

TOUCH&DISPLAY MODULE SPECIFICATIONS

MODULE NO: (模组型号) 98-030A1-7020A

CUSTOMER NO: (客户型号) NA

CUSTOMER: (客户) 思必驰

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

APPROVED BY CUSTOMER 客户签署栏	
Approved by 审核	Remark 备注

APPROVED BY DJN 帝晶签署栏			
Prepared by 制作	Checked by 检查		Approved by 审核
	电 子	结 构	
王振华	王振华	叶才禄	刘永峰

Office add: Intersection of Qinji Road and Huangshan Avenue, Yuhui District, Bengbu City, Anhui Province 办公地址：安徽省蚌埠市禹会区秦集路与黄山大道交叉口（帝晶光电）	Factory add: Intersection of Qinji Road and Huangshan Avenue, Yuhui District, Bengbu City, Anhui Province 工厂地址：安徽省蚌埠市禹会区秦集路与黄山大道交叉口（帝晶光电） TEL: +86-755-61148777 FAX: +86-755-61148577 POST: 233000
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REVISION RECORD

REV NO. 版本	CONTENTS 内容	REV DATE 修改日期	REMARKS 注释
A0	First version	2024-1-18	A0
A1	更新可靠性标准	2024-9-13	A1
A2	可靠性标准： 温度变化试验 恒温恒湿实验 两项改为500H Page 4 更新盖板外形尺寸	2024-9-14	A2

目录

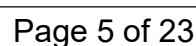
P/N: 98-030A1-7020A

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	In cell	-
Number of Dots 点阵	1200(H)*1920(V)	Dot
Outline dimensions 外形尺寸	154.36 (W)*235.98(H)* 3.37(T)	mm ³
Active area 有效区域	135.36(W)* 216.576(H)	mm ²
CG Viewing area (宽×高) CG 可视区 (W×H)	136.16*217.38	mm ²
Pixel pitch 像素	37.6(H)*112.8(V)	μ m
Module size 模组尺寸	10.1	inch
Viewing direction 视角方向	Min 75,Typ 80	O'clock
Backlight type 背光类型	8S4P(total 32pcs)	ea
LCD Driver IC LCD 驱动 IC	FT8201AB*2	-
Interface type 接口类型	MIPI 4lane D-PHY Touch: I2C	-
Display Operating Mode 显示工作模式	Normally Black	
LCM Input voltage 模组输入电压	IOVCC=1.8V, VSP=6.0V, VSN= -6.0V	V
All material of MODULE and process measure up to ROHS、HF、REACH		

2. MODULE OUTLINE DRAWING 产品外形图



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	Pin Name	Description
1/2	LED+	Anode
3/4	NC	NC
5	LED1-	Cathode
6	LED2-	Cathode
7	LED3-	Cathode
8	LED4-	Cathode
9	LED5-	Cathode
10	LED6-	Cathode
11	GND	Ground
12	NC	NC
13	LCD-IOVCC	LCD:IOVCC (TYP. 1.8V)
14	NC	NC
15	VSP	Power Supply +6V
16	VSN	Power Supply -6V
17/18	GND	Ground
19	DSIO_D0_P	MIPI Differential Data Input
20	DSIO_D0_N	MIPI Differential Data Input
21	GND	Ground
22	DSIO_D1_P	MIPI Differential Data Input
23	DSIO_D1_N	MIPI Differential Data Input
24	GND	Ground
25	DSIO_CLK_P	MIPI Differential Clock Input
26	DSIO_CLK_N	MIPI Differential Clock Input
27	GND	Ground
28	DSIO_D2_P	MIPI Differential Data Input
29	DSIO_D2_N	MIPI Differential Data Input
30	GND	Ground
31	DSIO_D3_P	MIPI Differential Data Input
32	DSIO_D3_N	MIPI Differential Data Input
33	GND	Ground
34	LCD_RST	Reset Pin 1.8V
35	LCD_ID1	ID1 (1.8V)
36	LCD_ID2	ID2 (1.8V)
37	GND	Ground
38	LCD_PWM	PWM Control Signal of LED Convert 1.8V
39	TP_I2C_SCL	I2C CLK,TYP. 1.8V
40	TP_I2C_SDA	I2C SDA,TYP. 1.8V
41	TP_INT	Interrupt Pin 1.8V (AP)
42	TP_RST	Reset Pin 1.8V
43	LCD-IOVCC	LCD:IOVCC (TYP. 1.8V)

