1. Absolute Type-Parallel output (Hollow Shaft Blind Hole)

1.1 Introduction:
KJ38 is a small economic universal design, compact, sturdy, high safety, and commonly used in industrial automations.

1.2 Feature:
- Encoder external diameter Ø38mm、thickness 38mm、diameter of shaft up to Ø5mm、Ø6mm、Ø8mm;
- Adopt non-contact photoelectric principle;
- Multiple electrical interfaces available;
- Resolution per turn up to 11Bits(2048)

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

1.4 Connection:
- Radial cable (STD length 1000mm)
- Radial cable with plug (STD length 1000mm)
- Axial cable (STD length 1000mm)
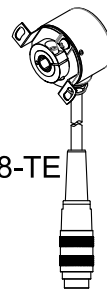- Axial cable with plug (STD length 1000mm)

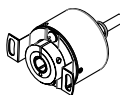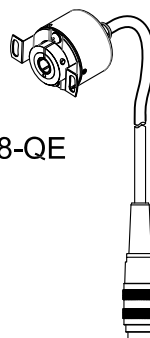**1.5 Protection:**
IP50 & IP65

1.6 Weight:
About 140g

KJ38-T   KJ38-TE

KJ38-Q   KJ38-QE

2. Model Selection Guide

KJ38- T 11 N   B8

KJ38-	T	11	N		B8		
Product model series	T=Radial cable Q=Axial cable TE=Radial cable with plug QE=Axial cable with plug	Bit(Steps): 5=5bit(32) 6=6bit(64) 7=7bit(128) 8=8bit(256) 8D=8bit(180) 9=9bit(512) 9D=9bit(360) 10=10bit(1024) 10D=10bit(720) 11=11bit(2048)	Interface (Parallel): N=OC (low level effective) NH=OC (high level effective) P=OC (low level effective) PH=OC (high level effective)	Count Direction Blank=clockwise (CW) C=counterclockwise(CCW) W=outside control direction (non-contact is CCW; connect to oV is CW)	Shaft (Blind hole): B5=ø5mm*18L B6=ø6mm*18L B8=ø8mm*18L	Special requirement Blank=cable length 1M; IP50 Special cable length =C+number Special protection IP65=D	Supply voltage: Blank=DC5V; DC30=DC8-30V

3. Resolution Output Table

	bit										
	11	10	9	8	7	6	5	4	3	2	1
0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	1	1
31	0	0	0	0	0	0	1	0	0	0	0
32	0	0	0	0	0	1	1	0	0	0	0
37	0	0	0	0	0	1	1	0	1	1	1
38	0	0	0	0	0	1	1	0	1	0	1
63	0	0	0	0	0	1	0	0	0	0	0
64	0	0	0	0	1	1	0	0	0	0	0
75	0	0	0	0	1	1	0	1	1	1	0
76	0	0	0	0	1	1	0	1	0	1	0
127	0	0	0	0	1	0	0	0	0	0	0
128	0	0	0	1	1	0	0	0	0	0	0
151	0	0	0	1	1	0	1	1	1	0	0
152	0	0	0	1	1	0	1	0	1	0	0
217	0	0	0	1	0	1	1	0	1	0	1
218	0	0	0	1	0	1	1	0	1	1	1
255	0	0	0	1	0	0	0	0	0	0	0
256	0	0	1	1	0	0	0	0	0	0	0
435	0	0	1	0	1	1	0	1	0	1	0
436	0	0	1	0	1	1	0	1	1	1	0
511	0	0	1	0	0	0	0	0	0	0	0
512	0	1	1	0	0	0	0	0	0	0	0
871	0	1	0	1	1	0	1	0	1	0	0
872	0	1	0	1	1	0	1	1	1	0	0
1023	0	1	0	0	0	0	0	0	0	0	0
1024	1	1	0	0	0	0	0	0	0	0	0
2046	1	0	0	0	0	0	0	0	0	0	1
2047	1	0	0	0	0	0	0	0	0	0	0

Left-side brackets: Resolution32, Resolution64, Resolution128, Resolution256, Resolution512, Resolution1024, Resolution2048

Right-side brackets: Resolution180, Resolution360, Resolution720

5bit Resolution32
6bit Resolution64
7bit Resolution128
8bit Resolution256 (180)
9bit Resolution512 (360)
10bit Resolution1024 (720)
11bit Resolution2048

4. Output Mode

Interface(Parallel)	Output circuit	Output wave form
OC (NPN)		 Position: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21......2047 View from shaft end,rotate direction is clockwise(CW)
OC (PNP)		 Position: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21......2047 View from shaft end,rotate direction is clockwise(CW)

5. Electrical Characteristics

Parameter Interface (Parallel) Item	OC(NPN)	OC(PNP)
Supply voltage	DC5V±5%；DC8V-30V±5%	
Allowable ripple	≤3%rms	
Consumption current	100mA Max	
Output code	gray code	
Precision	[360/(resolutionx4)]°	
Top response frequency	100kHz Max	
Output capascity — Output current — Input	≤30mA	
Output current — Output	—	
Output voltage — "H"	—	
Output voltage — "L"	≤0.4V	
Load voltage	≤DC30V	
Rise & Fall time	Less than 2us (Load resistance 1KΩ、cable length: 2m)	
Output level	Low level available	High level available
Insulation strength	AC500V 60s	
Insulation resistance	10MΩ	
GND	not connect to encoder	

