

MTS Temposonics® Commercial Sensors

New, High performance,
Compact size, Non-contact,
Low cost in volume



Proven technology in a new, low cost package.

Magnetostrictive technology isn't new. In fact, Temposonics sensors were invented in 1970. They also were the first magnetostrictive position sensors for industrial discrete manufacturing or process level control. MTS has over one half million sensors in these applications throughout the world.

Now, using innovative manufacturing techniques MTS is able to offer this technology in low cost approaches suitable for high volume product applications such as automobiles, trucks, medical/therapeutic devices, marine and agricultural equipment, HVAC controls and appliances.

The size, cost and non-contact advantages of Temposonics Commercial Sensors make them extremely attractive for a wide range of applications. In addition, proven magnetostrictive technology delivers some very significant benefits:

Non-Contact Actuation – No Wear

For long life and high reliability.

Absolute Position Measurement

For quick recovery of service after power supply interruptions; no re-homing required.

Selectable Performance Options

Allows lowest possible installation costs. You don't need to design in more than you need. Plus, advanced, innovative designs are possible.

Stable Performance

Over Time & Temperature

Ensures a set-and-forget calibration strategy for reliable, consistent performance.

Variety of Outputs

Allows connection to most controller architecture schemes, including Pulse-Width Modulated (PWM) and Analog (voltage).

Automated Production

100% Quality Testing at every assembly operation brings a level of quality to the user suitable for high-volume production.



One great solution in a choice of standard packages.

MTS has taken the benefits of magnetostriction and prepackaged them into two standard, ready to use sensors complete with electronics and physical packaging. Each has a three-pin, automotive-style connector as part of the rugged molded housing. Electronics are integrated in the housing and require only a 5 Vdc supply. Outputs are analog 0.5 to 4.5 volts (ratiometric) or pulse width modulation to drive your timer/counter. Cable lengths in the remote version can vary between 300mm and 1 meter.

Specifications

PARAMETER	RANGE	UNITS
Active stroke length	59.3 to 237.1	mm
Non-linearity (independent BSL)	0 to ± 0.30	mm
Dead zone ¹	18.2	mm
Operating temperature range	-40 to 105	°C
Thermal shock ²	10	Cycles
Mechanical shock survivability, 4 1/2 sine waves @ 13ms, 6 axes	20	G
Vibration survivability, 10K cycles, 10Hz to 2kHz	5	G
Update rate ³	1.26 (@ 237 mm) to 4 (@ 60 mm)	kHz
Standard Commercial Sensor Outputs	0.5 to 4.5V nominal 10 to 90% (ratiometric) of input voltage PWM	Vdc
Standard Commercial Sensor Power	5, $\pm 10\%$	Vdc

• All specifications are subject to change without notice. Contact MTS Sensors Group for confirmation of specifications critical to your application requirements.

NOTES:

1. Dead zone is an unusable area and is measured as a distance from the tip of the sensor (the far end).
2. Move between -40 and 105°C within 10 seconds.
3. Length dependent.



Or your solution built to your specification.

If our standard product does not suit your application, MTS can design a package or electronics that is right for you. MTS will work with your engineering team to define a sensor based upon our proven modular concepts that's just right for your needs.

Form

The Temposonics Sensing Element forms the basis of the system. From this starting point comes a wide range of customized solutions for the most challenging environmental and size conscious applications.

