Incremental 25-mm-dia. Rotary Encoder

E6A2-C

CSM_E6A2-C_DS_E_3_1

Compact Encoder (External Diameter: 25 mm)

- Models with origin output (phase Z) for positioning applications.
- Resolution of 500 ppr in an Encoder with an external diameter of only 25 mm.

⚠ Be sure to read *Safety Precautions* on page 3.

Ordering Information

Encoders [Refer to *Dimensions* on page 4.]

Output phases	Power supply voltage	Output configuration	Resolution (pulses/rotation)	Model
Phase A	5 to 12 VDC	Voltage output	10, 20, 60, 100, 200, 300, 360	**E6A2-CS3E (resolution) 0.5M** Example: E6A2-CS3E 10P/R 0.5M
			500	
		Open-collector output	10, 20, 60, 100, 200, 300, 360	**E6A2-CS3C (resolution) 0.5M** Example: E6A2-CS3C 10P/R 0.5M
			500	
	12 to 24 VDC		10, 20, 60, 100, 200, 300, 360	**E6A2-CS5C (resolution) 0.5M** Example: E6A2-CS5C 10P/R 0.5M
			500	
Phases A and B	5 to 12 VDC	Voltage output	100, 200, 360	**E6A2-CW3E (resolution) 0.5M** Example: E6A2-CW3E 100P/R 0.5M
			500	
		Open-collector output	100, 200, 360	**E6A2-CW3C (resolution) 0.5M** Example: E6A2-CW3C 100P/R 0.5M
			500	
	12 to 24 VDC		100, 200, 360	**E6A2-CW5C (resolution) 0.5M** Example: E6A2-CW5C 100P/R 0.5M
			500	
Phases A, B, and Z	5 to 12 VDC	Voltage output	100, 200, 360	**E6A2-CWZ3E (resolution) 0.5M** Example: E6A2-CWZ3E 100P/R 0.5M
			500	
		Open-collector output	100, 200, 360	**E6A2-CWZ3C (resolution) 0.5M** Example: E6A2-CWZ3C 100P/R 0.5M
			500	
	12 to 24 VDC		100, 200, 360	**E6A2-CWZ5C (resolution) 0.5M** Example: E6A2-CWZ5C 100P/R 0.5M
			500	

Accessories (Order Separately) [Refer to *Dimensions* on *Rotary Encoder Accessories*.]

Name	Model	Remarks
Coupling	**E69-C04B**	Provided with the product.
Servo Mounting Bracket	**E69-1**	Provided with the E6A2-CWZ☐.

Refer to *Accessories* for details.

Ratings and Specifications

Model Item		E6A2-CS3E	E6A2-CS3C	E6A2-CS5C	E6A2-CW3E	E6A2-CW3C	E6A2-CW5C	E6A2-CWZ3E	E6A2-CWZ3C	E6A2-CWZ5C
Power supply voltage		5 VDC –5% to 12 V +10%, ripple (p-p): 5% max.		12 VDC –10% to 24 VDC +15%, ripple (p-p): 5% max.	5 VDC –5% to 12 V +10%, ripple (p-p): 5% max.		12 VDC –10% to 24 VDC +15%, ripple (p-p): 5% max.	5 VDC –5% to 12 V +10% ripple (p-p): 5% max.		12 VDC –10% to 24 VDC +15%, ripple (p-p): 5% max.
Current consumption*1		30 mA max.	20 mA max.		30 mA max.	20 mA max.		50 mA max.	30 mA max.	
Resolution (pulses/ rotation)		10, 20, 60, 100, 200, 300, 360, 500			100, 200, 360, 500					
Output phases		Phase A			Phases A and B			Phases A, B, and Z		
Output configuration		Voltage output	Open-collector output		Voltage output	Open-collector output		Voltage output	Open-collector output	
Output capacity		Output resistance: 2 kΩ Output current: 20 mA max. Residual voltage: 0.4 V max. (Output current: 20 mA max.)	Applied voltage: 30 VDC max. Sink current: 30 mA max. Residual voltage: 0.4 V max. (at sink current of 30 mA)		Output resistance: 2 kΩ Output current: 20 mA max. Residual voltage: 0.4 V max. (Output current: 20 mA max.)	Applied voltage: 30 VDC max. Sink current: 30 mA max. Residual voltage: 0.4 V max. (at sink current of 30 mA)		Output resistance: 2 kΩ Output current: 20 mA max. Residual voltage: 0.4 V max. (Output current: 20 mA max.)	Applied voltage: 30 VDC max. Sink current: 30 mA max. Residual voltage: 0.4 V max. (at sink current of 30 mA)	
Maximum response frequency*2		30 kHz								
Phase difference between outputs		---			Phase difference between phases A and B: 90°±45°					
Output duty factor		50±25%			---					
Rise and fall times of output		1.0 µs max. (Cable length: 500 mm, Sink current: 10 mA)	1.0 µs max. (Cable length: 500 mm, Control output voltage: 5 V, Load resistance: 1 kΩ)		1.0 µs max. (Cable length: 500 mm, Sink current: 10 mA)	1.0 µs max. (Cable length: 500 mm, Control output voltage: 5 V, Load resistance: 1 kΩ)		1.0 µs max. (Cable length: 500 mm, Sink current: 10 mA)	1.0 µs max. (Cable length: 500 mm, Control output voltage: 5 V, Load resistance: 1 kΩ)	
Starting torque		1 mN·m max.								
Moment of inertia		1×10^{-7} kg·m^2 max.								
Shaft loading	**Radial**	10 N								
	Thrust	50 N								
Maximum permissible speed		5,000 r/min								
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^2 3 times each in X, Y, and Z directions								
Degree of protection*3		IEC 60529 IP50								
Connection method		Pre-wired Models (Standard cable length: 500 mm)								
Material		Case: Aluminum alloy, Main unit: Aluminum, Shaft: SUS420J2, Mounting Bracket: Galvanized iron								
Weight (packed state)		Approx. 35 g								
Accessories		Coupling, Servo Mounting Bracket (provided with the E6A2-CWZ☐), Hexagonal wrench, Instruction manual								

