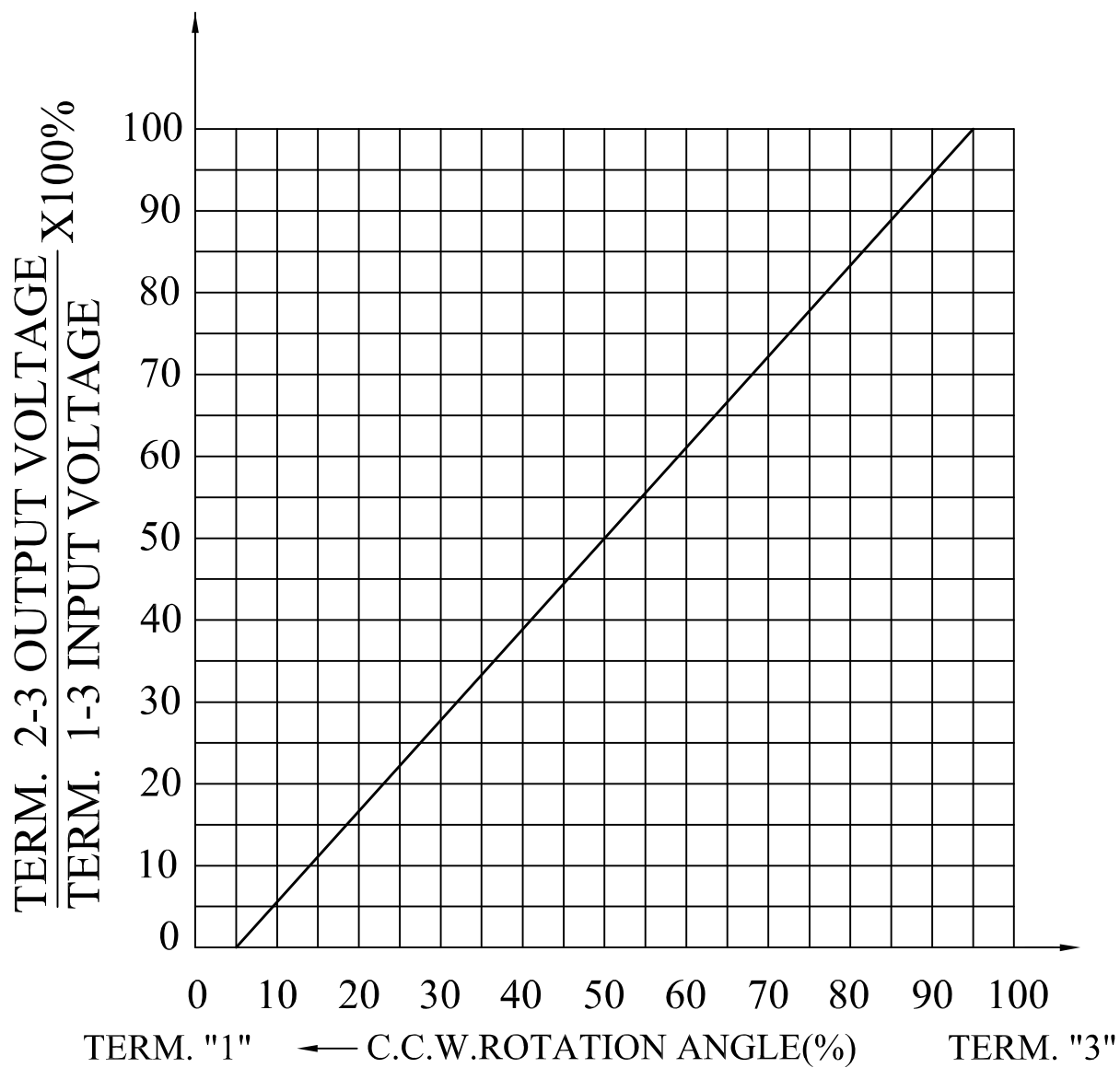


|              |            |         |      |          |     |                                                                                                       |                                                                                                                                                                                                                             |
|--------------|------------|---------|------|----------|-----|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div>4</div> |            |         |      |          |     | <div><div><div>YTL</div></div><div>深圳市亚特联科技有限公司<br/>SHENZHEN YATELIAN TECHNOLOGY CO., LTD</div></div> |                                                                                                                                                                                                                             |
| <div>3</div> |            |         |      |          |     |                                                                                                       | <div><div><div><div><div></div><div></div></div><div></div></div><div></div></div><div>TITLE</div><div>16 Series</div><div>DWG NAME</div><div>YG16-FL7.8-B10Ka(80)-R</div><div>DWG NO.</div><div>CF-G04-J16-300</div></div> |
| <div>2</div> |            |         |      |          |     |                                                                                                       |                                                                                                                                                                                                                             |
| <div>1</div> |            |         |      |          |     |                                                                                                       |                                                                                                                                                                                                                             |
|              | ALTERATION |         | DATE | DESIGN   |     |                                                                                                       |                                                                                                                                                                                                                             |
| DRAWN        | 宋明士        | CHECKED | 宋明士  | APPROVAL | 严治银 | <div>UNIT</div> <div>MM</div> <div>SCALE</div> <div>2/1</div>                                         |                                                                                                                                                                                                                             |



## TAPER (B) SERIES

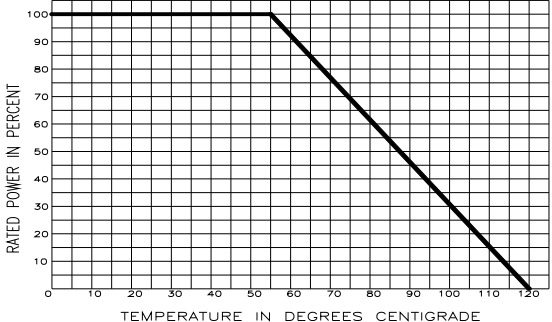




一、ELECTRICAL CHARACTERISTICS 电气特性