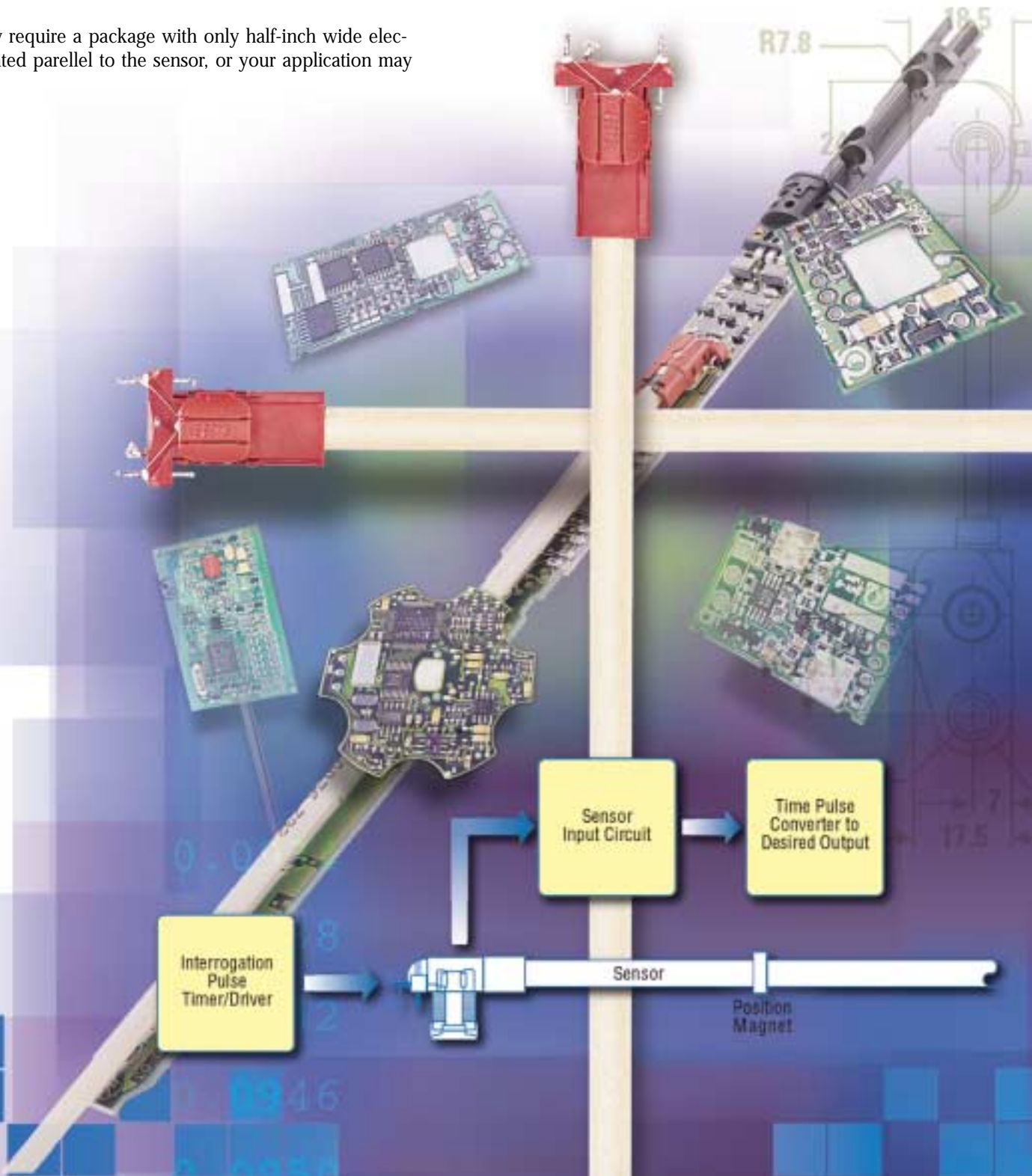
Fit

You may require a package with only half-inch wide electronics mounted parallel to the sensor, or your application may

demand a package with a round circuit board positioned at the head of the sensor. Whatever your need, MTS can create a package configuration that fits virtually any space.

Function

A wide range of electronics can be used to complete the sensor system. Our standard analog voltage or pulse width modulated electronics may not suit your application but we can draw on our in-depth knowledge of custom design from serial outputs to velocity monitoring and even integrate into an application's existing controls to offer the custom solution you need.



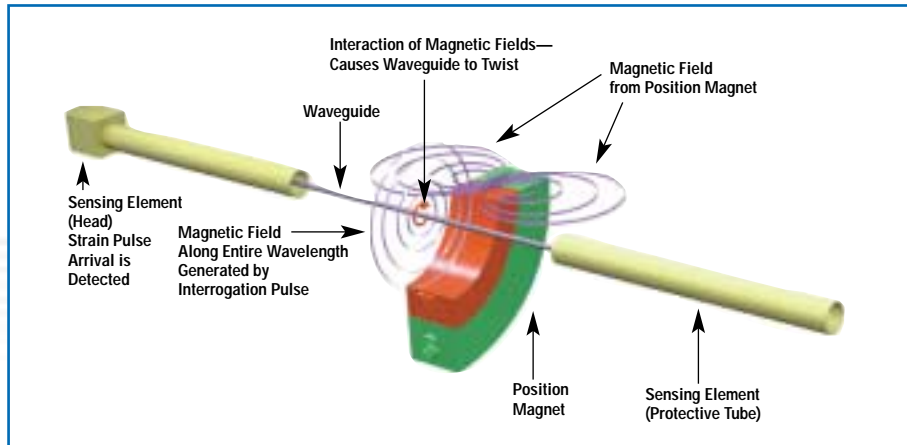
Magnetostriction – how it works.

