

1. S18 Incremental Optical Encoder (Solid shaft)

1.1 Introduction:

S18 is a micro-miniature solid shaft optical encoder with compact structure and high reliability, which is commonly used in small equipment and space-constrained industrial automation.

1.2 Feature:

- Encoder external diameter $\varnothing 18\text{mm}$, thickness 18mm, diameter of shaft $\varnothing 2.5\text{mm}$;
- Adopt non-contact photoelectric principle;
- Multiple electrical interfaces available;
- Resolution per turn up to 16384PPR.

1.3 Application:

Bill counting machines, printers, micro motors, small instruments and other automation control fields.

1.4 Connection:

- Radial alignment (standard length 150mm)
- Axial alignment (standard length 150mm)

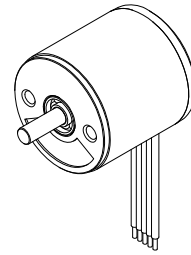
1.5 Protection:

IP40

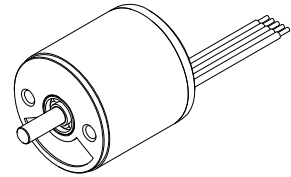
1.6 Weight:

about 20g

S18-J

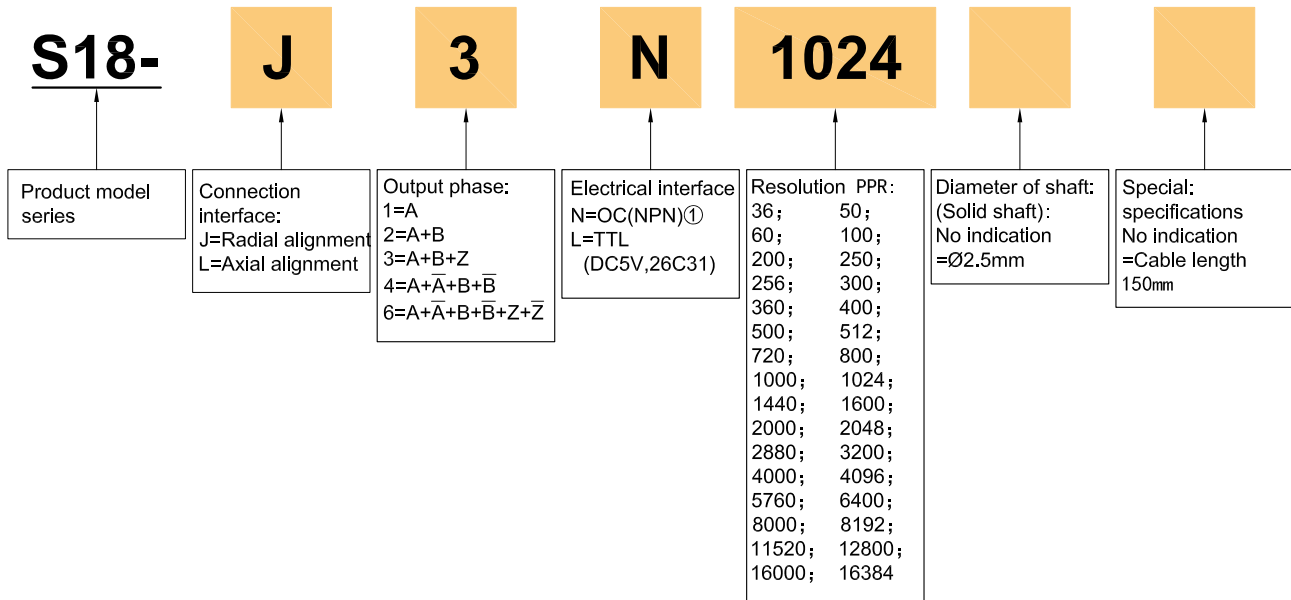


S18-L



2. Model Selection Guide

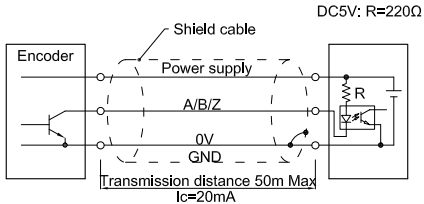
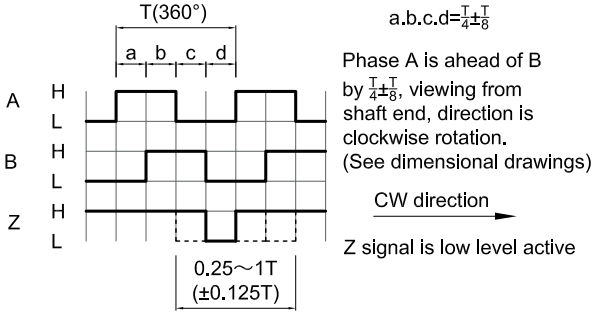
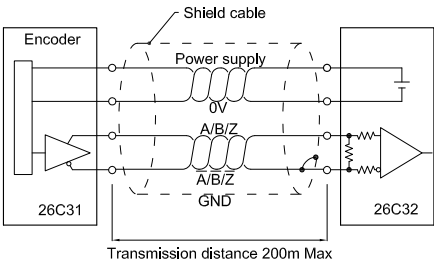
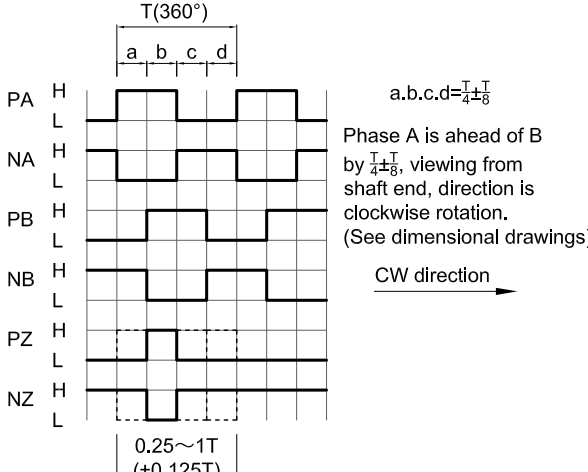
2.1 Model composition(select parameters)



2.2 Note

- ①. Resolution selection is recommended below 5000PPR, Z signal is low level active.

3. Output mode

Electrical interface	Output circuit	Output wave form
<p>OC NPN open collector circuit</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 \rightarrow</p> <p>Z signal is low level active</p>
