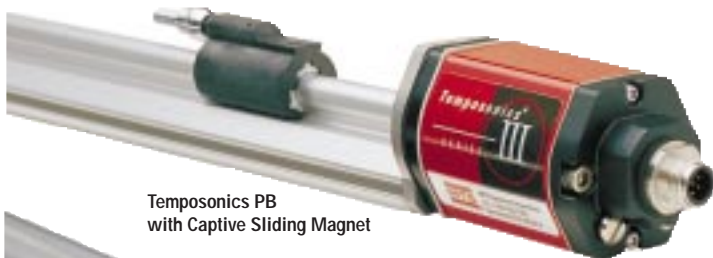


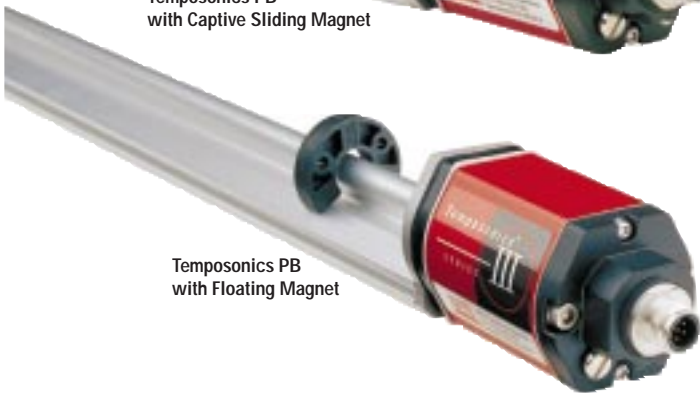
Product Specifications



Temposonics RH



Temposonics PB
with Captive Sliding Magnet



Temposonics PB
with Floating Magnet

Features

- Superior resolution and repeatability
- Absolute displacement and velocity measurement
- Modular, non-contacting design
- 100% field programmable zero and span settings
- Selection of application housings
- Field replaceable sensor cartridge (Model RH only)
- 2-year warranty
- CE certified

PARAMETER SPECIFICATION

Measured Variable:	Displacement, Velocity (magnitude only)
Resolution:	16 bit or 0.025 mm, whichever is greater
Non-Linearity:	< ± 0.02% of full stroke or ± 0.05 mm, whichever is greater
Repeatability:	< ± 0.001% of full scale or ± 0.0025 mm, whichever is greater
Hysteresis:	< 0.004 mm
Outputs:	Voltage: 0 to 10 Vdc or +10 to 0 Vdc * Minimum load: ≥ 5 kΩ Current: 4 (0) to 20 mA, 20 to 4 (0) mA Maximum load: ≤ 500 Ω
Measuring Range:	<i>Profile Style Sensors (PB):</i> 50 to 5000 mm (2 to 196 in.) <i>Rod Style Sensors (RH):</i> 50 to 7600 mm (2 to 300 in.)
Velocity:	Velocity output range: 0.1 to 10 m/s or 1.0 to 400.0 in/s Minimum velocity: 1.0 in/s or 0.05 x stroke length in inches, whichever is greater Maximum velocity: 400.0 in/s or 100 x stroke length in inches, whichever is less (factory calibrated)
Operating Voltage:	+24 Vdc (+ 20%, - 15%)
Power Consumption:	100 mA typical
Operating Temperature:	<i>Head Electronics:</i> - 40 to 75°C (- 40 to 167°F) <i>Sensing Element:</i> - 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
Adjustment of Zero & Span:	100% field adjustment of measuring range
Update Time:	≤ 1 ms typical (length dependent)

PROFILE STYLE (PB MODEL)

Electronic Head:	Aluminum die-cast housing
Sensor Stroke:	Aluminum profile
Sealing:	<i>Electronics Head:</i> IP 67 <i>Extrusion:</i> 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

* Due to single ended power supply, 0.0 V is not attainable. Typical minimum voltage is 50 mV.
All specifications are subject to change. Please contact MTS for specifications critical to your needs

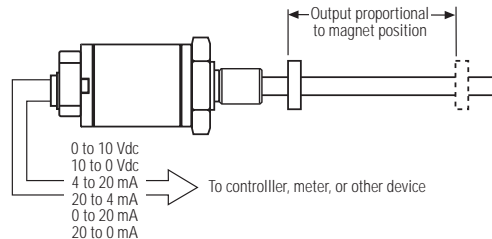
ANALOG OUTPUT

The “smart” Temposonics® III Series position sensors provide fast, reliable, and highly precise data processing and communication. Displacement and velocity data is preprocessed by the sensor electronics, thereby reducing the processing overhead of your machine controller.

