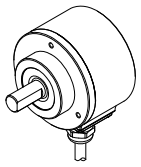
1. SJ58 Parallel Gray Code Absolute Encoder (Solid Shaft)

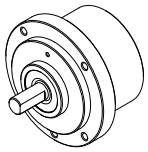
1.1 Introduction:

SJ58 is a solid shaft rugged housing design, single-turn absolute photoelectric encoder, capable of outputting 12Bits of parallel gray code position information, the electrical interface has an open collector NPN or PNP, the direction of rotation can be controlled externally, four mounting flange and collar sizes, the highest protection grade is IP65, the product structure is compact, high security, suitable for high-intensity mechanical movement positioning fields.

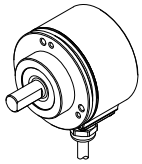
SJ58-A



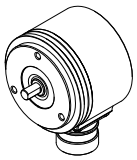
SJ58-B



SJ58-C



SJ58-D



1.2 Feature:

- Encoder external diameter Ø58mm、thickness 36-40mm、diameter of shaft Ø6mm, Ø8mm, Ø10mm available;
- Multiple mounting flange sizes available;
- Adopt non-contact photoelectric principle;
- Resolution per turn up to 12 Bits (4096);
- Reverse polarity protection;

1.3 Application:

Textile, packaging, motor, CNC and other automation control fields.

1.4 Connection:

- Cable connection (STD length 1000mm)
- Socket connection (M16 or M23 male)

1.5 Protection:

IP50 & IP65

1.6 Weight:

About 420g

2. Model Selection Guide

Model composition (select parameters)

SJ58-	A	10	T	12	N		H	D	-	000
Product model series	Mounting flange: ❶. A/B/C/D	Diameter of shaft: (Solid hole) 6=Ø6mm 8=Ø8mm 10=Ø10mm	Connection method: T=Radial cable Q=Axial cable Radial socket: N=M16-16P R=M23-16P Axial socket: O=M16-16P P=M23-16P	Resolution ppr 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) 12=12bit(4096)	Interface (Parallel): N=NPN ❷ NH=NPN❸ P=PNP❷ PH=PNP❸ F=Push-pull❷ FH=Push-pull ❸	Count direction: Blank=clockwise (CW) C=counterclock-wise(CCW) W=outside control direction (non-contact is CCW; connect to 0V is CW)	Supply voltage: Blank=DC5V H=DC8-30V	Special requirement: Blank=❹ D=IP65		Management No.

Mounting flange：

❶. A=Clamping flange，collar Ø36mm，3-M3 PCD Ø48mm；
B=Clamping flange，collar Ø56mm，4-M4 PCD Ø66mm；
C=Synchro flange，collar Ø36mm，3-M3 & 3-M4 PCD Ø48mm；
D=Synchro flange，collar Ø50mm，3-M4 PCD Ø42mm.

