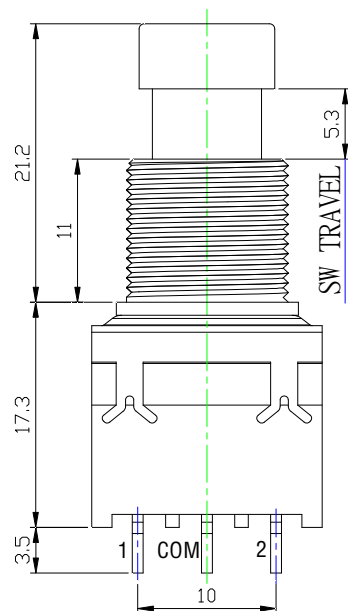
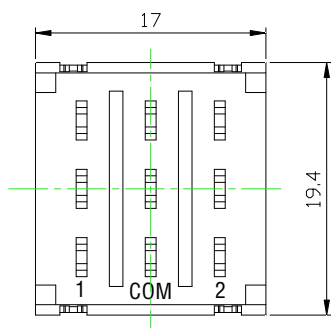
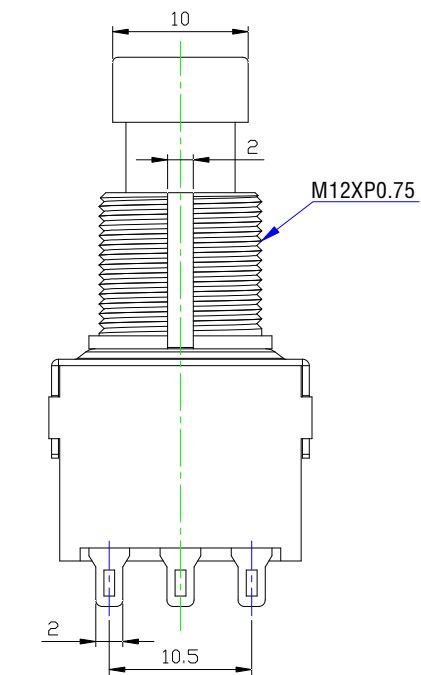
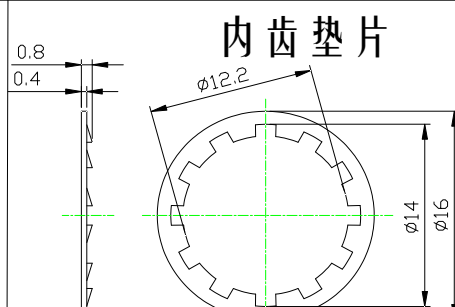
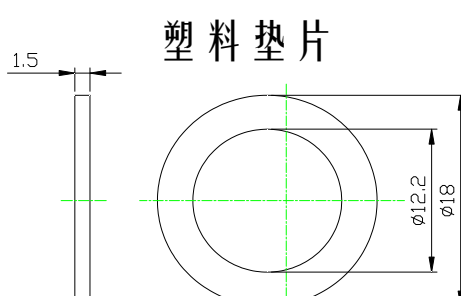
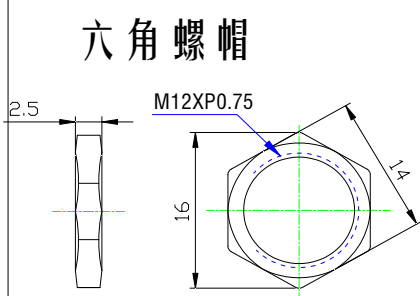
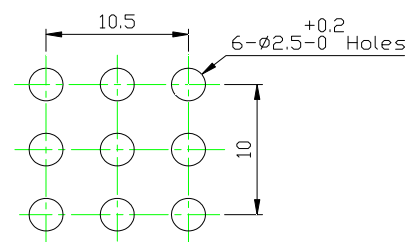
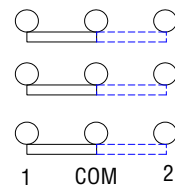




SWITCH CIRCUIT:TPDT

PUSH1 PUSH2



				3					
				2					
				1					
Title	FRJT9 Series			Devision	Date	Design			
Code	805100001				Unit	Scale	TOLERANCE		
Dwg Name	FRJT9 -M12B11-R21.2-FR				MM	3:1			
Dwg No	GC-G-JT09-001	Version	A	MTL				UNDER 10	±0.3
DESIGN		CHECK	APPROVAL	SPEC				10~100	±0.5
				DISPOSAL			OVER 100	±0.8	
							ANGULAR DIMENSION	±5°	

1、一般事項 General

1-1 適用規格 Scope

本规格书适用于 FRJT9 踏板用开关。

This specification applies to the FRJT9 pedal switch.

