



SPECIFICATIONS FOR LCD MODULE

CUSTOMER	Preliminary
CUSTOMER PART NO.	
AMPIRE PART NO.	AM- 800600CTMQW-02H
APPROVED BY	
DATE	

☒ Preliminary Specification

☐ Approved Specification

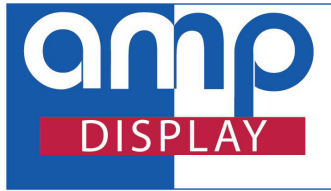
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A Brighter Solution

AMP DISPLAY INC.

SPECIFICATIONS

8.0-in COLOR TFT MODULE

CUSTOMER:	
CUSTOMER PART NO.	
AMP DISPLAY PART NO.	A M - 8 0 0 6 0 0 C T M Q W - 0 2 H
APPROVED BY:	
DATE:	

☐

APPROVED FOR SPECIFICATIONS

☐

APPROVED FOR SPECIFICATION AND PROTOTYPES

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RECORD OF REVISION

Revision Date	Page	Contents	Editor
2007/10/17	-	New Release	Edward

1. Features

8 inch Amorphous-TFT-LCD (Thin Film Transistor Liquid Crystal Display) module.
This module is composed of a 8" TFT-LCD panel, LED backlight and T-CON board unit.

- (1) Construction: 8" a-Si TFT active matrix, White LED Backlight .
 - (2) Resolution (pixel): 800(R.G.B) X600
 - (3) Number of the Colors : 262K colors (R , G , B 6 bit digital each)
 - (4) LCD type : Transmissive , normally White
 - (5) Interface: 40 pin
 - (6) Power Supply Voltage: 3.3V single power input.
- Viewing Direction: 6 O'clock (The direction it's hard to be discolored)

2. PHYSICAL SPECIFICATIONS

Item	Specifications	unit
LCD size	8 inch (Diagonal)	
Resolution	800 x 3(RGB) x 600	dot
Dot pitch	0.0675(W) x 0.2025(H)	mm
Active area	162.0(W) x 121.5(H)	mm
Module size	183.0(W) x 141.0(H) x 10.1(D)	mm
Surface treatment	Anti-Glare	
Color arrangement	RGB-stripe	
interface	Digital	
Weight	TBD	g

3. ABSOLUTE MAX. RATINGS

(GND = AVSS = 0V, Note 2)

Item	Symbol	Values		UNIT	Note
		Min.	Max.		
Power voltage	VCC	-0.3	4.6	V	
	AVDD	-0.5	13.5		
	VGH	13.0	19.0		
	VGL	-12.0	-2.0		
	VGH-VGL	--	31.0		
Input signal voltage	V1~V7	0.4AVDD	AVDD+0.3	V	Note 1
	V8~V14	-0.3	0.6AVDD	V	Note 1
Operation temperature	TOP	-20	70	°C	
Storage temperature	TST	-30	80	°C	
LED Reverse Voltage	VR	--	1.2	V	each LED Note 3
LED Forward Voltage	IF	--	25	mA	each LED

Note 1: $AVDD - 0.1 \geq V1 \geq V2 \geq V3 \geq V4 \geq V5 \geq V6 \geq V7 \geq V8 \geq V9 \geq V10 \geq V11 \geq V12 \geq V13 \geq V14 \geq AVSS + 0.1$

Note 2: The absolute maximum rating values of the module should not be exceeded. Once exceeded absolute maximum rating values, the characteristics of the module may not be recovered. Even in an extreme condition, may result in module permanently destroyed.

Note 3: VR Conditions : Zener Diode 20mA

4. ELECTRICAL CHARACTERISTICS

4-1 Typical Operation Conditions

(GND = AVSS = 0V, Note 1)

Item	Symbol	Values			UNIT	Note
		Min.	Typ.	Max.		
Power voltage	VCC	3.0	3.3	3.6	V	Note2
	AVDD	--	10.2	--		
	VGH	--	16.0	--		
	VGL	--	-7.0	--		
Input signal voltage	VCOM	--	4.15	--	V	
	V1~V7	0.4 AVDD	--	AVDD-0.1		
	V8~V14	0.1	--	0.6 AVDD		
Input logic high voltage	VIH	0.7VCC	--	VCC	V	Note3
Input logic low voltage	VIL	0	--	0.2 VCC	V	

Note 1: Be sure to apply GND, VCC, and VGL, to the LCD first, and then apply VGH.

Note 2: VCC setting should match the signals output voltage (refer to Note 3) of customer's system board.

Note 3: STHL, STHR, OEH, L/R, CPH1~CPH3, STVD, STVU, OEV, CKV, U/D.