Dual, simultaneous analog outputs are offered as standard (i.e., one displacement and one velocity output using one magnet, or two identical displacement outputs using two magnets). Like all of our sensors, the Temposonics III sensors use non-contacting magnetostrictive technology. Two application housings are available: rod-style (Model RH) and profile-style (Model PB). With RH sensors, the sensor cartridge can be quickly replaced in

the field without removing the application housing (available for sensor lengths up to 72 inches).

Temposonics III position sensors provide direct analog outputs, including voltage and current. Both voltage and current outputs allow 100% adjustments of zero and span setpoints. Since the outputs are direct, no signal-conditioning electronics are needed when interfacing with controllers or meters.

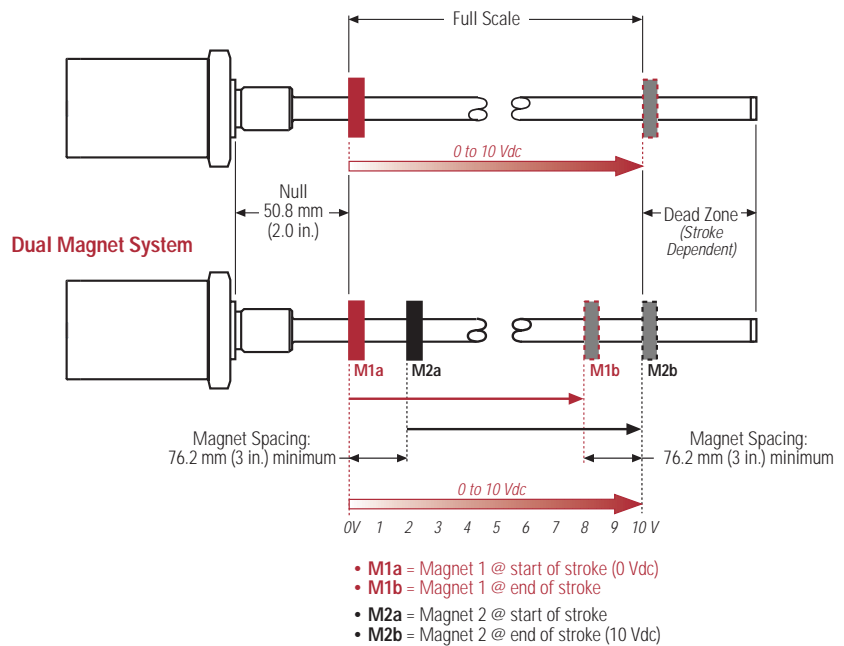


SINGLE/DUAL MAGNETS

Temposonics III position sensors with analog outputs will support one or two magnets. (Refer to the illustration, right.)

A **single magnet system** provides one displacement output over the entire active range of the sensor's stroke length and one velocity output* (magnitude only).

A **dual magnet system** provides two identical displacement outputs; a separate output is provided for each of two magnets positioned along the sensor length. It is important to note that a gap of at least three inches must be maintained between the magnets. Therefore, the output range of each magnet equals the active stroke length of the sensor less three inches. (Minimum sensor length for dual magnet systems is 6 inches.)