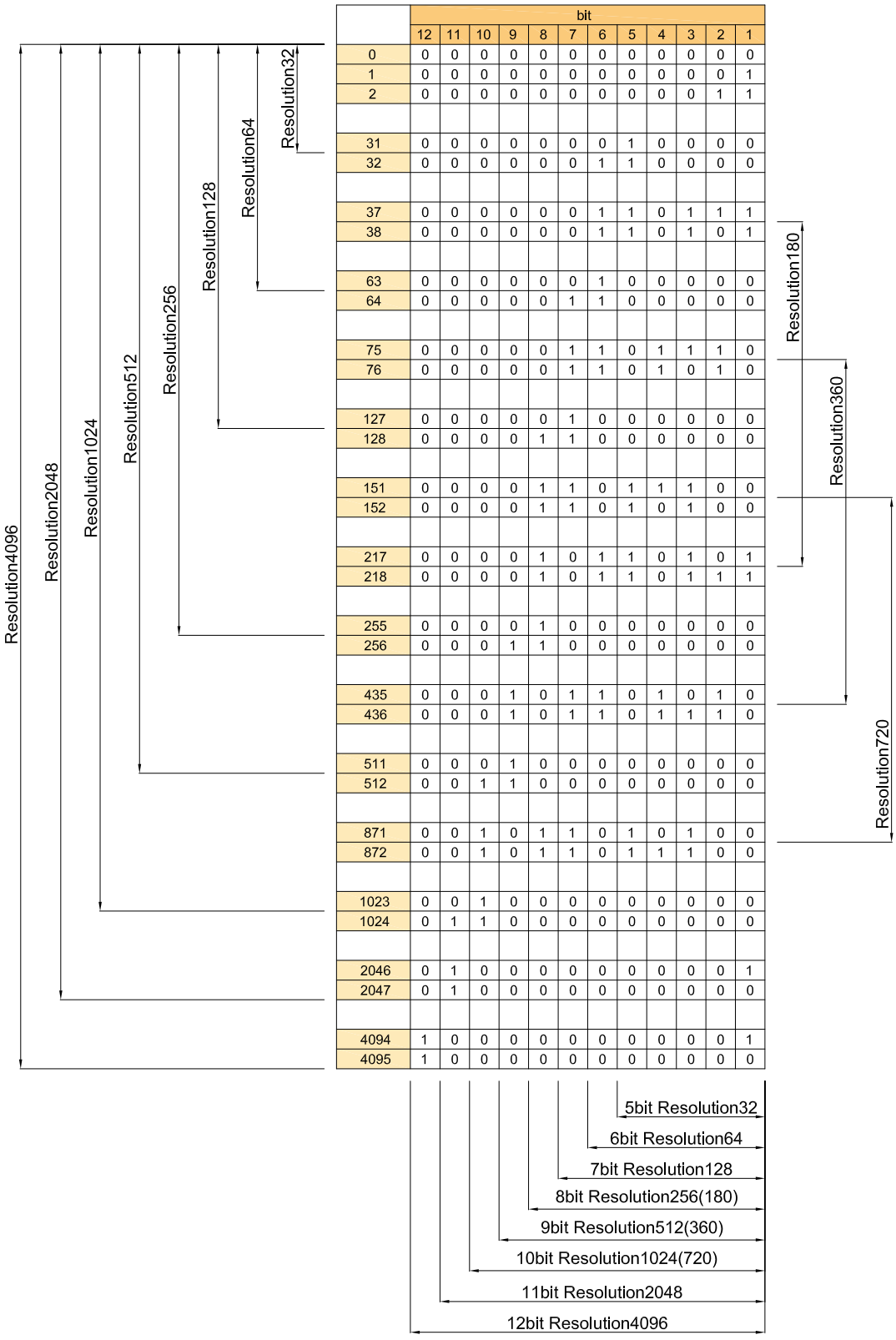
Interface (Parallel):

❷. low level effective.
❸. high level effective.

Special requirement：

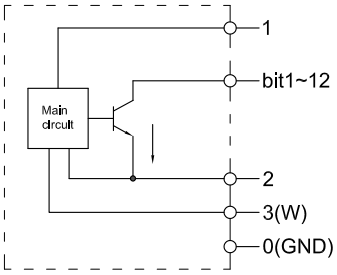
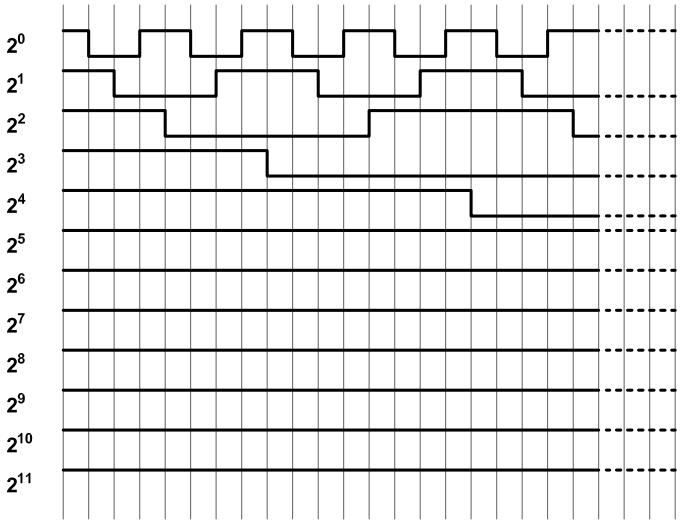
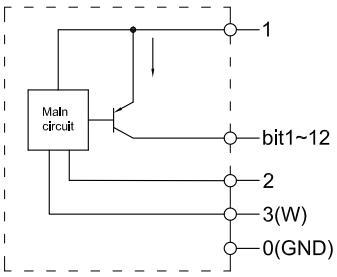
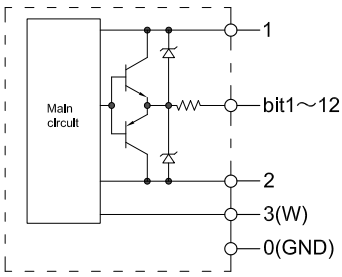
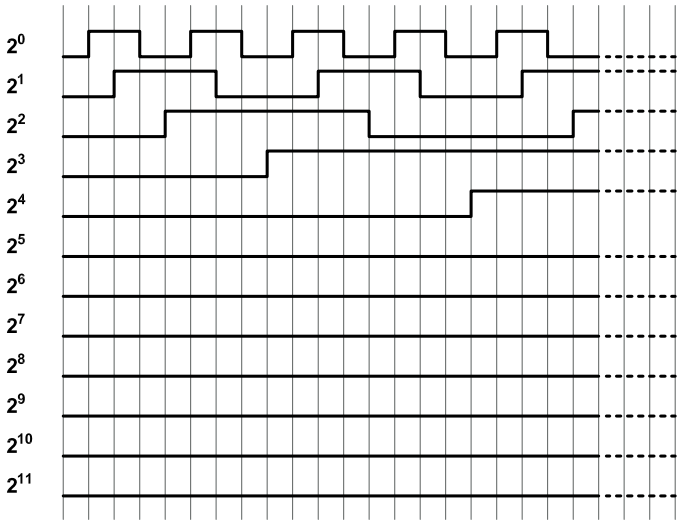
❹. IP=50；cable length 1m，if need to change the length C+number，max 100m (indicated by C100).

