

产品承认书

MODULE NO: (模组型号) 98-31028-7246A-H(C)

CUSTOMER NO: (客户型号) HP520

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CONFIDENTIALITY LEVEL: (保密等级) 秘密 (SECRET)

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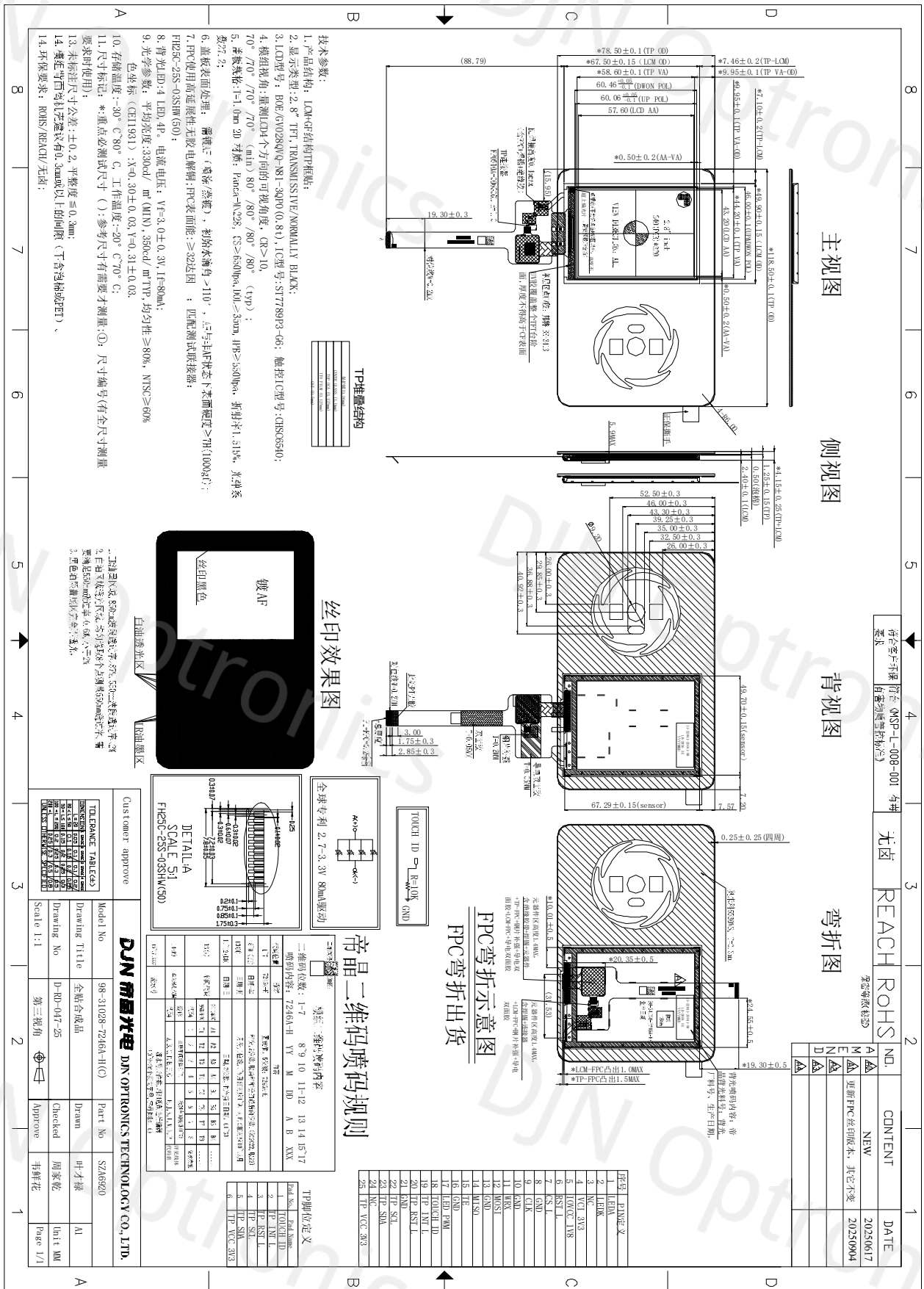
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1. GENERAL INFORMATION

基本描述

Item 项目	Contents 内容	Unit 单位
LCD Type LCD 类型	TFT-LCD /TRANSMISSVIE	-
TP Structure TP 结构	GF	-
Number of Dots 点阵	240(H)*320(V)	Pixel
Outline dimensions 外形尺寸	118.5*78.5*4.15	mm
Active area 有效区域	43.2(W)*57.6(H)	mm ²
CG Viewing area (宽×高) CG 可视区 (W×H)	44.2*58.6	mm ²
Pixel pitch 像素	0.180(H)×0.180(V)	μ m
LCD Display Frame Rate LCD 显示刷新率	60Hz	Panel 兼容 90HZ
Module size 模组尺寸	2.83	inch
Pixel Per inch 像素密度	141	PPI
Viewing direction 视角方向	ALL View	O'clock
LCD Driver IC LCD 驱动 IC	ST7789P3-G6	-
Active Stylus 主动式触控笔	NA	-
Interface type 接口类型	SPI	-
Display Operating Mode 显示工作模式	Normally Black	-
LCM Input voltage 模组输入电压	IOVCC=1.8V VCI =3.3V	V
All material of MODULE and process measure up to ROHS、HF、REACH		

2. MODULE OUTLINE DRAWING 产品结构图



3. INTERFACE DESCRIPTION

接口定义

Note: I/O definition:

