



# Specification for Approval

Customer: \_\_\_\_\_

Model Name: \_\_\_\_\_

Supplier Approval			Customer approval
R&D Designed	R&D Approved	QC Approved	
<i>Peter</i>	Peng Jun		



## Table of Contents

List	Description	Page No.
	Cover	1
	Revision Record	2
	Table of Contents	3
1	Scope	4
2	General Information	4
3	External Dimensions	5
4	Interface Description	6
5	Absolute Maximum Ratings	7
6	Electrical Characteristics	7
7	Timing Characteristics	8
8	Backlight Characteristics	10
9	Optical Characteristics	11
10	Reliability Test Conditions and Methods	13
11	Inspection Standard	14
12	Handling Precautions	18
13	Precaution for Use	19
14	Packing Method	19

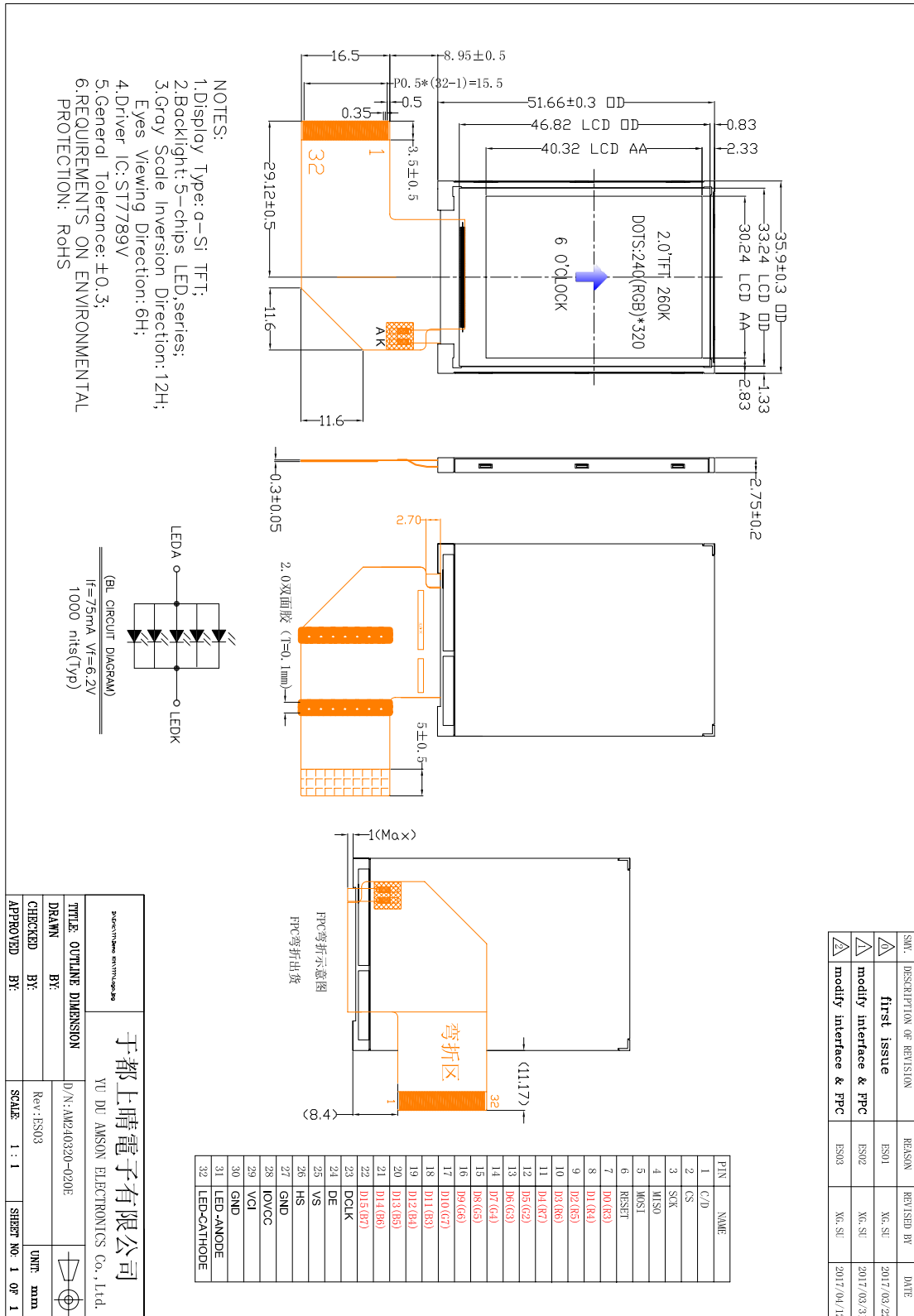
## 1. Scope

This specification defines general provisions as well as inspection standards for TFT module supplied by AMSON electronics.

If the event of unforeseen problem or unspecified items may occur, naturally shall negotiate and agree to solution

## 2. General Information

ITEM	STANDARD VALUES	UNITS
LCD type	2.0" TFT	--
Dot arrangement	240(RGB) × 320	dots
Color filter array	RGB vertical stripe	--
Display mode	Transmission / Normally White	--
Viewing Direction	12 O'clock (Gray inversion)	--
Driver IC	ST7789V	--
Module size	35.9(W) × 51.66(H) × 2.75(T)	mm
Active area	30.24(W) × 40.32(H)	mm
Dot pitch	0.126(W) × 0.126(H)	mm
Interface	4-line SPI+RGB 16Bit	--
Operating temperature	-20 ~ +70	°C
Storage temperature	-30 ~ +80	°C
Back Light	5 White LED	--
Weight	9.3	g