44	NC	Left Open (NC)
45	NC	Left Open (NC)
46	NC	Left Open (NC)
47	NC	Left Open (NC)
48	NC	Left Open (NC)
49	NC	Left Open (NC)
50	NC	Left Open (NC)
51	GND	Ground

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
Forward voltage 正向电压	Vf	21.6	-	26.4	V (伏)	If=90mA Ta=25℃
Number of LED LED 灯数	-	8S*4P=32			Piece (颗)	-
Connection mode 连接类型	S/P	Series and Parallel(串联与并联)			-	-

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 for logic	IOVCC	-0.3	+1.95	V
Input voltage for analog circuit	VSP	-0.3	+6.3	V
	VSN	-6.3	+0.3	V
Operating temperature 操作温度	TOP	-10	50	℃
Storage temperature 存储温度	TST	-20	65	℃

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
Analog operating voltage	VSP	5.9	6.0	6.1	V	
Analog operating voltage	VSN	-6.1	-6.0	-5.9	V	
Logic operating voltage	IOVCC	1.7	1.8	1.95	V	
Input voltage “H”level	V _{IH}	0.7IOVCC	-	IOVCC	V	
Input voltage “L”level	V _{IL}	0	-	0.3 IOVCC	V	
Output voltage “H”level	V _{OH}	0.8IOVCC	-	IOVCC	V	
Output voltage “L”level	V _{OL}	0	-	0.2 IOVCC	V	
Display Consumption 显示功耗	40HZ	-	TBD	TBD	mW	@White Ta=25℃
Touch Consumption 触控功耗	40HZ	-	TBD	TBD	mW	Long V
Display Consumption 显示功耗	60HZ	-	200	300	mW	@White Ta=25℃
Touch Consumption 触控功耗	60HZ	-	TBD	TBD	mW	Long V
Display Consumption 显示功耗	120HZ	-	TBD	TBD	mW	@White Ta=25℃
Touch Consumption 触控功耗	120HZ	-	TBD	TBD	mW	Long V

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	ms	FIG1	1
	GTG		-	-	30			
Luminance (Without CG)	WHITE	$\Theta=0^{\circ}$ $\varnothing=0^{\circ}$ $T_a=25^{\circ}\text{C}$	300	330	-	nits	FIG2	2
Contrast ratio	Cr	$\Theta=0^{\circ}$ $\varnothing=0^{\circ}$ $T_a=25^{\circ}\text{C}$	900	1200	-	-	FIG2	2
Color gamut CIE1931	S(%)	CIE1931	-	64.7	-	%	FIG2-	2
CIE (X,Y) Chromaticity CIE1931	White(X)	$\Theta=0^{\circ}$ $\varnothing=0^{\circ}$ $T_a=25^{\circ}\text{C}$	0.265	0.295	0.325	-	FIG2	6
	White(Y)		0.285	0.315	0.345	-		
	Red(X)		0.627	0.647	0.667	-		
	Red(Y)		0.318	0.318	0.328	-		
	Green(X)		0.243	0.263	0.283	-		
	Green(Y)		0.529	0.549	0.569	-		
	Blue(X)		0.120	0.140	0.160	-		
	Blue(Y)		0.070	0.090	0.110	-		
Luminance uniformity	δ WHITE	P25	70	75	-	%	FIG2	3
Viewing angle	Θ_{x+}	CR ≥ 10 $T_a=25^{\circ}\text{C}$	75	80	-	deg	FIG3	4
	Θ_{x-}		75	80	-			
	Θ_{y+}		75	80	-			
	Θ_{y-}		75	80	-			
	Θ_{x-}		-	-	80			
	Θ_{y+}		-	-	80			
	Θ_{y-}		-	-	80			
	Θ_{x-}		-	-	80			
	Θ_{y+}		-	-	80			
	Θ_{y-}		-	-	80			
	Θ_{x-}		-	-	4.5			
	Θ_{y+}		-	-	4.5			
	Θ_{y-}		-	-	4.5			
	极限		-	-	3.75			
Flicker	flicker	60/120HZ	-	-	-30	dB	-	-
		30HZ	-	-	-25			
Crosstalk	CT	回字形	-	-	2.2	%	-	-
		工字形	-	-	3.0			
Gamma	W	间隔 4gray, G16~G240	1.9	2.2	2.5	-	-	-
	W	间隔 4gray, G0~G16, G240~G255	1.9	2.2	2.5	-	-	-

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 each 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 is2.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.

