

# Temposonics®

Absolute, Non-Contact Position Sensors

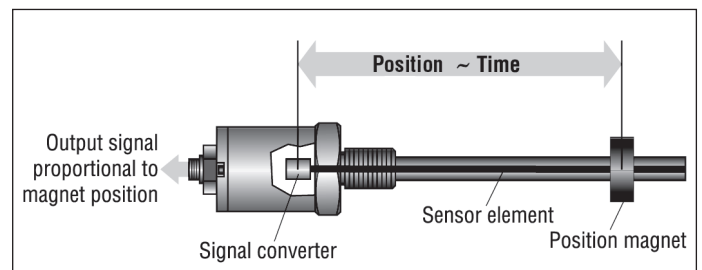
## R-Series Rod Model RF

**Temposonics® RF**  
Stroke length 100...20.000 mm



**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 output for position and velocity
- Analog / SSI / CANbus / Profibus-DP / EtherCAT / Ethernet/IP™ / Powerlink / Profinet
- Multi-position measurement: max. 20 positions with 1 sensor
- Cost-effective shipment for long measuring length



**Temposonics® RF** with compact housing and broad range of stroke length are user-friendly, modular sensors ideal for harshest continuous operations in the automation industry.

The sensor head accommodates the complete electronic interface with active signal conditioning. Double encapsulation ensures high operating safety and optimum EMC protection. The passiv position transmitter, a permanent magnet, drives contactlessly over the sensors stroke and starts measuring through the housing wall.

Optimized on high accuracy, engaged the sensor linear measuring displacements up to 20 meters and can be also used for linear measurements on selected radiuses.

## Technical data

### Input

Measured variables	- Position - Velocity - Multi-position measurement max. 20 positions (CANbus, Profibus, EtherCAT, Ethernet/IP™, Powerlink, Profinet)
Stroke length	100...20.000 mm

### Output

Interfaces	Analog, SSI, CANbus, Profibus-DP, EtherCAT, Ethernet/IP™, Powerlink, Profinet
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### 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 movement velocity	Any
Operating temperature	-40...+75 °C
Dew point, humidity	90% rel. humidity, no condensation
Ingress protection	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, Criterium A, CE qualified <sup>1</sup>

### Design, Material

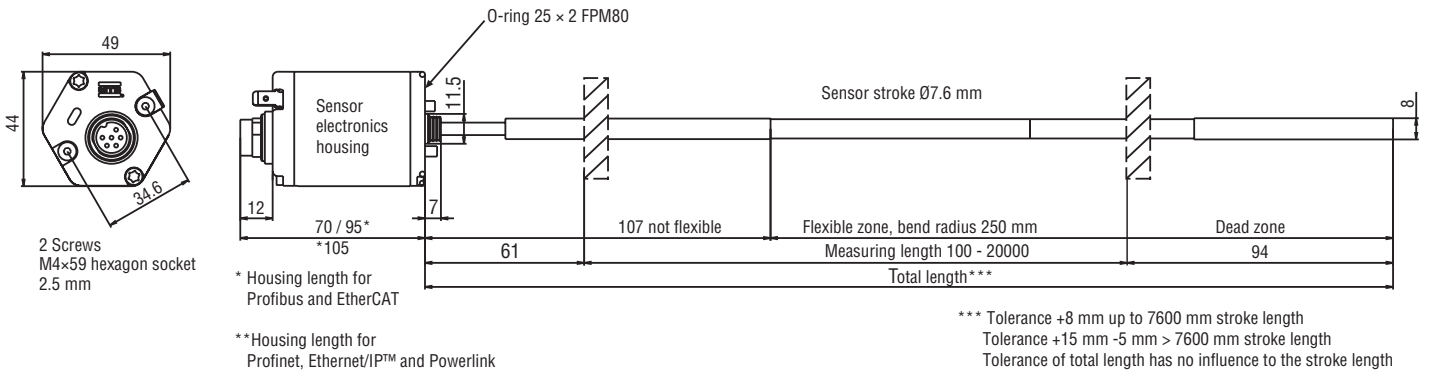
Diagnostic display	LEDs beside connector
Sensor electronics housing	Aluminum
Sensor stroke	Stainless steel conduct with Teflon® coating
Position magnet	Ring- or U-magnet

### 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, Ethernet/IP™, Powerlink, Profinet

<sup>1</sup>The conformity is fulfilled, assumed the wave guide of the sensor is embedded in an EMC-sealed and grounded housing.



