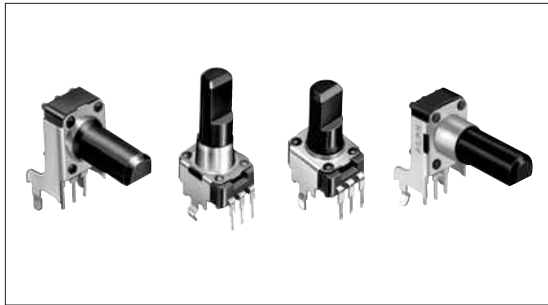


# Insulated Shaft Potentiometer 9mm Size Insulated Shaft Snap-in Type

RK09K/RK09D Series



Compact type potentiometer with 9.8mm width is ideal for designing high density sets.



## Features

- Closed structure improves dust and flux resistance.

## Applications

- For various types of control in mini component stereos, portable audio, speaker systems and various audio equipment
- For controlling mixing consoles and electronic musical instruments
- For controlling flat panel TVs, game consoles, copy machines and refrigerators (temperature control)

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors

Metal Shaft

Insulated Shaft

Hollow Type

Knob Operating

## Typical Specifications

Items		Specifications
Total resistance tolerance	Single-unit	$\pm 20\%$
	Dual-unit	$\pm 30\%$
Maximum operating voltage	Single-unit	50V AC 20V DC
	Dual-unit	50V AC for AC only
Total rotational angle	Single-unit	RK09K: $280 \pm 5^\circ$ RK09D: $300 \pm 5^\circ$
	Dual-unit	$280 \pm 5^\circ$
Rotational torque		1 to 8mN·m
Operating life	Single-unit	5,000cycles
	Dual-unit	10,000cycles
Operating temperature range		$-10^\circ\text{C}$ to $+70^\circ\text{C}$

**Recommended Products List**

Number of resistor elements	Mounting direction	Total rotation angle	Collar (Sleeve type)	Shaft type	Length of the shaft (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum packing unit (pcs.)	Products No.	Drawing No.	
Single-unit (20V DC)	Vertical type	280±5°	Without	Flat	15	With	10	1B	100	RK09K113004U	2	
							5			RK09K1130AU2		
						Without	10	15A		RK09K1130A6S		
							20			RK09K1130AJ3		
							50			RK09K1130ACM		
							10			RK09K1130ACL		
				20			RK09K1130AAU					
				25			RK09K1130AH1					
				Knob	15	20	With	10		1B		RK09K1130BM4
								30				RK09K1130A8G
								10				RK09K1130A5R
								5				RK09K1130081
	10	RK09K1130A70										
	5	RK09K1130AP5										
	Flat	15	20	Without	10	1B	RK09K1130AV7					
					20		RK09K1110A2S					
					5		RK09K1110AK4					
					10		RK09K1110AH8					
					50		RK09K1110B1V					
					10		RK09K1110A0J					
	Knob	20	25	With	50	15A	RK09K11100E9					
					10		RK09K1110B1R					
					10		RK09K1110B26					
					10		RK09D1130C1B					
10					RK09D1130C2P							
10					RK09D1130A1L							
Flat	25	30	Without	10	1B	RK09D1130A1N						
				10		RK09D1130C3W						
				10		RK09D1130C3C						
				10		RK09D113000F						
				50		RK09D1110C0R						
				50		RK09K12C0A19						
Dual-unit (Not applicable to DC)	Vertical type	280±5°	Without	15	Without	10	15A	RK09K12C0A2S	10			
						50		RK09K12C0A8G				
						20		RK09K12C0D0U				
						20		RK09K12C0A8K				
	With		25	30		Without		10	RK09K12A0A2K	9		
								10	RK09K12A0A6R			
								50	RK09K12A0B0W			
								50				
Horizontal type H=6.5mm	Without	20	With	15	Flat	50						
						50						
						50						
						50						

**Note**


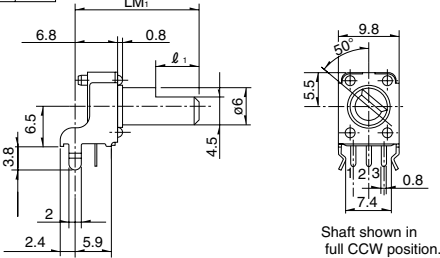
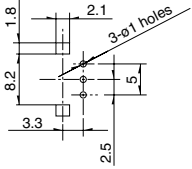