4-2 Current Consumption

(GND = AVSS = 0V)

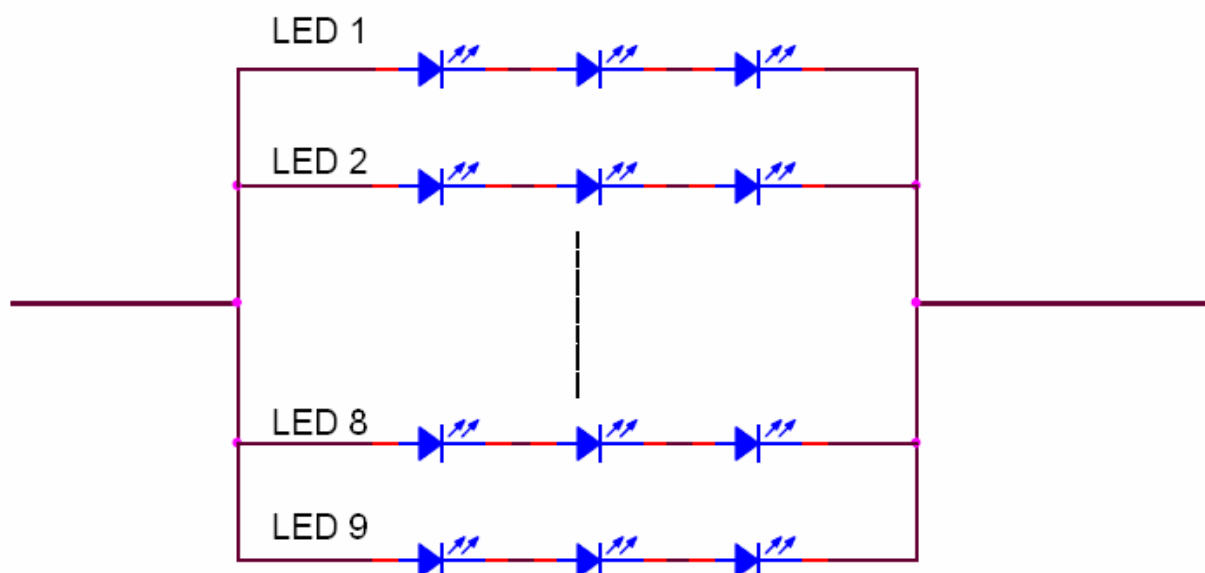
Item	Symbol	Values			Unit	Note
		Min.	Typ.	Max.		
Current for Driver	IGH	--	0.2	0.5	mA	VGH = 16.0V
	IGL	--	0.2	1.0	mA	VGL = -7.0V
	ICC	--	5.5	10.0	mA	VCC = 3.3V
	IAVDD	--	32	50.0	mA	AVDD = 10.0V

4-3 Backlight Driving Conditions

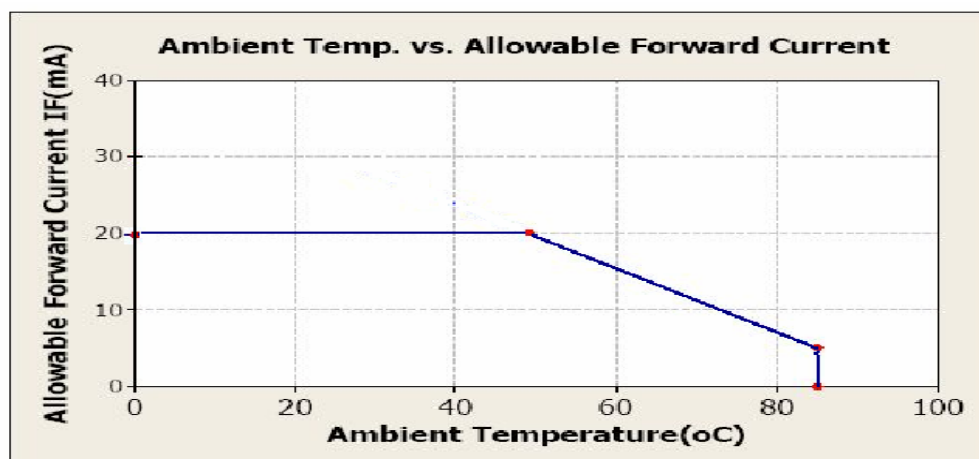
Item	Symbol	Values			Unit	Note
		Min.	Typ.	Max.		
LED voltage	VL	9.3	9.9	10.5	V	Note 1
LED current	IL	18	20	22	mA	Note 1
LED life time	--	20,000	--	--	Hr	Note 2

Note 1 : The LED driving condition is defined for each LED module. (3 LED Serial)

Note 2 : The “LED life time” is defined as the module brightness decrease to 50% original brightness that ambient temperature is 25°C and IL = 20mA.

