

RK168 Rotary Motor-driven Type

Remote controllable and available in a wide variety of products



Typical Specifications

| Items | Specifications |
|--|--|
| Total resistance tolerance | ±20% |
| Maximum operating voltage | 50V AC |
| Total rotational angle | 300° ±5° |
| Rotational torque | 10 to 40mN·m |
| Operating life | 15,000 cycles |
| Operating temperature range | -10°C to +70°C |
| Motor voltage | 4 to 6V DC (Stander: 4.5V DC) |
| Potentiometer rotational speed (sec./300°) | 12±3 (4.5V DC) |
| Maximum operating current | At rotation: 100mA / At end slip: 150mA |

Product Line

| Number of resistor elements | Shaft type | Length of the shaft L ₁ (mm) | Total resistance (kΩ) | Resistance taper | Motor print terminal | Minimum order unit (pcs.) | | Products No. | Drawing No. |
|-----------------------------|------------|---|-----------------------|------------------|----------------------|---------------------------|--------|---------------------|-------------|
| | | | | | | Japan | Export | | |
| Dual-unit | Flat | 25 | 100 | 3B | With | 200 | 200 | RK16812MG099 | 1 |
| | | | 10 | | Without | | | RK16812MG09T | 2 |
| Quad-unit | | | 100 | 15A | | | | RK16814MGA0K | 3 |

Note

Other varieties are also available. Refer to "Other Specifications" (P.308, 309).

Packing Specifications

Tray

| Number of packages (pcs.) | | Export package measurements (mm) |
|---------------------------|------------------------|----------------------------------|
| 1 case /Japan | 1 case /export packing | |
| 200 | 200 | 527×368×215 |

Dimensions

Unit:mm

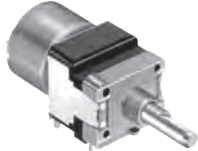
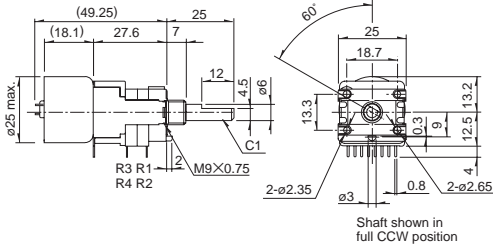
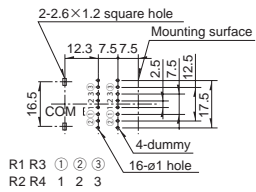
| No. | Photo | Style | PC board mounting hole dimensions (Viewed from mounting side) |
|-----|---|---|---|
| 1 | <p>16mm size Single-shaft, dual-unit RK16812MG</p> | <p>Shaft shown in full CCW position</p> | |
| 2 | <p>16mm size Single-shaft, dual-unit RK16812MG</p> | <p>Shaft shown in full CCW position</p> | |

Refer to P.308 for other specifications.
Refer to P.309 for attached parts.
Refer to P.310 for ordering products not listed.
Refer to P.311 for soldering conditions.

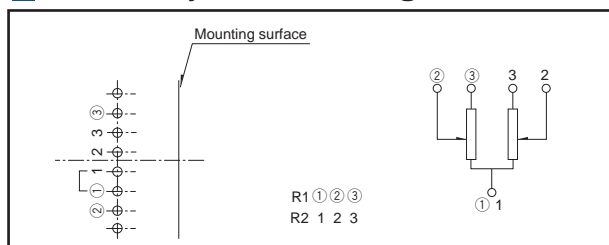
RK168 Rotary Motor-driven Type

Dimensions

Unit:mm

| No. | Photo | Style | PC board mounting hole dimensions (Viewed from mounting side) |
|-----|--|--|--|
| 3 |  <p>16mm size Single-shaft, quad.-unit RK16814MG</p> |  <p>Shaft shown in full CCW position</p> |  <p>2-2.6×1.2 square hole Mounting surface COM R1 R3 ① ② ③ R2 R4 1 2 3 4-dummy 16-φ1 hole</p> |

Terminal Layout / Circuit Diagram



Rotary Motor-driven Type / Other Specifications

In addition to the Product Line, we accommodate the following specifications. Combinations not included in the Product Line are treated as semi-standard products.

