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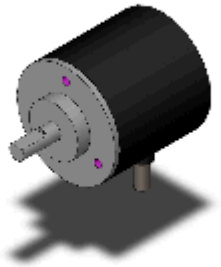
Incremental 40-mm-dia. Rotary Encoder

# E6B2-CWZ6C 2000P/R 2M

**Rotary Encoder, 2000 P/R, 5 to 24 VDC, NPN open collector, Cable length 2 m**



Image

| | |
|---|---|
| **Encoding method** | Incremental Shaft model |
| **Resolution** | 2000 P/R |
| **Output phases** | A, B and Z |
| **Control output** | NPN open collector |
| **Connection method** | Pre-wired models (Cable length: 2 m) |

## Ratings / Performance

As of March 13, 2024

| | | |
|---|---|---|
| **Categorise** | | Incremental Shaft model |
| **Diameter** | | 40 mm dia. |
| **Power supply voltage** | | 5 to 24 VDC (-5% to +15%) Ripple (p-p) 5% max. |
| **Current consumption** | | 80 mA max. |
| **Resolution** | | 2000 P/R |
| **Inrush current** | | Approx. 9 A (0.3 ms) |
| **Output phases** | | A, B and Z |
| **Control output** | **Output type** | NPN open collector |
| | **Load power supply voltage** | 30 V max.DC |
| | **Sink current** | 35 mA max. |
| | **Residual voltage** | 0.4 V max. (at sink current 35 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** | | 1 μs max. (Cable length: 2 m max., output voltage: 5 V, load resistance: 1 kΩ) |
| **Starting torque** | | 0.98 mN.m max. |
| **Moment of inertia** | | $1 \times 10^{-6}$ kg.m$^2$ max. |
| **Shaft loading** | | Radial: 30 N<br>Thrust: 20 N |
| **Max. permissible rotation** | | 6000 r/min |

| | |
|---|---|
| **Protective circuit** | Output short-cut protection<br>Power supply reverse polarity protection |
| **Ambient temperature** | Operating: -10 to 70 ℃ (with no icing)<br>Storage: -25 to 85 ℃ (with no icing) |
| **Ambient humidity** | Operating: 35 to 85 % (with no condensation)<br>Storage: 35 to 85 % (with no condensation) |
| **Insulation resistance** | Between charged parts and the case: 20 MΩ or higher (500 VDC megger) |
| **Dielectric strength** | Between charged parts and the case: 500 VAC 50/60 Hz 1 min |
| **Vibration resistance** | Destruction: 10 to 500 Hz, 2-mm or 150 $m/s^2$ double amplitude for 11 min 3 times each in X, Y, and Z directions |
| **Shock resistance** | Destruction: 1000 $m/s^2$ for 3 times each in X, Y, and Z directions |
| **Degree of protection** | IEC: IP50 |
| **Connection method** | Pre-wired models (Cable length: 2 m) |
| **Material** | Case: ABS<br>Main Unit: Aluminum<br>Shaft: SUS420J2 |
| **Accessories** | Instruction manual, Couplings, Hex-head spanner |

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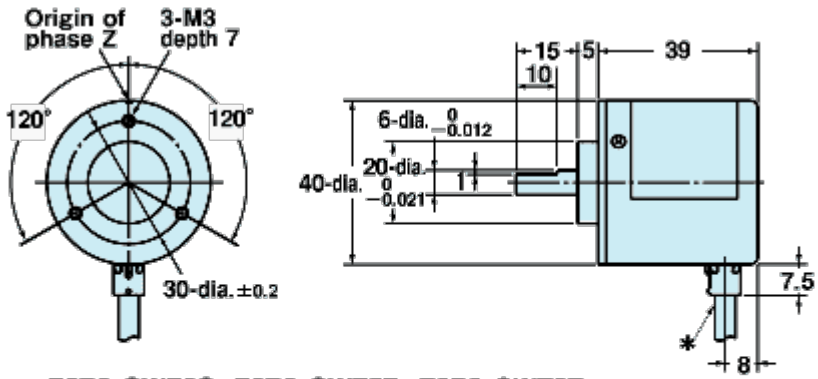
## Dimensions

As of March 13, 2024




***E6B2-CWZ6C, E6B2-CWZ5B, E6B2-CWZ3E**
**5-dia. Shielded cable with 5 conductors**
**(conductor cross section: 0.2mm², insulator diameter: 1.0mm)**
**Standard length: 500mm**
**E6B2-CWZ1X**
**5-dia. Shielded cable with 8 conductors**
**(conductor cross section: 0.2mm², insulator diameter: 1.0mm)**
**Standard length: 500mm**

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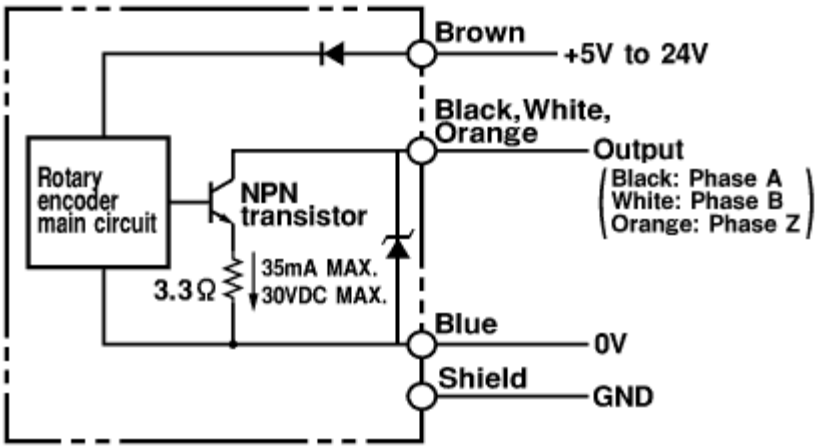
## Output circuit diagram

As of March 13, 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.

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## Connected specification chart

As of March 13, 2024

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

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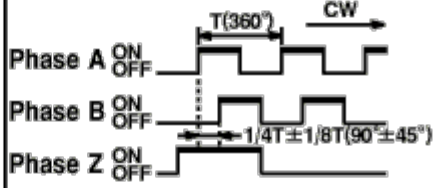
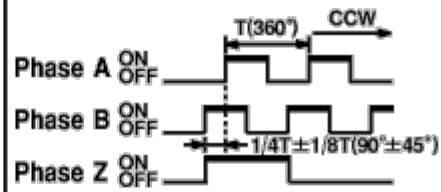
## Timing chart

As of March 13, 2024

| Output phase | Direction of rotation | Output mode |
|---|---|---|
| Phase A<br>Phase B<br>Phase Z | **CW**<br>as viewed from the end of the shaft |  |
| | **CCW**<br>as viewed from the end of the shaft |  |

∗CW direction: Phase A is 1/4±1/8T faster than phase B.
CCW direction: Phase A is 1/4±1/8T slower than phase B.

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