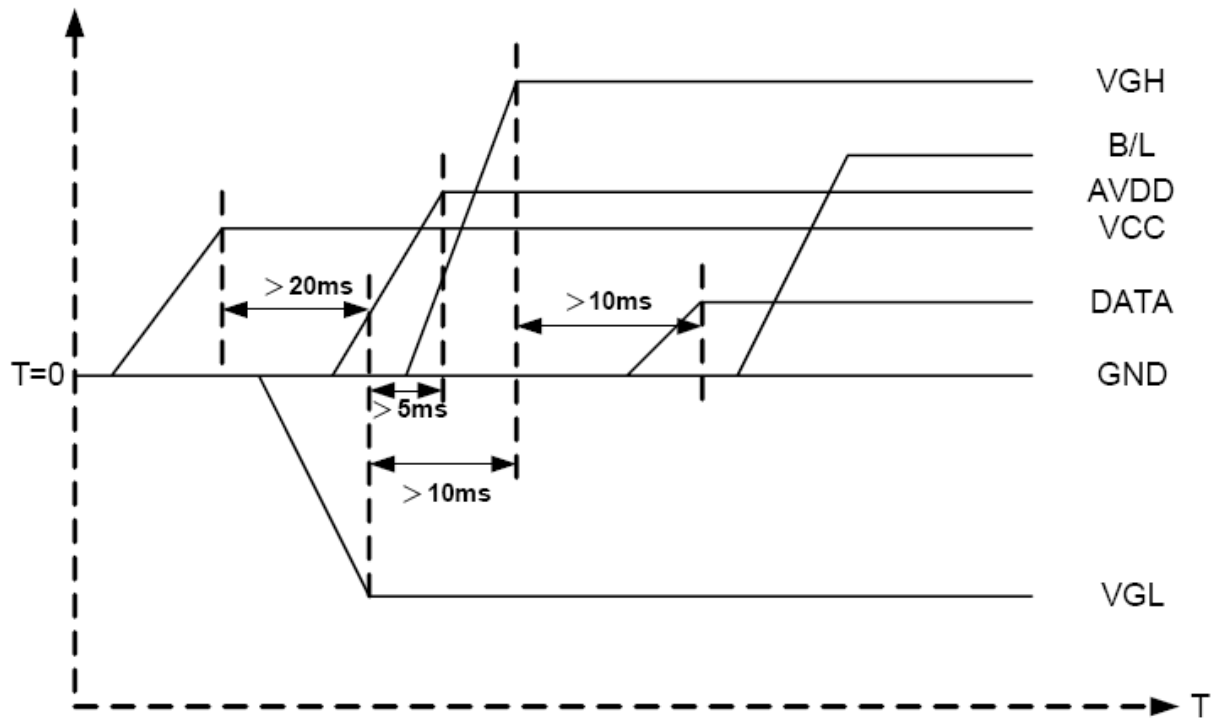


Note 3 : When LCM is operated over 40°C ambient temperature, the ILED of each LED module (3 LED Serial) should be follow :



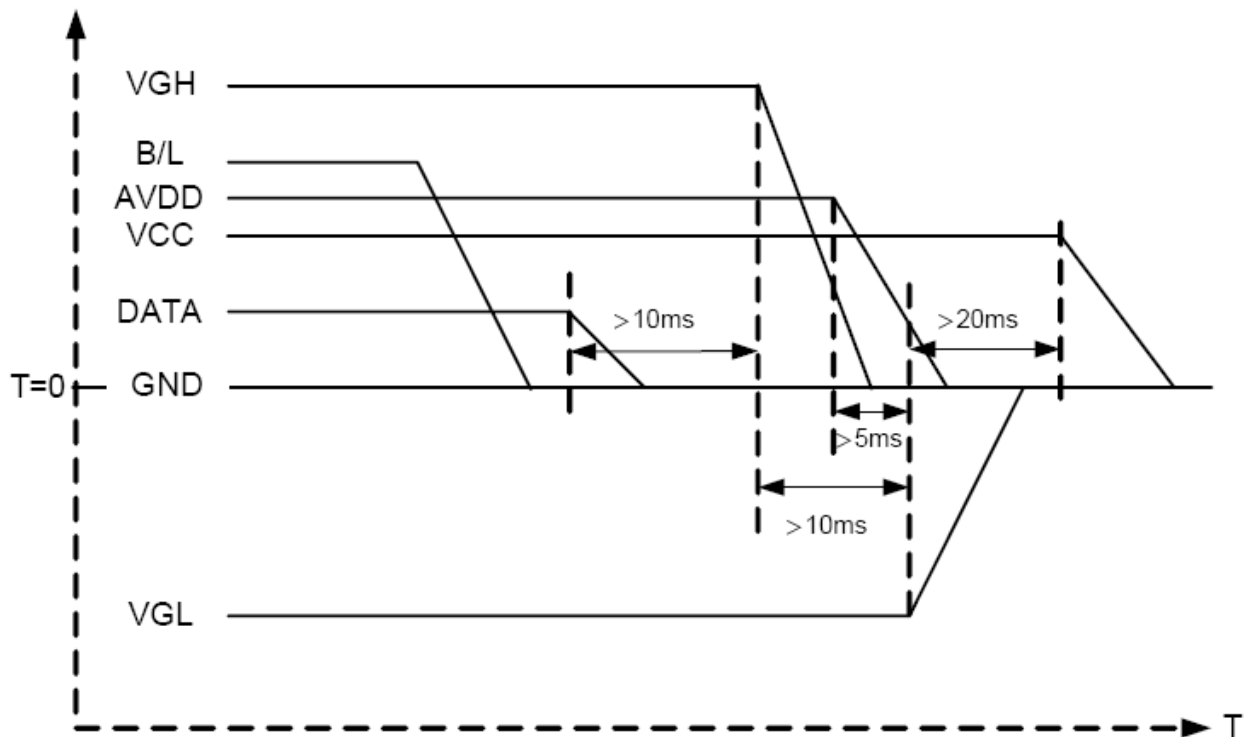
4-4 Power Sequence

4-4-1 Power on :



