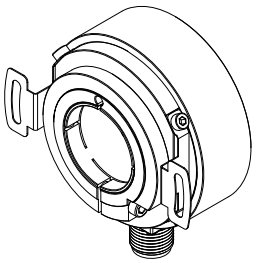
1. KJ58 Absolute Type Parallel Gray Code Output (Hollow Shaft, Through Hole)

1.1 Introduction:

KJ58 is a robust large bore through shaft design with compact structure, high protection grade and high safety, commonly used in industrial automation fields.

KJ58-C



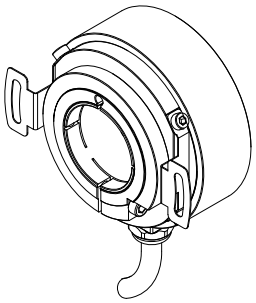
1.2 Feature:

- Encoder external diameter Ø58mm、thickness 30mm、diameter of shaft up to Ø25mm;
- Adopt non-contact photoelectric principle;
- Multiple electrical interfaces available;
- Gray code parallel output absolute position information;
- Resolution per turn up to 12Bits(4096)

1.3 Application:

Robotics, textile, packaging, motor, CNC and other automation control fields.

KJ58-T



1.4 Connection:

- Radial cable (STD length 1M)
- Radial socket (M12*1 17P Male-connector)

1.5 Protection:

IP65

1.6 Weight:

About 180g

2. Model Selection Guide

2.1 Model composition(select parameters)

KJ58-	T	12	N		Q25			-	000
Product model series	Connection method: C=Radial socket (M12 17pin male connector) Radial cable: T=Radial cable	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=OC❶ (NPN low level effective) NH=OC❷ (NPN high level effective) P=OC❶ (PNP low level effective) PH=OC❷ (PNP high level effective)		Count Direction: Blank=clockwise (CW) C=counterclock-wise(CCW) W=external control rotation direction (non-contact is CCW; connect to oV is CW)	Shaft: (through hole) Q14=Ø14mm Q18=Ø18mm Q20=Ø20mm Q22=Ø22mm Q24=Ø24mm Q25=Ø25mm	Supply voltage: Blank=DC5V H=DC8-30V	Special requirement: Blank=❸ D=IP65		Management No.

2.2 Note:

Zero level signal:

