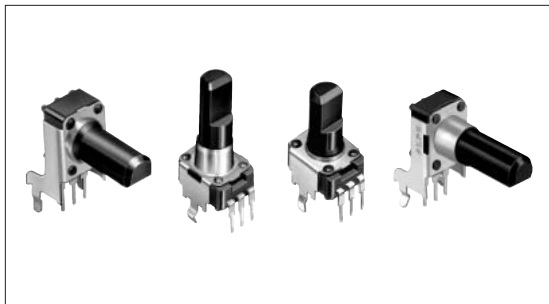


Insulated Shaft Potentiometer 9mm Size Snap-in Insulated Shaft Type

RK09K/RK09D Series



Compact type with a width of 9.8mm is ideal for designing a high-density set.



Features

- Closed structure improved dust-proofing capacity and flux resistance.

Applications

- Controls for audio devices, including mini component stereos, portable audio players and speaker systems
- Controls for audio mixing console and musical instruments
- Controls for LCD TVs, game consoles, photo copiers and refrigerators (temperature control)

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Rotary Sensors
Linear Sensors

Metal Shaft

Insulated Shaft

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	$280 \pm 5^\circ$, $300 \pm 5^\circ$ turning type is also available
	Dual-unit	$280 \pm 5^\circ$
Rotational torque		1 to $8\text{mN}\cdot\text{m}$
Operating life		5,000 cycles
Operating temperature range		-10°C to $+70^\circ\text{C}$

Insulated Shaft Potentiometer

9mm Size Snap-in Insulated Shaft Type | RK09K/RK09D Series

Recommended Products List

Number of resistor elements	Mounting direction	Products No.	Total rotation angle	Collar (Sleeve type)	Shaft type	Length of the shaft (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum packing unit (pcs.)	Drawing No.			
Single-unit (20V DC)	Vertical type	RK09K113004U	280±5°	Without	Flat	15	With	10	1B	100	2			
		Without					5							
		With					10							
		Without					20							
		Without					50							
		Without					10							
		Knob			20	Without	5	1B						
						With	10							
						Without	15							
						Without	20							
		Driver			15	Without	5	15A						
						Without	20							
		Horizontal type H=6.5mm			Flat	15	300±5°	With	Without			Without	10	1B
												Without	20	
	Without		5											
	Knob		20	Without	10									
				With	50									
				With	10									
	Horizontal type H=10mm	15	Without	10	15A									
			Without	20										
Vertical type	15	30	300±5°	With	Without	Without	10	1B						
						Without	50							
						Without	20							
						Without	30							
					Flat	25	25		With	With	10			
										With	25			
										With	30			
										With	30			
Horizontal type H=10mm	25	50	300±5°	With	Flat	25	50	15A	3					
Dual-unit (Not applicable to DC)	Vertical type	280±5°	Without	Without	Flat	15	Without	10	15A	10				
								50						
								20						
								10						
								10						
	Horizontal type H=6.5mm	Without	With	Without	Flat	20	Without	50						
								15						
								10						
								50						
Horizontal type H=6.5mm	Without	With	With	Flat	20	Without	50	15A	11					

Note

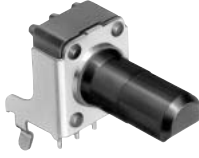
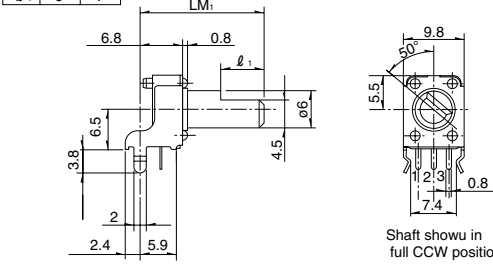
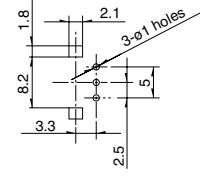

