MasTouch
展觸光電科技股份有限公司
MasTouch Optoelectronics Technologies Co., Ltd.

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TEL：886-3-460-5261 FAX：886-3-460-5262

Projected Capacitive Touch Panel Product Specification

對象客戶 Customer	
產品簡述 Product Description	19 INCH PROJECTED CAPACITIVE TOUCH PANEL
規格書適用級別 Application Level	☐ Preliminary Reference Only. ☐ Sample Used Only. ■ Mass-Production Used.
申請日期 Apply Date	2011-04-15
規格書版次別 Spec. Version	1.0
產品型號 Part Number	MT9D190C55106

客戶確認

Approved By Customer

客戶料號 Customer Part No.	
審核人員 Checked By	
核准人員 Approved By	

核准窗口 Approved By	審核窗口 Checked By	制定窗口 Prepared By
David Mi	David Tseng	Louis Huang

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修 正 履 歷

REVISION HISTORY

項次 Item	版次 Version	修正日期 Date	摘要敘述 Description	頁數 Page
1	1.0	2011-04-15	1. Initial Release.	17

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1. 一般說明 GENERAL DESCRIPTION

1.1 產品摘要 OVERVIEW

這是一款採用 USB 介面並支援 WIN7 作業系統已達到可以兩指觸控作業的投射式電容觸控面板。

It is a Projected Capacitive Touch Panel with USB interface to support and compatible with WIN7 O/S system for multi-touch application.

1.2 產品特徵 FEATURES

項次 ITMES	規格 SPECIFICATIONS
面板尺寸 Panel Size	19 inch
產品結構 Structures	Glass/Glass (ITO glass with Chemical enhanced)
總厚度值 Total Thickness	2.4 ± 0.15 mm (Cover_1.1 mm & Sensor_1.1 mm)
作業條件 Operation Conditions	-10℃ ~ +60℃ at Min 20% to Max 90% RH
儲存條件 Storage Conditions	-15℃ ~ +65℃ at Min 10% to Max 90% RH
靜電防護等級 ElectroStatic Discharge (Non-Operation)	Contact：±4KV, 3times/1point, 1time/1sec, Total 3points. Air：±8KV, 3times/1point, 1time/1sec, Total 3points.

備註 1：為確保觸控模組可有效發揮其功能，請務必於作業時將控制器作有效的接地動作。

Note 1：In order to make a touch panel operate normally, please make sure that the host device is grounded.

備註 2：作業環境設定值須小於 1 大氣壓壓力。

Note 2：All environmental characteristics listed as above all should be less than1 atmosphere.

備註 3：觸控面板必須藉由雙面膠帶或其他具有黏性之材料將其與 TFT-LCD 模組作組裝貼合作業，並將觸控面板的控制器反折固定於 TFT-LCD 模組的下鐵框或其他系統機構件上並加以接地；當執行抗靜電防護測試時，允收標準為當沒有外在靜電衝擊時，觸控面板不可有功能性與外觀性的失效或損傷；但是當有靜電衝擊時，若觸控面板有跳動等非規則性之功能性變化時，這種現象是被允許與接受的。

Note 3：The touch panel must be assembled with LCD panel by VHB or other materials, the control board also be fixed on LCM bezel or other mechanical parts of the system and then be grounded; In ESD test, the function and appearance should be available when electrostatic charge. It is acceptable that the display flicker when electrostatic discharge.

備註 4：假設觸控模組沒有被有效的執行接地動作時，觸控面板可能會有功能性受損或不穩定等現象發生。

Note 4：The touch panel may be damaged functionally or unstable if the panel does not be grounded through your system to earth.

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1.3 通用規格 GENERAL SPECIFICATIONS

項次 ITMES	規格 SPECIFICATIONS	備註 NOTE
輸入方式 Input Method	Finger or Cap. Stylus	
精確度 Accuracy	Within 2.5mm each target & 10% Jitter limit on moving	Based on W3C N7 definition (ppi: pixel per inch)
解析度 Resolution	25ppi (Min.)	
玻璃穿透率 Transparency	90 ± 2%	By BYK-Gardner at 550nm.
玻璃霧度值 Haze	3% (Maximum)	

備註 1：上表中所列之光學特性數值的量測是採用檢測儀器(BYK-Gardner)在波長 550nm 的條件測得。

Note 1：The optical characteristics listed as above are measured by BYK-Gardner instrument at 550nm wavelength.

1.4 觸控面板規格 TOUCH PANEL SPECIFICATION

項次 ITMES	規格 SPECIFICATIONS
Cover Lens 外觀尺寸 Cover Lens O.D.	421.00 mm * 346.00 mm ± 0.30 mm
Sensor Glass 外觀尺寸 Sensor Glass O.D.	402.32 mm * 330.06 mm ± 0.30 mm
Cover Lens 可視區 C/L Visual Area	377.32 mm * 302.06 mm ± 0.30 mm
FPC/COF 厚度值 FPC/COF Thickness	0.3 mm ± 0.05 mm
軟板長度值 Tail Length	X axis ➔ 250.0 mm ± 1.0 mm * 80.9 mm ± 0.2 mm (Max. dimensions) Y axis ➔ 280.0 mm ± 1.0 mm * 80.9 mm ± 0.2 mm (Max. dimensions)

備註 1：觸控面板的玻璃四周與兩側均執行 R 角與 C 角的加工，相關加工規格請參閱圖面尺寸規格的標示與定義。

Note 1：All of the corners and edges of the glass that have chamfer process by CNC machines and all dimensions and tolerances will be defined on the drawing of the touch panel.

