RD Split Displacement Sensor

Technical Characteristics

- Rugged and fully enclosed design
- Non-wear, non-contact measurement method
- Linear measurement, absolute output
- Sealing grade up to IP68
- Low power consumption design effectively reduces system heating
- Ultra-high temperature sensing rod (up to + 125℃)
- Multiple interfaces available: Analog、SSI、Profibus-DP、CANopen、Start-Stop、Profinet、EtherCAT

Product Parameters

• Input

Measurement data	Position Magnet
Stroke length	25mm~5500mm，customized according to customer needs

• Output

Interface	Analog
Resolution	16-bit D/A or 0.0015% of full scale (min. 1μm)
Nonlinearity	< ± 0.01% of full scale, Min. ± 50μm
Repetition accuracy	< 0.001% for full-scale taxis, Min. ± 1μm
Hysteresis	＜10μm
Update time	1KHz（range≤1m） 500Hz（1m＜range≤2m） 250Hz（2m＜range≤3m）， customizable
Temperature coefficient	＜30ppm/℃

• Working conditions

Magnet ring velocity	Arbitrary
Protection level	IP68（Sensor Lever）
Operating temperature	Sensor rod -40℃ ~ +125℃，electronic bin-40℃ ~ +85℃
Humidity/dew point	100%， 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	+24Vdc±20%
operating current	＜100mA（varying with range）
Polarity protection	Max.-30Vdc
Overpressure protection	Max.36Vdc
Insulation resistance	＞10MΩ
Insulation strength	500V

• Structure and materials

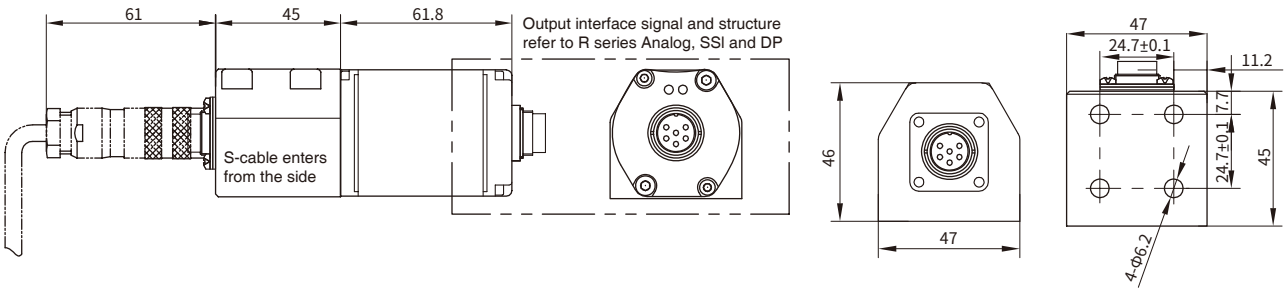
Fault indication	Electronic bin cover with LEDs display
Electronic bin	Aluminum alloy
Measuring rod	304 stainless steel
Outer tube pressure	35MPa (continuous)/70MPa (peak) or 350bar (continuous)/700bar (peak)
Position magnet	Standard Magnet ring and various magnet rings
Mounting thread form	M18×1.5（customizable）
Installation direction	Any direction
Cable outlet mode	Cable outlet cable or connector