Lv=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 Autronil 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

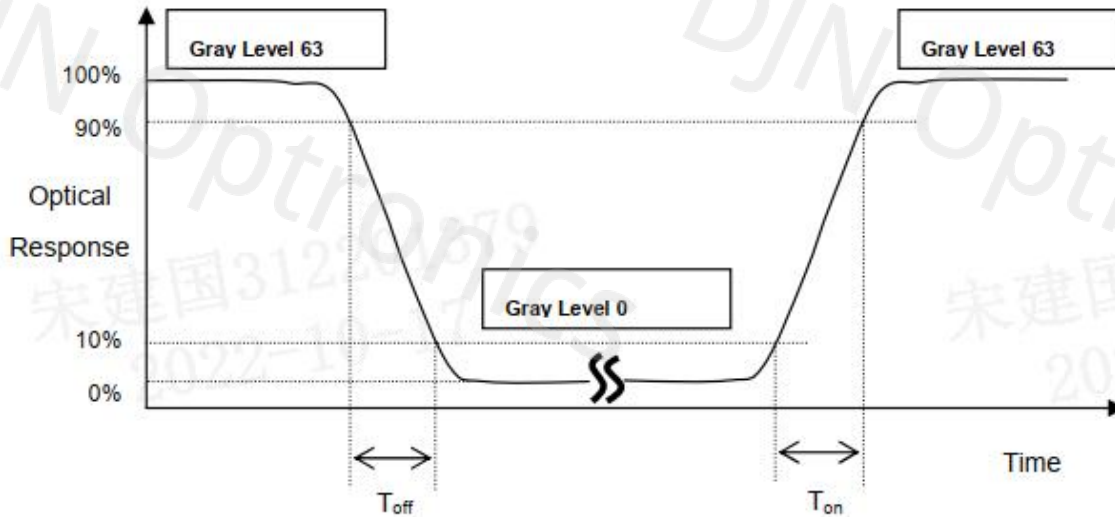
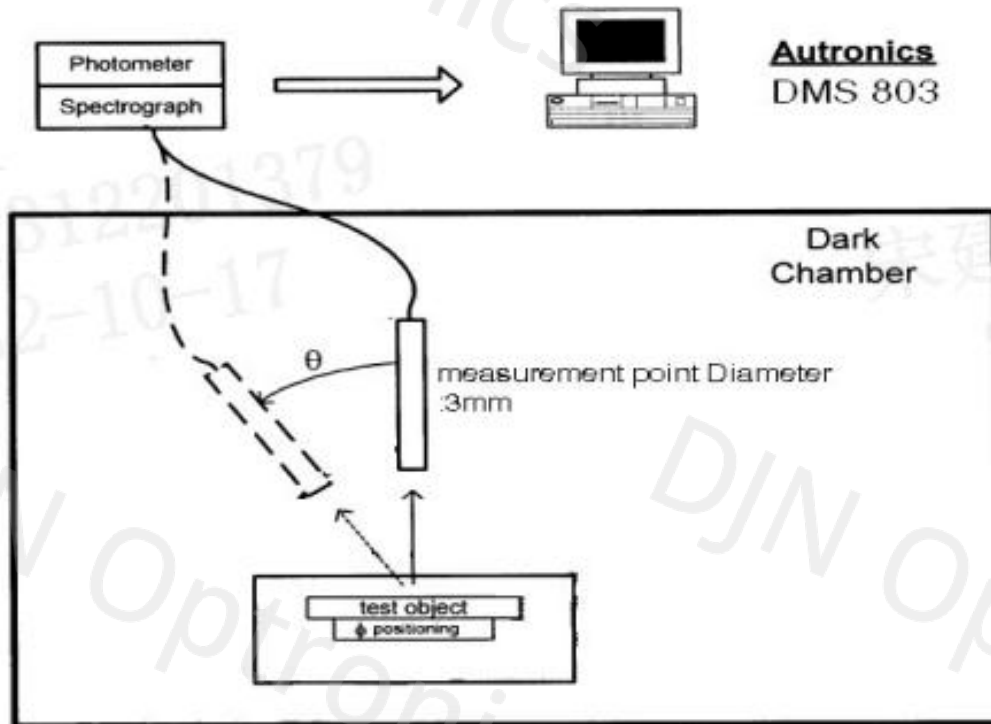


FIG1. Measuring method for Contrast ratio,surface luminance,Luminance uniformity,CIE(X,Y)chromaticity.

