



Magnetostrictive Displacement Sensor

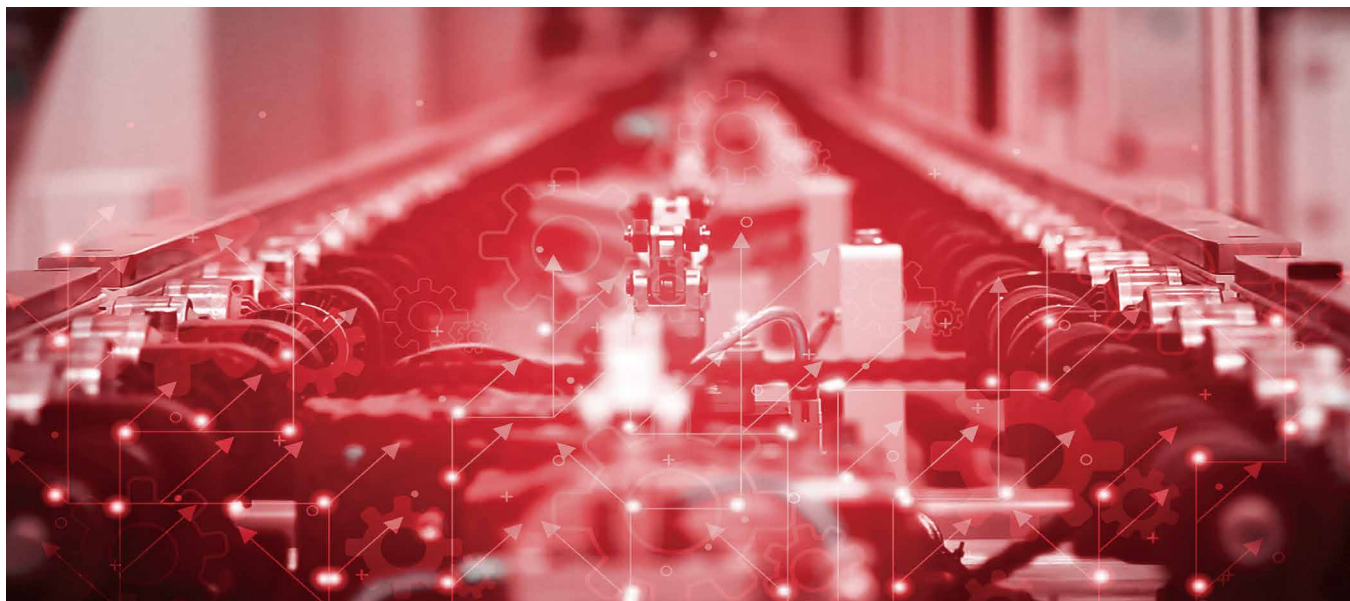
R Series Product manual



• High quality • High precision • Long service life

Company Profile

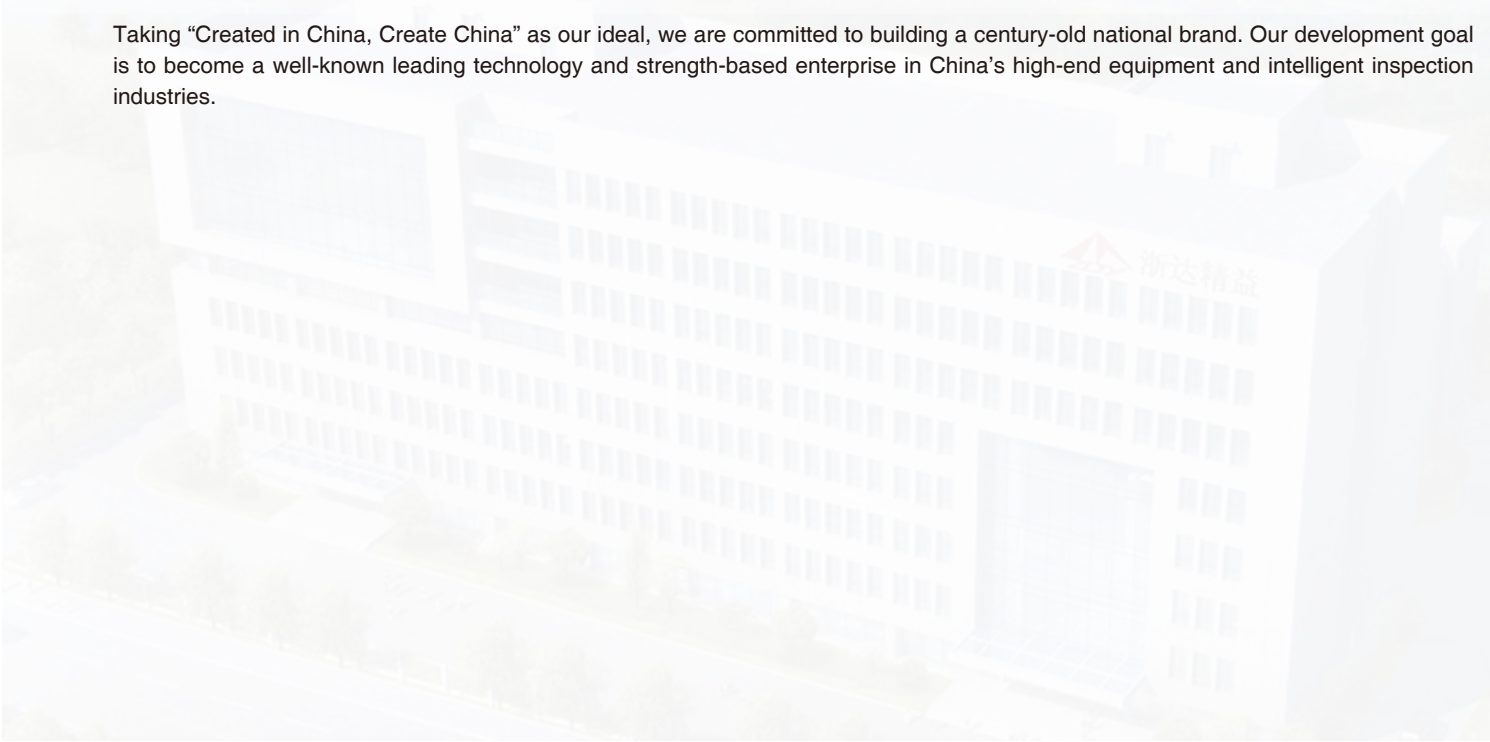
As a technological innovation enterprise born out of Zhejiang University, our company has more than 180 employees, including 4 overseas talents, 4 professors, and 2 associate professors. There are also 12 doctors, and more than 86% of employees with a bachelor degree or above.



We are committed to intelligent manufacturing, high-end equipment, intelligent sensing, intelligent detection, military industry and other fields. Most of our company's products are independently researched and developed, and the market share ranks in the forefront of the domestic industry. A variety of equipment is the first set in China, which breaks the long-term monopoly of foreign companies.

We are a national high-tech enterprise integrating scientific research, product development, engineering design, and technical consulting. Besides, the company has obtained 45 invention patents, 29 utility model patents, 10 software copyrights, and 4 registered trademarks.

Taking "Created in China, Create China" as our ideal, we are committed to building a century-old national brand. Our development goal is to become a well-known leading technology and strength-based enterprise in China's high-end equipment and intelligent inspection industries.



