

## » 技术 创新 信誉

TECHNOLOGY INNOVATION CREDIBILITY

常州科能电子有限公司是专业设计和制造开关和电位器的厂商，已有20年的制造经验。公司占地面积25000平方米，厂房建筑面积15000平方米，公司产品现有50多个系列，800多种规格。产品远销欧洲、美洲、亚洲、中东等地区，在国内外市场均有相当的占有率，主要客户均为国内、国际一流品牌。

常州科能电子有限公司已通过ISO9001:2000质量管理体系。相关大功率电位器和开关，均已通过美国的UL，德国的VDE，挪威的NEMKO和国际电工委员会（IECEE）的CB等认证，生产的产品符合ROHS等欧洲环保标准。

常州科能电子有限公司拥有强大的技术和管理团队，先进的生产工艺、专业设备，系统的质控体系。完全具有大规模生产配套服务的能力。

公司以“质量第一、合理价格、交货快捷、服务优良”为宗旨。携手所有合作伙伴，共同发展，共同进步。

Changzhou Kennon Electronics Co., Ltd. is a professional manufacturers which design and manufacture switches and potentiometers , has 20 years of experience in manufacturing. The company covers an area of 25000 square meters, plant construction area of 15000 square meters, existing products more than 50 series, more than 800 kinds of specifications. Products are exported to Europe, America, Asia, the Middle East and other regions. Our product is very popular around the world, main customer are all from domestic and international and most of them are first-class brand customer.

Changzhou Kennon electronics Limited company has passed ISO9001:2000. The dimmer potentiometers and switches, has passed UL, VDE, NEMKO and the International Electro technical Commission (IECEE) of the CB, products meet European environmental standards ROHS,Reach etc..

Changzhou Kennon Electronics Co., has a strong technical and management team, professional production technology, advanced equipment and quality control system. Capable cooperate with large company with mass production. With the purpose of quality first, reasonable price, fast delivery, excellent service ,we will work with our all partner hand in hand ,common development, and common progress.





一、碳膜电位器 CARBON POTENTIOMETERS

1) 大电流，带开关电位器  
DIMMER POTENTIOMETERS/SWITCHES

PUSH-PUSH TYPE



P5-8

ROTARY TYPE



P9-14

ROTARY TYPE



P15-17

2) 微调电位器  
TRIMMER POTENTIOMETERS

PT6 PT10 PT15



P18-30

6MM SERIES



P31-32

6MM CERAMIC BASE  
8MM CERAMIC BASE  
CERMET TRIMMER 3386/3296/3006P



P33-47



3) 常规系列  
REGULAR TYPE

9MM 旋转式电位器  
ROTARY POTENTIOMETERS



P48-50

12MM 旋转式电位器  
ROTARY POTENTIOMETERS



P51-55

16MM 旋转式电位器  
ROTARY POTENTIOMETERS



P56-59

16MM 旋转式电位器  
ROTARY POTENTIOMETERS



P60-62

17MM 旋转式电位器  
ROTARY POTENTIOMETERS



P63-66

20MM 旋转式电位器  
ROTARY POTENTIOMETERS



P67-68

24MM 旋转式电位器  
ROTARY POTENTIOMETERS



P69-72

4) 薄型电位器  
ULTRA THIN MICRO POTENTIOMETERS

薄型电位器  
ULTRA THIN MICRO  
POTENTIOMETERS



P73-75



二、开关 SWITCH

1) ROTARY SWITCH

SR16A  P76

SR26  P77-79

2) Pressure switch

Pressure switch  P80

三、直滑电位器 SLIDE POTENTIOMETERS

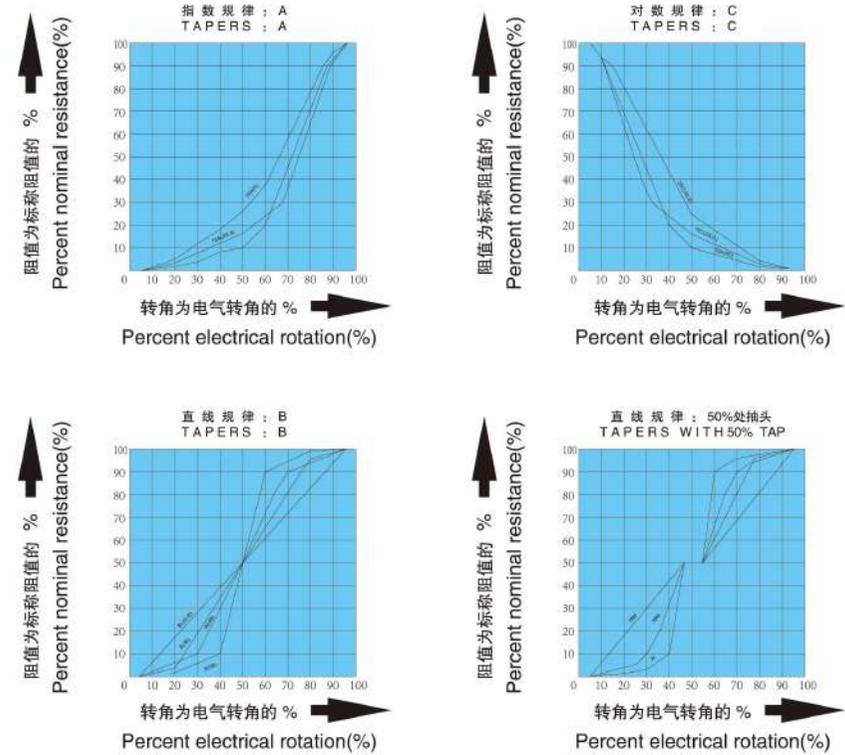
SLIDE POTENTIOMETERS  P81-83

四、线绕电位器 WIREWOUND POTENTIOMETERS

WIREWOUND POTENTIOMETERS  P84

WIREWOUND POTENTIOMETERS  P85-86

线性规律



▲ The tapers of all the products in the catalogue are same as above diagram except PT6,PT10 and PT15.

▲ 本目录除PT6,PT10,PT15电位器以外, 所有产品按以上线性规律

▲ The tapers of PT6,PT10 and PT15(IEC standard) is following as: PT6,PT10,PT15线性规律如下:

- (1)A为直线  
A=Linear
- (2)B为指数  
B=Log
- (3)C为对数  
C=Alog



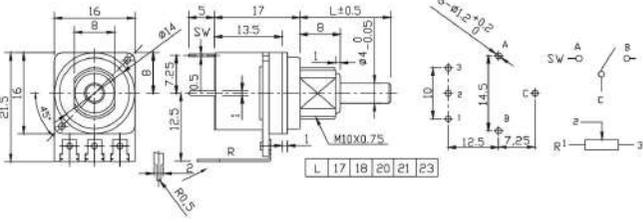
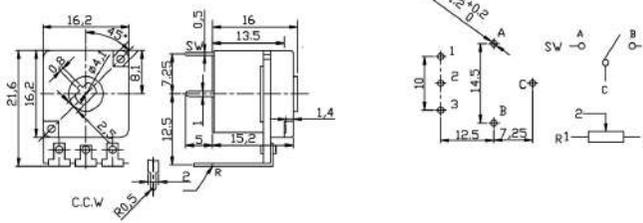
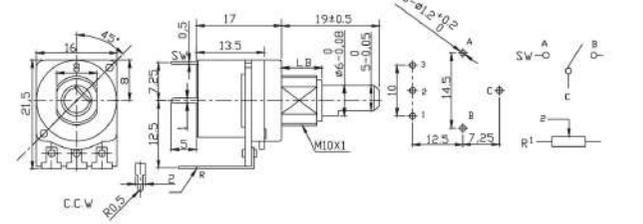
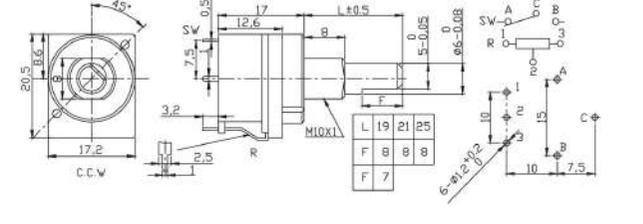


# DIMMER POTENTIOMETERS/SWITCHES

## Push-Push Types



### Model 25T105

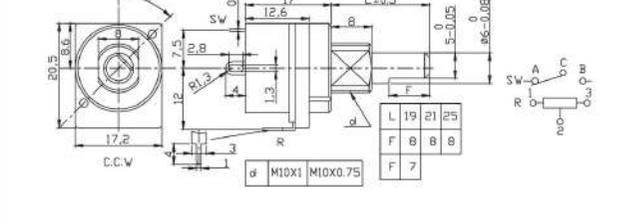
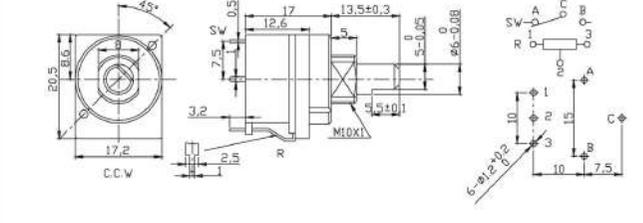
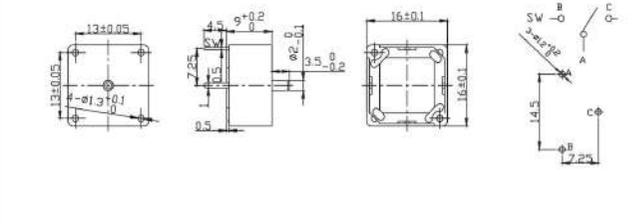
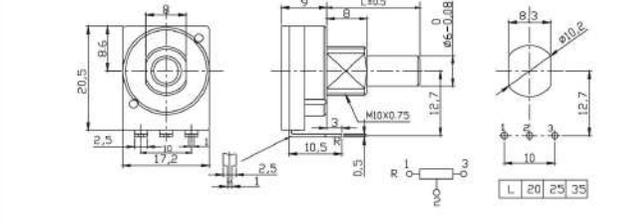
 <p>WH116AK-3T</p>	
 <p>WH116AK-5</p>	
 <p>WH116AK-6F</p>	
 <p>WH116AK-7</p>	

# DIMMER POTENTIOMETERS/SWITCHES

## Push-Push Types



### Model 25T105

 <p>WH116AK-8</p>	
 <p>WH116AK-9</p>	
 <p>WH116AK-40-3T</p>	
 <p>WH116-4A</p>	

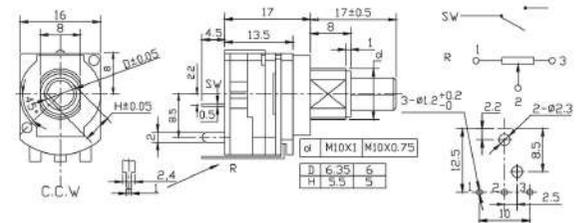
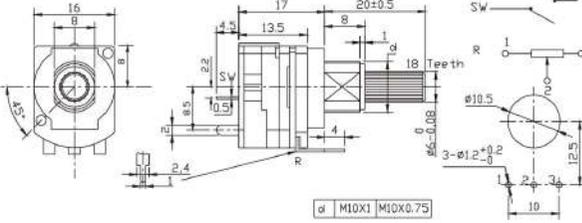
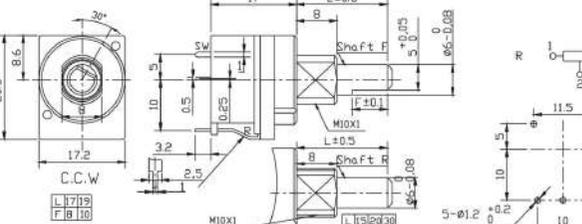
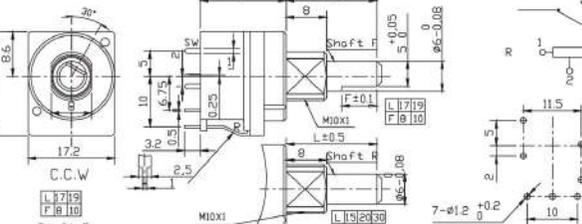


# DIMMER POTENTIOMETERS/SWITCHES

## Rotary Types



Model

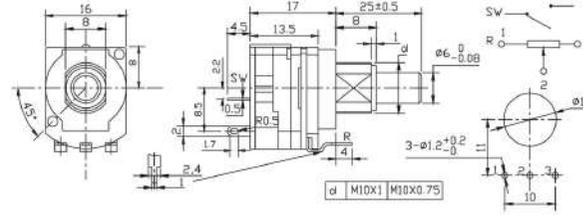
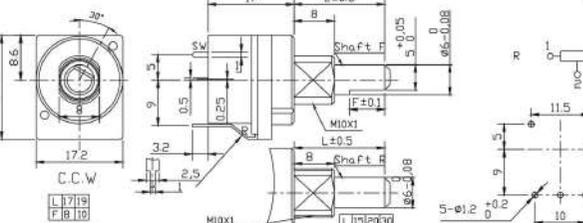
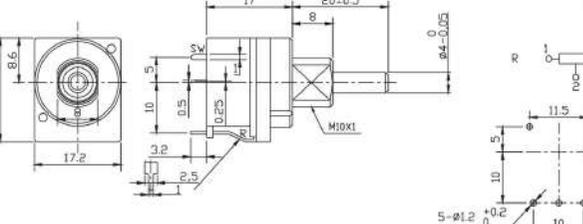
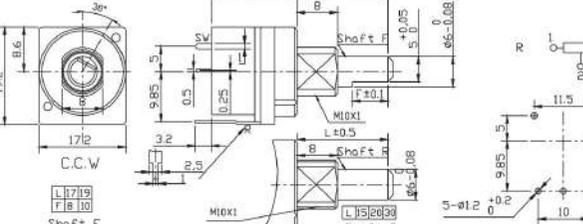
 <p>RV16C-40-1</p>	
 <p>RV16C-40-2</p>	
 <p>RV16C-40-3 (SPST)</p>	
 <p>RV16C-40-3 (DPST)</p>	

# DIMMER POTENTIOMETERS/SWITCHES

## Rotary Types

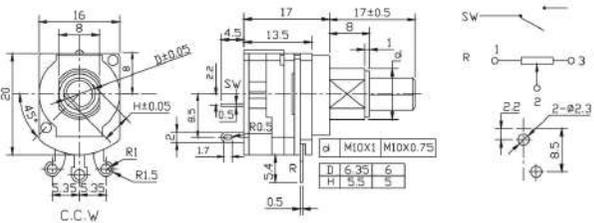
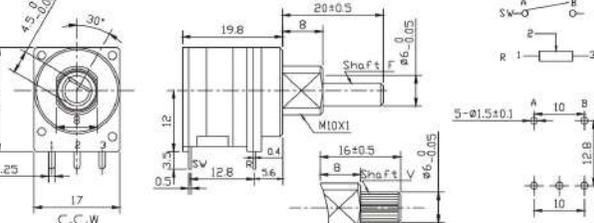
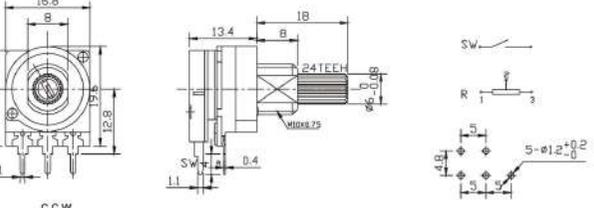
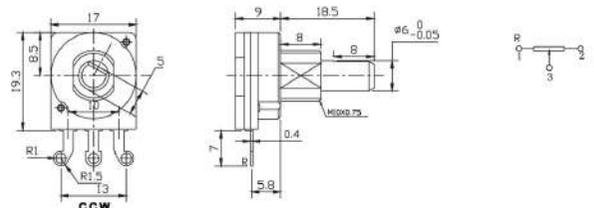


