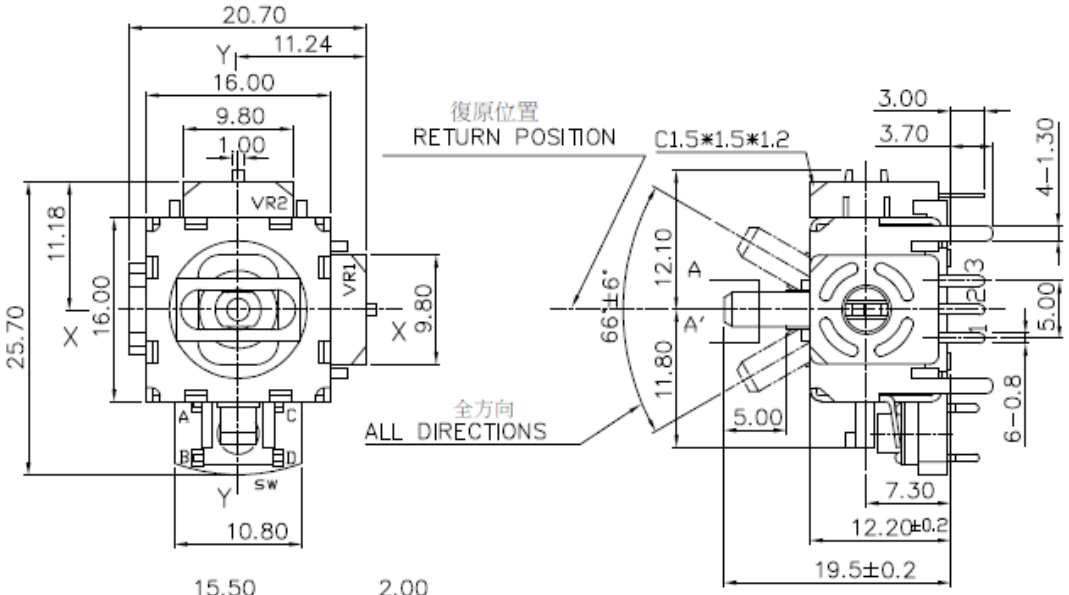
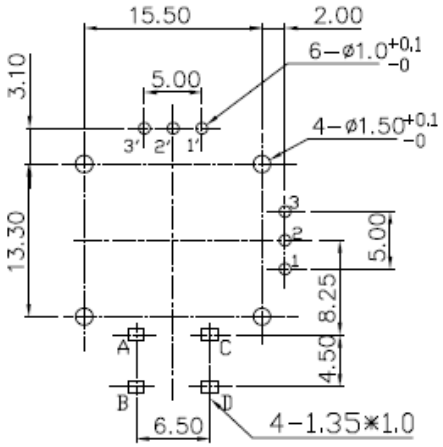
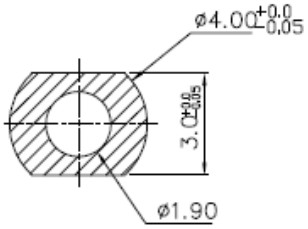
Data Sheet

Joystick potentiometer, single shaft with switch

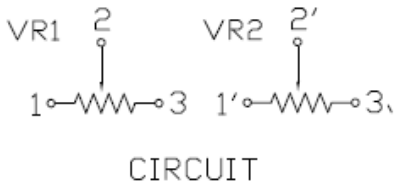






A —— A'
SCALE=3/1

B	28 中6°	32 中8°	35 中8°	38 中8°	40 中6°
	28°	32°	35°	38°	40°
	45 中6°	50 中6°	53 中6°	60 中6°	38 中6°
	45°	50°	53°	60°	



CIRCUIT

TOLERANCES UNLESS OTHERWISE SPEC	
BASIC DIMENSIONS	TOLERANCE
L ≦ 10	±0.3
10 < L ≦ 100	±0.5
100 < L	±0.8
ANGULAR DIMENSION	±5°

Data Sheet

分類號碼: 1/5	搖桿制品規格書 SPECIFICATIONS OF JOYSTICK CONTROLLERS	版本（version）: PWL-V2.0

1. 電器性能:
ELECTRICAL CHARACTERISTICS:

