

General-purpose Encoder with External Diameter of 40 mm



- Incremental model
- External diameter of 40 mm.
- Resolution of up to 2,000 ppr.



Be sure to read *Safety Precautions* on page 4.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Ordering Information

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

Power supply voltage	Output configuration	Resolution (pulses/rotation)	Model
5 to 24 VDC	NPN open-collector output	10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600	E6B2-CWZ6C (resolution) 0.5M Example: E6B2-CWZ6C 10P/R 0.5M
		720, 800, 1,000, 1,024	
		1,200, 1,500, 1,800, 2,000	
12 to 24 VDC	PNP open-collector output	100, 200, 360, 500, 600	E6B2-CWZ5B (resolution) 0.5M Example: E6B2-CWZ5B 100P/R 0.5M
		1,000	
		2,000	
5 to 12 VDC	Voltage output	10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600	E6B2-CWZ3E (resolution) 0.5M Example: E6B2-CWZ3E 10P/R 0.5M
		1,000	
		1,200, 1,500, 1,800, 2,000	
5 VDC	Line-driver output	10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600	E6B2-CWZ1X (resolution) 0.5M Example: E6B2-CWZ1X 10P/R 0.5M
		1,000, 1,024	
		1,200, 1,500, 1,800, 2,000	

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

Name	Model	Remarks
Couplings	E69-C06B	Provided with the product.
	E69-C68B	Different end diameter
	E69-C610B	Different end diameter
	E69-C06M	Metal construction
Flanges	E69-FBA	---
	E69-FBA02	E69-2 Servo Mounting Bracket provided.
Servo Mounting Bracket	E69-2	---

Note: 1. Refer to *Rotary Encoders Accessories* on your OMRON website for details.

2. Refer to *Precautions For Correct Use of Rotary Encoders* on your OMRON website when using the Rotary Encoders together with a Coupling.

Ratings and Specifications

Item	Model	E6B2-CWZ6C	E6B2-CWZ5B	E6B2-CWZ3E	E6B2-CWZ1X
Power supply voltage		5 VDC −5% to 24 VDC +15%, ripple (p-p): 5% max.	12 VDC −10% to 24 VDC +15%, ripple (p-p): 5% max.	5 VDC −5% to 12 VDC +10%, ripple (p-p): 5% max.	5 VDC ±5%, ripple (p-p): 5% max.
Current consumption *1		80 mA max.	100 mA max.		160 mA max.
Resolution (pulses/rotation)		10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600, 720, 800, 1,000, 1,024, 1,200, 1,500, 1,800, 2,000	100, 200, 360, 500, 600, 1,000, 2,000	10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600, 1,000, 1,200, 1,500, 1,800, 2,000	10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600, 1,000, 1,024, 1,200, 1,500, 1,800, 2,000
Output phases		Phases A, B, and Z			Phases A, \bar{A} , B, \bar{B} , Z, and \bar{Z}
Phase difference between outputs		90°±45° between A and B (1/4 T ± 1/8 T)			
Output configuration		NPN open-collector output	PNP open-collector output	Voltage output (NPN output)	Line driver output *2
Output capacity		Applied voltage: 30 VDC max. Sink current: 35 mA max. Residual voltage: 0.4 V max. (at sink current of 35 mA)	Applied voltage: 30 VDC max. Source current: 35 mA max. Residual voltage: 0.4 V max. (at source current of 35 mA)	Output resistance: 2 kΩ Sink current: 20 mA max. Residual voltage: 0.4 V max. (at sink current of 20 mA)	AM26LS31 equivalent Output current High level: $I_o = -20$ mA Low level: $I_s = 20$ mA Output voltage: $V_o = 2.5$ V min. $V_s = 0.5$ V max.
Maximum response frequency *3		100 kHz	50 kHz	100 kHz	
Rise and fall times of output		1 μs max. (Control output voltage: 5 V, Load resistance: 1 kΩ, Cable length: 2 m max.)	1 μs max. (Cable length: 2 m max., Sink current: 10 mA)		0.1 μs max. (Cable length: 2 m max., $I_o = -20$ mA, $I_s = 20$ mA)
Starting torque		0.98 mN·m max.			
Moment of inertia		1×10 ^{−6} kg·m ² max.; 3 × 10 ^{−7} kg·m ² max. at 600 P/R max.			
Shaft load- ing	Radial	30 N			
	Thrust	20 N			
Maximum permissible speed		6,000 r/min			
Protection circuits		Power supply reverse polarity protection, Load short-circuit protection			---
Ambient temperature range		Operating: −10 to 70°C (with no icing), Storage: −25 to 85°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 500 Hz, 150 m/s ² or 2-mm double amplitude for 11 min 3 times each in X, Y, and Z directions			
Shock resistance		Destruction: 1,000m/s ² 3 times each in X, Y, and Z directions			
Degree of protection		IEC 60529 IP50			
Connection method		Pre-wired Models (Standard cable length: 500 mm)			
Materials		Case: ABS, Main unit: Aluminum, Shaft: SUS420J2			
Weight (packed state)		Approx. 100 g			
Accessories		Coupling, 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 line driver output is a data transmission circuit compatible with RS-422A and long-distance transmission is possible with a twisted-pair cable. The quality is equivalent to AM26LS31.

*3. 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 E6B2-C Rotary Encoder will not operate electrically if its speed exceeds the maximum electrical response speed.