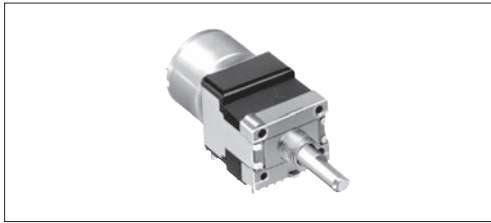


Remote controllable and available in a wide variety of products.



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	15,000cycles
Operating temperature range	- 10°C to + 70°C
Motor voltage	4 to 6V DC (Stander : 4.5VDC)
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	Mounting direction	Shaft type	Length of the shaft (L _i) (mm)	Total resistance (k Ω)	Resistance taper	Motor print terminal	Minimum order unit (pcs.)		Products No.	Drawing No.
							Japan	Export		
Dual-unit	Horizontal type	Flat	25	100	3B	With	200	200	RK16812MG099	1
Quad-unit						Without			RK16814MGA0K	

Note

Other varieties are also available. Refer to "Other Specifications" (P.326).

Packing Specifications

Tray

Number of packages (pcs.)		Export package measurements (mm)
1 case / Japan	1 case / export packing	
200	200	368 × 527 × 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, quad-unit RK16814MG</p>	<p>Shaft shown in full CCW position</p>	

Refer to P.326 for other specifications.
Refer to P.327 for attached parts.
Refer to P.328 for soldering conditions

16mm Size Motor-driven Type Potentiometer / Other Specifications

In addition to the products listed, we can accommodate the follow specifications.

Rotary Potentiometers

Slide Potentiometers

Metal Shaft

Insulated Shaft

Knob Operating

Ring Type

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:4.5)	$12 \pm 3\text{sec}/300^\circ$ (4.5V DC)	At rotation 100mA
Single-shaft, quad.-unit	RK16814MG					At end slip 150mA (4.5V DC)
Single-shaft, 5-ganged-unit	RK16815MG					
Single-shaft, 6-ganged-unit	RK16816MG					

