

Rugged Incremental 50-mm-dia. Rotary Encoder

# E6C3-CWZ5GH 1000P/R 2M

Rugged Rotary Encoder, Incremental, External Diameter: 50 dia., Complementary output, 1000 P/R, 12 to 24 VDC, Phases A/B/Z, Pre-wired model, 2 m



Image

Encoding method	Incremental Shaft model
Resolution	1000 P/R
Output phases	A, B and Z
Control output	Complementary output
Connection method	Pre-wired models (Cable length: 2 m)

Ratings / Performance

As of July 25, 2024

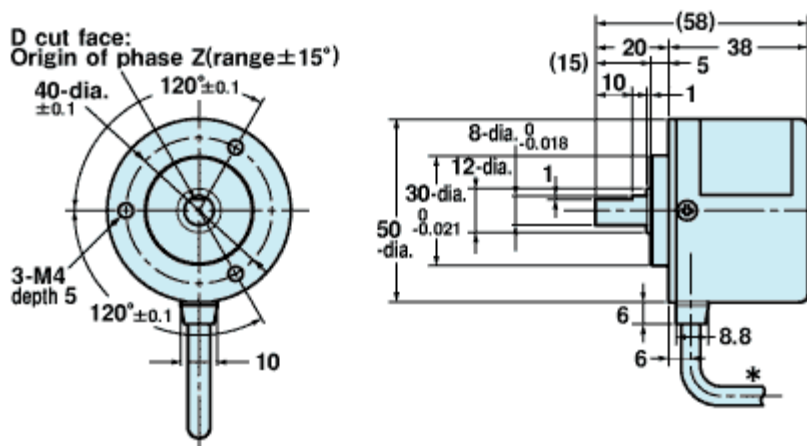
<b>Categorise</b>		Incremental Shaft model
<b>Diameter</b>		50 mm dia.
<b>Power supply voltage</b>		12 to 24 VDC (-10% to +15%) Ripple (p-p) 5% max.
<b>Current consumption</b>		100 mA max.
<b>Resolution</b>		1000 P/R
<b>Inrush current</b>		Approx. 9 A (0.1 ms)
<b>Output phases</b>		A, B and Z
<b>Control output</b>	<b>Output type</b>	Complementary output
	<b>Output voltage</b>	VH: Vcc -3 V min. (IO = 30 mA) VL: 2 V max. (IO = -30 mA)
	<b>Load current</b>	±30 mA
<b>Max. response frequency</b>		125 kHz (65 kHz when using phase Z reset)
<b>Phase difference on output</b>		90±45 ° between A and B (1/4 T ± 1/8 T)
<b>Rise and fall times of output</b>		1 µs max. (Cable length: 2 m, load current: 30 mA)
<b>Starting torque</b>		Room temperature: 10 mN.m max. Low temperature: 30 mN.m max.
<b>Moment of inertia</b>		2.0 x 10 <sup>-6</sup> kg.m <sup>2</sup> max.
<b>Shaft loading</b>		Radial: 80 N Thrust: 50 N
<b>Max. permissible rotation</b>		5000 r/min
<b>Protective circuit</b>		Output short-cut protection
<b>Ambient temperature</b>		Operating: -10 to 70 °C (with no icing) Storage: -25 to 85 °C (with no icing)
<b>Ambient humidity</b>		Operating: 35 to 85 % (with no condensation) Storage: 35 to 85 % (with no condensation)
<b>Insulation resistance</b>		Between charged parts and the case: 20 MΩ or higher (500 VDC megger)

<b>Dielectric strength</b>	Between charged parts and the case: 500 VAC 50/60 Hz 1 min
<b>Vibration resistance</b>	Destruction: 10 to 500 Hz, 2-mm or 150 m/s <sup>2</sup> double amplitude for 11 min 3 times each in X, Y, and Z directions
<b>Shock resistance</b>	Destruction: 1000 m/s <sup>2</sup> for 3 times each in X, Y, and Z directions
<b>Degree of protection</b>	IEC: IP65 Company standard: Oil resistance
<b>Connection method</b>	Pre-wired models (Cable length: 2 m)
<b>Material</b>	Case: Aluminum Main Unit: Aluminum Shaft: SUS303
<b>Accessories</b>	Instruction manual

As of July 25, 2024

### Dimensions

As of July 25, 2024



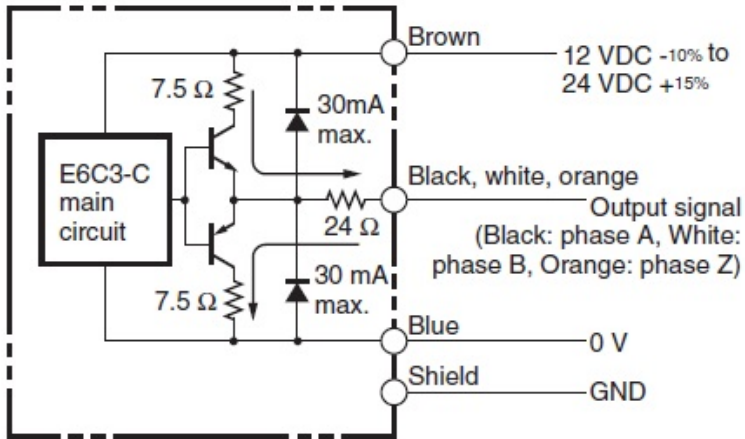
\*5-dia. Oil-resistant PVC-insulated shielded cable with 5 conductors (Line driver: 8 conductors) (conductor cross section: 0.2mm<sup>2</sup>, insulator diameter: 1.1mm) Standard length: 1m

As of July 25, 2024

### Output circuit diagram

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## E6C3-CWZ5GH



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### Connected specification chart

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Color	Terminal
Brown	Vcc
Black	Phase A
White	Phase B
Orange	Phase Z
Blue	0V(COMMON)
Shield	GND

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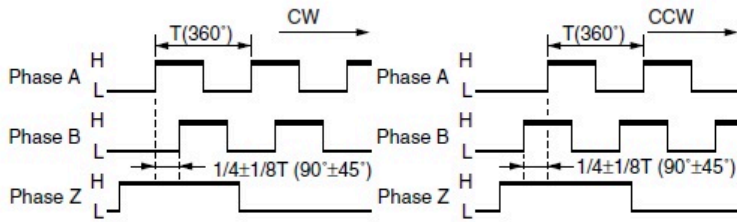
### Timing chart

As of July 25, 2024

**E6C3-CWZ3EH Voltage Output Model**  
**E6C3-CWZ5GH Complementary Output Model**

Direction of rotation: CW  
 (as viewed from end of shaft)

Direction of rotation: CCW  
 (as viewed from end of shaft)



Note: Phase A is  $1/4 T \pm 1/8 T$   
 faster than phase B.

Note: Phase A is  $1/4 T \pm 1/8 T$   
 slower than phase B.

(“H” and “L” in the diagrams are the output voltage levels of phases A, B, and Z.)