Model

 <p>RV16C-40-4</p>	
 <p>RV16C-40-5</p>	
 <p>RV16C-40-6</p>	
 <p>RV16C-40-7</p>	



Model

<p>RV16C-40-8</p> 	
<p>RV16C-3S</p> 	
<p>RV16A-2S-24T</p> 	
<p>RV16A-Φ6S-2</p> 	



RV16C-40-1  
RV16C-40-2  
RV16C-40-4  
RV16C-3S

RV16C-40-3/RV16C-40-5  
RV16C-40-6  
RV16C-40-7  
RV16C-40-8

RV16A Series  
WH116-4A

机械性能 Mechanical Characteristics

Total Rotational Angle 总旋转角度	270°±5°	270°±5° RV16C-3S:300°±5°	300°±5°	300°±5°
Rotational torque 旋转力矩	2-15mN.m	2-20mN.m	2-20mN.m	2-20mN.m
Shaft Stopper Strength 止档强度	30cN.m	40cN.m	40cN.m	40cN.m
Switch working angle/stroke 开关动作角度/行程	(3±0.5)mm	40°MAX.	35°MAX.	35°MAX. RV16A-6S/WH116-4A Except
Switch working force/torque 开关动作力/力矩	(0.6-2)kgf	(2-5)cN.m	(2-5)cN.m	(1.0-3.5)cN.m RV16A-6S/WH116-4A Except
Click position C.C外置	0 detent/ 15、27、36 detents	0 detent	0 detent/ 15 detents	0 detent/ 15 detents

电气性能 Electrical Characteristics

Operating temperature 工作温度	(-25℃)to-(+105℃)	(-20℃)to-(+70℃)	(-20℃)to-(+70℃)	(-20℃)to-(+70℃)
Switching rating 开关额定负载	AC250V,10A	AC250V,10A	AC250V,4A	AC250V,2A or DC24V,3A RV16A-6S/WH116-4A Except
Switch contact resistance 开关接触电阻	Less than 50mΩ	Less than 50mΩ	Less than 50mΩ	Less than 50mΩ RV16A-6S/WH116-4A Except
Rated wattage 额定功率	CurveB:0.2W,Other than B:0.1W			
Rated voltage 额定电压	CurveB:250V,Other than B:200V			
Insulation resistance 绝缘电阻	More than 100MΩ at DC500V			
Dielectric 抗电强度	AC750V 1minute(between open contacts),Ac1500Vminute(between carbon and contacts)			
Resistance Law 电阻规律	A or B or C			
Resistance Range 阻值范围	1KΩ-2MΩ			
Resistance tolerance 阻值偏差	±20%(≥1M±30%)			
Rotational noise 转动噪音	47mv			
Residual resistance 残留电阻	R≥250KΩ,0.1%R max;250KΩ > R > 10KΩ,20Ωmax;10KΩ≥R, 10Ωmax			

耐久性 Durability

Mechanical life 机械寿命	50,000 cycles(10-17 times/minute)	20,000 cycles (10-17 times/minute)
Electrical life 电气寿命	30,000 cycles(10-17 times/minute)	15,000 cycles (10-17 times/minute)



### Model

<p><b>WH0162</b></p>	<p>Project 20V24V35V45V L 20 24 35 45 I 10 10 21.5 31.5</p> <p>Project 45R50R L 45 50 LB B.2 19.2</p>
<p><b>WH0162-1J</b></p>	<p>Project 20V24V35V45V L 20 24 35 45 I 10 10 21.5 31.5</p> <p>Project 45R50R L 45 50 LB B.2 19.2</p>
<p><b>WH0162-2J</b></p>	<p>Project 20V24V35V45V L 20 24 35 45 I 10 10 21.5 31.5</p> <p>Project 45R50R L 45 50 LB B.2 19.2</p>



### Model

<p><b>WH0162-1B</b></p>			
<p><b>电气性能 Electrical Characteristics</b></p>		<p>Dielectric 抗电强度</p>	<p>AC500v,1minute</p>
<p>Operating temperature 工作温度</p>	<p>(-20℃)to-(+70℃)</p>	<p><b>机械性能 Mechanical Characteristics</b></p>	
<p>Rated wattage 额定功率</p>	<p>CurveB:0.2W,Other than B:0.1W</p>	<p>Total Rotational Angle 总旋转角度</p>	<p>WH0162-3J Series(270or300)±5℃ Except 300±5℃</p>
<p>Max Operation Voltage 最大工作电压</p>	<p>CurveB:200V,Other than B:150V</p>	<p>Rotational torque 旋转力矩</p>	<p>3-15m.Nm</p>
<p>Resistance Range 阻值范围</p>	<p>1KΩ~2MΩ</p>	<p>Shaft Stopper Strength 止档强度</p>	<p>60cN.m</p>
<p>Resistance tolerance 阻值偏差</p>	<p>±20%(≥1M±30%)</p>	<p>Push Pull Strength 轴推拉强度</p>	<p>50N</p>
<p>Rotational noise 转动噪音</p>	<p>47mv</p>	<p>Durability 耐久性</p>	<p>10,000cycles (10~17 times/minute)</p>
<p>Residual resistance 残留电阻</p>	<p>R≥250KΩ,0.1%Rmax;250KΩ&gt;R&gt;10KΩ,20Ωmax;10KΩ≥R,100Ωmax</p>	<p><b>焊接 Soldering</b></p>	
<p>Resistance Law 电阻规律</p>	<p>A or B or C</p>	<p>T≤265℃ 温度</p>	<p>≤5s 时间</p>
<p>Insulation resistance 绝缘电阻</p>	<p>More than 100MΩ at DC500V</p>		



### Model

<p><b>WH20-1J</b></p>	<table border="1"> <tr> <td>L</td> <td>20</td> <td>25</td> <td>40</td> <td>50</td> <td>60</td> <td>Shaft R</td> </tr> <tr> <td>L</td> <td>21</td> <td>23</td> <td colspan="3"></td> <td>Shaft v</td> </tr> <tr> <td>l</td> <td>16.5</td> <td>18.5</td> <td colspan="3"></td> <td></td> </tr> <tr> <td>teeth</td> <td colspan="2">24</td> <td colspan="3">18</td> <td></td> </tr> </table>	L	20	25	40	50	60	Shaft R	L	21	23				Shaft v	l	16.5	18.5					teeth	24		18										
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<p><b>P20-1AK-2</b></p>	<table border="1"> <tr> <td>LB</td> <td>8</td> <td>2</td> <td>12</td> <td colspan="2"></td> <td>Shaft R</td> </tr> <tr> <td>L</td> <td>20</td> <td>25</td> <td>40</td> <td>50</td> <td>60</td> <td>Shaft R</td> </tr> <tr> <td>L</td> <td>21</td> <td>23</td> <td>60</td> <td colspan="2"></td> <td>Shaft v</td> </tr> <tr> <td>l</td> <td>16.5</td> <td>18.5</td> <td>50.5</td> <td colspan="2"></td> <td></td> </tr> <tr> <td>teeth</td> <td colspan="2">24</td> <td colspan="2">18</td> <td></td> <td></td> </tr> </table>	LB	8	2	12			Shaft R	L	20	25	40	50	60	Shaft R	L	21	23	60			Shaft v	l	16.5	18.5	50.5				teeth	24		18			
LB	8	2	12			Shaft R																														
L	20	25	40	50	60	Shaft R																														
L	21	23	60			Shaft v																														
l	16.5	18.5	50.5																																	
teeth	24		18																																	
<p><b>P20-1AK-3</b></p>	<table border="1"> <tr> <td>LB</td> <td>8</td> <td>2</td> <td>12</td> <td colspan="2"></td> <td>Shaft R</td> </tr> <tr> <td>L</td> <td>20</td> <td>25</td> <td>40</td> <td>50</td> <td>60</td> <td>Shaft R</td> </tr> <tr> <td>L</td> <td>21</td> <td>23</td> <td>60</td> <td colspan="2"></td> <td>Shaft v</td> </tr> <tr> <td>l</td> <td>16.5</td> <td>18.5</td> <td>50.5</td> <td colspan="2"></td> <td></td> </tr> <tr> <td>teeth</td> <td colspan="2">24</td> <td colspan="2">18</td> <td></td> <td></td> </tr> </table>	LB	8	2	12			Shaft R	L	20	25	40	50	60	Shaft R	L	21	23	60			Shaft v	l	16.5	18.5	50.5				teeth	24		18			
LB	8	2	12			Shaft R																														
L	20	25	40	50	60	Shaft R																														
L	21	23	60			Shaft v																														
l	16.5	18.5	50.5																																	
teeth	24		18																																	



### Model

Electrical Characteristics 电气性能		Switching rating 开关额定负载	With Switch Series: AC250V, 2A or DC24V, 5A
Operating temperature 工作温度	(-20°C) to (+70°C)	Switch contact resistance 开关接触电阻	With Switch Series: Less than 30mΩ
Rated wattage 额定功率	Curve B: 0.4W, Other than B: 0.2W	Mechanical Characteristics 机械性能	
Max Operation Voltage 最大工作电压	Curve B: 200V, Other than B: 150V	Switch working angle 开关动作角度	With Switch Series: 30±5°
Resistance Range 阻值范围	1KΩ~2MΩ	Switch working torque 开关动力矩	With Switch Series: (2~5)cN.m
Resistance tolerance 阻值偏差	±20% (≥1M±30%)	Total Rotational Angle 总旋转角度	300±5°
Rotational noise 转动噪音	47mv	Rotational torque 旋转力矩	4~15m.Nm
Residual resistance 残留电阻	R≥250KΩ, 0.1%R max; 250KΩ > R > 10KΩ, 20Ω max; 10KΩ ≥ R, 10Ω max	Shaft Stopper Strength 止档强度	80cN.m
Resistance Law 电阻规律	A or B or C	Push Pull Strength 轴推拉强度	50N
Insulation resistance 绝缘电阻	More than 100MΩ at DC500V	Durability 持久性	10,000 cycles (10~17 times/minute)
Dielectric 抗电强度	AC500V, 1minute	Soldering 焊接	
		T≤265°C 温度	t≤5s 时间

### PT6 6mm Carbon Potentiometer



#### 特点

- 长寿命, 低成本。
  - 优良的防尘结构 没有任何开口部分。
  - 力矩小。
  - 阻值线性多样化。
  - 旋转50%处有定位或整个旋转行程带定位。
  - 品种规格多 适用性强
- Carbon resistive element.
  - Dust proof enclosure.
  - Polyester substrate.
  - Also upon request:
  - ◇ Wiper positioned at 50% or fully clockwise.
  - ◇ Supplied in magazines for automatic insertion.
  - ◇ Long life model PT-6...E(10,000 cycles)
  - ◇ Without crimping model PT-6...SC
  - ◇ Housing available in self extinguishable plastic (UL94V0)

#### FEATURES

#### 机械性能

#### MECHANICAL SPECIFICATIONS

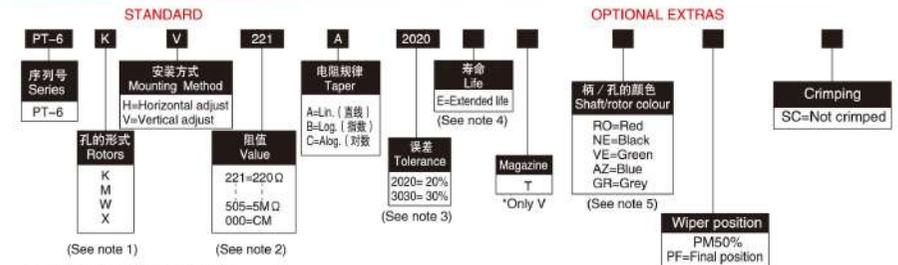
- 机械
  - Mechanical rotation angle: 235° ± 5°
- 电气
  - Electrical rotation angle: 200° ± 20°
- 旋转力矩
  - Torque: 0.2 to 2Ncm, (0.3 to 2.7in-oz)
- 止档力矩
  - Stop torque: >4 Ncm (>5.6 in-oz)

#### 电器性能

#### ELECTRICAL SPECIFICATIONS

- 阻值范围
  - Range of values(\*) 220 Ω ≤ Rn ≤ 5M (Decad. 1.0-2.0-2.2-2.5-4.7-5.0)
- 阻值误差
  - Tolerance(\*): 220 Ω ≤ Rn ≤ 1M Ω ----- ± 20%  
1M Ω < Rn ≤ 5M Ω ----- ± 30%
- 耐电压
  - Max. Voltage: 100VDC (lin), 50 VDC (no lin)
- 额定功率
  - Nominal Power 50°C (122° F) (see power rating curve) 0.1W (lin) 0.05W (no lin)
- 线性
  - Taper(\*) (log. & Alog. only Rn ≥ 1k)
- 残留电阻
  - Residual resistance: ≤ 0.5% Rn (5 Ω min.)
- 平滑性
  - Equivalent Noise Resistance: ≤ 3% Rn (3 Ω min)
- 环境温度
  - Operating Temperature\*: -25°C +70°C (-13° F +158° F)
  - \*Others upon request \*\*Up to 85°C depending on application

#### 型号命名 HOW TO ORDER



A Dual Gang version is available (see Low Torque Ganged Trimmer data sheet).

#### NOTES

- (1) Adjust.type: 《X》 is only available with horizontal adjusting method.
- (2) Value: - Code:  $22 \quad 1 = 200 \Omega$   
 ↳ Number of zeros  
 ↳ First two digits.  
 - 000=CM=Switch (see diagram)
- (3) Tolerance (non standard): Upon request: Code eg.:  $+7 \quad -5 = 07 \quad 05$   
 ↳ Negative tolerance  
 ↳ Positive tolerance
- (4) Life: Normal = 500 cycles Long = 10,000 cycles
- (5) Potentiometer without knob, only the rotor Potentiometer with knob, only the knob.

NOTE: The information contained here should be used for reference purposes only.

