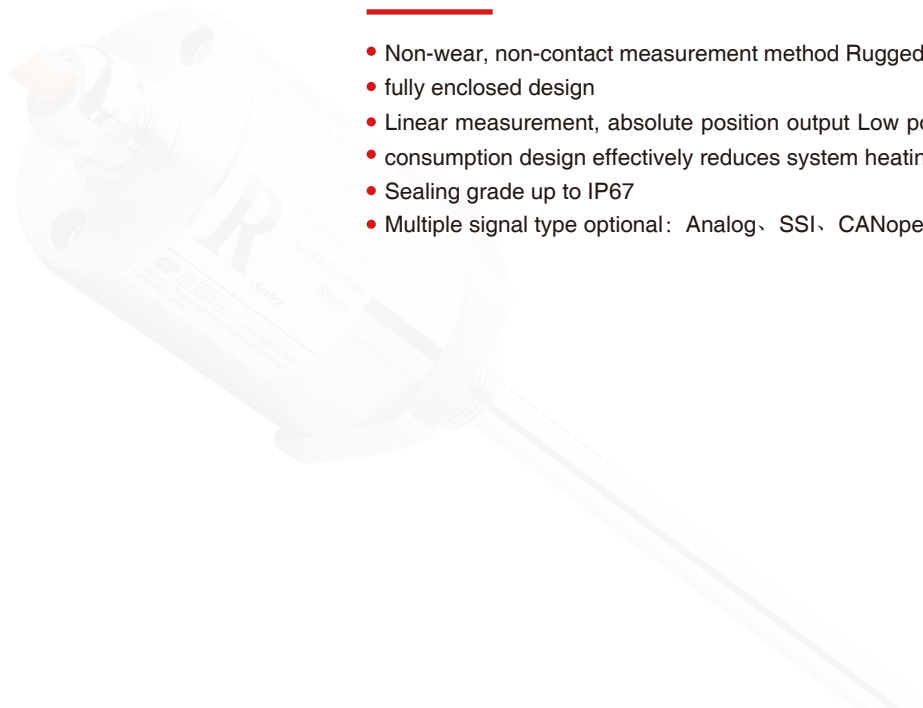


# RS Waterproof Displacement Sensor



## Technical Characteristics

- Non-wear, non-contact measurement method Rugged and
- fully enclosed design
- Linear measurement, absolute position output Low power
- consumption design effectively reduces system heating
- Sealing grade up to IP67
- Multiple signal type optional: Analog、SSI、CANopen、Start/Stop



## Product Parameters

### • Input

Measurement data	Position Magnet ring
Stroke length	50mm~5500mm, customized according to customer's needs
Number of measurements	1

### • Output

Interface	Analog、SSI、CANopen、Start/Stop
Resolution	0.5 / 1 / 2 / 5 / 10 / 20 / 40 / 50 / 100 $\mu$ m
Nonlinearity	$< \pm 0.01\%$ of full scale, Min. $\pm 50\mu$ m
Repetition accuracy	$< \pm 0.001\%$ of full scale, Min. $\pm 1\mu$ m
Hysteresis	$< 10\mu$ m
Update time	1KHz (range $\leq 1$ m)      500Hz (1m < range $\leq 2$ m) 250Hz (2m < range $\leq 3$ m), customizable
Temperature coefficient	$< 30$ ppm/°C

### • Working conditions

Magnet ring velocity	Arbitrary
Protection level	IP68
Operating temperature	-40 °C ~ +105 °C
Humidity/dew point	Humidity100%, relative humidity
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

### • Electrical connection

Input voltage	Normal: +24Vdc $\pm 20\%$ Wide voltage: 9Vdc~28.8Vdc
operating current	$< 90$ mA (varying with range)
Polarity protection	Max.-30Vdc
Overpressure protection	Max.36Vdc
Insulation resistance	$> 10$ M $\Omega$
Insulation strength	500V

