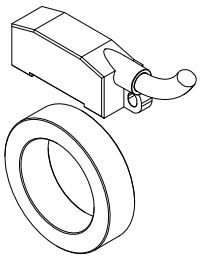
1. WSN49 Bearing-less Magnetic Encoder (Hollow Shaft)

1.1 Introduction:

WSN49 is a maintenance-free off-axis bearing-less magnetic encoder, which is quick, easy and space-saving to install, highly resistant to pollution and shock, and is widely used in industrial automation fields with relatively poor environments.

WSN49-A
(Magnetic rotor)



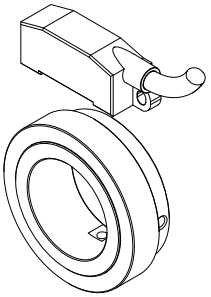
1.2 Feature:

- Adopts non-contact magnetic induction principle;
- High precision, max error ± 0.3°;
- Max speed: 18000 rpm;
- Output circuit: HTL or TTL;
- Resolution up to 8192PPR per cycle;
- Reverse polarity protection;
- Short circuit protection;
- Magnetic rotor is included in the scope of delivery.

1.3 Application:

Automation control fields such as textiles, packaging, motors, elevators, CNC, etc.,

WSN49-B
(Magnetic rotor)



1.4 Connection:

Cable (standard length 1M)

1.5 Protection:

IP67

1.6 Weight:

About 250g

2. Model Selection Guide

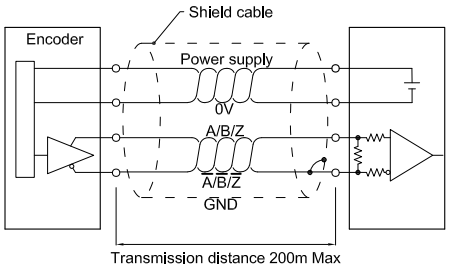
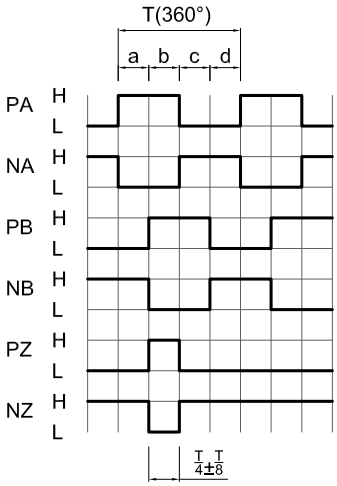
2.1 Model composition(select parameters)

WSN49–	J	6	L	1024	A	28		–	000
Series product model	Connection: J=cable	Output phase: 4=A+$\overline{A}$+B+$\overline{B}$ 6=A+$\overline{A}$+B+$\overline{B}$+Z+$\overline{Z}$	Electrical interface: L=TTL (DC5V，26C31) E=HTL (DC8-30V)	Resolution PPR: A type rotor：64；128；256；512；1024；2048；4096；8192 B type rotor：400；800；1000；2000；4000；8000	Rotor type: (OD) A=Ø40.3mm B=Ø50mm	Rotor shaft diameter: A type rotor: 9=Ø9mm 10=Ø10mm 12=Ø12mm 14=Ø14mm 15=Ø15mm 19=Ø19mm 25=Ø25mm 28=Ø28mm B type rotor: 25=Ø25mm 28=Ø28mm 30=Ø30mm		Special specifications: No indication=❶	Management No.

2. 2 Note

❶. None indicated for IP67 and cable length of 1M, if need to change the length C+number, the longest is 100M (expressed by C100). For the specific length of use, please refer to page 2 of the provision of output circuit.

3. Output Mode

Electrical interface	Output circuit	Output wave form
TTL (DC5V) HTL (DC8-30V)		 a.b.c.d=$\frac{T}{4}\pm\frac{T}{8}$ Phase A is ahead of B by $\frac{T}{4}\pm\frac{T}{8}$, counterclockwise rotation when viewed from the mounting surface (See P4 dimensional drawings) CCW direction

4. Electrical Parameter

Parameter / Output type / Item			TTL	HTL
Supply voltage			DC+5V±5%	DC8-30V±5%
Consumption current			50mA Max	
Allowable ripple			≤3%rms	
Top response frequency			300KHz	300KHz
Output capacity	Output current	Input	≤±20mA	≤±30mA
		Output		
	Output voltage	"H"	≥2.5V	≥Vcc-3 VDC
		"L"	≤0.5V	≤ 1V VDC
	Load voltage		—	
Rise & Fall time			≤500ns Less than 1us(Cable length：2m)	
Reverse polarity protection			✔	
GND			Not connect to encoder	

5. Mechanical Specification

A magnetic rotor shaft diameter	Ø9mm; Ø10mm; Ø12mm; Ø14mm; Ø15mm; Ø19mm; Ø25mm; Ø28mm (optional)
B magnetic rotor shaft diameter	Ø25mm; Ø28mm; Ø30mm (optional)
Rotor material	Stainless steel
Max speed allowed	≤18000 rpm
Sensor housing	Plastic
Weight	About 250g

