Temposonics® Magnetostrictive Position Sensors for Industrial Applications

Whether your application is industrial or medical, harsh environment or commercial, extra-long or ultra-space sensitive, standard or custom, MTS Sensors have the features, options and flexibility to work in your design.

	R-Series Smart sensors with ruggedness, highest accuracy and a large variety of designs & interfaces				G-Series Sensors with analog or Start/Stop output for standard applications			E-Series Sensors designed for applications requiring simple and low cost position feedback				
												
Sensor Model	**RH** **Pressure-resistant stainless steel rod sensor for fluid technology**	**RP** **Robust aluminum profile for industrial manufacturing**	**RD4** **Separate electronics + pressure-resistant rod for limited space**	**RF** **Smart sensor with flexible measuring rod**	**GH/GP** **Simple and robust sensor**	**GT** **High reliability redundant triple/ twin sensor**	**GBS** **High pressure resistant sensor rod**	**EP** **Aluminum profile for industrial automation technology**	**ER** **Profile sensors with "Rod & Cylinder" actuation and integral electronics**	**EL** **Low profile sensor for applications where tight mounting space is a critical factor**	**EH** **High pressure rod with compact waterproof stainless steel housing**	**EP2** **Non-contact linear position sensor to substitute linear potentiometers**
Features	Displacement, Velocity (except DeviceNet)				Displacement			Displacement, Velocity (Output dependent)				
	Simultaneous Multi Position Measurement (Multi Magnet Measurement) Analog up to 2 positions; SSI differential measurement up to 2 positions; CAN, Profibus, EtherCAT, EtherNet/IP up to 20 positions; Profinet RT up to 19 positions				Simultaneous Multi Position Measurement Start/Stop up to 9 positions	2 or 3 totally separated, independent measuring systems in 1 housing	High operating temperature	Rugged profile	Rod-and-cylinder style and competitive with potentiometers	For tight mounting space	Cost effective & compact rod type	Flat Profile
	Diagnostic LED				Diagnostic LED	Redundant	Flat & compact	Simultaneous 2 Positions Measurement (Analog)				
Output	Voltage：0 to 10V, 10 to 0V, -10 to +10V, +10 to -10V				Voltage：0 to 10V, 10 to 0V, -10 to +10V, +10 to -10V		Voltage：0-10V, 10-0V	Voltage：0 to 10V, 10 to 0V				
	Current：4 to 20mA, 0 to 20mA, 20 to 4mA, 20 to 0mA				Current：4 to 20mA, 0 to 20mA, 20 to 4mA, 20 to 0mA		Current：4 (0) -20mA, 20-4 (0) mA	Current：4 to 20mA, 20 to 4mA				
	SSI：Binary or Gray, Data Length 24bit・25bit・26bit、32bit (Binary only)				Start/Stop pulse	-	-	Start/Stop pulse				
	Fieldbus：CANbus, CANopen, Profibus, Profinet RT, EtherCAT, EtherNet/IP, DeviceNet (except RD4)				PWM	-	-	SSI：24/25bit Binarry or Gray, CANopen (ER：Please contact factory)				
Measuring Range	Analog：50-7600mm	Analog：50-5000mm		0.1-20m >15m: Contact Factory	Analog：50-2500mm	50-2900mm	25-3250mm	Analog, SSI, CANopen：50-2500mm	50-1500mm	Analog, SSI, CANopen：50-2500mm	50-2500mm	Analog：50-2500mm
	Digital：25-7600mm	Digital：25-5000mm			Digital： GH：50-7600mm GP：50-5000mm			Start/Stop：50-3000mm		Start/Stop：50-3000mm		Start/Stop：50-3000mm
Non-Linearity	<±0.01%F.S. (Option internal linearization)		<±0.02%F.S. (Contact factory for internal linearization of RD4)		<±0.02%F.S.			<±0.02%F.S. (Min.±60μm)				<±0.02%F.S.
Resolution (Please see P.9 for velocity)	Analog：16bit/0.0015%, SSI：0.5μm, EtherCAT, Profibus, Profinet RT, EtherNet/IP：1μm, CAN, DeviceNet：2μm, RD4：5μm				Analog：infinite Digital：5μm	infinite	16bit (min.1μm)	Analog：infinite Start/Stop：0.1/0.01/0.005mm SSI：20μm CANopen：10μm				Analog：infinite Start/Stop：5μm～