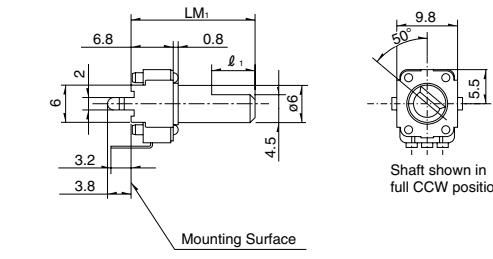
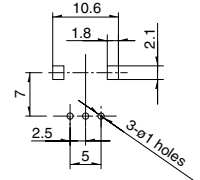
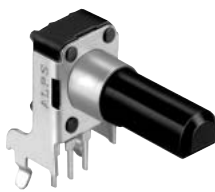
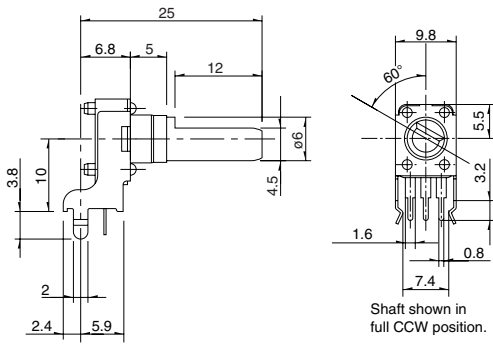
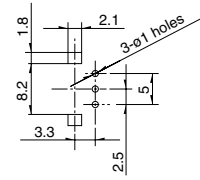

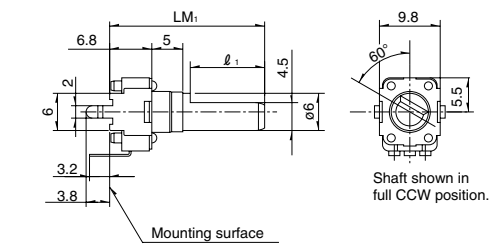
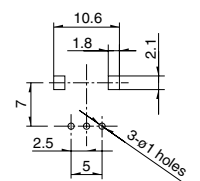
Additional product specifications in response to those not included in the above recommended products are also available.

For product varieties, see P.58
For products specifications, see P.72

■ Dimensions

Single-shaft, single-unit

Unit:mm

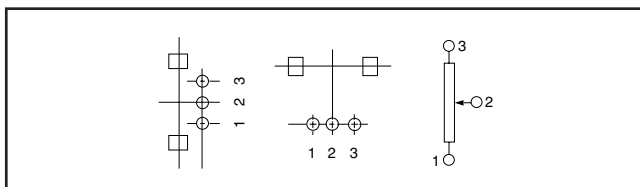
No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)										
1	<p>Horizontal type RK09K111</p> 	<table border="1" style="margin-bottom: 5px;"> <tr><td>LM₁</td><td>15</td><td>20</td></tr> <tr><td>ℓ₁</td><td>6</td><td>7</td></tr> </table>  <p style="font-size: small;">Shaft shown in full CCW position.</p>	LM ₁	15	20	ℓ ₁	6	7					
LM ₁	15	20											
ℓ ₁	6	7											
2	<p>Vertical type RK09K113</p> 	<table border="1" style="margin-bottom: 5px;"> <tr><td>LM₁</td><td>15</td><td>20</td><td>25</td><td>30</td></tr> <tr><td>ℓ₁</td><td>6</td><td>7</td><td>12</td><td>12</td></tr> </table>  <p style="font-size: small;">Mounting Surface</p> <p style="font-size: small;">Shaft shown in full CCW position.</p>	LM ₁	15	20	25	30	ℓ ₁	6	7	12	12	
LM ₁	15	20	25	30									
ℓ ₁	6	7	12	12									
3	<p>Horizontal type with collar RK09D111</p> 	 <p style="font-size: small;">Shaft shown in full CCW position.</p>											
4	<p>Vertical type with collar RK09D113</p> 	<table border="1" style="margin-bottom: 5px;"> <tr><td>LM₁</td><td>20</td><td>25</td><td>30</td></tr> <tr><td>ℓ₁</td><td>7</td><td>12</td><td>12</td></tr> </table>  <p style="font-size: small;">Mounting surface</p> <p style="font-size: small;">Shaft shown in full CCW position.</p>	LM ₁	20	25	30	ℓ ₁	7	12	12			
LM ₁	20	25	30										
ℓ ₁	7	12	12										