日期:2024 年 06 月 22 日

| 序号<br>NO. | 项 目<br>ITEM                              | 性 能<br>PERFORMANCE                                                                       | 测试条件<br>PTEST CONDITIONS                                                                                                                                                                                                                                                                                                                        |
|-----------|------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.1       | Total resistance and tolerance<br>总阻值和误差 | 10K $\pm$ 20%                                                                            | The resistance between terminals 1 and 3 shall be measured.<br>端子 1-3 间阻值测定。                                                                                                                                                                                                                                                                    |
|           | Center silver Angle<br>中心银层角度            | /                                                                                        |                                                                                                                                                                                                                                                                                                                                                 |
| 1.2       | Angle of Effective Rotation<br>碳膜有效角度    | 80° $\pm$ 5°                                                                             |                                                                                                                                                                                                                                                                                                                                                 |
| 1.3       | Resistance taper<br>阻抗特性型式               | Type B; Refer to attached drawing “Resistance taper characteristics”<br>B 型; 见附页 “阻型特性图” | Percentage of the voltage of terminal 1-2 to the voltage of terminal 1-3.<br>端子 1-2 电压对端子 1-3 电压的百分比。                                                                                                                                                                                                                                           |
| 1.4       | Rated voltage<br>额定电压                    | Linear Taper B: AC 50V DC 5V<br>B 型: AC 50V DC 5V                                        | $E = \sqrt{PR}$<br>E:额定电压 Rated voltage(V)<br>P:额定功率 Rated power(W)<br>R:公称全阻值 Nominal total resistance( $\Omega$ )<br>The rated voltage is calculated by above formula. When the rated voltage exceeds the maximum operating voltage, the maximum operating voltage should be the rated voltage.<br>额定电压按以上公式计算, 当额定电压超过最大工作电压时, 最大工作电压即为额定电压。 |

