measurement SPECIALTIES

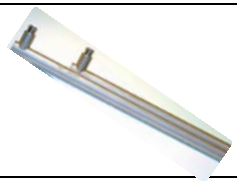
Position Sensor Products

Catalog Products

August 2011

Embedded Sensing Technologies

Model	HR	MHR	M12	E Series	XS-B/-BG
Applications	General	General	General	General	General
Type	AC operated LVDT	AC operated LVDT	AC operated LVDT	AC operated LVDT	AC operated LVDT
Description	High Reliability	Miniature High Reliability	Metric, High Reliability	Economy Series	Sub-Miniature
Photo					
Ranges, inch	±0.05 to ±10	±0.005 to ±2"	±5mm to ±100mm	±0.1 to ±2 inches	±0.1 and ±0.25 inch
Input voltage (nominal)	3Vrms	3Vrms	3Vrms	3Vrms	1Vrms
Input frequency	400Hz to 5kHz	2 to 20kHz	2 to 20kHz	50Hz to 10kHz	2.5 to 20kHz
Test frequency	2.5kHz	2.5kHz	2.5kHz	2.5kHz	2.5kHz
Output(s)	AC	AC	AC	AC	AC
Non-Linearity (% full range)	±0.25%	±0.25%	±0.25%	±0.5%	±0.2%
Operating temperature	-55°C to +150°C	-55°C to +150°C	-55°C to +150°C	-55°C to +95°C	-55°C to +150°C
Core threads, inch	6-40 UNF-2B	1-72 UNF-2B	1-72 UNF-2B	4-40 UNC-2B	N/A
Core threads, metric	M4x0.7-6H	M2x0.4-6H	M2x0.4-6H	M3x0.5-6H	N/A
Diameter inch (mm)	0.812 (20.62)	0.375 (9.53)	0.47 (12.00)	0.750 (19.05)	0.188 (4.78)
Housing material	400 series stainless steel	400 series stainless steel	304 series stainless steel	400 series stainless steel	Kovar
Housing length, inch	1.1 to 31	0.38 to 8	2.7 to 11.2	1.75 to 10.5	0.9 and 1.9
Housing length, mm	28 to 788	10 to 203	69 to 285	45 to 267	23 to 49
Features	Large 1/16 Inch radial core-to-bore clearance	Small size; light weight	Excellent stroke to length ratio Constant sum of secondary voltages Very low temperature coefficient of sensitivity	Low cost	Low mass core
Certifications					
IP rating					
Options	Hi-pressure vented case 220˚C high temp rating 5KHz calibration Guided core Metric thread core Small dia, low mass core Mild radiation resistance	Hi-pressure vented case 220˚C high temp rating 5KHz calibration 10KHz calibration Metric thread core	5KHz calibration Metric thread core	Metric thread core	Threaded mount (metric)
Typical applications	General Industrial	XYZ stage position Wire-die bonding machines Cylinder position feedback Voice coil testing Materials testing machines	Materials testing machines Cylinder position feedback Hydraulic valve spool position Absolute X-Y stage position Auto suspension testing Flight simulators Aircraft flight control feedback	General Industrial Moderate temperatures	Miniature servo-mechanisms Multi-point measurements on small components Where small size is the requirement

Model	XS-D	XS-C	MP	HCA	HCA-RA
Applications	General	High Pressure	Harsh Industrial	Hostile Environment	Hostile Environment
Type	AC operated LVDT	AC operated LVDT	AC operated LVDT	AC operated LVDT	AC operated LVDT
Description	Long Stroke Series	High Pressure Sealed	Ruggedized High Reliability	All Welded Hermetically Sealed	Hermetically sealed Right angle connector
Photo					
Ranges, inch	±1 to ±10 inches	±0.25, ±0.5 and ±1 inch	±0.5 to ±10 inches	±0.05 to ±10 inches	±0.05 to ±10 inches
Input voltage (nominal)	3Vrms	3Vrms	3Vrms	3Vrms	3Vrms
Input frequency	400Hz to 3kHz	400Hz to 20kHz	400Hz to 5kHz	400Hz to 5kHz	400Hz to 5kHz
Test frequency	2.5kHz	2.5kHz	2.5kHz	2.5kHz	2.5kHz
Output(s)	AC	AC	AC	AC	AC
Non-Linearity (% full range)	±2%	±0.25%	±0.25%	±0.25%	±0.25%
Operating temperature	-55°C to +150°C	-55°C to +150°C	-55°C to +150°C	-55°C to 150°C	-55°C to 150°C
Core threads, inch	6-40 UNF-2B	4-40 UNC-2B	6-40 UNF-2B	4-40 UNC-2B	4-40 UNC-2B
Core threads, metric	M4x0.7-6H	M3x0.5-6H	M4x0.7-6H	M3x0.5-6H	M3x0.5-6H
Diameter inch (mm)	0.812 (20.62)	0.750 (19.05)	1.25 (31.75) square	0.750 (19.05)	0.750 (19.05)
Housing material	410 series stainless steel	304 series stainless steel	Anodized Aluminum	400 series stainless steel	400 series stainless steel
Housing length, inch	2.5 to 25	2.9 to 7.9	6.5 to 32	1.7 to 34 plus connector	1.7 to 34
Housing length, mm	64 to 635	74 to 201	166 to 913	44 to 864 plus connector	44 to 864
Features	Longest stroke to body length Long strokes	3000 PSI (210 bars) operating pressure Bulkhead mount	Industrial flange mounting Screw terminal wiring Teflon bore liner	IP-68 to1,000PSI (70Bars) Welded PT06A connector Double magnetic shielding	IP-68 to1,000PSI (70Bars) Welded PT06A connector Through bore body
Certifications					
IP rating				IP68	IP68
Options	Metric thread core	Metric thread core	5kHz calibration Metric thread core Small dia/low mass core	5KHz calibration 10KHz calibration 220˚C high temp rating Metric thread core Guided core Small dia, low mass core Mild radiation resistance	5KHz calibration 10KHz calibration 220˚C high temp rating Metric thread core Guided core Small dia, low mass core Mild radiation resistance
Typical applications	Where sensor installation length is restricted Ideal replacement for potentiometers	Hydraulic actuators Other pressurized vessels	Rolling mills Power turbines Paper mill head boxes	Where resistance to dirt, water, steam, and corrosive liquids and vapors is needed (verify metals compatibility) Submersible with appropriate connector	Turbine valve position Vertically mounted applications Submersible with appropriate connector

