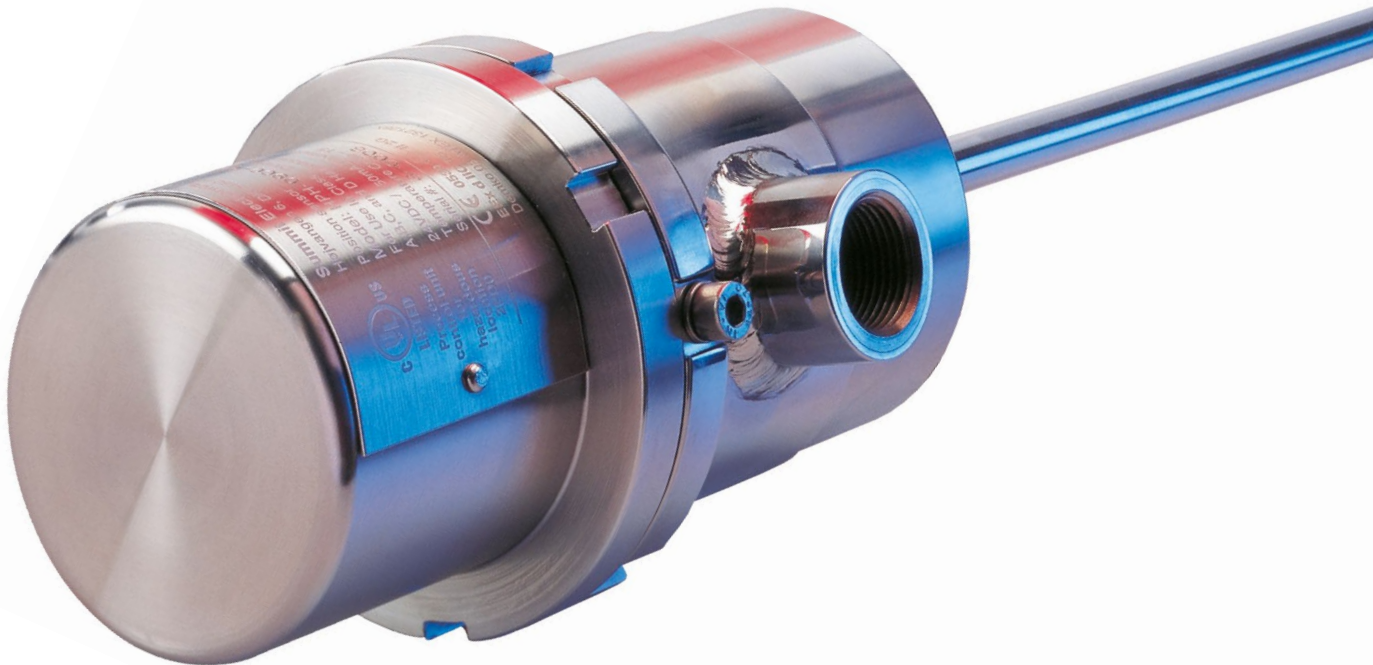**MTS**®

SENSORS

Temposonics®

Magnetostrictive Linear Position Sensors

High Pressure Housing (HPH)
Operation Manual

PRECISION POSITION MEASUREMENT – HPH

This **H**igh **P**ressure **H**ousing (HPH) is ATEX/IECEx as well as UL and cUL approved for use in hazardous locations with Temposonics® position sensors. The ATEX /IECEx, UL and cUL approvals cover flammable gases, vapors, liquids and dust.
This housing is made to fit Temposonics® G-Series Analog + Start/Stop Sensors and R-Series sensors with analog and digital outputs. Both fixed cable and connector versions can be used. When using a standard sensor in this housing you get a cost efficient solution for use in hazardous locations which also allows easy sensor replacement. Several design combinations are available to fit your application:
M18 or ¾"UNF mounting flange - M20 or ½" NPT cable gland thread - top mounted or single/dual side-mounted. See combination chart. All parts are made of 316L stainless steel. The housing is also available in non-approved versions ensuring an outstanding protection to the sensor when used in rigged applications with high humidity and agressive gases.

