Specifications

TFT-LCD module

Model No：AML-FRD450B4503-RT

For Customer's Acceptance	
Approved by	Comment

	Signature	Date
Prepared by		
Checked by		
Approved by		

Revision Record

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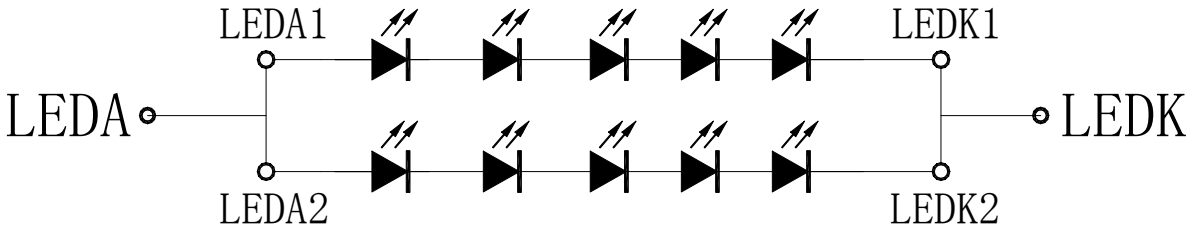
1. General linformation

ITEM	STANDARD VALUES	UNITS
LCD type	4.5”TFT	--
Dot arrangement	480（RGB）× 854	dots
Driver IC	ILI9806E-2C	--
Module size	60(W) ×109(H)×1.85(T)	mm
Active area	55.44(W) ×98.64 (H)	mm
Dot pitch	0.1155*0.1155	mm
Operating temperature	- 20 ~ + 70	℃
Storage temperature	- 30 ~ + 80	℃
Back Light	10White LED In Parallel	--
Weight	TBD	g

2 .Absolute Maximum Ratings

ITEM	Symbol	MIN	MAX	UNITS
Power supply voltage 1	VCC	2.8	3.3	V
Power supply voltage 1	IOVCC	1.8	3.3	V
Operating temperature	Topr	-20	+70	℃
Storage temperature	Tstg	-30	+80	℃
Humidity	RH	---	90%(Max40 ℃)	RH