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℃ to 35℃

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 : - 10 ℃ to +70 ℃

1-4 保存溫度範圍 Storage temperature range : - 20 ℃ to +85 ℃

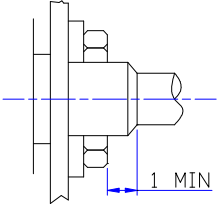
2、構造 Construction

2-1 尺寸 Dimensions

見所附成品圖 Refer to attached drawing

2・Mechanical Characteristics

机械特性

	Item 項目	Measuring condition 测试条件	Specifications 规格
2-1	Switch action force 开关动作力		2.6Kgf±0.6Kgf
2-2	Staking terminals 端子紧度	The front end of the terminal is 1000gf for one minute without loosening, falling off and terminal plate 端子前端受 1000gf 一分钟无松动、脱落、端子板无破裂	1000gf
2-3	Bushing nut Tightening strength 轴套锁紧强度	Tighten the nut according to 圖五 (fig.5) 依下圖(圖五)安裝方式。 	1Nm(10.2kgf.cm)Min。 1Nm(10.2kgf.cm)以上。
2-4	Push-pull strength of Shaft 軸的推拉強度	At the shaft end, apply a static load thrust of 3.0Kgf for 10 seconds each.(After the PCB solder tin) 在軸端，沿軸向施加 3.0Kgf 的靜負荷推力和拉力各 10 秒鐘。(在 PCB 焊錫後)	Without damage to. Or excessive play in shaft no excessive abnormality in rotational feeling. And electrical characteristics shaft be satisfied. 端子不得有明显松动及接触不良。电气性能无异常。

2-5	Axis shaking 轴心晃动	从距离轴顶端 5mm 处，以垂直于轴线的方向施以 50mN.m(510gf.cm)的瞬间负荷测试 A stant load test of 50mN.m(510gf.cm 5mm from the top of the axis in the direction perpendicular to the axis)	Bushing lengthShaft wobble 轴套长度 轴心晃动 (mm) (mm p-plex) 11.0 1.5*L/30 Note: Bushing length--- Bushing length is The screw Thread length. 轴套长度-- 轴套长度即螺纹长度。 L-Shaft length Shaft length is measured from At the bottom of the thread length between the crown to the shaft end. M-轴心长度是从螺纹底部至轴帽顶端之间的长度。 Wobble angle:10° Max 晃动角度：不大于 10°
3 · Encoder electrical characteristic s			电气特性
	Item 项目	Measuring condition 测试条件	Specifications 规格
3-1	Switching circuit 开关电路		Three knife double throw (TPDT)三刀雙投
3-2	Rating 定格电力		AC 125V4A;AC 250V2A; DC 30V2A
3-3	Closed Circuit Resistance 接触电阻	Use DC5V0.5A voltage drop method 1KHZ2.0mV100m Ω 以 DC5V0.5A 电 压 降 下 法 1KHZ2.0mV100m Ω	小于 100m Ω
3-4	Insulation resistance 绝缘电阻	Measurement shaft be made under the condition which a voltage of 250VD.C.1mA is applied between individual terminals and bushing.(OFF-teminals) 测量时应 在轴套与端子（及断开端子）之间施加 D.C.250V 1mA	100MΩ min.
3-5	Withstand voltage 耐电压	Apply a 1000VAC/1mA voltage test between each terminal and the bushing for 1 minute, or an additional 1500VAC/1mA voltage test for 2 seconds. (including leakage current test) 在各端子与轴套之间施加 1000VAC/1mA 电压测试 1 分钟，或外加 1500VAC/1mA 电压测试 2 秒钟。（包括漏电流测试）	No damage. Arc and dielectric breakdown. 无损伤、电弧和电故障

