

Metal Shaft Potentiometer Rotary Motor-driven Type



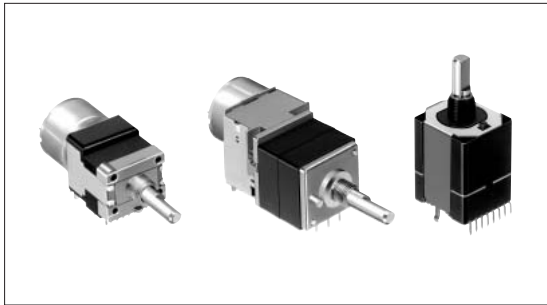
Available in a variety of models, for remote controls for various equipment.

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Rotary Sensors
Linear Sensors



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)

Metal Shaft

Insulated Shaft

Knob Operating

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

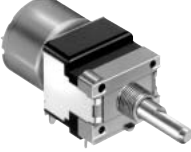
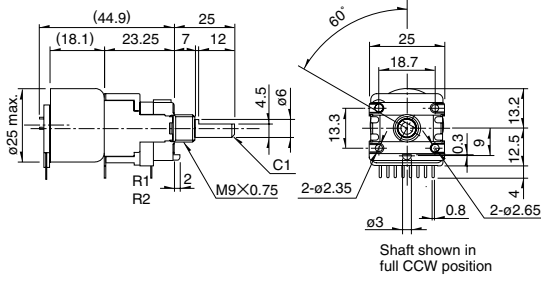
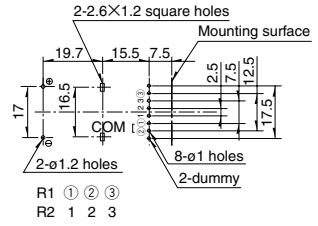

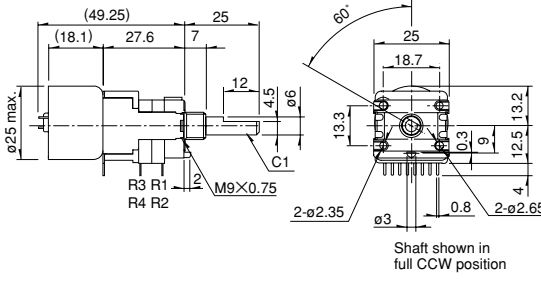
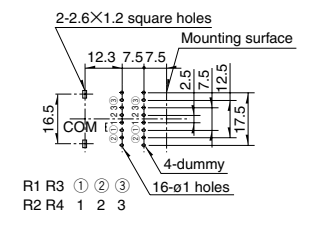

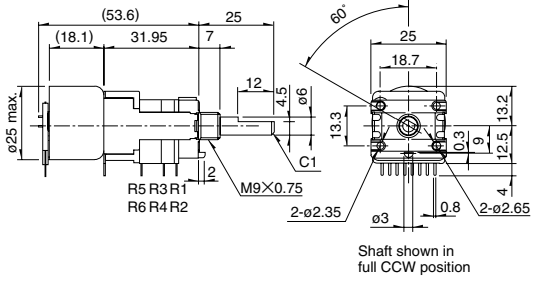
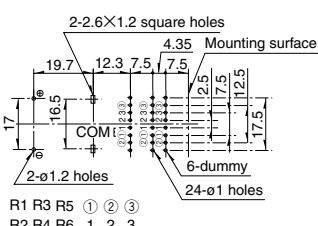

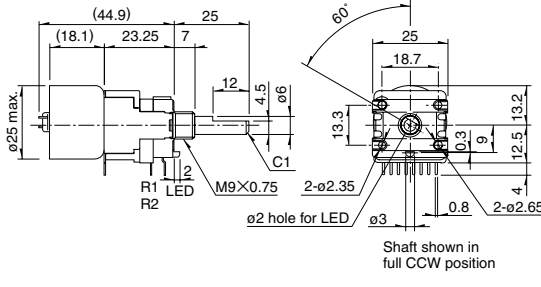
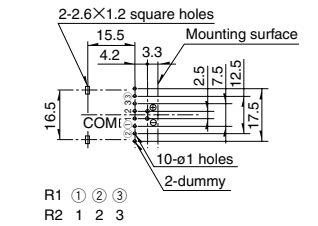
Recommended Products List

