

Metal Shaft Potentiometer 16mm Size Metal Shaft Type

RK163 Series



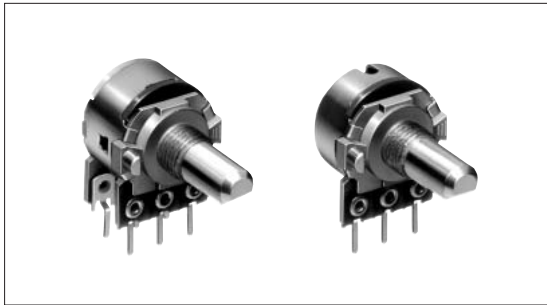
A wide range of versatility products applicable for various types of control.

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors



Applications

- For various control in mini component systems and audio equipment
- For various control in refrigerators, fan heaters, wireless radios and measuring devices

Metal Shaft

Insulated Shaft

Hollow Type

Knob Operating

Typical Specifications

Items	Specifications
Total resistance tolerance	±20%
Maximum operating voltage	150V AC, 5V DC
Total rotational angle	300±3°
Rotational torque	3 to 25mN·m
Operating life	15,000cycles
Operating temperature range	-10°C to +70°C

Recommended Products List

Number of resistor elements	Mounting direction	Shaft type	Terminal style	Length of the shaft (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum packing unit (pcs.)	Products No.	Drawing No.
Single-unit	Horizontal type	Flat	For PC board	15	Without	10	1B	100	RK1631110TBK	1
				20			15A		RK1631110TT3	
			Lead	1B			RK1631110U1Q			
		Knurled	For PC board			15	20		RK1631110TNP	2
			Lead			10	RK1631110TTU		3	
		Dual-unit for tone	Horizontal type	Flat		For PC board	20		With	20
Knurled	15			Without	10		15A	RK1631210ATD	5	
	20				50		3B	RK1631210B8		
Dual-unit for vol.	Horizontal type	Flat	For PC board		20	Without	10	15A	RK1631210AX9	5
				25	50		3B		RK16312A0B85	
		Knurled		15	10		15A		RK16312A0BKH	
								RK16312A0BKR	6	


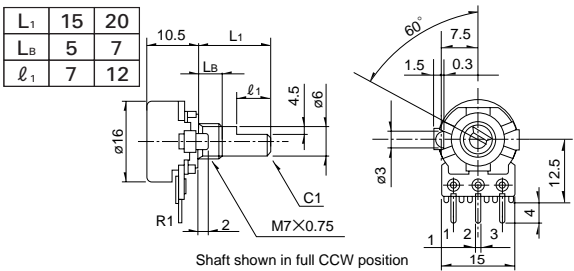
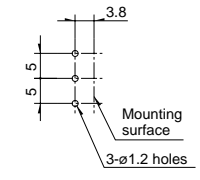

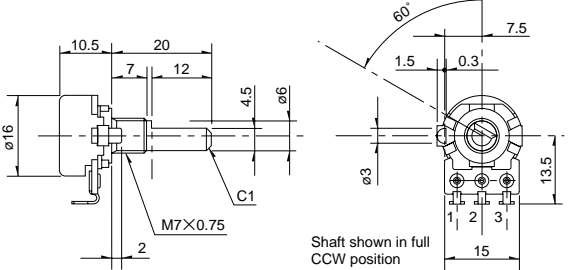
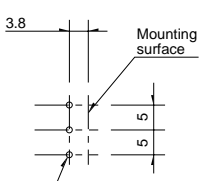

