

## 1. PGK96 Incremental Optical Encoder (Through shaft)

### 1.1 Introduction:

PGK96 is a heavy duty through shaft design with a variety of electrical interfaces and resolutions available. Highest protection grade IP67 with solid structure and high safety, widely used in industrial and mining environmental fields.

### 1.2 Feature:

- Encoder external diameter  $\varnothing 96\text{mm}$ , thickness 63.5mm, diameter of shaft up to  $\varnothing 30\text{mm}$ , robust and miniaturized;
- Adopt non-contact photoelectric principle;
- Reverse polarity protection;
- Short circuit protection;
- Multiple electrical interfaces available;
- Resolution per turn up to 65536PPR.

### 1.3 Application:

Servo motor, elevator, motor, packaging machinery, CNC and other automation control fields.

### 1.4 Connection:

- Radial socket
- Cable connection (standard length 1M)

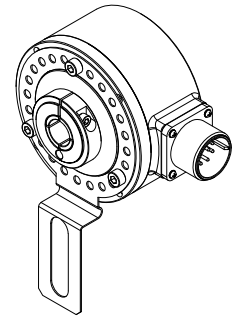
### 1.5 Protection:

IP67

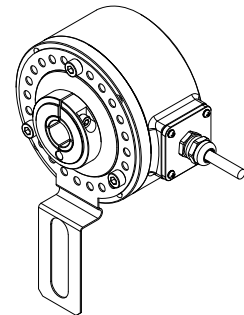
### 1.6 Weight:

About 1100g

PGK96-C

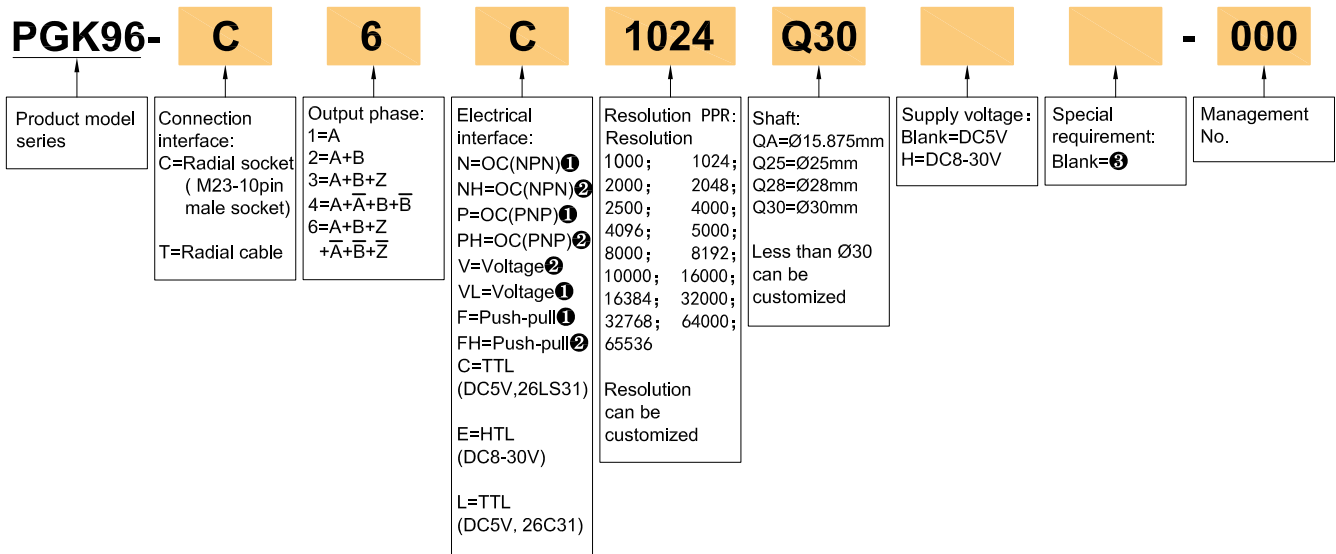


PGK96-T



## 2. Model Selection Guide

### 2.1 Model composition(select parameters)



### 2.2 Note

- Z signal is low level active.
- Z signal is high level active.
- None indicated for IP67, 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, pls refer to page 2 and 3 of the provision of output circuit.

