样 品 承 认 书

客户（customer）：_____

客户料号（customer model）_____

机种型号（our model no）：HYSSIQ-02FVS3

产品描述（escription）：编码器

日期（date）：2026-06-27

Otherprecautions 其他注意事项:

(1) Following the:soldering process, do not try to clean the switch ·with a solvent·or the like. 进行焊接过程中，不可以用溶剂或类似品清洗开关

(2)Safeguard the switch:assemblyagainst·flux penetration from its topside. 防止助焊剂从开关的顶端渗入

(3)Please have the products keep in close status and the "storage time is 90 days guaranty afterdelivering the goods·atmost.交货后保证开关处于封密状态并库存时间90天以下

客户确认 approval signature:		
核准 approved by:	审核 checked by:	检测 tested by:

制造商 manufacturer:		
业务 sales:	核准 approved by	设计 designed by:
杨凌峰	陈丽梅	李文魁

东莞市宏煜盛实业有限公司

工厂地址：惠州石湾白源北路8号 华顺高科产业园

地址：广东省东莞市大朗镇洋坑塘景富西路 211 号

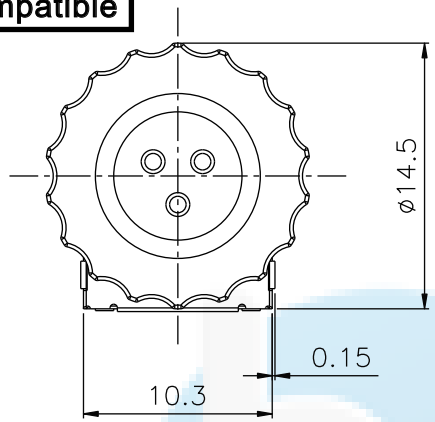
ADD:211 Jingfu West Road, yangkengtang, Dalang Town, Dongguan City, Guangdong Province