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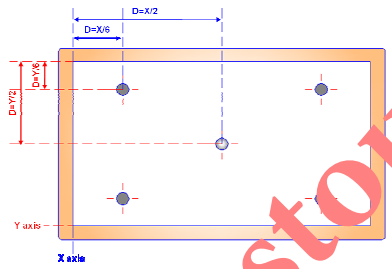
2. 可靠度測試報告與規範 RELIABILITY TEST REPORT AND SPECIFICATIONS

2.1 機械特性 MECHANICAL CHARACTERISTICS

項次 ITEMS		測試條件 CONDITIONS	允收條件 PASS CRITERIA
面板部分 Panel	落球測試 Ball Drop Test	227g ± 2g 40cm	No damage at each cycle drop 5points and each point drop 1time only.
	硬度測試 Hardness	Pencil：7H Pressure：1N/45°	Hardness ≧ 7H
	翹曲度 Warpage	By Cage	Warpage ≦ Length * 0.1% Unit：mm
FPC/COF 可靠度測試 FPC/COF Reliability	剝離測試方向 Direction of peeling off	90°	Strength ≧ 500gf/cm
	拉力測試速度 Speed of Pulling out	50mm/min	

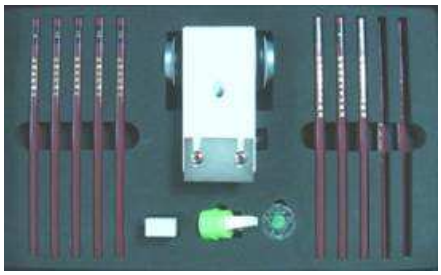
備註 1：鋼球落下測試示意圖如下附圖所示。

Note 1：The ball drop test illustration is showed as follow.



備註 2：玻璃硬度測試依 JIS K-5400 系列標準規範手法；相關測試示意圖如下附圖所示。

Note 2：The hardness test follows up the JIS K-5400 serials industry standard and the test illustration is showed as below.



備註 3：FPC/COF 的軟板剝離強度測試依循 ASTM D903/ASTM D3807 系列標準規範手法；測試示意圖如下附圖所示。

Note 3：The FPC/COF peeling strength test illustration is showed as below, and the test method follows the standard of ASTM D903 / ASTM D3807.

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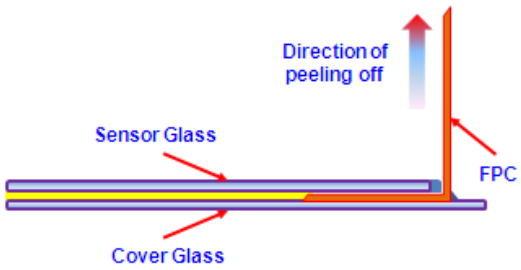
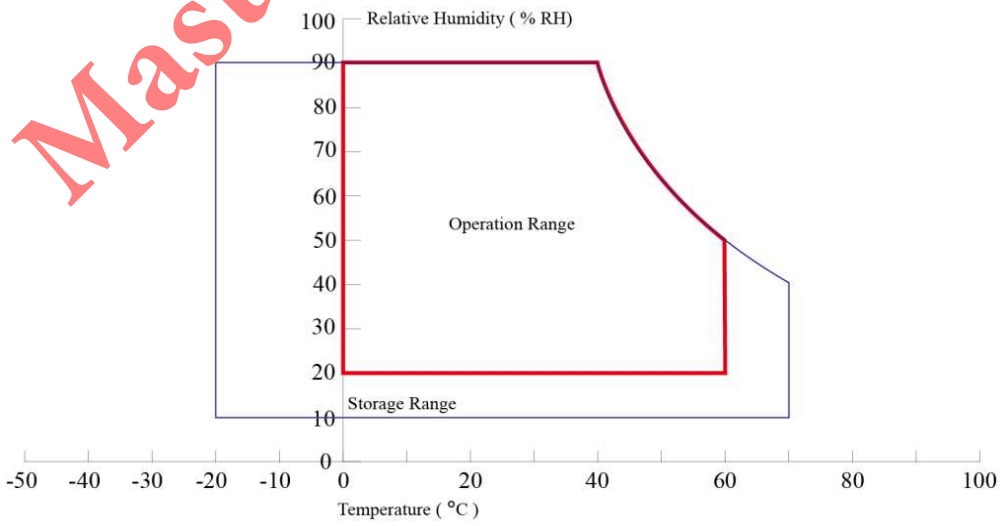


2.2 可靠度規格 RELIABILITY SPECIFICATIONS

環境測試條件列表如下所示。

Environment test conditions are listed as follows.

