# Specifications
# TFT-LCD module

## Model No：AML600A30002-A
## Customer Name：

| For Customer's Acceptance | |
|---|---|
| Approved by | Comment |
| | |

| | Signature | Date |
|---|---|---|
| Prepared by | | |
| Checked by | | |
| Approved by | | |

# Revision Record

| VEV NO. | REV DATE | CONTENTS | Note |
|---|---|---|---|
| A | 2016-12-21 | NEW ISSUE | |
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## Table Of Contents

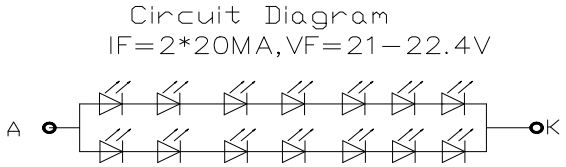
## 1. General information

| ITEM | STANDARD VALUES | UNITS |
|---|---|---|
| LCD type | 6.0”TFT | -- |
| Dot arrangement | 720（RGB）× 1280 | dots |
| Driver IC | HX8394D | -- |
| Module size | 77.8(W) ×141.3(H)×1.65(T) | mm |
| Active area | 74.52(W) ×132.48 (H) | mm |
| Dot pitch | 0.0345*0.1035 | mm |
| Operating temperature | - 20 ~ + 70 | ℃ |
| Storage temperature | - 30 ~ + 80 | ℃ |
| Back Light | 14 chip White LED | -- |
| Weight | TBD | g |
| Viewing Direction | ALL DIRECTION | -- |
| PoL（UP） | | ° |
| PoL（DOW） | | ° |

## 2 .Absolute Maximum Ratings

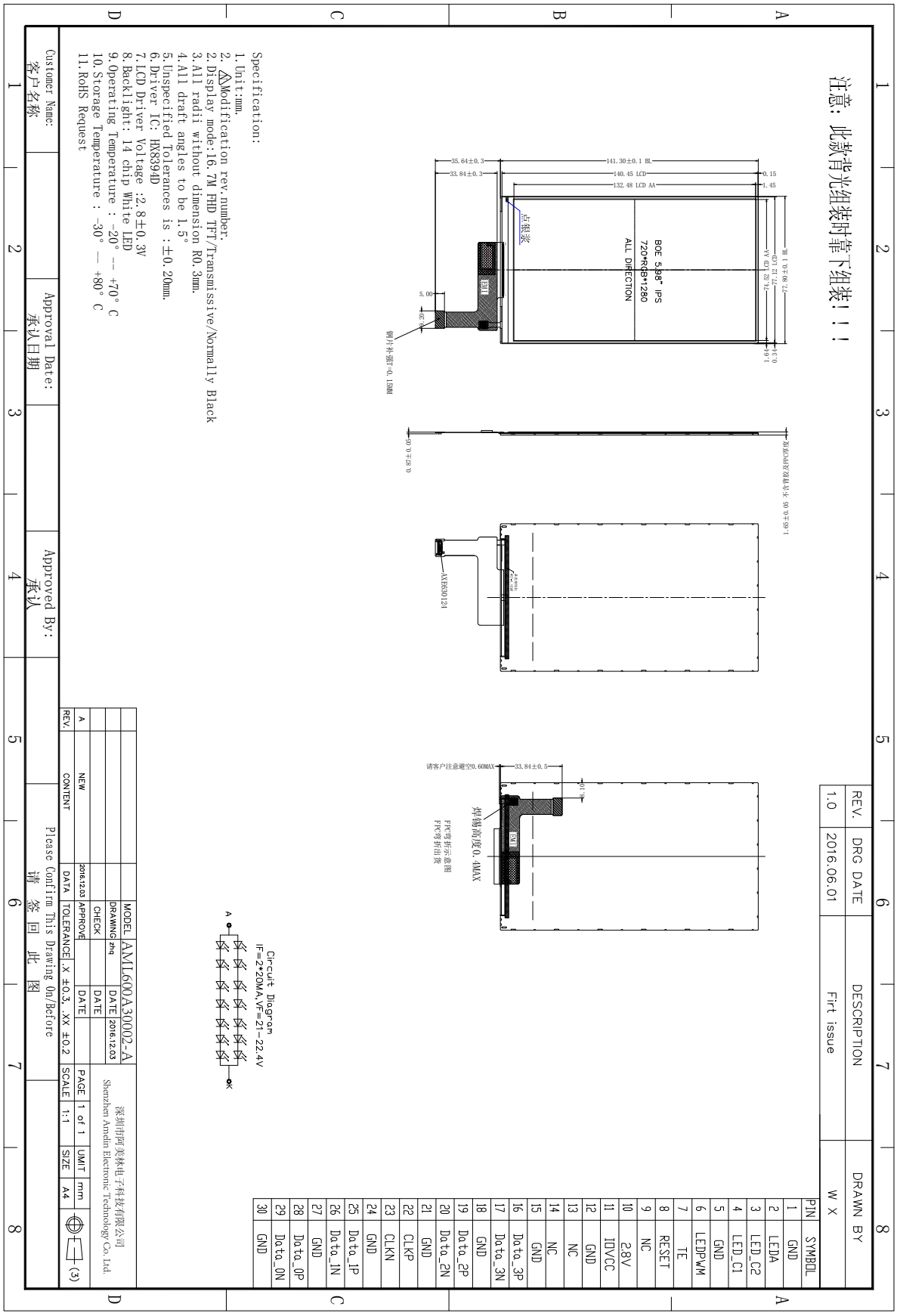
| ITEM | Symbol | MIN | MAX | UNITS |
|---|---|---|---|---|
| Power supply voltage 1 | VCC | 2.8 | 3.3 | V |
| Power supply voltage 1 | IOVCC | 1.8 | 3.3 | V |
| Operating temperature | Topr | -20 | +70 | ℃ |
| Storage temperature | Tstg | -30 | +80 | ℃ |
| Humidity | RH | --- | 90%(Max40 ℃) | RH |

