



规格书

SPECIFICATION

CUSTOMER NAME	客户名称:	
CUSTOMER NO.	客户编号:	
SERIES	系 列:	电位器/编码器
MODEL NO.	型 号:	XB-RS-1701-E1-K series
DRAWING NO.	图 形 号:	POTENTIOMETER

If specification of this product meets your request, please confirm all the items of it and return to us with signature and stamp, it will be basis of our production and record. Thanks your cooperation in advance!

若此产品规格符合贵司要求，敬请确认此规格书内所有项目
并签名和盖章后回传给我司，以作我司产品制作之
依据和存档之用，多谢合作！

EXAMINE & APPROVAL 审批

APPROVE 接受			NOT APPROVE 不接受		
SIGNATURE 签署	STAMP盖章	DATE日期			

PREPARED BY.制表人		CHECKED BY.校对		APPROVED BY.审核		APPROVAL BY.批准	
研发部		品质部		工程部		总经办	
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2022. 06. 08		2022. 06. 08		2022. 06. 08		2022. 06. 08	

东莞市溪榜电子有限公司

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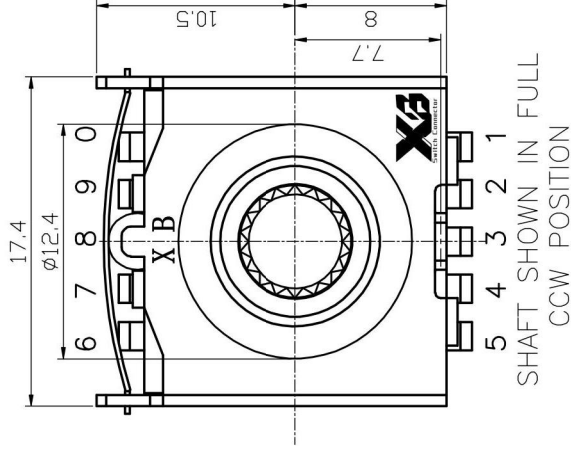
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required)

MAiL: HK@ALPSR.CN XB@ALPSR.CN XB@ALPSR.COM
Quality core! Afterburner for Made in China!

DIMENSIONS



X

RATING:	DC	5V	0.5mA	10mA
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RATING:	DC	5V	0.5mA	10mA
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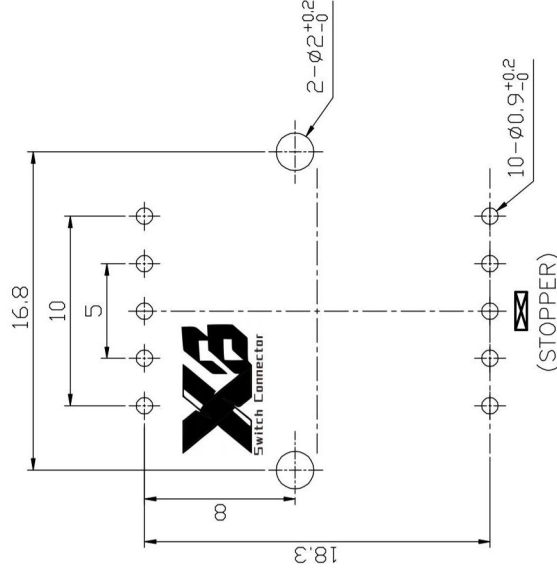
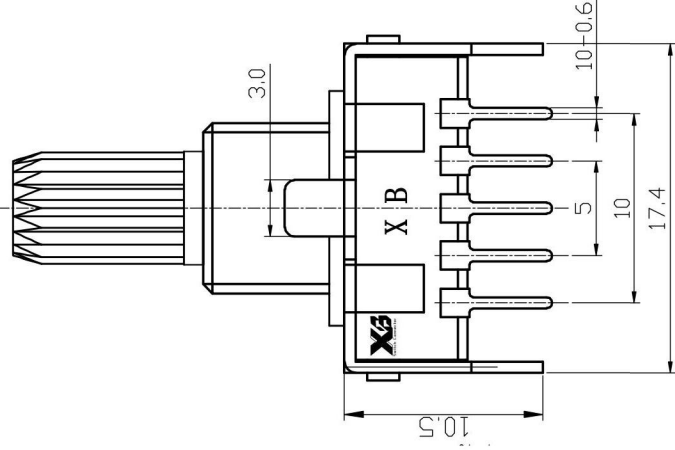
ANGLE: FULL ROTATION ANGLE: 360 DEGREES