### • Structure and materials

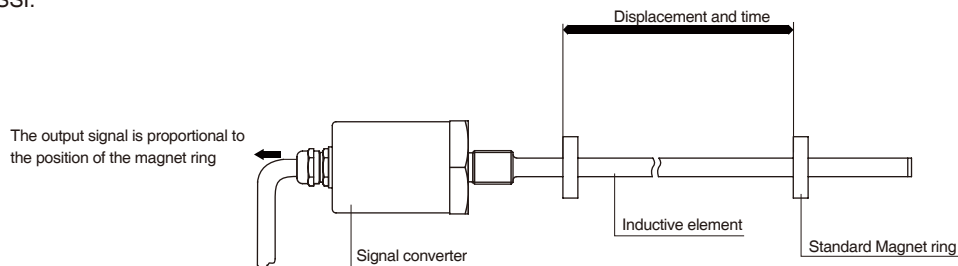
Electronic bin	304 stainless steel, or 316L according to customer requirements
Measuring rod	304 stainless steel, or 316L according to customer requirements
Outer tube pressure	35MPa (continuous)/70MPa (peak) or 350bar (continuous)/700bar (peak)
Position magnet	Standard Magnet ring and various magnet rings
Mounting thread form	M18 $\times$ 1.5、M20 $\times$ 1.5、3/4"-16UNF-3A (customizable)
Installation direction	Any direction
Cable outlet mode	Cable outlet

## A a Installation and Use Instructions

### • Output characteristic

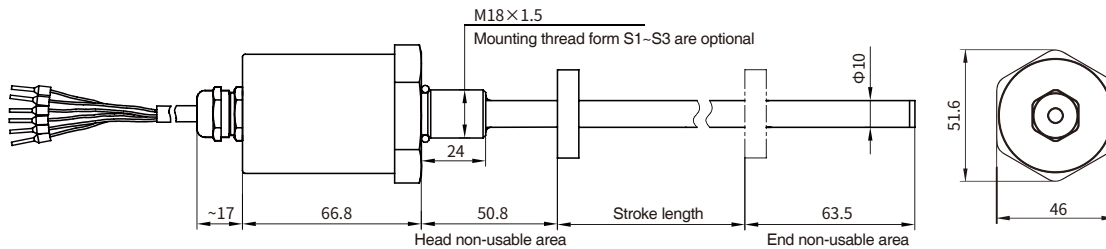
RS series sensors have strong protective shell, which is durable and can provide users with continuous, reliable and real-time displacement signals in harsh environment. The sensor is completely sealed with stainless steel shell, which fully meets the protection level IP68. Note: The electronic compartment is not detachable.

Because of the non-contact measurement technology, the sensor can be integrated in an isolated and sealed shell. The position magnet moves along the measuring rod, and the position can be measured without mechanical contact. For liquid level measurement, an alternative float can be used. The sensor with high protection level shell is easy to install and use, so as to better meet the application requirements. The measurement accuracy and all technical parameters depend on the output characteristics of the selected sensor, and the interface form can be selected: analog or SSI.



### • Installation dimensions of RS waterproof sensor

RS Series super protective Sensor, designed for cylinder built-in installation in harsh environment, withstands pressure of 35MPa for continuous, flexible and simple installation mode, and mounting thread form M18×1.5 or M20×1.5 or 3/4"-16UNF-3A.



**Note:** It is equipped with standard Magnet ring kit 288501, with magnetic isolation gasket and fixing screw.

## C Common Accessories - SSI Output

Accessory name/ model	Dimensions	Accessory name/ model	Dimensions	Accessory name/ model	Dimensions
Standard Magnet ring Order No.: 211501		Magnetic isolation gasket		7-pin Female Connector Order No.: 312703	
Sector magnet Order No.: 211502		Sector magnetic isolation gasket		7-pin 90 Female Connector Order No.: 312704	
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 wire color definition in the following table for connection mode



• 7-pin male connector arrangement (facing the sensor head)			
Pin	Wire color 1*	Wire color 2*	Pin/wire function definition
1	White	Grey	Data (-)
2	Yellow	Pink	Data (+)
3	Blue	Yellow	Clock (+)
4	Green	Green	Clock (-)
5	Red	Brown	+24Vdc power supply (-20%~+20%)
6	Black	White	0 Vdc
7	-	-	Do not connect