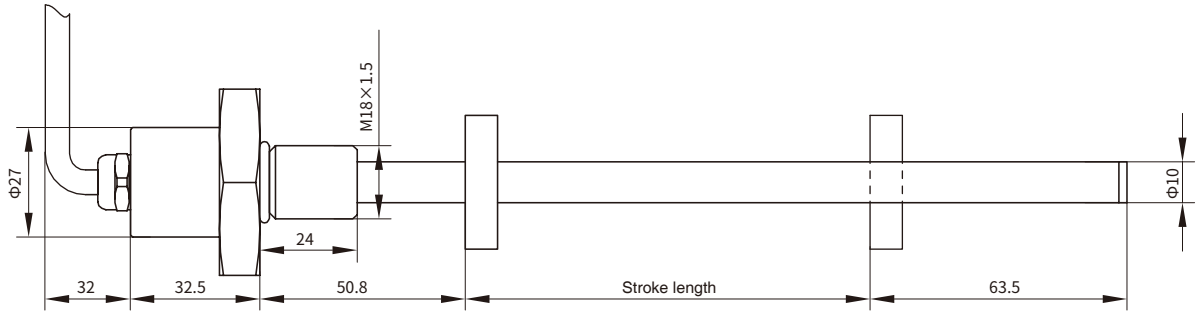
Installation and Use Instructions

• Output characteristic

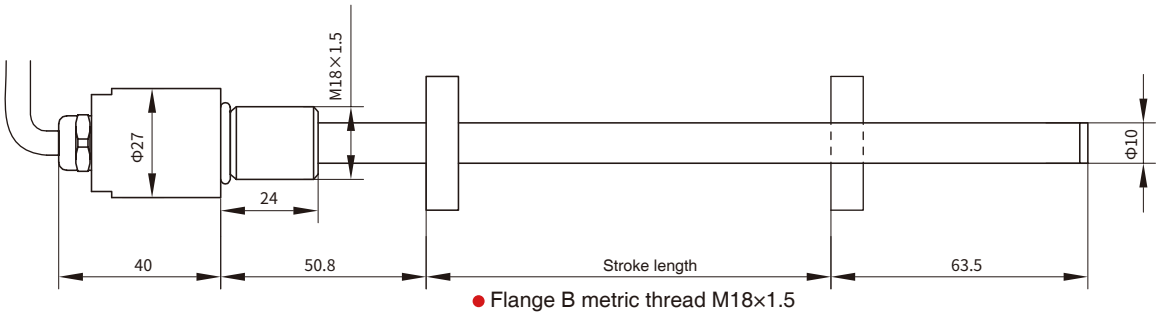
RD Series sensors are designed in a split form and are suitable for installation in cylinder, especially for cylinder applications in confined spaces. The sensor consists of two parts: a sensing rod and an electronic bin. The sensor rod is a pressure-resistant stainless round pipe with threads or flanges to provide protection for the sensing elements, and the whole sensor rod is installed in the cylinder through pistons. The temperature resistance of the sensing rod up to + 125℃, and the protection level reaches IP68, which is very suitable for harsh occasions such as high temperature, high humidity and water vapor; The electronic bin encapsulates the sensor signal processing part and the external interface together, reaching IP67 protection level, and can be connected with the sensor rod through the side or bottom of the connector plate.

