity	±0.25% of range
Excitation	AC operated
Output	AC voltage
Range	± 0.025 to ±1 inches
Unique Features	<ul style="list-style-type: none"> • Compact design • Operating pressure to 20,000 psi+
Operating Temp.	-55°C to 200°C
Diameter (mm)	9.5
Typical Applications	Machine tools, robotic grippers, medical equipment, valve position sensing, hydraulic cylinder, down-hole equipment



MACRO GHSE/R

Package	AISI-410 stainless steel
Linearity	±0.1% of range
Excitation	DC operated
Output	0 - 10 VDC
Range	0.100 to 4 inches
Unique Features	<ul style="list-style-type: none"> • Spring loaded design • IP68 rating, hermetically sealed • Axial and radial connection • Low pressure air-extend/spring-retract version available (GHSE 750-A)
Operating Temp.	-20°C to 70°C
Diameter (mm)	19
Typical Applications	Industrial gaging systems, replaces dial indicators, fabricated metal products gaging

LINEAR POSITION TRANSDUCERS—INDUCTIVE

Dimensional Gaging Products



	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; USB
Range	±0.02 to ±0.20 inches	±0.04 and ±0.1 inches	±0.02 to ±1 inches	±0.05 to ±2 inches	1, 2, 5 and 10 mm
Unique Features	<ul style="list-style-type: none"> • 0.000004 inch (0.1 μm) repeatability • Removable tungsten carbide contact tip • Double shielded LVDT • Repairable 	<ul style="list-style-type: none"> • 0.000004 inch (0.1 μm) repeatability • Removable tungsten carbide contact tip • Double shielded LVDT • Repairable 	<ul style="list-style-type: none"> • Longer strokes • IP65 cable exit • Accepts industry standard contact tips • Heavy duty return spring 	<ul style="list-style-type: none"> • Hermetically sealed • Welded MS connector (MIL-C-5015) " • CE mark for DC versions • Special tips available • Air extend spring retract available 	<ul style="list-style-type: none"> • Plug-and-play • 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 Applications	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 gaging, precision dimensional measurement, optics inspection systems, SPC data collection, hand tools

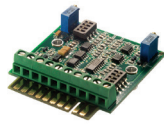
LINEAR POSITION ENCODERS

Incremental



	ED32i
Package	IP67 aluminum
Range	Magnetic scale, 5 mm 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	≥10 μm; field programmable
Max. Speed	4 m/s
Unique Features	<ul style="list-style-type: none"> • 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 Applications	Linear displacement measurement in industrial and medical applications

LVDT/RVDT INSTRUMENTATION



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	<ul style="list-style-type: none"> • 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 Applications	OEM applications



LDM-1000

Package	DIN rail mount
Supply	10 to 30 VDC
Output	DC voltage and current
Operating Temp.	-25°C to 85°C
Unique Features	<ul style="list-style-type: none"> • Operates with 4, 5 & 6 wire LVDT/RVDTs • Adjustable zero, span and phase • Status LEDs • CE mark
Dimensions (mm)	115 x 99 x 23
Typical Applications	Automotive test track instrumentation, gas and steam turbine controls, factory automation



ATA-2001

Package	1/8 DIN panel mount
Supply	115 and 220 VAC, 50 - 400 Hz
Output	DC voltage and current
Operating Temp.	-40°C to 85°C
Unique Features	<ul style="list-style-type: none"> • Push button programmable • Splash proof front panel • LED status lights • Mounting hardware included • CE mark
Dimensions (mm)	267 x 99 x 49
Typical Applications	Precision metrology labs, power generation valve position monitoring



PML 1000

Package	1/8 DIN panel mount
Supply	90 to 265 VAC, 50 - 60 Hz or 24 VDC
Output	DC voltage and current (RS-485 optional)
Operating Temp.	10°C to 55°C
Unique Features	<ul style="list-style-type: none"> • 5 digit LED display • Auto-calibration • Programmable • Splash proof front panel • Mounting hardware included • CE mark
Dimensions (mm)	173 x 97 x 49
Typical Applications	Remote monitoring stations, measurement test stands, process monitoring



MP 2000

Package	1/4 DIN panel mount
Supply	100 to 240 VAC, 47 - 63 Hz
Output	DC voltage and RS-232
Operating Temp.	0°C to 55°C
Unique Features	<ul style="list-style-type: none"> • Programmable set point controller • Dual channel with math functions • Digital I/O • Large LCD display • Splash proof front panel
Dimensions (mm)	178 x 92 x 92
Typical Applications	LVDT based weighing systems, pass/fail parts sorting, quality inspection



MMX Mini Module

Package	DIN rail mount
Supply	15 to 30 VDC
Output	DC voltage or 4-20 mA
Operating Temp.	0°C to 70 °C
Unique Features	<ul style="list-style-type: none"> • Push-button calibration • Flame retardant mini-module housing • Master/slave excitation synchronization (Up to 10 channels) • LED status lights • Supports all standard AC LVDTs, RVDTs, and VR half-bridge sensors
Dimensions (mm)	85.1 x 70.4 x 17.8
Typical Applications	Automotive test instrumentation, factory automation

LINEAR POSITION—POTENTIOMETERS



MLP, CLP

Package	Aluminum body, steel rod, IP65, IP67
Range	0 - 0.5 to 0 - 6" (MLP) 0 - 1 to 0 - 10" (CLP)
Linearity	±0.5 to ±1% (MLP) ±0.1 to ±0.2% (CLP)
Excitation	Up to 40 VDC max.
Output	Voltage divider
Resolution	Essentially infinite
Max. Speed	10 m/s
Unique Features	<ul style="list-style-type: none"> • Extended temperature range, miniature design • First choice for auto racing applications • Perfect for high cycle applications
Operating Temp.	-40°C to 90°C
Dimensions (mm)	Diameter/cross section: Ø9.5 mm (MLP) 15 mm x 15 mm (CLP)
Typical Applications	Vehicle testing, autosport instrumentation, structural and architectural testing and robotics.

LINEAR POSITION—POTENTIOMETERS



5903, 5905 Linear Motion

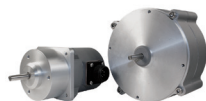
Package	<ul style="list-style-type: none"> • 7.94 mm - 12.7 mm/0.312" - 0.500" housing diameter • 1.98 mm - 3.18 mm/0.078" - 0.125" shaft diameter
Resistance	1K/5K/10K
Range	5903 series - up to 50.8 mm/2" stroke 5905 series - up to 101.6 mm/4" stroke
Linearity	±1%
Output Smoothness	<0.1%
Resolution	Infinite
Operating Temp.	-65°C to 125°C
Stroke Life	50 million cycles min
Typical Applications	Critical position feedback applications in commercial, industrial, medical, aircraft and military markets

ANGULAR POSITION—POTENTIOMETERS



	6000 Servo Mount	6200 Bushing Mount	6900 Element/Wiper/Insulator	6100 Hollow Shaft
Package	<ul style="list-style-type: none"> • 12.7 mm - 50.8 mm/0.500" - 2.00" housing diameter • 3.170 mm - 6.34 mm/0.1248" - 0.2498" shaft diameter • 12.7 mm - 1.74 mm/0.500" - 0.680" housing length • 11.11 mm - 47.62 mm/0.438" - 1.875" mounting pilot diameter 	<ul style="list-style-type: none"> • 12.7 mm - 50.8 mm/0.500" - 2.00" housing diameter • 3.170 mm - 6.34 mm/0.1248" - .2498" shaft diameter • 12.7 mm - 1.74 mm/0.500" - 0.680" housing length • 3/8 32 NEF thread/10.31 mm/0.4062" pilot diameter 	<ul style="list-style-type: none"> • 17.81 mm - 45.85 mm/0.702" - 1.805 in element outside diameter • 4.724 mm - 11.05 mm/0.186" - 0.435" element inside diameter • 3.175 mm - 6.35 mm/0.125" - 0.250 shaft insulator inside diameter • 4.064 mm - 7.80 mm/0.160" - 0.307" mating wiper inside diameter • 5.08 mm/0.200" assembled package height 	<ul style="list-style-type: none"> • 27.94 mm - 66.5 mm/1.100" - 2.62" housing diameter • 3.175 mm - 19 mm/0.125" - 0.752" hollow shaft diameter
Resistance	1K - 20KΩ	1K - 20KΩ	1K/5K/10KΩ	1K - 20KΩ
Range	Up to 355°	Up to 355°	Up to 350°	Up to 355°
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/minute	50 million cycles/minute	50 million cycles/minute	50 million cycles/minute.
Typical Applications	Critical position feedback applications in commercial, industrial, medical, aircraft and military markets	Critical position feedback applications in commercial, industrial, medical, aircraft and military markets	Critical position feedback applications in commercial, industrial, medical, aircraft and military markets	Critical position feedback applications in commercial, industrial, medical, aircraft and military markets

ANGULAR POSITION—POTENTIOMETERS



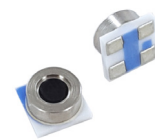
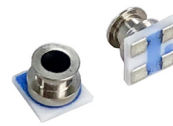
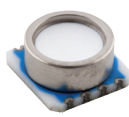
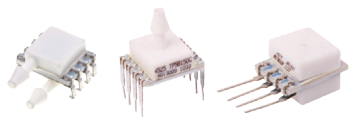
	RT8, RT9
Package	Aluminum or stainless IP67, IP68
Resolution	±0.15% to ±1.25%
Unique Features	<ul style="list-style-type: none"> • Absolute rotary • Designed for heavy industrial applications • CSA, CENELEC certification for hazardous area applications
Output	Voltage divider, 0 - 5 V, 0 - 10 V, 4 - 20 mA, incremental encoder, CANbus, DeviceNet™
Range	0 - 0.125 to 0 - 200 turns
Operating Temp.	-40°C to 90°C
Dimensions (mm)	Ø65 x 100 (RT8) Ø115 x 60 (RT9)
Typical Applications	Valve control, airport passenger loading bridge, water management, factory automation

PRESSURE SENSORS



BOARD LEVEL PRESSURE SENSORS

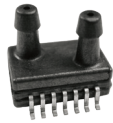
Digital Output and Altimeter



	MS4515DO, MS4525DO	MS5803	MS5837	MS5840
Package	8 pin DIL	Surface mountable	Surface mountable	Surface mountable
Type	Gage, compound (MS4515DO) Gage, absolute, differential, compound (MS4525DO)	Absolute	Absolute	Absolute
Pressure Range	0 - 2 to 30" H ₂ O (MS4515DO) 0 - 1 to 150 psí (MS4525DO)	0 - 1 to 30 bar	0 - 2 bar 0 - 30 bar	0 - 2 bar Operating range: 300 to 1200 mbar
Output/Span	14-bit ADC SPI or I ² C	24-bit ADC I ² C and SPI (Mode 0, 3)	24-bit ADC I ² C	24-bit ADC I ² C
Resolution	—	12 µbar (MS5803-01BA) 0.5 mbar (MS5803-30BA)	0.016 mbar (2 bar) 0.2 mbar (30 bar)	13 cm of air
Unique Features	<ul style="list-style-type: none"> • Optional gel coat, low power • Pressure and temperature measurement • Single supply of 3.3 or 5.0 VDC • Top, side barbed or manifold o-ring port • J lead or thru hole pins 	<ul style="list-style-type: none"> • 24-bit digital sensor, software calibration and temperature compensation (I²C and SPI), no external components • Supply voltage 1.8 to 3.6 V 	<ul style="list-style-type: none"> • Supply voltage: 1.5 to 3.6 V • Pressure and temperature measurement • Excellent long term stability • Hermetically sealable for outdoor devices • Sealing designed for 1.8 x 0.88 mm o-ring 	<ul style="list-style-type: none"> • Supply voltage: 1.5 to 3.6 V • Pressure and temperature measurement • Low power, 0.6 µA (standby ≤ 0.1 µA at 25°C) • Protected against direct sunlight
Linearity/Absolute Accuracy	0.25%/1% TEB	±1.5 mbar at 25°C (MS5803-01BA) ±250 mbar at 0°C to 40°C (MS5803-30BA)	±5 mbar (2 bar) ±400 mbar (30 bar)	±0.5mbar at 20°C ±4mbar from -20°C to 85°C
Overpressure	300 psi	10 bar (1, 2 bar) 30 bar (5, 7, 14 bar) 50 bar (30 bar)	10 bar (2 bar) 50 bar (30 bar)	—
Operating Temp.	-10°C to 85°C (MS4515DO) -25°C to 105°C (MS4525DO)	-40°C to 85°C	-20°C to 85 °C	-20°C to 85 °C
Dimensions (mm)	12.5 x 9.9	6.4 x 6.2 x 2.9	3.3 x 3.3 x 2.75	3.3 x 3.3 x 1.7mm
Typical Applications	Medical instruments, air flow measurements, process control, leak detection	Precision altimeter, diving and multi-mode watches, in-building navigation, variometers/flight instruments	Mobile water depth measurement systems, diving computers, adventure or multi-mode watches, data loggers	Altimeter and barometer applications, adventure or multi-mode watches, drones, bike computers

BOARD LEVEL PRESSURE SENSORS

Digital Output and Altimeter



MS5525DSO

Package	SOIC-14
Type	Gage, absolute, differential, compound
Pressure Range	0 - 1 to 30 psi
Output/Span	24-bit ADC SPI or I ² C protocol
Resolution	—
Unique Features	<ul style="list-style-type: none"> • 24-bit digital small outline sensor • Pressure and temperature measurement • Single supply of 1.8 or 3.6 VDC • Barb, tube and hole package style options
Linearity/Absolute Accuracy	0.25%/2.5% TEB
Overpressure	3X range
Operating Temp.	-40°C to 125°C
Dimensions (mm)	12.5 x 7.9
Typical Applications	Medical respirators, ventilators, factory automation, altitude and airspeed measurements, leak detection, home appliances



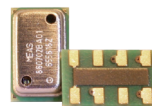
MS5607, MS5611, MS5637

Package	Surface mountable
Type	Absolute
Pressure Range	10 - 2K mbar
Output/Span	24-bit ADC I ² C
Resolution	0.016 mbar
Unique Features	<ul style="list-style-type: none"> • 24-bit digital sensor • 13 cm resolution (MS5607, MS5637) • 10 cm resolution (MS5611) • Supply voltage: 1.5 to 3.6 V (MS5637) Supply voltage: 1.8 to 3.6 V (MS5607, MS5611) • Low power, 0.6 μA (Standby ≤ 0.1 μA at 25°C)
Linearity/Absolute Accuracy	±2.0 mbar at 25°C
Overpressure	6 bar
Operating Temp.	-40°C to 85°C
Dimensions (mm)	3 x 3 x 0.9 (MS5637) 5 x 3 x 1 (MS5607, MS5611)
Typical Applications	Smart phones, tablets, personal navigation devices, tire pressure monitoring, compressors



MS5805

Package	Surface mountable
Type	Absolute
Pressure Range	10 - 2K mbar
Output/Span	24-bit ADC I ² C
Resolution	0.02 mbar
Unique Features	<ul style="list-style-type: none"> • 24-bit digital sensor • 20 cm resolution • Supply voltage: 1.8 to 3.6 V • Sealing designed for 2.5 x 1 mm o-ring • Silicone gel protection • Waterproof
Linearity/Absolute Accuracy	±2.0 mbar at 25°C
Overpressure	5 bar
Operating Temp.	-40°C to 85°C
Dimensions (mm)	4.5 x 4.5 x 3.5
Typical Applications	Mobile altimeter and barometer systems, bike computers, adventure or multi-mode watches, variometers, data loggers

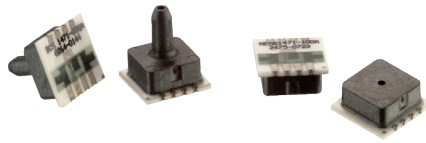


MS8607

Package	Surface mountable
Type	Absolute
Pressure Range	10 - 2K mbar
Output/Span	24-bit ADC I ² C
Resolution	0.016 mbar
Unique Features	<ul style="list-style-type: none"> • Integrated pressure, humidity and temperature • Supply voltage: 1.5 to 3.6 V • Fully factory calibrated sensor
Linearity/Absolute Accuracy	±4 mbar
Overpressure	6 bar
Operating Temp.	-40°C to 85°C
Dimensions (mm)	5 x 3 x 1
Typical Applications	Mobile water depth measurement systems, diving computers, adventure or multi-mode watches, data loggers

BOARD LEVEL PRESSURE SENSORS

mV Output



MS1451, MS1471

Package	Surface mountable
Type	Gage, absolute
Pressure Range	0 - 5 to 500 psi
Output/Span	60 mV typical
Unique Features	<ul style="list-style-type: none"> • 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, application dependent
Typical Applications	Altitude measurement, barometric pressure, medical instrumentation, consumer appliances, tire pressure

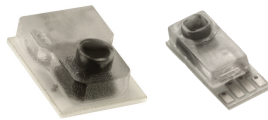


MS52xx, MS54xx

Package	Surface mountable
Type	Gage, absolute
Pressure Range	0 - 1 to 12 bar
Output/Span	150 mV, 240 mV
Unique Features	<ul style="list-style-type: none"> • 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%, ±0.15% FS non-linearity (MS52xx) ±0.05%, ±0.2% FS non-linearity (MS54xx)
Operating Temp.	-40°C to 125°C
Dimensions (mm)	7.6 x 7.6, application dependent (MS52xx) 6.4 x 6.2 (MS54xx)
Typical Applications	Absolute pressure sensor systems, engine controls, high resolution altimeters, variometers, waterproof watches, diver computers, barometers, tire pressure monitoring systems (TPMS), medical instrumentation, pneumatic controls

DISPOSABLE MEDICAL PRESSURE SENSORS

mV Output



1620, 1630

Package	Hybrid assembly
Type	Gage
Pressure Range	-30 to 300 mmHg
Output/Span	5 µV/V/mmHg
Unique Features	<ul style="list-style-type: none"> • Low cost, disposable design • Supplied in tape and reel • Compliant to AAMI spec • ISO13485 certified
Operating Temp.	10°C to 40°C
Dimensions (mm)	1620: 11.43 x 8.13 x 4.20 1630: 12.7 x 5.08 x 3.94
Typical Applications	Disposable blood pressure, surgical procedures, ICU, kidney dialysis machines, medical instrumentation



Fully Assembled 1620 (Customized per customer specifications)

Package	Plastic housing
Type	Gage
Pressure Range	-30 to 300 mmHg
Output/Span	5 µV/V/mmHg
Unique Features	<ul style="list-style-type: none"> • Low cost, disposable design • Compliant to AAMI spec • Custom designs available
Operating Temp.	10°C to 40°C
Dimensions (mm)	42.8 x 30.3 x 19.0
Typical Applications	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.

