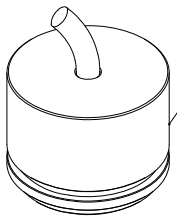
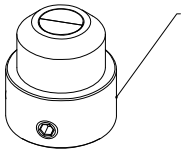
1. WSN22 Bearingless Incremental Blind Encoder (Magnetic Blind Hole)

1.1 Introduction:
WSN22 is a micro-miniature through shaft incremental encoder with compact structure and high reliability, differential circuit output, protection grade IP67, which is commonly used in small equipment and space-constrained industrial automation fields.

WSN22-L





1.2 Feature:
- Encoder external diameter Ø22mm, shaft diameter up to Ø6mm;
- Utilizes a contactless magnetic induction principle;
- The magnet holder and shaft are connected with a set screw for easy and reliable installation.
- Reverse polarity & output short circuit protection;
- Resolution per turn up to 16384PPR.

1.3 Application:
Automation control fileds such as textile machinery, printing machinery, micro motors, small instruments, etc.,

1.4 Connection:
Axial cable(standard length 1M);

1.5 Protection:
IP67

1.6 Weight:
About 30g.

2. Model Selection Guide

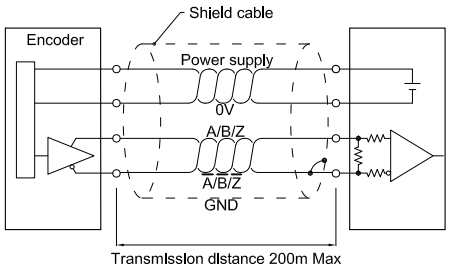
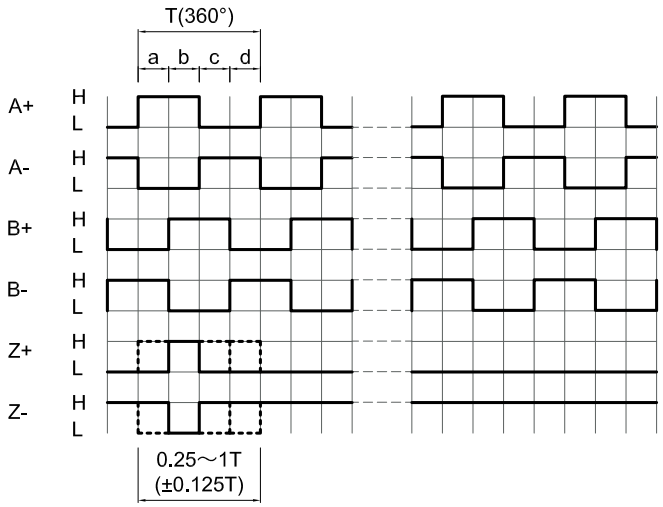
2.1 Model composition(select parameters)

WSN22-	L	6	D	E	200	M6		-	000
Product model series	Connection: L=Axial cable	Output phase: 3=A+B+Z 4=A+$\overline{A}$+B+$\overline{B}$ 6=A+$\overline{A}$+B+ $\overline{B}$+Z+$\overline{Z}$	Z phase width: A=0. 25T B=0. 5T C=1T D=180°	Electrical interface: E=HTL (DC7-30V) C=TTL(DC5V)	Resolution PPR: 1～16384	Diameter of shaft: blind hole M6=Ø6mm (Other shaft diameter can be customized; please contact sales for details)	Special requirement: Blank=❶		Management No.

