

Rotary Motor-driven Potentiometer

Available in a variety of models, for remote controls for various equipment.

Rotary Potentiometers

Slide Potentiometers

Trimmer Potentiometers

Multi Control Devices

Position Sensors



Metal Shaft

Insulated Shaft

Knob Operating

Features

- Remote-controllable potentiometers for various audio products.
- Supports motor driving and manual operation.
- The small build-in DC motor enables axis rotation with a high-speed follow-up of 300° per second (RK25T).
- Good manual operation feel (RK25T).
- For servo track+touch sensitivity applications, an audio track combination is also available (RK25T).

Applications

- Volume control in amplifiers, CD players, karaoke, etc.
- Various controls for professional audio equipment such as mixing console and guitar amplifiers (RK25T)

Typical Specifications

| Items | Specifications | | |
|---|--|--------|--------------------------------|
| | RK16 | RK27 | RK25 |
| Total resistance tolerance | ±20% | | |
| Maximum operating voltage | 50V AC | 30V AC | 5V DC |
| Total rotational angle | 300±5° | | |
| Rotational torque | 15 to 45 mN·m | | 0.5 to 7.5 mN·m |
| Operating life | 15,000 cycles | | 100,000 cycles |
| Operating temperature range | -10°C to +70°C | | -10°C to +60°C |
| Motor voltage | 4 to 6 (Standard : 4.5) V DC | | 4.5 to 5.5 (Standard : 5) V DC |
| Potentiometer rotational speed (sec/300°) | 12±3 (4.5V DC) | | 1max. (5V DC) |
| Maximum operating current | At rotation : 100 mA At end slip : 150 mA | | 2,000 mA |

For attached parts, see P.50

Recommended Products List

| Type | Model | Number of resistor elements | Products No. | Shaft type | Length of the shaft (mm) | Total resistance (kΩ) | Resistance taper | Illumination function | Motor print terminal | Minimum packing unit (pcs.) | Drawing No. | |
|-----------|------------|-----------------------------|--------------|------------|--------------------------|-----------------------|------------------|-----------------------|----------------------|-----------------------------|-------------|---|
| 16mm size | RK1681□MG0 | Dual-unit | RK16812MG099 | Flat | 25 | 100 | 3B | Without | With | 200 | 1 | |
| | | Quad-unit | RK16814MG02R | | | 20 | 15A | | Without | | Without | 2 |
| | | 6 ganged-unit | RK16816MGA04 | | | 100 | 3B | | With | | 3 | |
| | RK1681□MGL | Dual-unit | RK16812MGL2K | | | 50 | | With (Red) | Without | | 4 | |
| 25mm size | RK25T | Single-unit | RK25T11M0001 | | 20 | 10 | 1B | Without | With | 210 | 5 | |
| 27mm size | RK27112MC0 | Dual-unit | RK27112MC030 | | 25 | 100 | 15A | | Without | Without | 150 | 6 |

Product Varieties

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

Basic Motor Specifications

| Type | Number of unit | Model | Motor type | | Motor voltage | Potentiometer rotational speed | Max. operating current |
|---|-----------------------------|------------|---------------|------------------------|---------------------------|--------------------------------|--|
| | | | Sealed case | Motor printed terminal | | | |
| 16mm size | Single-shaft, dual-unit | RK16812MG | Available | Available | 4 to 6V DC (Standard:4.5) | 12±3sec/300° (4.5V DC) | At rotation 100mA At end slip 150mA (4.5V DC) |
| | Single-shaft, quad.-unit | RK16814MG | | | | | |
| | Single-shaft, 5-ganged-unit | RK16815MG | | | | | |
| | Single-shaft, 6-ganged-unit | RK16816MG | | | | | |
| 16mm size illuminated, through-shaft type | Single-shaft, dual-unit | RK16812MGL | | | | | |
| | Single-shaft, quad.-unit | RK16814MGL | | | | | |
| | Single-shaft, 5-ganged-unit | RK16815MGL | | | | | |
| 27mm size | Single-shaft, dual-unit | RK27112MC | | | | | |
| | Single-shaft, quad.-unit | RK27114MC | | | | | |
| 25mm size | Single-shaft, single-unit | RK25T11M0 | Not available | With | 5V DC | 1sec/300° | 2000mA |