## 4. Interface Description

PIN NO.	PIN NAME	DESCRIPTION
1	C/D	Write enable in MCU parallel interface. Display data/command selection pin in 4-line serial interface. Second Data lane in 2 data lane serial interface. If not used, please fix this pin at VDDI or DGND.
2	CS	Chip selection pin Low enable High disable
3	SCK	This pin is used to be serial interface clock
4	MISO	SPI interface output pin. The data is output on the falling edge of the SCL signal If not used, let this pin open.
5	MOSI	When IM3:High, SPI interface input pin. The data is latched on the rising edge of the SCL signal
6	RESET	This signal will reset the device and it must be applied to properly initialize the chip. Signal is active low.
7-22	D0-D15	DB[17:0] are used as MCU parallel interface data bus. 8-bit I/F: when IM3:0, DB[7:0] are used; when IM3:1, DB[17:10] are used. 9-bit I/F: when IM3:0, DB[8:0] are used; when IM3:1, DB[17:9] are used. 16-bit I/F: when IM3:0, DB[15:0] are used; when IM3:1, DB[17:10] and DB[8:1] are used. 18-bit I/F: DB[17:0] are used. DB[17:0] are used as RGB interface data bus. 6-bit RGB I/F: DB[5:0] are used. 16-bit RGB I/F: DB[17:13], DB[11:1] are used. 18-bit RGB I/F: DB[17:0] are used. If not used, please fix this pin at VDDI or DGND.
23	DCLK	Dot clock signal for RGB interface operation. If not used, please fix this pin at VDDI or DGND
24	DE	Tearing effect signal is used to synchronize MCU to frame memory writing. If not used, please let this pin open.
25	VS	Vertical(Frame) synchronizing input signal for RGB interface operation. If not used, please fix to the VDDI or DGND.
26	HS	Horizontal(Line) synchronizing input signal for RGB interface operation. If not used, please fix to the VDDI or DGND.
27	GND	Power Ground
28	IOVCC	Power Supply for I/O System
29	VCI	Power Supply for Analog, Digital System and Booster Circuit
30	GND	Power Ground
31	LED +	POWER FOR BACKLIGHT(ANODE)
32	LED -	POWER FOR BACKLIGHT(CATHODE)

## 5. Absolute Maximum Ratings

Item	Symbol	Min.	Max.	Unit
Logic Supply Voltage	IOVCC	-0.3	4.6	V
Analog Supply Voltage	VCI	-0.3	4.6	V
Input Voltage	V <sub>in</sub>	-0.3	IOVCC+0.3	V
Operating Temperature	T <sub>OP</sub>	-20	70	°C
Storage Temperature	T <sub>ST</sub>	-30	80	°C
Storage Humidity	HD	20	90	%RH

## 6. DC Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Logic Supply Voltage	IOVCC	1.65	2.8	3.3	V	-
Analog Supply Voltage	VCI	2.5	2.8	3.3	V	-
Input High Voltage	V <sub>IH</sub>	0.7 IOVCC	-	IOVCC	V	-
Input Low Voltage	V <sub>IL</sub>	GND	-	0.3 IOVCC	V	-
Output High Voltage	V <sub>OH</sub>	0.8 IOVCC	-	IOVCC	V	-
Output Low Voltage	V <sub>OL</sub>	GND	-	0.2 IOVCC	V	-
I/O Leak Current	ILI	-1	-	1	uA	-
Power supply current	ICC+ICI	-	-	13	mA	

### NOTE:

Measuring Condition : Standard Value MAX.

