

Specifications Of Touch Panel

觸控面板標準規範書

Preliminary Specification

Final Specification

Title	15" 5-Wire Resistive Touch Panel
Model / Version	GP-150F-5H-NB04B / V1.0
Note	Standard product

Signature Or Stamp	Approved By	Checked By	Prepared By
	OWEN	HANK	SCOTT
Approved By Customer	Approved By Groovy Technology Corp.		

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Record of Revision

版本修訂紀錄

Version	Date	Page	Old description	New Description	Remark
1.0	2021.10.12	All	-	First Edition [初版]	Layout and content update [版面與內容更新]

00. Handling Precautions [注意事項]

1. Warranty [保固]

1. GROOVY comes with a 2-year guaranty on 5 wire resistive touch panel. GROOVY guaranty provide replacement without any charge during this period of time. GROOVY reserves the right in its sole discretion to determine the defects received, and will take the responsibility if there is any defect or damages.

[除了下列 4 點所述外，坤巨資訊所生產製造的產品保固期限為 2 年，若判定為坤巨資訊之責任，則產品更換。坤巨資訊保留判定責任歸屬之權益]

Limited warranty does not cover the following situations：[有限度保固，不包括下列幾點]

- (1) Damages caused by improper handling from clients, such as the shipping period or manufacturing processes.
[在客戶的製程或運輸中，因客戶自身疏忽所造成對產品的傷害及破損]
 - (2) Damages caused by either natural disaster or human factors after receiving the products.
[在客戶收到坤巨之產品後，因為天災人禍所造成的傷害及破損]
 - (3) Damage caused by self-repairs, and modifications or disassembling of GROOVY products from clients without prior notice.
[沒有知會坤巨共同討論，而自行變更、維修、拆卸產品所造成的傷害及破損]
 - (4) Damage caused by user error； failing to follow normal operation procedures or using paper tools.
[客戶端於觸控面板使用操作上，該使用正確的動作及工具操作觸控面板，因客戶與依正確操作使用造成產品傷害及破損]
2. Cosmetic defects should be reported to GROOVY within 3 months after delivery. Should there be any discrepancy, GROOVY is to perform inspection, upon product return, based on the mutually recognized specifications and determine which party is accountable.
[外觀缺陷請於 3 個月內提出，由坤巨依據雙方協議之規範書規格進行覆判，判定責任歸屬]
 3. Cosmetic defects caused by improper handling from clients will not be covered under standard warranty.
[外觀缺陷經討論判定後，若為客戶疏失造成外觀瑕疵，亦不在保固範圍內]
 4. In order to trace the warranty, the product's serial number will be recorded before shipping it out.
[產品出貨時會記錄產品序號，以便後續保固追蹤]

2. General notes [一般注意事項]

Storage [儲存]

(1) Storage shall be under the temperature and humidity that mentioned in the specification. Do not expose the products to direct sunlight or piling caused damage on the surface.

[儲存要注意溫/濕度條件，且不可直接暴露於陽光下，或堆疊造成直接加壓觸控面板]

(2) Ship Method (1) must use legal couriers to transport products. (2) fragile products ; beware of vibration and dropping during transit.

[運送方式 (1)需雇用合法貨運公司進行貨物搬運 (2)產品為易碎品,搬運時需注意震動、掉落]

(3) Stacking method (1) based on standard air/ocean freight regulation (2) pallet use recommended for stacking (3) monitor stack weight and height to prevent damage to bottom stack.

[堆疊方式 (1)依空運或海運堆放標準 (2)建議利用棧板進行堆疊作業 (3)注意堆疊重量及高度,不可造成最下層包裝箱發生變形或破損]

Unpacking [拆裝]

(1) Unpack the box with the printed red arrow pointing up.

[注意檢查包裝箱已發現來貨外箱已有嚴重變形或破損時,應立即拍照佐證，以避免損壞]

Handling [握持]

(1) In order to prevent fingerprints or stain on the products, and get a cut by sharp edges of glass, clean finger sacks or glove and mask are required during handling.

[配戴清潔的指套、手套、口罩，以避免造成指紋、髒污或不小心中玻璃邊緣割傷]

(2) Avoid touching the viewable area before installation/integration.