Basic Motor Specifications

| Number of unit | Model | Motor type | | Motor voltage | Potentiometer rotational speed | Max. operating current |
|-------------------------|-----------|-------------|------------------------|-----------------------------------|--------------------------------|---|
| | | Sealed case | Motor printed terminal | | | |
| Single-shaft, dual-unit | RK16812MG | Available | Available | 4 to 6V DC (Standard: 4.5V DC) | 12±3s/300° (4.5V DC) | At rotation 100mA At end slip 150mA (4.5V DC) |
| Single-shaft, quad-unit | RK16814MG | | | | | |

Total Resistance Variety

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

Resistance Taper

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

Rotary Potentiometers
Slide Potentiometers

Metal Shaft
Insulated Shaft

Knob Operating

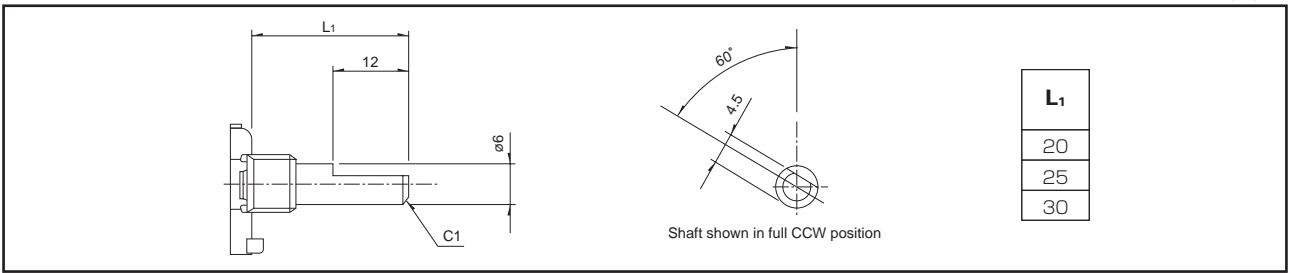
Through Shaft Type

Ring Type

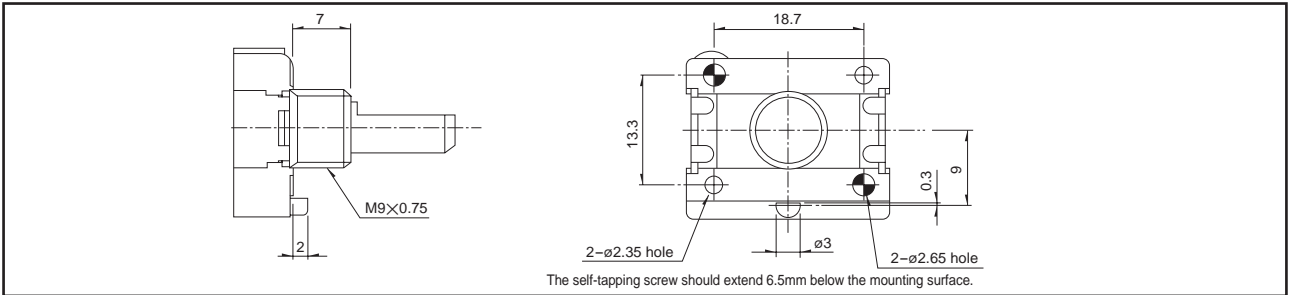
Rotary Motor-driven Type / Other Specifications

In addition to the Product Line, we accommodate the following specifications. Combinations not included in the Product Line are treated as semi-standard products.