#### HOW TO ORDER CUSTOM DRAWING

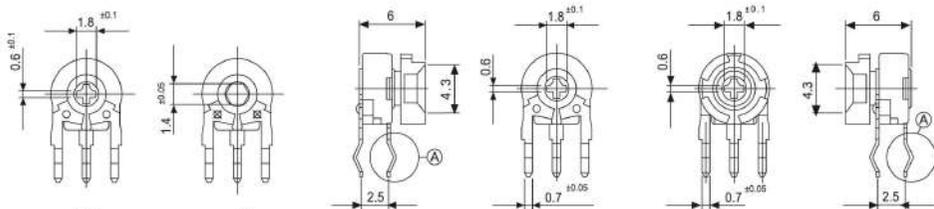
#### PT-6 KV + DRAWING NUMBER (Max.16 characters)

This way of ordering should be used for options which are not included in the "How to order" standard and optional extras

#### STANDARD OPTIONS

- Long life .....10000 cycles
- Packing .....Bulk
- Rotor colour .....White
- Wiper position .....Initial
- Crimping .....With crimping

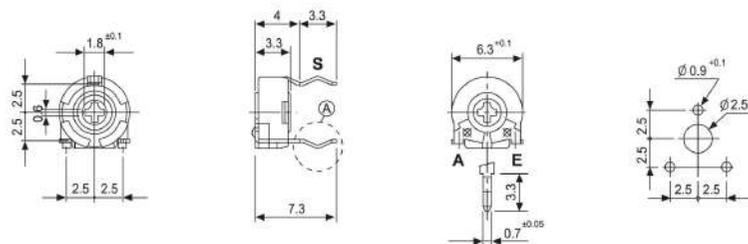
#### ROTORS (孔的形式)



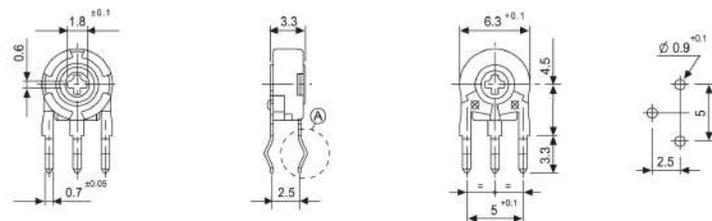
十字 六角  
K=Cross slot thru hole M=Hexagonal thru hole X=Adjustable from collector side W=Adjustable from terminal side

#### MOUNTING METHODS (安装方式)

v= Horizontal mount/Vertical adjust 卧式—垂直调节

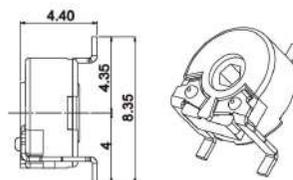


h= Vertical mount/Horizontal adjust 立式—水平调节

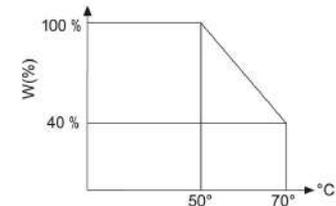


#### SMD VERSION

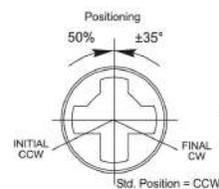
SMD / SMT version available:



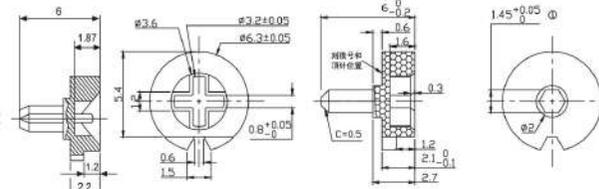
#### POWER RATING CURVE



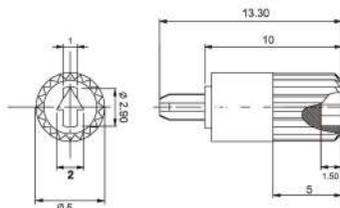
#### 3#



#### 4#

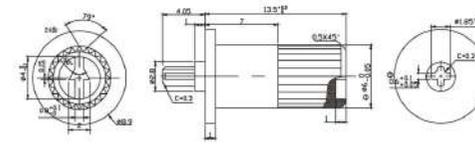


#### 5V



Please order Shaft Separately

#### 6V



#### TESTS

ELECTRICAL LIFE	1,000h @ 50°C:0.1W	± 5%
MECHANICAL LIFE(CYCLES)	200 @ 10CPM...15CPM	± 3% (Rn<1M Ω)
TEMPERATURE COEFFICIENT	-25°C; +70°C	± 300ppm(Rn<100K)
THERMAL CYCLING	16h. @ 85°C;2h. @ -25°C	± 2.5%
DAMP HEAT	500h. @ 40°C @95%HR	± 5%
VIBRATION (for each plane X,Y,Z)	2h. @ 10Hz... 55Hz.	± 2%

NOTE:Out of range values may not comply with these results.



# TRIMMER POTENTIOMETERS

## PT10 10mm Carbon Potentiometer

### PT10



### 机械性能 MECHANICAL SPECIFICATIONS

- 机械 - Mechanical
  - 旋转角度 rotation angle: 235° ± 5°
- 电气 - Electrical
  - 旋转角度 rotation angle: 220° ± 20°
  - 旋转力矩 - Torque: 0.4 to 2Ncm. (0.6 to 2.7in-oz)
  - 止挡力矩 - Stop torque: >5 Ncm.(>7 in-oz)

### 特点

- 长寿命, 低成本。 - Carbon resistive element.
- 优良的防尘结构 没有 - Dust proof enclosure.
- 力矩小。 - Polyester substrate.
- 阻值线性多样化。 - Also upon request:
  - Wiper positioned at 50% or fully clockwise.
  - Supplied in magazines for automatic insertion.
- 旋转50%处有定位或整个旋转行程带定位。 - Long life model for low cost control pot applications
- 品种规格多 适用性强。 - Self extinguishable plastic UL 94V-0

### FEATURES

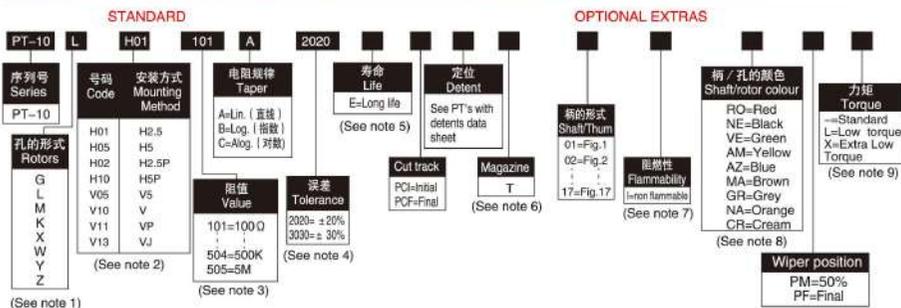
- Carbon resistive element.
- Dust proof enclosure.
- Polyester substrate.
- Also upon request:
  - Wiper positioned at 50% or fully clockwise.
  - Supplied in magazines for automatic insertion.
- Long life model for low cost control pot applications
- Self extinguishable plastic UL 94V-0
- Cut track option
- Special tapers
  - Mechanical detents
  - Low & extra low torque versions
  - Special switch option

### 电器性能

- 阻值范围 Range of values(\*)
    - 100 Ω ≤ Rn ≤ 5M(Decad. 1.0-2.0-2.2-2.5-4.7-5.0)
  - 阻值误差 - Tolerance(\*)
    - 100 Ω ≤ Rn ≤ 1M Ω ± 20%
    - 1M Ω < Rn ≤ 5M Ω ± 30%
  - 耐电压 - Max. Voltage: 200VDC (lin), 100 VDC (no lin)
  - 额定功率 - Nominal Power 50°C(122° F) (see power rating curve)
    - 0.15W(lin)/0.07W(no lin)
  - 线性 - Taper(\*) (log. & Alog. only Rn ≥ 1k) Lin; Log; Alog
  - 残留电阻 - Residual resistance: ≤ 0.5%Rn(5Ω min.)
  - 平滑性 - Equivalent Noise Resistance: ≤ 3%Rn(3 Ω min)
  - 环境温度 - Operating Temperature\*: (-25°C + 70°C) (-13° F + 158° F)
- \*Others upon request \*\*Up to 85°C depending on application

### ELECTRICAL SPECIFICATIONS

### 型号命名 HOW TO ORDER



### NOTES

- "Z" adjustment only available on "H" versions. Rotor "G" only available in purple (shaft/rotor colour "V1").
- Terminals styles: "P" & "J" are crimped terminals.
- Value Example: Code: 10 1 100Ω
  - 1: Numb Of zeros
  - 10: First two digits Of the value.
- Non Standard tolerance, upon request. Example: +7% Code: 07 05
  - 07: positive tolerance
  - 05: negative tolerance
- Life ♦ Long life 10000 cycles
- Magazines: not available with the H10, V05 and V13 models, nor with adjustment types X, Y, Z.
- Non flammable: housing, rotor and shaft.
- Colour shaft/rotor: ♦ Potentiometer without shaft: only rotor ♦ Potentiometer with shaft: only shaft
  - ♦ Cream colour only available in standard plastic
- Low Torque: 0.25 to 1 Ncm (per pot.)
  - Extra Low Torque: 0.1 to 0.4 Ncm(per pot). Only available on "H" modles without crimping
  - No detent option available for low and extra low torque models. No shaft or thumbwheel option for extra low torque models.

NOTE: The information contained here should be used for reference purposes only.

# TRIMMER POTENTIOMETERS

## PT10



### PT10

### HOW TO ORDER CUSTOM DRAWING

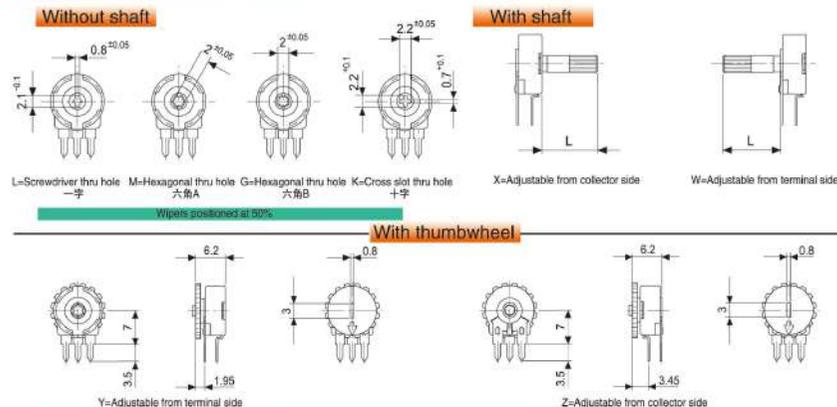
PT-10 LH01 + DRAWING NUMBER (Max.16 characters)

This way of ordering should be used for options which are not included in the "How to order" standard and optional extras

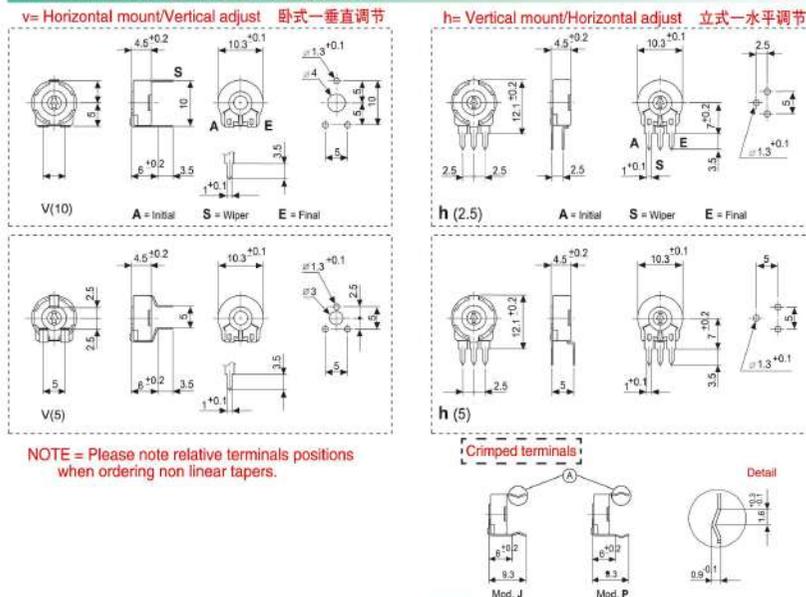
### STANDARD OPTIONS

Long life	10000 cycles
Cut track	No
Detents	None
Packing	Bulk
Non flammable	No
Rotor colour	White
Shaft colour	Natural
Wiper position	Initial
Torque	Standard

### ROTORS (孔的形式)



### MOUNTING METHODS (安装方式)

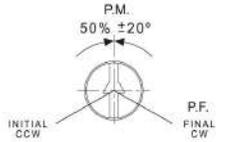


CHANGZHOU KENNON ELECTRONICS CO., LTD.

CHANGZHOU KENNON ELECTRONICS CO., LTD.

#### OPTIONS

Positioning (Std. Position = CCW)

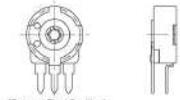


CUT TRACK  
CCW on-off (A)



A = Initial  
E = Final

Special SWITCH (Upon request)



(Rotor at Final Position)  
Mechanical Rotation Angle: 45°  
Housing Colour: Green

CW on-off (E)

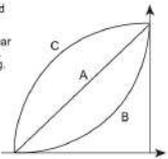


A = Initial  
E = Final  
S = Wiper

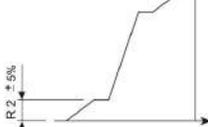
#### TAPERS

Standard

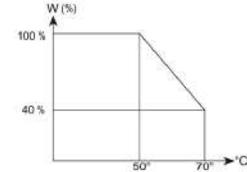
A = Linear  
B = Log.  
C = Alog.



Special taper example



#### POWER RATING CURVE



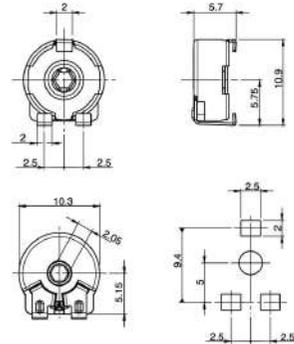
NOTE = Please note relative terminals positions when ordering non linear tapers.

#### TESTS

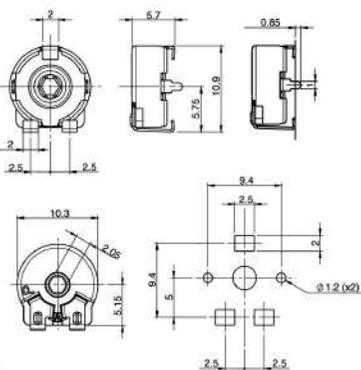
ELECTRICAL LIFE	1.000h @ 50°C:0.15W	± 5%
MECHANICAL LIFE(CYCLES)	500 @ 10CPM...15CPM	± 3% (Rn<1M Ω)
TEMPERATURE COEFFICIENT	-25°C; +70°C	± 300ppm(Rn<100K)
THERMAL CYCLING	16h. @ 85°C; 2h. @ -25°C	± 2.5%
DAMP HEAT	500h. @ 40°C @ 95%HR	± 5%
VIBRATION (for each plane X,Y,Z)	2h. @ 10Hz... 55Hz.	± 2%

NOTE: Out of range values may not comply with these results.