Honorary Qualification



RH/RP Displacement Sensor- Start/Stop Output



Technical Characteristics

- Rugged and fully enclosed design
- Non-wear, non-contact measurement method
- Easy diagnosis, LEDs real-time condition monitoring
- No need to return to zero, absolute displacement output
- Stable and reliable, using digital analog technology
- Low power consumption design effectively reduces system heating



C Product Parameters-Start/Stop Output

• Input

Measurement data	Position magnet ring
Stroke length	25~5500 mm , customized according to customer needs
Number of measurements	Multiple

• Output

Digital quantity	Start/Stop Signal (Start/End)
Resolution	Controller dependent (minimum accuracy 5μm)
Nonlinearity	< 0.01% full-scale taxi, minimum 50μm
Pulse width	Start pulse: 2~5μs, stop pulse: 1.5~2μs
Repetition accuracy	< 0.001% of full-scale taxis, min. 1μm
Update time	1KHz (range≤1m) 500Hz (1m<range≤2m) 250Hz (2m<range≤3m) , customizable
Hysteresis	<10μm
Temperature coefficient	<30ppm/°C

• Operating conditions

Magnet velocity	Arbitrary
Protection level	IP67RH Stainless Stell Rod/IP65RP Aluminum profile
Operating temperature	-40 °C ~ +105 °C
Humidity/dew point	Humidity 90%, no condensation
Shock index	GB/T2423.5 100g(6ms)
Vibration index	GB/T2423.10 20g/10~2000Hz
EMC Test	GB/T17626.2/3/4/6/8, Grade 4/3/4/3/3, Class A, CE Certification

• Structure and Material

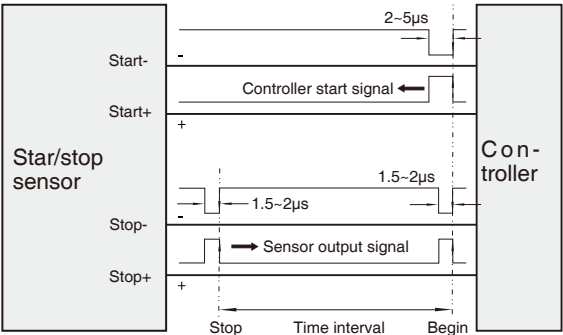
Failure indication		Electronic bin cover with LEDs display
RH Series	Electronic bin	Aluminum alloy
	Measuring rod	304 stainless steel
	Outer tube pressure	35MPa (continuous)/70MPa (peak) or 350bar (continuous)/700bar (peak)
	Position magnet	Standard magnet ring and various ring magnets
RP Series	Electronic bin	Aluminum alloy
	Measuring rod	Aluminum alloy
	Position magnet	Slider magnet, square magnet, sector magnet
Mounting thread form		M18×1.5、 M20×1.5、 3/4"-16UNF-3A (customizable)
Installation direction		Any direction
Outgoing mode		Cable outlet or Connector

• Electrical Connection

Input voltage	+24Vdc±20%
operating current	< 90mA (varying with range)
Polarity protection	Max.-30Vdc
Overvoltage protection	Max.36Vdc
Insulation resistance	> 10MΩ
Insulation strength	500V

SS Output Characteristics-Start/Stop Output

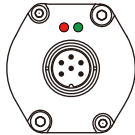
- The sensor outputs the controller start signal and the position magnet signal, and the time interval between them is proportional to the displacement of the position magnet. The measurement and control of time is calculated by the controller and converted into displacement value.



LL LED Real-time State Monitoring and Diagnosis

- Red and green LED indicator built into the sensor head cover provides sensor working condition and diagnostic function.

Green light	ON	ON	ON	Flash
Red light	OFF	Flash	ON	OFF
Function	Normal work	The sensor has no interrogation signal	Magnet not detected	Programming state