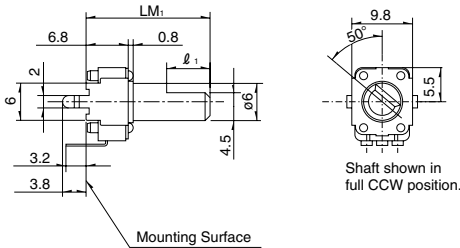
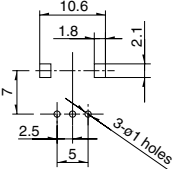
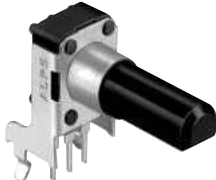
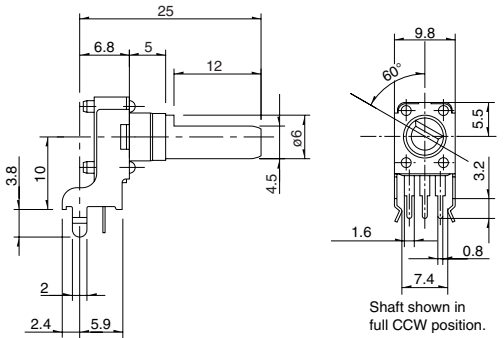
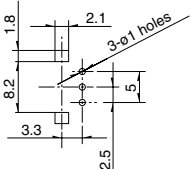

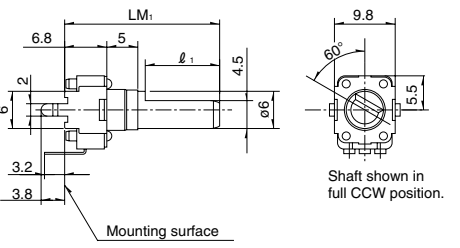
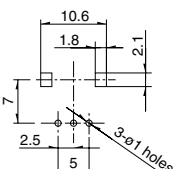
Products other than those listed in above recommended product are also available. Please contact us for details.

Refer to **P.64** for product varieties.  
 Refer to **P.78** for product specifications.

**Dimensions**

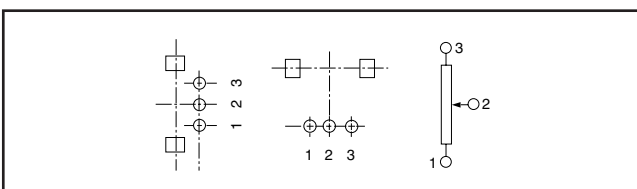
Single-shaft, single-unit

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)										
1		<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>15</td> <td>20</td> </tr> <tr> <td>ℓ<sub>1</sub></td> <td>6</td> <td>7</td> </tr> </table>  <p>Shaft shown in full CCW position.</p>	LM <sub>1</sub>	15	20	ℓ <sub>1</sub>	6	7					
LM <sub>1</sub>	15	20											
ℓ <sub>1</sub>	6	7											
2		<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> </tr> <tr> <td>ℓ<sub>1</sub></td> <td>6</td> <td>7</td> <td>12</td> <td>12</td> </tr> </table>  <p>Mounting Surface          Shaft shown in full CCW position.</p>	LM <sub>1</sub>	15	20	25	30	ℓ <sub>1</sub>	6	7	12	12	
LM <sub>1</sub>	15	20	25	30									
ℓ <sub>1</sub>	6	7	12	12									
3		 <p>Shaft shown in full CCW position.</p>											
4		<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>20</td> <td>25</td> <td>30</td> </tr> <tr> <td>ℓ<sub>1</sub></td> <td>7</td> <td>12</td> <td>12</td> </tr> </table>  <p>Mounting surface          Shaft shown in full CCW position.</p>	LM <sub>1</sub>	20	25	30	ℓ <sub>1</sub>	7	12	12			
LM <sub>1</sub>	20	25	30										
ℓ <sub>1</sub>	7	12	12										

