

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



KMPX

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 • KMPX 1000: p= 1 mm • KMPX 2000: p= 2 mm • KMPX 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



RVIT-Z

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

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



R30A

Package	Servo mount with ball bearing
Resolution	Infinite
Excitation	AC operated
Output	AC voltage
Range	$\pm 30^\circ$ to $\pm 60^\circ$
Unique Features	<ul style="list-style-type: none"> Absolute position
Operating Temp.	-55°C to 150°C
Dimensions (mm)	Aluminum case size 11 ($\varnothing 27$ mm)
Typical Applications	Machine tool equipment, rotary actuator feedback, valve positioning, power generation valve position

ANGULAR POSITION—ENCODERS

Absolute



H005, H009

Package	<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
Range	Up to 359°
Output Options	Analog/PWM/Serial
Resolution	12-bit analog/PWM 14-bit serial (SPI)
Excitation	—
Unique Features	—
Absolute Linearity	$\pm 0.2\%$
Nominal Supply	5 volts
Operating Temp.	-40°C to 150°C
Rotational Life	> 100 million cycles (Bearing life)
Dimensions (mm)	
Typical Applications	Critical position feedback applications in commercial, industrial, medical, aircraft and military markets



H009, 1200
Dual Output

Package	<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
Range	Up to 359° (Dual output)
Output Options	Analog/PWM/Serial
Resolution	12-bit analog/PWM 14-bit serial (SPI)
Excitation	—
Unique Features	—
Absolute Linearity	$\pm 0.2\%$ (Dual output)
Nominal Supply	5 volts (Dual output)
Operating Temp.	-40°C to 150°C
Rotational Life	> 100 million cycles (Bearing life)
Dimensions (mm)	
Typical Applications	Critical position feedback applications in commercial, industrial, medical, aircraft and military markets



R36

Package	Heavy duty shaftless
Range	180°
Output Options	Voltage
Resolution	Analog 1.4°
Excitation	5 VDC
Unique Features	<ul style="list-style-type: none"> Rugged housing Shaftless No optical degradation
Absolute Linearity	—
Nominal Supply	—
Operating Temp.	-40°C to 85°C
Rotational Life	—
Dimensions (mm)	37.36 x 25.4 x 7.62
Typical Applications	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

Package	Stainless steel
Type	<ul style="list-style-type: none"> • 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

Package	Nylon 6.6
Type	<ul style="list-style-type: none"> • 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

Package	Stainless steel
Type	<ul style="list-style-type: none"> • 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

Package	Glass filled nylon 6.6
Type	<ul style="list-style-type: none"> • 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

Package	Glass filled nylon 6.6
Type	<ul style="list-style-type: none"> • 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

Package	Glass filled nylon 6.6
Type	<ul style="list-style-type: none"> • 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

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



PM50
 Glass filled nylon 6.6
 • Proximity magnet
 • Used with proximity sensor
 Housed magnet
 -30°C to 70°C
 Ø6 x 32
 Door interlocks, hook switches, security systems, safety interlocks, position indication



PM81
 Nylon 6.6
 • Proximity magnet
 • Used with proximity sensor
 Housed magnet
 -30°C to 120°C
 Ø10 x 38
 Door interlocks, hook switches, security systems, safety interlocks, position indication



PM83
 Stainless steel
 • Proximity magnet
 • Used with proximity sensor
 Housed magnet
 -30°C to 120°C
 Ø12 x 32
 Door interlocks, hook switches, security systems, safety interlocks, position indication

LINEAR POSITION TRANSDUCERS

Cable Extension Transducers



PT1, PT5
 0 - 2 to 0 - 250 inches
 Voltage divider, 0 - 5 VDC, 0 - 10 VDC, 4 - 20 mA, incremental encoder, CANbus, DeviceNet™, RS-232
 IP65, IP67 (PT5)
 Aluminum and abs plastic (PT1)
 ±0.04% to ±0.25%
 • Designed for most factory environments
 • Industry standard output signals
 • User serviceable
 • Compact design (PT1)
 -40°C to 90°C
 85 x 100 x 70 (PT1) 100 x 175 x 80 (PT5)
 Factory automation, industrial, die casting, injection molding



PT8000
 0 - 2 to 0 - 60 inches
 Voltage divider, 0 - 5 VDC, 0 - 10 VDC, 4 - 20 mA, incremental/absolute encoder, CANbus, DeviceNet™, RS-232
 IP67, IP68
 Aluminum or stainless
 ±0.04% to ±0.25%
 • 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
 -40°C to 90°C
 90 x 140 x 135
 Steel mills, lumber and paper mills, factory automation, die-casting, injection molding, mobile construction and mining



PT9000
 0 - 75 to 0 - 1700 inches
 Voltage divider, 0 - 5 VDC, 0 - 10 VDC, 4 - 20 mA, incremental/absolute encoder, CANbus, DeviceNet™, RS-232
 IP67, IP68
 Aluminum or stainless
 ±0.04% to ±0.25%
 • 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
 -40°C to 90°C
 200 x 135 x 125
 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 (GHSER 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 - 20K Ω	1K - 20K Ω	1K/5K/10K Ω	1K - 20K Ω
Range	Up to 355°	Up to 355°	Up to 350°	Up to 355°
Linearity	\pm 0.5%	\pm 0.5%	\pm 0.5%	\pm 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	\pm 0.15% to \pm 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