

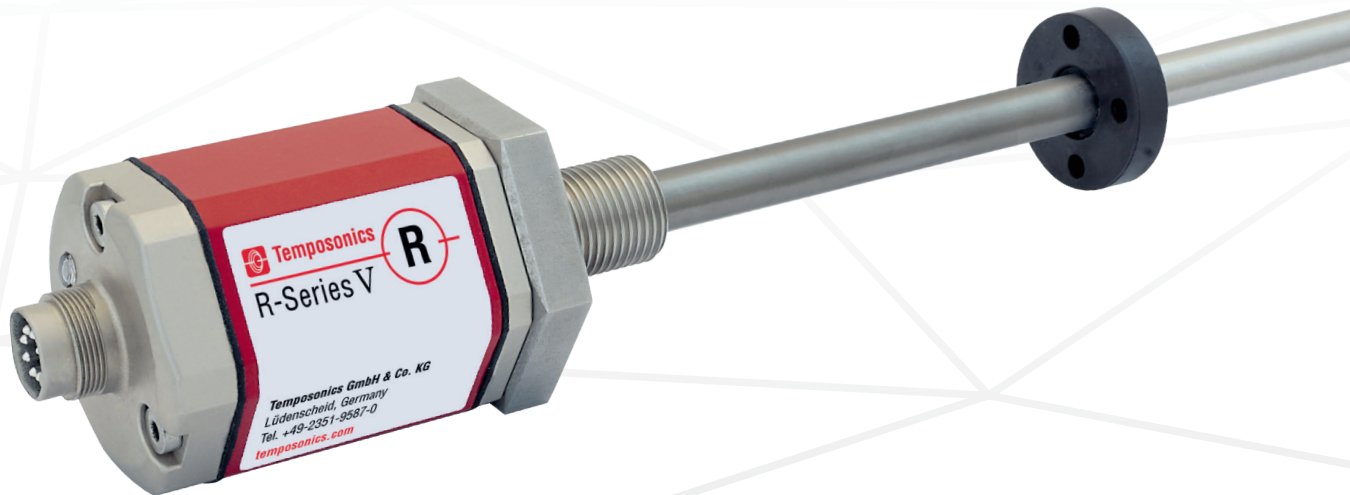
## Data Sheet

# R-Series V RH5 Analog

## Magnetostrictive Linear Position Sensors

**NEW!**  
Also with flexible  
sensing element  
for easy replacement

- Output of position and speed/velocity
- Dual magnet position measurement
- Field adjustments and diagnostics using the TempoLink® smart assistant



**V**  
THE NEW GENERATION

## MEASURING TECHNOLOGY

The absolute, linear position sensors provided by Temposonics rely on the company's proprietary magnetostrictive technology, which can determine position with a high level of precision and robustness. Each Temposonics® position sensor consists of a ferromagnetic waveguide, a position magnet, a strain pulse converter and supporting electronics. The magnet, connected to the object in motion in the application, generates a magnetic field at its location on the waveguide. A short current pulse is applied to the waveguide. This creates a momentary radial magnetic field and torsional strain on the waveguide. The momentary interaction of the magnetic fields releases a torsional strain pulse that propagates the length of the waveguide. When the ultrasonic wave reaches the beginning of the waveguide it is converted into an electrical signal. Since the speed of the ultrasonic wave in the waveguide is precisely known, the time required to receive the return signal can be converted into a linear position measurement with both high accuracy and repeatability.

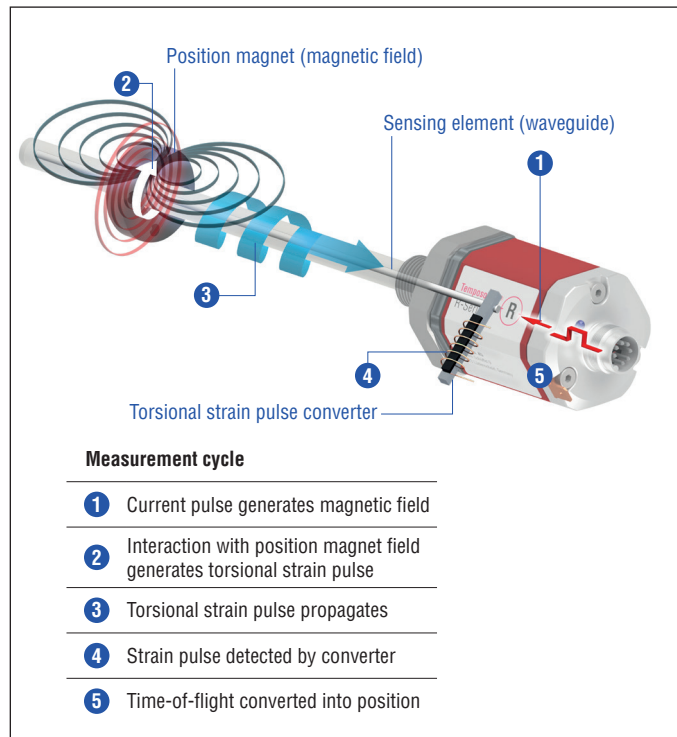
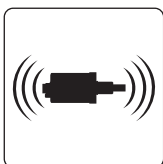


Fig. 1: Time-of-flight based magnetostrictive position sensing principle

## R-SERIES V RH5 Analog

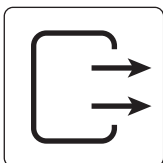
The Temposonics® R-Series V brings very powerful sensor performance to meet the many demands of your application. The main advantages of the rod version RH5 with Analog output (current/voltage) are:



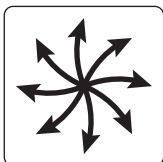
**High shock and vibration resistance**  
The R-Series V is the long term solution for harsh environments that have high levels of shock and vibration.