Model	XS-ZTR	DC-EC	DC-SE	LCIT	CTS 420
Applications	Extreme Environments	General	General	General	General
Type	AC operated LVDT	DC operated LVDT	DC operated LVDT	DC operated LVIT	Position Transmitter System
Description	High Temp, Cryogenic & Nuclear Radiation	Symmetrical output	Single-ended supply Low current draw	Low cost OEM position transducer	LVDT or RVDT with external signal conditioner
Photo					
Ranges, inch	±0.1 to ±1 inch	±0.05 to ±10 inches	0-0.1 to 0-6 inches	0-0.25 to 0-4-inches	0-0.25 to 0-10 inches; 0-90°
Input voltage (nominal)	3Vrms	±15VDC	8.5 to 28VDC	7~36VDC	Loop supply 10 to 36VDC
Input frequency	400Hz to 5kHz	N/A	N/A	N/A	N/A
Test frequency	2.5kHz	N/A	N/A	±0.25%	N/A
Output(s)	AC	±10VDC	0 to 5VDC or 1 to 6VDC	0.5 to 4.5VDC	4 to 20mA
Non-Linearity (% full range)	±0.5%	±0.25%	±0.25%	±0.25%	±1.5%
Operating temperature	-195°C to +550°C	0°C to +70°C	-25°C to +85°C	0°C to +85°C	-40°C to +95°C
Core threads, inch	4-40 UNC-2B	4-40 UNC-2B	4-40 UNC-2B	N/A	N/A
Core threads, metric	M3x0.5-6H	M3x0.5-6H	M3x0.5-6H	0.5~4.5VDC	N/A
Diameter inch (mm)	1.00 (25.40)	0.750 (19.05)	0.750 (19.05)	0.750 (19.05)	0.75 (LVDT); 1.5 (RVDT)
Housing material	304 series stainless steel	400 series stainless steel	400 series stainless steel	400 series stainless steel	400 series SST (LVDT)
Housing length, inch	2.5 to 6.8	2.1 to 35.4	3.5 to 17.3	2.6 to 10.4	2.5 to 19.7 (LVDT)
Housing length, mm	64 to 173	54 to 900	89 to 440	66 to 265	64 to 501 (LVDT)
Features	Withstand neutron flux levels of $3x10^{20}$ NVT Withstands total integrated radiation 10^9 gray 2500 PSI (175 bar) pressure Survives 650°C (1200°F)	Double magnetic shielding Insensitive to input voltage variations 200-500 Hz frequency response @ -3dB Shielded cable	Single-ended Vsupply; low current consumption 4-wire 0 to 5VDC output 6mA typical current draw Internal voltage regulator Shielded cable	Reverse polarity protection to 40 VDC Aluminum core High frequency response (1kHz @ -3dB	2-wire operation Zero and Span Adjustments Model HCI LVDT or R36AS RVDT IP-68 to 1,000PSI (70Bars), LVDT version only
Certifications		CE Mark	CE Mark		
IP rating					
Options	Metric thread core Custom length stainless steel cable Sealed header or connector at cable end	Metric thread core Guided core Captive core Small dia, low mass core	Metric thread core Guided core Captive core Small dia, low mass core		Splashproof electronic enclosure Metric thread core Interconnecting cable
Typical applications	Nuclear Power Plants Nuclear Reactors Nuclear Lab Testing Space and Rockets Silicon Wafer fab equipment Particle Accelerators Cryogenic medicine.	General Industrial Test & Measurement	Battery operated systems Positioning sensing feedback Test labs Ram guide position feedback Platen position feedback	General Industrial Tool position Valve position	Process controls Stem-type valve position

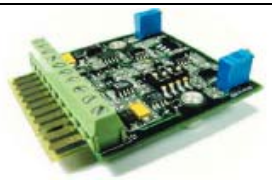
Model	HCD	HCT IS	HC485	PTS 420
Applications	High pressure	Intrinsically Safe	RS-485 LVDT	Process Controls
Type	DC operated LVDT	DC operated LVDT	DC operated LVDT	DC operated LVDT
Description	All Welded Hermetically Sealed	Hermetically Sealed 4-20mA	Hermetically Sealed RS-485 Digital Series	LVDT Position Transmitter
Photo				
Ranges, inch	±.05 to ±10 inches	0-0.25 to 0-10 inches	±0.05 to ±3 inches	0-0.25 to 0-10 inches
Input voltage (nominal)	±15VDC	Loop 12.75to 28VDC	8.5 to 30VDC	loop supply 10.5 to 28VDC
Input frequency	N/A	N/A	N/A	N/A
Test frequency	N/A	N/A	N/A	N/A
Output(s)	±10VDC	4 to 20mA	Metric & Inches (Digital)	4 to 20mA
Non-Linearity (% full range)	±0.25%	±0.5% (±0.5%, 10" model)	±0.25%	±0.75% (±1.25%, 10" model)
Operating temperature	0°C to +70°C	-25°C to +85°C	-25°C to +85°C	-25°C to +85°C
Core threads, inch	4-40 UNC-2B	4-40 UNC-2B	4-40 UNC-2B	4-40 UNC-2B
Core threads, metric	M3x0.5-6H	M3x0.5-6H	M3x0.5-6H	N/A
Diameter inch (mm)	0.750 (19.05)	0.750 (19.05)	0.750 (19.05)	1.00 (25.40)
Housing material	400 series stainless steel	400 series stainless steel	400 series stainless steel	400 series stainless steel
Housing length, inch	2.4 to 34.6	4.4 to 21.6	3.4 to 17.6	3.5 to 20.8
Housing length, mm	61 to 879	112 to 549	87 to 447	89 to 529
Features	1,000PSI (70Bars) resistance Welded PT06A connector Double magnetic shielding 200-500 Hz frequency response @ -3dB	4~20mA 2-wire operation Welded PT06A connector Hermetically Sealed IP-68 to 1,000PSI (70Bars)	Up to 32 Sensors/Network Programmable Filtering Built-in Tare/Untare Built-in Min/Max Function Velocity Output MOD-Bus ASCII & RTU	4~20mA 2-wire operation Zero and Span Adjustments Rugged Splashproof Housing Ideal for Noisy Environments Compatible with Process Controllers
Certifications	CE Mark	CSA/FM Intrinsically Safe	CE Mark	
IP rating	IP68	IP68	IP68	
Options	Metric thread core Guided core Captive core Small dia, low mass core	Metric Threaded Core Captive Core Option	±0.05% FR Linearity Metric Thread Core Captive Core Guide Core Special OEM Protocols Mating Connector	Metric Thread Core
Typical applications	Where resistance to dirt, water, steam, and corrosive liquids and vapors is needed (verify metals compatibility) Submersible with appropriate connector	Valve Position Indication Outdoor use w long cable Controller Roller Gap in Rolling Mills Process Industries Ideal for Noisy Areas	Process Control Valve Position Feedback Roller Gap Automated Test Systems	Stem-type valves Power Generation Air-Handling Systems Filtration/Water Treatment Rolling Mills Sluice gates in sewage and waste water treatment plants.

