

1. S30 Incremental Optical Encoder (Solid shaft)

1.1 Introduction:

S30 is a small economic universal design, compact, sturdy, high safety, and commonly used in industrial automations.

1.2 Feature:

- Encoder external diameter $\varnothing 30\text{mm}$, thickness 29mm, diameter of shaft up to $\varnothing 4\text{mm}$ / $\varnothing 6\text{mm}$;
- Adopt non-contact photoelectric principle;
- Multiple electrical interfaces available;
- Resolution per turn up to 2500PPR.

1.3 Application:

Textile, packaging, motor, elevator, CNC and other automation control fields.

1.4 Connection:

- Cable connection (standard length 1000mm)
- Axial socket (M8-8P/4P)

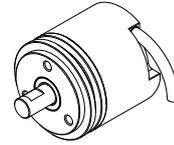
1.5 Protection:

IP65

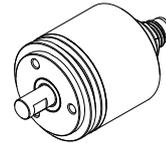
1.6 Weight:

about 100g

S30-S

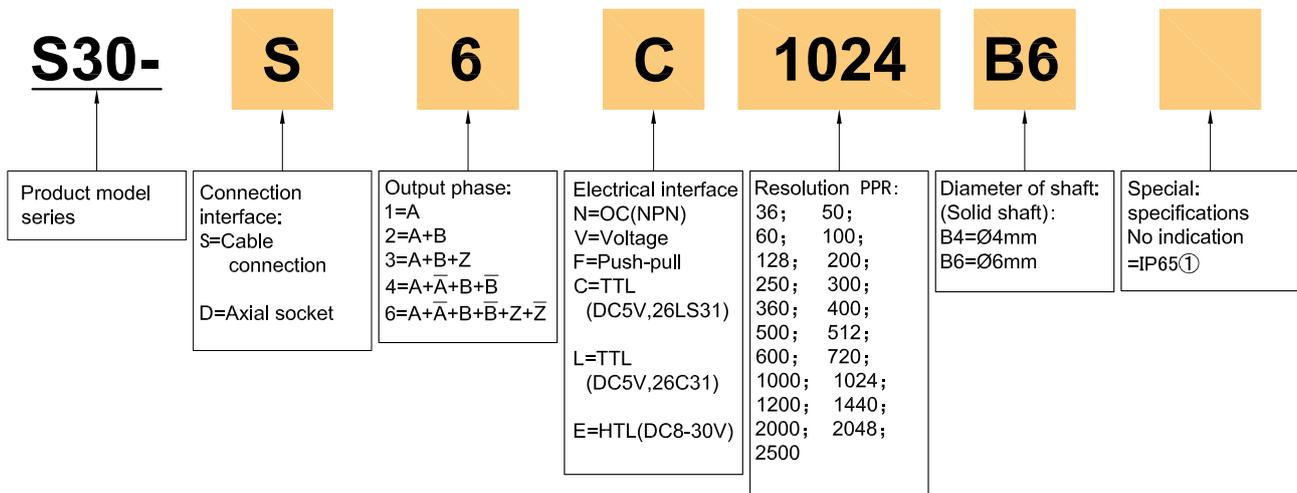


S30-D



2. Model Selection Guide

2.1 Model composition(select parameters)



2.2 Note

- ①. Cable length 1m, if you need to change the length C+number, max 100m(indicated by C100), please refer to page 2 for the specific length used for the output circuit.