CONTACT RESIS TANCE: 100m Ω maxINSULATION RESISTANCE: 100M Ω DC 250V 1mA

WITHSTAND VOLTAGE: 300V AC/min or

OPERATION FORCE: $6 \pm 3\text{N}$ $600\text{gf} \pm 300\text{gf}$

SWITCHING LIFE:	20,000 cycles
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P.C.B MOUNTING HOLE DETAIL

[illegible]

POTENTIOMETER SERIES SPECIFICATION

1. 一般事项General

1-1.适用规格 Scope

本规格书适用于09型回转型电位器.

This specification applies to 09mm size rotary potentiometer.

1-2.标准状态Standard atmospheric conditions

除另有规定外, 测量应在以下状态下进行:

Unless otherwise specified ,the standard range of atmospheric conditions formaking measurements and test is as following limits:

温 度 Ambient temperature : 15°C to 35°C

相对湿度 Relative humidity : 25% to 85%

气 压 Air pressure :86kpa to 106kpa

如果对上述所提到的条件中所做的实测值有疑问的话, 应使用以下条件进行测量:

If doubt arises on the decision based on the measured values under the above-mentioned conditions,the following conditions shall be employed:

温 度 Ambient temperature : 20±1°C

相对湿度 Relative humidity : 63% to 67%

气 压 Air pressure :86kpa to 106kpa

1-3. 使用温度范围 Operating temperature range :-10°C to +70°C

1-4. 保存温度范围 Storage temperature range: -30°C to +80°C

2.构造Construction

2-1.尺寸 Dimensions

见所附成品图 Refer to attached drawing

3.电位器使用注意事项 Cautions for Potentiometer Use

3-1.避免储藏于高温潮湿及腐蚀的场所.产品购入后尽可能在6个月内使用完.拆包装后未使用完的剩余产品需储藏于防潮防毒的环境下.

Avoid storing the products in a place at high temperature,high humidity and in Corrosive gases.Please use this product as soon as possible with 6 months limitation.If any remainder left after packing is opened,please store it with proper moistureproofing, gasproofing etc.

3-2.慎用助焊剂: 应避免使用水溶性助焊剂(俗称松香), 否则将加速金属氧化及导致材料发黑甚至功能失效.

Cautious use of flux: water-soluble flux (commonly known as rosin) should be avoided otherwise it will accelerate metal oxidation and lead to material blackening or even functional failure.

3-3.环境提示: 电位器若被使用在低温的环境条件下工作, 其转动扭力会较常温重很多, 详见如下表1, 为解决此问题, 请告之我们环境要求, 我们会采用特殊结构予以提供.

Environmental tips: If potentiometer is used in low temperature environment,Its rotational torque will be much heavier than normal temperature. See the table 1 below for details.To solve this problem,please inform us of our environmental requirements,we will provide it with special structure.

3-4.抗硫化保护层: 为避免电位器被使用在恶劣环境而造成电阻硫化, 在银层位印刷一层低阻碳膜作保护, 不过残留电阻会增加.

Anti-yulcanization protective laver; In order to avoid resistance vulcanization caused by potentiometer being used in harsh environment, a low resistance carbon film is printed on the silver layer for protection, but the residual resistance will increase.

3-5.旋转到止档位后, 请避免施加规定以上的旋转力矩, 否则会损坏功能失效.

After rotating to stop gear,please avoid imposing more than specified rotating moment,otherwise the function will be damaged and invalid.

3-6.避免结露: 产品表面应避免结露或有水滴存在, 以避免绝缘劣化或造成短路.

Avoid condensation: The product surface should avoid condensation or the presence of water droplets to avoid insulation deterioration or short circuit;

3-7.上锡法如下图1, 应尽量避免在PCB板上面非焊接位焊接, 否则加焊时易将焊锡流至产品 塑胶位造成松动或接触不良, 在无法避免且需此焊接工艺时, 请与本公司联络;

If the upper tin method is shown on the right,the non-welded position on the PCB board should be avoided as far as possible. Otherwise,it is easy to flow solder to the plastic position of the product to cause loosening or poor contact when adding solder. This welding process is unavoidable and necessary.Please contact our company.

