Temposonics®

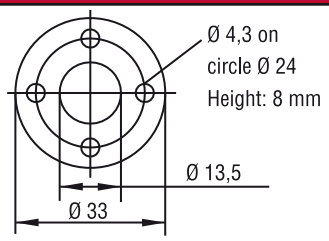
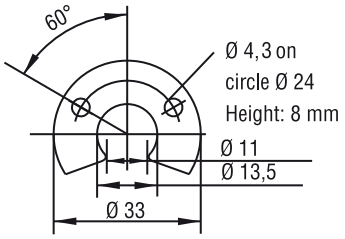
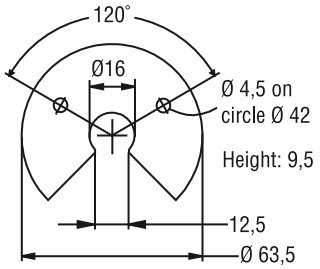
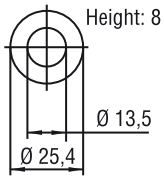
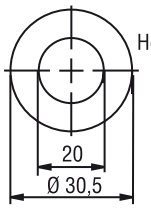
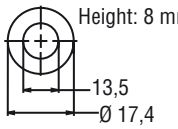
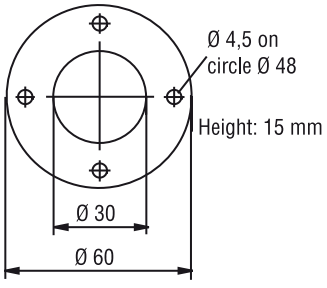
Absolute, Non-Contact Position Sensors

Accessories

- Position Magnets
- Floats
- Connectors
- Clamps
- Cables
- Programming Tools
- High Pressure Housing, …

ACCESSORIES R-SERIES

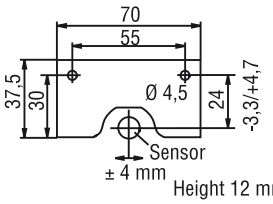
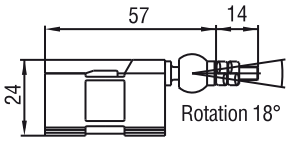
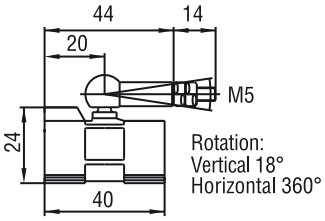
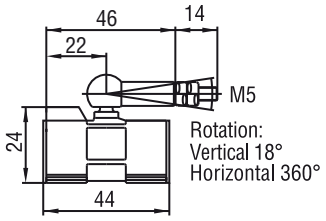
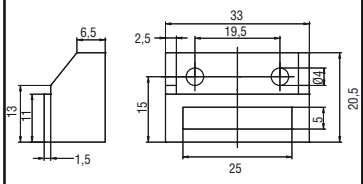
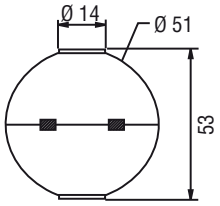
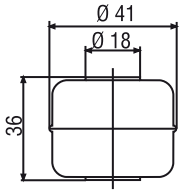
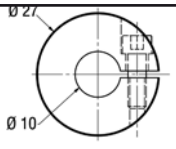
Position Magnets, Floats, Connectors, Clamps, Cables and Programming Tools

Product	Dimension	Material	Application
 **Standard magnet** Ring magnet OD33 **Part No. 201 542-2**		Composite PA-Ferrite-GF20 Weight ca. 14 g Operating temperature: -40 ... +100°C Surface pressure max. 40 N/mm² Fastening Torque for M4 screws max. 1 Nm	RH, RF, RD4 marked version for sensors with linearity correction option (LCO): **Part No. 253 620**
 **Standard magnet** U-magnet OD33 **Part No. 251 416-2**		Composite PA-Ferrite-GF20 Weight ca. 11 g Operating temperature: -40 ... +100°C Surface pressure max. 40 N/mm²	RH, RF, RP marked version for sensors with linearity correction option (LCO): **Part No. 254 226**
 U-magnet OD63,5 **Part No. 201 553**		PA 66-GF30 Magnets compound-filled Weight ca. 26 g Operating temperature: -40 ... +75°C	RH, RF, RP
 Ring magnet OD25,4 **Part No. 400 533**		Composite: PA-Ferrite Weight ca. 10 g Operating temperature: -40 ... +100°C Surface pressure max. 40 N/mm²	RH, RF, RD4 marked version for sensors with linearity correction option (LCO): **Part No. 253 621**
 Ring magnet OD30,5 **Part No. 402 316**		Composite: PA-Ferrite Weight ca. 15 g Operating temperature: -40 ... +100°C Surface pressure max. 40 N/mm²	RH, RF, RD4
 Ring magnet **Part No. 401 032**		PA-Neonbond compound Weight ca. 5 g Operating temperature: -40 ... +100 Surface Pressure max. 20 N/mm²	RH, RD4 (not for multi-position measurement)
 Ring magnet OD60 **Part No. MT 0162**		Al CuMgPb Magnets compound-filled Weight ca. 90 g Operating temperature: -40 ... +75°C	RH, RF, RD4

