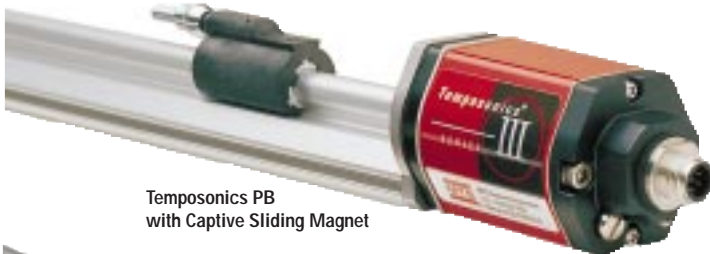
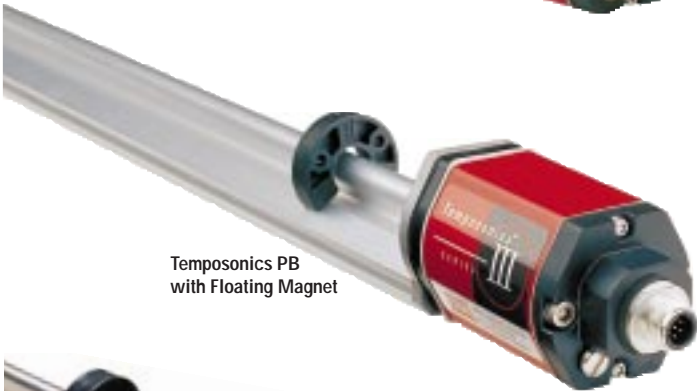


Product Specifications



Temposonics PB
with Captive Sliding Magnet



Temposonics PB
with Floating Magnet



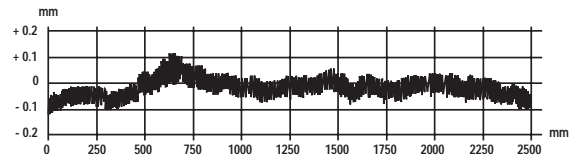
Temposonics RH

Features

- High-speed 2-wire data transmission
- Digital communications architecture
- Industrial standard communications protocol
- Up to 2 micron resolution
- Sensor-based intelligence & diagnostics
- Modular, non-contacting design
- Field replaceable sensor cartridge (Model RH only)
- 2-year warranty
- CE certified

PARAMETER SPECIFICATION

Measured Variable:	Displacement
Resolution:	Up to 0.002 mm
Non-Linearity:	< ± 0.01% of full stroke or ± 0.04 mm, whichever is greater



Example: Sensor Type: Temposonics PB
Measuring Range: 2500 mm
Non-linearity (measured): ± 0.116 mm

Repeatability:	< ± 0.001% of full scale or ± 0.0025 mm, whichever is greater
Hysteresis:	< 0.004 mm
Output Signal:	CAN-Field-bus System ISO 11898
Data Protocol:	DeviceNet/CANbus
Measuring Range:	Profile Style Sensors (PB): 50 to 4800 mm (2 to 188 in.) Rod Style Sensors (RH): 50 to 4800 mm (2 to 188 in.)
Operating Voltage:	+24 Vdc (+ 20%, - 15%)
Power Consumption:	100 mA (typical)
Operating Temperature:	Head Electronics: - 40 to 75°C (- 40 to 167°F) Sensing Element: - 40 to 105°C (- 40 to 221°F)
EMC-Test:	DIN IEC 801-4, Type 4, CE Qualified DIN EN 50081-1 (Emissions), DIN EN 50082-2 (Immunity)
Shock Rating:	100 g (single hit)/IEC standard 68-2-27 survivability
Vibration Rating:	5 g/10-150 Hz/IEC standard 68-2-6
Update Time:	≤ 1 ms typical (length dependent)

PROFILE STYLE (PB MODEL)

Electronic Head:	Aluminum die-cast housing
Sensor Stroke:	Aluminum profile
Sealing:	Electronics Head: IP 67 Extrusion: IP 65
Mounting:	Adjustable mounting feet or T-slot M5 nut in base channel
Magnet Type:	Captive sliding magnet or floating magnet

