

# Temposonics®

Absolute, Non-Contact Position Sensors

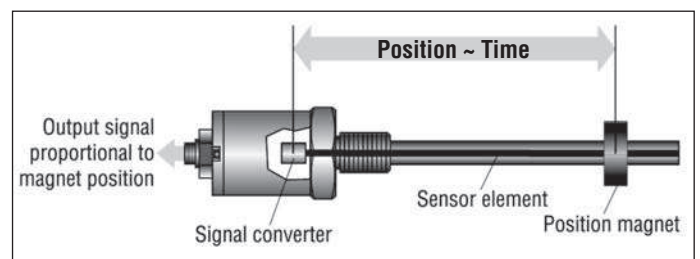
## R-Series Rod Model RF

**Temposonics® RF**  
Stroke length 100...20,000 mm



**A very flexible sensor**

- Rugged industrial sensor
- Linear and absolute measurement
- LEDs for sensor diagnostics
- Contactless sensing with highest durability
- Superior accuracy: Linearity better 0.02 % F.S.
- Repeatability 0.001 % F.S.
- Direct analog output for position:
- Analog / SSI / CANbus / Profibus-DP / EtherCAT
- Multi-position measurement: max. 20 positions with 1 sensor
- Cost-effective shipment for long measuring length



**Temposonics® RF** the extremely robust sensor, ideal for continuous operation under harshest industrial conditions is completely modular in mechanic and electronic design. The sensor head accommodates the complete modular electronic interface with active signal conditioning. Double encapsulation ensures high operating safety and optimum EMC protection. The position transmitter, a permanent magnet - fixed at the mobile machine part - drives contactlessly over the sensor's stroke and starts measuring through the housing wall. The RF sensors are housed in a teflon coated stainless steel housing that is flexible and that can be bent in an arc to an 250 mm min. bend radius arc. Specifications are measured with flexible sensor element at a 0° degree bend radius. Most operating parameters are identical to its rigid cousin.

## Technical data

### Input

Measured variables	- Position - Velocity - Multi-position measurement max. 20 positions (CANbus, Profibus, EtherCAT)
Stroke length	100...20,000 mm

### Output

Interfaces	Analog, SSI, CANbus, Profibus-DP, EtherCAT
------------	--

### Accuracy

Resolution	output dependent
Linearity	< ± 0.02 % F.S. (Minimum ± 100 µm)
Repeatability	< ± 0.001 % F.S. (Minimum ± 2.5 µm)
Hysteresis	< 4 µm

### Operating conditions

Magnet speed	any
Operating temperature	-40 °C...+75 °C
Dew point, humidity	90% rel. humidity, no condensation
Ingress protection <sup>1</sup>	IP30 (IP65 rating only for professional mounted guide pipe IP65 and if mating connectors are correctly fitted)
Shock test	100 g (single shock IEC-Standard 60068-2-27)
Vibration test	5 g / 10 - 150 Hz IEC-Standard 60068-2-6
Standards, EMC test	Electromagnetic emission EN 61000-6-4 Electromagnetic immunity EN 61000-6-2 EN 61000-4-2/3/4/6, Level 3/4, Criterion A

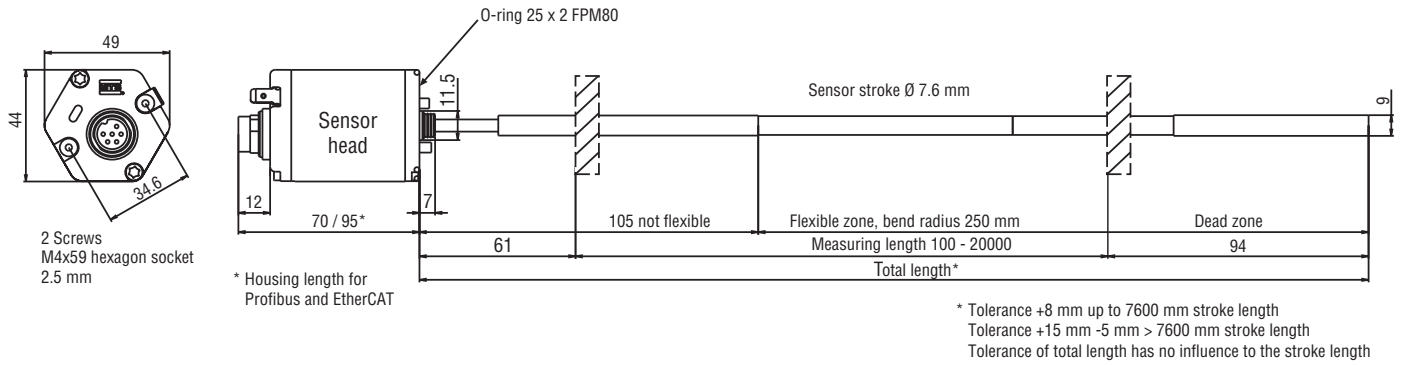
### Design, Material

Diagnostic display	LEDs beside connector
Sensor head	Aluminum-diecasting housing
Sensor stroke	Flexible plastic pipe, min. bend radius 250 mm, radius for shipping 400 mm
Position magnet	Permanent magnet

