

1. KS76 Sin/Cos Optical Encoder (Through shaft)

1.1 Introduction:

KS76 is large through-hole shaft rugged design that can output 2048ppr, Sin/Cos signal. The product is compact and safe, and can solve the user's use in highly segmented areas.

1.2 Feature:

- Encoder external diameter $\varnothing 76.5\text{mm}$, thickness 37mm, diameter of shaft up to $\varnothing 30\text{mm}$, optional prior and rear shaft clamping.
- Ring locking mounting structure.
- Adopt non-contact photoelectric principle.
- Resolution per turn Sin/Cos period 2048.

1.3 Application:

Motor, elevator, CNC and other automation control fields.

1.4 Connection:

- Radial cable (standard length 1M)

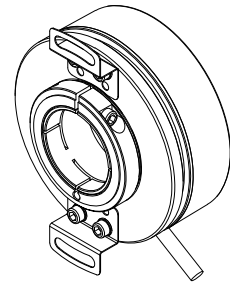
1.5 Protection:

IP50

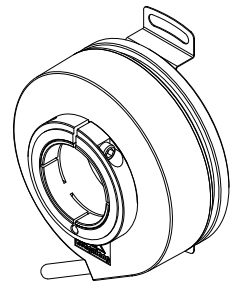
1.6 Weight:

about 360g

KS76-J
(BQ-clamping ring at prior)

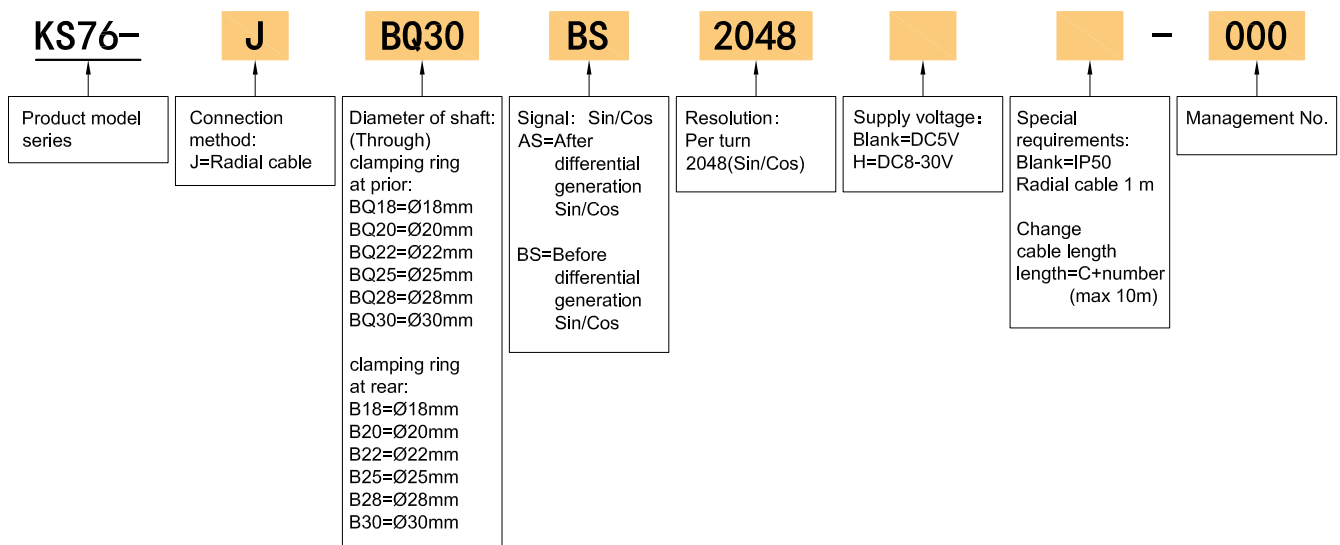


KS76-J
(B-clamping ring at rear)



2. Model Selection Guide

2.1 Model composition(select parameters)



3. Technical Parameters

3.1 Performance

Sine/cosine periods per revolution	2048
Measuring step	0,3 " For interpolation of the sine/cosine signals with e.g.12 bits ¹⁾
Initialization time	50ms ²⁾
Integral non-linearity	Typ.±45 Winkelsekunden(Loose stator coupling)
Differential non-linearity	±7 Winkelsekunden
Reference signal, number	1
Reference signal, position	90°, electrically,gated with Sinus and Cosinus

¹⁾ Not safety-related.

²⁾ Valid signals can be read thereafter.

