RB Flat 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

Product Parameters

• Input

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

• 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% of full scale, Min. ± 1μm
Hysteresis	＜10μm
Update time	1KHz（range≤1m） 500Hz（1m＜range≤2m） 250Hz（2m＜range≤3m），customizable
Temperature coefficient	＜30ppm/℃

• Operating conditions

Magnet ring velocity	Arbitrary
Protection level	IP67
Operating temperature	-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
Overvoltage protection	Max.36Vdc
Insulation resistance	＞10MΩ
Insulation strength	500V

• Structure and materials

Electronic bin	304 stainless steel
Measuring rod	304 stainless steel
Outer tube pressure resistance	35MPa (continuous)/70MPa (peak) or 350ba (continuous)/700ba (peak)
Position magnet	Standard magnetic ring and various ring magnets
Mounting thread	6 M6X16 screws，M18×1.5、 M20×1.5（Customizable）
Installation direction	Any direction
Connection type	Cable outlet or connector

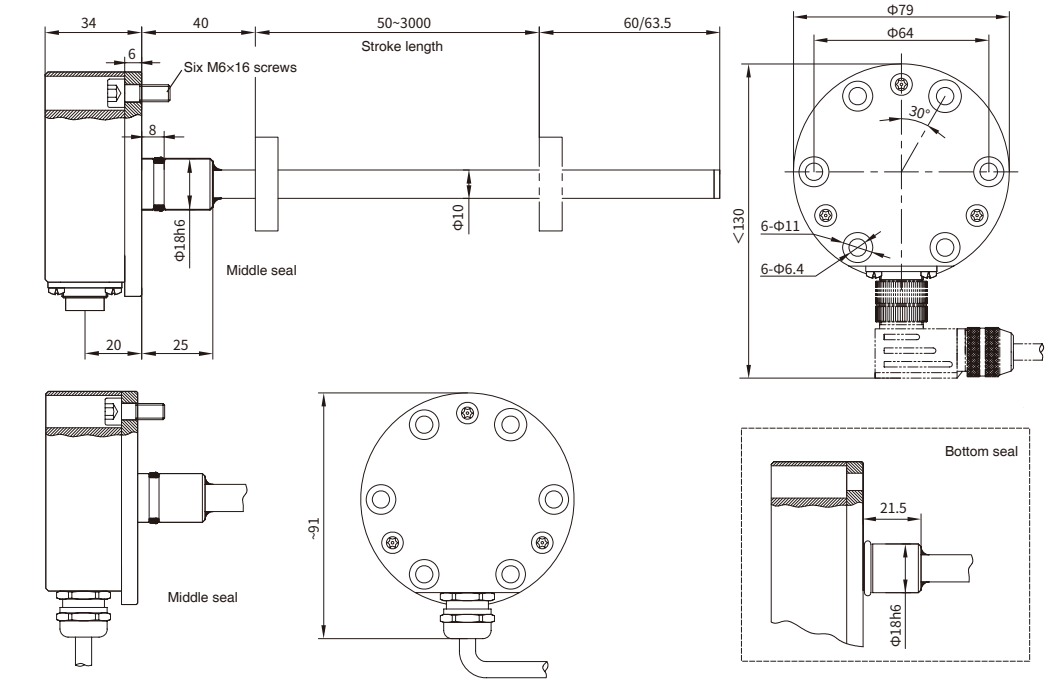
Aa Installation and Instructions for use

• Output characteristic

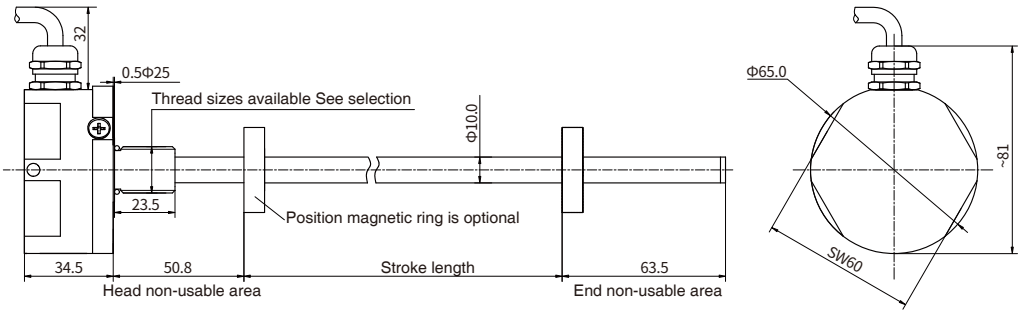
RB series sensors have high-strength protective shell and high working temperature, and are durable, which can provide users with continuous, reliable and real-time displacement signals in harsh environment. The sensor has a completely stainless steel shell. It is suitable for installing in hydraulic cylinder and measuring the stroke of piston, and is widely used in energy and mining industries. Thanks to its flat and compact design, the sensor is very suitable for cylinder installation in narrow space.

• Installation dimensions

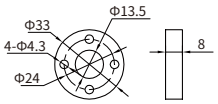
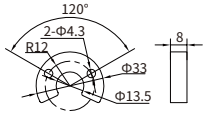
Tight pressure seal type

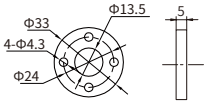
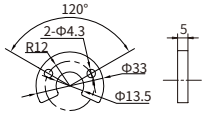


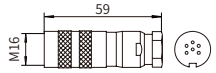
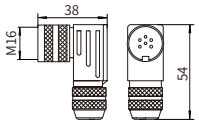
External thread type



C C Common Accessories - Analog Output

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

Accessory name/ model	Dimensions
Magnetic isolation gasket	
Sector magnetic isolation gasket	

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 a 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

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

Pin	Wire color 1*	Wire color 2*	Pin/wire function definition
1	Blue	Grey	No. 1 magnet ring position signal(+)
2	Green	Pink	No. 1 magnet ring position signal(-)
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℃

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

Pin	Wire color 3*	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

X x Selection Guide-Analog

R	B	–	M					–			–					–					–			–		
01	02		03	04	05	06	07		08	09		10	11	12	13		14	15	16	17		18	19		20	21

01 - 02	Sensor shell form
R B	Compact sealing installation

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

08 - 09	Installation form
S 1	Bottom seal
S 2	Middle seal
S A	M18X1.5 measuring rod diameter 10mm, 304 material
S B	M20X1.5 measuring rod diameter 10mm, 304 material

10 - 13	Connection form
10 - 11	For cable outlet
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 with 6-pin connector
D V	PVC sheath, orange,-20~105℃, end with 6-pin connector
D C	PVC sheath, orange,-20~105℃, end with 8-pin connector
12 - 13	For cable outlet: cable length, 01~99 meters
10 - 13	For connector
P H 6 0	M16 male connector (6 pins)
P B 8 0	M16 male connector (8 pins)

Note: For supporting cables, please refer to Analog/Start-Stop Cable Accessories Selection

14 - 17	Signal output mode
14 - 15	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
16	Number of magnet ring
1	Single magnet ring
17	No magnet ring state
A	Keep the original value
B	Max. value
C	Min. value
18 - 19	Non-usable area at head and end, customizable
S 4	40mm+60mm
20-21	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.

- Examples of selection： RB-M3600-S1-PH60-A01C-S4-CN

  Indication: The product is a compact sealed RB structure, with an effective stroke of 3600 mm, a bottom sealed M18×1.5, six-pin connector, output of 4-20 mA, Min. output value of no magnet ring state, single magnet ring, non-usable area of 40mm at the head and 60mm at the end.

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.