In a Temposonics transducer, a torsional strain pulse is induced in a specially designed magnetostrictive waveguide by the momentary interaction of two magnetic fields. One field comes from a moving magnet, which passes along the outside of the transducer tube, and the other field is generated from a current pulse which is applied to the waveguide.

The interaction between these two magnetic fields produces a strain pulse which travels at sonic speed along the waveguide, until the pulse is detected at the head of the transducer. The

position of the moving magnet is precisely determined by measuring the elapsed time between the application of the current pulse and the arrival of the strain pulse. As a result, accurate non-contact position sensing is achieved with absolutely no wear to any of the sensing elements.

For additional information about Magnetostriction and the Temposonics product line, visit us on the Internet: www.temposonics.com/commercial



Don't trust your tough job to any other sensor.

No other position sensor can match the track record of Temposonics position sensors for ruggedness and reliable performance. That's why you can find Temposonics position sensors on everything from heavy-duty logging machines to

sophisticated amusement park rides. MTS pioneered the non-contacting magnetostrictive technology that forms the core of our renowned operational advantages of reliable, repeatable performance with absolutely no maintenance.

Temposonics Sensors - Right for the Job

Automotive

- Suspension Height
- Steering Position
- Transmission Shifting & Clutch Position

Medical

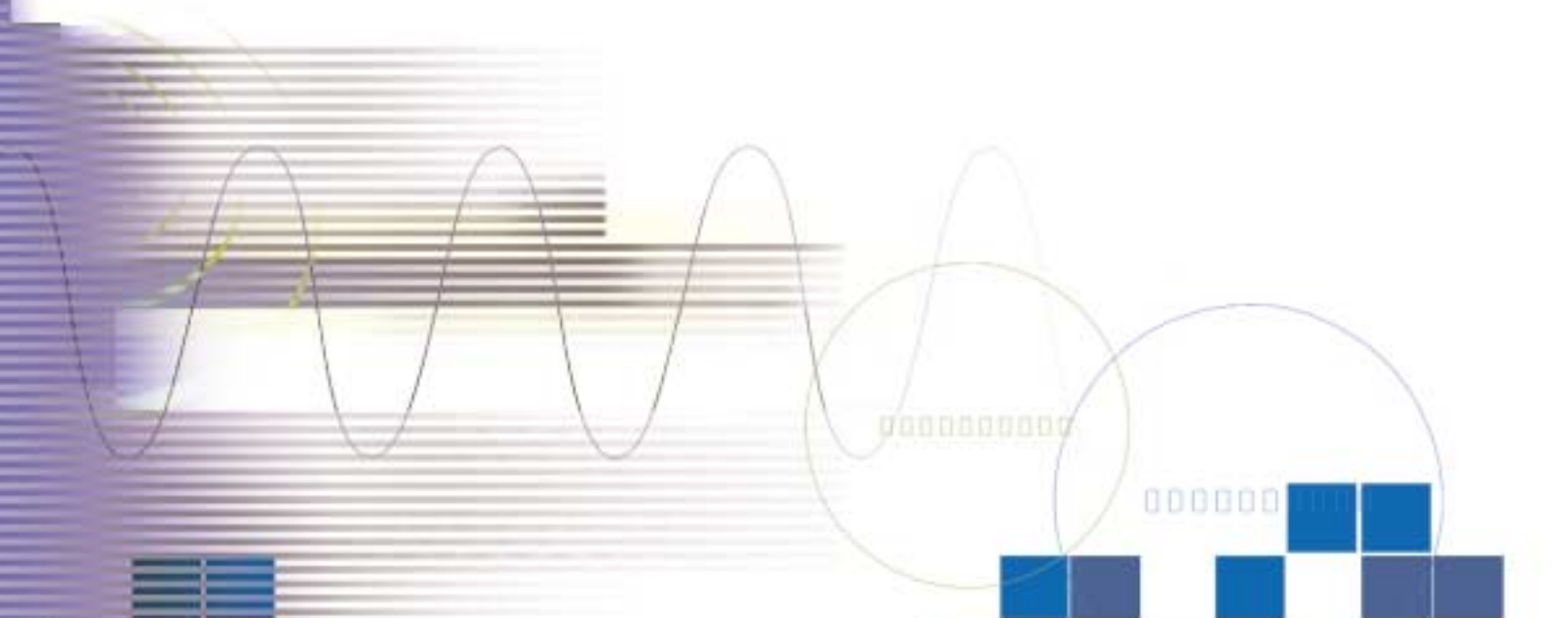
- Wheelchair Tilt
- Hospital Bed Position
- Therapeutic Machine Control

