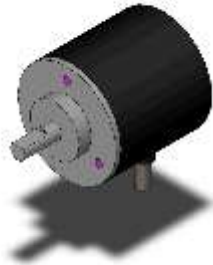


Incremental 40-mm-dia. Rotary Encoder

# E6B2-CWZ1X 2000P/R 0.5M

Rotary Encoder, Incremental, External Diameter: 40 dia., Line driver output, 2000 P/R, 5 VDC, Phases A/-A/B/-B/Z/-Z, Pre-wired model, 0.5 m



Image

Encoding method	Incremental Shaft model
Resolution	2000 P/R
Output phases	A, -A, B, -B, Z and -Z
Control output	Line driver output
Connection method	Pre-wired models (Cable length: 0.5 m)

Ratings / Performance

As of July 25, 2024

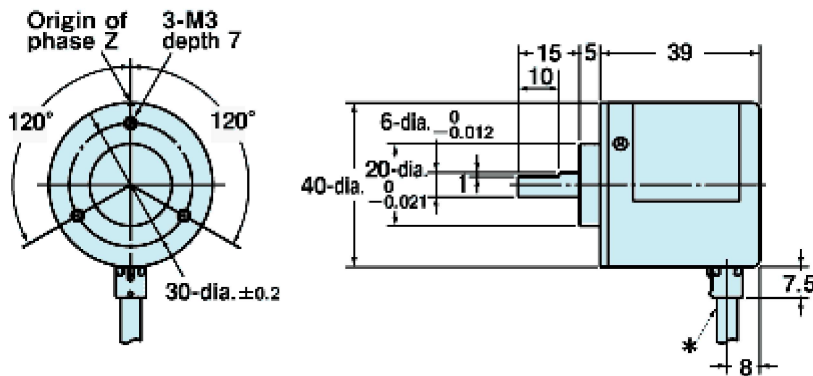
Categorise		Incremental Shaft model
Diameter		40 mm dia.
Power supply voltage		5 VDC±5% ripple (p-p) 5% max.
Current consumption		160 mA max.
Resolution		2000 P/R
Inrush current		Approx. 9 A (0.3 ms)
Output phases		A, -A, B, -B, Z and -Z
Control output	Output type	Line driver output
	Output voltage	Vo: 2.5 V min. Vs: 0.5 V max.
	Load current	High level (Io): -20 mA Low level (Is): 20 mA
Starting positional point		Equipped
Max. response frequency		100 kHz
Phase difference on output		90±45 ° between A and B (1/4 T ± 1/8 T)
Rise and fall times of output		0.1 µs max. (Cable length: 2 m max., Io = -20 mA, Is = 20 mA)
Starting torque		0.98 mN.m max.
Moment of inertia		1 x 10 <sup>-6</sup> kg.m <sup>2</sup> max.
Shaft loading		Radial: 30 N Thrust: 20 N
Max. permissible rotation		6000 r/min
Ambient temperature		Operating: -10 to 70 °C (with no icing) Storage: -25 to 85 °C (with no icing)
Ambient humidity		Operating: 35 to 85 % (with no condensation) Storage: 35 to 85 % (with no condensation)
Insulation resistance		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: IP50
<b>Connection method</b>	Pre-wired models (Cable length: 0.5 m)
<b>Material</b>	Case: ABS Main Unit: Aluminum Shaft: SUS420J2
<b>Weight</b>	Package: Approx. 100 g
<b>Accessories</b>	Instruction manual, Couplings, Hex-head spanner

As of July 25, 2024

### Dimensions

As of July 25, 2024

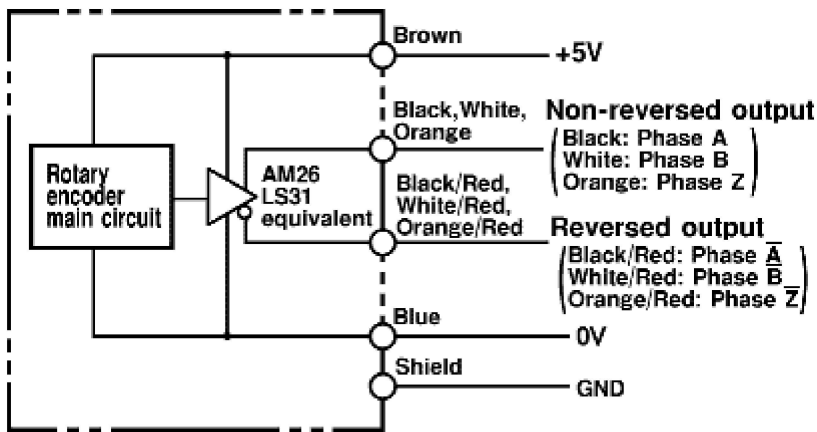


- \*E6B2-CWZ6C, E6B2-CWZ5B, E6B2-CWZ3E  
5-dia. Shielded cable with 5 conductors  
(conductor cross section: 0.2mm<sup>2</sup>, insulator diameter: 1.0mm)  
Standard length: 500mm
- E6B2-CWZ1X  
5-dia. Shielded cable with 8 conductors  
(conductor cross section: 0.2mm<sup>2</sup>, insulator diameter: 1.0mm)  
Standard length: 500mm

As of July 25, 2024

### Output circuit diagram

As of July 25, 2024



- \* 1. The shielded cable outer core is not connected to the inner area or the case.
- 2. Normally, connect GND to 0V or to an external ground.

As of July 25, 2024

Connected specification chart

As of July 25, 2024

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

\* Receiver: AM26LS32 equivalent

As of July 25, 2024

Timing chart

As of July 25, 2024

Output phase	Direction of rotation	Output mode
Phase A Phase B Phase Z	<b>CW</b> as viewed from the end of the shaft	<p>Phase A <sup>H</sup><sub>L</sub></p> <p>Phase B <sup>H</sup><sub>L</sub></p> <p>Phase Z <sup>H</sup><sub>L</sub></p> <p>Phase <math>\bar{A}</math> <sup>H</sup><sub>L</sub></p> <p>Phase <math>\bar{B}</math> <sup>H</sup><sub>L</sub></p> <p>Phase <math>\bar{Z}</math> <sup>H</sup><sub>L</sub></p> <p><math>T(360^\circ)</math> CW</p> <p><math>1/4T \pm 1/8T</math> (<math>90^\circ \pm 45^\circ</math>)</p>
	<b>CCW</b> as viewed from the end of the shaft	<p>Phase A <sup>H</sup><sub>L</sub></p> <p>Phase B <sup>H</sup><sub>L</sub></p> <p>Phase Z <sup>H</sup><sub>L</sub></p> <p>Phase <math>\bar{A}</math> <sup>H</sup><sub>L</sub></p> <p>Phase <math>\bar{B}</math> <sup>H</sup><sub>L</sub></p> <p>Phase <math>\bar{Z}</math> <sup>H</sup><sub>L</sub></p> <p><math>T(360^\circ)</math> CCW</p> <p><math>1/4T \pm 1/8T(90^\circ \pm 45^\circ)</math></p>

\*CW direction: Phase A is  $1/4 \pm 1/8T$  faster than phase B.  
 CCW direction: Phase A is  $1/4 \pm 1/8T$  slower than phase B.