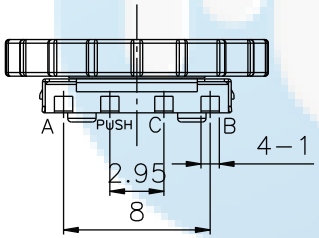
电话：0769-81230179 传真：0769-81230169

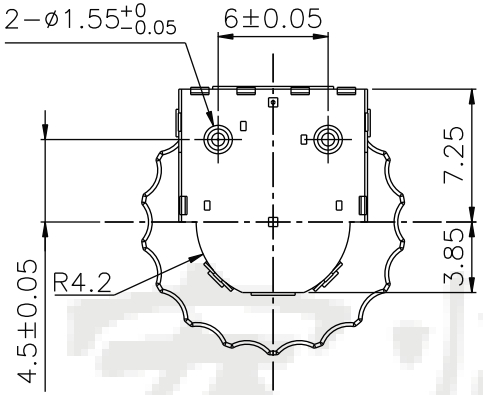
网站：www.hystypec.com 邮箱：hys@hystypec.com

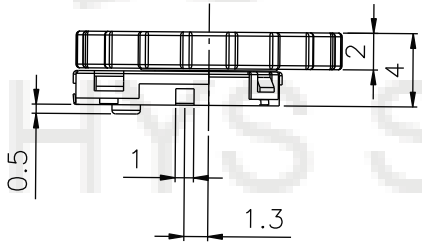
RoHS

ROHS
Compatible

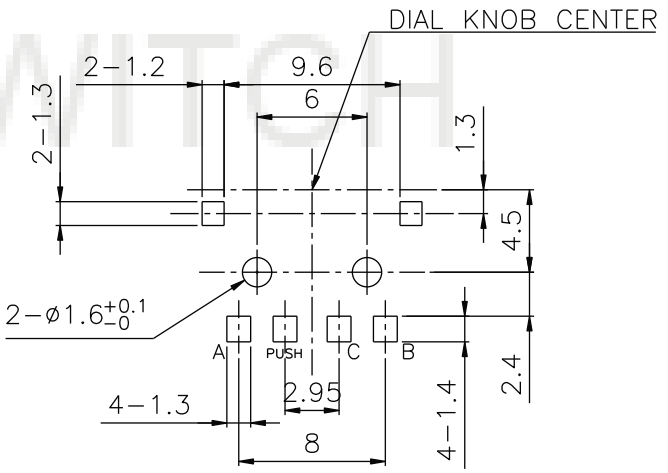




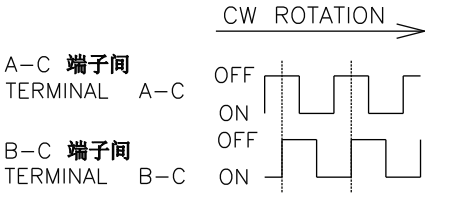




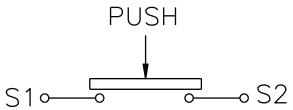
一、ELECTRICAL CHARACTERISTICS 电气特性
Pulse 脉冲数:15脉冲
Output Signal Format 输出信号:A领先B
Phase-Difference 相位差:大于3ms
Sliding Noise 滑动噪声:小于2ms
Fluttering (Contact) 接触弹跳噪声:小于3ms
二、MECHANICAL CHARACTERISTICS 机械特性
Total Rotational Angle 全回转角度:360°
Number and Position of Detents 定位点数:15
Detent Torque 定位脱出力:20-60gf.cm
三、ENDURANCE CHARACTERISTICS 耐久性能
Rotational life 旋转寿命:50,000 cycles Min
四、SWITCH CHARACTERISTICS 开关规格
Switch Travel 开关移动量：0.5±0.3mm
Switch Action 开关作用力：500±200gf.cm
Number of Cycles 开关耐久次数：50,000 cycles Min



P.C.B.MOUNTING DETAIL



(SW1)输出信號
ENCODER OUTPUT SIGNAL



(SW2)输出信号
SWITCH SIGNAL

DESIGN	Li Jinwei	SCALL	
DRAWING	Wu Qifa	UNIT	mm
CHECK	Zheng Jinxian	SIZE	A4: 210 * 297
APPROVAL	Liu Xiaohong	DATE	2020-06-10

TOLERANCE
X.X ±0.30 X.°±2°
.XX ±0.20 .X° ±1°
.XXX ±0.10 .XX°±0.5°

DRAWG NO. HYSSIQ-02FVS3
TITLE: 编码器

东莞市宏煜盛实业有限公司
Dongguan hongyusheng Industry Co., Ltd
TEL: 0769-81230179 https://www.hystypec.com

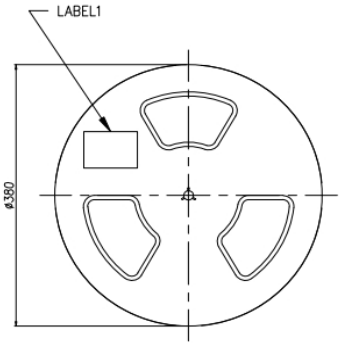
《编码器产品包装说明书》

料号： HYSSIQ-02FVS3　　包装数量：5700PCS/箱

材料名称	材料规格			用量/标箱	说明	
卷盘	Φ380*24.5mm			6卷/箱	每卷卷盘可装950PCS载带	
PET（载带）	24*0.4*6.2mm（总长16m）			6条/箱	每条载带可装950PCS产品	
风琴袋	51*490*310*640mm			1个	每6盘配1PCS风琴袋	
纸箱	390*390*180mm			1个	每6盘为1捆装1个纸箱	
包装数量说明	最小包装	5700PCS	最大包装	5700PCS	标准包装	5700PCS
包装方式	具体参照包装作业指导书。					
管控重点	1:装入载带时注意端子不能变形,不可有混料。 2:打包时轻拿轻放。 3:包装前清点实物是否与标签数量相符，另对照标签与实物成品是否一致。 4:此包装为常规标准包装，每盘包装950PCS。（前后各预留26PCS空格）如客户有特殊要求，请参照【 客户特殊要求】进行包装。					

包装示意图：

图一：每盘950PCS



*One reel accommodates 950 pieces (Φ380).