3. Resolution Output Table



	bit											
	12	11	10	9	8	7	6	5	4	3	2	1
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	1	1
31	0	0	0	0	0	0	0	1	0	0	0	0
32	0	0	0	0	0	0	1	1	0	0	0	0
37	0	0	0	0	0	0	1	1	0	1	1	1
38	0	0	0	0	0	0	1	1	0	1	0	1
63	0	0	0	0	0	0	1	0	0	0	0	0
64	0	0	0	0	0	1	1	0	0	0	0	0
75	0	0	0	0	0	1	1	0	1	1	1	0
76	0	0	0	0	0	1	1	0	1	0	1	0
127	0	0	0	0	0	1	0	0	0	0	0	0
128	0	0	0	0	1	1	0	0	0	0	0	0
151	0	0	0	0	1	1	0	1	1	1	0	0
152	0	0	0	0	1	1	0	1	0	1	0	0
217	0	0	0	0	1	0	1	1	0	1	0	1
218	0	0	0	0	1	0	1	1	0	1	1	1
255	0	0	0	0	1	0	0	0	0	0	0	0
256	0	0	0	1	1	0	0	0	0	0	0	0
435	0	0	0	1	0	1	1	0	1	0	1	0
436	0	0	0	1	0	1	1	0	1	1	1	0
511	0	0	0	1	0	0	0	0	0	0	0	0
512	0	0	1	1	0	0	0	0	0	0	0	0
871	0	0	1	0	1	1	0	1	0	1	0	0
872	0	0	1	0	1	1	0	1	1	1	0	0
1023	0	0	1	0	0	0	0	0	0	0	0	0
1024	0	1	1	0	0	0	0	0	0	0	0	0
2046	0	1	0	0	0	0	0	0	0	0	0	1
2047	0	1	0	0	0	0	0	0	0	0	0	0
4094	1	0	0	0	0	0	0	0	0	0	0	1
4095	1	0	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.....4095 View from shaft end,rotate direction is clockwise(CW)
OC (PNP)		
Push-pull		 Position: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21.....4095 View from shaft end,rotate direction is clockwise(CW)

5. Electrical Parameters

Parameter / Item \ Interface (Parallel)			OC(NPN)	OC(PNP)	Push-pull	
Supply voltage			DC5V±5%； DC8V-30V±5%		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		300kHz Max	
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 (Load resistance 1KΩ、cable length: 2m)			
Output level			Low level available & High level available			
External control of counting direction			"W" brown wire: Leave open (unconnected) for CCW counting; connect to 0V for CW counting			
Insulation strength			AC500V 60s			
Insulation resistance			10MΩ			
Reverse polarity protection			✔			
GND			not connect to encoder			

6. Mechanical Specifications

Shaft	Ø6mm; Ø8mm; Ø10mm(stainless steel)
Starting torque	at +20°C IP50＜0.05 Nm; IP65＜0.1 Nm
Inertia moment	Less than 3×10^{-6} kg·m²
Shaft load	Radial 60N; Axial 40N
Slew speed	IP50 ≤6000 rpm； IP65 ≤4000 rpm
Bearing Life	1.5×10^{9} revs at rated load(10000hrs at 2500RPM)
Shell	Die cast aluminum
Weight	about 420g