**Terminal Layout/Circuit Diagram**

Single-unit



Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors

Metal Shaft

Insulated Shaft

Hollow Type

Knob Operating

**Dimensions**

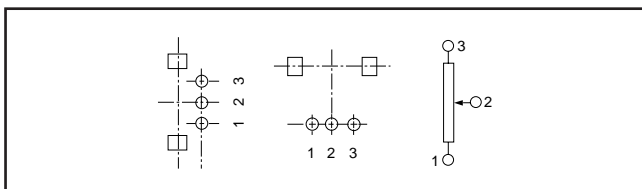
Single-shaft, single-unit

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)								
5											
6		<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>15</td> <td>20</td> </tr> <tr> <td>ℓ<sub>1</sub></td> <td>6</td> <td>7</td> </tr> </table>	LM <sub>1</sub>	15	20	ℓ <sub>1</sub>	6	7			
LM <sub>1</sub>	15	20									
ℓ <sub>1</sub>	6	7									
7		<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>15</td> <td>20</td> <td>30</td> </tr> <tr> <td>ℓ<sub>1</sub></td> <td>6</td> <td>7</td> <td>7</td> </tr> </table>	LM <sub>1</sub>	15	20	30	ℓ <sub>1</sub>	6	7	7	
LM <sub>1</sub>	15	20	30								
ℓ <sub>1</sub>	6	7	7								
8		<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>15</td> <td>20</td> </tr> <tr> <td>ℓ<sub>1</sub></td> <td>6</td> <td>7</td> </tr> </table>	LM <sub>1</sub>	15	20	ℓ <sub>1</sub>	6	7			
LM <sub>1</sub>	15	20									
ℓ <sub>1</sub>	6	7									

**Terminal Layout/Circuit Diagram**

Single-unit



**Dimensions**

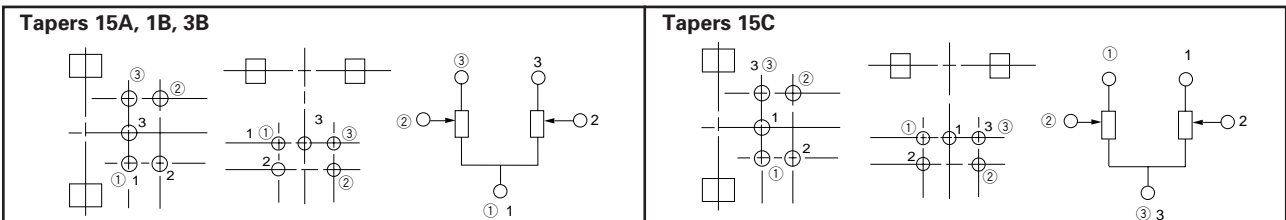
Single-shaft, dual-unit

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)								
9		<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>15</td> <td>20</td> </tr> <tr> <td>ℓ<sub>1</sub></td> <td>6</td> <td>7</td> </tr> </table> <p>Shaft shown in full CCW position</p>	LM <sub>1</sub>	15	20	ℓ <sub>1</sub>	6	7			
LM <sub>1</sub>	15	20									
ℓ <sub>1</sub>	6	7									
10		<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>15</td> <td>20</td> <td>30</td> </tr> <tr> <td>ℓ<sub>1</sub></td> <td>6</td> <td>7</td> <td>12</td> </tr> </table> <p>Shaft shown in full CCW position</p>	LM <sub>1</sub>	15	20	30	ℓ <sub>1</sub>	6	7	12	
LM <sub>1</sub>	15	20	30								
ℓ <sub>1</sub>	6	7	12								
11		<p>Shaft shown in full CCW position</p>									
12		<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>25</td> <td>30</td> </tr> <tr> <td>ℓ<sub>1</sub></td> <td>12</td> <td>12</td> </tr> </table> <p>Shaft shown in full CCW position</p>	LM <sub>1</sub>	25	30	ℓ <sub>1</sub>	12	12			
LM <sub>1</sub>	25	30									
ℓ <sub>1</sub>	12	12									

**Terminal Layout/Circuit Diagram**

Dual-unit



Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors

Metal Shaft

Insulated Shaft

Hollow Type

Knob Operating

# Product Varieties

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

## Total Resistance Variety

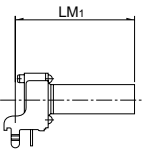
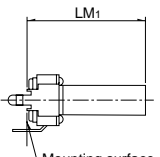
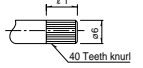
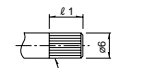
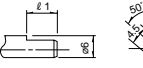
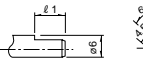
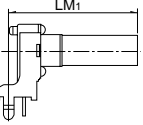
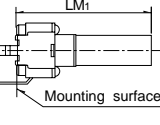
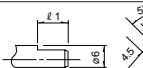
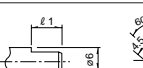
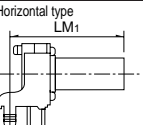
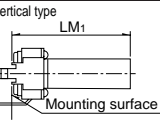
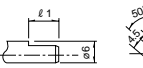
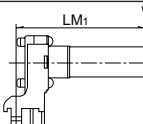
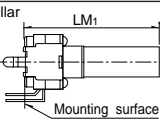
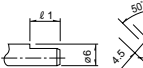
Total resistance (kΩ)	5	10	20	50	100	200
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## Resistance Taper