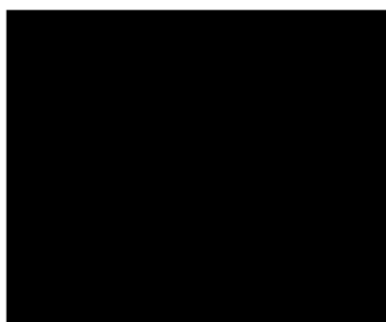
T<sub>a</sub> =25°C

IOVCC-VSS =+2.8V

VCI-VSS =+2.8V

Fosc =615KHZ

Display Patten=Checkered pattern

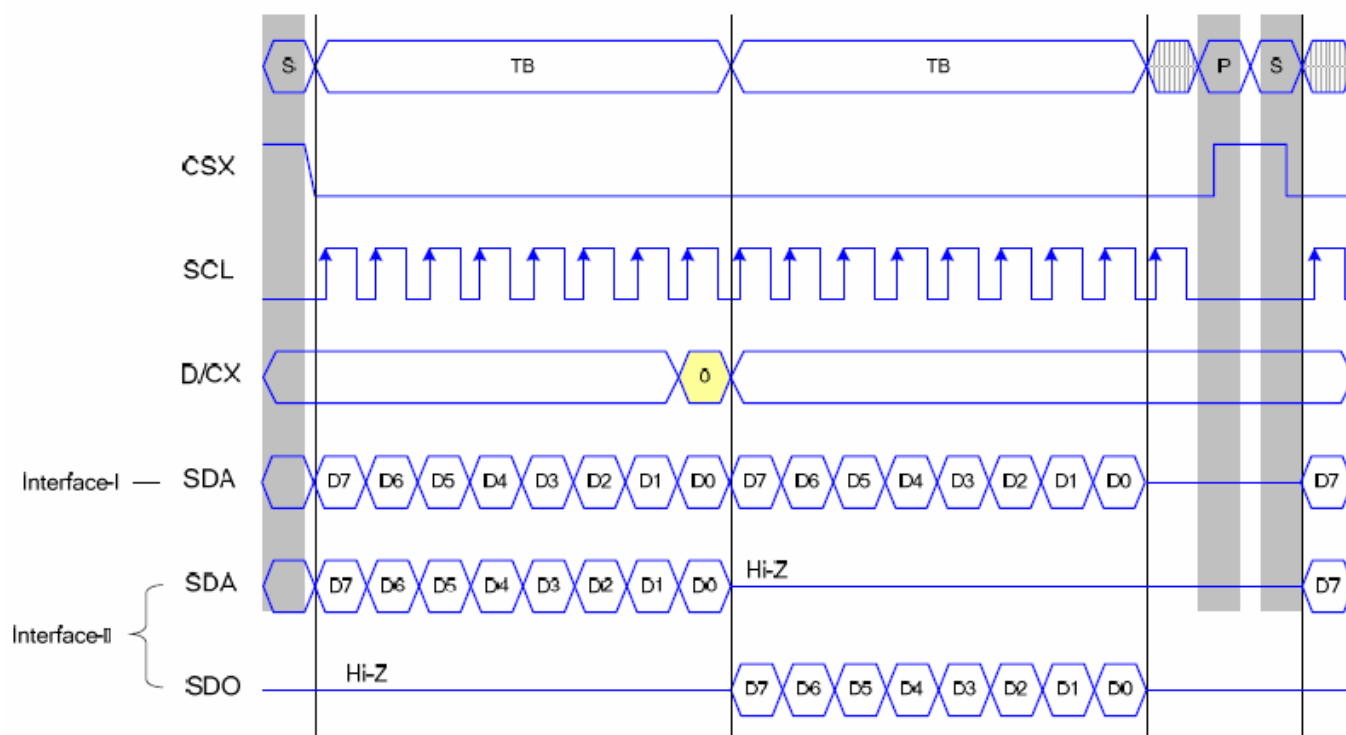


0 gray black pattern

## 7. Timing Characteristics

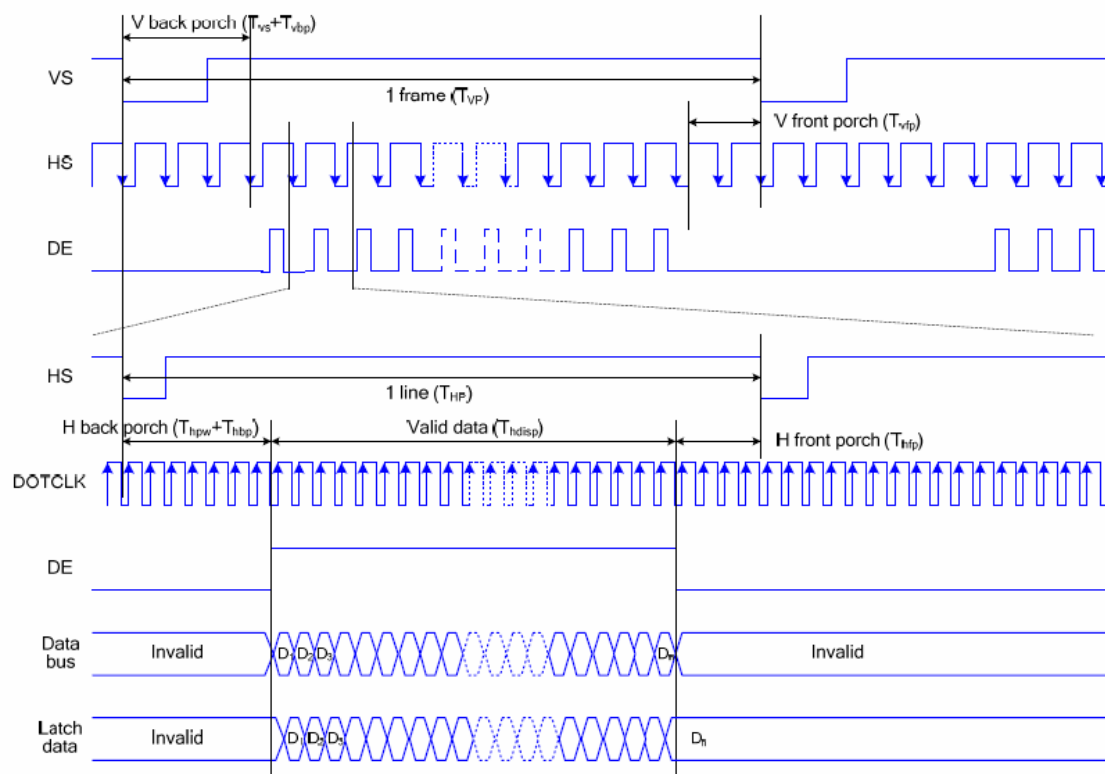
### 7.1 4-line Serial Protocol

4-line serial protocol (for RDID1/RDID2/RDID3/0Ah/0Bh/0Ch/0Dh/0Eh/0Fh command: 8-bit read):



### 7.2 RGB Interface Timing

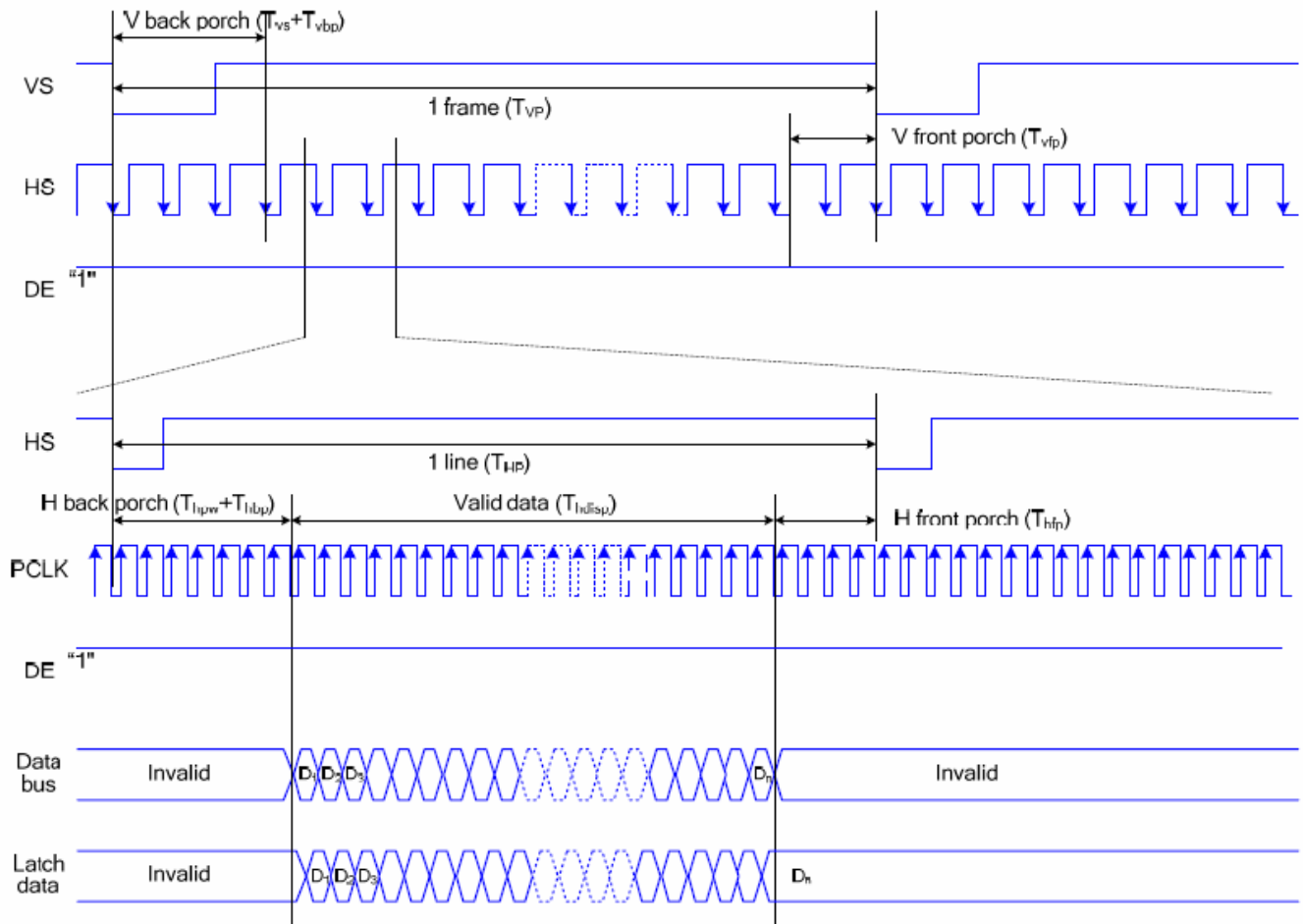
The timing chart of RGB interface DE mode is shown as follows.