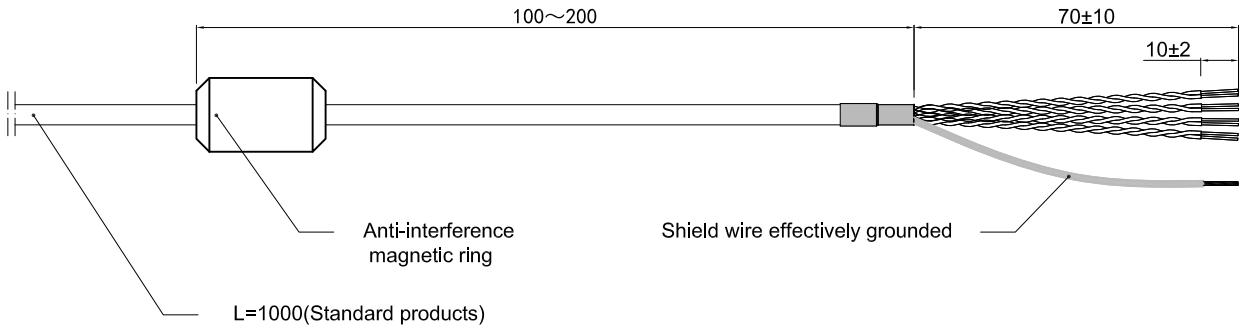
6. Environmental Specification

Environmental temperature	Operating:—40～+100°C(repeatable winding cable: -10°C); Storage:—40～+100°C
Environmental humidity	Operating and storage：35～85%RH(noncondensing)
Protection	IP67

7. Wiring 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.

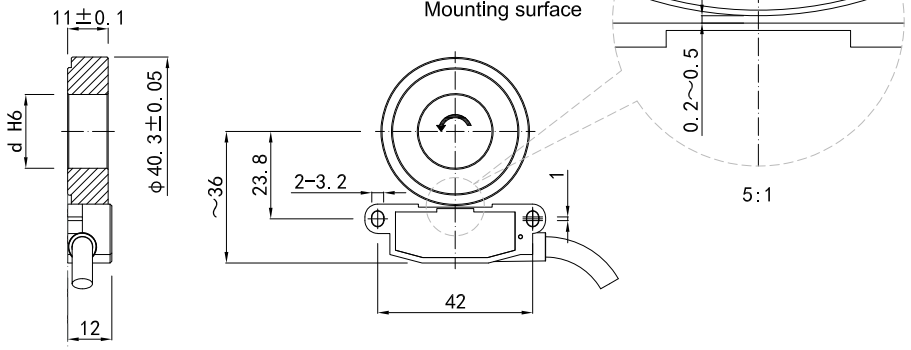


Unit: mm

8. Basic Dimension

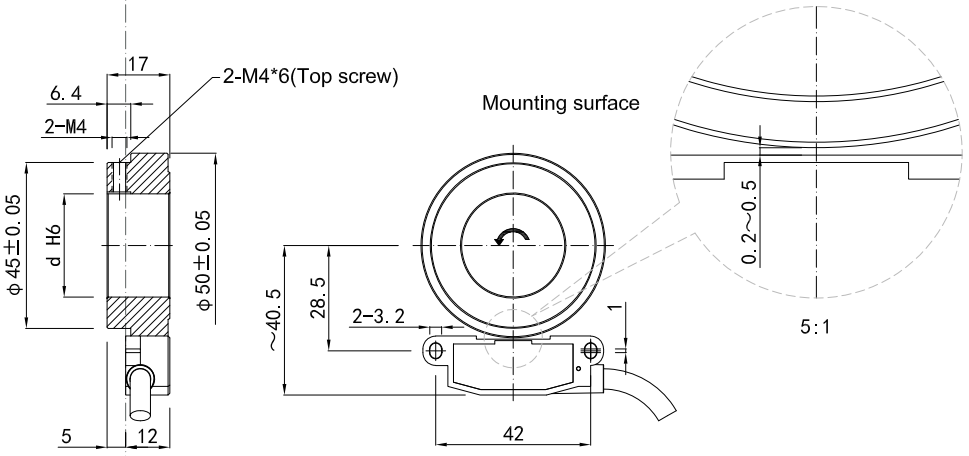
8.1 WSN49-A (Magnetic rotor)

d H6
$\phi 9_{H6}\ (^{+0.009}_{0})$
$\phi 10_{H6}\ (^{+0.011}_{0})$
$\phi 12_{H6}\ (^{+0.011}_{0})$
$\phi 14_{H6}\ (^{+0.011}_{0})$
$\phi 15_{H6}\ (^{+0.011}_{0})$
$\phi 19_{H6}\ (^{+0.013}_{0})$
$\phi 25_{H6}\ (^{+0.013}_{0})$
$\phi 28_{H6}\ (^{+0.013}_{0})$