Notice: More magnets available on request. Product pictures may vary from original.

ACCESSORIES R-SERIES

Position Magnets, Floats, Connectors, Clamps, Cables and Programming Tools

Product	Dimension	Material	Application
 U-magnet 70 **Part No. 252 185**		AlMg4.5Mn, black anodised Magnets compound-filled Weight ca. 75 g Operating temperature: -40...+75°C	RH, RF, RP Resolution min. 10 µm
 Magnet slider V **Part No. 252 184**		GFK, Magnet Hardferrite Weight ca. 30 g Operating temperature: -40 ... +75°C	RP
 Magnet slider S Magnet slider G **Part No. 252 182 Part No. 253 421**		GFK, Magnet Hardferrite Weight ca. 30 g Operating temperature: -40 ... +75°C **Magnet slider S:** Ball joint CuZn 39Pb3 nickel plated **Magnet slider G - free from float:** Socket joint, high-strength plastics Ball joint CuZn39Pb3 nickel plated	RP
 Magnet slider P **Part No. 253 673**		GFK, Magnet Hardferrite Weight ca. 30 g Operating temperature: -40 ... +75°C with additional end plates	RP
 Block magnet **Part No. 403 448**		Weight: ca. 20 g Operating temperature: -40...+75°C	RH, RF, RP Resolution min. 10 µm
 Float 50 mm **Part No. 251 447**		1.4571 Stainless steel Density: 720 kg/m³ Max. Pressure: < 40 bar Weight: 42 ± 3 g	RH, RF
 Float 41 mm **Part No. 200 938-2**		1.4404 Stainless steel Density: 740 kg/m³ Max. Pressure: =< 8 bar Weight: 20 ± 2 g	RH, RF
 Collar **Part No. 560 777**		1.4301 Stainless steel	RH

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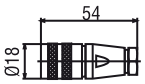
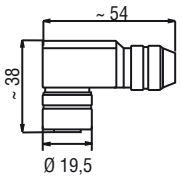
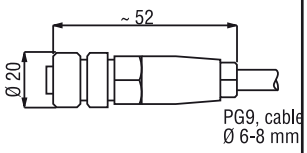
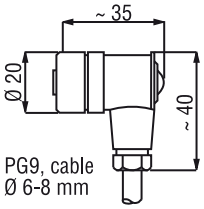
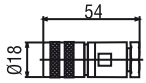
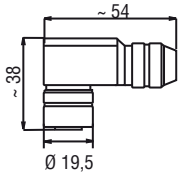
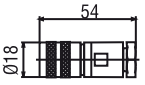
ACCESSORIES R-SERIES