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

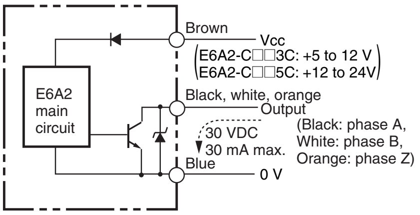
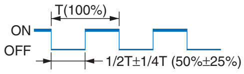
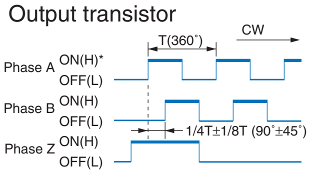
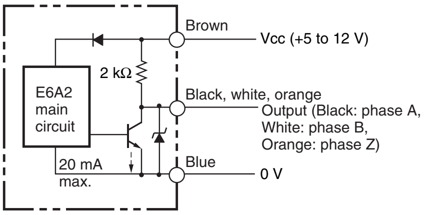
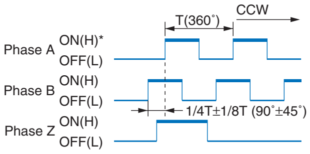
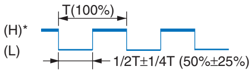
*2. The maximum electrical response speed is determined by the resolution and maximum response frequency as follows:

$$\text{Maximum electrical response speed (rpm)} = \frac{\text{Maximum response frequency}}{\text{Resolution}} \times 60$$

This means that the E6A2-C Rotary Encoder will not operate electrically if its speed exceeds the maximum electrical response speed.

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

I/O Circuit Diagrams

<table>
<tr><th>Model</th><th>Output circuits</th><th>Output mode</th><th>Connection</th></tr>
<tr><td>E6A2-CS3C
E6A2-CS5C</td><td rowspan="3">
</td><td>Output transistor

</td><td rowspan="6">
<table>
<tr><th>Color</th><th>Signal</th></tr>
<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>
</table>
Note: 1. The white and orange wires of Single Models (E6A2-CS□□) do not output signals (no connection).
2. The white and orange wires of Single Models (E6A2-CS□□) do not output signals (no connection).
3. Voltage Output Models are capable of sinking a maximum current of 20 mA.</td></tr>
<tr><td>E6A2-CW3C
E6A2-CW5C</td><td rowspan="2">Direction of rotation: CW
(as viewed from end of shaft)
Output transistor

</td></tr>
<tr><td>E6A2-CWZ3C
E6A2-CWZ5C</td></tr>
<tr><td>E6A2-CW3E</td><td rowspan="3">
</td><td rowspan="2">Direction of rotation: CCW
(as viewed from end of shaft)
Output transistor

</td></tr>
<tr><td>E6A2-CWZ3E</td></tr>
<tr><td>E6A2-CS3E</td><td>Output transistor

</td></tr>
</table>

Note: 1. *(H) and (L) indicate the output levels of Voltage Output Models.

2. Output A leads B by 1/4 T±1/8 T when the shaft revolves clockwise, while A lags behind B by 1/4 T±1/8 T when the shaft revolves counterclockwise.

Safety Precautions

Refer to *Warranty and Limitations of Liability*.

⚠ WARNING

This product is not designed or rated for ensuring safety of persons either directly or indirectly.
Do not use it for such purposes.

Precautions for Correct Use

Do not use the Encoder under ambient conditions that exceed the ratings.

● Wiring

Spurious pulses may be generated when power is turned ON and OFF. Wait at least 0.1 s after turning ON the power to the Encoder before using the connected device, and stop using the connected device at least 0.1 s before turning OFF the power to the Encoder. Also, turn ON the power to the load only after turning ON the power to the Encoder.

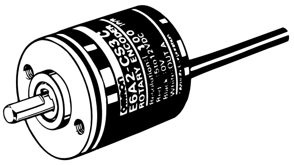
(Unit: mm)

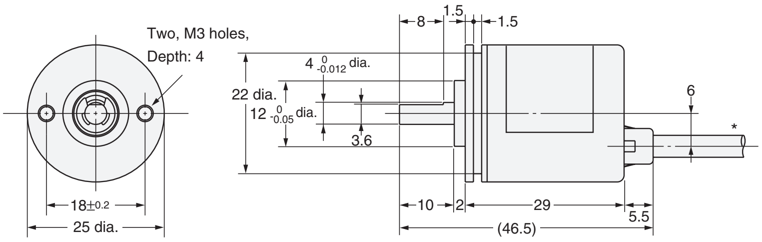
Dimensions

Tolerance class IT16 applies to dimensions in this datasheet unless otherwise specified.

Encoder

E6A2-C





* 4-dia. vinyl-insulated round cable with 5 conductors (Conductor cross section: 0.14 mm^2, Insulator diameter: 0.9 mm), Standard length: 500 mm

Accessories (Order Separately)

Coupling	**Servo Mounting Bracket**
E69-C04B	**E69-1**

Refer to *Accessories* for details.

Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

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- Systems, machines, and equipment that could present a risk to life or property.

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2008.11

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Данный компонент на территории Российской Федерации

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