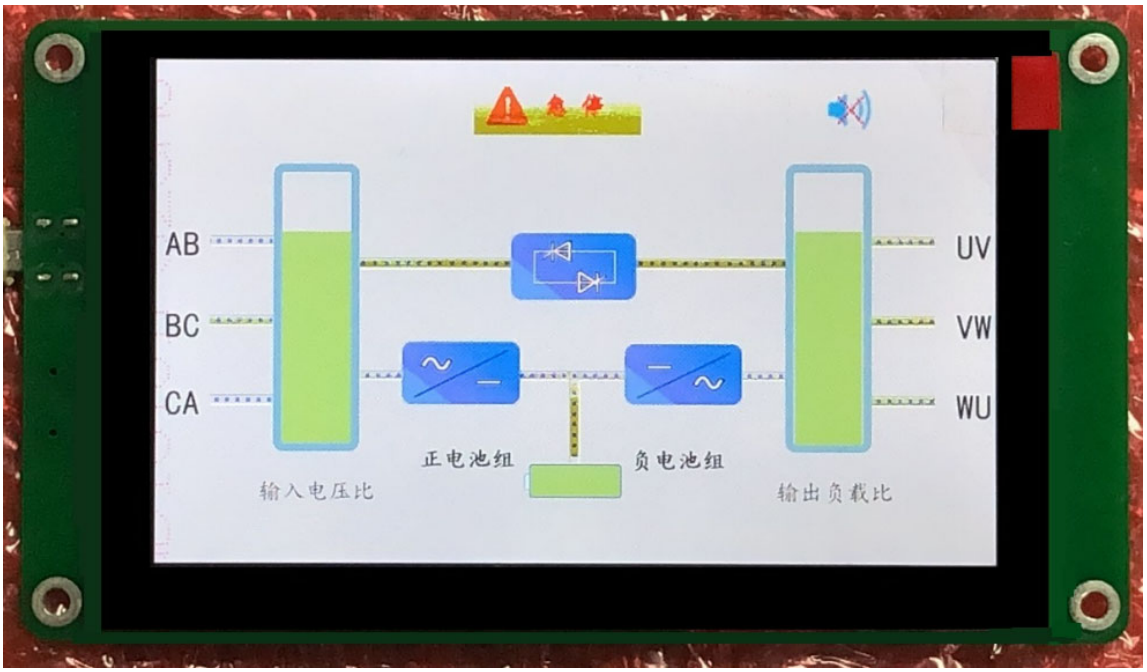
南城多鑫达科技有限公司

模块规格书（LCM Specification）

产品名称（Product Name）：		DXD8048IR050_001C_MNE	
产品类型（Product Type）：		5寸串口屏（5.0”Serial Module）	
版本（Version）：	V00	修订日期（Date）：	2024.04.18

■ 实拍产品图片（Real product pictures）



■ 主要特色（Main Features）

■ 单片机(MCU)：M4内核芯片，内置128M控制器。
M4 core chip, built-in 128M controller.

■ 显示屏(LCM)：5寸，800*480分辨率，IPS全视角。
5-inch, 800 x 480 resolution, IPS all view.

■ 触控类型(Touch type)：电容触摸（G+G）。
Capacitive touch pannel（G+G）.

■ 质量要求(Quality requirements)：工控标准，不带三防工艺和UV防护。
Industrial control standards，No with conformal coating and anti-UV.