• 8-pin male connector arrangement (facing the sensor head)		
Pin	Wire color 3*	Pin/wire function definition
1	Yellow	Clock (+)
2	Grey	Data (+)
3	Pink	Clock (-)
4	-	Reservation
5	Green	Data (-)
6	Blue	0 Vdc (power supply circuit)
7	Brown	+24Vdc power supply (-20%~+20%)
8	White	Reservation

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

## X Selection Guide-SSI

R	S	-	M					-			-					-	S								-			-		
01	02		03	04	05	06	07		08	09		10	11	12	13		14	15	16	17	18	19		20	21		22	23		

01 - 02	Sensor shell form
R S	Pressure-resistant pipe

03 - 07	Measuring range
	Four digits, less than four digits are preceded by zero, M means metric system, unit mm

08 - 09	Magnet ring type/mounting thread form
S 1	M 18×1.5, 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

10 - 13	Connection form
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10 - 11	Cable outlet mode
D H	PUR sheath, orange, -20~90℃, end scattered, cable color 1
D U	PVC sheath, orange, -20~105℃, end scattered, cable color 2
D B	PVC sheath, orange, -20~105℃, end scattered, cable color 3
D I	PUR sheath, orange, -20~90℃, end 6-pin connector
D V	PVC sheath, orange, -20~105℃, end 6-pin connector
D C	PVC sheath, orange, -20~105℃, end 8-pin connector

12 - 13	Cable outlet mode: cable length, 01 ~99 meters
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10 - 13	Connector mode
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P H 7 0	M16 male connector (7 pins)
P B 8 0	M16 male connector (8 pins)

**Note:** For supporting cables, please refer to the Guide for Selection of Cable Accessories

14 - 19	Signal output mode
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15	Data length
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1	24bit	2	25bit	3	26bit *
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\* 26-bit are parity bits and 25-bit are status bits

16	Data format
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B	Binary	G	Gray code
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17	Resolution
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1	0.1mm	2	0.05mm
3	0.02mm	4	0.01mm
5	0.005mm	6	0.002mm
7	0.001mm	8	0.04mm
9	0.0005mm	0	0.0001mm

18	Direction
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0	Forward	1	Reverse
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19	Mode
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0	Regular	1	Synchronization	2	High update rate
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20 - 21	Non-usable area at head and end, customizable
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S 0	50.8mm+63.5mm
B 0	30mm+60mm

22-23	Country
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	Refer to the country list
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## SSI Cable accessories selection Guide

SSI - M -   
 01 02 03 04 05 06 07 08 09 10

01 - 03	Type
<span>S</span> <span>S</span> <span>I</span>	SSI interface
04 - 07	Cable length
<span>M</span> <span>*</span> <span>*</span> <span>*</span>	Less than 3 digits are preceded by zeros, and M means metric system, unit m
08 - 10	Cable type, outlet mode
<span>H</span> <span>0</span> <span>1</span>	One end of 7-pin (M16) is female connector, and one end scattered, wire color1
<span>H</span> <span>0</span> <span>3</span>	One end of 7-pin (M16) right angle female connector, and one end scattered, wire color 1
<span>U</span> <span>0</span> <span>1</span>	One end of 7-pin (M16) is female connector, and one end scattered, wire color 2
<span>U</span> <span>0</span> <span>2</span>	One end of 8-pin (M16) is female connector, and one end scattered, wire color 3
<span>U</span> <span>0</span> <span>3</span>	One end of 7-pin (M16) right angle female connector, and one end scattered, wire color 2
<span>U</span> <span>0</span> <span>4</span>	One end of 8-pin (M16) right angle female connector, and one end scattered, wire color 3
Note	H: Cable type, PURsheath, orange, -20~90℃ U: Cable type, PVC sheath, orange, -20~105℃

- Selection example: SSI-M005-H01

Indicates: SSI interface cable, cable length 5 meters, PURsheath, orange, -20~90℃, one end of the cable is 7-pin (M16) female connector, and one end scattered.

- Selection example: SSI-M010-U04

Indicates: SSI interface cable, cable length 10 meters, PVC sheath, orange, -20~105℃, one end of the cable is an 8-pin (M16) right angle female connector, and one end scattered.