項次 ITEMS	規格 SPECIFICATIONS
溫濕循環測試 Temperature Cycling	The product should be allowed to stand at 0℃ to +60℃ with 90% RH for 240hrs un-load condition and allowed to be normalized for 4hrs.
冷熱衝擊測試 Thermal Shock	The product should be allowed to stand at -40℃ to +85℃ for 30min/cycle with totally 50cycle and allowed to be normalized for 4hrs.
高溫儲存測試 High Temp. Storage	The sample should be allowed to stand at +85℃ for 240hrs un-load condition and allowed to be normalized for 4hrs.
低溫儲存測試 Low Temp. Storage	The sample should be allowed to stand at -40℃ for 240hrs un-load condition and allowed to be normalized for 4hrs.



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3. 外觀檢驗 APPEARANCE AND COSMETIC INSPECTION

3.1 檢驗環境參數 INSPECTION ENVIRONMENT CONDITIONS

I. 觸控面板的目視檢查作業必須在至少無塵室等級為 10,000 的環境下執行。

The touch panel has to be inspected at a clean room of at least class 10,000.

II. 觸控面板的目視檢查環境設定值必須被控制溫度在 15℃到 25℃以及濕度在 25%到 75%之間。

The visual inspection environment should be set at 15 to 25 degree C and 25% to 75% humidity.

III. 觸控面板的外觀目視檢查之環境照度須設定在 800~1000Lux 的日光燈光源下。

The illumination of the appearance inspection should be 800~1000Lux with fluorescent reflection light source.

IV. 觸控面板的目視檢查須在人眼裸視基礎下，並且觸控面板到人眼的目檢距離須至少超過 35 公分。

The visual inspection should be kept the distance 35cm or more between the touch panel and the raw eyes of inspectors.

V. 觸控面板的裸眼目視檢查角度須以 45 度正負 10 度的角度作業。

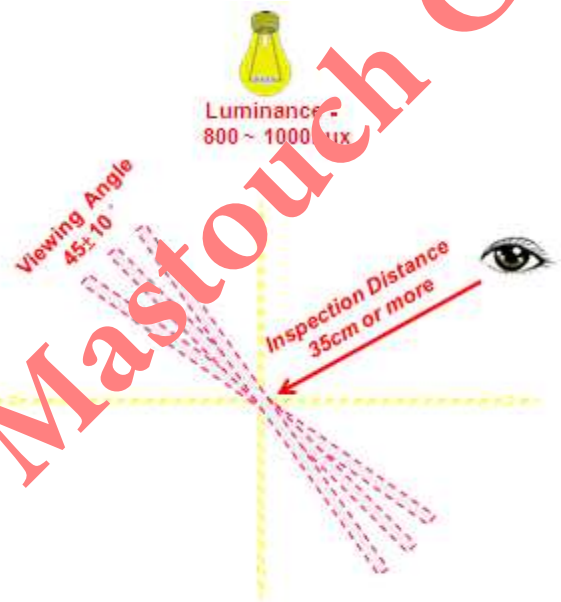
The viewing angle should be 45±10 degree with an inspector's raw eyes when visual inspection.

VI. 外觀目視檢查時間建議為 25 秒正負 5 秒鐘的時間.

Visual inspection time is 25±5 second per one's that we are recommanded.

VII. 目視檢查示意圖如下附圖所示。

The visual inspection illustration is showed as below.



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3.2 目視檢驗規範 COSMETIC SPECIFICATIONS

不良的分類共分為 2 種，分別是主要不良項目與次要不良項目；定義分別如下。

Defects are classified two types, one is major and the other is minor according to the defect specification, and they were definition as follows.

檢驗方法：依據 ANSI/ASQC C1.4-2003 一般檢驗規範等級二的抽樣標準比例。

Test method：According to ANSI/ASQC C1.4-2003. General Inspection Level II take a single time.

I. 主要不良項目 Major defect

任何可能導致有功能性失效或降低堪用率的不良原因；例如電性失效或外觀受損等。

Any defect may result in functional fail or reduce the usability such as electrical fail, deformation etc.

II. 次要不良項目 Minor defect

不會導致堪用率降低的不良原因；例如線性不良或點狀不良等表現。

It doesn't reduce the usability such as line defect, dot defect etc.

III. 不良項目的抽樣判定等級標準依循如下:

The defects classify of AQL as following:

Major defect：AQL=0.65. Minor defect：AQL=2.5. Total defects：AQL=2.5.

