

**CHINA YUMO ELECTRIC CO.,LIMITED  
YUEQING YING'S IMPORT & EXPORT CO.,LTD**

ADD: ZHAOYANG INDUSTRIAL ZONE, LIUSHI TOWN, YUEQING CITY, ZHEJIANG, 325604 CHINA  
TEL: 0086-577-62791815 FAX: 0086-577-62791825  
Http://www.yumoelectric.com E-mail:sales@yingselectric.com

**A6A2 series**

Incremental Rotary Encoder



◆ **Substitute: E6A2**

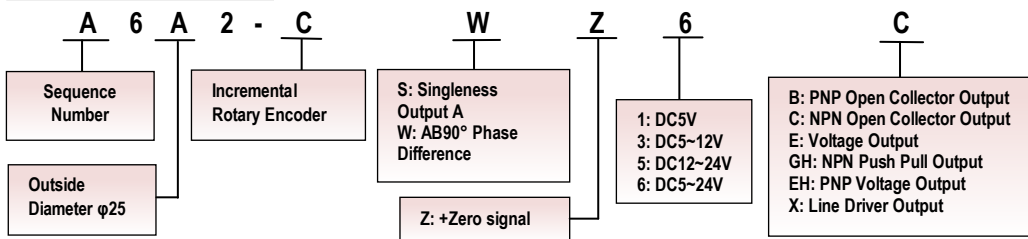
- Mini type encoder
- Outside Diameter φ25 Model: A6A2

◆ **Features**

Miniature rotary encoder for positioning in space-confined areas

- Wide variety of supply voltages and output forms to match input devices
- Models with zero index function ideal for position applications
- High resolution models (300 or 360 pulses per revolution) substantially improve measuring accuracy
- High response frequency and noise immunity make encoders ideal for factory automation applications

◆ **Ordering Information**



◆ **Note:**

1, Please contact sales representative to confirm the correctness and availability of the part number

◆ **Technical Specifications**

Output Phases	Power Supply Voltage	Output Configuration	Substitution	Resolution (pulses/rotation)	
Phase A	5 to 12 VDC	Voltage Output	A6A2-CS3E	10, 20, 60, 100, 200, 300, 360 500	
		Open-collector Output (NPN Output)	A6A2-CS3C	10, 20, 60, 100, 200, 300, 360 500	
	12 to 24 VDC		Open-collector Output (NPN Output)	A6A2-CS5C	10, 20, 60, 100, 200, 300, 360 500
		Voltage Output		A6A2-CW3E	100 200 360 500
Phase A and B	5 to 12 VDC	Open-collector Output (NPN Output)	A6A2-CW3C	100 200 360 500	
			12 to 24 VDC	Open-collector Output (NPN Output)	A6A2-CW5C
	Phase A, B, and Z	5 to 12 VDC			Voltage Output
			Open-collector Output (NPN Output)	A6A2-CWZ3C	100 200 360 500
12 to 24 VDC		Open-collector Output (NPN Output)		A6A2-CWZ5C	100 200 360 500

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**◆ Ratings and Specifications**

Model Item	A6A2-CS3E	A6A2-CS3C	A6A2-CS5C	A6A2-CW3E	A6A2-CW3C	A6A2-CW5C	A6A2-CWZ3E	A6A2-CWZ3C	A6A2-CWZ5C
Power supply Voltage	5 VDC-5% to 12 V+10%, ripple (p-p): 5% max.		12 VDC-10% to 24 V+15%, ripple (p-p): 5% max.	5 VDC-5% to 12 V+10%, ripple (p-p): 5% max.		12 VDC-10% to 24 V+15%, ripple (p-p): 5% max.	5 VDC-5% to 12 V+10%, ripple (p-p): 5% max.		12 VDC-10% to 24 V+15%, ripple (p-p): 5% max.
Current Consumption	30mA max	20mA max		30mA max	20mA max				30mA max
Resolution (See Note1)	10, 20, 60, 100, 200, 300, 360, 500			10, 200, 360, 500					
Output Phases	Phase A			Phase A and B			Phase A, B, and Z		
Output Form	Voltage Output	NPN Open-collector Output		Voltage Output	NPN Open-collector Output		Voltage Output	NPN Open-collector Output	
Output Capacity	Output Resistance: 2KΩ  Output Current: 20mA max.  Residual Voltage:0.4V max (Output current: 20mA max.)	Applied Voltage: 30VDC max.  Sink Current: 30mA max.  Residual Voltage: 0.4Vmax (at sink current of 30mA)		Output Resistance: 2KΩ  Output Current: 20mA max.  Residual Voltage:0.4V max (Output current: 20mA max.)	Applied Voltage: 30VDC max.  Sink Current: 30mA max.  Residual Voltage: 0.4Vmax (at sink current of 30mA)		Output Resistance: 2KΩ  Output Current: 20mA max.  Residual Voltage:0.4V max (Output current: 20mA max.)	Applied Voltage: 30VDC max.  Sink Current: 30mA max.  Residual Voltage: 0.4Vmax (at sink current of 30mA)	
Maximum Response Frequency	30kHz								
Phase Difference of Output	---			Phase difference between phases A and B: 90°±45°					
Output Waveform Percentage	50±25%			---					
Output Rise And Fall Times	1.0μs max. (Cable length: 2m, Sink current: 10 mA)	1.0μs max. (Cable length: 2m, Control output voltage: 5V, Load resistance 1kΩ)		1.0μs max. (Cable length: 2m, Sink current: 10 mA)	1.0μs max. (Cable length: 2m, Control output voltage: 5V, Load resistance 1kΩ)		1.0μs max. (Cable length: 2m, Sink current: 10 mA)	1.0μs max. (Cable length: 2m, Control output voltage: 5V, Load resistance 1kΩ)	

