

投射式电容屏规格书

Projected Capacitive Touch Panel Product Specification

客 户 Customer	
品 名 Product Description	21.5 inch
产品型号 Part Number	P-CAP 21.5 GG 94CH
申请日期 Apple Date	

(请在对本检查规格审核确认签字后传回)

(Please return one copy of this document with your signature for approval.)

制 定 Prepared By	审 核 Check By	批 准 Approved By	客户承认 Customer Approved

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General Specification

Power Supply(V)			USB DC:5±5%
Average Current(mA)			<100
touch controller IC			ILI2510
Operating temperature range			-20℃ ~ +60℃
Interpolation Resolution			9600*9600
Support Points			10
Interface Type			USB
Driving Voltage(V)			24
Response Time (ms)			7~10
Touch Accuracy(mm)			Center ± 1.5, Edge ±2.5
Original Point			Left Up
Sensor type			DITO
Sensor pattern			Diamond
Trace Routing			Tx double Routing
Channel Number		Tx Number	34
		Rx Number	60
Sensor Pitch Size(mm)		Tx Pitch	8
		Rx Pitch	8
Resistance (Ω/□)		Tx Side	100±20
		Rx Side	100±20
Object For Touch	finger		supported
	Passive Stylus Pen		Probe tip diameter: 8 mm
	Active Stylus Pen		Not supported
	Operate with gloves	thin latex gloves	supported
		work gloves	Requires high-sensitivity firmware
		thermal gloves	Not supported
Water Resistance			Basic water resistance
UV barrier(365nm)			≥99.5% (Use UV- Cut OCA)
Transmission (%)	Viewing Area	550nm	≥85%
	Transparent Area	550nm	≥90%
Surface Hardness			≥7H
Ball Drop Test	200g steel ball, 35 cm height, drop onto center of active area, one impact		No crack on cover glass, touch function normal after test.

Material

Item	Material	Spec. (mm)
Cover Glass	Silicon dioxide Sodium oxide Calcium oxide	518.8*315.4*3*R8
Silkscreen ink	Waterborne acrylic resin Bismuth oxide Silicon dioxide	
View Area		476.8*268.3
SCA	Ethylene- vinyl acetate copolymer Trimethylolpropane trimethacrylate	493.5*286.64*0.2
Active layer	Indium Tin Oxide	481*272
Sensor Glass	Silicon dioxide Sodium oxide Calcium oxide	493.5*286.64*0.7
FPC	Polyimide Copper Foil	90.7*91.89*0.3
Controller Board	Glass- fiber fabric Thermosetting epoxy resin Copper Foil Solder- resist resin	94*30*5.0

EMC Performance

Test Item	Specification	Performance
Radiated Emission (EMI)	CISPR 22, 30 MHz ~ 1 GHz	Under - 4 dB
Electro- Static Discharge (ESD)	IEC 61000- 4- 2, Level 4 Air discharge: ±15 kV Contact discharge: ±8 kV	Class B
Radiated Susceptibility (RS)	IEC 61000- 4- 3, Level 4; 30 V/m	Class A
Electrical Fast Transient (EFT)	IEC 61000- 4- 4, Level 4 AC power line: 4 kV; I/O port: 2 kV	Class A
Conducted Susceptibility (CS)	IEC 61000- 4- 6, Level 3; 10 Vrms	Class A

Note: 1、 AC power line test is not applicable for DC powered touch controller unit

2、 Criteria: No permanent hardware damage. Temporary touch malfunction is acceptable during test, function shall recover automatically after test.

Support OS List

OS		In- box driver	ILITEK driver
Windows	Windows 11	Yes	Multi-Touch
	Windows 10	Yes	Multi-Touch
	Windows 8/8.1	Yes	Multi-Touch
	Windows 8.1 Embedded	Yes	Multi-Touch
	Windows 7	Yes	Multi-Touch
	Windows XP	No	Mouse mode
	Windows XP Embedded	No	Mouse mode
	Windows 2000	No	Mouse mode
	Windows Vista	No	Mouse mode
	Windows CE 7.0	No	Mouse mode
	Windows CE 6.0	No	Mouse mode
	Windows CE 5.0	No	Mouse mode
Linux、 Android	Android 4.2.x Upwards (ARM, 32-bit)	Yes	Multi-Touch
	Kernel 3.0.8 Upwards (x86, 64-bit) (Need X-Window)	Yes	Multi-Touch
	Kernel 3.0.8 Upwards (x86, 32-bit) (Need X-Window)	Yes	Multi-Touch
	Kernel 2.6.32 Upwards (x86, 64-bit) (Need X-Window)	No	Ilitek_auv3_7 Multi-Touch
	Kernel 2.6.32 Upwards (x86, 32-bit) (Need X-Window)	No	Ilitek_auv3_7 Multi-Touch
	Kernel 2.6.31 Downwards (ARM/MIPS, 32/64 bit)	No	Mouse mode
	Kernel 2.6.31 Downwards (x86, 32/64 bit)	No	Mouse mode
Mac	Mac OS 9.X	No	Mouse mode
	Mac OS X(Intel CPU)	No	Mouse mode