#### V50

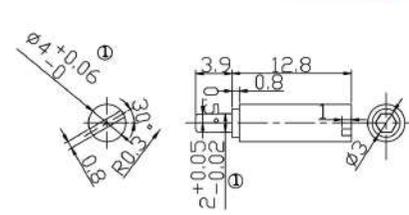


#### V60

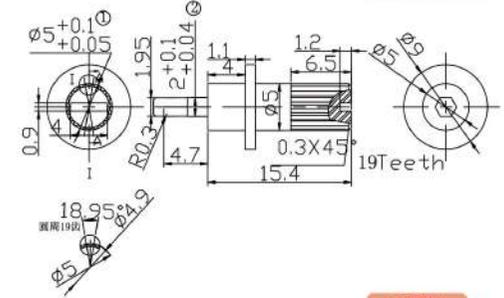


#### Shaft type

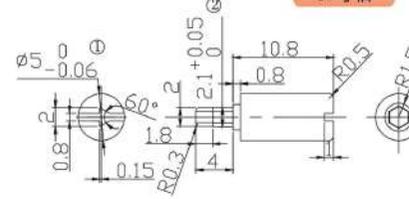
##### 1#号轴



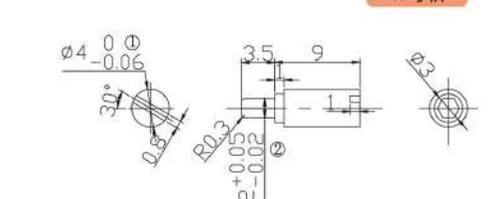
##### 2#号轴



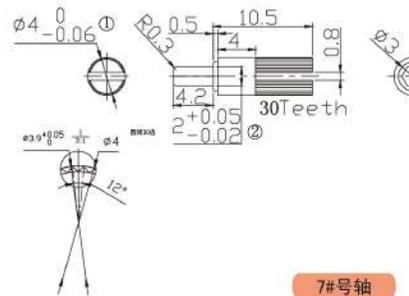
##### 3#号轴



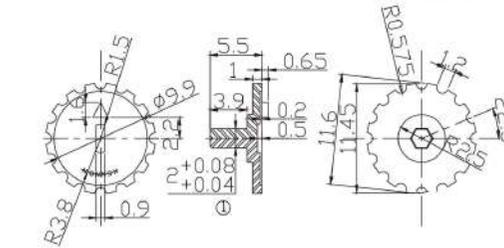
##### 4#号轴



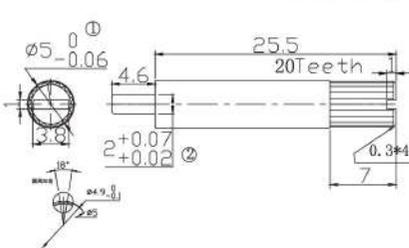
##### 5#号轴



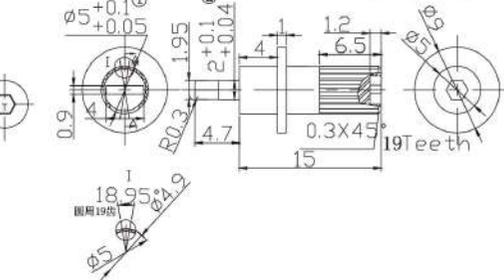
##### 6#号轴



##### 7#号轴



##### 8#号轴

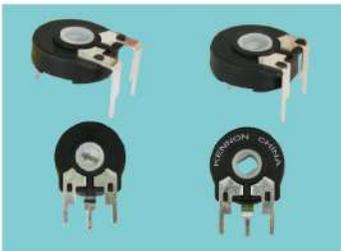




# TRIMMER POTENTIOMETERS

PT15 15mm Carbon Potentiometer

PT15



### 特点

- 长寿命, 低成本。
- 优良的防尘结构 没有任何开口部分。
- 力矩小。
- 阻值线性多样化。
- 旋转50%处有定位或整个旋转行程带定位。
- 品种规格多 适用性强

### FEATURES

- Carbon resistive element.
- Dust proof enclosure.
- Polyester substrate.
- Also upon request:
  - ◇ Wiper positioned at 50% or fully clockwise.
  - ◇ Long life model for low cost control pot. applications
  - ◇ Low torque option
  - ◇ Supplied in magazines for automatic insertion.
  - ◇ Self extinguishable plastic UL 94V-0
  - ◇ Cut track option
  - ◇ Special tapers
  - ◇ Mechanical detents

### 机械性能 MECHANICAL SPECIFICATIONS

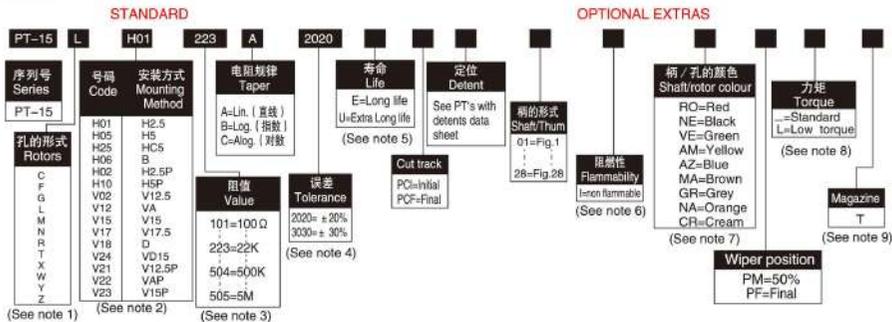
- 机械 - Mechanical
  - 旋转角度 rotation angle:  $265^\circ \pm 5^\circ$
- 电气 - Electrical
  - 旋转角度 rotation angle:  $250^\circ \pm 20^\circ$
  - 旋转力矩 - Torque: 0.5 to 2.5Ncm. (0.7 to 3.4in-oz)
- 止档力矩 - Stop torque:  $>10\text{ Ncm.} (>14\text{ in-oz})$

### 电器性能

### ELECTRICAL SPECIFICATIONS

- 阻值范围 Range of values(\*)
    - $100\ \Omega \leq R_n \leq 5\text{M}(\text{Decad. } 1.0-2.0-2.2-2.5-4.7-5.0)$
  - 阻值误差 - Tolerance(\*):  $100\ \Omega \leq R_n \leq 1\text{M} \text{ --- } \pm 20\%$ 
    - $1\text{M}\ \Omega < R_n \leq 5\text{M}\ \Omega \text{ --- } \pm 30\%$
  - 耐电压 - Max. Voltage: 250VDC (lin), 125 VDC (no lin)
  - 额定功率 - Nominal Power 50°C (122° F) (see power rating curve)
    - 0.25W (lin) 0.12W (no lin)
  - 线性 - Taper(\*) (log. & Alog. only  $R_n \geq 1\text{k}$ ) Lin; Log; Alog
  - 残留电阻 - Residual resistance:  $\leq 0.5\% R_n (\geq 5\ \Omega \text{ min.})$
  - 平滑性 - Equivalent Noise Resistance:  $\leq 3\% R_n (3\ \Omega \text{ min})$
  - 环境温度 - Operating Temperature\*:  $(-25^\circ\text{C} + 70^\circ\text{C}) (-13^\circ\text{F} + 158^\circ\text{F})$
- \*Others upon request \*\*Up to 85°C depending on application

### 型号命名 HOW TO ORDER



### NOTES

- (1) "Z" adjustment only available on "H" versions. Standard colour for the "T" rotor: Orange
- (2) Terminals styles: "P" are crimped terminals.
- (3) Value Example: Code:10 1 100Ω
- (4) Non Standard tolerance, upon request. Example: +7% Code:07 05 negative tolerance positive tolerance
- (5) Life ♦ Standard 500 cycles ♦ Long life 10000 cycles ♦ Extra Long life 100000 cycles (to be studied case by case)
- (6) Non flammable: housing, rotor and shaft.
- (7) Colour shaft/rotor: ♦ Potentiometer without shaft: only rotor ♦ Potentiometer with shaft: only shaft Cream colour only available in standard plastic
- (8) Low Torque:  $\leq 1.5\text{Ncm}$ . no detent option available for low torque models
- (9) Magazines (35pcs/mag): available for VA (12.5), V (12.5P), V(15), V(15P) and H -models. For more information please contact us directly.

NOTE: The information contained here should be used for reference purposes only.

# TRIMMER POTENTIOMETERS

PT15



PT15

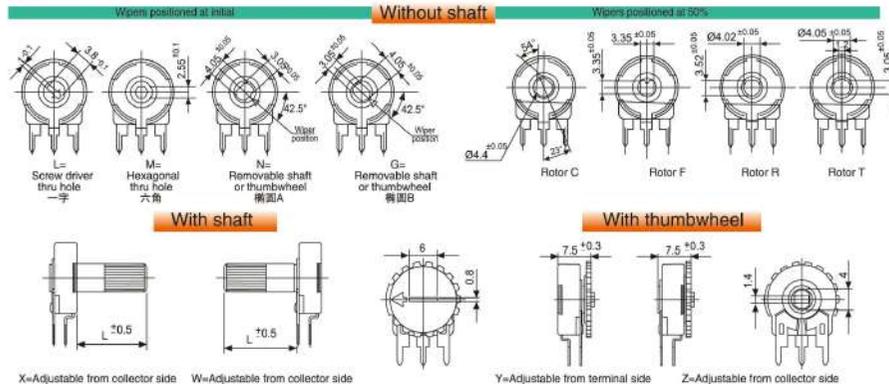
### HOW TO ORDER CUSTOM DRAWING

PT-15 LH01 + DRAWING NUMBER (Max.16 characters)  
This way of ordering should be used for options which are not included in the "How to order" standard and optional extras

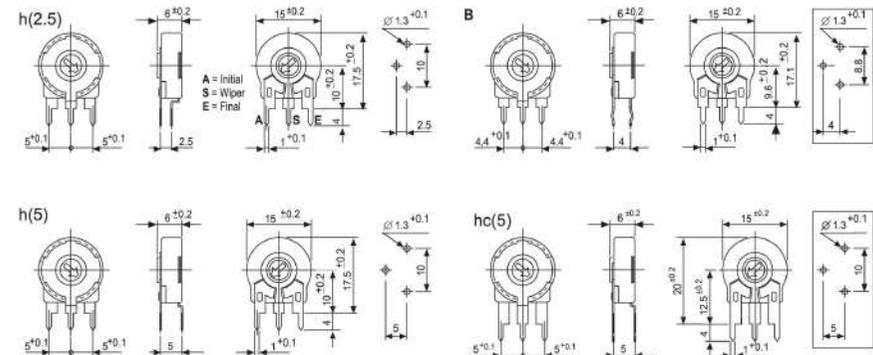
### STANDARD OPTIONS

- Long life ..... 10000 cycles
- Cut track ..... No
- Detents ..... None
- Non flammable ..... No
- Rotor colour ..... White
- Shaft colour ..... Natural
- Wiper position ..... Initial
- Torque ..... Standard

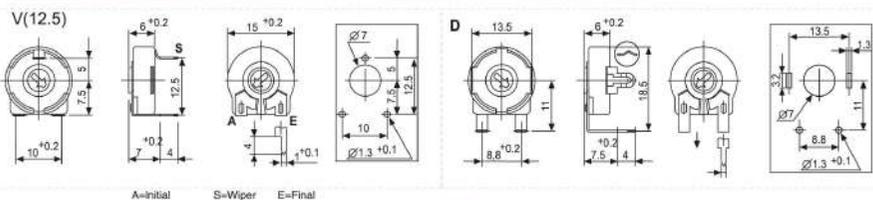
### ROTORS (孔的形式)



### VERTICAL MOUNT-HORIZONTAL ADJUST (安装方式) 立式-水平调节



### HORIZONTAL MOUNT- VERTICAL ADJUST 卧式-垂直调节





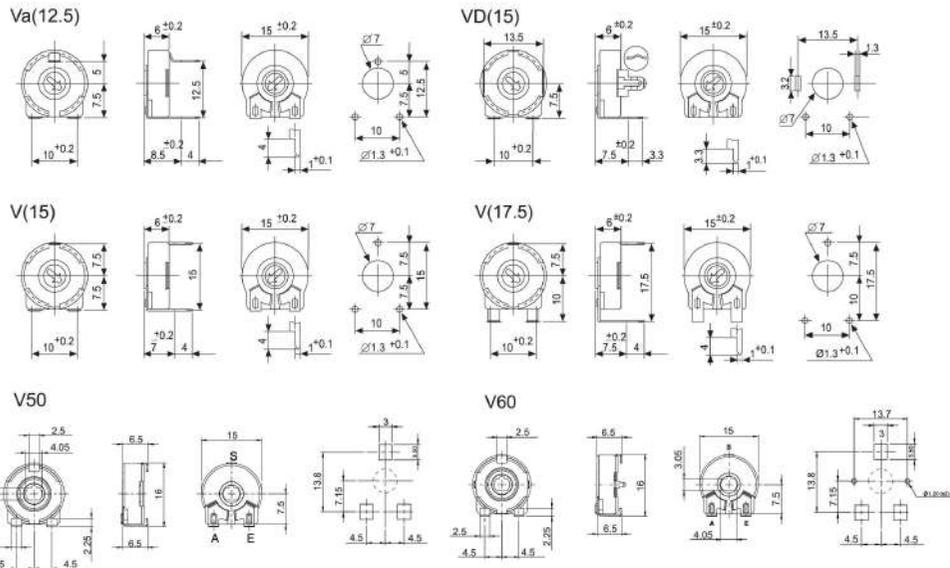
# TRIMMER POTENTIOMETERS

PT15

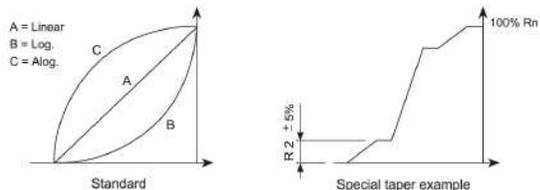
PT15

## HORIZONTAL MOUNT- VERTICAL ADJUST

## 卧式—垂直调节

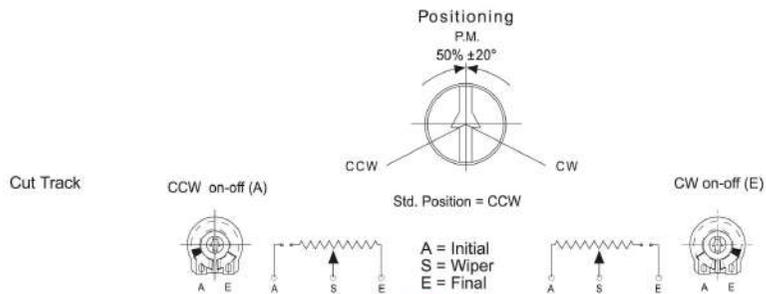


## TAPERS



NOTE = Please note terminals positions when ordering non linear tapers.

## OPTIONS



# TRIMMER POTENTIOMETERS

PT15



PT15

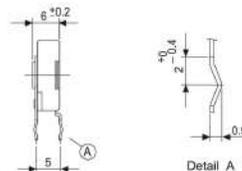
## TESTS

## TYPICAL VARIATIONS

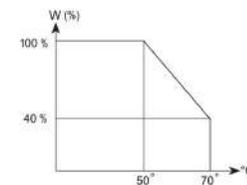
ELECTRICAL LIFE	1.000h @ 50°C:0.25W	± 5%
MECHANICAL LIFE(CYCLES)	500 @ 10CPM...15CPM	± 3% (Rn<1M Ω)
TEMPERATURE COEFFICIENT	-25°C; +70°C	± 300ppm(Rn<100K)
THERMAL CYCLING	16h. @ 85°C:2h. @ -25°C	± 2.5%
DAMP HEAT	500h. @ 40°C @95%HR	± 5%
VIBRATION (for each plane X,Y,Z)	2h. @10Hz... 55Hz.	± 2%

NOTE: Out of range values may not comply these results

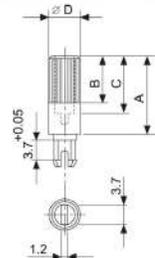
## CRIMPED TERMINALS (DETAIL)



## POWER RATING CURVE



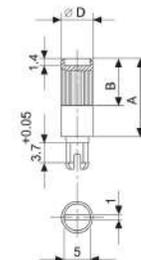
## SHAFTS



Hollow model shafts

FIG.	A	B	C	D
1	12	9	8	6
2	19	9	15	6
5	9.5	6.5	15.5	6
9	35	9	15	6
10	37.8	9	33.8	6
11	35	25	15	6
13	7.8	4.8	3.8	6

A=Length (FRS)  
B=Knurling length  
C=Hollow depth  
D=Shaft diameter  
FRS=From rotor surface



Solid model Shafts

FIG.	A	B	C
6	15	9	6
7	16.8	9	6
8	25.3	9	6
12	46	5	6

Slot(1x1.4) perpendicular to rotor position. Fig. 12 slot is on line with wiper position.