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.



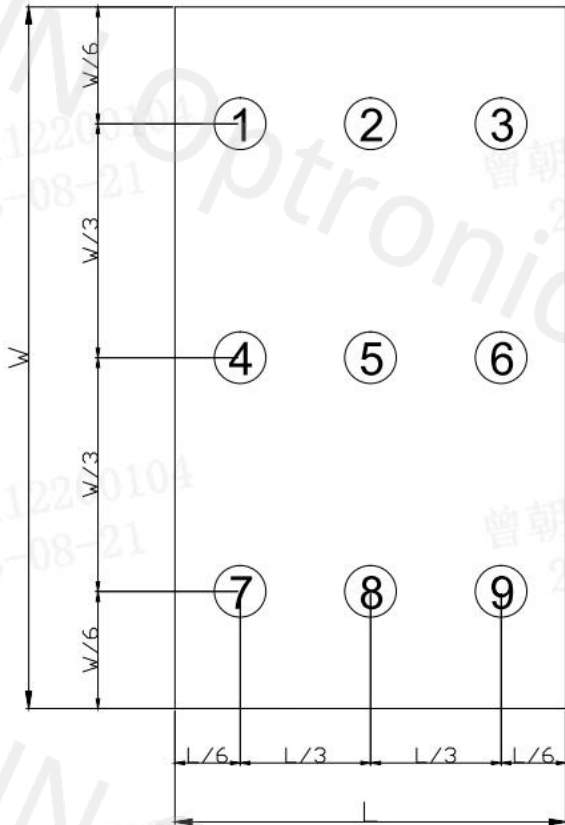
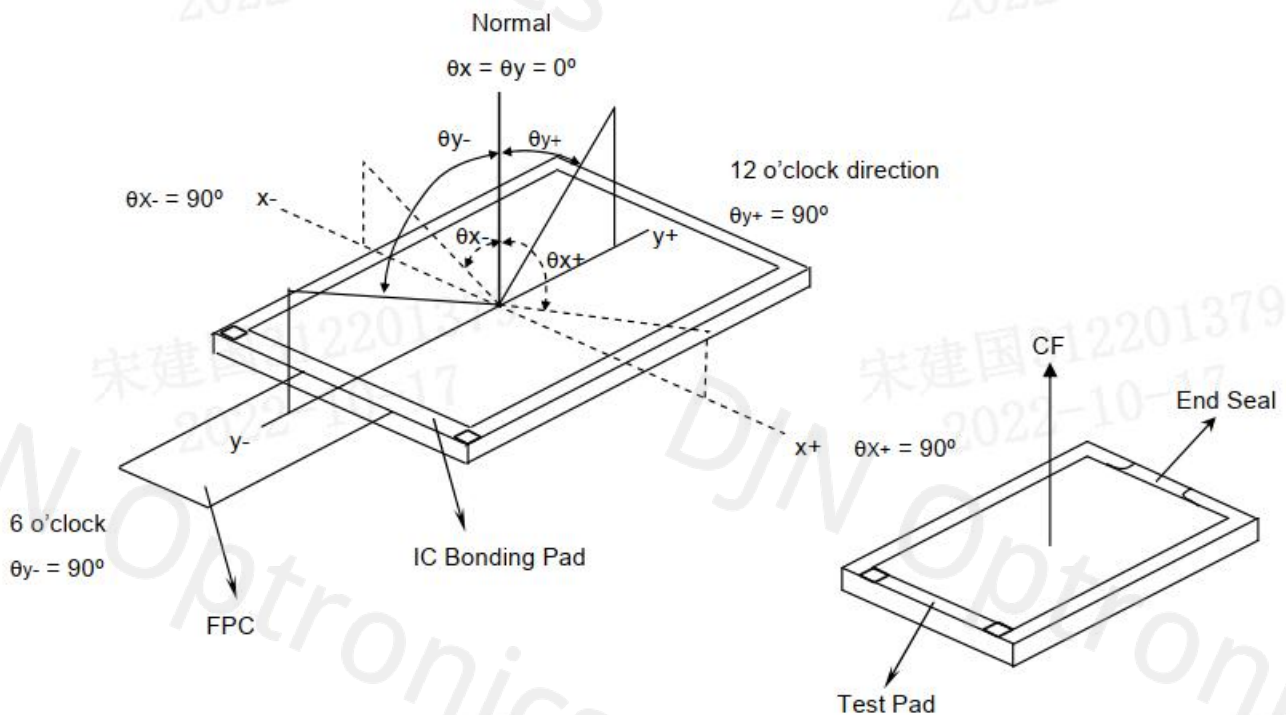