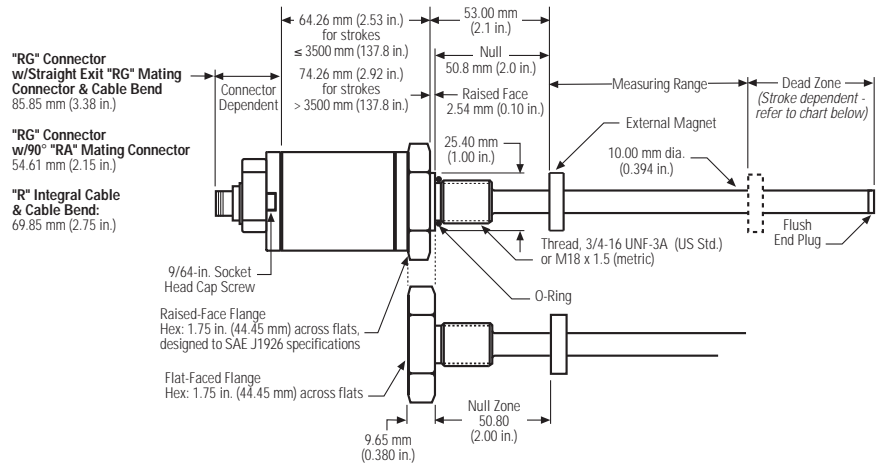
* Please contact MIS applications engineering for assistance with velocity outputs.

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 (for sensors up to 72 inches).

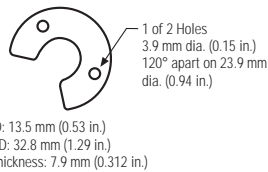


Stroke-dependent Dead Zones	
Stroke Length	Dead Zone
50 - 5000 mm (2 - 197 in.)	63.5 mm (2.5 in.)
5001 - 7625 mm (197.1 - 300 in.)	66 mm (2.6 in.)

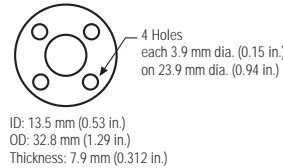
MAGNETS FOR TEMPOSONICS RH

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

Part No. 251416

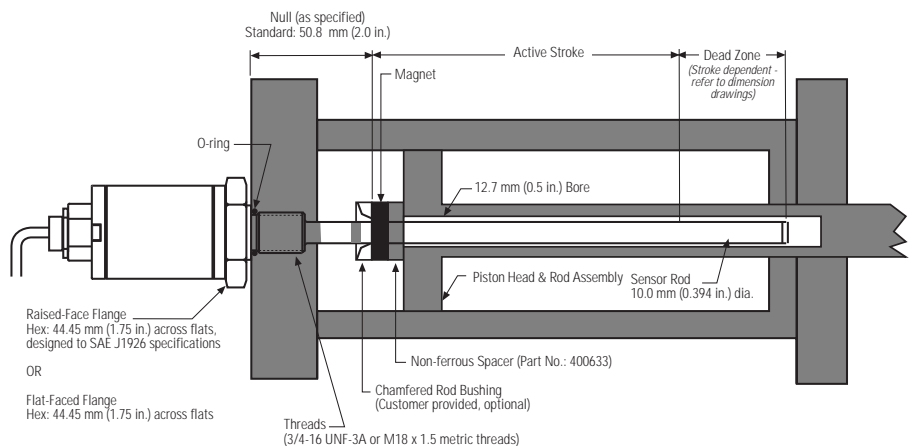


Part No. 201542



TYPICAL 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.