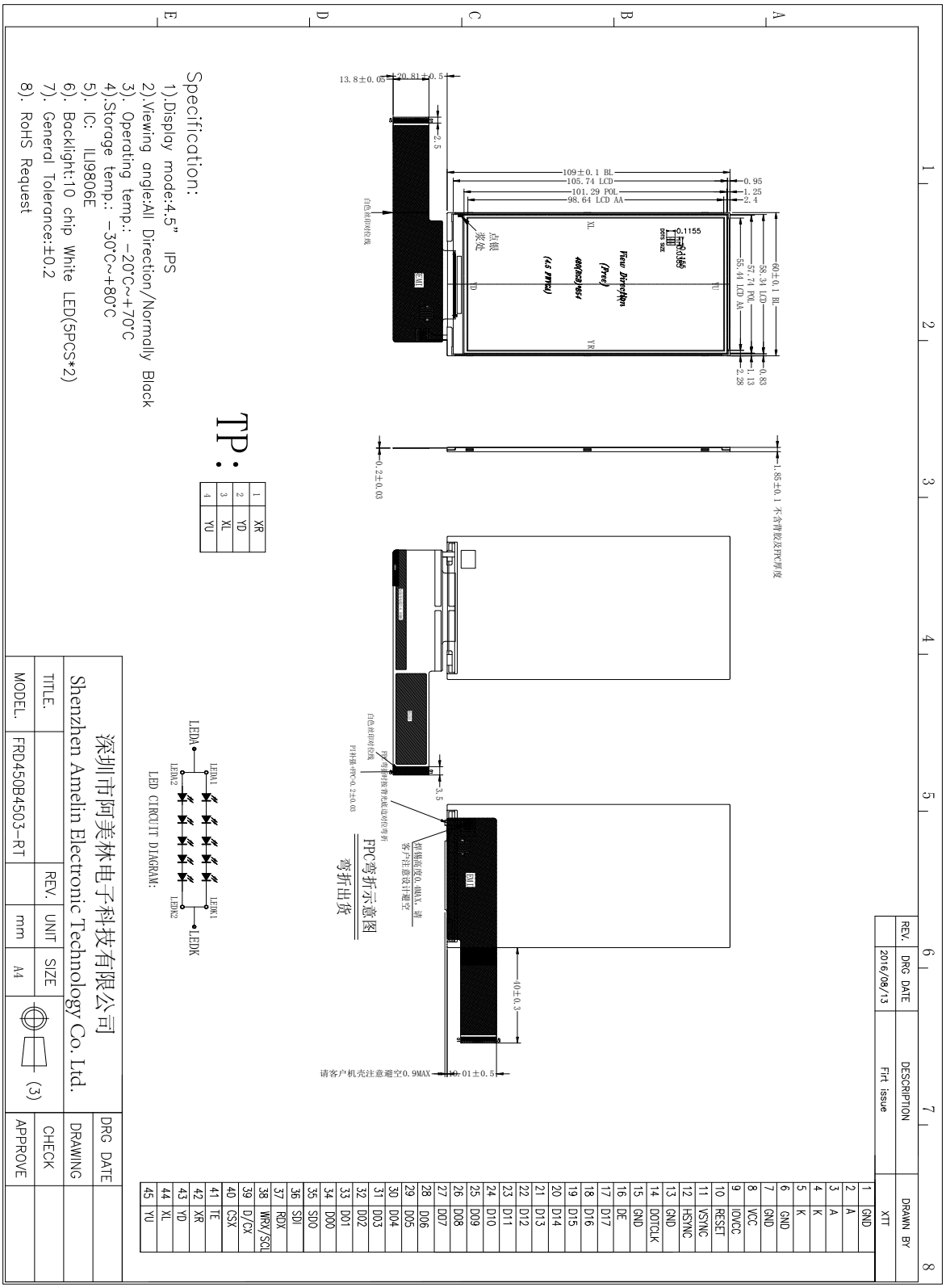
3.Backlight Charasterics



LED CIRCUIT DIAGRAM:

Item	Symbol	MIN	TYP	MAX	UNIT	Test Condition	Note
Supply Voltage	**Vf**	**15**	**16**	**17**	**V**	**If=40 mA**	**-**
Supply Current	**If**	**-**	**40**	**-**	**mA**	**-**	**-**
Reverse Voltage	**Vr**	**-**	**-**	**5**	**V**	**10uA**	
Power dissipation	**Pd**	**-**	**640**	**-**	**mW**	**-**	
Luminous Intensity for LCM		-	**500**	-	**mCd/m^2**	**If=40 mA**	
Uniformity for LCM	**-**	**80**	**-**	**-**	%	**If=40 mA**	
Life Time	**-**	**50000**	**-**	**-**	**Hr**	**If=40 mA**	**-**
Backlight Color	**White**						

4. External Dimensions



5. Interface Description

PIN NO.	PIN NAME	DESCRIPTION
1	GND	**System Ground**
2-3	LEDA	Power Supply For LED Backlight Anode Input
4-5	LEDK	Power Supply For LED Backlight Cathode Input
6-7	GND	**System Ground**
8	VCC	POWER SUPPLY FOR LCD(2.8V)
9	IOVCC	Power Supply For LCD
10	RESET	Reset Signal
11	VSYNC	Not Control
12	HSYNC	Not Control
13	GND	**System Ground**
14	DCLK	Positive polarity of low voltage differential data 2 signal
15	GND	System Ground
16	DE	System Ground
17-34	D17-D0	Data Bus
35	SDO	Serial data output
36	SDI	**Serial data input**
37	RDX	Read Signal And Read Data
38	WRX/SCL	The pin used as serial clock pin
39	D/CX	**Register Select Signal**
40	CSX	**Chip Select PIN**
41	TE	Tearing Effect Output Signal
42	XR	Touch Panel PIN
43	YD	Touch Panel PIN
44	XL	Touch Panel PIN
45	YU	Touch Panel PIN