图二：1摞6盘

图五：使用封箱胶纸

图三：外套风琴袋

图四：将一摞产品放入纸箱中

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	2023-6-07	李宏鑫 已批准	廖嵩霖 已批准	林生财 已批准
文号 File No						
EC10专用						
版本 VERSION：	A0					

ENCODER 规格书(正码)

14mm Size Rotary Encoder General Specifications

1.General 一般事项

1-1 Scope 适用范围

This specification applies to 14mm size rotary incremental encoders used in electronic equipment.
本规格书适用于电子设备使用之 14mm 型旋转式增量型编码器。

1-2 Standard atmospheric conditions 标准大气状态

Unless otherwise specified, the standard range of atmospheric conditions for making measurements And tests is as follows:
除另有规定外，量测应在以下大气条件下进行：

Ambient temperature 温度 : 15℃~35℃

Relative humidity 相对湿度 : 25%~85%

Air pressure 气压 : 86 KPa~106 KPa （860mbar ~ 1060 mbar）

If there is any doubt about the results, measurements should be made within the following limits:
如有任何疑虑时，量测应在以下条件下进行：

Ambient temperature 温度 : 20℃± 1℃

Relative humidity 相对湿度 : 63%~67%

Air pressure 气压 : 86 KPa~106 KPa （860mbar~1060 mbar）

1-3 Operating temperature range 适用温度范围 : -10℃~+70℃

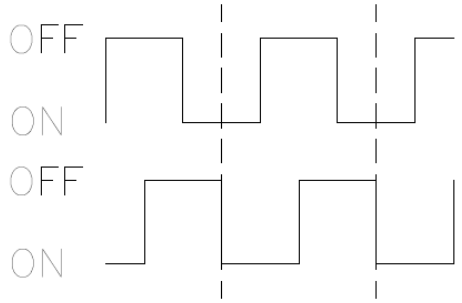
1-4 Storage temperature range 保存温度范围 : -40℃~+85℃

2. Construction 构造

2-1 Dimension 尺寸 : Refer to attached drawing 参见成品图

3. Rating Voltage 额定电压 : DC5V 10mA

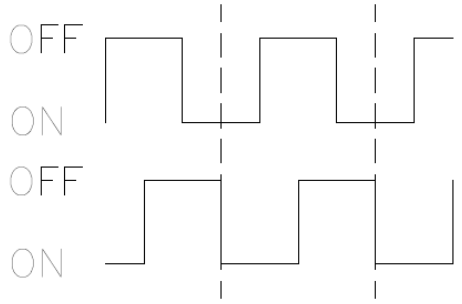
4. Electrical Characteristics 电气特性

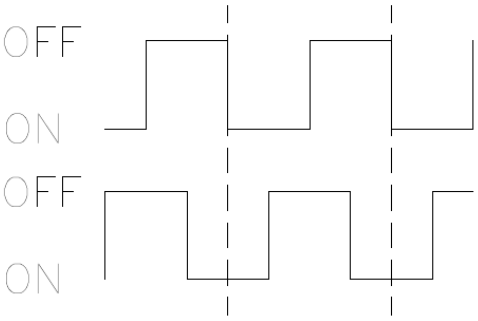
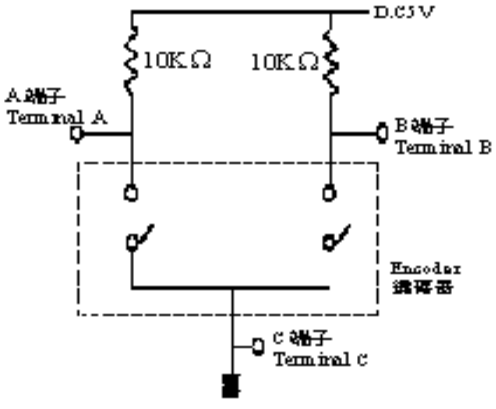
NO. 序号	ITEM 项 目	TEST CONDITIONS 测 试 条 件	STANDARD RANGE 标 准 范 围
4-1	Output signal format 输出讯号	<Fig. 1> 	Phase-different output signals (signal A and B). Details are shown in <Fig. 1>. (The broken line shows detent position of encoders with detent type) 二差相输出讯号(A 及 B 讯号)，详细说明参见图一。(虚线部份是具有停注功能的机型的停注位置图标)