Model	LBB	GCA	PCA375	PCA375 PR-020	PCA-116
Applications	Precision Gaging	Gaging	Gaging	Gaging	Gaging
Type	AC operated gage head	AC operated gage head	AC operated gage head	AC operated gage head	AC operated gage head
Description	Linear Ball Bearing Series Spring or Air Extend	Hermetically Sealed Spring or Air Extend	Longer Stroke Spring extend	Ultra compact Spring extend	Economy Series
Photo					
Ranges, inch	±0.02 to ±0.2 inch	±0.05 to ±2 inches	±0.1 to ±1 inch	±0.02 inch	±0.1, ±0.2 & ±0.3 inch
Input voltage (nominal)	3.5Vrms	3Vrms	3Vrms	3.5Vrms Max.	3Vrms
Input frequency	2.5 to 10KHz	400 to 10KHz	2.5 to 10KHz	2.5 to 10 KHz	50Hz to 10kHz
Test frequency	5 KHz	2.5KHz	10 KHz	5 KHz	2.5KHz
Output(s)	AC	AC	AC	AC	AC
Non-Linearity (% full range)	±0.2%	±0.25%	±0.5%	±0.5%	±0.5%
Operating temperature	-40°C to +70°C	-55°C to +150°C	-20°C to +70°C	-18 to +121°C	-55°C to +95°C
Core threads, inch	N/A	N/A	N/A	N/A	N/A
Core threads, metric	N/A	N/A	N/A	N/A	N/A
Diameter, inch (mm)	0.315 (8) & 0.375 (9.5)	0.750 (19.05)	0.375 (9.53)	0.375 (9.53)	0.750 (19.05)
Housing material	Hardened stainless steel	400 series stainless steel	400 series stainless steel	304 series stainless steel	400 series stainless steel
Housing length, inch	2.3 to 5.8	1.9 to 20.9	2 to 9	0.9	1.75 to 2.8
Housing length,mm	59 to 148	49 to 531	51 to 229	23	45 to 72
Features	0.000004" (0.10µm) repeatability Removable Tungsten Carbide contact tip Double shielded LVDT Repairable	Hermetically sealed All-welded construction Welded MS connector .000025" (.6um) repeatability Special tips available MS type connector	Longer strokes IP65 cable exit Accepts industry standard contact tips Heavy Duty Return Spring Based on MHR Series LVDT	.00004" (1µm) repeatability Very Compact Design 90° Cable Exit 4-48 ADG standard dial gage contact tip	Cost Effective Preformance .0001" (2.5um) repeatability Nylon Sleeve Bearings Uses E-Series LVDT
Certifications					
IP rating		IP68			
Options	Air extend Threaded housing Connectors	Mating connector Special contact tips Air extend, spring retract	Connectors 4-48 AGD Contact Tips	Connectors Special Contact Tips	Special Contact Tips
Typical applications	Auto factory automation Mfg on-line inspection Robotics Replaces dial indicators Process standards Factory SPC	In-process measurements Harsh environments Environments requiring hermetic seal High temp. applications Elevator Landing Systems	High Density Gaging Fixtures Resistance Weld Verification Pressing Applications X-Y Stage Position Feedback Rough Casting Inspection	Bore Gages Fixture Gages Limited Space Applications Small Inside Diameter Measurements	Less Demanding Applications

Model	GCD	GCD-SE	GCT	GC 485	Digital LBB
Applications	Gaging	Gaging	Gaging	Digital I/O Gaging	Digital I/O Gaging
Type	DC operated gage head	DC operated gage ghead	DC operated gage head	DC operated gage head	Stackable system
Description	Hermetically Sealed Spring or Air Extend	Hermetically Sealed Single Ended Supply	2-Wire Current Loop Spring or Air Extend	Hermetically Sealed RS-485 Ultra Precision	Ultimate-Precision Gaging system
Photo					
Ranges, inch	±0.05 to ±2 inches	0.1 to 2 inches	0.25 to 2 inches	±0.05 to ±1 inch	1, 2 and 5 mm
Input voltage (nominal)	± 15VDC	8.5 to 28VDC	Loop 12.75 to 28VDC	8.5 to 30VDC	5 VDC USB (bus or external)
Input frequency	N/A	N/A	N/A	N/A	N/A
Test frequency	N/A	N/A	N/A	N/A	N/A
Output(s)	± 10VDC	1~6VDC; 0~5VDC(4 wires)	4 to 20mA	Metric & Inches (Digital)	RS485 Orbit®; USB
Non-Linearity (% full range)	±0.25%	±0.25%	±0.5%	±0.1%	±0.2% accuracy
Operating temperature	0°C to +70°C	-25°C to +85°C	-25°C to +85°C	-25°C to +85°C	0 to +60ºC
Core threads, inch	N/A	N/A	N/A	N/A	N/A
Core threads, metric	N/A	N/A	N/A	N/A	N/A
Diameter, inch (mm)	0.750 (19.05)	0.750 (19.05)	0.750 (19.05)	0.750 (19.05)	0.315 (8) & 0.375 (9.5)
Housing material	400 series stainless steel	400 series stainless steel	400 series stainless steel	400 series stainless steel	hardened stainless steel
Housing length, inch	2.7 to 11.5	4.1 to 9.7	4.7 to 9.5	4.1 to 9.5	2.3 to 5.8
Housing length,mm	69 to 293	105 to 247	120 to 242	105 to 242	59 to 148
Features	Hermetically sealed All-welded construction Welded MS connector 0.000025" (.6um) repeatability Special tips available	Hermetically sealed All-welded construction Welded MS connector Single-ended supply 6mA typical current draw 0.000025" (.6um) repeatability	Hermetically sealed All-welded construction Welded MS connector 0.000025" (.6um) repeatability	Up to 32 Sensors/Network Programmable Filtering Built-in Tare/Untare Min/Max/TIR Function Velocity Output MOD-Bus ASCII & RTU	Plug-and-play compatible with Orbit® bus 14 bit resolution COM libraries provided USB adapter & power supply available
Certifications	CE mark	CE Mark		CE Mark	CE mark
IP rating	IP68	IP68	IP68	IP68	
Options	Mating connector Special contact tips Air extend, spring retract	Mating connector Special contact tips Air extend, spring retract	Mating Connector Special contact tips Air extend, spring retract	Special Contact Tips Special OEM Protocols Air Extend	Threads on gage head body
Typical applications	In-process measurements Harsh environments Environments requiring hermetic seal Elevator Landing Systems	Battery operated systems Roller Gap Control In-process wet grinding Handheld Gages X-Y Position Feedback	Bridge Expansion Monitoring Pipeline Vibration Monitoring Valve Position Compressor Feedback Ideal for Noisy Environments	Roller Gap Control In-Process Wet Grinding Handheld Gages X-Y Position Feedback	Multi-channel Electronic Dimensional Gauging Precision Dimensional Measurement Optics Inspection Systems SPC Data Collection Hand tools

