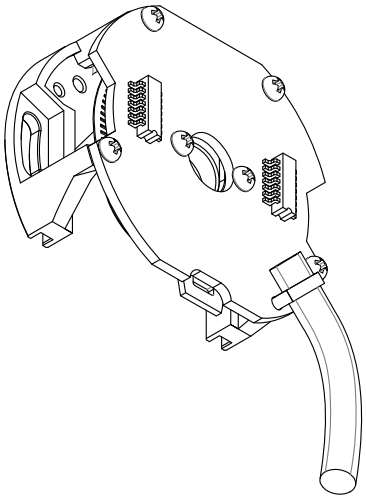
Z48

Specifications 1/6

Rotary Encoder Module (Incremental tpye,Non-bearing)

- Feature: Thin,logical compact configuration,easy to install
- Application: Servo motor,motor,ect,for Automatic control
- External dimensions: external diameter Ø48mm,thickness 22.5mm,diameter of shaft Ø8mm
- Resolution: up to 2500P/R
- Supply voltage: DC5V; DC8-30V
- Cable length: 300mm
- Weight: about 60g

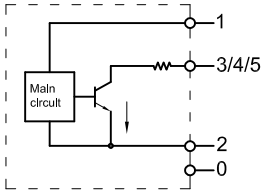
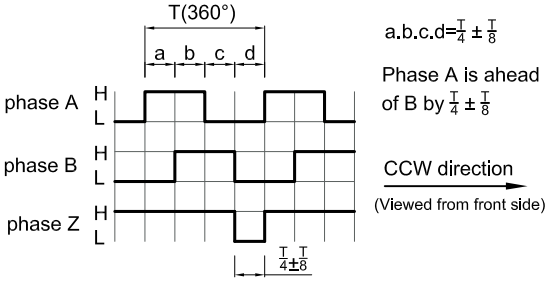
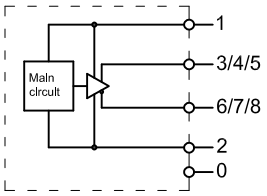
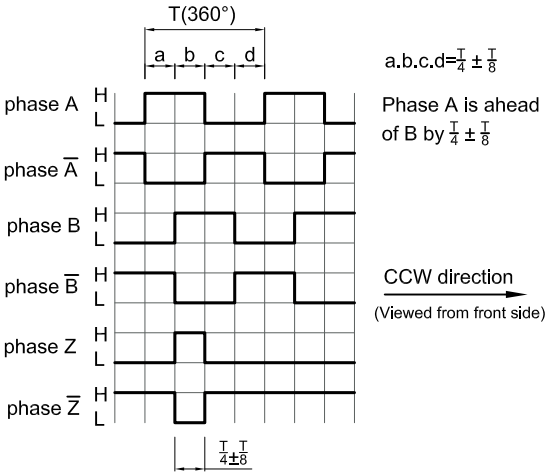
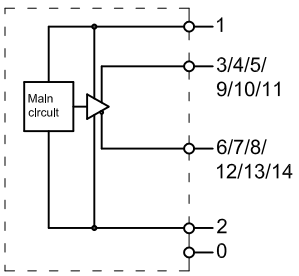
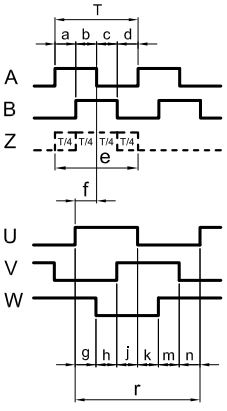
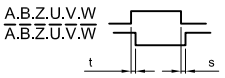


Model Guide

- Model form (filled required parameters in the box as following)
- Must choose supply voltage: DC5V; DC8-30V

Z48–	J	12	C	2500/8		
Product model series	J=Radial cable	Output phase 1=A 2=A+B 3=A+B+Z 4=A+$\overline{A}$+B+$\overline{B}$ 6=A+$\overline{A}$+B+$\overline{B}$+Z+$\overline{Z}$ 12=A+$\overline{A}$+B+$\overline{B}$+Z+$\overline{Z}$ +U+$\overline{U}$+V+$\overline{V}$+W+$\overline{W}$	Output type N=OC(NPN) C=TTL(DC5V) E=HTL(DC8-30V)	Incremental: Resolution（P/R） 50; 60; 100; 200; 256; 300; 360; 500; 512; 600; 720; 1000; 1024; 1200; 2000; 2048; 2500 Servo: Resolution/pole 1000/4; 1024/4; 1000/6; 1024/6; 1000/8; 1024/8; 2048/4; 2500/4; 2048/6; 2500/6; 2048/8; 2500/8	Diameter of shaft Blank=Ø8	Special requirement Blank=cable length 300mm Special cable length =C+number

