

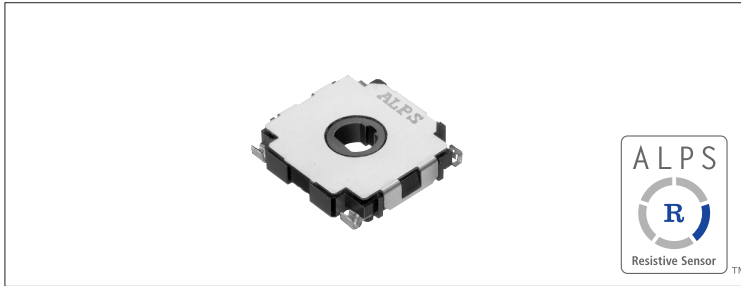
# Resistive Sensor Rotary Type (360° Rotation)

RDC80 Series

SENSORING™



Hollow-shaft type that enables output covering the whole 360-degree angle due to adoption of 2-phase output.



Magnetic Sensors

Piezo Sensors

Capacitive Sensor

Resistive Sensors

## Typical Specifications

Items	Specifications
Operating life	100,000cycles
Total resistance	10kΩ
Operating temperature range	-40°C to +120°C

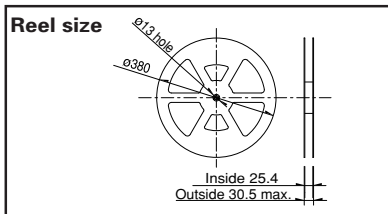
## Product list

Resistance taper (1-phase)	Linearity	Minimum order unit (pcs.)	Model No.
B (linear) 100%/340°	±3%	1,600	RDC803001A

## Packing Specifications

### Taping

Unit:mm



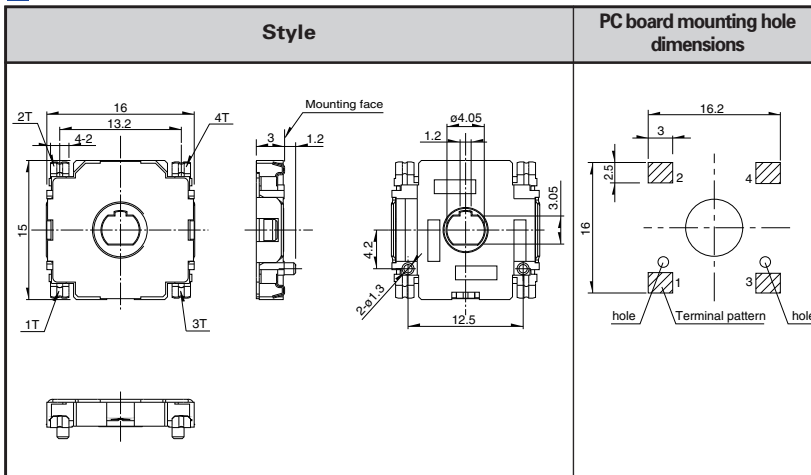
Number of packages (pcs.)			Tape width (mm)	Export package measurements (mm)
1 reel	1 case /Japan	1 case /export packing		
800	1,600	1,600	24	401 × 401 × 110

## Notes

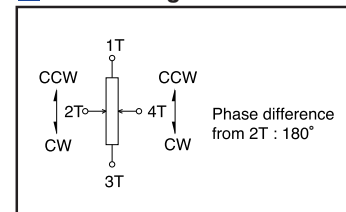
1. Additional product specifications in response to those not included in the above recommended products are also available.
2. Please place purchase orders per minimum order unit N (integer).

## Dimensions

Unit:mm



## Circuit Diagram



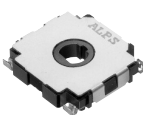

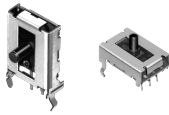


Automotive Use

Refer to P.521 for product specifications.  
Refer to P.522 for soldering conditions.

**ALPS**

## Index for Functions

Type		Rotary Type			Linear Type	
Series		RDC40	RDC50	RDC80	RDC10	※RD7
Photo						
Travel (mm)		_____			14mm (RDC1014) 22mm (RDC1022) 32mm (RDC1032) 47mm (RDC1047)	8mm (RD708) 9mm (RD709) 12mm (RD712)
Mounting method		_____				Vertical   Horizontal
Effective variable angle (°)		4680 (13 rotations)	320	330 (1-phase) 360 (2-phase)	_____	
Soldering	Manual soldering	_____				
	Dip soldering	_____	260°C, 4±1s	_____	260°C, 4±1s	
	Re-flow soldering	_____	Please see P.522			_____
Operating temperature range		-30°C to +80°C	-40°C to +120°C		-30°C to +85°C	-40°C to +105°C
Automotive use		●	●	●	●	●
Mechanical performance	Operating force	_____			0.25N max.	2N max.
	Rotational torque	2mN·m max.		10mN·m max.	_____	
Electrical performance	Total resistance tolerance	±30%				±20%
	Linearity (%)	±1	±2	±3	±0.5	±1
	Rated Voltage (VDC)	5				12
Environmental test	Cold	-30±3°C for 240h	-40±3°C for 168h		-40±3°C for 240h	-40±3°C for 96h
	Dry heat	80±2°C for 240h	120±3°C for 168h		90±2°C for 240h	105±2°C for 96h
	Damp heat	60±2°C, 90 to 95%RH for 240h	60±2°C, 90 to 95%RH for 96h		60±2°C, 90 to 95%RH for 240h	40±2°C, 90 to 95%RH for 96h
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Magnetic Sensors