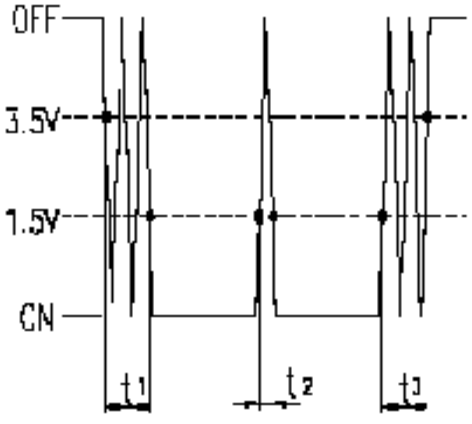
<table>
<tr><td></td><td></td><td>Shaft rotational direction
回转方向</td><td>Signal

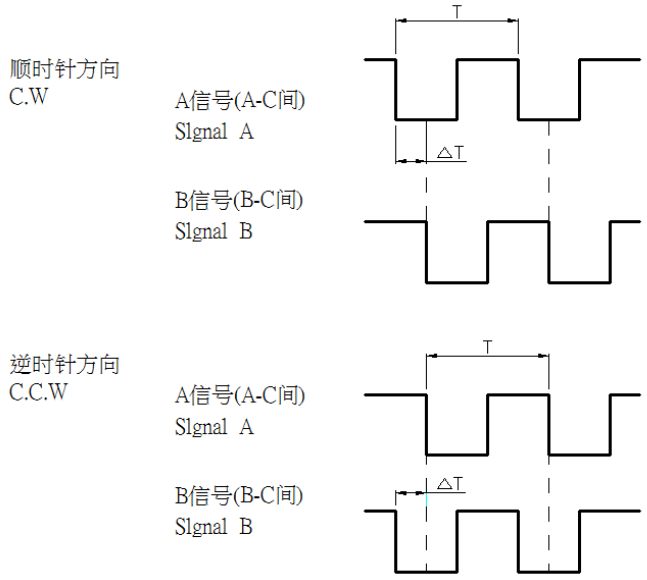
信号</td><td>Output

输出波形</td></tr>
<tr><td></td><td></td><td>C.W.
顺时针方向</td><td>A (Terminal A-C)
A (A-C 端子间)

B (Terminal B-C)
B (B-C 端子间)</td><td> 
</td></tr>
<tr><td></td><td></td><td>C.C.W.
逆时针方向</td><td>A (Terminal A-C)
A (A-C 端子间)

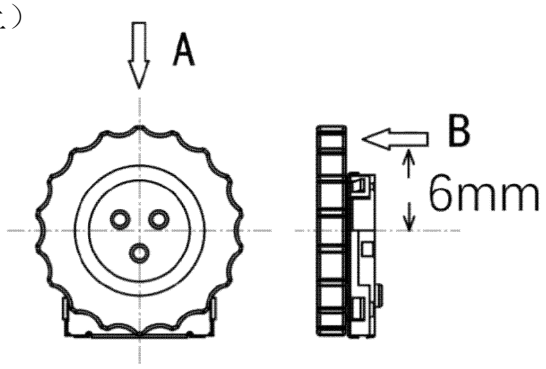
B (Terminal B-C)
B (B-C 端子间)</td><td> 
</td></tr>
<tr><td>4-2</td><td>Resolution
分辨率</td><td colspan="2">Number of pulses in 360° degree rotation.
旋转 360° 的脉波数</td><td>15 个脉冲 / 360°
15 pulses / 360°</td></tr>
<tr><td>4-3</td><td>Switching characteristics
电位转换特性</td><td colspan="3">Measurement should be made under following conditions:
1. Dial rotation speed--- 360° /sec.
2. Test Circuit--- as <Fig.2> shows
Note: Code-OFF area: The area where the voltage is 3.5V and more.
Code-ON area: The area where the voltage is 1.5V and less.
测量应按下列条件进行：
1. 拔盘旋转速度--- 360° /秒
2. 测试电路--- 如图二所示
注： OFF ：输出电压在 3.5V 以上区域
ON ：输出电压在 1.5V 以下区域</td></tr>
<tr><td></td><td></td><td colspan="3"><Fig.2>
 