I---Input/输入 O---Output/输出 I/O---输入/输出
 P---Power or GND NC---No connection/ 不连接

Pin No 接口序号	Symbol 符号	Description 描述
1	LEDA	Ground
2	LEDA	Ground
3	NC	NC
4	VCI_3V3	6.0V input power
5	IOVCC_1V8	6.0V input power
6	RST_L	NC
7	CS_L	-6.0V input power
8	GND	-6.0V input power
9	CLK	NC
10	GND	Ground
11	WRX	Ground
12	MOSI	MIPI differential data3 input (Negative)
13	GND	MIPI differential data3 input (Positive)
14	MISO	Ground
15	TE	MIPI differential data0 input (Negative)
16	GND	MIPI differential data0 input (Positive)
17	LED_PWM	Ground
18	LCM_ID	MIPI differential clock input (Negative)
19	TP_INT_L	MIPI differential clock input (Positive)
20	TP_RST_L	Ground
21	GND	MIPI differential data1 input (Negative)
22	TP_SCL	MIPI differential data1 input (Positive)
23	TP_SDA	Ground
24	NC	MIPI differential data2 input (Negative)
25	TP_VCC_3V3	MIPI differential data2 input (Positive)

4. BACKLIGHT CHARACTERISTICS 背光电气特性

Item 项目	Symbol 符号	Min 最小值	Typ 中间值	Max 最大值	Unit 单位	Condition 条件
LED voltage	VLED	2.7	-	3.3	V	Single Serial
LED current	ILED		单串电 流*串数		mA	Single Serial
Number of LED LED 灯数	-	4PCS=80mA			Piece (颗)	-
Connection mode 连接类型	S/P	并联			-	-

(Ta= 25°C, GND=0V)

5. ABSOLUTE MAXIMUM RATINGS 极限参数(IC)

Parameter 参数	Symbol 符号	Min 最小值	Max 最大值	Unit 单位
Supply Voltage	VDD	-0.3	+4.6	V
Supply Voltage (Logic)	VDDI	-0.3	+4.0	V
Logic Input Voltage Range	VIN	-0.3	+4.0	V
Logic Output Voltage Range	VO	-0.3	+0.4	°C
Operating Temperature Range	TOPR	-30	+85	°C
Storage Temperature Range	TSTG	-40	+125	°C

6. ELECTRICAL CHARACTERISTICS 模块电气特性

Parameter 参数	Symbol 符号	Min 最小值	Typ 中间值	Max 最大值	Unit 单位	Note 备注
System Voltage	VDD	2.4	2.75	3.3	V	
Interface Operation Voltage	VDDI	1.65	1.8	3.3	V	
Logic-High Input Voltage	V _{IH}	0.7VDDI	-	VDDI	V	
Logic-Low Input Voltage	V _{IL}	VSS	-	0.3VDDI	V	
Logic-High Output Voltage	V _{OH}	0.8VDDI	-	VDDI	V	
Logic-Low Output Voltage	V _{OL}	VSS	-	0.2VDDI	V	
工作状态	帧频	60Hz				

7. OPTICAL CHAYACTERISTICS 光学特性

Item	Symbol	Condition	Min	Typ	Max	Unit	Remark	Note
Response time	Ton+Toff	$\Theta=0^\circ$ $\varnothing=0^\circ$ $T_a=25^\circ\text{C}$	-	30	35	ms	FIG1	1
	GTG		-	-	-			
Luminance (With CG)	WHITE	$\Theta=0^\circ$ $\varnothing=0^\circ$ $T_a=25^\circ\text{C}$	330	350	-	nits	FIG2	2
Contrast ratio	Cr	$\Theta=0^\circ$ $\varnothing=0^\circ$ $T_a=25^\circ\text{C}$	1000	1200	-	-	FIG2	2
Color gamut CIE1931	S(%)	CIE1931	65	70	-	%	FIG2-	2
CIE (X,Y) Chromaticity CIE1931	White(X)	$\Theta=0^\circ$ $\varnothing=0^\circ$ $T_a=25^\circ\text{C}$	0.270	0.300	0.33	-	FIG2	6
	White(Y)		0.280	0.310	0.34	-		
	Red(X)		0.600	0.630	0.660	-		
	Red(Y)		0.335	0.365	0.395	-		
	Green(X)		0.310	0.340	0.370	-		
	Green(Y)		0.590	0.620	0.650	-		
	Blue(X)		0.115	0.145	0.175	-		
	Blue(Y)		0.055	0.085	0.115	-		
Luminance uniformity	WHITE	P25	80	85	-	%	FIG2	3
Viewing angle	Θ_x+	$CR \geq 10$ $T_a=25^\circ\text{C}$	75	80	-	deg	FIG3	4
	Θ_x-		75	80	-			
	Θ_y+		75	80	-			
	Θ_y-		75	80	-			

Note1.Response time is the time required for the display to transition from White to black(Rise Time,Tr)and from black to white(Decay Time,Tf).For additional information see FIG1...

备注 1. 响应时间是 Tr(上升时间) 与 Tf(下降时间) 的和, Tr 指显示黑色画面转为显示白色画面需要时间, Tf 指显示白色画面转为显示黑色画面需要时间, 详见 FIG1.。

Note2.contrast Ratio(CR) is defined mathematically by the following formula ,For more information see FIG2.

Contrast Ratio(CR)=Average Surface Luminance with all white pixels/ Average Surface Luminance with all black pixels

备注 2. 对比度是由以下公式计算所得。详见 FIG2.

对比度=显示白色画面时平均表面亮度 (P1, P2, ……)/显示黑色画面时平均表面亮度 (P1, P2, ……)

Note3.The uniformity in surface luminance(WHITE) is determined by measuring luminance at eath test position,and then dividing the maximum luminance of all white pixels by minimum luminance of all white pixels,For more information seeFIG2.

WHITE=Minimum Surface Luminance with all white pixels(P1,P2,……)/Maximum Surface Luminance with all white pixels(P1,P2,……)

备注 3. 均匀度是在显示白色画面时, 测试 P1 到 P25 的亮度, 然后再用 25 个点亮度的最小值除以最大值。详见 FIG2.。

均匀度=白色画面下表面亮度最小值 (P1, P2, ……)/白色画面下表面亮度最大值 (P1, P2, ……)

Note4. Viewing angle is the angel at which contrast ratio is greater than a specific value. For TET module, the specific value of contrast ratio is 10. For monochrome and color stn module, the specific value of contrast ratio is 2. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see FIG3

备注 4. 视角指对比度大于等于一个特定值时的可视范围, 对 TFT 屏, 对比对特定值为 10, 对黑白屏 CSTN 屏, 对比度特定值为 2, 视角由横轴 (X 轴), 竖轴 (Y 轴) 同 Z 轴 (垂直与 LCD 表面) 之间的夹角来定义, 详见 FIG3.。

Note5. Surface luminance is the LCD surface luminance with all white pixels, For more information see FIG2.

