编 码 器 规 格 书

SPECIFICATIONS

1. 一般事项 General information

1-1. 适用规格 Scope

规格书适用于电子设备用微小电流回路 18 型回转式编码器

The specification applies to 18mm microscopic current circuits encoder used in electronic equipment.

1-2 使用温度范围 Operating temperature range -20℃～+60℃

1-3 储存温度范围 Storage temperature range -40℃～+70℃

1-4 标准状态 Standard atmospheric conditions

1-4-1 如果没有其它特殊要求时，其测量及实验的大气压状态，标准范围如下：

Unless other specified, the standard range of atmospheric conditions for measurements and test is as following:

温度 Ambient temperature: 15℃ to 35℃

相对湿度 Relative humidity：25% to 85%

气压 Air pressure ：86kPa to 106kPa

1-4-2 如果发生判定有疑问或有特殊要求时，则这限定测试的标准大气压，标准范围如下：

If there is any doubt to the results, Measurements shall be made within the following limits:

温度 Ambient temperature ：20℃ ±1℃

相对湿度 Relative humidity：63% to 67%

气压 Air pressure ：86kPa to 106kPa

2.外观尺寸 Appearance and dimensions

2-1 外观 外观无锈蚀,电镀不良,破裂和明显变形.

Appearance: No harmful rust, cracks, scratches and poor under functioning

2-2 尺寸 见附图

Dimensions: Refer to attached drawing

3.额定参数 Electrical ratings

3-1 额定电压 Rated voltage: DC 10V

3-2 额定电流（阻性负载）Resistive load:

各相导线 Each lead: 1mA

公共端 Common lead: 10mA

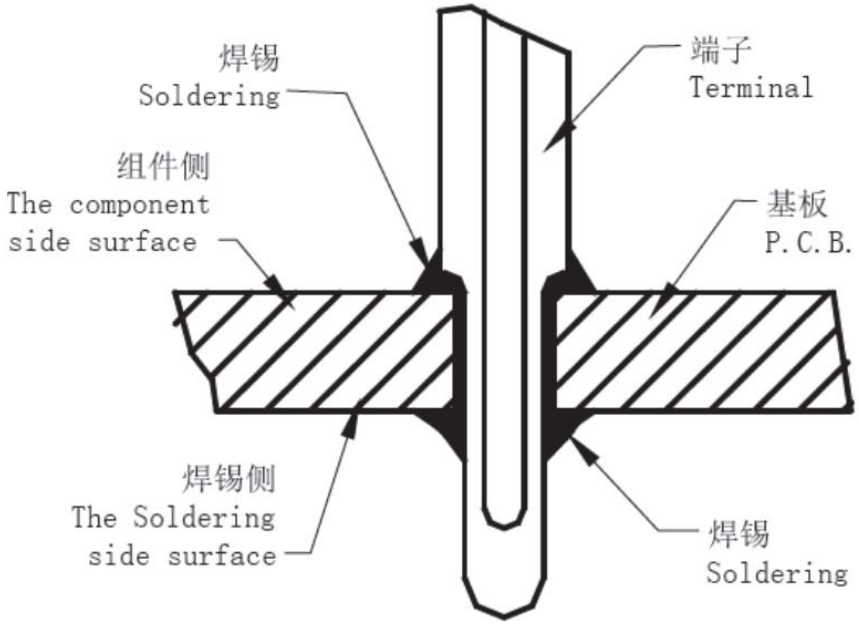
4.电气特性 Electrical characteristics

项目 Items	条件 Condition	规格 Specifications
4-1 额定值 Rating		DC 10V 1mA
4-2 接触电阻 Contact resistance	以 DC 10V 1mA 电压降下法测定之. Measured by the 1mA 10V DC voltage drop method	初始值：10Ω 最大. 试验后 100Ω 最大 Initial value: 10Ω Max. After test: 100Ω Max.
4-3 耐电压 Withstand voltage	在端子间接入 AC 50V 交流电压，通电 1 分±5 秒 AC 50V applied between terminals for 1 minute ±5 seconds.	无发生电介质击穿 No dielectric breakdown shall be occurred
4-4 绝缘电阻 Insulation resistance	在端子间接入 DC 250V 直流电压，通电 1 分±5 秒。 DC 250V applied between terminals for 1 minute ±5 seconds	初始值:50MΩ 最小; 试验后 50MΩ 最小。 Initial value: 50MΩ Min. After test: 50MΩ Min.
4-5编码表 Coding table		见附图 Refer to attached drawing