<Fig.3>
 
</td></tr>
</table>

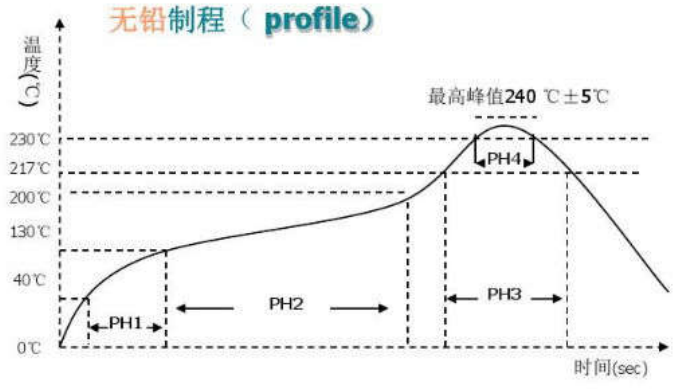
	Fluttering (Contact) 接触弹跳噪声	Specified by the signal's passage time from 3.5V to 1.5V or from 1.5V to 3.5V of each switching position (Code OFF→ON or ON→OFF) 讯号从 3.5V 切换到 1.5V(t1)，或从 1.5V 切换到 3.5V(t3)时所过渡的时间 (编码从 OFF→ON or ON→OFF)。	t1, t3 ≦ 3ms
	Sliding noise 滑动噪声	Specified by the time of voltage level change drops to 1.5V and lower in code-ON area. When the sliding noise in code-ON area between t1 and t3 less than 2ms, they are regarded as one linked signal。 电压转换到 1.5V 以下的 ON 区域时，在 t1 及 t3 区域之间所发生的小于 2ms 的噪声（t2）视为连续的讯号。	t2 ≦ 2ms
4-4	Phase-difference 相位差	Measurement should be made with the specified dial rotation speed as described in clause 4-3。 量测应在拔盘以 4-3 条款所指定的转速下进行。 ＜Fig.4＞  Note: This specification (4-4) is changeable when shaft is operated by manual; please check the performance by using actual circuit and knob. 注：本项规格(4-4)在以手动检查时因转速不稳定会有所变动，请配合实际电路及旋钮来检查其性能。	In <Fig.4>, ΔT ≧ 0.08T 参见图四所示， 相位差 ΔT ≧ 0.08T
4-5	Insulation resistance 绝缘阻抗	Measurement should be made under the condition that a voltage of 250V DC 1mA is applied between individual terminals and case. 测量时应在外壳与端子之间施加一 250V DC 1mA 的电压。	100MΩ Min. 阻抗 100MΩ以上
4-6	Contact resistance 端子间接触阻抗	Measurement shall be stable condition which a output signal is ON. 输出信号处于 ON 时安定状态条件下测定.	1Ω Max 1Ω以下

4-7	Dielectric strength 耐电压 (Leak current: 1mA) (漏电流：1mA)	A voltage of 300V AC/1mA applied for 1 minute, or a voltage of 360V AC/1mA applied for 2 sec. between individual terminals and case. (Leak current: 1mA) 在各端子与外壳之间施加一 300V AC/1mA 电压测试 1 分钟，或外加 360V AC/1mA 电压测试 2 秒钟。〈包括漏电流测试〉	Without damage to parts, arcing or breakdown. 对零件无损伤、跳弧或故障。

