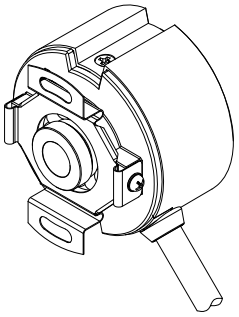
KZ48

Specifications 1/5

Incremental Type (Hollow conical shaft)

- Feature: small, logical compact configuration,optional various output mode and diameter of shaft
- Application: servo motor、textile industry、packing machinery、small instrument , etc , for automation control
- External dimensions: external diameter Ø48mm,thickness 34mm, diameter of hole Ø9mm depth 15mm(taper 1:10)
- Resolution: up to 8192P/R
- Supply voltage: DC5V; DC8-30V
- Protection: IP40
- Cable length: 500mm
- Weight: about 140g

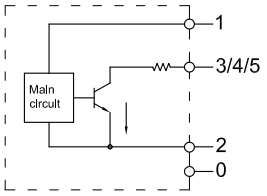
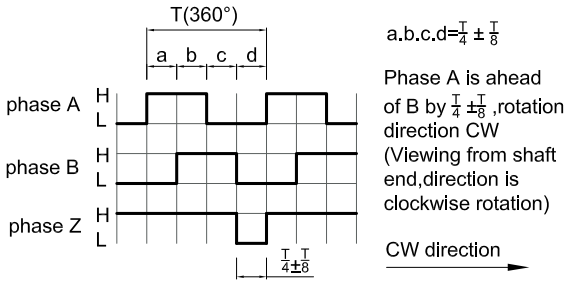
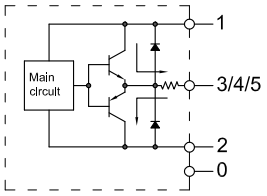


Model Guide

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

KZ48−	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+$\overline{W}$	N=OC V=Voltage F=Push-pull C=TTL(DC5V) 26LS31 E=HTL (DC8-30V) L=TTL(DC5V) 26C31 S=TTL(DC5V) (Phase A.B.Z are back of phase U.V.W)	Incremental: Resolution(P/R) 50; 60; 100; 200; 256; 300; 360; 500; 512; 600; 720; 1000; 1024; 1200; 2000; 2048; 2500; 3600; 4096; 5000; 8192; 10000 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; 4096/4; 8192/4; 4096/6; 8192/6; 4096/8; 8192/8; 10000/6; 10000/8	Diameter of shaft Blank=diameter of hole Ø9mm depth 15mm (taper 1:10)	Special requirement Blank=cable length 500mm; IP40 Special cable length =C+number

■ Output Mode

<table>
<tr><th>Output type</th><th>Output circuit</th><th>Output wave form</th><th>Connection</th></tr>
<tr><td>OC</td><td rowspan="2"> 
</td><td rowspan="2"> 
</td><td rowspan="3">0=GND
1=red=DC5V;
DC8-30V
2=black=OV
3=white=A
4=green=B
5=yellow=Z</td></tr>
<tr><td>Push-Pull</td><td> 
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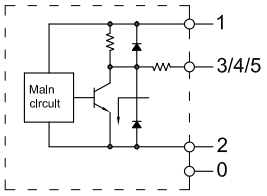
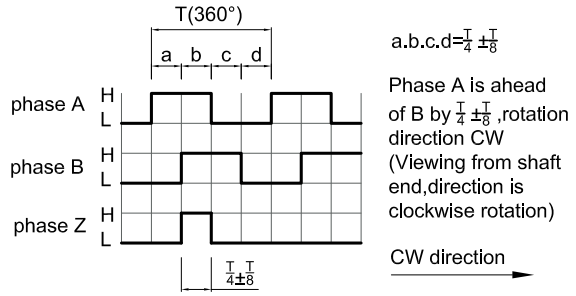
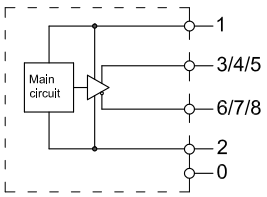
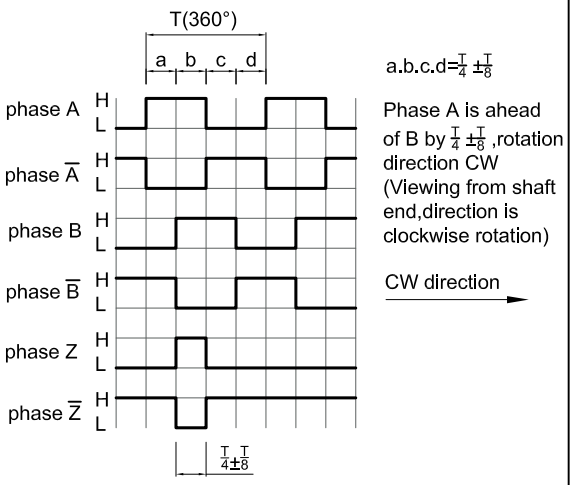
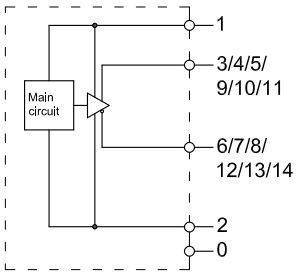
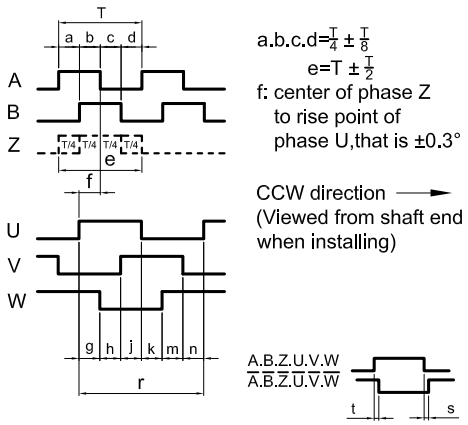
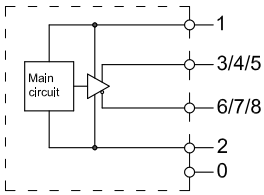
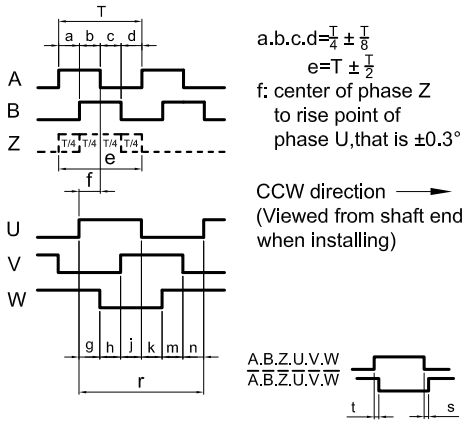
<tr><td>Voltage</td><td> 
</td><td> 
</td></tr>
<tr><td>TTL

