

PRODUCT SPECIFICATIONS

產品規格書

Customer (客戶) : _____
Model No. (型號) : AB-1518505041218121501
Mode (種類) : Five-wires Analog Touch Panel
Date (日期) : 2013.10.23
Version (版本) : C05

Customer Approval 客戶簽認
Date: _____

Approve [確認] _____ **CJ.Huang**
Review [審訂] _____ **Eric.Pan**
Preparation [製表] _____ **Yuan.Chen**

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01. Scope [範圍]

This specification is applied to Touch Panel made by Abon Touchsystems Inc.

[此規格書是適用崑達光電科技股份有限公司所製作的觸控面板]

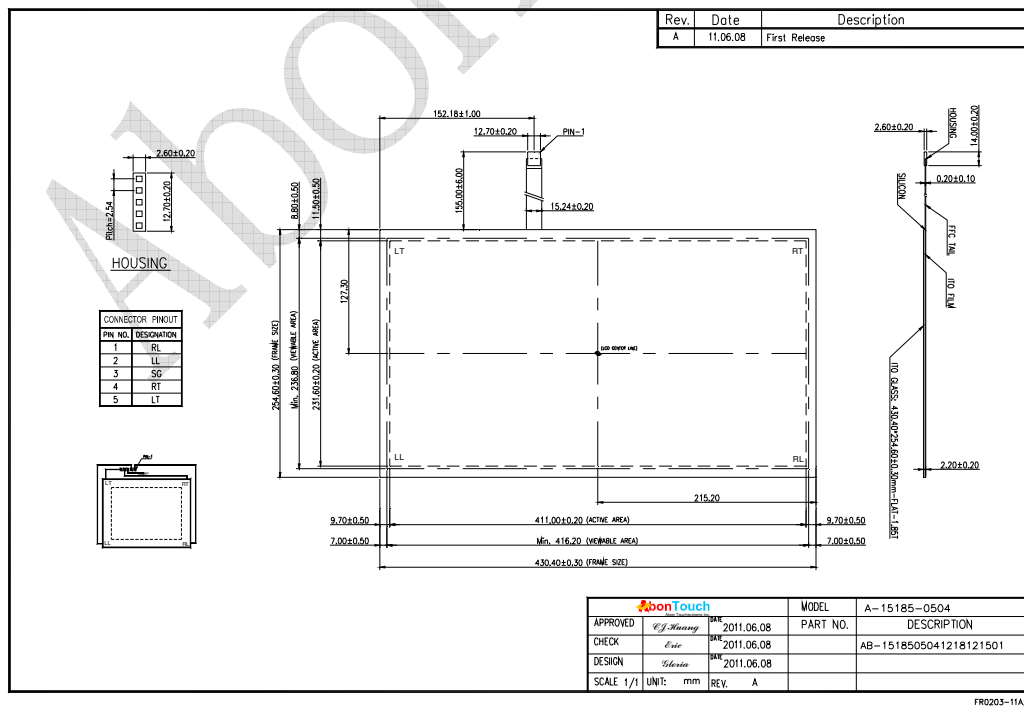
02. Features [特性]

Item [項目]	Specifications [規格]
2-1 Type [型式]	Five-Wire Analog Resistive [五線-類比電阻式]
2-2 Input Mode [操作模式]	Stylus or Finger [筆觸或手觸]
2-3 Cable [連結線]	Flat Flexible Cable [以 FFC 連結]

03. Dimensions [產品尺寸]

Item [項目]	Specifications [規格]
3-1 Frame Size [框尺寸]	430.40 ± 0.30 X 254.60 ± 0.30 mm
3-2 View Area [可視區]	416.40 ± 0.20 X 237.00 ± 0.20 mm
3-3 Active Area [動作區]	411.00 ± 0.20 X 231.60 ± 0.20 mm
3-4 Total Thickness [總厚度]	2.20 ± 0.20 mm
3-5 Tail Length [出線長度]	155.00 ± 6.00 mm

Engineering Drawing [工程圖]