5. Mechanical Characteristics 机械特性

NO. 序号	ITEM 项 目	TEST CONDITIONS 测 试 条 件	STANDARD RANGE 标 准 范 围
5-1	Total rotational angle 全旋转角度	/	360º(Endless) 360º 连续
5-2	Detent torque 定位点脱出力	Applied for with-detent type. 适用于具有定位点装置的机种	20 ~70 gf.cm
5-3	Number and position of detents 定位点位数及位置	Applied for with-detent type. 适用于具有定位点装置的机种	15 detents (Step angle:24 °±3°)
5-4	Terminal strength 端子强度	A static load of 3 N (310gf) should be applied to the tip of terminals not less than 10 seconds in any direction. (Terminal bend is permitted) 对端子的尖端从任何方向施以 3N(310gf) 的静负荷 10 秒钟。(端子弯曲可允许)	Without damage or excessive looseness of terminals. 端子无毁损或过度松动。
5-5	Push strength of knob 推压强度	Push static load of 30N(306gf) shall be applied to the knob in the direction A for 10 sec. And push static load of 5N (510gf) shall be applied to the knob in the derection B for 10 sec. (After installing) 将旋钮 A 方向 30N（306 gf）、B 方向 5N（510gf）的静载荷加 10 秒钟。（安装在基板上） 	Meet the electrical characteristics no damage to the body, no obvious lag. 满足电气特性，机身无损坏，无明显卡顿。

6. Endurance characteristics 耐久性能			
NO. 序号	ITEM 项 目	TEST CONDITIONS 测 试 条 件	STANDARD RANGE 标 准 范 围
6-1	Dry heat 耐热特性	The encoder should be stored at temperature of 80±3℃ for 240±10hr. In a thermostatic chamber, and then keep the encoder in a standard atmospheric condition for 1.5hr before proceed the measurement. 编码器测试前须先在温度为 80±3℃的恒温容器中放置 240±10 小时，然后再置于常温常湿的环境中 1.5 小时。	Specification in clauses 4-1~4-7 and 5-1~5-5 must be satisfied. 必须符合 4-1~4-7 和 5-1~5-5 条款的规定。
6-2	Cold 耐寒特性	The encoder should be stored at temperature of -30 ± 3 ℃ for 240 ± 10hr. In a thermostatic chamber, and then keep the encoder in a standard atmospheric condition for 1.5hr before proceed the measurement. 编码器测试前须先在温度为-30±3℃的恒温容器中放置 240±10 小时，然后再置于常温常湿的环境中 1.5 小时。	Specification in clauses 4-1~4-7 and 5-1~5-5 must be satisfied. 必须符合 4-1~4-7 和 5-1~5-5 条款的规定。
6-3	Damp heat 耐湿特性	The encoder should be stored at temperature of 40±2℃ with relative humidity of 90% to 95% for 240 ± 10hr. In a thermostatic chamber, and then keep the encoder in a standard atmospheric condition for 1.5hr before proceed the measurement. 编码器测试前须先在温度为 40±2℃，相对湿度为 90%至 95%的恒温容器中放置 240±10 小时，然后再置于常温常湿的环境中 1.5 小时。	Specification in clauses 4-1~4-7 and 5-1~5-5 must be satisfied. 必须符合 4-1~4-7 和 5-1~5-5 条款的规定。
6-4	Free falling 坠落特性	Measurement should be made by packing the encoder with vinyl package then dropped from 60cm height to the concrete floor. 将编码器以乙烯类材料包装，由离地面 60cm 的高度，成自由落体落至混凝土地面，再进行量测。	No excessive deformation or damage (except the deformation of terminals). Specification in clauses 4-1~4-7and 5-1~5-5 must be satisfied. 无过度变形或损坏（端子变形例外）。 必须符合 4-1~4-7 和 5-1~5-5 条款的规定。
6-5	Vibration 耐震特性	Following vibration should be applied to the encoder, after that the measurement should be made. The vibration frequency ranged from 10Hz to 55Hz and return to 10Hz, it	Specification in clauses 4-1~4-7 and 5-1~5-5 must be satisfied. 必须符合 4-1~4-7 和 5-1~5-5 条款的规定。