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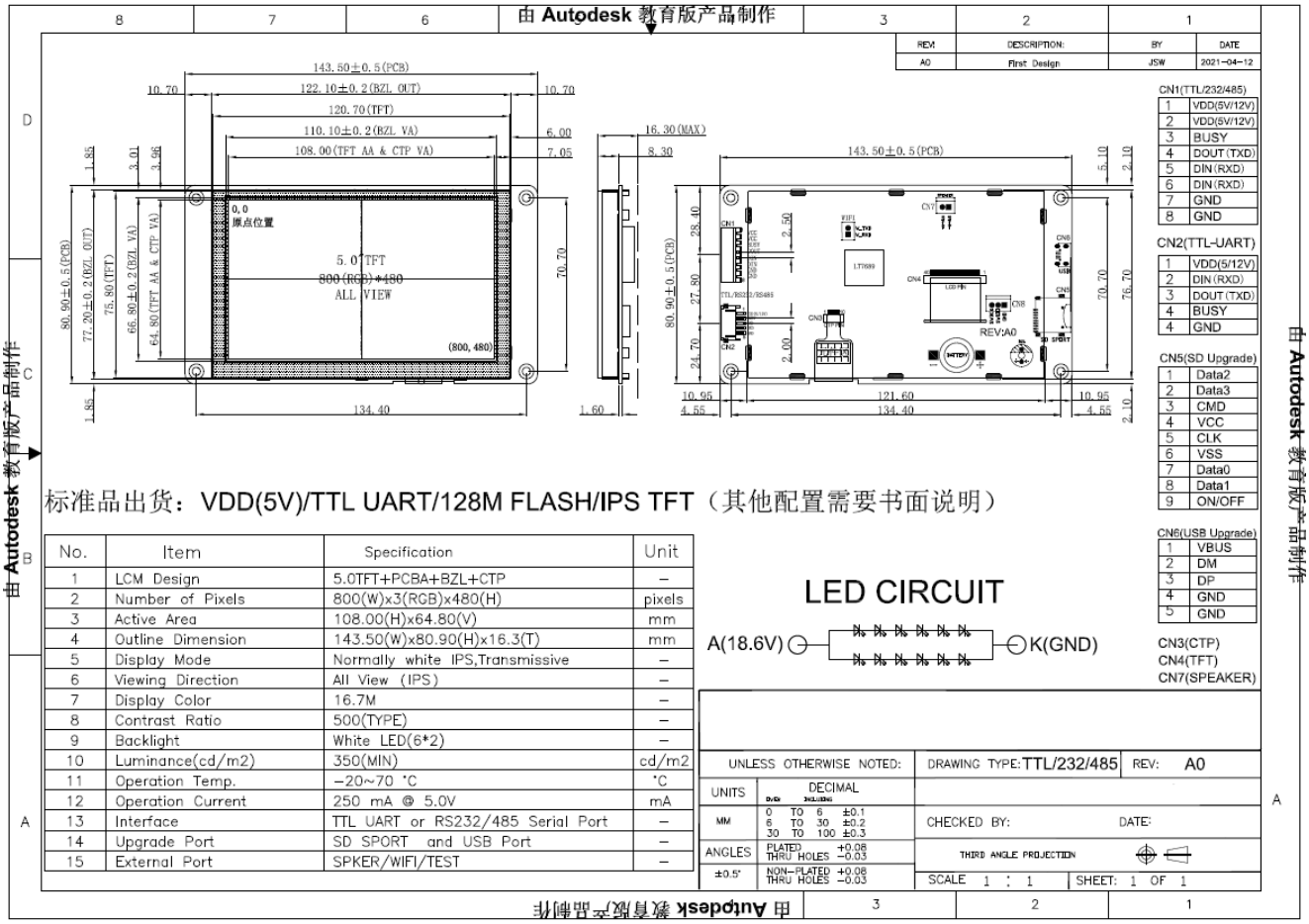
■ 结构尺寸（Structural Dimensions）



标准品出货：VDD(5V)/TTL UART/128M FLASH/IPS TFT（其他配置需要书面说明）

No.	Item	Specification	Unit
1	LCM Design	5.0TFT+PCBA+BZL+CTP	–
2	Number of Pixels	800(W)x3(RGB)x480(H)	pixels
3	Active Area	108.00(H)x64.80(V)	mm
4	Outline Dimension	143.50(W)x80.90(H)x16.3(T)	mm
5	Display Mode	Normally white IPS,Transmissive	–
6	Viewing Direction	All View (IPS)	–
7	Display Color	16.7M	–
8	Contrast Ratio	500(TYPE)	–
9	Backlight	White LED(6*2)	–
10	Luminance(cd/m2)	350(MIN)	cd/m2
11	Operation Temp.	-20~70 °C	°C
12	Operation Current	250 mA @ 5.0V	mA
13	Interface	TTL UART or RS232/485 Serial Port	–
14	Upgrade Port	SD SPORT and USB Port	–
15	External Port	SPKER/WIFI/TEST	–

