

RDCC0 Magnetic Rotary Type

Non-contact magnetic rotary sensor achieving high precision and long life



Typical Specifications

| Items | Specifications |
|-----------------------------|-------------------|
| Rated Voltage | 5V DC |
| Operating life | 10,000,000 cycles |
| Total resistance | 0.3V to 4.3V |
| Operating temperature range | 0°C to +50°C |

Product Line

| Mounting method | Effective electrical angle | Linearity guarantee range | Linearity | Style of lever | Minimum order unit (pcs.) | | Model No. |
|-----------------|----------------------------|---------------------------|-----------|----------------|---------------------------|--------|-------------------|
| | | | | | Japan | Export | |
| Connector type | 30° | ±15° | ±2% | Flat type | 720 | 720 | RDCC010002 |

Packing Specifications

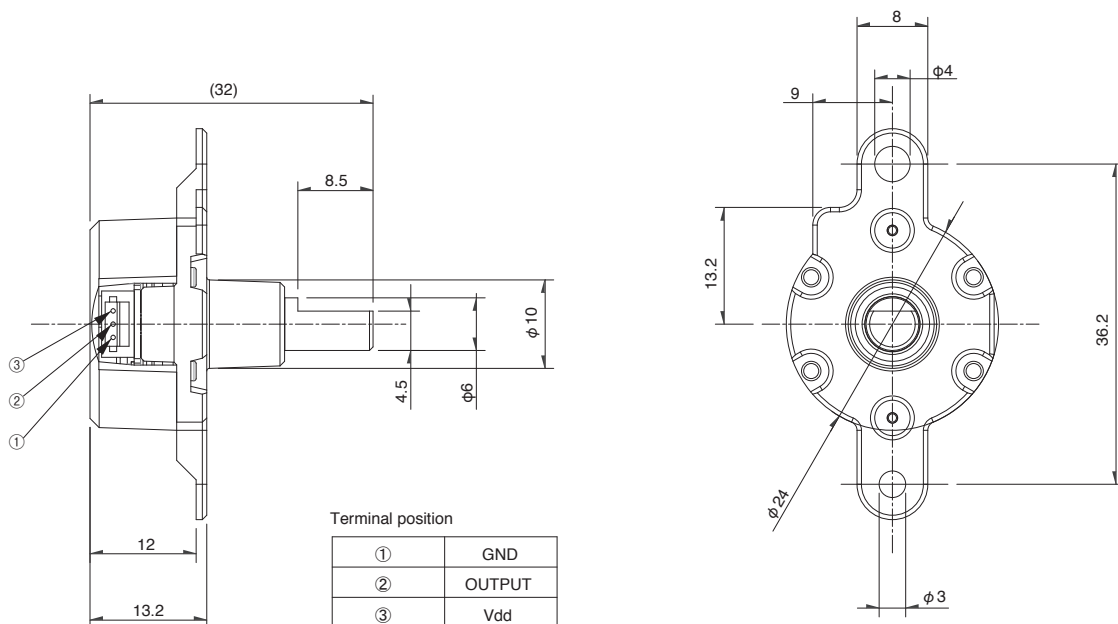
Tray

| Number of packages (pcs.) | | Export package measurements (mm) |
|---------------------------|------------------------|----------------------------------|
| 1 case /Japan | 1 case /export packing | |
| 720 | 720 | 540×360×250 |

