



东莞市凡睿电子科技有限公司

DONG GUAN FAN RUI ELECTRONICS&TECHNOLOGY CO.,LTD.

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ED08 系列旋转式編碼器規格书

1、一般事項 General

1-1 適用規格 Scope

本規格書適用於電子設備用微小電流回路 ED08 型薄型迴轉式編碼器。

This specification applies to 08 mm size low-profile thin rotary encoder (incremental type) for microscopic current circuits used in electronic equipment.

1-2 標準狀態 Standard atmospheric conditions

除另有規定外，測量應在以下狀態下進行：

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

溫度 Ambient temperature : 15°C to 35°C

相對溼度 Relative humidity : 25 % to 85%

氣壓 Air pressure : 86 kPa to 106 kPa

1-3 使用溫度範圍 Operating temperature range : - 30 °C to +70 °C

1-4 保存溫度範圍 Storage temperature range : - 40 °C to +85 °C

2、構造 Construction

2-1 尺寸 Dimensions

見所附成品圖 Refer to attached drawing

3、額定值 Rating

3-1 額定電壓： Rated voltage : D.C 5V 10mA(1mA MIN)

4、電氣性能 Electrical characteristics

4-1	項目 Item	條件 Conditions	規格 Specifications
	輸出信號 Output signal format	圖一 < fig.1 >	A、B 兩個信號的相位差輸出波型詳見(圖一)。 附卡點時，卡點位子如下圖所示：(虛線表示帶卡點裝置的上孖子處位置) 2 phase-different signals(signal A.&signal B)Details shown in < fig.1 > (The broken line shows detent position)
4-2	Bouncing 切换特性	Between 3.5V and 1.5V Measurement circuit Diagram 1 Measurecondition: 360° /s for rotational speed t1. t3 : 3ms Max. t2 : 2ms Max. T1. T2. T3 : 4ms Min. 位于 1.5V 和 3.5V 电压下测定 电路如图解 1 测量条件：旋转速度 360°/s t1. t3 : 3ms Max. t2 : 2ms Max. T1. T2. T3 : 4ms Min.	 Diagram 1 Signal B C1 R1 R2 R3 R4 Signal A C2 DC 5V R1=R2=R3=R4=10KΩ C1=C2=0.01μF Diagram 2 Signal A Signal B 1 (ON) 0 (OFF) 1 (ON) 0 (OFF) cw direction Diagram 3 1.5V 3.5V 1 (ON) 0 (OFF) t1 t2 t3