4. Endurance		耐久特性	
Item 项目		Measuring condition 测试条件	Specifications 规格
4-1	Heat resistance 耐热特性	Temperature 85±2℃ Time 96 ±10hours After that , leave in ordinary temp and humidity for 1.5 hour. Then measure. 温度 85±2℃ 时间 96 ±10 小时 然后放置在常温和湿度下 1.5 小时 再测试。	Specification in clause all items in shall be satisfied. 所有项应满足初期规格
4-2	Moisture resistance 耐湿特性	Temperature 40±2℃ Humidity 90~95%Rh Time 48±10 hours Test insulation impedance above 10MΩ within 30 minutes 温度 40±2℃ 湿度 90~95%Rh 时间 48±10 小时 于 30 分钟内测试绝缘阻抗在 10M Ω 以上	The same as above. 同上
4-3	Low temperature resistance 耐寒特性	Temperature -20±2℃ Time 96±10 hours After that , leave in ordinary temp and humidity for 1.5 hour. Then measure. 温度 -20±2℃ 时间 96±10 小时 然后放置在常温和湿度下 1.5 小时 再测试。	The same as above. 同上
4-4	Free falling 耐落下性	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. 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。	No excessive deformation or damage. (Except the defor- mation of terminals.) And specifications in clause 4.1~4.6 and 5.1~5.3 shall be satisfied. 沒有明顯的變形、破損。 應滿足初期規格。(但端 子變形除外)
4-5	迴轉壽命 Rotational life	Under the condition of no load, the spindle at the speed of 500 reciprocating times per hour, continuous 20000 times; It is measured every 5000 times. 在無負荷條件下,主軸以每小時 500 次往復的速度,持續進行 20000 次; 每進行 5000 次時測定一次。	Contact resistance 200 mΩ or less Specification in clause shall be satisfied. 接觸電阻: ≤200mΩ. 其它应满足初期规格

5、焊接條件 Soldering conditions

5-1 手工焊接 Manual soldering

溫度 260℃ 以下，時間 5 秒以內。

Bit temperature of soldering iron : 260℃ or less.

Application time of soldering iron : within 5s.

5-2 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 0.83 ± 0.05 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: 0.83 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 50~70 秒以內。

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

5-3 焊接: 溫度 $300^\circ\text{C} \pm 10^\circ\text{C}$ 以下、時間 3 ± 1 秒以內。

Soldering: Solder temperature: 300℃ or less. Immersion time: Within 3s.

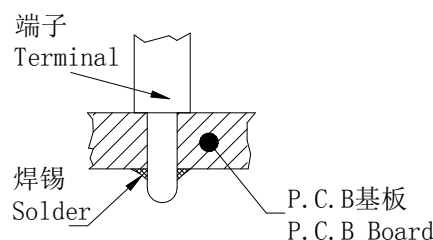
以上操作不得重覆二次以上。

Apply the above soldering process for 1 or 2 times

6. 焊接注意事項 Note for soldering method

6-1 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.



插腳式機種焊線圖

6-2 焊接洗淨後,如果焊劑流入內可能會產生接觸不良,請注意!

After the clean welding, if the flux into the encoder may cause poor contact, please note!

7、其它使用方面的注意事項 Precautions in use.

7-1 避免儲藏與高溫潮濕及腐蝕的場所，產品溝入後盡可能在 6 個月內使用完。拆包裝後未使用的剩餘產品需儲藏於防潮防毒的環境下。

Avoid storing the products in a place at high temperature, high humidity and in corrosive gases. Please use this product as soon as possible with 6 months limitation. If any remainder left after packing is opened, please store it with proper moisture proofing, gas proofing etc.

7-2 本制品本體若接觸水分則對脈沖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.

7-3 本制品對軸不能施加橫壓力,為避免制品機能損傷,應事先設置旋鈕方向。

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

7-4 本制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.

文件名称	制订日期	版本	核准	审核	制订
FRJT9 脚踏开关系列 规格书	2023-3-30	A			