[安裝組合時，避免接觸可視區]

(3) Do not handle the tail (connector) of panel directly, when you handle the touch panel. It will cause the problem of combination and reliability.

[拿取面板時，不可直接拿取 tail 部份]

Cleaning [清潔]

(1) If you want to clean the surface of this resistive touch panel, you can use 1:100 diluted bleach or 75% alcohol.

[如果要清潔此電阻式觸控面板的表面，可以使用 1 : 100 稀釋的漂白劑或 75%的酒精]

(2) Dip a clean cloth with cleaning solvent (alcohol, bleach) and make sure that the cloth is fully saturated.

[將清潔的布沾上清潔劑 (酒精，漂白劑)，並確保布完全浸透]

(3) Wipe the entire touch panel with a "Z" pattern to clean every corner of the touch surface.

[用 " Z " 形擦拭整個觸控面板，以清潔觸控面板表面的每個角落]

(4) Thoroughly dry the touch panel with a dry cloth, and remove excess cleaning solvent as much as possible.

[用乾布徹底擦乾觸控面板，並儘可能除去多餘的清潔溶劑]

(5) Please do not to mix bleach and ammonia because this will cause dangerous chemical reactions.

[提醒您不要混合使用漂白劑和氨水，因為這會引起危險的化學反應]

(6) Please do not mix bleach and ammonia because this will cause dangerous chemical reactions.

[請勿將清潔劑直接噴在觸控面板上]

(7) Prevent using any kind of chemical solvent, acidic or alkali solution.

[不能使用化學溶劑或酸鹼液進行清潔]

(8) Foreign objects and prints that can be wiped off are not regulated under the specification can be ignored.

[表面可擦拭及排除的異物及異紋並不列入判定規範內，可被忽略]

(9) The following solvents are recommended to clean the touch panel: [建議使用下列溶劑清潔觸控面板:]

1. Ethanol → 75% 2. Propan-2-ol → 70% 3. Butanone → 70% 4. Acetone → 70%

1.乙醇 75% 2.異丙醇 70% 3.丁酮 70% 4.丙酮 70%

Cleaning solvents such as bleach, alcohol and ammonia are corrosive to the coating on the surface of the touch panel and the ITO film. After cleaning, please make sure to remove all residual solvents. If used properly, this cleaning method will not damage resistive (including surface glass type Glass-Film-Glass, GFG) touch panels, and will not remove Low Reflective (LR) and GFG LR resistive types AR coating on the surface of the touch panel.

[漂白水、酒精和氨水這些清潔溶劑對觸控面板表面的塗層和 ITO 薄膜具有腐蝕性。完成清潔後，請務必去除所有殘留溶劑。如果使用正確，這種清潔方式不會損壞 PCAP 或電阻式(包含表面玻璃式 Glass-Film-Glass, GFG)觸控面板，也不會去除低反射式(Low Reflective, LR) 和 GFG LR 電阻式觸控面板表面的 AR 塗層]

Install and Assembling [組合與裝配]

(1) Excessive force or strain to the panel or tail is prohibited.

[注意避免加壓或拉扯面板及 Tail]

(2) Gasket or cushion pads around the edge of the panel may segregate water and/or dust contamination.

[在設計機構時，注意四周邊緣需有緩衝墊，以避免滲水或聚集灰塵]

(3) Maintain a minimal 5R when bending tail to prevent dead fold or fold mark.

[組裝時應保持最小 5 R 的折彎尺寸，並避免死折或有折痕現象]

(4) Flaws in customer module design may cause functionality issues after assembly.

[客戶端設計模組若有疏失時，會造成觸控面板組裝後，產生變形或破損現象會影響正常觸控功能]

Operating [操作]

(1) Use a plastic stylus (tip R0.8 or over) or finger. Sharp edged or hard articles are prohibited.

[應用手指或專用觸控工具，不能使用尖銳、堅硬的物體書寫輸入]

(2) The gathering of dew in the panel may occur with abrupt temperature or humidity changes. A stable environment condition is recommended.

[急遽的溫/濕度變化會有結露現象，易造成面板功能失效，所以穩定的環境條件是必要的]

(3) Avoid applying excessive activation force or sudden impact on the panel surface.