MEDIA ISOLATED PRESSURE SENSOR MODULES

Digital Output



	85BSD	86BSD	89BSD	154BSD
Package	<ul style="list-style-type: none"> • 13 mm diaphragm diameter • Weldable or threaded process fittings 	<ul style="list-style-type: none"> • 16 mm diaphragm diameter • O-ring mount 	<ul style="list-style-type: none"> • 9 mm diaphragm diameter • Threaded or weldable 	<ul style="list-style-type: none"> • 19 mm diaphragm diameter • O-ring mount
Type	Gage, absolute	Gage, absolute	Absolute, sealed gage	Gage, absolute
Pressure Range	0 - 0.35 to 20 bar / 0 - 5 to 300 psi	0 - 0.07 to 20 bar / 0 - 1 to 300 psi	0 - 6 to 30 bar	0 - 1 to 300 psi
Output/Span	14-bit ADC I ² C or SPI	14-bit ADC I ² C or SPI	24-bit ADC I ² C	14-bit ADC I ² C or SPI
Unique Features	<ul style="list-style-type: none"> • Pressure and temperature read-out • Cable and connector options • Low power option 	<ul style="list-style-type: none"> • Pressure and temperature read-out • Cable and connector options • Low power option 	<ul style="list-style-type: none"> • Pressure and temperature read-out • Low power: 1 μA (Standby < 0.15 μA) 	<ul style="list-style-type: none"> • Pressure and temperature read-out • Cable and connector options • Low power option
Accuracy	\pm 0.25% span	\pm 0.25% span	\pm 0.3% span	\pm 0.25% span
Total Error Band	\pm 1.0% FSO	\pm 1.0% FSO	\pm 3.0% FSO max.	\pm 1.0% FSO
Overpressure	2X	2X	2X	2X
Operating Temp.	-40°C to 125°C	-40°C to 125°C	-40°C to 85°C	-40°C to 125°C
Dimensions (mm)	\varnothing 15.85 x 7.9	\varnothing 15.82 x 9.3	\varnothing 9.04 x 7.5	\varnothing 19 x 13.8
Typical Applications	Level controls, tank level measurement, corrosive fluids and gas measurement systems, sealed systems, manifold pressure measurement, submersible depth monitoring	Level controls, tank level measurement, corrosive fluids and gas measurement systems, sealed systems, manifold pressure measurement, submersible depth monitoring	Level controls, tank level measurement, corrosive fluids and gas measurement systems, sealed systems, manifold pressure measurement, dive computers	Level controls, tank level measurement, corrosive fluids and gas measurement systems, sealed systems, manifold pressure measurement, submersible depth monitoring

TRANSDUCERS AND TRANSMITTERS

Industrial Wireless



	M5600, U5600	MSP100	MSP300, MSP340
Type	Gage, sealed, absolute, compound	Gage	Gage
Pressure Range	0 - 50 to 15K psi (M5600), 0 - 5 to 10K psi (U5600)	0 - 100 to 500 psi	0 - 100 to 10K psi (MSP300) 0 - 50 to 10K psi (MSP340)
Output/Span	24-bit ADC I ² C	100 mV typical	0 - 100 mV, 0.5 - 4.5 VDC, 1 - 5 VDC, 4 - 20 mA
Unique Features	<ul style="list-style-type: none"> • Pressure and temperature • 2.3 - 3.6 V supply voltage • Compact and battery-powered • Weather resistant (IP66 and IP67) • Stainless steel and polycarbonate enclosure 	<ul style="list-style-type: none"> • Microfused • Low cost stainless steel isolated transducer • No threads needed for pressure connect • Highly customized for OEM application • Small size • Solid state reliability 	<ul style="list-style-type: none"> • Microfused • Highly customized for OEM applications • Small size • Solid state reliability
Accuracy	\pm 0.25% FS (M5600) Down to \pm 0.1% FS (U5600)	\pm 0.5% FSO	\pm 1% FSO
Operating Temp.	-20°C to 85°C	0°C to 55°C	-20°C to 85°C
Dimensions (mm)	24 x 24 x 69	12.7 x 24.38 x 20.32	MSP300: 22.23 x 22.23 x 55.88 MSP340: 15.88 x 15.88 x 75.44
Typical Applications	Industrial process control and monitoring, advanced HVACR systems, refrigeration systems, automotive test stands, off-road vehicles, pumps and compressors, hydraulic and pneumatic systems, agriculture equipment, energy generation and management	Beverage dispensing systems, automation, HVACR controls, energy and water management, pumps, compressors, pneumatic equipment	Paint sprayers, braking systems, HVACR controls, energy and water management, pumps, compressors, pneumatic equipment, off road heavy equipment, agriculture equipment
Agency Approvals	CE, FCC	—	UL 508 (MSP300)

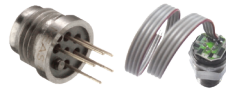
MEDIA ISOLATED PRESSURE SENSOR MODULES

Analog Output



82, 85 with Fittings

Package	Weldable (85) or process fitting
Type	Gage, absolute, vacuum gage
Pressure Range	0 - 5 to 500 psi (85), 0 - 1 to 500 psi (82)
Output/Span	100 mV typical
Unique Features	<ul style="list-style-type: none"> • Modular design
Non-linearity	±0.3% FSO (1 psi) ±0.2% FSO (5 psi) ±0.1% FSO (≥15 psi)
Operating Temp.	-40°C to 125°C
Dimensions (mm)	Fittings: application dependent
Typical Applications	Medical, process control, refrigeration compressor, oceanography, level systems



89 Button, 89 with Fittings

Package	Weldable or process fitting
Type	Sealed gage, absolute
Pressure Range	0 - 1K to 10K psi
Output/Span	100 mV typical
Unique Features	<ul style="list-style-type: none"> • High pressure • Modular design
Non-linearity	±0.25% FSO
Operating Temp.	-40°C to 125°C
Dimensions (mm)	89 Button: Ø9.04 x 13.2 89 with Fittings: application dependent
Typical Applications	Air tank pressure, hydraulics, process control, robotics, refrigeration compressors, oceanography



86A Amplified

Package	5/8" (16 mm) diameter o-ring mount
Type	Gage, absolute
Pressure Range	0 - 1 to 150 psi
Output/Span	0.5 - 4.5 VDC
Unique Features	<ul style="list-style-type: none"> • Small diameter, amplified output • Bar ranges available
Non-linearity	±1.0% FSO
Operating Temp.	-20°C to 85°C
Dimensions (mm)	Ø15.82 x 9.3
Typical Applications	Level measurement, OEM transmitters and transducers, process control

MEDIA ISOLATED PRESSURE SENSOR MODULES

Analog Output



82, 85, 85F, 86, 154N

Package	<ul style="list-style-type: none"> • 3/4" (19 mm) diameter o-ring mount (82, 154N) • 5/8" (16 mm) diameter o-ring mount (86) • 1/2" (13 mm) diameter o-ring flush mount (85F) • 1/2" (13 mm) diameter o-ring mount (85)
Type	Gage, absolute, vacuum gage (82, 85, 86, 154N) Gage, absolute (85F)
Pressure Range	0 - 1 to 500 psi (Absolute, gage: 82, 154N) 0 - 5 to 500 psi (Absolute, gage: 85, 86) 0 - 15 to 500 psi (85F, vacuum gage: 82, 85, 86, 154N)
Output/Span	100 mV typical
Unique Features	<ul style="list-style-type: none"> • High performance • High stability for OEM applications • Minimizes trapped volume (85F)
Non-linearity	±0.3% FSO (1 psi), ±0.2% FSO (5 psi) ±0.1% FSO (≥15 psi), ±0.1% FSO (85F)
Operating Temp.	-40°C to 125°C (82 / 85 / 86 / 154N), -20°C to 125°C (85F)
Dimensions (mm)	82: Ø19 x 6.48 86: Ø15.82 x 11.4 154N: Ø18.97 x 13.8 85F: Ø17.2 x 11.33 85: Ø15.85 x 9.3
Typical Applications	Hydraulic controls, process control, oceanography, refrigeration/compressors, pressure transmitters, level systems, dialysis machines, infusion pumps, medical systems



DP86 O-Ring Mount, with Fittings/Cable

Package	• 5/8" (16 mm) diameter o-ring mount or threaded process fittings
Type	Differential
Pressure Range	0 - 1 to 500 psi
Output/Span	100 mV typical/sensitivity dependent
Unique Features	<ul style="list-style-type: none"> • Wet/wet differential pressure • Line pressure max. 1,000 psi
Non-linearity	±0.3% FSO (1 psi) ±0.2% FSO (5 psi) ±0.1% FSO (≥15 psi)
Operating Temp.	-40°C to 125°C
Dimensions (mm)	O-ring: Ø15.82 x 17.5 Fittings: Application dependent
Typical Applications	Level controls, tank level measurement, corrosive fluids and gas measurement systems, flow measurement



U86B

Package	• Mountable with o-ring seal
Type	Sealed gage, absolute
Pressure Range	0 - 5 to 13 bar/0 - 50 to 200 psi
Output/Span	0.5 - 4.5 VDC (Ratiometric output)
Unique Features	• Amplified
Non-linearity	±0.5% FSO
Operating Temp.	-7°C to 105°C
Dimensions (mm)	Ø15.82 x 13.6 Socket spacing: 31.75
Typical Applications	Urea level, urea pressure, air brakes, corrosive fluid measurement for engine & vehicle applications

TRANSDUCERS AND TRANSMITTERS

Industrial



	US300	AST20HA, AST20PT, AST20SW	AST4000, AST4100, AST4200
Type	Gage, absolute	Gage, sealed gage, absolute	Gage, sealed gage, compound
Pressure Range	0 - 15 to 5K psi	0 - 1 to 60K psi	0 - 25 to 10K psi
Output/Span	0 - 10 mV/V, 0.5 - 4.5 V, 1 - 5 V, 4 - 20 mA	0.5 - 4.5 V (Ratiometric) 1 - 5 V 4 - 20 mA, 0 - 5 V, 0 - 10 V, switch (AST20SW)	0.5 - 4.5 V (Ratiometric), 1 - 5 V, 1 - 10 V, 4 - 20 mA, 0.5 - 2.5 V
Unique Features	<ul style="list-style-type: none"> • UltraStable technology • Highly customized for OEM applications • Small size • Solid state reliability 	<ul style="list-style-type: none"> • Excellent performance over temperature • Semi-custom designs available • Fault mode condition settings • Four standard sensor material options • Additional temperature output (AST20PT) 	<ul style="list-style-type: none"> • Four standard sensor material options • Rugged construction • 100 V/m EMI/RFI protection • Semi-custom designs available
Accuracy	±0.15% FSO (15 - 1K psi), ±0.25% FSO (>1K psi)	±0.1% FSO	±0.5% FSO
Operating Temp.	-40°C to 105°C	-40°C to 85°C	-40°C to 85°C
Dimensions (mm)	15.88 x 15.88 x 98.00	Application dependent	Application dependent
Typical Applications	Paint sprayers, braking systems, HVACR controls, energy and water management, pumps, compressors, pneumatic equipment, off road heavy equipment, agriculture equipment	Test and measurement, industrial controls	Water, hydraulic equipment, HVACR, industrial controls
Agency Approvals	—	ABS, CE	UL/cUL508, ABS, CE



	M3200	M5200	U5200, U5300	D5100
Type	Gage, Compound	Gage, sealed, compound	Gage, sealed, absolute, compound	Differential wet/wet
Pressure Range	0-7bar to 500 bar / 0-100 to 7,500 Psi	0 - 3.5 to 1K bar/0 - 50 to 15K psi	0 - 0.14 to 700 bar/0 - 2 to 10K psi	0 - 0.07 to 35 bar/0 - 1 to 500 psi
Output/Span	100mV, 0.5 - 4.5 V, 1 - 5 V, 0 - 5 V, 0 - 10 V, 4 - 20 mA and I ² C Digital Output	0.5 - 4.5 V, 1 - 5 V, 0 - 5 V, 0 - 10 V, 4 - 20 mA, 1 - 6 V	0.5 - 4.5 V, 1 - 5 V, 0 - 5 V, 0 - 10 V, 4 - 20 mA, 1 - 6 V	80 mV / 100 mV, 0.5 - 4.5 VDC, 1 - 5 VDC, 4 - 20 mA
Unique Features	<ul style="list-style-type: none"> • Microfused technology • High performance at a low cost • Solid state reliability • ±1.5% FSO TEB (-20°C to 85°C) • Weatherproof - IP67 with cable • 14bit digital output for Pressure 	<ul style="list-style-type: none"> • Microfused technology • High performance at a low cost • Solid state reliability • ±1% FSO TEB (-20°C to 85°C) • Weatherproof • 17 - 4 PH or 316L SS 	<ul style="list-style-type: none"> • UltraStable technology • High performance at a low cost • ±0.75% FSO TEB (-20°C to 85°C, >5 psi and ≤5000 psi) (U5200) • ±0.5% FSO TEB (-20°C to 85°C) (U5300) • Weatherproof • High accuracy (U5300) 	<ul style="list-style-type: none"> • UltraStable technology • High performance at a low cost • Solid state reliability • ±1% FSO TEB (-20°C to 85°C) • Line pressure max. 1000 psi
Accuracy	±0.25% FSO	±0.25% FSO	±0.1% FSO (>5 and ≤500 psi)	±0.3% FSO (<5 psi), ±0.25% FSO (5 psi), ±0.1 % FSO (≥15 psi)
Operating Temp.	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C
Dimensions (mm)	22.2 on Hex x 58 max	24 X 24 X 82 max.	24 X 24 X 82 max.	25.4 x 58.4 x 72.0
Typical Applications	Suitable for measurement of liquid or gas pressure, even for difficult media such as contaminated water, steam, and mildly corrosive fluids.	Industrial process control and monitoring, advanced HVACR systems, refrigeration systems, automotive test stands, off road vehicles, pumps and compressors, hydraulic and pneumatic systems, agriculture equipment, energy generation and management	Industrial process control and monitoring, advanced HVACR systems, refrigeration systems, automotive test stands, off road vehicles, pumps and compressors, hydraulic and pneumatic systems, agriculture equipment, energy generation and management, military and aerospace test stands, calibration equipment, high accuracy applications, stationary motor fuel control, high end industry machinery	Process controls, tank level measurement, filter performance monitoring, corrosive fluids and gas measurement systems, flow measurement
Agency Approvals	CE (EMC)	CE (EMC)	CE (EMC), UL 508	CE (EMC)