## 3.Backlight Characterics




| Item | Symbol | MIN | TYP | MAX | UNIT | Test Condition | Note |
|---|---|---|---|---|---|---|---|
| Supply Voltage | Vf | | 21 | 22.4 | V | If=40 mA | - |
| Supply Current | If | - | 40 | - | mA | - | - |
| Reverse Voltage | Vr | - | - | 5 | V | 10uA | |
| Power dissipation | Pd | - | 72 | - | mW | - | |
| Luminous Intensity for LCM | | - | 350 | - | 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



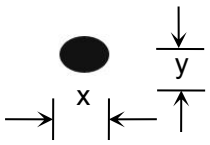
## 5. Interface Description

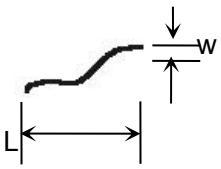
| PIN NO. | PIN NAME | DESCRIPTION |
|---|---|---|
| 1 | GND | System Ground |
| 2 | LEDA | Power Supply For LED Backlight Anode Input |
| 3 | LEDK | Power Supply For LED Backlight Cathode Input |
| 4 | LEDK | Power Supply For LED Backlight Cathode Input |
| 5 | GND | System Ground |
| 6 | LEDPWM | PWM (Pulse Width Modulation) Signal Of LED Driving. |
| 7 | TE | Tearing Effect Output Signal |
| 8 | RESET | Reset Signal |
| 9 | NC | Not Connect |
| 10 | VCC | Power Supply For LCD 2.8V |
| 11 | IOVCC | Power Supply For LCD 1.8/2.8V |
| 12 | GND | System Ground |
| 13 | NC | Not Connect |
| 14 | NC | Not Connect |
| 15 | GND | System Ground |
| 16 | D3P | Positive polarity of low voltage differential data 3 signal |
| 17 | D3N | Negative polarity of low voltage differential data 3 signal |
| 18 | GND | System Ground |
| 19 | D2P | Positive polarity of low voltage differential data 2 signal |
| 20 | D2N | Negative polarity of low voltage differential data 2 signal |
| 21 | GND | System Ground |
| 22 | CLKP | Positive polarity of low voltage differential clock signal |
| 23 | CLKN | Negative polarity of low voltage differential clock signal |
| 24 | GND | System Ground |
| 25 | D1P | Positive polarity of low voltage differential data 1 signal |
| 26 | D1N | Negative polarity of low voltage differential data 1 signal |
| 27 | GND | System Ground |
| 28 | D0P | Positive polarity of low voltage differential data 0 signal |
| 29 | D0N | Negative polarity of low voltage differential data 0 signal |
| 30 | GND | System Ground |

## 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 |

## 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<br> 

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 rowspan="2">04</td><td rowspan="2">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>
<tr><td></td><td></td></tr>
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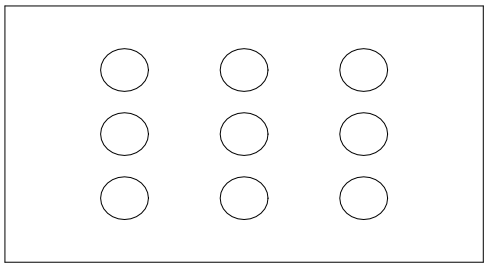
| | | | | |
|---|---|---|---|---|
| 05 | LCD Scratch 、 Threadlike Fiber | Same to NO.3 circle<br>sightline and surface of LCD is vertical<br>(2)Same to NO.3 line style | | |
| 06 | POL | It is not admissible that POL is beyond the edge of glass, else, unqualified.<br>It is essential that POL is over the 50 percent of width of frame , else ,unqualified.<br>According to the drawing in case of special definition. | | |
| 07 | Brightness | In accord with product specification | Drive condition is according to specification<br>Measure location is in Follow Picture<br>3 、 Adjust brightness instrument tozero , burrow against the surface of LCD , press “measure” , record when the display is steady. (YOKOGAWA-3298) | |
| | | |  <br>Measure location | |
| 08 | CR (Max) | According to specification | According to product specification<br>Measure instrument ( DMS-501 ) | |
| 09 | Response time | According to specification | According to product specification<br>Measure instrument ( DMS-501 ) | |
| 10 | Viewing angle | According to specification | According to product specification<br>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.

- 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

**TND**