[避免應用過大觸動力或瞬間衝擊面板表面]

Others [其他]

(1) Keep the surface clean. No adhesives should be applied.

[請保持表面清潔，不要貼膠帶於面板上]

(2) Avoid high voltage and static charge.

[避免高壓與靜電]

(3) GROOVY has the right to change the materials and specification.

[坤巨保有變更規格及材料的權利]

3. Attention of Mounting Condition [裝機注意事項]

(1) The gasket support of touch panel must be designed on the outside of Viewable area, as well as to avoid pressing on touch panel accidentally, the enclosure must be designed with enough clearance to panel surface. To avoid pressing error on touch panel accidentally, please remain space between the surface of panel and the Bezel.

[請將固定觸控面板用的支撐體(support)設計於可視區(Viewable area)之外。為避免不小心碰到觸控面板而產生動作，請預留空間於面板與機體外殼之間]

(2) Bezel opening must be designed between Viewable area and Active area. Bezel opening must not touch Viewable area.

[外殼內緣(Bezel opening)應設計於可視區及動作區之間，並且不得碰到可視區]

(3) We recommend elastic material made support.

[建議使用彈性物質製成的支撐體]

(4) Do not use adhesive to bond top surface (ITO Film) of touch panel with enclosure.

[請勿使用黏著劑或雙面膠帶固定觸控面板和機體外殼]

(5) Due to the conductive characteristic of the panel backside, prevent metal contact after mounting.

[觸控面板背面具導電性質，安裝後請避免與其他金屬物質接觸]

(6) Proper grounding of controller at all times assure normal operation.

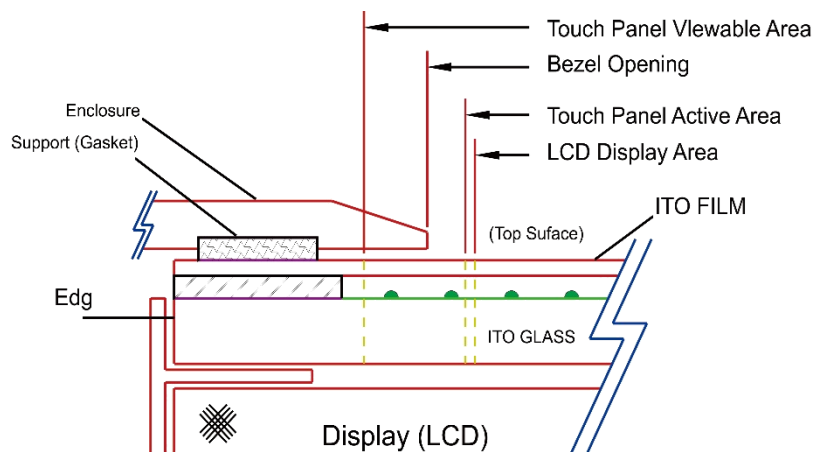
[觸控面板正常的作動有賴於控制器確實的電源接地]

(7) During assembly. Please take into consideration the variance in the different module designs, whether it would cause physical, cosmetic or functional damages to the touch panel, when completing the assembly.

[客戶端設計與觸控面板組裝時，不論客戶端的模組設計為卡榫式、螺母鎖固式或其他組裝方式時，請客戶端先行評估其模組的變異量，是否會影響組裝時造成觸控面板破損變形或其他外觀及功能性問題]

(8) After installation, please perform 4 point and 25-point calibration.

[裝設完成需利用定位工具進行 4 點及 25 點校正]



01. Characteristics [特性]

1. General [一般]

Type [形式]	Five-Wire Analog Resistive [五線-類比電阻式]
Input Mode [操作模式]	Stylus or Finger [筆觸或手觸]
Cable [連接線]	FFC
Frame Size [外框尺寸]	322.00 x 245.50 ±0.3mm
View Area [可視區]	309.50 x 233.50 ±0.2mm
Active Area [動作區]	303.50 x 227.50 ±0.2mm
Total Thickness [總厚度]	2.20mm ±0.20mm
Tail Length [出線長度]	205mm ±6mm
Certification [認證]	FCC、CE、RoHS