Total Resistance Variety

| | | | | |
|-----------------------|----|----|----|-----|
| Total resistance (kΩ) | 10 | 20 | 50 | 100 |
|-----------------------|----|----|----|-----|

Resistance Taper

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

For other detailed specifications, see P.48, 49
For resistance taper, see P.224

Rotary Motor-driven Potentiometer

Dimensions

Unit:mm

| No. | Model | Style | PC board mounting hole dimensions (Viewed from mounting side) |
|-----|---|---|---|
| 1 | 16mm size Single-shaft, dual-unit RK16812MG | <p>Technical drawing showing side and front views of the RK16812MG potentiometer. Dimensions include: (44.9), (18.1), 23.25, 7, 12, 25, 13.3, 18.7, 25, 0.3, 9, 12.5, 13.2, 4, 0.8, 2-ϕ2.65, ϕ3, 60°, 4.5, ϕ6, M9X0.75, 2-ϕ2.35, R1, R2, C1, ϕ25 max.</p> <p>Shaft shown in full CCW position</p> | <p>PC board mounting hole dimensions (Viewed from mounting side) for RK16812MG. Features include: 2-2.6X1.2 square holes, Mounting surface, 19.7, 15.5, 7.5, 2.5, 7.5, 12.5, 17.5, 17, 16.5, COM, 2-ϕ1.2 holes, 8-ϕ1 holes, 2-dummy. Pin connections: R1 ① ② ③, R2 1 2 3.</p> |
| 2 | 16mm size Single-shaft, quad-unit RK16814MG | <p>Technical drawing showing side and front views of the RK16814MG potentiometer. Dimensions include: (49.25), (18.1), 27.6, 7, 12, 25, 13.3, 18.7, 25, 0.3, 9, 12.5, 13.2, 4, 0.8, 2-ϕ2.65, ϕ3, 60°, 4.5, ϕ6, M9X0.75, 2-ϕ2.35, R3 R1, R4 R2, C1, ϕ25 max.</p> <p>Shaft shown in full CCW position</p> | <p>PC board mounting hole dimensions (Viewed from mounting side) for RK16814MG. Features include: 2-2.6X1.2 square holes, Mounting surface, 12.3, 7.5, 7.5, 2.5, 7.5, 12.5, 17.5, 16.5, COM, 4-dummy, 16-ϕ1 holes. Pin connections: R1 R3 ① ② ③, R2 R4 1 2 3.</p> |
| 3 | 16mm size Single-shaft, triple-unit RK16816MG | <p>Technical drawing showing side and front views of the RK16816MG potentiometer. Dimensions include: (53.6), (18.1), 31.95, 7, 12, 25, 13.3, 18.7, 25, 0.3, 9, 12.5, 13.2, 4, 0.8, 2-ϕ2.65, ϕ3, 60°, 4.5, ϕ6, M9X0.75, 2-ϕ2.35, R5 R3 R1, R6 R4 R2, C1, ϕ25 max.</p> <p>Shaft shown in full CCW position</p> | <p>PC board mounting hole dimensions (Viewed from mounting side) for RK16816MG. Features include: 2-2.6X1.2 square holes, Mounting surface, 19.7, 12.3, 7.5, 4.35, 7.5, 2.5, 7.5, 12.5, 17.5, 17, 16.5, COM, 2-ϕ1.2 holes, 6-dummy, 24-ϕ1 holes. Pin connections: R1 R3 R5 ① ② ③, R2 R4 R6 1 2 3.</p> |
| 4 | 16mm size Single-shaft, dual-unit Illuminated, through-shaft type RK16812MGL | <p>Technical drawing showing side and front views of the RK16812MGL illuminated potentiometer. Dimensions include: (44.9), (18.1), 23.25, 7, 12, 25, 13.3, 18.7, 25, 0.3, 9, 12.5, 13.2, 4, 0.8, 2-ϕ2.65, ϕ3, 60°, 4.5, ϕ6, M9X0.75, 2-ϕ2.35, R1, R2, LED, C1, ϕ25 max.</p> <p>Shaft shown in full CCW position</p> | <p>PC board mounting hole dimensions (Viewed from mounting side) for RK16812MGL. Features include: 2-2.6X1.2 square holes, Mounting surface, 15.5, 4.2, 3.3, 2.5, 7.5, 12.5, 17.5, 16.5, COM, 10-ϕ1 holes, 2-dummy. Pin connections: R1 ① ② ③, R2 1 2 3.</p> |

