



萬達光電科技股份有限公司  
HIGGSTEC INC.

## PRODUCT SPECIFICATIONS

### 產品規範書

Customer (客戶) :

Model (型式) : \_\_\_\_\_

Mode (種類) : Capacitive Analog Touch Panel

Date (日期) : July 09, 2008

Version (版本) : 1.4

Customer Approval

客戶簽認

#### **HIGGSTEC INCORPORATED**

8 F., No. 609, Wan Shou Rd., Sec. 1,  
Kweishan, Taoyuan Hsien 33350,  
Taiwan.

TEL : 886-2-8209-9696

FAX : 886-2-8200-3030

E-mail : info@higgstec.com.tw

Approve 確認	Review 審訂	Preparation 製表
Andy	Yuwen	Vicky

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**01. Circumscription** The specification is for analog capacitive touch panel.

[範圍]

[此規格適用於類比電容式觸控屏幕]

**02. Features**

[特性]

Item [項目]		Specifications [規格]
(1)	Type [型式]	Analog Capacitive [類比電容式]
(2)	Input Mode [操作模式]	Finger [手觸]
(3)	Connector [連接方式]	FFC

**03. General Specification**

[規格總則]

Item [項目]		Specifications [規格]
(1)	Frame Size [外框尺寸]	
(2)	View Area [可視區]	
(3)	Precision Area [動作區]	
(4)	Total Thickness [總厚度]	
(5)	Tail Length [出線長度]	

**04. Environmental Characteristics**

[環境特性]

Item [項目]		Specifications [規格]	
		Temperature [溫度]	Humidity [濕度] (Non Condensing) [不可結露]
(1)	Operation [操作]	-20°C ~ +70°C	20%RH ~ 85%RH *
(2)	Storage [儲存]	-40°C ~ +85°C	10%RH ~ 90%RH *

Note: The environment is under normal atmosphere pressure.

[註:於正常的 1 大氣壓下]

\* While the environment temperature is above 65°C, the humidity will be allowed in below 50%RH .

[65°C 以上高溫環境時，濕度允許在 50%RH 以下]

05. Optical Characteristics

[光學特性]

Item [項目]		Specifications [規格]
(1)	Transparency [透光度]	$\geq 88\% \pm 2\%$ (measured by BYK-Gardner)
(2)	Haze [霧化度]	$\leq 5\% \pm 2\%$

06. Electrical Characteristics

[電子特性]

Item [項目]		Specifications [規格]
(1)	Loop Resistance [迴路阻抗]	X:50~600Ω, Y:50~600Ω (See Figure 6-1)
(2)	Linearity [線性]	$X \leq 1.0\%$ , $Y \leq 1.0\%$ (See Figure 10-2)
(3)	Response [作動時間]	According to Integration time of controller
(4)	Insulation [絕緣阻抗]	$\geq 20M\Omega/25V(DC)$
(5)	Endurance [耐電壓]	No acting damage at DC50V/60sec.