Position Magnets, Floats, Connectors, Clamps, Cables and Programming Tools

Product	Dimension	Material	Application
 6 pin Connector (for cable Ø 6 mm) **Part No. 370 623 (female)** For cable Ø 6-8 mm **Part No. 370 423**		Housing: Zinc nickel plated Termination: Solder Contact insert: Silver plated Max. Cable-Ø 6 mm or Ø 8 mm depending on design	Analog CAN
 6 pin Connector M16, 90° **Part No. 560 778 (female)**		Housing: Zinc nickel plated Termination: Solder Contact insert: Silver plated Max. Cable-Ø 8 mm	Analog CAN
 5 pin connector, M12x1 **Part No. 370 618 (female)**		Housing: PA Termination: Screws clamp Contact insert: (CuZn/Sn) Max. Cable-Ø 6-8 mm	CAN
 5 pin connector, M12x1, 90° **Part No. 370 619 (female)**		Housing: PA Termination: Screws clamp Contact insert: (CuZn/Sn) Max. Cable-Ø 6-8 mm	CAN
 7 pin Connector, M16 **Part No. 370 624 (female)**		Housing: Zinc nickel plated Termination: Solder Contact insert: Silver plated Cable clamp: PG9 Max. Cable-Ø 8 mm	SSI
 7 pin Connector, M16, 90° **Part No. 560 779 (female)**		Housing: Zinc nickel plated Termination: Solder Contact insert: Silver plated Max. Cable-Ø 8 mm	SSI
 6 pin Connector, M16 **Part No. 370 423 (female)** **Part No. 370 427 (male)**		Housing: Zinc nickel plated Termination: Solder Contact insert: Silver plated Cable clamp: PG9	Profibus (D63)

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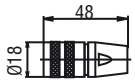
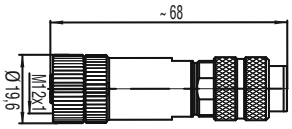
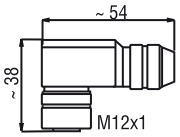
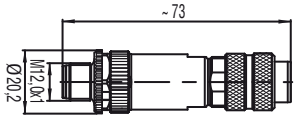
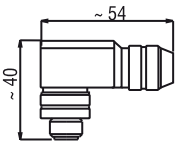
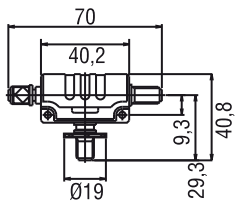
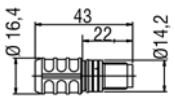
ACCESSORIES R-SERIES

Position Magnets, Floats, Connectors, Clamps, Cables and Programming Tools

Product	Dimension	Material	Application
 6 pin Bus endplug M16, male **Part No. 370 620**		Housing: Zinc nickel plated Contact insert: Silver plated	Profibus (D63)
 5 pin connector M12-B **Part No. 560 885 (female)**		Housing: Zinc nickel plated Termination: spring-type terminal Contact insert: Silver plated Cable-Ø: 6,5 - 8,5 mm	Profibus (D53)
 5 pin 90° connector M12-B **Part No. 370 514 (female)**		Housing: Zinc nickel plated Termination: spring-type terminal Contact insert: Silver plated Cable-Ø: 6,5 - 8,5 mm	Profibus (D53)
 5 pin connector M12-B **Part No. 560 884 (male)**		Housing: Zinc nickel plated Termination: Srews clamp Contact insert: Silver plated Cable-Ø: 6,5 - 8,5 mm	Profibus (D53)
 5 pin 90° connector M12-B **Part No. 370 515 (male)**		Housing: Zinc nickel plated Termination: Srews clamp Contact insert: Silver plated Cable clamp: M16 Cable-Ø: 6,5 - 8,5 mm Cable type e.g.: K25	Profibus (D53)
 5 pin Bus T-connector M12 **Part No. 560 887**		Housing: PA 66 Contact insert: Silver plated	Profibus (D53)
 5 pin Bus endplug M12 **Part No. 560 888**		Housing: PA 66 Contact insert: Silver plated	Profibus (D53)

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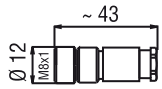
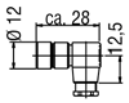
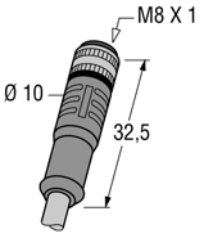
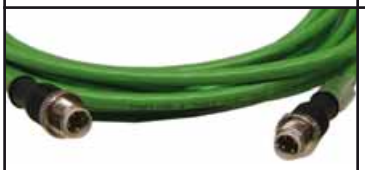
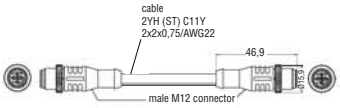
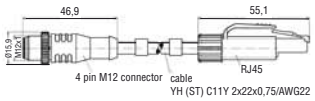
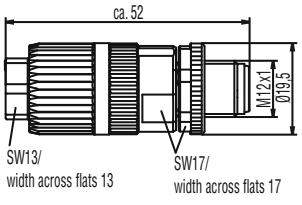
ACCESSORIES R-SERIES