■ 配置选型（Configuration Selection）

项目（Item）	应用选项（Apply Options）	Othe
显示屏（LCD）	☐480x272 ☑ 800x480 ☐1024x600 ☐TN ☑ IPS	---
触摸屏（Touch Pannel）	☐ 无触摸(NTP) ☐ 电阻(RTP) ☑ 电容(CTP)	---
模块亮度（LCM Brightness）	☑ 300 nits ☐ 500 nits ☐ 800 nits	---
输入电压（Input Voltage）	☐ 3.3V ☑ 5.0V ☐ 12V ☐ 24V	---
串口模式（Serial Mode）	☑ TTL UART ☐ RS232 ☐ RS485	---
I/O 口电平（I/O port level）	☐ 2.0V ☑ 3.3V ☐ 5.0V	---
闪存容量（Flash capacity）	☐ 32M ☐ 64M ☑ 128M ☐ 1 G	---
升级方式（Upgrade Mode）	☐ USB Upgrade ☑ SD Upgrade	---
连接器（Connector）	☐ 4P(2.0mm) ☑ 5P(2.0mm) ☐ 8P(2.5mm)	---
界面要求（UI Requirements）	☑ 标准(Standards) ☐ 定制(Customisation)	---
RTC 时钟（RTC Clock）	☑ 没有(No Batteries) ☐ 有(With Batteries)	---
质量标准(Quality Standards)	☐消费(Consumer) ☑工业(Industry) ☐医疗(Medical)	---
其他（Other Configurations）	☐ 蜂鸣器(Buzzer) ☐ 音频(Audio) ☐ WIFI ☐ Other	

■ 产品特性（Product Characteristics）

Item	MIN	Typical	MAX	Unit	Notes
输入电压（Input Voltage）	4.5	5.0	5.5	V	VDD
工作电流（Operating Current）	---	250	---	mA	5.0V Power
工作温度（Operating Temperature）	-20	25	70	° C	/
存储温度（Storage Temperature）	-30	25	80	° C	/
工作湿度（Working Humidity）	10%	60%	90%	RH	25℃
波特率（Baud rate）	2400	9600	115200	bps	Standards
输出电平（TXD Output Leve）	3.0	3.3	---	V	H
输入电平（RXD Input Leve）	2.0	3.3	5.0	V	H
外置闪存（Extend Flash）	64M	128M	1G	bits	Nor/Nand
主控显存（Display RAM）	---	128M	---	Bytes	MCU
内置闪存（Inside Flash）	---	512K	---	Bytes	MCU
SRAM 存储器（SRAM Memory）	---	256K	---	Bytes	MCU
MCU 主频（MCU Frequency）	---	150M	---	Hz	MCU
实时时钟 **RTC**（Real Time Clock）	---	---	---	---	有（Yes）
三防处理（Protective Paint）	---	---	---	---	无（No）
老化时间（Aging Time）	2	4	6	H	USB
使用寿命（Service Life）	10000	20000	---	H	/

■ 接口说明（Interface Description）

■ CN1: 8PIN串口备用（8PIN Serial Standby）

Pin.No	Symbol	DESCRIPTION
1	VDD	5.0V 电源供电（使用 12V 电源更换 LP1 到 LP2 电路） 5.0V Power Supply Voltage（Use 5.0V Change LP1 to LP2）
2	VDD	
3	BUSY	Not Defined
4	Dout	标准配置 TTL UART（TXD），可选择更换 RS232 或 RS485 StandardsTTL UART（TXD），Optional replacement RS232 or RS485
5	Din	标准配置 TTL UART（RXD），可选择更换 RS232 或 RS485 StandardsTTL UART（RXD），Optional replacement RS232 or RS485
6	Din	
7	GND	Ground
8	GND	Ground