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6. Reliability Test Conditions And Methods

NO	Item	Condition	Method
1	High / Low Temperature Storage	60℃/-20℃ 500hrs	Check and record every 96Hrs
2	High / Low Temperature Life	50℃/-10℃ 500hrs (operating mode)	Check and record every 96Hrs
3	High Temperature、High Humidity Operating	40℃ 90% RH, 120Hrs	Check and record every 48hrs
4	Thermal Shock	-30℃(30Min) ⟶ 25℃(5Min) ⟶ 80℃(30Min) (conversion time, : 5 sec) 20 cycles	Each 10 cycles end , check
5	Vibration	10Hz~55Hz~10Hz Amplitude: 1.5mm 2hrs for each direction(X,Y,Z)	Each direction end, Check the Appearance and Electrical Characteristics
6	Static Electricity	Gap mood: ±1KV~±8KV (10 times air discharge with positive/negative voltage voltage gap : 1kv) Touch mood: ±1KV~±2KV	Each discharge end, Check the Electrical Characteristics
7	Slump	Free faller movement for each side、cording、angle (75cm High、 6 sides、2 angle、2 cording)	End

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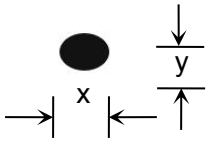
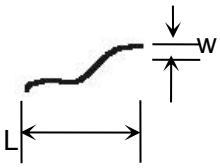
7.Inspection Standard

<table>
<tr><th>No</th><th>Item</th><th>Criterion</th><th></th></tr>
<tr><td>01</td><td>Outline Dimension</td><td>In accord with drawing</td><td></td></tr>
<tr><td>02</td><td>Position-finding Dimension Assemble Dimension</td><td>In accord with drawing</td><td></td></tr>
<tr><td rowspan="2">03</td><td rowspan="2">LCD black spots, white spots (Round type)</td><td>Round type: non display
 

Unit : mm
<table>
<tr><th>Dimension</th><th>Qualified Quantity</th></tr>
<tr><td>D≤0.1</td><td>Ignore</td></tr>
<tr><td>0.1＜D≤0.15</td><td>3</td></tr>
<tr><td>0.15＜D≤0.25</td><td>2</td></tr>
<tr><td>D＞0.25</td><td>0</td></tr>
</table></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>04</td><td>LCD black spots, white spots (Line Style)</td><td> 

Unit : mm
<table>
<tr><th>Length</th><th>Width</th><th>Qualified Quantity</th></tr>
<tr><td>-</td><td>≤0.02</td><td>Ignore</td></tr>
<tr><td>≤3</td><td rowspan="2">0.02＜W≤0.03</td><td>2</td></tr>
<tr><td></td><td></td></tr>
<tr><td>≤2</td><td>0.03＜W≤0.05</td><td>1</td></tr>
<tr><td>-</td><td>D＞0.05</td><td>According to circle</td></tr>
</table></td><td></td></tr>
</table>

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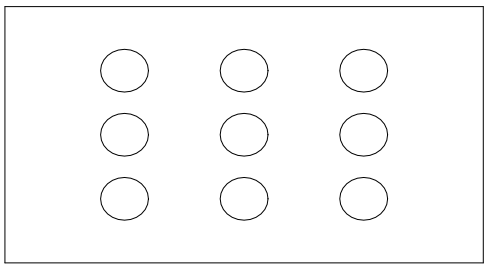
05	LCD Scratch 、Threadlike Fiber	Same to NO.3 circle sightline and surface of LCD is vertical (2)Same to NO.3 line style		
06	POL	It is not admissible that POL is beyond the edge of glass, else, unqualified. It is essential that POL is over the 50 percent of width of frame , else ,unqualified. According to the drawing in case of special definition.		
07	Brightness	In accord with product specification	Drive condition is according to specification Measure location is in Follow Picture 3 、 Adjust brightness instrument tozero , burrow against the surface of LCD , press “measure” , record when the display is steady. (YOKOGAWA-3298)	
			 Measure location	
08	CR (Max)	According to specification	According to product specification Measure instrument (DMS-501)	
09	Response time	According to specification	According to product specification Measure instrument (DMS-501)	
10	Viewing angle	According to specification	According to product specification Measure instrument (DMS-501)	
11	Vibration、Ring	Compare with the sample customer supply	Compare with the sample customer supply when assemble	

8 . Handling Precautions

8.1 Mounting method

The LCD panel of SC LCD LCD module consists of two thin glass plates with polarizes which easily be damaged. And since the module in so constructed as to be fixed by utilizing fitting holes in the printed circuit board.