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Dimensions

Unit:mm

| No. | Model | Style | PC board mounting hole dimensions (Viewed from mounting side) |
|-----|---|-------|---|
| 5 | 25mm size Single-shaft, single-unit RK25T11M0 | | |
| 6 | 27mm size Single-shaft, dual-unit RK27112MC | | |

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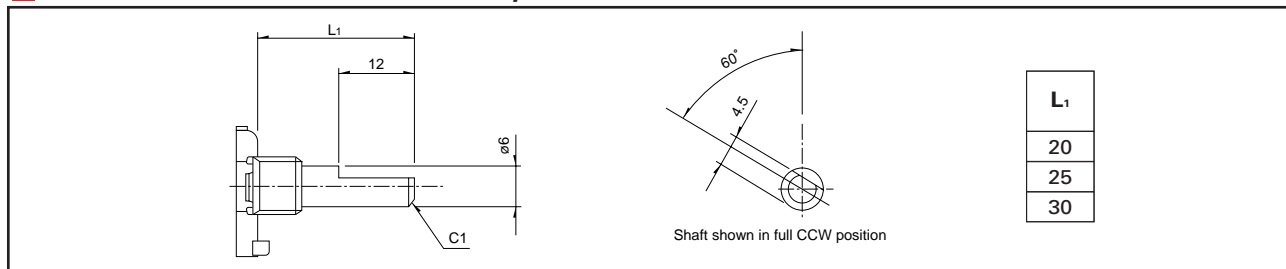
Metal Shaft