2. Environmental [環境]

	Temperature [溫度]	Humidity [濕度] (Non Condensing)[未凝結]
Operation [操作]	-10°C ~ +70°C	20%RH ~ 80%RH
Storage [儲存]	-40°C ~ +80°C	20%RH ~ 90%RH

Note: All terms under 1 atmosphere. [註:於正常的 1 大氣壓下]

3. Optical [光學]

Transparency [透光度]	80% ± 3%(Measured by BYK-Gardner)
Haze [霧化度]	8% ± 3%(Measured by BYK-Gardner)

4. Electrical [電子]

Loop Resistance [迴路阻抗]	X:20~500Ω, Y:20~500Ω(See Figure1)
Linearity [線性]	$X \leq 1.5\%$, $Y \leq 1.5\%$ (See Figure2)
Chattering [作動時間]	$\leq 15\text{ms}$
Insulation [絕緣阻抗]	$\geq 20\text{M}\Omega/25\text{V}(\text{DC})$
Endurance [耐電壓]	No acting damage at DC50V/60sec.

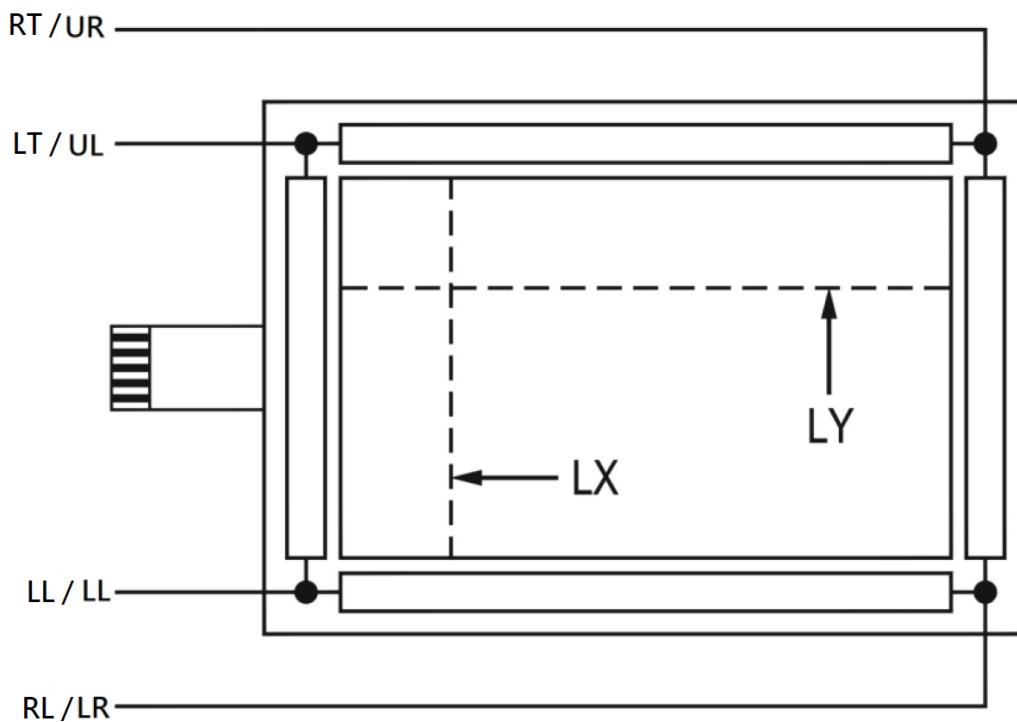


Figure 1

Loop Resistance X= short RT(UR)and RL(LR), short LT(UL) and LL(LL), measure the resistance between RT(UR) and LT(UL)

Loop Resistance Y= short RT(UR) and LT(UL), short RL(LR) and LL(LL), measure the resistance between RT(UR) and RL(LR)