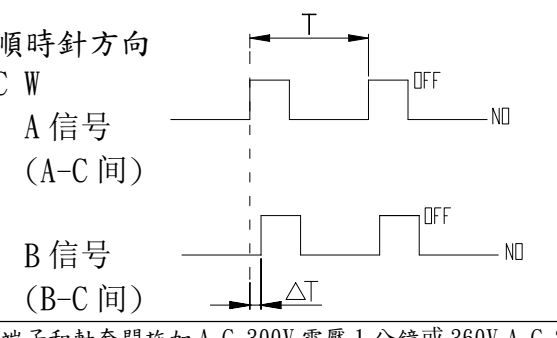


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	項 目 Item	條 件 Conditions	規 格 Specifications
4-3	分解能力 Resolution	迴轉一周的輸出脈衝數 Number of pulses in 360° rotation	每 12 個脈衝/360° 12pulses/360° for each phase
4-4	相位差 Phase-difference	以固定的速度操作軸進行迴轉。 Measurement shaft be made under the condition which the shaft is rotated in constant speed. 圖四 < fig.4 > 順時針方向 C W A 信號 (A-C 間) B 信號 (B-C 間) 	見(圖四) MIN $\Delta T \geq 0.08T$ in < fig.4 >
4-5	耐電壓 Dielectric strength	在端子和軸套間施加 A. C. 300V 電壓 1 分鐘或 360V A. C. 2 秒鐘。 A voltage of 300V A. C. shaft be applied for 1min or a voltage of 360V A. c. shall be applied for 2 sec between individual terminals and bushing. (Leak current: 1mA)	不得有絕緣破壞 Without arcing or breakdown.
4-6	絕緣阻抗 Insulation resistance	在端子和軸套間施加 D. C. 250V Measurement shaft be made under the condition which a voltage of 250V D. C. is applied between individual terminals and bushing.	端子和軸間電阻 100MΩ 以上 Between individual terminals and bushing: 100MΩ MIN.
5、機械性能 Mechanical characteristics			
5-1	全迴轉角度 Total rotational angle		360° (無止擋點) 360° (Endless)
5-2	力矩 torque	順時針或逆時針旋轉時需要的力 Cw or ccw rotated counterclockwise force required	60±30gf.cm
5-3	定位點數及位置 Number and Position of detents	只適用於附卡點裝置 Only suitable for C. C, equipment.	12 點定位(間隔角度 30°±3°) 12 detents (Step angle : 30°±3°)
5-4	端子強度 Terminal strength	端子前端的任意方向施加 2N(1.9kgf) 的靜負荷力 1 分鐘。 A static load of 2N shall be applied to the tip of terminals for 1 min in any direction.	端子不得有明顯鬆動及接觸不良, 但允許變形。 Without excessive play in terminal or poor contact.



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	項 目 Item	條 件 Conditions	規 格 Specifications
5-5	耐焊接熱 Resistance to soldering heat	在第七條的條件下。 Specified by the clause 7 "Soldering conditions".	不得有絕緣體的破損、變形。接觸無 異常。 Electrical characteristics shall be satisfied. No mechanical abnormali ties such as a excessive play.
5-6	軸的回轉方向 間隙 Rotation play at the click position	使用角度板測定。 Measurement with jig for rotational angle.	5°以內 (5°Max)

6、耐久性能 Endurance characteristics

	項 目 Item	條 件 Conditions	規 格 Specifications
6-1	迴轉壽命 Rotational life	在無負荷條件下軸以 500/h 速度迴轉 100,000 周。 The shaft of encoder shall be rotated to 100,000 cycles at a speed of 500/h cycles per without electrical load, after which measurement shall be made.	相位差: $\Delta T \geq 3mS$ 卡點出脫力矩 -30%~+10% Phase-difference: $\Delta T \geq 3mS$ Detent torque -30%~+10%

6-2	耐濕性 Damp heat	溫度 $40 \pm 2^{\circ}C$ 、濕度 90~95% 的恆溫恆濕槽中放 置 240 ± 10 小時後，在常溫、常濕中放置 1.5 小時後測試。 The encoder shall be stored at temperature of $40 \pm 2^{\circ}C$ with relative humidity of 90% to 95% for 240 ± 10 in a thermostatic chamber. And then the encoder shall be subjected to standard atmospheric conditions for 1.5H. After which measurements shall be made.	應滿足初期規格。 Specifications in clause
6-3	耐熱性 Dry heat	溫度 $85 \pm 3^{\circ}C$ 的恆溫箱中放置 240 ± 10 小 時，常溫、常濕放置 1.5 小時後測量。 The encoder shall be stored at a temperature of $85 \pm 3^{\circ}C$ for $240 \pm 10H$ in a thermostatic chamber. And then the encoder shall be subjected to standard atmospheric conditions for 1.5H. After witch measurement shaft be made.	應滿足初期規格。 Specifications in clause



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6-4	低温特性 Cold	溫度-40±3℃的恆溫箱中放置 240±10 小時，常溫、常濕放置 1.5 小時後測量。 The encoder shall be stored at a temperature of -40±3℃ for 240±10H in a thermostatic chamber. And then the encoder shall be subjected to standard atmospheric conditions for 1.5H. After which measurement shall be made.	應滿足初期規格。 Specifications in clause
6-5	耐落下性 Free falling	製品從 60cm 高度以任意方向自由落到鋪展在水泥地面上的塑膠墊上。 The encoder shall be fallen freely at any posture from 60cm height to the concrete floor covered with vinyl-tile. After which measurement shall be made.	沒有明顯的變形、破損。應滿足初期規格。(但端子變形除外) No excessive deformation or damage. (Except the deformation of terminals.) And specifications in clause 4.1~4.6 and 5.1~5.3 shall be satisfied.