3. Output Method

Electrical interface	Output circuit	Output wave form
<p>OC NPN open collector circuit</p>		
<p>OC PNP open collector circuit</p>		
<p>Push-pull</p>		
<p>Voltage</p>		
<p>TTL (DC5V)  HTL (DC8-30V)</p>		

## 4. Electrical Parameters

Parameter Item	Output type	OC	Voltage	Push-pull	TTL	HTL	
Supply voltage		DC+5V±5%; DC8V-30V±5%			DC+5V±5%	DC8-30V±5%	
Consumption current		100mA Max			120mA Max		
Allowable ripple		≤3%rms					
Top response frequency		100KHz			500KHz	800KHz	
Output capacity	Output current	Input	≤30mA	Load resistance 2.2K	≤30mA	≤±20mA	≤±50mA
		Output	—		≤10mA		
	Output voltage	"H"	—	—	≥[(Supply voltage)-2.5V]	≥2.5V	≥V <sub>CC</sub> -3 V <sub>DC</sub>
		"L"	≤0.4V	≤0.7V(less than 20mA)	≤0.4V(30mA)	≤0.5V	≤ 1V V <sub>DC</sub>
Load voltage		≤DC30V	—		—		
Rise & Fall time		Less than 2us(cable length: 2m)			Less than 1us(Cable length: 2m)		
Insulation strength		AC500V 60s					
Insulation resistance		10MΩ					
Mark to space ratio		45% to 55%					
Reverse polarity protection		✓					
Short-circuit protection		✓❶					
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 or GND permitted for max.30s.

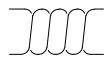
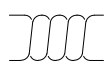
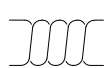

## 5. Mechanical Specifications

Diameter of shaft	Ø15.875mm、Ø25mm、Ø28mm、Ø30mm (Stainless steel, through shaft)
Starting torque	Less than $70 \times 10^{-3} \text{N}\cdot\text{m}$
Inertia moment	Less than $90 \times 10^{-6} \text{kg}\cdot\text{m}^2$
Shaft load	Radial 50N; Axial 30N
Slew speed	$\leq 3000 \text{ rpm}$
Bearing Life	$1.5 \times 10^9$ revs at rated load(100000hrs at 2500RPM)
Shell	Aluminum alloy
Weight	about 1100g

## 6. Environmental Parameters

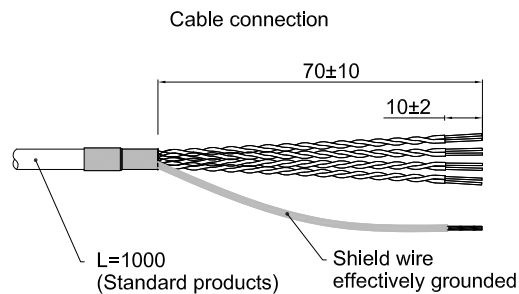
Environmental temperature	Operating: $-40 \sim +95^\circ\text{C}$ (repeatable winding cable: $-10^\circ\text{C}$ ); Storage: $-40 \sim +95^\circ\text{C}$
Environmental humidity	Operating and storage: 35~85%RH(noncondensing)
Vibration(Endurance)	Amplitude 0.75mm,5~55Hz,2h for X,Y,Z direction individually
Shock(Endurance)	$1960 \text{m/s}^2$ 11ms three times for X,Y,Z direction individually
Protection	IP67

7. Wiring Table

Socket pin definition (M23 10-pin)	Wire colors (cable connection)	Signal	Explanation	Twisted wire for differential
D	Red	Up	Power positive	
F	Black	Un	Power negative	
A	White	A	Signal wire	
H	White/BK	$\bar{A}$	Signal wire	
B	Green	B	Signal wire	
I	Green/BK	$\bar{B}$	Signal wire	
C	Yellow	Z	Signal wire	
J	Yellow/BK	$\bar{Z}$	Signal wire	
E	-	N.C.	Unallocated	
G	-	N.C.	Unallocated	
GND	GND		No connect to encoder	

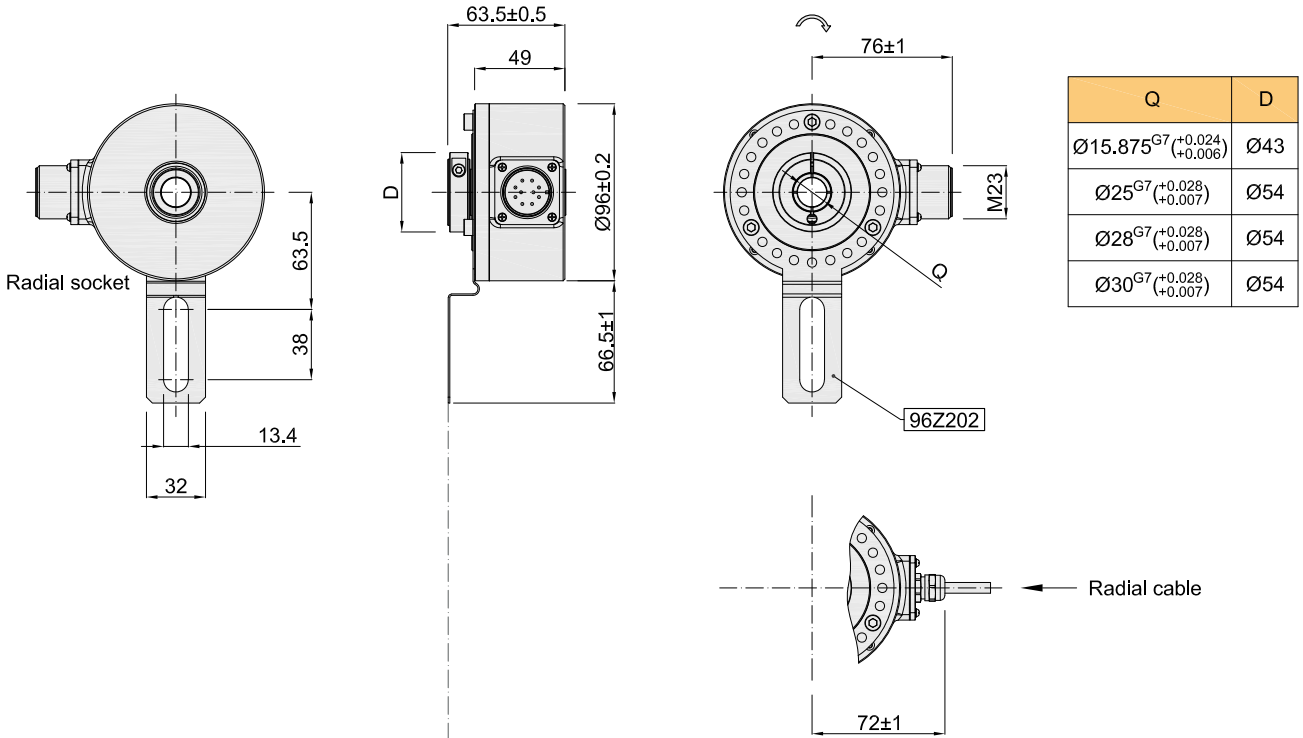
Up=Supply voltage.