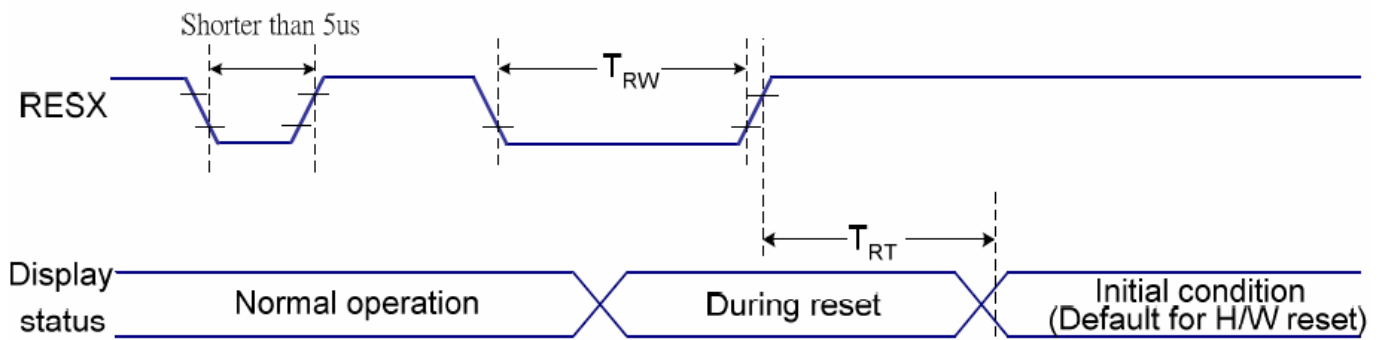
Note: The setting of front porch and back porch in host must match that in IC as this mode.



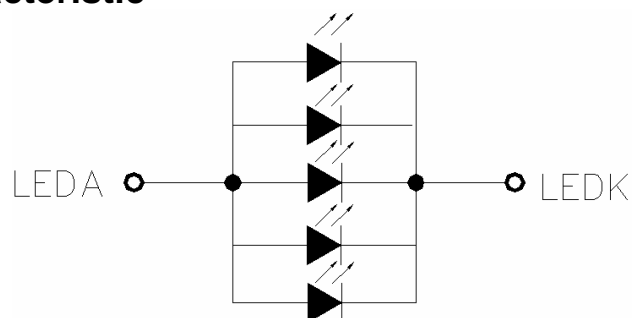
The timing chart of RGB interface HV mode is shown as follows.