※ 外 觀 不 良 定 義 與 規 範 ※

※ COSMETIC DEFECT DEFENITION AND SPECIFICTIONS ※

外觀不良定義 COSMETIC DEFECT DEFENITION		規格 SPECIFICATIONS	允收條件 PASS CRIRERA
Linear Defects (刮傷/擦痕/纖維/毛絮/雜質) (Scratch/Scrub/Fiber/Particle)	刮傷/擦痕 Scratch/Scrub	W≦0.05mm	Ignore
		0.05mm＜W≦0.1mm、L≦15mm	N≦5、Distance≧5mm
		0.1mm＜W≦0.2mm、L≦15mm	N≦5、Distance≧5mm
		W＞0.2mm	Not Allowed
	纖維/毛絮/雜質 Fiber/Particle	W≦0.1mm	Ignore
		0.1mm＜W≦0.3mm、L≦10mm	N≦4、Distance≧5mm
		W＞0.3mm	Not Allowed

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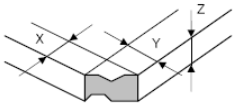
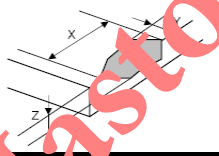
外觀不良定義 COSMETIC DEFECT DEFENITION		規格 SPECIFICATIONS	允收條件 PASS CRIRERA
點狀不良 Dot Defects (氣泡/雜質/白班 黑斑/凹洞/刻痕 槽口) (Bubble/Fiber/Particle /Spot/Dent/Nick)	可視區 Active Area	D≦0.1mm	Ignore、Pitch≧5mm
		0.1mm＜D≦0.3mm	N≦5、Pitch≧5mm
		0.3mm＜D≦0.4mm	N≦5、Pitch≧5mm
		D＞0.4mm	Not Allowed
	印刷區域 Printing Area	D≦0.2mm	Ignore
		0.2mm＜D≦0.4mm	N≦4、Pitch≧5mm
		0.4mm＜D≦0.5mm	N≦4、Pitch≧5mm
		D＞0.5mm	Not Allowed
印刷不良 Printing Defects	針孔 Pine Hole	D≦0.3mm	Ignore
	漏光 Light Leakage	Peak to Peak≦0.2mm	Border Area Acceptable
		Peak to Peak≦0.1mm	Logo/icon Area Acceptable
破損不良 Breakage Defects	Corner Defect 	X≦3.0mm & Y≦3.0mm If Z≦T/2mm	Be Allowed on Cover Glass
		X≦3.0mm & Y≦3.0mm If Z≦T/2mm	Be Allowed on Sensor Glass
	Edge Defect 	X≦3.0mm & Y≦3.0mm If Z≦T/2mm	N≦3/Edges、Distance≧20mm Be Allowed on Cover Glass
		X≦3.0mm & Y≦3.0mm If Z≦T/2mm	N≦3/Edges、Distance≧10mm Be Allowed on Sensor Glass
外觀造型 ID Appearance		All dimensions by procedures via mechanical must be followed by customer's drawing definition	All dimensions and tolerances must be followed by customer's drawing definition.
印刷色差 Color Shift		Be followed by customer's AI drawing and "PANTONE" no. definition all of the marks	Be followed by "PANTONE" no. or checked by golden sample if have argued.
IR 孔印刷 IR Hole Printing			Be followed by customer spec or checked by golden sample

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備註 1：”L”表示長度，”W”表示寬度，”N”表示數量，”Pitch”代表兩個不良標地物之間的距離。

Note 1： “L” means Length, “W” for Width, “N” for Quantity and “Pitch” for the distance between both defects.

備註 2：直徑 D 表示為 X 軸與 Y 軸的長度總和除以 2 的結果；點狀不良的外型示意圖如下附圖所示。

Note 2： D=(X+Y)/2, and dot sharp diagram showed as below.

備註 3：”L”表示長度，”D”表示寬度；線狀不良的外型示意圖如下附圖所示。

Note 3： “L” means Length, “D” for Width, and linear sharp illustration is showed as below.