Dimensions

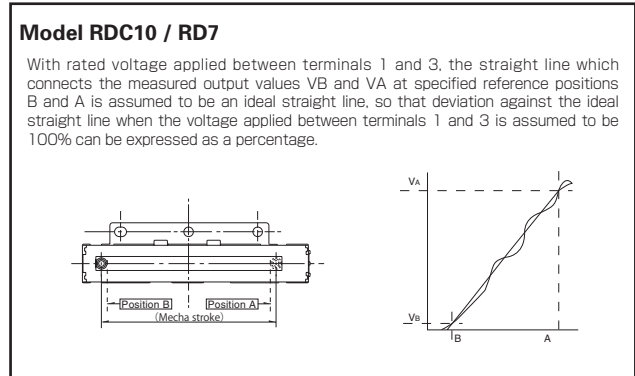
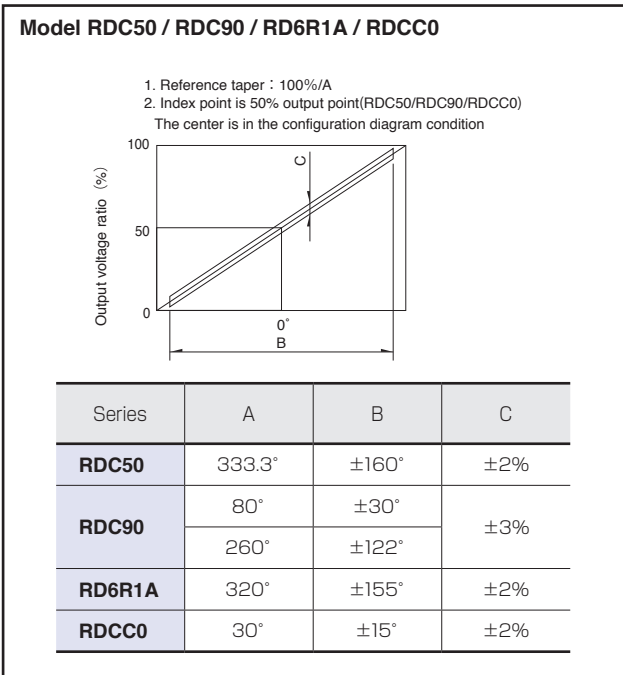
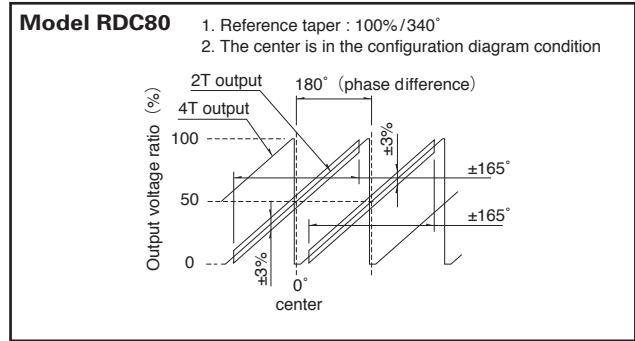
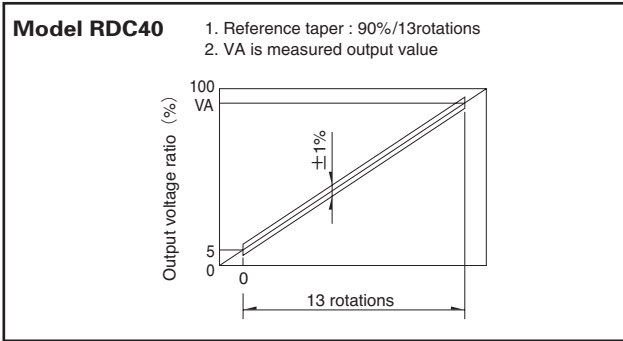
Unit:mm

Style



Refer to P.477 for product specifications.

Method for Regulating the Linearity



Resistive Position Sensors / Measurement and Test Methods

Resistive Position Sensor

[Total Resistance]

The total resistance, with the shaft (lever) placed at the end of terminal 1 or 3, shall be determined by measuring the resistance between the resistor terminals 1 and 3 unless otherwise specified.

[Rating Voltage]













The rating voltage corresponding to the rated power shall be determined by the following equation. When the resulting rated voltage exceeds the maximum operating voltage of a specific resistor, the maximum operating voltage shall be taken as the rated voltage.

$$E = \sqrt{P \cdot R}$$

E : Rated voltage (V)
P : Rated power (W)
R : Total nominal resistance (Ω)