TRANSDUCERS AND TRANSMITTERS

Heavy Industrial



	M7100, U7100	P900, P981, P1200, P700, P9000	P101, P105, P125
Type	Gage, no vent gage (M7100) Gage, sealed gage, absolute (U7100)	Gage, absolute	Gage
Pressure Range	0 - 10 to 700 bar/0 - 150 to 10K psi (M7100) 0 - 1 to 10 bar/0 - 15 to 150 psi (U7100)	0 - 5 bar to 700 bar/0 - 75 to 10K psi	0 - 10 to 7K bar/0 - 150 to 100K psi
Output/Span	0.5 - 4.5 VDC [Ratiometric output] 1 - 5 VDC [Regulated] (M7100) 0.5 - 4.5 VDC [Ratiometric output] (U7100)	0 - 5 VDC, 0 - 10 VDC, 4 - 20 mA	7.5 to 20 mV (4 V; 5 V optional)
Unique Features	<ul style="list-style-type: none"> • ±1% FSO TEB (-20°C to 85°C) • Solid state reliability • Survives high vibration and immersion • Microfused technology (M7100) • UltraStable technology (U7100) • Copper tube for HVACR (M7100) 	<ul style="list-style-type: none"> • High overpressure (10X over pressure) • Shock and vibration resistant • Heavy industrial grade transducer (P9000) • Advanced digital compensation / calibration • Mechanical over pressure stops • High temperature operation 	<ul style="list-style-type: none"> • Stainless steel diaphragm • Female pressure connectors: M16 x 1.5, M20 x 1.5, 1/4 NPT • Metal to metal seal
Accuracy	0.25% FSO	0.1% to 0.2% FSO	±0.3% FSO
Operating Temp.	-40°C to 125°C	-54°C to 120°C	-20°C to 80°C
Dimensions (mm)	26.7 x 26.7 x 50.0	Application dependent	Ø29 x 85 max.
Typical Applications	HVACR refrigeration controls, off road vehicles engine control, compressors, hydraulic, energy and water management	Steel mills, hydraulic controls, power generation equipment, torpedo depth, military and aerospace, vehicle braking systems	Harsh environments, aggressive liquids
Agency Approvals	CE (EMC), UL 508	CE, CENELEC (Intrinsically Safe)	—

TRANSDUCERS AND TRANSMITTERS

Miniature



	XP	XPC10
Type	Gage, sealed, absolute	Gage, sealed, absolute
Pressure Range	0 - 1 to 350 bar/0 - 15 to 5K psi (XP5, XPM10) 0 - 5 to 200 bar/0 - 75 to 3K psi (XPM4) 0 - 100 to 1K bar/0 - 1.5K to 15K psi (XPM6)	0 - 10 to 500 bar/0 - 150 to 7.5K psi
Output/Span	20 - 100 mV, 4 V FSO (Amplified)	12 mV FSO, 4 V FSO (Amplified)
Unique Features	<ul style="list-style-type: none"> • Titanium construction (XP5, XPM4) • Stainless steel housing (XPM6, XPM10) • Amplified output options (XP5, XPM6, XPM10) • Cable and connector options • For static and dynamic applications 	<ul style="list-style-type: none"> • Amplified output available • For static and dynamic applications • Optional IP67 ingress protection • High temperature operation
Accuracy	Down to ±0.25% FSO (XP5, XPM6, XPM10), down to ±0.35% FSO (XPM4)	Down to ±0.25% FSO
Operating Temp.	-40°C to 120°C	-40°C to 220°C
Dimensions (mm)	XPM4: M4 x 0.7 thread; Hex 8 XP5: M5 x 0.8 or 10-32 UNF thread; Hex 10 XPM6: M6 x 1 thread; Hex 12 XPM10: M10 x 1 thread; Hex 15	M10 x 1 or 3/8-24 UNF thread; Hex 15
Typical Applications	Corrosive liquids and gases, braking system pressure, onboard equipment monitoring, military and aerospace, explosive test benches, robotics and effectors, laboratory and research, extreme miniature devices	Aerospace, test benches, oven monitoring equipment, cooling regulation systems

TRANSDUCERS AND TRANSMITTERS

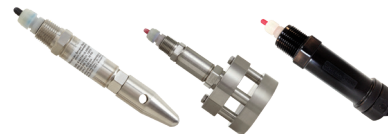
Miniature



	EB, EPRB	EPIH	EPB, EPB-PW, EPL
Type	Gage, sealed, absolute	Gage, sealed, absolute	Gage, sealed, absolute
Pressure Range	0 - 0.35 to 700 bar/0 - 5 to 10K psi	0 - 0.35 to 20 bar/0 - 5 to 300 psi	0 - 0.35 to 350 bar/0 - 5 to 5K psi
Output/Span	0.5 to 4.5 VDC	12 mV to 75 mV	10 mV to 125 mV
Unique Features	<ul style="list-style-type: none"> • High accuracy • Miniature design • UltraStable technology • EMI protected • Combined pressure and temperature 	<ul style="list-style-type: none"> • 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) • Ultra-miniature design 	<ul style="list-style-type: none"> • Miniature flush mountable • Flush stainless steel diaphragm, flanged or non-flanged • Bonded silicon gage, high frequency response (To 400 KHz) • IP68 ingress protection in Titanium construction (EPB-PW)
Accuracy	±0.25% FSO	±1.0% FSO	±0.5 to ±1% FSO
Operating Temp.	-40°C to 125°C (Available option up to 150°C)	-40°C to 120°C	-40°C to 120°C
Dimensions (mm)	11 body diameter	Application dependent	3.2 to 7 outside diameter
Typical Applications	Motor sport, hydraulic/pneumatic systems, automotive test stands, military and aerospace test stands	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, centrifuge pore water pressure measurements
Agency Approvals	CE (EMC)	—	—

TRANSDUCERS AND TRANSMITTERS

Liquid Level



	U5700	AST45xx
Type	Gage, sealed, absolute, compound	Gage, absolute
Pressure Range	0 - 2 to 10K psi	0 - 1 to 100 psi (AST4500, AST4510, AST4520)
Output/Span	0.5 - 4.5 V, 1 - 5 V, 0 - 5 V, 0 - 10 V, 4 - 20 mA, 1 - 6 V	0.5 - 4.5 V [Ratiometric], 1 - 5 V, 4 - 20 mA, 0.5 - 2.5 V
Unique Features	<ul style="list-style-type: none"> • UltraStable technology • High accuracy • IP68 rated connection and submersible • Polyurethane jacketed cable • Optional Polyoxymethylene cap 	<ul style="list-style-type: none"> • Intrinsically safe ratings • Material options including: 316L, alloy C276, and PVDF • Low power options • High quality cable options
Accuracy	0.1% FSO	±0.25% FSO
Operating Temp.	-10°C to 60°C	-40°C to 85°C
Dimensions (mm)	22.23 x 22.23 x 98.04	Application dependent
Typical Applications	Industrial process control and monitoring, advanced HVACR systems, refrigeration systems, automotive test stands, off road vehicles, pumps and compressors, hydraulic/pneumatic systems, agriculture equipment, energy generation and management, liquid level applications	Diesel tanks, chemical tanks, water tanks
Agency Approvals	CE (EMC)	UL/CSA Class I Div I, ATEX/IECEx Exia, ABS, CE

TRANSDUCERS AND TRANSMITTERS

Hazardous Location



AST43xx, AST44xx

Type	Gage, sealed gage, compound, absolute
Pressure Range	0 - 1 to 15 psi (AST43LP, AST44LP) 0 - 25 to 20K psi (AST4300, AST4400, AST4401)
Output/Span	0.5 - 4.5 V [Ratiometric], 1 - 5 V, 4 - 20 mA, 0.5 - 2.5 V
Unique Features	<ul style="list-style-type: none"> • Available with 316L, Hastalloy C276, or Inconel 718 materials • Low current consumption options • Low power options • High proof and burst pressure
Accuracy	±0.25% FSO
Operating Temp.	-40°C to 85°C
Dimensions (mm)	Application dependent
Typical Applications	Compressors, well sites, ships, factory automation, SCADA equipment, offshore equipment
Agency Approvals	UL/CSA Class I Div I and II, ATEX/IECEX Exia/Exn, CCOE, CNEx, ABS, CE



AST46xx

Type	Gage, sealed gage, compound, absolute
Pressure Range	0 - 1 to 20K psi
Output/Span	0.5 - 4.5 V [Ratiometric], 1 - 5 V, 4 - 20 mA, 0.5 - 2.5 V, switch (AST46SW)
Unique Features	<ul style="list-style-type: none"> • Available with 316L, Hastalloy C276, or Inconel 718 materials • Low current consumption options • Low power options • Local display (AST46DS) • Additional temperature output
Accuracy	±0.25% FSO (AST4600, AST46DS), ±0.1% FSO (AST46HA, AST46PT)
Operating Temp.	-40°C to 85°C
Dimensions (mm)	Application dependent
Typical Applications	SCADA/RTU, well sites, offshore equipment, hydraulic controls
Agency Approvals	CSA Class I/II Div I, ATEX/IECEX Exd, ABS, CE



AST5100, AST5300, AST5400

Type	Differential
Pressure Range	0 - 5 H ₂ O to 5K psi
Output/Span	0.5 - 4.5 V [Ratiometric], 0 - 5 V, 1 - 5 V, 4 - 20 mA
Unique Features	<ul style="list-style-type: none"> • Wide range of pressures available • Full line pressure on either side without zero shifts • Hazardous location approvals (AST5300, AST5400)
Accuracy	±0.25% FSO (AST5100, AST5300), 1% TEB (AST5400)
Operating Temp.	-40°C to 85°C
Dimensions (mm)	Application dependent
Typical Applications	Filter monitoring, flow measurement, tank level measurement
Agency Approvals	CSA Class I/II Div I and II, ATEX/IECEX Exd/Exn, ABS, CE



AST2000H2

Type	Gage, sealed gage
Pressure Range	0-10 PSI to 10000 PSI
Output/Span	0.5 - 4.5 V [Ratiometric] 1 - 5 V, 4 - 20 mA
Unique Features	<ul style="list-style-type: none"> • 20 bar, 448 bar, 900 bar • High pressure H₂ Storage • CE EN61326
Accuracy	±0.25% BFSL
Operating Temp.	-40°C to 85°C
Dimensions (mm)	Application dependent
Typical Applications	PEM fuel cells, hydrogen storage, hydrogen filling stations, backup power
Agency Approvals	EC-79 e24*79/2009*406/2010*0006*02 CE EN61326

RATE AND INERTIAL SENSORS



RATE SENSORS AND GYROS



	11206AC	11207AC	31206B/31207B	610	603
Package	Electroless nickel plated Aluminum	Electroless nickel plated Aluminum	Electroless nickel plated Aluminum	Anodized aluminum	Anodized aluminum
FS Ranges	±50, ±180°/sec	±300°/sec	±50, ±180, ±1,000°/sec	±500 to ±50K°/sec	±100 to ±24K°/sec
Unique Features	<ul style="list-style-type: none"> • IdentiCal™ interchangeable sensor • ±0.5% accuracy from -40°C to +85°C • Silicon MEMS gyro • EN61000-6-2/-4 certified for industrial environment 	<ul style="list-style-type: none"> • IdentiCal™ interchangeable sensor • High stability • Low noise • Vibration-rejecting 	<ul style="list-style-type: none"> • Triaxial angular rate sensor • Stable performance over temperature • Power supply regulation • Temperature calibration data 	<ul style="list-style-type: none"> • Small, lightweight package • SAE-J211, ISO-6487, NHTSA approved • Crash testing certified • Insensitive to shock 	<ul style="list-style-type: none"> • MEMS triaxial rate sensor • SAEJ211 compliant • Shock resistant housing • Rugged compact package
Accuracy	±0.1% non-linearity	±0.01% non-linearity	±0.1% non-linearity	±0.5% non-linearity	±0.5% non-linearity
Excitation Voltage	8.5 - 36 VDC	10 - 36 VDC	8.5 - 36 VDC	5 - 16 VDC	5 - 16 VDC
Operating Temp.	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 105°C	-40°C to 105°C
Dimensions (mm)	24 x 24 x 27.30	24 x 24 x 27.30	24 x 24 x 28.30	14.6 x 10.2 x 7.6	20.8 x 20.8 x 14.5
Typical Applications	Wind turbine, weapons testing, test and measurement	Wind turbine, weapons testing, test and measurement	Weapons testing, boat stabilization, test and measurement	Automotive safety crash testing, roll-over testing, motor sports, biomechanics, weapons testing	Automotive safety crash testing, pedestrian impact, biomechanics, robotics

6 DEGREES OF FREEDOM SENSORS



633

Package	Stainless steel
FS Ranges	±500 to ±50K°/sec ±50g to ±6,000g
Unique Features	<ul style="list-style-type: none"> • Complete six degree-of-freedom (6DoF) analog sensor • Shock resistant rugged housing • Silicon MEMS gyros • PR MEMS high-g shock sensors
Accuracy	±0.5% non-linearity
Excitation Voltage	5 - 16 VDC
Operating Temp.	-40°C to 105°C
Dimensions (mm)	21.3 x 21.3 x 15.2
Typical Applications	Aerospace testing, weapons testing, biomechanics, shock and impact testing



634

Package	Anodized aluminum
FS Ranges	±100 to ±18K°/sec ±2g to ±100g
Unique Features	<ul style="list-style-type: none"> • 6DoF analog sensor • Signal conditioned output • Silicon MEMS gyros • UltraStable VC MEMS low-g sensors
Accuracy	±0.1% non-linearity
Excitation Voltage	5 - 16 VDC
Operating Temp.	-40°C to 105°C
Dimensions (mm)	30.5 x 30.5 x 24.6
Typical Applications	Automotive testing, motion measurements, biomechanics

INERTIAL SENSORS



65210E

Package	Electroless nickel plated Aluminum
FS Ranges	±1K to ±20K°/sec, ±10g to ±100g
Unique Features	<ul style="list-style-type: none"> • 6DoF and telemetry kit • User configurable, IRIG encoder • Parabolic and radome ring mounting adaptor options • Up to 4hr battery options
Accuracy	±0.2% non-linearity error
Excitation Voltage	Li-Ion battery included
Operating Temp.	-40°C to 85°C
Dimensions (mm)	Ø69.85 x 197.3 length
Typical Applications	Weapons separation testing, captive carry testing, GTV and JTV test vehicles



65210ES

Package	Electroless nickel plated Aluminum
FS Ranges	±1K to ±20K°/sec, ±10g to ±100g
Unique Features	<ul style="list-style-type: none"> • 6DoF and telemetry kit • Parabolic and radome ring mounting adaptor options • AES encryption option • Wide range of signal conditioning modules
Accuracy	±0.2% non-linearity error
Excitation Voltage	Li-Ion battery included
Operating Temp.	-40°C to 85°C
Dimensions (mm)	Ø69.85 x 161.3 length
Typical Applications	Weapons separation testing, captive carry testing, GTV and JTV test vehicles

SCANNERS AND SYSTEMS



PRESSURE AND TEMPERATURE SCANNERS

NetScanners



NetScanner 9216

Measurement Type	Pressure
Media	Dry
Accuracy	±0.05% FS
# of Channels	16
EU Throughput Rate	500 Hz/chan/sec
Operating Temp.	-30°C to 80°C
Enclosure	IP66/30 g vibration
Typical Applications	Engine testing, portable data acquisition, wind tunnel research, process monitoring



NetScanner 9146-R

Measurement Type	Temperature
Media	RTD/TC/Volt
Accuracy	±0.25°C
# of Channels	16/32
EU Throughput Rate	33 Hz/chan/sec
Operating Temp.	-30°C to 70°C
Enclosure	IP66/30 g vibration
Typical Applications	Engine testing, portable data acquisition, wind tunnel research, process monitoring



NetScanner 9146-T

Measurement Type	Temperature
Media	TC
Accuracy	±0.25°C
# of Channels	16
EU Throughput Rate	33 Hz/chan/sec
Operating Temp.	-30°C to 70°C
Enclosure	IP54/30 g vibration
Typical Applications	Engine testing, portable data acquisition, wind tunnel research, process monitoring



NetScanner 9022

Measurement Type	Pressure
Media	Liquid
Accuracy	±0.05% FS
# of Channels	12
EU Throughput Rate	100 Hz/chan/sec
Operating Temp.	-30°C to 70°C
Enclosure	IP64/30 g vibration
Typical Applications	Engine testing, third party transducers, close coupled requirements, high pressure

PRESSURE SCANNERS & TRANSDUCERS

NetScanners, Transducers, and Accompanying Equipment



NetScanner 9032, 9033

Measurement Type	Barometer, Differential Standard
Media	Dry
Accuracy	±0.01% FS
# of Channels	1
EU Throughput Rate	10 Hz
Operating Temp.	-10°C to 60°C
Enclosure	Laboratory grade
Typical Applications	Barometric monitor, precision reference



NetScanner 9034, 9038

Measurement Type	Calibrator
Media	Dry
Accuracy	±0.01% FS
# of Channels	1
EU Throughput Rate	10 Hz
Operating Temp.	-10°C to 60°C
Enclosure	Laboratory grade
Typical Applications	Calibration, transfer standard, verification testing



NetScanner 9916, 98RK-1 Rack

Measurement Type	Pressure
Media	Dry
Accuracy	±0.05% FS
# of Channels	128
EU Throughput Rate	100 Hz/chan/sec
Operating Temp.	0°C to 50°C
Enclosure	19" rackmount/4U
Typical Applications	Turbine engine test, control room location