VCC→VGL→VGH→Data→B/L

4-4-2 Power off :



B/L→Data→VGH→VGL→VCC

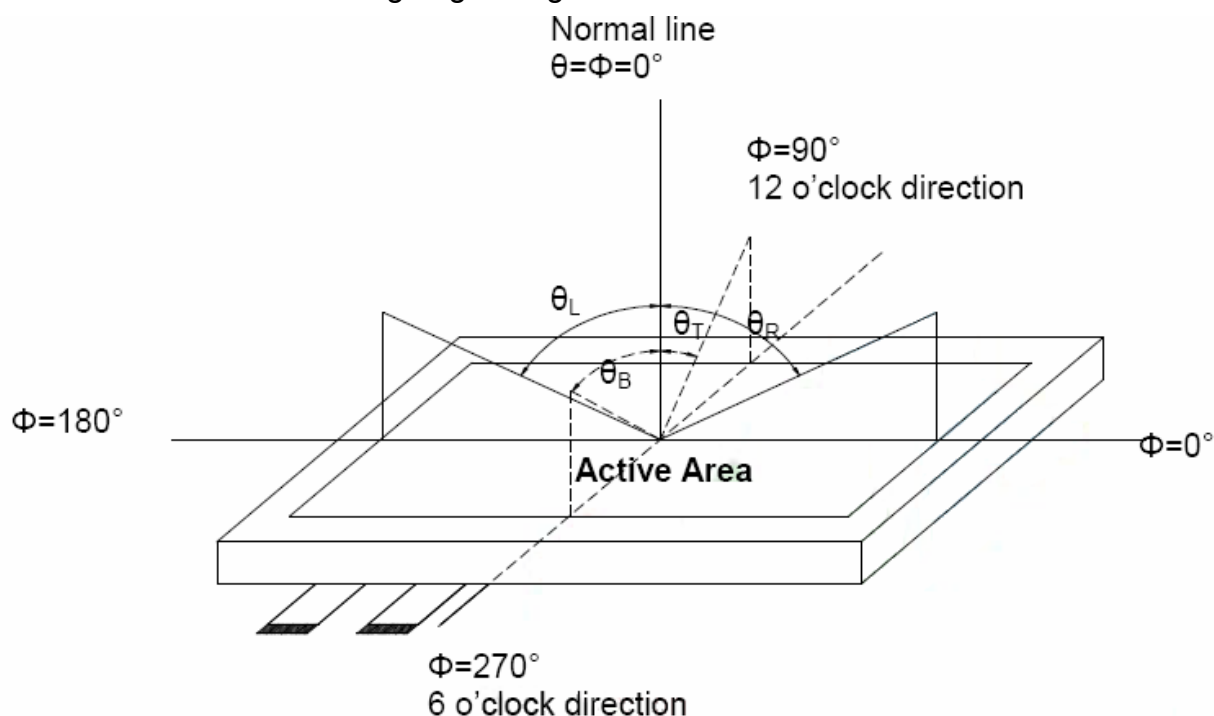
5. Optical Specifications

Item	Symbol	Condition	Values			Unit	Note
			Min.	Typ.	Max.		
Viewing angle ($CR \geq 10$)	θL	$\Phi = 180^\circ$ (9 o'clock)	60	70	--	degree	Note1
	θR	$\Phi = 0^\circ$ (3 o'clock)	60	70	--		
	θT	$\Phi = 90^\circ$ (12 o'clock)	40	50	--		
	θB	$\Phi = 270^\circ$ (6 o'clock)	60	70	--		
Response time	TON	Normal $\theta = \Phi = 0^\circ$	--	10		msec	Note3
	TOFF		--	15		msec	
Contrast ratio	CR		400	500	--	--	Note4
Color chromaticity	WX		0.26	0.31	0.36	--	Note5
	WY		0.28	0.33	0.38	--	Note6
Luminance	L		200	250	--	cd/m ²	Note6
Luminance uniformity	YU		70	75	--	%	Note7

Test Conditions :