3.2 Electrical characteristics

Communication Interface	Incremental
Communication interface detail	Sin/Cos ¹⁾
Connection type	Radial cable
Supply voltage	DC4.5V...5.5V; DC8V...30V
Maximum output frequency	≤200 kHz
Load resistance	≥120Ω
Power consumption max.(without load)	≤0.7 W
Power consumption	Without load
Reverse polarity protection	✓
Protection class	IP50
Short-circuit protection	✓ ²⁾

¹⁾ 1.0 Vss (Differential)

²⁾ Short-circuit to another channel or GND permitted for max.30s.

3.3 Mechanical characteristics

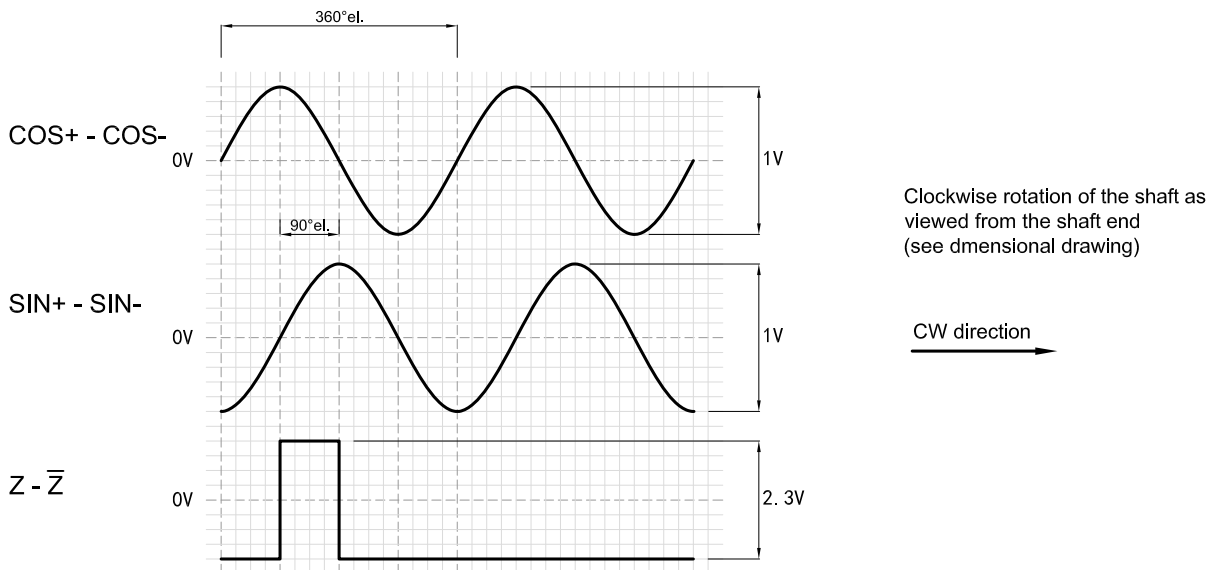
Diameter of shaft	Ø18mm; Ø20mm; Ø22mm; Ø25mm; Ø28mm; Ø30mm available
Shaft material	Stainless steel
Starting torque	Less than 80×10^{-3} N·m
Inertia moment	Less than 100×10^{-6} kg·m ²
Permissible movement static	±0.2mm (radial) ; ±0.3mm (axial)
Permissible movement dynamic	±0.05mm (radial) ; ±0.1mm (axial)
Shaft load	Radial 70N; Axial 50N
Slew speed	≤3000 rpm
Housing material	Aluminum alloy
Weight	Approx.360g