Position Magnets, Floats, Connectors, Clamps, Cables and Programming Tools

Product	Dimension	Material	Application
 4 pin cable connector M8 **Part No. 370 504**		Housing: Brass nickel plated Termination: Solder Contact insert: Au Max. Cable-Ø 5 mm	Profibus (D53) EtherCAT CAN (D54)
 4 pin cable connector M8, 90° **Part No. 560 886**		Housing: PA 66 Termination: Solder Contact insert: Au Max. Cable-Ø 5 mm	Profibus (D53) EtherCAT CAN (D54)
 Cable connector **Part No. 530 066** **Part No. 530 096** **Part No. 530 093**		PUR-cable with 4 pin. female connector 5 m length free end 4 x 0,25 mm², shielded for 24 V power supply **Part No. 530 066** = 5 m length **Part No. 530 096** = 10 m lengt **Part No. 530 093** = 15 m length	Profibus (D53) EtherCAT CAN (D54)
 Cable connector **Part No. 530 064**		5 m industrial Ethernet cable (Cat 5e ES) w/2x4 pin M12-connectors (D-coded) PUR-jacket, green	EtherCAT
 Cable connector **Part No. 530 065**		5 m industrial Ethernet cable (Cat 5e ES) RJ45 connector and M12-connector (D-coded) PUR-jacket, green	EtherCAT
 4 pin Bus cable connector **Part No. 370 523**		IDC technology	EtherCAT
 End cap **Part No. 370 537**		Aluminum	EtherCAT

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ACCESSORIES R-SERIES

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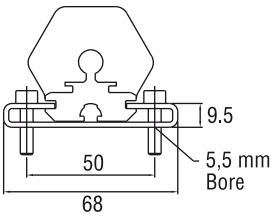
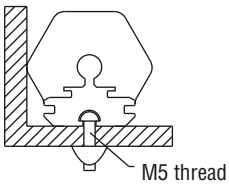
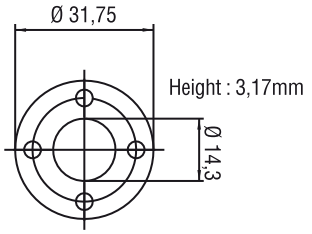
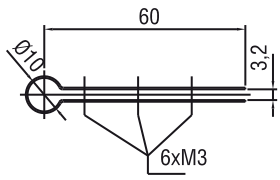
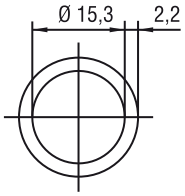
Product	Dimension	Material	Application
 Clamp **Part No. 400 802**		Stainless steel	RP
 T-Nut **Part No. 401 602**		Stainless steel	RP
 Spacer **Part No. 400 633**		Aluminum	RH
 Fixing clip **Part No. MT 0200**		Brass Flat section and fastening screws: non-magnetic material	RH
 Metal protection cap for connector M16 **Part No. 403 290**			Analog, CAN, SSI, Profibus
 Hex nut **Part No. 500 018**		Edelstahl	RH-M
 O-ring **Part No. 401 133**		Fluorelastomer FPM 75 Operating temperature: -10...+125°C	RH-M
 Cable **Part No. 530 032**	3 x 2 x 0,14 mm² Ø 6 mm	PVC -10 ... +80°C	Standard

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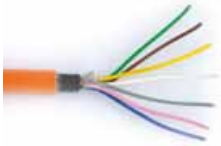
Product	Dimension	Material	Application
 Cable **Part No. 530 052**	3 x 2 x 0,25 mm Ø 6,8 mm	Pelon PUR -40 ... +80°C	Halogen free Oil-resistant High flexible
 Cable **Part No. 530 116**	4 x 2 x 0,25 mm²	PUR (-30 ... +90°C)	Water proof wires
 Cable **Part No. 530 112**	4 x 2 x 0,25 mm²	Teflon (-90 ... +180°C)	Temperature
 Cable **Part No. 530 029**	7 x 0,14 mm² EMC protected Ø 7 mm	PUR -20 ...+70°C	SSI, CAN
 Cable **Part No. 530 040**	BUS + feed-in Ø 8 mm	PVC -30 ... +80°C	Profibus-DP D63
 Cable **Part No.530 109**	BUS conductor, high flexible cable Ø 8 mm	PUR -30 ... +70°C	Profibus-DP D53

Product	Description
 Hand-Programmer R-Analog **Part No. 253 124**	**Hand-Programmer R-Analog for 1-Magnet Sensor** is for easy teach-in-setups of measuring length and direction on desired Zero/Span positions.