備註 4：若有一個既不像是點狀不良亦或是也不像線狀不良的灰塵或髒汙時，請依下面方式作判斷解析：

Note 4： If the shape of particles is not dot or line,

<A> 取一片透明且有刻度的尺規，並將尺規放置在該不良標地物上方，並優先採用點狀不良的檢驗手法判斷。

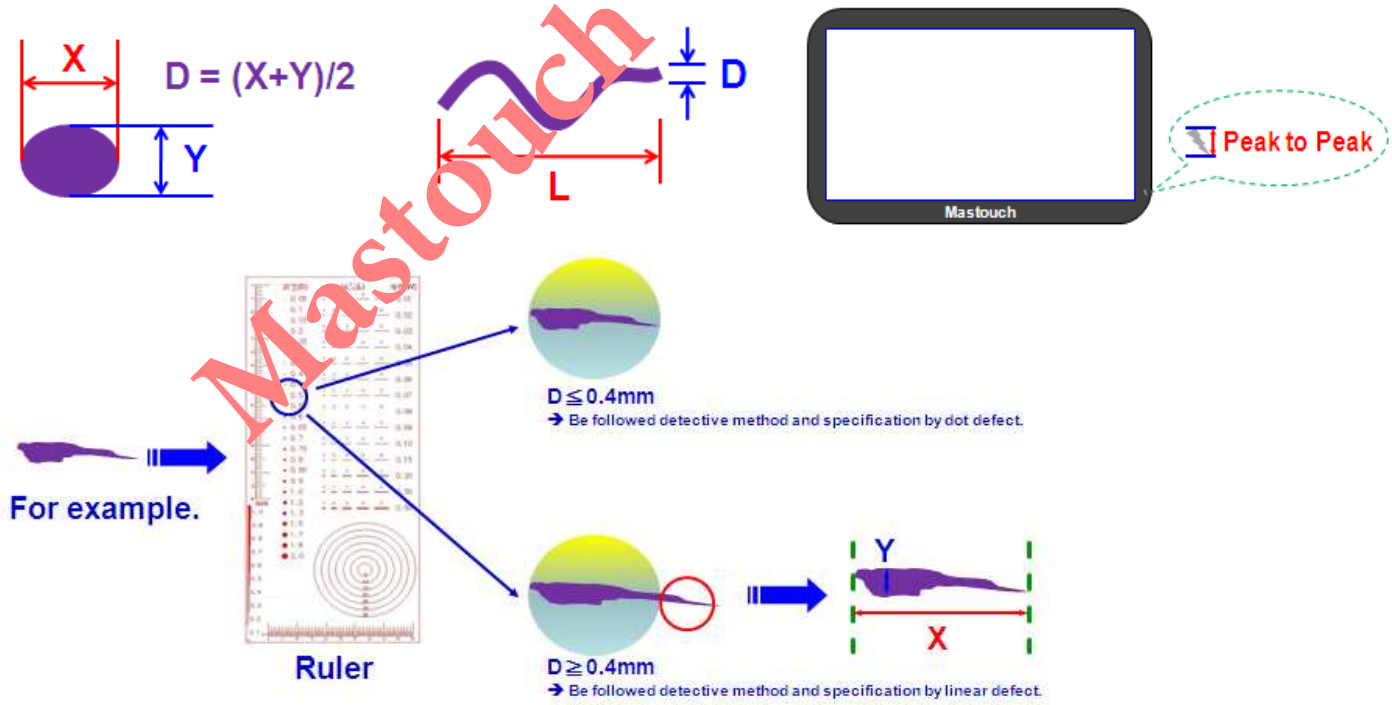
<A> Put Ruler on the particle and inspect it by the inspection method of the particle.

<B> 假設不良標的物的尺寸大小超過此份規格書中現有點狀不良的規範時，則請改以此規格書中的線狀不良的規範作判斷。

<B> Use the inspection method of the linear particle to inspect the particle, if the size of the particle exceeds the range of the dot particle.

備註 5：不良標的物的尺寸的檢測請採用尺規作為量測的依據標準。

Note 5： The size of the defects should be measured by Ruler.



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4. 預防措施 PRECAUTIONS

項目 ITEM	說明 EXPLANATION
儲存 Storage	1. 觸控面板必須被儲存放置在一如規格書所建議的有從事環境溫度與濕度控制的區域內。 A touch panel should be stored under the environment temperature and humidity controlled as suggested. 2. 不可將觸控面板直接曝曬在陽光下。 Do not store a touch panel in direct sunlight.
取放 Handling	1. 觸控面板要自包裝箱中取出時，請務必特別注意該包裝箱外的紅色箭頭符號是否朝上。 Unpack the carton with the printed red arrow pointing up. 2. 無論任何時候都必須以拿取觸控面板本體為優先。 Hold a touch panel body instead of the FPC/COF all the time. 3. 當 Sensor Glass 的保護膜被移除而準備從事組裝作業時，務必要避免 Sensor Glass 受到外在因素的汙染。 Avoid that the surface of the sensor glass is polluted after removing the protect film when assembly.
清潔 Cleaning	1. 若要清潔觸控面板，請盡量避免使用諸如強酸或強鹼之類的任何化學溶劑。 Prevent using any kind of the chemical solvent, acidic or alkali solution when cleaning. 2. 若要清潔觸控面板，我們建議使用中性的清潔劑或異丙醇和酒精等等。 Neutral detergent or isopropyl alcohol was suggested if the panel is cleaned.
組裝 Assembly	1. 觸控面板在組裝時，請不要過度施力導致玻璃表面發生諸如變形或扭曲等形變現象的發生。 Do not apply rough force such as bending or twisting to the touch panel during assembly. 2. 對於 FPC 或 COF 的作業時，過度的拉力或繃緊作業是必須被禁止與避免的。 Excessive force or strain to the panel or FPC/COF is prohibited. 3. 請在觸控面板與 TFT-LCD 面板的中間間隙處選用適合的雙面膠帶或是具有黏性的泡棉加以阻絕外在水份與汙染源的干擾。 Past VHB tape or sponge with adhesive on the gap between a touch panel and a LCD module to segregate water and dust contamination.
操作 Operation	1. 觸控面板必須在穩定的環境狀況下被使用，環境狀態的突然急遽變化有可能會導致觸控面板的機能性失效的發生。 The panel must be operated in a steady environment, the abrupt change of the environment conditions may cause the malfunction of the panel.