**Internal resolution 0.1  $\mu\text{m}$**   
The sensor works with an internal resolution of 0.1  $\mu\text{m}$  to detect and report smallest position changes.



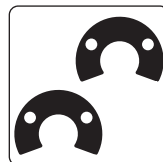
**Dual output channel**  
The sensor is available with single output channel or with dual output channels.



**Multiple output options**  
The following values can be output via the second output:

- Speed/velocity of the first magnet
- Reversed position of the first magnet
- Position of the second magnet
- Temperature in the sensor electronics housing

In addition the R-Series V Analog scores with the following features:



**2 positions simultaneously**  
The R-Series V Analog can detect and report the position of up to 2 magnets simultaneously.



**R-Series V Analog**  
With the R-Series V Analog you can configure the Analog output (current/voltage) for your application and also adjust it on site with the smart assistant.

**All settings under control with the smart assistant for the R-Series V**  
The TempoLink® smart assistant supports you in setup and diagnostics of the R-Series V. For more information of the assistant please see the data sheet:

- TempoLink® smart assistant  
(Document part number: [552070](#))



## RH5 WITH RIGID OR FLEXIBLE SENSING ELEMENT – YOU DECIDE

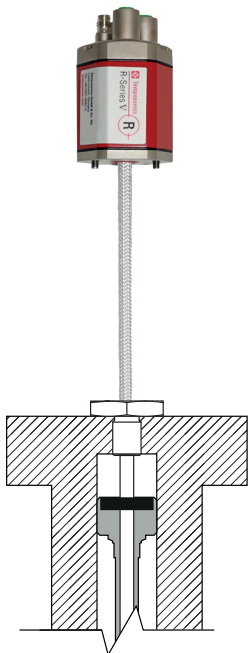
With the RH5, you can replace the base unit when the sensor is installed in the cylinder without opening the hydraulic circuit. This is possible as the flange with the pressure tube remains in the cylinder. You decide whether the base unit of the RH5 has a rigid or a flexible sensing element:

- RH5 with rigid sensor element: RH5-B/J/M/S/T-A/B/M/V
- RH5 with flexible sensing element: RH5-B/M/S/T-F

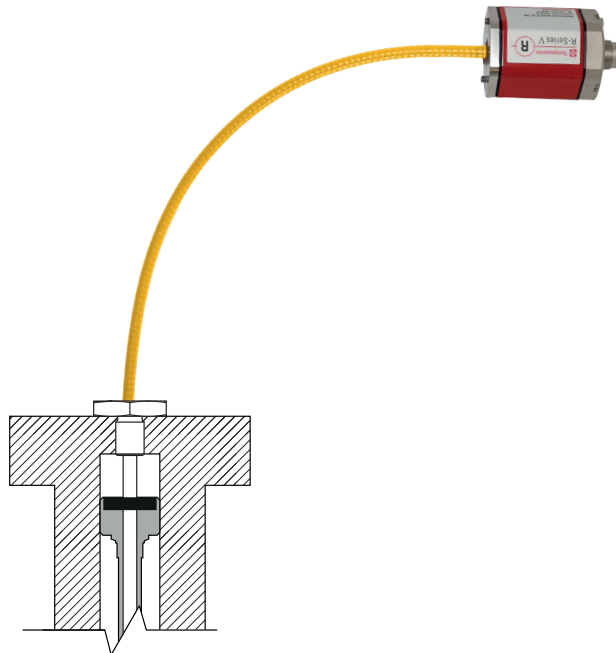
### The advantages of the rod sensor with flexible sensing element RH5-B/M/S/T-F:

- Only a small amount of space is required when replacing the sensor as the sensing element can be bent
- It can be used as a replacement for an RH5 sensor with a rigid sensing element