NetScanner 9400 Transducer

Measurement Type	Pressure
Media	All-media
Accuracy	±0.05%
# of Channels	1
EU Throughput Rate	Analog Output
Operating Temp.	-30°C to 100°C
Enclosure	IP66
Typical Applications	Turbine Engine Test, liquids, hydraulics

ELECTRONIC & MINIATURE PRESSURE SCANNERS

ESP & MicroScanner



ESP 64HD DTC

Type	Pressure
Media	Dry
Accuracy	±0.03% FS
# of Channels	64
Thermal Comp.	Active (DTC)
Operating Temp.	-25°C to 80°C
Multiplex Scan Rate	70 KHz
Port Sizes (Inches)	0.040
Typical Applications	Wind tunnel research, flight test, on vehicle research



ESP 32HD DTC

Type	Pressure
Media	Dry
Accuracy	±0.03% FS
# of Channels	32
Thermal Comp.	Active (DTC)
Operating Temp.	-25°C to 80°C
Multiplex Scan Rate	70 KHz
Port Sizes (Inches)	0.040 or 0.063
Typical Applications	Wind tunnel research, flight test, on vehicle research



ESP 64HD, 32HD, 16HD

Type	Pressure
Media	Dry
Accuracy	±0.05% FS
# of Channels	64, 32 or 16
Thermal Comp.	Passive
Operating Temp.	-25°C to 80°C
Multiplex Scan Rate	20 KHz
Port Sizes (Inches)	0.040 or 0.63
Typical Applications	Wind tunnel research, flight test, on vehicle research



MicroScanner 16MS

Type	Pressure
Media	Dry
Accuracy	±0.05%
# of Channels	16
Thermal Comp.	Active
Operating Temp.	-20°C to 100°C
Multiplex Scan Rate	100 KHz
Port Sizes (Inches)	Direct mount
Typical Applications	For confined space, wind tunnel, flight test

DATA ACQUISITION SYSTEMS

Multi-Scanner Data Acquisition Systems



Optimus

Type	Pressure scanning
Media	Dry
Accuracy	±0.03% FS
# of Channels	2048
EU Throughput Rate	2000 Hz
Operating Temp.	0°C to 50°C
Enclosure	Laboratory grade
Typical Applications	Aerospace development



Initium

Type	Pressure scanning
Media	Dry
Accuracy	±0.05% FS
# of Channels	512
EU Throughput Rate	1200 Hz
Operating Temp.	0°C to 70°C
Enclosure	Laboratory grade
Typical Applications	Wind engineering



mSDI Interface

Type	A/D conversion
Media	Dry
Accuracy	±0.05% FS
# of Channels	512
EU Throughput Rate	2000 Hz
Operating Temp.	-25°C to 80°C
Enclosure	Miniature
Typical Applications	In-model placement, Optimus System interface



Pneumatics

Type	Quick disconnect
Media	Dry
Accuracy	—
# of Channels	19, 31, 36, 55
EU Throughput Rate	—
Operating Temp.	-40°C to 80°C
Enclosure	Miniature
Typical Applications	Pressure connections for confined spaces

SPEED SENSORS



3 & 4 CHANNELS HALL EFFECT SPEED SENSORS



Jaquet DSD 25

Technology	Differential Hall Effect three and four channels
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length 29 mm • Shaft diameter 24.5 mm
Frequency Range	0 - 20 kHz
Nominal Supply Voltage	Nominal 15VDC (9 VDC to 30 VDC)
Output Signal	3 & 4 channels push-pull
Operating Temp.	-40°C to 125°C
Typical Applications	Railway

DUAL CHANNEL HALL EFFECT SPEED SENSOR



Jaquet DSD 70

Technology	Differential Hall Effect two channels
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length 29 mm • Shaft diameter 16 mm
Frequency Range	0 - 20 kHz
Nominal Supply Voltage	Nominal 15VDC (9 VDC to 30 VDC)
Output Signal	2 channels push-pull
Operating Temp.	-40°C to 125°C
Typical Applications	Railway

EDDY CURRENT SPEED SENSORS



Jaquet DSH

Technology	Eddy Current single channel
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length 42 mm • Shaft diameter 18 mm
Frequency Range	up to 20 kHz
Nominal Supply Voltage	10 - 30VDC
Output Signal	Square Wave
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial (Power Generation, Hydraulic, Engines, Industry)



Jaquet DSH 16

Technology	Eddy Current two channels
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length 29 mm • Shaft diameter 16 mm
Frequency Range	up to 20 kHz
Nominal Supply Voltage	Nominal 15 VDC (8 VDC to 30 VDC)
Output Signal	2 channels push-pull
Operating Temp.	120°C
Typical Applications	Railway

HALL EFFECT SPEED SENSORS



Jaquet Green Line D

Technology	Differential Hall Effect single channel
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length 26 mm, 64 mm • Shaft diameter 12 mm
Frequency Range	5-20 kHz
Nominal Supply Voltage	8-32 VDC
Output Signal	Square Wave, single channel
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial, non demanding, low cost applications



Jaquet Green Line Y12AD

Technology	Hall Speed Sensor single channel + direction signal
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length 36 mm • Shaft diameter 12 mm
Frequency Range	0-15 kHz
Nominal Supply Voltage	8-32 VDC
Output Signal	Square Wave, single channel + direction signal
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial, non demanding, low cost applications



Jaquet Green Line F

Technology	Hall Effect quasi static
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length various • Shaft diameter various
Frequency Range	0.05-15 kHz
Nominal Supply Voltage	8-25 VDC
Output Signal	Square Wave, single channel
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial, non demanding, low cost applications



Jaquet DSD

Technology	Differential Hall Effect single channel
Package	<ul style="list-style-type: none"> • Stainless steel • Various shaft lengths M12, M14, M16, M18, M22 • Various shaft diameter
Frequency Range	up to 20 kHz
Nominal Supply Voltage	8-30 VDC
Output Signal	Square Wave, single channel
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial (Power Generation, Hydraulic, Engines, Industry)



Jaquet DSF extended power supply

Technology	Hall Effect
Package	<ul style="list-style-type: none"> • Stainless steel • Various shaft lengths • Various shaft diameter
Frequency Range	up to 20 kHz
Nominal Supply Voltage	8-28 VDC 10-30 VDC
Output Signal	Square Wave, single channel
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial (Power Generation, Hydraulic, Engines, Industry)



Jaquet DSF EX-ATEX

Technology	Hall Effect
Package	<ul style="list-style-type: none"> • Stainless steel • Various shaft lengths • Various shaft diameter
Frequency Range	up to 15 kHz
Nominal Supply Voltage	9-18 VDC
Output Signal	2-wire
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial (Power Generation, Hydraulic, Engines, Industry), explosion protected, classified areas



Jaquet DSF

Technology	Hall Effect
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length various • Various shaft diameter
Frequency Range	up to 15 kHz
Nominal Supply Voltage	9-18 VDC
Output Signal	One channel
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial, non demanding, low cost applications



Jaquet DSL

Technology	Hall Effect
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length various • Various shaft diameter
Frequency Range	up to 15 kHz
Nominal Supply Voltage	10-25 VDC
Output Signal	Square Wave
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial, non demanding, low cost applications



Jaquet DSS

Technology	Hall Effect zero speed
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length various • Shaft diameter various
Frequency Range	up to 15 kHz
Nominal Supply Voltage	8-30 VDC
Output Signal	Square Wave
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial, non demanding, low cost applications

HALL EFFECT SPEED SENSORS



	Jaquet DSY
Technology	Hall Effect chopped
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length various • Various shaft diameter
Frequency Range	0 - 15 kHz
Nominal Supply Voltage	4.5 - 16 VDC 8 - 32 VDC
Output Signal	Square Wave
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial (Power Generation, Hydraulic, Engines, Industry)

	Jaquet DSD 17
Technology	Differential Hall Effect single channel, 3 wires, voltage output
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length various • Various shaft diameter
Frequency Range	Up to 20 kHz
Nominal Supply Voltage	Nominal 15 VDC (9 VDC to 30 VDC)
Output Signal	1 channel push-pull, voltage output
Operating Temp.	-40°C to 125°C
Typical Applications	Railway

	Jaquet DSD 40
Technology	Differential Hall Effect single channel, 2 wires, current output
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length various • Various shaft diameter
Frequency Range	0 - 20 kHz
Nominal Supply Voltage	Nominal 15 VDC (12 VDC to 30 VDC)
Output Signal	1 channel push-pull, current output
Operating Temp.	-40°C to 125°C
Typical Applications	Railway

VARIABLE RELUCTANCE SPEED SENSORS



	Jaquet Green Line EV
Technology	Variable Reluctance (VR) square wave output
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length various • Various shaft diameter
Frequency Range	25 Hz - 20 kHz
Nominal Supply Voltage	5-32 VDC
Output Signal	Square Wave
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial, non demanding, low cost applications

	Jaquet Green Line EX
Technology	Variable Reluctance (VR) Classified Areas (explosion proof)
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length 48, 89, 129 mm • Shaft diameter 5/8" and 3/4"
Frequency Range	25 Hz - 20 kHz
Nominal Supply Voltage	Passive
Output Signal	Sine Wave
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial, non demanding, low cost applications

	Jaquet Green Line E
Technology	Variable Reluctance (VR)
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft length various • Shaft diameter various
Frequency Range	25 Hz - 20 kHz
Nominal Supply Voltage	Passive
Output Signal	Sine Wave
Operating Temp.	-40°C to 125°C
Typical Applications	Industrial, non demanding, low cost applications

	Jaquet SIL-3
Technology	Variable Reluctance (VR)
Package	<ul style="list-style-type: none"> • Stainless steel • Shaft lengths 35 mm up to 101 mm • Shaft diameter M16 and 5/8"
Frequency Range	up to 30 kHz
Nominal Supply Voltage	Passive
Output Signal	Sine Wave
Operating Temp.	-40°C to 150°C
Typical Applications	SIL-3 and SIL-4 applications

POLE WHEEL



FTP520 One piece pole wheel without boss

Material 1.1191 CK45 Ferromagnetic steel, electrogalvanized, whit/blue passivated 8...12µm

Module 1 to 4

Typical Applications Railway traction motors, turbines, diesel engines, motors/generators and large compressors in industrial machinery



FTP530 One piece pole wheel with boss

Material 1.1191 CK45 Ferromagnetic steel, electrogalvanized, whit/blue passivated 8...12µm

Module 1 to 3

Typical Applications Measuring chain/signal output optimized



FTP540 & FTP560 Two piece pole wheels

Material 1.1191 CK45 Ferromagnetic steel, electrogalvanized, whit/blue passivated 8...12µm

Module 1 to 3

Typical Applications Existing or new designed machine with difficult mounting process of the pole wheel



FTP551 Pole Band

Material Ferromagnetic Steel St 12.03, surface Zinc-plated DIN/EN/ISO 9227, passivated blue/white 8-12µm

Module ≥ 3.0

Typical Applications Typically used for shafts with small diameters (diameter <500mm) and sensors which are sensitive to high magnetic gradients



FTP552 Pole Band

Material Ferromagnetic Steel St 12.03, surface Zinc-plated DIN/EN/ISO 9227, passivated blue/white 8-12µm

Module ≥ 3.0

Typical Applications Typically used for shafts with large diameters (diameter >500mm) and sensors which are sensitive to high magnetic gradients



FTP553 Pole Band

Material Ferromagnetic Steel St 12.03, surface Zinc-plated DIN/EN/ISO 9227, passivated blue/white 8-12µm

Module ≥ 3.0

Typical Applications Typically used for shafts with large diameters (diameter >500mm), large axial movements of the shaft and large number of poles



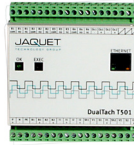
FTP554 Pole Band

Material Ferromagnetic Steel St 12.03, surface Zinc-plated DIN/EN/ISO 9227, passivated blue/white 8-12µm

Module ≥ 3.0

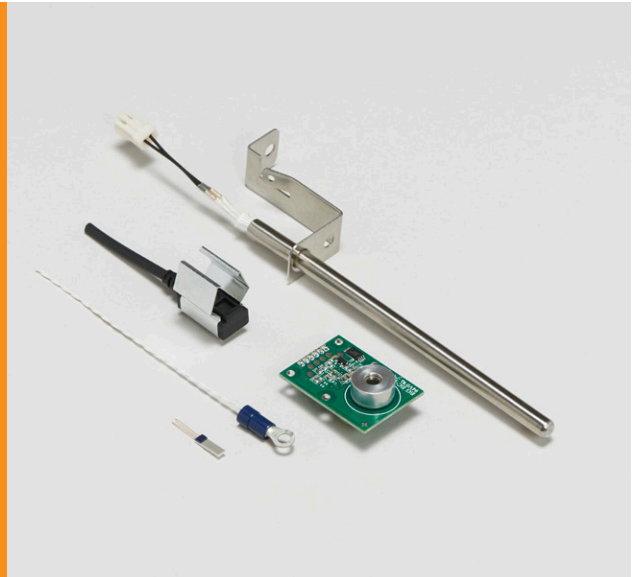
Typical Applications Typically used for shafts with large diameters (diameter >500mm), large axial and radial movements of the shaft

TACHOMETERS



	T400 Tachometer	T500 dual channel Tachometer	T600 Multitasker
Analog Inputs	0	0	1
Binary Inputs	1	2	2
Analog Ouputs	1	2	2
Relays	1	4	4
Communication Interface	RS232	LAN (TCP/IP)	LAN/CAN
Nominal Supply Voltage	10 to 36VDC	AC version: 90 to 264VAC DC Version: 18 to 36VDC	AC version: 90 to 264VAC/120 to 370VDC DC Version: 18 to 36VDC
Ambient Temperature	-40°C to 85°C	-25°C to 50°C for AC version -40°C to 70°C for DC version	-25°C to 50°C for AC version -40°C to 70°C for DC version

TEMPERATURE SENSORS



SENSING ELEMENTS—NTC

Analog Output



Thermistor Chips

Package	Leadless chips, SMD 0402, 0603, 0805
Type	Gold or silver electrodes, surface mounted
Resistance Range	Chip: 100 to 1M Ω / SMD: 2K to 200K Ω
Unique Features	<ul style="list-style-type: none"> • Wire bonding compatible • End band SMD
Accuracy	$\pm 1\%$ to 10%
Operating Temp.	-40°C to 125°C
Dimensions (mm)	Chip: 0.34 - 1 square SMD 0402: 1 x 0.5 x 0.7 SMD 0603: 1.6 x 0.8 x 1 SMD 0805: 2 x 1.25 x 1.2
Typical Applications	Temperature compensation, communication (DWDM), infrared sensing systems, PCB mounting temperature measurement

Radial Leaded Thermistors

Package	Radial, beads
Type	Epoxy or glass coated
Resistance Range	100 to 1M Ω
Unique Features	<ul style="list-style-type: none"> • Interchangeable • Moisture resistant • Stability
Accuracy	0.25% to 20%
Operating Temp.	-55°C to 280°C
Dimensions (mm)	0.4 to 4.9
Typical Applications	Temperature sensing for OEM, automotive, medical, HVACR

Axial Leaded Thermistors

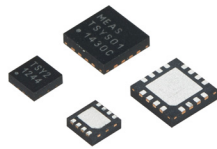
Package	DO-35
Type	Glass coated
Resistance Range	5K Ω to 100K Ω
Unique Features	<ul style="list-style-type: none"> • Tight tolerance ($\pm 1\%$) • Max. stability using high density (HD) chip • Hermetically sealed • Tinned and nickel plated leads
Accuracy	$\pm 1\%$ to $\pm 3\%$
Operating Temp.	-40°C to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

Space Qualified (Hi-Rel)

Package	Radial, bead, custom
Type	NTC, epoxy, glass, probes
Resistance Range	1K Ω to 100K Ω
Unique Features	<ul style="list-style-type: none"> • ESA and NASA approved • High reliability and accuracy
Accuracy	0.5% to 10%
Operating Temp.	-55°C to 160°C
Dimensions (mm)	From 2.4
Typical Applications	Instrumentation and compensation for aerospace applications

SENSING ELEMENTS—DIGITAL

Digital Output



Temperature System Sensor (TSYS)

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

SENSING ELEMENTS—RTD

Analog Output



Nickel RTD

Package	SOT 23 Bare die on request
Type	<ul style="list-style-type: none"> Thin film nickel structure on silicon substrate, protected with a passivation layer SOT 23 package for SMT Bare die for COB assembly
Resistance Range	1,000Ω
Unique Features	<ul style="list-style-type: none"> Harsh environment compatible Automotive qualified Very small dimensions Very short response time Good linearity High temperature coefficient Low power consumption Good thermal connection of sensing element through leadframe-pin
Accuracy	Class B, according to former DIN 43760 standard
Operating Temp.	-55°C to 160°C
Dimensions (mm)	2.1 x 2.5 x 2.1 (SOT 23), 0.7 x 0.7 x 0.4 (Bare die)
Typical Applications	Automotive, industrial, OEM, thermal compensation, thermal management