Resistive Position Sensors

List of Varieties

| Type | Rotary Type | | | | | Magnetic Rotary Type | |
|--------------------------------|---|---|---|--|---|--|---------------------------|
| Series | RDC40 | RDC50 | RDC90 | RDC80 | RD6R1A | RDCC0 | |
| Photo |  |  |  |  |  |  NEW | |
| Direction of lever | Horizontal | Vertical Horizontal | Vertical | | | | |
| Effective electrical angle (°) | 5,400 (15 rotations) | 333.3 | 80,260 | 340 (1-phase) 360 (2-phase) | 320 | 30 | |
| Linearity guarantee range (°) | 4,680 (13 rotations) | 320 | 60,244 | 330 (1-phase) 360 (2-phase) | 310 | ±15 | |
| Travel | — | — | — | — | — | — | |
| Operating temperature range | −30°C to +80°C | −40°C to +120°C | | | −40°C to +85°C | 0°C to +50°C | |
| Operating life | 100,000 cycles | 1,000,000 cycles | 10,000,000 cycles | 100,000 cycles | 500,000 cycles | 10,000,000 cycles | |
| Available for automotive use | ● | ● | ● | ● | ● | — | |
| Life cycle (availability) |  |  |  |  |  |  | |
| Mechanical performance | Operating force | — | — | — | — | — | |
| | Rotational torque | 1.96mN·m max. | 2mN·m max. | | 10mN·m max. | 100mN·m | 5mN·m max. |
| Electrical performance | Total resistance tolerance | ±30% | | | | ±20% | — |
| | Linearity (%) | ±1 | ±2 | ±3 | | ±2 (320°) | ±2 |
| | Rated voltage (V DC) | 5 | | | | | |
| Environmental performance | Cold | −30°C 240h | −40°C 168h | | | −40°C 240h | |
| | Dry heat | 80°C 240h | 120°C 168h | | | 85°C 168h | 85°C 240h |
| | Damp heat | 60°C, 90 to 95%RH 240h | 60°C, 90 to 95%RH 96h | | | 80°C, 90 to 95%RH 96h | 60°C, 90 to 95%RH 240h |
| Terminal style | Connector | Insertion / Reflow | Reflow | | Connector | | |
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| | |
|---|-----|
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Note

- Indicates applicability to all products in the series.

Reference for Manual Soldering

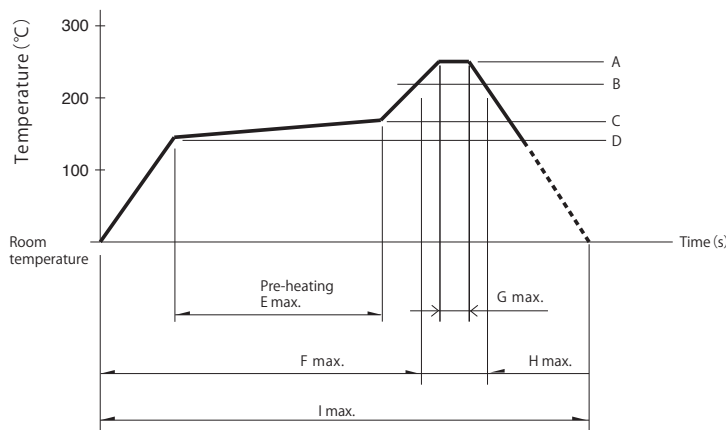
| Series | Tip temperature | Soldering time |
|----------------------------|-----------------|----------------------------------|
| RDC50, RDC90, RDC80 | 350±5°C | 3 ⁺¹ / ₀ s |
| RDC10, RD7 | 350°C max. | 3s max. |

Reference for Dip Soldering

| Series | Preheating | | Dip soldering | | No. of solders |
|-----------------------|-------------------------------|--------------|-----------------------|----------------|----------------|
| | Soldering surface temperature | Heating time | Soldering temperature | Soldering time | |
| RDC501, RDC502 | 100 to 150°C | 1minute max. | 260±5°C | 10±1s | 1 time |
| RD7 | 100°C max. | 1minute max. | 260°C max. | 5s max. | 1 time |

Example of Reflow Soldering Condition

1. Cleaning should not be attempted.
2. Type of solder to be used Use cream solder that contains 10 to 15 %wt flux.
3. Number of solder applications - apply solder only once
4. Recommended reflow conditions



| Series | A | B | C | D | E | F | G | H | I | No. of reflows |
|--------------------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|----------------|
| RDC503 RDC506 | 250°C | 230°C | 180°C | 150°C | 2min. | — | 5s | 40s | 4min. | 1 time |
| RDC90 | 255°C | 230°C | — | — | — | 2min. | 10s | 1min. | 4min. | 1 time |
| RDC80 | 250°C | — | 180°C | 150°C | 90±30s | — | 10±1s | — | — | 1 time |

Notes

1. When using an infrared reflow oven, solder may not always be applied as intended. Be sure to use a hot air reflow oven or a type that uses infrared rays in combination with hot air.
2. The temperatures given above are the maximum temperatures at the terminals of the sensor when employing a hot air reflow method. The temperature of the PC board and the surface temperature of the sensor may vary greatly depending on the PC board material, its size and thickness. Ensure that the surface temperature of the sensor does not rise to 250°C or greater.
3. Conditions vary to some extent depending on the type of reflow bath used. Be sure to give due consideration to this prior to use.