Model	R30A	R36AS	RSYN	R30D	R60D
Applications	General	General	Hostile Environment	General	General
Type	AC operated RVDT	AC operated RVDT	AC operated RVDT	DC operated RVDT	DC operated RVIT
Description	Size 11 Servo Mount Lead-Wires	Size 15 Servo Mount Connector	Ruggedized RVDT High Output Voltage	Size 11 Servo Mount Amplified	Low Inertia Size 11 Servo Mount
Photo					
Range, degree	±60	±60	±30	±30	±60
Input voltage (nominal)	3Vrms	3Vrms	7.5V rms	±15VDC	±15VDC
Input Frequency	2.5 to 10KHz	2.5 to 10KHz	3KHz	N/A	N/A
Test frequency	10KHz	2.5KHz	3KHz	N/A	N/A
Output(s)	AC	AC	AC	±3.75VDC	±7.5VDC
Non-Linearity (% full range)	±0.25(±30),±0.5(±40),±1.5(±60)	±0.5(±30),±1.0(±40),±3.0(±60)	±0.5%	±0.25(±30),±0.5(±40),±2(±60)	±0.5%
Operating Temperature	-55°C to +150°C	-55°C to +150°C	-55°C to +105°C	-18°C to +75°C	-25°C to +85°C
Diameter, inch (mm)	1.06 (26.9)	1.5 (38.1)	0.75 (19.1) or 1.06 (26.9)	1.06 (26.9)	1.06 (26.9)
Housing Material	Aluminum	Stainless steel	Stainless steel	Aluminum	Aluminum
Housing length, inch (mm)	0.9 inch	1.8 inch	1.3 inch	2 inches	1.3 inch
Features	Absolute position Small size & light weight Shielded ABEC 3 precision ball bearings 3/16 inch shaft diameter	Absolute position MS type connector Rugged housing Shielded ABEC 3 precision ball bearings 3/16 inch shaft diameter	High tolerance to Shock and Vibration Humidity & Salt Mist Resistant Low Temp Coefficient of Sensitivity High Output Voltage	Absolute position Shielded ABEC 3 precision ball bearings 3/16 inch shaft diameter	Absolute position Shielded ABEC 3 precision ball bearings 3/16 inch shaft diameter Low Moment of Inertia Printed Circuit Coils
Certifications				CE Mark	CE Mark
Options	R-Flex Coupler	R-Flex Coupler Mating Connector	R-Flex Coupler	R-Flex Coupler	R-Flex Coupler
Typical applications	Machine tool equipment Rotary actuator feedback. Valve positioning Power generation valve position	Machine tool equipment Rotary actuator feedback. Valve positioning Power generation valve position	Rotary Valve Position for Process Industries Headbox Position Feedback Spinnerets for Paper/Plastic Heavy Duty Transmissions Rudder Position on Boats Aircraft Cockpit Controls	Dancer arm position Rotary actuator position Throttle lever position Ball valve position Textile manufacturing equipment Printing presses	Dancer arm position Rotary actuator position Throttle lever position Ball valve position Textile manufacturing equipment Printing presses

Model	R120LC	RVIT-15-60	RVIT-15-120i	RVIT-Z
Applications	General	General	Process Controls	OEM
Type	DC operated RVIT	DC operated RVIT	DC operated RVIT	DC operated RVIT
Description	Potentiometer Replacement Sensor	Low Inertia Size 15 Servo Mount	Low Inertia Transmitter Size 15 Servo Mount	OEM PC Board Assembly
Photo				
Range, degree	±60°	±60°	0° to 120°	±60° or 0° to 120°
Input voltage (nominal)	4.75 to 5.25V	4 to 5.5 VDC	10 to 28 VDC	+5, +10 to +28, ±15 VDC
Input Frequency	N/A	N/A	N/A	N/A
Test frequency	N/A	N/A	N/A	N/A
Output(s)	0.5 to 4.5 VDC	±3VDC	4-20mA & 1 to 5VDC	Voltage, current, digital
Non-Linearity (% full range)	±0.5%	±0.25%	±0.25%	±0.5%
Operating Temperature	-40°C to +85°C	-25°C to +85°C	-25°C to +85°C	-25°C to +85°C
Diameter, inch (mm)	1.00 (25.5)	1.5 (38.1)	1.5 (38.1)	N/A
Housing Material	Aluminum	Aluminum	Aluminum	N/A
Housing length, inch (mm)	1.2 inch	1.6 inch	1.6 inch	N/A
Features	Absolute position 5mA Supply Current Printed Circuit Coils Low Cost 1/4 inch shaft diameter Non-contact	Absolute position Non-contact Printed Circuit Coils Matched & Preloaded ABEC 3 bearings 3/16" shaft diameter	Absolute position Non-contact Printed Circuit Coils Matched & Preloaded ABEC 3 bearings 3/16" shaft diameter	Absolute position Non-contact Low Cost Extremely Light Weight
Certifications	CE Mark	CE Mark	CE Mark	
Options		Custom Electronics for high volume OEMs Flange Mount	Custom Electronics for high volume OEMs Flange Mount	Custom designs for high volume OEMs
Typical applications	No Wear Potentiometer Replacement Sensor Battery Operated Systems Systems requiring much longer life cycles than potentiometers	Dancer arm position Rotary actuator position Throttle lever position Ball valve position Textile manufacturing equipment Printing presses	Process Controls Dancer arm position Rotary actuator position Ball valve position Textile manufacturing equipment Printing presses	Viscometers Valve position Robotics HVAC vane position ATMs Joysticks UAV Flight Controls