温度 Temperature	旋转扭力 Rotationaltorque
-20°C	最大 Max 80mN.m
-30°C	勉强可转动 Barely rotatable

table 1

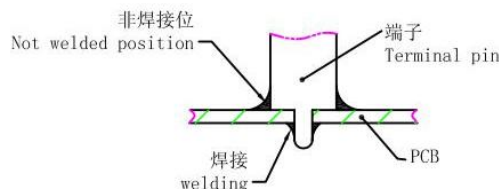
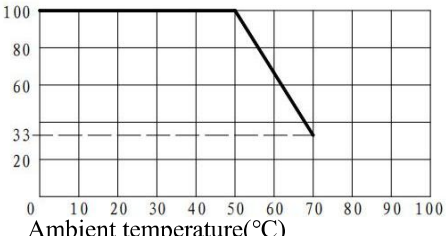
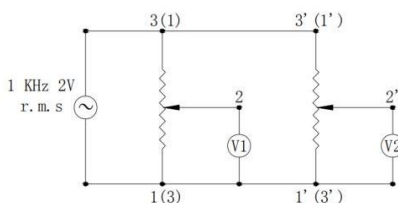


fig.1

POTENTIOMETER SERIES SPECIFICATION

4.电气性能 ELECTRICAL CHARACTERISTICS			
项目 ITEM	条件 CONDITIONS	规格 SPECIFICATIONS	
4-1 全阻值 Total Resistance	测试1~3端子间的阻值 The resistance between terminal 1 and 3 shall be measured.	<u>10 KΩ</u> (Terminal 1~3)	
4-2 容许误差 Total Resistance Tolerance		☒ ±20% ☐ ±10% ☐ Other____% (Terminal 1~3)	
4-3 电阻变化特性 Resistance law(Taper)	端子1-2电压对端子1-3电压的百分比。 Percentage of the voltage of terminal 1-2 to the voltage fo terminal 1-3	<u>B</u> Taper Refer to Taper sheet	
4-4 额定功率 Powerrating	1~3端子间连续负载后之最大功率,周围温度对功率影响之 曲线如下图表示。 Power rating is based on continuous full load operation at the maximum voltage betwe terminal 1 and 3.power rating vs.ambient temperature shall be denoted on the following graph. 	B Taper 0.05W Other 0.025W	
4-5 额定电压 Rated Voltage	额定电压超过最高使用电压时,最高使用电压为额定电压。 When the rated voltage exceeds the maximum operating voltage,the maximum operating voltage shall rated voltage 最高使用电压 Maximum operating voltage	Rated Voltage $E = \sqrt{P \cdot R}$ AC 50V DC 10V	
4-6 残留阻值 Residual resistance	刷子停留在终端位置时, 端子1-2和端子2-3间测定之电阻值 Resistance at each end of the between terminals 1 and 2,and 2 and 3 shall be measured.	$R \leq 10K\Omega: \leq 10\Omega;$ $10K < R < 500K\Omega: \leq 20\Omega$ $R \geq 500K: 0.1\% \text{ max.of total resistance}$	
4-7 转动杂音 Noise	端子1-3间施加电压测试(测试速度:每分钟30圈) $R > 1K\Omega$ 使用DC 20V, $R \leq 1K\Omega$ 使用DC 12V. The terminals between 1 and 3 shall be applied for voltage test, $R > 1K\Omega$ as per DC 20V, $R \leq 1K\Omega$ as per DC 12V.And then the noise shall be measured by the specified speed.For other procedures,refer to IEC PUB 393-1 Test method A.(Test speed:30r/min)	100mV以下 Less than 100mV	
4-8 同步误差 Gang error	将轴放在指定位置,在端子1-3间输入频率1KHz,电压2V的正弦波有效值,测量端子2与指定端子(端子1或端子3)之间的电压, 然后使用以下公式来确定同步误差。 如无疑问,在测试中使用DC电压。 With the shaft(lever)placed in the specified position, gang error shall be determined by appling test voltage of 2V r.m.s between the terminals 1 and 3 at 1KHz and measuring the voltage between the resistor terminal 2 and the specified terminal(terminal 1 or 3)and then by using the following equation. If there are no questions on determination,DC voltage may be applied for this test. 同步误差(Gang error)= $20\log V_2/V_1$ 电压表输入阻抗:10MΩ以上 Input impedance of the voltmeter: 10MΩ or more 	☐ 单联不适用 Single link is not applicable ☒ 双联或多联适用 Double or multiple couplets are applicable ±4dB at -40dB~0dB	