Output Mode

Output type	Output circuit	Output wave form	Connection
OC (NPN)		 a.b.c.d=T/4 ± T/8 Phase A is ahead of B by T/4 ± T/8 CCW direction (Viewed from front side)	0=GND 1=red=DC5V; DC8-30V 2=black=OV 3=white=A 4=green=B 5=yellow=Z
TTL HTL		 a.b.c.d=T/4 ± T/8 Phase A is ahead of B by T/4 ± T/8 CCW direction (Viewed from front side)	0=shielding=GND 1=red=DC5V; DC8-30V 2=black=OV 3=white=A 4=green=B 5=yellow=Z 6=white/black=$\overline{A}$ 7=green/black=$\overline{B}$ 8=yellow/black=$\overline{Z}$
TTL		 a.b.c.d=T/4 ± T/8 e=T ± T/2 f:center of phase Z to rise point of phase U,that is ±0.5° CW direction (Viewing from front, direction is CW rotation)  poles | g.h.j.k.m.n | r 4 | 30±1° | 180° 6 | 20±1° | 120° 8 | 15±1° | 90°	0=shielding=GND 1=red=DC5V 2=black=OV 3=white=A 4=green=B 5=yellow=Z 6=white/black=$\overline{A}$ 7=green/black=$\overline{B}$ 8=yellow/black=$\overline{Z}$ 9=blue=U 10=grey=V 11=pink=W 12=blue/black=$\overline{U}$ 13=grey/black=$\overline{V}$ 14=pink/black=$\overline{W}$

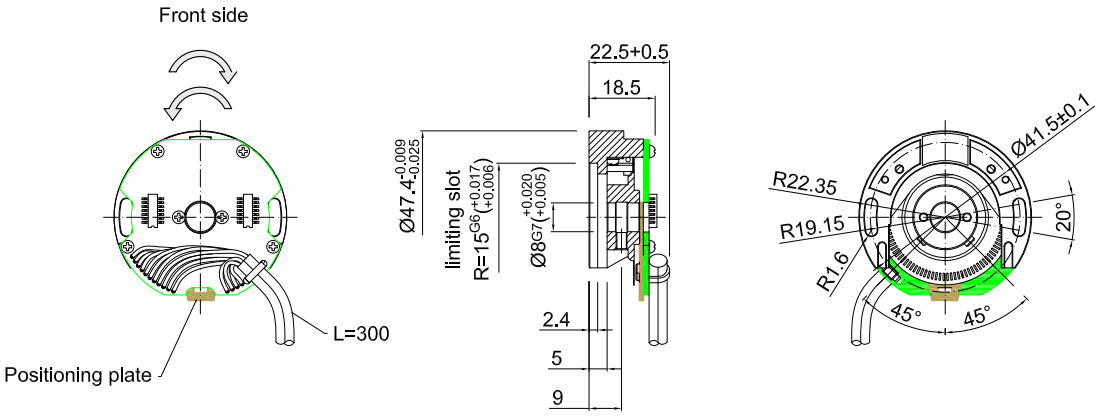
Electrical Characteristics

Parameter / Output type / Item			OC(NPN)	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	200KHz	300KHz
Output capacity	Output current	Input	≤30mA	≤±20mA	≤±50mA
		Output	—		
	Output voltage	"H"	—	≥2.5V	≥Vcc-3 VDC
		"L"	≤0.4V	≤0.5V	≤ 1V VDC
	Load voltage		≤DC30V	—	
Rise & Fall time			Less than 2us(cable length: 2m)	Less than 1us(Cable length: 2m)	≤100ns
Mark to space ratio			45% to 55%		
Phase shift between A & B			90°±10° (frequency in low speed)		
			90°±20° (frequency in high speed)		
Origin motion			Low level available	—	
GND			not connect to encoder		