Platinum Thin Film Chips

Package	Leadless chips, SMD 1206
Type	<ul style="list-style-type: none"> Thin film platinum deposited on ceramic substrate Contact pads on top and bottom side for NTC chip like assembly Contact pads on both ends for SMT
Resistance Range	100Ω, 1,000Ω (Other values on request)
Unique Features	<ul style="list-style-type: none"> Long term stability Interchangeability Assembly like NTC chips Very small dimensions Short response time
Accuracy	According to DIN EN 60751
Operating Temp.	-50°C to 400 °C
Dimensions (mm)	1.5 x 1.5 (Top/bottom pads), 1.2 x 3.6 (SMT)
Typical Applications	White goods, automotive, industrial, aerospace, medical, test and measurement



Platinum Thin Film Sensors

Package	Wired component
Type	<ul style="list-style-type: none"> Thin film platinum deposited on ceramic substrate, glass coated Tube outline available Connection via radial leads
Resistance Range	100Ω, 1,000Ω (Other values on request)
Unique Features	<ul style="list-style-type: none"> Long term stability Interchangeability Small dimensions Short response time High electrical insulation
Accuracy	Class T (F0.1), A (F0.15), B (F0.3) according to DIN EN 60751
Operating Temp.	-50°C to 600°C (Standard) down to -200°C or up to 1,000°C (On request)
Dimensions (mm)	2.0 x 2.3 x 1.1 (Standard) 1.2 x 4.0 x 1.1 (Standard) Other dimensions (On request)
Typical Applications	White goods, automotive, industrial, aerospace, medical, test and measurement



Glass Wire Wound Sensors

Package	GO, GX
Type	Glass rod, radial leads
Resistance Range	100Ω (2X 100Ω on few versions)
Unique Features	<ul style="list-style-type: none"> Aggressive environments (Acid, oil, solvent) Small dimensions Stability No hysteresis Short response time Interchangeability
Accuracy	Class W0.3, W0.15, W0.1 according to IEC60751
Operating Temp.	-200°C to 400°C
Dimensions (mm)	Ø1.8/length 5 mm to Ø4.5/length 48 mm
Typical Applications	Oil and chemical industry, aviation, aeronautic, food industry



Ceramic Wire Wound Sensors

Package	CWW600, CWW850, CWW1000
Type	Ceramic rod, radial leads
Resistance Range	100Ω (2X 100Ω on few versions)
Unique Features	<ul style="list-style-type: none"> High temperature Stability No hysteresis Small dimension Interchangeability
Accuracy	Class W0.3, W0.15, W0.1 according to IEC60751
Operating Temp.	-200°C to 600°C (CWW600) -200°C to 850°C (CWW850) -200°C to 1000°C (CWW1000)
Dimensions (mm)	Ø1.5/length 8 mm to Ø4.5/length 30 mm Ø2.7/length 45 mm (CWW1000)
Typical Applications	Process industry, laboratories, reference sensors

SENSOR ASSEMBLIES



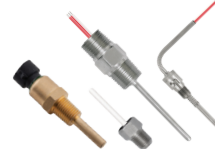
Ring Sensors

Package	Ring for surface assembly Threaded bolt, tube style
Type	Epoxy potted element
Sensor Range	<ul style="list-style-type: none"> • NTC • RTD: Pt, Ni
Unique Features	<ul style="list-style-type: none"> • Surface mount sensing • For use where space is limited • Simple installation
Accuracy	<ul style="list-style-type: none"> • NTC: Custom tolerances available • Pt RTD: Class AA, A, B according to IEC60751
Operating Temp.	Varies: -50°C to 250°C
Dimensions (mm)	Case specific dimensions
Typical Applications	Surface plates, heat exchangers, fluid pumping systems, generators



Push-in Sensors

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



Screw-in Sensors

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



Refrigeration Molded Probes

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



Pipe Mount Sensors

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



Outdoor Air Sensors

Package	Metal housing with PVC sun shield with or without weatherproof box
Type	<ul style="list-style-type: none"> • Fast response time
Unique Features	<ul style="list-style-type: none"> • Easy installation - threads into mounting hole or standard handy box • Fully potted housing protects sensing element and provides fast, accurate response
Accuracy	±0.2°C at 0°C to 70°C
Operating Temp.	-40°C to 105°C
Dimensions (mm)	Ø12 X 64
Typical Applications	Residential and commercial building controls, energy management systems



Pool and Spa Sensors

Package	Plastic or metal housing with o-ring seal designed for band clamp or backing nut
Type	<ul style="list-style-type: none"> • Overmolded subassembly
Unique Features	<ul style="list-style-type: none"> • O-ring seals • Compatible with pool and spa chemicals
Accuracy	±0.2°C
Operating Temp.	0°C to 90°C
Dimensions (mm)	6.4 x 50
Typical Applications	Pools, hot tubs



Boiler Sensors

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

SENSOR ASSEMBLIES



	Oven Sensors	Urea Temperature Sensors	Exhaust Gas Temperature Probes
Package	Stainless steel housing	Plastic housing with screw hole mountings	EGT thermocouple probe
Type	<ul style="list-style-type: none"> Pt element encapsulated into ceramic tube, with rigid stainless steel housing High temperature cable 	<ul style="list-style-type: none"> Overmolded plastic housing with integrated 2 pin connector 	<ul style="list-style-type: none"> Mineral insulated alloy sheath, screwed mechanical interface, cable extension and automotive connector Option: CANbus interface (From 1 to 4 thermocouples, fully configurable)
Sensor Range	Pt100, Pt500, Pt1000 sensor	NTC	Thermocouple: Type K, N
Unique Features	<ul style="list-style-type: none"> High temperature Easy integration/installation Higher dielectric strength according to type 	<ul style="list-style-type: none"> Temperature measurement of urea liquid used in Selective Catalytic Reduction (SCR) systems Suitable for high pressure applications 	<ul style="list-style-type: none"> High temperature, robust design Vibration and corrosion resistant Fast response time
Accuracy	Class B, C according to IEC60751	<ul style="list-style-type: none"> NTC: custom tolerances available ±2%, 3% and 5% Beta 25/85: 3976 	Class 1 according to IEC584
Operating Temp.	-20°C to 750°C (According to version)	-40°C to 125°C	-40°C to 900°C
Dimensions (mm)	<ul style="list-style-type: none"> OD Ø4 mm to Ø6 mm Immersion length 35 mm to 100 mm Custom mechanical interface and cable length 	Sensor tip 8 mm diameter	<ul style="list-style-type: none"> OD Ø4 to OD Ø8 Custom immersion length and cable length
Typical Applications	Drying oven, domestic oven	Temperature measurement of urea liquid used in SCR systems	Automotive, truck, mining, power unit, racing



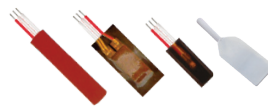
	Micro-Thermocouples	Patient Monitoring Probes	TLH Reference Probe	USB Temperature Probe
Package	Fine gage thermocouples	Sensor with cable and connector	TLH100/TLH600	Push-in probe with handle
Type	<ul style="list-style-type: none"> Micro sized thermocouple: 44 AWG, 40 AWG, 38 AWG, 36 AWG Polymer encapsulated or bare junction 	<ul style="list-style-type: none"> Reusable: Skin; 10FR and 12FR GP Disposable: Skin; 9FR and 12FR GP; 12FR, 18FR, 24FR Esoph/Stethoscope; 14FR, 16FR, 18FR Foley catheter 	<ul style="list-style-type: none"> Rigid protective external stainless steel sheath and stainless steel handle, unique internal design to insure stability 	<ul style="list-style-type: none"> Versatile push-in probe with stainless steel sheath and plastic or stainless steel handle High precision sensing element combined with integrated electronics for signal processing, calibration and USB interface
Sensor Range	Thermocouple type: T, K	400 series, 700 series (Reusable only)	Pt100 sensor	Not applicable due to direct digital output
Unique Features	<ul style="list-style-type: none"> Welded or soldered junction Low profile, fast response Polyesterimide wire insulation 	<ul style="list-style-type: none"> Autoclavable reusables Sterile disposables 	<ul style="list-style-type: none"> Stability Provided with calibration report or option of calibration certificate by national committee for accreditation (COFRAC) 	<ul style="list-style-type: none"> USB conformal interface Calibrated digital output, recalibration possible on request Robust design for general purpose applications Long term stability
Accuracy	Varies by type: standard, special and custom limits of error available	±0.1°C at 25°C to 45°C ISO-80601-2-56: ±0.2°C at 35°C to 42°C	Class B (TLH600), A (LTH100) according to IEC60751	±0.1°C for temperature range -5°C to 55°C ±0.2°C for temperature range -40°C to 160°C (Other accuracies on request)
Operating Temp.	Varies by type: Rated up to 240°C	-40°C to 100°C, Patient: 0°C to 50°C	-80°C to 350°C (TLH100) -180°C to 600°C (TLH600)	-55°C to 160°C for probe tip -40°C to 85°C for handle with electronics (Other temperature ranges on request)
Dimensions (mm)	Varies by thermocouple gage	Reusable: 3 m cable with sensor Disposable: Sensor <1 m; 3 m reusable adaptor cable	OD Ø5 x 500 + handle Ø15 x 100 (Typical cable length = 2 m)	OD Ø6 x 200 + handle Ø19 x 100 (Typical cable length = 2,000)
Typical Applications	Medical, catheters	Patient monitoring, laboratory	Laboratory, temperature sensors calibration by comparison	Laboratory, mobile research, test and measurement

SENSOR ASSEMBLIES



Stator Sensors

Package	TPE/CPME G11 epoxy glass laminated, Class F or H
Type	<ul style="list-style-type: none"> Rigid flat, slot sensor Cable or leadwire options
Sensor Range	<ul style="list-style-type: none"> RTD: Pt, Ni, Cu Thermocouple: Type J, K, T, E
Unique Features	<ul style="list-style-type: none"> Extended sensitive length Single or dual elements Calibration available
Accuracy	RTD: Class A, B according to IEC60751
Operating Temp.	Max. temperature: Class F, 155°C Max. temperature: Class H, 180°C Available up to 200°C
Dimensions (mm)	Custom dimensions available
Typical Applications	Monitor temperature between stator coils, electric motors, generators



Surface Sensors

Package	Silicone rubber or polyimide laminated element SP683
Type	<ul style="list-style-type: none"> Flat, flexible, rectangular sensor Variety of designs available
Sensor Range	<ul style="list-style-type: none"> RTD: Pt, Ni, Cu Thermocouple: Type J, K, T, E
Unique Features	<ul style="list-style-type: none"> Surface sensing for curved or uneven surfaces Noninvasive, simple installation Adhesive backing option
Accuracy	RTD: Class A, B according to IEC60751
Operating Temp.	Varies: -50°C to 200°C Available up to 220°C
Dimensions (mm)	Custom dimensions available
Typical Applications	Chemical and pharmaceutical industry, process industry, laboratory, aerospace, motor end windings of stator coils, generators



Bearing Sensors

Package	Copper alloy tip Stainless steel, isolated stainless steel or epoxy glass case
Type	<ul style="list-style-type: none"> Rigid sheath Tip sensitive Cable/leadwire options
Sensor Range	<ul style="list-style-type: none"> RTD: Pt, Ni, Cu Thermocouple: Type J, K, T, E
Unique Features	<ul style="list-style-type: none"> Cut-to-length Copper tip for fast time response Assemblies with fluid seal and spring loading Single or dual elements
Accuracy	RTD: Class A, B, C according to IEC60751
Operating Temp.	Sheath specific, up to 250°C
Dimensions (mm)	Custom lengths Standard sheath diameters: Ø4.78, Ø5.46, Ø6.35
Typical Applications	Bearing monitoring, electric motors, generators



Thermocouple

Package	Screw-in or push-in design with cable extension, connector, or connecting head
Type	<ul style="list-style-type: none"> Collapsible Mineral Insulated (MI) with alloy sheath (Radius $\geq 5 \times OD$) Flexible cable with plastic or composite insulation Rigid protection sheath: ceramic, quartz or alloy sheath
Sensor Range	Type T, J, K, N, R, S, B (According to TC type and insulation type)
Unique Features	<ul style="list-style-type: none"> High temperature and high vibration level (For MI) Available in small diameters for fast respond time Grounded or ungrounded or apparent hot junction Single or multiple measuring points
Accuracy	Class 1 according to IEC584
Operating Temp.	-40°C to 1,700°C (According to TC type and insulation type)
Dimensions (mm)	<ul style="list-style-type: none"> OD Ø0.3 mm to Ø8 mm for MI Ø0.15 mm for smallest flexible cable Custom dimensions, fittings and cable lengths (From few centimeters to many meters)
Typical Applications	Aeronautic, process industry, medical, semiconductor industry (spike, profile)



Transmitter

Package	Brass, copper and stainless steel housing, flexible sheath with integrated connector.
Type	<ul style="list-style-type: none"> Epoxy potted element Screw-in
Sensor Range	4 - 20 mA output
Unique Features	<ul style="list-style-type: none"> Compact, welded design Highly sensitive and stable High vibration application Good waterproof properties
Accuracy	0.5 or 1% FS
Operating Temp.	-20°C to 120°C
Dimensions (mm)	<ul style="list-style-type: none"> Customer sheath length, thread type Probe diameter: Ø4.75 mm; Ø5 mm; Ø6 mm; Ø6.35 mm; Ø8 mm
Typical Applications	Heavy industry, general industrial monitoring

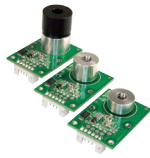
THERMOPILES



	<p>TS TS318-3B0814, TS318-5C50, TS305-10C50</p>
Package	TO-18, TO-5
Type	Thermopile sensor components
Temp. Range	Depends on applied electronics and calibration, filter types optimal for object temperature range -40°C to 300°C (Extended range: -60°C to 1,000°C)
Unique Features	<ul style="list-style-type: none"> • High signal output • Accurate reference sensors
Accuracy	Depends on applied electronics and calibration
Operating Temp.	Ambient temperature range: -20°C to 85°C
Dimensions (mm)	Ø9.15 x 4.4 (Body)
Typical Applications	Medical thermometer (ear, forehead), pyrometer

	<p>TSD Single Pixel Digital Output Series</p>
Package	TO-5
Type	Digital thermopile sensor component
Temp. Range	Object temperature range 0°C to 300°C (Other temperature ranges available upon request)
Unique Features	<ul style="list-style-type: none"> • Calibrated and ready to use, I²C interface • Direct assembly to PCB, no additional components needed
Accuracy	Depends on temperature range, typical 1% full range
Operating Temp.	Ambient temperature range: -20°C to +85°C
Dimensions (mm)	Ø9.15 x 4.4 (Body)
Typical Applications	Contactless temperature measurement, e.g. on moving parts like heated rolls, laminators, people detection, body temperature, microwave oven, air conditioner

THERMOPILES



TSEV
Single Pixel Series

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



TSEV
Multi Pixel Series

Package	OEM-module
Type	8-pixel-linear array thermopile module
Temp. Range	Object temperature range -20°C to 120°C
Unique Features	<ul style="list-style-type: none"> • Calibrated and ready to use • Digital output • Small field of view
Accuracy	Depends on temperature range, typical 2% full scale
Operating Temp.	Ambient temperature range: -20°C to 85°C
Dimensions (mm)	25 x 35 x 15.2
Typical Applications	Contactless temperature measurement, e.g. on moving parts or heated rolls, laminators, people detection, microwave oven, air conditioner



TPT
TPT300V

Package	IP65 stainless steel tube
Type	Thermopile system for industrial use
Temp. Range	Object temperature range 0°C to 300°C
Unique Features	<ul style="list-style-type: none"> • Calibrated and ready to use • Digital or analog outputs • Small field of view
Accuracy	Depends on temperature range, typical 1% full scale
Operating Temp.	Ambient temperature range: 0°C to 85°C
Dimensions (mm)	Ø18 x 111
Typical Applications	Contactless temperature measurement, e.g. on moving parts or heated rolls, control of assembly lines, paper fabrication, drying applications

TORQUE SENSORS



STATIC TORQUE SENSORS



CS1060



CS1120



CS1210

Package	Square male coupling	Keyed shaft connections	Collar mechanical fittings
Operating Mode	Reaction	Reaction	Reaction
Unique Features	<ul style="list-style-type: none"> • Optional high level output • Keyed shaft connection • Static measurements 	<ul style="list-style-type: none"> • Optional high level output • Static torque measurement • Excellent temperature stability 	<ul style="list-style-type: none"> • High stiffness • Low transverse sensitivity • Optional high temp option
FS Ranges	±5 to ±7,000 Nm ±4 to ±5,600 lbf-ft	±5 to ±2,500 Nm ±4 to ±2,000 lbf-ft	±160 to ±10,000 Nm ±128 to ±8,000 lbf-ft
Max. Over-range	1.5X FS	1.5X FS	1.5X FS
Output/Span	±20 mV , 0.5-4.5V	±20 mV , 0.5-4.5V	±20 mV , 0.5-4.5V
Combined Non-linearity & Hysteresis	< ±0.25% FS	< ±0.25% FS	< ±0.25% FS
Operating Temp.	-20°C to 100°C	-20°C to 100°C	-40°C to 150°C
Dimensions (mm)	Application dependent	Application dependent	Application dependent
Typical Applications	Non-rotating parts torque measurement, robotics and effectors, laboratory and research	Non-rotating parts torque measurement, robotics and effectors, laboratory and research	Non-rotating parts torque measurement, robotics and effectors, laboratory and research