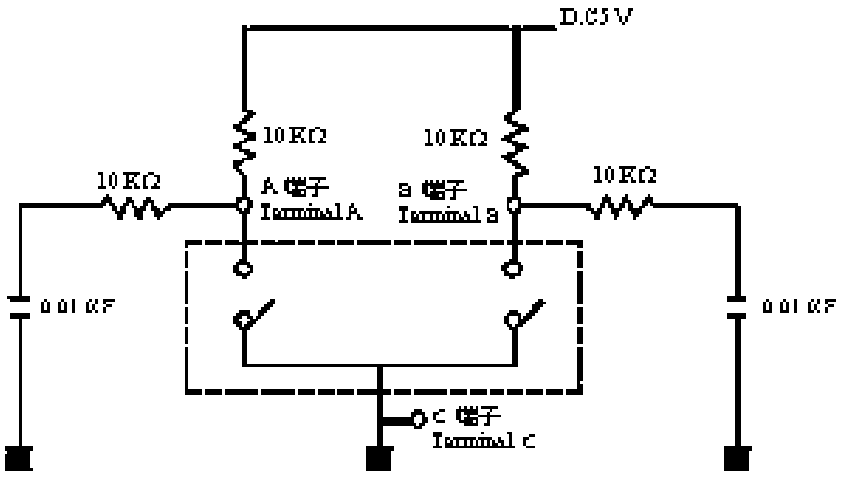
		should be transverse in 1 Min. with 1.5mm amplitude. This motion shall be applied for a period of 2Hr in each of 3 mutually perpendicular axes (A total of 6Hr) 做 10 Hz ～ 55 Hz ～ 10 Hz 的变化震动试验（1 周期 1 分/振幅 1.5 mm）。X、Y、Z 每一轴向的震动 2 小时（共计 6 小时）。	
6-6	Resistance to Sold-ering heat 焊锡耐热性	1、Solder dip:浸焊 Preheating condition: Surface temperature of the substrate shall be settled within 100℃ in one min. 预热: 基板表面温度100℃以下，1分钟内. Solder temperature 260±5℃for 5 sec. 焊锡温度 260±5℃，5 秒. 2、Manual Soldering: Less than 350℃ and quicker than 3 seconds. 手焊: 350℃以下，3 秒以内.	There are no any loosened terminal which may cause intermittence. 端子不能松动及引起断路.
6-7	Reflow 回流焊	炉温曲线分析（profile）  无铅回流炉温工艺要求: 1. 起始温度(40℃)到150 ℃时的温升率为1~3 ℃/s 2. 150 ℃~200 ℃时的恒温时间要控制在60~120秒 3. 高过217 ℃的时间要控制在30~70秒之间 4. 高过230 ℃的时间控制在10~30秒,最高峰值在240 ℃±5℃ 5. 降温率控制在3~5℃/s之间为好 6. 一般炉子的传送速度控制在70~90cm/Min为佳	
6-7	Rotational Life 回转寿命	The shaft of encoder should be rotated to 50,000 cycles at the speed of 600 cycles/ per hour without electrical load. After that measurements should be made. However, measurements should be made every 10,000 cycles during the test. 1 cycle: rotate 360° C.C.W. then 360° C.W. 无电气负荷下以每小时 600 次的速度回转 50,000 次。 回转每达 10,000 次应做一次测试。 1 回转：正反转各旋转 360° 为 1 回转。	Fluttering : t1, t3 ≦ 5ms Sliding noise : t2 ≦ 3ms Detent feeling must remain (for detent-type only). 接触弹跳噪声： t1, t3 ≦ 5ms 滑动噪音 ： t2 ≦ 3ms 定位点必须保持原有停驻功能（仅适用于具定位点的机种）。

6-8	Switch life 开关寿命	The Knob of encoder shall be slide at a speed of 600cycles/H without electrical load,after with measurements shall be made 50,000±200cycles. 在无负荷条件下旋钮以 600 次/小时速度滑动 50,000±200 次。	Contact resistance:200 mΩ orless.Specification in clause shall be satisfied. 接触电阻:≤200 mΩ.其它应满足初期规格.

7. Note for soldering method 焊接注意事项

NO. 序号	ITEM 项 目	TEST CONDITIONS 测 试 条 件
7-1	Clean 清除污物	Please avoid cleaning of P.C. board because the flux used during the dip soldering process may enter the encoder and cause poor contact. 请清除污物，因为基板浸入焊剂作业过程中，污物会渗入编码器内部，造成接触不良。

