E6C2-C

CSM E6C2-C DS E 3 1

Tough and Easy

- Sealed bearings with IP64 oilproof construction.
- Improved shaft loading performance. Radial: 50 N, Thrust: 30 N
- Pre-wired Models with cable connected at an angle. Side or back cable connections also possible.
- Improved reliability with reverse connection and load short-circuit protection (except for line-driver outputs).





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

Ordering Information

Encoders [Refer to Dimensions on page 4.]

Power supply voltage	Output configuration	Resolution (pulses/rotation)	Model	
5 to 24 VDC	Open-collector output (NPN)	10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600	E6C2-CWZ6C (resolution) 2M Example: E6C2-CWZ6C 10P/R 2M	
		720, 800, 1,000, 1,024, 1,200, 1,500, 1,800, 2,000		
12 to 24 VDC	Open-collector output (PNP)	100, 200, 360, 500, 600	E6C2-CWZ5B (resolution) 2M Example: E6C2-CWZ5B 100P/R 2M	
		1,000, 2,000		
5 to 12 VDC	Voltage output	10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600	E6C2-CWZ3E (resolution) 2M Example: E6C2-CWZ3E 10P/R 2M	
		720, 800, 1,000, 1,024, 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	E6C2-CWZ1X (resolution) 2M Example: E6C2-CWZ1X 10P/R 2M	
		720, 800, 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	
	E69-C06B		
Countings	E69-C68B	Different end diameter	
Couplings	E69-C610B	Different end diameter	
	E69-C06M	Metal construction	
Flamma	E69-FCA		
Flanges	E69-FCA02	E69-2 Servo Mounting Bracket provided.	
Servo Mounting Bracket	E69-2	Provided with E69-FCA02 Flange.	

Refer to Accessories for details.

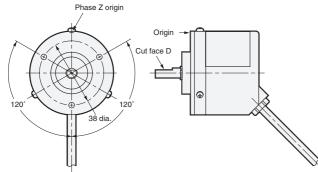
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Ratings and Specifications

Item	Model	E6C2-CWZ6C	E6C2-CWZ5B	E6C2-CWZ3E	E6C2-CWZ1X			
Power su voltage	upply	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, 1,000, 1,024, 1,200, 1,500, 1,800		300, 360, 400, 500, 600, 720, 800, 0, 2,000			
Output phases		Phases A, B, and Z	Phases A, \overline{A} , B, \overline{B} , Z, and \overline{Z}					
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 Output current: 20 mA max. Residual voltage: 0.4 V max. (at sink current of 20 mA)	AM26LS31 equivalent Output voltage: High level: Io = -20 mA Low level: Is = 20 mA Output voltage: Vo = 2.5 V min. Vs = 0.5 V max.			
Maximum response frequency*3		100 kHz	50 kHz	100 kHz				
Phase di between		90°±45° between A and B (1/4 T ± 1/8 T)						
Rise and fall times of output		1 μs max. (Control output voltage: 5 V, Load resistance: 1 $k\Omega$, Cable length: 2 m)	1 μs max. (Cable length: 2 m, Sink current: 10 mA)		0.1 μs max. (Cable length: 2 m, lo = -20 mA, ls = 20 mA)			
Starting	torque	10 mN·m max.						
Moment	of inertia	1×10 ⁻⁶ kg·m² max.; 3 × 10 ⁻⁷ kg·m² max. at 600 P/R max.						
Shaft Radial		50 N						
loading	Thrust	30 N						
Maximur permissi	n ble speed	6,000 r/min						
Protection	on circuits	Power supply reverse polarity prof						
Ambient range	temperature	Operating: -10 to 70°C (with no icing), Storage: -25 to 85°C (with no icing)						
Ambient range	humidity	Operating/Storage: 35% to 85% (with no condensation)						
Insulatio	n resistance	20 $M\Omega$ min. (at 500 VDC) between current-carrying parts and case						
Dielectri	c strength	500 VAC, 50/60 Hz for 1 min betw	een current-carrying parts and cas	е				
Vibration	n 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 re	sistance	Destruction: 1,000 m/s² 3 times each in X, Y, and Z directions						
Degree o	of protection	IEC 60529 IP64, in-house standards: oilproof						
Connect	ion method	Pre-wired Models (Standard cable length: 2 m)						
Material		Case: Zinc alloy, Main unit: Aluminum, Shaft: SUS420J2						
Weight (packed	state)	Approx. 400 g						
Accesso	ries	Instruction manual						
N . O .	in Indication							

Note: Origin Indication

The following illustration shows the relationship between phase Z and the origin. Set cut face D to the phase Z origin as shown in the illustration.