<p>TTL (DC5V)</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 \rightarrow</p>

4. Electrical Characteristics

Parameter		Output type	OC	TTL
Item				
Supply voltage		DC+5V±5%		
Consumption current		100mA Max		
Allowable ripple		≤3%rms		
Top response frequency		100KHz	200KHz	
Output capacity	Output current	Input	≤30mA	≤±20mA
		Output	—	
	Output voltage	“H”	—	≥2.5V
		“L”	≤0.4V	≤0.5V
Load voltage		≤DC30V	—	
Rise & Fall time		Less than 2us(cable length: 2m)		≤100ns Less than 1us(Cable length: 2m)
Mark to space ratio		45% to 55%		
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	Ø2.5mm(Stainless steel material)
Starting torque	Less than $5 \times 10^{-4} \text{N} \cdot \text{m}$
Inertia moment	Less than $0.3 \times 10^{-6} \text{kg} \cdot \text{m}^2$
Shaft load	Radial 2N; Axial 2N
Slew speed	≤5000 rpm
Shell	Aluminium alloy
Weight	about 20g

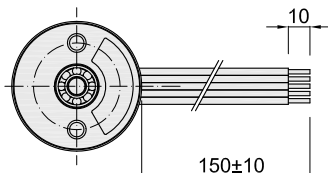
6. Environmental Specifications

Environmental temperature	Operating: -10~+70°C; Storage: -15~+75°C
Environmental humidity	Operating and storage: 35~85%RH(noncondensing)
Vibration(Endurance)	Amplitude 0.75mm,5~50Hz,2h for X,Y,Z direction individually
Shock(Endure)	49m/s ² 11ms three times for X,Y,Z direction individually
Protection	IP40

7. Wiring table

7.1 OC (Wiring table)

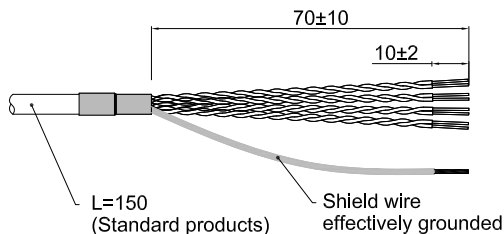
	Supply voltage		Incremental signal		
Wire color	Red	Black	White	Green	Yellow
Function	Up	0V	A	B	Z



7.2 TTL (Wiring table)

	Supply voltage		Incremental signal					
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								