## Option and more accessories:

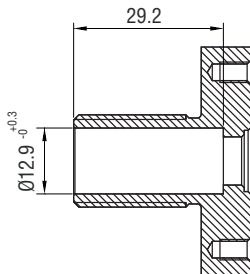
### 1. Pressure housing pipe OD 12.7 and flange

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 peak. Typically, a bore 18 mm is used to match the large ring magnet.

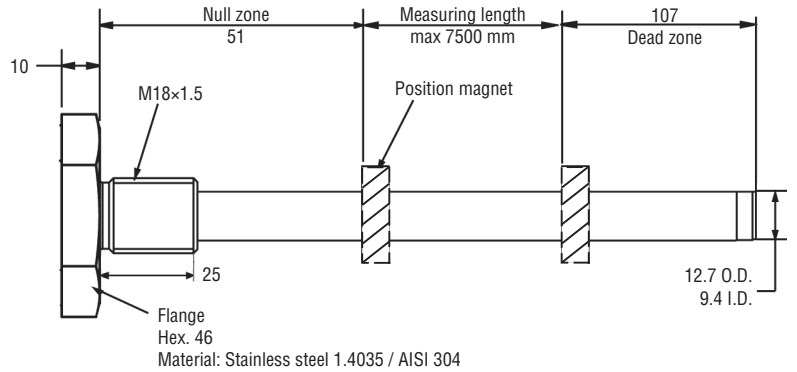
### 2. Flexible RF profile FFP

See "Product Flash RF Profile" (Document Part No.: 551 442) for further information

### 3. Flange M18x1,5 Part No. 402 704

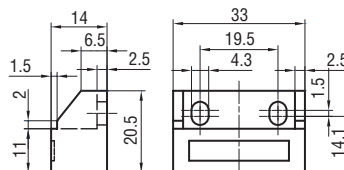
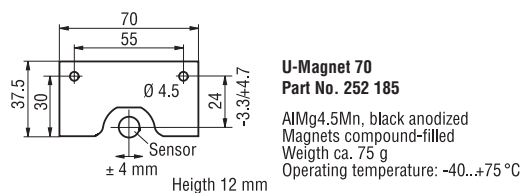
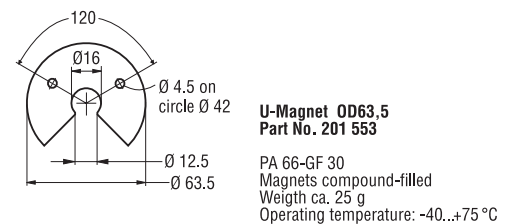
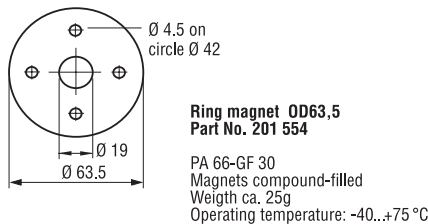
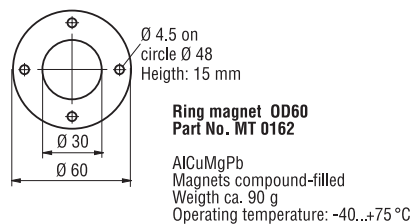
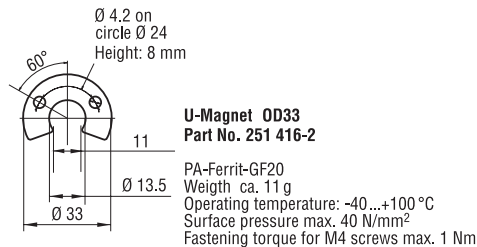
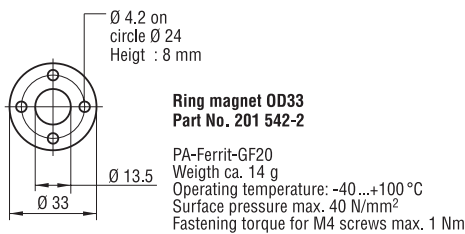


