Caution

電位器使用注意事項

電位器在使用過程中，電阻體表面應避免結露或水滴，否則，將導致絕緣電阻惡化或短路。

7.Stress being applied to the terminals 施加于端子應力

Care must be taken not to apply excessive stress when handling the terminals. Also be sure to design appropriate soldering conditions.

手拿端子時應特別注意避免過分用力，同時應設計正確的焊錫條件。

8.Looseness of the shaft 軸的徑向晃動

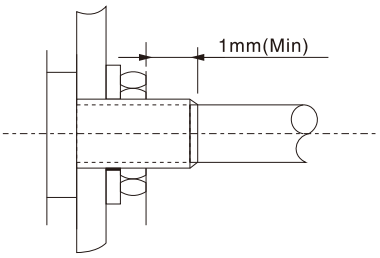
When long shaft are being employed, the looseness (deviation) tends to grow in proportion to the shaft length . Conducting a test under actual operating conditions is recommended.

當使用長度過分長的轉軸時，其徑向晃動量將與軸長成正比，應按實際需要選用軸長。

9.Chassis mounting 面板安裝

When this part is fastened to the chassis using a nut, excessive tigh tening may deteriorate the rotary contact performance, or strip the threads. Exercise care when tightening the nut.

當電位器是用螺母安裝于面板時，過緊將使旋轉按觸功能失效或螺紋滑牙，鎖螺母時應非常小心。



10.Operation at low Temperature 低溫工作

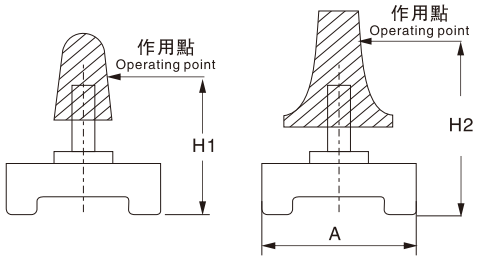
When these products are expected to be used under low temperature environments such as applications of car radios or car stereos, we can customize them for sassier and more smooth rotary movements. When placing orders, indicate whether the low temperature specification is necessary or not nut.

當產品是用于低溫環境時，如寒帶地区使用的汽車收音機或汽車音響等，本公司按客戶要求提供手感舒適產品，請定貨時加以說明。

11.Lever length 滑柄長度

If conditions permit, it is recommended that using the shortest lever (over5mm) for the application. Since the length A of the slider is constant as shown, the shorter the length up to the operating point , the better slide feeling will be obtained.(the longer the length up to the operating point like H2, the mkore unfavorable slide feeling will be given.)

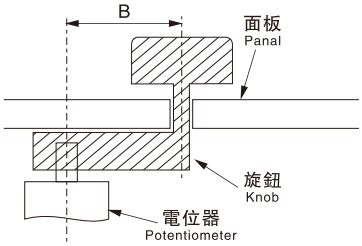
長度越短越好（至少5mm）在滑柄的宽度A不變情形下，滑柄長度越短，手感愈好，另出力點愈高，手感愈差（如圖）。



12.Driving lever 驅動臂

It is recommended that not to make the operating point away from the center line of the lever as shown. For the same reason as mentioned above, the shorter the length B the better slide feeling will be obtained.

切勿使操作點遠離滑柄中心綫，基于同樣理由，兩者距離B越短越好（如圖）。



Explanation of Terms
電 位 器 術 語 解 釋

1.Grouned Termina 接地端
This terminal is electrically connected to the shaft.
By connecting it to the set ground,ground noise (externally–induced noise) can be prevented.
在電器上與軸連接的端子起屏蔽外部噪聲作用。

2.Name of terminal 端子的名稱
When describing the terminal numbers of a potentiometer,the terminals connected to both ends of a resistor element are called terminal 1 and terminal 3.
The terminal connected to the sliding contact is called terminal 2.
面向電位器的驅動機構，將軸逆時針方向調節到盡頭時，在電氣上最靠近動觸點的終端引出端，稱爲1端；另一端的終端引出端稱爲3端，觸動點的引出端稱爲2端。

3.Temperature Characteristic 温度特性
Resistance variation dependant upon temperature.
電阻值隨温度變化的特性。

4.Rotational Torque 旋轉力矩（啓動力矩）
Torque to turn the operating shaft (operating knob).
使電位器轉軸（或旋鈕）轉動所需的力矩。

5.Allowable Operating Torque 終端止檔力矩
Maximum operating torque that the operating shaft (operating knob) can endure in its full CW or CCW position.
當轉軸（或旋鈕）轉到終端止檔位置而未引起檔點變形和其他可見損傷時的最大力矩。

6.Detent 定位裝置
Mechanism that provides the click feel during operation.
電位器驅動機構造運動時，有手感定位的機械裝置。

7.Derating Curve 降功耗曲綫
Curve that shows the relationship between the ambient temperature and maximum power.(Unit:percentage to rated power).
最大功耗與環境温度的關系曲綫（用額定功率的百分比表示）。