Model	LVM-110	LiM 4-20	PSD 4-15	LDM-1000	ATA-2001
Applications	General OEM	General OEM	General	Controls & Automation	Industrial & Metrology
Type	Open circuit board	Open circuit board	DIN rail or chassis mnt	DIN rail mount	1/8 DIN panel mount
Description	LVDT/RVDT OEM Signal Conditioner Voltage Out	LVDT/RVDT OEM Signal Conditioner Current Out	Dual-Rail DC Power Supply	LVDT/RVDT Industrial Signal Conditioner Voltage & Current Output	Rugged LVDT/RVDT Industrial Signal Conditioner with Digital Calibration
Photo					
Supply Voltage	+/-15VDC, +/-12VDC	18 to 30VDC	115/230 VAC, 47-63Hz	10 to 30VDC	115VAC/220VAC, 50-400Hz
Output	±10,±5, 0 to 5, 0 to 10VDC	4 to 20mA	±15 VDC, 100mA	±5, 0~5, 0~10VDC, 4~20mA	±10,0~10, 4~20mA
Non-Linearity (% full range)	±0.05%	0.05%		±0.02%	±0.05%
LVDT Excitation Voltage	3Vrms ± 10%	3.5 Vrms ± 10%		1 and 3Vrms	0.5 and 3.5 Vrms
LVDT Excitation Frequency	2.5, 5, 8 and 10KHz	2.5KHz		2.5, 5 and 10KHz	2.5, 5 and 10KHz
Digital Display	No	No		No	No
Operating Temperature	0 to +55ºC	-25°C to +85°C	-25°C to +70°C	-25°C to +85°C	-40°C to +85°C
Dimensions, inch	2.45 x 2.2 x 0.8	2.45 x 2.2 x 0.8	4.3 x 2.0 x 0.9	4.5 x 3.9 x 0.9	10.5 x 3.9 x 1.9
Dimensions, mm	63 x 56 x 21	63 x 56 x 21	110 x 51 x 23	115 x 99 x 23	267 x 99 x 49
Features	Master/slave for multi-up applications Dip switch selectable LVDT excitation frequencies Plug-in PCB or wires to screw terminal strip Low Cost ±6VDC Zero Suppression	Master/slave for multi-up applications Dip switch selectable LVDT excitation frequencies Plug-in PCB or wires to screw terminal strip Low Cost ±2.5mA Offset Adjustment	±15 VDC ±0.05% Low noise outputs Overload & short circuit protection	Operates with 4, 5 & 6 wire LVDT and RVDT Status LEDs Front Mounted Zero, Phase and Span Adjustment Pots 100% Zero Suppression Multiple LVDT/RVDT Master/Slave Feature	Push button programmable Splash proof front panel Extruded Aluminum Housing LED status lights Phase Shift Compensation ±110% Zero Suppression Auto fall-back synchronization for multiple LVDT/RVDT
Certifications			CE and UL	CE mark	CE mark
Options					
Typical applications	General OEM Aplications	Valve Position Feedback Roller Gap Sensing Paper Head Box Position Coater Knife Gap Materials testing Machines	Optimum operation of our DC transducers Powers multiple sensors Din rail applications Chassis applications Industrial environments	Automotive test track Instrumentation Gas & steam turbine controls Factory automation	Precision metrology labs Control Valve Position Head Box Slice Lip Position RollerGapPositionFeedback

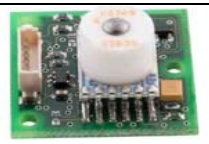
Model	PML1000	MP2000	IEM 422
Applications	Industrial & Process	Industrial & Process	Process Controls
Type	1/8 DIN panel mount	1/4 DIN panel mount	
Description	LVDT/RVDT Signal Conditioner and Panel Meter	Dual Channel LVDT/RVDT Indicator & Set-Point Controller	LVDT/RVDT Current Transmitter
Photo			
Supply Voltage	90~265VAC, 24VAC*, 24VDC*	100~240VAC, 47-63 Hz	115 and 240VAC
Output	0~10V,0~20mA,4~20mA,RS485	+/-5 VDC, 0~10V, RS232	4 to 20mA
Non-Linearity (% full range)	±0.05%	±0.02%	±0.02%
LVDT Excitation Voltage	1 and 3 Vrms	1 and 3Vrms	3Vrms
LVDT Excitation Frequency	2.5 and 10KHz	2.5, 3.3, 5 and 10KHz	2.5, 5 and 10KHz
Digital Display	5 digit LED display	5 digit LCD display	No
Operating Temperature	+10°C to +50°C	0°C to +55°C	-25°C to +70°C
Dimensions, inch	6.8 x 3.8 x 1.9	7.0 x 3.6 x 3.6	9.5 x 6.0 x 6.0
Dimensions, mm	173 x 97 x 49	178 x 92 x 92	242 x 153 x 153
Features	Splash proof front panel Auto-Calibration 2 Programmable Logic Inputs 2 Programmable Function Keys Min, Max, AVG, Zero, and Hold Functions User-Select Decimal Point Mounting hardware included	17-Bit A to D Converter Programmable set points Auto-Calibration Dual channel with math Digital I/O 9-Pin RS232 Connector Splash proof front panel Aluminum Case	DIN Rail Mount Power Supply ±30% Zero Adjust Power & Loop LEDs Adjustable Zero, Phase and Span NEMA 13 Enclosure
Certifications	CE mark	CE mark	
Options	RS422/485 Interface Model *Low Voltage Operation (24V)	Relay Board Lab Stand/Bench Mount 4-Up Rack Adapter	
Typical applications	Remote monitoring stations Measurement test stands Process monitoring	Weighting Systems Pass/Fail Part Sorting Roller Gap Control Concentricity Gaging Press Cycle Control Part Classification Quality Inspection	Steam Turbine Throttle Valve Pulp Paper Industry Petrochemical Process Control Roller Gap Process Control