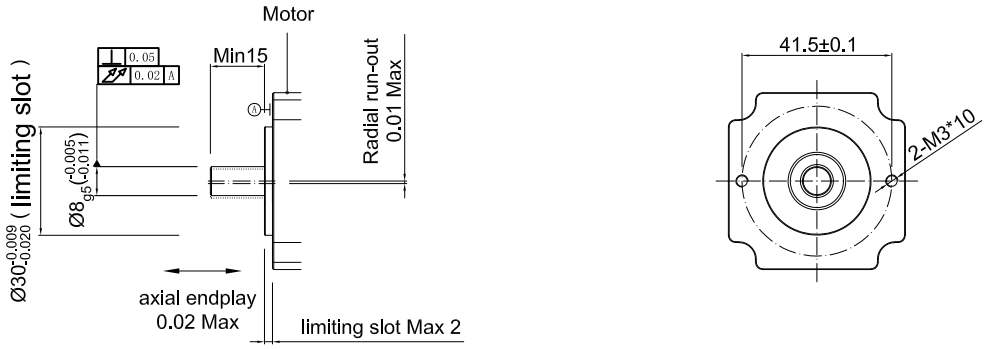
Mechanical Characteristics

External dimensions	External diameter Ø48mm，thickness 22.5mm
Shaft	Shaft for less than 8mm can be customized
Dimension of limiting slot	$Ø30^{+0.005}_{+0.025}$; depth 2.4mm
Slew speed	5000rpm
Environmental temperature	Operating:－20～+80℃; Storage:－25～+85℃
Environment humidity	Operating and storage:35～85%RH(noncondensing)
Material	Main body: Aluminium alloy
Cable length	300mm(with shielded cable)
Weight	About 60g

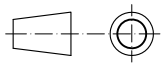
Basic Dimensions



Assembling requirement



Unit: mm



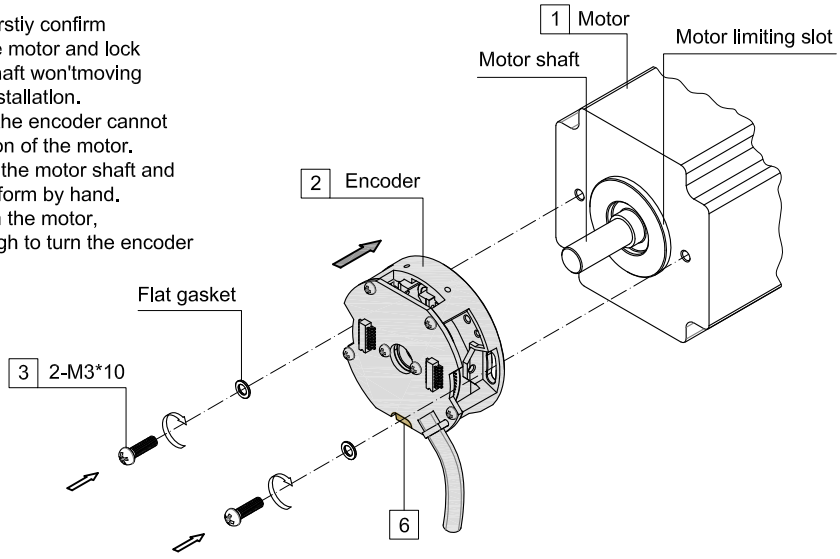
= The shaft rotary dirrction for encoder with UVW signal

= The shaft rotary dirrction for encoder without UVW signal

Assembling steps for UVW encoder(servo only)

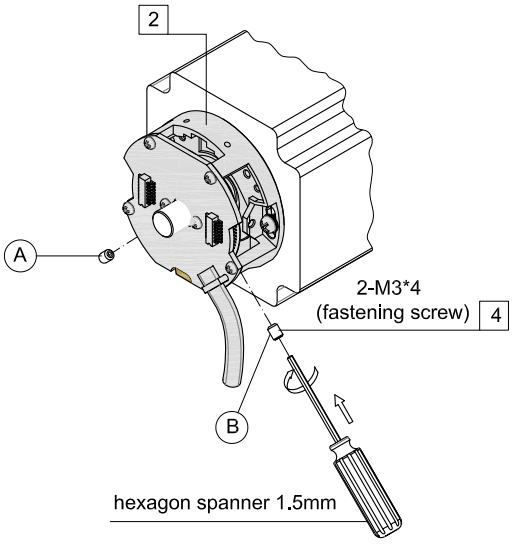
Step 1
a. Before installing the encoder,firstiy confirm the starting zero position of the motor and lock it tightly to ensure the motor shaft won'tmoving until the encoder completed Installatlon. otherwise the zero position of the encoder cannot be aligned with the zero position of the motor.
b. Put the encoder (2) directly on the motor shaft and gently push it to the motor platform by hand.
c. Fix the two hexagon screws on the motor, do not be too tightly ,just enough to turn the encoder by hand.