■ CN2: 5PIN串口使用（5PIN Serial Use）

Pin.No	Symbol	DESCRIPTION
1	VDD	5.0V 电源供电（使用 12V 电源更换 LP1 到 LP2 电路） 5.0V Power Supply Voltage（Use 5.0V Change LP1 to LP2）
2	Din	标准配置 TTL UART（RXD），可选择更换 RS232 或 RS485 StandardsTTL UART（RXD），Optional replacement RS232 or RS485
3	Dout	标准配置 TTL UART（TXD），可选择更换 RS232 或 RS485 StandardsTTL UART（TXD），Optional replacement RS232 or RS485
4	BUSY	Not Defined
5	GND	Ground

■ CN3: 10PIN电容触摸使用（10PIN CTP Use）

■ CN4: 40PIN显示屏使用（40PIN TFT Use）

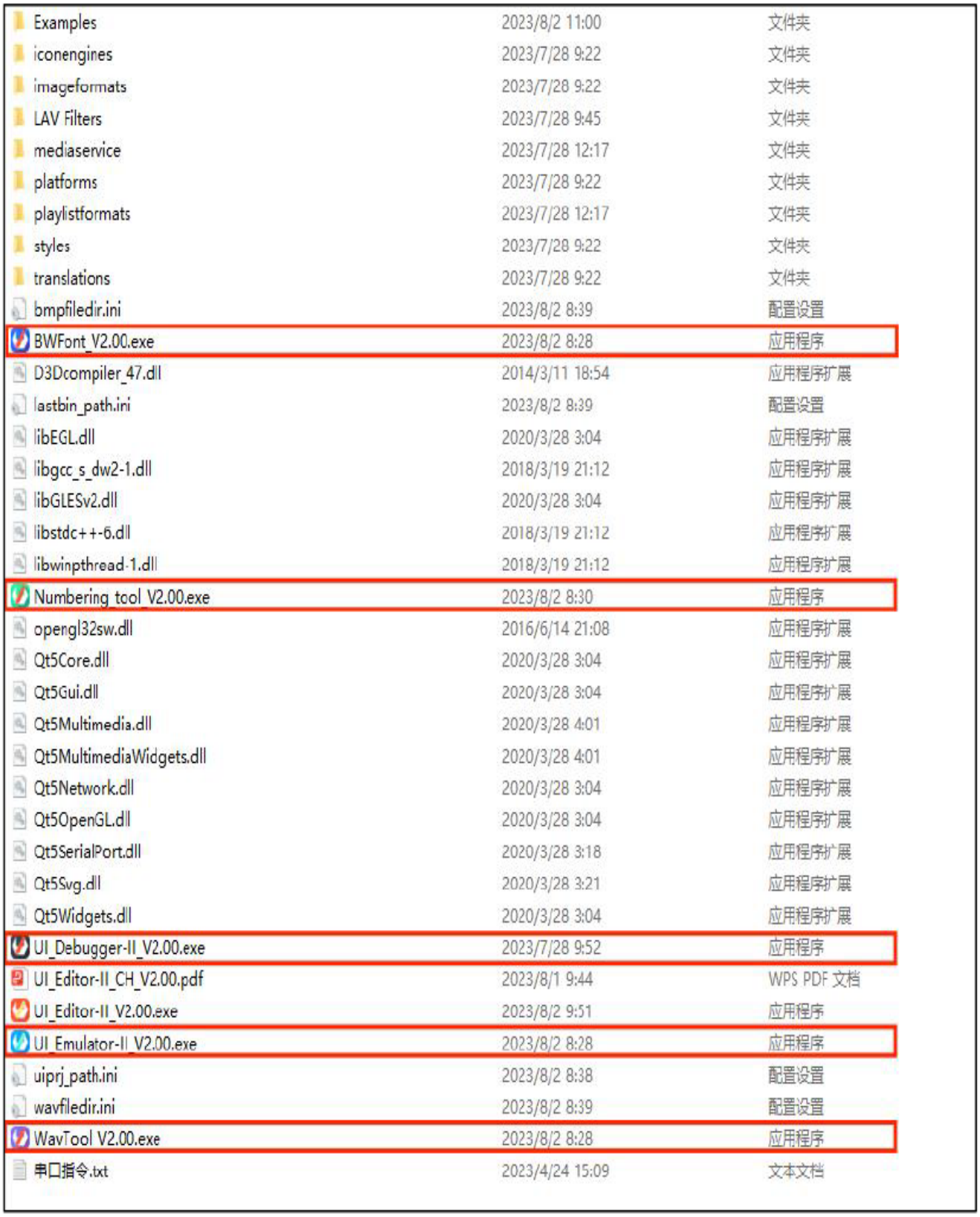
■ CN5: 标准SD升级使用（Standard SD Upgrade Use）