ROD STYLE (RH MODEL)

Electronic Head:	Aluminum die-cast housing
Sensor Rod with Flange:	304L Stainless steel
Operating Pressure:	350 bar, 530 bar peak (5000 psi static; 10,000 psi spike)
Maximum Hex Torque:	45 nM (33.19 ft. lbs.)
Sealing:	IP 67
Mounting:	M18 x 1.5 or 3/4-16 UNF-3A
Magnet Type:	Ring magnet

Specifications are subject to change without notice. Contact MTS to confirm specifications that are critical to your application.

TEMPOSONICS III SENSORS WITH DEVICENET OUTPUT

“Smart” Temposonics® III Series position sensors with DeviceNet® interface expand the functionality of position sensors. DeviceNet is a bus architecture that allows up to 64 nodes to share one data highway. DeviceNet provides precise, fast, and reliable data processing for high-speed control in industrial automation applications, multi-tasking capabilities, simplified bus wiring, sensor-based diagnostics, and easy expandability.

Temposonics III sensors offer modular construction and non-contacting magnetostrictive technology. Two application housings are available: rod-style (Model RH) and profile style (Model PB). The Model RH sensor cartridge can be quickly replaced in the field for sensor lengths up to 72 inches (1830 mm).

About DeviceNet

DeviceNet is a CAN-based (Controller Area Network) network that links all system components via an open databus system. DeviceNet allows you to interface up to 64 devices using a single cable, thus eliminating the need for conventional methods of multiple wire runs.

DeviceNet offers a cost-effective communication link from industrial measurement and control devices to a network.

DeviceNet provides a way to define how, and in which priority, data will be transmitted over a network. Together, the open DeviceNet protocol and the MTS “smart” Temposonics III sensors offer an effective, high-precision data transfer system that is well suited for industrial automation.

Plug and Play

Plug and play makes installation quick and easy. After initial system configuration, the user is not required to have extensive knowledge concerning network timing and sensor technology.

Each sensor is provided with an Electronic Data Sheet (EDS) on a 3 1/2 inch floppy disk. Sensor-specific parameters are installed into the network using the EDS file. A PC programming tool, such as DeviceNet Manager offered by Allen Bradley, is used to set the node identifier and baud rate (node identifier is factory set at node 63 and baud rate is factory set at 500 kBit/sec.).

Temposonics III sensors with DeviceNet output can be directly connected to a DeviceNet network. The sensor acts as a “slave” device which transmits its position and status data upon request to the “master” device such as a PLC or IPC.

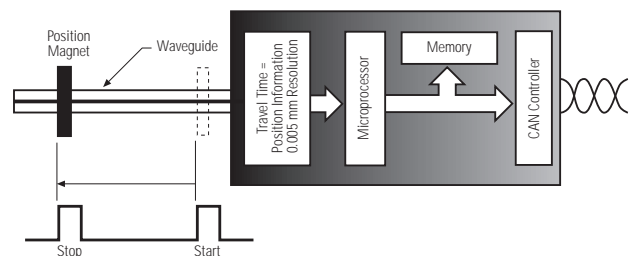
CANBUS INTERFACE (w/DeviceNet)

Controller Area Network (CAN) is standard for device level communications. It provides high speed transmission appropriate for position indication and motion control in industrial applications.

Temposonics III sensors with CANbus capability are microprocessor-based and transmit the complete displacement value data directly to

a machine controller. CANbus functionality is used for position data, and status.

Resolution is up to 2 microns at a maximum of 7,500 measurements per second (length dependent). Also, displacement outputs are absolute which means that position information is immediately available upon power loss recovery.



FEATURES

- High speed 2-wire data transmission
- Sensor-based intelligence, built-in diagnostics
- Priority adjustability
- 2 micron resolution
- Easy expandability
- Position data

CANBUS PROTOCOL

Basic CAN protocol is illustrated at right.