Notice: Product pictures may vary from original.

ACCESSORIES R-SERIES

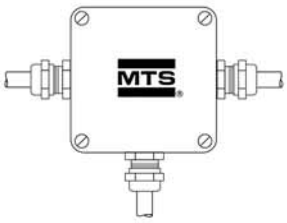
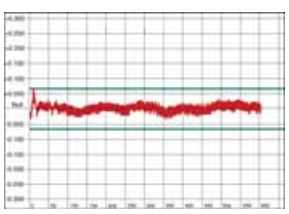
Position Magnets, Floats, Connectors, Clamps, Cables and Programming Tools

Product	Description
 Cabinet-Programmer **Part No. 253 408**	**Cabinet-Programmer R-Analog** Cabinet-Programmer R-Analog completes the accessories program of MTS absolute position sensors. The unit can be used for adjusting a connected 1-magnet sensor via the leads, using a simple teach-in procedure in the field.
 USB-Programmer R-Analog **Part No. 253 134-1**	**USB-Programmer R-Analog for 1 or 2-Magnets Sensor (incl. Power supply, USB-Cable, Sensor-Cable and CD-ROM)** for setting and reading of position and output values by using a PC for - Zero/Span Magnet 1 - Zero/Span Magnet 2 - Velocity range - Free assignment of outputs to measured position or velocity - Error output value (e.g. magnet out of stroke)
 USB-Programmer R-SSI **Part No. 253 135-1**	**USB-Programmer R-SSI (incl. Power supply, USB-Cable, Sensor-Cable and CD-ROM)** for setting and reading of - Data length - Data format - Resolution - Measuring direction - Synchronous / asynchronous measurement - Offset, begin of the measurement range - Alarm value (Magnet outsite) - Measurement filter - Differential measurement
 Profibus Address-Programmer Kit for D63, D53 or cable connector **Part No. 280 640**	**PROFIBUS Address Programmer** is used for setting the slave address to Temposonics® sensors with Profibus-DP Interface. The setup of slave address normally is done by the profibus standard service **SetSlaveAddress.** Since some master systems do not support this standard, or the customer controller system can not handle it, this MTS service tool can be used for the direct setup of the sensor. The programmer and the sensor will be supplied by the included power supply.

Notice: Product pictures may vary from original.

ACCESSORIES R-SERIES

Position Magnets, Floats, Connectors, Clamps, Cables and Programming Tools

Product	Description
 CANopen Address-Programmer D62 6 pin. female connector M 16 **Part No. 252 382-D62** 6 pin female 90°-connector M16 **Part No. 252 382-D62A**	**CANopen Address Programmer** is used for setting the Node-Address to Temposonics® sensors with CANopen Interface. The setup of Node-Address normally is done by the CAN Bus standard **LMT-Service.** Since some master systems do not support this standard, or the customer controller system can not handle it, this MTS service tool can be used for the direct setup of the sensor. All you need for using the programmer is a 24 VDC power supply to the sensor. The programming tool will be supplied from the Temposonics® position sensor.
 Profibus Master Simulator **Part No. 401 727**	**PROFIBUS Master Simulator** The Master Simulator can be used to check the sensors functions and to change the slave address. The magnet positions can be read out and the diagnostic data as well. Cable D 53 **Part No. 252 383** Cable D63 **Part No. 401 726**
 Display and control unit with SSi input **Part No. IX 345**	Housing: 96 x 48 x 141 m Cutout: 91 x 44 mm 6-segment LED Display for SSI
 Profibus Filter box **Part No. 252 916**	Housing: 80 x 75 x 58 mm The box is used for EMC-conformal feeding of 24 VDC supply voltage into the Profibus-DP hybrid cable.
 Linearity diagram **Part No. 625 096**	DIN A 4 printout with sensor data and graphic with the linearity gradient Printout with linearity gradient from the sensor. This gradient can be used to choose a special linear segment also for linearity correcture in sections.

Notice: Product pictures may vary from original.

ACCESSORIES R-SERIES

ATEX [ATmosphere EXplosive]

Approved Sensors: R-Series

- Analog Output
- CAN Bus [All Versions]
- SSI Output

Note: 1. All products are available in Profile and Rod Version.
2. Signal dependent selectable with PUR, PVC or Teflon cable.