5. Mechanical [機械]

Operating Force [作動力]	Stylus= R0.8 [筆式=R0.8]	≤ 50g
Impact [撞擊]	25.0ψDIA. Steel Ball/67g Height=50cm [25ψ/67g 鋼球 高度=50cm]	1 time, no damage[Impact at center area] [中央區域撞擊 1 次,不能破損]
Static Load [靜態承重]	5000g within 10cm ² area for 30sec [5000g 置於 10cm ² 內 · 30 秒]	Satisfy(1)of Item 5 and(1),(2),(4) of Item4 [符合 5 項目(1)及 4 項目(1),(2),(4)]
Hardness [硬度]	3H pencil, pressure750g/45° [鉛筆 3H,壓力 750g/45°(ASTM D3363)]	≥ 3H
Tail Peeling [Tail 剝離]	800g by vertical 90° [800g,垂直 90°]	Satisfy(1)of Item4 [符合 4 項目(1)]
Tail Bending [Tail 繞折]	90° 10times up & down [90°角,上下來回 10 次]	Satisfy(1)of Item4 [符合 4 項目(1)]

6. Reliability [可靠度]

High Temperature/Humidity [高溫高濕]	70°C /90%RH, 240 hrs, allow panel stays in normal environment for 4 hrs [70°C/90%RH · 240 小時 · 回常溫 4 小時後始可測試]	Reliability test may cause the film puffed yet the electric characteristic; (1), (4) of Item 4; (2) of item 4Satisfies $X \leq 2.5\%$, $Y \leq 2.5\%$; Actuation force must not exceed 200g after reliability test. [經由可靠度測試後 · 外觀不在其規範內 · 但功能性仍符合以下條件 4 項目(1) · (4) ; 4 項目(2)符合 $X \leq 2.5\%$, $Y \leq 2.5\%$; 測試後作動力不能超過 200g]
High temperature [高溫]	80°C /240 hrs allow panel stays in normal environment for 4 hrs [80°C /240 小時 · 回常溫 4 小時後始可測試]	
Low temperature [低溫]	-40°C /240hrs allow panel stays in normal environment for 4 hrs [-40°C /240 小時 · 回常溫 4 小時後始可測試]	
Thermal Cycle [冷熱循環]	-40°C ~80°C [60 min./cycle] *50 cycles and normalized for 4 hrs [-40°C ~80°C · 每循環 60 分鐘 · 共 50 次循環 · 回常溫 4 小時後始可測試]	

7. Durability [耐久性]

Knock Test [觸擊測試]	10,000,000 times [1000 萬次]	(1),(4)of Item4; (2) of item 4 satisfies $X \leq 2.5\%$, $Y \leq 2.5\%$; Actuation force must not exceed 200g after durability test. [4 項目(1)·(4) ; 4 項目(2)符合 $X \leq 2.5\%$, $Y \leq 2.5\%$; 測試後作動力不能超過 200g]
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02. Inspection Methods [檢驗方法]

1. Linearity [線性]

Step 1: short RT(UR) and RL(LR)(or short RL(LR) and LL(LL)).

Step 2: apply voltage DC 5V.

Step 3: short LT(UL) and LL(LL) (or short RT(UR) and LT(UL)).

Step 4: apply grounding.

Step 5: draw points along LX and LY at 5.0mm intervals within pattern area and detect the voltage at SG.

Step 6: measure the voltage differences between RT(UR) and LT(UL) (or RT(UR) and RL(LR)) (Figure 2)

(Figure 3)

[將 RT, RL 短路(或 RL,LL 短路)並接上 5V 的直流電,另外將 LT, LL 短路(或 RT, LT 短路)並接上接地線圈 0V,以 5.0mm 的間隔,利用手寫筆(stylus)劃直線(如圖 2 中 LX 和 LY),並量測 SG 的電壓,量測並計算 RT 與 LT 間的電位差(或 RT 與 RL 間的電位差)](Figure 2) (Figure 3)