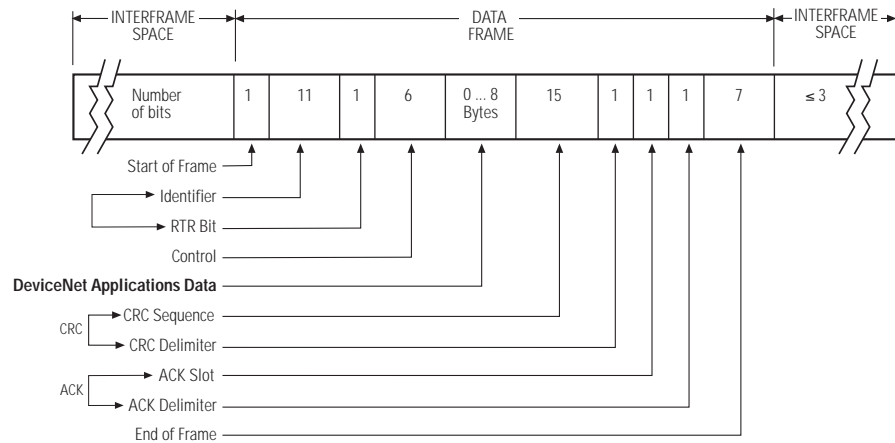
The base protocol includes 44 bits of overhead with 8 bytes (64 bits) being allocated to variable or "applications" data.

Temposonics III sensors with DeviceNet protocol* offers:

- **Status**
- **Position** (1 magnet)
- **Error Detection**
- **Polling & bit-strobe communications modes**

Additional applications data may be customized for some future OEM applications. Data might include:

- **Velocity**
- **Point Control**
- **Motion Profile Capture** (Displacement vs. time)
- **Velocity Profile Capture** (Velocity vs. time)
- **Cyclic polling** (future)



Abbreviations:
RTR - Remote Transmission Request
CRC - Cyclic Redundancy Code
ACK - Acknowledge

- **Multiple Position Measurement:**
(The position of multiple magnets on a single sensor are detected and transmitted via CANbus. A distance of 3 inches (76.2 mm) between each magnet must be maintained.)

BENEFITS

- High baud rate (up to 500 kbit/sec.)
- Up to 64 devices per bus system
- 2-Wire Data Transfer
- Reliable Data Processing
- Mode Selection

Contact MIS for details.

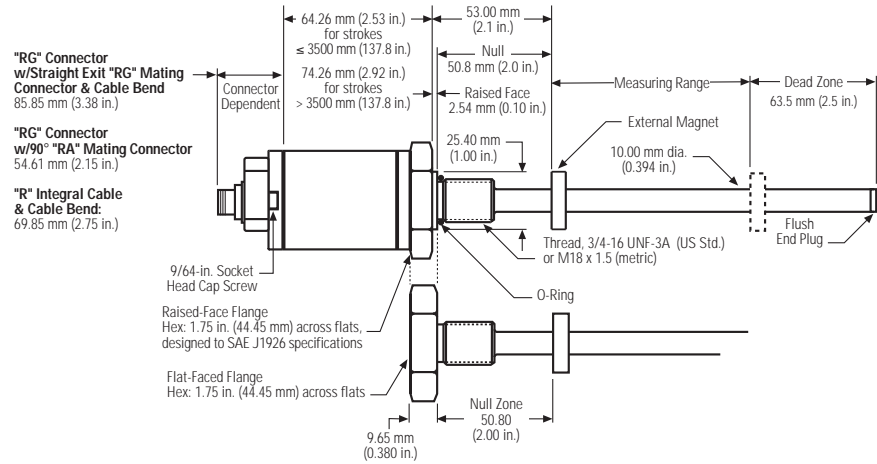
* Programming details for MIS protocol are available in a separate document, contact your MIS Sensors Division representative.