**Example: RH5-B/J/M/S/T-A/B/M/V**  
(rigid sensing element)



**Example: RH5-B/M/S/T-F**  
(flexible sensing element)



## TECHNICAL DATA

Output							
Analogue	Voltage: 0...10 /10...0/-10...+10/+10...-10 VDC (min. controller load > 5 kΩ) Current: 4(0)...20/20...4(0) mA (min./max. load 0/500 Ω)						
Measured output variables	Position for one or two position magnets Position + speed (without direction) or velocity (with direction) for one position magnet Position for one position magnet + temperature inside the sensor electronics housing						
Measurement parameters							
Position measurement							
Null/Stroke adjustment	100 % of electrical stroke						
Resolution	16 bit (internal resolution 0.1 μm)						
Update time	Stroke length	≤ 200 mm	≤ 350 mm	≤ 1200 mm	≤ 2400 mm	≤ 4800 mm	≤ 7620 mm
	Update time	0.25 ms	0.333 ms	0.5 ms	1.0 ms	2.0 ms	5.0 ms
Linearity deviation <sup>1</sup>	< ±0.01 % F.S. (minimum ±50 μm)						
Repeatability	< ±0.001 % F.S. (minimum ±1 μm)						
Hysteresis	< 4 μm typical						
Temperature coefficient	< 30 ppm/K typical						
Speed/velocity measurement							
Range	0.01...10 m/s or 1...400 in./s						
Deviation	≤ 0.05 %						
Resolution	16 bit (minimum 0.01 mm/s)						
Operating conditions							
Operating temperature	-40...+85 °C (-40...+185 °F)						
Humidity	90 % relative humidity, no condensation						
Ingress protection	IP67 (connectors correctly fitted)/IP68 (3 m/3 d) for straight cable outlet/IP68 (3 m/3 d) & IP69 for angled cable outlet						
Shock test	150 g/11 ms, IEC standard 60068-2-27						
Vibration test	30 g/10...2000 Hz, IEC standard 60068-2-6 (excluding resonant frequencies)/ RH5-J: 15 g/10...2000 Hz, IEC standard 60068-2-6 (excluding resonant frequencies)						
EMC test	Electromagnetic emission according to EN 61000-6-3						
	Electromagnetic immunity according to EN 61000-6-2 The RH5 sensors fulfill the requirements of the EMC directives 2014/30/EU, UKSI 2016 No. 1091 and TR CU 020/2011						
Operating pressure	350 bar (5,076 psi)/700 bar (10,153 psi) peak (at 10 × 1 min) for sensor rod/RH5-J: 800 bar (11,603 psi)						
Magnet movement velocity	Any						
Design/Material							
Sensor electronics housing	Aluminum (painted), zinc die cast						
Sensor flange	Stainless steel 1.4305 (AISI 303)						
Sensor rod	Stainless steel 1.4306 (AISI 304L)/RH5-J: Stainless steel 1.4301 (AISI 304)						
RoHS declaration	The used materials are compliant with the requirements of EU Directive 2011/65/EU and EU Regulation 2015/863 as well as UKSI 2022 No. 622 with amendments						
Stroke length	25...7620 mm (1...300 in.)/RH5-J: 25...5900 mm (1...232 in.)						
Mechanical mounting							
Mounting position	Any						
Mounting instruction	Please consult the technical drawings on <a href="#">page 6</a> , <a href="#">page 7</a> and the operation manual (document part number: <a href="#">552063</a> )						

Technical data "Electrical connection" on [page 5](#)

1/ With position magnet # 251 416-2

Electrical connection	
Connection type	1 × M16 male connector (6 pin), 1 × M12 male connector (5 pin) or cable outlet
Operating voltage	+12...30 VDC ±20 % (9.6...36 VDC); the RH5 sensors must be power supplied via an external Class 2 power source in accordance with the UL approval
Power consumption	< 3.25 W
Dielectric strength	500 VDC (DC ground to machine ground)
Polarity protection	Up to -36 VDC
Overvoltage protection	Up to 36 VDC

## TECHNICAL DRAWING

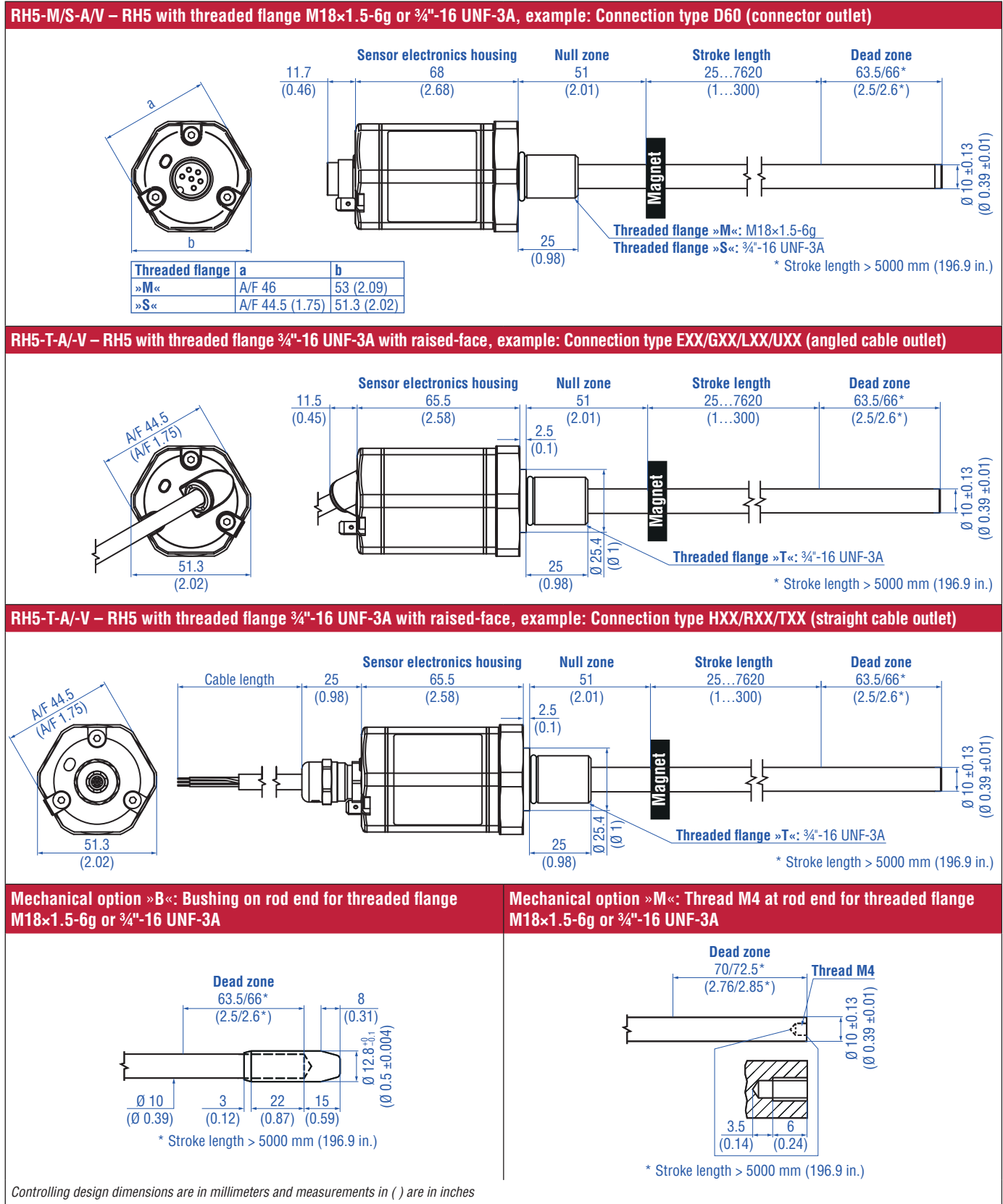
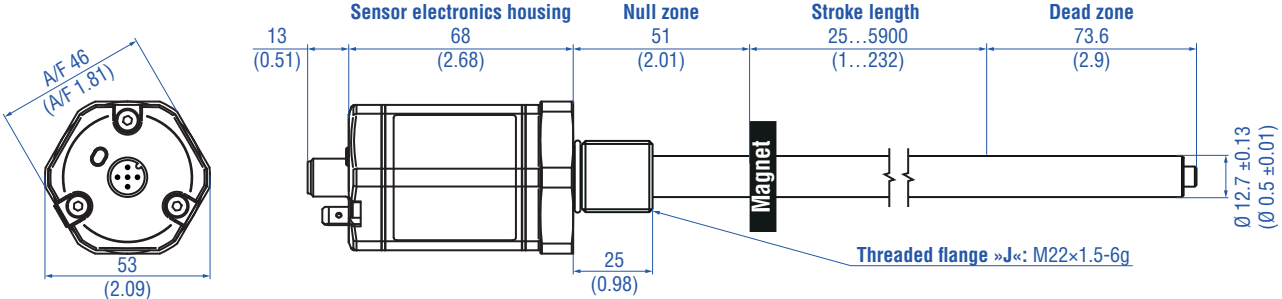