2. 2 Note

❶. None indicated for IP67, cable length of 1M, if need to change the length C+number, the longest is 100M (expressed by C100)

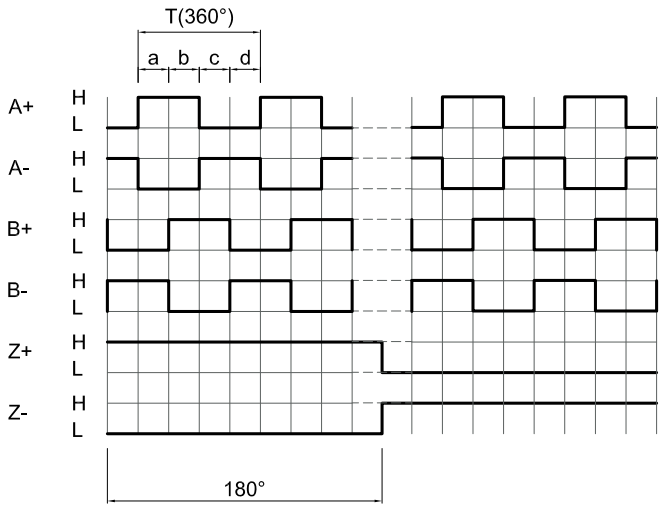
3. Output Mode

Electrical interface	TTL (DC5V)	HTL (DC7-30V)
Output circuit		
Output waveform		

a.b.c.d=$\frac{T}{4}\pm\frac{T}{8}$

Phase A is ahead of B by $\frac{T}{4}\pm\frac{T}{8}$, viewing from shaft end, direction is counterclockwise rotation. (See dimensional drawings)

CCW direction



4. Electrical Parameter

Parameter / Output type / Item			TTL	HTL
Supply voltage			DC5V±5%	DC7V-30V±5%
Consumption current			100mA Max	
Allowable ripple			≤3%rms	
Top response frequency			300KHz	500KHz
Output capacity	Output current	Input	≤±20mA	
		Output		
	Output voltage	"H"	≥2.5V	≥Vcc-3 VDC
		"L"	≤0.5V	≤ 1V VDC
Rise & fall time			Less than 1us(Cable length：2m)	
Electrical Protection			Reverse polarity and output short circuit protected❶	
Mark to space ratio			45% to 55%	
Phase shift between A & B			90°±10° (frequency in low speed)	
			90°±20° (frequency in high speed)	
GND			Not connect to encoder	

❶ Short-circuit to another channel, permitted for max 30s.

5. Mechanical Specification

Diameter of shaft	Ø6mm (Stainless steel material)
Allowable max speed	＜10000 rpm （Shaft speed）
Shell	Aluminium alloy
Weight	About 30g

6. Environmental Parameter

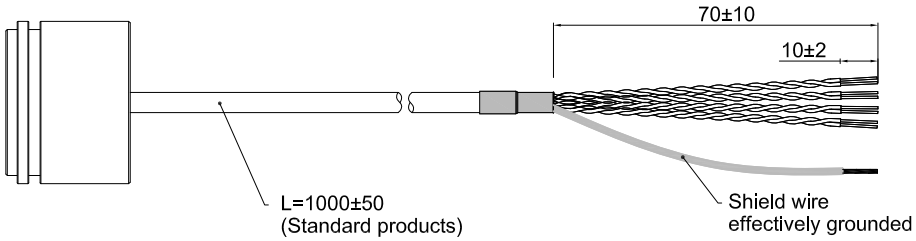
Environmental temperature	Operating:－40～+70°C; Storage:－40～+75°C
Environmental humidity	Operating and storage：35～95％RH(noncondensing)
Protection of shell	IP67

7. Wiring Table

7.1 TTL & HTL (cable connection table)

	Supply voltage		Incremental signal					
Wire color	Red	Black	White	White/BK	Green	Green/BK	Yellow	Yellow/BK
Function	Up	0V	A+	A-	B+	B-	Z+	Z-
Twisted-paired cable								