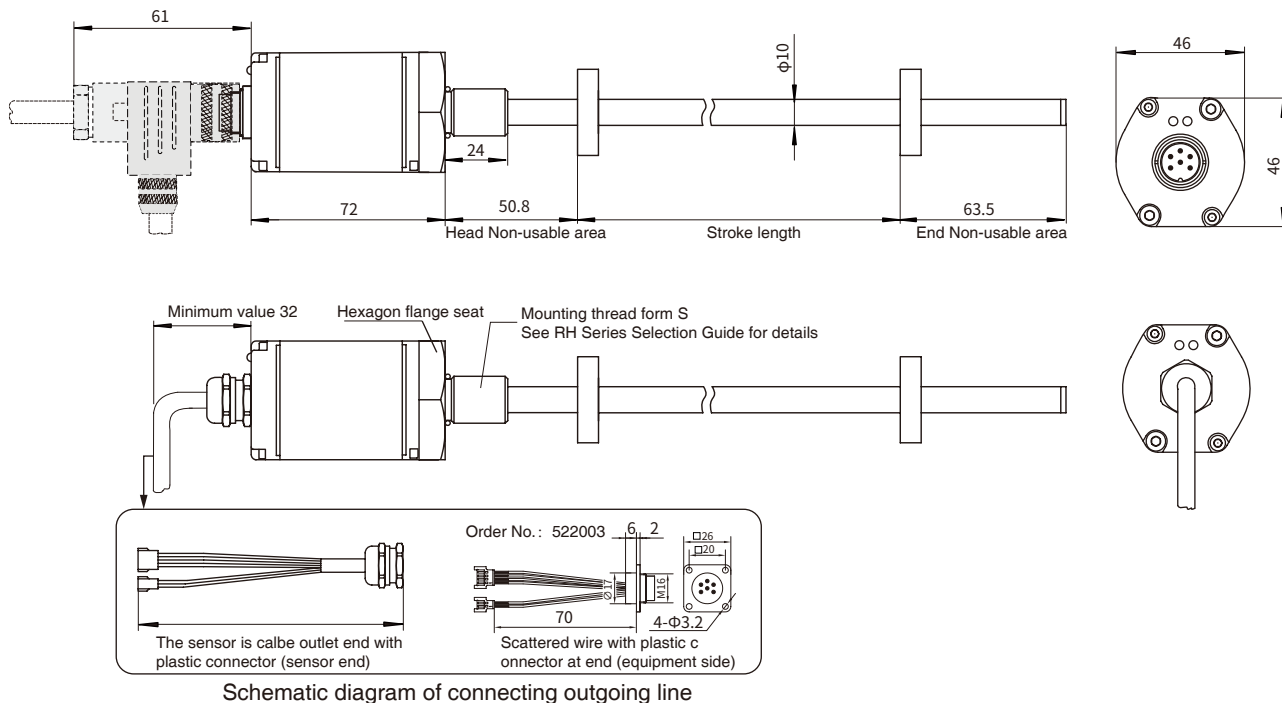


A a Installation Instructions-Start/Stop Output

- Dimensions and installation guidance of RH pressure-resistant rod sensor

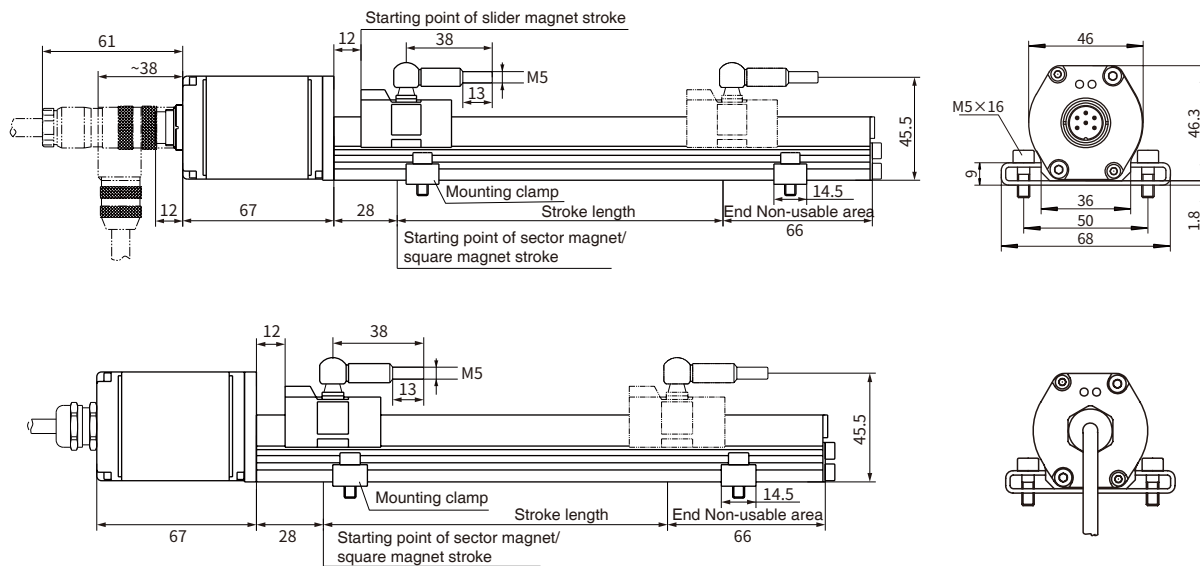
RH series pressure-resistant rodshell, built-in installation design for hydraulic system, pressure-resistant 35MPa continuous, flexible and simple installation mode, mounting thread form M18×1.5 or M20×1.5 or 3/4"-16UNF-3A.