Pin.No	Symbol	DESCRIPTION
1	DATD2	Data2
2	DATD3 （SS3）	Chip selection signal
3	CMD （MOSI3）	Data output signal
4	VCC	SD Power Supply Voltage（3.3V+/-0.3V）
5	CLK	Clock Signal
6	VSS	Ground
7	DAT0 （MISO3）	Data input signal
8	DAT1	Data1
9	ON/OFF （SD_IN）	Wake-up input

■ CN6: USB升级备用（USB Upgrade Standby）

Pin.No	Symbol	DESCRIPTION
1	VBUS	Power Supply Voltage（5.0V+/-0.3V）
2	DM	D- USB Data Terminal
3	DP	D+ USB Data Terminal
4	GND	Ground
5	GND	Ground

■ UI_Editor-II 使用说明（UI Apply Instructions）



Examples	2023/8/2 11:00	文件夹
iconengines	2023/7/28 9:22	文件夹
imageformats	2023/7/28 9:22	文件夹
LAV Filters	2023/7/28 9:45	文件夹
mediaservice	2023/7/28 12:17	文件夹
platforms	2023/7/28 9:22	文件夹
playlistformats	2023/7/28 12:17	文件夹
styles	2023/7/28 9:22	文件夹
translations	2023/7/28 9:22	文件夹
bmpfiledir.ini	2023/8/2 8:39	配置设置
BWFont_V2.00.exe	2023/8/2 8:28	应用程序
D3Dcompiler_47.dll	2014/3/11 18:54	应用程序扩展
lastbin_path.ini	2023/8/2 8:39	配置设置
libEGL.dll	2020/3/28 3:04	应用程序扩展
libgcc_s_dw2-1.dll	2018/3/19 21:12	应用程序扩展
libGLESv2.dll	2020/3/28 3:04	应用程序扩展
libstdc++-6.dll	2018/3/19 21:12	应用程序扩展
libwinpthread-1.dll	2018/3/19 21:12	应用程序扩展
Numbering_tool_V2.00.exe	2023/8/2 8:30	应用程序
opengl32sw.dll	2016/6/14 21:08	应用程序扩展
Qt5Core.dll	2020/3/28 3:04	应用程序扩展
Qt5Gui.dll	2020/3/28 3:04	应用程序扩展
Qt5Multimedia.dll	2020/3/28 4:01	应用程序扩展
Qt5MultimediaWidgets.dll	2020/3/28 4:01	应用程序扩展
Qt5Network.dll	2020/3/28 3:04	应用程序扩展
Qt5OpenGL.dll	2020/3/28 3:04	应用程序扩展
Qt5SerialPort.dll	2020/3/28 3:18	应用程序扩展
Qt5Svg.dll	2020/3/28 3:21	应用程序扩展
Qt5Widgets.dll	2020/3/28 3:04	应用程序扩展
UI_Debugger-II_V2.00.exe	2023/7/28 9:52	应用程序
UI_Editor-II_CH_V2.00.pdf	2023/8/1 9:44	WPS PDF 文档
UI_Editor-II_V2.00.exe	2023/8/2 9:51	应用程序
UI_Emulator-II_V2.00.exe	2023/8/2 8:28	应用程序
uiprj_path.ini	2023/8/2 8:38	配置设置
wavfiledir.ini	2023/8/2 8:39	配置设置
WavTool_V2.00.exe	2023/8/2 8:28	应用程序
串口指令.txt	2023/4/24 15:09	文本文档