8.Nominal Total Resistance 標稱阻值
Resistance value that represents the specified values (reference resistance).
標志在電位器上的電阻值（標準阻值）。

9.Cermet 金屬陶瓷
Resistor element with excellent environment endurance formed by high–temperature baking of oxidized metal on sudstrate.
其電阻體是由印制在陶瓷基板上的金屬氧化物經高温烘烤所組成，具有良好的耐候性。

10.Maximum Allowable Operating Voltage 最高工作電壓。
Maximum voltage applicable to the resistor specified for the potentiometer type.
$V_{max}=\sqrt{P.R}$ Vmax–––Maximum Voltage P–––Rated power
R–––Rated resistance,Vmax equal to the limiting element voltage,When R is morn than the critical resistance
施加于電位器電阻體的最高電壓按下式計算：
$V_{max}=\sqrt{P.R}$ Vmax–––最高工作壓力
P–––額定功率 R–––標稱阻值. 如果R大于臨界電阻時，Vmax等于電阻體極限電壓。

Explanation of Terms
電 位 器 術 語 解 釋

11.Maximum Resolution 最大分解能
Number of bits in case of an absolute–type encoder or number of pulses per revolution in case of an incremental–type encoder.
絶對型編碼器的位元數或增量型編碼器旋轉一圈的脉冲數。

12.Residual Resistance 殘留電阻
Resistance (value) between the end terminal (terminal 1 or terminal 3) and the sliding terminal(ter–minal 2) when the control shaft (control part) is in its full CW or CCW position.
當驅動機構處于反時針或順時針極限位置時，終端（端子1或端子3）與滑動端（端子2）之間的電阻值。

13.Allowable Force in Push–pull Action for Lever 軸的推力和拉力
Maximum force at which the control part can endure without being broken when axial load is appliedto the shaft (lever).
電位器無可見損傷的情况下所能承受的軸向最大推力和拉力。

14.Shaft (lever) Play 軸的徑向晃動（間隙）
Play (tilt) of the shaft (lever) when a specified force is applied perpendicular to the shaft (lever).
在垂直于軸心（操縱杆）方向施加一規定的力時軸（操縱杆）的傾斜。

15.Shaft Tilt 軸的傾斜
Parallel of perpendicular shift from the axial line or mounting surface with no load applied to the shaft,assuming the potentiometer mounting surface as reference.
以電位器安裝平面爲基準，軸在無負荷狀態下，軸心綫與安裝平面的平行度或垂直度的偏移。

16.Sliding Noise 滑動噪聲
Electrical noise that is generated when a potentiometer is operated, expressed as voltage or resistance ratio.
電位器操作時産生的電氣噪聲，用電壓或電阻的比率表示。

17.Insulation Resistance 絶緣電阻
Insulation resistance between the conductive plate (terminal) of the potentiometer,and the body orshaft (lever). The larger the value,the higher the insulation.
電位器所有引出端連接在一起與外部金屬件和轉軸（操縱杆）之間的電阻。

18.Total Rotational Angle 總旋轉角
Rotational angle of the operating shaft between both ends.
操作軸在兩終點之間的旋轉角度。

19.Total Resistance and Tolerance 總阻值及允許偏差
A basic performance item of a potentiometer.Resistance between terminal 1 and terminal 3 and itstolerance.
這是電位器的基本性能之一，指在端子1與端子3之間的阻值及允許偏差。

20.Gang Error 相互偏差
Gap between respective resistance tapers of several potentiometers that make up a multi–ganged–type potentiometer.
(Unit:decibel)
多聯電位器各聯之間電阻規律的偏差，用分貝表示。

Explanation of Terms
電 位 器 術 語 解 釋

21.Withstanding Voltage 耐電壓
Voltage at which the insulation between the conductive part of a potentiometer and the body or shaft (lever) is destroyed.
電位器活動部件與外部金屬件或轉軸（操縱杆）的絶緣未受破壞時所能承受的電壓。

22.Tap 抽頭
Terminal 4 is generally called the tap.It is installed in the middle of the resistor and is used in loudn–ess circuits,balance adjusting circuits,etc.
端子4通常稱爲抽頭，設置在電阻體中心位置，用于響度電路，平衡電路等。

23.Carbon Film (Resistor) 碳膜（電阻體）
Resistance element that is formed from a carbon–base film and used for general–purpose potentiometers.
一般用途電位器的電阻體，以碳素爲基材形成的碳膜。

24.Mounting Dimensions 安裝尺寸
Dimensions for mounting a potentiometer on a PC board.
電位器用于PC板安裝時，PC板安裝開孔尺寸。

25.Mounting Height 安裝高度
Height from the surface of the PC board to the top of the shaft when a rotary potentiometer is soldered on the board.
旋轉式電位器焊接于PC板時，從PC板安裝平面到軸心頂端的高度。