7、焊接條件 Soldering conditions

7-1 手工焊接 Manual soldering

溫度 300℃ 以下，時間 3 秒以內。

Bit temperature of soldering iron : 300℃ or less.

Application time of soldering iron : within 3s.

7-2 槽焊 Dip soldering

使用基板: t=1.6 的單面覆銅板。

Printed wiring board: Single-sided copper clad laminate board with thickness of 1.6mm.

焊劑: 採用比重為 0.82 以上的焊料和發泡式助焊劑，浸入深度不超過基板厚度的二分之一，且基板表面不得有焊劑流入。

Flux: Specific gravity: 0.82 or more. Flux shall be applied to the board using a bubble foaming type fluxer. The board shall be soaked in the flux bubble only to the middle of its thickness. Flux shall not come into contact with the component side surface.

預熱: 基板表面溫度 100℃ 以下，時間 2 分鐘以內。

Preheating: Surface temperature of board: 100℃ or less.

7-3 焊接: 溫度 280℃±5℃ 以下、時間 3±1 秒以內。

Soldering: Solder temperature: 260℃ or less. Immersion time: Within 3s.

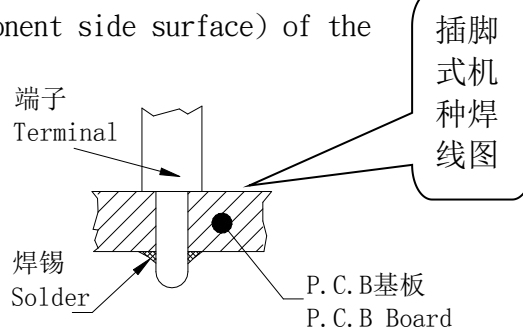
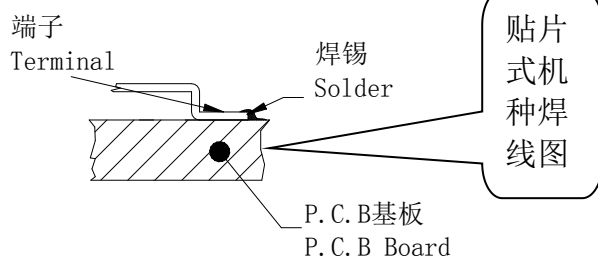
以上操作不得重覆二次以上。

Apply the above soldering process for 1 or 2 times.

8、焊接注意事項 Note for soldering method

8-1 如下圖所示，請不要在 P.C.B 板上面焊接處附近配線。

Please avoid soldering on upper surface (the component side surface) of the PC board as shown below.



8-2 焊接後洗淨後，如果焊劑流入編碼器內可時能產生接觸不良，請注意！



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9、其它,使用方面的注意事项

Precautions in use.

9-1 不要在高溫、多濕及腐蝕性氣體環境中保管。

During operation storage in high temperature and in corrosive gas should be avoided.

9-2 對編碼器脈衝數的處理、設計時, 要充分考慮速度、脈衝調制時間和雜音干擾等因素。

在實際確認後再使用! As design of the pulse count process. Care should be taken with operational speed.

9-3 本製品在卡點上使 A 相在 OFF 狀態下比較安定, 軟件設計時以 A 相為標準。

With this part detent positions we always be aligned with a-off phase. Therefore Make the a phase the reference at the soft ware design stage.

9-4 本製品本體若接觸水分則對脈衝波形能產生異常影響, 避免直接接觸水分。

This product when touching wet or water can be influence the pulse wave.

9-5 本製品對軸不能施加橫壓力, 為避免製品機能損傷, 應事先設置旋鈕方向。

The shaft can't be over pressure. For avoided damaged the function, please Pre-setting the button direction.

9-6 本製品對軸不要施加過大的沖擊力, 以免使產品機能受損。

Please don't shocking the shaft. To avoided damaged the function.