SHAFTS

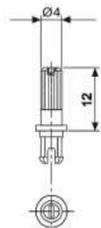


Fig.3

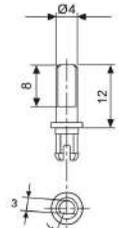


Fig.15

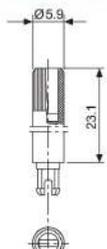


Fig.17

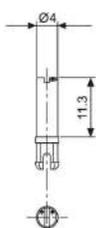


Fig.18

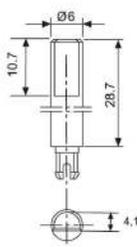


Fig.19

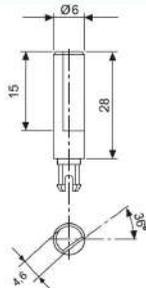


Fig.20

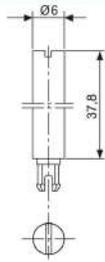


Fig.21

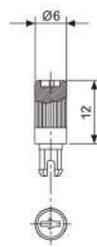


Fig.22

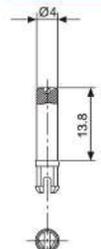


Fig.23

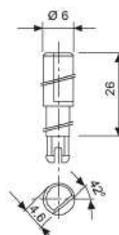


Fig.25

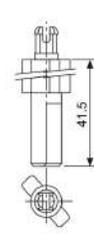


Fig.27

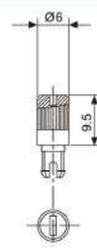


Fig.28

\*Not available in self extinguishable plastic

THUMBWHEEL

1#轴

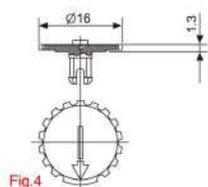
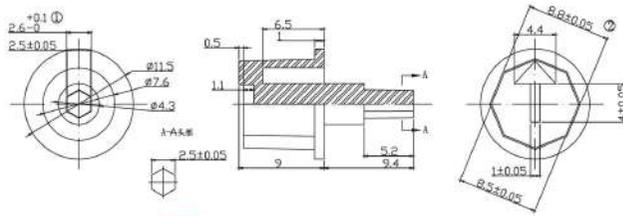


Fig.4



Model

<p>WH158-1</p>	
<p>WH158-2</p>	
<p><b>Electrical Characteristics</b> <b>电气性能</b></p>	
Rated wattage 额定功率	0.1W
Max Operation Voltage 最大工作电压	100V
Resistance Range 阻值范围	1KΩ-2MΩ
Resistance tolerance 阻值偏差	±20%(≥1M±30%)
Rotational noise 转动噪音	47mv
Residual resistance 残留电阻	R≥250KΩ,0.1%R max;250KΩ>R>10KΩ,20Ωmax;10KΩ≥R,10Ωmax
<p>Resistance Law 电阻规律</p>	
<p>B</p>	
<p><b>Mechanical Characteristics</b> <b>机械性能</b></p>	
Total Rotational Angle 总旋转角度	270±10°
Rotational torque 旋转力矩	2—20m.Nm
Shaft Stopper Strength 止档强度	70cN.m
<p><b>Soldering</b> 焊接</p>	
Residual resistance 残留电阻	T≤265℃ 温度
	t≤5s 时间

Model

**WH123-1**

L	5	7	12	12
F	15	19	25	30

**WH123-2**

L	15	20	25	30
F	7	12	17	17

Model

**WH148-1A-1**

L	15	20	25	30
F	7	12	17	17

**WH148-1A-2**

L	15	20	25	30
F	7	12	12	12

**WH148-1A-3**

L	15	20	25	30
F	7	12	17	17

**WH148-1A-4**

L	15	20	25	30
F	7	12	12	12

<b>Electrical Characteristics</b> 电气性能		Dielectric 抗电强度	AC500V,1minute
Operating temperature 工作温度	(-20℃)to-(+70℃)	Tracking tolerance 双联同步误差	WH0122 Series:0~35dB±3dB
Rated wattage 额定功率	CurveB:0.04W,Other than B:0.02W	<b>Mechanical Characteristics</b> 机械性能	
Max Operation Voltage 最大工作电压	CurveB:50V,Other than B:25V	Total Rotational Angle 总旋转角度	300±5°
Resistance Range 阻值范围	1KΩ~2MΩ	Rotational torque 旋转力矩	3~15mN.m
Resistance tolerance 阻值偏差	±20%(≥1M±30%)	Shaft Stopper Strength 止档强度	40cN.m
Rotational noise 转动噪音	47mv	Push pull Strength 轴推拉强度	50N
Residual resistance 残留电阻	R≥250KΩ,0.1%R max;250KΩ > R > 10KΩ,20Ωmax;10KΩ≥R,10Ωmax	Durability 耐久性	10,000cycles (10~17 times/minute)
Resistance Law 电阻规律	A or B or C	<b>Soldering</b> 焊接	
Insulation resistance 绝缘电阻	More than 100MΩ at DC500V	Ts≤265℃ 温度	ts≤5s 时间

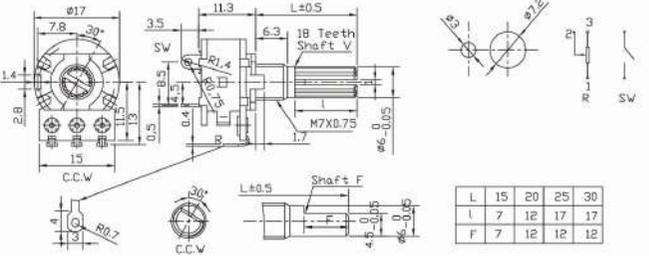
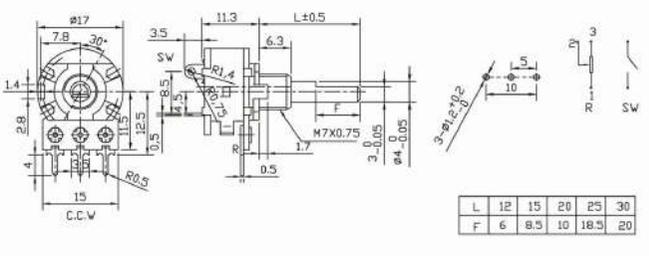
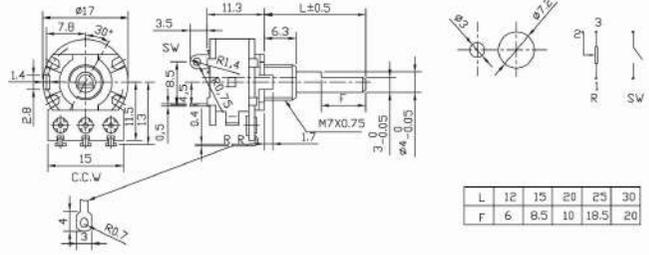
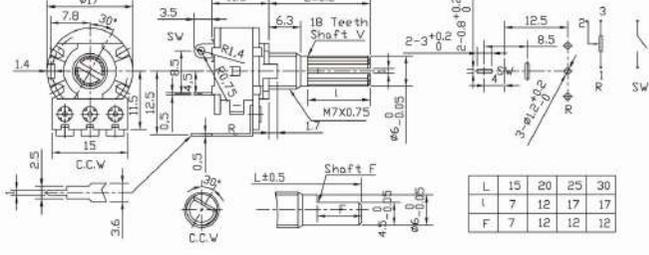
Model

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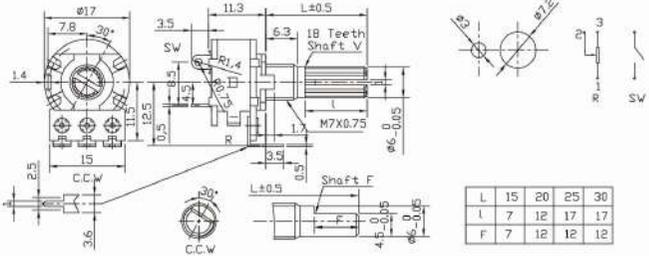
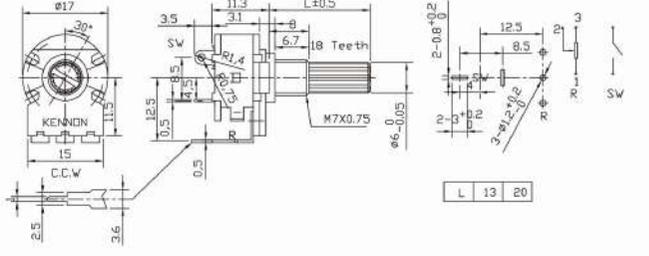
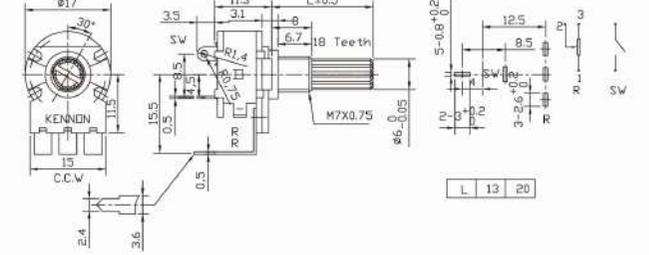
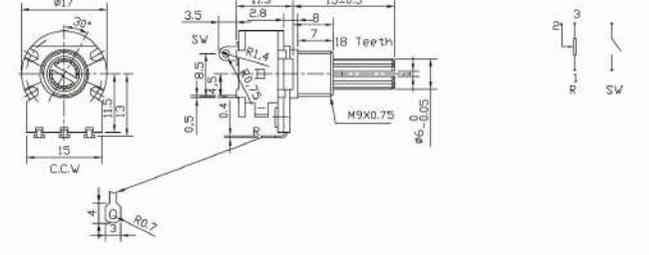
Model

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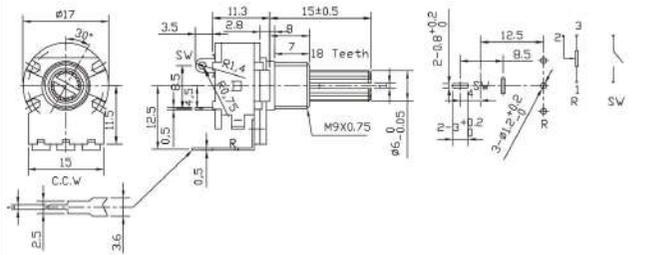
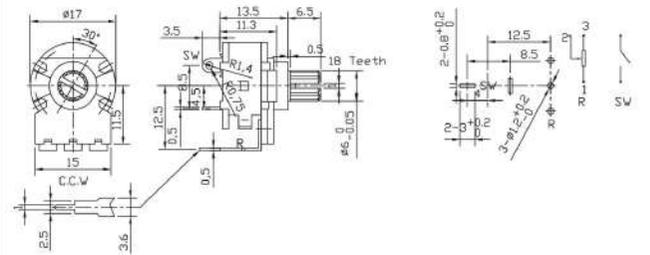
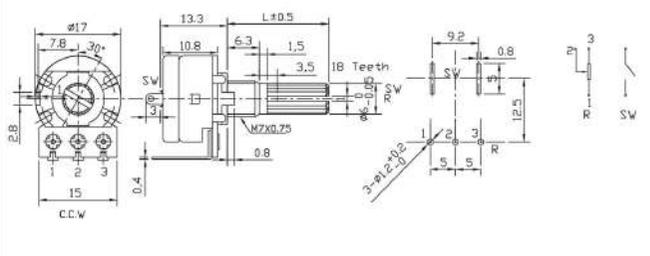
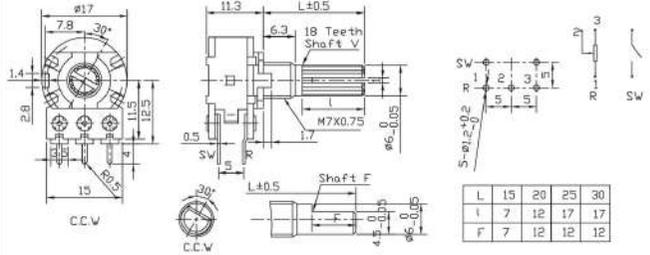
Model

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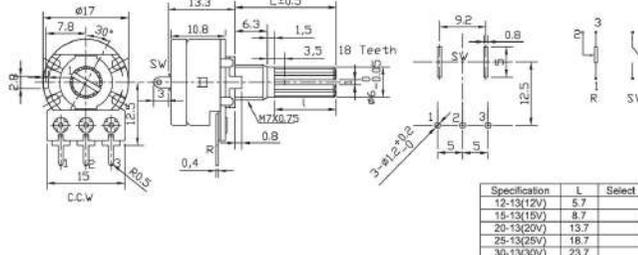
Model

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L	7	12	17	17												
F	7	12	12	12												
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L	13	20														
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L	13	20														
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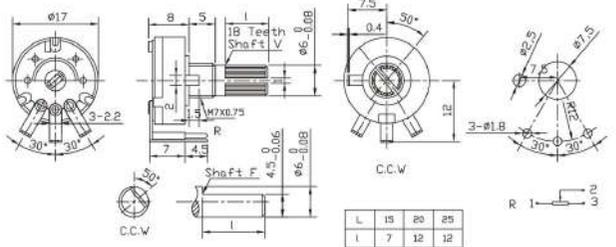
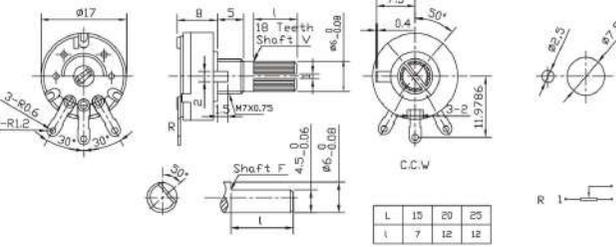
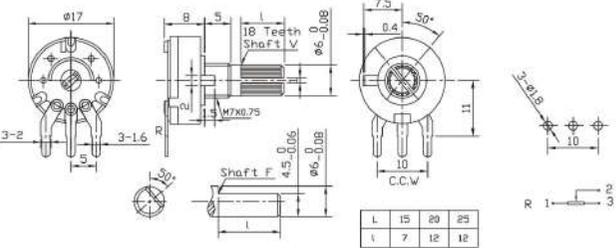
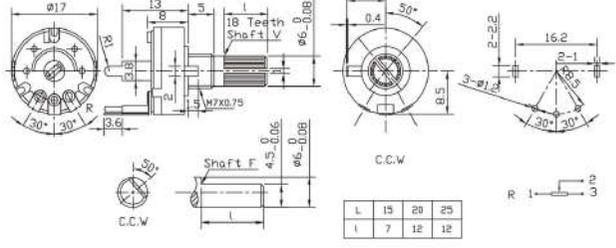
Model

<p><b>WH160AK-4S-6-18T</b></p> 																
<p><b>WH160AK-5S-6-2</b></p> 																
<p><b>WH148-K2-4-18T</b></p> 																
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I	7	12	17	17												
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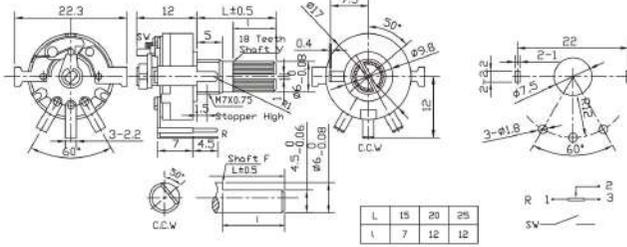
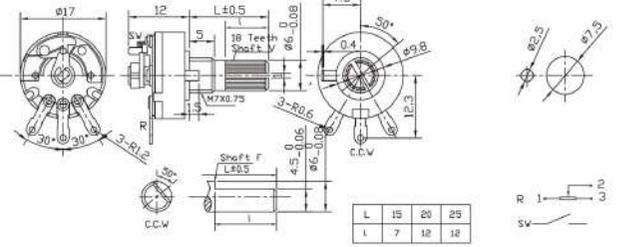
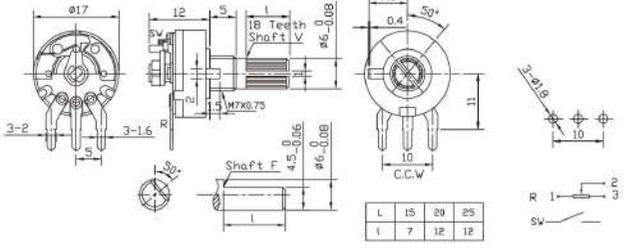
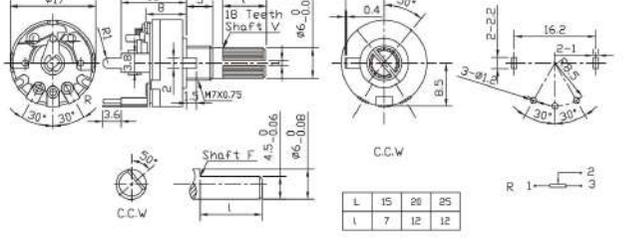
Model