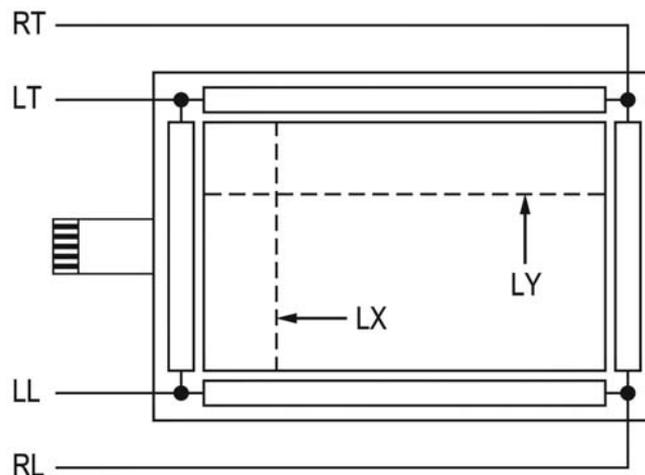


Figure 6-1

Note : 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]
(1)	Operating Force [作動力]	Finger [手觸]	≤ 10g
(2)	Impact [撞擊]	13.0 φ DIA. Steel Ball/9g Height=30cm [13 φ /9g 不銹鋼球 高度=30cm]	1 time, no damage [Impact at center area] [中央區域撞擊 1 次,不能破損]
(3)	Static Load [靜態承重]	500g within 30 cm <sup>2</sup> area for 30sec [500g 置於 30cm <sup>2</sup> 內, 30 秒]	Satisfy(1) of Item 7 and (1), (2),(4) of Item 6 [符合 7 項目(1)及 6 項目(1),(2),(4)]
(4)	Hardness [硬度]	7H pencil, pressure 1N/45° [鉛筆 7H, 壓力 1N/45° (JIS K5400)]	≥ 7H
(5)	Peeling [剝離]	800g/cm by vertical 90° [800g/cm, 垂直 90°]	Satisfy (1) of Item 6 [符合 6 項目(1)]
(6)	Bending [彎折]	135° 10 times left & right [135° 角, 左右來回 10 次]	Satisfy (1) of Item 6 [符合 6 項目(1)]

## 08. Reliability

[信賴性]

	Item [項目]	Specification [規格]	Condition [條件]
(1)	Constant Temperature /Humidity [恆溫恆濕]	70°C /90%RH, 500 hrs and normalized for 4 hrs [70°C /90%RH, 500 小時, 回常溫 4 小時後始可測試]	Satisfy (1), (2) of Item 5; (1), (4) of Item 6; (2) of item 6 satisfies X ≤ 2.0%, Y ≤ 2.0% [符合 5 項目(1)、(2)及 6 項目(1)、(4); 6 項目(2)符合 X ≤ 2.0%, Y ≤ 2.0%]
(2)	Heat Cycle [高溫循環]	70°C /240 hrs and normalized for 4 hrs [70°C /240 小時, 回常溫 4 小時後始可測試]	
(3)	Cold Cycle [低溫循環]	-40°C /240 hrs and normalized for 4 hrs [-40°C /240 小時, 回常溫 4 小時後始可測試]	
(4)	Thermal Cycle [冷熱循環]	-40°C ~70°C [60 min./cycle] *10 cycles and normalized for 4 hrs [-40°C ~70°C, 每循環 60 分鐘, 共 10 次循環, 回常溫 4 小時後始可測試]	

## 09. Durability

[耐久性]

	Item [項目]	Specification [規格]	Condition [條件]
(1)	Knock Test [觸擊測試]	200,000,000 times [2 億次]	Satisfy (1), (2) of Item 5; (1), (4) of Item 6; (2) of item 6 satisfies X ≤ 2.0%, Y ≤ 2.0% [符合 5 項目(1)、(2)及 6 項目(1)、(4); 6 項目(2)符合 X ≤ 2.0%, Y ≤ 2.0%]

## 10. Inspection Methods :

[檢查方法]

### (1) Linearity Condition [線性測試條件]

Short RT and RL(or short RL and LL) and voltage DC 5V is applied , short LT and LL (or short RT and LT) and ground is applied , using finger to draw staight points LX and LY at 5.0mm intervals within pattern area and detect the voltage at SG.. To 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, 利用手指(Finger)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)