DYNAMIC TORQUE SENSORS



CD1050

Package	Square male couplings
Operating Mode	Dynamic rotary
Unique Features	<ul style="list-style-type: none"> • Optional high level output • Rugged • Slip ring measurement interface
FS Ranges	± 5 to $\pm 7,000$ Nm ± 4 to $\pm 5,600$ lbf-ft
Max. Over-range	1.5X FS
Output/Span	± 20 mV, 0.5-4.5V
Combined Non-linearity & Hysteresis	$< \pm 0.25\%$ FS
Operating Temp.	-20°C to 80°C
Dimensions (mm)	Application dependent
Typical Applications	Engine efficiency, robotics and effectors, laboratory and research



CD1095

Package	Keyed shaft couplings
Operating Mode	Dynamic rotary
Unique Features	<ul style="list-style-type: none"> • High accuracy • Built-in amplifier • Bi-directional measurement
FS Ranges	± 5 to $\pm 2,500$ Nm ± 4 to $\pm 2,000$ lbf-ft
Max. Over-range	1.5X FS
Output/Span	± 20 mV, 0.5-4.5V
Combined Non-linearity & Hysteresis	$< \pm 0.25\%$ FS
Operating Temp.	-20°C to 80°C
Dimensions (mm)	Application dependent
Typical Applications	Process control equipment, robotics and effectors, test and measurement



CD1110

Package	Keyed shaft couplings
Operating Mode	Dynamic rotary
Unique Features	<ul style="list-style-type: none"> • Low range measurements • Bi-directional measurement • Mechanical over-range stops
FS Ranges	± 0.05 to ± 2 Nm ± 0.04 to ± 1.6 lbf-ft
Max. Over-range	10X FS
Output/Span	± 20 mV, 0.5-4.5V
Combined Non-linearity & Hysteresis	$< \pm 0.25\%$ FS
Operating Temp.	-20°C to 80°C
Dimensions (mm)	Application dependent
Typical Applications	Process control equipment, robotics and effectors, test and measurement

CONTACTLESS TORQUE SENSORS



CD1140

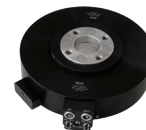
Package	Keyed shaft couplings
Operating Mode	Contactless
Unique Features	<ul style="list-style-type: none"> • High accuracy • Built-in amplifier • Speed and angle detection
FS Ranges	± 0.05 to $\pm 20,000$ Nm ± 0.04 to $\pm 16,000$ lbf-ft
Max. Over-range	2X FS
Output/Span	± 10 V (60 pulses/rev)
Combined Non-linearity & Hysteresis	$\pm 0.1\%$ FS
Operating Temp.	0°C to 60°C
Dimensions (mm)	Application dependent
Typical Applications	Process control equipment, robotics and effectors, test and measurement



CD9515

Package	Keyed shaft couplings
Operating Mode	Contactless
Unique Features	<ul style="list-style-type: none"> • Economical • Small form factor • Speed and angle detection
FS Ranges	± 5 to $\pm 1,000$ Nm ± 4 to ± 738 lbf-ft
Max. Over-range	2X FS
Output/Span	± 5 V (60 pulses/rev)
Combined Non-linearity & Hysteresis	$\pm 0.3\%$ FS
Operating Temp.	0°C to 60°C
Dimensions (mm)	Application dependent
Typical Applications	Industrial applications, process control equipment, PLC compatible

AUTOMOTIVE TEST TORQUE SENSORS



FCA7300

Package	Steering wheel adaptable
Operating Mode	Multi-sensing
Unique Features	<ul style="list-style-type: none"> • Dual torque/angle range • Steering velocity measurement • Fits all road vehicles
FS Ranges	10 to 200 Nm (7 lbf-ft to 150 lbf-ft)
Max. Over-range	10X FS
Output/Span	± 10 V
Combined Non-linearity & Hysteresis	$\pm 0.1\%$ FS
Operating Temp.	-20°C to 80°C
Dimensions (mm)	Ø195 x 50
Typical Applications	On-car road test, truck and buses steering test, armored vehicles steering test



CD1124T

Package	Engine shaft dynamic torque meter
Operating Mode	Contactless
Unique Features	<ul style="list-style-type: none"> • Heavy duty vehicles • Telemetry based • Gearbox to engine shaft measurement
FS Ranges	20,000 Nm (16,000 lbf-ft)
Max. Over-range	1.5X FS
Output/Span	± 10 V
Combined Non-linearity & Hysteresis	$\pm 1\%$ FS
Operating Temp.	-20°C to 80°C
Dimensions (mm)	Ø195 x 35
Typical Applications	Automotive test benches for engine shaft torque measurement

ULTRASONIC SENSORS

(air bubble, point level, continuous level monitoring)



STANDARD CONTACT POINT LEVEL



LL-01

Type	Gap
Unique Features	<ul style="list-style-type: none"> • All 316L SS • Integral electronics • Miniature threads • No adjustment for viscosity, density
Input	5 - 30 VDC
Output	<ul style="list-style-type: none"> • 30 V, 3 W relay • Analog 4 - 20 mA power loop
Pressure Range	250 psi
Operating Temp.	-30°C to 80°C
Actuation point	0.25 inches
Process Connection	1/4"NPT and 1/2"NPT
Cable	1, 4, 10, 20 feet
Approvals	CE
Typical Applications	Medical waste tanks, histology processors, compressors, chillers, coolant reservoirs



LL-10

Type	Tip
Unique Features	<ul style="list-style-type: none"> • All 316L SS • Integral electronics • No adjustment for viscosity, density
Input	5 - 30 VDC
Output	<ul style="list-style-type: none"> • 1 A SPDT • Analog 4 - 20 mA power loop
Pressure Range	1000 psi
Operating Temp.	-30°C to 80°C
Actuation point	Custom (2.25, 6, 12, 18, 24 inches)
Process Connection	3/4"NPT
Cable	1, 4, 10, 20 feet
Approvals	CE
Typical Applications	Hydraulic reservoirs, storage tanks, pipe lines, sewage systems

AIR-BUBBLE AND NON-INVASIVE POINT LEVEL



AD-101

Type	Non-invasive
Unique Features	<ul style="list-style-type: none"> • Detect minimum bubble size of 70% ID • Immune to EMI/RFI • Acoustic coupling agent not required • Continuous self testing • LED indicator
Input	5 - 24 VDC standard
Output	TTL & Open collector
Pressure Range	Atmosphere
Operating Temp.	0°C to 40°C
Actuation point	—
Process Connection	—
Cable (Inches)	12
Approvals	-
Typical Applications	Infusion pumps, dialysis machines, semi-conductor equipment, 3D printing



SL-630

Type	Non-invasive
Unique Features	<ul style="list-style-type: none"> • Stick on dry contact • Point level detection
Input	5 - 24 VDC
Output	TTL (High), dry condition
Pressure Range	Atmosphere
Operating Temp.	-30°C to 70°C
Actuation point	Variable
Process Connection	Reusable sensor, disposable tape
Cable (Inches)	12
Approvals	CE
Typical Applications	Chromatography, chemical analyzer, hemodialysis, reagent vessels

CONTACT MULTI-POINT LEVEL



SL-900

Type	Contact
Unique Features	<ul style="list-style-type: none"> • Miniature • 10 μRA electropolished finish • 316 LSS body • Designed for high purity market
Input	Variable
Output	Dual color LED and ½ A relay
Pressure Range	250 PSIG
Operating Temp.	-30°C to 93°C
Actuation point	Variable
Process Connection	1/2", 3/4" VCR, male/female
Cable (Inches)	Up to 24" shielded with strain relief, 9 pin connector
Approvals	NEMA 1 housing
Typical Applications	Pharmaceutical and semiconductor industries, high pressure vessels

CONTINUOUS LEVEL



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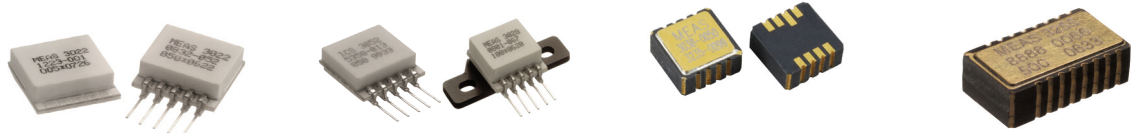
Type	Continuous transmitter through air
Unique Features	<ul style="list-style-type: none"> • Non-contact • Remotely mounted • 316 SS or epoxy sensor material • Configurable via RS-232
Input	24 VDC
Output	RS-232, analog, relay setpoints
Pressure Range	Atmosphere
Operating Temp.	-30°C to 70°C
Sensing Range	0.5" to 5" inches
Process Connection	—
Accuracy	±0.0075"
Elect Connection	Terminal block
Approvals	NEMA 1 housing
Typical Applications	Microplate well level, test tubes and vials, bottle fill level, surface flaw detection

VIBRATION SENSORS



EMBEDDED ACCELEROMETERS

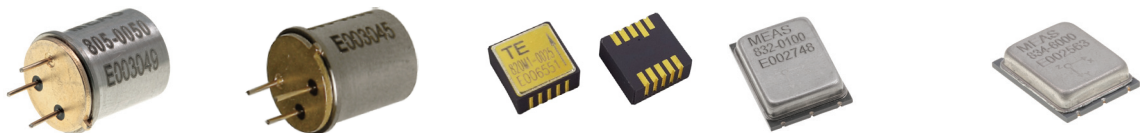
MEMS DC Accelerometer



	3022, 3028	3052A, 3058A	3038	3255A
Package	Pins or pads	Pins or pads	SMD	SMD
Type	Board level	Board level	Board level	Board level
FS Range	±2g to ±100g	±2g to ±100g	±50g to ±6,000g	±25g to ±100g
Unique Features	<ul style="list-style-type: none"> • mV output, critically gas damped • Board and screw mount options • Pin or solder pad option 	<ul style="list-style-type: none"> • Temperature compensated • Board and screw mount options • Pin or solder pad option 	<ul style="list-style-type: none"> • Hermetically sealed • High over-range protection • Gas damping 	<ul style="list-style-type: none"> • Amplified, signal conditioned • Gas damping • Bidirectional mounting
Accuracy	±1.0% non-linearity	±1.0% non-linearity	±1.0% non-linearity	±1.0% non-linearity
Operating Temp.	-40°C to 125°C	-40°C to 125°C	-54°C to 125°C	-40°C to 125°C
Dimensions (mm)	22.8 x 15.2 x 5.3	22.8 x 15.2 x 5.3	7.5 x 7.5 x 3.3	13.5 x 7.6 x 3.8
Typical Applications	Vibration and shock monitoring, tilt applications, motion control, impact testing	Vibration and shock monitoring, tilt applications, motion control, impact testing	Vibration and shock monitoring, embedded systems, shock testing, safe and arm	Vibration and shock monitoring, aerospace testing, impact testing, transportation

EMBEDDED ACCELEROMETERS

Piezoelectric Accelerometer



	805, 805M1	808, 808M1	820M1	832, 832M1	834, 834M1
Package	TO-5	TO-8	Board level	SMD	SMD
Type	Adhesive (Stud mount option)	Adhesive (Stud mount option)	SMD	Board mount	Board mount
FS Range	±20g to ±500g	±4g to ±50g	±25g to ±500g	±25g to ±500g	±2,000g to ±6,000g
Unique Features	<ul style="list-style-type: none"> • Hermetically sealed • Case grounded design • Bandwidth to 12 kHz 	<ul style="list-style-type: none"> • Hermetically sealed • Case grounded design • Bandwidth to 8 kHz 	<ul style="list-style-type: none"> • Small size, low cost • Dynamic response • Wide >6000Hz bandwidth 	<ul style="list-style-type: none"> • SMT mount, triaxial • Wide bandwidth >6000Hz • Low power consumption 	<ul style="list-style-type: none"> • SMT mount, triaxial • Wide bandwidth >6,000Hz • Low power consumption
Accuracy	±1.0% non-linearity	±1.0% non-linearity	±2.0% non-linearity	±2.0% non-linearity	±2.0% non-linearity
Operating Temp.	-50°C to 125°C	-50°C to 100°C	-40°C to 125°C	-20°C to 80°C (832) -40°C to 125°C (832M1)	-20°C to 80°C (834) -40°C to 125°C (834M1)
Dimensions (mm)	Ø8.9 x 10.2	Ø15.2 x 16.6	8.9 x 8.9 x 4.2	18.8 x 14.2 x 4.3	18.8 x 14.2 x 4.3
Typical Applications	Machine monitoring, data loggers, permanent structures	Machine monitoring, data loggers, embedded applications	Embedded predictive maintenance, condition monitoring, data loggers	Data logging, asset monitoring, impact monitoring	Data logging, asset monitoring, impact monitoring

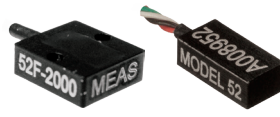
PLUG AND PLAY ACCELEROMETERS

Uniaxial DC Response



40A, 40B

Package	Anodized aluminum
Type	Screw mount
FS Range	±25g to ±2,000g
Unique Features	<ul style="list-style-type: none"> • Critically damped • Euro NCAP certified • Compact
Accuracy	±1.0% non-linearity
Operating Temp.	-20°C to 80°C
Dimensions (mm)	16.7 x 10.0 x 5.0
Typical Applications	Pedestrian crash testing, Euro NCAP testing



52, 52M30, 52F

Package	Anodized aluminum
Type	Adhesive and Screw mount
FS Range	±50g to ±6,000g
Unique Features	<ul style="list-style-type: none"> • SAE-J211/2570 and ISO-6487 compliant • Gas damping, thin profile • Over-range stops
Accuracy	±1.0% non-linearity
Operating Temp.	-40°C to 90°C
Dimensions (mm)	11.2 x 10.1 x 3.8
Typical Applications	Vibration and shock testing, safety impact testing, side-impact testing



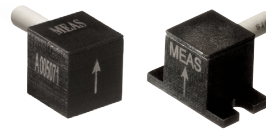
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Package	Anodized Aluminum
Type	Adhesive mount
FS Range	±50g to ±6,000g
Unique Features	<ul style="list-style-type: none"> • Most reliable crush zone accelerometer available • Rugged, water proof • Mounting on any sides of housing
Accuracy	±1.0% non-linearity
Operating Temp.	-20°C to 85°C
Dimensions (mm)	14.0 x 6.3 x 6.3
Typical Applications	On-vehicle crash and impact testing, drop testing, harsh environment



64B, 64C, 64X

Package	Anodized aluminum
Type	Screw mount
FS Range	±50g to ±6,000g
Unique Features	<ul style="list-style-type: none"> • SAE-J211/2570 and ISO-6487 compliant • ATD dummy certified • Market performance leader
Accuracy	±0.7% non-linearity
Operating Temp.	-40°C to 121°C
Dimensions (mm)	13.1 x 10.0 x 5.0
Typical Applications	In-dummy crash and impact testing, Euro NCAP testing



1201, 1201F

Package	Anodized aluminum
Type	Adhesive/screw mount
FS Range	±50g to ±2,000g
Unique Features	<ul style="list-style-type: none"> • Cube form factor, low noise cable • Adhesive or screw mount • Over-range stops
Accuracy	±1.0% non-linearity
Operating Temp.	-20°C to 85°C
Dimensions (mm)	8.9 x 8.9 x 9.4
Typical Applications	On-vehicle crash and impact testing, vibration and shock monitoring

PLUG AND PLAY ACCELEROMETERS

Uniaxial DC Response



3801A, 4801A

Package	Stainless steel
Type	Stud mount
FS Range	4801A; $\pm 2g$ to $\pm 200g$ 3801A; $\pm 50g$ to $\pm 6,000g$
Unique Features	<ul style="list-style-type: none"> • Hermetically sealed sensor • mV and amplified output options • Integral connector, detachable cable
Accuracy	$\pm 0.1\%$ non-linearity on 4801A
Operating Temp.	-54°C to 121°C
Dimensions (mm)	15.9 x 15.2
Typical Applications	Impact testing, structural testing, test and instrumentation, environmental testing