Insulated Shaft

Knob Operating

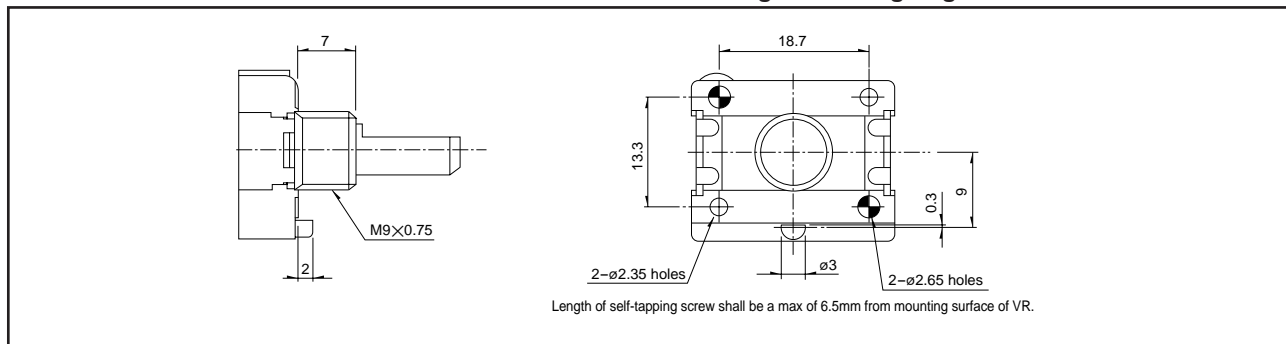
16mm Size (RK168 Series) Shaft Variety

Unit:mm



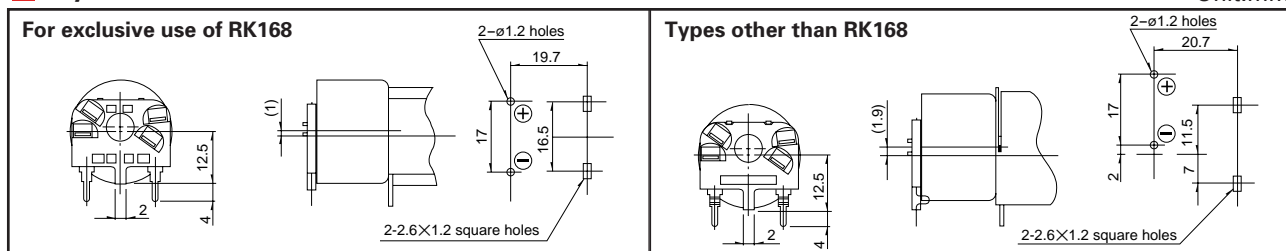
16mm Size (RK168 Series) Standard Dimensions of Bushing and Fixing Lug

Unit:mm



Style of Printed Terminal for Motor

Unit:mm



Products Varieties

| Items | | Model | | RK097 RK098 | RK117 | RK163 RK168 |
|------------------------------------|---|--|--------------------|--|------------------------------------|----------------|
| | | RK09L | | | | |
| Operating temperature range | | -10°C to +70°C | | | | |
| Electrical performance | Total resistance tolerance | ±20% | | | | |
| | Rated power | 0.05W | | | | |
| | Maximum operating voltage | 50V AC | | | RK163 :150V AC RK168 : 50V 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 | 300±5° | 300±5° (Shaft movement type is 300 ^{+10°} _{-5°}) | 300 ^{+10°} _{-5°} | 300±5° |
| Rotational torque | | 2 to 25mN·m | | | RK168 : 15 to 45mN·m | |
| Stopper strength | | 0.5N·m (For shaft movable type,0.4N·m) | | | 0.9N·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 | | | | |
| Solder heat resistance | | Manual soldering | 350°C max. 3s max. | | | |
| | 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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Products Specifications

| Items | | Model | | RK20B | | RK25T | | RK271 | | RK501 | |
|---|---|-------------------------|--|--------------------|--|-------|----------------------------------|-------|------------|----------------|--|
| | | | | | | | | | | | |
| Operating temperature range | | -10°C to +105°C | | -10°C to +60°C | | | | | | -10°C to +70°C | |
| Electrical performance | Total resistance tolerance | | ±20% | | | | | | | | |
| | Rated power | | 0.06W | | 0.05W | | | | 0.1W | | |
| | Maximum operating voltage | | 20V DC | | 5V DC | | 30V AC | | 150V AC | | |
| | Residual resistance | | _____ | | $R \leq 10k\Omega$ 20Ω max. $10k\Omega < R \leq 50k\Omega$ 30Ω max. $50k\Omega < R$ 0.1% or less of nominal total resistance | | | | _____ | | |
| | 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. | | | | 120dB 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 | | 360° | | 300±5° | | 300±3° Motor-driven 300±5° | | 300±3° | | |
| | Rotational torque (mN·m) | | 20 to 80 | | 0.5 to 7.5 | | 5 to 35 Motor-driven 15 to 45 | | 13 to 43 | | |
| | Stopper strength (N·m) | | — | | 0.5 | | 0.9 | | 1.5 | | |
| | Push-pull strength | | 100N max. | | | | 150N 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 | | | | | | | | |
| | Solder heat resistance | Manual soldering | | 350°C max. 3s max. | | | | | | | |
| Dip soldering (Dip available products) | | 260±5°C 4±1s | | | | | | | | | |
| Endurance | Operating life | | 15,000 cycles | | 100,000 cycles | | 15,000 cycles | | | | |
| Environmental test | Cold | | -10°C for 96h | | | | | | | | |
| | Long-term heat resistance | | +105°C for 96h | | +70°C for 96h | | | | | | |
| | Moisture resistance | | +40±2°C, 90 to 95%RH for 96h | | | | | | | | |

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Attached Parts

These parts are attached to the following products.

Unit:mm

| Applicable products | Bearing screw diameter | Hexagonal nut | Flat washer |
|--|------------------------|---------------|-------------|
| RK09L RK168 RK097 | M9 | | |
| RK271 | M8 | | |
| RK097 RK098 RK163 | M7 | | |
| RK097 RK098 | M6 | | |

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