ATEX Conformity: Marking on MTS Approved Sensor

Ex II 3G Ex nA II T4
and/or
Ex II 3D tD A22 IP67 T100°C
TFR: 07 ATEX 027
-20°C ≤ Ta ≤ 75°C
Pmax = 4 Watt
Derated 6,5 K/W ≥ 49°C

Applicable ATEX Regulations / Directives

Directive 94/9/EG ('Manufacturers Directive')
Sets out directives for equipment manufacturers that are used in potentially explosive atmospheres.
Related Norms:
EN 60079-0:2006, EN 60079-15:2005
EN 61241-0:2006, EN 61241 - 1:2004

MTS is a certified supplier for displacement sensors intended to be used in hazardous areas of the Category 3 according to the ATEX standard.

a. In Zone 2 (Gas, Category 3G) in the explosion groups IIA, IIB, IIC.
b. In Zone 22 (Dust, Category 3D) at dusts with a minimum ignition energy of > 3 mJ.

Ordering Code

Temposonics® R _ _ _ _ _ M _ _ _ 1 _ _ _ E X

Model
RP- Profile
RH - Rod

Measuring Length in mm
Profile - 0050...5000 mm
Rod - 0050...7600 mm
Standard: up to 1000 in 50 mm steps, greater 1000 in 250 mm steps
Other length upon request.

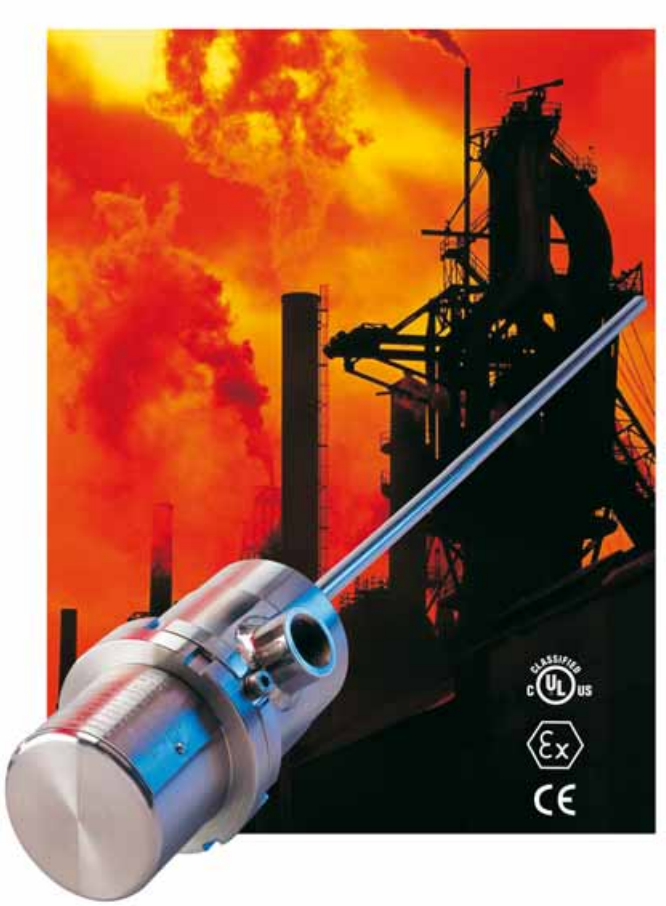
Connection type:
R02 - 2 m PVC cable w/o connector, Option: R01-R10 (1-10 m)
P02 - 2 m PUR cable w/o connector, Option: P01-P10 (1-10 m)
T02 - 2 m Teflon cable w/o connector, Option: T01-T10 (1-10 m)
Note: This options are output signal dependent.
For details refer individual catalog section.

Output
Analog / CANbus / SSI

Approved Versions
ATEX

ACCESSORIES R-SERIES

Precision Position Measurement High Pressure Housing



This **H**igh **P**ressure **H**ousing is **ATEX EEx approved** and **UL and cUL** approved for use in **hazardous locations** with Temposonics® position sensors.

