



# RE30E

## OPTICAL ENCODERS

### STANDARD SPECIFICATIONS

#### Electrical characteristics

|                                   |   |                                   |
|-----------------------------------|---|-----------------------------------|
| Input voltage                     | DC5 ~ 12 V ± 10 %   | DC24 V ± 10 %                     |
| Input current                     | 50 mA maximum   |                                   |
| Output wave form                  | Square wave   |                                   |
| Output phases                     | A, B, Z   |                                   |
| (P/R) Resolution                  | 100, 200, 300, 360, 400, 500<br>600, 800, 900, 1000, 1024   |                                   |
| Phase difference of outputs A & B | 90° ± 45°   |                                   |
| Maximum frequency response        | 10 kHz (100 P/R), 20 kHz (200P/R)<br>25 kHz (300 ~ 500 P/R), 60 kHz (600 P/R)<br>80 kHz (800 P/R), 90 kHz (900P/R)<br>100 kHz (1000 ~ 1024 P/R) |                                   |
| Output signal                     | "1 (High)"  | (Vcc - 1) V min. (Vcc - 2) V min. |
|                                   | "0 (Low)"   | + 0.5 V max. + 1.0 V max.         |
| Output impedance                  | 2.2 kΩ  |                                   |
| Light source                      | LED   |                                   |

#### Mechanical characteristics

|                               |                             |                        |
|-------------------------------|-----------------------------|------------------------|
| Starting torque               | 0.29 mN·m {3 gf·cm} maximum |                        |
| Inertia                       | 2 g·cm <sup>2</sup> maximum |                        |
| Shaft loading (When mounting) | Radial                      | 19.6 N {2 kgf} maximum |
|                               | Axial                       | 9.81 N {1 kgf} maximum |
| Net weight                    | Approx. 70 g                |                        |

#### Environmental characteristics

|                       |              |
|-----------------------|--------------|
| Operating temp. range | 0 ~ 70 °C    |
| Storage temp. range   | - 20 ~ 80 °C |
| Protection grade      | IP40         |

### RELIABILITY TEST

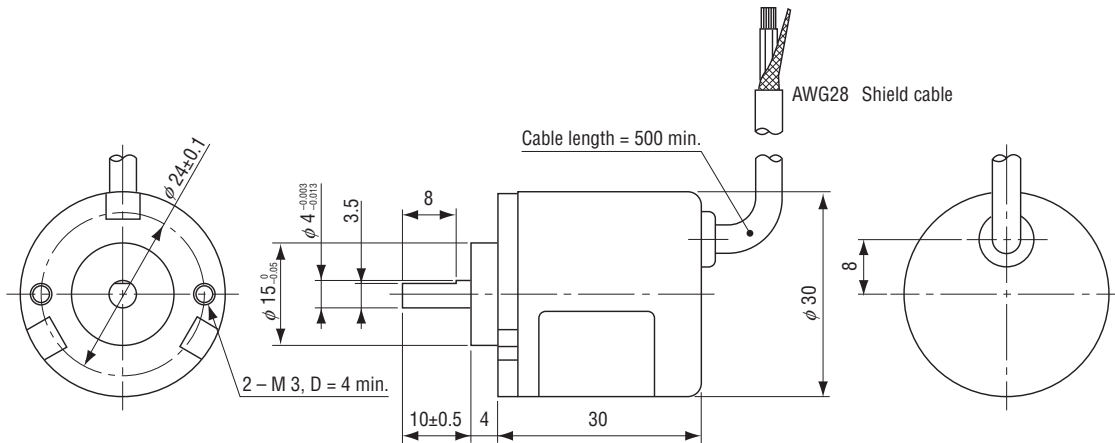
The output wave form shall satisfy the STANDARD SPECIFICATIONS after the following tests.

| Test item                 |           | Test conditions  |   |
|---------------------------|-----------|--|---|
| Vibration                 | Power OFF | Amplitude : 1.52 mm or 98.1 m/s <sup>2</sup> (10 G) whichever is smaller.<br>10 ~ 500 Hz excursion 0.25 h/cycle, 8 cycles each for X, Y, Z, directions.                          |   |
| Shock                     | Power OFF | 3 times each in 6 directions (X, Y, Z) at 490 m/s <sup>2</sup> (50 G), 11 ms.  |   |
| High temperature exposure | Power OFF | 80 °C 96 h   | (To be measured after leaving samples for 1 h at normal temperature and humidity after the test.) |
|                           | Power ON  | 70 °C 96 h   |   |
| Low temperature exposure  | Power OFF | - 20 °C 96 h   |   |
|                           | Power ON  | 0 °C 96 h  |   |
| Humidity                  | Power OFF | 40 °C Relative humidity 90 ~ 95 % 96 h<br>(To be measured after wiping out moisture and leaving samples for 1 h at normal temperature and humidity after the test.)              |   |
| Thermal shock             | Power OFF | To be done 10 cycles with the following condition<br>(To be measured after leaving samples for 1 h at normal temperature and humidity after the test.)<br>80 °C 1 h, - 20 °C 1 h |   |

# RE30E OPTICAL ENCODERS

## OUTLINE DIMENSIONS

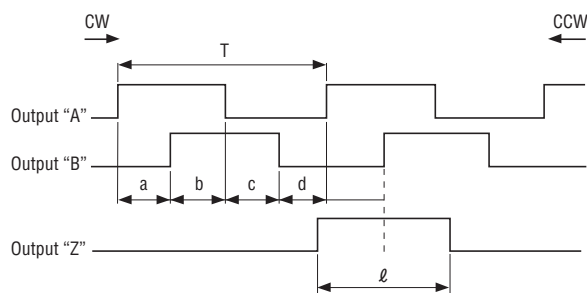
Unless otherwise specified, tolerance:  $\pm 0.4$  (Unit: mm)



## ELECTRICAL WIRING

|              |                |
|--------------|----------------|
| Red          | Power $\oplus$ |
| Black        | Power 0 (V)    |
| White        | Output "A"     |
| Green        | Output "B"     |
| Yellow       | Output "Z"     |
| Cable shield | NC             |

## OUTPUT



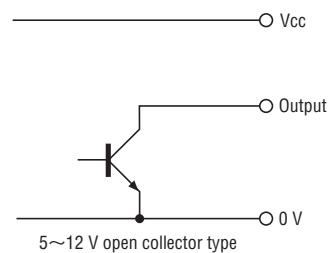
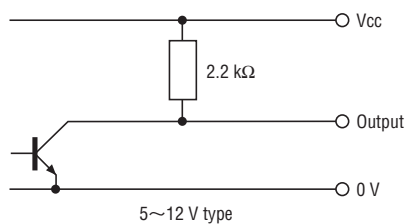
$$a, b, c, d = 1/4 \pm T1/8T$$

$$l = T \pm 3/4T$$

The "Z" phase, however, includes no more than two "B" phase startups (CW rotation)

## OUTPUT CIRCUIT

### RE30E



Sink current of output circuit 80 mA maximum (at 25 °C)

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