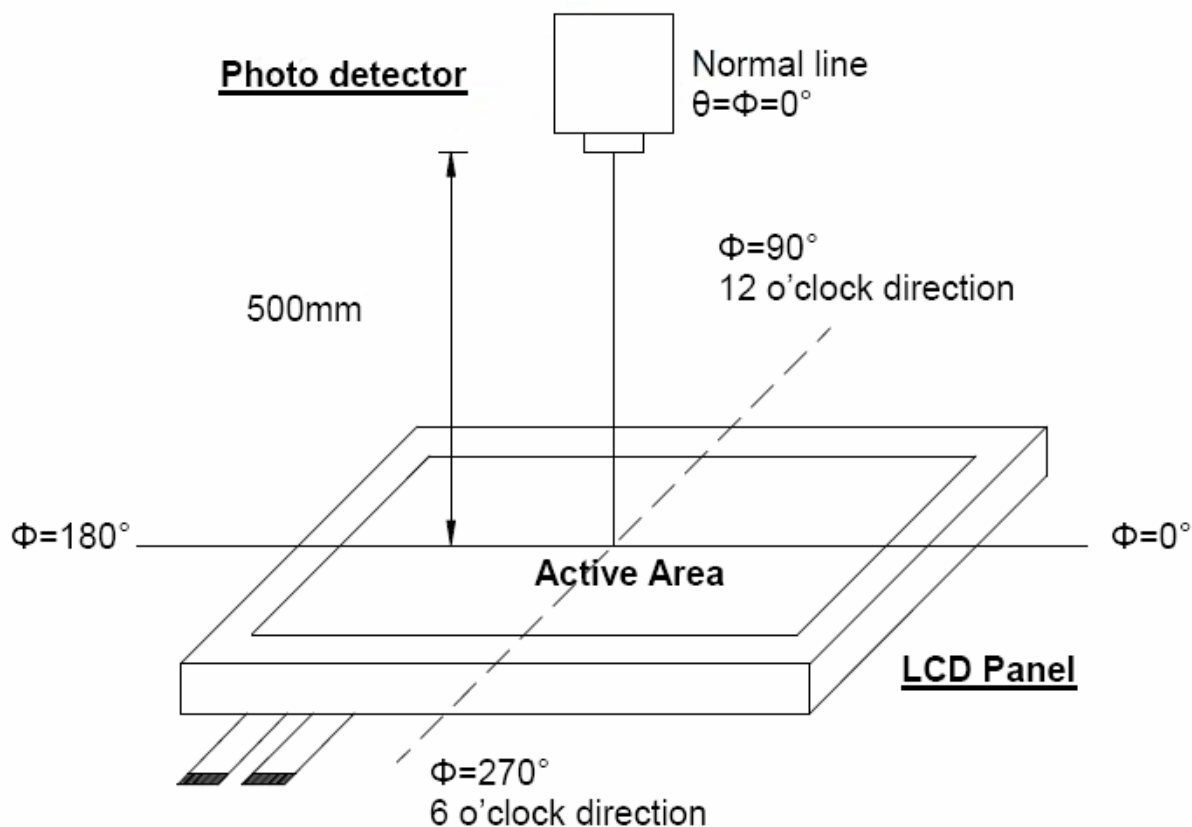
1. VCC = 3.3V, IL = 20mA (Backlight current), the ambient temperature is 25°C.
2. The test systems refer to Note 2.

Note 1 : Definition of viewing angle range



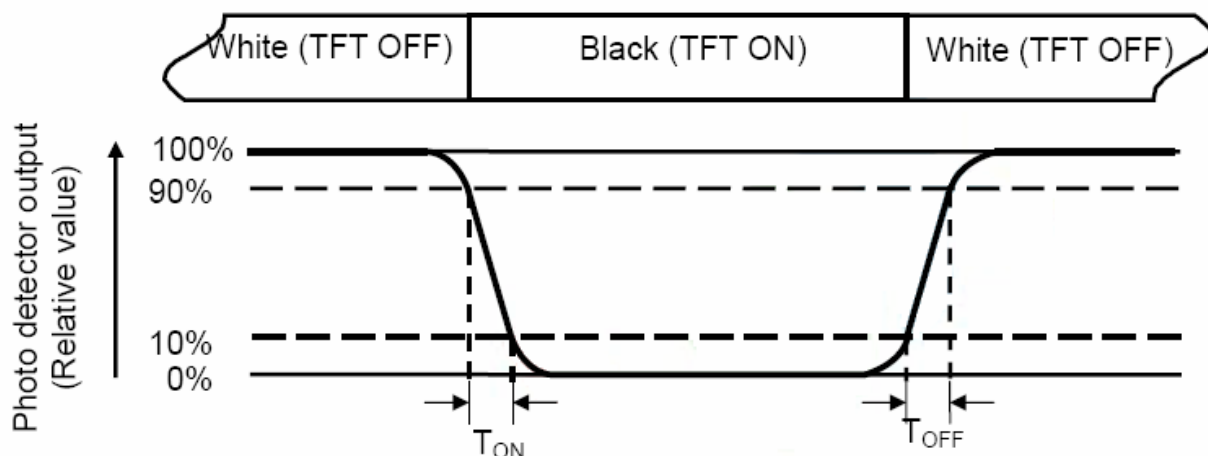
Note 2 : Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 30 minutes operation, the optical properties are measured at the center point of the LCD screen. (Response time is measured by Photo detector TOPCON BM-7, other items are measured by BM-5A/Field of view : 1° / Height : 500mm.)