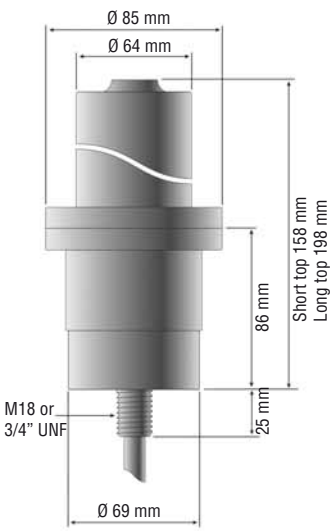
The ATEX, UL and cUL approvals cover flammable gases, vapors and liquids.

This housing is made to fit Temposonics® 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 3/4"UNF Mounting flange thread - M20 or 1/2" NPT Cable gland thread - long or short - top-mounted, side-mounted, or dual side-mounted cable glands. See Combination Chart.

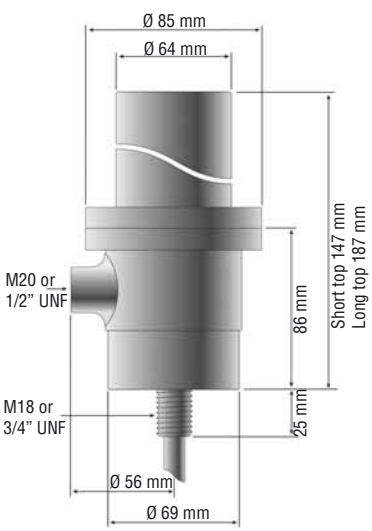
All parts are made of 316L Stainless steel. The housing is also available in non-approved versions ensuring an outstanding protection to the sensor when used in rugged applications with high humidity and aggressive gases.

Protection Type:	
ATEX:	II 2 G Ex d IIC T5 T_{amb} -40°C to +60°C II 2 D Ex tD 20/A21 IP68 T 100°C ITS09ATEX16296X In accordance with EN 60079-0:2006 EN 60079-1:2007, EN 60079-26:2004, EN 60079-0:2006 and EN 61241-1:2004 Only with ATEX approved cable glands
	Class 1, Devision 1, Groups A, B, C, and D hazardous locations, temperature code T5 As to fire, electrical shock and explosion hazards only UL certificate no. 2PD0. In accordance with UL 1203 standard. Only with UL approved cable glands
Material:	Stainless Steel AISI 316L (1.4404)
Cable Gland Threads:	M20 x 1,5 or 1/2" NPT
Ingress protection code:	IP68 (only with IP68 approved cable gland)
Approved sensors:	G-Series Analog + Digital L-Series Start / Stop R-Series Analog R-Series Profibus R-Series CANBUS R-Series SSI R-Series DeviceNet
Mounting Flange:	M18 x 1,5 or 3/4" - 16UNF - 3A
Pressure rating:	350 Bar continuous
Peak pressure:	530 Bar
Magnet type:	Ring magnets see page 58
Level Measurement:	Float on request

Top mounted cable gland



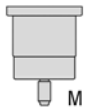
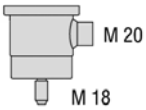
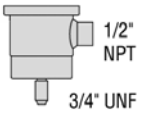
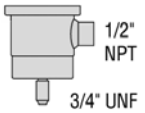
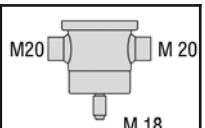
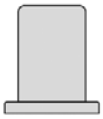
Side mounted cable gland



ACCESSORIES R-SERIES

Precision Position Measurement High Pressure Housing

Combination Chart:

Bottom / Top	 M 18	 M 20 M 18	 1/2" NPT 3/4" UNF	 1/2" NPT 3/4" UNF	 M20 M 20 M 18
Approval	**ATEX**	**ATEX**	**ATEX**	**UL and cUL**	**ATEX**
 M 20	**0100**				
		**0900**	**1000 ATEX**	**1000 UL/cUL**	**1300**
 M 20	**0300**				
		**1700**			**2100**

The long top is needed for Profibus sensors

Ordering Information:

Part-No. HPH -XXXX-XXXX-X-XXXXXX

Choose a design combination from the chart

Measuring length 50 - 7600 mm

Approved or **N**on-approved version

Only for version 1000: Please add type of approval:
- ATEX
- UL/cUL

Example: Approved short housing with M18 mounting threads and one side mounted cable gland with M20 threads and a measuring length of 650 mm:
HPH-0900-0650-A

Note!
Accessories see data sheet "High Pressure Housing"
Order separately: Sensor R-Series RH-B...
B = Basic version without hydraulic rod