|     |                                |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----|--------------------------------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.5 | Rated power<br>额定功率            | Linear Taper B: 0.0125W<br>B 型: 0.0125W              | <p>Rated power shall be the maximum value of electric power that can be applied continuously to the whole area of a resistor (between terminals 1 and 2) at the range of -40 &amp; 120° C under acontinuous full load. At the range of 50 &amp; 120° C, the power level shall be debated in accordance with the diagram shown below.</p> <p>额定功率最大时是指施加于端子 1 和 2 的功率在-40 和 120 度之间在连续的满负荷下,在 50 和 120 度之间功率按下图递减. 功率变化曲线.</p>  |
| 1.6 | Contact Noise<br>接触杂音          | 20% or less of the total resistance .<br>全阻值的 20%以下. | <p>By the test angle of less than 90% carbon film angle.</p> <p>测试角度小于碳膜角度的 90%.</p>                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1.7 | Insulation resistance<br>绝缘阻抗值 | More than 100 M $\Omega$<br>100 M $\Omega$ 以上        | <p>Apply 250V DC to the individual terminals and case.</p> <p>金属外壳与端子间加 DC 250V 电压.</p>                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 1.8 | Voltage Divider Error<br>分压误差值 | 47% ~ 53%                                            | <p>Voltage divider error is defined the ratio of the voltage terminals 1-2 to terminals 1-3 after the drive arm rested. 5V D.C. shall be applied to the terminals between 1and 3 and then voltage divider error shall be measured with the drive arm operation on the line X-X and Y-Y. (Terminal 1-2/Terminal 1-3 <math>\times</math> 100%)</p> <p>分压误差值是摇杆自由复归后端子 1-2 与端子 1-3 电压比例.将 5V D.C 电压加在端子 1-3 之间,分压误差值在摇杆运作于 X-X 和 Y-Y 方向到底复归后测试.(端子 1-2/端子 1-3 <math>\times</math> 100.</p>                          |
| 1.9 | Withstand voltage<br>耐电压特性     | Without arcing or breakdown<br>无损坏或弧光.               | <p>Apply one minute of 250V AC to the individual terminals and case.</p> <p>在特定端子与外壳间加 AC 250V 电压 1 分钟.</p>                                                                                                                                                                                                                                                                                                                                                                                                      |

## 二、MECHANICAL CHARACTERISTICS 机构特性

| 序号<br>NO. | 项 目<br>ITEM                                   | 性 能<br>PERFORMANCE                                    | 测试条件<br>TEST METHODS AND REFERENCE                                                                                                                                 |
|-----------|-----------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.1       | Figure of lever operation<br>摇杆动作形式           | Square operating<br>方形式                               | /                                                                                                                                                                  |
| 2.2       | The stopper strength of the lever<br>摇杆止动强度   | More than 3.0Kgf 3 seconds min<br>大于 3.0Kgf, 至少 3 秒钟  | Apply side force on the lever perpendicular to the lever' s axial direction.<br>垂直于摇杆的力作用于摇杆上.                                                                     |
| 2.3       | Push-Pull Strength of Shaft<br>推拔强度           | More than 5.0 Kgf 3 seconds min<br>大于 5.0Kgf, 至少 3 秒钟 | Apply side force on the lever perpendicular to the lever' s axial direction.<br>垂直于摇杆的力作用于摇杆上.                                                                     |
| 2.4       | Operating force of lever<br>摇杆作用力             | 50-300 gf.cm                                          | Test position: More than 10 degrees deflection of lever.<br>摇杆偏斜 10 度以上之位置测定.                                                                                      |
| 2.5       | Accuracy of reset position of lever<br>摇杆复归精度 | $\pm 5^{\circ}$                                       | Measure the angle between the lever and the axial center line after the lever pushed to the direction of X-X(Y-Y) and resets.<br>摇杆推向 X-X(Y-Y)方向自由复归后测摇杆与垂直中心线的角度. |
| 2.6       | Operation angle of lever<br>摇杆使用有效角度          | $48^{\circ}$                                          | The maximum angle of the lever pushed to the direction of X-X and Y-Y<br>摇杆推向 X-X(Y-Y)方向的最大角度.                                                                     |