FIG 2 9 点均一性测试点位

FIG3 The definition of viewing angle

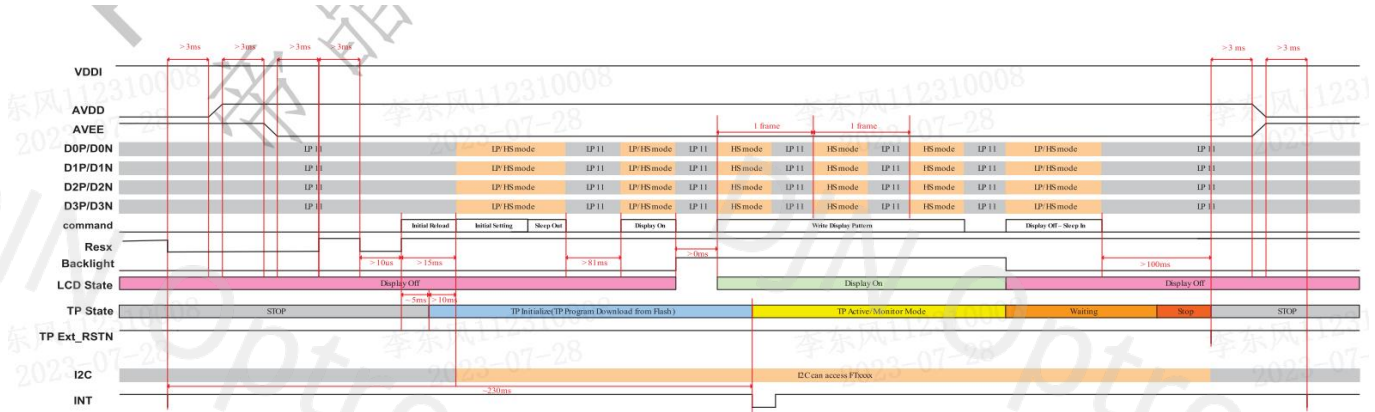
视角定义



8. Power On/Off Sequence (电源开/关时序)

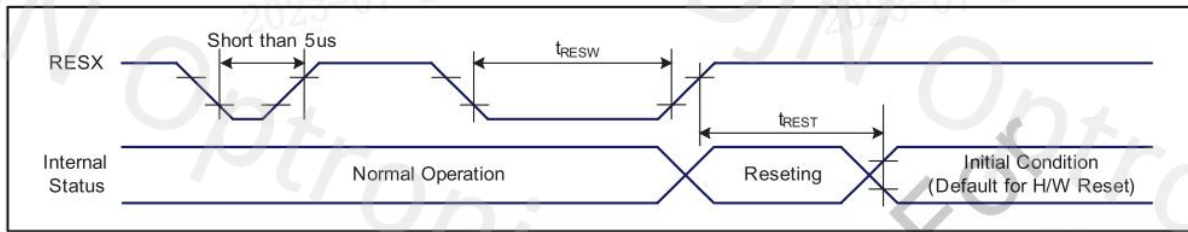
8.1 Power On/Off Sequence

- There will be no damage to the display module if the power sequences are not met.
- There will be no abnormal visible effects on the display panel during the Power On/Off sequences.
- There will be no abnormal visible effects on the display between end of Power On sequence and before receiving Sleep Out command.
Also between receiving Sleep In command and Power Off sequence.
- RESX and TP_RSTN must be held stably by host during Power On Sequence, otherwise function is not guaranteed.
- The display module can also initialize and calibrate DSI-CLK +/- and DSI-D0 +/- lanes within 5ms after LP-11 (Clock and Data Channels), VDDI are applied and H/W Reset is not active (5ms is as same as the Reset Cancelling Time).
- During Power off, VDDI can be powered down 5ms after AVDD/AVVEE power down if LCD in Sleep-In Mode.
- During Abnormal power dropping, VDDI can start power down 5ms after AVDD/AVEE power down.
- BL Enable timing is for reference only and not restricted (T8/T9).