Note:
For the matching tolerance among encoder shaft sleeve, the motor shaftand limiting slot, please refer to page 4/6



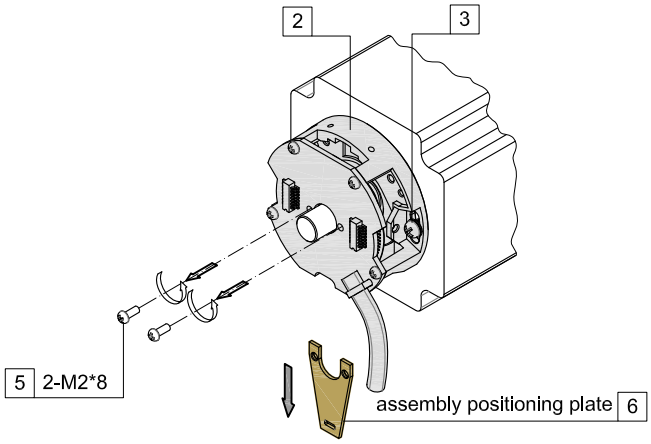
Step 2
Apply thread adhesive to the front ends of the two M3*4 bolts on the side of the encoder (2) and tighten to fix the encoder disk on the motor shaft.

Note:
Follow the tightening sequence of the two screws as figure,first A then B
Recommended tightening force is 0.6N.m



Step 3
a. Remove the two M2*8 screws(5)and the positioning plate
b. Connect the signal wires of the encoder,power on,and connect to the oscilloscope or other testing equipment that can read the zero signal of the motor and the encoder.
c. Centered on the limiting slot and turn the encoder from left to right by hand,and observe the testing equipment until the alignment of zero position for encoder and motor meets the requirements,then tighten the two M3*10 bolts(3)
d. Unlock the zero position of the motor to complete the encoder's installation

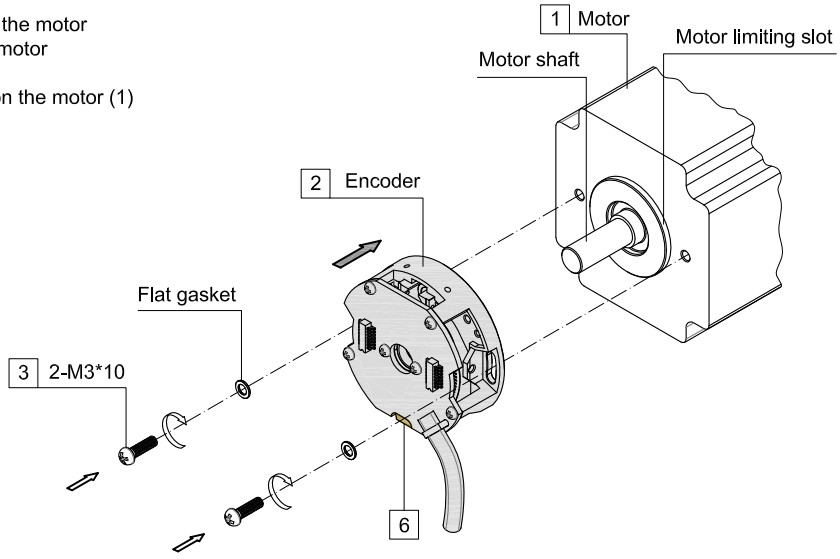
Note:
The assembly positioning plate (6) needs to be remounted if you want to reset zeo oposition or remove the encoder (2)



Assembling steps without UVW encoder

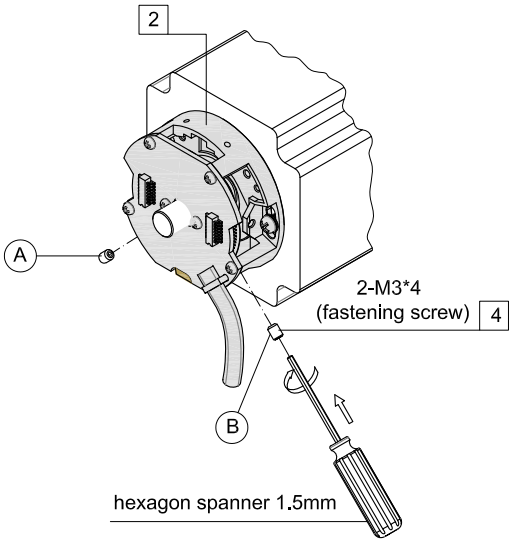
Step 1
a. Put the encoder (2) directly on the motor shaft and gently push it to the motor platform by hand.
b. Tighten the two M3 screws(3)on the motor (1)

Note:
For the matching tolerance among encoder shaft sleeve, the motor shaftand limiting slot, please refer to page 4/6



Step 2
Apply thread adhesive to the front ends of the two M3*4 bolts on the side of the encoder (2) and tighten to fix the encoder disk on the motor shaft.

Note:
Follow the tightening sequence of the two screws as figure,first A then B
Recommended tightening force is 0.6N.m



Step 3
a. Remove the two M2*8 screw
b. Remove the positioning plate

Note:
The assembly positioning plate (6) needs to be remounted if you want to remove the encoder (2)