D I M E N S I O N S / T E M P O S O N I C S R H

ROD-STYLE (Model RH)

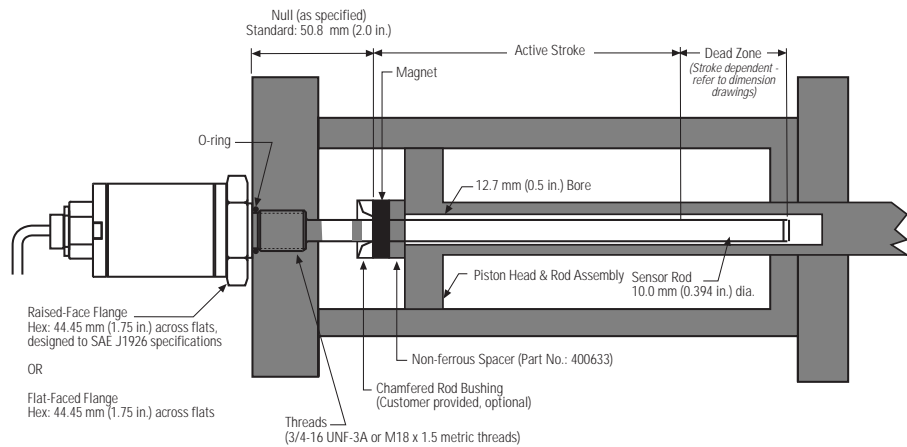
The Temposonics III rod-style application housing (Model RH) offers modular construction, flexible mounting configurations, and easy installation. It is designed for internal mounting in applications where high-pressure conditions exist (5000 PSI continuous, 10,000 PSI spike) such as hydraulic cylinders. Temposonics RH may also be mounted externally in many applications.

In addition, the RH housing offers the ability to quickly and easily replace the sensor cartridge in the field (up to 72 inches).



CYLINDER INSTALLATION

The rod-style Temposonics III position sensors (Model RH) are designed for installation into hydraulic cylinders. The sensor's high-pressure, stainless steel tube installs into a 1/2 inch bore in the piston head and rod assembly as illustrated (right).



The illustration above represents a **typical** installation. Some installation requirements may be application specific.

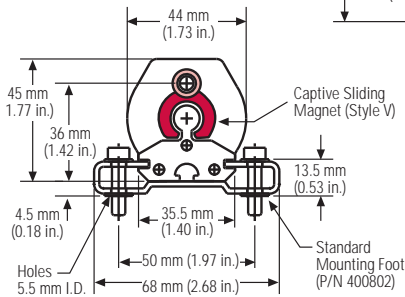
D I M E N S I O N S / T E M P O S O N I C S P B

PROFILE-STYLE (Model PB)

Temposonics PB low profile-style position sensors offer modular construction, flexible mounting configurations, and easy installation. A choice of two magnet mounting configurations are available with the low profile housing: captive sliding magnet or floating magnet.

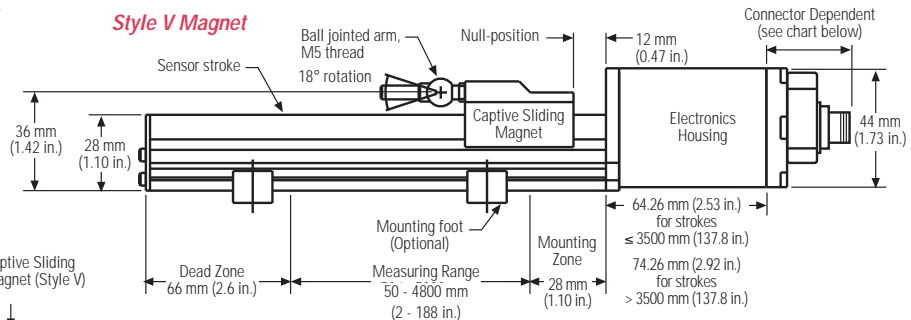
Temposonics PB sensors are effective in applications where space is an issue and in environments where there are high levels of dust and contamination. In addition, low profile Temposonics PB sensors are designed for external mounting on machines and can be configured with a variety of connector options.