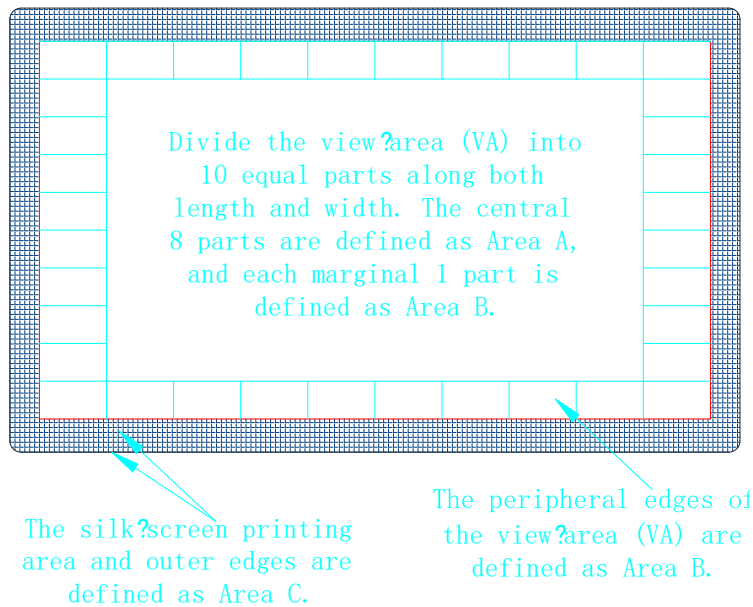
Reliability Test

No	Test Items	Conditions	
1	High temperature storage test	Ta=60°C, 240 hrs	
2	Low temperature storage test	Ta=-20°C, 240 hrs	
3	High temperature & high humidity operation test	Ta=60°C, 80%RH,240 hrs	
4	High temperature & high humidity storage test	Ta=60°C, 90%RH,240 hrs	
5	High temperature operation test	Ta=60°C, 240 hrs	
6	Low temperature operation test	Ta=-20°C, 240 hrs	
7	Thermal shock	Ta=-20°C↔60°C(0.5 hr),100 cycle	
8	Altitude operation test	0-16400 feet (5000m)	
9	Altitude storage test	0-40000 feet (12192m)	
10	Vibration test (non-operating)	Frequency	Random,10~300Hz,30min/Axis
		Gravity\AMP	1.5Grms
		Period	X, Y, Z 30min
11	Panel push test	9points, push tip diameter 25mm, ^10kgf no unrecoverable FOS damage, no crack	
12	On/off test	10sec on / 5sec off, 30000 times	
13	Electro- Static Discharge (ESD)	Air: 150pF,330 Ω , ±15kV Contact: 150pF,330 Ω , ±8kV	

Visual inspection standard**1. Inspection Environment**

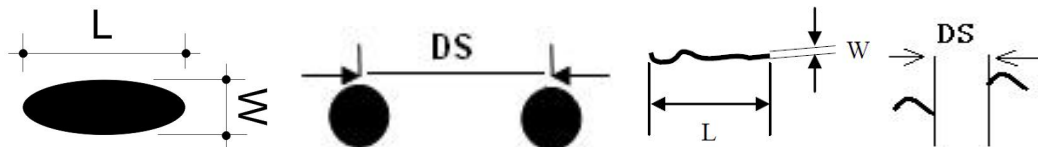
1. Fluorescent lamp illuminance: 1000±200 Lux; visual inspection distance: 50±10 cm.
2. Inspection duration: 30 seconds per piece; 20 s for front side, 10 s for back side, 6 s for four edges and four corners.
3. Inspection angle: the included angle with the normal line of the inspected surface ≤45°.
4. Inspection background: black / white background.
5. Inspection shall be performed under white- light transmission and reflection illumination.