LV=Average Surface Luminance with all white pixels(P1,P2,.....)

备注 5. 表面亮度是在显示白色画面时, 测试的亮度值, 详见 FIG2.

L_v =平均的表面亮度 (P1, P2,)

Note6. CIE(X,Y)chromaticity is the Center point value. For more information see FIG2.

备注 6. 选择中心点, 分别测试 X, Y 值, 详见 FIG2.。

Note7. For Viewing angle and response time testing, the testing date is base on Autronic-Melchers' s ConScope. Series instruments. For contrast ratio, Surface Luminance, Luminance uniformity and CIE, the testing date is base on CA310 photo detector.

备注 7. 视角和响应时间, 测试数据基于 Autronic Melchers' s Conoscope 系列, 而对比度, 表面亮度, 均匀度 CIE 坐标, 测试数据基于 CA310 photo detector。

Note8. For TN type TFT transmissive module, Gray scale reverse occurs in the direction of panel viewing angle

备注 8. TN 型 TFT 全透产品, 在视角方向会发生灰度反转。

FIG1. The definition of Response time

响应时间定义

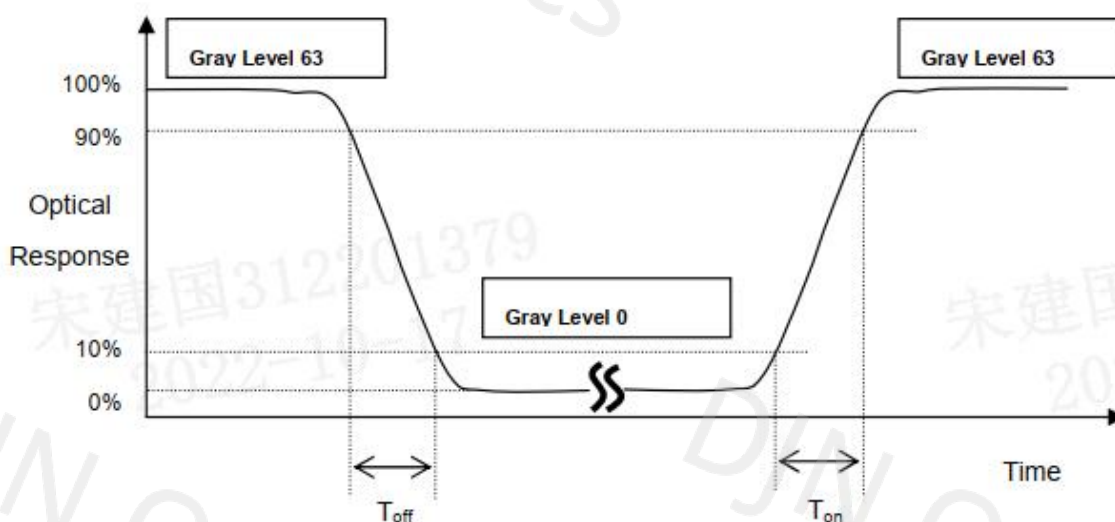
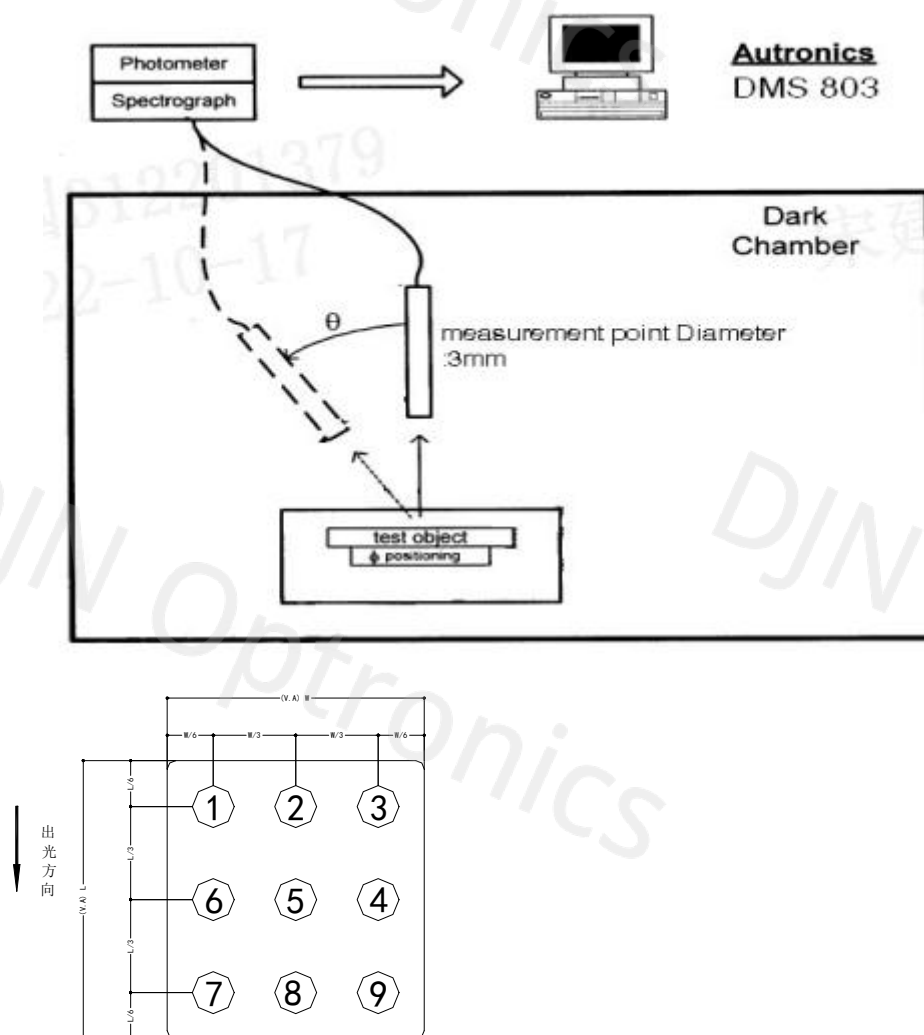


FIG1. Measuring method for Contrast ratio, surface luminance, Luminance uniformity, CIE(X,Y)chromaticity.

