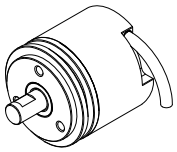
1. S30C Incremental Optical Encoder (Solid shaft)

1.1 Introduction:

S30C is a small economic universal design, compact, sturdy, high safety, and commonly used in industrial automations.

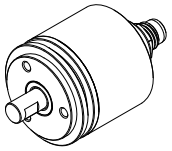
S30-S



1.2 Feature:

- Encoder external diameter Ø30mm、thickness 29mm、diameter of shaft Ø4mm / Ø6mm;
- Adopt non-contact photoelectric principle;
- Reverse polarity protection;
- Short circuit protection;
- Multiple electrical interfaces available;
- Resolution per turn up to 20000PPR.

S30-D



1.3 Application:

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

1.4 Connection:

- Cable connection (standard length 1M)
- Axial socket (M8-8P/4P)

1.5 Protection:

IP65

1.6 Weight:

about 100g

2. Model Selection Guide

2.1 Model composition(select parameters)

S30C- | **S** | **6** | **C** | **1024** | **B6** | | | **-** | **000**

Product model series	Connection interface: S=Cable connection; D=Axial socket	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: 36; 50; 60; 100; 128; 200; 250; 300; 360; 400; 500; 512; 600; 720; 800; 1000; 1024; 1200; 1440; 1600; 2000; 2048; 2400; 2500; 2880; 3200; 4000; 4096; 4800; 5000; 5760; 6400; 8000; 8192; 9600; 10000; 11520; 12800; 16000; 16384; 19200; 20000	Diameter of shaft: (D type) B4=Ø4mm B6=Ø6mm	Supply voltage: Blank=DC5V H=DC8-30V	Special requirement: Blank=❸	Management No.

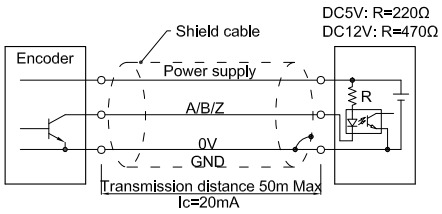
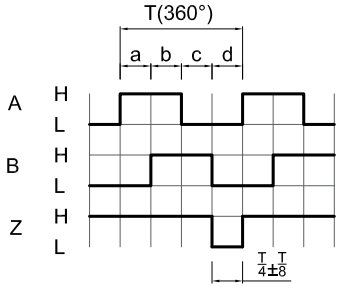
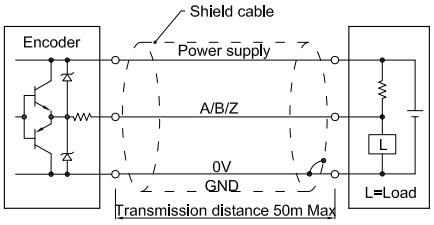
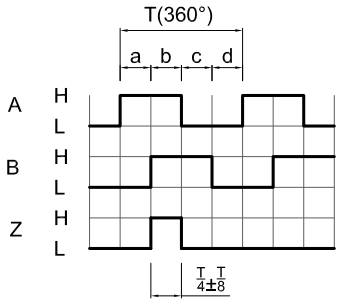
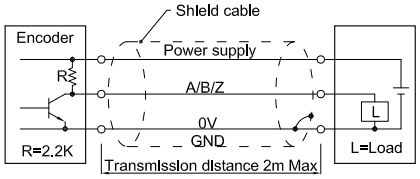
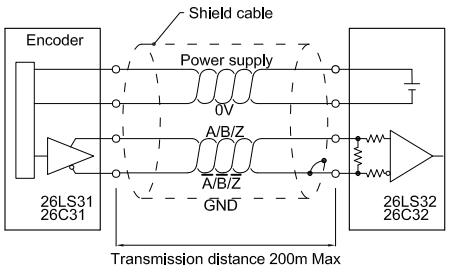
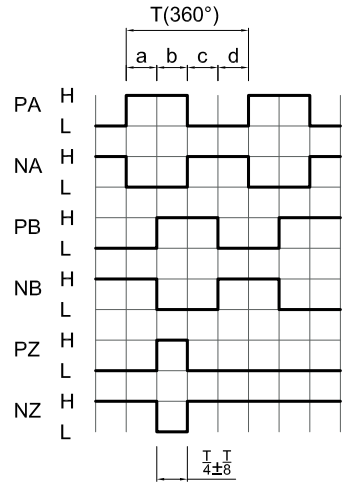
2. 2 Note

❶. Z signal is low level active.

❷. Z signal is high level active.

❸. None indicated for IP65 and 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 of the provision of output circuit.