• RD Split Sensor Installing Dimensions

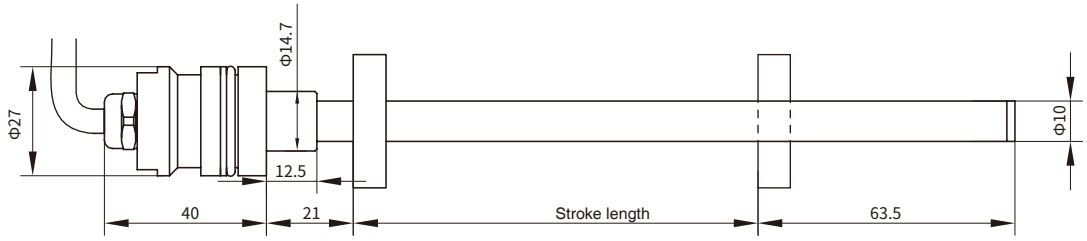




● Flange A metric thread M18×1.5 hexagon flange 46



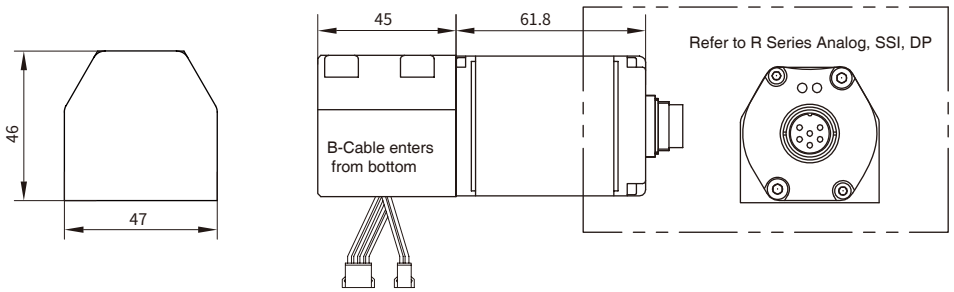
● Flange B metric thread M18×1.5



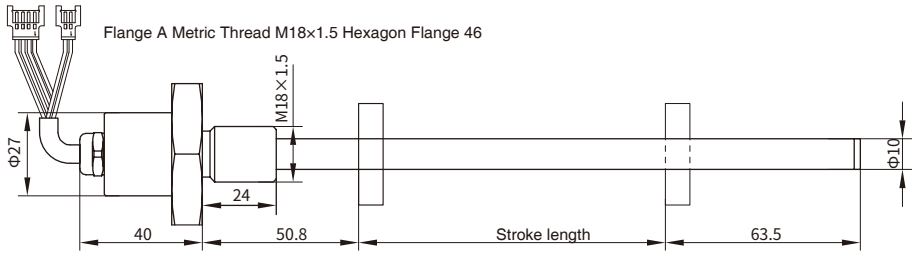
● Flange C connecting flange

Installation and Use Instructions

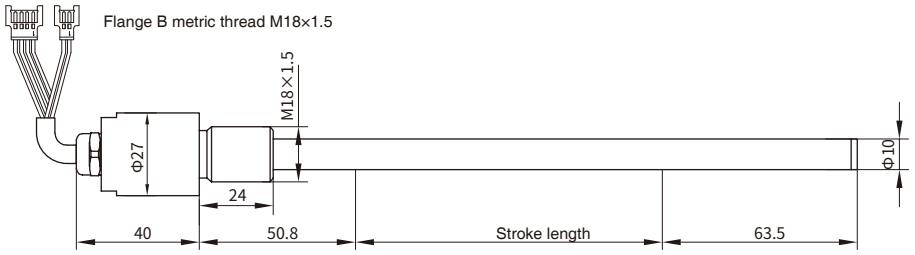
- RD Split Sensor Installing Dimensions



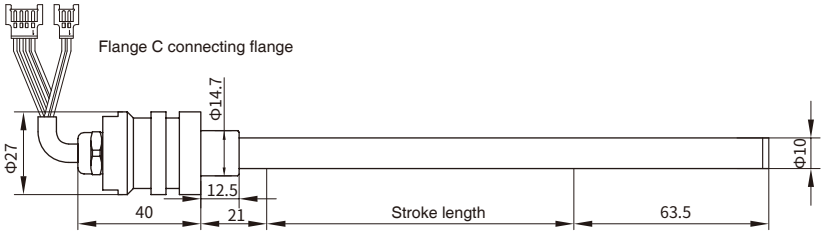
Scattered wire
with plastic plug



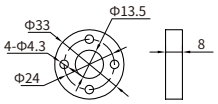
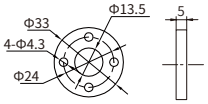
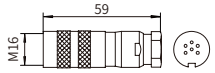
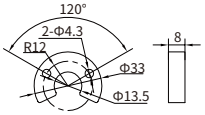
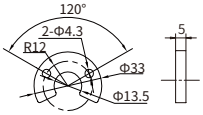
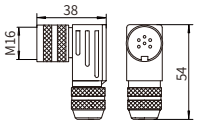
Scattered wire
with plastic plug



Scattered wire
with plastic plug



Common Accessories - Analog 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	

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

Wiring Mode

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

Analog 

• Pin arrangement of six-pin male connector (facing the sensor head)

Pin	Wire color 1*	Wire color 2*	Pin/wire function definition
1	Blue	Grey	No.1 Magnet position signal(+)
2	Green	Pink	Position signal of No.1 Magnet(-)
3	Yellow	Yellow	Reservation
4	White	Green	Reservation
5	Red	Brown	+24Vdc power supply (-20%~+20%)
6	Black	White	0 Vdc (power supply circuit)