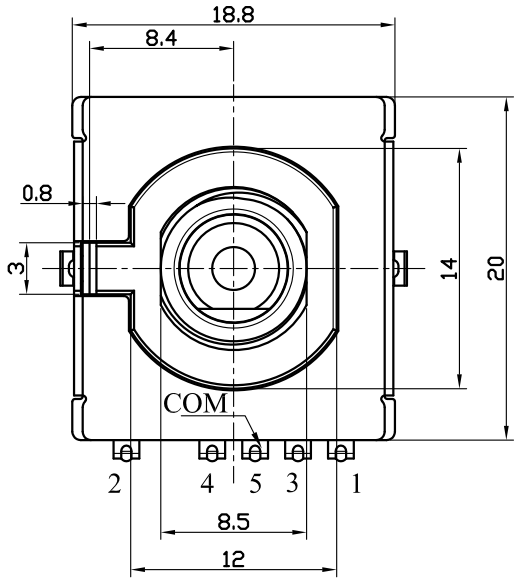
5.机械特性 Mechanical characteristics		
项目 Items	**条件 Condition**	**规格 Specifications**
5-1 回转力矩 Rotational torque		■ 250~600 gf.cm □ 300~700 gf.cm
5-2 定位点数 Number of detent		□ 8 定位点 8 detents □ 12 定位点 12 detents ■ 16 定位点 16 detents
5-3 全旋转角度 Total rotational angle		360°（无止档） 360°（endless）
5-4 轴强度 Shaft strength	轴的水平方向静止受力 300gf,持续 15 秒,同时轴的垂直方向静止受力 500gf,持续 15 秒. A static load of 300gf shall be applied in the horizontal direction of shaft for 15 seconds and a static load of 500gf shall be applied in the vertical direction of shaft for 15 seconds	无弯曲和机械损坏. Shall be free from bending and mechanical abnormalities
5-5 轴的推/拉强度 Shaft push/pull strength	轴的垂直方向静止受力 10kgf ,持续 10 秒. A static load of 10kgf shall be applied in the vertical direction of shaft for 10 seconds	无电气损坏和机械损坏. Shall be free from electrical, mechanical abnormalities.
5-6 轴移动量 Movement of shaft	轴的水平方向静止受力 300gf 时测量轴的移动 Measure the movement of shaft during a static load of 300gf shall be applied in the horizontal direction of shaft.	最大 0.5mm. 0.5mm Max.
5-7 端子强度 Terminal strength	端子顶端静止受力 200gf, 持续 1 分钟. A static load of 200gf shall be applied to the tip of terminal for 1 minute.	端子无松开或损坏. Shall be free from terminal looseness and damage.
5-8 轴套类型 Type of bushing		□ 无螺纹 threadless ■ 3/8-32 UNEF(2A)
6.耐久性能 Endurance characteristics		
6-1 耐热性 Heat resistance	温度 85±3℃的恒温箱中放置 500±10 小时，常温常湿中放置 1.5 小时后测试 The encoder shall be stored at temperature of 85±3℃ for 500±10H in a thermostatic chamber. And the encoder shall be subjected to standard atmospheric conditions for 1.5H, After that measurements shall be made.	应满足初期规格 It should meet the initial specifications
6-2 耐寒性 Low temperature resistance	温度-40±3℃的恒温箱中放置 500±10 小时，常温常湿中放置 1.5 小时后测试 The encoder shall be stored at temperature of -40±3℃ for 500±10H in a thermostatic chamber. And the encoder shall be subjected to standard atmospheric conditions for 1.5H, After that measurements shall be made.	应满足初期规格 It should meet the initial specifications
6-3 耐湿性 Damp heat	温度 60±2℃,湿度 90~95%的恒温恒湿槽中放置 240±10 小时，在常温常湿中放置 1.5 小时后测试。 The encoder shall be stored at temperature of 60±2℃ with relative humidity of 90% to 95% for 240±10H in a thermostatic chamber. And the encoder shall be subjected to standard atmospheric conditions for 1.5H, After that measurements shall be made.	应满足初期规格 It should meet the initial specifications
6-4 回转寿命 Rotational life	在常温、常湿 无负载条件下以 600~1000 周/小时速度回转 30，000 周。 The shaft of potentiometers shall be rotated to 30,000 cycles at a speed Of 600～1000cycles/H without electrical load, after that measurements shall be made.	无电气损坏，转动力矩在初始值±40%的范围内. Shall be free from electrical abnormalities Rotational torque: Within ±40% of initial value.