3. Output Mode

Electrical interface	Output circuit	Output wave form
OC NPN open collector circuit		 a.b.c.d=$\frac{T}{4}\pm\frac{T}{8}$ 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) CW direction Z signal is low level active
Push-pull		 a.b.c.d=$\frac{T}{4}\pm\frac{T}{8}$ 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) CW direction Z signal is high level active
Voltage		
TTL (DC5V) HTL (DC8-30V)		 a.b.c.d=$\frac{T}{4}\pm\frac{T}{8}$ 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) 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			300KHz	500KHz
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			—		✔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	Ø4mm; Ø6mm (D type, stainless steel material)
Starting torque	Less than 1×10^{-3}N·m
Inertia moment	Less than 1×10^{-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	Aluminium alloy
Weight	about 100g

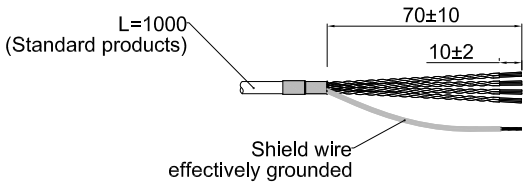
6. Environmental Parameters

Environmental temperature	Operating:－30～+90°C(repeatable winding cable: -10°C); Storage:－30～+95°C
Environmental humidity	Operating and storage：45～85％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	IP65

7. Wiring Table

M8 8pin male socket
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/Voltage/Push-pull (Wiring table for socket connection M8 4pin)

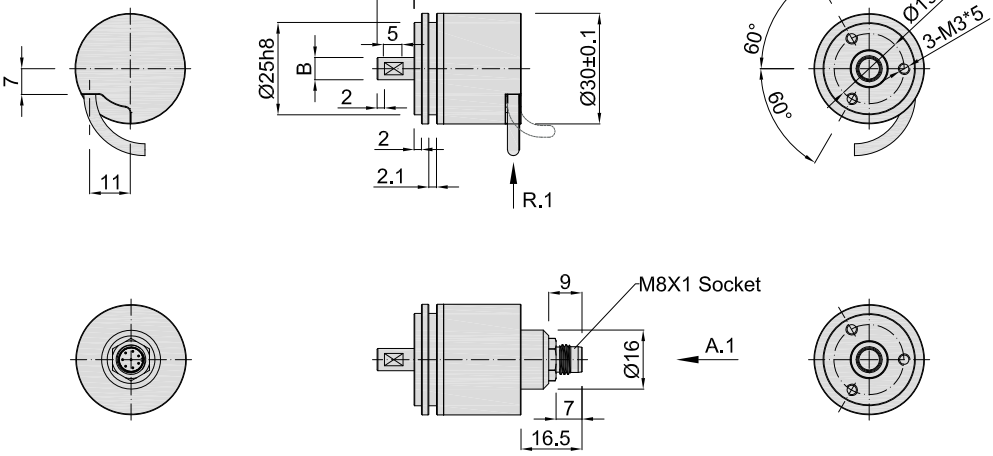
Function definition	Supply voltage		Incremental signal		
Socket pin Definition	1	2	3	4	
Function	OV	Up	A	B	

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

8. Basic Dimensions

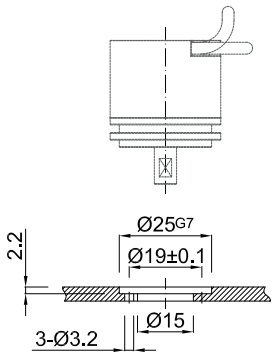
8.1 Dimensions

B(D type，solid shaft)
$Ø4_{g4}(^{-0.004}_{-0.008})$
$Ø6_{g4}(^{-0.005}_{-0.009})$



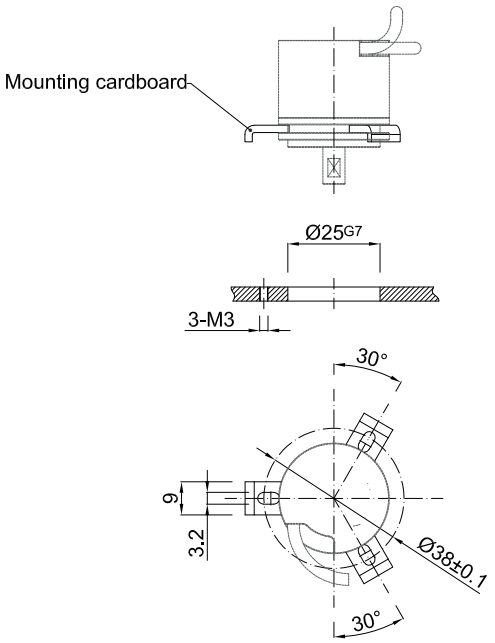
8.2 Installation method

Installation method 1:

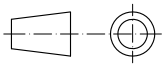


Mounting screws
Inner hexagon bolt +flat washer Specification: M3*8 Material: stainless steel Quantity: 3

Installation method 2:



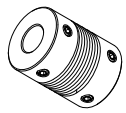
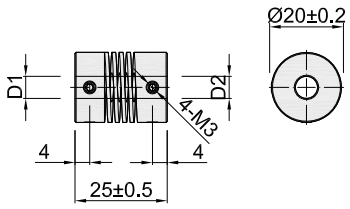
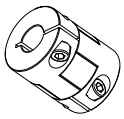
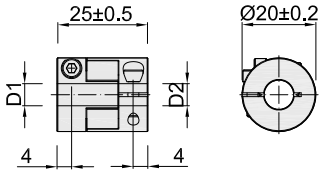
Unit: mm



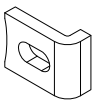
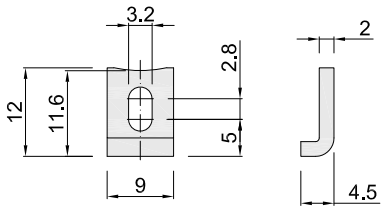
= Shaft rotation direction of incremental signal output
R.1 = Cable connection (standard length 1000)
A.1 = Axial socket（M8x1-P8/P4）

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