Fig. 2: Temposonics® RH5 with ring magnet, part 1

**RH5-J-A/-V – RH5 with threaded flange M22×1.5-6g and Ø 12.7 mm rod, example: Connection type D34 (connector outlet)**



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

Fig. 3: Temposonics® RH5 with ring magnet, part 2

## CONNECTOR WIRING


D34			
Signal + power supply			
M12 male connector	Output	Pin	Function
 <p>View on sensor</p>	1	1	+12...30 VDC (±20 %)
		2	Position (magnet 1)
		3	DC Ground (0 V)
	2*	4	Position (magnet 2) or reverse position (magnet 1) or speed or velocity (magnet 1) or temperature inside the sensor electronics housing
		5	Signal Ground
* order dependent			

Fig. 4: Connector wiring D34


D60			
Signal + power supply			
M16 male connector	Output	Pin	Function
 <p>View on sensor</p>	1	1	Position (magnet 1)
		2	Signal Ground
	2*	3	Position (magnet 2) or reverse position (magnet 1) or speed or velocity (magnet 1) or temperature inside the sensor electronics housing
		4	Signal Ground
		5	+12...30 VDC (±20 %)
		6	DC Ground (0 V)
* order dependent			

Fig. 5: Connector wiring D60

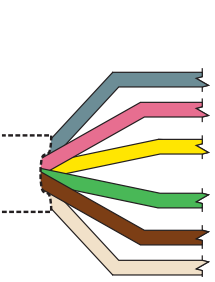
HXX or LXX/RXX or EXX/TXX or GXX/UXX			
Signal + power supply			
Cable	Output	Color	Function
	1	GY	Position (magnet 1)
		PK	Signal Ground
	2*	YE	Position (magnet 2) or reverse position (magnet 1) or speed or velocity (magnet 1) or temperature inside the sensor electronics housing
		GN	Signal Ground
		BN	+12...30 VDC (±20 %)
		WH	DC Ground (0 V)
		* order dependent	
For cable type TXX, the extra red & blue wires are not used.			