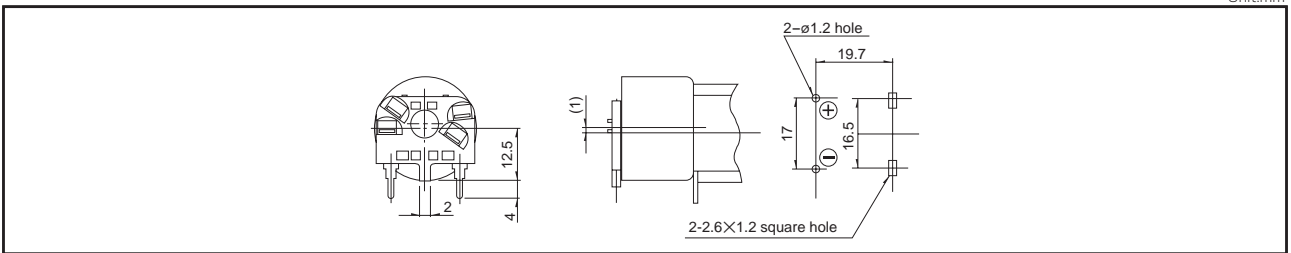
Shaft Variety



Standard Dimensions of Bushing and Fixing Lug



Style of Printed Terminal for Motor

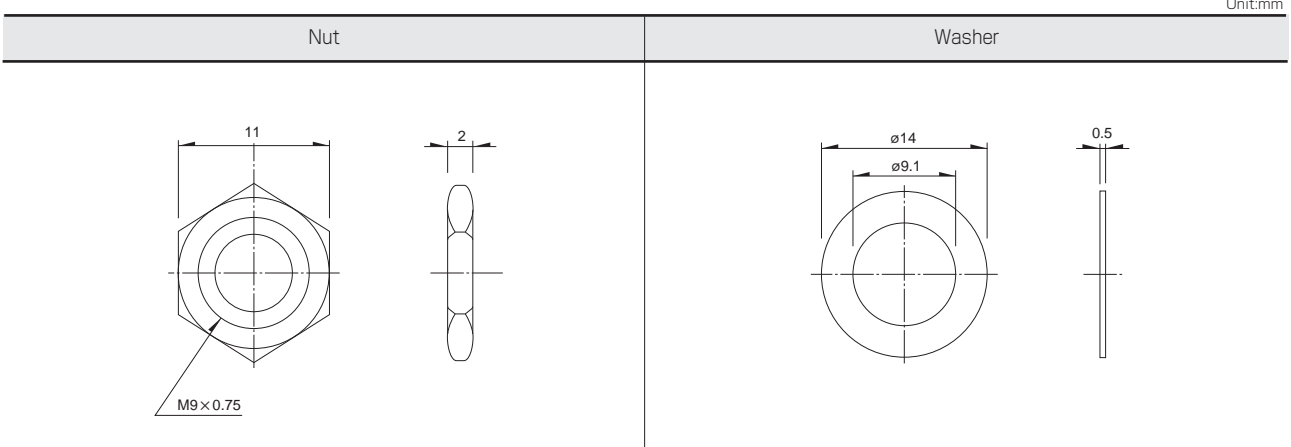


Note

Marked are specifications recommended by Alps Alpine.

Rotary Motor-driven Type / Attached Parts

The following parts are included with the product.



Rotary Motor-driven Type / Ordering Products Not Listed

In addition to the Product Line, we accommodate the following specifications. Combinations not included in the Product Line are treated as semi-standard products. Please refer to the notation example below.

Sample Part Number

R K 1 6 8 1 2 M G - **F 2 0** - **B 1 0 3** - **M 0**

Model type

| Code | Model type |
|------|-------------------------|
| 12 | Single-shaft, dual-unit |
| 14 | Single-shaft, quad-unit |

Shaft type

| Code | Shaft type |
|------|------------|
| F | Flat |

※ Flat shaft only

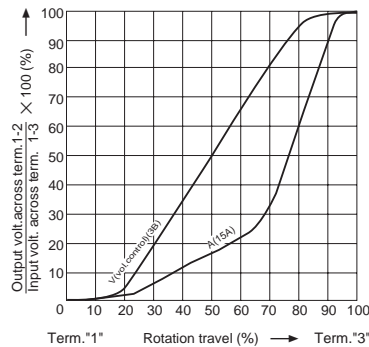
Length of the shaft L₁ (mm)

| Code | Length of the shaft |
|------|---------------------|
| 20 | 20 |
| 25 | 25 |
| 30 | 30 |

Resistance taper

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

※ 1B can be accommodated on request. Please inquire.



Total resistance

| Code | Total resistance (k Ω) |
|------|------------------------|
| 103 | 10 |
| 203 | 20 |
| 503 | 50 |
| 104 | 100 |

Printed terminal for motor

| Code | Printed terminal for motor |
|------|----------------------------|
| M0 | without |
| M1 | with |

Note

Marked are specifications recommended by Alps Alpine.