04. Environmental Characteristics [環境特性]

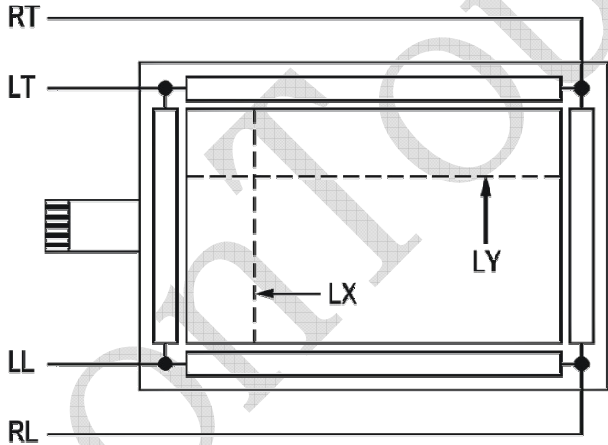
Item [項目]		Specifications [規格]	
		Temperature [溫度]	Humidity [濕度] (Non Condensing)[未凝結]
4-1	Operation [操作]	-30°C ~ +70°C	90%RH at max 50°C
4-2	Storage [儲存]	-40°C ~ +80°C	90%RH at max 50°C
Note: All terms under 1 atmosphere. [註:於正常的 1 大氣壓下]			

05. Optical Characteristics [光學特性]

Item [項目]		Specifications [規格]
5-1	Transparency [透光度]	80% ± 5% (measured by BYK-Gardner at 550nm, and the test method accorded to ASTM D1003)
5-2	Haze [霧化度]	Antiglare: <15% (the test method accorded to ASTM D1003)

06. Electrical Characteristics [電子特性]

Item [項目]		Specifications [規格]
6-1	Operation Voltage [操作電壓]	3.3 ~ 5 Vdc
6-2	Loop Resistance [迴路阻抗]	X:20~500Ω, Y:20~500Ω (See Figure 6.1)
6-3	Linearity Tolerance [線性誤差]	$X \leq 1.5\%$, $Y \leq 1.5\%$ (See Figure 10.1)
6-4	Chattering [作動時間]	$\leq 10\text{ms}$
6-5	Insulation [絕緣阻抗]	$\geq 20\text{M}\Omega$, 25Vdc
6-6	Endurance [耐電壓]	No acting damage at DC50V/60sec.



The diagram shows a rectangular component with four terminals: RT (top), LT (left), LL (bottom), and RL (right). A dashed line represents a horizontal loop LX connecting the top and bottom terminals. Another dashed line represents a vertical loop LY connecting the left and right terminals. A small comb-like structure is located on the left side of the component.

Figure 6.1 Loop Resistance X = short RT and RL , short LT and LL ,
measure the resistance between RT and LT
Loop Resistance Y = short RT and LT , short RL and LL ,
measure the resistance between RT and RL

07. Mechanical Characteristics [機械特性]

Item [項目]		Specification [規格]	Condition [條件]	
7-1	Panel [螢幕區]	Operating Force [作動力]	R8 Silicon Rubber,60HS [R8 矽膠頭,硬度 60 度]	less than 4 ounces (113 grams).
		Impact [撞擊]	25.0 ϕ DIA. Steel Ball/67g Height=80cm [25 ϕ /67g 鋼球 高度=80cm]	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]	15kg within ϕ 20mm area for 30sec [15kg 置於 ϕ 20mm 內, 30 秒]	Satisfy Item 6-2,6-3,6-5 [符合項目 6-2,6-3,6-5]
		Hardness [硬度]	3H pencil, pressure 1N/45° [鉛筆 3H,壓力 1N/45°(JIS K-5400)]	$\geq 3H$
7-2	FFC [連結線]	Peeling [剝離]	800g by 90 degrees [800g, 往下 90°]	Satisfy Item 6-2 [符合項目 6-2]
		Bending [繞折]	135° 10 times left & right [135° 角,左右來回 10 次]	Satisfy Item 6-2 [符合項目 6-2]

08. Reliability[可靠度]

Item [項目]		Specification [規格]	Condition [條件]
Panel [螢幕區]	High temperature /humidity [恆溫恆濕]	60°C / 90%RH, 240 hrs, allow panel stays in normal environment for 12 hrs [60°C /90%RH, 240 小時, 回常溫 12 小時後始可測試]	Reliability test may cause the film puffed yet the electric characteristic stays intact. Satisfy of Item 5-1, 5-2; Item 6-2, 6-5; Item 6-3 satisfies $X \leq 2.5\%$, $Y \leq 2.5\%$ and the function is OK after reliability test [符合項目 5-1, 5-2 及項目 6-2, 6-5; 項目 6-3 符合 $X \leq 2.5\%$, $Y \leq 2.5\%$] 環測後功能正常。
	High temperature [高溫]	80°C /240 hrs allow panel stays in normal environment for 12 hrs [80°C /240 小時, 回常溫 12 小時後始可測試]	
	Low temperature [低溫]	-40°C /240 hrs allow panel stays in normal environment for 12 hrs [-40°C /240 小時, 回常溫 12 小時後始可測試]	
	Thermal Cycle [冷熱循環]	-40°C ~80°C [60 min/cycle] *50 cycles allow panel stays in normal environment for 12 hrs [-40°C ~80°C, 每循環 60 分鐘, 共 50 次循環, 回常溫 12 小時後始可測試]	

