

Temposonics®

Magnetostrictive Linear-Position Sensors

MTS
SENSORS

550937 B

Product Selector Guide



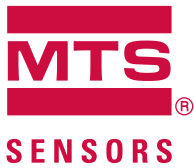
COMPLETE DESIGN FLEXIBILITY WITH MAXIMUM PERFORMANCE.

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.

www.mtssensors.com

R-SERIES

A smart sensor for fast, high precision, and synchronized position control applications.



H STYLE

Hydraulic/pneumatic sensor housing with integral electronics

P STYLE

Aluminum extrusion Profile sensor housing with integral electronics

F STYLE

Flexible sensing element housing with integral electronics

DIRECT SENSOR OUTPUTS	Voltage 0 to +10V, +10 to 0V -10 to +10V, +10 to -10V (1)	Voltage 0 to +10V, +10 to 0V -10 to +10V, +10 to -10V (1)	Voltage 0 to +10V, +10 to 0V -10 to +10V, +10 to -10V (1)
	Current 0 or 4 to 20 mA, 20 to 4 or 0 mA	Current 0 or 4 to 20 mA, 20 to 4 or 0 mA	Current 0 or 4 to 20 mA, 20 to 4 or 0 mA
	SSI, Synchronous Serial Interface, (absolute encoder format)	SSI, Synchronous Serial Interface, (absolute encoder format)	SSI, Synchronous Serial Interface, (absolute encoder format)
	Fieldbus - CANbus (2), DeviceNet, Profibus DP	Fieldbus - CANbus (2), DeviceNet, Profibus DP	Fieldbus - CANbus (2), DeviceNet, Profibus DP
STROKE LENGTH	50 to 7,620 mm (2 to 300 in.)	50 to 5,080 mm (2 to 200 in.)	250 to 10,060 mm (10 to 396 in.) (3)
	16 bit, as low as 0.01 mm (0.0004 in.) (Analog)	16 bit, as low as 0.01 mm (0.0004 in.) (Analog)	16 bit, as low as 0.01 mm (0.0004 in.) (Analog)
RESOLUTION	as low as 0.002mm (0.00008 in.) (Digital) (5)	as low as 0.002mm (0.00008 in.) (Digital) (5)	as low as 0.002mm (0.00008 in.) (Digital) (5)
	Position / Displacement	Position / Displacement	Position / Displacement
MEASUREMENT FEATURES	Velocity	Velocity	Velocity
	Multiple magnets to 15	Multiple magnets to 15	Multiple magnets to 15
	Analog Zero and Span Scale Adjustment	Analog Zero and Span Scale Adjustment	Analog Zero and Span Scale Adjustment
	--	--	--
EXTERNAL INTERFACES	--	--	--
	--	--	--

(1) Additional output ranges available.

(2) Includes CANOpen and MTS multiple-magnet position, velocity and programmable limit switch output.

(3) Consult factory for stroke lengths greater than 10,060 mm (396 in.).

(4) ER stroke length range is 75 to 1,500 mm (3 to 60 in.). Articulated or unsupported sensor applications (e.g. using dual rod ends), must be limited to a maximum of 750 mm (30 in.) stroke length.

(5) R-Series SSI available with 0.001mm (0.00004 in.) resolution.

(6) Analog (Voltage or Current) resolution restricted by output ripple.

Hydraulic/pneumatic "H Style"

- Sensing element pressure housing threads into standard size port on cylinder endcap.
- Industry standard for position feedback in fluid power cylinders.
- Convenient sensor cartridge field replacement without need to break oil seal.
- High pressure flange and isolation tube (5000 psi static, 10,000 psi spike).

Profile "P Style"





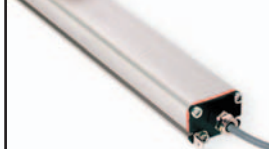
- Extruded aluminum housing designed for convenient machine surface mounting.
- Ideal for precision sensing external to fluid power cylinders.
- Guided or "floating" position magnets Single or multiple magnet operation.

G-SERIES

Programmable sensors with built in diagnostics.

E-SERIES

Sensors designed for applications requiring simple and economical position feedback.