3 power mode Power on/off sequence(VDDI keep)

8.2 RESET INPUT TIMING 复位时序



VSS=0V, VDDI=1.65V to 3.6V, Ta = -30°C to 70°C

Symbol	Parameter	Related Pin	MIN	TYP	MAX	Note	Unit
t _{RESW}	*1) Reset low pulse width	RESX	10	-	-	Reset applied during Sleep-in mode	us
			70	-	-	Reset applied during Sleep-out mode	ms
t _{REST}	*2) Reset complete time	-	-	-	10	Reset applied during Sleep-in mode	ms
		-	-	-	120	Reset applied during Sleep-out mode	ms

Table: Reset input timing

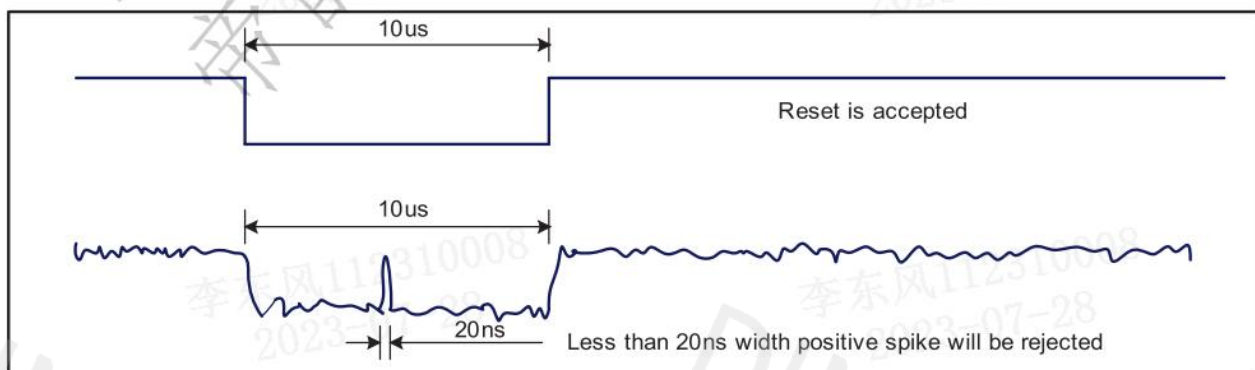
Note 1. Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the table below.

RESX Pulse	Action
Shorter than 5us	Reset Rejected
Longer than 10us	Reset
Between 5us and 10us	Reset starts (It depends on voltage and temperature condition.)

Note 2. During the resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120 ms, when Reset starts in Sleep-out mode. The display remains the blank state in Sleep-in mode) and then return to default condition for H/W reset.

Note 3. During Reset complete time, ID1/ID2/ID3 and VCOM value in OTP will be latched to internal register during this period. This loading is done every time when there is H/W reset complete time (t_{REST}) within 10ms after a rising edge of RESX.

Note 4. Spike Rejection also applies during a valid reset pulse as shown below:

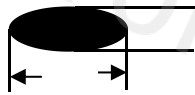


Note 5. It is necessary to wait 10msec after releasing RESX before sending commands. Also Sleep Out command cannot be sent for 120 msec.