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		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	20	15A	Without	Without	150	6

For attached parts, see P.48

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>	 <p>R1 ① ② ③ R2 1 2 3</p>
2	<p>16mm size Single-shaft, quad-unit RK16814MG</p> 	 <p>Shaft shown in full CCW position</p>	 <p>R1 R3 ① ② ③ R2 R4 1 2 3</p>
3	<p>16mm size Single-shaft, triple-unit RK16816MG</p> 	 <p>Shaft shown in full CCW position</p>	 <p>R1 R3 R5 ① ② ③ R2 R4 R6 1 2 3</p>
4	<p>16mm size Single-shaft, dual-unit Illuminated, through-shaft type RK16812MGL</p> 	 <p>Shaft shown in full CCW position</p>	 <p>R1 ① ② ③ R2 1 2 3</p>


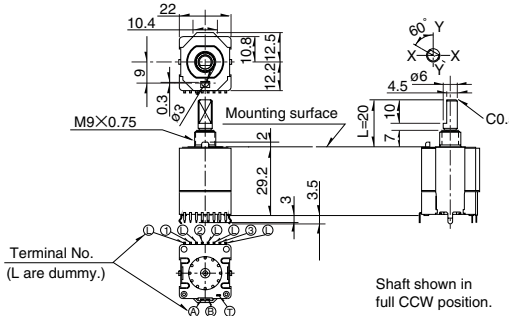
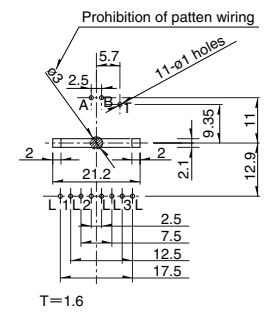

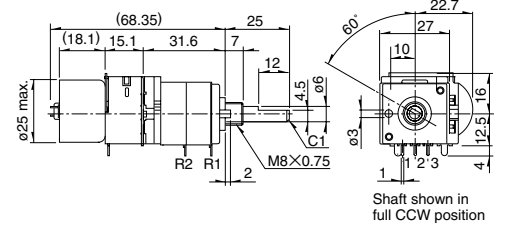
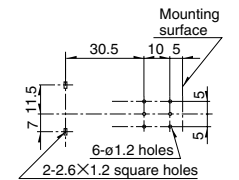
Rotary Potentiometers
Slide Potentiometers
Multi Control Devices
Rotary Sensors
Linear Sensors

Metal Shaft
Insulated Shaft
Knob Operating

Metal Shaft Potentiometer Rotary Motor-driven Type

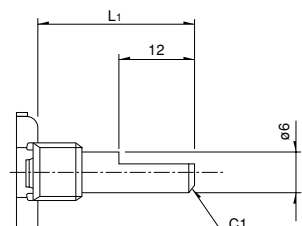
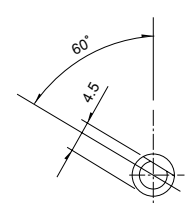
Dimensions

Unit:mm

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

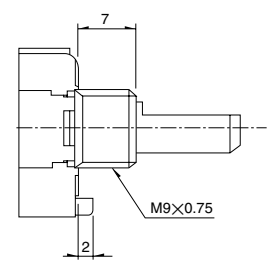
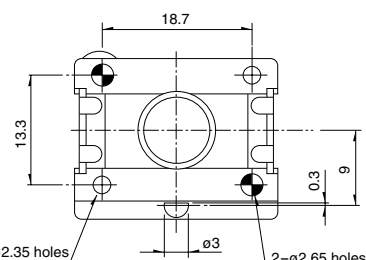
16mm Size (RK168 Series) Shaft Variety

Unit:mm

	 <p>Shaft shown in full CCW position</p>	<table border="1"> <tr> <th>L₁</th> </tr> <tr> <td>20</td> </tr> <tr> <td>25</td> </tr> <tr> <td>30</td> </tr> </table>	L ₁	20	25	30
L ₁						
20						
25						
30						