## 7.3 Reset Timing Characteristics



## 8. Backlight Characteristic

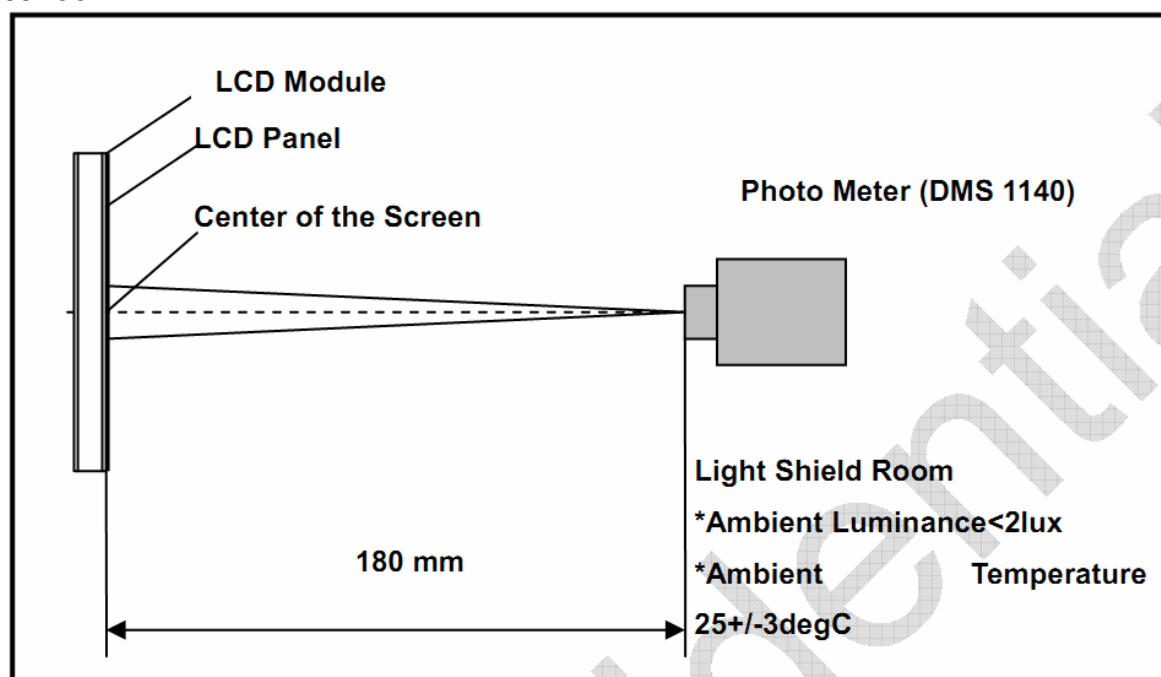


Item	Symbol	MIN	TYP	MAX	UNIT	Test Condition
Supply Voltage	Vf	-	6.2	-	V	If=75mA
Supply Current	If	-	75	-	mA	-
Luminous Intensity for LCM	-	-	1000	-	Cd/m <sup>2</sup>	If=75mA
Uniformity for LCM	-	80	-	-	%	If=75mA
Life Time	-	-	30000	-	Hr	If=75mA
Backlight Color	White					

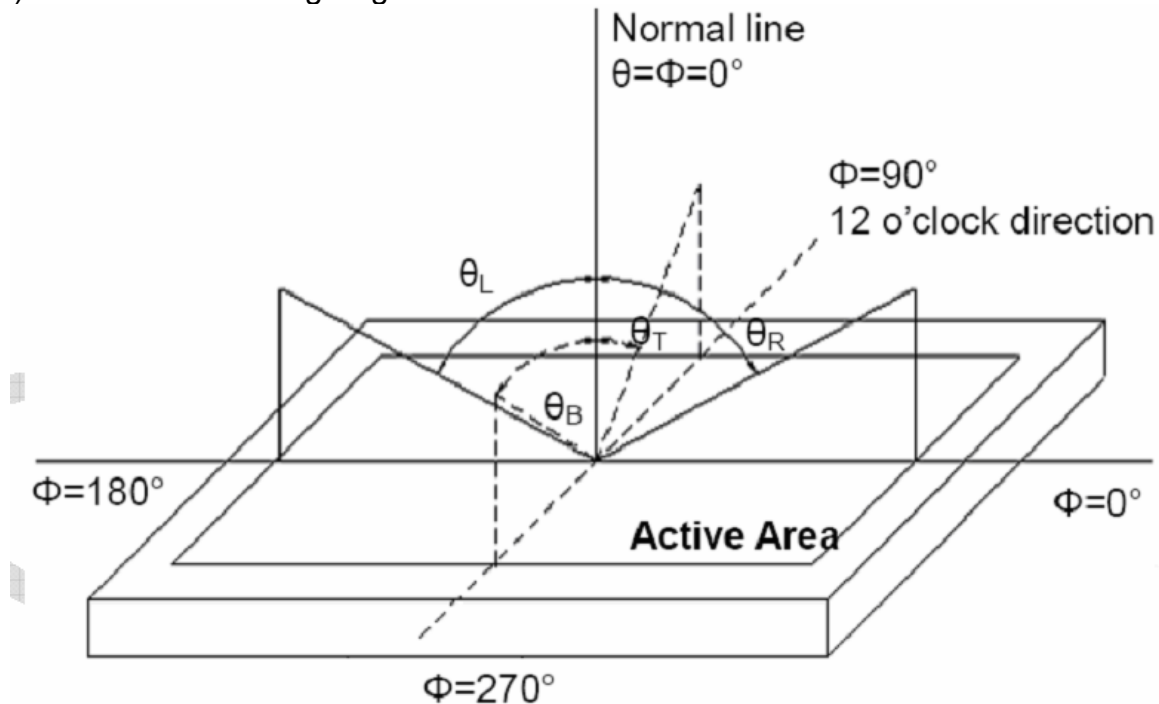
## 9. Optical Characteristics

Item	Conditions	Min.	Typ.	Max.	Unit	Note
Viewing Angle (CR>10)	Horizontal	$\theta_L$	60	70	-	degree (1),(2),(6)
		$\theta_R$	60	70	-	
	Vertical	$\theta_T$	60	70	-	
		$\theta_B$	50	60	-	
Contrast Ratio	Center	400	600	-	-	(1),(3),(6)
Response Time	Rising	-	20	30	ms	(1),(4),(6)
	Falling	-	20	30	ms	(1),(4),(6)
CF Color Chromaticity (CIE1931)	Red x	Typ. -0.05	0.640	Typ. +0.05	-	(1), (6)
	Red y		0.321		-	
	Green x		0.293		-	
	Green y		0.579		-	
	Blue x		0.134		-	
	Blue y		0.142		-	
	White x		0.299		-	
	White y		0.355		-	
NTSC	CIE1931	-	60	-	%	(1),(6)

Note (1) Measurement Setup: The LCD module should be stabilized at given temp. 25°C for 15 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight for 15 minutes in a windless room.