3.4 Environmental parameters

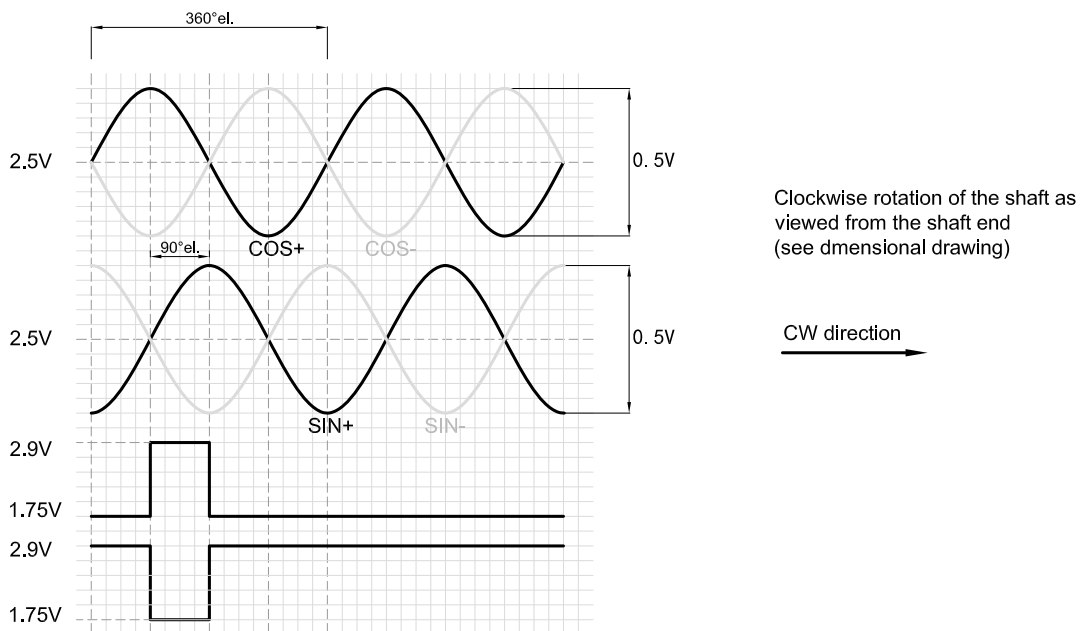
Shell protection grade	IP50
Permissible relative humidity	Operating and storage: 35~85%RH(noncondensing)
Operating temperature range	Operating: -20~+85°C(repeatable winding cable: -10°C)
Storage temperature range	Storage: -25~+90°C
Resistance to shocks	1960m/s ² , 11ms three times for X,Y,Z direction individually
Frequency range to resistance to vibrations	Amplitude 0.75mm, 5~55Hz, 2h for X,Y,Z direction individually

4. Output Wave Form

4.1 Signal SIN/COS after differential generation

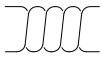
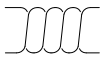
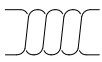
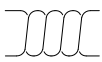


4.2 Signal SIN/COS before differential generation

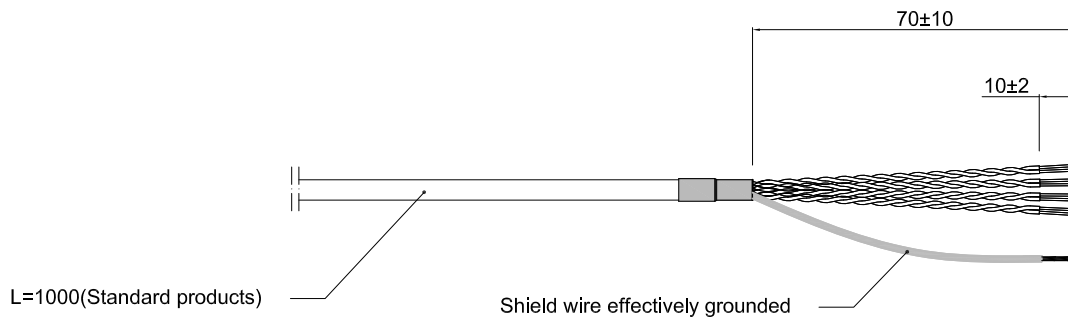


Supply voltage	Output	Signal	Interface signals	Signals before differential generation	Signal offset
4.5V...5.5V	SIN/COS 1.0 Vss	+SIN -SIN +COS -COS	Differential analog	0.5Vss±20%	2.5V±10%
		Z Z̄	Differential digital	Low:1.75V±15%, High:2.9V±15%	

5. Wiring Table

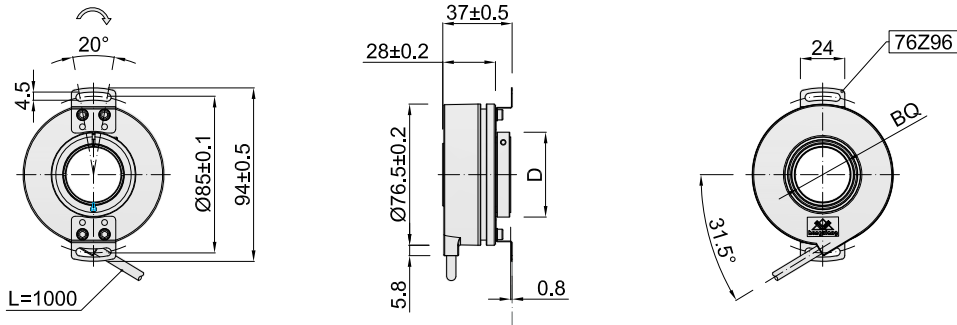
No	Wire colors (cable connection)	Signal	Explanation	Twisted-paired cable
1	White/BK	-COS	Signal wire	
2	White	+COS	Signal wire	
3	Green/BK	-SIN	Signal wire	
4	Green	+SIN	Signal wire	
5	Yellow/BK	\bar{Z}	Signal wire	
6	Yellow	Z	Signal wire	
7	Black	Un	Power negative	
8	Red	Up	Power positive	
GND	GND	GND	GND	Encoder body not connected