Note: The measurement Non-usable area shown in the figure indicates that the output value of the sensor in this area is zero or unreliable. The values of the head and end Non-usable areas of this product are 50.8 m and 63.5 m respectively. The value of the measurement Non-usable area can be appropriately modified according to the needs of customers, please pointed out when ordering.



- Dimensions and installation guidance of RP aluminum profile sensor

RP Series aluminum profile provides flexible and simple external installation mode, which is suitable for stroke or position detection of linear motion mechanism, and can also be used for external position detection of hydraulic cylinder.



C Common Accessories-Start/Stop Output

Accessory name/ model	Dimensions	Accessory name/ model	Dimensions	Accessory name/ model	Dimensions
Standard magnet ring Order No.: 211501		Magnetic isolation gasket		6-pin female connector Order No.: 312701	
Sector magnet Order No.: 211502		Sector magnetic isolation gasket		6-pin 90° female connector Order No.: 312702	
Slider magnet Order No.: 211503		Square magnet Order No.: 211508			

Note: Please refer to "Magnet ring Selection" for details of magnet ring kit and other models.

• Wiring mode

When the sensor is connector output, refer to the pin definition in the following table for wiring mode; when the sensor is cable outlet output, refer to the line color definition in the following table for connection mode



• 6-pin male connector arrangement (facing the sensor head)

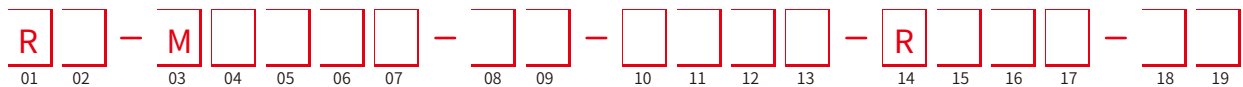
Pin	Line color 1*	Line color 2*	Pin/wire function definition
1	Blue	Grey	Stop (-)
2	Green	Pink	Stop (+)
3	Yellow	Yellow	Start (+)
4	White	Green	Start (-)
5	Red	Brown	+24Vdc power supply (-20%~+20%)
6	Black	White	0 Vdc

• 8-pin male connector arrangement (facing the sensor head direction)

Pin	Line color 3*	Pin/wire function definition
1	Yellow	Start (+)
2	Grey	Stop (+)
3	Pink	Start (-)
4	-	Reservation
5	Green	Stop (-)
6	Blue	0 Vdc (power supply circuit)
7	Brown	+24Vdc power supply (-20%~+20%)
8	White	Reservation

Note: * Line color 1: Cable PUR sheath, orange, -20~90 °C
* Line color 2/3: Cable PVC sheath, orange, -20~105 °C

X Selection Guide -Start/Stop Output



01 - 02 Sensor shell form

R	H	Pressure-resistant rod (internal or external)
R	P	Aluminum profile (external only)

03 - 07 Measuring range

Four digits, less than four digits are preceded by zero, M means metric system, unitmm