## Note (2) Definition of Viewing Angle



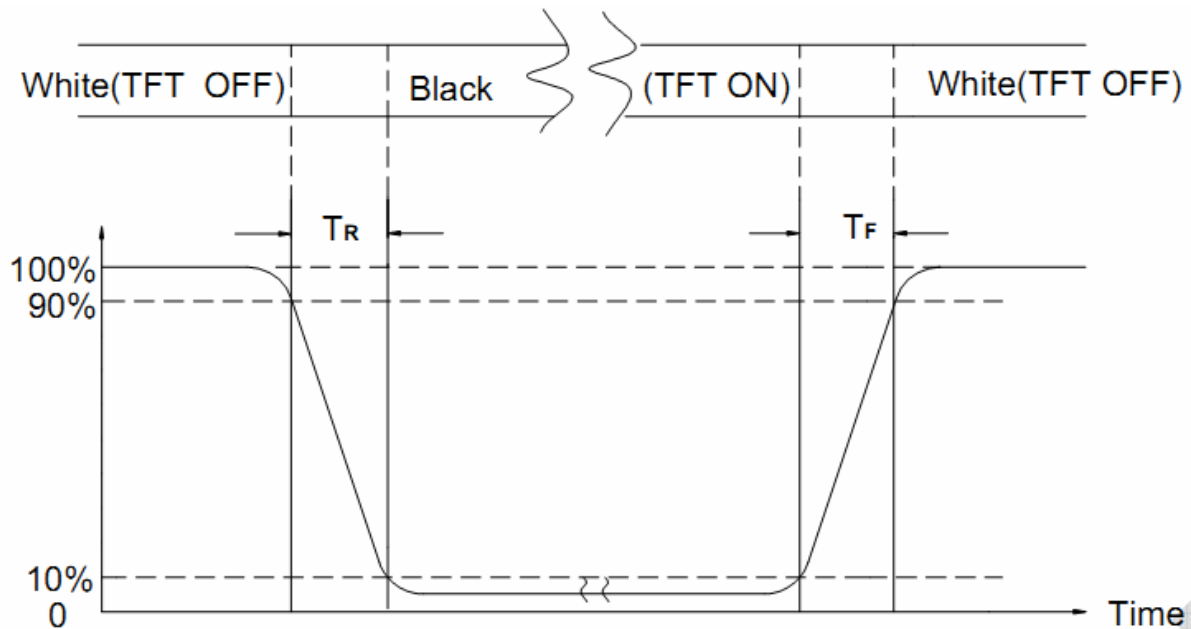
## Note (3) Definition Of Contrast Ratio (CR)

The contrast ratio can be calculated by the following expression

$$\text{Contrast Ratio (CR)} = L_{63} / L_0$$

L63: Luminance of gray level 63, L0: Luminance of gray level 0

## Note (4) Definition of response time



## Note (5) Definition of Transmittance (Module is without signal input)

$$\text{Transmittance} = \text{Center Luminance of LCD} / \text{Center Luminance of Back Light} \times 100\%$$

## Note (6) Definition of color chromaticity (CIE1931)

Color coordinates measured at the center point of LCD

## 10. Reliability Test Conditions and Methods

NO.	TEST ITEMS	TEST CONDITION	INSPECTION AFTER TEST
①	High Temperature Storage	80°C±2°C×200Hours	Inspection after 2~4hours storage at room temperature, the samples should be free from defects: 1, Air bubble in the LCD. 2, Seal leak. 3, Non-display. 4, Missing segments. 5, Glass crack. 6, Current IDD is twice higher than initial value. 7, The surface shall be free from damage. 8, The electric characteristic requirements shall be satisfied.
②	Low Temperature Storage	-30°C±2°C×200Hours	
③	High Temperature Operating	70°C±2°C×120Hours	
④	Low Temperature Operating	-20°C±2°C×120Hours	
⑤	Temperature Cycle(Storage)	-20°C $\longleftrightarrow$ 25°C $\longleftrightarrow$ 70°C (30min) (5min) (30min) 1cycle Total 10cycle	
⑥	Damp Proof Test (Storage)	50°C±5°C×90%RH×120Hours	
⑦	Vibration Test	Frequency:10Hz~55Hz~10Hz Amplitude:1.5M X,Y,Z direction for total 3hours (Packing Condition)	
⑧	Drooping Test	Drop to the ground from 1M height one time every side of carton. (Packing Condition)	
⑨	ESD Test	Voltage:±8KV,R:330Ω,C:150PF,Air Mode,10times	

### REMARK:

- 1, The Test samples should be applied to only one test item.
- 2, Sample side for each test item is 5~10pcs.
- 3, For Damp Proof Test, Pure water(Resistance > 10MΩ) should be used.
- 4, In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judge as a good part.
- 5, EL evaluation should be accepted from reliability test with humidity and temperature: Some defects such as black spot/blemish can happen by natural chemical reaction with humidity and Fluorescence EL has.
- 6, Failure Judgment Criterion: Basic Specification Electrical Characteristic, Mechanical Characteristic, Optical Characteristic.

## 11. Inspection Standard

### 11.1. QUALITY :

THE QUALITY OF GOODS SUPPLIED TO PURCHASER SHALL COME UP TO THE FOLLOWING STANDARD.

#### 11.1.1. THE METHOD OF PRESERVING GOODS

AFTER DELIVERY OF GOODS FROM AMSON TO PURCHASER. PURCHASER SHALL CONTROL THE LCM AT -10℃ TO 40℃ ,AND IT MIGHT BE DESIRABLE TO KEEP AT THE NORMAL ROOM TEMPERATURE AND HUMIDITY UNTIL INCOMING INSPECTION OR THROWING INTO PROCESS LINE.

#### 11.1.2. INCOMING INSPECTION

##### (A) THE METHOD OF INSPECTION

IF PURCHASER MAKE AN INCOMING INSPECTION , A SAMPLING PLAN SHALL BE APPLIED ON THE CONDITION THAT QUALITY OF ONE DELIVERY SHALL BE REGARDED AS ONE LOT.

##### (B) THE STANDARD OF QUALITY

ISO-2859-1 (SAME AS MIL-STD-105E ) , LEVEL II SINGLE PLAN.

CLASS	AQL(%)
CRITICAL	0.4 %
MAJOR	0.65 %
MINOR	1.5 %
TOTAL	1.5 %

EVERY ITEM SHALL BE INSPECTED ACCORDING TO THE CLASS.

##### (C) MEASURE

IF AS THE RESULT OF ABOVE RECEIVING INSPECTION , A LOT OUT IS DISCOVERED.

PURCHASER SHALL BE INFORM SELLER OF IT WITHIN SEVEN DAYS. BUT FIRST SHIPMENT WITHIN FOURTEEN DAYS.

