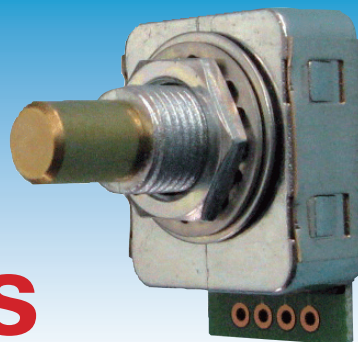


# Optical Rotary Encoder with Push Switch



# RE23 Series



## Outline

RE23 series are optical rotary encoders with dual functions of pushing and rotating on its shaft. Its size, mounting procedures and inner-structures have been designed for a wide-array of uses; measurement devices, medical equipments, industrial machineries, telecommunication devices and machine tools.

## Features

- Multi-functional with 2 way acting – pushing and rotating – shaft
- Eco friendly:
  - 1) Low cost and lesser parts by VA design
  - 2) RoHS compliant
- Thin-line (18.8x25.5x8.9mm) and lightweight (18g)
- Various types of models with options: lead wire with or without connector, clamp for horizontal/vertical mounting
- Long-lasting without “contact chatter” due to its optical switching function

## Specifications

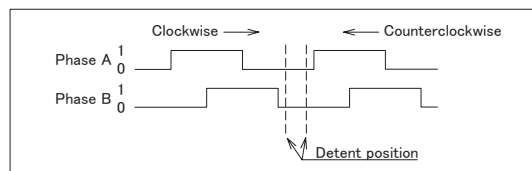
| 1. Electrical and Mechanical specifications |                   |                                    |                         |
|---|-------------------|------------------------------------|-------------------------|
| Items                                       |                   | Rated Value                        |                         |
| Number of pulses                            |                   | 16PPR, 25PPR                       |                         |
| Supply voltage                              |                   | 3.3V±10%                           | 5V±10%                  |
|   |                   | 20mA                               | 10mA                    |
| Output signals                              |                   | Channel A/B: Square Wave CMOS chip |                         |
| Output voltage                              | High              | (Supply Voltage - 0.5V) ≤          |                         |
|   | Low               | ≤ 0.5V                             |                         |
| Response frequency                          |                   | 200Hz                              |                         |
| Rotational torque                           | Light: S          | 4±1mN · m                          |                         |
|   | Standard: C       | 6±2mN · m                          |                         |
|   | Medium: M         | 10.5±3.5mN · m                     |                         |
|   | High: H           | 16±5mN · m                         |                         |
| Push switch                                 | Rating of contact |                                    | ≤ DC12V      0.1 ~ 10mA |
|   | Travel of switch  |                                    | 0.2±0.1mm               |
|   | Operational Force | S                                  | 3.2±1N                  |
|   |                   | M                                  | 4.0±1N                  |
| H   |                   | 5.0±1N                             |                         |
| Weight                                      |                   | 18g                                |                         |

Note : In case Rotational Torque M or H, Operational Torque should be either M or H.

| 2. Reliability and Environmental specifications |                             |                                    |                                |
|---|-----------------------------|------------------------------------|--------------------------------|
| Items   |                             | Rated Value                        |                                |
| Durability of operating area                    | Thrust direction            | Push                               | 100N                           |
|   |                             | Pull                               | 50N                            |
|   | Radial                      |                                    | 1N · m                         |
| Rotational durability                           | Light: S                    |                                    | 1 million strokes (No load)    |
|   | Standard: C                 |                                    |                                |
|   | Medium: M                   |                                    |                                |
|   | High: H                     |                                    | 100 thousand strokes (No load) |
| Screw Torque                                    |                             | Not more than 1N · m               |                                |
| Heat resistance of solder                       | Solder bit temp.: MAX 350°C | Within 3 seconds for each terminal |                                |
| Operating temperature                           |                             | 0°C ~ +55°C<br>32F ~ 131F          |                                |
| Storage temperature                             |                             | - 40°C ~ +85°C<br>- 40F ~ 185F     |                                |