				
H STYLE Hydraulic/pneumatic sensor housing with integral electronics	P STYLE Aluminum extrusion Profile sensor housing with integral electronics	P STYLE Aluminum extrusion profile sensor housing with integral electronics	R STYLE Profile sensors with "Rod and Cylinder" actuation and integral electronics	EP2 STYLE Aluminum extrusion Profile sensor housing with integral electronics
Voltage 0 to +10V, +10 to 0V -10 to +10V, +10 to -10V (1)	Voltage 0 to +10V, +10 to 0V -10 to +10V, +10 to -10V (1)	Voltage 0 to +10V, +10 to 0V	Voltage 0 to +10V, +10 to 0V	Voltage 0 to +10V
Current 0 or 4 to 20 mA, 20 to 4 or 0 mA	Current 0 or 4 to 20 mA, 20 to 4 or 0 mA	Current 4 to 20 mA, 20 to 4 mA	Current 4 to 20 mA, 20 to 4 mA	--
--	--	--	--	--
--	--	--	--	--
Digital Pulse Start/Stop or PWM	Digital Pulse Start/Stop or PWM	Digital Pulse Start/Stop	Digital Pulse Start/Stop	Digital Pulse Start/Stop
Voltage or Current 50 to 2,540 mm (2 to 100 in.) Digital Pulse 50 to 7,620 mm (2 to 300 in.)	Voltage or Current 50 to 2,540 mm (2 to 100 in.) Digital Pulse 50 to 5,080 mm (2 to 200 in.)	50 to 1,525 mm (2 to 60 in.)	75 to 1,525 mm (3 to 60 in.) (4)	4, 6, 9, 12, 15, 18, 21, 24, 30, 36, 42, 48, 54, and 60 in.
Infinite (6)	Infinite (6)	Infinite (6)	Infinite (6)	Infinite (6)
Controller Dependent (Digital Pulse)	Controller Dependent (Digital Pulse)	Controller Dependent (Digital Pulse)	Controller Dependent (Digital Pulse)	--
Position / Displacement	Position / Displacement	Position / Displacement	Position / Displacement	Position / Displacement
--	--	--	--	--
Multiple magnets to 15	Multiple magnets to 15	--	--	--
Analog Zero and Span Scale Adjustment	Analog Zero and Span Scale Adjustment	--	--	--
TDU-200 Digital Display (for digital pulse outputs)	TDU-200 Digital Display (for digital pulse outputs)	TDU-200 Digital Display (for digital pulse outputs)	TDU-200 Digital Display (for digital pulse outputs)	--
MK-292 (Parallel 24 Bit Binary, BCD, or Gray Code)	MK-292 (Parallel 24 Bit Binary, BCD, or Gray Code)	MK-292 (Parallel 24 Bit Binary, BCD, or Gray Code)	MK-292 (Parallel 24 Bit Binary, BCD, or Gray Code)	--

Flexible "F Style"

- Durable sensing element flexible to an 8 inch minimum bend radius
- Ideal for position measurement along an arc
Stroke lengths from 10 to 396 inches
(consult factory for longer lengths)
- Convenient packaging and shipping for long stroke lengths
- Facilitates use of long sensors in applications with limited installation space

Rod and Cylinder "R Style"

- Rod actuated position feedback in an extruded aluminum cylinder housing
- Reliable alternative to linear potentiometers
- Provides mounting alternative for articulated motion
- Eliminates need for complex mounting mechanisms
- Dust, debris and moisture tolerant

SELECT BY APPLICATION MECHANICS **OUTSIDE CYLINDER**

APPLICATION HOUSING

FLOATING MAGNET ▶

Ideal for:

- Flange mounted magnets
- Single or multiple magnets
- Zero backlash
- Dirty environments



ELECTRONIC INTERFACE

Analog or
Digital Pulse

Digital Serial (SSI)
Fieldbus
Analog with Position and Velocity

SENSOR MODEL

EP2
EPM

GPM

RPM

STROKE RANGE

2-60 in.

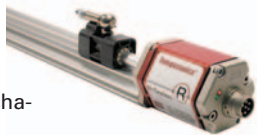
2-200 in.

2-200 in.

CAPTIVE SLIDING MAGNET ▶

Ideal for:

- Situations where flange mounting the magnet is impractical
- Simplifying guidance mechanism for the magnet



Analog or
Digital Pulse

Digital Serial (SSI)
Fieldbus
Analog with Position and Velocity

EPS
EPV

GPS
GPV

RPS
RPV

2-60 in.

2-200 in.

2-200 in.

ROD AND CYLINDER ▶

Ideal for:

- Articulated motion using rod-end attachments
- Dirty environments
- Linear potentiometer upgrades



Analog or
Digital Pulse

ER

3-60 in.*

FLEXIBLE SENSING ELEMENT ▶

Ideal for:

- Curvilinear positioning
- Short installation heights
- Long stroke sensing (>300")
- Single or multiple magnets



Digital Serial (SSI)
Fieldbus
Analog with Position and Velocity

RF

10-396 in.**

* Articulated or unsupported sensor applications must be limited to a maximum of 30 in. stroke length

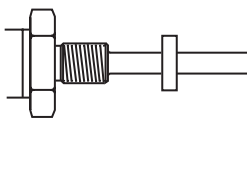
** Consult factory for stroke lengths >396 in.

