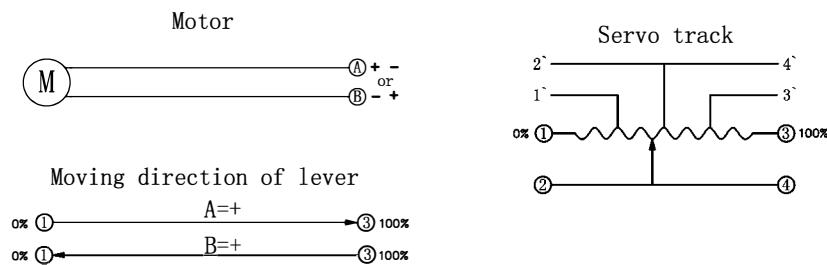


Circuit diagram



重点控制标注序号尺寸

03					
02					
01					
00					
NO	DATE	DESCRIPTION	DRAWING NO	SM100B-01	
SCALE		TOLERANCE			
UNIT	mm	L≤10 ±0.3	DRAWN BY	CHECK BY	APPROVED BY
		10<L≤30 ±0.5			
		30<L≤100 ±1.0			
		ANGLE ±5°			

SM SERIES GENERAL SPECIFICATION

SM 系列 规 格 书

1/5

1、GENERAL一般事项

1-1、Scope

The specification applies to model SM type mainly used for consumer products

1-2、Operating temperature range

适用范围

此规格书适用于SM机型

1-3、Storage temperature range

使用温度范围: -10°C~60°C

1-4、Test conditions:

保存温度范围: -30°C~70°C

Standard atmospheric conditions:

试验状态

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and test is as follows:

标准状态

Ambient temperature: 5~35°C Relative humidity: 45~85%

无特别规定之实验及测定时以温度

Air pressure: 86kpa to 106kpa

5~35°C, 相对湿度45~85%, 气压

If there is any doubt about the results, measurements shall be

86~106kpa之标准状态测定。

Made within the following limit:

发生判定疑问或另有特别要求则以

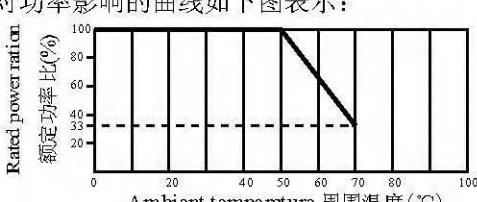
Ambient temperature: 20±2°C Relative humidity: 60~70%

