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

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/℃

• Operating conditions

Magnet velocity	Arbitrary
Protection level	IP67RH Stainless Stell Rod/IP65RP Aluminum profile
Operating temperature	-40℃ ~ +105℃
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

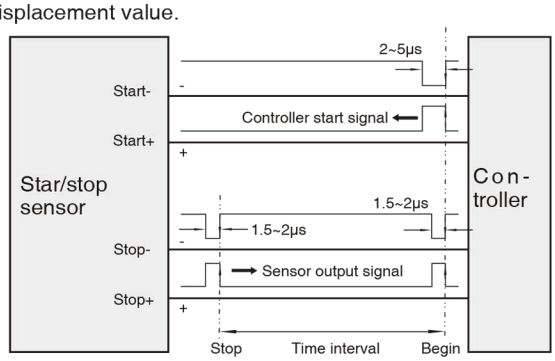
Failure indication		Electronic bin cover with LEDs display
RH Series	Electronic bin	Aluminum alloy
	Measuring rod	304 stainless steel
	Outer tube pressure	35MPa (continuous)/70MPa (peak) or 350bar (continuous)/700bar (peak)
	Position magnet	Standard magnet ring and various ring magnets
RP Series	Electronic 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

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.



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.

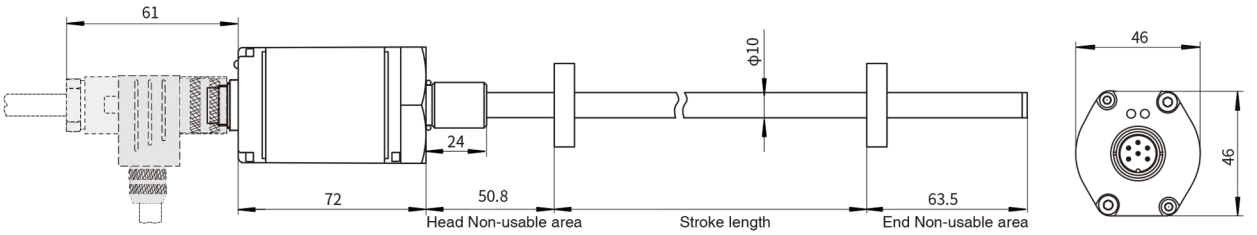
Green light	ON	ON	ON	Flash
Red light	OFF	Flash	ON	OFF
Function	Normal work	The sensor has no interrogation signal	Magnet not detected	Programming state

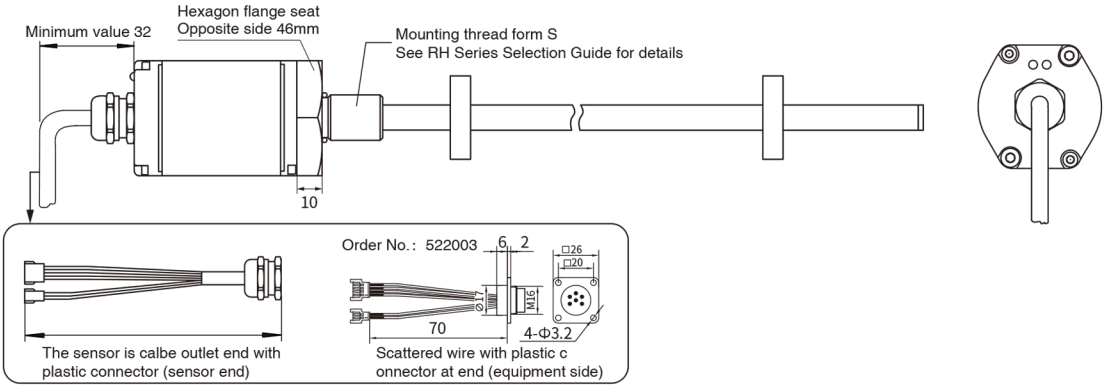
Aa Installation Instructions-Start/Stop Output

● 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.