对比度, 表面亮度, 均匀度, CIE 坐标测试方法

Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.



测试点要求

测试距离:350mm

Measure distance:350mm

测量角度:1°, 9个点

Angle:1°, 9 Points

亮度值是用BM-7色度仪测试.

The Measurement instrument is:BM-7

测试点位置: 6等分测试

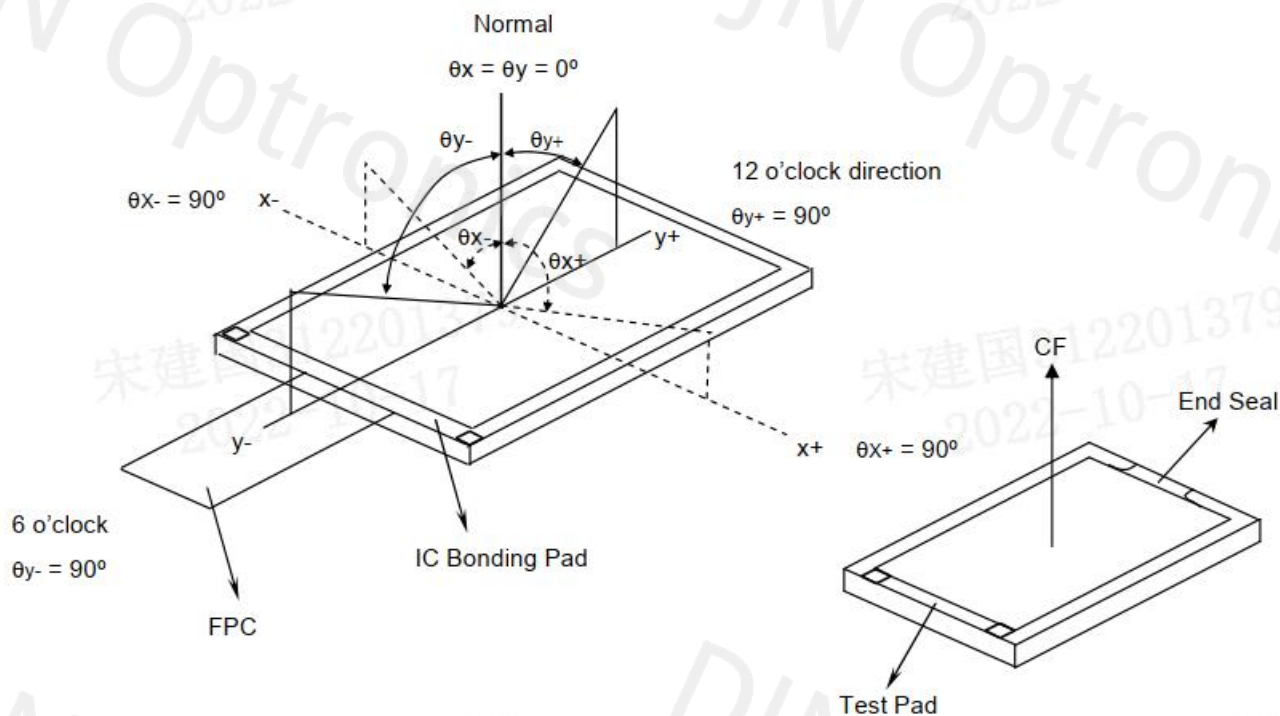
均匀性=最小/最大亮度值*100%

Uniformity=min/max*100%

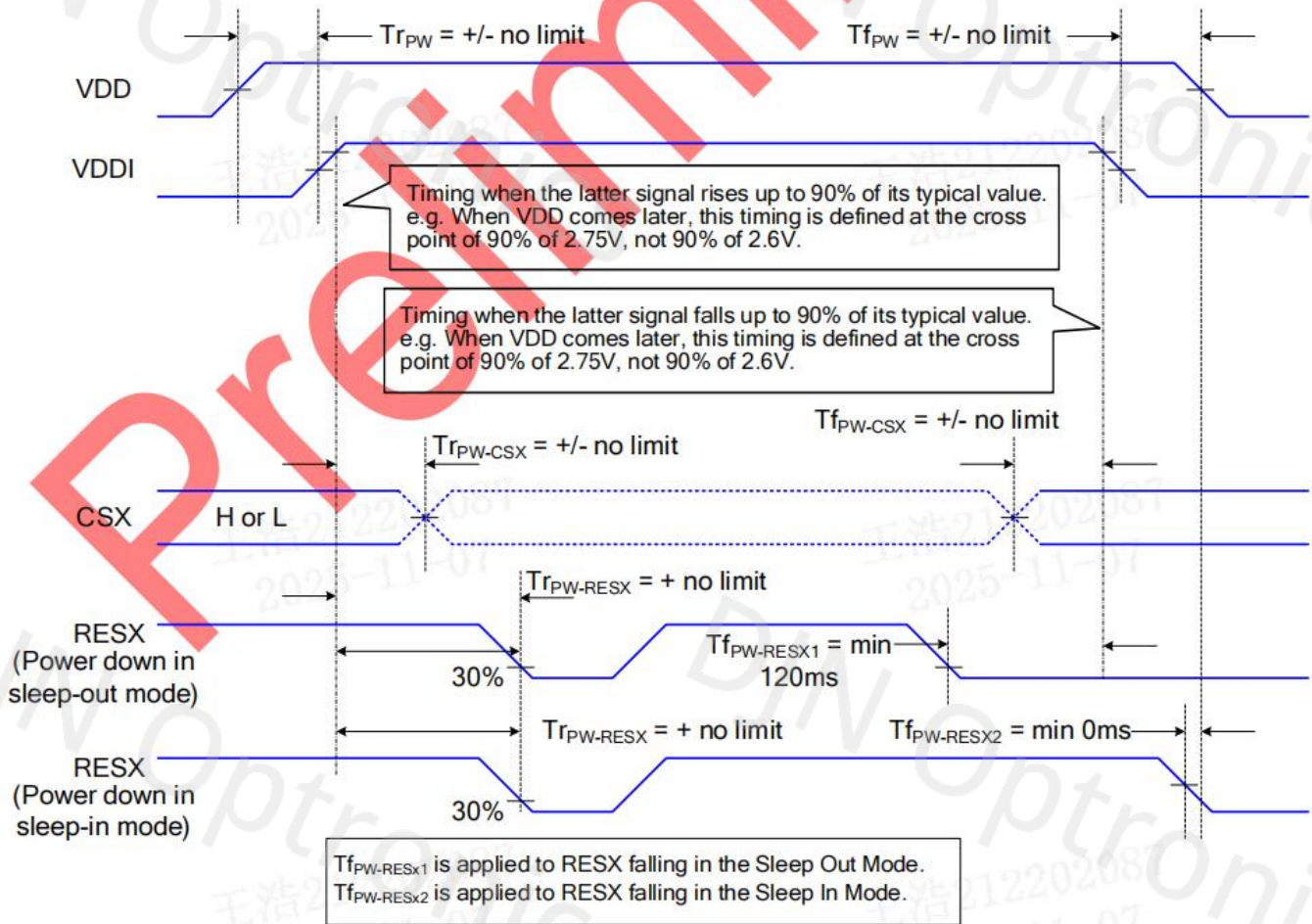
要求: 均匀性≥80%

FIG 2 9 点均一性测试点位

FIG3 The definition of viewing angle
视角定义



8. Power On/Off Sequence (电源开/关时序)



8.15.1 Uncontrolled Power Off

The uncontrolled power-off means a situation which removed a battery without the controlled power off sequence. It will neither damage the module or the host interface.

If uncontrolled power-off happened, the display will go blank and there will not any visible effect on the display (blank display) and remains blank until "Power On Sequence" powers it up.

NOTE: This section is only for reference, Details please refer to the IC specification.
备注: 本节仅供参考, 详细信息请参阅 IC 规格书

9. INSPECTION SPECIFICATIONS

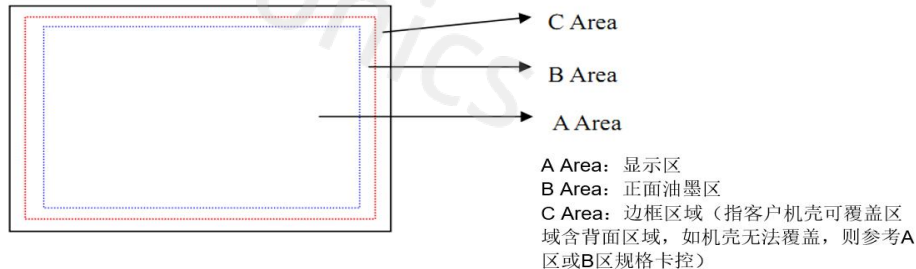