<p><b>WH148-K2-2-18T</b></p> 	 <table border="1" data-bbox="1937 462 2105 550"> <thead> <tr> <th>Specification</th> <th>L</th> <th>Select</th> </tr> </thead> <tbody> <tr> <td>12-13(12V)</td> <td>5.7</td> <td></td> </tr> <tr> <td>16-13(15V)</td> <td>8.7</td> <td></td> </tr> <tr> <td>20-13(20V)</td> <td>13.7</td> <td></td> </tr> <tr> <td>25-13(25V)</td> <td>18.7</td> <td></td> </tr> <tr> <td>30-13(30V)</td> <td>23.7</td> <td></td> </tr> </tbody> </table>			Specification	L	Select	12-13(12V)	5.7		16-13(15V)	8.7		20-13(20V)	13.7		25-13(25V)	18.7		30-13(30V)	23.7	
Specification	L	Select																			
12-13(12V)	5.7																				
16-13(15V)	8.7																				
20-13(20V)	13.7																				
25-13(25V)	18.7																				
30-13(30V)	23.7																				
<p><b>Electrical Characteristics</b> <b>电气性能</b></p>		<p>Switching rating 开关额定负载</p>	<p>WH160AK Series:DC12V.1A WH148AK Series:DC16V.3A</p>																		
<p>Operating temperature 工作温度</p>	<p>(-20℃)to-(+70℃)</p>	<p>Switch contact resistance 开关接触电阻</p>	<p>WH160AK/WH 148AK Series: Less than 30mΩ</p>																		
<p>Rated wattage 额定功率</p>	<p>CurveB:0.125W,Other than B:0.63W</p>	<p><b>Mechanical Characteristics</b> <b>机械性能</b></p>																			
<p>Max Operation Voltage 最大工作电压</p>	<p>CurveB:200V,Other than B:150V</p>	<p>Switch working angle 开关动作角度</p>	<p>WH160AK/WH 148AK Series: 35±5°</p>																		
<p>Resistance Range 阻值范围</p>	<p>1KΩ~1MΩ</p>	<p>Switch working troqe 开关动力矩</p>	<p>WH160AK/WH 148AK Series: (5~35)mN.m</p>																		
<p>Resistance tolerance 阻值偏差</p>	<p>±20%(≥1M±30%)</p>	<p>Total Rotational Angle 总旋转角度</p>	<p>300±5°</p>																		
<p>Rotational noise 转动噪音</p>	<p>47mv</p>	<p>Rotational torque 旋转力矩</p>	<p>2~20m.Nm</p>																		
<p>Residual resistance 残留电阻</p>	<p>R≥250KΩ,0.1%R max;250KΩ&gt;R&gt;10KΩ,20Ωmax;10KΩ≥R,10Ωmax</p>	<p>Shaft Stopper Strength 止档强度</p>	<p>60cN.m</p>																		
<p>Resistance Law 电阻规律</p>	<p>A or B or C</p>	<p>Push Pull Strength 轴推拉强度</p>	<p>60N</p>																		
<p>Insulation resistance 绝缘电阻</p>	<p>More than 100MΩ at DC500V</p>	<p>Click position C. C外置</p>	<p>0 detent/1 detent/ 41 detents</p>																		
<p>Dielectric 抗电强度</p>	<p>AC500V,1minute</p>	<p>Durability 耐久性</p>	<p>10,000cycles (10~17 times/minute)</p>																		
<p>Tracking error 双联同步误差</p>	<p>WH148-1B Series:0~40dB±3dB</p>	<p><b>Soldering</b> 焊接</p>	<p>T≤265℃ 温度</p> <p>t≤5s 时间</p>																		

Model

<p><b>RV17-1</b></p> 	 <table border="1" data-bbox="728 502 862 550"> <tr><td>L</td><td>15</td><td>20</td><td>25</td></tr> <tr><td>l</td><td>7</td><td>12</td><td>12</td></tr> </table>	L	15	20	25	l	7	12	12
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l	7	12	12						
<p><b>RV17-3</b></p> 	 <table border="1" data-bbox="728 1109 862 1157"> <tr><td>L</td><td>15</td><td>20</td><td>25</td></tr> <tr><td>l</td><td>7</td><td>12</td><td>12</td></tr> </table>	L	15	20	25	l	7	12	12
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Model

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l	7	12	12						
<p><b>RV17-K2</b></p> 	 <table border="1" data-bbox="1825 805 1960 853"> <tr><td>L</td><td>15</td><td>20</td><td>25</td></tr> <tr><td>l</td><td>7</td><td>12</td><td>12</td></tr> </table>	L	15	20	25	l	7	12	12
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l	7	12	12						

Model

<p>WH0171-1</p>	<p>C.C.W</p> <table border="1"> <tr> <td>L</td> <td>20</td> <td>25</td> <td>30</td> <td>35</td> </tr> <tr> <td>l</td> <td>7</td> <td>12</td> <td>12</td> <td>12</td> </tr> </table>	L	20	25	30	35	l	7	12	12	12
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<p>WH0172-1</p>	<p>C.C.W</p> <table border="1"> <tr> <td>L</td> <td>15</td> <td>20</td> <td>25</td> </tr> <tr> <td>l</td> <td>7</td> <td>12</td> <td>12</td> </tr> </table>	L	15	20	25	l	7	12	12		
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l	7	12	12								
<p>WH0172-1A</p>	<p>C.C.W</p> <table border="1"> <tr> <td>L</td> <td>15</td> <td>20</td> <td>25</td> </tr> <tr> <td>l</td> <td>7</td> <td>12</td> <td>12</td> </tr> </table>	L	15	20	25	l	7	12	12		
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l	7	12	12								

Model

<p>WH0172-2</p>	<p>C.C.W</p> <table border="1"> <tr> <td>L</td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> </tr> <tr> <td>l</td> <td>7</td> <td>12</td> <td>12</td> <td>12</td> </tr> </table>			L	15	20	25	30	l	7	12	12	12
L	15	20	25	30									
l	7	12	12	12									
<p><b>Electrical Characteristics</b> 电气性能</p>		<p>Tracking error 双联同步误差</p>	<p>WH0172 Series:0~40dB±3dB</p>										
<p>Operating temperature 工作温度</p>	<p>(-20℃)to~(+70℃)</p>	<p>Switching rating 开关额定负载</p>	<p>RV17-K Series:DC12V,1A</p>										
<p>Rated wattage 额定功率</p>	<p>Curve B:0.1W Other than B:0.05W</p>	<p>Switch contact resistance 开关接触电阻</p>	<p>RV17-K Series:Less than 30mΩ</p>										
<p>Max Operation Voltage 最大工作电压</p>	<p>RV17 Series: Curve B:200V,Other than B:150V RV17 Series: Curve B:100V,Other than B:50V</p>	<p><b>Mechanical Characteristics</b> 机械性能</p>											
<p>Resistance Range 阻值范围</p>	<p>1KΩ~1MΩ</p>	<p>Switch working angle 开关动作角度</p>	<p>RV17-K Series:300±10°</p>										
<p>Resistance tolerance 阻值偏差</p>	<p>±20%(≥1M±30%)</p>	<p>Switch working troqe 开关动力矩</p>	<p>RV17-K Series:(5~35)mN.m</p>										
<p>Rotational noise 转动噪音</p>	<p>47mv</p>	<p>Total Rotational Angle 总旋转角度</p>	<p>RV17 Series:260±5° WH017 Series:300±5°</p>										
<p>Residual resistance 残留电阻</p>	<p>R≥250KΩ,0.1%R max;250KΩ &gt; R &gt; 10KΩ,20Ωmax;10KΩ≥R,10Ωmax</p>	<p>Rotational torque 旋转力矩</p>	<p>2-20m.NM</p>										
<p>Resistance Law 电阻规律</p>	<p>A or B or C</p>	<p>Shaft Stopper Strength 止档强度</p>	<p>30cN.m</p>										
<p>Insulation resistance 绝缘电阻</p>	<p>More than 100MΩ at DC500V</p>	<p>Push Pull Strength 轴推拉强度</p>	<p>RV17 Series:70N WH017 Series:50N</p>										
<p>Dielectric 抗电强度</p>	<p>AC500V,1minute</p>	<p>Durability 耐久性</p>	<p>10,000cycles (10~17 times/minute)</p>										
<p>Soldering 焊接</p>	<p>AC500V,1minute</p>	<p>Temperature 温度</p>	<p>T≤265℃ t≤5s 时间</p>										

Model

<p>WH137-1AK-1</p>	
<p>WH137-1AK-1-2</p>	
<p>WH137-1AK-2-SSD</p>	
<p>WH137-1AK-4</p>	

Model

<p>WH137-1AK-4-JS</p>	
<p>WH137-1AK-2-JS</p>	
<p>WH137-2BK-2-JST</p>	
<p>WH137-2BK-2</p>	

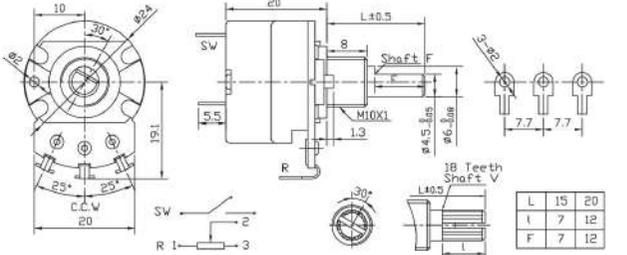
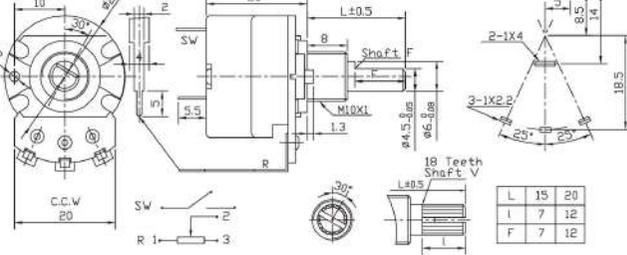
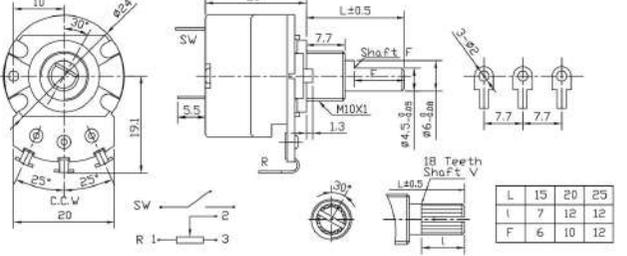
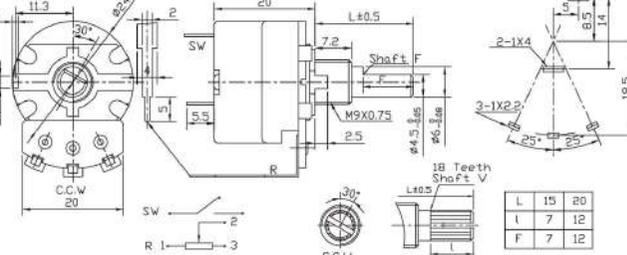
Model

<p><b>WH138-1A-1</b></p>	<table border="1"> <tr><td>L</td><td>15</td><td>20</td><td>25</td></tr> <tr><td>I</td><td>7</td><td>12</td><td>12</td></tr> <tr><td>F</td><td>6</td><td>10</td><td>12</td></tr> </table>	L	15	20	25	I	7	12	12	F	6	10	12
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I	7	12	12										
F	6	10	12										
<p><b>WH138-1A-2</b></p>	<table border="1"> <tr><td>L</td><td>15</td><td>20</td><td>25</td></tr> <tr><td>I</td><td>7</td><td>12</td><td>12</td></tr> <tr><td>F</td><td>6</td><td>10</td><td>12</td></tr> </table>	L	15	20	25	I	7	12	12	F	6	10	12
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I	7	12	12										
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<p><b>WH138-1A-3</b></p>	<table border="1"> <tr><td>L</td><td>15</td><td>20</td><td>25</td></tr> <tr><td>I</td><td>7</td><td>12</td><td>12</td></tr> <tr><td>F</td><td>6</td><td>10</td><td>12</td></tr> </table>	L	15	20	25	I	7	12	12	F	6	10	12
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I	7	12	12										
F	6	10	12										
<p><b>WH138-1A-1-SS</b></p>	<table border="1"> <tr><td>L</td><td>15</td><td>20</td></tr> <tr><td>I</td><td>7</td><td>12</td></tr> <tr><td>F</td><td>7</td><td>12</td></tr> </table>	L	15	20	I	7	12	F	7	12			
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I	7	12											
F	7	12											

Model

<p><b>WH138-1A-2-SS</b></p>	<table border="1"> <tr><td>L</td><td>15</td><td>20</td><td>25</td></tr> <tr><td>I</td><td>7</td><td>12</td><td>12</td></tr> <tr><td>F</td><td>6</td><td>10</td><td>12</td></tr> </table>	L	15	20	25	I	7	12	12	F	6	10	12
L	15	20	25										
I	7	12	12										
F	6	10	12										
<p><b>WH138-1AK-1</b></p>	<table border="1"> <tr><td>L</td><td>15</td><td>20</td><td>25</td></tr> <tr><td>I</td><td>7</td><td>12</td><td>12</td></tr> <tr><td>F</td><td>6</td><td>10</td><td>12</td></tr> </table>	L	15	20	25	I	7	12	12	F	6	10	12
L	15	20	25										
I	7	12	12										
F	6	10	12										
<p><b>WH138-1AK-2</b></p>	<table border="1"> <tr><td>L</td><td>15</td><td>20</td><td>25</td></tr> <tr><td>I</td><td>7</td><td>12</td><td>12</td></tr> <tr><td>F</td><td>6</td><td>10</td><td>12</td></tr> </table>	L	15	20	25	I	7	12	12	F	6	10	12
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I	7	12	12										
F	6	10	12										
<p><b>WH138-1AK-3</b></p>	<table border="1"> <tr><td>L</td><td>15</td><td>20</td><td>25</td></tr> <tr><td>I</td><td>7</td><td>12</td><td>12</td></tr> <tr><td>F</td><td>6</td><td>10</td><td>12</td></tr> </table>	L	15	20	25	I	7	12	12	F	6	10	12
L	15	20	25										
I	7	12	12										
F	6	10	12										

**Model**

<p><b>WH138-2BK-1-SS</b></p> 	
<p><b>WH138-2BK-3-SS</b></p> 	
<p><b>WH138-2BK-1-SJ</b></p> 	
<p><b>WH138-2BK-3-SJ</b></p> 	

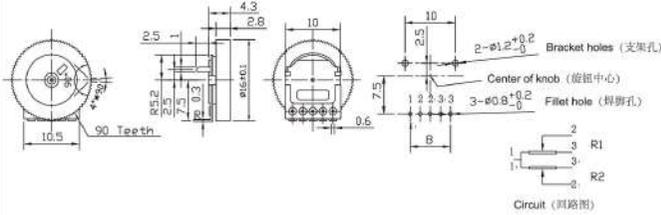
**Model**
**Specification WH137 Series WH138 Series**

