

AAS58...SZ / AAM58...SZ**Main Features :**

- SSI Synchronous serial + Incremental signal
- Double output encoder
- Multi-turn tech: Gear Box, no count, no battery
- Zero setting and counting direction setting function
- Independent power supply, independent signal

Extensive Application :

- ✓ Speed sensing, angle, distance, locus, tilt
- ✓ Water conservancy and power generation
- ✓ Position and velocity closed-loop feedback
- ✓ Solar electrical energy generation
- ✓ Day tracking system feedback
- ✓ Iron and steel metallurgical equipment,
- ✓ Port lifting and transportation machinery, factory automation
- ✓ Use in non-explosion proof environment

Absolute encoder

SSI + Incremental

Double output

Material	Shell:	Aluminum shell	EMC:
	Flange:	Aluminum flange	Emitted interference: EN61000-6-4
	Shaft:	Stainless steel	Noise immunity: EN61000-6-2
Maximum shaft load	Max 80N	Axial	ISO9001:2015
	Max 150N	Radial	CE authentication
Levels of protection	IP65		
Starting torque	25°C, ≤0.5Nm		
Maximum speed	6000RPM		
Impact resistance	≤ 100g ,3ms		
Anti-vibration	≤ 10g (10Hz—2000Hz)		
Weight	≈550g		
Working temperature	-25°C - +80°C		
Storage temperature	-30°C - +85°C		

Electrical specifications (Absolute type)

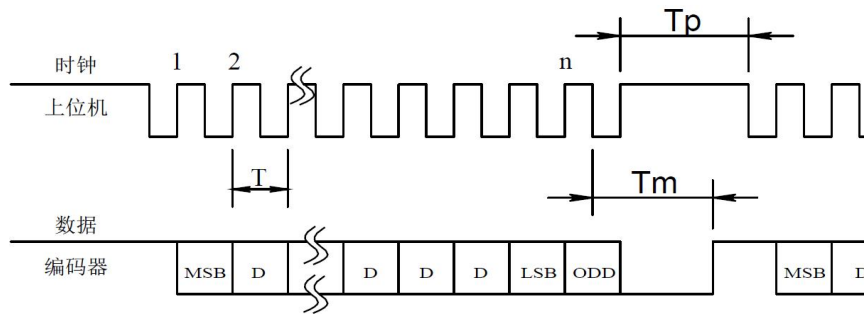
Interface type	SSI Synchronous Serial Interface	
Clock frequency	100KHz—1MHz	
Output code system	Gray code or Binary code	
Presentation of information	RS422 compliant line driver	
Data refresh	Single-turn encoder: < 15us	
	Multi-turn encoder: < 1.3ms	
Working voltage	10-30VDC or 5VDC;polarity protection	
No-load current	≤50mA	
Repeatability precision	±2bit	
Steps per revolution	≤ 13 bits 8192 (14 bits 16384 customizable);	
Revolutions (turn)	≤ 14 bits 16384	
Counting direction	0V: Clockwise data increase, VCC: Counter clockwise reduction	
External position	Setup, turn-on delay > 100ms	

Electrical specifications (Incremental type)

Output form	Push-pull	RS422
	(compatible with HTL)	(compatible with TTL)
Resolution rate	Max.1024ppr	Max.1024ppr
Supply voltage	DC10-30V	DC10-30V
Reverse polarity protection	Yes	Yes
Typical current consumption	≤80mA	≤80mA
Load current (per channel)	≤60mA	≤60mA
Response frequency	≤120KHz	≤120KHz
Rising edge time(Tr)	≤200nS	≤200nS
Down edge time(Tf)	≤200nS	≤200nS
Signal high level	≥Vcc x 70%	≥2.5VDC
Signal low level	≤0.5VDC	≤0.5VDC

Interface type: SSI

Clock/Data: Four-wire RS422 mode, ±5V, a pair of clock triggers, a pair of data output.



$T=1/f$ clock cycle $\leq 1\text{MHz}$	MSB=High data bits (Number first)
T_p =Clock gap $>$ Monostable trigger time	LSB=Low data bit (Data end)
T_m =Monostable trigger time 10us–30us	ODD=check bit

About ODD (check bit) :

To verify the correctness of the data during transmission, we added a bit at the end of the data:

Multiple turn 1213 (25bit) :

When n equals 25 bits, the data output from high to low (MSB--LSB) has no output.,

When n equals 26 bits, the data end adds a bit check bit odd output after LSB.

Data processing (Gray code as an example.)

➤ Single turn data processing:

The encoder outputs a Gray code, which is first received and decoded into binary code from the high position in an XOR manner. Encoder installation does not require change. After installation, when the equipment runs to the mechanical zero point, the P-SET line of the core line of the encoder cable and the power supply are touched short. The current signal is the actual position of the encoder output, which can be calculated.