7. Environmental Parameters

Environmental temperature	Operating:－40～+95°C(repeatable winding cable: -10°C); storage:－40～+95°C
Environmental humidity	Operating and storage：35～85%RH(noncondensing)
Vibration(endurance)	Amplitude 0.75mm, 10~50Hz, 1h for X,Y,Z direction individually
Shock(endurance)	49m/s² ,three times for X,Y,Z direction individually
Protection	IP50 & IP65

8. Wiring table

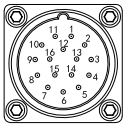
Socket Pin No. & Wire Color	Resolution4096	Resolution2048	Resolution1024 (720)	Resolution512 (360)	Resolution256 (180)	Resolution128	Resolution64	Resolution32
15=R=pink /black	bit1(2^0)	Not connect	←	←	←	←	←	←
14=P=gray /black	bit2(2^1)	bit1(2^0)	Not connect	←	←	←	←	←
13=O=blue /black	bit3(2^2)	bit2(2^1)	bit1(2^0)	Not connect	←	←	←	←
12=N=yellow /black	bit4(2^3)	bit3(2^2)	bit2(2^1)	bit1(2^0)	Not connect	←	←	←
11=M=green /black	bit5(2^4)	bit4(2^3)	bit3(2^2)	bit2(2^1)	bit1(2^0)	Not connect	←	←
10=L=white /black	bit6(2^5)	bit5(2^4)	bit4(2^3)	bit3(2^2)	bit2(2^1)	bit1(2^0)	Not connect	←
9=K=pink	bit7(2^6)	bit6(2^5)	bit5(2^4)	bit4(2^3)	bit3(2^2)	bit2(2^1)	bit1(2^0)	Not connect
8=I=gray	bit8(2^7)	bit7(2^6)	bit6(2^5)	bit5(2^4)	bit4(2^3)	bit3(2^2)	bit2(2^1)	bit1(2^0)
7=H=blue	bit9(2^8)	bit8(2^7)	bit7(2^6)	bit6(2^5)	bit5(2^4)	bit4(2^3)	bit3(2^2)	bit2(2^1)
6=G=yellow	bit10(2^9)	bit9(2^8)	bit8(2^7)	bit7(2^6)	bit6(2^5)	bit5(2^4)	bit4(2^3)	bit3(2^2)
5=F=green	bit11(2^{10})	bit10(2^9)	bit9(2^8)	bit8(2^7)	bit7(2^6)	bit6(2^5)	bit5(2^4)	bit4(2^3)
4=E=white	bit12(2^{11})	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"❶ brown wire: Leave open (unconnected) for CCW counting; connect to 0V for CW counting							
2=C=black	OV							
1=B=red	DC5V & DC8-30V							
0=A=shielding	GND❷							

❶. W=External control of counting direction.
❷. GND No encoder body connected.

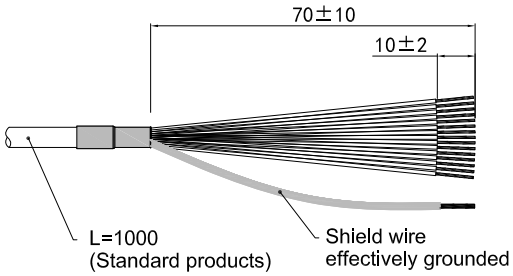
M16F-16K
Male socket pin assignment diagram