<b>电气性能 Electrical Characteristics</b>		
Operating temperature 工作温度	(-25℃)to-(+70℃)	
Rated wattage 额定功率	CurveB:0.25W,Other than B:0.125W	CurveB:0.5W,Other than B:0.25W
Max Operation Voltage 最大工作电压	CurveB:160V,Other than B:100V	CurveB:500V,Other than B:250V
Resistance Range 阻值范围	1KΩ~2MΩ	
Resistance tolerance 阻值偏差	±20%(≥1M±30%)	
Rotational noise 转动噪音	47mv	
Residual resistance 残留电阻	R≥250KΩ,0.1%R max;250KΩ>R>10KΩ,20Ωmax;10KΩ≥R,10Ωmax	
Resistance Law 电阻规律	A or B or C	
Insulation resistance 绝缘电阻	More than 100MΩ at DC500V	
Dielectric 抗电强度	开关 Switch:AC 100V/min 电阻 Resistance:AC 600v/min	
Switching rating 开关额定负载	AC250V,1A/3A OR D24V,5A	AC250V,1A/3A/6A/8A OR D24V,5A
Switch contact resistance 开关接触电阻	Less than 30mΩ	
<b>机械性能 Mechanical Characteristics</b>		
Switch working angle 开关动作角度	50°±10°	
Switch working troque 开关动力矩	(2~5)cN.m	(1.5~4.5)cN.m
Total Rotational Angle 总旋转角度	250°±5°	300°±5°
Rotational torque 旋转力矩	3~20mN.m	3~20mN.m
Shaft Stopper Strength 止档强度	60cN.m	60cN.m or80cN.m
Push Pull Strength 轴推拉强度	60N	80N
<b>耐久性 Durability</b>	20,000 cycles (10~17 times/minute)	
Soldering 焊接	T≤265℃ 温度	t≤5s 时间

Model

**WH0142-3-1T**



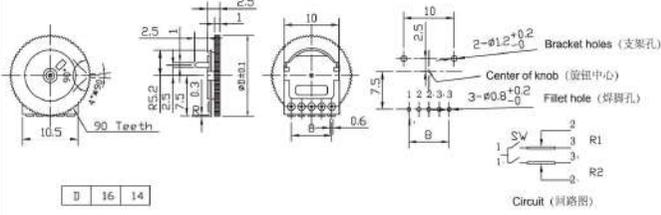


Labels: Bracket holes (支架孔), Center of knob (旋钮中心), Fillet hole (焊脚孔), Circuit (回路图)

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**WH0142-1S**





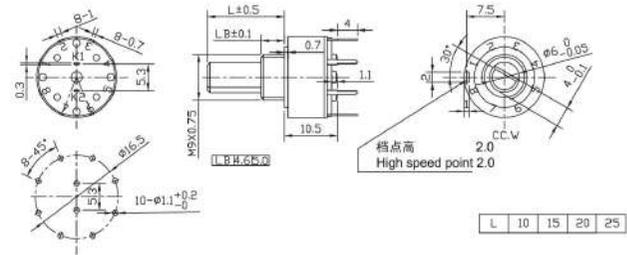
Labels: Bracket holes (支架孔), Center of knob (旋钮中心), Fillet hole (焊脚孔), Circuit (回路图)

<b>Electrical Characteristics</b> 电气性能		<b>Dielectric</b> 抗电强度		AC250V,1minute
Operating temperature 工作温度	(-20℃)to-(+70℃)	<b>Tracking error</b> 双联同步误差		wh0142 Series:0~35dB±3dB
Rated wattage 额定功率	0.03w	<b>Mechanical Characteristics</b> 机械性能		
Max Operation Voltage 最大工作电压	AC50V or DC12V	Total Rotational Angle 总旋转角度	270±10°	
Resistance Range 阻值范围	1KΩ~2MΩ	Rotational torque 旋转力矩	1—10m.Nm	
Resistance tolerance 阻值偏差	±20%	Shaft Stopper Strength 止档强度	8cN.m	
Rotational noise 转动噪音	47mv	Push Pull Strength turntable 转盘推拉强度	25N	
Residual resistance 残留电阻	10Qmax	Durability 耐久性	10,000 cycles (10~17 times/minute)	
Resistance Law 电阻规律	A or B or C	<b>Soldering</b> 焊接		
Insulation resistance 绝缘电阻	More than 100MΩ at DC100v	T≤265℃ 温度	t≤5s 时间	

Model

**SR16A**





Labels: High speed point 2.0, Shaft V, Shaft F, Shaft R

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**SHAFT (轴形式)**





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**电气图 Circuit :**

<b>SP Mode I</b> SP型 (单脚)	1 POLE 4 POSITIONS 1极4位	1 POLE 5 POSITIONS 1极5位	1 POLE 6 POSITIONS 1极6位
	1 POLE 7 POSITIONS 1极7位	1 POLE 8 POSITIONS 1极8位 (无止档No stop)	
<b>DP Mode I</b> DP型 (双脚)	2 POLE 3 POSITIONS 2极3位		2 POLE 4 POSITIONS 2极4位

**Model**

<p>SR2611</p>	<p>Wire type pin 焊线型引脚</p>																																																						
<p>SR2612</p>	<p>Flapper type pin 插板型引脚</p>																																																						
<b>ACTUATOR OPTIONS (转轴选择)</b>																																																							
<table border="1" data-bbox="174 1102 293 1126"> <tr><td>L</td><td>15</td><td>20</td><td>25</td></tr> </table> <table border="1" data-bbox="427 1102 647 1198"> <tr><td>D=φ6</td><td>L</td><td>15</td><td>17</td><td>18</td><td>20</td></tr> <tr><td></td><td>F</td><td>21</td><td>23</td><td>33</td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td>4.5</td><td></td></tr> <tr><td>D=φ6.35</td><td>L</td><td>15</td><td></td><td></td><td></td></tr> <tr><td></td><td>F</td><td>5.5</td><td></td><td></td><td></td></tr> </table> <table border="1" data-bbox="734 1102 954 1161"> <tr><td>D=6.5<sub>±0.05</sub></td><td>L</td><td>15</td><td>17</td><td>18</td><td>19</td></tr> <tr><td></td><td>L</td><td>20</td><td>25</td><td>46</td><td>50</td></tr> <tr><td>D=6.35<sub>±0.05</sub></td><td>L</td><td>38</td><td></td><td></td><td></td></tr> </table>				L	15	20	25	D=φ6	L	15	17	18	20		F	21	23	33						4.5		D=φ6.35	L	15					F	5.5				D=6.5 <sub>±0.05</sub>	L	15	17	18	19		L	20	25	46	50	D=6.35 <sub>±0.05</sub>	L	38			
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D=6.35 <sub>±0.05</sub>	L	38																																																					
<b>SCHEMATICS P.C.MOUNTING (引脚位置图)</b>																																																							
<b>SP Model</b> SP型 (单脚)	<b>1 POLE 3 POSITIONS</b> 1极3位 	<b>1 POLE 4 POSITIONS</b> 1极4位 	<b>1 POLE 5 POSITIONS</b> 1极5位 																																																				

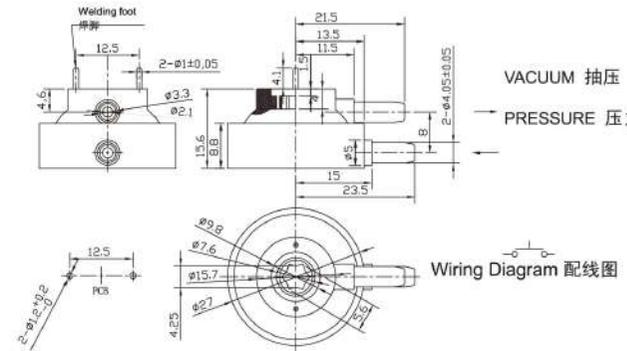
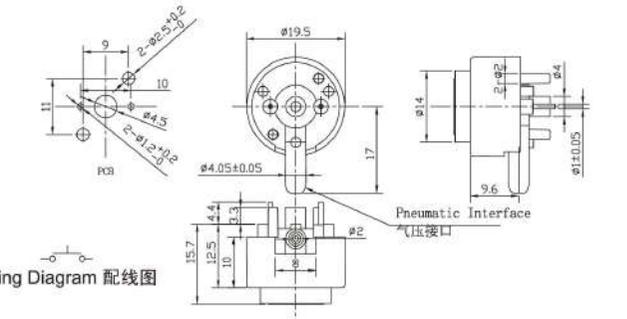
**Model**

<b>SP Model</b> SP型 (单脚)	<b>1 POLE 6 POSITIONS</b> 1极6位 	According to this rule push 以此类推 	<b>1 POLE 12 POSITIONS</b> 1极12位 
<b>DP Model</b> DP型 (双脚)	<b>2 POLE 3 POSITIONS</b> 2极3位 	According to this rule push 以此类推 	<b>2 POLE 6 POSITIONS</b> 2极6位 
<b>3P Model 3P型 (3脚)</b> 3 POLE 3 POSITIONS 3极3位 	<b>3P Model 3P型 (3脚)</b> 3 POLE 4 POSITIONS 3极4位 	<b>4P Model 4P型 (4脚)</b> 4 POLE 3 POSITIONS 4极3位 	
<b>TIMING OPTIONS (时序选择)</b>			
N = (STD.) Non-shorting-break before make      N = 不短路型, 先断后通 N = shorting-break before make                      N = 短路型, 先通后断 Note:(S) shorting contacts available only with 30° indexing 注: 只有30°一档时, 才有短路型产品			

**Specification**
**SR16 Series**
**SR26 Series**

电气性能 Electrical Characteristics		
Operating temperature 工作温度	(-25℃)to-(+85℃)	
Rated wattage 额定功率	DC60V,0.3A	AC250V,0.15A AC125V,0.35A
Insulation resistance 绝缘电阻	More than 100MΩ at DC500V	
Dielectric 抗电强度	AC 500V/min	
Contact resistance 接触电阻	Less than 50mΩ	
机械性能 Mechanical Characteristics		
Terminal strength 端子强度	5N/min	20N/min
Rotational torque 旋转力矩	2.5~5.5cN.m	3~6cN.m
Shaft Stopper Strength 止档强度	70cN.m	50cN.m
Push Pull Strength 轴推拉强度	50N	70N
Durability 耐久性	10,000 cycles	
Dip-Soldering 浸焊	T≤265°C: 温度	t≤5s 时间
Hand Soldering 手焊	T≤360°C: 温度	t≤3s 时间
Withstand vibration property 耐振性能	10~55~10Hz/至、全振幅1.5mm、x、y、z方向各两小时 10~55~10Hz/swing1.5mm、x、y、z direction 2 hours	

**Model Pressure switch**

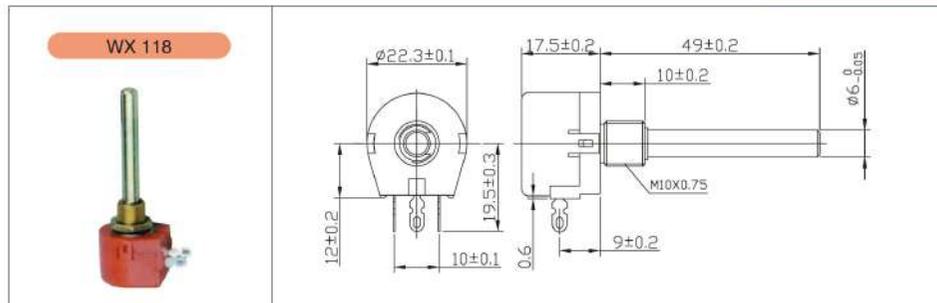
<p><b>KBQ-02B</b></p> 	 <p>VACUUM 抽压 PRESSURE 压力</p> <p>Wiring Diagram 配线图</p> <p>Specifications 产品规格:            1.Power Parameters 电参数参: 250mA,AC250V            2.Switch contact resistance 开关接触电阻: ≤50mΩ            3.Switch contact form 开关触点形式: Unipolar control normally open 单极控制, 常开            4.Operating temperature 工作温度: -10°C to~90°C            5.Electrical life 电气寿命: 10, 000cycles            6.Pressure range: 压力范围:            Negative Pressure 负气压: 0.5Kpa-100Kpa (Adjustable可调)            Positive Pressure 正气压: 1Kpa-80Kpa (Adjustable可调)</p>
<p><b>KBQ-02C</b></p> 	 <p>Wiring Diagram 配线图</p> <p>Pneumatic Interface 气压接口</p> <p>Specifications 产品规格:            1.Power Parameters 电参数参: 20mA,AC250V            2.Switch contact resistance 开关接触电阻: ≤50mΩ            3.Switch contact form 开关触点形式: Unipolar control normally open 单极控制, 常开            4.Operating temperature 工作温度: -10°C to~+95°C            5.Electrical life 电气寿命: 10, 000cycles            6.Pressure range: 压力范围: 1Kpa-80Kpa (Adjustable可调)            7.Applicable pressure 适用气压: Negative Pressure 负气压</p>



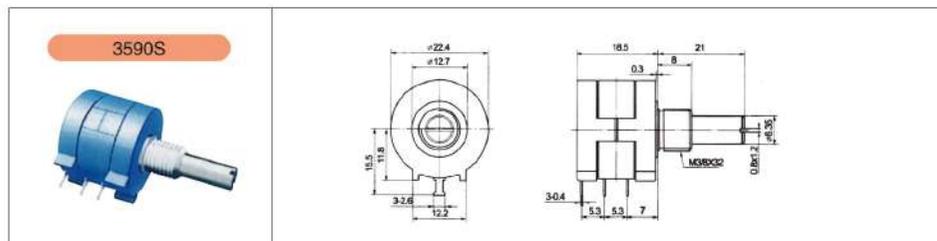
## Specification

MODEL	S05 Series	RD7 Series	S20AWH301 Series	WH20	WH118
<b>电气性能 Electrical Characteristics</b>					
Operating temperature 工作温度	(-20°C)to-(+70°C)	(-40°C)to-(+105°C)	(-20°C)to-(+70°C)		
Rated wattage or Rated Voltage 额定功率/额定电压	Curve B:0.05W, Other than B:0.025W	DC16V	Curve B:0.2W, Other than B:0.1W	Curve B:0.25W, Other than B:0.125W	Curve B:0.2W, Other than B:0.1W
Max Operation Voltage 最大工作电压	AC50V or DC12V	AC50V or DC30V	Curve B:200V Other than B:150V	Curve B:200V Other than B:150V	Curve B:200V Other than B:150V
Resistance Range 阻值范围	1KΩ~1MΩ	5KΩ~50KΩ	1KΩ~2MΩ	1KΩ~2MΩ	1KΩ~3MΩ
Resistance tolerance 阻值偏差	±20%(≥1M ±30%)	±20%	±20%(≥1M ±30%)		
Rotational noise 转动噪音	68mv	68mv	47mv		
Residual resistance 残留电阻	R>20KΩ, 20Ωmax; 20 KΩ≥R, 10Ωmax	0.1%R	R>20KΩ, 20Ωmax; 20 KΩ≥R, 10Ωmax		
Resistance Law 电阻规律	A or B or C				
Insulation resistance 绝缘电阻	More than 50MΩ at DC100V	More than 100MΩ at DC250V	More than 100MΩ at DC500V		
Dielectric 抗电强度	AC250V/min	AC300V/min	AC500V/min	AC500V/min	AC600V/min
<b>机械性能 Mechanical Characteristics</b>					
Stroke 行程	5mm	RD7V:9mm RD7H:8mm	S20A:20mm WH301:30mm	30mm	255±5°
Rated wattage or Rated Voltage 额定功率/额定电压	30-120gf	30-120gf	30-250gf	50-300gf	30-300gf.cm
Shaft Stopper Strength 止档强度	25N	25N	50N	60N	60cN.m
Push Pull Strength 轴推拉强度	25N	25N	30N	50N	80N
Durability 耐久性	5,000 cycles (10~17 times/minute)	100,000 cycles (10~17 times/minute)	100,000 cycles (10~17 times/minute)		
Soldering 焊接	Ts≤250°C: ts5s 温度 时间	Hand Soldering 手工焊	Ts≤350°C: ts3s 温度 时间	Dip-Soldering 浸焊	Ts≤265°C: ts5s 温度 时间