3700

Package	Stainless steel
Type	Screw mount
FS Range	$\pm 50g$ to $\pm 6,000g$
Unique Features	<ul style="list-style-type: none"> • No zero shift • mV output • 20,000 g over-range protection
Accuracy	$\pm 1.0\%$ non-linearity
Operating Temp.	-54°C to 121°C
Dimensions (mm)	14.2 x 8.1 x 3.8
Typical Applications	Impact and shock testing, structural testing, drop testing, aerospace testing



EGAXT, EGAXT3

Package	Stainless steel
Type	Adhesive/screw mount
FS Range	$\pm 5g$ to $\pm 2,500g$
Unique Features	<ul style="list-style-type: none"> • Sub-miniature, fluid damped • Miniature single and triaxial designs • 10,000 g over-range protection
Accuracy	$\pm 1.0\%$ non-linearity
Operating Temp.	-40°C to 120°C
Dimensions (mm)	EGAXT; 7.2 x 4.6 x 4.6 EGAXT3; 12.7 x 12.7 x 12.7
Typical Applications	Flight test and control, launch, crash, impact testing, robotics



EGCS-D0, EGCS-D1S, EGCS-D5

Package	Stainless steel
Type	Screw/stud mount
FS Range	$\pm 5g$ to $\pm 10,000g$
Unique Features	<ul style="list-style-type: none"> • Rugged housing • Critically damped • 20,000 g over-range protection
Accuracy	$\pm 1.0\%$ non-linearity
Operating Temp.	-40°C to 120°C
Dimensions (mm)	D0: 19.0 x 19.0 x 7.6 D1S: 12.7 x 12.7 x 15.2 D5: 14.2 x 12.7 x 5.6
Typical Applications	Impact and shock testing, destructive testing, engine testing



4602, 4604

Package	Anodized aluminum
Type	Screw mount
FS Range	$\pm 2g$ to $\pm 200g$
Unique Features	<ul style="list-style-type: none"> • UltraStable MEMS • Low noise, signal conditioned • <2% TEB (total error band)
Accuracy	$\pm 0.1\%$ non-linearity
Operating Temp.	-54°C to 125°C
Dimensions (mm)	21.1 x 21.6 x 7.6
Typical Applications	Flight testing on engines, flutter test, road load and transportation testing



4610, 4810A

Package	Stainless steel
Type	Screw mount
FS Range	$\pm 2g$ to $\pm 200g$
Unique Features	<ul style="list-style-type: none"> • UltraStable MEMS • Hermetically sealed • <2% TEB (total error band)
Accuracy	$\pm 0.1\%$ non-linearity
Operating Temp.	-55°C to 125°C
Dimensions (mm)	25.4 x 29.1 x 7.6
Typical Applications	Low frequency monitoring, road testing, motion analysis

PLUG AND PLAY ACCELEROMETERS

Triaxial DC Response



53A, 53AF

Package	Anodized aluminum
Type	Adhesive mount
FS Range	±50 to ±2,000g
Unique Features	<ul style="list-style-type: none"> • Low cost • Gas damping • Low power
Accuracy	±1.0% non-linearity
Operating Temp.	-20°C to 85°C
Dimensions (mm)	18.3 x 13.2 x 7.1
Unique Features	Auto safety, passenger comfort, transportation, NVH analysis



68CM1

Package	Stainless steel
Type	Screw mount
FS Range	±50 to ±2,000g
Unique Features	<ul style="list-style-type: none"> • World SID • Gas damping • Low power
Accuracy	±1.0% non-linearity
Operating Temp.	-20°C to 85°C
Dimensions (mm)	12.7 x 12.7 x 12.7
Unique Features	Auto safety, in-dummy crash, on-vehicle crash



4630

Package	Anodized aluminum
Type	Screw mount
FS Range	±2g to ±200g
Unique Features	<ul style="list-style-type: none"> • UltraStable MEMS • Low noise, signal conditioned • <2% TEB (total error band)
Accuracy	±0.1% non-linearity
Operating Temp.	-40°C to 115°C
Dimensions (mm)	26.2 x 26.2 x 23.4
Unique Features	Road testing, motion control, structural testing



4020, 4030

Package	Molded plastic
Type	Screw mount
FS Range	±2g to ±6g
Unique Features	<ul style="list-style-type: none"> • Low cost • Biaxial, with triaxial option • DC response
Accuracy	±1.0% non-linearity
Operating Temp.	-40°C to 85°C
Dimensions (mm)	71.2 x 40.0 x 15.2
Unique Features	Structural monitoring, seismic array, bridge testing



606M1

Package	Nitrile rubber pad
Type	Removable
FS Range	±25g
Unique Features	<ul style="list-style-type: none"> • 606M2 IEPE option • Triaxial, hermetic • Seat pad accelerometer
Accuracy	±1.0% non-linearity
Operating Temp.	-20°C to 85°C
Dimensions (mm)	199 x 4
Unique Features	Off road equipment, amusement rides, commercial aircraft



4835A

Package	Titanium
Type	Screw mount
FS Range	±2g to ±200g
Unique Features	<ul style="list-style-type: none"> • UltraStable MEMS • Welded connector, hermetic • <2% TEB (total error band)
Accuracy	±0.1% non-linearity
Operating Temp.	-55°C to 125°C
Dimensions (mm)	22.9 x 22.9 x 17.1
Typical Applications	Road testing, motion control, flight testing



4630M12, 4630M14

Package	Titanium
Type	Screw mount
FS Range	±2g to ±200g
Unique Features	<ul style="list-style-type: none"> • UltraStable MEMS • Compact, rugged and double shielded cable • <2% TEB (total error band)
Accuracy	±0.1% non-linearity
Operating Temp.	-55°C to 125°C
Dimensions (mm)	22.9 x 22.9 x 16.0
Typical Applications	Road load testing, transportation testing



4332M3

Package	Stainless steel
Type	Screw mount
FS Range	±2g to ±50g
Unique Features	<ul style="list-style-type: none"> • Low noise ranges • Temperature compensated • High over-range
Accuracy	±1.0% non-linearity
Operating Temp.	-40°C to 115°C
Dimensions (mm)	34.5 x 34.5 x 31.2
Typical Applications	Structural monitoring, bridge testing



XL403D

Package	Nickel plated aluminum
Type	Screw mount
FS Range	±2g to ±15g
Unique Features	<ul style="list-style-type: none"> • Digital triaxial accelerometer • Smart, onboard processing • Temperature output included
Accuracy	±0.25% non-linearity
Operating Temp.	-40°C to 85°C
Dimensions (mm)	36.5 x 25.4 x 17.5
Typical Applications	Smart sensor function, vibration monitoring and alarm functions

PLUG AND PLAY ACCELEROMETERS

IEPE AC Response



7100A, 7101A

Package	Stainless steel/titanium
Type	Center-hole mount
FS Range	±50g to ±2,000g
Unique Features	<ul style="list-style-type: none"> • Single axis, shear mode • Isolated mounting surface • Wide bandwidth, >10 kHz
Operating Temp.	7100A: -55°C to 150°C 7101A: -55°C to 125°C
Dimensions (mm)	7100A: 9.9 x 22.3, 7101A: 5.8 x 14.5
Typical Applications	Flight testing, general purpose, vibration monitoring



7102A

Package	Titanium
Type	Adhesive mount
FS Range	±50g to ±2,000g
Unique Features	<ul style="list-style-type: none"> • Single axis, shear mode • Wide bandwidth
Operating Temp.	-55°C to +125°C
Dimensions (mm)	4.4 x 11.9
Typical Applications	Small structures monitoring, minimal mass loading, general purpose testing



7108A

Package	Stainless steel
Type	Adhesive mounting
FS Range	±50g to ±500g
Unique Features	<ul style="list-style-type: none"> • Single axis, shear mode • Wide bandwidth • Small size
Operating Temp.	-55°C to 125°C
Dimensions (mm)	9.5 x 10.2
Typical Applications	Vibration monitoring, modal testing, general purpose



7104A, 7105A

Package	Stainless steel
Type	Stud mounting
FS Range	±50g to ±2,000g
Unique Features	<ul style="list-style-type: none"> • Single axis, shear mode • Wide bandwidth
Operating Temp.	-55°C to 125°C
Dimensions (mm)	7104A: 11.1 x 14.10, 7105A: 11.1 x 19.05
Typical Applications	General purpose IEPE accel, vibration monitoring, lab testing



7131A, 7132A

Package	Titanium
Type	Adhesive/stud mounting
FS Range	±50g to ±2,000g
Unique Features	<ul style="list-style-type: none"> • Triaxial, shear mode • >12 kHz bandwidth • Hermetically sealed
Operating Temp.	-55°C to 125°C
Dimensions (mm)	7131A: 11.0 x 11.0 x 11.0, 7132A: 15.2 x 15.2 x 14.5
Typical Applications	General purpose, modal testing, vibration monitoring



7135A

Package	Stainless steel
Type	Adhesive mounting
FS Range	±50g to ±500g
Unique Features	<ul style="list-style-type: none"> • Triaxial, through hole mount • Case isolated, internally shielded • Hermetically sealed
Operating Temp.	-55°C to 125°C
Dimensions (mm)	28.6 x 14.0
Typical Applications	AD&M monitoring, HUMS, structural applications



8711-01

Package	Stainless steel
Type	Stud mount
FS Range	±5g to ±500g
Unique Features	<ul style="list-style-type: none"> • Industrial accelerometer • Case isolated, internal shielding • Low cost
Operating Temp.	-55°C to +125°C
Dimensions (mm)	22.2 x 50.8
Typical Applications	Industrial applications, machine monitoring, wind turbines



8011-01, 8021-01

Package	Stainless steel
Type	Stud/center-hole mount
FS Range	±10g to ±100g
Unique Features	<ul style="list-style-type: none"> • Industrial accelerometer • Case isolated, internal shielding • Reverse wiring protection
Operating Temp.	-55°C to 125°C
Dimensions (mm)	22.2 x 48.3
Typical Applications	Industrial applications, machine monitoring, intrinsic safety



8032-01

Package	Stainless steel
Type	Stud mount
FS Range	±50g to ±500g
Unique Features	<ul style="list-style-type: none"> • Industrial accelerometer • Case isolated, internal shielding • Low cost, molded strain relief
Operating Temp.	-40°C to 100°C
Dimensions (mm)	14.3 x 45.3
Typical Applications	Industrial applications, machine monitoring



8811-01

Package	Stainless steel
Type	Stud mount
FS Range	±5g to ±500g
Unique Features	<ul style="list-style-type: none"> • Certified for wind turbines • ±2,500VAC lightning protection • Case isolated, internal shielding
Operating Temp.	-55°C to +125°C
Dimensions (mm)	22.2 x 50.8
Typical Applications	Industrial applications, machine monitoring, wind turbines

PLUG AND PLAY ACCELEROMETERS

4-20mA AC Accelerometer



8011, 8021-AR/AP

Package	Stainless steel
Type	Stud/center-hole mount
FS Range	5g to 50g
Unique Features	<ul style="list-style-type: none"> • Industrial 4-20mA accelerometer • Case isolated, internal shielding • Top mount or side mount connector
Operating Temp.	-40°C to 85°C
Dimensions (mm)	22.2 x 48.3
Typical Applications	Industrial applications, machine monitoring, intrinsic safety



8011, 8021-VR/VP

Package	Stainless steel
Type	Stud/center-hole mount
FS Range	0.5in/sec to 5.0in/sec
Unique Features	<ul style="list-style-type: none"> • Industrial 4-20mA velocity transmitter • Case isolated, internal shielding • Top mount or side mount connector
Operating Temp.	-40°C to 85°C
Dimensions (mm)	22.2 x 48.3
Typical Applications	Industrial applications, machine monitoring, intrinsic safety

PLUG AND PLAY ACCELEROMETERS

3 Wire Voltage AC Accelerometer



8102A

Package	Anodized aluminum
Type	Screw mount
FS Range	±25g to ±6,000g
Unique Features	<ul style="list-style-type: none"> • Triaxial PE accel, low cost • Environmentally sealed, rugged • <22µA current consumption
Operating Temp.	-40°C to 125°C
Dimensions (mm)	25.4 x 21.6 x 10.8
Typical Applications	Impact and shock testing, R&D and lab applications

PLUG AND PLAY ACCELEROMETERS

PE Charge Accelerometer



7500A

Package	Stainless steel
Type	Center-hole mount
Sensitivity	7pC/g to 20pC/g
Unique Features	<ul style="list-style-type: none"> • Single axis, shear mode • Hermetically sealed • Isolated mounting surface
Operating Temp.	-73°C to 260°C
Dimensions (mm)	8.4 x 22.3
Typical Applications	Gearbox vibration monitoring, flight test, high temp. applications



7501A

Package	Titanium
Type	Center-hole mount
Sensitivity	5.6pC/g
Unique Features	<ul style="list-style-type: none"> • Single axis, shear mode • Hermetically sealed • Bandwidth to >15 kHz
Operating Temp.	-73°C to 260°C
Dimensions (mm)	5.8 x 14.5
Typical Applications	Gearbox vibration monitoring, flight test, high temp. applications



7502A

Package	Titanium
Type	Adhesive mounting
Sensitivity	1.8pC/g
Unique Features	<ul style="list-style-type: none"> • Single axis, shear mode • Hermetically sealed • Miniature, <1 gram
Operating Temp.	-73°C to 260°C
Dimensions (mm)	4.4 x 11.9
Typical Applications	Small structures monitoring, minimal mass loading, high temp. applications



7504A, 7505A

Package	Stainless steel
Type	Stud mount
Sensitivity	5.6pC/g
Unique Features	<ul style="list-style-type: none"> • Single axis, shear mode • Top and side connector option • >15 kHz Bandwidth
Operating Temp.	-73°C to 260°C
Dimensions (mm)	7504A; 11.1 x 14.1, 7505A; 11.1 x 19.0
Typical Applications	Small structures monitoring, general purpose, high temp. applications



7514A

Package	Stainless steel
Type	Stud mounting
Sensitivity	30pC/g to 100pC/g
Unique Features	<ul style="list-style-type: none"> • Single axis, shear mode • >12 kHz bandwidth • High sensitivity
Operating Temp.	-73°C to 260°C
Dimensions (mm)	15.0 x 15.0
Typical Applications	Low frequency vibration, general purpose, high temp. applications



7531A

Package	Titanium
Type	Adhesive mount
Sensitivity	1.8pC/g
Unique Features	<ul style="list-style-type: none"> • Triaxial, shear mode • Miniature, light weight • >10 kHz bandwidth
Operating Temp.	-73°C to 260°C
Dimensions (mm)	11.0 x 13.6 x 11.0
Typical Applications	High temp. applications, flight testing, structural monitoring

PLUG AND PLAY ACCELEROMETERS

Amplifiers



121

Type	Bench top
No. of Channels	3
Gain Range	x0.001 to 9999
Unique Features	<ul style="list-style-type: none"> • Universal DC amplifier • Low noise operation with auto-zero • For bridge type sensors
Dimensions (mm)	301 x 258 x 102
Typical Applications	Instrumentation labs, test benches, R&D facilities



130

Type	In-line charge converter
No. of Channels	1
Gain Range	x0.1, 1, 10
Unique Features	<ul style="list-style-type: none"> • Low noise, small package • BNC male or female • Wide bandwidth
Dimensions (mm)	Ø13.8 x 52.2
Typical Applications	Instrumentation labs, high temperature testing PE accelerometer



140A & 142A

Type	Inline amplifier with auto-zero
No. of Channels	1
Gain Range	x10, 25, 50, 100, 200
Unique Features	<ul style="list-style-type: none"> • ±1.5 mV auto-zero • 140A for bridge type sensor, 142A for strain gages • 5 to 30 VDC excitation
Dimensions (mm)	57 x 25 x 13
Typical Applications	Instrumentation labs, test benches, R&D facilities



160

Type	Bench top
No. of Channels	1
Gain Range	x1, 10
Unique Features	<ul style="list-style-type: none"> • Economical IEPE power supply • Portable, compact • Rechargeable battery
Dimensions (mm)	101 x 83 x 32
Typical Applications	Instrumentation



161

Type	Bench top
No. of Channels	4
Gain Range	x0.001 to 999.9
Unique Features	<ul style="list-style-type: none"> • Charge and IEPE conditioner • Sensitivity normalization • Support IEEE 1451.4 TEDS
Dimensions (mm)	310 x 180 x 115
Typical Applications	Instrumentation labs, PE/IEPE sensors

WATER LEVEL SENSORS



WATER LEVEL DATA LOGGERS



TruBlue Logger 555 Level, 575 Baro, 585 CTD

Accuracy	±0.05% FS TEB (TruBlue 555, 575, 585) 1% of reading or 20 µs/cm (TruBlue 585)
Range	0 - 692 ft (TruBlue 555, 585) 8 - 16 psia (TruBlue 575) 5 - 200,000µs/cm (TruBlue 585)
Max. Over-range	2X FS (TruBlue 555, 585) 32 psia (TruBlue 575)
Output	RS-485, SDI - 12
Data Logging Memory	8 MB
Operating Temp.	0°C to 50°C
Dimensions (mm)	Ø19.0 x 390.0
Typical Applications	Groundwater monitoring, surface water monitoring, oceanographic research, barometric pressure monitoring