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項目 ITEM	說明 EXPLANATION
操作 Operation	2. 為確保觸控面板的功能得以穩定有效的發揮呈現，請務必確認系統的接地迴路與電源供應器的接地迴路被正確的銜接與執行(與大地作共地的接地迴路是最佳的設計)。 In order to guarantee all functions of a touch panel stable, please make sure that system is grounded or a power adapter is connected correctly to ground loop (Connection to earth ground is suggested). 3. 觸控面板在操作的過程中，請勿任意插拔觸控面板與系統端的界面連接器。 Do not pull the interface connector in or out while the touch panel is operating. 4. 觸控面板在操作的過程中，請務必禁止與避免使用任何尖銳或硬質物體去敲擊碰觸。 Any sharp edged or hard objects are interdiction to hitting when touch panel operation.
其他 Others	1. 本產品滿足 ROHS 的規範要求。 The product meets the specification requirement of the ROHS standard criteria. 2. 在正常的操作條件基礎下，展觸光電提供 12 個月的觸控面板保固服務。 Mastouch will provide 12 months product guarantee under normal operation conditions. 3. 假設觸控面板將被使用於諸如相對高溫，高濕度，高海拔或是長時間操作等較為嚴峻的操作條件時，中心的建議請事先諮詢展觸光電的產品應用工程人員並取得相關意見；否則關於產品的可靠度與功能是無法被有效的確保。 If the panel will be used in extreme conditions such as high temperature, high humidity, high altitude or long operation time etc.. It is strongly recommended to contact MasTouch for field application engineer's advice. Otherwise, Its reliability and function may not be guaranteed. 4. 在觸控模組的本體下，請禁止與避免有任何高電壓或靜電衝擊等外在因素被加諸在模組上。 Avoid high voltage and/or static charge being applied to touch module. 5. 保持觸控面板的潔淨度並避免任何具有黏性的物質粘附在觸控面板的表面上。 Keep the panel surface clean. Prevent any kind of adhesive applied on the surface. 6. 本產品僅支援兩點觸控，超過兩指同時觸控時將無法動作。 It is support two fingers touch only and it would be malfunction when over two fingers touch together. 7. 當操作觸控面板時，應避免有金屬或導電物質放置在面板上。 To avoid the metal or any kind of the electric conduction materials on the touch screen when you are handling. 8. 觸控面板是藉由人體接觸操作，若有任何非導體被應用於該面板時，可能會出現觸控面板的機能失效。 Any kind of the non-electric conductor may cause the malfunction when that applied due to touch screen is sensing by human body.

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5. 標籤釋義 PRODUCT LABEL EXPLANATION

5.1 條碼定義 BARCODE DEFINITION

5.1.1 觸控面板料號編碼原則 Coding rule for touch screen part number used

Serial ID: AA-B-C-DDD-E-F-G-H-II

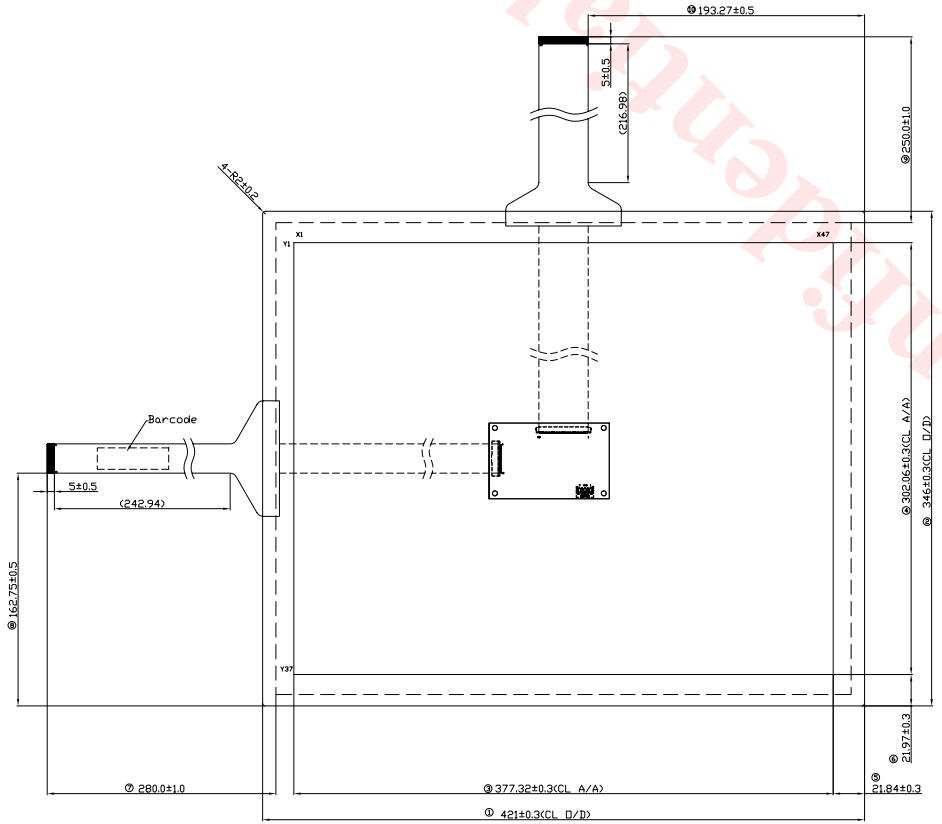
CODE	MEANING	DESCRIPTION
AA	MT	用以表示 MasTouch 的半完成品及成品階的料號定義表頭
B	Number	用以表示 Finished Goods 的主分類項次的定義碼
C	Letter	用以表示 Finished Goods 的次分類定義碼
DDD	Number	用以表示成品尺寸定義碼
E	Number & Letter	用以表示成品的線路結構產品屬性分類定義碼
F	Number	用以表示 Cover Lens 的玻璃厚度定義碼
G	Number	用以表示 Touch Sensor 的玻璃厚度定義碼
H	Number & Letter	用以表示 Cover Lens 的顏色與有無鑽孔製程的分類定義碼
II	Number	用以表示成品的編碼序號定義碼