电位器系列规格书

POTENTIOMETER SERIES SPECIFICATION

项目 ITEM		条件 CONDITIONS		规格 SPECIFICATIONS	
4-9	绝缘阻抗 Insulation	DC 250V 1分钟. A voltage of 250V DC shall be applied for 1 minute, after which measurement shall be made. 端子与支架间. Between terminals and frame.		100 MΩ以上 100 MΩMax	
4-10	耐电压 Withstand Voltage	感度电流 2mA, 频率50/60Hz, AC 300V 1分钟,端子与支架间. Trip current:2mA,Measuring frequency:50/60 Hz 300V AC for 1 minute,Between terminals and frame.		没有损伤、变形、绝缘破坏等情形 Without damage to parts,arcing or breakdown etc.	
5.机械性能 MECHANICAL CHARACTERISTICS					
5-1	全回转角度 TotalRotational Angle	有效回转角度 Angle of effective rotation		300°±5°	
5-2	回转力矩 Rotationai torque	旋转速度300°/3秒 Rotational speed	Standard atmospheric conditions ☒ 常温5°to35°C		10~150gf.cm
			☐ -10°C~-30°C		30~300gf.cm
5-3	旋转定位数目 Number of Detents(click)				☐ 1C ☐ 11C ☐ 21C ☐ 41C
5-4	脱出力矩 Click Torque				50~250 gf.cm
5-5	轴的推拉强度 Push-pull strength ofshaft	在轴端,沿轴向施加70N(7Kgf) 的静负荷力推和拉10秒钟(产品焊锡固定在PCB上。) Push and pull static load of 70N(7Kgf) shall be applied to the shaft in the axial direction for 10s.(After soldering of the PC board)			轴向虚位间隙0.4以内 Shaft play in axial direction 0.4 Max
5-6	端子强度 Terminal strength	在任一方向施加5N负荷10秒钟 A static load of 5N shall be applied to the terminals for 10S.			无功能不良且端子无接触不良 Without functional problem because of rickety terminals or poor contact
5-7	轴套螺纹紧固强度 Bushing Nut Tighten Strength				0.7N.m(7.0kgf.cm)以上 0.7N.m(7.0kgf.cm) Min
5-8	止动强度 Stopper Strength				金属轴心0.5N.m(5.0kgf.cm)以上 Axis of metal 0.5N.m(5.0kgf.cm) Min
5-9	轴向间隙 Shaft play in axial direction				0.4mm 以下 0.4mm Max
5-10	轴摆动 Shaft wobble	在距离轴顶端5mm处,沿径向瞬间施加50mN.m(500gf.cm)的力测试 A momentary load of 50mN.m should be applied at the point 5mm from the tip of the shaft in a direction perpendicular to the axis of shaft.			0.7*L/30mm p-p 以下 (L: 指安装平面到轴的柄端的距离。) 0.7*L/30mm p-p Max L:Distance between mounting surface and measuring point on the shaft
6.耐久性能 ENDURANCE CHARACTERISTICS					
6-1	回转寿命 Life Rotationa	在无负荷条件下轴以600~1000周/小时的速度, 在有效旋转角度90%以上, 24小时连续5000~8000次。 The moving contact.Without electrical laod,shall be rotated from end stop to the other and returned to its original position extended over 90% or more effective angle,this procedure constitutes 1 cycle.And the moving contact shall be subjected of 600 to 1000 cycles per hour. (5000 to 8000 continuous cycles for 24 hours.)		☒ 10,000±200次 10,000±200 cycles	☐ _____次 _____cycles
				全阻值变化初期值±20% 杂音:150mV p-p以下 残留:初始规格值的两倍 Change in total resistance is relative to the value before test:±20%. Noise:less than 150mvp-p Residual resistance:Two times of original.	