 Rotary Potentiometers
 Slide Potentiometers
 Multi Control Devices
 Rotary Sensors
 Linear Sensors

 Metal Shaft
 Insulated Shaft
 Knob Operating

■ Terminal Layout/Circuit Diagram

Single-unit



Insulated Shaft Potentiometer

9mm Size Snap-in Insulated Shaft Type | RK09K/RK09D Series

Dimensions

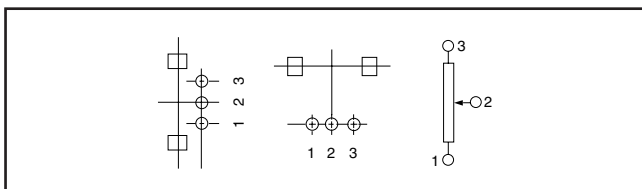
Single-shaft, single-unit

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)								
5											
6		<table border="1"> <tr> <td>LM₁</td> <td>15</td> <td>20</td> </tr> <tr> <td>ℓ₁</td> <td>6</td> <td>7</td> </tr> </table>	LM ₁	15	20	ℓ ₁	6	7			
LM ₁	15	20									
ℓ ₁	6	7									
7		<table border="1"> <tr> <td>LM₁</td> <td>15</td> <td>20</td> <td>30</td> </tr> <tr> <td>ℓ₁</td> <td>6</td> <td>7</td> <td>7</td> </tr> </table>	LM ₁	15	20	30	ℓ ₁	6	7	7	
LM ₁	15	20	30								
ℓ ₁	6	7	7								
8		<table border="1"> <tr> <td>LM₁</td> <td>15</td> <td>20</td> </tr> <tr> <td>ℓ₁</td> <td>6</td> <td>7</td> </tr> </table>	LM ₁	15	20	ℓ ₁	6	7			
LM ₁	15	20									
ℓ ₁	6	7									

Terminal Layout/Circuit Diagram


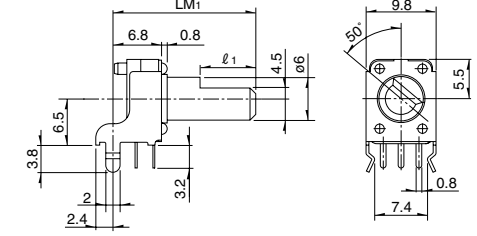
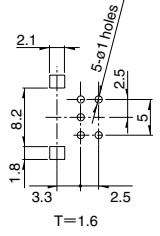

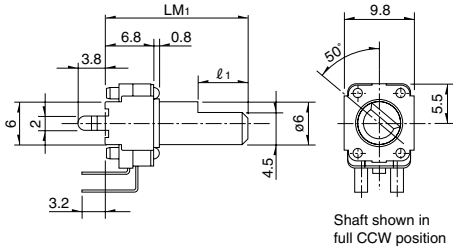
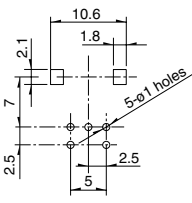
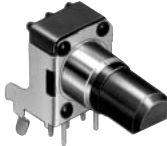
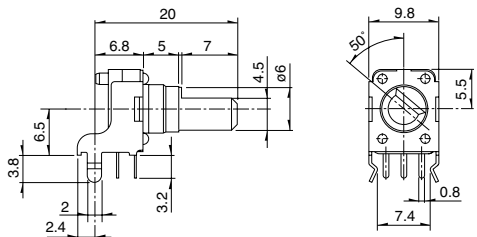
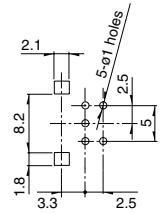