Shield wire is not connected to the internal circuit of encoder.

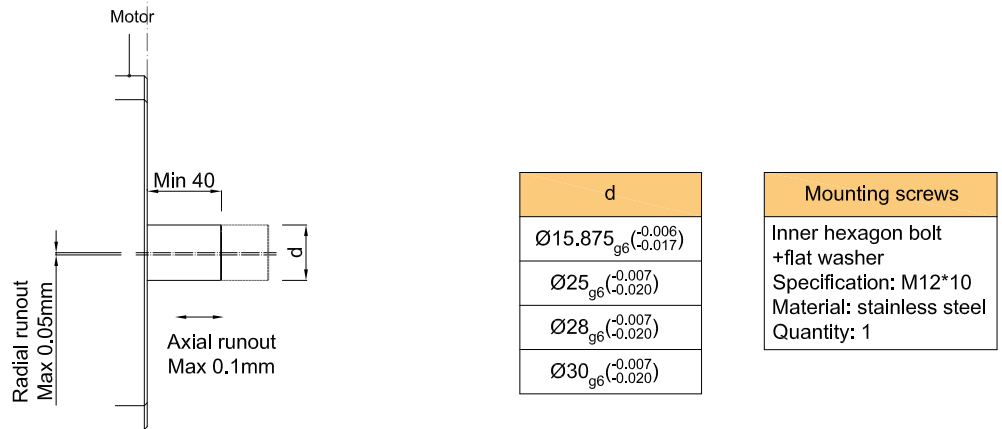


8. Basic Dimensions

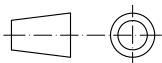
8.1 Dimensions



8.2 Mounting shaft requirements




Unit: mm



[96Z202] = Mounting spring plate(stainless steel)

↻ = Shaft rotation direction of the signal output

9. Recommended Accessories

Plug and cable	Brief description	No.	Order No.
	<p>C1C=Connection type head A: M23, 10-pin female straight connector; Connection type head B: Bare wire end; Cable length: 1M 8-core with shield,halogen-free PUR</p>	<p>PGK96C1C</p>	<p>44400045</p>
	<p>C2C=Connection type head A: M23, 10-pin female straight connector; Connection type head B: Bare wire end; Cable length: 2M 8-core with shield,halogen-free PUR</p>	<p>PGK96C2C</p>	<p>44400046</p>
	<p>C5C=Connection type head A: M23, 10-pin female straight connector; Connection type head B: Bare wire end; Cable length: 5M 8-core with shield,halogen-free PUR</p>	<p>PGK96C5C</p>	<p>44400047</p>

## 10. Caution

### 10.1 Caution for operation

- The working temperature shall not exceed the storage temperature.
- The working humidity shall not exceed the storage humidity.
- Do not use where the temperature changes dramatically and have fog.
- Do not close to corrosive and flammable gas.
- Keep away from dust,salt and metal powder.
- Keep away from places where you will use water, oil, or medicine.
- Undue vibration and shock will impact the encoder.

### 10.2 Caution for Installation

- Electrical components should not be subjected to excessive pressure, etc., and electrostatic assessment of the installation environment should be conducted.
- Do not close the cable of the motor power to the encoder.
- The FG wire of the motor and mechanical device should be grounded.
- The shielding wire must be effectively grounded since the shielding is not connected to the encoder.

### 10.3 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.