3. Output mode

Electrical interface	Output circuit	Output wave form
<p>OC NPN open collector circuit</p>		<p>a.b.c.d=$\frac{T}{4} \pm \frac{T}{8}$</p> <p>Phase A is ahead of B by $\frac{T}{4} \pm \frac{T}{8}$, viewing from shaft end, direction is clockwise rotation. (See dimensional drawings)</p> <p>CW direction →</p> <p>Z signal is low level active</p>
<p>Push-pull</p>		<p>a.b.c.d=$\frac{T}{4} \pm \frac{T}{8}$</p> <p>Phase A is ahead of B by $\frac{T}{4} \pm \frac{T}{8}$, viewing from shaft end, direction is clockwise rotation. (See dimensional drawings)</p> <p>CW direction →</p> <p>Z signal is high level active</p>
<p>Voltage</p>		<p>a.b.c.d=$\frac{T}{4} \pm \frac{T}{8}$</p> <p>Phase A is ahead of B by $\frac{T}{4} \pm \frac{T}{8}$, viewing from shaft end, direction is clockwise rotation. (See dimensional drawings)</p> <p>CW direction →</p> <p>Z signal is high level active</p>
<p>TTL (DC5V)</p> <p>HTL (DC8-30V)</p>		<p>a.b.c.d=$\frac{T}{4} \pm \frac{T}{8}$</p> <p>Phase A is ahead of B by $\frac{T}{4} \pm \frac{T}{8}$, viewing from shaft end, direction is clockwise rotation. (See dimensional drawings)</p> <p>CW direction →</p>

4. Electrical Characteristics

Parameter		Output type	OC	Voltage	Push-pull	TTL	HTL
Item							
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			200KHz	300KHz
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)			≤100ns	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			—				
Phase shift between A & B			90°±10° (frequency in low speed)				
			90°±20° (frequency in high speed)				
GND			Not connect to encoder				

5. Mechanical Characteristics

Diameter of shaft	Ø4mm; Ø6mm (D type, stainless steel material)
Starting torque	Less than $1 \times 10^{-3} \text{N}\cdot\text{m}$
Inertia moment	Less than $1 \times 10^{-6} \text{kg}\cdot\text{m}^2$
Shaft load	Radial 30N; Axial 20N
Slew speed	$\leq 6000 \text{ rpm}$
Bearing Life	1.5×10^9 revs at rated load (100000hrs at 2500RPM)
Shell	Aluminium alloy
Weight	about 100g

6. Environmental Specifications

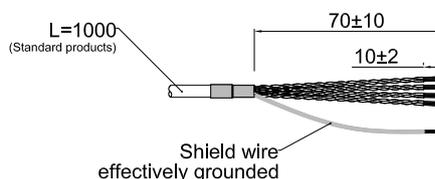
Environmental temperature	Operating: $-30 \sim +90^\circ\text{C}$ (repeatable winding cable: -10°C); Storage: $-30 \sim +95^\circ\text{C}$
Environmental humidity	Operating and storage: 45~85%RH (noncondensing)
Vibration (Endurable)	Amplitude 0.75mm, 5~55Hz, 2h for X, Y, Z direction individually
Shock (Endurable)	490m/s^2 11ms three times for X, Y, Z direction individually
Protection	IP65

7. Wiring table

M8 8pin male connector
pin distribution diagram



Cable connection



7.1 OC/Voltage/Push-pull (Wiring table for socket connection and cable connection)

Function definition	Supply voltage		Incremental signal					
Socket pin Definition	1	2	3	4	5	6	7	8
Wire color	Red	Black	White	/	Green	/	Yellow	/
Function	Up	0V	A	/	B	/	Z	/

7.2 TTL/HTL (Wiring table for socket connection and cable connection)

Function definition	Supply voltage		Incremental signal					
Socket pin Definition	1	2	3	4	5	6	7	8
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								

7.3 OC/Vo/Push-pull (Wiring table for socket connection M8 4pin)

Function definition	Supply voltage		Incremental signal		
Socket pin Definition	1	2	3	4	
Function	0V	Up	A	B	

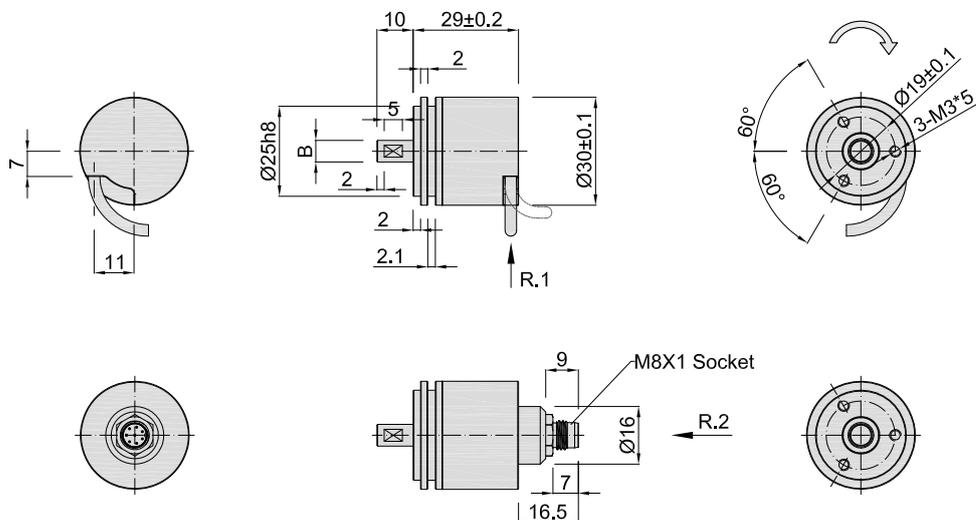
Up=Supply voltage.