#### 11.1.3. WARRANTY POLICY

AMSON WILL PROVIDE ONE-YEAR WARRANTY FOR THE PRODUCTS ONLY IF UNDER SPECIFICATION OPERATING CONDITIONS. AMSON WILL REPLACE NEW PRODUCTS FOR THESE DEFECT PRODUCTS WHICH UNDER WARRANTY PERIOD AND BELONG TO THE RESPONSIBILITY OF AMSON.

### 11.2. CHECKING CONDITION

11.2.1.CHECKING DIRECTION SHALL BE IN THE 45 DEGREE AREA TO FACE THE SAMPLE.

11.2.2.CHECKER SHALL SEE OVER 300±25 mm. WITH BARE EYES FAR FROM SAMPLE AND USING 2 PCS. OF 20W FLUORESCENT LAMP.

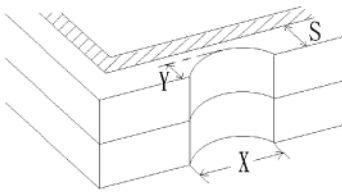
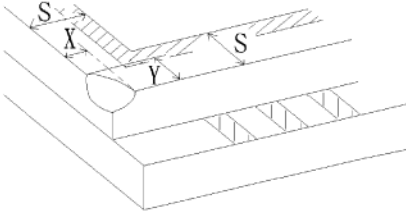
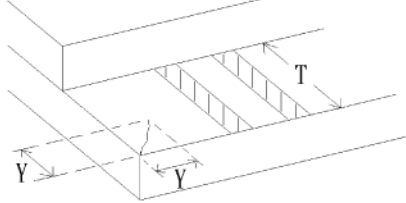
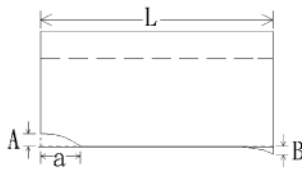
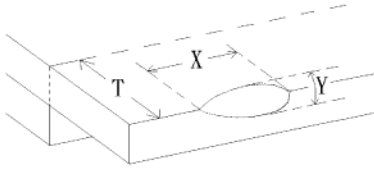
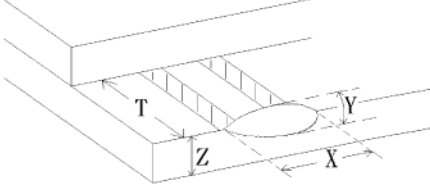
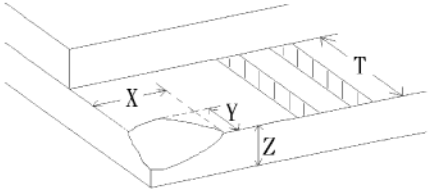
## 11.3. INSPECTION PLAN :

CLASS	ITEM	JUDGEMENT	CLASS
PACKING & INDICATE	1. OUTSIDE AND INSIDE PACKAGE	"MODEL NO." , "LOT NO." AND "QUANTITY" SHOULD INDICATE ON THE PACKAGE.	Minor
	2. MODEL MIXED AND QUANTITY	OTHER MODEL MIXED.....REJECTED QUANTITY SHORT OR OVER.....REJECTED	Critical
	3. PRODUCT INDICATION	"MODEL NO." SHOULD INDICATE ON THE PRODUCT	Major
ASSEMBLY	4. DIMENSION, LCD GLASS SCRATCH AND SCRIBE DEFECT.	ACCORDING TO SPECIFICATION OR DRAWING.	Major
APPEARANCE	5. VIEWING AREA	POLARIZER EDGE OR LCD'S SEALING LINE IS VISABLE IN THE VIEWING AREA .....REJECTED	Minor
	6. BLEMISH・BLACK SPOT・ WHITE SPOT IN THE LCD AND LCD GLASS CRACKS	ACCORDING TO STANDARD OF VISUAL INSPECTION(INSIDE VIEWING AREA)	Minor
	7. BLEMISH・BLACK SPOT WHITE SPOT AND SCRATCH ON THE POLARIZER	ACCORDING TO STANDARD OF VISUAL INSPECTION(INSIDE VIEWING AREA)	Minor
	8. BUBBLE IN POLARIZER	ACCORDING TO STANDARD OF VISUAL INSPECTION(INSIDE VIEWING AREA)	Minor
	9. LCD'S RAINBOW COLOR	STRONG DEVIATION COLOR ( OR NEWTON RING) OF LCD.....REJECTED. OR ACCORDING TO LIMITED SAMPLE ( IF NEEDED, AND INSIDE VIEWING AREA )	Minor
ELECTRICAL	10. ELECTRICAL AND OPTICAL CHARACTERISTICS ( CONTRAST・VOP・ CHROMATICITY ... ETC )	ACCORDING TO SPECIFICATION OR DRAWING . ( INSIDE VIEWING AREA )	Critical
	11.MISSING LINE	MISSING DOT・LINE・CHARACTER .....REJECTED	Critical
	12.SHORT CIRCUIT・ WRONG PATTERN DISPLAY	NO DISPLAY・WRONG PATTERN DISPLAY・CURRENT CONSUMPTION OUT OF SPECIFICATION..... REJECTED	Critical
	13. DOT DEFECT (FOR COLOR AND TFT)	ACCORDING TO STANDARD OF VISUAL INSPECTION	Minor