CAPTIVE SLIDING MAGNET

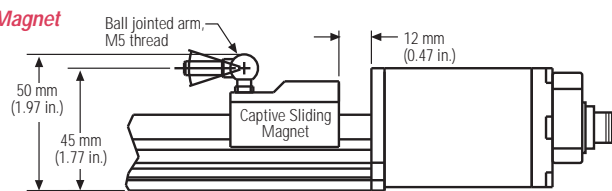


Captive Sliding Magnet, End View
(Shown with optional mounting feet)

Style V Magnet



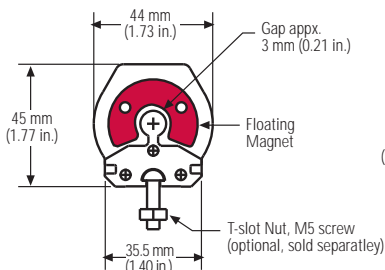
Style S Magnet



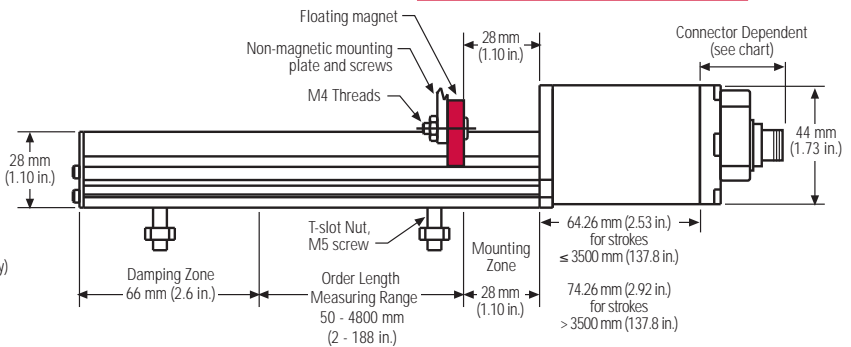
Connector Dimensions

- RG Connector w/Straight Exit
RG Mating Connector & Cable Bend
85.85 mm (3.38 in.)
- RG Connector w/90° RA Mating Connector
54.61 mm (2.15 in.)
- R Integral Cable & Cable Bend:
69.85 mm (2.75 in.)

FLOATING MAGNET



Floating Magnet, End View
(Shown with optional T-slot mounting)

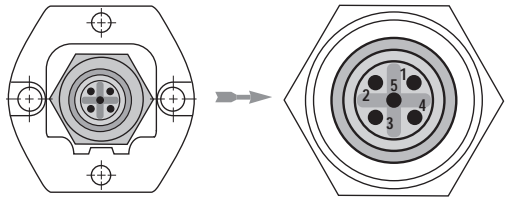


DEVICENET CONNECTIONS

Pin No.	Function
1	Shield
2	+ 24 Vdc (customer provided)
3	DC Ground
4	CAN-H (dominant high)
5	CAN-L (dominant low)

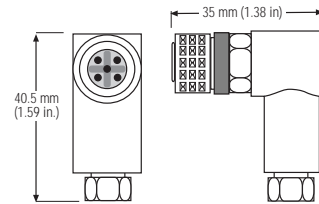
* Molded extension cables are also available from a third party vendor. Contact MTS for more information

CAUTION!
When wiring Temposonics III sensors, **DO NOT** connect DC ground to the cable shield or drain wire.

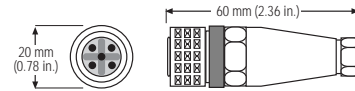


Integral 5-pin Micro Connector (D51)

Exploded View of Integral Micro Connector with Pin Identification (External View)



MTS P/N 370376
90° Micro Mating Field-Installable connector



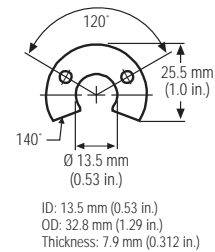
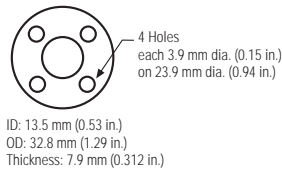
MTS P/N 370375
Straight Exit Micro Mating Field-Installable connector

MAGNETS

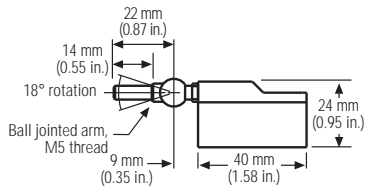
Magnets must be ordered separately with Temposonics RH sensors. The standard ring magnet (P/N 201542) is suitable for most applications.