26.Solder Heat Resistance 耐焊錫熱
Variation of electrical characteristics by heat during soldering.
焊錫後電氣性能的變化。

27.Push–push 推–推開關
A switch that toggles on and off by repetitive push operations.
這是一種推一下ON,再推一下OFF的開關。

28.Friction 摩擦
In a dual-shaft, multi-unit poduct, the inner and outer shafts interlock by frictional forcce. Both the inner and outer shafts that normally interlock can be shifted mutually for volume control,level control and other purposes.
兩軸多聯電位器，内外軸利用摩擦力互鎖，通常内外軸能相互移位，其用途是作音量控制，電平控制等。

29.Printed Circuit Terminal 印刷電路端子
This is a terminal to be inserted in the mounting hole of a PCB and soldered.
這是一種插入印刷電路板焊接的端子。

30.Resistance Taper 電阻規律
Characteristic that indicate the change in the resistance or output voltage of a potentiometer in reference with travel.
表示電位器的阻值或輸出電壓變化與行程的關系的特性。（見第七頁）

31.End Slip 終端無止動
This means free turning at the end of a potentiometer that has no stop mechanism(for end operation) in the co–ntrol part.
無終端止檔機構電位器可360°旋轉。

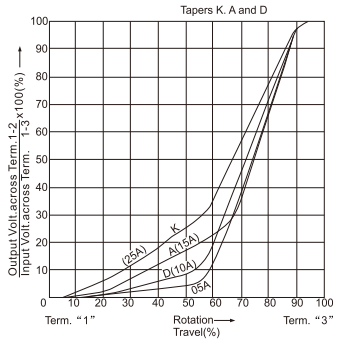
Common Specifications

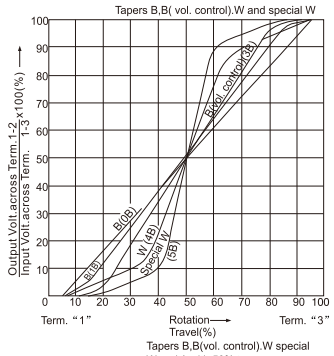
SPECIFICATIONS

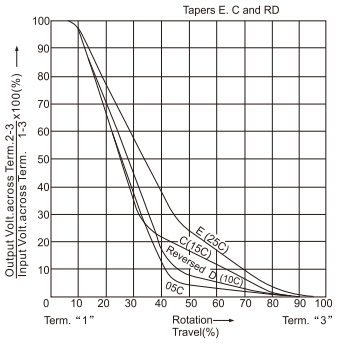
Electrical characteristics

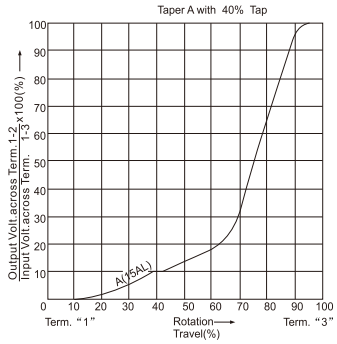
- **Resistance Taper Characteristics**

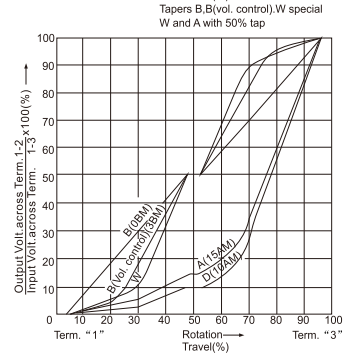
Resistance Taper Characteristic	Test Position (%)	$\frac{V1-2}{V1-3}$ X100% (%)	$\frac{V2-3}{V1-3}$ X100% (%)
A	50	10~25	—
B	50	40~60	—
C	50(started from Term.3)	—	10~25
D	50	6~15	—
E	50	—	18~34
W	30（±5 degree)	5~15	—
	50	40~60	—
	70（±5 degree)	85~95	—

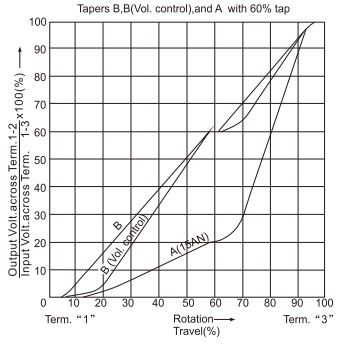


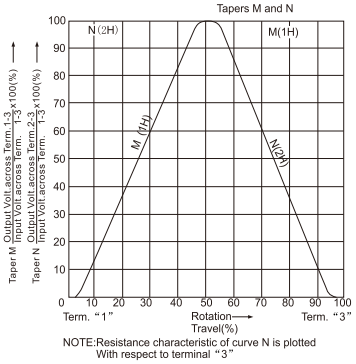












NOTE:Resistance characteristic of curve N is plotted With respect to terminal "3"