09. Durability[耐久性]

Item [項目]		Specification [規格]	Condition [條件]
Panel [螢幕區]	Knock Test [觸擊測試]	10,000,000 times [1000 萬次] (Please refer to page to page 4)	Satisfy of Item 5-1, 5-2; Item 6-2, 6-5. Item 6-3 satisfies. $X \leq 2.5\%$, $Y \leq 2.5\%$ and operation force $\leq 250g$. [符合項目 5-1, 5-2 及項目 6-2, 6-5; 項目 6-3 符合 $X \leq 2.5\%$, $Y \leq 2.5\%$, 做動力小於 250g]

10. Inspection Methods[檢查方法]

10-1 Linearity [線性測試條件]

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

Step 2: apply voltage DC 5V.

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

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 and LT(or RT and RL) (Fig 10.1) (Fig 10.2)

[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 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)] (Fig 10.1) (Fig 10.2)

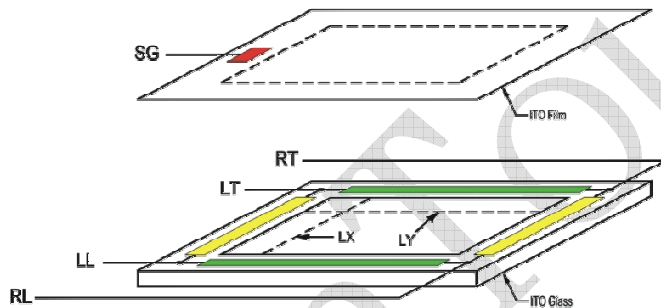


Figure 10.1

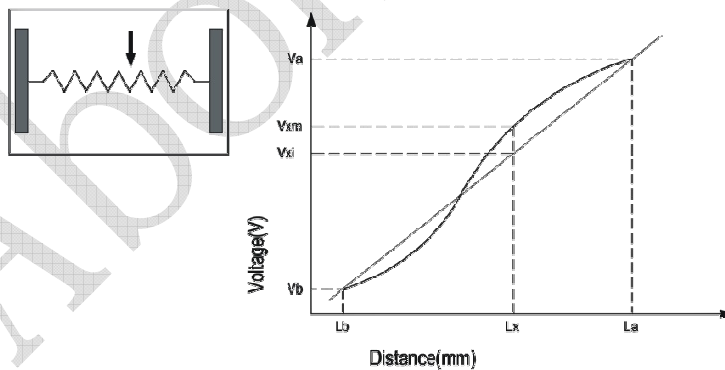


Figure 10.2

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

10-2 Specification [規範]

Linearity must meet the electrical characteristic specified in Item 6

[線性必須符合 項目 6 的電性規範]

11. Appearance Inspection [外觀檢查]

11-1 The inspection shall be performed by using one 600~1000 Lux fluorescent lamp as back or side light. The panel shall be placed at 30cm away from eyes as shown below. Detail settings are shown in Figures 11.1 and 11.2.

[11-1 檢測始用之燈光為一盞 600~1000 Lux 白熾燈光，並於面板後側或上側照射，檢測時須放置在離眼睛 30cm 處 (Figure 11.1), (Figure 11.2)]

11-2 Minor impurities outside viewing area (VA) are acceptable unless their existence affect electrical functions.