■ 获取文件联系我们的工程（Get the file to contact our engineers）

■ 开发流程（Development Process）

■ 1、准备素材，详情可参考素材格式要求

Prepare material, details can refer to material format requirements

■ 2、准备新建工程，详情可参考新建工程步骤

New Construction. For details, please refer to the new construction steps

■ 3、设计**UI** 页面，**UI** 页面涉及到的控件的使用详情可参考控件使用

Design UI pages, UI pages involved in the use of controls can refer to the details of the control to use

■ 4、编译模拟， **UI_Editor-II** 配套的模拟器（ **UI_Emulator-II** ） 使用详情可参考二代串口屏模拟器（**UI_Emulator-II**）使用说明

Compilation simulation, UI_Editor-II supporting the simulator (UI_Emulator-II) use details can refer to the second generation serial screen simulator (UI_Emulator-II）instructions

■ 5、烧录，详情可参考附录**1** 烧录

Please refer to appendix 1 for details

注：UI_Editor-II 软件界面中英切换功能请查看 Help 章节的 Language 参数说明

Note: see the Language parameter description in the Help section for the english-chinese switching functionality of the UI software interface

■ 可靠性验证（Reliability Verification）

N0.	测试项目（Test Items）	测试条件（Test Conditions）
1	高温存储（High Temperature Storage）	80℃；72hrs
2	低温存储（Low Temperature Storage）	-30℃；72hrs
3	高温工作（HighTemperature Operation）	70℃；72hrs
4	低温工作（Low Temperature Operation）	-20℃；72hrs
5	高温高湿（High Temperature and High Humidity）	50℃, 90% RH；120 hrs
6	存储冷热冲击（Storage Cold and Hot Shock）	-20℃(0.5Hr)→70℃(0.5Hr) 100 Cycles

■ LCD 检测准则（LCD Inspection Criterion）

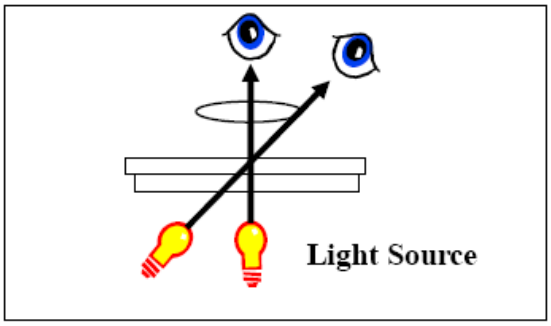
■ 抽样方法（Sampling Method）

Unless otherwise agreed upon in writing, the sampling inspection shall be applied to the Customer's incoming inspection.

1 Lot size: Quantity per shipment lot
2 Sampling type: Normal inspection , single sampling
3 Inspection level: Ⅱ
4 Sampling table: MIL-STD-105D
5 Acceptable Quality Level(AQL): Major=0.65 Minor=1.5

■ 检验方法（Inspection Method）

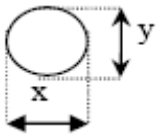
1) Ambient Condition:
   a. Temperature: Room temperature 25±5℃
   b. Illumination: Single fluorescent lamp non-directive(300 to 700 Lux)
2) Viewing distance
   The distance between the LCD and the inspector's eyes shall be at least 30-50cm.
3) Viewing Angle
   The inspection shall be conducted within normal viewing angle range.