Model	ED18	ED19	ED20	ED21	ED22
Applications	Light duty	Medium duty	Heavy duty	Heavy duty	Potentiometer replacement
Type	AMR angular encoder	AMR angular encoder	AMR angular encoder	AMR angular encoder	AMR angular encoder
Description	Absolute, analog output	Absolute, quadrarature	Absolute, quadrarature	Absolute, analog output	Absolute, analog output
Photo					
Range	0 to 360°	0 to 360°	0 to 360°	0 to 360°	0 to 300° (mech. stops)
Supply voltage	5±.25VDC	5±0.25VDC	8 to 26VDC	5±.25VDC	5±0.25VDC
Output	0.5-4.5VDC or 4-20mA	Quadrature (TTL level, open collector, 10KΩ internal pull-up)	Quadrature (NPN, LVD and HVD)	0.5-4.5VDC or 4-20mA	0 to 5VDC for 270°
Resolution (CPR=counts/revolution)	8 bits (1.4°)	64/256/400 CPR (others on request)	200/400 CPR (others on request)	8 bits (1.4°)	8 bits (1.4°)
Maximum speed	300 RPM (sleeve) 3000 RPM (ball)	300 RPM (sleeve) 3000 RPM (ball)	3000 RPM	3000 RPM	300 RPM
Operating Temperature	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Size, inch [mm]	1.0 [25.4] square	1.0 [25.4] square	1.25 [31.7] diameter	1.25 [31.7] diameter	0.75 [19] diameter
Bearing system	Aluminum sleeve or SST ball bearing	Aluminum sleeve or SST ball bearing	stainless steel ball bearing	stainless steel ball bearing	Aluminum sleeve
Shaft diameter, inch [mm]	1/4 [6.3]	1/4 [6.3]	1/4 [6.3]	1/4 [6.3]	1/4 [6.3]
Features	Excellent stability Sleeve, 3 million cycles Bearing, 30 million cycles Sealed electronics Low profile For harsh environments Metal shaft & barrel	Electrically compatible with other encoders Sleeve, 3 million cycles Bearing, 30 million cycles Sealed electronics For harsh environments Metal shaft & barrel	30 million cycle life Excellent stability Sealed electronics For harsh environments Metal shaft & barrel	30 million cycle life Excellent stability Sealed electronics For harsh environments Metal shaft & barrel	Excellent stability 3 million cycle life Sealed electronics High vibe & shock resistant For harsh environments Metal shaft & barrel
IP rating	IP52	IP52	IP52	IP52	IP52
Options	Extended temp range Custom outputs Custom shaft sizes Special connectors Custom housings	Custom shaft sizes Custom connectors Custom housings	Custom shaft sizes Custom connectors Custom housings	Extended temp range Custom outputs Custom shaft sizes Custom connectors Custom housings	Electrical cable or pins Special connectors Extended temp range
Typical applications	Avionics Motor speed & position Marine steering Marine throttle Pump speed & direction Camera control XY stage positioning Radio controls Med. diagnostic equip't Video/sound edit equip't Valve position Syringe pump Pot replacement	Avionics Motor speed & position Marine steering Marine throttle Pump speed & direction Camera control XY stage positioning Radio controls Med. diagnostic equip't Video/sound edit equip't Valve position Syringe pump Motor feedback	Avionics Motor speed & position Marine steering Marine throttle Pump speed & direction Camera control XY stage positioning Radio controls Med. diagnostic equip't Video/sound edit equip't Valve position Syringe pump Pot replacement	Avionics Motor speed & position Marine steering Marine throttle Pump speed & direction Camera control XY stage positioning Radio controls Med. diagnostic equip't Video/sound edit equip't Valve position Syringe pump Pot replacement	Machine tool control Paint spraying syst. ctrl Medical Equipment Test & Measuring Equip't Off highway cabin ctrls Marine equipment Exercise Equipment Valve Positioning Industrial Joysticks

Model	R36	ED32i	MRLF30-USB
Applications	Heavy duty shaftless	Linear displacement sensing	Linear displacement sensing
Type	AMR angular encoder	AMR linear encoder	AMR linear absolute encoder
Description	Absolute, analog output	Incremental or absolute	Absolute, USB interface
Photo			
Range	0 to 180°	0 to 100mm	±15mm
Supply voltage	5±0.25VDC	5±0.25VDC	5±0.5VDC
Output	0 to 5VDC	Quadrature (TTL level) or RS485	USB Type A (Full Duplex)
Resolution (CPR=counts/revolution)	0.7°	10µm	
Maximum speed	N/A	4m/s	10ms update time
Operating Temperature	-40°C to +85°C	-25°C to +85°C	
Size, inch [mm]	[38.1 x 25.4 x 7.62]	[60x20x10]	
Bearing system	N/A	N/A	
Shaft diameter, inch [mm]	N/A	N/A	
Features	Shaftless Very rugged Sealed electronics High vibe & shock resist. For harsh environments Target: Magnet	Contactless measurement Very high accuracy Programable resolution Error detection Adapter plate for easy mounting Target: Magnet	USB supplied Full duplex serial interface C- or T-Slot compatible High accuracy Very low hysteresis Magnet out-of-range detection
IP rating	IP52	IP67	RoHS
Options			Cable length Connector
Typical applications	Machine tool control Medical Equipment Test & Measuring Equip't Rotational feedback Human-machine interface	linear displacement measurement in industrial and medical applications	Handling machines Machine tools Pneumatic cylinder position Gripper positioning