Fig. 6: Connector wiring cable outlet

### NOTICE

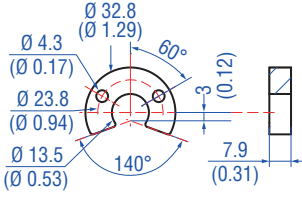
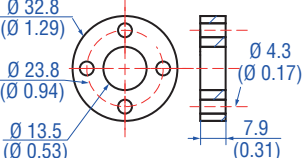
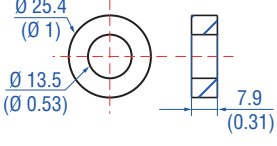
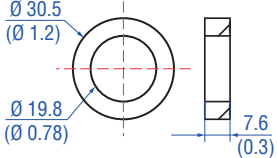
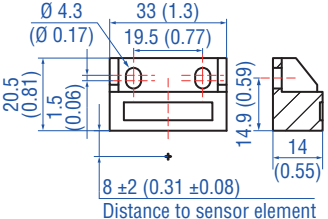
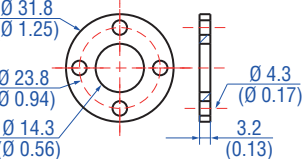
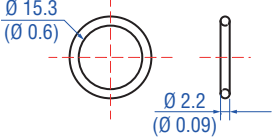
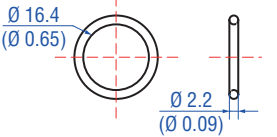
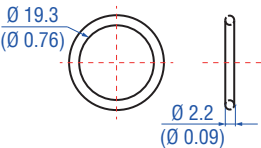
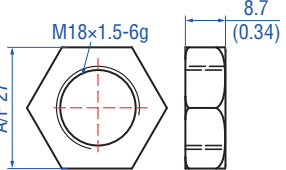
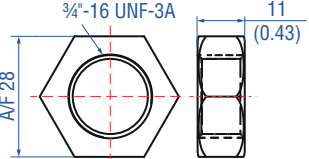
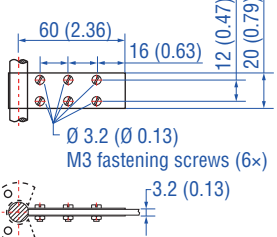
For sensors with current output (order code section **h** Output **A** Current), the output 1 (position (magnet 1)) must be connected in any case.

Straight cable outlet		Cable type	Angled cable outlet
<b>H</b>	<b>X</b>	Part no. 530 052 PUR	→ <b>L</b> <b>X</b> <b>X</b> Part no. 530 052
<b>R</b>	<b>X</b>	Part no. 530 032 PVC	→ <b>E</b> <b>X</b> <b>X</b> Part no. 530 032
<b>T</b>	<b>X</b>	Part no. 530 112 FEP	→ <b>G</b> <b>X</b> <b>X</b> Part no. 530 157

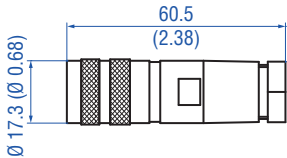
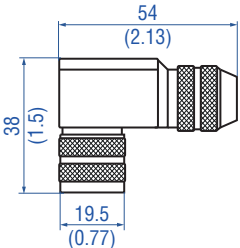
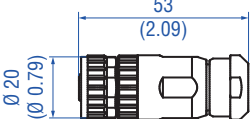
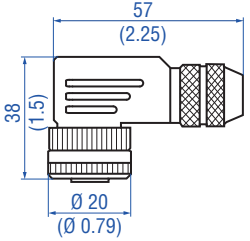
Fig. 7: Cable types assignment



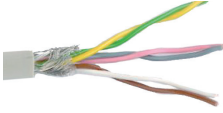
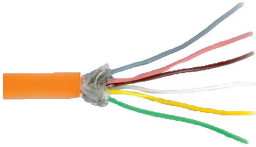
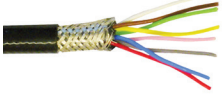

**FREQUENTLY ORDERED ACCESSORIES** – Additional options available in our [Accessories Catalog](#)  551444

Position magnets					
					
<p><b>U-magnet OD33</b> Part no. 251 416-2</p> <p>Material: PA ferrite GF20 Weight: Approx. 11 g Surface pressure: Max. 40 N/mm<sup>2</sup> Fastening torque for M4 screws: 1 Nm Operating temperature: -40...+105 °C (-40...+221 °F)</p>	<p><b>Ring magnet OD33</b> Part no. 201 542-2</p> <p>Material: PA ferrite GF20 Weight: Approx. 14 g Surface pressure: Max. 40 N/mm<sup>2</sup> Fastening torque for M4 screws: 1 Nm Operating temperature: -40...+105 °C (-40...+221 °F)</p>	<p><b>Ring magnet OD25.4</b> Part no. 400 533</p> <p>Material: PA ferrite Weight: Approx. 10 g Surface pressure: Max. 40 N/mm<sup>2</sup> Operating temperature: -40...+105 °C (-40...+221 °F)</p>	<p><b>Ring magnet</b> Part no. 402 316</p> <p>Material: PA ferrite coated Weight: Approx. 13 g Surface pressure: Max. 20 N/mm<sup>2</sup> Operating temperature: -40...+100 °C (-40...+212 °F)</p>		
Position magnet		Magnet spacer		O-rings	
					
<p><b>Block magnet L</b> Part no. 403 448</p> <p>Material: Plastic carrier with neodymium magnet Weight: Approx. 20 g Fastening torque for M4 screws: 1 Nm Operating temperature: -40...+75 °C (-40...+167 °F)</p> <p>This magnet may influence the sensor performance specifications for some applications.</p>	<p><b>Magnet spacer</b> Part no. 400 633</p> <p>Material: Aluminum Weight: Approx. 5 g Surface pressure: Max. 20 N/mm<sup>2</sup> Fastening torque for M4 screws: 1 Nm</p>	<p><b>O-ring for threaded flange</b> M18x1.5-6g Part no. 401 133</p> <p>Material: Fluoroelastomer Durometer: 75 ± 5 Shore A Operating temperature: -40...+204 °C (-40...+400 °F)</p>	<p><b>O-ring for threaded flange</b> ¾"-16 UNF-3A Part no. 560 315</p> <p>Material: Fluoroelastomer Durometer: 75 ± 5 Shore A Operating temperature: -40...+204 °C (-40...+400 °F)</p>		
O-ring		Mounting accessories			
					