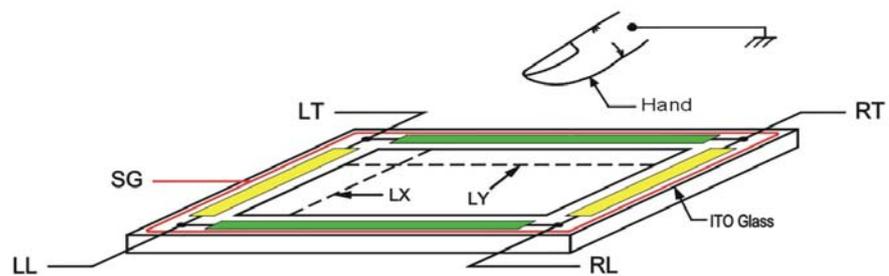


Figure 10-1

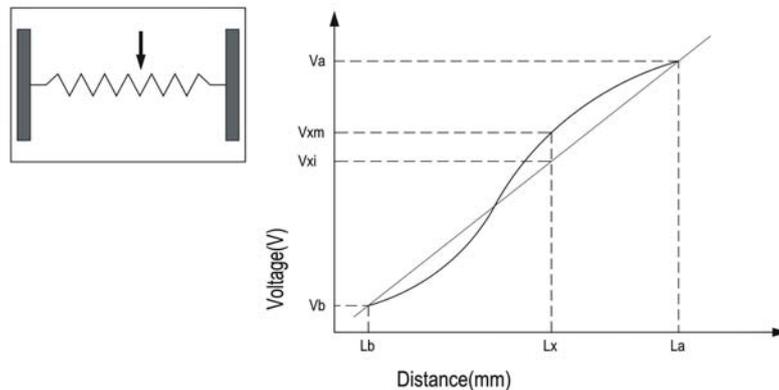


Figure 10-2

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

### (2) Specification [規範]

The linearity must be meet the electrical specification outlined in Item 6

[線性必須符合 6 項目的電性規範]

# 11. Appearance Inspection

[外觀檢查]

(1) The flaws and impurities are allowed outside viewing area except for those affecting electrical functions.

[(1) 只要不影響電器功能性，可視區外之外觀瑕疵是可以被允許的]

(2) The inspection was performed with one 17W fluorescent lamp lighting from back or side. The panel was placed 30cm away from eyes. (Figure 11-1).

[(2) 檢測始用之燈光為一盞 17W 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(Figure11-1)]

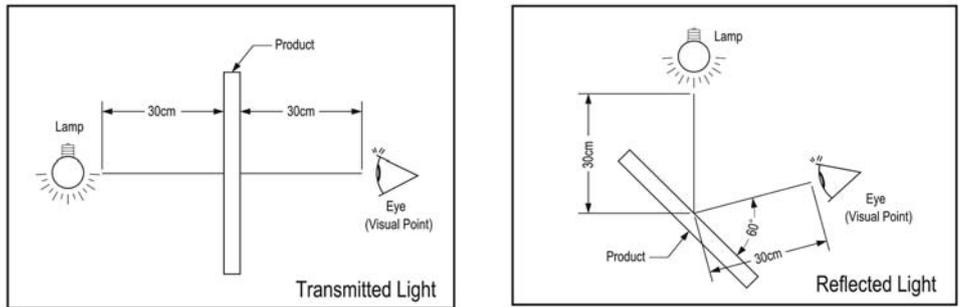


Figure 11-1

## (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]		$X \leq 3.0\text{mm}$ $Y \leq 3.0\text{mm}$ $Z \leq T$
Progressive Flaw [裂縫瑕疵]		Not allowed [不允許]

Note: T=Glass thickness

(4) Please refer to Appendix I : Appearance Specification.

[(4) 外觀規格請詳見(附註 1)]

## 12. 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.

[請將固定觸控屏用的支撐體(support)設計於可視區(Viewable area)之外。為避免不小心碰到觸控屏而產生動作，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) The edge of touch panel is conductive. Don't touch it with metal after mounting.

[觸控屏面板四周有可能會導電，安裝時後請勿與其他金屬物質接觸]

- (5) Please take notice of the grounding of power while mounting the touch screen, otherwise it may have unstable situation

[電容式觸控螢幕的組裝必須注意電源的接地，不然可能會有不穩定的情況發生]

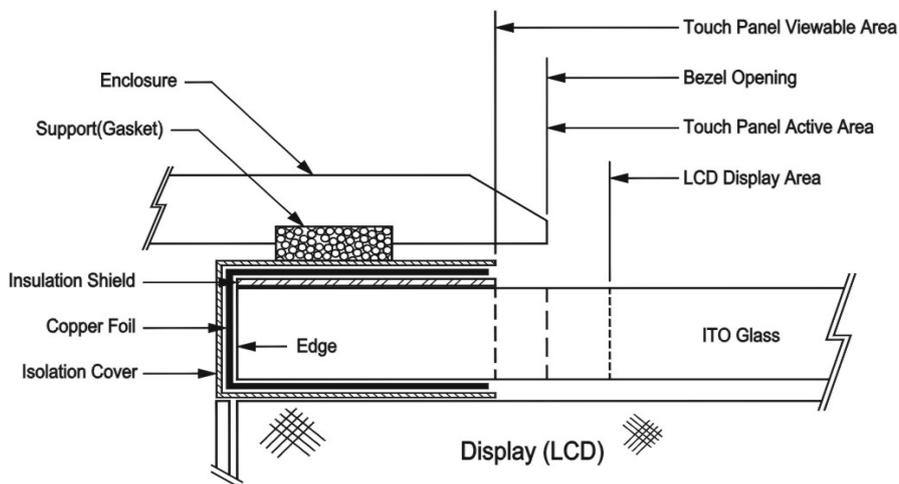


Figure 12-1

### 13. Guaranty

[保固]

HIGGSTEC comes with a 2-year guaranty on all HIGGSTEC products. HIGGSTEC guaranty provide for repair and replacement without any charge during this period.