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

8. Basic Dimensions

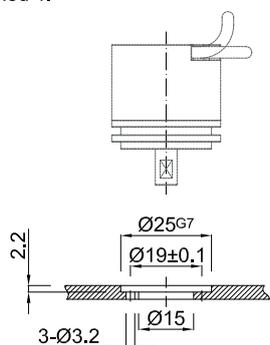
8.1 Dimensions

B(D type, solid shaft)	
$\varnothing 4_{g4}^{(-0.004)}$	
$\varnothing 6_{g4}^{(-0.005)}$	



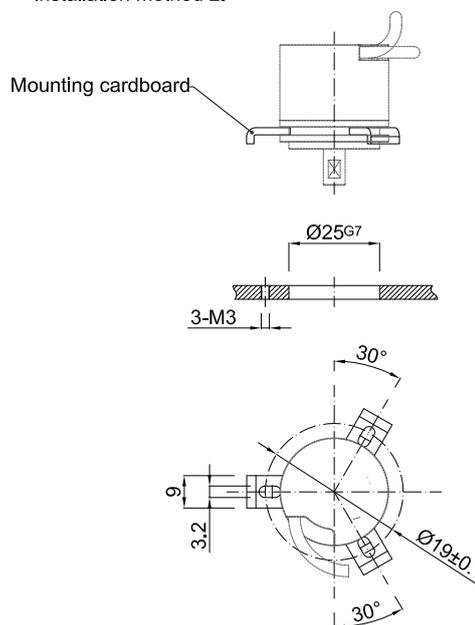
8.2 Installation method

Installation method 1:

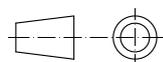


Mounting screws
Inner hexagon bolt +flat washer Specification: M3*8 Material: stainless steel Quantity: 3

Installation method 2:



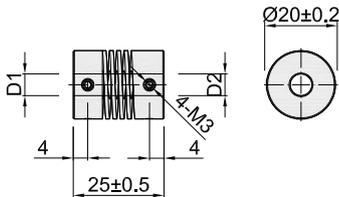
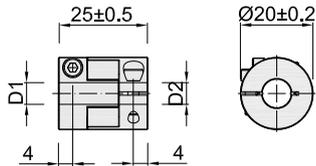
Unit: mm



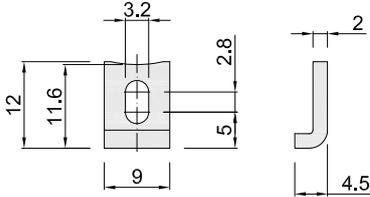
- ↻ = Shaft rotation direction of the signal output
- R.1 = Cable connection (standard length 1000)
- R.2 = Axial socket (M8x1-P8/P4)

9. Recommended Accessories

9.1 Coupler

Coupler	Dimensions	D1	D2	Model	Order No.
Spring type: H series 	 Main body material: aluminum alloy	Ø4 ^{G8}	Ø6 ^{G8}	4H6	08700056
		Ø6 ^{G8}	Ø6 ^{G8}	6H6	08700021
Cross type: M series 	 Main body material: aluminum alloy	Ø4 ^{G8}	Ø6 ^{G8}	4M6	08700057
		Ø6 ^{G8}	Ø6 ^{G8}	6M6	08700037

9.2 Mounting cardboard

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

Unit: mm