Magnets are included with the order of Temposonics PB sensors. Temposonics PB can be configured with one of two magnet configurations: captive sliding magnet or floating magnet. There are two styles of captive sliding magnet, and one style of floating magnet.

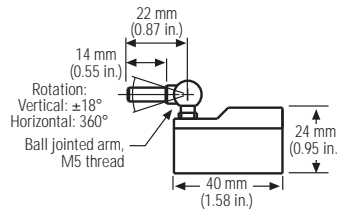
Part No. 201542



Floating Magnet
(May be used with Temposonics RH and PB)
Part No. 251416



Captive Sliding Magnet, Style V
Part No. 252111-1

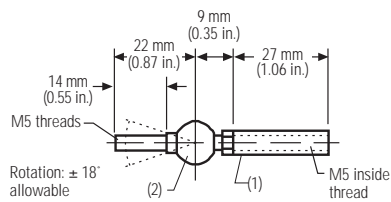


Captive Sliding Magnet, Style S
Part No. 252110-1

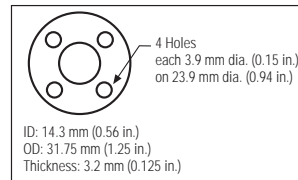
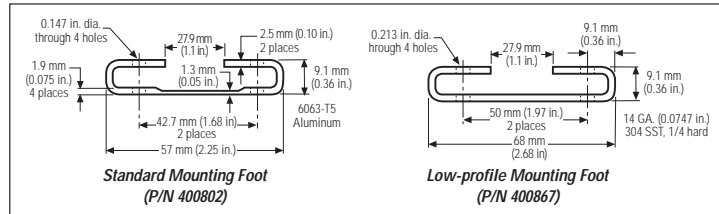
HOW TO ORDER (cont.)

ACCESSORIES

Description	Part No.	Notes
O-Ring (spare)	560315	For use with Temposonics RH sensors
Hex Jam-nut (w/ 3/4-16 UNF threads)	500015	For use with Temposonics RH sensors
Hex Jam-nut (w/ M18x 1.5 threads)	500018	For use with Temposonics RH sensors
RG Field-installable Connector	401366	
Magnet Spacer	400633	For use with standard ring magnet P/N 201542
Magnet Mounting Screws	560357	Used to mount standard ring magnet P/N 201542 (4 screws required) and 90° cutout magnet 201552 (2 screws required)
140° Cut-out Floating Magnet	251416	Spare for Temposonics PB sensors
Captive Sliding Magnet, Style V	252111-1	Spare for Temposonics PB sensors, Rod joint at front of magnet
Captive Sliding Magnet, Style S	252110-1	Spare for Temposonics PB sensors, Rod joint at top of magnet
Joint Rod Sleeve	401603	Optional accessory for Temposonics PB sensors
Ball Jointed Arm	401600-1	Optional accessory for Temposonics PB sensors
Power Supply (24/28 Vdc, 0.5 A)	380009	
Mounting Feet, Standard (spares for PB sensors)	400802	Temposonics PB position sensors are provided with a set of mounting feet
Mounting Feet, Low Profile (spares for PB sensors)	400867	
T-slot M5 Nut	401602	Optional accessory for mounting Temposonics PB sensors
Cable	530026	Specify length in feet at time of order



Joint Rod
 (1) Sleeve, Part No. 401603
 (2) Ball Jointed Arm, Part No. 401600-1



Magnet Spacer (P/N 400633)



Pioneers, innovators, leaders in magnetostrictive sensing

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Part Number 3-99 550651 Revision B

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