基准状态(温度20±2°C, 相对湿度60~70%,

Air pressure: 86kpa to 106kpa

气压 86~106kpa)为标准测定。

2 ELECTRICAL CHARACTERISTICS 电气性能

Item 项 目	Conditions 条 件		Specifications 规 格														
2-1、Nominal total resistance and tolerance 公称全阻抗值	The resistance between terminals 1 and 3 shall be measured 端子1-3间阻值测定。		<u>10KΩ ± 20%</u>														
2-2、Resistance law 阻抗变化特性	Measurement shall be made by the resistance law method. For other procedures(refer JISC5261 standard) 用电压法测试, 参照JISC5261标准		<u>B</u> Taper线性 Refer to the attached 参见附页														
2-3、Power rating 额定功率 (W)	Power rating is based on continuum full load operation at the maximum voltage between terminals 1 and 3 . Power rating vs. ambient temperature shall be denoted on the following graph. 端子1-3间连续负载后的最大功率。 环境温度对功率影响的曲线如下图表示:																
	 <table border="1"> <caption>Data points estimated from the graph</caption> <thead> <tr> <th>Ambient temperature (°C)</th> <th>Rated power ratio (%)</th> </tr> </thead> <tbody> <tr><td>0</td><td>100</td></tr> <tr><td>20</td><td>80</td></tr> <tr><td>40</td><td>60</td></tr> <tr><td>50</td><td>50</td></tr> <tr><td>60</td><td>40</td></tr> <tr><td>70</td><td>30</td></tr> </tbody> </table>	Ambient temperature (°C)	Rated power ratio (%)	0	100	20	80	40	60	50	50	60	40	70	30	B Taper: 0.5W Other Taper: 0.25W	
Ambient temperature (°C)	Rated power ratio (%)																
0	100																
20	80																
40	60																
50	50																
60	40																
70	30																
2-4、Rated voltage 额定电压	Rated voltage 额定电压: $E = \sqrt{PR}$ Power rating P: 额定功率 (W) Nominal total resistance R: 公称全阻抗值 (Ω)	Max Operation Voltage 最高工作电压 AC	DC 10V AC 200V														
	When the rated voltage exceeds the maximum operating voltage. The maximum operating voltage shall be the rated voltage. 额定电压大于最高使用电压时, 最高使用电压作为额定电压。																
文控编号: SM-001	编制时间:																
版本号: 01	2014.7.4																
REVISION变更记事:	变更时间:																
重新整理	2014.11.18	DSGD. 主 办	CHKD. 审 查	APPD. 核 准													
增加带负载寿命规格	2015.01.16																
				TITLE 标题: Master Type Potentiometer (Slide) 马达驱动电位器(直滑)													

SM SERIES GENERAL SPECIFICATION

SM 系列 规 格 书

2/5

2 ELECTRICAL CHARACTERISTICS 电气性能

Item 项 目	Conditions 条 件	Specifications 规 格
2-5、 Residual resistance 残留电阻	The resistance at the end of the (A).Resistance between terminals 1 and 2, and terminal 2 and 3 shall be measured. A: Travel of effective slide 接触刷停留在(A)终端位置, 在端子1-2间, 端子2-3间测定之电阻值. A :有效滑动行程	500 Ω MAX. 500 Ω 以下
2-6、 Slide noise 滑动噪音	Apply DC 20V between terminals 1-3 to measure the noise voltage . (rated voltage ≤20V .apply by rated voltage) 在端子1-3间加直流电压20V(额定电压≤20V,则以额定电压值测试) 后, 测定的杂音电压. Slide speed : 1 Cycles/3s 滑动速度: 1来回/3秒	68mVp-p Less than 68mVp-p 以下
2-7、 Insulation resistance 绝缘阻抗	Apply voltage of DC 250V and measure for 1 minute. DC 250V 1分钟	Between individual terminals and frame 端子-固定板 100MΩ or more 100MΩ 以上
2-8、 Dielectric strength 耐电压	Trip current:2mA Measuring frequency : 50~60Hz ; 250V AC for 1 min 电流: 2mA 频率: 50~60Hz AC 250V 1分钟	Between individual terminals and frame. 端子-固定板 Without arcing or breakdown. 不得有绝缘破坏。
2-9. Conductive resistance 导通阻抗	Touch sense track resistance (lever berween terminal T) 测量推柄与端子T脚间阻抗。	1 KΩ MAX. 1 KΩ 以下