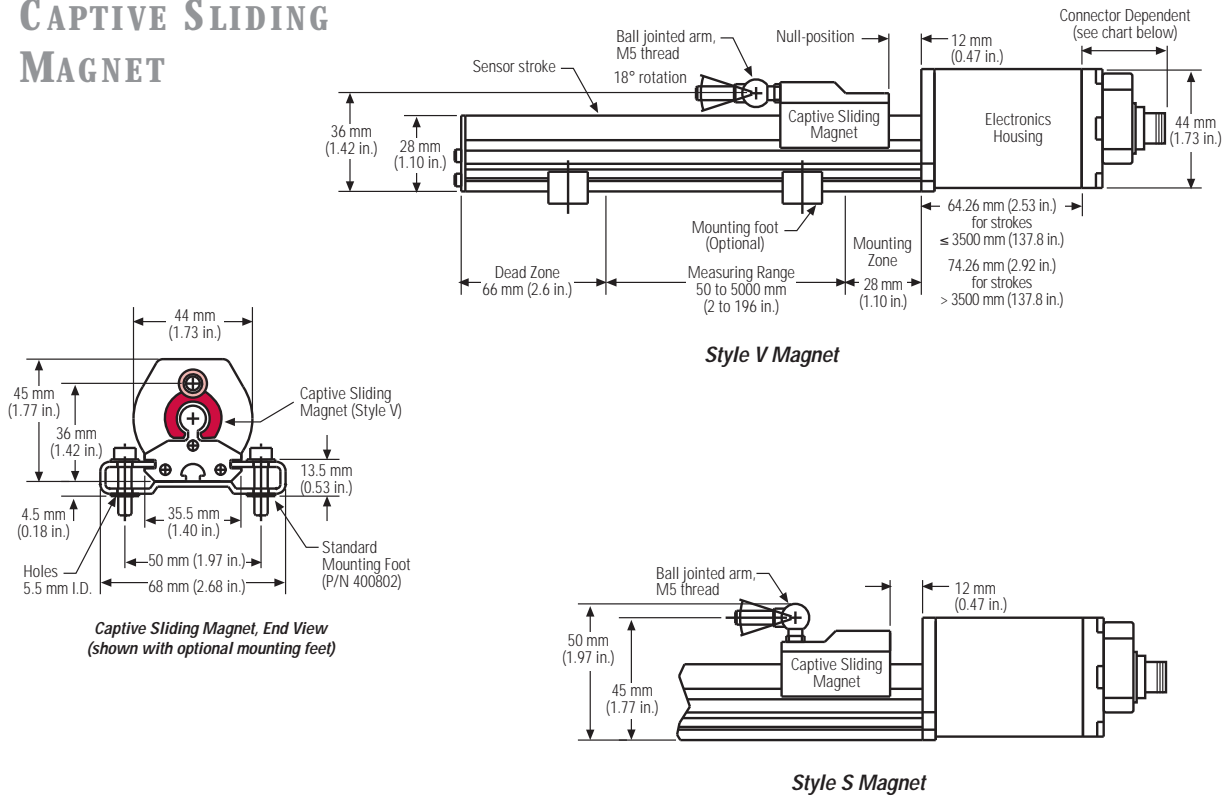
D I M E N S I O N S / T E M P O S O N I C S P B

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



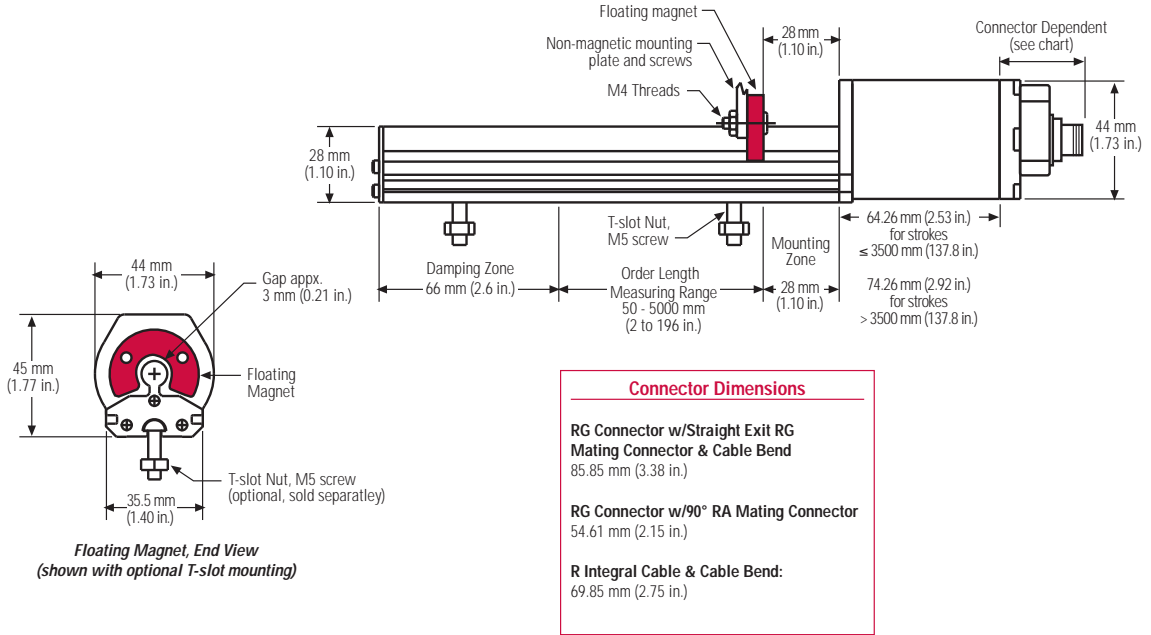
Connector Dimensions

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.)