品质检验标准

9.1 缺陷区分及定义

9.1.1 重缺：显示或者功能缺陷，严重偏离规格，客户无法正常使用。

严重外观缺陷，严重偏离规格，客户无法正常使用。

9.1.2 轻缺：轻微偏离规格，不影响产品功能，但对产品外观有影响



9.2 检验方法

9.2.1 在 20—40W 日光灯的照明条件下，样品离检查者眼睛约 30cm 处进行检查。检验方向以垂直线前后左右 45°，外观检验单一面的平均时间不超过 30s

9.2.2 外观检验者以目视检查或以菲林对比卡比对。

9.2.3 电性测试使用电测测架及电源线。

9.3 检验环境

电测工位:照度为 150~250Lux, 外观工位: 照度为 1000±200Lux

9.4 检验工具

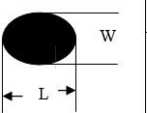
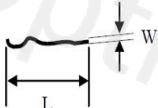
电测测架、电源线菲林对比卡、游标卡尺、放大镜、实体显微镜(必要时)等等。

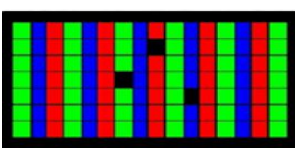
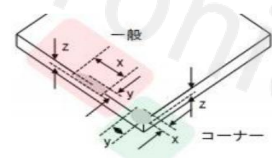
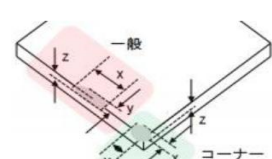
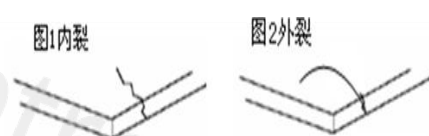
9.5 抽样判定标准

依据 GB/T2828.1-2012 抽样计划抽样计划，取一般检验水平 II；具体抽检方式参照《成品检验管理程序》、《抽样管理规范》

缺陷区分	AQL 允收水准
严重缺陷	0 收 1 退
重缺	0.4
轻缺	0.65

9.6 检验项目及判定标准

不良项目	判定标准		区域			缺点类别
			A 区	B 区	C 区	
点 状 不 良（白 点黑点， 粉尘，气 泡、凹凸 点等）	 D= (L+W) /2 单位: mm	D≤0. 10mm	N&DS 不计			轻缺
		0. 1mm<D≤0. 2mm	DS≥10mm N≤2	DS≥10mm N≤2	不计	
		D>0. 2mm	不允许	不允许	不计	
线状不良 （异物、 毛丝、异 色线型污		W≤0. 03mm	N&DS 不计			轻缺
		0. 03<W≤0. 05mm, L≤3mm,	N≤1	N≤1	不计	