电位器系列规格书

POTENTIOMETER SERIES SPECIFICATION

项目 ITEM		条件 CONDITIONS	规格 SPECIFICATIONS															
6-2	耐寒性 Cold	温度-30±2℃的恒温试验箱内放置96H，拿出后擦干表面水份并在常温下放置1.5H后测试。 The potentiometer shall be stored at a temperature of -30±2℃ for 96 hours in a thermostatic chamber. Then the potentiometer shall be taken out of the chamber and its s urface moisture shall be removed and then the potentiometer shall be maintained at standard atmospheric conditions for 1.5 hours,after which measurement shall be made.	全阻值变化初期值±20% Change in total resistance is relative to the value before test:±20%															
6-3	耐热性 Dry heat	温度70±2℃的恒温试验箱内放置240±8H，拿出后在常温下放置1.5H后测试。 The potentiometer shall be stored at a temperature of 70±2℃ for 240±8hours in a thermostatic chamber, Then the potentiometer shall be taken out of the chamber and then the potentiometer shall be maintained at standard atmospheric conditions for 1.5 hours,after which measurement shall be made.	全阻值变化初期值+5%~-30% Change in total resistance is relative to the value before test:+5/-30%															
6-4	耐湿性 Damp heat	温度40±2℃、湿度90%~95%的恒温试验箱内放置96±4H，拿出后擦干水份并在常温下放置1.5H后测试。 The potentiometer shall be stored at a temperature of 40±2℃ with relativ humidity of 90% to 95% for 96±4 hours in a thermostatic chamber.then the potentiometer shall be taken out of the chamber and its surface moisture shall be removed and then the potentiometer shall be maintained at standard atmospheric conditions for 1.5 hours,after which measurement shall be made.	全阻值变化初期值+35%~-5% 杂音：150mV p-p以下 绝缘阻抗：20MΩ DC 250V Change in total resistance is relative to the value before test:+35/-5% Noise:less than 150mV p-p Insulation resistance:20MΩ DC 250V															
6-5	温度变化特性 Change of temperature	在下表条件中5次温度循环后去除表面湿气，在常温常湿中放置1小时后再进行测量。 The potentiometer shall be subjected to 5 successive change of temperature cycles,each as shown in table and then the potentiometer shall be subjected to standard atmospheric conditions for 1 hours,after which measurement shall be made. <table><tr><td>Step</td><td>Temperature</td><td>Duration</td></tr><tr><td>1</td><td>-10±3℃</td><td>30 minutes</td></tr><tr><td>2</td><td>Standard atmospheric conditions</td><td>10-15 minutes</td></tr><tr><td>3</td><td>70±2℃</td><td>30 minutes</td></tr><tr><td>4</td><td>Standard atmospheric conditions</td><td>10-15 minutes</td></tr></table>	Step	Temperature	Duration	1	-10±3℃	30 minutes	2	Standard atmospheric conditions	10-15 minutes	3	70±2℃	30 minutes	4	Standard atmospheric conditions	10-15 minutes	全阻值变化初期值±30% 耐电压：AC 300V 1分钟绝缘阻抗：20MΩ DC 250V Change in total resistance is relative to the value before test:±30% Withstand Voltage:AC 300V 1 minute. Insulation resistance:20MΩ DC 250V
Step	Temperature	Duration																
1	-10±3℃	30 minutes																
2	Standard atmospheric conditions	10-15 minutes																
3	70±2℃	30 minutes																
4	Standard atmospheric conditions	10-15 minutes																
6-6	焊锡性 Solderability	端子在260±5℃温度的焊锡槽内浸锡3±0.5秒。 The terminals shall be immersed into solder bath at 260±5℃ for 3±0.5S.	浸渍面须有75%以上焊锡附着 A new uniform coating of solder shall cover 75% minimum of the surface being immersed.															
6-7	焊锡耐性 Resistance to Soldering heat	槽焊 使用基板：t=1.6mm的单面覆铜板。 预热：基板表面温度100℃以下，时间1分钟以内。 焊接：温度260±5℃或以下，时间3秒以内。 Dip soldering Printed wiring board:single-sided copper clad laminate board with thickness of 1.6mm. Preheating: 1.Surface temperature of board:100℃ or less. 2.preheating time:within 1 minute. Soldering:Solder temperature:260±5℃ or less Immersion time: within 3s. 手工焊接 温度300℃以下，时间3秒以内。 Manual soldering Bit temperature of soldering iron:300℃ less than Application time of soldering iron:within 3s.	不得有绝缘体的破损、变形、接触无异常。 Electrical characteristics shall be satisfied no mechanical abnormality.															