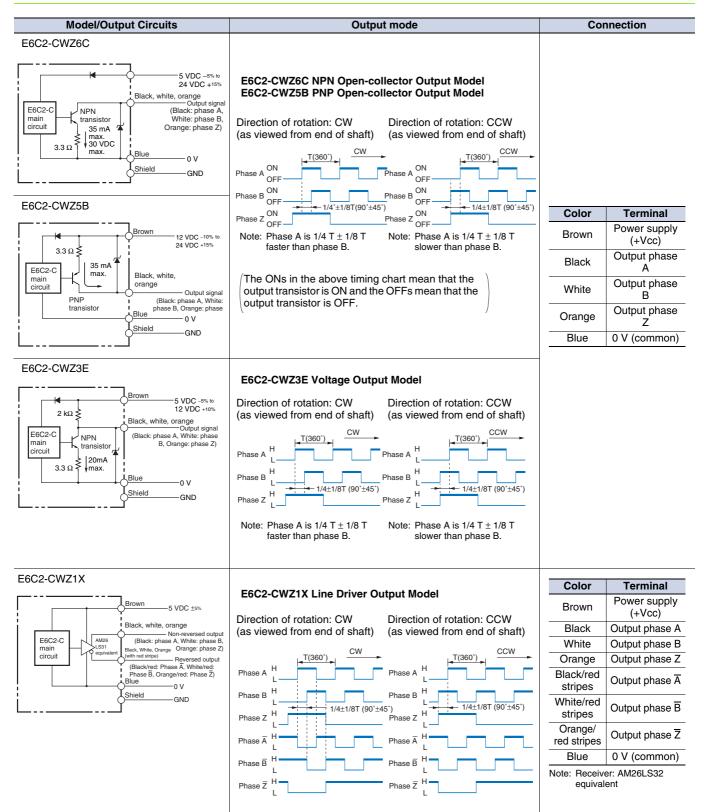
- *1. An inrush current of approximately 9 A will flow for approximately 0.3 ms when the power is turned ON.
 *2. The line driver output is a data transmission circuit compatible with RS-422A and long-distance transmission is possible with a twisted-pair cable.(AM26LS31 equivalent)

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

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

This means that the E6C2-C Rotary Encoder will not operate electrically if its speed exceeds the maximum electrical response speed.

I/O Circuit Diagrams



Note: 1. The shielded cable outer core (shield) is not connected to the inner area or to the case.

- 2. The phase A, phase B, and phase Z circuits are all identical.
- 3. Normally, connect GND to 0 V or to an external ground.

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

Cable Extension Characteristics

- When the cable length is extended, the output waveform startup time is lengthened and it affects the phase difference characteristics of phases A and B. Conditions will change according to frequency, noise, and other factors. As a guideline, use a cable length of 10 m* or less. If the cable must be more than 2 m, use a Model with a Line-driver Output (max. length for line-driver output: 100 m).
- * Recommended Cable Conductor cross section: 0.2 mm² Spiral shield

Conductor resistance: 92 Ω /km max. (20°C) Insulation resistance: 5 Ω /km min. (20°C)

- The output waveform startup time changes not only according to the length of the cable, but also according to the load resistance and the cable type.
- Extending the cable length not only changes the startup time, but also increases the output residual voltage.

Connection

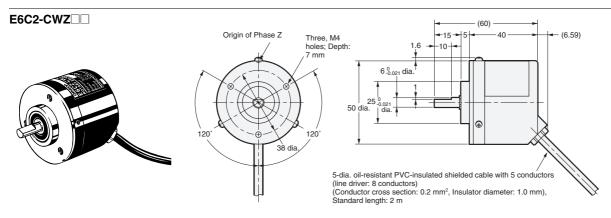
Spurious pulses may be generated when power is turned ON and OFF. Wait at least 0.1 s after turning ON the power to the Encoder before using the connected device, and stop using the connected device at least 0.1 s before turning OFF the power to the Encoder. Also, turn ON the power to the load only after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

(Unit: mm)

Dimensions

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

Encoder



Accessories (Order Separately)

Couplings Flanges E69-C06B E69-FCA

E69-FCA02

E69-C68B E69-C610B E69-C06M

Servo Mounting Bracket

E69-2 (Three brackets in a set.)

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.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

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At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

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DIMENSIONS AND WEIGHTS

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2008.11

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- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов:
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
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- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001:
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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