点、划伤等)	硬划伤不允许	0.05<W≤0.1mm, L≤2mm	N≤1	N≤1	不计	
		W>0.1mm	不允许	不允许	不计	
备注:						
1、D=(L+W)/2 单位: mm, N: 表示缺陷个数, DS: 表示缺陷距离。						
2、A 区: 显示区。B 区: 油墨区。C 区: 边框区域含产品背面;						
3. 点状: 点与点之间的间距≥10mm,						
亮点		单一点	DS>2cm, N≤2 个			轻缺
		连续亮点: 两个及两个以上连续亮点的情况	0			
暗点		单一点	DS>2cm, N≤3 个			
		连续暗点: 两个及两个以上连续暗点的情况	0			
1. 在黑色画面或非白色 画面下任何一个 R,G,B(sub-pixel)常亮;						
2. 亮点的缺陷面积为大于或等于 1/2 子像素;						
3. 微亮点、碎点: 点缺陷面积小于 1/2 子像素, ND5%不可见则 OK;						
4. 亮点及暗点总数不可超过 4 个;						
Mura	斑点、不均		ND5%遮盖 备注: 使用 ND 遮盖时环境照度为 150~250LUX			轻缺
漏光不良	外观漏光、显示区漏光		1. 外观漏光白光不允许 (BL 与模组分离)。 2. 显示漏光 ND5%不可见 OK;			轻缺
LCD 角破损 (端子&非端子部)		长度 X (mm)	宽度 Y (mm)	厚度 T	允许数	轻缺
		X≤3.0	Y≤1.0	Z≤T	忽略不计	
		超出以上不允许 *T 表示单片玻璃的厚度.				
LCD 边缘破损		长度 X (mm)	宽度 Y (mm)	厚度 T	允许数	轻缺
		X≤5.0	Y≤1.5	Z≤T	忽略不计	
		超出以上不允许 *T 表示单片玻璃的厚度.				
表面脏污	1. CG 表面可擦拭脏污运行, 不可擦拭脏污, 按点线规格判定。 2. 正面保护膜上表面不可擦拭脏污不管控					轻缺
LCD 裂纹			1: 内裂发生不可 2: 外裂修正后以玻璃破损规格判定, 但不能有可清除的玻璃屑附着			重缺

FPC 类不良		1、FPC 铜箔蚀刻质量： (1) 导体部分的外观 导体部分没有断线、裂纹、没有剥落、漂浮。 铜箔表面不得有明显变色、锈蚀。 导体间脏污、异物（覆膜区）：表面可擦拭脏污/异物 OK，不可擦拭不影响功能 OK，导电异物参考 (3) 导体之间导体异物规格。 (a) 导体的剩余宽度 (W') 应小于导体间宽度 (B') 的 1/3。 (b) 导体的剩余长度 (L') 不得超过导体间宽度 (B')。 图2 导体間の導体の残り (2) 导体部分的缺损 导体的缺失部分（悬架，铰链等）的宽度 (W) 和长度 (L) 如图 1 所示。 但是，(W)、(L) 分别用与导体长度方向成直角和平行方向的长度来表示。 (a) 导体的缺损宽度 (W) 应小于或等于导体宽度 (B) 的 1/3； (b) 导体缺失长度 (L) 不得超过导体宽 (B) 图1导体缺失 (3) 导体之间的导体残余导体的剩余部分（突起，剩余铜）的宽度 (W') 和长度 (L') 如图 2 所示。 (a) 导体的剩余宽度 (W') 应小于导体间宽度 (B') 的 1/3。 (b) 导体的剩余长度 (L') 不得超过导体间宽度 (B')。 图2 导体間の導体の残り 2、FPC 周边质量： FPC 线身死折/ 开裂/破损/毛边/分层/露底/ 金手指氧化/压伤/翘起剥离/露底材/深度刮伤/胶迹：不允许。	轻缺
TP&CG 不良	白点、刮刺伤、异物	依点线规格判定	轻缺
IR 孔不良	黑、白点	对黑底不可见为 OK，可见按点、线状标准判定。	轻缺
保护膜不良	偏位/脏污/气泡	1. 保护膜偏位：不超出 CG 边缘 1mm，为 OK 2. 正面保护膜上表面不可擦拭脏污不管控、保护膜气泡不管控。	轻缺

BL 不良	BL 不亮	NG	重缺
	BL 死灯	NG	重缺
	表面划伤/脏污	不影响显示 OK, 残胶异物不允许	轻缺
	显示异物/划伤	按点状或线状缺陷判定	轻缺
LCD 不良	LCD 漏液	NG	重缺
功能不良	黑屏/白屏	NG	重缺
	乱显	NG	重缺
	大电流	NG	重缺
	横缺	NG	重缺
	竖缺	NG	重缺
	字线缺	NG	重缺
包装不良	包装数量不符	NG	重缺
	包装不符	NG	轻缺

Note: 品质标准如有异议, 请以品质窗口信息为准。

10. RELIABILITY TEST CONDITIONS

可靠性测试条件(参照客户标准)