包装 PACKAGING

1. 成品包装方式PACKING METHOD:

1.1. 将V.R成品置放于单个胶盒内，并将胶盒叠放在一起再用胶纸将其扎好。

Let the V.R be placed into plastic box , and the plastic boxes be superposed one by one and use adhesive tape them together.

1.2. 将扎好之胶盒(共20盘)放置于外箱内,放好后用胶纸将外箱封口。

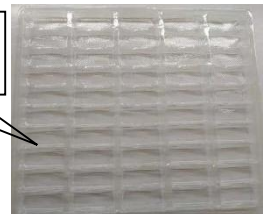
Let the packed plastic boxes be placed into (20PCS box) of the carton and use adhesive tape to seal.

2. 规格与数量MEASUREMENT AND QUANTITY:

2.1. 胶盒规格(长×宽×高):300mm×250mm×18mm

Plastic box (length×width×high): 300mm×250mm×18mm

胶 盒
PLASTIC BOX



2.2. 外箱规格(长×宽×高):315mm×260mm×235mm

Carton contain (length×width×high): 315mm×260mm×235mm

2.3. 单个胶盒包装数量: 2×50=100PCS(胶盒每格置放V.R成品2PCS)

A plastic box contain 2×50=100PCS of V.R (every lattice contain 2PCS of V.R)

20盘 胶 盒
20 PCS PLASTIC



2.4. 外箱包装V.R成品数量: 100×20=2000PCS

A carton contain100×20=2000PCS of V.R (20group of plastic box Can be placed on).

放 于 外 箱
INTO OF THE CARTON



受控编号 DOCUMENT No	修订 REVISION	日期 Date	经办 Designed	审核 Check	批准 Approved
	初始发行	2014.12.09			
电位器系列			庞东	贺龙飞	高鹏
版本 VERSION:	A0				