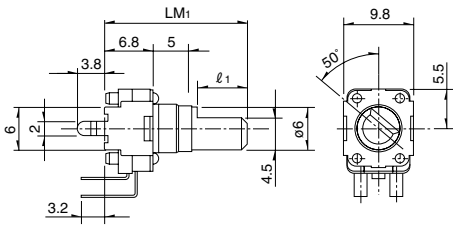
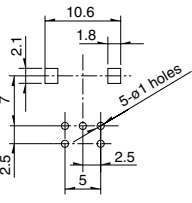
Single-unit



■ Dimensions

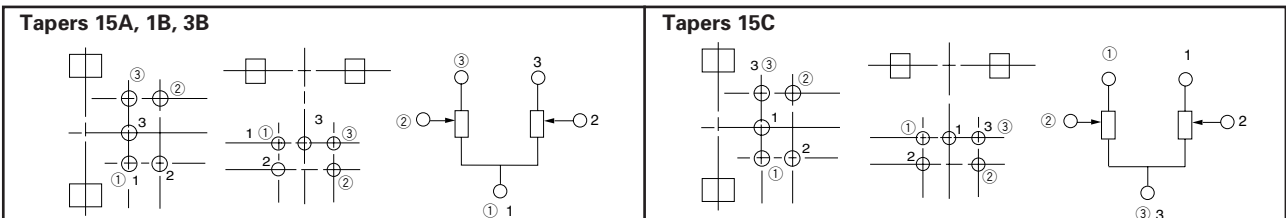
Single-shaft, dual-unit

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)								
9	<p>Horizontal type RK09K12A</p> 	<table border="1" style="margin-bottom: 10px;"> <tr><td>LM₁</td><td>15</td><td>20</td></tr> <tr><td>ℓ₁</td><td>6</td><td>7</td></tr> </table>  <p style="font-size: small;">Shaft shown in full CCW position</p>	LM ₁	15	20	ℓ ₁	6	7	 <p style="font-size: x-small;">T=1.6</p>		
LM ₁	15	20									
ℓ ₁	6	7									
10	<p>Vertical type RK09K12C</p> 	<table border="1" style="margin-bottom: 10px;"> <tr><td>LM₁</td><td>15</td><td>20</td><td>30</td></tr> <tr><td>ℓ₁</td><td>6</td><td>7</td><td>12</td></tr> </table>  <p style="font-size: small;">Shaft shown in full CCW position</p>	LM ₁	15	20	30	ℓ ₁	6	7	12	
LM ₁	15	20	30								
ℓ ₁	6	7	12								
11	<p>Horizontal type with collar RK09K12A</p> 	 <p style="font-size: small;">Shaft shown in full CCW position</p>									
12	<p>Vertical type with collar RK09K12C</p> 	<table border="1" style="margin-bottom: 10px;"> <tr><td>LM₁</td><td>25</td><td>30</td></tr> <tr><td>ℓ₁</td><td>12</td><td>12</td></tr> </table>  <p style="font-size: small;">Shaft shown in full CCW position</p>	LM ₁	25	30	ℓ ₁	12	12			
LM ₁	25	30									
ℓ ₁	12	12									

■ Terminal Layout/Circuit Diagram

Dual-unit



Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Rotary Sensors
Linear Sensors