[11-2 只要不影響電器功能性，可視區 (VA) 外之外觀瑕疵是可以被允許的]

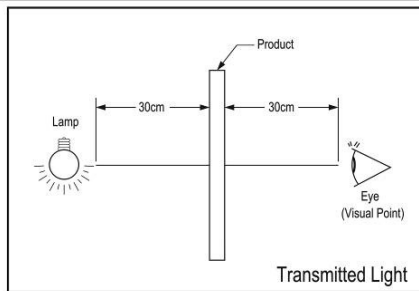


Figure 11.1

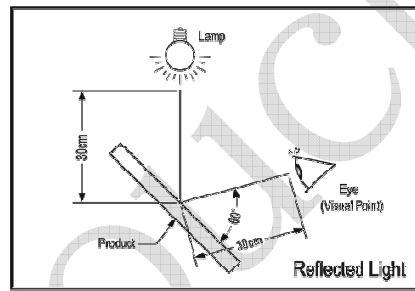


Figure 11.2

11-3 Glass Flaw [玻璃瑕疵]

Item [項目]	Picture [圖示]	Specification [規格]
Corner Flaw [角瑕疵]		$X \leq 3.0\text{mm}$ $Y \leq 3.0\text{mm}$ $Z \leq T$
Edge Flaw [邊緣瑕疵]		$X \leq 10.0\text{mm}$ $Y \leq 3.0\text{mm}$ $Z \leq T$
Progressive Flaw [裂縫瑕疵]		Not allowed [不允許]

Note: T=Glass thickness [玻璃厚度]

11-4 Please refer to Appendix I: Appearance Specification.

[11-4 外觀規格請詳見(附註 1)]

12. Attention for Mounting [裝機注意事項]

12-1 The gasket support of touch panel must allocate between Frame and Viewable Area.

Reserve enough clearance between panel surface and enclosure for normal panel operation.

To avoid pressing error, please retain enough space between surface panel and Bezel.

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

12-2 Bezel opening must not touch Viewable Area, Bezel opening must be designed between Viewable Area and Active 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]

12-3 We recommend elastic material support.

[建議使用彈性物質製成的支撐體]

12-4 Due to the conductive characteristic of the panel backside, prevent metal contact after mounting.

[觸控屏面板背面具導電性質，安裝後請避免與其他金屬物質接觸]

12-5 Proper grounding of controller at all times assure normal operation.

[觸控屏正常的作動有賴於控制器確實的電源接地]

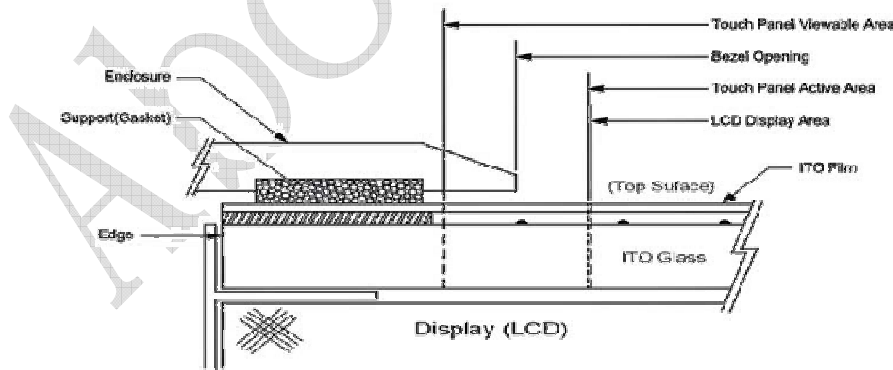


Figure 12.1

13. Warranty[保固]

Warranty does not cover the following situations [產品保固不包含下列三種情況]:

13-1 Damages caused by improper handling from clients, including and not limited to, during shipping, or manufacturing processes.

[客戶的不當操作(含製程或運輸中)所造成對產品的損傷]

13-2 Damages caused by disasters, either by natural causes or human factors, after the delivery of products.

[出貨後因天災(或)不可抗拒的因素(或)其他人為因素所造成的損傷]

13-3 Damage caused by self-repairs, modifications or disassembling of the product.

[自行變更、維修、拆卸產品所造成的傷害及破損]

14. Appendix[附註]

Item [項目]	Content [內容]	Page number [頁數]
Appendix I [附註一]	Appearance Specification [外觀檢查規格]	1 page
Appendix II [附註二]	Durability Testing Method [耐久測試方式]	1 page