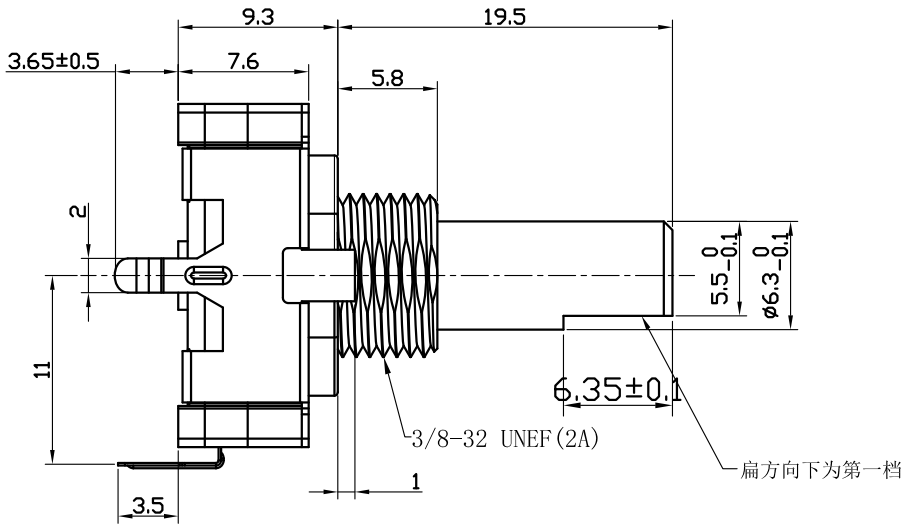
6-5 耐振性 Vibration	10~55~10Hz 变振动（1 开闭 1 分钟、振幅 1.5mm），在 X、Y、Z 3 个座标方向上各 2 小时（共 6 小时） The following vibration shall be applied to the encoder: The entire frequency range from 10Hz to 55Hz and return to 10Hz.(total mplitude:1.5mm), This motion shall be applied for a period of 2H in each of 3 mutually perpendicular axes (A total of 6H)	应满足初期规格 It should meet the initial specifications
6-6 防水特性 Waterproof	水温 20±5℃无负载条件下放置 24±2H，常温常湿中放置 1.5 小时后测试。 Water temperature 20 ± 5℃ , under no-load conditions, placed 24 ± 2H, and room temperature and moisture in placed 1.5 hours, the do the test. ■ 产品淹没深度：5±1cm The product submerged depth: 5±1cm. □ 产品淹没深度：15±1cm The product submerged depth: 15±1cm	应满足初期规格 It should meet the initial specifications
6-7 抗硫化 Sulfide resistance	温度 40±3℃，湿度 75~85%RH，H_2S 浓度 3±1ppm 的恒温恒湿槽中放置 100±5 小时，常温常湿中放置 1.5 小时后测试。 Temperature 40 ± 3℃, Humidity 75 ~ 85% RH, H_2S concentration of 3 ± 1ppm of constant temperature and humidity bath placed 100 ± 5 hours, and room temperature and moisture placed 1.5 hours, then do the test.	应满足初期规格 It should meet the initial specifications
6-8 耐盐雾 Salt mist	■ 不适用 No apply □ 开关应暴露在以下条件的室内。应清除水滴 Switch shall be exposed in the chamber of follow condition. Water drops shall be eliminated. ⑴ 盐份：5±1％ Salt solution: 5±1％ ⑵ 温度：35±2℃ Temperature : 35±2℃ ⑶ 时间：168±1 个小时 Duration :168±1 hours	金属部分无明显腐蚀现象 No remarkable corrosion in metal parts.
6-9 耐焊接性 Resistance to soldering heat	手工焊接：温度 350℃以下，时间 3 秒以内 Manual soldering: Soldering temperature : Less than 350℃ Application time of soldering : Within 3s 浸焊 Dip soldering： 使用基板：1.6mm 的单面覆铜板。 Board: Single-sided copper clad laminate board with thickness of 1.6mm. 预热：基板表面温度 100℃以下，时间 1 分钟以内 Preheating: Surface temperature of board: 100℃of less Preheating time: within 1 min. 焊接：温度 260±5℃或以下，时间 3 秒以内 Soldering: Solder temperature: 250±5℃ or less Immersion time: Within 3s	不得有绝缘体的破损、变形、接触无异常。 There shall be no damage, deformation, or abnormal contact of the insulator