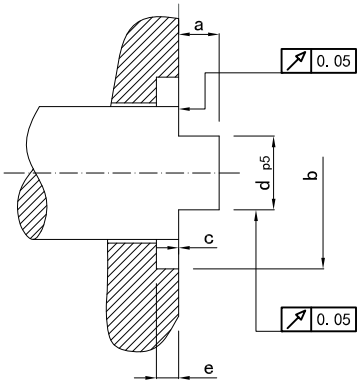


8.2 WSN49-B (Magnetic rotor)

d H6
$\phi 25_{H6}\ (^{+0.013}_{0})$
$\phi 28_{H6}\ (^{+0.013}_{0})$
$\phi 30_{H6}\ (^{+0.013}_{0})$



8.3 Installation shaft specification



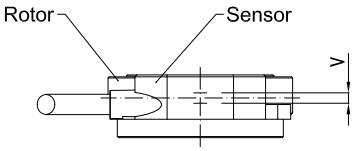
Item	A magnetic rotor	B magnetic rotor
a	min.11	min.12
b	Ø38	Ø46
c	0±0.1	5±0.1
e	min.1	min.6

Unit: mm

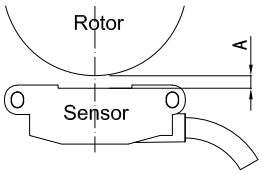
= Shaft rotation direction of signal output

9. Installation Note

9. 1 Installation tolerance, operating tolerance

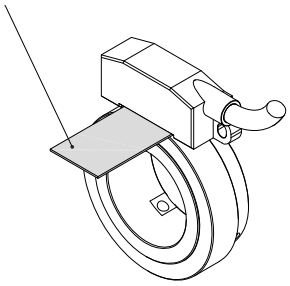


Axial offset：
V=±0.5mm，optimal 0.1mm

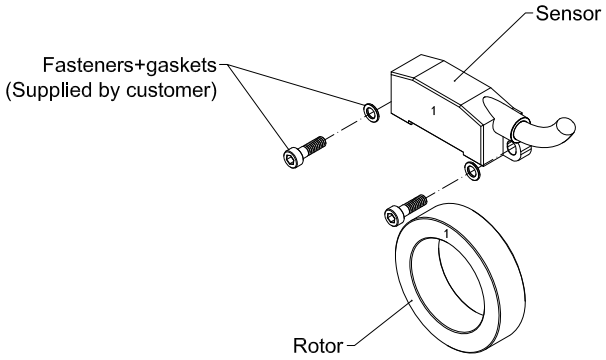


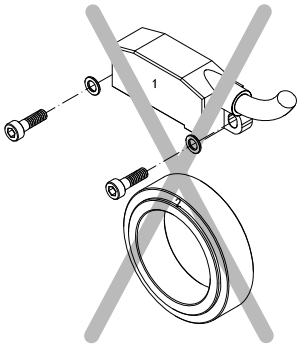
Working distance：
A=0.2-0.5mm，optimal 0.3mm

Use distance card as installation tool
to achieve optimal gap between
sensor and rotor (0.3mm)

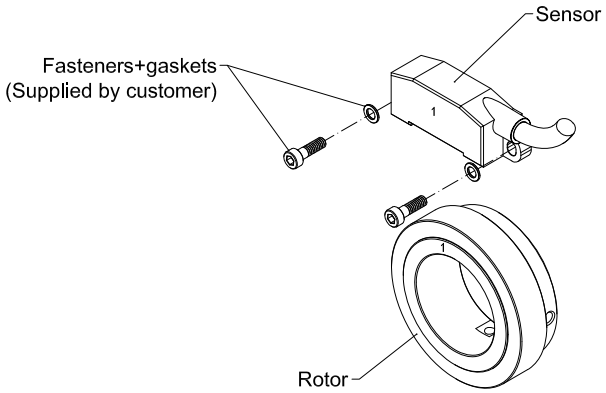


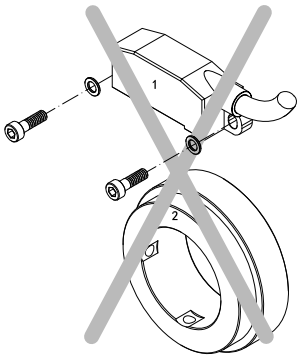
9. 2 A magnetic rotor - (Installation direction)
The installation position of the rotor and sensor must not be changed! (As shown below)





9. 3 B magnetic rotor - (Installation direction)
The installation position of the rotor and sensor must not be changed! (As shown below)





10. Precaution

10.1 Precaution for installation

- The system consists of a sensor and a rotor, forming a pair of matching components, which cannot be replaced separately.
- Do not bring the motor power line close to the encoder.
- The FG line of the motor and the FG of the mechanical device must be reliably grounded.

10.2 Precaution on wiring

- When used under the specified power supply voltage, please pay attention to the drop in power supply voltage amplitude due to long wiring.
- Do not put the encoder line and other power lines in the same pipeline or bundle them in parallel.
- Please use twisted pair for the signal line and power line of the encoder line.
- Do not apply excessive force to the encoder harness, which may cause the wire to break.
- Due to the shielded line is not connected to the encoder body, please connect the shielded line to the ground effectively at the user end.

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