Repeatability	<±0.001%F.S.				<±0.001%F.S.		<±0.005%F.S.	<±0.005%F.S.				
Update Time / Sampling Rate (1 magnet) (Please see P.9 for details.)	Analog：0.5ms (2KHz) CANbus/DeviceNet：0.5ms (2KHz) EtherCAT：Stroke dependent, EtherNet/IP：2ms (0.5KHz) Profibus：0.5ms (2KHz), Profinet RT：1KHz, SSI：0.27ms (3.7KHz), 10KHz synchronous mode				Analog：<1ms typ (>1KHz) Start/Stop：max 2800m/s (length, controller dependent) e.g. 1200mm：0.42ms (2.4KHz) +Controller processing time	<2.5ms	Up to 1200mm：0.5ms Up to 2400mm：1ms >2400mm：2ms	Analog：>0.33ms typ (<3KHz) Start/Stop：max 2800m/s (length, controller dependent) e.g. 1200mm：0.42ms (2.4KHz)+controller processing time SSI：0.27ms (3.7KHz) CANopen：1ms (1KHz)				Analog：<3KHz Start/Stop：controller dependent
Temperature Coefficient	Analog：<30ppm/℃, SSI, CAN, Profibus, EtherCAT, Profinet RT, EtherNet/IP, DeviceNet：<15ppm/℃				TBD			SSI, CANopen：<15ppm/℃				-
Shock Test	100G single hit (IEC60068-2-27)				100G single hit (IEC60068-2-27)			100G single hit (IEC60068-2-27)				
Vibration Test	15G 10-2KHz (IEC60068-2-6), 30G (option)		10G 10-2KHz (IEC60068-2-6)	5G 10-150Hz (IEC60068-2-C)	15G 10-2KHz (IEC60068-2-6), 30G (option/except GT)	5G 10-2KHz (IEC60068-2-6)	15G 10-2KHz (IEC60068-2-6)	Analog, Start/Stop, CANopen：15G 10-2KHz SSI：10G 10-2KHz (IEC60068-2-6)	Analog, Start/Stop 10G 10-2KHz SSI：5G 10-2KHz (IEC60068-2-6)	Analog, Start/Stop, CANopen：15G 10-2KHz SSI：10G 10-2KHz (IEC60068-2-6)	15G 10-2KHz (IEC60068-2-6)	8G 10-2KHz (IEC60068-2-6)
Pressure Rating	35MPa 70MPa peak 80MPa (option)	-	35MPa 70MPa peak	-	35MPa 70MPa peak (GH)	35MPa 69MPa peak	35MPa 70MPa peak	-	-	-	Analog, Start/Stop Φ7mm：30MPa 45MPa peak Φ10mm：35MPa 53MPa peak SSI, CANopen Φ7mm：30MPa 35MPa peak Φ10mm：35MPa 45MPa peak	-
Protection	IP67 IP68 (Cable outlet) IP68/IP69K (in SSH housing)	IP65	Sensor Electronics IP67 Side Cable Entry IP65 Bottom Cable Entry IP30	IP30 Waterproof Rod option	GH：IP67 IP68 (Cable outlet) IP68/IP69K (in SSH housing) GP：IP65	IP67 IP68 (Cable outlet)	IP67 IP68 (Cable outlet)	IP67			IP69K	IP67
Input Voltage	24VDC (-15/+20%)				24VDC (-15/+20%), 9-28.8V (option)	24VDC (-15%/ +20%)		24VDC (-15%/+20%)				
Operation Temperature	-40℃ to +75℃ , 0℃ to +75℃ (EtherNet/IP, Profinet RT)				-40℃ to +80℃	-40℃ to +75℃	-40℃ to +90℃ (option -40℃ to +100℃)	-40℃ to +75℃, -25℃ to +75℃ (ER SSI)				
Current Consumption	Analog, SSI：100mA typ CAN, Profibus, DeviceNet：90mA typ EtherCAT：80mA typ, EtherNet/IP, Profinet RT：110mA typ				100mA typ		100mA Stroke dependent	Analog：50-140mA, Start/Stop：50-100mA SSI：90mA, CANopen：90mA (EP, EL), 40-60mA (EH)				
EMC	EMI：EN61000-6-4, EMS：EN61000-6-2, ESD：EN61000-4-2, RFI：EN61000-4-3 Electrical fast transient / burst immunity test：EN61000-4-4 Immunity to conducted disturbances, induced by radio-frequency fields：EN61000-4-6 Criterium A, CE-qualified				EMI： EN61000-6-4, EMS：EN61000-6-2 CE-qualified			EMI：EN61000-6-4 EMS：EN61000-6-2 CE-qualified (SSI, CANopen：See datasheet)				
Option	TIIS Explosion-proof ATEX Pressure-resistant and explosion-proof ATEX Explosion proof	ATEX Explosion proof	Head to Rod Cable up to 5m	Waterproof rod cover	GH：ATEX Pressure-resistant and explosion-proof ATEX Explosion proof GP：ATEX Explosion proof		Wireless programming				SUS 316	

Functions and the approved certification depend on the sensor model.
Please contact factory for other measuring ranges, materials, operating environments, etc.