8. Precautions in use 使用前注意事项

NO. 序号	ITEM 项 目	TEST CONDITIONS 测 试 条 件
8-1	Storage environment 存储环境	Storage in high temperature, high humid and corrosive gas environment should be avoided. 请避免存放于高温、潮湿及具腐蚀性的场所。
8-2	RC Filter circuit RC 滤波电路	For the implementation of the pulse count or menu control, always use the RC filter circuit shown as below. 在脉冲计算或选项控制的运用时，尽可能采用下图所示的 RC 滤波电路过滤噪声。 
8-3	Pulse count operation 脉冲计数操作	For the pulse count operation, care should be taken with operational speed, sampling time and Masking time etc. 必须注意频率计算处理的动作方式。注意操作速度、取样时间及屏蔽时间等。

8-4	Application 应用设计	For product of with-detent type, detent position is always aligned with A-OFF phase; therefore, it is strongly recommended that use A output signal for the reference of the software design. 附定位点的产品，每个定位点停驻位置为 A 输出讯号 OFF 状态，因此在产品应用的软件设计上，最好以 A 相位为参考基准。
8-5	Waterproofing 防水设计	Care must be taken not to expose this product to water or dew to prevent possible problem in pulse output waveforms. 本制品的本体必须避免直接接触到水或露水，以避免影响到输出波形，造成输出异常。
8-6	Impact 撞击	Excessive impact force may decrease the performance or even cause damage of the product. For best performance consideration, care must be taken to avoid excessive impact force. 本制品的主轴无法承受过度的撞击力，为确保本制品的机能，请避免过度的撞击。

9. Push momentary switch 开关部份

9-1 Switch rating DC 16V 3A (10 mA Min.)
开关额定电压

9-2 Electrical Characteristics
电气特性

NO. 序号	ITEM 项 目	TEST CONDITIONS 测 试 条 件	STANDARD RANGE 标 准 范 围
9-2-1	Contact resistance 接触阻抗	Measurement by the 5V DC/ 1 mA. 以 5V DC/ 1mA 测试。	100 mΩ Max. 小于 100 mΩ
9-2-2	Chattering 接触弹跳	Switch is operated at the rate of 1 cycle/sec. One cycle is OFF→ON→OFF . 开关以每秒 1 周期操作。 1 周期为完成 (OFF→ON→OFF) 的循环动作。	Less than 10 ms. 小于 10 ms
9-2-3	Insulation resistance 绝缘阻抗	Measurement should be made under the condition that applies a voltage of 250VDC/1mA between individual terminals and dial. 在端子与拔盘之间，外加 250VDC/1mA 电源。	100MΩ Min. between individual terminals and dial. 端子与拔盘之间绝缘阻抗 大于 100 MΩ。
9-2-4	Dielectric strength 耐电压 (Leak circuit: 1mA) 〈漏电流〉	A voltage of 300V AC/1mA applied for 1 minute, or a voltage of 360V AC/1mA applied for 2 sec. between individual terminals and dial. (Leak current: 1mA)。 在各端子与拔盘之间施加一 300V AC/1mA 电压测试 1 分钟，或外加 360V AC/1mA 电压测试 2 秒钟。〈包括漏电流测试〉。	No damage to parts, arcing or breakdown. 对零组件没有任何的弧穿破裂、故障现象发生。

10-3 Mechanical Characteristics 机械特性			
NO. 序号	ITEM 项 目	TEST CONDITIONS 测 试 条 件	STANDARD RANGE 标 准 范 围
10-3-1	Contact arrangement 开关回路、接点数	/	S. P. S. T. (Push ON) 单极单投(Push ON)
10-3-2	Switching stroke 开关移动量	/	0.5±0.3mm
10-3-3	Activating force 作动力	/	300 ~ 800 gf.cm

10-4 Endurance characteristics 耐久性			
NO. 序号	ITEM 项 目	TEST CONDITIONS 测 试 条 件	STANDARD RANGE 标 准 范 围
10-4-1	Switch life 开关寿命	The Knob of encoder shall be slide at a speed of 600cycles/H without electrical load,after with measurements shall be made 50,000±200cycles. 在无负荷条件下旋钮以 600 次/小时速度滑动 50,000±200 次。	Contact resistance:200 mΩ orless.Specification in clause shall be satisfied. 接触电阻:≤200 mΩ.其它应满足初期规格.

Approval 核 准	Auditing 审 查	Projected 经 办
林生财 已批准	廖嵩霖 已批准	李宏鑫 已批准