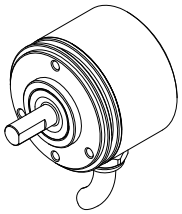
1. PGS38 Incremental Optical Encoder (Solid shaft)

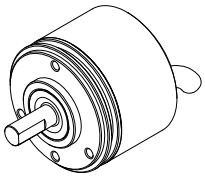
1.1 Introduction:

PGS38 is a solid shaft all stainless steel design with a variety of electrical interfaces and resolutions available. The highest protection grade is IP67. It has a compact and sturdy structure, and high safety, commonly used in industrial automation fields in harsh environments.

PGS38-T



PGS38-Q



1.2 Feature:

- Encoder external diameter Ø38mm、thickness 28mm、diameter of shaft Ø6mm (D type);
- Adopt non-contact photoelectric principle;
- Reverse polarity protection;
- Short circuit protection;
- Multiple electrical interfaces available;
- Resolution per turn up to 32768PPR.

1.3 Application:

Outdoor electromechanical, industrial and mining, textile, motor, CNC and other automation control fields.

1.4 Connection:

Cable connection (standard length 1000mm)

1.5 Protection:

IP67

1.6 Weight:

About 160g

2. Model Selection Guide

2.1 Model composition(select parameters)

PGS38-	T	6	C	1024	B6			-	000
Product model series	Connection method: T=Radial cable Q=Axial cable	Output phase: 1=A 2=A+B 3=A+B+Z 4=A+$\overline{A}$+B+$\overline{B}$ 6=A+B+Z +$\overline{A}$+$\overline{B}$+$\overline{Z}$	Electrical interface: N=OC(NPN)❶ NH=OC(NPN)❷ P=OC(PNP)❶ PH=OC(PNP)❷ V=Voltage❷ VL=Voltage❶ F=Push-pull❶ FH=Push-pull❷ C=TTL (DC5V,26LS31) E=HTL (DC8-30V) L=TTL (DC5V, 26C31)	Resolution PPR: 120; 250; 360; 400; 500; 720; 800; 900; 1000; 1024; 1440; 1600; 1800; 2500; 2000; 2048; 2500; 3600; 4000; 4096; 5000; 7200; 8000; 8192; 10000; 14400; 16000; 16384; 20000; 28800; 32000; 32768	Diameter of shaft: (solid shaft) B6=Ø6mm (D type)	Supply voltage: Blank=DC5V H=DC8-30V	Special requirement: Blank=❸	Management No.

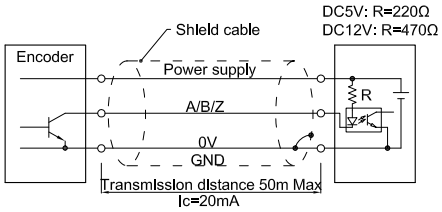
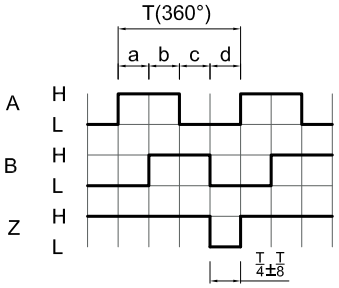
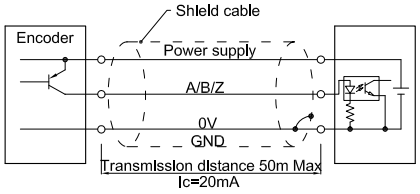
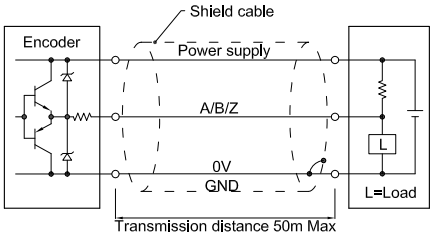
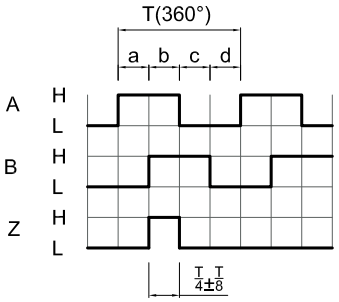
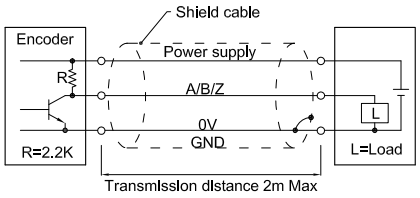
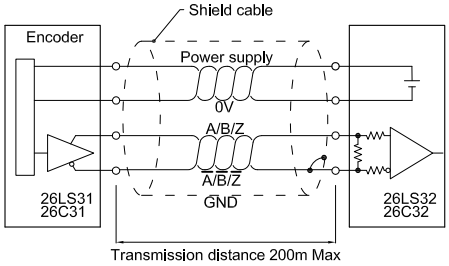
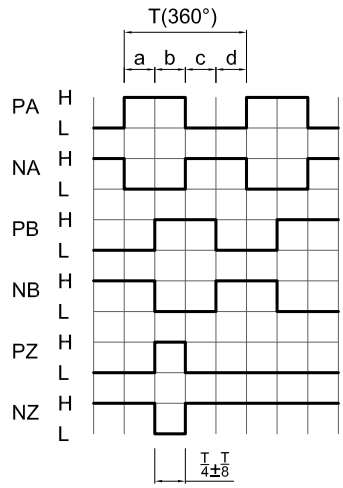
2. 2 Note