<p><b>O-ring for threaded flange</b> M22x1.5-6g Part no. 561 337</p> <p>Material: FPM Durometer: 75 Shore A Operating temperature: -20...+200 °C (-6...+392 °F)</p>	<p><b>Hex jam nut M18x1.5-6g</b> Part no. 500 018</p> <p>Material: Steel, zinc plated</p>	<p><b>Hex jam nut ¾"-16 UNF-3A</b> Part no. 500 015</p> <p>Material: Steel, zinc plated</p>	<p><b>Fixing clip</b> Part no. 561 481</p> <p>Application: Used to secure sensor rods (Ø 10 mm (Ø 0.39 in.)) when using an U-magnet or block magnet Material: Brass, non-magnetic</p>		

**Cable connectors\***

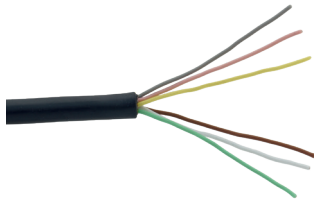
			
<p><b>M16 female connector (6 pin), straight</b> Part no. 370 423</p>	<p><b>M16 female connector (6 pin), angled</b> Part no. 370 460</p>	<p><b>M12 A-coded female connector (4 pin/5 pin), straight</b> Part no. 370 677</p>	<p><b>M12 A-coded female connector (5 pin), angled</b> Part no. 370 678</p>
<p>Material: 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</p>	<p>Material: Zinc nickel plated Termination: Solder Cable Ø: 6...8 mm (0.24...0.31 in.) Wire: 0.75 mm<sup>2</sup> (20 AWG) Operating temperature: -40...+95 °C (-40...+203 °F) Ingress protection: IP67 (correctly fitted) Fastening torque: 0.6 Nm</p>	<p>Material: GD-Zn, Ni Termination: Screw Contact insert: CuZn Cable Ø: 4...8 mm (0.16...0.31 in.) Wire: max. 1.5 mm<sup>2</sup> (16 AWG) Operating temperature: -30...+85 °C (-22...+185 °F) Ingress protection: IP67 (correctly fitted) Fastening torque: 0.6 Nm</p>	<p>Material: GD-Zn, Ni Termination: Screw Contact insert: CuZn Cable Ø: 5...8 mm (0.2...0.31 in.) Wire: max 0.75 mm<sup>2</sup> (18 AWG) Operating temperature: -25...+85 °C (-13...+185 °F) Ingress protection: IP67 (correctly fitted) Fastening torque: 0.4 Nm</p>

**Cables**

			
<p><b>PVC cable</b> Part no. 530 032</p>	<p><b>PUR cable</b> Part no. 530 052</p>	<p><b>FEP cable</b> Part no. 530 112</p>	<p><b>FEP cable</b> Part no. 530 157</p>
<p>Material: PVC jacket; gray Features: Twisted pair, shielded, flexible Cable Ø: 6 mm (0.23 in.) Cross section: 3 × 2 × 0.14 mm<sup>2</sup> Bending radius: 10 × D (fixed installation) Operating temperature: -40...+105 °C (-40...+221 °F)</p>	<p>Material: PUR jacket; orange Features: Twisted pair, shielded, highly flexible, halogen free, suitable for drag chains, mostly oil &amp; flame resistant Cable Ø: 6.4 mm (0.25 in.) Cross section: 3 × 2 × 0.25 mm<sup>2</sup> Bending radius: 5 × D (fixed installation) Operating temperature: -20...+80 °C (-4...+176 °F)</p>	<p>Material: FEP jacket; black Features: Twisted pair, shielded, flexible, high thermal resistance, mostly oil &amp; acid resistant Cable Ø: 7.6 mm (0.3 in.) Cross section: 4 × 2 × 0.25 mm<sup>2</sup> Bending radius: 8 – 10 × D (fixed installation) Operating temperature: -100...+180 °C (-148...+356 °F)</p>	<p>Material: FEP jacket; black Features: Twisted pair, shielded Cable Ø: 6.7 mm (0.26 in.) Cross section: 3 × 2 × 0.14 mm<sup>2</sup> Operating temperature: -40...+180 °C (-40...+356 °F)</p>

\*/ Follow the manufacturer's mounting instructions  
Color of connectors and cable jacket may change. Color codes for the individual wires and technical properties remain unchanged.  
Controlling design dimensions are in millimeters and measurements in ( ) are in inches

**Cable Cable sets**



**Silicone cable**  
Part no. 530 176

Material: Silicone jacket; black  
Features: Twisted pair, shielded  
Cable Ø: 6.3 mm (0.25 in.)  
Cross section: 3 × 2 × 0.14 mm<sup>2</sup>  
Bending radius: 7 × D  
(fixed installation)  
Operating temperature: -50...+150 °C  
(-58...+302 °F)



**Cable with M12 A-coded female connector (5 pin), straight – pigtail**  
Part no. 370 673

Material: PUR jacket; black  
Feature: Shielded  
Cable length: 5 m (16.4 ft)  
Ingress protection: IP67 (correctly fitted)  
Operating temperature:  
-25...+80 °C (-13...+176 °F)



**Cable with M12 A-coded female connector (5 pin), angled – pigtail**  
Part no. 370 675

Material: PUR jacket; black  
Feature: Shielded  
Cable length: 5 m (16.4 ft)  
Ingress protection: IP67 (correctly fitted)  
Operating temperature:  
-25...+80 °C (-13...+176 °F)

**Programming tools**



**Hand programmer for analog output**  
Part no. 253 124

Easy teach-in-setups of stroke length and direction on desired zero/span positions. For sensors with 1 magnet.