## 11.4. STANDARD OF VISUAL INSPECTION

NO.	CLASS	ITEM	JUDGEMENT																				
11.4.1	MINOR	BLACK AND WHITE SPOT FOREIGN MATERIEL DUST IN THE CELL BLEMISH SCRATCH	<div>(A) ROUND TYPE: <span>unit : mm.</span><table><tr><th>DIAMETER (mm.)</th><th>ACCEPTABLE Q'TY</th></tr><tr><td><math>\Phi \leq 0.1</math></td><td>DISREGARD</td></tr><tr><td><math>0.1 &lt; \Phi \leq 0.25</math></td><td>3 (Distance&gt;5mm)</td></tr><tr><td><math>0.25 &lt; \Phi</math></td><td>0</td></tr></table><div>NOTE: <math>\Phi=(\text{LENGTH}+\text{WIDTH})/2</math></div><div>(B) LINEAR TYPE: <span>unit : mm.</span><table><tr><th>LENGTH</th><th>WIDTH</th><th>ACCEPTABLE Q'TY</th></tr><tr><td>-----</td><td><math>W \leq 0.03</math></td><td>DISREGARD</td></tr><tr><td><math>L \leq 5.0</math></td><td><math>0.03 &lt; W \leq 0.07</math></td><td>3 (Distance&gt;5mm)</td></tr><tr><td>-----</td><td><math>0.07 &lt; W</math></td><td>FOLLOW ROUND TYPE</td></tr></table></div></div>	DIAMETER (mm.)	ACCEPTABLE Q'TY	$\Phi \leq 0.1$	DISREGARD	$0.1 < \Phi \leq 0.25$	3 (Distance>5mm)	$0.25 < \Phi$	0	LENGTH	WIDTH	ACCEPTABLE Q'TY	-----	$W \leq 0.03$	DISREGARD	$L \leq 5.0$	$0.03 < W \leq 0.07$	3 (Distance>5mm)	-----	$0.07 < W$	FOLLOW ROUND TYPE
DIAMETER (mm.)	ACCEPTABLE Q'TY																						
$\Phi \leq 0.1$	DISREGARD																						
$0.1 < \Phi \leq 0.25$	3 (Distance>5mm)																						
$0.25 < \Phi$	0																						
LENGTH	WIDTH	ACCEPTABLE Q'TY																					
-----	$W \leq 0.03$	DISREGARD																					
$L \leq 5.0$	$0.03 < W \leq 0.07$	3 (Distance>5mm)																					
-----	$0.07 < W$	FOLLOW ROUND TYPE																					
11.4.2	MINOR	BUBBLE IN POLARIZER DENT ON POLARIZER	<div><span>unit : mm.</span><table><tr><th>DIAMETER</th><th>ACCEPTABLE Q'TY</th></tr><tr><td><math>\Phi \leq 0.2</math></td><td>DISREGARD</td></tr><tr><td><math>0.2 &lt; \Phi \leq 0.5</math></td><td>2 (Distance&gt;5mm)</td></tr><tr><td><math>0.5 &lt; \Phi</math></td><td>0</td></tr></table></div>	DIAMETER	ACCEPTABLE Q'TY	$\Phi \leq 0.2$	DISREGARD	$0.2 < \Phi \leq 0.5$	2 (Distance>5mm)	$0.5 < \Phi$	0												
DIAMETER	ACCEPTABLE Q'TY																						
$\Phi \leq 0.2$	DISREGARD																						
$0.2 < \Phi \leq 0.5$	2 (Distance>5mm)																						
$0.5 < \Phi$	0																						
11.4.3	MINOR	Dot Defect	<table><tr><th>Items</th><th>ACC. Q'TY</th></tr><tr><td>Bright dot</td><td><math>N \leq 4</math> (Distance&gt;5mm)</td></tr><tr><td>Dark dot</td><td><math>N \leq 4</math> (Distance&gt;5mm)</td></tr></table> <div>Pixel Define :<div><div><div>Pixel</div><div><div><div>R</div><div>G</div><div>B</div></div><div><div>Dot</div><div>Dot</div><div>Dot</div></div></div></div></div><div>Note 1: The definition of dot: The size of a defective dot over 1/2 of whole dot is regarded as one defective dot.</div><div>Note 2: Bright dot: Dots appear bright and unchanged in size in which LCD panel is displaying under black pattern.</div><div>Note 3: Dark dot: Dots appear dark and unchanged in size in which LCD panel is displaying under pure red, green ,blue pattern.</div></div>	Items	ACC. Q'TY	Bright dot	$N \leq 4$ (Distance>5mm)	Dark dot	$N \leq 4$ (Distance>5mm)														
Items	ACC. Q'TY																						
Bright dot	$N \leq 4$ (Distance>5mm)																						
Dark dot	$N \leq 4$ (Distance>5mm)																						



NO.	CLASS	ITEM	JUDGEMENT
11.4.4	MINOR	LCD GLASS CHIPPING	 $Y > S$ Reject
11.4.5	MINOR	LCD GLASS CHIPPING	 $X \text{ or } Y > S$ Reject
11.4.6	MAJOR	LCD GLASS GLASS CRACK	 $Y > (1/2) T$ Reject
11.4.7	MAJOR	LCD GLASS SCRIBE DEFECT	 <ol style="list-style-type: none"> <li><math>a &gt; L/3</math>, <math>A &gt; 1.5\text{mm}</math>. Reject</li> <li>B : ACCORDING TO DIMENSION</li> </ol>
11.4.8	MINOR	LCD GLASS CHIPPING ( ON THE TERMINAL AREA )	 $\Phi = (x+y)/2 > 2.5 \text{ mm}$ Reject
11.4.9	MINOR	LCD GLASS CHIPPING ( ON THE TERMINAL SURFACE )	 $Y > (1/3) T$ Reject
11.4.10	MINOR	LCD GLASS CHIPPING	 $Y > T$ Reject

## 12. Handling Precautions

### 12.1 Mounting method

The LCD panel of AMSON TFT module consists of two thin glass plates with polarizers which easily be damaged. And since the module is 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.

### 12.2 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) , Sulfur (S)

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

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

### 12.3 Caution against static charge

The LCD module uses C-MOS LSI drivers, so we recommend that you:

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

### 12.4 packing

- Module employs 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

### 12.5 Caution for operation

- It is an indispensable condition to drive LCD's within the specified voltage limit since the higher voltage than the limit causes 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 than the operating temperature range and on the other hand at higher temperature LCD's show 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.
- 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.

## 12.6 storing

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]

## 12.7 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

## 13. Precaution for Use

### 13.1

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.

### 13.2

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 AMSON TFT , 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.

## 14. Packing Method

TBD