Resistance taper	15A	1B	3B	15C
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## Shaft Variety

Unit:mm

Number of resistor elements	Style	Shaft type		Shaft color										
		Knob variety	Detail dimensions											
Single-unit	Horizontal type  Vertical type 	Knob type ( $\phi 6$ ) 	<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> </tr> <tr> <td>l<sub>1</sub></td> <td>6</td> <td>7</td> <td>7</td> <td>7</td> </tr> </table>	LM <sub>1</sub>	15	20	25	30	l <sub>1</sub>	6	7	7	7	Black
		LM <sub>1</sub>	15	20	25	30								
		l <sub>1</sub>	6	7	7	7								
		Screw-driver adjustment type 	<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>9.5</td> <td>15</td> <td>20</td> <td></td> </tr> <tr> <td>l<sub>1</sub></td> <td>—</td> <td>6</td> <td>7</td> <td></td> </tr> </table>	LM <sub>1</sub>	9.5	15	20		l <sub>1</sub>	—	6	7		
	LM <sub>1</sub>	9.5	15	20										
	l <sub>1</sub>	—	6	7										
	Flat type 	<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> </tr> <tr> <td>l<sub>1</sub></td> <td>6</td> <td>7</td> <td>12</td> <td>12</td> </tr> </table>	LM <sub>1</sub>	15	20	25	30	l <sub>1</sub>	6	7	12	12		
	LM <sub>1</sub>	15	20	25	30									
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LM <sub>1</sub>	15	20	25	30										
l <sub>1</sub>	6	7	12	12										
With collar  	Flat type 	<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>20</td> <td>25</td> <td>30</td> <td></td> </tr> <tr> <td>l<sub>1</sub></td> <td>7</td> <td>12</td> <td>12</td> <td></td> </tr> </table>	LM <sub>1</sub>	20	25	30		l <sub>1</sub>	7	12	12		Black	
	LM <sub>1</sub>	20	25	30										
	l <sub>1</sub>	7	12	12										
	Flat type 	<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>20</td> <td>25</td> <td>30</td> <td></td> </tr> <tr> <td>l<sub>1</sub></td> <td>7</td> <td>12</td> <td>12</td> <td></td> </tr> </table>	LM <sub>1</sub>	20	25	30		l <sub>1</sub>	7	12	12		Gray (20,25) Black (30)	
LM <sub>1</sub>	20	25	30											
l <sub>1</sub>	7	12	12											
Horizontal type  Vertical type 	Flat type 	<table border="1"> <tr> <td>LM<sub>1</sub></td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> </tr> <tr> <td>l<sub>1</sub></td> <td>6</td> <td>7</td> <td>12</td> <td>12</td> </tr> </table>	LM <sub>1</sub>	15	20	25	30	l <sub>1</sub>	6	7	12	12	Black	
	LM <sub>1</sub>	15	20	25	30									
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LM <sub>1</sub>	20	25	30											
l <sub>1</sub>	7	12	12											

### Note

marked are specifications recommended by ALPS.

Refer to P.65, 211 for resistance taper.

# Orders Other Than Recommended Products

When ordering product varieties that are not listed in the Recommended Product list, please specify by referring to the below example.

## Sample Part Number



### Model type

Code	Model type
K111	280° single-unit horizontal type H=6.5
K113	280° single-unit vertical type
D111	300° single-unit horizontal type H=10
D113	300° single-unit vertical type
K12A	280° dual-unit horizontal type H=6.5
K12C	280° dual-unit vertical type

\* All RK09D types are single-ganged.  
 \* For other horizontal type mount height requirements, please indicate separately.

### Shaft type

Code	Shaft type	Code	Shaft type
F	Flat	X	Driver
K	Knob		

\* All RK09D types are only available in flat format.

### Length of the shaft (LM<sub>1</sub>) (mm)

Code	Length of the shaft	Code	Length of the shaft
15	15	25	25
20	20	30	30

\* 20, 25 and 30 are the only available RK09D types.  
 \* 9.5, 15 and 20 are the only available models in the driver shape.