3 Mechanical characteristics 机械性能

3-1、 Total travel slide 全滑动行程	Travel fo effective slide. 有效滑动行程	<input checked="" type="checkbox"/> 60±0.5mm <input checked="" type="checkbox"/> 100 ±0.5mm			
3-2、 Sliding force 滑动推力	Standard atmospheric conditions 常温5°C至35°C。 Traveling speed :20 mm/S 移动速度: 20 mm/秒。 Operating position:Tip of the lever 操作位置: 柄部顶端。	40gf ±30gf			
3-3、 Starting force 起动力	Standard atmospheric conditions 常温5°C至35°C。 Traveling speed :20 mm/S 移动速度: 20 mm/秒。 Operating position:Tip of the lever 操作位置: 柄部顶端。	Sliding force + 1N MAX 滑动推力 + 1N 以下			
3-4、 Stop strength 止档强度	The following torsion moment load of 5Kgf shall be applied to the shaft for 10sec at both ends (after fixation) 固定后滑动到前后两端末加5Kgf拉力保持10秒	Electrical characteristics shall be satisfied with specification 电气性能符合规定要求			
3-5、 Slide andle wobble 滑柄偏摆量		1.6mm Max.			
3-6、 Terminal strength 端子强度	After fixed add 0.7kgf static force along to the terminal position and keep 10 s 固定后沿端子方向加 0.7kgf 静载荷力并保持10秒	Electrical characteristics shall be satisfied with specification 电气性能符合规定要求			
文控编号: SM-001	编制时间:				
版本号: 01	2014.7.4				
REVISION变更记事:	变更时间:				
重新整理	2014.11.18	DSGD. 主办	CHKD. 审查	APPD. 核准	TITLE 标题: Master Type Potentiometer (Slide) 马达驱动电位器(直滑)
增加带负载寿命规格	2015.01.16				

SM SERIES GENERAL SPECIFICATION

SM 系列 规 格 书

3/5

3 Mechanical characteristics 机械性能

Item 项 目	Conditions 条 件	Specifications 规 格
3-7、Handle press force 推柄按压力	Push pull static load of 5Kgf shall be applied to the handle in perpendicular to axial directions for 10 s(After fixation) 固定后在与推柄垂直的端面方向加5Kgf静载荷并保持10秒。	Electrical characteristics shall be satisfied with specification. 电气性能符合规定要求

4 ENDURANCE CHARACTERISTICS 耐久性能

4-1、 Solder ability 焊锡性	<p>The terminals shall be immersed into solder bath at $260\pm 5^{\circ}\text{C}$ for $3\pm 0.5\text{s}$ in the same manner as para. 端子在$260\pm 5^{\circ}\text{C}$温度的焊锡槽内浸锡3 ± 0.5秒。</p> <p><input type="checkbox"/> Manual soldering 手工焊接 Bit temperature of soldering iron: 350°C less than Application time of soldering iron: within 3 s. 温度350°C以下，时间3秒以内。</p> <p><input type="checkbox"/> Dip soldering 槽焊</p> <ol style="list-style-type: none"> Printed wiring board : single-sided copper clad laminate board with thickness of 1.6mm; 使用基板: $t=1.6\text{mm}$的单面覆铜板。 Solder flux: Flux of 0.82 specific weight in bubbling type,solder flux coating apparatus shall be used and bubbling surface height shall be defined substantially as half thickness of substrate,Flux shall not flow up on substrate surface; 助焊剂: 使用发泡式比重0.82以上的焊剂，发泡面高大致在基板厚度一半的位置，而且助焊剂不可流入基板表面上。 Preheating : Surface temperature of board: 100°C or less; Preheating time : within 2 min. 预热: 基板表面温度100°C以下，时间2分钟以内。 Soldering : Solder temperature : $260^{\circ}\text{C}\pm 5^{\circ}\text{C}$ less Immersion time:within 5 ± 1 s 焊接: 温度$260^{\circ}\text{C}\pm 5^{\circ}\text{C}$，时间$5\pm 1$ s。 Apply the above soldering process for 1 or 2 times. 以上工程适用1至2次。 	A new uniform coating of solder shall cover 75% minimum of the surface being immersed. 浸渍面须有75%以上焊锡附着
4-2、 Resistance to soldering heat 焊锡耐热性	<p>使用基板: $t=1.6\text{mm}$的单面覆铜板。</p> <p>2. Solder flux: Flux of 0.82 specific weight in bubbling type,solder flux coating apparatus shall be used and bubbling surface height shall be defined substantially as half thickness of substrate,Flux shall not flow up on substrate surface;</p> <p>助焊剂: 使用发泡式比重0.82以上的焊剂，发泡面高大致在基板厚度一半的位置，而且助焊剂不可流入基板表面上。</p> <p>3. Preheating : Surface temperature of board: 100°C or less; Preheating time : within 2 min. 预热: 基板表面温度100°C以下，时间2分钟以内。</p> <p>4. Soldering : Solder temperature : $260^{\circ}\text{C}\pm 5^{\circ}\text{C}$ less Immersion time:within 5 ± 1 s 焊接: 温度$260^{\circ}\text{C}\pm 5^{\circ}\text{C}$，时间$5\pm 1$ s。 Apply the above soldering process for 1 or 2 times. 以上工程适用1至2次。</p>	Electrical characteristics shall be satisfied No mechanical abnormality. 不得有绝缘体的破损、变形、接触无异常。