15. Caution[注意事項]

<p>Storage [儲存]</p>	<p>Store panel under the temperature and humidity range pre-specified. Direct sunlight exposure or piling should be avoided. [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面板]</p>
<p>Unpack [拆裝]</p>	<p>Unpack the box with the printed red arrow pointing up. [注意檢查包裝箱之箭頭方向，以避免損壞]</p>
<p>Handing [握持]</p>	<p>(1) Use clean sacks or glove to prevent fingerprints and/or stains left on the panel. Extra attention and carefulness should be taken while handling the glass edge. [配戴清潔的指套、手套、口罩，以避免造成指紋、髒污或不小心被玻璃邊緣割傷] (2) Avoid touching the viewing area before installation/integration. [安裝組合時，避免接觸可視區] (3) Holding the panel instead of the tail at all time. [拿取面板時，不可直接拿取 tail 部份，易造成結合度及信賴性問題]</p>
<p>Cleaning [清潔]</p>	<p>(1) Use neutral detergent or isopropyl alcohol on a clean soft cloth to clean the panel surface. [使用乾淨且柔軟的布，沾中性清潔劑或酒精進行清潔] (2) 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]</p>
<p>Installing and Assembling [組合與裝配]</p>	<p>(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) Retain at least 0.3 mm clearance between panel and display module. [最少保留 0.3mm 的空間於面板及顯示器之間] (3) 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] (4) Don't insert cable line like follow drawing could cause the tail broken. [連接器部分請勿彎折，可能會導致線路斷裂。如下圖示。]</p> <div data-bbox="467 1199 1317 1675" style="border: 1px solid black; padding: 10px;"> <p style="text-align: center;">Don't bend of the cable and stiffener board</p> <p style="text-align: center;">HOUSING</p> </div>

<p>Operating [操作]</p>	<p>(1) Touch the panel with your finger or stylus(R0.8 or over) only to assure normal operation. Any sharp edged or hard objects are prohibited. [應用手指或觸控筆(R0.8 以上)，不能使用尖銳、堅硬的物體書寫輸入]</p> <p>(2) Operate the panel in a steady environment. Abrupt variation on temperature and humidity may cause malfunction of the panel. [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]</p>
<p>Others [其他]</p>	<p>(1) Keep the panel surface clean. Prevent any kind of adhesive applied on the surface. [請保持表面清潔，不要貼膠帶於面板上]</p> <p>(2) Avoid high voltage and/or static charge. [避免高壓與靜電]</p> <p>(3) Abon Touchsystems Inc. has the right to change the materials and/or specifications. [嵩達光電保有變更規格及材料的權利]</p>

[Appendix I]

Appearance Specification [外觀規格]

Item [項目]	Specification [規格]
Particle [顆粒異物]	$D \leq 0.6 \Rightarrow OK$ (Q'ty disregard)
Linear Object [線狀異物] Scratch [刮傷]	(1) $W \leq 0.05 \Rightarrow OK$ (Q'ty disregard) (2) $W > 0.12$ or $L > 30 \Rightarrow NG$ (3) $0.05 < W \leq 0.12$ and $L \leq 20 \Rightarrow OK$ (Q'ty disregard)
<p>1. Inspection Area[檢驗區]: According to engineering drawing, Viewable Area is the inspection area. Any defect outside of the viewable area may be disregard. [依工程圖的可視區為檢驗區域，可視區以外的不良可忽略。]</p>	
<p>2. Each Area [每區]: One of the areas of T/P viewable area divided into 9 (3 by 3) equal areas. [將觸控螢幕平均分割為 3x3 的 9 個區域，每區為其中一個區域。]</p>	
<p>3. Stain [髒污]: No clear outline, not easy to identify with eyes, but able to clean out by wiping. [輪廓不清晰，以肉眼辨識不易的沾污或與觸控面板表面有明顯色差，存在於觸控面板表面，可擦拭乾淨。]</p>	
<p>< Remark > [備註欄] D=Diameter=直徑 W=Width=寬度 L=Length=長度 Unit: mm Note 1: Particle, Stain or Linear Object that can be clean out easily within 3 times is disregard. 註(一):異物、髒污、條狀物正常擦拭 3 次可去除,即可允收。</p>	

【Appendix II】

Durability Testing Method [耐久測試方式]

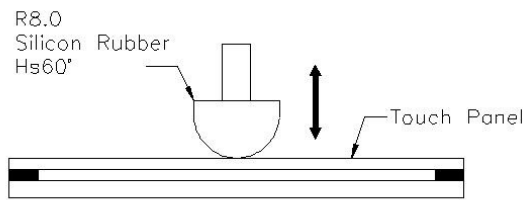
1. Finger Touch [打點測試方式] :

1). Test Pen: R8.0 Silicon Rubber Hs60°. (Fig 1)

測試筆：R8.0 橡膠頭 Hs60°。(如圖 1)

2). Test Method: Knock in the active area.

測試方式：打在動作區內。



[Fig.1]