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 SPECIFICATION 品质检验标准

不良项目	判定标准			缺点类别
点状缺陷	D=(L+W)/2 单位: mm	A/B 标	C 标	轻缺
		$\phi \leq 0.10$, 不计; $0.10 < \phi \leq 0.15$, $DS \geq 10\text{mm}$, $N \leq 2$; $0.15 < \phi \leq 0.20$, $DS \geq 10\text{mm}$, $N \leq 1$; $\phi > 0.2$, 不允许	$\phi \leq 0.10$, 不计; $0.10 < \phi \leq 0.2$, $DS \geq 10\text{mm}$, $N \leq 2$; $\phi > 0.2$, 不允许	
线状缺陷	CG 划伤	$L \leq 5$, $W \leq 0.03$, $DS \geq 5\text{mm}$, 不计; $L \leq 5$, $0.03 \leq W \leq 0.05$, $DS \geq 5\text{mm}$, $N \leq 2$; $W > 0.05$, 不允许	$W \leq 0.03$, $DS \geq 5\text{mm}$ 不计; $L \leq 5$, $0.03 \leq W \leq 0.05$, $DS \geq 5\text{mm}$, $N \leq 2$; $W > 0.05$, 不允许	轻缺
	非 CG 划伤	$L \leq 5$, $W \leq 0.03$, $DS \geq 5\text{mm}$, 不计; $L \leq 3$, $0.03 \leq W \leq 0.05$, $DS \geq 5\text{mm}$, $N \leq 2$	$W \leq 0.03$, $DS \geq 5\text{mm}$, 不计; $L \leq 3$, $0.03 \leq W \leq 0.05$, $DS \geq 5\text{mm}$, $N \leq 2$;	
亮点	含像素亮点 ($\Phi > 1/2\text{dot}$) 和碎亮点 ($\Phi \leq 1/2\text{dot}$)	按照模拟点 R145: G80: R238 或 ND10; 亮度高于模拟点, 不允许; 亮度低于模拟点或 ND10 不可见, 按点缺陷大小管控	ND8 不可见, 按点缺陷大小管控	轻缺
暗点		分辨率在 FHD 以下, $N \leq 1$; FHD 及以上 $N \leq 2$ $DS \geq 10\text{mm}$	$N \leq 2$ $DS \geq 10\text{mm}$	
Mura		HD 解析度在 127 灰阶使用 ND6%遮盖可见不允许; HD+解析度在 64 灰阶使用 ND8%遮盖可见不允许; OLED 在 64 灰阶使用 ND6%遮盖可见不允许		轻缺
TP 鱼眼/凹凸点	$DS \geq 10\text{mm}$	$D \leq 0.2\text{mm}$ 不计 $0.2\text{mm} < D \leq 0.4\text{mm}$ 不允许超过 3 个且相互分离 $0.4\text{mm} < D \leq 0.5\text{mm}$ 允许 1 个 $D > 0.5\text{mm}$ 不允许		轻缺
TP 角崩		不允许		轻缺
TP 边崩		不允许		轻缺
裂纹		不允许		重缺

10. RELIABILITY TEST CONDITIONS (可靠性测试条件(参照客户标准))

NO. 序号	Test Item 实验项目	Test Condition 实验条件	Inspection after test 实验后检查
1	High Temperature Storage 高温存储测试	70℃±2℃/240 hours	Inspection after 2~4 hours storage at room temperature ,the sample shall be free from defects: 实验结束后,已测试的 LCD 样品必须在室内正常温湿度环境下放置,2~4 小时以上才能进行功能和外观检查,样品不允许有以下缺陷: 1.Air bubble in the LCD;模块中有气泡 2.Sealleak;封口松脱 3.Non-display;不显示 4.missing segments;漏笔 5.Glass crack;玻璃破碎 6.Current IDD is twice higher than initial value. 电流 IDD 大于初始值的两倍。
2	Low Temperature Storage 低温存储测试	-20℃±2℃/240 hours	
3	High Temperature Operating 高温操作测试	60℃±2℃/240 hours	
4	Low Temperature Operating 低温操作测试	-10℃±2℃/240 hours	
5	Temperature Cycle 温度变化试验	-15℃~65℃±2℃/RH95%℃±2℃ 500 hours	
6	Damp Proof Test 恒温恒湿实验	60℃±2℃*90%RH/500 hours	
7	ESD Test 抗静电性测试	1) 参考 GB/T 17626.2-2006/IEC61000-4-2: 2001 (电磁兼容试验、测量技术和静电放电抗扰度试验); 2) 温度 25±5℃, RH: 45±15%; 放电方式: 空气放电和接触放电。放电电压: 空气放电±10KV (有问题按照降级 2KV, ±8KV 电压确认); 接触放电±8KV 确认 (有问题按照降级 2KV, ±6KV 电压确认);	1) 性能要求: 不允许出现等级 a 类 (功能无法运行, 硬件或固件损坏)、等级 b 类 (功能无法运行, 需要人工操作恢复) 故障, 等级 c (功能无法运行, 10s 之内可自动恢复) 类 (可接受), 其它正常状况判定为测试 PASS; 2) 外观测试: 喷涂、印刷、镀层无明显脱落, 及其它测试前后外观不一致的现象。

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 OPP0 “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 material<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 handling 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 handling.