➤ Multi - turn data processing:

The encoder output is gray code and decodes it into binary code from high bit. To avoid sudden change of data in working stroke, it is suggested to use the middle position of encoder data value as the starting position. When the encoder is installed, the equipment runs to the starting point, and the P-SET line of the encoder cable is in direct contact with the power supply, and the current signal. The output is the median value of the encoder's total output value, and the P-SET line goes back to the power supply 0.

After the current measurements received are converted to binary codes, the following should be done:

➤ Upper computer position value = (DATE - P-SET) × Dir + Starting point value

In the formula, DATE: Current measurements of encoder output; P-SET: Intermediate position value, 为 2^{n-1} ,

Dir: The coefficient of rotation direction for the encoder, and the direction of calculation

The same is 1, the opposite direction of calculation is -1, and the connection level can be changed by the Dir line on the encoder. Example: Multi-loop 1213 encoder, after the encoder is set at the starting point (or any position required for measurement), The output of the encoder is $2048 \times 8192 = 16777216$,

P-EST is a fixed value of 16777216. If the starting value is set to 0, the rotation direction is a clockwise pointer.

Upper computer position value is $(16777216 - 16777216) \times 1 + 0 = 0$

At this point, clockwise rotation encoder data increases, 1, 2, 3...

Data reduction of counterclockwise rotary encoder, -1, -2, -3...

16777216It is decimal, but it is convenient to explain that the encoder actually outputs Gray code or binary code

➤ The starting point is not zero, and the calibration position can be determined by the user. Since the multi-loop encoder can have 4096 cycles of continuous measurement, from the starting point, the forward inversion can have 2048 cycles of continuous working stroke.

Mode of connection & Attention

1. Mode of connection

Signal	VCC	0V	Clock+	Clock-	Data+	Data-	P-set	Dir
Cable	Brown	White	Green	Yellow	Grey	Pink	Blue	Red
Seat	2	1	3	4	5	6	7	8

1) P-set external position line

Single-turn encoder: when short contact with VCC, the current position data is output to the zero position of the entire data; (Customizable: single-turn midpoint)

Multi-turn encoder: When a short touch with VCC, the current position data output is the mid-point position of the entire data; (Customizable: Multi-turn 0-point position)



M23 plug(12pin)

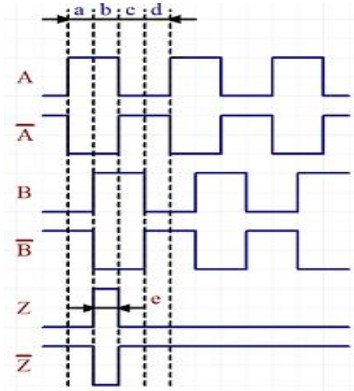
2) Dir Counter direction line: when VCC is connected: counterclockwise data increases in face of rotating axis;
0 V: clockwise data increase

3) Shield: Internal default suspension

2. Attention:

- 1) Encoder is a precision instrument, do not tap, impact or drop encoder, especially in the hinge end, please handle lightly, use carefully.
- 2) Ensure that the encoder power supply within the selected supply voltage range, and do a good job of isolation, to prevent large electric power grid in the impact of the encoder.
- 3) In the environment of strong electromagnetic interference, the extended signal line should use the twisted-pair shielded cable.
- 4) SSI signal lines are voltage-protected and should be used to prevent signal lines from being shortened or short-connected to the power supply.
- 5) It is forbidden to plug in and out and ensure that the cables are connected at the same time.
- 6) The encoder must be powered off without electrostatic soldering or connection, first welded or connected to the 0V line;
- 7) The encoder has a protection class of IP65 and is waterproof, but do not submerge the encoder shaft!

Incremental signal output



From the direction facing the axis, rotate the output waveform clockwise (CW).

$a, b, c, d = T/4 \pm 10\%$

$e = T/4 \pm 10\%$

Incremental signal wiring

Signal encoder	Cable 8pin	Socket 12pin
Vcc	BN	2
OV	WH	1
A	GN	3
B	YE	4
Z	GY	5
A-	PK	6
B-	BU	7
Z-	RD	8
G *	Shield	

*Shielding line (Shield) default suspension



M23 plug(12pin)

Selection instructions

A	A	58	—	—	C	—
Functional type S =single-turn M =multi-turn		Revolution (turn) 00 =1 turn 12 =4096 turns 14=16384 turns		Supply Voltage A=5VDC D=10-30VDC		Signal tunnel See Sheet1
Installation mode 10 =10mm Clamping Flange T06 =shaft diameter 06mm		Step per revolution 12 =4096 steps 13 =8192 steps 14=16384 steps*		Signal type SG=SSI Gray code SB=SSI Binary code		Resolution rate 1000=1000PPR 1024=1024PPR
Electrical connections GR= radial, cable 1 m CR= radial, M23 plug						

*resolution 14 bits (16384) customizable

Special note:

The two signals are independent power supply, if two outputs are required, respectively power supply.