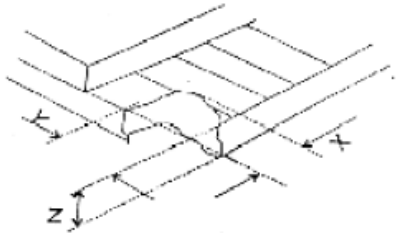
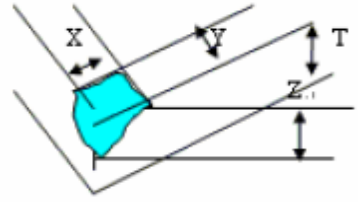
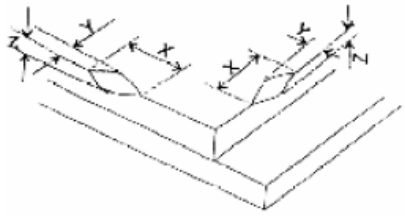
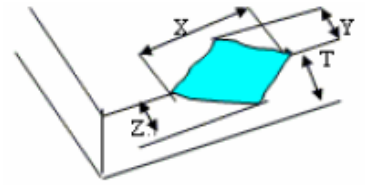
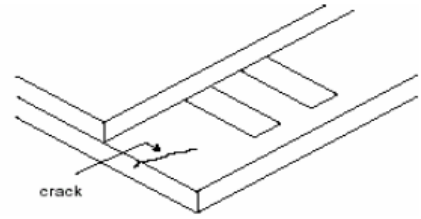


■ 主要缺陷（Major Defect）

No	Items	Inspection Standard	Classification of defects
1	All functional defects	1.No display 2.Display abnormally 3.Missing vertical，horizontal segment 4.Short circuit 5. Back-light no lighting, flickering and abnormal lighting.	Major
2	Missing	Missing component	
3	Outline dimension	Overall outline dimension beyond the drawing is not allowed.	
4	linearity	No more than 1.5%	

■ 表面缺陷（Cosmetic Defect）

<table>
<tr><th>No</th><th>Items</th><th colspan="2">Inspection Standard</th><th>Classification of defects</th></tr>
<tr><td rowspan="6">1</td><td rowspan="6">Clear Spot, Black Spot, white Spot, defect Pinhole, Foreign Particle, polarizer Dirt TP Dirt</td><td colspan="2">For dark/white spot, size Φ is defined as Φ=(x+y)/2  </td><td rowspan="6">Minor</td></tr>
<tr><td>Size(mm)</td><td>Acceptable Qty</td></tr>
<tr><td>Φ≤0.15</td><td>Ignore</td></tr>
<tr><td>0.15＜Φ≤0.20</td><td>2</td></tr>
<tr><td>0.20＜Φ≤0.30</td><td>1</td></tr>
<tr><td>Φ＞0.30</td><td>0</td></tr>
<tr><td rowspan="6">2</td><td rowspan="6">(line defect) Black and White line Polarizer scratch</td><td colspan="2">Define: Width W  </td><td rowspan="6">Minor</td></tr>
<tr><td>Width(mm)</td><td>Length(mm);Acceptable Qty</td></tr>
<tr><td>W≤0.03</td><td>Ignore</td></tr>
<tr><td>0.03<W≤0.05</td><td>L≤3.0; N≤2</td></tr>
<tr><td>0.05<W≤0.1</td><td>L≤2.0; N≤2</td></tr>
<tr><td>0.1<W</td><td>Define as spot defect</td></tr>
<tr><td rowspan="6">3</td><td rowspan="6">Dim Spots Circle shaped and dim edged defects</td><td colspan="2">/</td><td rowspan="6">Minor</td></tr>
<tr><td>Size(mm)</td><td>Acceptable Qty</td></tr>
<tr><td>Φ≤0.2</td><td>Ignore</td></tr>
<tr><td>0.20＜Φ≤0.40</td><td>2</td></tr>
<tr><td>0.40＜Φ≤0.60</td><td>1</td></tr>
<tr><td>Φ＞0.60</td><td>0</td></tr>
</table>

<table>
<tr><th>No</th><th>Items</th><th>Inspection Standard</th><th>Classification of defects</th></tr>
<tr><td rowspan="5">4</td><td rowspan="5">Glass defect
TP defect</td><td>
(1) Chips on corner（A:LCD Glass defect）