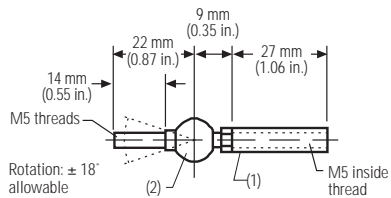
R Integral Cable & Cable Bend:
69.85 mm (2.75 in.)

FLOATING MAGNET

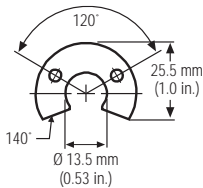


MAGNETS & MAGNET ACCESSORIES FOR TEMPOSONICS PB

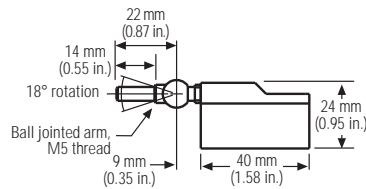
Magnets are included with the order of Temposonics PB sensors. There are two styles of captive sliding magnet, and one style of floating magnet.



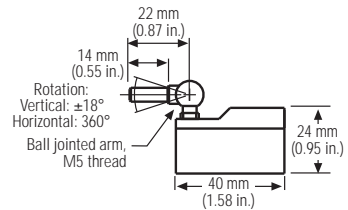
Joint Rod
 (1) Sleeve, Part No. 401603
 (2) Ball Jointed Arm, Part No. 401600-1



Floating Magnet
 Part No. 251416



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



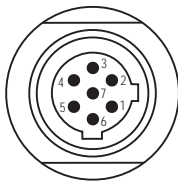
Captive Sliding Magnet, Style S
 Part No. 252110-1

WIRING

CONNECTOR

RG Connector:

Pin No.	Wire Color	Function
1	Gray	Output #1 (Displacement) * 0 to 10 Vdc, 10 to 0 Vdc 4 to 20 mA, 20 to 4 mA, 0 to 20 mA or 20 to 0 mA
2	Pink	Return for Pin 1
3	Yellow	Output #2 (Displacement or Velocity) * 0 to 10 Vdc, 10 to 0 Vdc 4 to 20 mA, 20 to 4 mA, 0 to 20 mA or 20 to 0 mA
4	Green	Return for Pin 3
5	Red or Brown	+ 24 Vdc (+20%, -15%), Customer Supplied
6	White	DC Ground
7	-	No Connection



RG Connector
(Molded Mating Extension Cable Required)

INTEGRAL CABLE

R0 Cable:

Wire Color	Function
Gray	Output #1 (Displacement) * 0 to 10 Vdc, 10 to 0 Vdc 4 to 20 mA, 20 to 4 mA, 0 to 20 mA or 20 to 0 mA
Pink	Displacement Output Return for Gray Wire
Yellow	Output #2 (Displacement or Velocity) * 0 to 10 Vdc, 10 to 0 Vdc 4 to 20 mA, 20 to 4 mA, 0 to 20 mA or 20 to 0 mA
Green	Displacement Output Return for Yellow Wire
Red or Brown	+ 24 Vdc (+20%, -15%), Customer Supplied
White	DC Ground

CAUTION!

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

* When using dual outputs, outputs #1 and #2 must have the same output scale (i.e., voltage or current) and the same orientation (i.e., forward or reverse acting).

HOW TO ORDER

When placing an order, build the desired model number using the model number guide (right). A wide range of Temposonics III sensor configurations are available to meet the demands of your particular application. See the following page for how to order extension cables and accessories.

If you have any questions about how to apply Temposonics III position sensors, please contact one of our Application Engineers or your local MTS distributor—they are available to help you design an effective position sensing system to fit your application.

IMPORTANT:
Consult MTS Applications Engineering before ordering analog outputs.