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

Analog 

• Pin arrangement of eight-pin male connector (facing the sensor head direction)

Pin	Wire color3*	Pin/wire function definition
1	Yellow	Current output
2	Grey	0Vdc(Current/Voltage Loop)
3	Pink	Reservation
4	-	Reservation
5	Green	0...10V
6	Blue	0 Vdc (power supply circuit)
7	Brown	+24Vdc power supply (-20%~+20%)
8	White	Reservation

Selection Guide-Analog

R D – M _ _ _ _ – _ – _ _ _ – _ _ _ _ – _ _ _ _ – _ _ – _ _

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 D	Split structure

03 - 07 Measuring range

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

08 Outer tube flange

A	M18X1.5 SW46
B	M18X1.5 SW24
C	Connecting flange

09 - 11 Connection mode of outer tube

09 Cable outlet mode

S	Cable enters from the side, PUR cable
B	Cable entry from bottom, independent cable with flat plastic connector
C	Cable entry from side, independent cable with flat plastic connector

10 - 11 Cable length

M 1	1m	M 2	2m	M 3	3m
M 4	1.5m	D 1	250mm	D 2	400mm
D 3	600mm	R 2	65mm	R 4	170mm
R 5	230mm	R 6	350mm		

12 - 15 Connection form

12 - 13 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

14 - 15 PVC sheath, orange,-20~105℃, end 8-pin connector

Note: For supporting cables, please refer to Analog/Start-Stop cable accessories selection

12 - 15 Connector mode

P H 6 0	M16 male connector (6 pins)
P B 8 0	M16 male connector (8 pins)

16 - 19 Signal output mode

16 - 17 Output form and direction

A 0	Current output，4 ~ 20mA
A 1	Current output，20 ~ 4mA
A 2	Current output，0 ~ 20mA
A 3	Current output，20 ~ 0mA
V 0	Voltage output，0 ~ 10V
V 1	Voltage output，10 ~ 0V
V 2	Voltage output，-10 ~ +10V
V 3	Voltage output，+10 ~ -10V
V 4	Voltage output，0 ~ 5V
V 5	Voltage output，5 ~ 0V
V 6	Voltage output，-5 ~ +5V
V 7	Voltage output，+5 ~ -5V

18 Number of Magnet rings

1	Single Magnet ring

19 No Magnet ring state

A	Keep the original value
B	Max. value
C	Min. value

20 - 21 Non-usable area at head and end, customizable

S 0	50.8mm+63.5mm
B 0	30mm+60mm

22-23 Country

	Refer to the country list，page 130.

- 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 examples:RD-M0500-A-SM1-PH60-A01C-S0-CN

  Indicates: the ordered product is split-mounted RD structure, stroke length is 500m, outer tube flange M18X1.5, SW46 electronic bin and sensor rod connecting side cable outlet, cable length is 1m. Six-pin connector, 4-20mA output, No Magnet ring output value is the Min., single magnet ring, head non-usable area 50.8 mm, end non-usable area 63.5 mm.

Selection 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 and outlet mode
H 0 1	One end of 6-pin (M16) female connector, and one end scattered, wire color 1
H 0 3	One end of 6-pin (M16) right angle female connector, and one end scattered, wire color 1
U 0 1	One end of 6-pin (M16) female connector, and one end scattered, wire color 2
U 0 2	One end of 8-pin (M16) female connector, and one end scattered, wire color 3
U 0 3	One end of 6-pin (M16) right angle female connector, and one end scattered, wire color 2
U 0 4	One end of 8-pin (M16) right angle female connector, and one end scattered, wire color 3
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, cable length 5 meters, PURsheath, orange, -20~90°C, one end of the cable is 6-pin (M16) female connector, and one end scattered.

- Selection example:AST-M010-U04
  Indicates: Analog or Start-.Stop interface cable, cable length 10 meters, PVC sheath, orange, -20~105C, one end of the cable is an 8-pin (M16) right angle female connector, and one end scattered.