## Model



标准阻值范围 Standard Resistance Range	5 Ω - 22k Ω
额定功率 Power Rating	1W/40°C
最大工作电压 Maximum Working Voltage	220V
最大接触点电流 Maximum Contacting Current	100mA
工作温度范围 Operating Temp Range	-50°C to +125°C
阻值允许偏差 Resistance Tolerance	±10%
有效电气行程 Effective Electrical Travel	mech.258° ±5°, elektr.270° ±5°
终端电阻 Residual Resistance	2 Ω max
耐电压 (室温条件下) Dielectric Strength (Room Conditions)	1000V AC
绝缘电阻 Insulation Resistance	1000M Ω min. (at 500V DC)
轴力矩 Shaft Torque	3.5 · 100mN.m
旋转寿命 Rotational Life	5000cycles without discontinuity
温度系数 Temperature Coefficient	±100ppm/°C



### 电器特性 Electrical Characteristics

标准阻值范围(Standard Resistance Range)	100 Ω - 100K Ω
阻值允许偏差(Resistance Tolerance)	±5%
独立线性度(Independent Linearity)	±0.5%
有效电行程(Effective Electrical Travel)	≥3600° -10°
终端电阻(Terminal Resistance)	≤0.2%R或5 Ω
转动噪声(Noise)	≤3%R或3 Ω
绝缘电阻(Insulation Resistance)	R <sub>i</sub> ≥ 1G Ω
耐电压(Withstand Voltage)	101.3kPa 710V, 8.5kPa 470V

### 物理特性 Physical Characteristics

总机械行程(Total Mechanical Travel)	≥3600° ±10°
起动转矩(Starting Torque)	≤36mN.m
离合器力矩(Clutch Torque)	≥300mN.m
包装标准(Standard Packaging)	10只 / 盒(pcs/box) 20只 / 盒(pcs/box)

### 环境特性 Environment Characteristics

额定功率(最高工作电压550V) (Rated Power)	+70°C 0.5W, +125°C 0W
工作温度范围(Temperature Range)	-55°C ~ +125°C
电阻温度系数(Temperature Coefficient)	±100ppm/°C
温度变化(Temperature Variation)	ΔR ≤ ±2%R, Δ(Uab/Uac) ≤ ±1%
碰撞(Collision)	390m/s <sup>2</sup> , 4000次, ΔR ≤ ±1%R
震动(Vibration)	10-500Hz, 0.75mm或98m/s <sup>2</sup> , 6h ΔR ≤ ±1%R, Δ(Uab/Uac) ≤ ±2%
气候顺序(Climate Category)	ΔR ≤ ±3%R, R <sub>i</sub> ≥ 100M Ω
70°C电气耐久性(Electrical Endurance at 70°C)	2W, 1000h, ΔR ≤ ±3%R
机械耐久性(Mechanical Endurance)	100周(cycles) ΔR ≤ ±3%R
稳态湿热(Steady damp-heat)	ΔR ≤ ±3%R, R <sub>i</sub> ≥ 100M Ω

# 使用注意事项 APPLICATION NOTE

## Use of circumstance

Synthetic resins such as Polycarbonate are used in the potentiometer. Care must, therefore, be exercised not expose the resistor thick atmosphere of ammonia, amins, alkali solution, aromatic hydrocarbon, ketons,esters, haogenous hydrocarbons,etc.

### 1、环境

由于在电位器中采用了诸如聚碳酸脂之类的合成树脂，因此，一定要小心仔细地不让电阻器暴露于浓稠的氨气、胺、碱溶液、芳香胺、酮、酯类、含碳氢化合物等之类的周围环境中。

### Recommended circuit configuration:

Best results with a potentiometer can be expected in the voltage-divider circuit arrangement "A" below, he current-regulating configurations "B" is not recommended, expect for those specifically designed(contrast control in a television set, for example),because contact resistance between resistance element and sliding arm could pose a problem.

### 2、回路的使用

电位器最好用在如A所示的电压调整场合中，如B所示的电流调整场合不推荐使用，因为接触片与碳膜之间的接触电阻不适于大电流的通过。

### Terminal connections:

In applications where a direct current is allow to flow through the potentiometer's sliding arm,there could be a problem of anodic oxidation owing to an unusual increase in resistance value.In such a case,good practice is to connect the negative line to the resistance element and the positive line to sliding arm.

### 3、电位器的接线

如果直流电流通过电位器，电位器的阳极就会受到氧化损伤，使阻抗异常增大，因此最好是将电流的负极接在碳膜区的端子，正极接在接触片端子上。

### Soldering

Avoid siring and soldering that causes to flow out to the top of PC board as shown. Contact failure may occur in the terminal section.In unavoidable cases,please consult us.

### 4、加锡法

避免布线与加锡时导致锡流穿线路板，否则易造成接触不良，在无法避免焊锡流穿的情况下，请与本公司联络。

### Mounting on chassis

When mounring a potentiometer on the chassis,the nut tightening torque and nut position should be as described below.Otherwise,rotation failure or nut brekage may occur.

### 5、旋转型（支架上安装）

安装电位器时，应符合下表所规定的螺帽上扭紧力和安装位置以避免螺帽断裂或转动不良。

### Soldering:

Saldering operation must be completed in a time as soon as possible suggested maximum solder-iron tip temperature and allowable time is at 270 C for 3 second.

### Use of flux

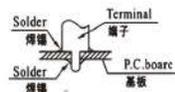
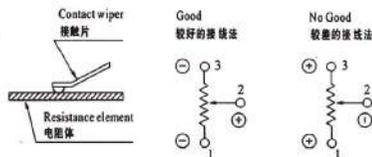
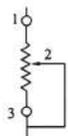
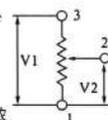
When soldering,avoid using water-soluble flux.Otherwise,it might cause an adverse effect on molding material an metal.

### 6、焊接

焊接操作应在尽可能短的时间内完成，焊烙铁触点的最高温度和可允许时间最好低于270℃，3秒钟以内。

### 慎用助焊剂:

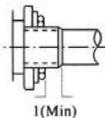
应避免使用水溶性助焊剂，否则，将助长金属氧化与材料发霉。



Nominal designation of serew thread	Tightening torque
M6,M7	0.7N·m(7kgf·cm)max
	0.7N·m(7kgf·cm)max
M8,M9,3/8", M10	0.9N·m(9kgf·cm)max

螺紋的制式規格	緊鋼扭力
M6 M7	最大0.7牛頓米(7kgf·cm)
M7(9mm size) (12mm size, 雙軸型)	最大0.7牛頓米(7kgf·cm)
M8,M9,3/8", M10	最大0.9牛頓米(9kgf·cm)



# MEASURES AND TEST METHOD 测试方法

## Total Resistance

The total resistance value is determined by measuring the resistance between terminals 1 and 3.

## Rated Power

Power ratings means at certain rated ambient temperature,a maximum value of electric power can be applied continuously to the whole area of a potentiometer ( between terminals 1 and 3 ) Assuming the rated ambient temperature of a carbon-film potentiometer is 500C,then the maximum power at an ambient temperature of 50~70C can be obtained by multiplying the rated power by the rated power ratio determined from the derating curve shown below.

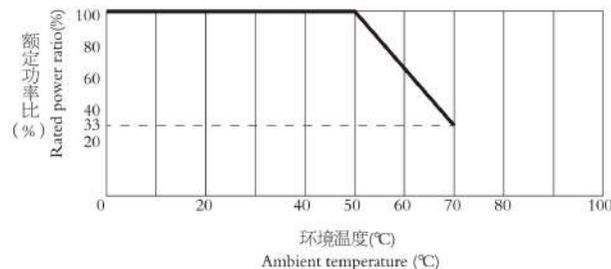
## 总阻

测量一端子及三端子间的固定阻值，是为总阻。

## 额定功率

额定功率指在一定的温度下，电流通过电位器整个范围(包括端子一及端子三)可获得最大的功率。假设碳膜电位器之额定温度为50℃，而最大负荷功率则可从改变温度50—70℃间及额定功率之大小而获得，此关系如下图所示：

功耗衰减曲线  
Derating curve



## Rated Voltage

The following equation determines the rated voltage corresponding to the rated power,as not exceeds the maximum operating voltage.

## 额定电压

在不高于最大工作电压下，额定电压可由下列数式计算。

$E = \sqrt{P \times R}$
E: Rated Voltage(V)/额定电压(V)
P:Rated Power(W)/额定功率(W)
R:Total Nominal Resistance(Ω) / 总阻(Ω)

## Residual Resistance

Place the shaft (lever) at the end ofterminal 1,measures the minimum resistance between terminal 1 and 2. Next,place the shaft (lever) at the end ofterminal 3, measures the minimum resistance between terminal 2 and 3.The minimum resistance is called residual resistance.

## 残留电阻

将推柄（轴心）移至贴近一端子与二端子间的残留阻值，再将推柄（轴心）移至贴近三端子量度二端子与三端子间的残留阻值，取其残留电阻。

**Rotational/Sliding Noise**

Connect the potentiometer to the amplifier having frequency characteristics specified in JIS C 6443, applying DC 20V between the terminals 1 and 3 (if rated voltage is  $\leq 20V$ , this voltage shall be applied) and by rotating (moving) the shaft (lever) at a speed of 30 cycles per minute.

**Insulation Resistance**

The insulation resistance of the undetermined spots should be tested by specified voltage, unless others specified.

- Between terminals and shaft (lever)
- Between terminals and metal cover
- Between terminals of multi-gang-unit
- Between switch terminal and shaft
- Between switch terminal and resistance terminal
- Between switch terminal and metal cover

**Rotational/Sliding Life**

The shaft (lever) should be turned at a speed of 600 cycles (reciprocating motion) per hour and 5000~8000 cycles a day with over 90% of the effective rotational angle (total travel).

Unless others specified, the following requirements should be met after test:

Variation in total resistance:  $\pm 20\%$   
Rotational/ Sliding noise:  $\leq 150mV$

**Heat Resistance** (Carbon-Film Potentiometer only)

After placing the potentiometer in a test chamber of  $70 \pm 3^\circ C$  for 240+8 hours, it should be taken out for 1 hour and 30 minutes before testing the variation in total resistance and mechanical performance.

Unless others specified, the variation in total resistance should be within  $+5\% - 30\%$  and mechanically operative.

**Moisture Resistance** (Carbon-Film Potentiometer only)

A specimen potentiometer is applied in a thermohygrostatic chamber of  $40 \pm 2^\circ C$  and 90~95% with rated DC voltage for 1 hour and 30 minutes and then shall be cut off for 30 minutes. This cycle should be repeated for  $350 \pm 10$  hours, and the specimen is allowed to stand in normal room temperature and humidity for more than 4 hours without load. The total resistance, insulation resistance and slider noise shall be measured.

The variation in total resistance with reference to the value given before shall be within  $\pm 20\%$  and the slider (rotational) noise shall be less than 150mV.

**旋转 / 滑动杂音**

将电位器接驳在扩音器，并将频道调较为 JIS C 6443；在 DC 20V 的电压下以每分钟旋转 / 滑动三十次的频率下测试。（适用于额定电压  $\leq 20V$ ，否则以额定电压值测试。）

**绝缘电阻**

以下部分应以特定电压测试绝缘电阻。（或其它特别指明部分）：

- 端子与轴心（推柄）
- 端子与金属外壳
- 多联端子间
- 开关端子与轴心
- 开关端子与电阻端子
- 开关端子与金属外壳

**旋转 / 滑动寿命**

轴心 / 推柄应以每小时六百转来回的速度，并在每天转动（滑动）五千至八千次的条件下进行测试（达到 90% 以上的有效角度 / 行程）。

除特别注明外，测试后应可达下列要求：

总阻误差： $\pm 20\%$   
旋转 / 滑动杂音： $\leq 150mV$

**耐热性（适于碳膜电位器）**

将电位器放置在恒温机内，调教至  $70 \pm 3^\circ C$ ，在  $240 \pm 8$  / 小时后取出并置其于室温下约 1.5 小时，测试总阻及机械性能。

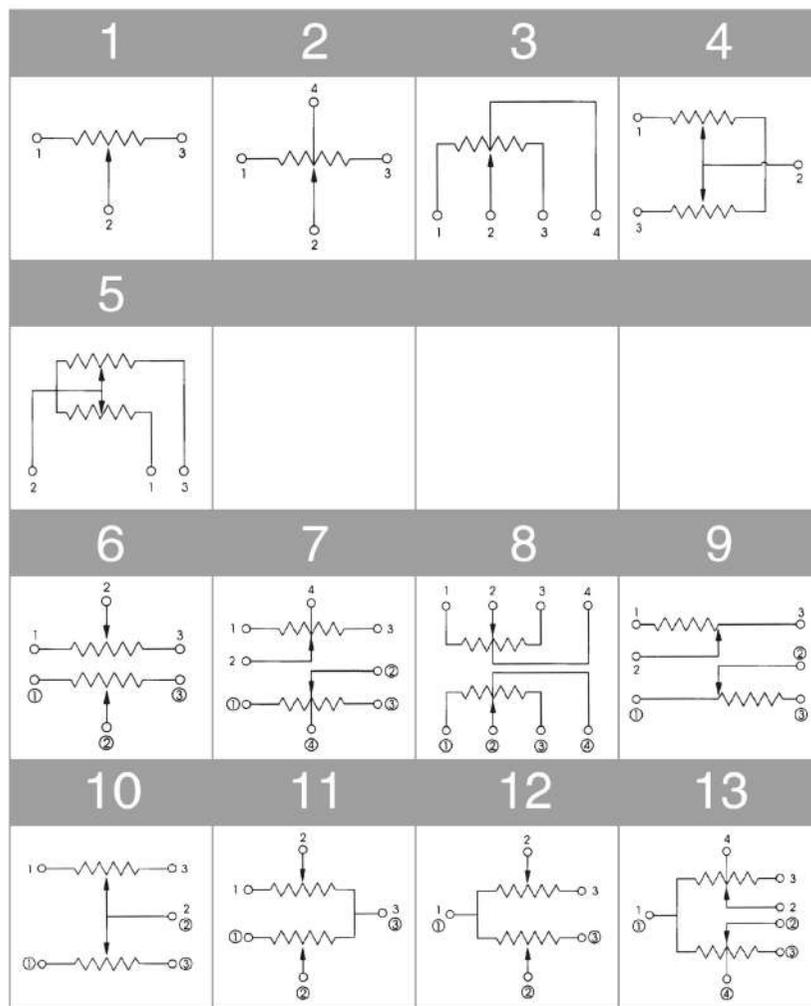
除特别注明外，总阻应可维持  $+5\% - 30\%$  的误差，机械性能无损。

**耐湿性（适于碳膜电位器）**

在  $40 \pm 2^\circ C$  的温度下，调教湿度至 90~95%，测试 1.5 小时后停半小时，重复此步骤  $350 \pm 10$  小时后，将电位器置于正常室温下 5 小时，再检验总阻，绝缘电阻及杂音。

除特别注明外，总阻误差应维持在  $\pm 20\%$  内，杂音则小于 150mV。

# 电路说明





POTENTIOMETERS

电位器 开关

常州科能电子有限公司

CHANGZHOU KENNON ELECTRONICS CO., LTD.

**Kennon**<sup>®</sup>  
ISO9001 ISO14001

Potentiometers  
Switches

专业电子元件制造商  
POTENTIOMETER EXPERT



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