Safety Instructions
The sensor must only be used according to the Ex certificates listed below. See product name plate for actual approvals.
To reduce risk of ignition in hazardous atmospheres, disconnect the equipment from the supply circuit before opening. Keep assembley tightly closed when in operation. For use according to UL-listing, conduit seals must be installed within 18" distance of the inclosure sensor must be connected to a Class 2 power supply. The housing parts must be kept as one unit.
They are not interchangeable with parts from similar housings. Only tools applicable for use in explosive atmosphere must be used. When mounting the rod in "ZONE 0" it is necessary to prevent any leakage between "ZONE 0" and the surrounding environment. The sensor house must be connected to an equipotential bonding system or an earthing system.
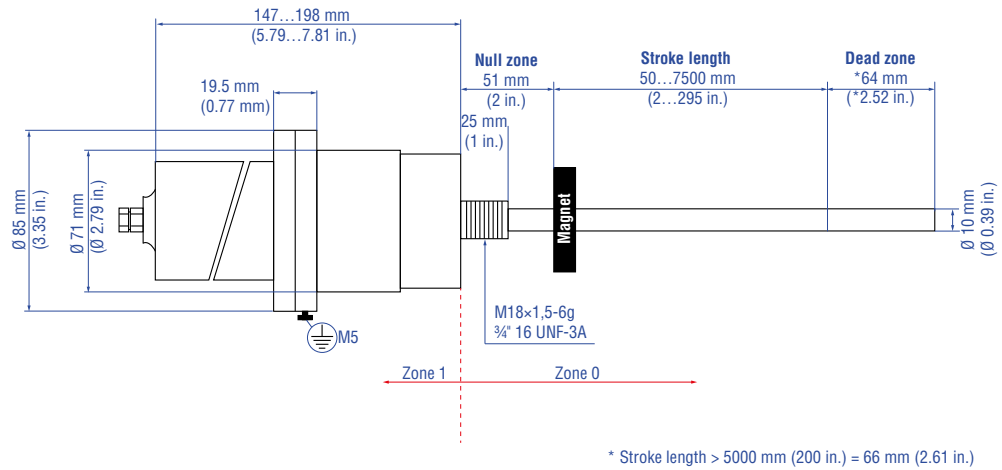
TECHNICAL DATA

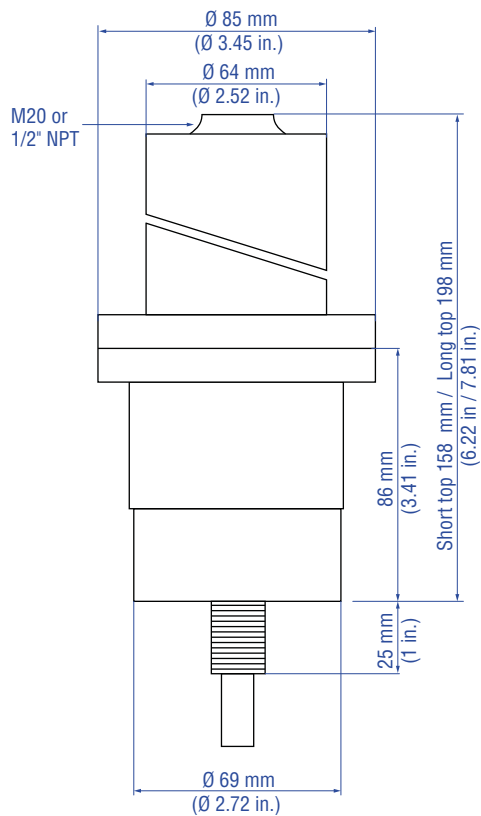| Explosion protection	
ATEX, IECEx	⟨Ex⟩ II 2G Ex db IIC T5 Gb T_{amb} –40°C to +75°C ⟨Ex⟩ II 2D Ex tb IIIC T100°C Db ATEX: ExVeritas 16 ATEX 0192X IECEx: IECEx EXV 16.0014X In accordance with EN 60079-0, EN 60079-0, EN 60079-1, 60079-26 and EN 60079-31 Only with ATEX approved cable glands (Ex d)
Classification	
CLASSIFIED c(UL)us	Class 1, Devision 1, Groups A, B, C, and D hazardous areas, temperature class T5 Certified to fire, electrical shock and explosion hazards according to UL no. 2PD0. In accordance with UL 1203 standard. Only with UL approved cable glands
Operating conditions	
Operating temperature [1]	–40…+75 °C (–40…+167 °F)
Humidity	90 % relative humidity, no condensation
Ingress protection	IP68 (only with IP68 approved cable gland)
Magnet movement velocity	Any
Design/Material	
Sensor rod	Stainless steel 1.4404 (AISI 316L)
Cable gland threads	M20×1.5 or ½" NPT
Stroke length	50…7500 mm
Mechanical mounting	
Mounting flange	M18×1.5 or ¾" - 16UNF - 3A
Mounting instructions	Please consult the technical drawings and the operation manual (document no.: 551751)
Approved sensors	
Temposonics® position sensors	G-Series Analog+Digital R-Series Profibus R-Series CANBUS R-Series DeviceNet R-Series V Analog R-Series V SSI