❶. Z signal is low level active.

❷. Z signal is high level active.

❸. 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
OC NPN open collector circuit		 a.b.c.d=T/4±T/8 Phase A is ahead of B by T/4±T/8, viewing from shaft end, direction is clockwise rotation. (See dimensional drawings) CW direction Z signal is low level active
OC PNP open collector circuit		
Push-pull		 a.b.c.d=T/4±T/8 Phase A is ahead of B by T/4±T/8, viewing from shaft end, direction is clockwise rotation. (See dimensional drawings) CW direction Z signal is high level active
Voltage		
TTL (DC5V) HTL (DC8-30V)		 a.b.c.d=T/4±T/8 Phase A is ahead of B by T/4±T/8, viewing from shaft end, direction is clockwise rotation. (See dimensional drawings) CW direction

4. Electrical Parameters

Parameter / Output type / Item			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	≥Vcc-3 VDC
		"L"	≤0.4V	≤0.7V(less than 20mA)	≤0.4V(30mA)	≤0.5V	≤ 1V VDC
	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	Ø6mm(D type, Stainless steel)
Starting torque	Less than 9.8×10^{-3}N·m
Inertia moment	Less than 6.5×10^{-6} kg·m²
Shaft load	Radial 30N; Axial 20N
Slew speed	≤6000 rpm
Bearing Life	$1.5X10^{9}$ revs at rated load(100000hrs at 2500RPM)
Shell	Stainless steel
Weight	about 160g

6. Environmental Parameters

Environmental temperature	Operating:—40～+95°C(repeatable winding cable: -10°C); Storage:—40～+95°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)	490m/s² 11ms three times for X,Y,Z direction individually
Protection	IP67

7. Wiring Table

7.1 OC/Voltage/Push-pull

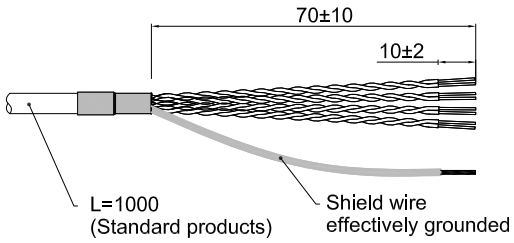
	Supply voltage		Incremental signal		
Wire color	Red	Black	White	Green	Yellow
Function	Up	Un	A	B	Z

7.2 TTL/HTL

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

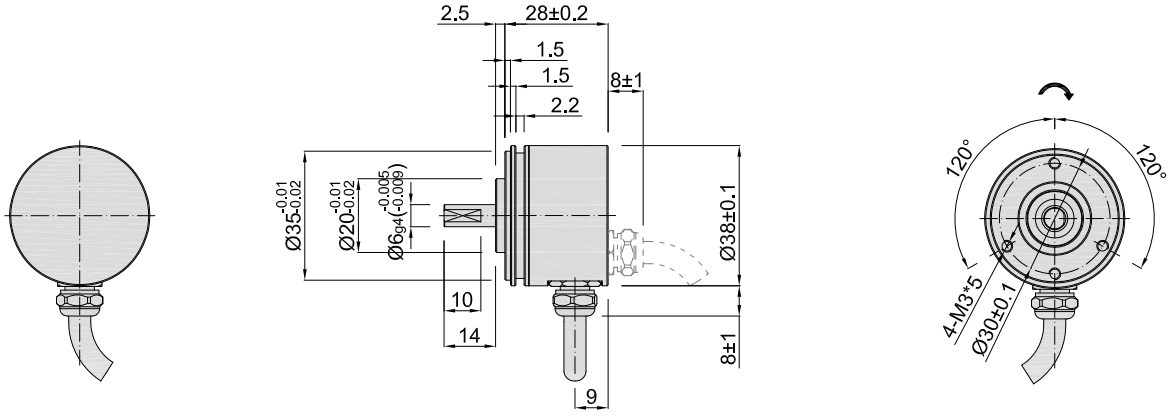
Up=Supply voltage.
Shield wire is not connected to the internal circuit of encoder.

