

11mm Size Metal Shaft Low-profile Potentiometer

RK117 Series

3 types available: without switch, with 0.5mm travel or 1.5mm travel push-on switch.

Rotary Potentiometers

Slide Potentiometers

Trimmer Potentiometers

Multi Control Devices

Position Sensors



Car Use

Features

- Low-profile (only 7.55mm in height) with a 1.5mm travel push-on switch.
- Rear mounting configuration permits direct mounting on the front side of a PC board.
- Without detent, with center detent, with 41 detents are available.

Applications

- Sound volume, tone and balance controls for car audio systems and other audio players
- Controls for accessories including dimmers and wipers in vehicle cabins
- Level controls for communication devices including transceivers
- Controls for home appliances

Metal Shaft

Insulated Shaft

Knob Operating

Typical Specifications

| Items | Specifications |
|-----------------------------|---------------------|
| Total resistance tolerance | ±20% |
| Maximum operating voltage | 50V AC |
| Total rotational angle | 300 ^{+10°} |
| Rotational torque | 2 to 25 mN·m |
| Operating life | 15,000 cycles |
| Operating temperature range | -10°C to +70°C |

Recommended Products List

Single-shaft without switch type

| Number of resistor elements | Mounting direction | Products No. | Shaft type | Length of the shaft (mm) | Center detent | Total resistance (kΩ) | Resistance taper | Minimum packing unit (pcs.) | Drawing No. |
|-----------------------------|--------------------|--------------|------------|--------------------------|---------------|-----------------------|------------------|-----------------------------|-------------|
| Single-unit | Vertical type | RK117111000N | Flat | 15 | Without | 10 | 1B | 100 | 1 |
| | | With | | | | | | | |
| | | RK1171110W0D | | | Without | 20 | 15A | | |
| | | RK1171110W0L | | | With | 50 | | | |
| | | RK1171110W03 | | 20 | Without | 10 | 1B | | 2 |
| | | RK117111000A | | | | 20 | | | |

Recommended Products List

Single-shaft push-on (0.5mm stroke) switch type

| Number of resistor elements | Mounting direction | Products No. | Shaft type | Length of the shaft (mm) | Center detent | Total resistance (kΩ) | Resistance taper | Minimum packing unit (pcs.) | Drawing No. |
|-----------------------------|--------------------|--------------|------------|--------------------------|---------------|-----------------------|------------------|-----------------------------|-------------|
| Single-unit | Vertical type | RK117111400C | Flat | 20 | Without | 10 | 1B | 100 | 3 |
| | | RK1171114D01 | | | With | | | | |

Single-shaft push-on (1.5mm stroke) switch type

| Number of resistor elements | Mounting direction | Products No. | Shaft type | Length of the shaft (mm) | Number of detent | Total resistance (kΩ) | Resistance taper | Minimum packing unit (pcs.) | Drawing No. |
|-----------------------------|--------------------|--------------|------------|--------------------------|------------------|-----------------------|------------------|-----------------------------|-------------|
| Single-unit | Vertical type | RK1171114V02 | Flat | 15 | 41 | 50 | 1B | 100 | 4 |

Note

Additional products other than the above recommended products are available. For inquiries, contact our sales department.

Product Specifications

In addition to the recommended products, the following specifications can also be accommodated.

Total Resistance Variety

| | | | |
|-----------------------|----|----|----|
| Total resistance (kΩ) | 10 | 20 | 50 |
|-----------------------|----|----|----|

Resistance Taper

| | | | |
|------------------|-----|----|----|
| Resistance taper | 15A | 1B | 3B |
|------------------|-----|----|----|

Detent and Attached switch

| Variety | Items | Detent | | Attached switches travel |
|---------------------------|---------|---------|--------|--------------------------|
| | | Without | Center | 41 |
| Single-shaft, Single-unit | Without | Center | 41 | 0.5, 1.5mm |

Dimensions of Shaft

Flat type

Unit : mm

Shaft shown in full CCW position.

| L ₁ | ※L _B | l |
|----------------|-----------------|----|
| (15) | 7 | 5 |
| (20) | 7 | 10 |
| (25) | 7 | 12 |

Note

※LB is only available in 7mm, and does not support M7 (with screws).

Specification for Switch

Mechanical Characteristics

| Switch type | | Pole-position | Rating | Changeover torque (Operating force) | Changeover angle (travel) (mm) |
|----------------|--------|---------------|-----------|-------------------------------------|--------------------------------|
| Momentary push | 5R4411 | SPST | 3A 16V DC | 6±3N | 0.5 |
| | 5R4511 | | | 5±2N | 1.5 |

Electrical Characteristics

| Model | Contact resistance | Insulation resistance | Voltage proof |
|----------------|---|---|--------------------------|
| 5R4411, 5R4511 | 100mΩ max. Measured by a 1A 5V DC voltage drop method. | 100MΩ min. Measured with a 250V DC megger. | 300V AC 1 minute min. |

Durability

| | |
|----------------------------------|---|
| Operating life under load | The switch under a rated resistive load shall be subjected to a total of 10,000 cycles of operation at a speed of 600 to 1,000 cycles per hour. The contact resistance after testing should not exceed 200mΩ. |
|----------------------------------|---|

Note

The operating current should be 10mA or greater.