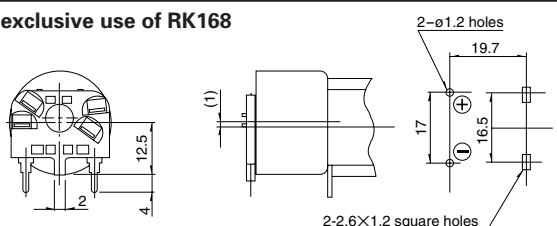
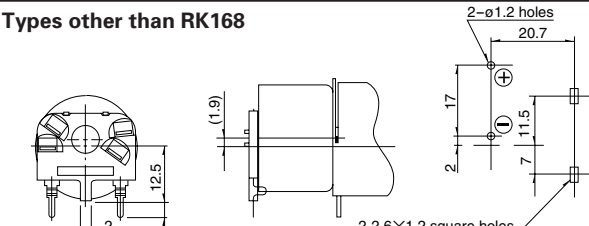
16mm Size (RK168 Series) Standard Dimensions of Bushing and Fixing Lug

Unit:mm

	 <p>Length of self-tapping screw shall be a max of 6.5mm from mounting surface of VR.</p>
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Style of Printed Terminal for Motor

Unit:mm

For exclusive use of RK168	Types other than RK168
	

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

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Knob Operating

Total Resistance Variety

Total resistance (kΩ)	10	20	50	100
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Resistance Taper

Resistance taper	15A	3B
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Note

Shows the specification recommended by us.

Products Specifications

Items		Model			
		RK09L	RK097 RK098	RK117	RK163 RK168
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			RK163 : 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		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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Knob Operating

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		—	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					

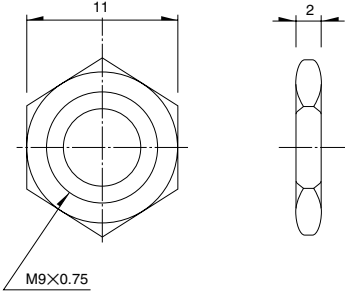
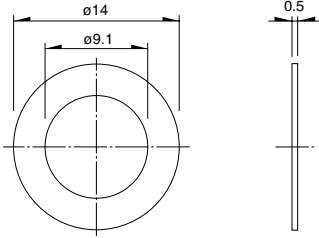
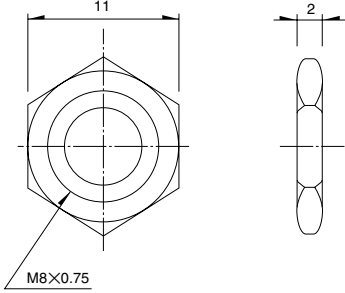
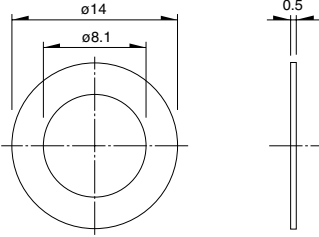
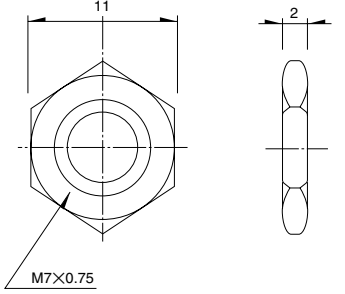
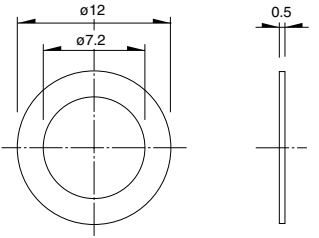
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Attached Parts

These parts are attached to the following products.

Unit:mm

Applicable products	Bearing screw diameter	Hexagonal nut	Flat washer
<p>Rotary Potentiometers</p> <p>Slide Potentiometers</p> <p>Multi Control Devices</p> <p>Rotary Sensors</p> <p>Linear Sensors</p> <p>RK09L RK168 RK097</p>	M9		
<p>Metal Shaft</p> <p>Insulated Shaft</p> <p>Knob Operating</p> <p>RK271</p>	M8		
<p>RK097 RK098 RK163</p>	M7		
<p>RK097 RK098</p>	M6	