6. Mechanical Characteristics

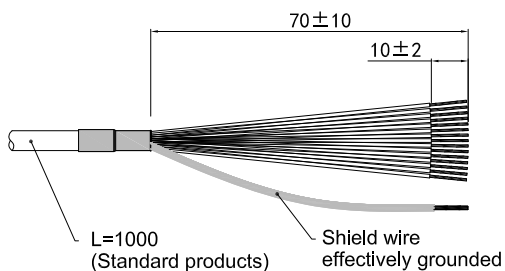| Shaft	Ø5mm、Ø6mm、Ø8mm(stainless steel，Blind hole,Depth 18mm)
Starting torque	Less than $9.8×10^{-3}$ N·m
Inertia moment	Less than $6.5×10^{-6}$ kg·m²
Shaft load	Radial 30N；Axial 20N
Slew speed	≤3000 rpm；IP65≤2000 rpm
Bearing Life	$1.5×10^{9}$ revs at rated load(10000hrs at 2500RPM)
Shell	Die cast aluminum
Weight	About 140g (with package)

7. Environmental Specifications

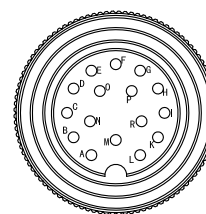| Environmental temperature	Operating:－20～+85°C(repeatable winding cable:－10°C)；storage:－25～+90°C
Environmental humidity	Operating and storage：35～85％RH(noncondensing)
Vibration(endure)	Amplitude 0.75mm, 10~50Hz, 1h for X,Y,Z direction individually
Shock(endure)	49m/s² ,three times for X,Y,Z direction individually
Protection	IP50；IP65

8. Wiring table

Socket Pin No. & Color	Resolution2048	Resolution1024 (720)	Resolution512 (360)	Resolution256 (180)	Resolution 128	Resolution 64	Resolution 32
14=P=gray/black	bit1(2^0)	not connect	←	←	←	←	←
13=O=blue/black	bit2(2^1)	bit1(2^0)	not connect	←	←	←	←
12=N=yellow/black	bit3(2^2)	bit2(2^1)	bit1(2^0)	not connect	←	←	←
11=M=green/black	bit4(2^3)	bit3(2^2)	bit2(2^1)	bit1(2^0)	not connect	←	←
10=L=white/black	bit5(2^4)	bit4(2^3)	bit3(2^2)	bit2(2^1)	bit1(2^0)	not connect	←
9=K=pink	bit6(2^5)	bit5(2^4)	bit4(2^3)	bit3(2^2)	bit2(2^1)	bit1(2^0)	not connect
8=I=gray	bit7(2^6)	bit6(2^5)	bit5(2^4)	bit4(2^3)	bit3(2^2)	bit2(2^1)	bit1(2^0)
7=H=blue	bit8(2^7)	bit7(2^6)	bit6(2^5)	bit5(2^4)	bit4(2^3)	bit3(2^2)	bit2(2^1)
6=G=yellow	bit9(2^8)	bit8(2^7)	bit7(2^6)	bit6(2^5)	bit5(2^4)	bit4(2^3)	bit3(2^2)
5=F=green	bit10(2^9)	bit9(2^8)	bit8(2^7)	bit7(2^6)	bit6(2^5)	bit5(2^4)	bit4(2^3)
4=E=white	bit11(2^{10})	bit10(2^9)	bit9(2^8)	bit8(2^7)	bit7(2^6)	bit6(2^5)	bit5(2^4)
3=D=brown	W (outside control direction: non-contact is CCW; connect to oV is CW)						
2=C=black	OV						
1=B=red	DC5V; DC8-30V						
0=A=shielding	GND						

Cable connection

70±10

10±2

L=1000 (Standard products)

Shield wire effectively grounded

Cable with plug

M16F-16K(plug)

9. Basic Dimensions

9.1 Dimensions

38±0.2   13±1
28±0.2

32±1

10

L=1000

38T45

17

R22.5   R26.1

4-R2.1

60°

Origin location:
The blue dot aligned with the center of
outlet cable is the origin position

pls refer to the wiring table
on page 5 for connection

M16F-16K(plug)