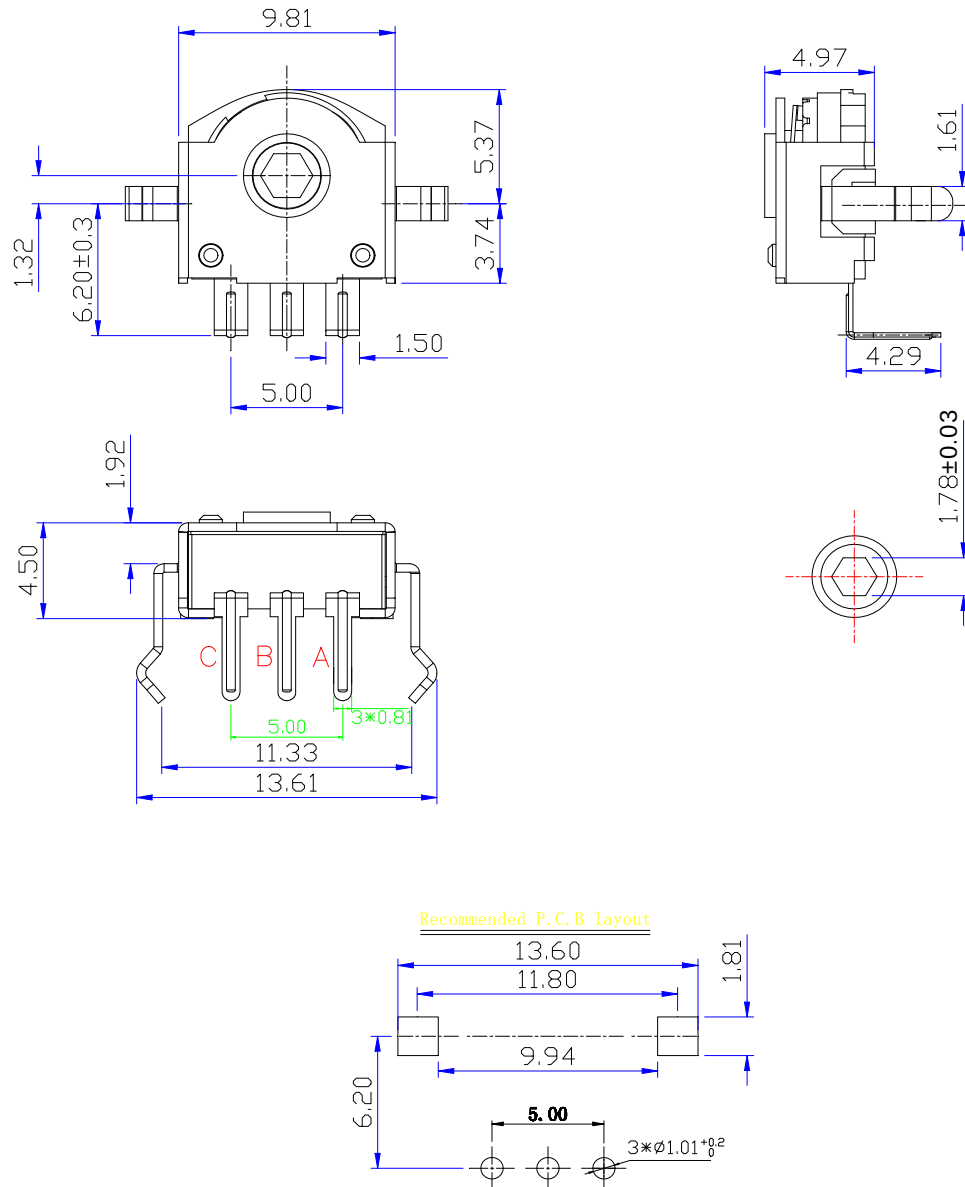


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				2			
				1			
Title	ED08 Series			Devision	Date	Design	
Dwg Name	ED0812-12P-12HC-C1. 78-H5			 Unit MM	Scale 3:1	TOLERANCE	
Dwg No	CPT-ED08-017	Version	B	MTL		UNDER 10	± 0.3
DESIGN	CHECK	APPROVAL	SPEC			10 ~ 100	± 0.5
			DISPOSAL		OVER 100	± 0.8	
						ANGULAR DIMENSION	± 5°