5.1.2 生產序號編碼原則 Coding rule for manufacturing serial used

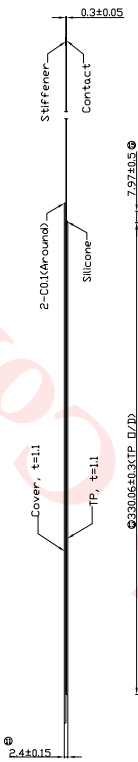
Serial ID: A-B-CC-DD- EE-FFFFF

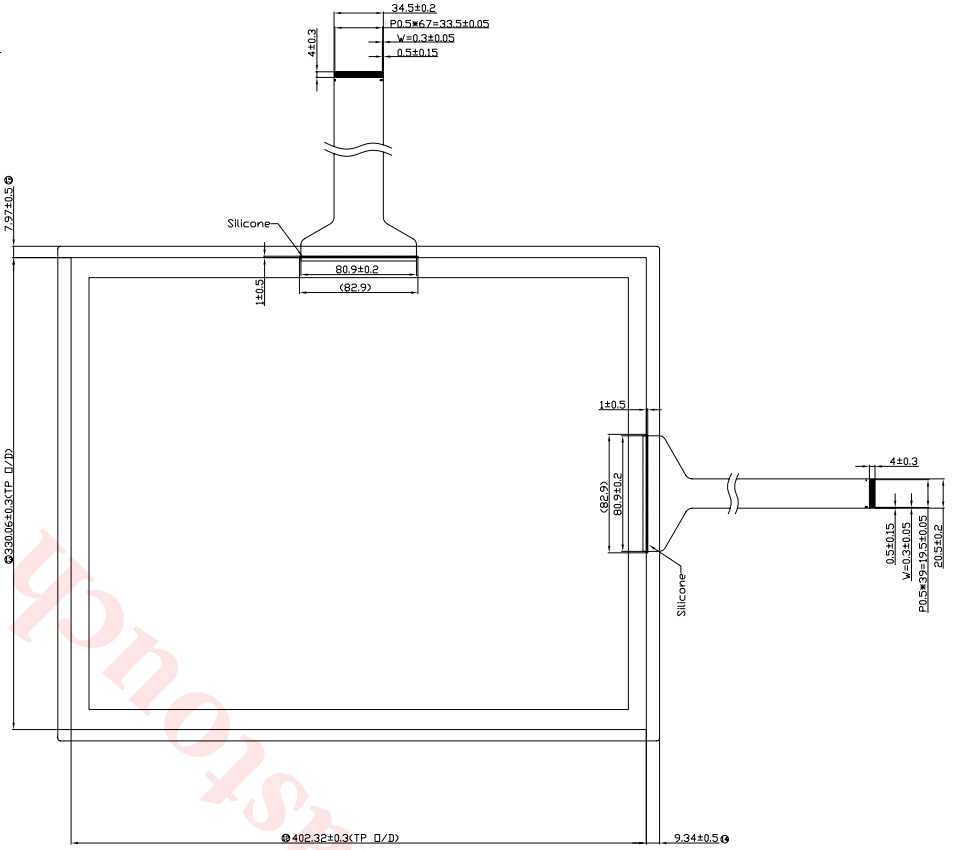
CODE	MEANING	DESCRIPTION
A	Letter	用以表示產品狀態之定義碼
B	Letter	用以表示生產工廠別之定義碼
CC	Number	用以表示生產西元年份後二碼之定義碼
DD	Number	用以表示生產週別之定義碼
EE	Number	用以表示成品工單號碼後二碼之定義碼
FFFFF	Number	用以表示成品的編碼序號定義碼

Date	Rev.	Description
10'-12-09	1.0	First Release
10'-12-16	2.0	Modify Silicon Marked
11'-01-28	2.1	Modify drawing
11'-04-14	3.0	Modify PART NO. (9PM-190233BNC06)



Front





Rear

For 68 pin Connector	
Pin Number	Pin Name
1~6	NC
7~19	NC
20	Dummy X
21~67	X47~X1
68	Dummy X