## 三. ENDURANCE CHARACTERISTICS 耐久性能

| 序号<br>NO. | 项 目<br>ITEM            | 性 能<br>PERFORMANCE                                                                                            | 测试条件<br>TEST CONDITIONS                                         |
|-----------|------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| 3.1       | Free falling<br>自由落下试验 | No damage and lever deformation, but deformations of terminals and molded parts are allowed.<br>无不良产生,端子变形除外. | Height: 75cm<br>Number of falls: 3 times<br>从高度为 75 厘米落下测试 3 次后 |

|     |                                    |                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.2 | Dry heat<br>耐热性                    | Variation of total resistance should be within $\pm 5\%$ to $\pm 30\%$ .<br>To be operated mechanically.<br>全阻值变化要在 $\pm 5\%$ 到 $\pm 30\%$ 以内。<br>机械方面能动作。                                                                                                                    | Temperature: $80 \pm 2^\circ\text{C}$<br>Time: 96 hours<br>The controller shall be subjected to standard atmospheric conditions for 2 hours after which measurement shall be made.<br>温度: $80 \pm 2^\circ\text{C}$<br>时间: 96 小时<br>放置正常状态下 2 小时后测试。                                                                                                                                                                           |
| 3.3 | Cold<br>耐寒性                        | The total resistance change should be within $\pm 20\%$ .<br>To be operated mechanically.<br>全阻值变化要在 $\pm 20\%$ 以内。<br>机械方面能动作。                                                                                                                                               | Temperature: $-30 \pm 2^\circ\text{C}$<br>Time: 96 hours<br>Surface moisture shall be removed, and then the controller shall be subjected to standard atmospheric conditions for 2 hours after which measurement shall be made.<br>温度: $-30 \pm 2^\circ\text{C}$<br>时间: 96 小时<br>表面水份摄取后 2 小时正常状态下测试。                                                                                                                         |
| 3.4 | Damp heat<br>耐湿性                   | Insulation resistance: more than $20\text{M}\Omega$ with 250V insulation resistance tester.<br>The total resistance change should be within $\pm 20\%$ .<br>To be operated mechanically.<br>用 250V 绝缘测试机测试, 绝缘阻抗 $20\text{M}\Omega$ 以上。<br>全阻值变化要在 $\pm 20\%$ 以内。<br>机械方面能动作。 | Temperature: $65 \pm 2^\circ\text{C}$<br>Time: 96 hours<br>Humidity: 90% to 95%<br>Surface moisture shall be subjected to standard atmospheric conditions for 2 hours after which measurement shall be made..<br>温度: $65 \pm 2^\circ\text{C}$<br>时间: 96 小时<br>湿度: 90% to 95%<br>表面水份摄取后 2 小时正常状态下测试。                                                                                                                          |
| 3.5 | Temperature cycling test<br>温度循环测试 | The change of total resistance should be within $\pm 20\%$ , insulation resistance is $100\text{M}\Omega$ min, without mechanical malfunction.<br>全阻值变化 $\pm 20\%$ 以内, 绝缘阻抗 $100\text{M}\Omega$ 以上, 机械性能无异常。                                                                  | Low temperature : $-20 \pm 3^\circ\text{C}$ 30 minutes High temperature: $60 \pm 3^\circ\text{C}$ 30 minutes Number of cycles: 5, Surface moisture shall be removed, and then the controller shall be subjected to standard atmospheric conditions for 2 hours , after which measurement shall be made.<br>在低温为 $-20 \pm 3^\circ\text{C}$ 恒温槽放置 30 分钟, 高温 $60 \pm 3^\circ\text{C}$ 放置 30 分钟, 测试 5 次, 表面水份摄取后在正常状态下放置 2 小时后测试。 |
| 3.6 | Resistance to soldering<br>焊锡性     | Not less than 95% of the surface dipped shall be covered with new solder. 浸锡部分表面最少 95% 被新锡覆盖。                                                                                                                                                                                 | Temperature of solder: $235 \pm 5^\circ\text{C}$ ,<br>Dipping duration: $3 \pm 0.5\text{S}$ .<br>焊锡温度: $235 \pm 5^\circ\text{C}$ ,<br>浸锡时间: $3 \pm 0.5$ 秒。                                                                                                                                                                                                                                                                    |