### Detent

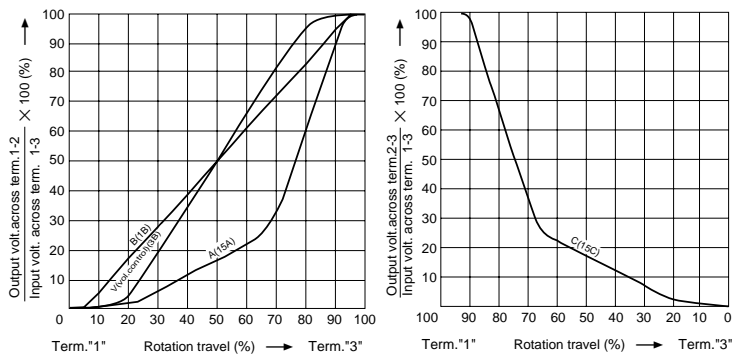
Code	Center detent
C0	Without
C1	With

### Resistance taper

Code	Resistance taper	Code	Resistance taper
A	15A	C	15C
B	1B	V	3B

B: For tone & general  
 V: For vol.

\* 1B is a recommended specification for single-unit.  
 \* 3B is a recommended specification for dual-unit.



### Total resistance

Code	Total resistance (kΩ)	Code	Total resistance (kΩ)
502	5	503	50
103	10	104	100
203	20	204	200

### Notes

1. RK09D comes with a collar.
2. The recommended specification for RK09K does not include a collar. For collar requirements please indicate separately.
3.   marked are specifications recommended by ALPS.

## Product Specifications

Items	Type	9mm Size Insulated Shaft Snap-in		11mm Size Insulated Shaft Snap-in	14mm Size Insulated Shaft Snap-in	12mm Size Insulated Shaft Snap-in	9mm Size Insulated shaft Long-life	
	Model	RK09K11□ RK09D11□	RK09K12□	RK11K11□	RK14K12□	RK12L12□	RK09Y11L	
	Items	Single-unit	Dual-unit	Single-unit	Dual-unit	Dual-unit	Single-unit	
<b>Operating temperature range</b>		-10°C to +70°C						
<b>Electrical performance</b>	<b>Total resistance tolerance</b>	±20%	±30%	±20%		±30%		
	<b>Rated power</b>	0.05W	0.03W	0.05W		0.01W		
	<b>Maximum operating voltage</b>	50V AC 20V DC	50V AC For AC only	50V AC 20V DC	50V AC For AC only		50V AC 5V DC	
	<b>Insulation resistance</b>	100MΩ min. 250V DC		100MΩ min. 500V DC	100MΩ min. 250V DC			
	<b>Voltage proof</b>	250V AC (for 1minute)		500V AC (for 1minute)	300V AC (for 1minute)		250V AC (for 1minute)	
	<b>Gang error</b>	—	-40dB to 0dB 3dB max.	—	Volume control -40dB to 0dB 3dB max. For tone control within 2dB at center		—	
<b>Mechanical performance</b>	<b>Total rotational angle</b>	RK09K : 280±5° RK09D11□ : 300±5°		300±5°				
	<b>Rotational torque</b>	1 to 8mN·m		3 to 20mN·m		2 to 15mN·m	5mN·m max.	
	<b>Strength of the actuator</b>	<b>Stopper strength</b>	0.3N·m		Without bushing 0.5N·m With bushing 0.6N·m	0.6N·m	0.5N·m	—
		<b>Push-pull strength</b>	50N max.		80N max.		30N max.	
	<b>Vibration</b>		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					
	<b>Resistance to soldering heat</b>	<b>Manual soldering</b>	350°C max. 3s max.					
		<b>Dip Soldering</b>	—				260°C max. 5s max.	—
<b>Endurance</b>	<b>Operating life</b>	Single-unit : 5,000cycles Dual-unit : 10,000cycles		15,000cycles			1,000,000 cycles	
<b>Environmental performance</b>	<b>Cold</b>	-30±2°C for 96h					-30±2°C for 240h	
	<b>Dry heat</b>	70±2°C for 96h			70±2°C for 240h			
	<b>Damp heat</b>	40±2°C, 90 to 95% RH for 96h					40°C, 90 to 95% RH for 240h	

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors

Metal Shaft

Insulated Shaft

Hollow Type

Knob Operating