液晶显示模块很容易被损坏，请注意以下并小心操作

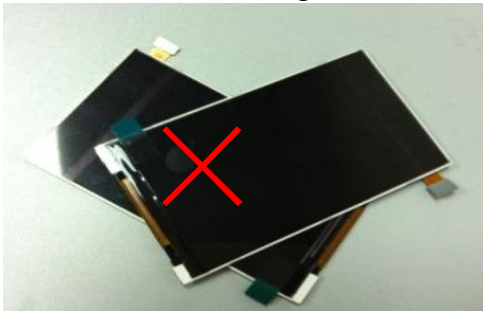
2.2 Correct handling; 正确操作



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 handing 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 patters,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

使用聚乙烯密封袋，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。

13. PACKING SPECIFICATION

包装规格

RoHS
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 2PCS
Two pallets stacked cross 180 degrees
Stacked layer has 10 layer, including the top plate
每个吸塑盘放置产品数量为2PCS
两个托盘需要交叉180度叠放
叠放层数为10层, 包括顶面空盘用
美纹胶缠绕两头

Antistatic bag: 1PCS
Specifications: 625*435*0.1MM
防静电袋: 1PCS
规格: 625*435*0.1MM
抽真空
贴一张内箱标签

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

环保标签:
RoHS标签 45*28绿色

外箱标签:
白色不干胶纸100MM*80MM

材料 Material	数量Quantity
1 外箱 Outer box	1
2 吸塑盘 Plastic tray	10*2=20
3 防静电袋 Antistatic bag	2
4 泡棉隔板 Foam separator	2
5 泡棉隔板 Foam separator	1
6 模组 (TLCM) Module	18*2=36
7 护角 card Angle	短边2条
8 护角 card Angle	长边2条
9 护角 card Angle	竖方向4条
10 捆扎带 Strapping tie	长边2条
11 栈板 pallet	1/864
12 保鲜膜 plastic wrap	1/7860
13 内外箱标签 Carton label	3/36

产品堆叠后, 需要用保鲜膜进行缠绕固定外箱不能晃动

静电袋真空包装件

Packaging card Angle

Strapping tie

pallet

栈板堆叠示意图

1500MAX

1000

1200

120

每层6箱, 叠码4层, 共24箱;
底部四边及竖直四边放护角
打包带6面“井”字型捆绑打包, 最后四周缠保鲜膜

87654321

内箱标签内容

100

标签内容	
供应商名称	安徽帝晶光电科技有限公司
物料名称	液晶显示模组 MD-10
物料编码	98-030A1-7020A
客户料号	C02400000027
包装箱内数量	按照实际包装数量填写
出厂日期	实际出货日期
箱号条码	
备注:	

内箱箱号条码规则:

7020 XX XX XX XXXX

5位 流水号 如: 00001~99999

2位 日 如: 01~31

2位 月 如: 01~12

2位 年 如: 23、24、25

4位 7020固定

外箱箱号条码规则:

7020 XXXX XX XX XXX

3位 流水号 如: 001~999

2位 日 如: 01~31

2位 月 如: 01~12

4位 年 如: 2023、2024...

4位 7020固定

87654321

外箱标签内容

100

标签内容	
供应商名称	安徽帝晶光电科技有限公司
物料名称	液晶显示模组 MD-10
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客户料号	C02400000027
包装箱内数量	按照实际包装数量填写
出厂日期	实际出货日期
箱号条码	
备注:	

Customer approve

DJN 帝晶光电

DJN OPTRONICS TECHNOLOGY CO.,LTD.

Model No

98-030A1-7020A

Part No

71-60000-00036

Drawing Title

内外箱标签

Drawn

叶才禄

A0

Drawing No

D-RD-236-23

Checked

覃东浩

Unit MM

Scale 1:1

第三视角

Approve

金飞

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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