4-3、 Resistance to heat 耐热性	The potentiometer shall be stored at a temperature of $70\pm 2^{\circ}\text{C}$ for $240\pm 8\text{h}$ in a thermostatic chamber.Then the potentiometer shall be measured after maintaining at standard atmospheric conditions for 1h . 温度 $70\pm 2^{\circ}\text{C}$ 恒温槽中 240 ± 8 小时放置后,置于常温常湿1小时除去水滴后测定。	Change in total resistance is relative to the value before test : $\pm 20\%$ 总阻变化值: 初期值的 $\pm 20\%$
--------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

文控编号： SM-001	编制时间：						TITLE 标题： Master Type Potentiometer (Slide) 马达驱动电位器(直滑)
版本号： 01	2014.7.4						
REVISION变更记事：	变更时间：						
重新整理	2014.11.18	DSGD. 主办	CHKD. 审查	APPD. 核准			
增加带负载寿命规格	2015.01.16						

SM SERIES GENERAL SPECIFICATION

SM 系列 规 格 书

4/5

4 ENDURANCE CHARACTERISTICS 耐久性能

Item 项 目	Conditions 条 件	Specifications 规 格			
4-4、 Resistance to cold 耐寒性	<p>The potentiometer shall be stored at a temperature of $-25\pm3^{\circ}\text{C}$ for $96\pm4\text{h}$ in a thermostatic chamber. Then the potentiometer shall be taken out of the chamber and its surface moisture shall be removed.</p> <p>And measure the potentiometer which shall be subjected to standard atmospheric conditions for 1h .</p> <p>温度$-25\pm3^{\circ}\text{C}$恒温槽中96 ± 4小时放置后，置于常温常湿1小时除去水滴后，1小时内测定。</p>	<p>Change in total resistance is relative to the value before test : $\pm 20\%$</p> <p>总阻变化值：初期值的$\pm 20\%$</p>			
4-5、 Damp heat 耐湿性	<p>The potentiometer shall be stored at a temperature of $40\pm2^{\circ}\text{C}$, with relative humidity of 90% to 95% for $96\pm4\text{h}$ in a thermostatic chamber. Then the potentiometer shall be taken out of the chamber and its surface moisture shall be removed.and measure the potentiometer which shall be subjected to standard atmospheric conditions for 1h.</p> <p>温度$40\pm2^{\circ}\text{C}$,湿度90-95%,恒温恒湿槽中放置96 ± 4小时后，置于常温常湿1小时除去水滴后,1小时内测定。</p>	<p>Change in total resistance is relative to the value before test : $+35\sim-5\%$</p> <p>总阻变化值:初期值的$+35\sim-5\%$</p> <p>Insulation resistance: $50\text{M}\Omega$ or more</p> <p>绝缘阻抗:$50\text{M}\Omega$ 以上</p> <p>Noise: 150mV p-p less than</p> <p>转动噪音: 150mV p-p 以下</p>			
4-6、 Change of temperature 温度循环试验	<p>The potentiometer shall be subjected to 5 successive change of temperature cycles as shown in table below. Then is surface moisture shall be removed.And measure the potentiometer which shall be subjected to standard atmospheric conditions for 1hour .</p> <p>以下条件温度连续5个周期的试验后,置于常温常湿1小时除去水滴后,1小时内测定。</p>	<p>Change in total resistance is relative to the value before test : $\pm 20\%$</p> <p>总阻变化值：初期值的$\pm 20\%$</p> <p>Slide noise: 150mVp-p less than</p> <p>滑动噪音: 150mVp-p 以下</p> <p>Sliding force : $0.1\text{-}1\text{N}$ ($10\text{-}100\text{gf}$)</p> <p>滑动推力: $0.1\text{-}1\text{N}$ ($10\text{-}100\text{gf}$)</p>			
4-7、 Endurance 耐久性	<p>The moving contact without electrical load shall be slide from one end to the other and covers at least 90% of the effective travel</p> <p>And the moving contact shall be subjected to 600 cycles per hour. total $30,000\pm200$ cycles.(5000 to 8000continuous cycles for 24h).</p> <p>在无负载的条件下，推柄以600周/小时的速度推动,24小时推动5000~8000周，有效滑动行程超过90%，共 $30,000\pm200$周.</p>	<p>Change in total resistance is relative to the value before test : $\pm 15\%$</p> <p>总阻变化值：规格值范围的$\pm 15\%$</p> <p>Slide noise: 150mVp-p less than</p> <p>滑动噪音: 150mVp-p 以下</p> <p>Sliding force : $0.1\text{-}1\text{N}$ ($10\text{-}100\text{gf}$)</p> <p>滑动推力: $0.1\text{-}1\text{N}$ ($10\text{-}100\text{gf}$)</p>			
文控编号： SM-001	编制时间：				
版本号： 01	2014.7.4				
REVISION变更记事：	变更时间：				
重新整理	2014.11.18	DSGD. 主 办	CHKD. 审 查	APPD. 核 准	TITLE 标题： Master Type Potentiometer (Slide) 马达驱动电位器(直滑)
增加带负载寿命规格	2015.01.16				