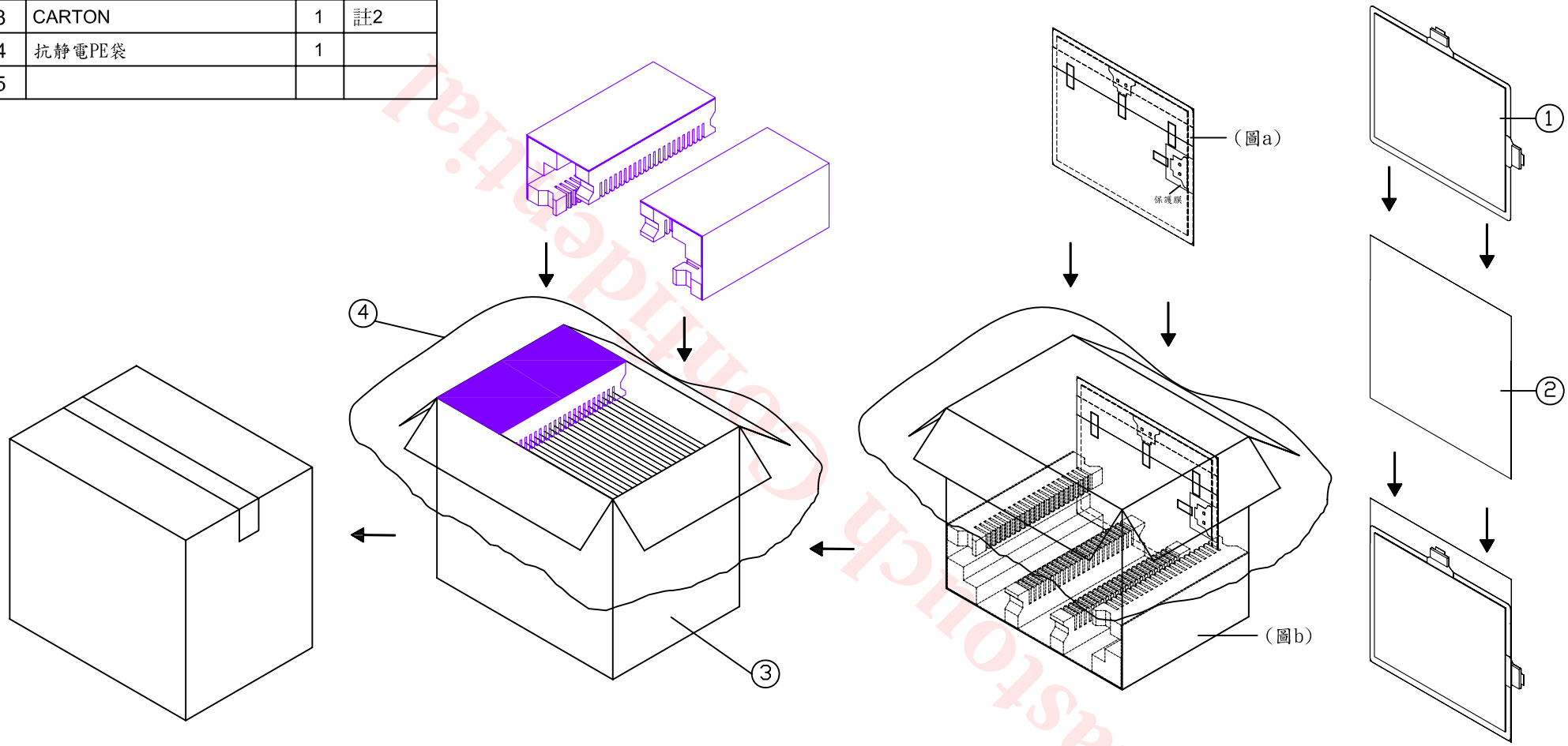
For 40 pin Connector	
Pin Number	Pin Name
1	NC
2	Dummy Y
3~39	Y1~Y37
40	Dummy Y

For USB Connector	
Pin Number	Pin Name
1	EGND
2	VCC
3	GND
4	D+
5	D-

CUSTOMER NAME	MasTouch™	MasTouch Optoelectronics Technologies Co.,LTD.	
	PROJECTION		PART NAME: Touch Module
CUSTOMER'S APPROVAL	DRWN: Chin Lin	DATE: 11'-04-14	PART NO.: MT9D190C55106
	CHK: Kawa Huang	DATE: 11'-04-14	UNIT: mm / SCALE: 1/1 / Rev.: 3.0
	APVD: Jeffrey Chou	DATE: 11'-04-14	

ITEN	DESCRIPTION	QTY	REMARK
1	PANEL	20	
2	抗靜電PE袋	20	
3	CARTON	1	註2
4	抗靜電PE袋	1	
5			

Date	Rev.	Description
10'-11-25	1.0	First Release



註1:將單片如(圖a)方式包裝,後如(圖b)
示意置放

CUSTOMER NAME	MasTouch™ MasTouch Optoelectronics Technologies Co.,LTD.		
	PROJECTION	PART NAME	包裝示意圖
CUSTOMER'S APPROVAL	DRWN / DATE	PART NO.	
	CHK / DATE	UNIT: mm / SCALE 1/1	Rev. 1.0
	APVD / DATE		

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8. 成品照片 PRODUCT PICTUES

TP 產品正面照片(Front view of touch panel)

TP 產品背面照片(Bottom view of touch panel)

Barcode Label 正面照片(Front view of barcode label)