1/ T_{amb}+ is limited to max T_{amb}+ of used sensor –10 ºC (–14 ºF)
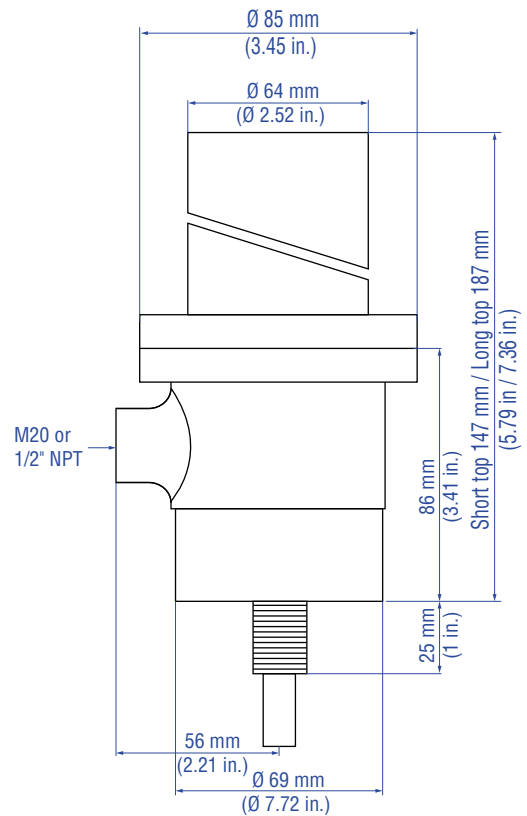
TECHNICAL DRAWING

HPH housing | 3 |

147…198 mm
(5.79…7.81 in.)

19.5 mm
(0.77 mm)

Null zone
51 mm
(2 in.)

25 mm
(1 in.)

Stroke length
50…7500 mm
(2…295 in.)

Dead zone
*64 mm
(*2.52 in.)

Ø 85 mm
(3.35 in.)

Ø 71 mm
(Ø 2.79 in.)

Magnet

Ø 10 mm
(Ø 0.39 in.)

M5

M18×1,5-6g
¾" 16 UNF-3A

Zone 1   Zone 0

* Stroke length > 5000 mm (200 in.) = 66 mm (2.61 in.)

Top mounted cable gland

Ø 85 mm
(Ø 3.45 in.)

Ø 64 mm
(Ø 2.52 in.)

M20 or
1/2" NPT

86 mm
(3.41 in.)

Short top 158 mm / Long top 198 mm
(6.22 in / 7.81 in.)

25 mm
(1 in.)

Ø 69 mm
(Ø 2.72 in.)

Side mounted cable gland

Ø 85 mm
(3.45 in.)

Ø 64 mm
(Ø 2.52 in.)

M20 or
1/2" NPT

86 mm
(3.41 in.)

Short top 147 mm / Long top 187 mm
(5.79 in / 7.36 in.)

25 mm
(1 in.)

56 mm
(2.21 in.)

Ø 69 mm
(Ø 7.72 in.)

