1. Absolute Type-Parallel output (Solid Shaft)

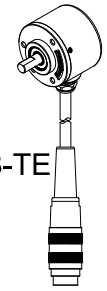
1.1 Introduction:
SJ38 is a small economic universal design, compact, sturdy, high safety, and commonly used in industrial automations.

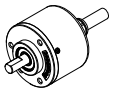
1.2 Feature:
- Encoder external diameter Ø38mm、thickness 28mm、diameter of shaft up to Ø6mm;
- Adopt non-contact photoelectric principle;
- Multiple electrical interfaces available;
- Resolution per turn up to 11Bits(2048)

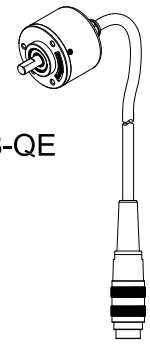
1.3 Application:
Textile, packaging, motor, elevator, CNC and other automation control fields.

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)


SJ38-T


SJ38-TE


SJ38-Q


SJ38-QE

1.5 Protection:
IP50 & IP65

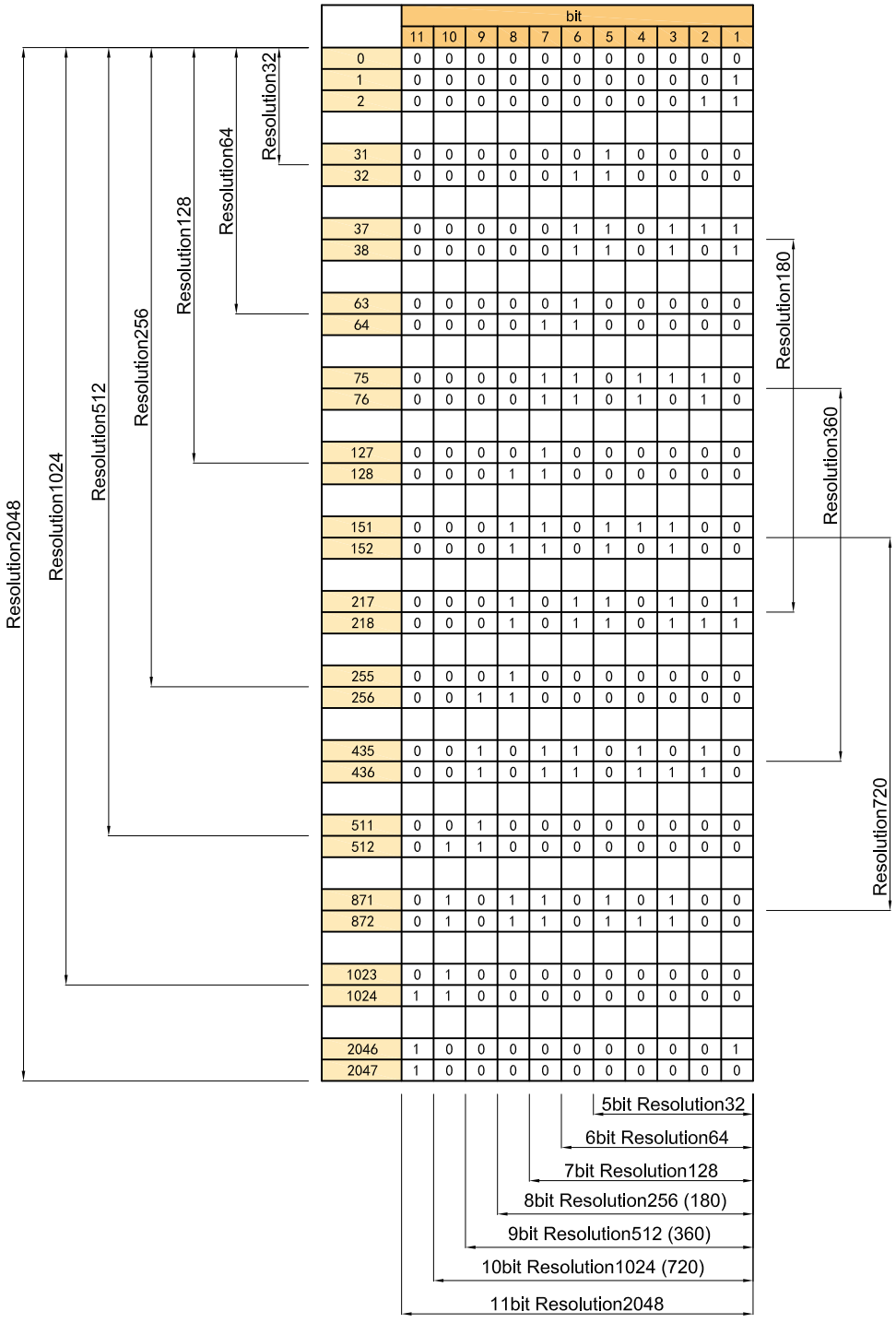
1.6 Weight:
About 130g

2. Model Selection Guide

SJ38- | **T** | **11** | **N** | | | | | |

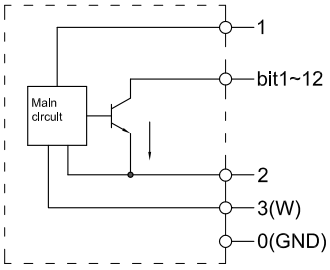
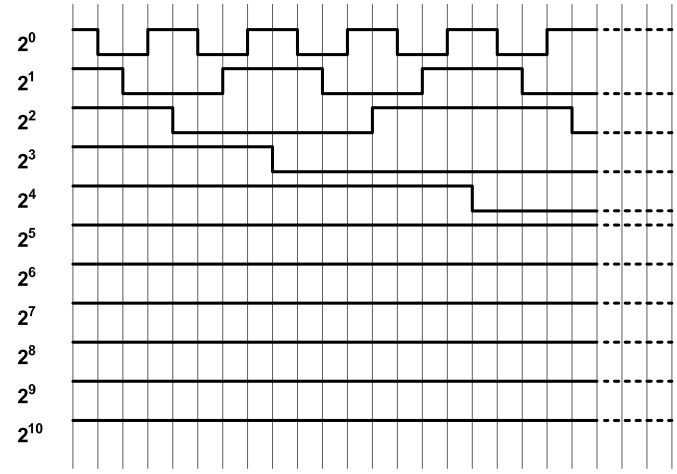
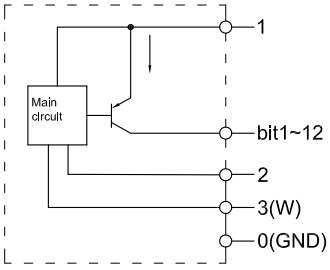
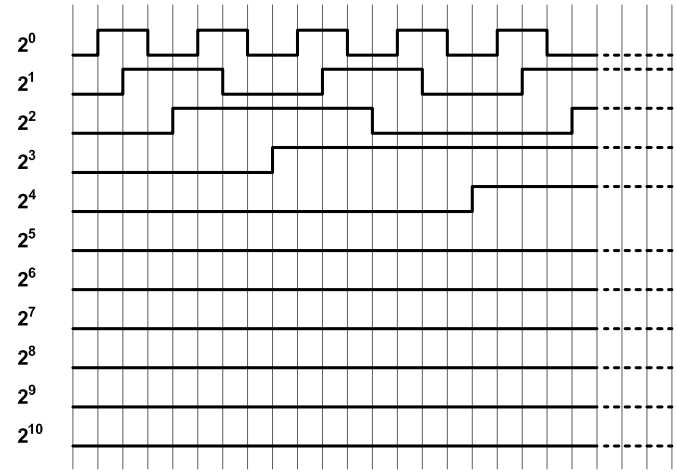
Product model series	T=Radial cable Q=Axial socket TE=Radial cable with plug QE=Axial cable with plug	Bit(Steps): 5=5bit(32) 6=6bit(64) 7=7bit(128) 8=8bit(256) 8D=8bit(180) 9=9bit(512) 9D=9bit(360) 10=10bit(1024) 10D=10bit(720) 11=11bit(2048)	Interface (Parallel): N=OC (low level effective) NH=OC (high 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: Blank=Ø6mm	Special requirement Blank=cable length 1M; IP50 Special cable length =C+number Special protection IP65=D	Supply voltage: Blan=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

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 / Item \ Interface (Parallel)			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	—	
	Output voltage	“H”	—	
		“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	Ø6mm(stainless steel)
Starting torque	Less than 4.4×10^{-3} N·m
Inertia moment	Less than 1.5×10^{-6} kg·m²
Shaft load	Radial 30N; Axial 20N
Slew speed	≤4000 rpm； IP65≤3000 rpm
Bearing Life	$1.5x10^{9}$ revs at rated load(10000hrs at 2500RPM)
Shell	Die cast aluminum
Weight	about 130g