POSITION SENSORS

3 or 7 digit output code

SENSOR MODEL

RH = Hydraulic Rod Style
PB = Low-Profile Style

HOUSING STYLE

Temposonics RH only (magnet must be ordered separately):
T = US customary threads, raised-faced hex, and pressure tube
S = US customary threads, flat-faced hex, and pressure tube
M = Metric threads, flat-faced hex, and pressure tube
N = Metric threads, raised-faced hex, and pressure tube
B = Sensor cartridge only (No application housing, stroke lengths ≤ 72 in.)
Temposonics PB only (magnet included):
M = Floating Magnet, (Open ring; 140°)
S = Captive sliding magnet with joint at top
V = Captive sliding magnet with joint at front

LENGTH

---.--- **U** = Inches and tenths
 or
 ---.--- **M** = Millimeters
 (Encode length in 0.5 in. or 5 mm increments)

CONNECTION TYPE/CONNECTOR OR CABLE

Connector
RG0 = Standard 7-pin micro connector

Integral Cables
R --- = Integral Cable, Standard
 Cable Length
 --- = Encode in feet if using US customary stroke length,
 encode in meters if using metric stroke length
 Range: 1 (01) to 99 (99) ft. or 1 (01) to 30 (30) meters

INPUT VOLTAGE

1 = +24 Vdc (+20%, -15%)

OUTPUT

V0 ---.--- = 0 to 10 Vdc **A0** ---.--- = 4 to 20 mA **A2** ---.--- = 0 to 20 mA
V1 ---.--- = 10 to 0 Vdc **A1** ---.--- = 20 to 4 mA **A3** ---.--- = 20 to 0 mA

To complete the analog output code, select from the 1 to 5 digit option codes below.

Single Magnet Analog System

- 1** = One (1) displacement output only
- 1** ---.--- = One (1) each displacement and velocity (magnitude only) output (fill in blanks with desired max. velocity) **See chart at right.**

Velocity output range: 001.0 to 400.0 inches/second or meter equivalents
 Minimum velocity = 1.0 inches/second or 0.05 x stroke length in inches, whichever is greater.
 Maximum velocity = 400 inches/second or 100 x stroke length in inches, whichever is less.

Dual Magnet Analog System

- 2** = Two (2) displacement outputs (Set points are referenced to the zero point of each application housing.)

Output	Velocity Direction		
	Head	Magnet at Rest	Tip
0 - 10 Vdc	10	0	10
10 - 0 Vdc	10	0	10
4 - 20 mA	20	4	20
20 - 4 mA	20	4	20
0 - 20 mA	20	0	20
20 - 0 mA	20	0	20

PRESSURE HOUSING (RH Only)

SENSOR CONNECTION TYPE

S = US customary threads, flat-faced hex
T = US customary threads, raised-face hex
M = Metric threads, flat-faced hex
N = Metric threads, raised-face hex

UNIT OF MEASURE

U = US customary (inches and tenths: xxx.x in.)
M = Metric (millimeters: xxxx mm)

LENGTH

---.--- = Inches and tenths (1 to 72 inches) or
 ---.--- = Millimeters (25 to 1825 mm)

EXTENSION CABLES

SENSORS CONNECTION TYPE

RG = Mating connector for Temposonics III sensors with RG connector (straight exit)
RA = Mating connector for Temposonics III sensors with RG connector (90° exit)

CABLE LENGTH

For Sensor Connection Types RG or RA (see above)

005 = 5 ft. **015** = 15 ft.
025 = 25 ft. **050** = 50 ft.
100 = 100 ft.

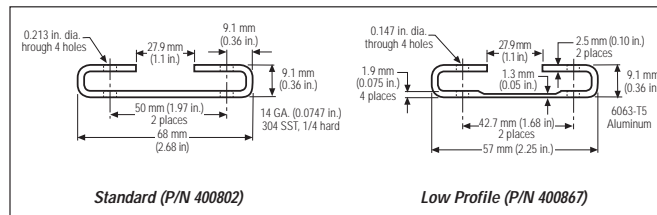
CABLE TERMINATION

P0 = Pigtail connection

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



Mounting Feet



Pioneers, innovators, leaders in magnetostrictive sensing

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Cary, NC 27513
Phone: 800-633-7609
Fax: 919-677-0200
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