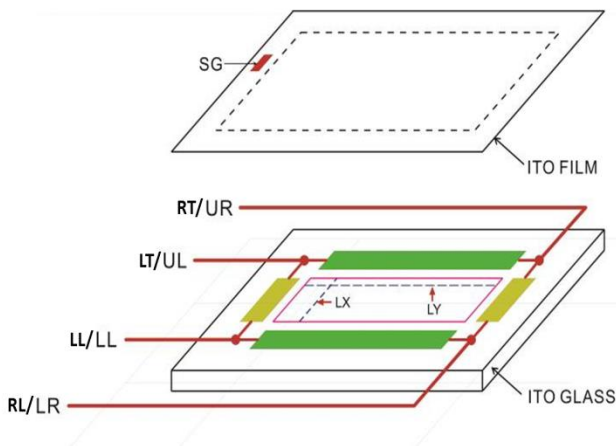


Figure 2

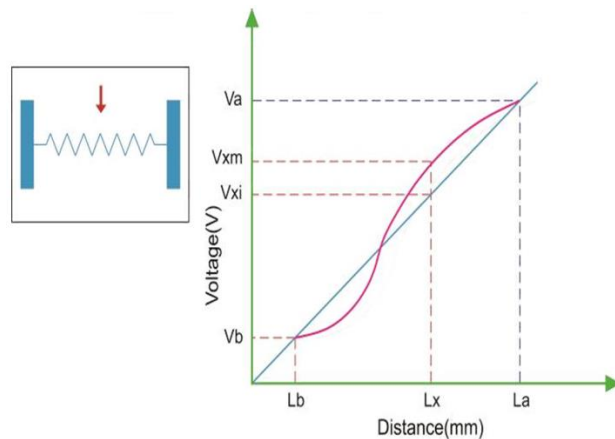


Figure 3

$$\text{※ Linearity: } [| V_{xm} - V_{xi} |] / (V_a - V_b) \times 100\%$$

Specification [規範]

Linearity must meet the electrical characteristic specified in Item 4. [線性必須符合 4 項目的電性規範]

2. Appearance [外觀]

(1) 18W(1000±500Lux) fluorescent luminant lamp is used for appearance inspection. Detail settings are shown in (Figure 4) and (Figure 5).

[(1) 檢測使用之燈光為 18W(1000±500Lux)白熾燈光·詳細的擺設方式·請參考圖(Figure 4), (Figure 5)]

(2) Minor impurities outside active area are acceptable unless their existence affect electrical functions.

[(2) 只要不影響電器功能性·作動區外之外觀瑕疵是可以被允許的]

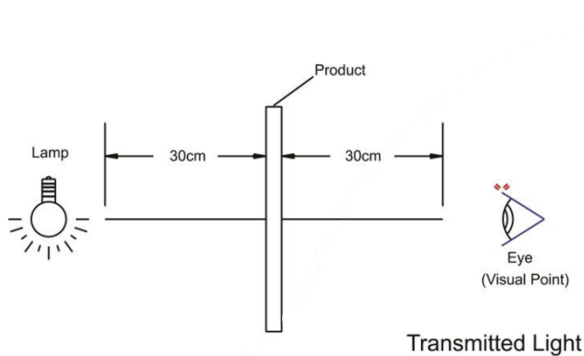


Figure 4

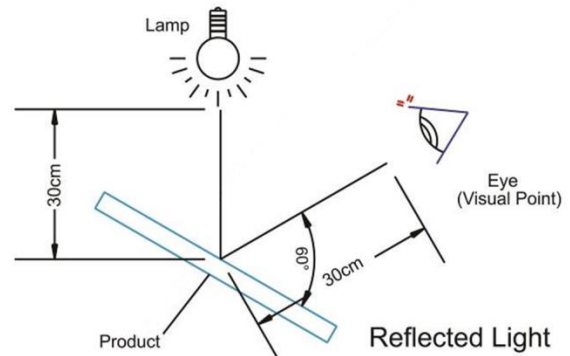


Figure 5

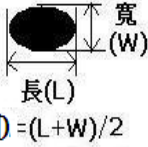
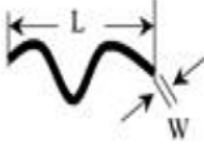
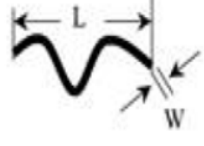
(3) Glass Flaw [玻璃瑕疵]

Corner Flaw [邊角瑕疵]		$X \leq 3.0\text{mm}$ $Y \leq 3.0\text{mm}$ $Z \leq T$
Edge Flaw [邊緣瑕疵]		$X \leq 3.0\text{mm}$ $Y \leq 3.0\text{mm}$ $Z \leq T$
Progressive Flaw [裂縫瑕疵]		Not allowed [不允許]