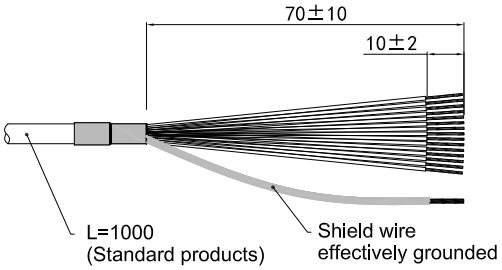
7. Environmental Specifications

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

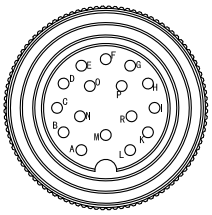
8. Wiring table

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



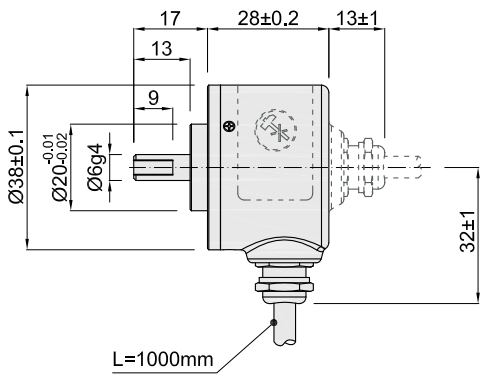
Cable with plug

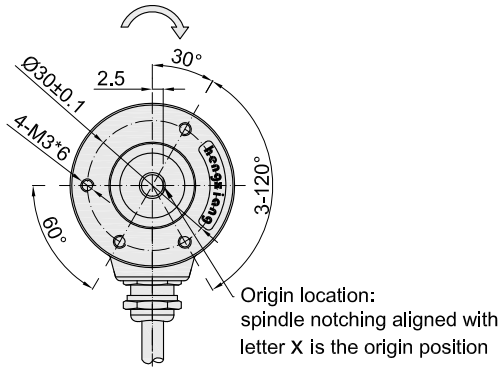


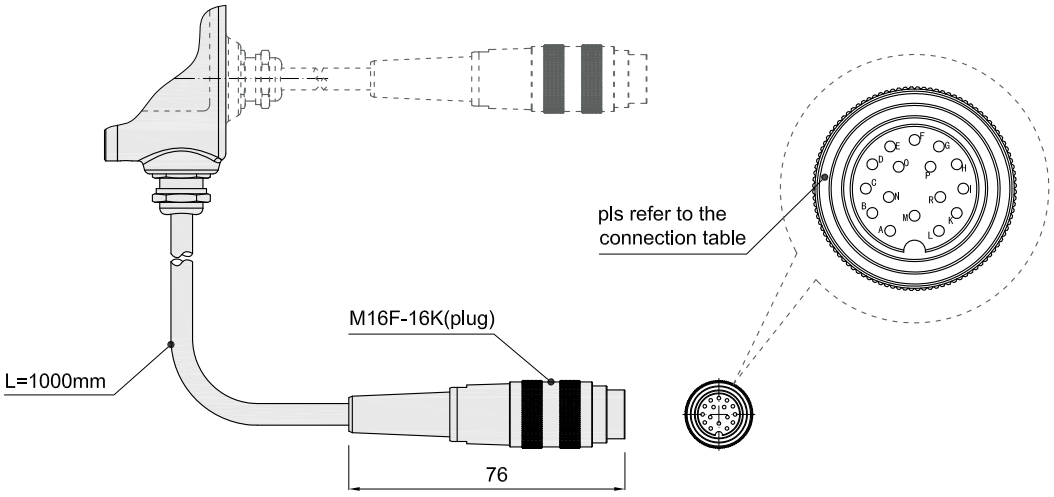
M16F-16K(plug)

9. Basic Dimensions

9.1 Dimensions



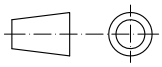




9.2 Assembling requirement

Notice : The radial runout of motor shaft should be less than 0.03mm, and the angle shoud be less than 1.0°.

Unit: mm



= Shaft rotation direction of the signal output

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.

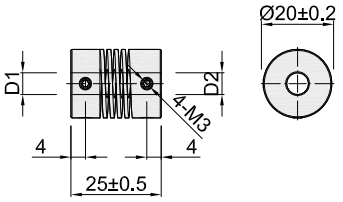
10. Accessories(Recommended purchase)

Spring type H series coupling

(general accuracy, or choose M series for higher accuracy)

6H6 No: 08700021

6H8 No: 08700022



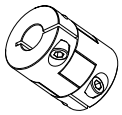
Model	D1	D2
6H6	$Ø6^{+0.03}_{+0.01}$	$Ø6^{+0.03}_{+0.01}$
6H8		$Ø8^{+0.03}_{+0.01}$

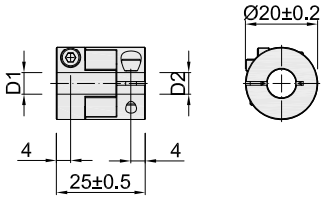
material：
aluminium alloy

Crossover type M series coupling

6M6 No: 08700037

6M8 No: 08700038





Model	D1	D2
6M6	$Ø6^{+0.03}_{+0.01}$	$Ø6^{+0.03}_{+0.01}$
6M8		$Ø8^{+0.03}_{+0.01}$

material：
aluminium alloy