Metal Shaft

Insulated Shaft

Knob Operating

Product Varieties

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

Total Resistance Variety

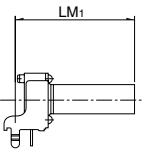
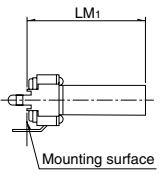
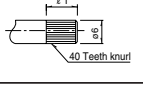
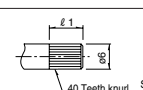
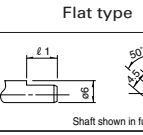
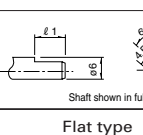
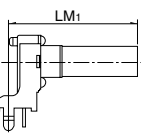
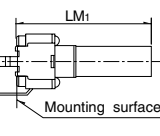
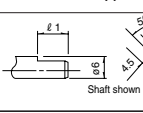
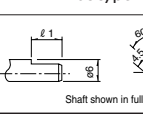
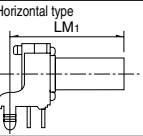
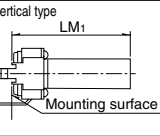
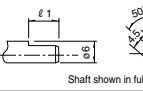
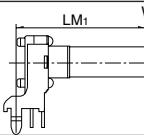
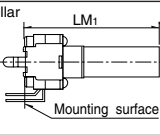
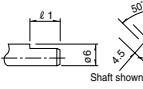
Total resistance (kΩ)	5	10	20	50	100	200
-----------------------	---	----	----	----	-----	-----

Resistance Taper

Resistance taper	15A	1B	3B	15C
------------------	-----	----	----	-----

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>LM₁</td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> </tr> <tr> <td>ℓ₁</td> <td>6</td> <td>7</td> <td>7</td> <td>7</td> </tr> </table>	LM ₁	15	20	25	30	ℓ ₁	6	7	7	7	Black
		LM ₁	15	20	25	30								
		ℓ ₁	6	7	7	7								
		Screw-driver adjustment type 	<table border="1"> <tr> <td>LM₁</td> <td>9.5</td> <td>15</td> <td>20</td> <td></td> </tr> <tr> <td>ℓ₁</td> <td>—</td> <td>6</td> <td>7</td> <td></td> </tr> </table>	LM ₁	9.5	15	20		ℓ ₁	—	6	7		
	LM ₁	9.5	15	20										
	ℓ ₁	—	6	7										
	Flat type 	<table border="1"> <tr> <td>LM₁</td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> </tr> <tr> <td>ℓ₁</td> <td>6</td> <td>7</td> <td>12</td> <td>12</td> </tr> </table>	LM ₁	15	20	25	30	ℓ ₁	6	7	12	12		
	LM ₁	15	20	25	30									
ℓ ₁	6	7	12	12										
Flat type 	<table border="1"> <tr> <td>LM₁</td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> </tr> <tr> <td>ℓ₁</td> <td>6</td> <td>7</td> <td>12</td> <td>12</td> </tr> </table>	LM ₁	15	20	25	30	ℓ ₁	6	7	12	12			
LM ₁	15	20	25	30										
ℓ ₁	6	7	12	12										
With collar  	Flat type 	<table border="1"> <tr> <td>LM₁</td> <td>20</td> <td>25</td> <td>30</td> <td></td> </tr> <tr> <td>ℓ₁</td> <td>7</td> <td>12</td> <td>12</td> <td></td> </tr> </table>	LM ₁	20	25	30		ℓ ₁	7	12	12		Black	
	LM ₁	20	25	30										
	ℓ ₁	7	12	12										
	Flat type 	<table border="1"> <tr> <td>LM₁</td> <td>20</td> <td>25</td> <td>30</td> <td></td> </tr> <tr> <td>ℓ₁</td> <td>7</td> <td>12</td> <td>12</td> <td></td> </tr> </table>	LM ₁	20	25	30		ℓ ₁	7	12	12		Gray (20,25) Black (30)	
LM ₁	20	25	30											
ℓ ₁	7	12	12											
Horizontal type  Vertical type 	Flat type 	<table border="1"> <tr> <td>LM₁</td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> </tr> <tr> <td>ℓ₁</td> <td>6</td> <td>7</td> <td>12</td> <td>12</td> </tr> </table>	LM ₁	15	20	25	30	ℓ ₁	6	7	12	12	Black	
	LM ₁	15	20	25	30									
ℓ ₁	6	7	12	12										
With collar  	Flat type 	<table border="1"> <tr> <td>LM₁</td> <td>20</td> <td>25</td> <td>30</td> <td></td> </tr> <tr> <td>ℓ₁</td> <td>7</td> <td>12</td> <td>12</td> <td></td> </tr> </table>	LM ₁	20	25	30		ℓ ₁	7	12	12			
LM ₁	20	25	30											
ℓ ₁	7	12	12											

Note

Shows the specification recommended by us.

