



# 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, 500 600, 800, 900, 1000, 1024	
Phase difference of outputs A & B	90° ± 45°	
Maximum frequency response	10 kHz (100 P/R), 20 kHz (200P/R) 25 kHz (300 ~ 500 P/R), 60 kHz (600 P/R) 80 kHz (800 P/R), 90 kHz (900P/R) 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.

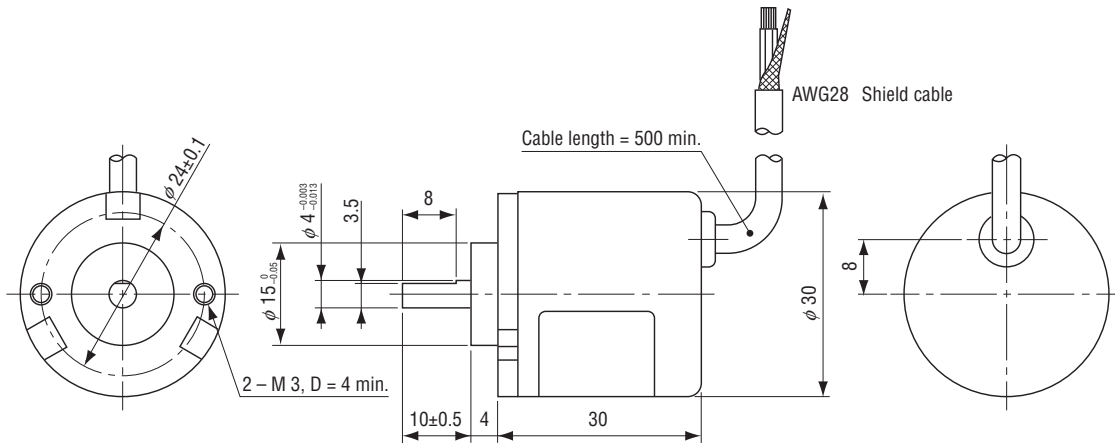
Test item		Test conditions	
Vibration	Power OFF	Amplitude : 1.52 mm or 98.1 m/s <sup>2</sup> (10 G) whichever is smaller. 10 ~ 500 Hz excursion 0.25 h/cycle, 8 cycles each for X, Y, Z, directions.	
Shock	Power OFF	3 times each in 6 directions (X, Y, Z) at 490 m/s <sup>2</sup> (50 G), 11 ms.	
High temperature 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 (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 (To be measured after leaving samples for 1 h at normal temperature and humidity after the test.) 80 °C 1 h, – 20 °C 1 h	

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### OUTLINE DIMENSIONS

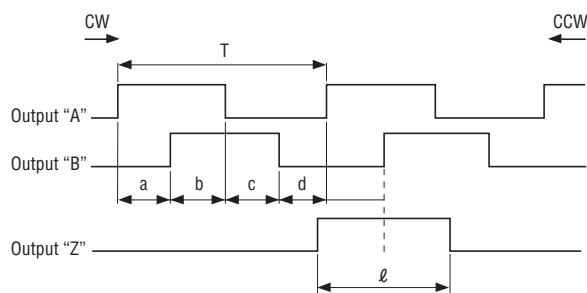
Unless otherwise specified, tolerance:  $\pm 0.4$  (Unit: mm)



### ELECTRICAL WIRING

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

### OUTPUT



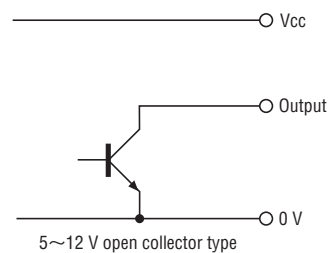
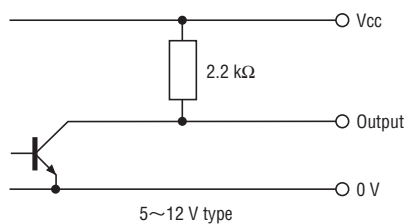
$$a, b, c, d = 1/4 \pm T1/8T$$

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

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  $^{\circ}\text{C}$ )