

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

CC 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
Resolution	Analog: 16-bit D/A or 0.0015% of full scale (min. 1μm) Digital quantity: 1 / 2 / 5 / 10 / 20 / 40 / 50 / 100 μm
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

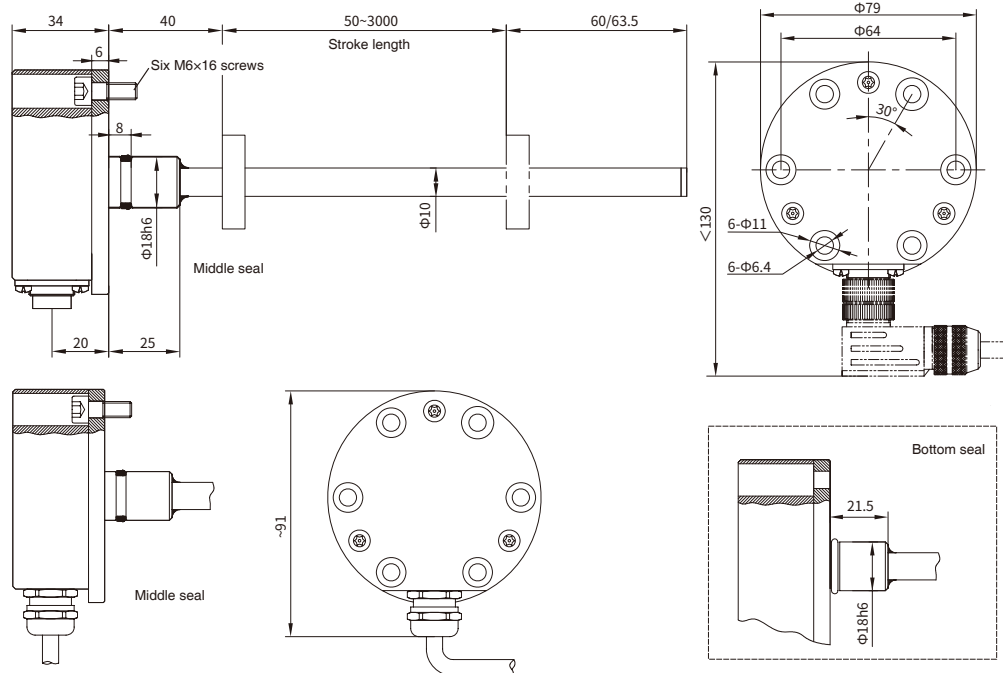
A a Installation and Instructions for use

• Output characteristic

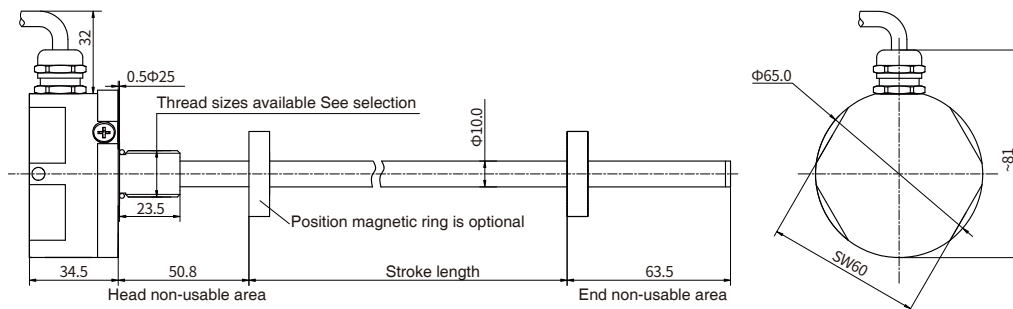
RB series sensors have high-strength protective shell and high working temperature, and are durable, which can provide users with continuous, reliable and real-time displacement signals in harsh environment. The sensor has a completely stainless steel shell. It is suitable for installing in hydraulic 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 Commonly used accessories

Accessory name/ model	Dimensions	Accessory name/ model	Dimensions
Standard magnetic ring Order No.: 211501		Standard Magnet ring Kit Order No.: 288501	

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

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	
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



• 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 B - 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 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 7-pin connector
D V	PVC sheath, orange, -20~105℃, end with 7-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 7 0	M16 male connector (7 pins)
P B 8 0	M16 male connector (8 pins)

Note: See SSI cable fittings selection for supporting cables

14 - 19	Signal output mode
---------	--------------------

15	Data length
----	-------------

1	24bit	2	25bit	3	26bit*
---	-------	---	-------	---	--------

* 26-bit are parity bits and 25-bit are status bits

16	Data format
----	-------------

B	Binary	G	Gray code
---	--------	---	-----------

17	Resolution
----	------------

1	0.1mm	2	0.05mm
3	0.02mm	4	0.01mm
5	0.005mm	6	0.002mm
7	0.001mm	8	0.04mm

18	Direction
----	-----------

0	Forward	1	Reverse
---	---------	---	---------

19	Mode
----	------

0	Regular
---	---------

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

S 4	40mm+60mm
-----	-----------

22-23	Country
-------	---------

	Refer to the country list, page 130.
--	--------------------------------------

SSI Cable accessories selection Guide

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

01 - 03	Type
S S I	SSI 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 end of 7-pin (M16) is female connector, and one end scattered, wire color1
H 0 3	One end of 7-pin (M16) right angle female connector, and one end scattered, wire color 1
U 0 1	One end of 7-pin (M16) is female connector, and one end scattered, wire color 2
U 0 2	One end of 8-pin (M16) is female connector, and one end scattered, wire color 3
U 0 3	One end of 7-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, 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.

