

FBGB Explosion-Proof 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
- Pressure resistance and explosion-proof, high explosion-proof grade
- Strong anti-interference performance and high reliability
- Multiple interfaces are available: Analog、SSI、CANopen

C Product Parameters

• Input

Measurement data	Position Magnet ring
Stroke length	25mm~5500mm, customized according to customer needs
Number of measurements	1

• Output

Interface	SSI
Resolution	0.1 / 0.5 / 1 / 2 / 5 / 10 / 20 / 40 / 50 / 100 μ 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 ≤ 1 m) 500Hz (1m < range ≤ 2 m) 250Hz (2m < range ≤ 3 m) , customizable
Temperature coefficient	$< 30\text{ppm}/^\circ\text{C}$

• Working conditions

Magnet ring velocity	Arbitrary
Protection level	IP67
Operating temperature	$-40^\circ\text{C} \sim +85^\circ\text{C}$
Humidity/dew point	The humidity is 90, and dew cannot be condensed
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
Certified Exd II BT6	Comply with GB3836.1-2010 and GB3836.2-2010 standards Temperature range: T6 (85 $^\circ\text{C}$ surface)

• Electrical Connection

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

• Structure and materials

Electronic bin	304 stainless steel
Measuring rod	304/316 L stainless steel
Outer tube pressure	35MPa (continuous)/70MPa (peak) or 350ba (continuous)/700ba (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	Special cable outlet(flameproof cable lead-in device)

FBGB series explosion-proof shell sensor is an explosion-proof structure composed of shell, electronic bin, sensor and lead-in device. It is designed for cylinder built-in installation under harsh environment. The working pressure is 35MPa continuous, flexible and simple installation mode. The Mounting thread form M18×1.5 or M20×1.5 or inch 3/4"-16UNF-3A.

Technical drawing of the measuring range of the probe. The drawing shows a side view of the probe assembly. Key dimensions and labels include:

- Overall height: 105.5 ± 3
- Height of the main body: $\Phi 55$
- Height of the main body: 50
- Thread specification: M18 \times 1.5
- Distance from the main body to the measuring range start: 24
- Distance from the main body to the measuring range start: 50.8
- Measuring range length: 63.5
- End non-usable area diameter: $\Phi 10$
- Labels: Head non-usable area, Measuring range, End non-usable area

Technical drawing of the Ex-cable lead-in device. The side view shows a cylindrical body with a diameter of $\Phi 50$ and a total length of 92. The front flange has a diameter of 50.8 and a thickness of 24. The rear flange has a diameter of 30. The measuring range is 63.5. The end non-usable area is 50.8. The side view also shows a section of the cable with a diameter of $\Phi 10$. The top view shows a hexagonal base with a diameter of 50 and a height of 56.2.

C Common Accessories - SSI Output

Accessory name/ model	Dimensions	Accessory name/ model	Dimensions
Standard Magnet ring Order No.: 211501		Magnetic isolation gasket	
Sector magnet Order No.: 211502		Sector magnetic isolation gasket	

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

FBGB - 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 24 25

01 - 04	Sensor shell form
F B G B	Explosion-proof flameproof sensor

05 - 09	Measuring range
	Four digits, less than four digits are preceded by zero, M means metric system, unit mm

10 - 11	Magnet ring type/mounting thread form
S 1	M18×1.5, 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

12 - 15	Connection form
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12 - 13	Cable outlet mode
D H	Cable outlet, PUR sheath, orange,-20~90℃, end scattered
D U	Cable outlet, PVC sheath, orange,-20~105℃, end scattered
S H	Side outlet, PUC sheath, orange,-20~90℃, end scattered
S U	Side outlet, PVR sheath, orange,-20~105℃, end scattered

14 - 15	Cable outlet mode: cable length, 01~99 meters
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Note: See SSI cable Accessories selection for supporting cables

16 - 21	Signal output mode
17	Data length

1	24bit	2	25bit	3	26bit *
* 26-bit are parity bits and 25-bit are status bits					

18	Data format			
	B	Binary	G	Gray code

19	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
	9	0.0005mm	0	0.0001mm

20	Direction	
0	Forward	1 Reverse

21	Mode				
0	Regular	1	Synchronization	2	High update rate

22 - 23	Non-usable area at head and end, customizable
S 0	50.8mm+63.5mm
B 0	30mm+60mm

24-25	Country
	Refer to the country list