HIGGSTEC 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 3 點所述外，萬達光電所生產製造的產品保固期限為 2 年，若判定為萬達光電之責任，則產品更換。萬達光電保留判定責任歸屬之權益]

Notice: HIGGSTEC is not responsible for following situation:

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.

[在客戶收到萬達光電之產品後,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 HIGGSTEC products from clients without prior notice.

[沒有知會萬達光電共同討論，而自行變更、維修、拆卸產品所造成的傷害及破損]

### 14. Appendices

[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



## 15. Caution

[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面板]
Unpacking [拆裝]	(1) Check for the correct vertical direction of the package before unpacking. [注意檢查包裝箱之垂直方向，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、髒污或不小心被玻璃邊緣割傷]  (2) Do not touch the viewing area of the panel. [手不能接觸可視區]  (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，易造成結合度及信賴性問題]
Cleaning [清潔]	(1) Clean and soft clothes with neutral detergent and with isopropyl alcohol may be used for cleaning. [使用乾淨且柔軟的布，沾中性清潔劑或酒精進行清潔]  (2) Do not use any chemical solvent, acidic or alkali solution. [不能使用化學溶劑或酸鹼液進行清潔]
Installing and Assembling [組合與裝配]	(1) Excessive force or strain to the panel or the tail is prohibited. [注意避免加壓或拉扯面板及 tail]  (2) Provide a clearance of at least 0.3mm between panel and display module. [最少保留 0.3mm 的空間於面板及顯示器之間]  (3) The panel is designed with air groove. Insulation and cushioning pads should be designed around the edges of the panel to prevent water and dust. [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]
Operating [操作]	(1) Use a finger. Sharp edged or hard articles are prohibited. [應用手指，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]
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) HIGGSTEC has the right to change the materials and specification. [萬達光電保有變更規格及材料的權利]

# Appearance Specification

【Appendix I】

Unit: mm Page:1/1

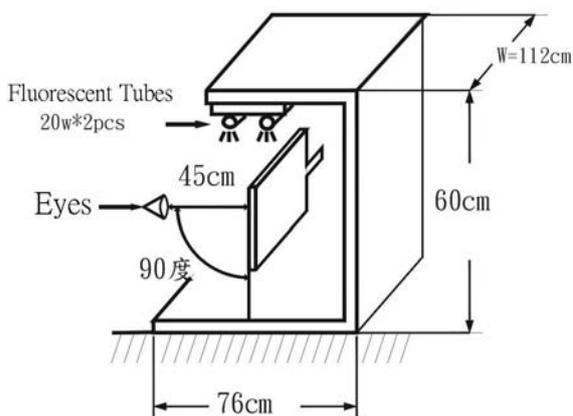
Item [項目]	Specification [規格]
Particle [顆粒異物]	(1) $D \leq 1.00$ total $\leq 5 \rightarrow$ OK
Transparent Spots [透明點狀異紋]	(1) $D \leq 1.70$ total $\leq 5 \rightarrow$ OK
Linear Object [線狀異物]	(1) $W \leq 0.25$ $L \leq 6.00$ total $\leq 5 \rightarrow$ OK
Scratch [刮傷]	(1) $W \leq 0.25$ $L \leq 25.00$ total $\leq 5 \rightarrow$ OK
Coating Spots [特殊鍍膜不良]	(1) $W \leq 1.00$ $L \leq 3.00$ total $\leq 5 \rightarrow$ OK

< Remark > [備註欄]

1. D=Diameter=直徑
2. W=Width=寬度
3. L=Length=長度
4.  $D \leq 0.13\text{mm}$  可忽略不計
5. 單片內不良總數  $\leq 5$

檢驗環境設定：

1. 檢驗治具



2. 眼睛檢驗方向