Model	MS32	KMT32B	KMT36H	KMA36	MR174B, KMY, KMZ	MLS
Description	Low field switching sensor	Absolute angle sensor	Absolute angle sensor	Angular or linear	Linear low field sensor	Linear position
Type	AMR Magneto-resistive)	AMR Magneto-resistive)	AMR Magneto-resistive)	AMR system	AMR Magneto-resistive)	AMR Magneto-resistive)
Photo						
Range	1 to 3kA/m magnetic switching field	180° angle	360° angle	360° angle	-2 to +2kA/m magnetic field	Absolute within pole pitch, or incremental
Supply voltage	5 to 30VDC	5 to 10VDC	5 to 12VDC	2.9 to 6.0VDC	5 to 10VDC	5 to 10VDC
Output	Ratiometric 10mV/V	Sine/Cosine 20mV/V	3x120° shifted, 20mV/V	PWM; I^2C	Ratiometric 20mV/V	Sine/Cosine 20mV/V
Accuracy	0.1 KA/m	0.1 to 1°	0.1 to 1°	0.3°	1% of range	0.1 to 1% of pole pitch
Resolution	0.1 KA/m	0.01 to 0.1°	0.01 to 0.1°	0.1°	0.1% of range	.01 to .1% of pole pitch
Speed		Up to 30,000 RPM		24-720Hz update rate		
Operating Temperature	-25°C to +85°C	-40°C to +150°C	-40°C to +125°C	-25°C to +85°C	-40°C to +150°C	-40°C to +85°C
Package	TDFN 2.5 x 2.5	TDFN 2.5 x 2.5; SO-8	TDFN 2.5 x 2.5	TSSOP20	SOT-223, E-line 4 pin	Die or Hybrid
Size, mm	2.5x2.5x0.8	TDFN: 2.5 x 2.5 x 0.8 SO-8: 5 x 4 x 1.75	2.5 x 2.5 x 0.8	6.5 x 6.4 x 1.2	SOT: 6.6 x 7.0 x 1.6 E-line: 16 x 4.2 x 2.4	Die: 5.2 x 1.2 x 0.5 HK: 7.6 x 5.3 x 1.4 HS: 18 x 8 x 2
Features	Linearized output Temperature-compensated switching point Low power consumption Wheatstone bridge type Linear field response	High accuracy High resolution High temperature 175°C on request Low power consumption Self Diagnosis RoHS compliant	High accuracy High resolution 360° full turn	Incremental mode Linear mode Low power mode Sleep mode Auto wake-up (I2C) Programmable parameters	High sensitivity Very low hysteresis Linear to uniaxial field strength Avail. w/ internal magnet High temperature Full or half bridge	Pole pitch 1 to 5mm available Very high precision Insensitive to air gap fluctuations
Typical applications	Piston position switch Reed switch replacement Notebook cover position Door, window position	Steering position Flowmeters Tachometers Rotary Eencoders Motor motion control Camera positioning Medical applications Torque (automotive) Robotics	Steering position Gauge readings Rotary encoders Pot. replacement Camera positioning Robotics Motor motion control	Knobs/potentiometers Small robots Angular/linear position Encoders Battery powered apps Handling machine Motor motion control	Non-destructive material testing Spray arm detection in dish washer Magnetic imaging Brake pedal position Gears revolutions Contactless switch Displacement sensors Detection of low magnetic fields (i.e. earth's)	Roller conveyors Circular saws Bending machines Velocity measurements

Model	E-Series	G-Series	P-Series	V-Series	AccuStar®	AccuStar® IP-66
Type	Single axis	Single axis	Single axis	Single axis	Single axis	Single axis
Technology	Conductive, fluid-filled	Conductive, fluid-filled	Conductive, fluid-filled	Conductive, fluid-filled	Capacitive, fluid-filled	Capacitive, fluid-filled
Description	Voltage output PC board mountable	Switch outputs Aluminum enclosure	Analog & RS-232 out Aluminum housing	Voltage or current out Aluminum housing	Voltage or digital out Light weight	Voltage or current out Water tight enclosure
Photo						
Range(s), degree	±5; ±15	±10	±5; ±15; ±45	±5; ±15; ±45	±45	±3 to ±45
Supply voltage	6.5 to 24VDC	14.4 to 30VDC	6.5 to 24 VDC	12 to 24 VDC	5 to 15, ±8 to ±15, or 4.75 to 5.25VDC	12 to 30 VDC (24 VDC min for 4-20mA)
Frequency response	2-3 Hz @-3dB	2-3 Hz @-3dB	1 Hz @-3dB	2-3 Hz @-3dB	0.5 Hz @-3dB	0.5 Hz @-3dB
Output(s)	±1.5VDC (±15°) or ±3VDC (±5°)	Solid state switch	RS 232 and ±1.5VDC or 4-20mA	+/-2 V , 0.5 to 4.5V or 4-20mA	0.3 V/V, ±2.7VDC, digital, or PWM	0.5 to 4.5V or 4-20mA
Accuracy	0.3°	0.25°	0.02 to 0.8°	0.08 to 0.9°	0.9°	0.1 to 0.45°
Resolution	0.02°	0.001°	0.001 to 0.005°	0.01 to 0.001°	0.002°	N/A
Operating Temperature	-25 to +85°C	-25 to +85°C	-25 to +85°C	0 to +70°C	-30 to +65°C	-25 to +60°C
Dimensions, inch	1.14 x 0.67 x .63	3.15 x 2.24 x 2.95	3.54 x 1.57 x 1.79	3.54 x 2.36 x 1.79	Ø2 x 1.2 H	3.86 x 2.48 x 1.38
Dimensions, mm	29 x 17 x 16	80 x 57 x 75	90 x 40 x 45.5	90 x 60 x 45.5	Ø51 x 31 H	98 x 63 x 35
Features	High accuracy High resolution Ceramic housing SIL solder contacts Low weight Small form factor Easy to integrate	Robust housing High accuracy Programmable switch thresholds Temp. compensated EMC protected Wall mounted	High accuracy High resolution Robust metal housing Programmable zero & baud rate Temp. compensated RS232 output	Robust metal housing M9, 7 pin connector Voltage or current out High resolution	Low 2 oz (57g) weight Rugged plastic housing CE certified	Die-Cast Aluminum Housing 2-Meter Cable
Certifications					CE	
IP rating		IP67	IP65	IP65		IP66
Typical applications	Platform leveling Building control Weighing systems Mobile/stationary cranes Platform leveling Road construction machines	Alarm switch Building control Mobile/stationary cranes Fork/lift trucks & hoists Road construction machines	Building control Drilling machines Weighing systems Mobile/stationary cranes Hydraulic leveling Platform leveling Road construction machines	Drilling machines Vehicle applications Building control Mobile/stationary cranes Hydraulic leveling Platform leveling Road construction machines	Wheel alignment Robotics Antenna positioning Road construction machines	Tower Crane Safety RV Leveling Systems Machine Tool Angle Medical Trailer Leveling for mobile CT & MRI Barge Load Distribution Well Drilling Rigs Mining equipment