## Drawing pressure housing pipe



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

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



**Block magnet**  
Part no. 403 448

Magnet support: plastic  
Magnet: hard ferrite  
Weight: ca. 20 g  
Operating temperature: -40...+75 °C

All dimensions in mm

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

## Position magnets

Ring magnet OD33 (part no. 201 542-2)  
U-magnet OD33 (part no. 251 416-2)

## Connection types

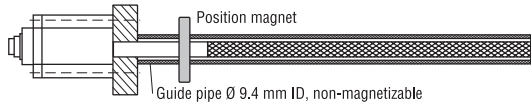
Connector or cable outlet output dependent

## Sensor Installation

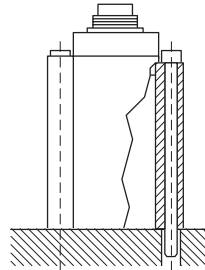
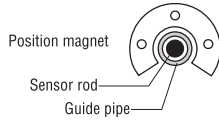
Mounting of sensor electronics housing requires the use of 2 non-ferrous screws M4x59. Long sensors require a guide pipe support (inside diameter of 9.4 mm) of non-magnetizable material, straight or bent to the desired shape.

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.

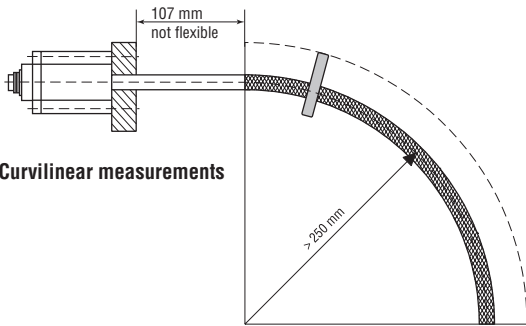


### Straight measurements



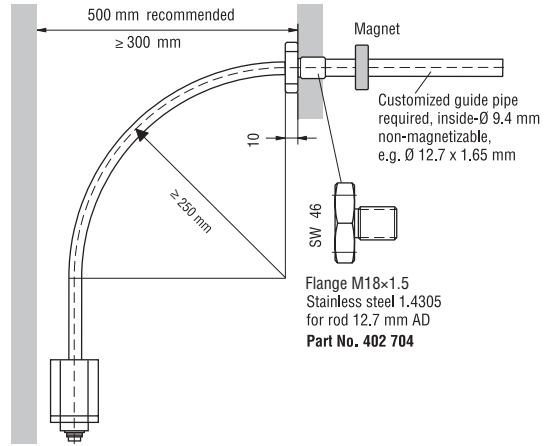
**Note**

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

**Note**  
Bend radius 250 mm,  
radius for shipping 400 mm



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.

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**Model**

RF = Flexible sensor stroke

**Design**

C - Basic sensor

M - Flange M18×1.5

S - Flange ¾" – 16 UNF – 3A

**Messlänge**

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 / Ethernet/IP™ / Powerlink / Profinet

**Magnets and accessories (Please order separately)**

**Accessories**

Ring magnet OD33, standard

U-magnet OD33 251

Ring magnet OD30.5

Ring magnet OD60

Ring magnet OD63.5

U-magnet OD63.5

U-magnet 70

Block magnet

Flange M18×1.5 for pressure housing pipe 12.7 mm

**Part No.**

201 542-2

416-2

402 316

MT 0162

201 554

201 553

252 185

403 448

402 704

**Flexible RF Profile HFP**

See "Product Flash RF Profile"

(Document Part No.: 551 442) for further information

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

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**Model**

HD = Pressure housing pipe 12.7 mm with flange for Temposonics® RF M18×1.5

**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