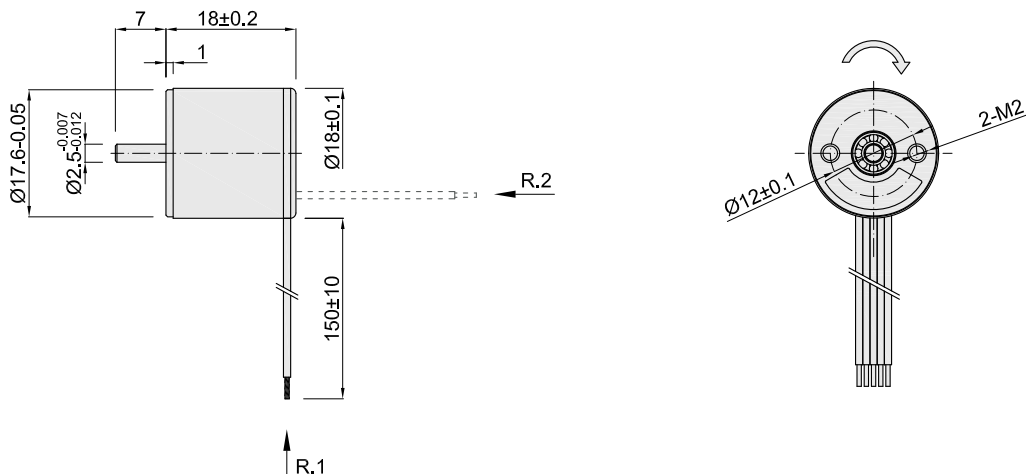
Up=Supply voltage.
Shield wire is not connected to the internal circuit of encoder.



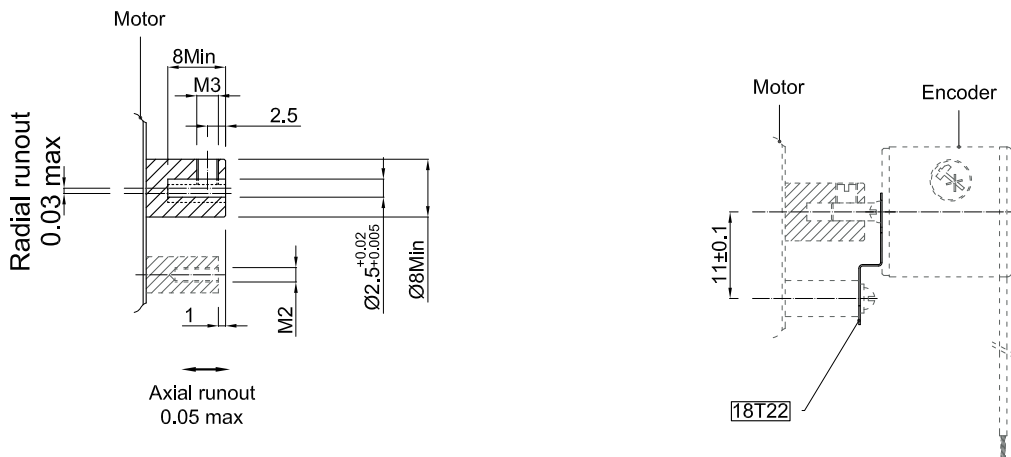
Unit: mm

8. Basic Dimensions

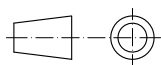
8.1 Dimensions



8.2 Assembling requirement



Unit: mm



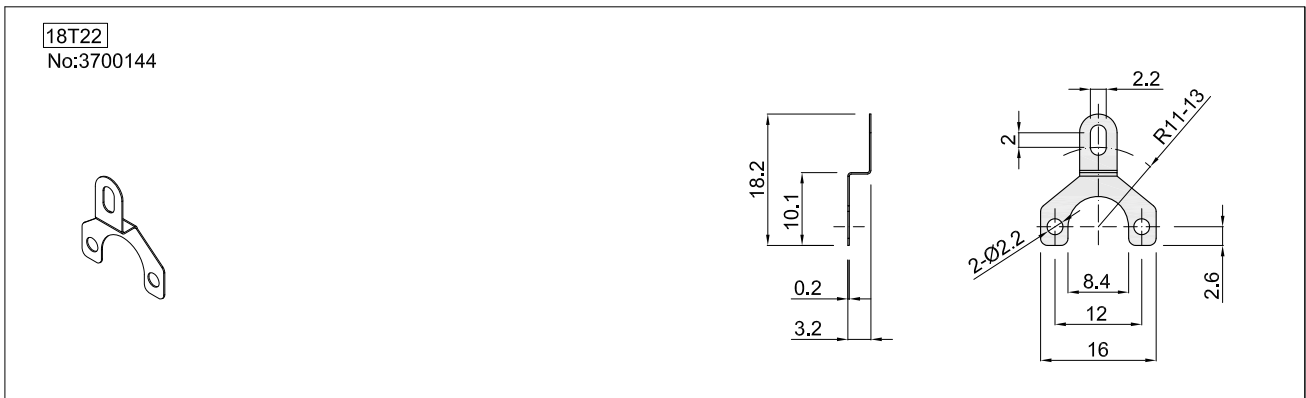
= Shaft rotation direction of the signal output

R.1 = Radial alignment(standard length 150)

R.2 = Axial alignment (standard length 150)

18T22 = Mounting spring plate model

9. Accessories(Recommended purchase)



About vibration

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