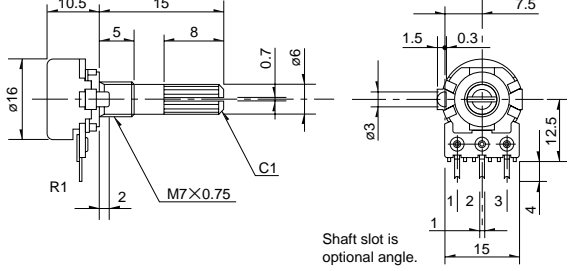


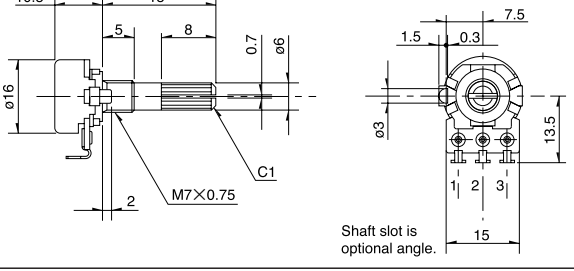
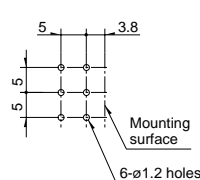
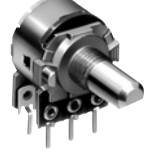
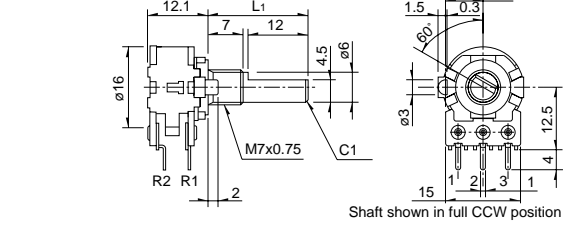
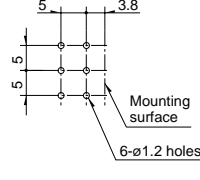
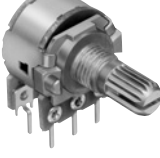
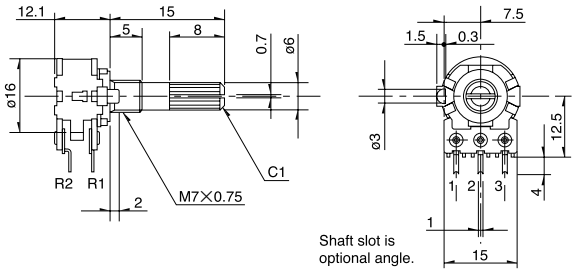
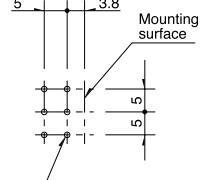
Note

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

Refer to P.38 for product varieties.
Refer to P.51 for product specifications.

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)									
1		<table border="1" data-bbox="590 324 726 414"> <tr> <td>L₁</td> <td>15</td> <td>20</td> </tr> <tr> <td>L_B</td> <td>5</td> <td>7</td> </tr> <tr> <td>ℓ₁</td> <td>7</td> <td>12</td> </tr> </table>  <p>Shaft shown in full CCW position</p>	L ₁	15	20	L _B	5	7	ℓ ₁	7	12	 <p>3-ø1.2 holes</p>
L ₁	15	20										
L _B	5	7										
ℓ ₁	7	12										
2		 <p>Shaft shown in full CCW position</p>	 <p>3-ø1.2 holes</p>									
3		 <p>Shaft slot is optional angle.</p>	 <p>3-ø1.2 holes</p>									
4		 <p>Shaft slot is optional angle.</p>	 <p>3-ø1.2 holes</p>									
5		<table border="1" data-bbox="590 1478 726 1512"> <tr> <td>L₁</td> <td>20</td> <td>25</td> </tr> </table>  <p>Shaft shown in full CCW position</p>	L ₁	20	25	 <p>6-ø1.2 holes</p>						
L ₁	20	25										
6		 <p>Shaft slot is optional angle.</p>	 <p>6-ø1.2 holes</p>									

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Product Varieties

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

Product Specifications and Applications

Type	Model	Applications	Detent variety
Single-shaft, single-unit	RK16311	General	Center 21
Single-shaft, dual-unit	RK16312	General or Volume and tone control	31 41

Total Resistance Variety

Total resistance (kΩ)	5	10	20	50	100	200

Resistance Taper

Resistance taper	15A	1B	3B	15C

Dimensions of Shaft

1) 18 teeth knurl

Unit:mm

Die-casting shaft

Not specified slotting angle

L ₁	L _B	l ₁
15	5	8
20	5	12
25	7	12
30	7	12

Shaft shown in full CCW position

● The serration angle shall be as shown.

2) Flat type

Unit:mm

Shaft shown in full CCW position

L ₁	L _B	l ₁
15	5	7
20	7	12
25	7	12
30	7	12

3) Slotted type

Unit:mm

Shaft shown in full CCW position

L ₁	L _B
15	7
20	7
25	7
30	7

Note

marked are specifications recommended by ALPS.

Refer to P.54 for attached parts.
Refer to P.39, 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
111	Single-unit
121	Dual-unit for tone
12A	Dual-unit for vol.