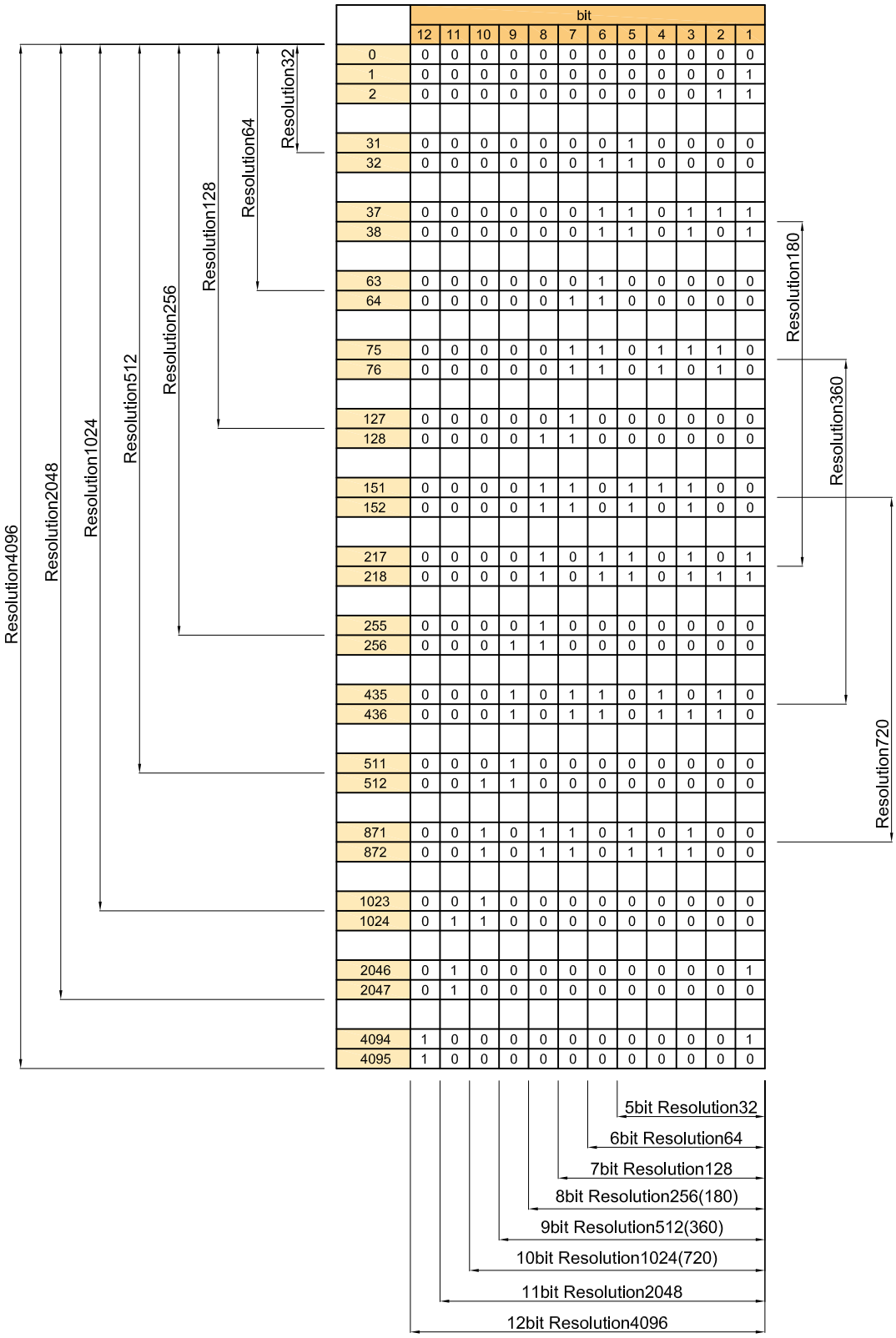
❶. Z signal is low level effective

❷. Z signal is high level effective

Special requirement:

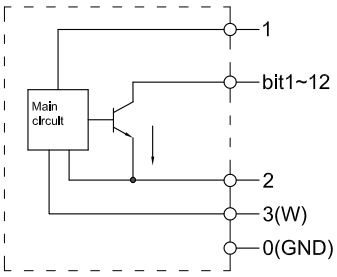
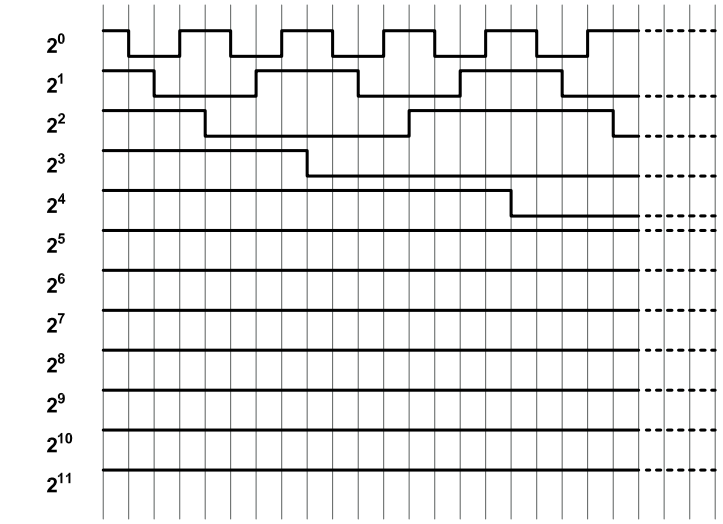
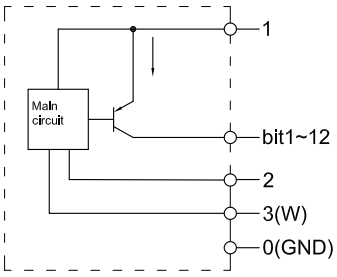
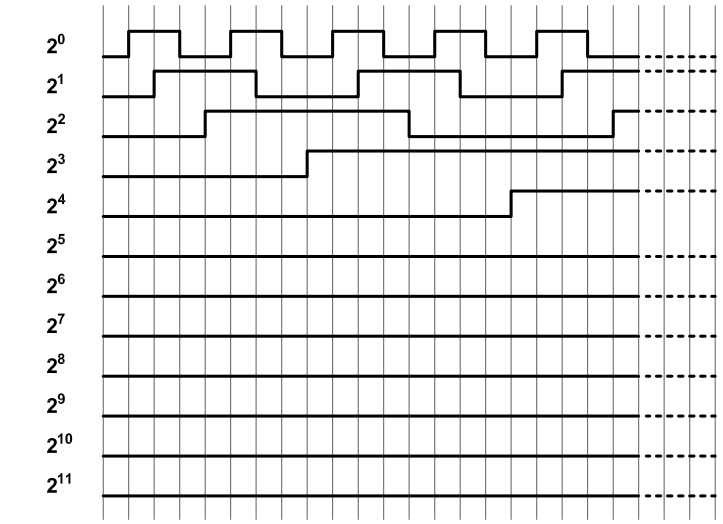
❸. None indicated for IP50 and cable length 1M, if need to change the length C+number, the longest is 20M (express by C20)