Rotary Potentiometers

Slide Potentiometers









Metal Shaft

Insulated Shaft

Knob Operating

Through Shaft Type

Ring Type

| Type | 16mm size | 27mm size | 50mm size | Rotary motor-driven | |
|------------------------------|---|--|---|---|---|
| Series | RK163 | RK271 | RK501 | RK168 | |
| | Single-shaft | | | | |
| Number of resistor elements | Single/dual | Single/dual/quad | Dual/quad | | |
| Photo |  |  |  |  | |
| Control part orientation | Horizontal | | | | |
| Fixing method of bushing | Bushing screw clamp | | | | |
| Operating temperature range | -10°C to +70°C | | | | |
| Operating life | 15,000 cycles | | | | |
| Available for automotive use | — | — | — | — | |
| Life cycle (availability) |  |  |  |  | |
| Electrical performance | Total resistance (kΩ) | 5, 10, 20, 50, 100, 200 | 5, 10, 20, 50, 100, 250 | 10, 20, 50, 100 | |
| | Resistance taper | 15A, 1B, 3B, 15C | 15A, 3B | | |
| | Rated Power | 0.1W 0.05W (15A) | 0.05W | 0.1W | 0.05W |
| | Residual resistance | R ≤ 10kΩ 20Ω max. 10kΩ < R ≤ 50kΩ 30Ω max. 50kΩ < R Nominal total resistance of 0.1% or less | R ≤ 10kΩ 20Ω max. 10kΩ < R ≤ 50kΩ 30Ω max. 50kΩ < R Nominal total resistance of 0.1% or less | — | — |
| | Maximum attenuation (Volume control) | 5kΩ ≤ R < 10kΩ 70dB min. 10kΩ ≤ R < 50kΩ 80dB min. 50kΩ ≤ R < 100kΩ 90dB min. 100kΩ ≤ R 100dB min. | 5kΩ ≤ R < 10kΩ 70dB min. 10kΩ ≤ R < 50kΩ 80dB min. 50kΩ ≤ R < 100kΩ 90dB min. 100kΩ ≤ R 100dB min. | 120dB min. | 5kΩ ≤ R < 10kΩ 70dB min. 10kΩ ≤ R < 50kΩ 80dB min. 50kΩ ≤ R < 100kΩ 90dB min. 100kΩ ≤ R 100dB min. |
| | Gang error applicable to Dual-unit parts for audio volume control purposes | -40dB to 0dB 3dB max. | -70dB to -60dB 3dB max. -60dB to 0dB 2dB max. | -100dB to 0dB 3dB max. ※ | -60dB to -40dB 5dB max. -40dB to 0dB 3dB max. |
| | Insulation resistance | 100MΩ min. 500V DC | | | 100MΩ min. 250V DC |
| | Voltage proof | 500V AC for 1 minute | | | 300V AC for 1 minute |
| | Center-taps | Without | | | |
| Mechanical performance | Detent | Without, Cente | Without, Center, 21, 31, 41 | Without | |
| | Stopper strength | 0.9 N·m | | 1.5 N·m 0.9 N·m | |
| | Push-pull strength | 100N max. | | 150N 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 for 2 hours respectively | | | |
| Shaft style | Serrated type. Flat type, Slotted type | Slotted type, Flat type | Slotted type | Flat type | |
| Terminal style | Insertion, Lead | Insertion | | | |
| Attached switch | — | | | | |
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| | |
|---|-----|
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| Potentiometers Measurement and Test Methods | 386 |
| Potentiometers Resistance Taper | 388 |

Note

○ Indicates applicability to some products in the series.

※ Gang error of 4-gang (quad) model: - 100dB to 0dB 3dB max. (applies only between R1 and R2 and between R3 and R4)

Reference for Manual Soldering

| Series | | Tip temperature | Soldering time | No. of solders |
|---------------------|-------------------------------|-----------------|--------------------------------|----------------|
| RK09L, RK097 | | 350°C max. | 3s max. | 1 time |
| RK271 | | 350°C max. | 5s max. | 1 time |
| RK501 | | 350±10°C | 5 ⁺¹ ₀ s | 1 time |
| RK163 | | 350°C max. | 5s max. | 1 time |
| RK168 | Potentiometer terminal | 300°C max. | 3s max. | 1 time |
| | Motor terminal | 350°C max. | 2s max. | |

Reference for Dip Soldering

| Series | Preheating | | Dip soldering | | No. of solders |
|---------------------|-------------------------------|--------------|-----------------------|----------------|----------------|
| | Soldering surface temperature | Heating time | Soldering temperature | Soldering time | |
| RK09L, RK097 | 100°C max. | 2 min. max. | 260±5°C | 5±1s | 2 times max. |
| RK501 | 120±10°C | 2 min. max. | 260±5°C | 5±1s | 2 times |