L=1000mm

76
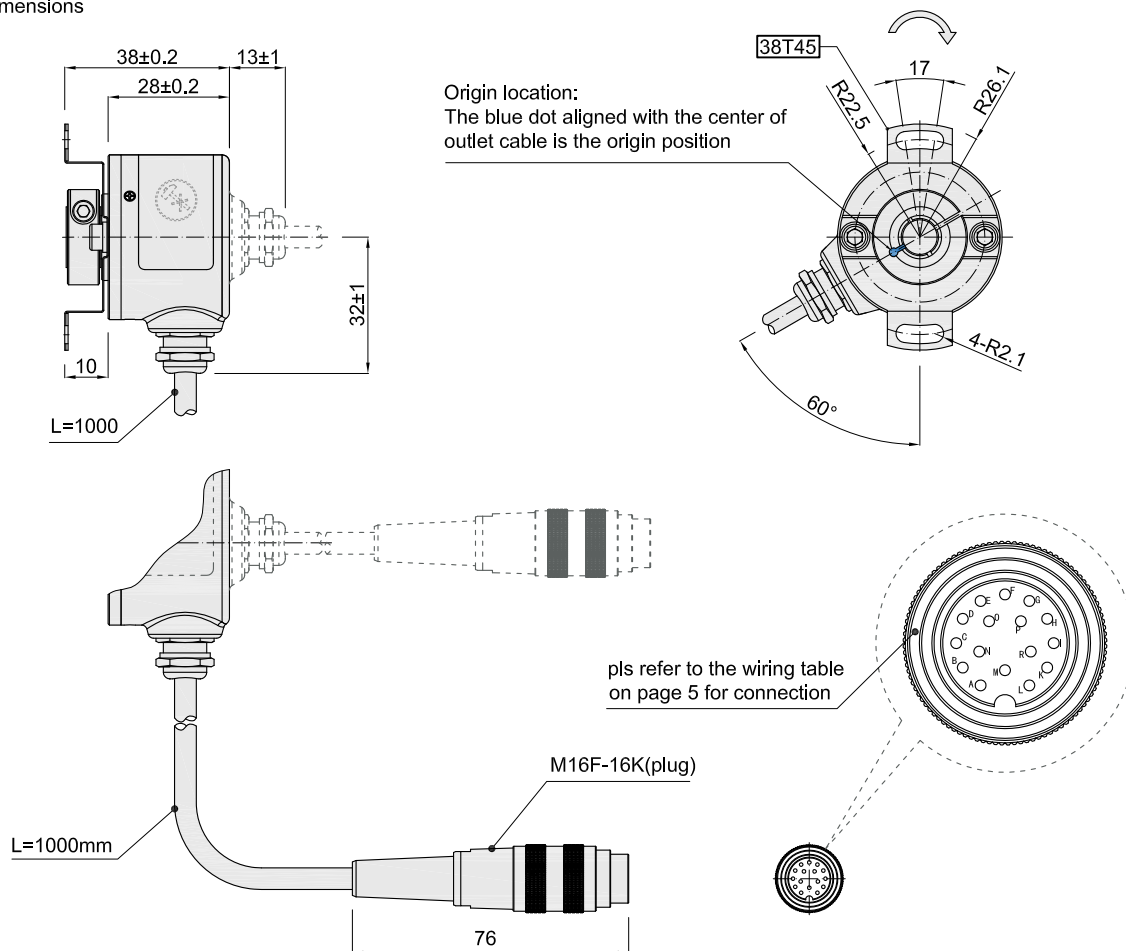
9.2 Assembling requirement

Motor

Inner hexagon screw
M3*6 with flat gasket
and spring ring is
recommended to use

coaxiality
0.03 max

17(Max)

B*

axial endplay
0.1 max

B

18±0.5

B	B*
$\varnothing 5^{H7}$	$\varnothing 5_{g4}$
$\varnothing 6^{H7}$	$\varnothing 6_{g4}$
$\varnothing 8^{H7}$	$\varnothing 8_{g4}$

B* Motor shaft
diameter
tolerance
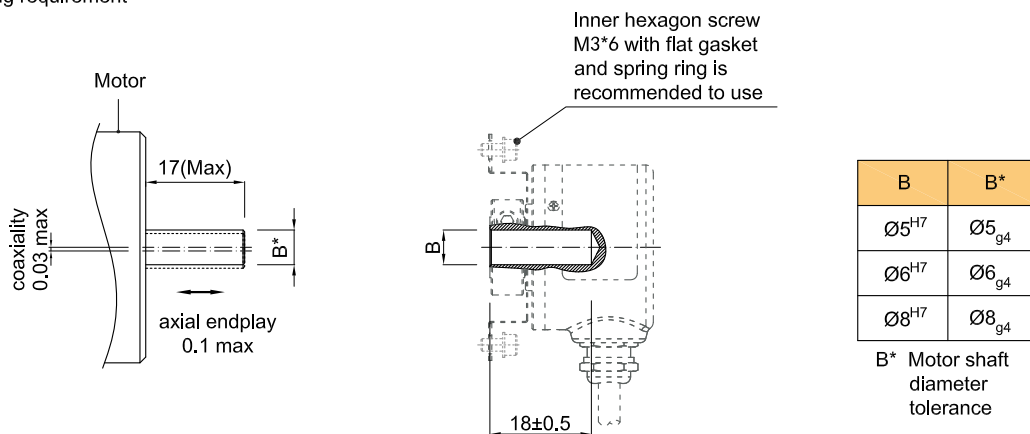
Unit: mm
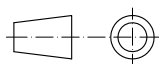
= Shaft rotation direction of the signal output

10. Caution

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