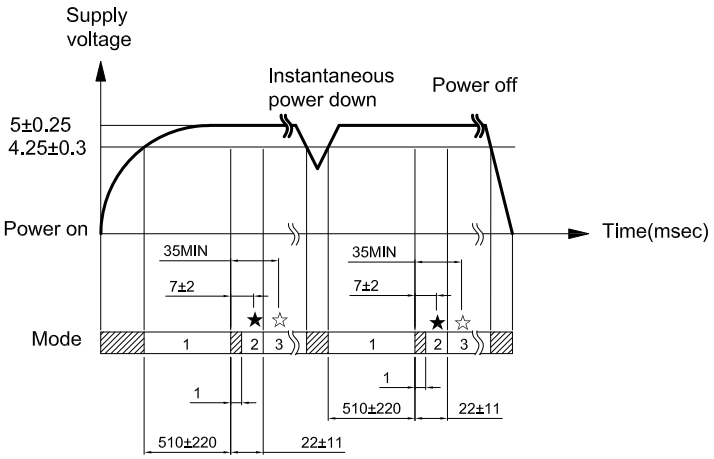
HTL</td><td> 
</td><td> 
</td><td>0=shielding=GND
1=red=DC5V;
DC8-30V
2=black=OV
3=white=A
4=green=B
5=yellow=Z
6=white/black=Ā
7=green/black=B̄
8=yellow/black=Z̄</td></tr>
</table>

Output Mode

Output type	Output circuit	Output wave form	Connection
TTL		 a.b.c.d=$\frac{T}{4}\pm\frac{T}{8}$ e=T $\pm\frac{T}{2}$ f: center of phase Z to rise point of phase U,that is ±0.3° CCW direction ⟶ (Viewed from shaft end when installing)	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=$\overline{W}$
TTL (phase A.B.Z are back of phase U.V.W)		 a.b.c.d=$\frac{T}{4}\pm\frac{T}{8}$ e=T $\pm\frac{T}{2}$ f: center of phase Z to rise point of phase U,that is ±0.3° CCW direction ⟶ (Viewed from shaft end when installing)	No. / Function / Color / Mode 1 2 3 3 white HZ U A 6 white/black HZ $\overline{U}$ $\overline{A}$ 4 green HZ V B 7 green/black HZ $\overline{V}$ $\overline{B}$ 5 yellow HZ W Z 8 yellow/black HZ $\overline{W}$ $\overline{Z}$ 1 red DC+5V 2 black OV 0 shielding GND

pole	g.h.j.k.m.n	r
4	30±1°	180°
6	20±1°	120°
8	15±1°	90°

Timing Chart



Symbol signification

★: indicate position of UVW channel
☆: position to start counting ABZ channel
▨: non-using zone
HZ: high impedance