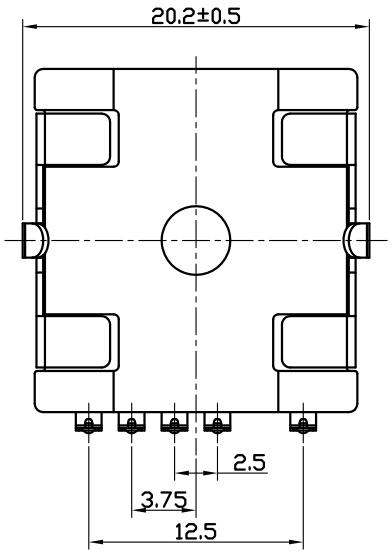
7.注意事项 Precautions in use

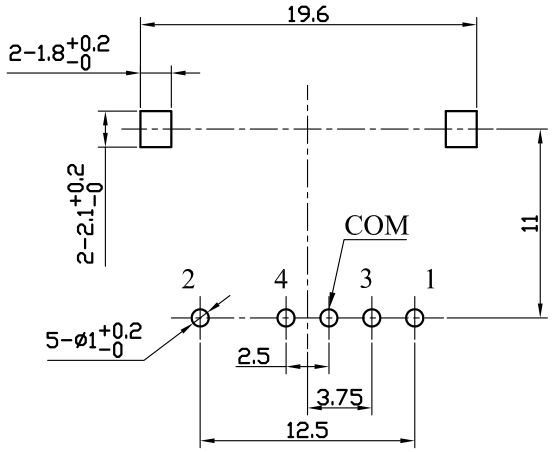
7-1 储存环境 Storage condition	请避免存放于高温、潮湿及具腐蚀性场所 Operating storage in high temperature and humidity, and in corrosive gas should be avoided.
7-2 焊剂渗入 Flux infiltration	请避免焊锡作业时，将焊剂渗入 P.C.B 的表面（组件侧的表面） Please avoid soldering on the surface (the component side surface) of the P.C board as shown below. 

	制 作 Prepared By	审 核 Checked By	核 准 Approved By
东 莞 市 长 泰 尔 电 子 有 限 公 司 **DONGGUAN CHANGTAIER ELECTRONICS CO.,LTD**	研发工程部 2026.09.16 田维金	研发工程部 2026.09.16 喻钊	研发工程部 2026.09.16 吴耀龙







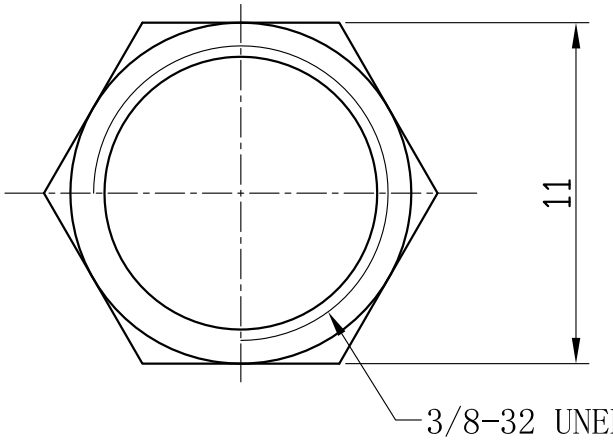


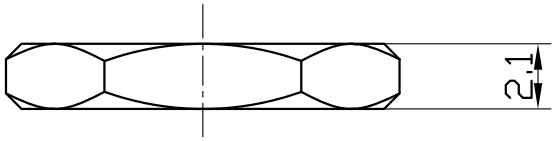
P.C.B. Mounting hole detail

编码表	ON / OFF															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	○	●	●	○	○	●	●	○	○	●	●	○	○	●	●	○
2	○	○	●	●	●	●	○	○	○	○	●	●	●	●	○	○
3	○	○	○	○	●	●	●	●	●	●	●	●	○	○	○	○
4	○	○	○	○	○	○	○	○	●	●	●	●	●	●	●	●

Dongguan Changtaier Electronics Co., Ltd.

Gen.tolerance		Scale	3:1	Edition	A1.0	Designed By	Checked By	Approved By
L≤10	±0.3	Part NO.	ED180-Installation Dimension			研发工程部 2026.09.16 田维金	研发工程部 2026.09.16 喻钊	研发工程部 2026.09.16 吴耀龙
10<L≤30	±0.5							
30<L≤100	±1.0	Dwg. NO.	ED180120-HB19.5B6.35-A16-0000					
Angular DIM	±5°							





技术要求

1. 未注尺寸公差:
L≤1.0时, ±0.1
1.0<L≤10时,±0.3
L>10时, ±0.5
2.未注角度公差±1°。
3.未注对称度公差:±0.1.
4.未注工艺圆角为R0.1。
5. 所有毛刺小于0.1。
6.采用ROHS材料。

标记	变更内容	改图	日期
5			
4			
3			
2			
1			

东莞市长泰尔电子有限公司

材料	锌合金	视角		制图	田维金	出图日	2025-6-17
牌号		比例	5:1	单位	mm		
处理	镀 镍	版本	1.0	设 计	审 核	批 准	
品名	ED180螺母			研发工程部 2026.09.16 田维金	研发工程部 2026.09.16 喻钊	研发工程部 2026.09.16 吴耀龙	
图号	M18002-3/8-32UNEF						