Model	25/E2-Series	AAL-Series	DPL/DPN Series	E2-Series	DQL-Series	Accustar® II / DAS 20
Type	Dual axis	Dual axis	Dual axis	Dual axis	Dual axis	Dual axis
Technology	Conductive, fluid-filled	Conductive, fluid-filled	Conductive, fluid-filled	Conductive, fluid-filled	Conductive, fluid-filled	Conductive, fluid-filled
Description	Voltage output OEM module	High accuracy OEM module	Analog & digital OEM module	Voltage output OEM module	Digital output miniature OEM	Voltage & PWM outputs Cost effective OEM
Photo						
Range(s), degree	±25	±2 to ±30	±2 to ±30	±5, ±10, ±15, and ±45	±26	±20
Supply voltage	4.75 to 5.25 or 12 to 24 VDC	4.75 to 5.25 VDC	4.75 to 5 or 7 to 30 VDC	12 to 24 VDC	4.75 to 5.25 VDC	5 to 15 VDC
Frequency response			0.5 to 25 Hz (adjustable)			0.25 Hz @-3dB
Output(s)	±2 or ±2.5 VDC	0.3 to 4.7 VDC	0.3 to 4.7 VDC & RS232, TTL or SPI	0.5 to 4.5 or ±2 VDC	I2C-like	±2 VDC and PWM
Accuracy	0.3°	0.1°	0.05 to 0.15°	0.08 to 0.15°	0.1°	0.2 to 0.45°
Resolution	0.01°	0.001 to 0.01°	0.001°	0.001 to 0.01°	0.02°	0.01°
Operating Temperature	-25 to +70°C	-40 to +85°C	-40 to +85°C	0 to +70°C	-25 to +85°C	-20 to +65°C
Dimensions, inch	1.97 x 1.97 x 0.55	1.77 x 1.77 x 0.79	1.77 x 1.77 x 0.79	1.77 x 1.77 x 0.79	0.98 x 0.98 x 0.63	3.50 x 3.12 x 1.30
Dimensions, mm	50 x 50 x 14	45 x 45 x 20	45 x 45 x 20	45 x 45 x 20	25 x 25 x 16	89 x 80 x 33
Features	High zero point stability Fast response time Low noise level Low drift Low temp. sensitivity	High accuracy Temp. compensated High resolution e2-PROM on board	High accuracy High resolution Fast response time Programmable digital filtering Programmable zero point, baud rate, out rate	High resolution Fast response time Low drift sensitivity Low noise level	2-wire digital Small size Fast response time	Microprocessor-based electronics Adaptable design Ratiometric and PW digital outputs Trimmable outputs
Certifications						
IP rating						
Typical applications	Drilling machines Vehicle applications Building control Mobile/stationary cranes Hydraulic leveling Platform leveling Road construction machines	Building control Weighing systems Truck chassis leveling Mobile/stationary cranes Lift platforms Vehicle applications Road construction machines	Platform leveling Drilling machines Weighing systems Mobile/stationary cranes Hydraulic leveling Wind power Road construction machines	Mobile/stationary cranes Platform leveling Building control Hydraulic leveling Drilling machines Vehicle applications Road construction machines	Alignment & level ctrl Mobile/stationary cranes Manlift tipover protection Forklift truck Harvester leveling Vehicle applications	Platform Leveling Pitch & roll monitoring Manlift tipover protection Auto-leveling systems Wheel Alignment

Model	D-Series	DPG Series	DQG-Series	P-Series	V-Series	AngleStar® system	AngleStar® DP-45
Type	Dual axis	Dual axis	Dual axis	Dual axis	Dual axis	Digital protractor	Digital protractor
Technology	Conductive, fluid-filled	Conductive, fluid-filled	Conductive, fluid-filled	Conductive, fluid-filled	Conductive, fluid-filled	Capacitive, fluid-filled	Capacitive, fluid-filled
Description	Voltage & digital outputs Aluminum housing	Voltage & RS232 out Aluminum housing	Voltage output Small size	Analog & RS-232 out Aluminum housing	Voltage or current out Aluminum housing	System with Accustar for remote sensing	All-in-one protractor with hold function
Photo							
Range(s), degree	±5, ±15 and ±30	±5, ±15 and ±30	±25	±5; ±15; ±45	±5; ±15; ±45	±19.99, ±45, 0 to 90	±45
Supply voltage	10 to 30 VDC	7 to 30 VDC	8 to 30 VDC	6.5 to 24 VDC	12 to 24 VDC	9V battery or external 9-15 VDC	9V battery
Frequency response	0.1 to 16 Hz (adjustable)	0.5 to 25 Hz (adjustable)		1 Hz @-3dB	2-3 Hz @-3dB	0.5 Hz @-3dB	
Output(s)	0.3 to 4.7 VDC and RS232, or **Canopen**	0.3 to 4.7 VDC & RS232	0.3 to 4.7 VDC	RS 232 and ±1.5VDC or 4-20mA	+/-2 V , 0.5 to 4.5V or 4-20mA	3 digit LCD display	3 digit LCD display
Accuracy	0.04 to 0.15°	0.06 to 0.5°		0.02 to 0.8°	0.08 to 0.9°		0.1 to 0.7°
Resolution	0.001 to 0.005°	0.001°	0.1°	0.001 to 0.005°	0.01 to 0.001°	0.01 to 0.45°	0.1°
Operating Temperature	-40 to +85°C	-40 to +85°C	-40 to +85°C	-25 to +85°C	0 to +70°C	-18 to +55°C	0 to +65°C
Dimensions, inch	3.31 x 2.76 x 1.81	3.31 x 2.76 x 1.22	1.61 x 1.81 x 0.79	3.54 x 1.57 x 1.79	3.54 x 2.36 x 1.79	5.04 x 3.47 x 1.30	5.45 x 3.21 x 1.5
Dimensions, mm	84 x 70 x 46	84 x 70 x 31	41 x 46 x 20	90 x 40 x 45.5	90 x 60 x 45.5	128 x 88 x 33	139 x 82 x 38
Features	High accuracy Robust metal housing High resolution EMC protected M12 male connector Programmable digital filtering Programmable zero point, baud rate, out rate	High accuracy Robust metal housing High resolution Temp. compensated High out data transfer 3 ft (1 meter) cable Programmable digital filtering	Small package Aluminum housing Temp. compensated Fast response time 1.6ft (0.5 meter) cable)	High accuracy High resolution Robust metal housing Programmable zero & baud rate Temp. compensated RS232 output	Robust metal housing M9, 7 pin connector Voltage or current out High resolution	Separate sensor & readout External power jack Remote sensing up to 200 ft from display	100 hours approx on 9V battery Alternate reference (floating zero) function Display hold button High impact carrying case Low battery & overrange indicator
Certifications	CE	CE					
IP rating	IP67/68	IP67/68	IP66	IP65	IP65		
Typical applications	Building control Construction machines Wind power Weighing systems Mobile/stationary cranes Hydraulic leveling Platform leveling Drilling machines	Mobile/stationary cranes Lift platforms Building control Weighing systems Truck chassis leveling Vehicle applications Road construction machines	Alignment & level ctrl Mobile/stationary cranes Manlift tipover protection Forklift truck Harvester leveling Vehicle applications	Building control Drilling machines Weighing systems Mobile/stationary cranes Hydraulic leveling Platform leveling Road construction machines	Drilling machines Vehicle applications Building control Mobile/stationary cranes Hydraulic leveling Platform leveling Road construction machines	Platform Leveling Antenna Positioning Mining Equipment Machine Tooling	Driveshaft Maintenance Antenna Positioning Race Cars Machine Tooling