TruBlue Logger 255 Level

Accuracy	0.05% FS TEB
Range	0 - 658 ft H ₂ O
Max. Over-range	3X FS
Output	RS 485, SDI - 12
Data Logging Memory	8 MB or 56 MB
Operating Temp.	0°C to 50°C
Dimensions (mm)	Ø19.0 x 222.0
Typical Applications	Flood and storm monitoring, wave studies and rapid sampling, stream and stage gaging, slug and pump test, aquifer characterization



TruBlue Logger 275 Baro

Accuracy	0.05% FS TEB
Range	8 - 16 psia
Max. Over-range	3X FS
Output	RS 485, SDI-12
Data Logging Memory	8 MB or 56 MB
Operating Temp.	0°C to 50°C
Dimensions (mm)	Ø19.0 x 222.0
Typical Applications	Barometric pressure monitoring

DIGITAL LEVEL SENSORS



KPSI 500, 501

Accuracy	±0.05% FS TEB (KPSI 500) ±0.01 ft H ₂ O (KPSI 501)
Range	10 - 230 ft (KPSI 500) 10 - 50 ft (KPSI 501)
Max. Over-range	2X FS
Output	SDI - 12, RS-485
Operating Temp.	-20°C to 60°C
Dimensions (mm)	Ø25.4 x 197.0
Typical Applications	Groundwater monitoring, surface water monitoring, oceanographic research



KPSI 351, 353, 355

Accuracy	±0.10% FS TEB (KPSI 353) ±0.05% FS TEB (KPSI 355) ±0.01 ft H ₂ O (KPSI 351)
Range	10 - 230 ft (KPSI 353, 355) 10 - 50 ft (KPSI 351)
Max. Over-range	2X FS
Output	SDI - 12, RS-485
Operating Temp.	-20°C to 60°C
Dimensions (mm)	Ø19.0 x 243.0
Typical Applications	Groundwater monitoring, surface water monitoring, oceanographic research



KPSI 600, 601 - Ceramic

Accuracy	±0.05% FS TEB (KPSI 600) ±0.01 ft H ₂ O (KPSI 601)
Range	10 - 230 ft (KPSI 600) 10 - 50 ft (KPSI 601)
Max. Over-range	5X FS
Output	SDI - 12, RS-485
Operating Temp.	-20°C to 60°C
Dimensions (mm)	Ø25.4 x 197.0
Typical Applications	Dissolved gas monitoring, trailrace egress monitoring, ground water monitoring, oceanographic research

DIGITAL TEMPERATURE SENSORS



	KPSI 380
Accuracy	±0.1°C
Range	-20°C to 60°C
Connection	Open port nosepiece
Output	SDI - 12, RS-485
Operating Temp.	-20°C to 60°C
Dimensions (mm)	Ø19.0 x 127.0
Typical Applications	Groundwater monitoring, surface water monitoring, storm water, dam operations and stream gaging

ANALOG LEVEL SENSORS

1" Bore



	KPSI 700, 710, 720	KPSI 730, 735
Accuracy	±1.00%, ±0.50%, ±0.25% FSO	±0.10%, ±0.05% FSO
Range	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)	Custom ranges from: 5 - 700 ft H ₂ O (Vented: KPSI 730) 0 - 5 ft H ₂ O to 0 - 700 ft H ₂ O (Sealed, Absolute: KPSI 730) 6 - 700 ft H ₂ O (Vented KPSI 735)
Max. Over-range	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
Operating Temp.	-20°C to 60°C	-20°C to 60°C
Dimensions (mm)	Ø25.4 x 86.6	Ø25.4 x 86.6
Typical Applications	Groundwater monitoring, surface water monitoring, oceanographic research, pump control, life stations, landfill leachate	Groundwater monitoring, surface water monitoring, oceanographic research, pump control, life stations, landfill leachate
Agency Approvals	CE, WEEE, RoHS, UL and FM (Intrinsically safe)	CE, WEEE, RoHS, UL and FM (Intrinsically safe)

ANALOG LEVEL SENSORS

0.75" Bore



	KPSI 320, 330, 335, 342	KPSI 300DS
Accuracy	±0.10%, ±0.05% FSO (KPSI 330, 335) ±0.25% FSO (KPSI 320) ±0.25% FS TEB (KPSI 342)	±0.50% FSO
Range	Custom ranges from: 5 - 700 ft H ₂ O (Vented: KPSI 320, 330, 335) 10 - 700 ft H ₂ O (Vented KPSI 342) 0 - 5 ft H ₂ O to 0-700 ft H ₂ O (Sealed: KPSI 330, 342) 10 - 700 ft H ₂ O (Sealed: KPSI 320) 35 - 700 ft H ₂ O (Absolute: KPSI 320, 330, 342)	Custom ranges from: 700 - 6,921 ft H ₂ O
Max. Over-range	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 (KPSI 320, 330, 335) 4 - 20 mA (KPSI 342)	4 - 20 mA, 0 - 5 VDC, 0 - 2.5 VDC, 0 - 4 VDC, 0 - 10 VDC, 1.5 - 7.5 VDC
Operating Temp.	-20°C to 60°C (KPSI 320, 330, 335) -20°C to 85°C (KPSI 342)	-20°C to 60°C
Dimensions (mm)	Ø19.0 x 151.0	Ø19.0 x 215.0
Typical Applications	Groundwater monitoring, surface water monitoring, oceanographic research, pump control, lift stations, landfill leachate, tailrace and forebay monitoring	Down hole, level control, pump control
Agency Approvals	CE, WEEE, RoHS, UL and FM (Intrinsically safe) (KPSI 320, 330, 335) CE, WEEE, RoHS (KPSI 342)	CE, WEEE, RoHS

LEVEL SENSORS

OEM Level Sensors



	KPSI 705	KPSI 745, 750	LTA, LT	LTB, LTR
Accuracy	±0.25% FSO	±0.25% FSO	±0.25% FSO	±0.25% FSO
Options	Optional ETFE	Optional standoff (KPSI 745)	Optional lightning protection	Optional lightning protection
Range	Custom ranges from 6 - 115 ft H ₂ O	Custom ranges from 10 - 115 H ₂ O	0 - 1 psi up to 0 - 300 psi Custom ranges available	0 - 11.5, 23.1, 34.6, 69.2, 115.4 ft H ₂ O Custom ranges available
Max. Over-range	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	4 - 20 mA, 0 - 5 VDC, 0 - 10 VDC, 0 - 2.5 VDC, 0 - 4 VDC, 1.5 - 7.5 VDC
Operating Temp.	-20°C to 60°C	-20°C to 60°C	-20°C to 60°C	-20°C to 60°C
Dimensions (mm)	Ø25.4 x 86.6	KPSI 745: Ø88.9 x 279.4 (With standoff) Ø88.9 x 253.3 (Without standoff) KPSI 750: Ø104.1 x 279.4	LTA: Ø25.4 x 93.0 LT: Ø25.4 x 170.5 (Dependent on fitting)	LTB: Ø104.1 x 206.5 LTR: 287.1 with overmold conduit connection, 253.5 with gland seal conduit connection
Typical Applications	Wastewater, lift stations, pump control, slurry tank liquid level, tank level	Wastewater, lift stations, pump control, slurry tank liquid level, tank level	Pump control, tank liquid level, landfill leachate monitoring, construction bypass pumping, dewatering, lift station monitoring, submersible tank liquid level, liquid line pressure, slurry tank liquid level, wastewater	Pump control, tank liquid level, landfill leachate monitoring, construction bypass pumping, dewatering, lift station monitoring, submersible tank liquid level, liquid line pressure, slurry tank liquid level, wastewater
Agency Approvals	CE, WEEE, RoHS, UL and FM (Intrinsically safe)	CE, WEEE, RoHS, UL and FM (Intrinsically safe)	CE, WEEE, RoHS, with optional UL, CUL, and FM (Intrinsically safe)	CE, WEEE, RoHS, with optional UL, CUL, and FM (Intrinsically safe)

NON-SUBMERSIBLE PRESSURE TRANSDUCERS

OEM Level Sensors



	KPSI 27, 28	KPSI 30
Accuracy	±0.5%, ±0.25%	±0.1%
Options	IP68 submersible option	IP68 submersible option
Range	1 - 300 psi (Vented) 5 - 2000 psi (Sealed) 15 - 2,000 psi (Absolute)	2 - 300 psi (Vented) 5 - 500 psi (Sealed, absolute)
Max. Over-range	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
Operating Temp.	-20°C to 60°C	-20°C to 60°C
Dimensions (mm)	Ø25.4 x 86.6	Ø25.4 x 86.6
Typical Applications	Line pressure monitoring, pump and lift stations, pump control, tank level monitoring, underwater research	Line pressure monitoring, pump and lift stations, pump control, tank level monitoring, underwater research
Agency Approvals	CE, WEEE, RoHS, UL and FM (Intrinsically safe)	CE, WEEE, RoHS, UL and FM (Intrinsically safe)

EVERY CONNECTION COUNTS

TE Connectivity is a global technology leader. Our connectivity and sensor solutions are essential in today's increasingly connected world. If data, signal or power moves through it, TE connects and senses it.



TE designs, manufactures and delivers products, systems and solutions in over 150 countries. This global reach enables us to work closely with our customers and identify and act on local needs quickly. By leveraging our global scale, we can deliver the highest levels of quality, innovation and service at a local level.

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Calibration

Testing of a sensor to confirm output is within a specified range for particular values of the input.

Compensated Temperature Range

The temperature range in which the sensor meets the specifications for Thermal Zero Shift and Thermal Sensitivity Shift.

DeviceNet™

Device level network for industrial automation.

Excitation

The recommended voltage with which a standard sensor should be excited.

Full Scale Output (FSO)

Full Scale Output (FSO) is the span between the lowest range limit and the highest range limit of the sensor. Published values are approximate values and may vary with each sensor.

Hysteresis

Hysteresis is the difference in sensor output signal at a specific input when applied in the increasing and then decreasing sectors of a single cycle of short time duration at constant temperature. It is expressed as a percentage of FSO.

Natural Frequency

Natural Frequency is the frequency at which the sensor's active sensing element goes into resonance and responds with maximum movement for a specific applied input.

Non-linearity

Non-linearity is the deviation of the sensor output signal from a theoretical straight line which has been fitted to the data points of an actual calibration. It expresses the maximum deviation of all data points in that calibration and is sometime expressed as a percentage of FSO, usually as a $\pm\%$ error band, or % of reading.

Non-Repeatability

Non-repeatability is the deviation in sensor output signal levels when a specific input is applied in consecutive cycles of short time duration under the same conditions, such as temperature and direction of increasing or decreasing input. It can be determined by performing two consecutive short time duration calibration cycles and can be expressed as $\pm\%$ FSO.

Operating Temperature

The temperature range within which a sensor will meet all of its stated specifications while powered and in operation.

Over-range Limit

The over-range limit is the maximum input to which the sensor can be exposed without damage.

Plug and Play

Sensors designed for end-users who expect sensors to meet calibration performance standards once power and signal cables are properly connected to instrumentation.

Root Mean Square

The square root of the arithmetical mean of a set of squared instantaneous values

Sealing

Sealing is the assembly method by which the sensor is protected from moisture in the surrounding environment. The most desirable sealing method is hermetically seal. This can be achieved by joining the individual piece parts together by soldering, welding, brazing, glassing, or other commonly accepted manufacturing processes. Another common sealing method is epoxy seal. It is achieved by joining the piece parts by applying adhesive or potting compound to mitigate the incursion of moisture into the sensor assembly.

Sensitivity

The sensor's change in output per the unit change in the physical parameter being measured. The change may be linear or non-linear.

Thermal Sensitivity Shift (TSS)

The change in sensitivity of the sensor as a function of temperature. It is usually expressed as a percent reading change in sensitivity for a specified change in temperature such as $\pm 0.01\%/^{\circ}\text{C}$ and is generally linear with moderate temperature changes. The Thermal Sensitivity Shift can be eliminated or minimized by using sensitivity numbers determined at or near the temperature of use.

Thermal Zero Shift (TZS)

The change in the Zero Offset as a function of temperature is the Thermal Zero Shift. It may be expressed as either a %FSO for a specific temperature change such as $\pm 0.01\%\text{FSO}/^{\circ}\text{C}$ or in voltage units such as $\pm 0.2\text{ mV}/^{\circ}\text{C}$ and it is not a linear function.

Total Error Band (TEB)

Typically expressed as a percentage, the TEB is the combination of possible errors for a sensing device within its measurement range and temperature of operation.

ABS	American Bureau of Shipping	IP	Ingress Protection	PSIS	Pounds Per Square Inch-Sealed Gage Reference
AC	Alternating Current	ISO	International Organization for Standardization	PTFE	Polytetrafluoroethylene
ANSI	American National Standards Institute	ITAR	International Traffic in Arms Regulations	PUDF	Public Use Data File
ASIC	Application-Specific Integrated Circuit	KHZ	Kilohertz	PWM	Pulse Width Modulation
ATEX	Appareils destinés à être utilisés en ATmosphères EXplosibles	LED	Light Emitting Diode	R&D	Research and Development
BOP	Blow Out Prevention	LIN	Local Interconnect Network	RDT&E	Research, Development, Test & Evaluation
CAN	Controller Area Network	LVD	Low Voltage Differential	RFI	Radio Frequency Interference
CE	Communauté Européenne	LVDT	Linear Variable Displacement Transducers	RH	Relative Humidity
CENELEC	European Committee for Electrotechnical Standardization	mA	Milliamp	RMS	Root Mean Square
CSA	Canadian Standards Association	MAF	Mass Air Flow	ROHS	Restriction of Hazardous Substances
CT	Computed Tomography	mbar	Millibar	RPM	Revolutions Per Minute
cUL	Tested to Canadian Standards by Underwriters' Laboratories	MCR	Main Control Room	RTD	Resistance Temperature Detector
DC	Direct Current	MEMS	Microelectromechanical Systems	RTU	Remote Terminal Unit
DCS	Distributed Control System	mHZ	Megahertz	RVDT	Rotary Variable Differential Transformer
DEF	Diesel Exhaust Fluid	mm	Millimeter	SAE	Society of Automotive Engineering
DTC	Digital Temperature Compensation	MQS	Military Qualification Standards	SCADA	Supervisory Control and Data Acquisition
ECU	Engine Control Unit	MR	Magnetostrictive	SCR	Selective Catalytic Reduction
EGR	Exhaust Gas Recirculation	mV	Millivolt	SDI-12	Serial Data Interface at 1200 Baud
EMC	Electromagnetic Compatibility	NAV	Navigation	SMD	Surface Mount Device
EMI	Electromagnetic Interference	NASA	National Aeronautics and Space Administration	SpO₂	Pulse Oximeter Oxygen Saturation
ESA	European Space Agency	NEMA	National Electrical Manufacturers Association	SPDT	Single Pole, Double Throw
FLS	Field Loadable Software	NIST	National Institute of Standards and Technology	SPI	Serial Peripheral Interface
FM	Factory Mutual	NOx	Nitrogen Oxide	SPST	Single Pole, Single Throw
FPGA	Field Programmable Gate Array	NPT	National Pipe Tapered	T&M	Test & Measurement
FS	Full Scale	NSF	National Science Foundation	TDFN	Thin Dual Flats No Leads
FSO	Full Scale Output	NTC	Negative Temperature Coefficient	TE	TE Connectivity
FT LBS	Foot Pounds	OEM	Original Equipment Manufacturer	TEB	Total Error Band
GPS	Global Positioning System	PCB	Printed Circuit Board	TESS	TE Sensor Solutions
HUMS	Health Usage and Monitoring System	PDF	Portable Document Format	THSA	Trimmable Horizontal Stabilizer Actuators
HVACR	Heating, Ventilation, Air Conditioning, and Refrigeration	PDM	Pulse Density Modulation	TPMS	Tire Pressure Monitoring System
HVD	High-Voltage Differential	PE	Piezoelectric	TSYS	Temperature System Sensor
HZ	Hertz	PLCD	Permanent Magnet Linear Displacement Sensor	UAV	Unmanned Aerial Vehicle
I²C	Inter-Integrated Circuit	PPS	Polyphenylene Sulfide	uC	Microcontroller
IEC	International Electrical Commission	PSI	Pounds Per Square Inch	UL	Underwriters Laboratories
IECEX	International Electrotechnical Commission Explosive	PSIA	Pounds Per Square Inch-Absolute Reference	USB	Universal Serial Bus
IEEE	Institute of Electrical and Electronics Engineers	PSID	Pounds Per Square Inch-Differential Reference	VAV	Variable Air Volume
IEPE	Integral Electronic Piezoelectric	PSIG	Pounds Per Square Inch-Gage Reference	VDC	Volts Direct Current
				WEEE	Waste Electrical and Electronic Equipment

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