HVAC

- Air Pressure Control Valves
- Damper Control

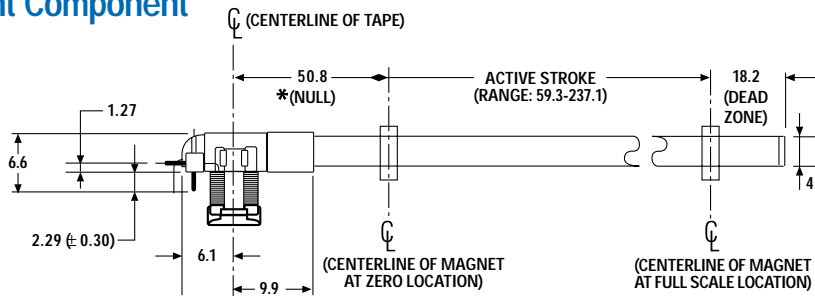
Appliances

- Washing Machine Drum Position
- Fluid Level Measurement



Dimensions

Sensor Element Component (CSE)



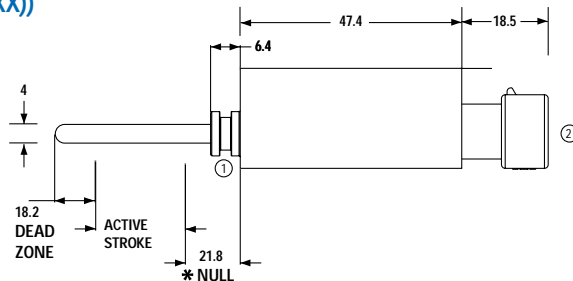
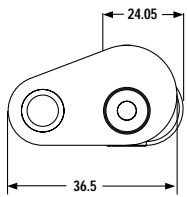
Sample Magnets

PART NO. 401842

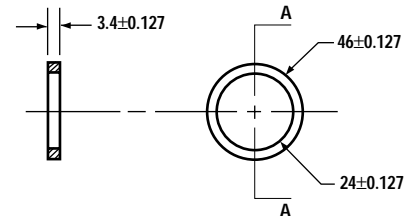


ID: 6.35 mm
OD: 8.73 mm
Thickness: 8.73 mm

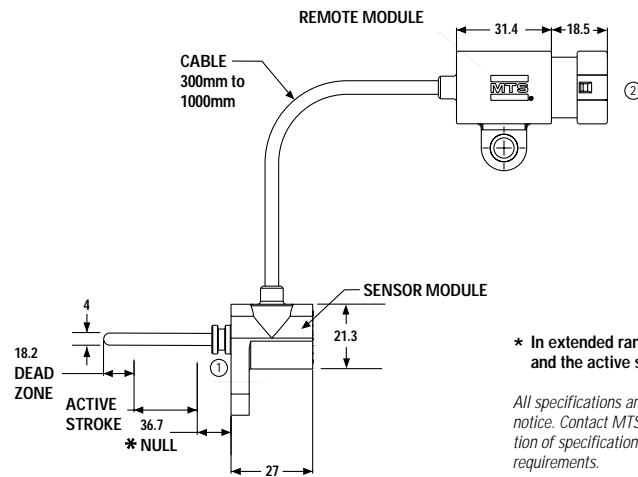
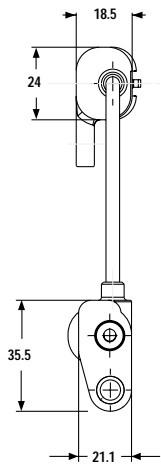
Standard Integral Sensor (CSPISS00M (XXX)F(XX))



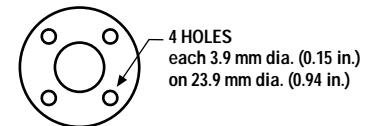
PART NO. 401467



Standard Remote Sensor (CSPRSS01M (XXX)F(XX))



PART NO. 201542



ID: 13.5 mm (0.53 in.)
OD: 32.8 mm (1.29 in.)
Thickness: 7.9 mm (0.312 in.)

* In extended range Null is 13mm shorter and the active stroke is 13mm longer.

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- ① O-Ring Part No: 2-010
- ② Mating Connector 3 pin Part No: GT150 Series. 3-5mm ϕ

ALL DIMENSIONS ARE IN MILLIMETERS



SENSORS
GROUP

Pioneers,
Innovators,
Leaders in
Magnetostrictive
Sensing

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