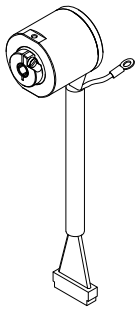
1. KSN19 Incremental Optical Encoder (Hollow Shaft Blind Hole)

1.1 Introduction:

KSN19 is a micro-miniature through shaft incremental encoder with compact structure and high reliability, differential circuit output, which is commonly used in small equipment and space-constrained industrial automation fields.

KSN19-J

KSN19-JE



1.2 Feature:

- Encoder external diameter Ø19mm, shaft diameter up to Ø3mm;
- The motor shaft is locked with a buckle, which makes installation easy and reliable;
- Reverse polarity & output short circuit protection;
- Resolution per turn up to 16384PPR.

1.3 Application:

Bill counting machines, printers, micro motors, small instruments and other automation control fields.

1.4 Connection:

- Radial cable(standard length 0.5M);
- Radial cable+plug(standard length 70mm).

1.5 Protection:

IP50

1.6 Weight:

About 26g.

2. Model Selection Guide

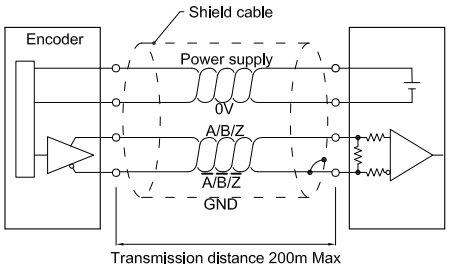
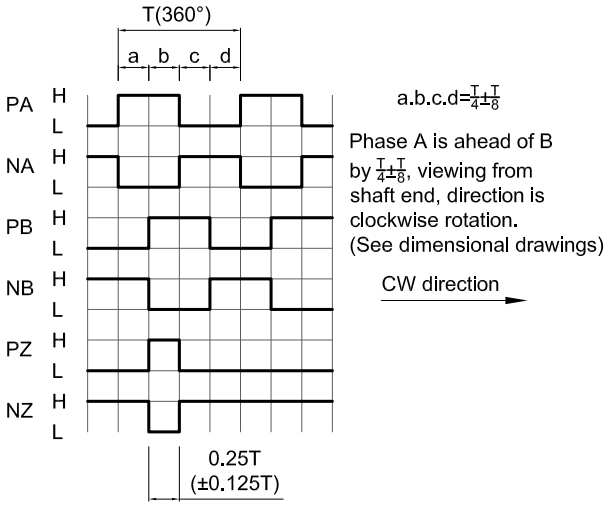
2.1 Model composition(select parameters)

KSN19-	JE	6	C	5000	B3			-	000
Product model series	Connection: J=Radial cable JE=Radial cable (+plug)	Output phase: 6=A+B+Z +$\overline{A}$+$\overline{B}$+$\overline{Z}$	Electrical interface: E=HTL C=TTL	Resolution PPR: 100; 250; 256; 300; 360; 500; 512; 600; 720; 1000; 1024; 1200; 1440; 2000; 2048; 2500; 3600; 4000; 4096; 5000; 8000; 8192; 10000; 16384	Diameter of shaft: (Blind hole) B3=Ø3mm	Supply voltage: Blank=DC5V H=DC8-30V	Special requirement: Blank=❶		Management No.

2. 2 Note

❶. None indicated for IP50, the standard cable length with plug is 70mm, the standard cable length without plug is 0.5M.
If you need to change the length, C+number, the max length is 10M (indicated by C10). Please consult with sales for specific needs.

3. Output Mode

Electrical interface	Output circuit	Output wave form
HTL (DC8-30V) TTL (DC5V)		

4. Electrical Parameter

Parameter / Item \ Output type			TTL	HTL
Supply voltage			DC5V±5%	DC8V-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)	
Accuracy			±0.8 arc-min	
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	Ø3mm (Stainless steel material)
Starting torque	＜0.005Nm at 25℃
Inertia moment	Less than 0.3×10^{-6} kg·m²
Shaft load	Radial 2N; Axial 2N
Allowable max speed	＜6000 rpm （Shaft speed）
Bearing life	＞$1.9\text{x}10^{10}$ revolutions at rated load
Shell	Aluminium alloy
Weight	About 26g

6. Environmental Parameter

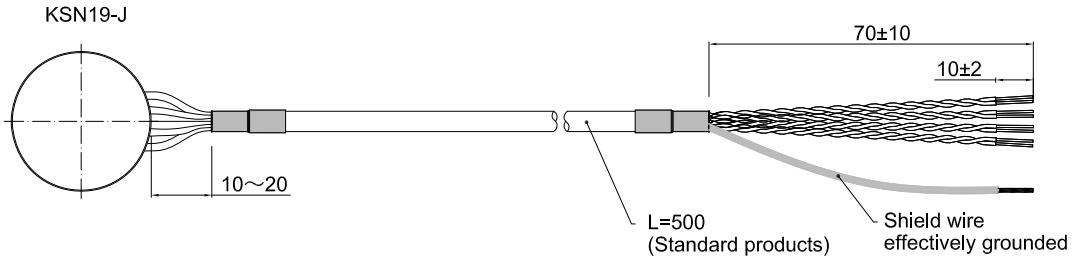
Environmental temperature	Operating:－20～+80°C; Storage:－20～+85°C
Environmental humidity	Operating and storage：35～95％RH(noncondensing)
Vibration(Endurance)	10~2000Hz/10G
Shock(Endurance)	100G 11ms
Protection of shell	IP50