SHEET1:

Signal tunnel	
2P=A,B	Supply voltage: 10-30VDC Output circuit: Push-pull
4P=A,B,A-,B-	
6P=A,B,Z,A-,B-,Z-	
2R=A,B	Supply voltage: 10-30VDC Output type: 5VDC RS422
4R=A,B,A-,B-	
6R=A,B,Z,A-,B-,Z-	

Absolute encoder

SSI + Incremental

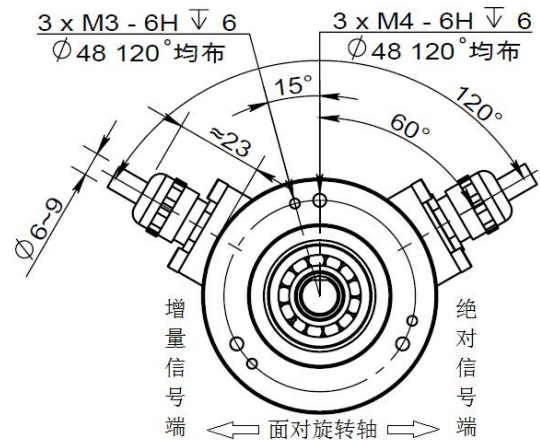
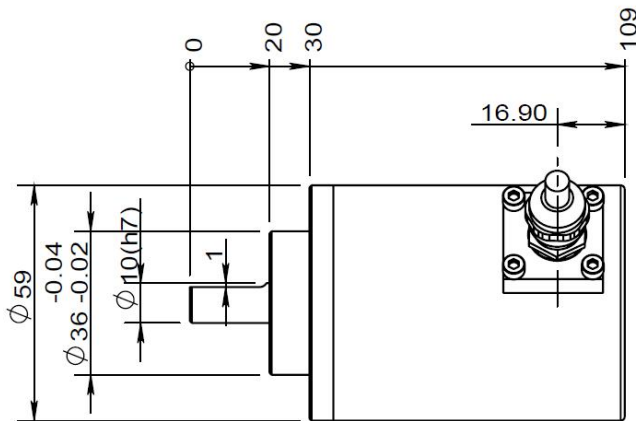
Double output

Mechanical dimension

Unit: mm

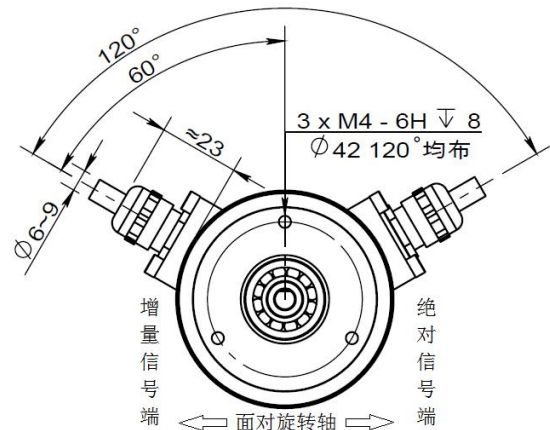
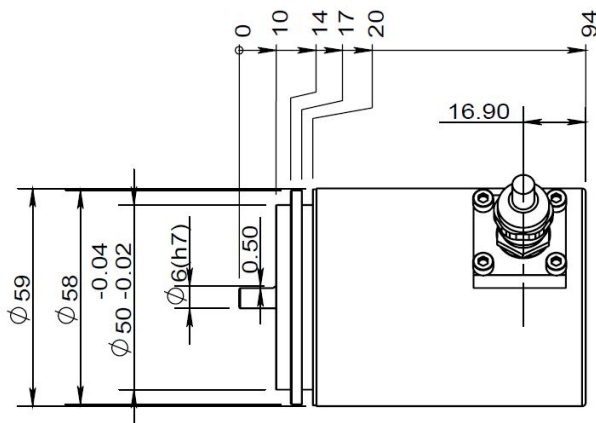
Clamping Flange (5810) ↓

Double cable output

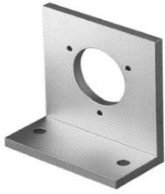


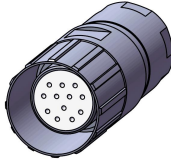


Synchronization Flange (58T06) ↓

Double cable output



Accessories (Please refer to the attached information for more information)

Mounting brackets	Stainless steel coupling	Spring steel Couplings	M23 plug
			
MODEL AZJ80	AL4A-B	AL3B	C12C
Apply to 58A	5810&58T	5810&58T	M23 plug