SM SERIES GENERAL SPECIFICATION

SM 系列 规 格 书

5/5

5 Motor drive characteristics 马达驱动时性能

Item 项 目	Conditions 条 件	Specifications 规 格
5-1、Rated voltage 额定电压	Between terminals of the motor 马达端子间	10 V D.C.
5-2、Operating supply voltage range 使用电压范围	Voltage supply ripple: 0.3%or less 电压波动: 0.3%以下	6 -11 V D.C.
5-3、Starting current 起动电流	Supply voltage 10 V D.C. 加电压10 V D.C.	800 mA or less 800 mA以下
5-4、Starting force 起动滑动推力	Supply voltage 10 V D.C. It shall be measured at the top or lever 加电压10 V D.C., 测量位置为柄部顶端	0.2N (20gf) or more 0.2N (20gf) 以上
5-5、Moving speed of lever 推柄移动速度	Supply voltage 10 V D.C. 加电压10 V D.C.	20 mm /0.1 ses or more 20 mm /0.1 秒以上
5-6、Maximum current 推柄固定时电流	Lock the shaft the motor and the rated vol-rage shall be applied to the motor. 推柄固定后加额定电压测试	400 - 800 mA

6、Application Notes 使用上的事项

6-1、Avoid storing the products in a place at high humidity and in Corrosive gases. please use this product with 12 months limitation. If any remainder left after packing is opened, please store it with proper moistureproofing, gasproofing etc.

避免储藏于高温、高湿及腐蚀的场所。产品购入后需在12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。

文控编号：SM-001	编制时间：			
版本号：01	2014.7.4			
REVISION变更记事：	变更时间：			
重新整理	2014.11.18	DSGD. 主办	CHKD. 审查	APPD. 核准
增加带负载寿命规格	2015.01.16			
		TITLE 标题： Master Type Potentiometer (Slide) 马达驱动电位器(直滑)		

POTENTIOMETERS PATTERN OF RESISTANCE CURVE

The Sample Correspondence Specification is