M23*1 16P
Male socket pin assignment diagram

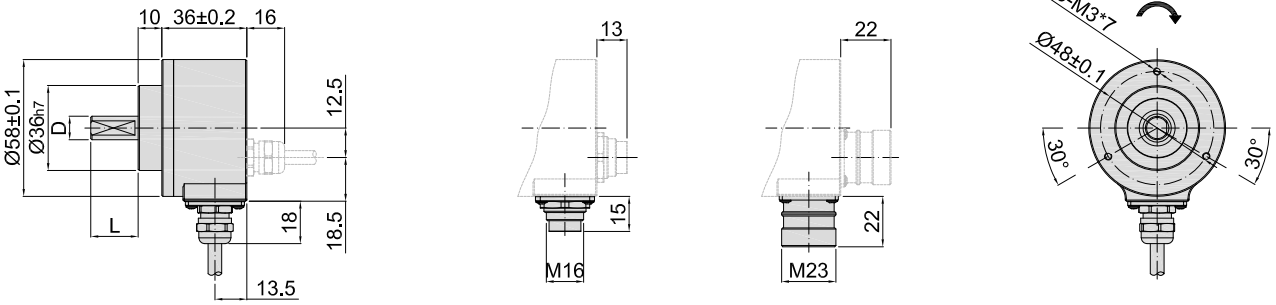


Cable connection

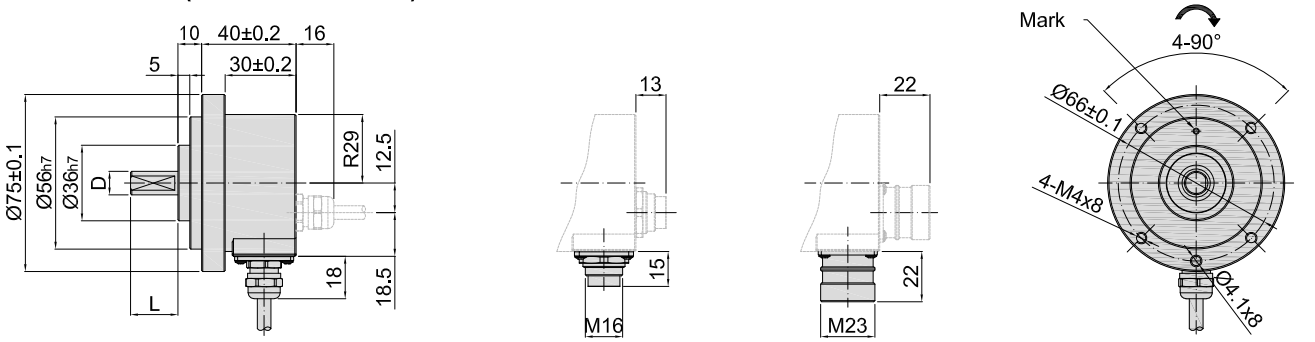


9. Basic Dimensions

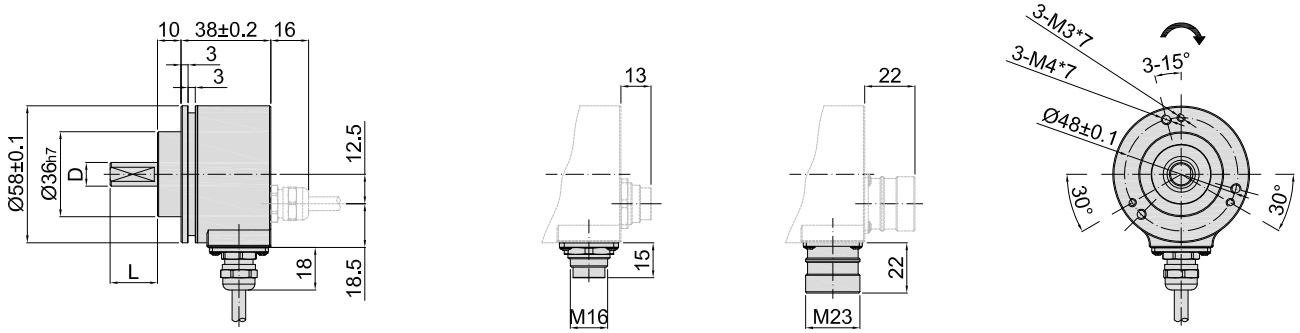
9.1 SJ58-A (Basic dimensions)



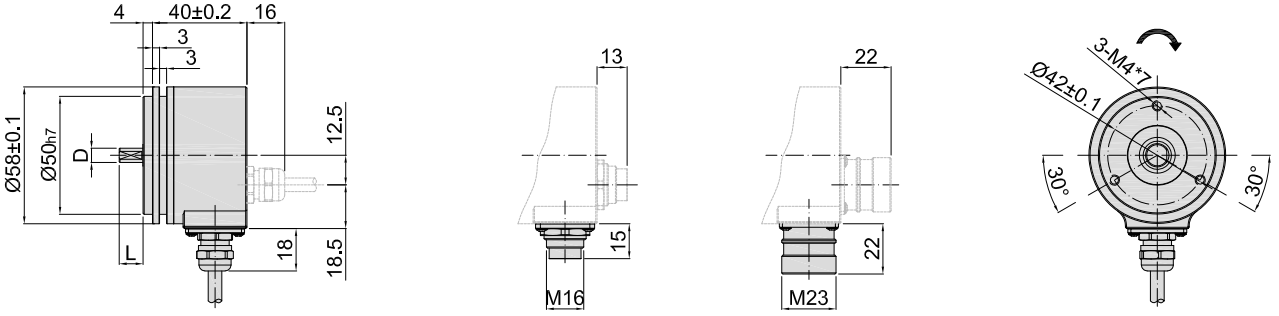
9.2 SJ58-B (Basic dimensions)