Note 3 : Definition of Response time

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (T_{ON}) is the time between photo detector output intensity changed from 90% to 10%. And fall time (T_{OFF}) is the time between photo detector output intensity changed from 10% to 90%.



Note 4 : Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

Note 5 : Definition of color chromaticity (CIE1931)

Color coordinated measured at center point of LCD.

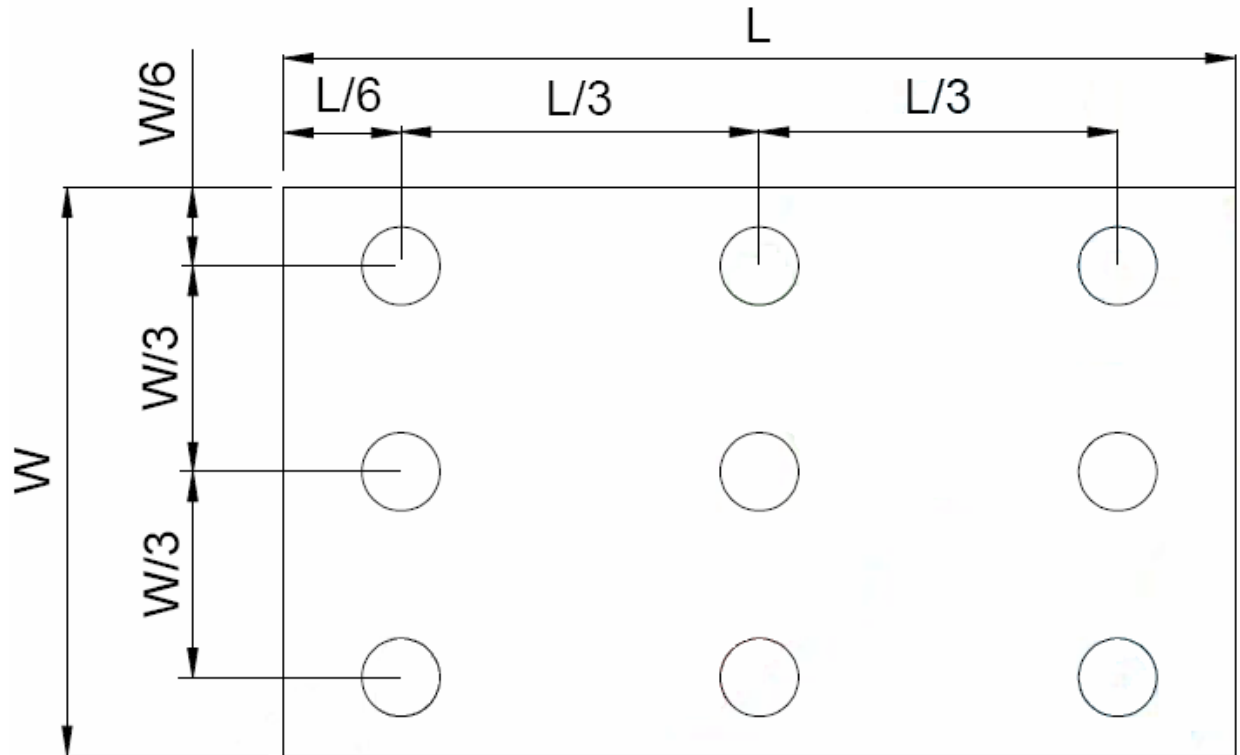
Note 6 : All input terminals LCD panel must be ground when measuring the center area of the panel.

Note 7 : Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer to bellow figure). Every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity (Yu)} = \frac{B_{\min}}{B_{\max}}$$

L ----- Active area length W ----- Active area width



$B_{\max}$: The measured maximum luminance of all measurement position.

$B_{\min}$: The measured minimum luminance of all measurement position.

6. INTERFACE

TFT LCD Panel Driving Section

Pin No.	Symbol	I/O	Description	Note
1	GND	P	Power ground	
2	GND	P	Power ground	
3	NC		No Connection	
4	VCC	I	Power supply for digital circuit(3.3V)	Note 1
5	VCC	I	Power supply for digital circuit(3.3V)	Note 1
6	VCC	I	Power supply for digital circuit(3.3V)	Note 1
7	VCC	I	Power supply for digital circuit(3.3V)	Note 1
8	VCC	I	Power supply for digital circuit(3.3V)	Note 1
9	DE	I	Data enable	
10	GND	P	Power ground	
11	GND	P	Power ground	
12	GND	P	Power ground	
13	BI5	I	Blue data input (MSB)	
14	BI4	I	Blue data input	
15	BI3	I	Blue data input	
16	GND	P	Power ground	
17	BI2	I	Blue data input	
18	BI1	I	Blue data input	
19	BI0	I	Blue data input (LSB)	
20	GND	P	Power ground	
21	GI5	I	Green data input (MSB)	
22	GI4	I	Green data input	
23	GI3	I	Green data input	
24	GND	P	Power ground	
25	GI2	I	Green data input	