Shaft type

Code	Shaft type
F	Flat
S	Slotted
K	Knurled

Length of the shaft (L₁) (mm)

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

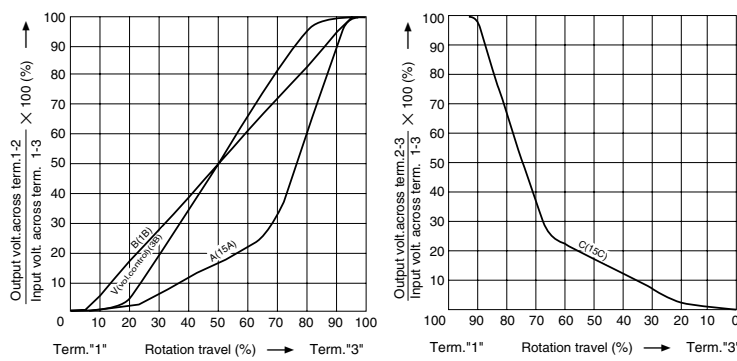
Detent

Code	Detent	Code	Detent
C0	Without	31	31
C1	Center	41	41
21	21		

Resistance taper

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

B: For tone & general(model type : 111,121)
 V: For vol.(model type : 111,12A)



Total resistance

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

Terminal style

Code	Terminal style
P	For PC board
L	Lead terminal

Note

marked are specifications recommended by ALPS.

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Product Specifications

Model		RK09L	RK097 RK098	RK117	RK119	RK163 RK168
Items	Operating temperature range	-10°C to +70°C	-20°C to +70°C	-30°C to +70°C	-40°C to +85°C	-10°C to +70°C
Electrical performance	Total resistance tolerance	±20%				
	Rated power	0.05W				
	Maximum operating voltage	50V AC , 10V DC				RK163 :150V AC, 5V, DC RK168 : 50V AC
	Residual resistance	$R \leq 10k\Omega$ $10k\Omega < R < 50k\Omega$ $50k\Omega \leq R$	20Ω max. 30Ω max. Nominal total resistance of 0.1% or less		$R \leq 10k\Omega$ 50Ω max. $10k\Omega < R \leq 50k\Omega$ 80Ω max. $50k\Omega < R$ Nominal total resistance of 0.2% or less	$R \leq 10k\Omega$ 20Ω max. $10k\Omega < R \leq 50k\Omega$ 30max. $50k\Omega < R$ Nominal total resistance of 0.1% or less
	Maximum attenuation (Volume control)		$5k\Omega \leq R < 10k\Omega$ $10k\Omega \leq R < 50k\Omega$ $50k\Omega \leq R < 100k\Omega$ $100k\Omega \leq R$	70dB min. 80dB min. 90dB min. 100dB min.		
	Insulation resistance	100MΩ min. 250V DC				RK163:100MΩ min. 500V DC RK168:100MΩ min. 250V DC
	Voltage proof	300V AC (for 1minute)				RK163:500V AC for minute RK168:300V AC for minute
Mechanical performance	Total rotational angle	300±5°	300±5° (Shaft movement type is 300 ±5°)	300 ±10°		RK163 : 300±3° RK168 : 300±5°
	Rotational torque	2 to 25mN·m		5 to 20mN·m	7.5±3.5mN·m	RK163 : 3 to 25mN·m RK168 : 10 to 40mN·m
	Stopper strength	0.5N·m (With push-lock mechanism type: 0.4N·m)			0.5N·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.			350±10°C 3 ⁺¹ ₀ s
Dip soldering		260±5°C, 5±1s			—————	
Reflow soldering		—————			Please see P.35	—————
Endurance	Operating life	15,000cycles				
Environmental performance	Cold	-20°C ±2°C for 96h	-30±2°C for 96h		-40±2°C for 240h	-20±2 for 96h
	Dry heat	70±2°C for 96h			85±2°C for 240h	70±2°C for 96h
	Damp heat	40±2°C, 90 to 95%RH for 96h			60±2°C, 90 to 95%RH for 240h	40±2°C, 90 to 95%RH for 96h

Push-on Switch Specifications

Items	RK097		RK117		RK119	
Contact arrangement	Single pole and single throw (Push on)					
Travel (mm)	0.5	1.5	0.5	1.5	0.5±0.3	1.5±0.5
Operating force (N)	4 ± ₂ ⁴	5±2	6±3	5±2		4±2
Rating	0.5A 12V DC		3A 16V DC		0.1A 5V DC (1mA 5V DC min.ratings)	0.5A 16V DC (1mA 16V DC min.ratings)
Contact resistance	100mΩ for initial period; 200mΩ after operating life					
Operating life	10,000 times min.	20,000 times min.	10,000 times min.	20,000 times min.	100,000 times min.	20,000 times min.

Note

The operating temperature range for automotive applications can be raised upon request. Please contact us for requirements of this kind.

Attached Parts

The following parts are included with the product.

Unit:mm

Applicable products	Bearing screw diameter	Hexagonal nut	Flat washer
RK09L RK168 RK097 RK203	M9		
RK271	M8		
RK097 RK098 RK163	M7		
RK097 RK098	M6		

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