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Capacitive Sensor

Resistive Sensors

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**Note**

1. ※The RD7 series are used to detect vehicle headlight angles.
2. ●marks in "Available for automotive use" indicate that all of the series products can work at the operating temperature range from -40°C to +85°C.

## Product Specifications

### Method for Regulating the Linearity

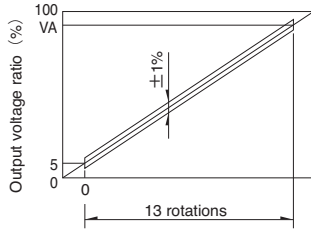
Magnetic Sensors

Piezo Sensors

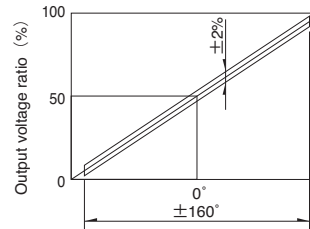
Capacitive Sensor

**Resistive Sensors**

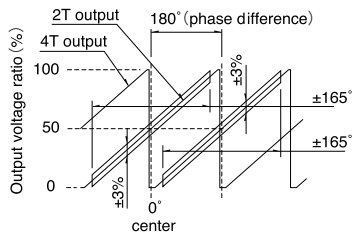
- Model RDC40**
1. Reference taper : 90%/13rotations
  2. VA is measured output value



- Model RDC50**
1. Reference taper : 100%/333.3°
  2. Index point is 50% output point

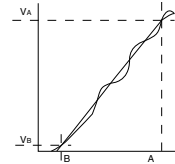
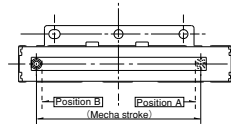


- Model RDC80**
1. Reference taper : 100%/340°
  2. The center is in the configuration diagram condition



**Model RDC10/RD7**

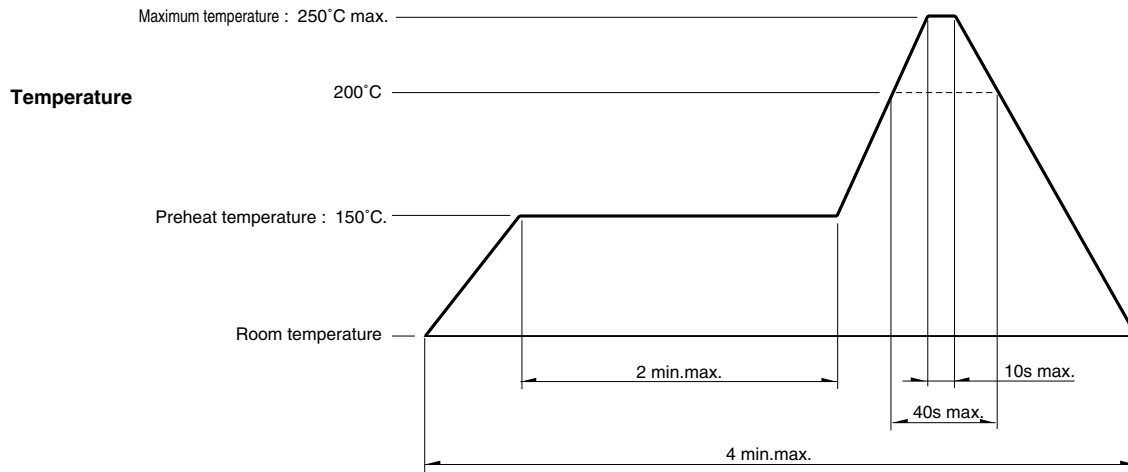
With rated voltage applied between terminals 1 and 3, the straight line which connects the measured output values VB and VA at specified reference positions B and A is assumed to be an ideal straight line, so that deviation against the ideal straight line when the voltage applied between terminals 1 and 3 is assumed to be 100% can be expressed as a percentage.



## Soldering Conditions

### Soldering Conditions

#### 1. Recommended reflow conditions



Magnetic  
Sensors

Piezo  
Sensors

Capacitive  
Sensor

Resistive  
Sensors

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

### 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 potentiometer when employing a hot air reflow method. The temperature of the PC board and the surface temperature of the potentiometer may vary greatly depending on the PC board material, its size and thickness. Ensure that the surface temperature of the potentiometer 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.

## Measurement and Test Methods

### Analog Output Contact Type 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)