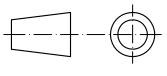
9.3 SJ58-C (Basic dimensions)



9.4 SJ58-D (Basic dimensions)



Unit：mm

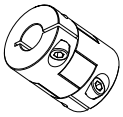
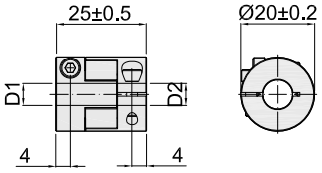
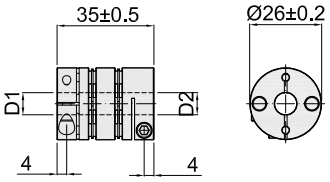


= Direction of shaft rotation for signal output

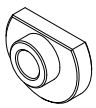
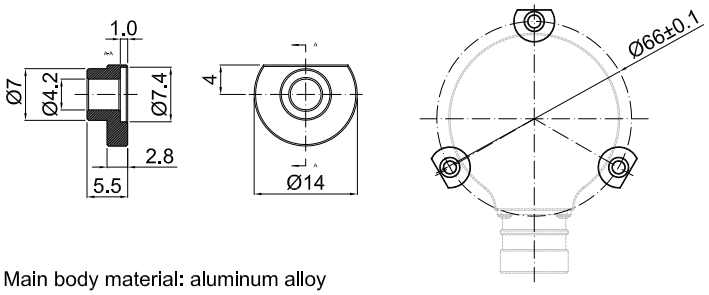
D(Shaft)	$Ø6_{h7}(^{0}_{-0.015})$	$Ø8_{h7}(^{0}_{-0.015})$	$Ø10_{h7}(^{0}_{-0.018})$
L	10	20	20

10. Recommended Accessories

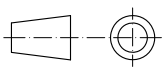
10.1 Coupler

Coupler	Dimensions	D1	D2	Model	Order No.
Cross type: M series 	 Main body material: aluminum alloy	Ø6^{G8}	Ø8^{G8}	6M8	08700038
		Ø8^{G8}	Ø8^{G8}	8M8	08700039
		Ø8^{G8}	Ø10^{G8}	8M10	08700040
Diaphragm type: W series 	 Main body material: aluminum alloy	Ø6^{G8}	Ø8^{G8}	6W8	08700042
		Ø8^{G8}	Ø8^{G8}	8W8	08700043
		Ø8^{G8}	Ø10^{G8}	8W10	08700044

10.2 Mounting cardboard

Mounting cardboard	Dimensions	Model	Order NO.
 3 pcs as a set	 Main body material: aluminum alloy	58C66	03700733

Unit: mm



11. Caution

11.1 Caution for operation

- The working temperature shall not exceed the storage temperature.
- The working humidity shall not exceed the storage humidity.
- Do not use where the temperature changes dramatically and have fog.
- Do not close to corrosive and flammable gas.
- Keep away from dust,salt and metal powder.
- Keep away from places where you will use water, oil, or medicine.
- Undue vibration and shock will impact the encoder.

11.2 Caution for Installation

- Electrical components should not be subjected to excessive pressure, etc., and electrostatic assessment of the installation environment should be conducted.
- Do not close the cable of the motor power to the encoder.
- The FG wire of the motor and mechanical device should be grounded.
- The shielding wire must be effectively grounded since the shielding is not connected to the encoder.

11.3 Caution for wiring

- Use the encoder under the specified supply voltage. Please note that the supply voltage range may drop due to the wiring length.
- Do not put the encoder wiring and other power lines through the same duct, and do not use them by bundling in parallel.
- Please use twisted pair wires for the signal and power wires of encoder.
- Please do not apply excessive force to the cable of encoder, or it will may be damaged.

www.shhxgd.com fang@shhxgd.com Tel: 86-21-54613487 We reserve the final interpretation right of this specifications,subject to change without notice .