Cable connection



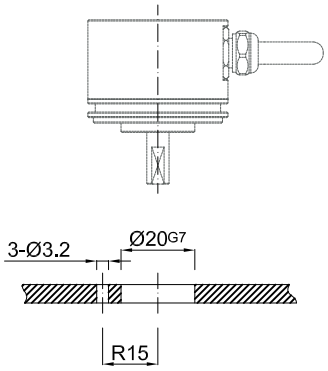
8. Basic Dimension

8.1 Dimension



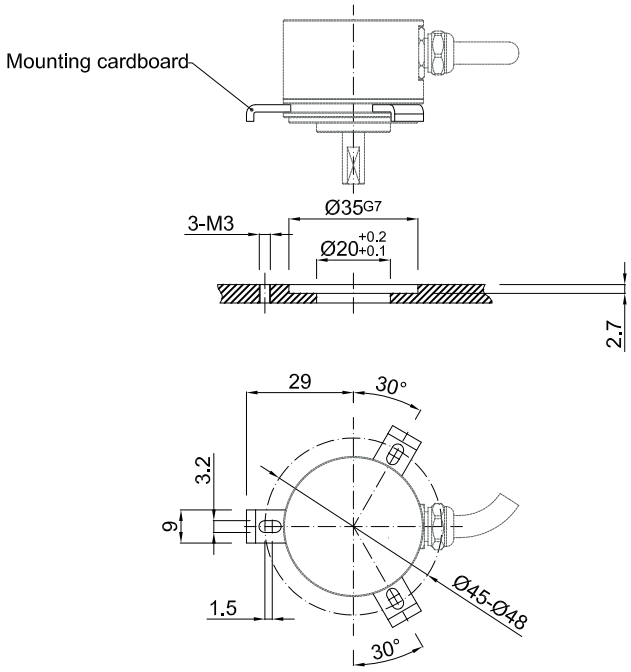
8.2 Installation method

Installation method 1:

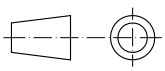


Mounting screws
Inner hexagon bolt +flat washer Specification: M3*10 Material: stainless steel Quantity: 3

Installation method 2:



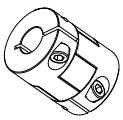
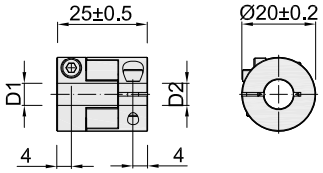
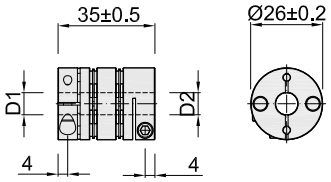
Unit: mm



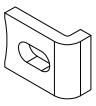
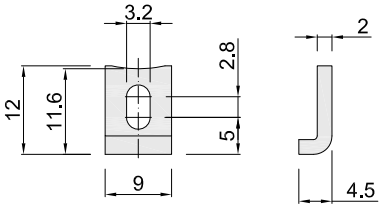
= Shaft rotation direction of the signal output

9. Recommended Accessories

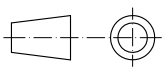
9.1 Coupler

Coupler	Dimension	D1	D2	Model	Order No.
Cross type: M series 	 Main body material: aluminum alloy	Ø6^{G8}	Ø6^{G8}	6M6	08700037
		Ø6^{G8}	Ø8^{G8}	6M8	08700038
Diaphragm type: W series 	 Main body material: aluminum alloy	Ø6^{G8}	Ø6^{G8}	6W6	08700041
		Ø6^{G8}	Ø8^{G8}	6W8	08700042

9.2 Mounting cardboard

Mounting cardboard	Dimension	Model	Order NO.
 3 pcs as a set	 Material: stainless steel	39K46	03700722

Unit: mm



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.

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We reserve the final interpretation right of this specifications,subject to change without notice .