No	实验项目	测试条件	判定标准	结果
1	低温储存	1) 温度: $(-30 \pm 2)^{\circ}\text{C}$ 2) 储存时间: 72H 3) 样品状态: Power off	完成后, 样机常温下恢复 2H, 再检查外观、结构、功能是否异常。	OK
2	高温储存	1) 温度: $(80 \pm 2)^{\circ}\text{C}$ 2) 储存时间: 72H 3) 样品状态: Power off	完成后, 样机常温下恢复 2H, 再检查外观、结构、功能是否异常。	OK
3	低温运行	1) 温度: $(-20 \pm 2)^{\circ}\text{C}$ 2) 储存时间: 48H 3) 样品状态: Power on	1. 测试过程中关注产品功能是否正常。 2. 完成后, 样机常温下恢复 2H, 再检查外观、结构、功能是否异常。	OK
4	高温运行	1) 温度: $(60 \pm 2)^{\circ}\text{C}$ 2) 储存时间: 48H 3) 样品状态: Power on	1. 测试过程中关注产品功能是否正常。 2. 完成后, 样机常温下恢复 2H, 再检查外观、结构、功能是否异常。	OK
5	高温高湿运行	1) 温度: $(40 \pm 3)^{\circ}\text{C}$ 2) 湿度: $(95 \pm 3)\%$ 3) 储存时间: 48H 4) 样品状态: Power on	1. 测试过程中关注产品功能是否正常。 2. 完成后, 样机常温下恢复 2H, 再检查外观、结构、功能是否异常。	OK
6	温度冲击	1) 温度: $(-30 \pm 2)^{\circ}\text{C} \sim (80 \pm 2)^{\circ}\text{C}$ 2) 最高最低温度维持时间: 30min 3) 循环次数: 50 个循环 4) 高低温转换时间: $< 5\text{min}$ 5) 样品状态: Power on	1. 测试过程中关注产品功能是否正常。 2. 完成后, 样机常温下恢复 2H, 再检查外观、结构、功能是否异常。	OK
7	ESD 测试	接触放电 $\pm 2\text{KV}$, 空气放电 $\pm 4\text{KV}$ 1、放电位置: 每块屏测试四角, 四边的中间及中心点共 9 个点。 2、ESD 的阻容套件: 空气放电: $1.5\text{K}\Omega / 100\text{pF}$, 接触放电: $330\Omega / 150\text{pF}$ 。	试验后功能测试 pass, 屏幕外观、显示正常。	OK



98-31028-7246A
-H(C) 试产例行可靠

Note: The rest of the test items are executed according to the customer's standard
 注:其余测试项目按客户标准执行,如有异议,请参阅客户文件“液晶显示屏可靠性实验规范 V3.9”

11. RoHS TEST REPORT

RoHS 测试标准

Tested Item(s) 测试项目	Measured Equipment(s) 测量设备	Report Limit 限定值	Content 内容
Lead(Pb) 铅	XRF	Organic materials<100PPM 有机材料<100PPM Inorganic materials<700PPM 无机材料<700PPM	N.D.
Mercury(Hg) 汞	XRF	<700PPM	N.D.
Cadmium(Cd) 镉	XRF	<70PPM	N.D.
Hexavalent Chromium(Cr(VI)) 六价铬	XRF	<700PPM	N.D.
Polybrominated Biphenyls(PBBS) 多溴联苯	XRF	<700PPM	N.D.
Polybrominated Diphenyl Ethers(PBDES) 多溴二苯醚	XRF	<700PPM	N.D.

Note:-N.D.=Not Detected (<report limit)

-mg/kg=ppm=parts per million

12. PRECAUTIONS FOR USING LCD MODULES

模组使用注意事项

1. Handling precautions 使用注意事项

1.1 The display panel is made of glass and polarizer.As glass is fragile.It tends to become or chipped

during handing especially on the edges. Please avoid dropping or jarring. Do not subject it to a mechanical shock by dropping it or impact.

显示屏由玻璃和偏光片组成，由于玻璃是脆的，使用过程中要特别注意边缘区，请防止跌落或震动，不能机械碰撞。

1.2 Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary. Do not touch the display with bare hands, This will stain the display area and degraded insulation between terminals (some cosmetics are determined to the polarizer)

请勿施加过大的压力与显示屏或连接部位，否则会引起色调变化，不要用手接触显示屏，这将弄脏显示区和降低端子之间的绝缘能力，（一些外观是由偏光片决定的）

1.3 The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully. Do not touch, push or rub the exposed polarizers with anything harder than an HB pencil lead (glass, tweezers, etc). Do not put or attach anything on The display area to avoid leaving marks on it. Condensation on the surface and contact with terminals due to cold will damage, stain or dirty the polarizer. After products are tested at low temperature they must be warmed up in container before coming in to contact with room temperature air.

覆盖液晶显示模块显示平面的偏光片是软性且易被擦伤，请小心轻拿，请勿用任何硬度大于 HB 铅笔芯的物品（玻璃，镊子等）接触、撞压或摩擦裸露偏光片，不要放置或粘附物体在显示区域上以免留下痕迹，冷凝在表面和端子将会损坏或弄脏偏光片，产品在低温下测试之后，与室温空气接触之前必须在容器内升温。

1.4 Tools required for assembling, such as soldering irons, must be properly grounded. Make certain the AC power source for the soldering iron does not leak. When using an electric screwdriver to attach LCM, the screwdriver should be of ground potentiality to minimize as much as possible any transmission of electromagnetic waves produced sparks coming from the commutator of the motor.

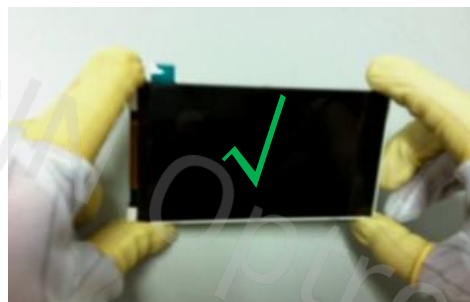
使用工具如电烙铁，要可靠接地，并确保烙铁使用交流电，不要漏电，用电批固定模块时，电批应接地，尽可能降低电动换向器火花产生的电磁波。

2. Handling precaution for LCM 模块操作规范

2.1 LCM is easy to be damaged. Please note below and be careful for handing.

液晶显示模块很容易被损坏，请注意以下并小心操作

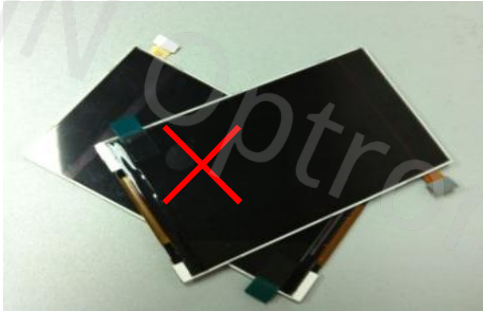
2.2 Correct handing; 正确操作



As above picture, Please handle with anti-static gloves around LCM edges.