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)		 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)
Supply voltage			DC5V±5%； DC8V-30V±5%	
Allowable ripple			≤3%rms	
Consumption current			100mA Max	
Encoding type			Gray code	
Precision			[360/(resolutionx4)]°	
Top response frequency			100kHz Max	
Output capacity	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 Specifications

Shaft	Ø14mm; Ø18mm; Ø20mm; Ø22mm; Ø24mm; Ø25mm(stainless steel)
Starting torque	Less than 12×10^{-3} N·m
Inertia moment	Less than 11×10^{-6} kg·m²
Shaft load	Radial 30N; Axial 20N
Slew speed	≤3000 rpm
Bearing Life	$1.5\text{x}10^{9}$ revs at rated load(10000hrs at 2500RPM)
Shell	Die cast aluminum
Weight	About 180g (with package)

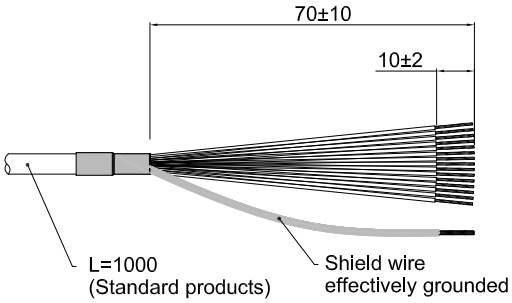
7. Environmental Parameters

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, 10~50Hz, 1h for X,Y,Z direction individually
Shock(Endurance)	49m/s² ,three times for X,Y,Z direction individually
Protection	IP50 & IP65

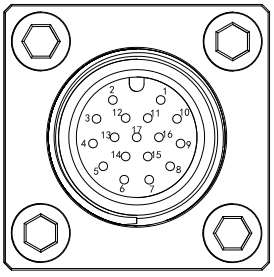
8. Wiring Table

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 (external control rotation 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