Orders other than recommended products

Specify orders for varieties that are not listed in the Recommended Product List, referring to the following example.

Sample part number

R K 1 1 7 1 1 1 0 - **F 1 5** - **C 0** - **B 1 0 3**

Switch

| Code | Switch |
|------|------------------------------------|
| 0 | Without switch |
| 4 | With push-on switch (0.5mm travel) |

Length of the shaft (L1) (mm)

| Code | Length of the shaft | Code | Length of the shaft |
|------|---------------------|------|---------------------|
| 15 | 15 | 25 | 25 |
| 20 | 20 | | |

Detent

| Code | Detent | Code | Detent |
|------|---------|------|--------|
| C0 | Without | 41 | 41 |
| C1 | Center | | |

Resistance taper

| Code | Resistance taper |
|------|------------------|
| A | 15A |
| B | 1B |
| V | 3B |

Total resistance

| Code | Total resistance (kΩ) | Code | Total resistance (kΩ) |
|------|-----------------------|------|-----------------------|
| 103 | 10 | 503 | 50 |
| 203 | 20 | | |

Notes

- Shows the specification recommended by us.
- Please specify if you need a 1.5mm travel push-on switch.

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Dimensions

Unit : mm

| No. | Model | Style | PC board mounting hole dimensions (Viewed from mounting side) |
|-----|--|--|---|
| 1 | Single-shaft, single-unit RK1171110 | <p>Mounting surface</p> <p>Shaft shown in full CCW position</p> | |
| 2 | Single-shaft, single-unit RK1171110 | <p>Mounting surface</p> <p>Shaft shown in full CCW position</p> | |
| 3 | Single-shaft, single unit with push-on switch travel 0.5mm RK1171114-5R4411 | <p>Mounting surface</p> <p>Switch travel</p> <p>Shaft shown in full CCW position</p> | |
| 4 | Single-shaft, single unit with push-on switch travel 1.5mm RK1171114-5R4511 | <p>Mounting surface</p> <p>Switch travel</p> <p>Shaft shown in full CCW position</p> | |

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Products Specifications

| Items | | Model | RK09L | RK097 RK098 | RK117 | RK16 |
|---|---|--|------------------------------------|----------------|--------------------|--------------------------------------|
| Operating temperature range | | -10°C to +70°C | | | | |
| Electrical performance | Total resistance tolerance | ±20% | | | | |
| | Rated power | 0.05W | | | | |
| | Maximum operating voltage | 50V AC | | | 150V AC | |
| | Residual resistance | $R \leq 10k\Omega$ 20Ω max. $10k\Omega < R \leq 50k\Omega$ 30Ω max. $50k\Omega < R$ Nominal total resistance of 0.1% or less | | | | |
| | Maximum attenuation (Volume control) | $5k\Omega \leq R < 10k\Omega$ 70dB min. $10k\Omega \leq R < 50k\Omega$ 80dB min. $50k\Omega \leq R < 100k\Omega$ 90dB min. $100k\Omega \leq R$ 100dB min. | | | | |
| | Insulation resistance | 100MΩ min. 250V DC | | | 100MΩ min. 500V DC | |
| | Voltage proof | 1 minute 300V AC | | | 1 minute 500V AC | |
| Mechanical performance | Total rotational angle | RK09L $300 \pm 5^\circ$ RK097 $300 \pm 5^\circ$ (Axis movement type is $300 \pm 10^\circ$) RK098 $300 \pm 5^\circ$ | | | $300 \pm 10^\circ$ | $300 \pm 5^\circ$ |
| | Rotational torque | 2 to 25mN·m | | | | |
| | Stopper strength | 0.5N·m (For shaft movable type, 0.4N·m) | | | | 0.9N·m (For dual-shaft type, 0.6N·m) |
| | Push-pull strength | 80N max. | | 100N max. | | |
| | Vibration | 10 to 55 to 10Hz / min., the amplitude is 1.5mm for all the frequencies, in the 3 direction of X, Y and Z and for 2 hours respectively | | | | |
| | Solderability | 230±5°C, 3±0.5s | | | | |
| | Solder heat resistance | Manual soldering | 350°C or less and within 3 seconds | | | |
| Dip soldering (Dip available products) | | 260±5°C 4±1s | | | | |
| Endurance | Operating life | 15,000 cycles | | | | |
| Environmental test | Cold | -10°C for 96h | | | | |
| | Long-term heat resistance | +70°C for 96h | | | | |
| | Moisture resistance | +40±2°C, 90 to 95%RH for 96h | | | | |

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