Total Resistance Variety

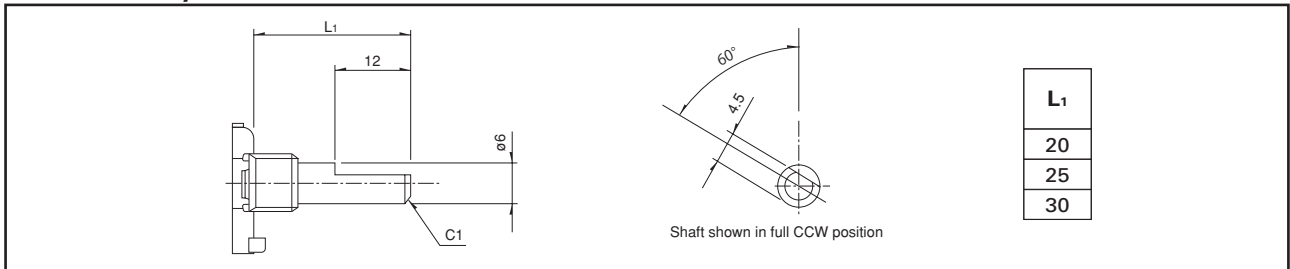
Total resistance (k Ω)	10	20	50	100

Resistance Taper

Resistance taper	15A	3B

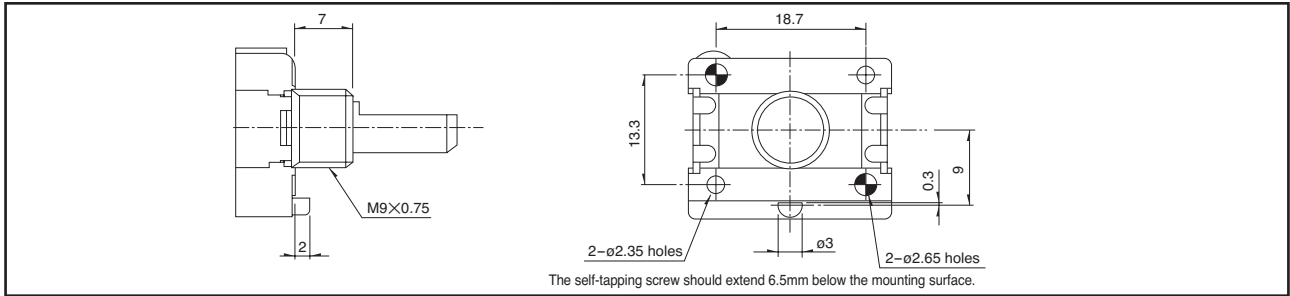
Shaft Variety

Unit:mm



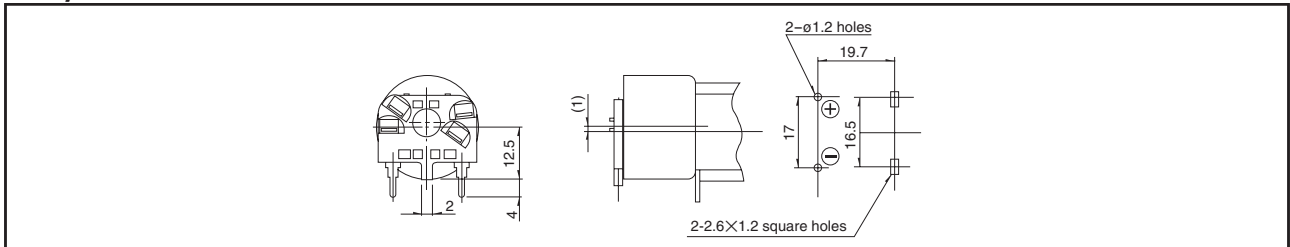
Standard Dimensions of Bushing and Fixing Lug

Unit:mm



Style of Printed Terminal for Motor

Unit:mm

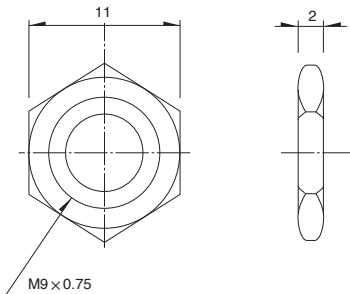
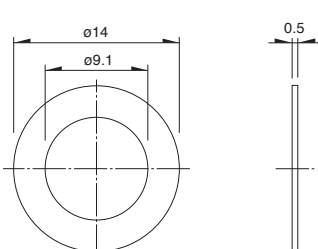


Note

marked are specifications recommended by Alps.

16mm Size Motor-driven Type Potentiometer / Attached Parts

The following parts are included with the product.

Nut	Washer
 <p style="text-align: center;">11</p> <p style="text-align: center;">2</p> <p style="text-align: center;">M9 x 0.75</p>	 <p style="text-align: center;">14</p> <p style="text-align: center;">9.1</p> <p style="text-align: center;">0.5</p>

Rotary Potentiometers

Slide Potentiometers











Metal Shaft

Insulated Shaft

Knob Operating

Ring Type

List of Varieties

Type	16mm size	20mm size	27mm size	50mm size	Rotary motor-driven	
Series	RK163	RK203/EC20A	RK271	RK501	RK168	
	Single-shaft					
Photo						
Terminal mounting	Horizontal	Vertical	Horizontal			
Fixing method of bushing	Bushing screw clamp					
Operating temperature range	-10°C to +70°C	-40°C to +85°C	-10°C to +70°C			
Operating life	15,000cycles	30,000cycles	15,000cycles			
Available for automotive use	—	○	—	—	—	
Life cycle (availability)						
Electrical performance	Total resistance (kΩ)	5, 10, 20, 50, 100, 200	10	5, 10, 20, 50, 100, 250	10, 20, 50, 100	
	Resistance taper	15A, 1B, 3B, 15C	1B	15A, 3B		
	Rated Power	0.05W / 0.1W	0.05W		0.1W	0.05W
	Residual resistance	$R \leq 10k\Omega$ 20Ω max. $10k\Omega < R \leq 50k\Omega$ 30Ω max. $50k\Omega < R < 3M\Omega$ Nominal total resistance of 0.1% or less%	—	$R \leq 10k\Omega$ 20Ω max. $10k\Omega < R < 50k\Omega$ 30Ω max. $50k\Omega \leq R$ 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.	—	$5k\Omega \leq R < 10k\Omega$ 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.	$5k\Omega \leq R < 10k\Omega$ 70dB min. $10k\Omega \leq R < 50k\Omega$ 80dB min. $50k\Omega \leq R < 100k\Omega$ 90dB min. $100k\Omega \leq R$ 100dB min.
	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 2dB max.	-60dB to -40dB 5dB max. -40dB to 0dB 3dB max.
	Insulation resistance	100MΩ min. 500V DC	100MΩ min. 250V DC	100MΩ min. 500V DC		100MΩ min. 250V DC
	Voltage proof	500V AC for 1minute	300V AC for 1minute	500V AC for 1minute		300V AC for 1minute
Center-taps	Without					
Mechanical performance	Detent	Without, Center, 21, 31, 41	17	Without, Center, 21, 31, 41	Without	
	Stopper strength	0.9	0.5	0.9	1.5	0.9
	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, Flat type, Slotted type	Flat type	Slotted type, Flat type	Slotted type	Flat type	
Terminal style	Insertion, Lead	Insertion				
Attached switch	—	Momentary push switch	—	—	—	
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● Potentiometers Cautions	404
● Potentiometers Measurement and Test Methods	406
● Potentiometers Resistance Taper	408