SELECT BY APPLICATION MECHANICS **INSIDE CYLINDER**

FLANGE TYPE

THREADED ▶

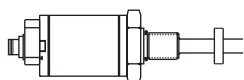
Ideal for installation from outside cylinder



ELECTRONICS HOUSING

Standard ▶

- Integral Electronics
- IP67 Housing
- Easy sensor cartridge replacement w/o breaking the hydraulic seal



ELECTRONIC INTERFACE

Analog or
Digital Pulse

Digital Serial (SSI)
Fieldbus
Analog with Position and Velocity

SENSOR MODEL

GH

RH

STROKE RANGE

2-300 in.

2-300 in.

OUTPUT VARIABLES	ELECTRONIC INTERFACE	MODEL SERIES	STROKE RANGE	MODEL NOTES
SINGLE POSITION	▶ Analog	E Series	Profile 2-60 in.	100% Null & Span Adjust
		G Series	Rod 2-100 in. Profile 2-100 in.	
	▶ Digital Pulse	E Series	Profile 2-60 in.	Programmable PWM Parameters
		G Series	Rod 2-300 in. Profile 2-200 in.	
	▶ Digital Serial (SSI)	R Series	Rod 2-300 in. Profile 2-200 in. Flex 10-396 in.*	Software Programmable
			Rod 2-300 in. Profile 2-200 in. Flex 10-396 in.*	Software Programmable
POSITION + VELOCITY	▶ Analog	R Series	Rod 2-300 in. Profile 2-200 in. Flex 10-396 in.*	100% Null & Span Adjust
	▶ Fieldbus	R Series	Rod 2-300 in. Profile 2-200 in. Flex 10-396 in.*	CANbus and Profibus only
MULTIPLE POSITION MAGNETS	▶ Analog	R Series	Rod 2-300 in. Profile 2-200 in. Flex 10-396 in.*	100% Null & Span Adjust. Up to two magnets
			G Series	Rod 2-300 in. Profile 2-200 in.
	▶ Fieldbus	R Series	Rod 2-300 in. Profile 2-200 in. Flex 10-396 in.*	CANbus and Profibus only. Consult Factory for > 15 magnets

* Consult Factory for stroke lengths >396 in.

TYPICAL APPLICATION MECHANICS: OUTSIDE CYLINDER

FLOATING MAGNET

Positioning for:

- Shearing and forming
- Paper & film slitters
- Die casting machines

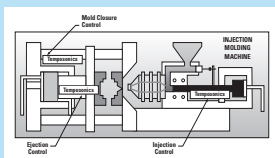


Paper Slitter

CAPTIVE SLIDING MAGNET

Positioning for:

- Presses
- Injection molding carriages & platens

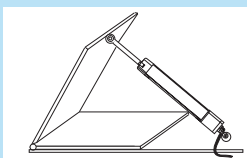


Injection Molding

ROD AND CYLINDER

Positioning for:

- Wood & metal finishing
- Packaging machinery
- Doors and gates

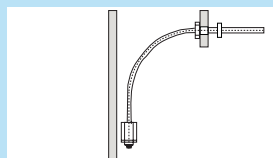


Hood Door Positioning

FLEXIBLE SENSING ELEMENT

Positioning for:

- Paper & film converting
- Long dam-gate cylinders
- Crane & turret control

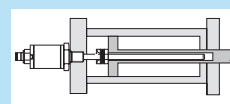


Short Installation Height Application

IN-CYLINDER STANDARD THREADED HOUSING

Used for:

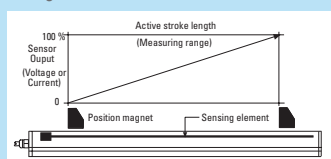
- Hydraulic or pneumatic flange or trunion externally cylinders
- Rugged externally mounted IP67 housing



ELECTRONIC OUTPUT OPTIONS

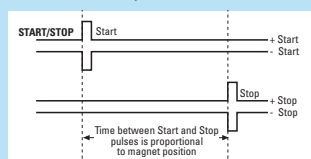
ANALOG

Voltage and Current



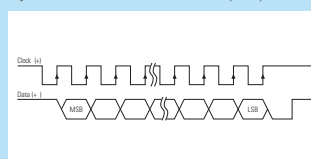
DIGITAL PULSE

PWM & Start/Stop



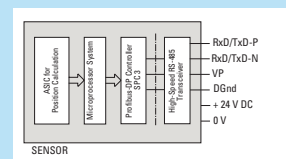
DIGITAL SERIAL

Synchronous Serial Interface (SSI)



FIELDBUS

CANbus, DeviceNet & Profibus



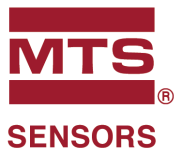
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All Temposonics sensors are covered by US patent number 5,545,984. Additional patents are pending.

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