■ Electrical Characteristics

Parameter / Item \ Output type			OC	Voltage	Push-pull	TTL(26LS31)	TTL(26C31)	TTL(26C31) (Phase A.B.Z are back of phase U.V.W)	HTL(HD7)
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 capascity	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)			≤100ns
Insulation strength			AC500V 60s						
Insulation resistance			10MΩ						
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	High level available	Low level available	—		Low level available	—
Delay motion time *			—					510±220ms	—
GND			not connect to encoder						

* Phase A.B.Z are back of phase U.V.W when power on。

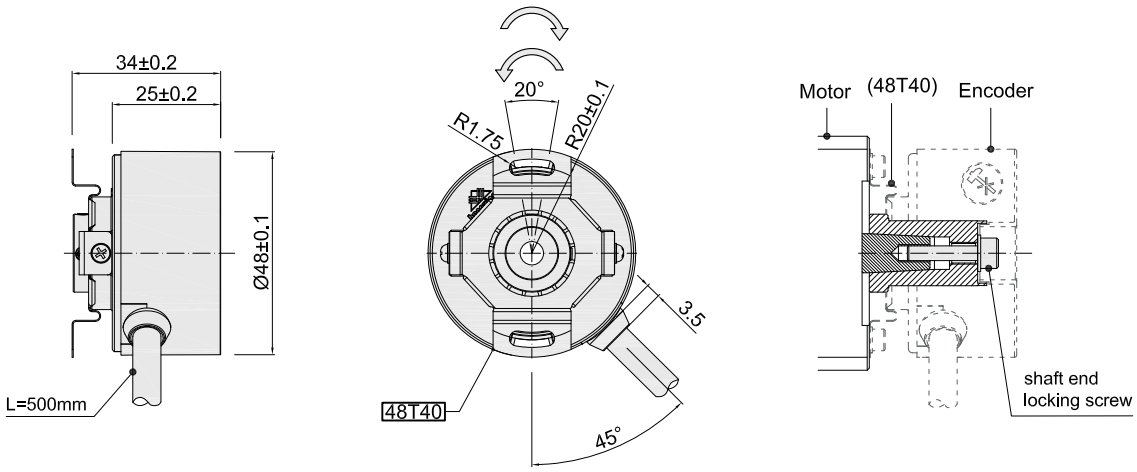
■ Mechanical Characteristics

Shaft	Ø9mm depth 15mm (taper 1:10)
Starting torque	Less than 9.8×10^{-3}N·m
Inertia moment	Less than 6.5×10^{-6} kg·m²
Shaft load	Radial 50N; Axial 30N
Slew speed	≤5000 rpm
Bearing Life	$1.5X10^{9}$ revs at rated load(100000hrs at 2500RPM)
Shell	Die cast aluminum
Weight	about 140g

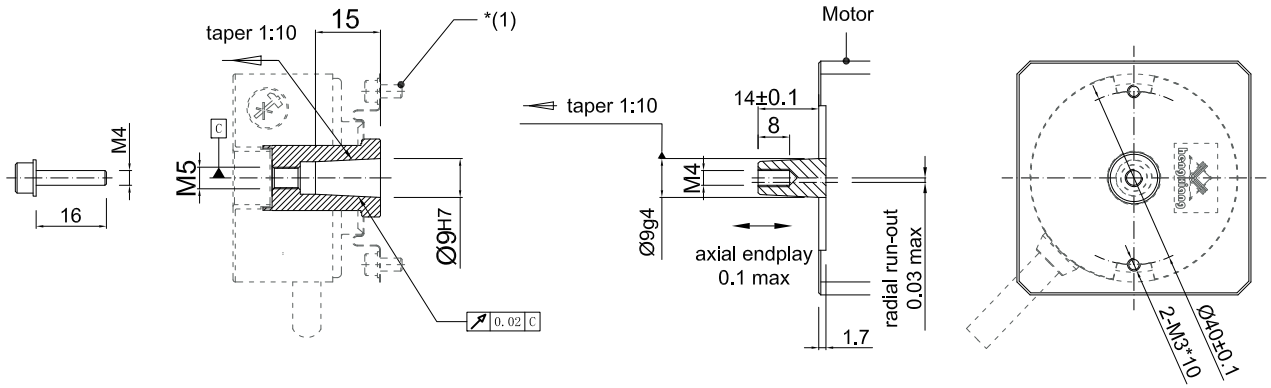
■ Environmental Specifications

Environmental temperature	Operating:—20～+85°C(repeatable winding cable: -10°C); Storage:—25～+90°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(endure)	490m/s² 11ms three times for X,Y,Z direction individually
Protection	IP40

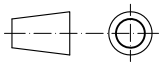
Basic Dimensions



Assembling requirement



Unit: mm



40T40 = Leaf Spring

= The shaft rotary dirrction for encoder without UVW signal

= The shaft rotary dirrction for encoder with UVW signal

Note:
*(1): Inner hexagon screw M3*10 with flat gasket and spring ring is recommended to use

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.