**◆ Note:**

\*1. An inrush current of approximately 9A will flow for approximately 0.3ms when the power is turned ON.

\*2. The maximum electrical response revolution is determined by the resolution and maximum response frequency as follows :

$$\text{Maximum Electrical Response Frequency (Rpm)} = \text{Maximum Response Frequency} / \text{Resolution} * 60$$

This means that the A6A2 encoder will not operate electrically if its shaft speed exceeds the maximum electrical response revolution

\*3. No protection is provided against water or oil.

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Mechanical Specifications	
Starting Torque	1mN.m max
Moment Of Inertia	$1 \times 10^{-7} \text{kg.m}^2$ max.
Shaft Loading	Radial
	Thrust
Mounting Tolerance	Radial: 0.03mm TIR Max; Axial:0.2mm Max; Shaft Runout: 0.1° Max
Allowable Shaft Load	Radial: 5N; Axial: 3N
Maximum Rotating Speed	5000 rpm
Ambient Temperature Range	Operating: -10 to 55°C (with no icing), Storage: -25 to 80°C (with no icing)
Ambient Humidity Range	Operating/storage:35% to 85% (with no condensation)
Insulation Resistance	20 MΩ min. (at 500 VDC) between current-carrying parts and case
Dielectric Strength	500 VAC, 50/60 Hz for 1 min between current-carrying parts and case
Vibration Resistance	Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions
Shock Resistance	Destruction: 500m/s <sup>2</sup> 3 times each in X, Y, and Z directions
Degree Of Protection	IEC 60529 IP50
Connection Method	Pre-wired Models (Standard cable length: 2 m)
Weight	Approx. 60g
Accessories	Coupling, Servo Mounting Bracket (provided with the E6A2-CWZ□), Hexagonal wrench, Instruction manual

**I/O Circuit Diagrams**

Model	Output circuits	Output mode	Connection												
A6A2-CS3C A6A2-CS5C		Output transistor	<table border="1"> <thead> <tr> <th>Color</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>Brown</td> <td>Vcc</td> </tr> <tr> <td>Black</td> <td>Phase A</td> </tr> <tr> <td>White</td> <td>Phase B</td> </tr> <tr> <td>Orange</td> <td>Phase Z</td> </tr> <tr> <td>Blue</td> <td>0 V (common)</td> </tr> </tbody> </table> <p>Note: 1. The white and orange wires of Single Models (A6A2-CS□□) do not output signals (no connection).                  2. The white and orange wires of Single Models (A6A2-CS□□) do not output signals (no connection).                  3. Voltage Output Models are capable of sinking a maximum current of 20 mA.</p>	Color	Signal	Brown	Vcc	Black	Phase A	White	Phase B	Orange	Phase Z	Blue	0 V (common)
Color		Signal													
Brown		Vcc													
Black	Phase A														
White	Phase B														
Orange	Phase Z														
Blue	0 V (common)														
A6A2-CW3C A6A2-CW5C	Direction of rotation: CW (as viewed from end of shaft)	Output transistor													
A6A2-CWZ3C A6A2-CWZ5C	Direction of rotation: CCW (as viewed from end of shaft)	Output transistor													
A6A2-CW3E		Output transistor													
A6A2-CWZ3E		Output transistor													
A6A2-CS3E		Output transistor													

Note: 1. \*(H) and (L) indicate the output levels of Voltage Output Models.  
 2. Output A leads B by  $1/4 T \pm 1/8 T$  when the shaft revolves clockwise, while A lags behind B by  $1/4 T \pm 1/8 T$  when the shaft revolves counterclockwise.

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**YUMO®**

◆ Dimensions(mm)