像上面的图片，请戴防静电手套，并拿模块边缘。

2.3 Incorrect handling 错误操作



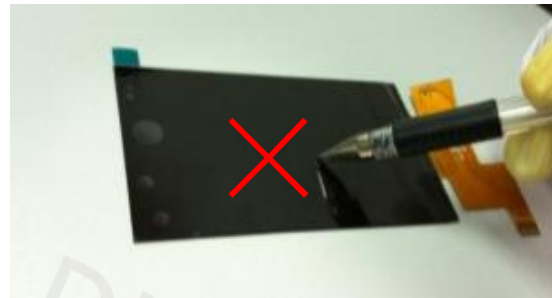
Please don't stack LCM
不要把模块叠在一起



Please don't hold the surface
请不要拿着面板的表面



don't hold the surface of IC
请不要拿着 IC 的表面



Please don't operate with sharp stick such as pens
请不要用尖锐的物体来操作，例如用笔尖

Please

2.4 Input logic voltage before apply analog high voltage such as LCD driving voltage when power on. Remove analog high voltage before logic when power off the module. Input each signal after the positive/negative voltage becomes stable.

开机时，先开逻辑电压，再接通模拟电压，如显示屏驱动电压。关机时，先断开模拟电压，再关逻辑电压，正负电源都稳定后再送控制信号。

2.5 If the LCD modules have been operating for a long time showing the same display patterns, the display patterns may remain on the screen as ghost images and a slight contrast irregularity may also appear. A normal operating status can be regained by suspending use for some time. It should be noted that this phenomenon does not adversely affect performance reliability.

如果液晶显示模块长时间工作于同一个显示图案，换屏时会出现鬼影，也会出现轻微的对比度不均，停止使用一段时间后可恢复到正常状态，此现象不会严重影响性能可靠性。

2.6 Please keep the temperature within the specified range for use and storage. Polarization degradation, bubble generation or polarizer peel-off may occur with high temperature and high humidity. 模块在操作和存储规范范围内使用，高温高湿可能会引起偏振退化，气泡，偏光片脱落等问题。

3. Storage Precautions 储存注意事项

3.1 When storing the LCD modules, the following precaution are necessary.

液晶显示模块的存储依照以下几点：

3.2 Store them in sealed polyethylene bag. If properly sealed, there is no need for the desiccant
使用聚乙烯密袋封，如果密封得当，不需要干燥剂。

3.3 Store them in a dark place. Do not expose to sunlight or fluorescent light, keep the temperature between 0~35°C, and keep the relative humidity between 40% RH and 60% RH.

避光保存，避免直接暴晒在太阳光或黄光灯下，保持温度在 0~35°C 之间，保持相对湿度在 40% RH 和 60%

RH 之间。

3.4 The polarizer surface should not come in contact with any other objects(We advise you store them in the anti-static electricity container in which they were shipped)

偏光片表面避免接触其他物质（建议存放在货运防静电包装中

4. Transportation Precautions 运输注意事项

4.1 During shipment, please handle with care. The packaging bag can not be broken, step on trap. Packing Carton layer height can not be over two meters .

装运过程要轻拿轻放，不能出现包装袋破损，塌陷，卡通箱叠层高度不能超过两米。

4.2 The transportation process should pay attention to the waterproof and moisture-proof measures. Product can not be watering. Ethylene sealed bags can not be unsealed.

运输过程要注意有防水和防潮措施，产品不能淋水，产品乙烯密封袋不可拆封。

包装规格

RoHS2.0	HF
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保密等级 (秘密)

The top of the empty pallet:1PCS
最上边空托盘: 1PCS

Each plastic plate placed on products for the number 8PCS

Two pallets stacked cross 180 degrees

Stacked layer has 11 layer,including the top plate

每个吸塑盘放置产品数量为8PCS

两个托盘需要交叉180度叠放

叠放层数为11层, 包括顶面空盘

Antistatic bag:1PCS
Specifications:625*435*0.1MM

防静电袋: 1PCS
规格:625*435*0.1MM

Foam separator:1PCS
Specifications:465*365*145MM

泡棉隔板:1PCS
规格:465*365*145MM

Foam separator:1PCS
Specifications:465*365*10MM

泡棉隔板:1PCS
规格:465*365*10MM

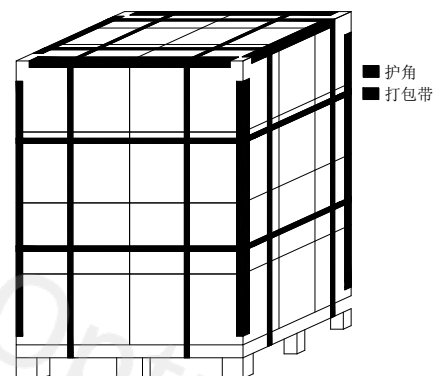
Foam separator:1PCS
Specifications:465*365*145MM

泡棉隔板:1PCS
规格:465*365*145MM

Outer box:1PCS
Specifications:480*385*315MM

外箱: 1PCS
规格:480*385*315MM

静



[illegible]

14.SPECIAL REMAKS

注意事项

1. The above specifications are the binding criteria for DJN Technology's outgoing quality inspection.
以上规格描述为帝晶的品质出货标准
2. The customer is kindly requested to inform DJN Technology as soon as possible on any questions, remarks, and disagreements regarding these specifications.
对于规格中的任何问题或存在疑问，客户可随时向帝晶公司进行咨询。
3. DJN is not responsible for damage to its products due to neglect of the precautions as described in the previous chapter.
如果不按照规格书要求进行操作而损坏产品的，帝晶不承担责任。
4. About the limited warranty unless special agreement between DJN and customer DJN will replace or repair any of its products that are found to be functionally defective when inspected in accordance with DJN acceptance standards for a period of one year from data of shipments.
除帝晶跟客户签定协议外，对确认为属于产品本身功能性缺陷的，在帝晶可接受范围内可进行退换或维修，帝晶保质期为从出货日期起一年内有效