|     |                                       |                                                                                                                                                                               |                                                                                                                                                                                                                                                                                              |
|-----|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.7 | Resistance to soldering heat<br>焊锡耐热性 | Variation of total resistance shall be within $\pm 5\%$ , and terminals shall not work loose to injure electric contact, after test.<br>全阻值变化 $\pm 5\%$ 以内,测试后无端子松动,不会损坏电气接点. | Solder dip:浸焊<br>Preheating condition: Surface temperature of the substrate shall be settled within $100^{\circ}\text{C}$ in one min.<br>预热: 基板表面温度 $100^{\circ}\text{C}$ 以下, 1 分钟内。<br>Solder temperature $260 \pm 5^{\circ}\text{C}$ for 5 sec.<br>焊锡温度 $260 \pm 5^{\circ}\text{C}$ , 5 秒。 |
|     |                                       |                                                                                                                                                                               | Manual Soldering: Less than $350^{\circ}\text{C}$ and quicker than 3 seconds.<br>手焊: $350^{\circ}\text{C}$ 以下, 3 秒以内。                                                                                                                                                                        |
| 3.8 | Number of cycles<br>耐久次数值             | Total resistance $\leq$ Initial value $\pm 20\%$ .<br>No mechanical malfunction.<br>全阻值变化 $\leq$ 初始值 $\pm 20\%$ .<br>机械方面能动作.                                                 | 100,000 cycles Min<br>100,000 次以上                                                                                                                                                                                                                                                            |

#### 四、General 一般事项

| 序号<br>NO.       | 项 目<br>ITEM                                                                                                             |                                                |
|-----------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 4.1             | Unless otherwise specified, test and measurement should be carried out in following condition:<br>如无特殊要求,试验与测试将按以下条件进行: |                                                |
|                 | Ambient temperature<br>温度                                                                                               | $15^{\circ}\text{C}$ to $35^{\circ}\text{C}$   |
|                 | Relative humidity<br>相对湿度                                                                                               | 25% to 75%                                     |
|                 | Air pressure<br>气压                                                                                                      | 86 KPa to 106 KPa                              |
| 4.2             | Operating temperature range<br>使用温度范围                                                                                   | $-30^{\circ}\text{C}$ to $+80^{\circ}\text{C}$ |
| 4.3             | Storage temperature range<br>储存温度范围                                                                                     | $-30^{\circ}\text{C}$ to $+80^{\circ}\text{C}$ |
| Approval<br>核 准 |                                                                                                                         | Projected<br>经 办                               |
| Auditing<br>审 查 |                                                                                                                         |                                                |
| 严治银             |                                                                                                                         | 宋明士                                            |
|                 |                                                                                                                         | 洪晓亮                                            |

## 1. 成品包装方式 PACKAGING METHOD:

1.1 将 V.R 成品放置于单个胶盘内，并将胶盘叠放在一起，最下面和最上面一层放置硬卡纸，再将其扎好。

Let the V.R be placed into plastic box , and the plastic boxes be superposed one by one , Place cardboard on the bottom and top layers and use adhesive tape them together.

1.2 将扎好的胶盘放置外箱内，放好后用胶纸将外箱封口。

Let the packed plastic boxes be placed of the carton and use adhesive tape to seal.

Fig.1



成品  
Products

胶盘  
Plastic box

## 2. 规格与数量 SPECIFICATION AND QUANTITY:

2.1 胶盘规格(长×宽×高): 285mm×230mm×25mm

Plastic boxes(length×width×high): 285mm×230mm×25mm

2.2 单个胶盘包装 V.R 数量: 1×75PCS (胶盘每盘放置 V.R 成品 75PCS)

A plastic boxes contain: 1×75PCS of V.R(every lattice contain 1 piece of V.R)

2.3 外箱规格(长×宽×高): 490mm×300mm×475mm

Carton(length×width×high): 490mm×300mm×475mm

2.4 外箱包装 V.R 数量:44×75=3300PCS

A carton contain: 44×75=3300PCS of V.R

## 3. 技术支持 TECHNICAL SUPPORT :

hxl@yatelian.com

www.yatelian.com