Radial socket connection



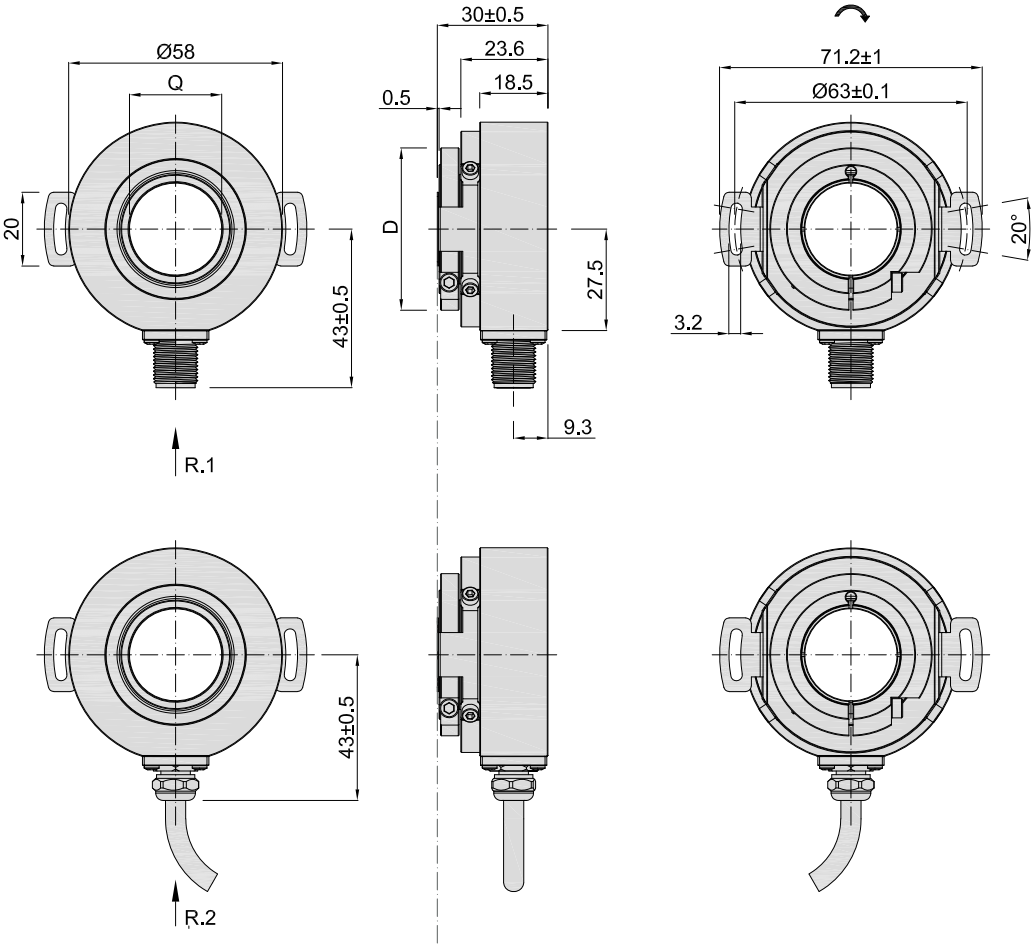
M12*1 17P
Male-connector pin Assignment

Unit: mm

9. Basic Dimensions

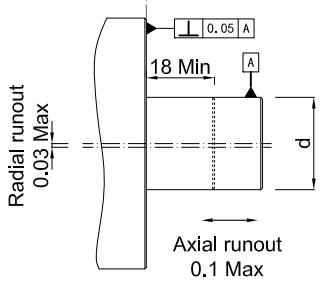
9.1 Dimensions

Q(Shaft)	D
Ø14$^{G7}_{(+0.006)}$	Ø35
Ø18$^{G7}_{(+0.007)}$	Ø37
Ø20$^{G7}_{(+0.007)}$	Ø41
Ø22$^{G7}_{(+0.007)}$	Ø41
Ø24$^{G7}_{(+0.007)}$	Ø44
Ø25$^{G7}_{(+0.007)}$	Ø44



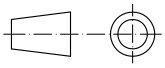
9.2 Specification for mounting shaft

Mounting screws
Inner hexagon bolt +flat washer Specification: M3*6 Material: stainless steel Quantity: 2



d
Ø14$_{g6}$($^{-0.006}_{-0.017}$)
Ø18$_{g6}$($^{-0.007}_{-0.020}$)
Ø20$_{g6}$($^{-0.007}_{-0.020}$)
Ø22$_{g6}$($^{-0.007}_{-0.020}$)
Ø24$_{g6}$($^{-0.007}_{-0.020}$)
Ø25$_{g6}$($^{-0.007}_{-0.020}$)

Unit: mm



= Shaft rotation direction of the signal output
R. 1 = Radial socket(M12x1 17pin male connector)
R. 2 = Radial cable (standard length 1000)

10. Recommended Accessories

Plug and cable	Brief description	No.	Order No.
	C2C=Connection type head A: M12, 17-pin female straight connector; Connection type head B: M12, 17-pin male straight connector; Cable length: 2M 15-core with shield,halogen-free PUR	KJ58C2C	44400022
	C5C=Connection type head A: M12, 17-pin female straight connector; Connection type head B: M12, 17-pin male straight connector; Cable length: 5M 15-core with shield,halogen-free PUR	KJ58C5C	44400023
	C1=Connection type head A: M12, 17-pin female straight connector; Connection type head B: Bare wire end; Cable length: 1M 15-core with shield,halogen-free PUR	KJ58C1	44400024
	C2=Connection type head A: M12, 17-pin female straight connector; Connection type head B: Bare wire end; Cable length: 2M 15-core with shield,halogen-free PUR	KJ58C2	44400025
	C5=Connection type head A: M12, 17-pin female straight connector; Connection type head B: Bare wire end; Cable length: 5M 15-core with shield,halogen-free PUR	KJ58C5	44400026

11. Caution

11. 1 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.

11. 2 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.

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