**Cabinet programmer for analog output**  
Part no. 253 408

Features snap-in mounting on standard DIN rail (35 mm). This programmer can be permanently mounted in a control cabinet and includes a program/run switch. For sensors with 1 magnet.



**TempoLink® kit for Temposonics® R-Series ▽**  
Part no. TL-1-0-AD60 (for D60)  
Part no. TL-1-0-AS00 (for cable outlet)  
Part no. TL-1-0-AD34 (for D34)

- Connect wirelessly via Wi-Fi enabled device or via USB with the diagnostic tool
- Simple connectivity to the sensor via 24 VDC power line (permissible cable length: 30 m)
- User friendly interface for mobile devices and desktop computers
- See data sheet “TempoLink® smart assistant” (document part no.: [552070](#)) for further information

Controlling design dimensions are in millimeters and measurements in ( ) are in inches  
Color of connectors and cable jacket may change. Color codes for the individual wires and technical properties remain unchanged.

**Extension cables M12**



**PVC cable with M12 female connector (6 pin), straight – pigtail**

PVC cable (part no. 530 032) with M12 female connector, straight (part no. 370 677)

Order code:  
**K2-A-370677-xxxxyy-530032-0**  
(where xxxx = cable length and yy = unit in centimeters “CM” or feet “FT”)

**PUR cable with M12 female connector (6 pin), straight – pigtail**

PUR cable (part no. 530 052) with M12 female connector, straight (part no. 370 677)

Order code:  
**K2-A-370677-xxxxyy-530052-0**  
(where xxxx = cable length and yy = unit in centimeters “CM” or feet “FT”)

**FEP cable with M12 female connector (6 pin), straight – pigtail**

FEP cable (part no. 530 112) with M12 female connector, straight (part no. 370 677)

Order code:  
**K2-A-370677-xxxxyy-530112-0**  
(where xxxx = cable length and yy = unit in centimeters “CM” or feet “FT”)

**Extension cables M16**

**Notice for extension cables M12/M16**



**PVC cable with M16 female connector (6 pin), straight – pigtail**

PVC cable (part no. 530 032) with M16 female connector, straight (part no. 370 423)

Order code:  
**K2-A-370423-xxxxyy-530032-0**  
(where xxxx = cable length and yy = unit in centimeters “CM” or feet “FT”)

**PUR cable with M16 female connector (6 pin), straight – pigtail**

PUR cable (part no. 530 052) with M16 female connector, straight (part no. 370 423)

Order code:  
**K2-A-370423-xxxxyy-530052-0**  
(where xxxx = cable length and yy = unit in centimeters “CM” or feet “FT”)

**FEP cable with M16 female connector (6 pin), straight – pigtail**

FEP cable (part no. 530 112) with M16 female connector, straight (part no. 370 423)

Order code:  
**K2-A-370423-xxxxyy-530112-0**  
(where xxxx = cable length and yy = unit in centimeters “CM” or feet “FT”)

**Standard cable lengths**

Meters	Feet	Code
1.5	5.0	0150
2.0	6.6	0200
4.6	15.0	0460
5.0	16.4	0500
7.6	25.0	0760
10.0	32.8	1000
15.2	50.0	1520

For additional extension cables reference the accessories catalog for industrial sensors (document part no.: [551444](#)).

Color of connectors and cable jacket may change. Color codes for the individual wires and technical properties remain unchanged.

## ORDER CODE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
R	H	5													1								
a			b	c	d					e	f			g	h	i	j	k	l				

optional

<b>a</b>	<b>Sensor model</b>
R H 5	Rod

<b>b</b>	<b>Design</b>
B	Base unit (only for replacement)
J	Threaded flange M22×1.5-6g (rod Ø 12.7 mm), stroke length: 25...5900 mm (1...232 in.)
M	Threaded flange M18×1.5-6g (standard)
S	Threaded flange ¾"-16 UNF-3A (standard)
T	Threaded flange ¾"-16 UNF-3A (with raised-face)

<b>c</b>	<b>Mechanical options</b>
A	Standard
B	Bushing on rod end (only for design »M«, »S« & »T«)
F	Flexible sensing element (only for design »B«, »M«, »S« & »T«)
M	Thread M4 at rod end (only for design »M«, »S« & »T«)
V	Fluorelastomer seals for the sensor electronics housing

<b>d</b>	<b>Stroke length</b>
X X X X M	0025...7620 mm
<b>Standard stroke length (mm)</b>	
	<b>Ordering steps</b>
25... 500 mm	5 mm
500... 750 mm	10 mm
750...1000 mm	25 mm
1000...2500 mm	50 mm
2500...5000 mm	100 mm
5000...7620 mm	250 mm
X X X X U	001.0...300.0 in.
<b>Standard stroke length (in.)</b>	
	<b>Ordering steps</b>
1... 20 in.	0.2 in.
20... 30 in.	0.4 in.
30... 40 in.	1.0 in.
40...100 in.	2.0 in.
100...200 in.	4.0 in.
200...300 in.	10.0 in.
Non-standard stroke lengths are available; must be encoded in 5 mm/0.1 in. increments.	