Orders Other Than Recommended Products

Specify orders for varieties that are not listed in the Recommended Product List, referring to the following 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.
 * If you wish to mount a horizontal model in a position that is not covered above, please provide us with the specific details.

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 (LM₁) (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

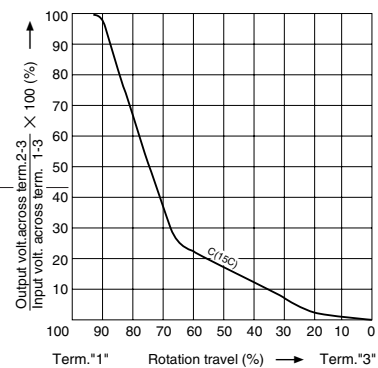
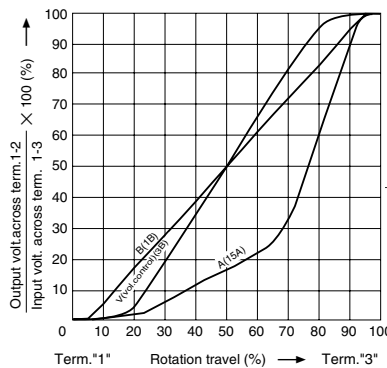
Resistance taper

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

B: For tone & general
 V: For vol.

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. Please specify if you need a collar.

Rotary Potentiometers
 Slide Potentiometers
 Multi Control Devices
 Rotary Sensors
 Linear Sensors

Metal Shaft
 Insulated Shaft
 Knob Operating

Products Specifications

Items		Type	9mm Size Insulated Shaft Snap-in		9mm Size Insulated shaft Long-life	11mm Size Insulated Shaft Snap-in	12mm/14mm Size Insulated Shaft Snap-in	
		Model	RK09K11□ RK09D11□	RK09K12□	RK09Y11L	RK11K11□	RK12L12□ RK14K12□	
Items			Single-unit	Dual-unit	Single-unit	Single-unit	Dual-unit	
Operating temperature range		-10°C to +70°C						
Electrical performance	Total resistance tolerance	±20%	±30%			±20%		
	Rated power	0.05W	0.03W	0.01W	0.05W			
	Maximum operating voltage	50V AC 20V DC	50V AC For AC only	50VDL	50V AC 20V DC	50V AC For AC only		
	Insulation resistance	100MΩ min. 250V DC				100MΩ min. 500V DC	100MΩ min. 250V DC	
	Voltage proof	1 minute 250V AC				1 minute 500V AC	1 minute 300V AC	
	Gang error	—	-40dB to 0dB within 3dB	—	Volume control -40dB to 0dB max. 3dB For tone control within 2dB at center			
Mechanical performance	Total rotational angle		280±5° RK09D11□ : 300±5°		300±5°			
	Rotational torque		1 to 8mN·m		5mN·m max	3 to 20mN·m		
	Strength of the operating section	Stopper strength	0.3N·m		150mN·m	Without bushing 0.5N·m With bushing 0.6N·m	14mm 0.6N·m 12mm 0.5N·m	
		Push-pull strength	50N max.		30N max.	80N 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.					
Endurance	Operating life	5,000 cycles		1,000,000 cycles	15,000 cycles			
Environmental test	Cold	-10°C for 96h						

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Rotary Sensors
Linear Sensors

Metal Shaft

Insulated Shaft

Knob Operating