1.1	碳膜有效角度 **Carbon coat active angle**	■ 60 °±2° ■ 60 °中 6 ° ■ 60 °±2° ■ 60 °**middle** 6 °
1.2	全阻抗值 **Total resistance**	■ **10K** □ **50K** □ **100K**
1.3	Total Resistance Tolerance 全阻抗容許差值	■ **±20%** □ **±10%** □ ___% ~ ___%
1.4	阻抗變化特性 Resistance law	直線型: B（線型偏移度±3%以內） **Linear type : B (±3% MAX)**
1.5	分中阻值誤差 Center position resistance error	推柄自由復歸后,端子1-2的阻值與端子2-3的阻值之差的絕對值 **The absolute value of resistance different between terminal** 1-2 **and terminal** 2-3 **after the lever rest** **0.5** KΩ Max
1.6	復歸阻值誤差 Reset resistance error	推柄推向端子**1**方向自由復歸后測得端子1-2或端子2-3的阻值與推柄向端子**3**方向自由復歸后測得端子1-2或端子2-3的阻值之差的絕對值 **The absolute value of resistance different between terminal** 1-2 **and terminal** 1-3 **after the lever rest from the direction of terminal 1 and terminal 3 The absolute value of resistance different between terminal** 2-3 **and terminal** 2-3 **after lever rest from the direction of terminal 1 and terminal 3** **0.5** K**Ω Max**
1.7	殘留阻值 **Residual resistance**	端子**1&2**和**2&3**同在 **1K** Ω以下 **Less than 1K Ω between terminal 1&2 and 2&3**
1.8	接觸阻抗 Contact resistance	$(R_{1\cdot2}+R_{2\cdot3}-R_{1\cdot3})/2 \leqq$ 全阻值×**30%** 端子 1-2 阻值加上端子 2-3 的阻值之和減去端子 1-3 的阻值之差的一半小于或等于全阻值的百分之三十 Sum of terminal 1-2 resistance plus terminal 2-3 resistance and minus terminal 1-3 resistance ≦ total resistance × 30%
1.9	滑動雜音 Slide Noise	依**JIS**測定方法，**300mV**以下 **300mV Max (By JIS method)**
1.10	絕緣阻抗 Insulation resistance	在端子和外框架之間加**250V D.C 1**分鐘以後，端子和外框架之間的電阻: **100M**Ω 以上 **More than 100M**Ω **at DC 250 V 1 minute between individual terminals of resistor and frame 1 minute later**

Data Sheet

分類號碼: 2/5	搖桿制品規格書 SPECIFICATIONS OF JOYSTICK CONTROLLERS	版本（version）: PWL-V2.0

1. 電器性能:
ELECTRICAL CHARACTERISTICS:

1.11	額定電壓 **Rated voltage**	Linear Taper B: AC 50V or DC 5V Max Operation Voltage Ea • PR P: Rated Power (W) **R: Total Resistance (Ω)**
1.12	額定負載功率 **Rated Power**	Linear Taper B: 0.0125 W
1.13	耐電壓 **Dielectric strength**	**1 minute at AC 250V/ 2ma /50Hz**
1.14	抵抗溫度特性 Resistance-Temperature Characteristic	■10K type:+5%~~-20%以內 □50K、□100K、□120K type:+5%~~-25%以內 The controller shall be maintained in a thermostatic chamber at temperature of 70±3° C、without electrical load for s hours after which the total resistance shall be measured immediately、 溫度在 70±3° C 無負荷的恆溫槽中放置 5 小時后測試
1.15	耐熱性 Dry heat	Temperature: +80±2° C Time: 96 hours The controller shall be subjected to standard atmospheric Conditions for 2 hours after which measurement shall be made 溫度在 80±2° C,放置 96 小時,2 小時后正常狀態下測試
1.16	耐寒性 Cold	Temperature: -30±2℃ Time: 96 hours Surface moisture shall be removed, and then the controller shall Be subjected to standard atmospheric conditions for 2hours after Which measurement shall be made 溫度在-30±2℃,放置 96 小時,表面水份攝取后 2 小時正常狀態下測試
1.17	耐濕性 Damp Heat	Temperature: +60±2° C Humidity: 90%-95%RH Time: 96 hours Surface moisture shall be subjected to standard atmospheric Conditions for 2 hours after which measurement shall be wade 溫度在-60±2° C,放置 96 小時,表面水份攝取后 2 小時正常狀態下測試

Data Sheet

分類號碼：3/5	搖桿制品規格書 SPECIFICATIONS OF JOYSTICK CONTROLLERS	版本（version）：PWL-V2.0

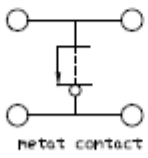
1. 電器性能：
ELECTRICAL CHARACTERISTICS:

1.18	溫度循環測試 Temperature Cycling Test	Low temperature: -10±3° C 30minutes High temperature: +60±2° C 30minutes Number of cycles: 5 tines Surface moisture shall be removed, and then the controller shall Be subjected to standard atmospheric conditions for 2hours after Which measurement shall be made 在低溫為-10±3° C 放置 30 分鐘,高溫 60±2° C 放置 30 分鐘,測試 5 次,表面水份擷取后 2 小時正常狀態下測試
1.19	自由落下試驗 Free Falling	Height: 75cm Number of falls: 3 tines Without change and lever deformation, but deformations of terminals and molded parts are available 從高度為 75 厘米落下測試 3 次后外觀內部無不良產生,端子變形除外
1.20	焊錫性 Solder ability	Temperature of solder: 235±5° C dipping duration: 3±0.5s,Not less than 3/4 of the surface dipped shall be covered with new solder 焊錫溫度在 235±5° C,浸錫時間 3±0.5 秒,浸錫部分表面最小 3/4 被新錫蓋
1.21	焊錫耐熱性 Resistance to soldering heat	Solder temperature of 260±5° C for 5 sec variation of total Resistance shall be within ±5%,and terminals shall not work loose to Injure electric contact after test 焊錫溫度 260±5° 5 秒,全阻值變化±5%以內,無損壞電氣這接的端子松動

2. 機械特性：
MECHANICAL CHARACTERISTICS:

2.1	推柄使用有效角度 Operation angle of lever	**66°±6°**
2.2	推柄移動形式 Figure of lever operation	環形方式 Circular operating
2.3	推柄止動強度 Stopper strength of lever	3Kgf-cm Min 3秒以下. More than 3.1 kgf .cm 3 seconds min

Data Sheet

分類號碼: 4/5	搖桿制品規格書 SPECIFICATIONS OF JOYSTICK CONTROLLERS	版本（version）: PWL-V2.0
2. 機械特性: MECHANICAL CHARACTERISTICS:		
2.4	推柄拉拔承受強度 Pull-push strength of lever	壓5Kgf-cm 3秒,拉5Kgf-cm 3秒,扭力0.3Nm. Push 5Kgf-cm 3 sec., pull 5Kgf-cm 3 sec. **Torsion moment 0.3Nm Min.**
2.5	搖柄動作力矩 **Operating force of lever**	130～180gf-cm.
2.6	推柄垂直復歸精度 **Accuracy of reset Position of lever**	±5。
2.7	耐久次數值 **Number of cycles**	■ 1000,000 Cycles Min □ Other____ (Cycles Min) 滿足以下條件:meet the conditions of: a.全阻值變化 Total resistance: 初始值(initial value): ±20% b.雜訊 Slide noise: less than 300mv (by JIS method) c.機械方面能動作 (Mechanical action)
3. 開關特性. SWITCH CHARACTERISTICS:		
3.1	最大定格 Maximum ratings	12V DC 50mA
3.2	接觸阻抗 Contact resistance	**100m**Ω 以下 100mΩ Max
3.3	開關動作力 Operation force of tact switch	□**100gf** ■ **160gf** □**260gf**
3.4	開關移動作量 **Operation force of tact switch**	**0.5 mm Max**
3.5	開關回路 **Switch circuit Diagram:**	
3.6	耐電壓 **Dielectric strength**	**250 v AC 50 Hz at /1 minute**

Data Sheet

分類號碼: 5/5	搖桿制品規格書 SPECIFICATIONS OF JOYSTICK CONTROLLERS	版本（version）: PWL-V2.0

3. 開關特性.
SWITCH CHARACTERISTICS:

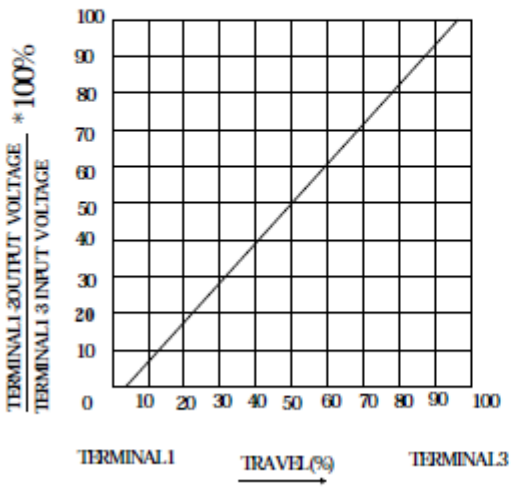
3.7	耐久次数值 **Number of cycles**	☐ 100,000 Cycles Min ☐ Other____ (Cycles Min) 滿足以下條件:meet the conditions of: a.接觸阻抗(Contact resistance): 200mΩ MAX b.機械方面能動作(Mechanical action)

4. 其它
NOTE

4.1	使用溫度範圍 Operating temperature range	-10°C～70°C.
4.2	保存溫度範圍 **Storage temperature range**	-30°C～80°C.
4.3	依照**JIS C 5260**電子機器用可變抵抗器. **(**可變電阻器部分**)** **Meet or exceed JIS C 5260 variable resistor for electronic equipment requirements. (potentiometer part)**	

5. 附:
直線型: **B**
Linear type: B

TAPERS B SERIES



TAPERS B WITH 50% TAP