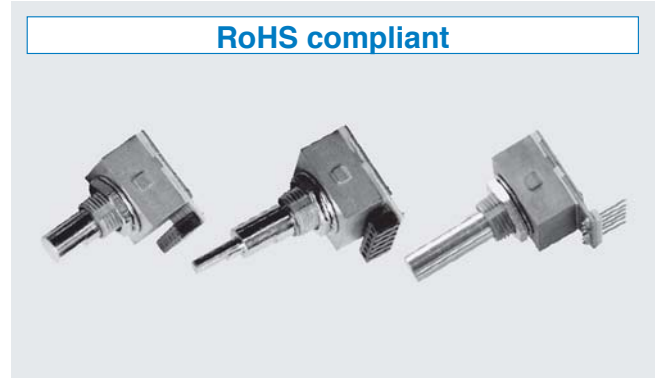
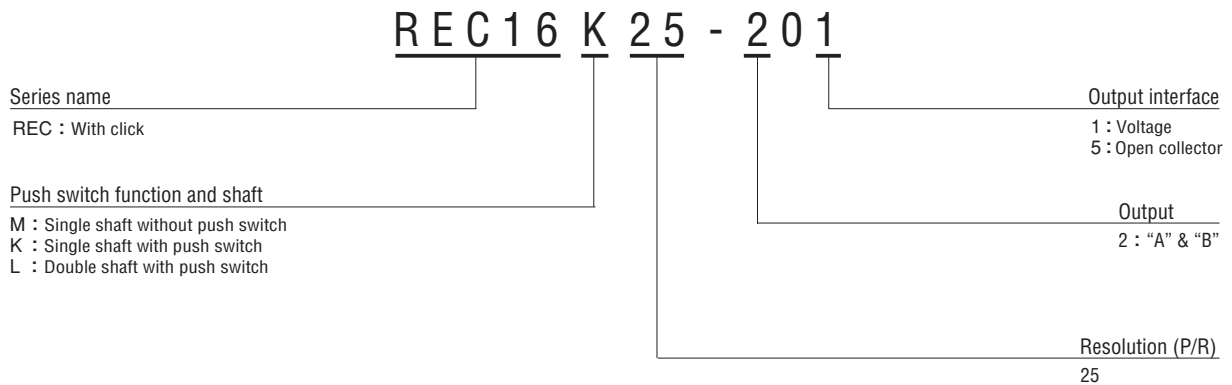


## FEATURES

- 16mm square compact size
- Excellent click & switch feelings
- Long life of 2 million cycles



## PART NUMBER DESIGNATION



## LIST OF PART NUMBERS

| Resolution | Click      | Push switch function | Shaft        | Output interface                | Part number      |
|------------|------------|----------------------|--------------|---------------------------------|------------------|
| 25 (P/R)   | With Click | No                   | Single Shaft | Voltage<br>(PIN HEADER Type)    | REC16M25-201     |
|            |            |                      |              |                                 | REC16K25-201     |
|            |            | Yes                  | Double Shaft | Open Collector<br>(SCOKET Type) | ➡ REC16K25-205-B |
|            |            |                      |              |                                 | ➡ REC16L25-205-B |

The products indicated by ➡ mark are manufactured upon receipt of order basis.

# REC16K/REC16L/REC16M

## OPTICAL ENCODERS

### STANDARD SPECIFICATIONS

#### Electrical characteristics

|                                   |               |                 |
|-----------------------------------|---------------|-----------------|
| Input voltage                     | DC5 ± 5 %     |                 |
| Input current                     | 30 mA maximum |                 |
| Output wave form                  | Square wave   |                 |
| Output phases                     | A, B          |                 |
| (P/R) Resolution                  | 25            |                 |
| Phase difference of outputs A & B | 90° ± 45°     |                 |
| Maximum frequency response        | 100 Hz        |                 |
| Output signal                     | "1 (High)"    | + 4.5 V minimum |
|                                   | "0 (Low)"     | + 0.5 V maximum |
| Light source                      | LED           |                 |

#### Switch characteristics

|                        |                             |
|------------------------|-----------------------------|
| Maximum contact rating | DC15 V, 20 mA               |
| Contact resistance     | 2 Ω maximum (Initial value) |

Note) Manual setting only.