### Electrical connection

Connection type	Connector or cable outlet (output dependent)
Supply voltage	24 VDC (-15 / +20 %)
- Polarity protection	up to -30 VDC
- Overvoltage protection	up to 36 VDC
Current drain	100 mA typical
Ripple	≤ 0.28 Vpp
Electric strength	500 VDC (DC ground to machine ground)

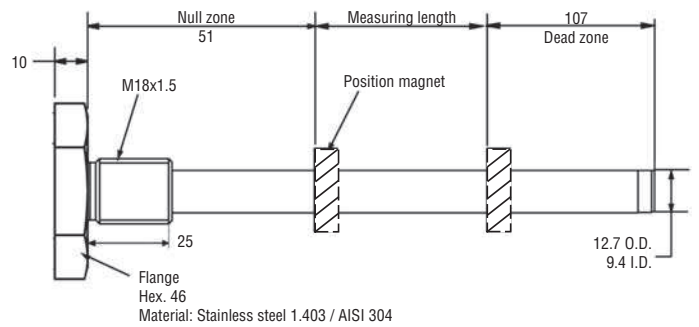
**Info:**  
For detailed technical data and electrical connection for the outputs please see data sheets: R-Series Analog, SSI, CANbus, Profibus, EtherCAT



### Option:

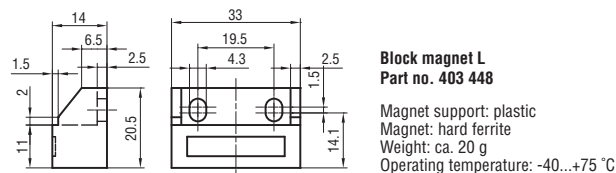
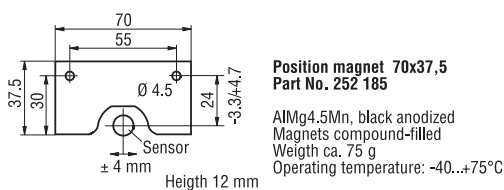
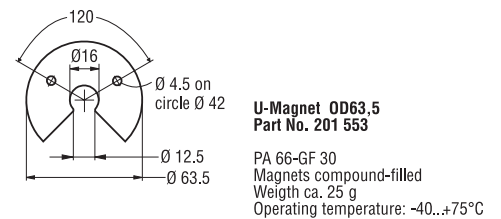
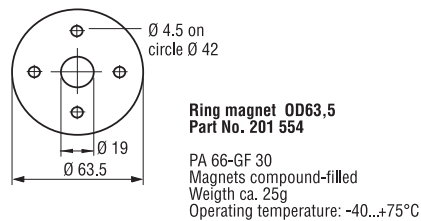
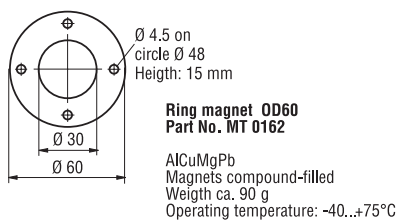
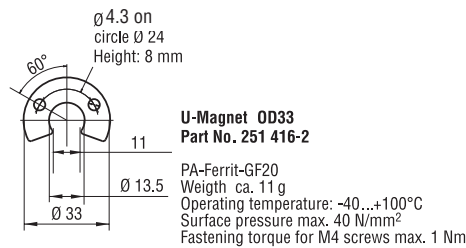
#### Pressure housing pipe OD 12.7 and flange

Pressure housing pipe with flange is designed specifically for Temposonics® RF. It provides protection from high pressures, as found in hydraulic cylinders, up to 350 bar static, 700 bar spike. Typically, a bore 18 mm is used to match the large ring magnet.