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



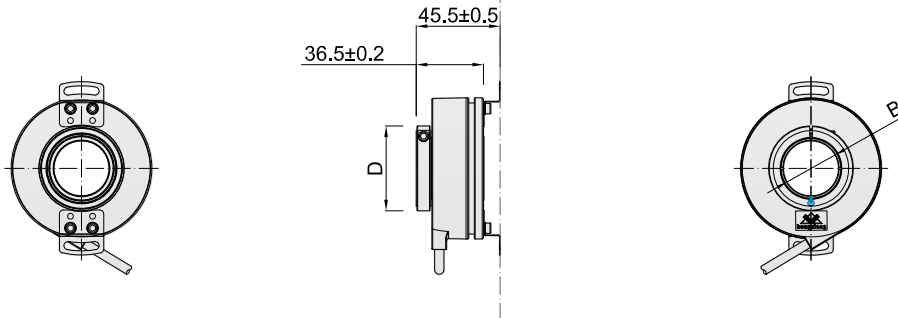
6. Basic Dimensions

6.1 Clamping ring at prior(BQ)



BQ(shaft)	D
Ø18 ^{G7} (+0.028/+0.007)	Ø36
Ø20 ^{G7} (+0.028/+0.007)	Ø36
Ø22 ^{G7} (+0.028/+0.007)	Ø41
Ø25 ^{G7} (+0.028/+0.007)	Ø41
Ø28 ^{G7} (+0.028/+0.007)	Ø46
Ø30 ^{G7} (+0.028/+0.007)	Ø46

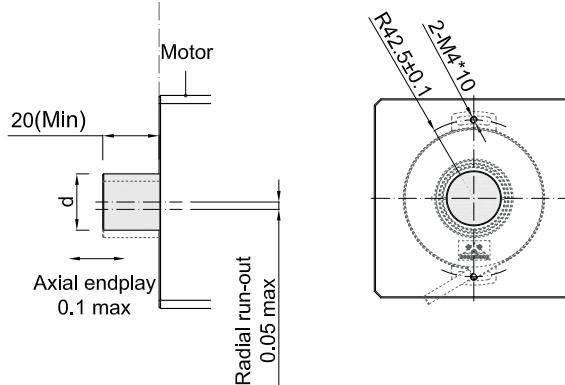
6.2 Clamping ring at rear(B)



B(shaft)	D
Ø18 ^{G7} (+0.028/+0.007)	Ø36
Ø20 ^{G7} (+0.028/+0.007)	Ø36
Ø22 ^{G7} (+0.028/+0.007)	Ø41
Ø25 ^{G7} (+0.028/+0.007)	Ø41
Ø28 ^{G7} (+0.028/+0.007)	Ø46
Ø30 ^{G7} (+0.028/+0.007)	Ø46

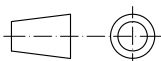
6.3 Mounting shaft requirements

d
Ø18 _{g6} (-0.007/-0.020)
Ø20 _{g6} (-0.007/-0.020)
Ø22 _{g6} (-0.007/-0.020)
Ø25 _{g6} (-0.007/-0.020)
Ø28 _{g6} (-0.007/-0.020)
Ø30 _{g6} (-0.007/-0.020)



Mounting screws
Inner hexagon bolt +flat washer Specification: M4*8 Material: stainless steel Quantity: 2

Unit: mm



76Z96 = Spring plate (other mounting spring plates are available, pls refer to page 7)

↻ = Direction of shaft rotation of signal output

About vibration

Vibration act on encoder always cause wrong pulse, so we should pay attention to working place. More pulse per revolution, narrower groove 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.

7. Accessories (Spring plate options)

<p>76Z96 (Standard)</p>	<p>76Z96 Spring plate installation method I</p>
<p>76Z96 (Standard)</p>	<p>76Z96 Spring plate installation method II</p>
<p>76T69 (Optional)</p>	