<table>
<tr><td>X(mm)</td><td>Y(mm)</td><td>Z(mm)</td></tr>
<tr><td>≤2.0</td><td>≤S</td><td>Disregard</td></tr>
</table>
Notes: S=contact pad length
Chips on the corner of terminal shall not be allowed to extend into the ITO pad or expose perimeter seal.
</td><td rowspan="5">Minor</td></tr>
<tr><td>
(2) Chips on corner （TP Glass defect）

<table>
<tr><td>X(mm)</td><td>Y(mm)</td><td>Z(mm)</td></tr>
<tr><td>≤3.0</td><td>≤3.0</td><td>Disregard</td></tr>
</table>
</td></tr>
<tr><td>
(3)Usual surface cracks（LCD Glass defect）

<table>
<tr><td>X(mm)</td><td>Y(mm)</td><td>Z(mm)</td></tr>
<tr><td>≤3.0</td><td><Inner border line of the seal</td><td>Disregard</td></tr>
</table>
</td></tr>
<tr><td>
(4)Usual surface cracks（TP Glass defect）

<table>
<tr><td>X(mm)</td><td>Y(mm)</td><td>Z(mm)</td></tr>
<tr><td>≤6.0</td><td>＜2.0</td><td>Disregard</td></tr>
</table>
</td></tr>
<tr><td>
(5) Crack（Cracks tend to break are not allowed.）


</td></tr>
</table>

■ LCD 预防措施（LCD Precautions）

■ 处理预防措施（Handing Precautions）

(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.
(2) If the display panel is damaged and the liquid crystal substance leaks out, be sure not to get
any in your mouth. If the substance contacts your skin or clothes, wash it off using soap and water.
(3) 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).
(4) 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. 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 a container before coming is contacting with room temperature air.
(5) If the display surface becomes contaminated, breathe on the surface and gently wipe it with
a soft dry cloth. If it is heavily contaminated, moisten cloth with one of the following solvents
- Isopropyl alcohol
- Ethyl alcohol
Do not scrub hard to avoid damaging the display surface.
(6) Solvents other than those above-mentioned may damage the polarizer. Especially, do not use the following.
- Water
- Ketone
- Aromatic solvents
Wipe off saliva or water drops immediately, contact with water over a long period of time may cause deformation or color fading. Avoid contacting oil and fats.
(7) Exercise care to minimize corrosion of the electrode. Corrosion of the electrodes is accelerated by water droplets, moisture condensation or a current flow in a high-humidity environment.
(8) Install the LCD Module by using the mounting holes. When mounting the LCD module make
sure it is free of twisting, warping and distortion. In particular, do not forcibly pull or bend the I/O cable or the backlight cable.
(9) Do not attempt to disassemble or process the LCD module.
(10) NC terminal should be open. Do not connect anything.
(11) If the logic circuit power is off, do not apply the input signals.

(12) Since LCM has been assembled and adjusted with a high degree of precision, avoid applying excessive shocks to the module or making any alterations or modifications to it.
- Do not alter, modify or change the shape of the tab on the metal frame.
- Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached.
- Do not damage or modify the pattern writing on the printed circuit board.
- Absolutely do not modify the zebra rubber strip (conductive rubber) or heat seal connector.
- Except for soldering the interface, do not make any alterations or modifications with a soldering iron.
- Do not drop, bend or twist LCM.

■ 储存注意事项（Storage Precautions）

When storing the LCD modules, the following precaution is necessary.
(1) Store them in a sealed polyethylene bag. If properly sealed, there is no need for the dessicant.
(2) Store them in a dark place. Do not expose to sunlight or fluorescent light, keep the temperature between 0° C and 35° C.
(3) The polarizer surface should not come in contact with any other objects. (We advise you to
store them in the container in which they were shipped).

■ 其他（Others）

Liquid crystals solidify under low temperature (below the storage temperature range) leading to
defective orientation or the generation of air bubbles (black or white). Air bubbles may also be generated if the module is subject to a low temperature.
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.
To minimize the performance degradation of the LCD modules resulting from destruction caused by static electricity etc., exercise care to avoid holding the following sections when handling the modules.
- Exposed area of the printed circuit board.
-Terminal electrode sections.