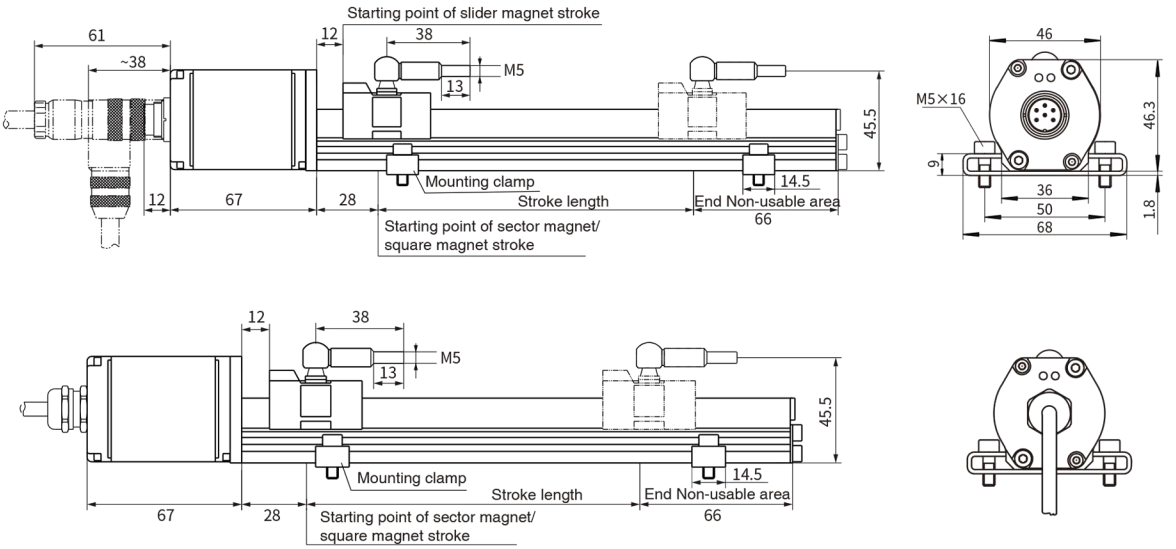




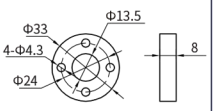
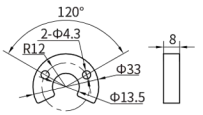
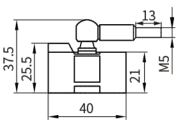
Schematic diagram of connecting outgoing line

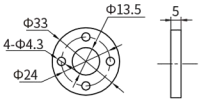
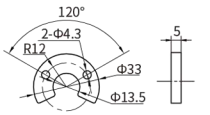
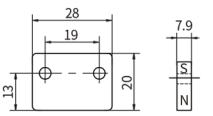
● Dimensions and installation guidance of RP aluminum profile sensor

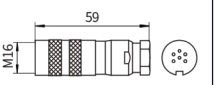
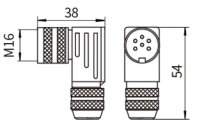
RP Series aluminum profile provides flexible and simple external installation mode, which is suitable for stroke or position detection of linear motion mechanism, and can also be used for external position detection of hydraulic cylinder.



Common Accessories-Start/Stop Output

Accessory name/ model	Dimensions
Standard magnet ring Order No.: 211501	
Sector magnet Order No.: 211502	
Slider magnet Order No.: 211503	

Accessory name/ model	Dimensions
Magnetic isolation gasket	
Sector magnetic isolation gasket	
Square magnet Order No.: 211508	

Accessory name/ model	Dimensions
6-pin female connector Order No.: 312701	
6-pin 90° female connector Order No.: 312702	

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

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

- 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

Selection Guide -Start/Stop Output

R	□	–	M	□	□	□	□	–	□	□	–	□	□	□	□	–	R	□	□	□	–	□	□
01	02		03	04	05	06	07		08	09		10	11	12	13		14	15	16	17		18	19

01 - 02 Sensor shell form

RH	Pressure-resistant rod (internal or external)
RP	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	S1	M18×1.5, measuring rod diameter 10mm, 304 material
	S2	M20×1.5, measuring rod diameter 10mm, 304 material
	S3	3/4"-16UNF-3A, measuring rod diameter 10mm, 304 material
Only for RP Series	C1	Sector magnet
	C2	Slider magnet
	C3	Square magnet

10 - 13 Connection form

10 - 11 Cable outlet mode

DH	PUR sheath, orange,-20~90° C, end scattered, line color 1
DU	PVC sheath, orange,-20~105°C, end scattered, line color 2
DB	PVC sheath, orange,-20~105°C, end scattered, line color 3
DI	PUR sheath, orange,-20~90° C, end with 6-pin connector
DV	PVC sheath, orange,-20~105°C, end with 6-pin connector
DC	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 0DR□ Cable outlet first and end with plastic connector

0DR2	Scattered wire with plastic connector 65mm
0DR3	Scattered wire with plastic connector 170mm
0DR4	Scattered wire with plastic connector 230mm
0DR5	Scattered wire with plastic connector 350mm

10 - 13 Connector mode

PH60	M16 male connector (6-pin)
PB80	M16 male connector (8-pin)

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

01	Start/Stop，multi-magnet ring

18 - 19 Non-usable area at head and end, customizable

S0	50.8mm+63.5mm
B0	30mm+60mm
S1	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℃

U: Cable type, PVC sheath, orange,-20~105℃

- 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.