东莞市溪榜电子有限公司

DONG GUAN XI BANG ELECTRONICS CO., LTD

电位器系列规格书

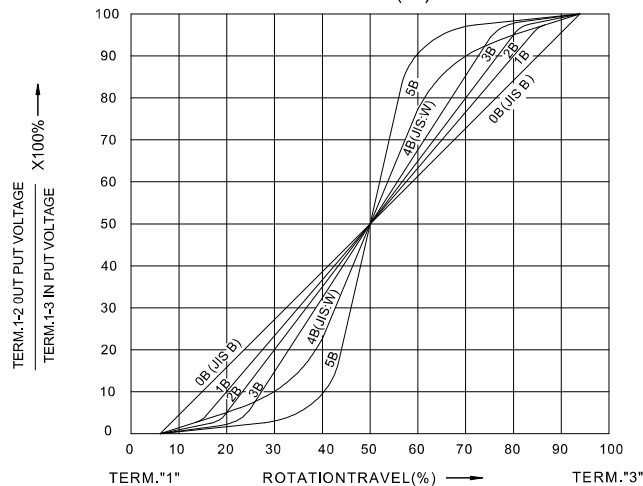
POTENTIOMETER SERIES SPECIFICATION

阻值变化特性

Resistance Characterist

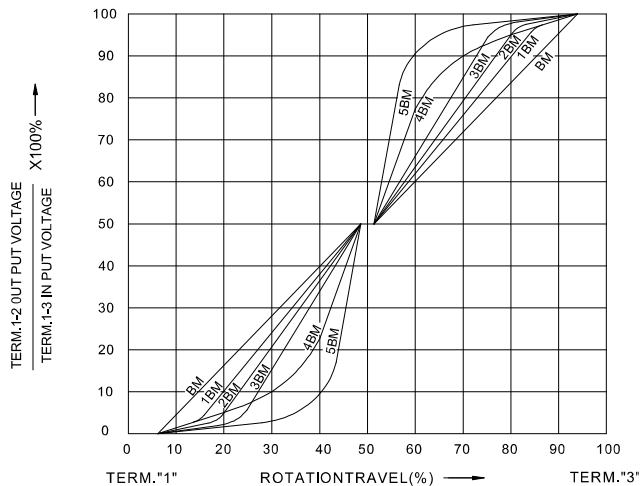
TAPERS B SERIES

- ☐ 0B(B) ☐ 1B ☐ 2B
☐ 3B ☐ 4B(W) ☐ 5B



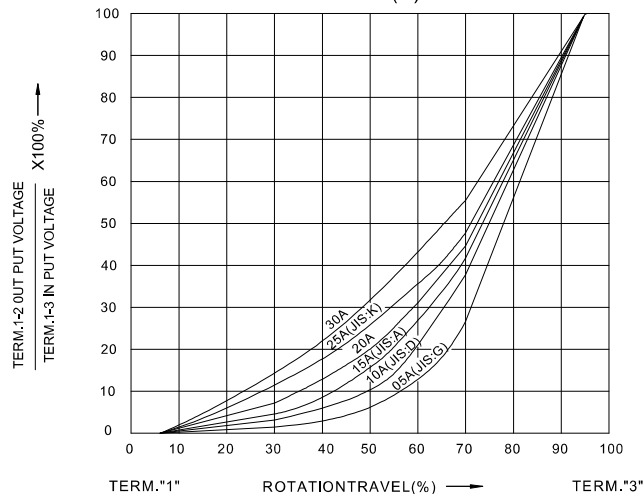
TAPERS B WITH 50% TAP

- ☐ BM ☐ 1BM ☐ 2BM
☐ 3BM ☐ 4BM ☐ 5BM



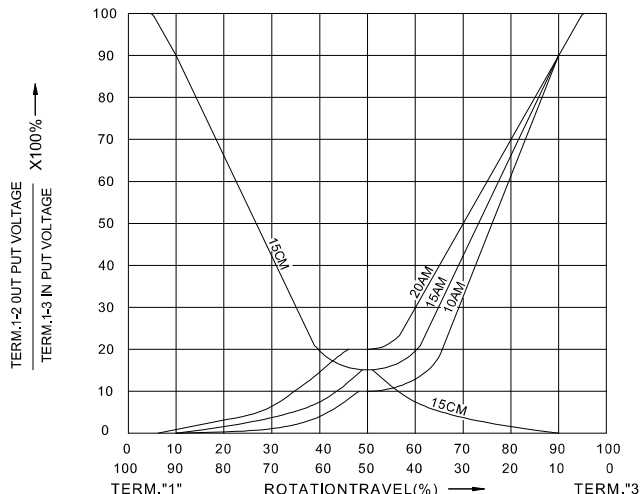
TAPERS A SERIES

- ☐ 05A(G) ☐ 10A(D) ☐ 15A(A)
☐ 20A ☐ 25A(K) ☐ 30A



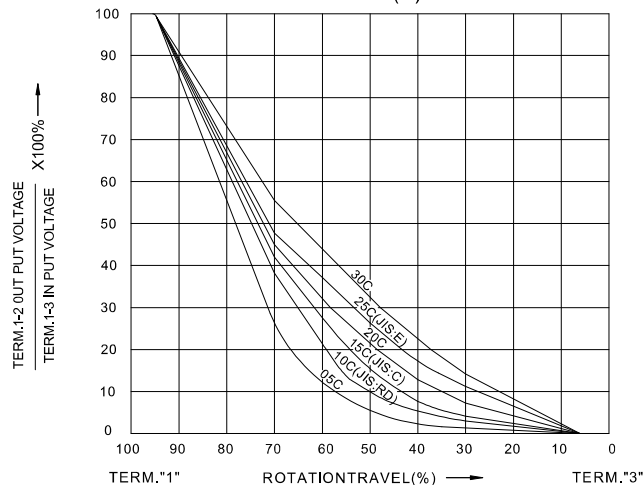
TAPERS A&C WITH 50% TAP

- ☐ 10AM ☐ 15AM
☐ 20AM ☐ 15CM



TAPERS C SERIES

- ☐ 05C ☐ 10C(RD) ☐ 15C(C)
☐ 20C ☐ 25C(E) ☐ 30C



TAPERS M&N

- ☐ M ☐ N