= Magnets must be ordered separately (details see chapter accessories)

### Position magnets (not included in delivery, please order separately)



All dimensions in mm

Standard position magnet not included in delivery (see chapter accessories)

#### Position magnets

Ring magnet OD33 (part no. 201 542-2)  
Ring magnet OD25,4 (part no. 400 533)  
U-magnet OD33 (part no. 251 416-2)

#### Connection types

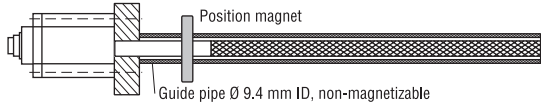
Connector or cable outlet output dependent

## Sensor Installation

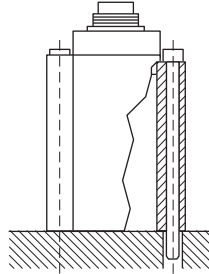
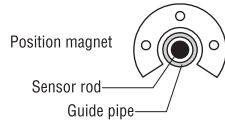
Mounting of sensor head requires the use of 2 non-ferrous screws M4x59. Long sensors require a guide pipe support (inside diameter of 9.4 mm) of non-magnetizable material, straight or bent to the desired shape.

For easy installation the sensor can be supplied with a hex 46 flange (accessory) bored for above mounting screws.

Optional you can order a pressure housing pipe OD 12.7 mm with flange up to max 7500 mm stroke length.

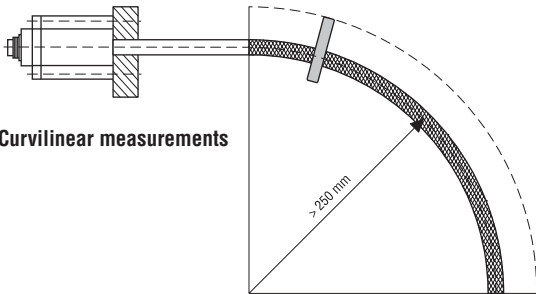


### Straight measurements

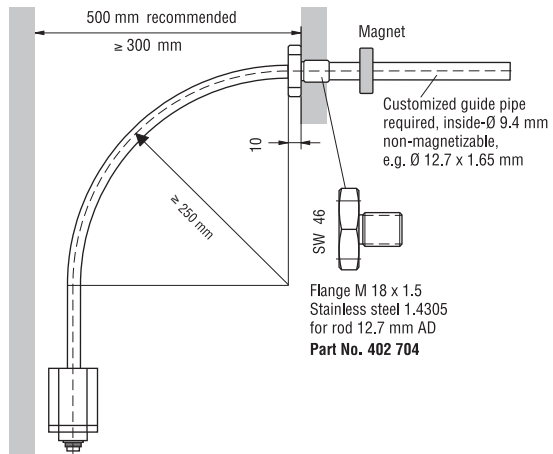


### Note

*A flexible sensor requires supports or anchoring to maintain proper alignment between sensor rod and the magnet, otherwise the sensor output signal can be interfered or lost.*



### Curvilinear measurements



Required for substitute sensors mounted on flange Part No. 401 035:

Use 2 Screws 8-32 x 2.35 Part No. 402 617 which supplied as attachment with each sensor.

The red rubber seal between sensor head and sensor stroke slit carefully and remove.

**Temposonics®** **R F** **M**

**Model**  
RF - Flexible sensor stroke

**Design**  
C - Basic sensor  
M - Flange M18x1,5  
S - Flange ¾" – 16 UNF – 3A

**Stroke length**  
00100...20,000 mm  
Up to 1000 in 50 mm steps, up 1000 in 250 mm steps

**Further parameter**  
See data sheets R-Series according to the required output  
Analog / SSI / CANbus / Profibus / EtherCAT

**Magnets and accessories must be ordered separately.**

Accessories	Part No.
Ring magnet OD33, standard	201 542-2
U-magnet OD33	251 416-2
Ring magnet OD30.5	402 316
Ring magnet OD60	MT 0162
Ring magnet OD63.5	201 554
U-magnet OD63.5	201 553
Position magnet 70x37.5	252 185
Block magnet	403 448
Flange M18x1.5 for pressure housing pipe 12.7 mm	402 704

**Pressure housing pipe (Please order separately)**

**Temposonics®** **H D** **M**

**Model**  
HD - Pressure housing pipe OD 12.7 mm  
with flange for Temposonics® RF M18x1.5

**Stroke length**  
255...7500 mm  
Standard: See chart

Stroke Length Standard RF	
Stroke length	Ordering steps
< 1000 mm	50 mm
1000...5000 mm	100 mm
5000...10000 mm	250 mm
10000...15000 mm	500 mm
> 15000 mm	1000 mm