Note

○ indicates applicability to some products in the series.

Metal Shaft Potentiometers Soldering Conditions

Reference for Hand Soldering

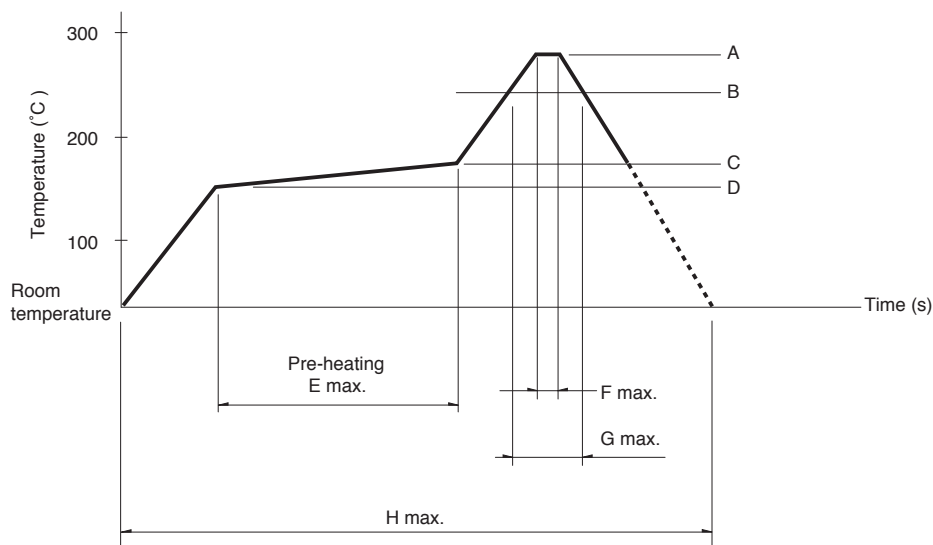
Series	Tip temperature	Soldering time	No. of solders
RK09L, RK097	350°C max.	3s max.	1 time
RK203	300°C max.	3s max.	1 time
RK119	350±10°C	3 ⁺¹ ₀ s	1 time
RK271	350°C max.	5s max.	1 time
RK501	350±10°C	5 ⁺¹ ₀ s	1 time
RK163	350°C max.	3s max.	1 time
RK168	Potentiometer terminal	300°C max.	3s max.
	Motor 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, RK203	100°C max.	2 min. max.	260±5°C	5±1s	2 time max.
RK501	120±10°C	2 min. max.	260±5°C	5±1s	2 time

Example of Reflow Soldering Condition

Temperature profile



Series	A	B	C	D	E	F	G	H	No. of reflows
RK119	260°C	230°C	180°C	150°C	2 min.	3s	40s	4 min.	2 time max.

Notes

- When using an infrared reflow oven, solder may sometimes not be applied. Be sure to use a hot air reflow oven or a type that uses infrared rays in combination with hot air.
- 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.
- Conditions vary to some extent depending on the type of reflow bath used. Be sure to give due consideration to this prior to use.