<b>e</b>	<b>Number of magnets</b>
0 X	01...02 Position(s) (1...2 magnet(s))

<b>f</b>	<b>Connection type</b>
<b>Connector</b>	
D 3 4	M12 male connector (5 pin)
D 6 0	M16 male connector (6 pin)
<b>Angled cable outlet</b>	
E X X	XX m/ft. PVC cable (part no. 530 032) E01...E30 (1...30 m/3...99 ft.) See "Frequently ordered accessories" for cable specifications
G X X	XX m/ft. FEP cable (part no. 530 157) G01...G30 (1...30 m/3...99 ft.) See "Frequently ordered accessories" for cable specifications
L X X	XX m/ft. PUR cable (part no. 530 052) L01...L30 (1...30 m/3...99 ft.) (Note the temperature range of the cable!) See "Frequently ordered accessories" for cable specifications
U X X	XX m/ft. Silicone cable (part no. 530 176) U01...U30 (1...30 m/3...99 ft.) See "Frequently ordered accessories" for cable specifications
<b>Straight cable outlet</b>	
H X X	XX m/ft. PUR cable (part no. 530 052) H01...H30 (1...30 m/3...99 ft.) (Note the temperature range of the cable!) See "Frequently ordered accessories" for cable specifications
R X X	XX m/ft. PVC cable (part no. 530 032) R01...R30 (1...30 m/3...99 ft.) See "Frequently ordered accessories" for cable specifications
T X X	XX m/ft. FEP cable (part no. 530 112) T01...T30 (1...30 m/3...99 ft.) See "Frequently ordered accessories" for cable specifications
Encode in meters if using metric stroke length. Encode in feet if using US customary stroke length.	

<b>g</b>	<b>System</b>
1	Standard

## Temposonics® R-Series V RH5 Analog

Data Sheet

h	Output
A	Current
V	Voltage

i	Function
1	Position (1 or 2 magnets/outputs)
2	Position and speed (1 magnet and 2 outputs) Specify the maximum speed value in section <b>l</b>
3	Position and velocity (1 magnet and 2 outputs) Specify the maximum velocity value in section <b>l</b>
4	Position and reverse position (1 magnet and 2 outputs)
5	Position and temperature inside the sensor electronics housing (1 magnet and 2 outputs)
6	Differential (2 magnets and 1 output)

j	Options
0	Standard
3	Over range output mode

k	Output range
0	0...10 VDC or 4...20 mA
1	10...0 VDC or 20...4 mA
2	-10...+10 VDC or 0...20 mA
3	+10...-10 VDC or 20...0 mA
V	0...10 VDC for position, -10...+10 VDC for velocity

l	Max. speed or velocity value
<b>(optional: use when <b>i</b> "Function" is <b>2</b> or <b>3</b>)</b>	
<input type="checkbox"/>	For metric stroke lengths encode speed or velocity in m/s for the values 0.01 to 9.99 m/s (001...999)
<input type="checkbox"/>	For US customary stroke lengths encode speed or velocity in inches/s for the values 1 to 400 in./s (001...400)
To get a speed or velocity output of 0.025 m/s or 10 m/s for the R-Series V Analog, enter code (00E) for 0.025 m/s or (A00) for 10.0 m/s in the order code.	

NOTICE
<ul style="list-style-type: none"> <li>Specify the number of magnets for your application and order the magnets separately.</li> <li>The number of magnets is limited by the stroke length. The minimum allowed distance between magnets (i.e. front face of one to the front face of the next one) is 75 mm (3 in.).</li> <li>Use magnets of the same type for differential/multi-position measurement.</li> </ul>

## DELIVERY



### RH5-B:

- Base unit (without flange & rod assembly)
- 3 × socket screws M4×59

### RH5-J/-M/-S/-T:

- Sensor
- O-ring

Accessories have to be ordered separately.

Manuals, Software & 3D Models available at:  
[www.temposonics.com](http://www.temposonics.com)

## GLOSSARY

<b>A</b>
<b>Analog output</b> For a sensor with analog output, the measured value is output as an analog voltage signal or current signal.
<b>D</b>
<b>Differential</b> For differential measurement, the distance between the two position magnets is output as a value. (→ multi-position measurement)
<b>M</b>
<b>Max. speed or velocity value</b> For speed or velocity, the output value generated is scaled based on the maximum speed or velocity value indicated in the order code.
<b>Measuring direction</b> <ul style="list-style-type: none"><li>• Forward: Values increasing from sensor electronics housing to rod end/profile end</li><li>• Reverse: Values decreasing from sensor electronics housing to rod end/profile end</li></ul>
<b>Multi-position measurement</b> During the measurement cycle, the positions of every magnet on the sensor are simultaneously reported. The velocity or speed is continuously calculated based on these changing position values as the magnets are moved.
<b>O</b>
<b>Over range output mode</b> When enabled this mode allows the position output values to continue to increase or decrease when the magnet travels beyond the active stroke range.
<b>R</b>
<b>Resolution</b> The sensor precisely measures time to provide the position measurement. For the analog output the measured time value is converted into an analog voltage signal or current signal using a high-performance <b>D</b> igital to <b>A</b> nalog <b>C</b> onverter (DAC) having 16 bits of resolution.
<b>S</b>
<b>Speed</b> The output value for speed indicates how fast the position magnet is being moved, independent of the measuring direction. (→ Velocity)
<b>T</b>
<b>Temperature inside the sensor electronics housing</b> The temperature inside the sensor electronics housing is reported as an analog voltage signal or current signal. For each output range, the 0 % output value has the factory default setpoint at -40 °C, and the 100 % output value has the default setpoint at +100 °C. Note: A dedicated temperature chip is used for the output signal and its values may vary from those reported on the TempoLink® application screen.
<b>V</b>
<b>Velocity</b> The output value for velocity indicates how fast the position magnet is being moved, and in which direction. (→ Speed)

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