2. Product Area Definition



3. Defect Codes

Codes	Description (Unit)	Codes	Description (Unit)
N	Quantity (pcs)	D	Diameter (mm), $D=(L+W)/2$
L	Length (mm)	H	Depth (mm)
W	Width (mm)	DS	Distance (mm)
S	Area (mm ²)	T	Thickness (mm)



4. Appearance Defect Inspection Standard

Size Specification	Inspection Items	Area	Inspection Standard	Acceptance Standard
15.6~27 inch	Point Defects (Bubbles, Foreign Materials, Black/White Dots)	A	$D \leq 0.15$	Ignore
			$0.15 < D \leq 0.3$	$N \leq 5$ & $DS \geq 20\text{mm}$
			$D > 0.3$	$N \leq 0$
		B	$D \leq 0.15$	Ignore
			$0.15 < D \leq 0.4$	$N \leq 5$ & $DS \geq 20\text{mm}$
			$D > 0.4$	$N \leq 0$
		C	$D \leq 0.3$	Ignore
			$0.3 < D \leq 0.6$	$N \leq 5$ & $DS \geq 20\text{mm}$
			$D > 0.6$	$N \leq 0$
	Linear Defects (Scratches,	A	$W \leq 0.03$	Ignore
			$0.03 < W \leq 0.08$ & $L \leq 10$	$N \leq 5$ & $DS \geq 20\text{mm}$

	Scuff Marks, Linear Foreign Materials)	B	W>0.08 or L>10	N≤0
			W≤0.05	Ignore
			0.05<W≤0.1 & L≤10	N≤5 & DS≥20mm
		C	W>0.1 or L>10	N≤0
			W≤0.06	Ignore
			0.06<W≤0.12 & L≤20	N≤5 & DS≥20mm
			W>0.12 or L>20	N≤0
32/43 inch	Point Defects (Bubbles, Foreign Materials, Black/White Dots)	A	D≤0.3	Ignore
			0.3<D≤0.4	N≤5 & DS≥20mm
			D>0.4	N≤0
		B	D≤0.3	Ignore
			0.3<D≤0.5	N≤5 & DS≥20mm
			D>0.5	N≤0
		C	D≤0.5	Ignore
			0.5<D≤1	N≤5 & DS≥20mm
			D>1	N≤0
	Linear Defects (Scratches, Scuff Marks, Linear Foreign Materials)	A	W≤0.05	Ignore
			0.05<W≤0.12 & L≤10	N≤5 & DS≥20mm
			W>0.12 or L>10	N≤0
		B	W≤0.08	Ignore
			0.08<W≤0.15 & L≤10	N≤5 & DS≥20mm
			W>0.15 or L>10	N≤0
		C	W≤0.1	Ignore
			0.1<W≤0.2 & L≤20	N≤5 & DS≥20mm
			W>0.2 or L>20	N≤0
49/50/55 inch	Point Defects (Bubbles, Foreign Materials, Black/White Dots)	A	D≤0.3	Ignore
			0.3<D≤0.5	N≤5 & DS≥20mm
			D>0.5	N≤0
		B	D≤0.3	Ignore
			0.3<D≤0.6	N≤5 & DS≥20mm
			D>0.6	N≤0
		C	D≤0.6	Ignore
			0.6<D≤1.2	N≤5 & DS≥20mm
			D>1.2	N≤0
	Linear Defects (Scratches, Scuff Marks, Linear Foreign Materials)	A	W≤0.05	Ignore
			0.05<W≤0.12 & L≤15	N≤5 & DS≥20mm
			W>0.12 or L>15	N≤0
		B	W≤0.08	Ignore
			0.08<W≤0.15 & L≤20	N≤5 & DS≥20mm
		C	W>0.15 or L>20	N≤0
			W≤0.1	Ignore
			0.1<W≤0.2 & L≤30	N≤5 & DS≥20mm