26	GI1	I	Green data input	
27	GI0	I	Green data input (LSB)	
28	GND	P	Power ground	
29	RI5	I	Red data input (MSB)	
30	RI4	I	Red data input	
31	RI3	I	Red data input	
32	GND	P	Power ground	
33	RI2	I	Red data input	
34	RI1	I	Red data input	
35	RI0	I	Red data input (LSB)	
36	GND	P	Power ground	
37	GND	P	Power ground	
38	DCLK	I	Sample clock	
39	GND	P	Power ground	
40	GND	P	Power ground	

Note : input, O : output, P : power

Note 1: Typ. Vcc = 3.3V, Min. Vcc = 3.0V, Max. Vcc = 3.6V

Backlight Unit Section

Pin No.	Symbol	I/O	Description	Note
1	HI	P	Power supply for backlight unit	Pink
2	GND	P	Ground for backlight unit	White

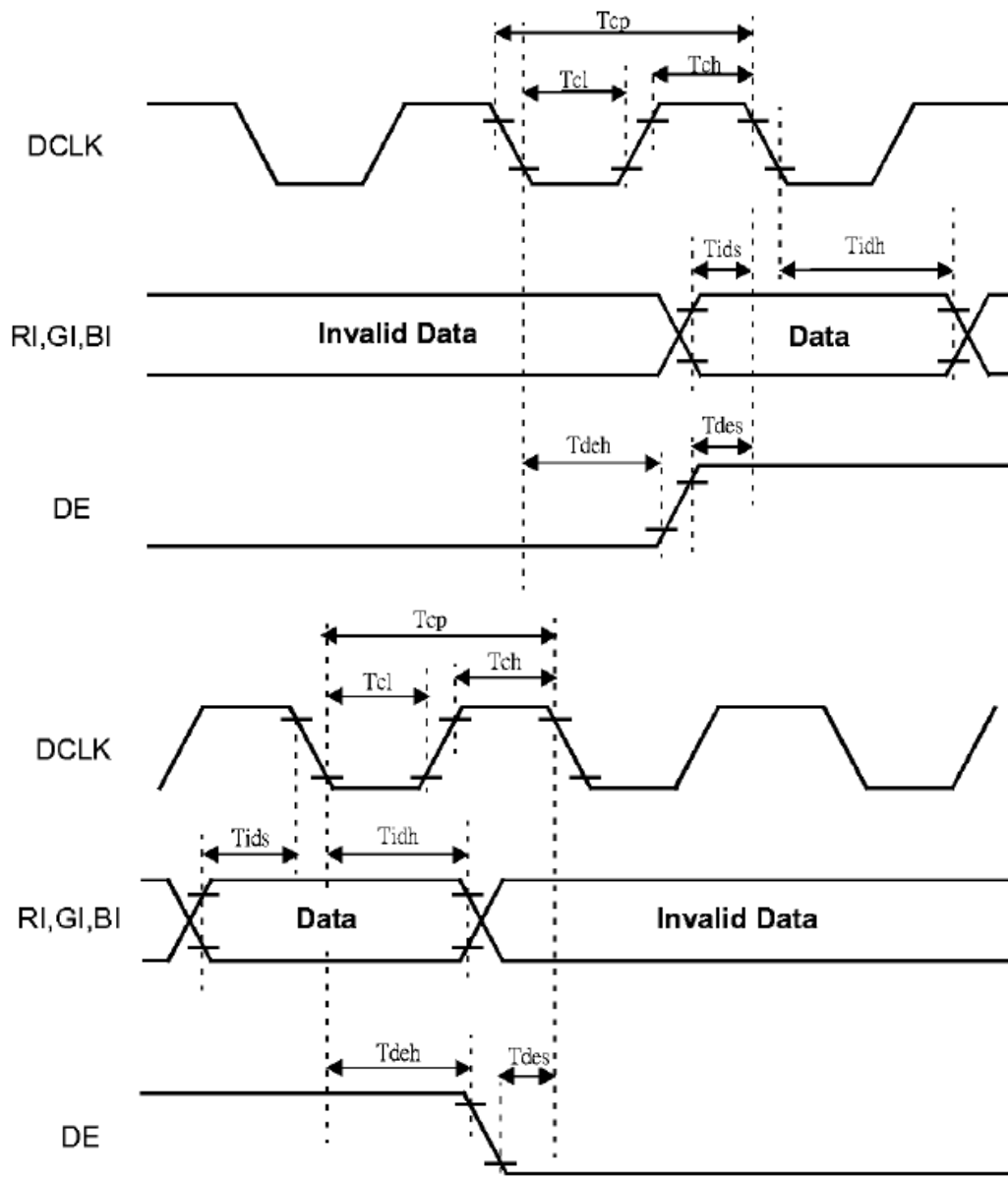
7. INPUT SIGNAL :