Controlling design dimensions are in millimeters and measurements in ( ) are in inches

Fig. 1: HPH housing

MOUNTING DISCRITPION

1. Open the housing by turning the top counter clockwise. When opening after a sensor is installed, it is very important to completely loosen the cable gland in order to protect the cable against twisting and physical damage. The normal way is that the sensor and the HPH housing are in one order and then MTS Sensors supply the sensor mounted in the WPH housing. Go to step 7.

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2. To simplify the connection, the basic sensor can be pulled out of the HPH housing after loosening the two or three fastening screws, depending on the configuration.

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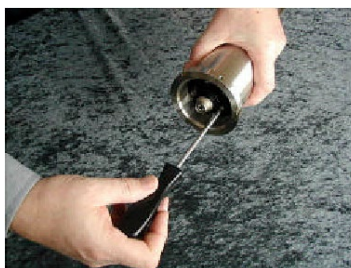
3. **Cable gland**

3.1 Insert the cable through the gland

3.2 Insert the connector through the top.

3.4 Connect to the sensor and assemble the top and bottom turning clockwise.

3.5   Tighten firmly until the top and bottom flanges come together.

3.6   Tighten gable gland according to the manufacturer's specifications.

4.   Side mounted cable gland(s)

4.1   Enter the cable through the gland without tightening.

4.2   For cable sizes larger than 7mm or very rigid cables, you may need to remove the outer insulation jacket from inside the cable gland to the connector

4.3   Insert and fasten the sensor.

4.4   Make the connections.

4.6   Assemble the top and bottom turning clockwise and tighten firmly until top and bottom flanges come together. (see fig. 11) Tighten the cable glands according to manufacturer's specifications.
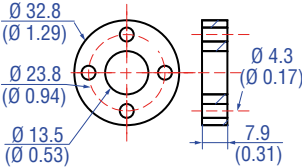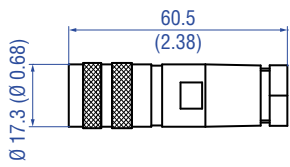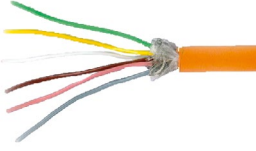

5.   Mount the grounding cable.

6.   Tighten the lock screw with min. 1.5 Nm torque.

FREQUENTLY ORDERED ACCESSORIES – Additional options available in our <u>Accessories Guide</u> 551444

Position magnet	Connector	Cable

Ring magnet OD33 **Part no. 201 542-2**	**M16 female connector (6 pin), straight** **Part no. 370 423**	**PUR cable** **Part no. 530 052**
Material: PA ferrite GF20 Weight: Approx. 14 g Surface pressure: Max. 40 N/mm² Fastening torque for M4 screws: 1 Nm Operating temperature: –40…+105 °C (–40…+221 °F)	Material: Zinc nickel plated Termination: Solder Cable Ø: 6…8 mm (0.24…0.31 in.) Operating temperature: –40…+100 °C (–40…+212 °F) Ingress protection: IP65/IP67 (correctly fitted) Fastening torque: 0.6 Nm	Material: PUR jacket; orange Features: Twisted pair, shielded, highly flexible, halogen free, suitable for drag chains, mostly oil & flame resistant Cable Ø: 6.4 mm (0.25 in.) Cross section: 3 × 2 × 0.25 mm² Bending radius: 5 × D

Spanner tool	Cable glands		
Spanner tool **Part no. DIN 1018A AMF 80-90 mm**	**M20×1.5** **Part no. CG-816679**	**M20×1.5** **Part no. CG-816609**	**½" NPT ATEX/CSA US, 180 °C (356 °F)** **Part no. 403 042**
	Type no. ADE1F-4 Material: Stainless steel Cable-Ø: 4…8.5 mm (0.16…0.33 in.)	Type no. ADE1F-6 Material: Stainless steel Cable-Ø: 8.5…16 mm (0.16…0.63 in.)	Type no. A3LF/16 1/2 NPT Material: Nickel plated brass Cable-Ø: 4…8.4 mm (0.16…0.33 in.)

HPH rotation adapters		
For M18, M30×1.5 **Part no. RTA-M18**	**For 3/4" UNF; 1 1/16"** **Part no. RTA-3/4" UNF-2**	**For 3/4" UNF; 1 ¼"** **Part no. 253 961**