			$W > 0.2$ or $L > 30$	$N \leq 0$
65 inch	Point Defects (Bubbles, Foreign Materials, Black/White Dots)	A	$D \leq 0.35$	Ignore
			$0.35 < D \leq 0.65$	$N \leq 5$ & $DS \geq 20\text{mm}$
			$D > 0.65$	$N \leq 0$
		B	$D \leq 0.35$	Ignore
			$0.35 < D \leq 0.7$	$N \leq 5$ & $DS \geq 20\text{mm}$
			$D > 0.7$	$N \leq 0$
		C	$D \leq 0.6$	Ignore
			$0.6 < D \leq 1.2$	$N \leq 5$ & $DS \geq 20\text{mm}$
			$D > 1.2$	$N \leq 0$
	Linear Defects (Scratches, Scuff Marks, Linear Foreign Materials)	A	$W \leq 0.05$	Ignore
			$0.05 < W \leq 0.12$ & $L \leq 15$	$N \leq 5$ & $DS \geq 20\text{mm}$
			$W > 0.12$ or $L > 15$	$N \leq 0$
		B	$W \leq 0.08$	Ignore
			$0.08 < W \leq 0.15$ & $L \leq 20$	$N \leq 5$ & $DS \geq 20\text{mm}$
			$W > 0.15$ or $L > 20$	$N \leq 0$
		C	$W \leq 0.1$	Ignore
			$0.1 < W \leq 0.2$ & $L \leq 30$	$N \leq 5$ & $DS \geq 20\text{mm}$
			$W > 0.2$ or $L > 30$	$N \leq 0$

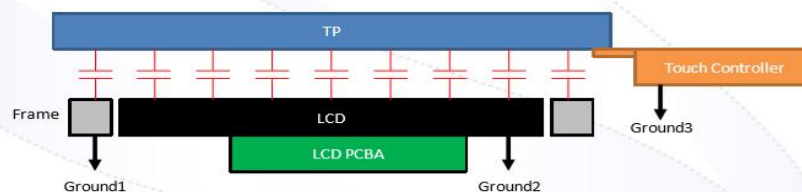
Cautions for storage

1. When storing product as spares for a long time, touch panels should be kept from direct light, moisture, and prevent water condensation.
2. Ventilate the warehouse effectively with proper ventilation system. Temperature should be between 5°C and 35°C at normal humidity($\leq 75\%$).
3. Product should be kept in storage no more than 6months. If products have been stored over 3 months, it is recommended to return to temperature of 20°C and humidity of 50% for 24hours.

Cautions for Assembly

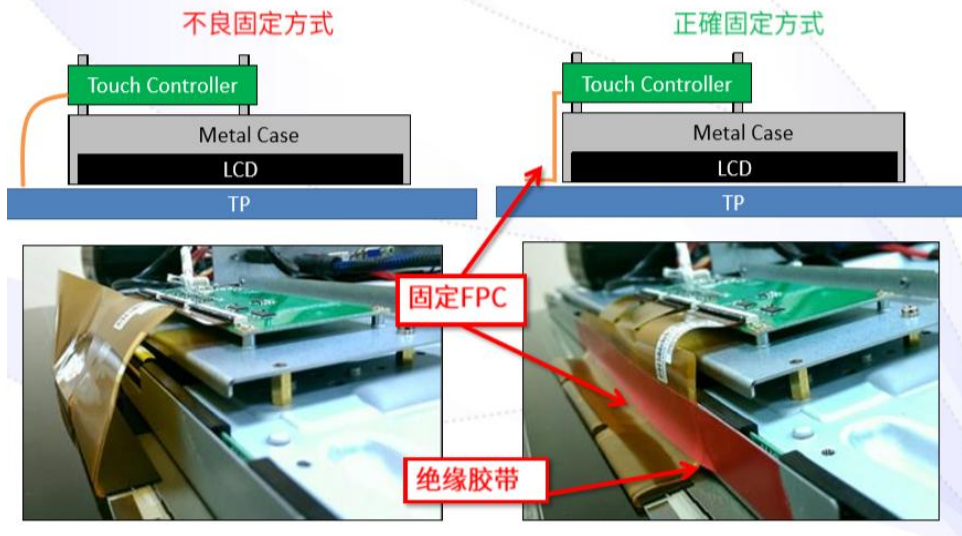
1. Grounding

• 接地



2.FPC Fixing

- FPC过长时需固定好



- the protective film of the Sensor Glass is peeled off prior to assembly, the Sensor Glass shall be kept free from external contamination.
- If the touch panel requires cleaning, propanol or alcohol is recommended. After cleaning, the Sensor Glass shall be wiped with analytical reagent (AR) grade alcohol.

Product structure drawing