## Output Waveform

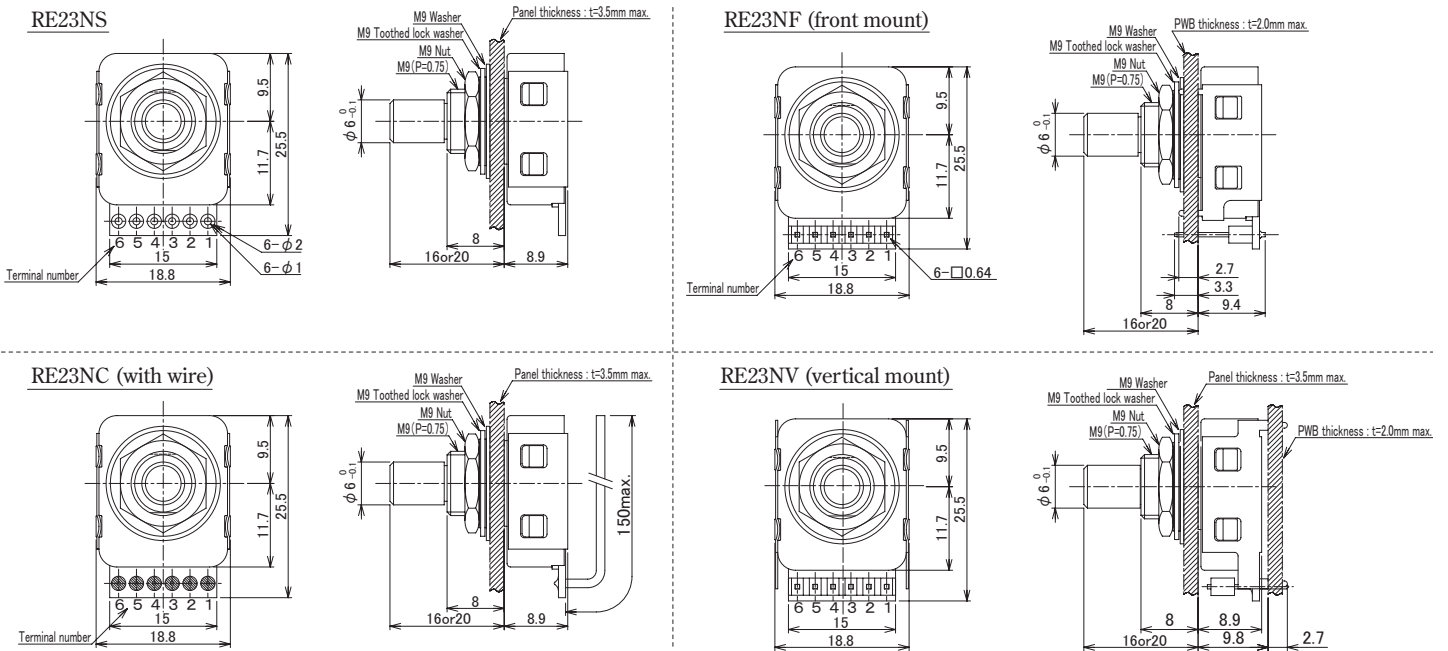
- 1) Turning the shaft clockwise will generate the signal A when the signal B outputs a low voltage (0);
- 2) Rotating the shaft counter-clockwise will generate the signal A when the signal B outputs a high voltage (1);
- 3) Detent positions are where both signal A and B are low (0).



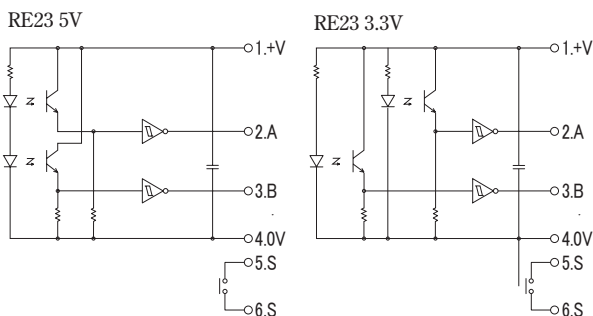
# Part Number Designation

|        |                |   |     |       |                                  |                   |      |   |               |              |
|--------|----------------|---|-----|-------|----------------------------------|-------------------|------|---|---------------|--------------|
| Series | RE23           | N | S   | 25    | C                                | S                 | 20   | R | A             |              |
|        | Waterproof     |   |     | Pulse |                                  | Push Switch Force |      |   | Power Voltage |              |
| N      | No             |   | 16  | 16PPR |                                  | S                 | 3.2N |   | A             | 5V           |
|        |                |   | 25  | 25PPR |                                  | H                 | 5N   |   | B             | 3.3V         |
|        | Wiring         |   |     | Ckck  | Rotation Torque                  |                   |      |   |               | Shaft Shape  |
| S      | Standard       |   | S   | With  | 4mN · m                          |                   |      |   | R             | Round        |
| C      | With wire      |   | C   |       | 6mN · m                          |                   |      |   |               |              |
| F      | Front Mount    |   | M   |       | 10.5mN · m                       |                   |      |   |               |              |
| V      | Vortical Mount |   | H   |       | 16mN · m                         |                   |      |   |               |              |
|        |                |   | Non | W/O   | $\leq 4\text{mN} \cdot \text{m}$ |                   |      |   |               | Shaft length |
|        |                |   |     |       |                                  |                   |      |   | 16            | 16mm         |
|        |                |   |     |       |                                  |                   |      |   | 20            | 20mm         |

## Dimensions (mm)



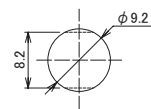
## Circuitry



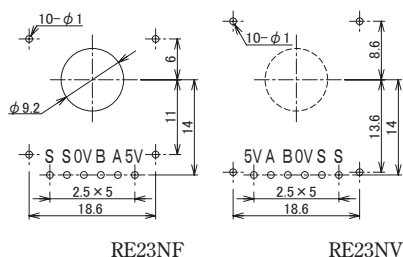
### Terminal number

|   |         |             |
|---|---------|-------------|
| 1 | 3.3V/5V | Supply      |
| 2 | A       | Signal A    |
| 3 | B       | Signal B    |
| 4 | 0V      | Ground      |
| 5 | S       | Push Switch |
| 6 | S       | Push Switch |

### Mounting hole dimensions (mm)



### PWB mounting hole dimensions (mm)



RE23NF

RE23NV

## Precautions

|               |  |
|---------------|--|
| Wiring        | Use buffering amplifier when extending lead wire over 30cm.                    |
| Soldering     | Do not put a load on the terminal area during and immediately after soldering. |
| Operation     | Do not use flow/reflow soldering machines.                                     |
| Power         | Use under specified power voltage and connect properly.                        |
| Waterproofing | Do not fasten tighter with the torque of more than 1.5N · m.                   |

## Warranty

- 1 year from the date of shipment.