Note : T=Glass thickness

(4) Please refer to Appearance Specification. [(4)請參考外觀規格]

3. Appearance Specification [外觀檢查規格]

Particle [顆粒異物]	(1) $D \leq 0.3\text{mm} \rightarrow \text{OK}$ (2) $0.3\text{mm} < D \leq 0.6\text{mm}$ (each area contains ≤ 3 , total ≤ 6) $\rightarrow \text{OK}$ (3) $D > 0.6\text{mm} \rightarrow \text{NG}$ (D : average of diameter , Each area contains=20 ψ)	
Linear Object [線狀異物]	(1) $W \leq 0.05\text{mm} \rightarrow \text{OK}$ (2) $0.05\text{mm} < W \leq 0.1\text{mm}$ and $L \leq 20$, total $\leq 6 \rightarrow \text{OK}$ (3) $W > 0.1\text{mm} \rightarrow \text{NG}$ (W : width of flaws , L : length of flaws)	
Scratch [刮傷]	(1) $W \leq 0.025\text{mm} \rightarrow \text{OK}$ (2) $0.025\text{mm} < W \leq 0.05\text{mm}$ and $L \leq 12\text{mm}$, total $\leq 6 \rightarrow \text{OK}$ (3) $0.05\text{mm} < W \leq 0.1\text{mm}$ and $L \leq 6\text{mm}$, total $\leq 6 \rightarrow \text{OK}$ (4) $W > 0.1\text{mm} \rightarrow \text{NG}$ (W : width of scratch , L : length of scratch)	

< Remark > 【備註欄】

- All appearance flaws outside AA are acceptable. 【except glass flaws , corner flaws , edge flaws , progressive flaws and scratches mast follow appearance inspection】

[所有外觀不良，只要超出 AA 區，均忽略不計【除玻璃破損、缺角、邊緣瑕疵、裂縫、刀傷問題，依成品外觀檢驗規範進行檢驗】。]

- D=Diameter=直徑。
- W=Width=寬度。
- L=Length=長度。
- Unit=mm

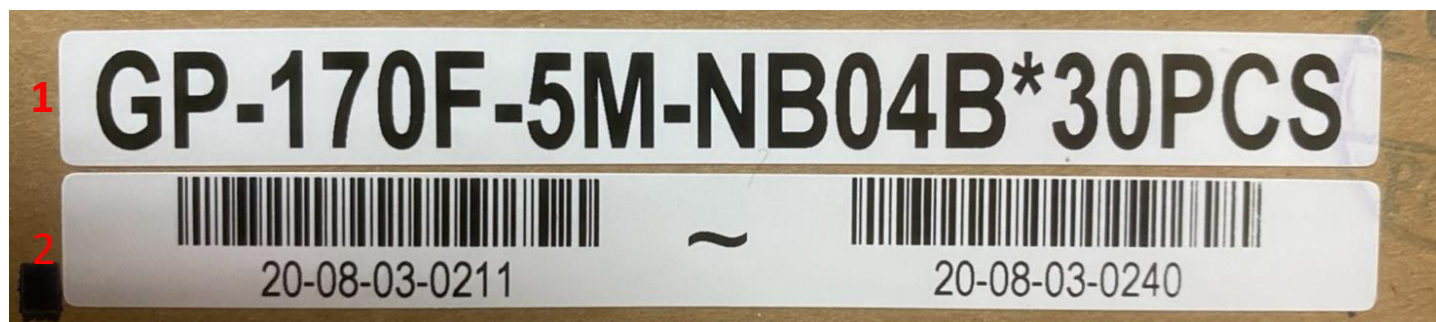
03. Product label [產品標籤]

The label is on the panel as shown below: [標籤在面板上如下所示:]



1. GTouch Logo
2. Certification mark [認證標示]
3. Serial Number [序號]
4. Part Number [料號]

Outer box label [外箱標籤]



1. Part Number and quantity [料號及數量]
2. Inner box product serial number [內盒產品序號]

In order to trace the warranty, the product's serial number will be recorded before shipping it out.

[產品出貨時會記錄產品序號，以便後續保固追蹤]

04. Dimension Drawing [尺寸圖]