#### Mechanical characteristics

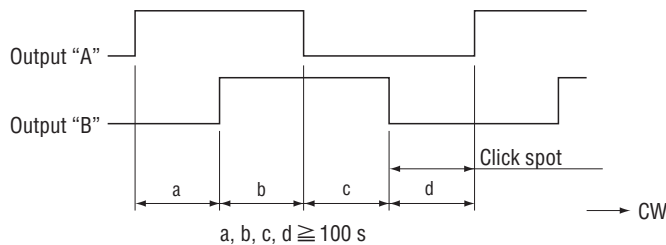
|                               |   |                         |
|-------------------------------|---|-------------------------|
| Click torque                  | 7.35 mN·m ± 2.5 maximum (75 ± 25 gf·cm)<br><REC : With click> |                         |
| Click number                  | 25  |                         |
| Shaft loading (Pull-push)     | 19.6 N maximum (2 kgf)  |                         |
| Switch operation force        | 2.45 ± 1.47 N (250 ± 150 gf)                                  |                         |
| Switch stroke                 | 0.3 ± 0.2 mm  |                         |
| Rotational life (Mechanical)  | 2 million cycles  |                         |
| Switching life                | 1 million cycles  |                         |
| Shaft loading (When mounting) | Radial  | 4.90 N maximum (500 gf) |
|                               | Axial   | 2.94 N maximum (300 gf) |
| Net weight                    | Approx. 12 g  |                         |
| Strength of tighten screw     | 1 N·m {10.2 kgf·cm} maximum                                   |                         |

#### Environmental characteristics

|                       |             |
|-----------------------|-------------|
| Operating temp. range | 0 ~ 50 °C   |
| Storage temp. range   | -20 ~ 80 °C |
| Protection grade      | IP40        |

### OUTPUT

#### Click spot for 25P/R



The click spot is located somewhere outputs A & B are at Lo level.

# REC16K/REC16L/REC16M

## OPTICAL ENCODERS

### RELIABILITY TEST

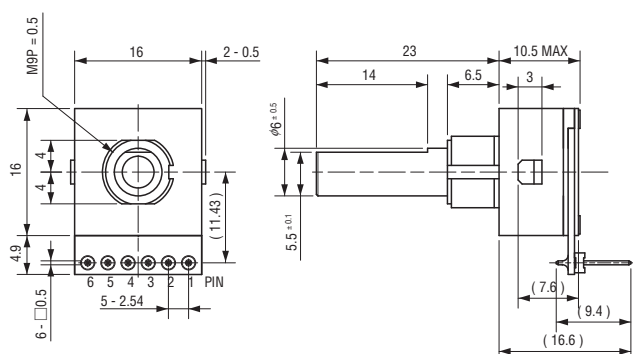
The output shall satisfy the criteria below after the following tests.

| 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 15 min/cycle, 8 cycles each for X, Z, directions.                                 |   |
| Shock                     | Power OFF | 3 times each in directions (X, 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  | 50 °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 0.5 h, - 20 °C 0.5 h |   |

### OUTLINE DIMENSIONS

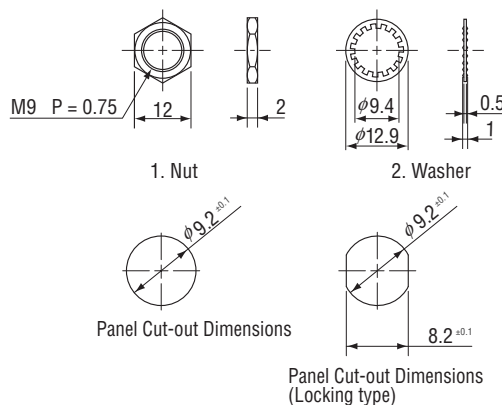
Unless otherwise specified, tolerance: ± 0.4 (Unit: mm)

#### Single shaft and PIN HEADER



PIN HEADER :  
Made by IRISO ELECTRONICS CO.,LTD  
S2088 - 1 - 6Z032 - PT1

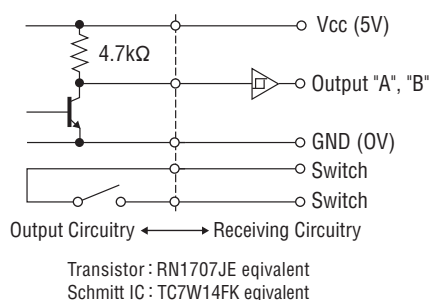
#### < Accessories >



### PIN ASSIGNMENT

| Pin No. | Without switch | With switch |
|---------|----------------|-------------|
| 1       | Power 0 (V)    | Power 0 (V) |
| 2       | N C            | For switch  |
| 3       | N C            | For switch  |
| 4       | Output "B"     | Output "B"  |
| 5       | Output "A"     | Output "A"  |
| 6       | Power + 5V     | Power + 5V  |