Extreme care should be needed when handling the LCD modules.

8.2 Caution of LCD handling and cleaning

When cleaning the display surface, Use soft cloth with solvent [recommended below] and wipe lightly

- Isopropyl alcohol
- Ethyl alcohol

Do not wipe the display surface with dry or hard materials that will damage the polarizer surface.

Do not use the following solvent:

- Water
- Aromatics

Do not wipe ITO pad area with the dry or hard materials that will damage the ITO patterns

Do not use the following solvent on the pad or prevent it from being contaminated:

- Soldering flux
- Chlorine (Cl) , Salfur (S)

If goods were sent without being sili8con coated on the pad, ITO patterns could be damaged due to the corrosion as time goes on.

If ITO corrosion happen by miss-handling or using some materials such as Chlorine (CI), Salfur (S) from customer, Responsibility is on customer.

8.3 Caution against static charge

The LCD module use C-MOS LSI drivers, so we recommended that you:

Connect any unused input terminal to Vdd or Vss, do not input any signals before power is turned on, and ground your body, work/assembly areas, assembly equipment to protect against static electricity.

8.4 packing

- Module employ LCD elements and must be treated as such.
- Avoid intense shock and falls from a height.
- To prevent modules from degradation, do not operate or store them exposed direct to sunshine or high temperature/humidity

8.5 Caution for operation

- It is an indispensable condition to drive LCD's within the specified voltage limit since the higher voltage then the limit cause the shorter LCD life.
- An electrochemical reaction due to direct current causes LCD's undesirable deterioration, so that the use of direct current drive should be avoided.
- Response time will be extremely delayed at lower temperature then the operating temperature range and on the other hand at higher temperature LCD's how dark color in them. However those phenomena do not mean malfunction or out of order with LCD's, which will come back in the specified operation temperature.

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- If the display area is pushed hard during operation, some font will be abnormally displayed but it resumes normal condition after turning off once.
- A slight dew depositing on terminals is a cause for electro-chemical reaction resulting in terminal open circuit.

Usage under the maximum operating temperature, 50%Rh or less is required.

8.6 storage

In the case of storing for a long period of time for instance, for years for the purpose or replacement use, the following ways are recommended.

- Storage in a polyethylene bag with the opening sealed so as not to enter fresh air outside in it . And with no desiccant.
- Placing in a dark place where neither exposure to direct sunlight nor light's keeping the storage temperature range.
- Storing with no touch on polarizer surface by the anything else.
  [It is recommended to store them as they have been contained in the inner container at the time of delivery from us

8.7 Safety

- It is recommendable to crash damaged or unnecessary LCD's into pieces and wash off liquid crystal by either of solvents such as acetone and ethanol, which should be burned up later.
- When any liquid leaked out of a damaged glass cell comes in contact with your hands, please wash it off well with soap and water

9. Precaution For Use

9.1

A limit sample should be provided by the both parties on an occasion when the both parties agreed its necessity. Judgment by a limit sample shall take effect after the limit sample has been established and confirmed by the both parties.

9.2

On the following occasions, the handing of problem should be decided through discussion and agreement between responsible of the both parties.

- When a question is arisen in this specification
- When a new problem is arisen which is not specified in this specifications
- When an inspection specifications change or operating condition change in customer is reported to SC LCD , and some problem is arisen in this specification due to the change
- When a new problem is arisen at the customer's operating set for sample evaluation in the customer site.

10 Packing Method

To Be Determined