08 - 09 Magnet ring type/mounting thread form

Only for RH series	S	1	M18×1.5, measuring rod diameter 10mm, 304 material
	S	2	M20×1.5, measuring rod diameter 10mm, 304 material
	S	3	3/4"-16UNF-3A, measuring rod diameter 10mm, 304 material
Only for RP Series	C	1	Sector magnet
	C	2	Slider magnet
	C	3	Square magnet

10 - 13 Connection form

10 - 11 Cable outlet mode

D	H	PUR sheath, orange,-20~90° C, end scattered, line color 1
D	U	PVC sheath, orange,-20~105°C, end scattered, line color 2
D	B	PVC sheath, orange,-20~105°C, end scattered, line color 3
D	I	PUR sheath, orange,-20~90° C, end with 6-pin connector
D	V	PVC sheath, orange,-20~105°C, end with 6-pin connector
D	C	PVC sheath, orange,-20~105°C, end with 8-pin connector

12 - 13 Cable length, 01~99 units: m (Cable outlet mode)

10 - 13 Cable outlet mode

10 - 13	0	D	R	Cable outlet first and end with plastic connector
0	D	R	2	Scattered wire with plastic connector 65mm
0	D	R	3	Scattered wire with plastic connector 170mm
0	D	R	4	Scattered wire with plastic connector 230mm
0	D	R	5	Scattered wire with plastic connector 350mm

10 - 13 Connector mode

P	H	6	0	M16 male connector (6-pin)
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Note: For supporting cables, please refer to Analog/Start-Stop Cable Accessories Selection

14 - 17 Signal output mode

15 Input voltage

1	+ 24Vdc (- 20% ~ + 20%)
2	+ 9 ~ 28.8Vdc

16 - 17 Output signal

0	1	Start/Stop, multi-magnet ring
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18 - 19 Non-usable area at head and end, customizable

S	0	50.8mm+63.5mm
B	0	30mm+60mm
S	1	28mm+66mm (used in RP series)

● **Note:** The forward output of the sensor means that when the magnet ring moves away from the electronic bin, the output value increases and decreases when the magnet ring moves in the reverse direction.

● **Selection example:** RH-M0300-S1-PH60-R101-S0

Indicates: the ordered product model is RH series displacement sensor, the measuring range is 300mm, the mounting thread form is M18×1.5, the measuring rod diameter is 10mm, the material is 304, the 6-pin Connector connection, the power supply voltage is + 24Vdc, start/stop output, the head Non-usable area is 50.8mm, and the end Non-usable area is 63.5mm.

Mm Selection Guide of Analog/Start-Stop Cable Fittings

A
S
T
-
M

-

01 02 03 04 05 06 07 08 09 10

01 - 03				Type
A	S	T		Analog/Start-Stop interface
04 - 07				Cable length
M	*	*	*	Less than 3 digits are preceded by zeros, and M means metric system, unit m
08 - 10				Cable type, outlet mode
H	0	1		One 6-pin (M16) female connector, and one end scattered
H	0	3		One 6-pin (M16) right angle female connector, and one end scattered
U	0	1		One end 6-pin (M16) female connector, and one end scattered
U	0	2		One end 8-pin (M16) inserted into female connector, and one end scattered
U	0	3		One end 6-pin (M16) right angle female connector, and one end scattered
U	0	4		One end 8-pin (M16) right angle female connector, and one end scattered
Note				H: Cable type, PUR sheath, orange, -20~90 °C
				U: Cable type, PVC sheath, orange, -20~105 °C

- Selection example: AST-M005-H01

Indicates: analog or start-stop interface cable, 5 meters long, PUR sheath, orange, -20~90 °C, with 6-pin (M16) at one end female connector and scattered at one end.

- Selection example: AST-M010-U04

Indicates: Analog or Start-Stop interface cable, 10 meters long, PVC sheath, orange, -20~105 °C; One end 8-pin (M16) right angle female connector, and one end scattered.