### OUTPUT CIRCUITRY AND RECEIVING CIRCUITRY



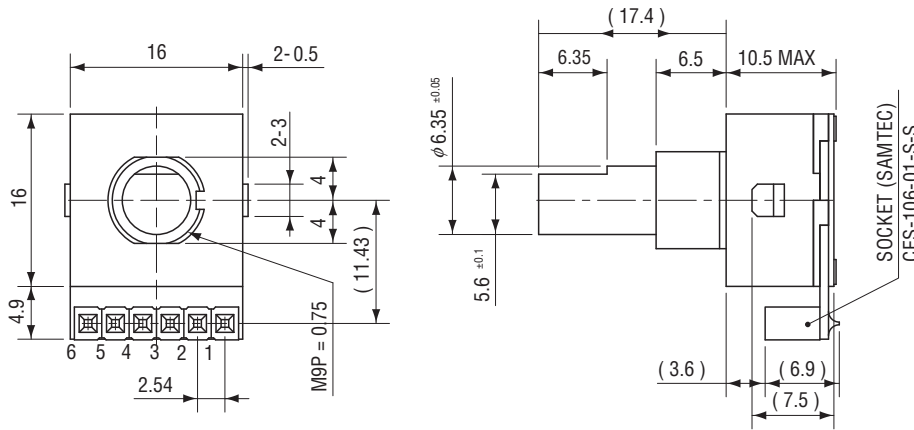
# REC16K/REC16L/REC16M

## OPTICAL ENCODERS

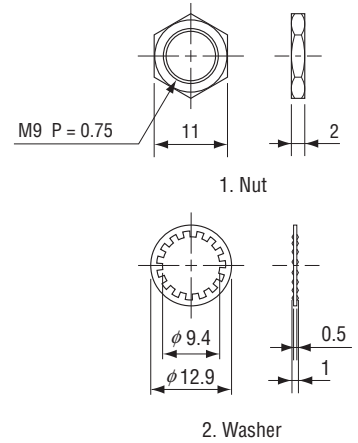
### OUTLINE DIMENSIONS

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

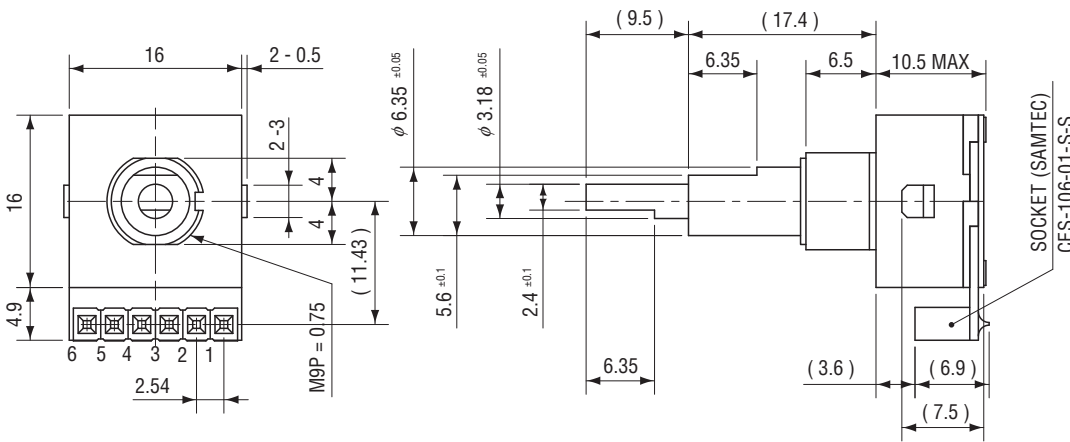
#### Single shaft and SOCKET



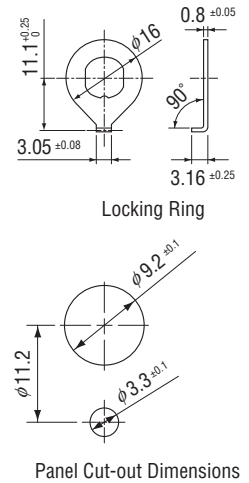
#### <Accessories>



#### Double shaft and SOCKET



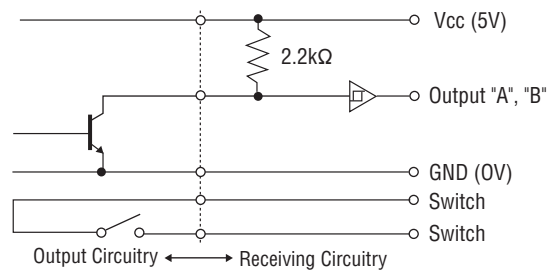
#### <Option>



### PIN ASSIGNMENT

| Pin No. | Function    |
|---------|-------------|
| 1       | Power 0 (V) |
| 2       | For switch  |
| 3       | For switch  |
| 4       | Output "B"  |
| 5       | Output "A"  |
| 6       | Power +5 V  |

### OUTPUT CIRCUITRY AND RECEIVING CIRCUITRY



Transistor : RN1707JE equivalent  
Schmitt IC : TC7W14FK equivalent