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								

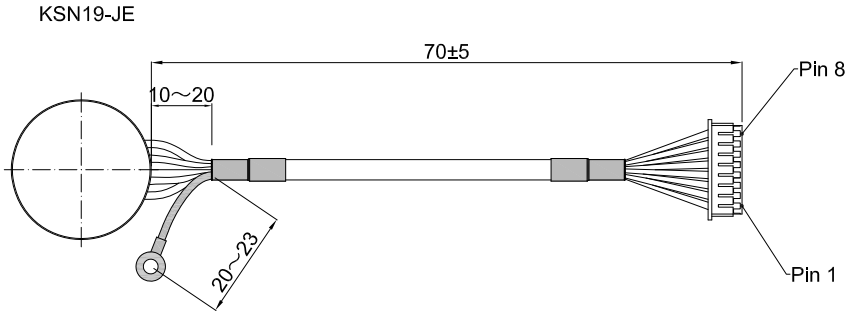
Up=Supply voltage.
Shield wire is not connected to the internal circuit of encoder.



7.2 TTL & HTL (Cable + plug connection table)

Plug definiton	Connector model number：JST ZHR-8							
	1	2	3	4	5	6	7	8
Function	Up	A	A–	Z	Z–	B	B–	0V

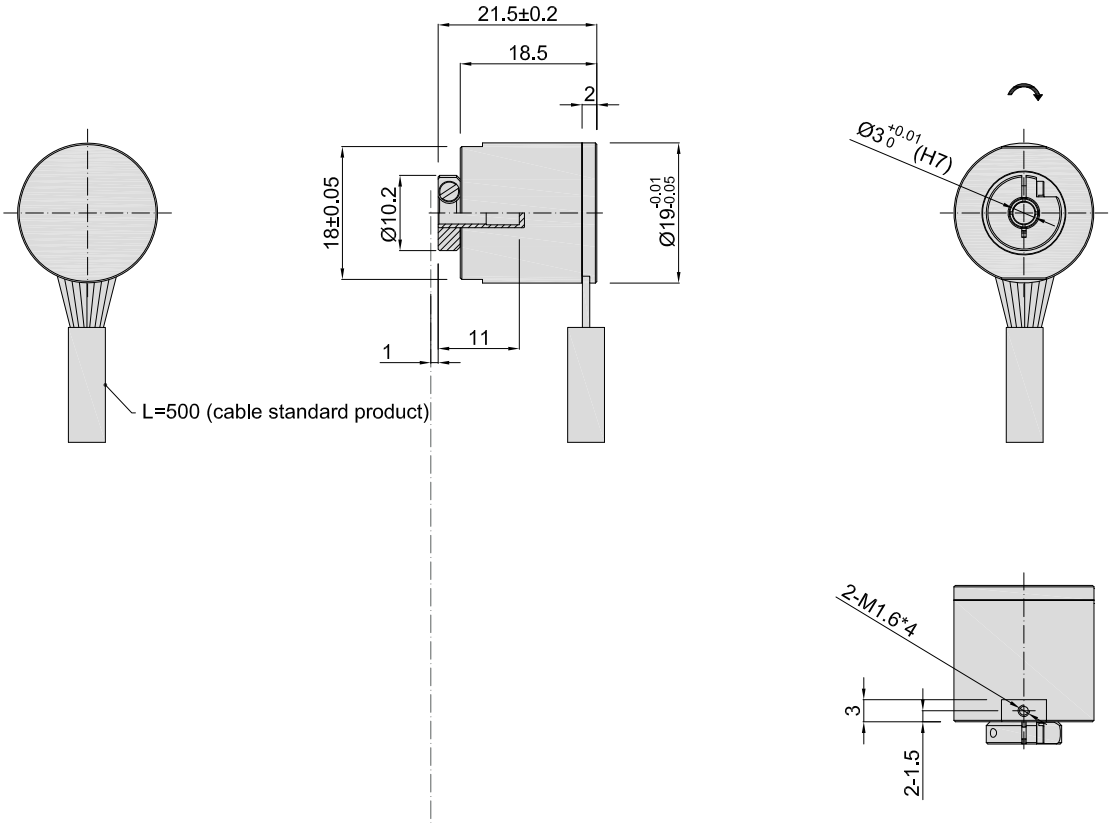
Up=Supply voltage.
Shield wire is not connected to the internal circuit of encoder.



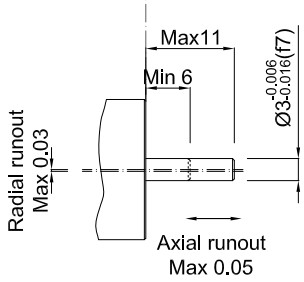
Unit: mm

8. Basic Dimension

8.1 KSN19-J

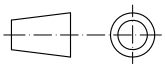


8.2 Specification for mounting shaft



Mounting screws
Slotted bolted + flat washers Specification:M1.6*3 Material：stainless steel Quantity：2

Unit: mm



= Shaft rotation direction of the incremental signal output

9. Caution

9. 1 About vibration

Vibration act on encoder always cause wrong pulse, so we should pay attention to working place.More pulse per revolution, narrower groovy spacing of grating, more effect to encoder by vibration, when rev is low or stop, vibration act on shaft or main body would cause grating vibrating, so encoder might make wrong pulse.

9. 2 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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