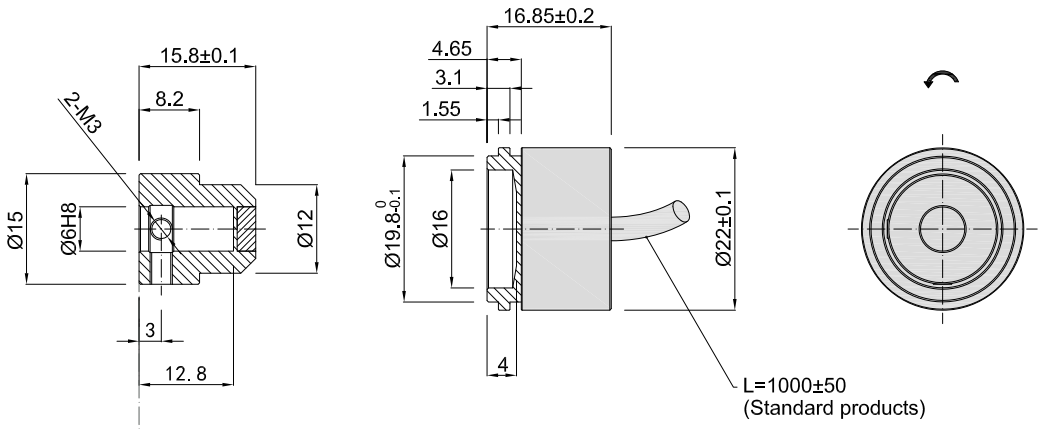
Up=Supply voltage.
Shield wire is not connected to the internal circuit of encoder.



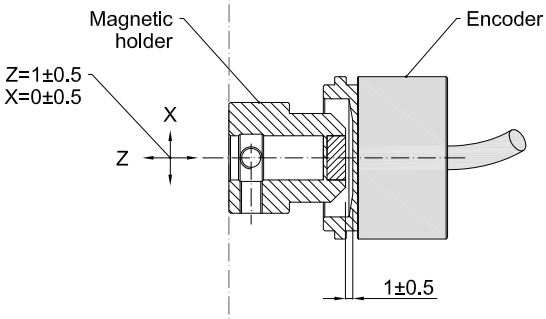
Unit: mm

8. Basic Dimension

8.1 Product dimension

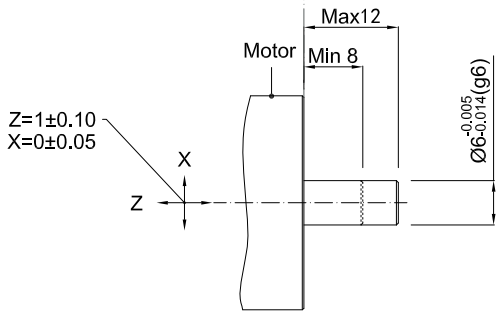


8.2 Assembly requirement



Installation top screw
Top screw Specification：M3*4 Material：Carbon steel Quantity：2

8.3 Specification for mounting shaft



Unit: mm

= Shaft rotation direction of the incremental signal output

9. Caution

9.1 External magnetic field interference

Magnetic encoders are very sensitive to strong magnetic fields and should be installaed away from strong magnetic devices such as high-current busbars, transformers, permanent magnet synchronous motors (which contain strong permanent magnets), and electromagnets. If this is unavoidable, a high-permeability magnetic shiled (such as Permalloy) can be added to the encoder for isolation.

9.2 Temperature effects

- High temperature reduce the magnetic strength of magnets and accelerate the aging of magnetic components. Ensure that the operating temperature is within the specified range.
- Low temperatures may delay signal response, and exceeding this range can easily cause malfunctions.

9.3 Contaminants

Although magnetic encoders are insensitive to dust, oil, and condensation, the accumulation of metal power (iron filings) and magnetic debris on the encoder disk must be strictly controlled.

9. 4 Caution for wiring

- Use the encoder under the specified supply voltage. Please note that the supply voltage range may drop due to the wiring length.
- Do not put the encoder wiring and other power lines through the same duct, and do not use them by bundling in parallel.
- Please use twisted pair wires for the signal and power wires of encoder.
- Please do not apply excessive force to the cable of encoder, or it will may be damaged.

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