7-1 Timing Condition

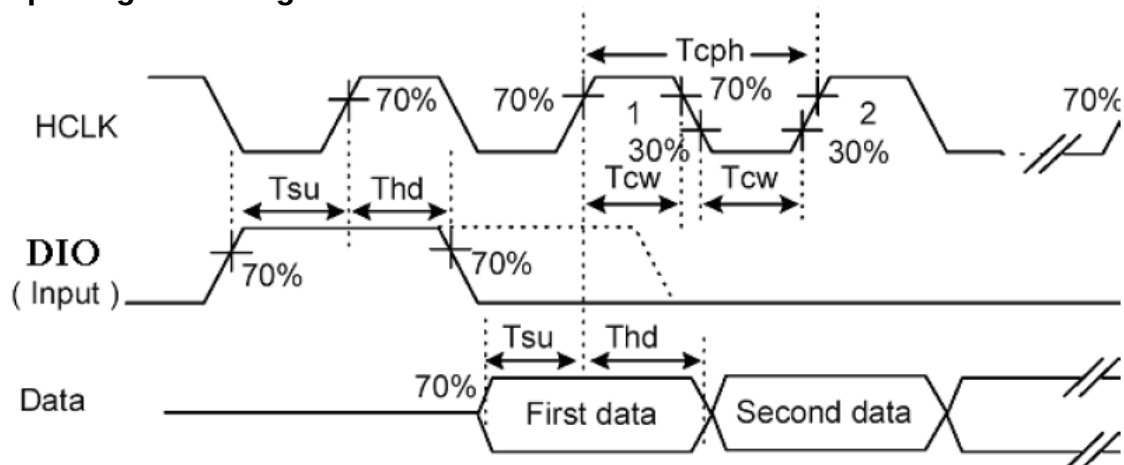
Symbol	Item	Values			Unit
		Min.	Typ.	Max.	
FDCLK	DCLK Frequency	5	--	50	MHZ
TDUTY	DCLK				
TCP	DCLK Period	20	--	--	ns
TCH	DCLK High Time	0.3	--	--	ns
TCL	DCLK Low Time	0.3	--	--	ns
TIDS	RGB Input Data Setup Time	5	--	--	
TIDH	RGB Input Data Hold Time	10	--	--	--
TDES	DE Setup Time	5	--	--	
TDEH	DE Hold Time	10	--	--	
TDES	DE Setup Time	5	--	--	ns
TDEH	DE Hold Time	10	--	--	ns
TSU	Data Hold Time	8			ns
TDH	Data Set-up Time	4			ns
TCW	HCLK Pulse Width	3			ns

7-2 Timing Characteristic

Input Signal Timing Chart



Input Signal Timing Chart



8. RELIABILITY TEST CONDITIONS

(Note 3)

Item	Test Conditions	Note
High Temperature Storage	Ta = 80°C 240 hrs	Note 1
Low Temperature Storage	Ta = -30°C 240 hrs	Note 1
High Temperature Operation	Ts = 70°C 240 hrs	Note 2
Low Temperature Operation	Ta = -20°C 240 hrs	Note1
Operate at High Temperature and Humidity	+60°C, 90%RH 240 hrs	
Thermal Shock	-40°C /30 min ~ +95°C /30 min for a total 100 cycles, Start with cold temperature and end with high temperature	
Vibration Test	Frequency range : 10 ~ 55Hz Stroke : 1.5mm Sweep : 10Hz ~ 55Hz ~ 10Hz 2 hours for each direction of X. Y. Z. (6 hours for total)	
Mechanical Shock	100G 6ms, ±X, ±Y, ±Z 3 times for each direction	
Package Vibration Test	Random Vibration : 0.015G*G/Hz from 5-200HZ, -6dB/Octave from 200-500Hz 2 hours for each direction of X. Y. Z. (6 hours for total)	
Package Drop Test	Height : 60 cm 1 comer, 3 edges, 6 surfaces	
Electro Static Discharge	±2KV, Human Body Mode, 100pF/1500Ω	

Note 1 : Ta is the ambient temperature of samples.

Note 2 : Ts is the temperature of panel's surface.

Note 3 : In the standard condition, there shall be no practical problem that man affect the display function.

9. General Precautions

9-1 Safety

Liquid crystal is poisonous. Do not put it your mouth. If liquid crystal touches your skin or clothes, wash it off immediately by using soap and water.

9-2 Handling

1. The LCD panel is plate glass. Do not subject the panel to mechanical shock or to excessive force on its surface.
2. The polarizer attached to the display is easily damaged. Please handle it carefully to avoid scratch or other damages.
3. To avoid contamination on the display surface, do not touch the module surface with bare hands.
4. Keep a space so that the LCD panels do not touch other components.
5. Put cover board such as acrylic board on the surface of LCD panel to protect panel from damages.
6. Transparent electrodes may be disconnected if you use the LCD panel under environmental conditions where the condensation of dew occurs.
7. Do not leave module in direct sunlight to avoid malfunction of the ICs.

9-3 Static Electricity

1. Be sure to ground module before turning on power or operation module.
2. Do not apply voltage which exceeds the absolute maximum rating value.

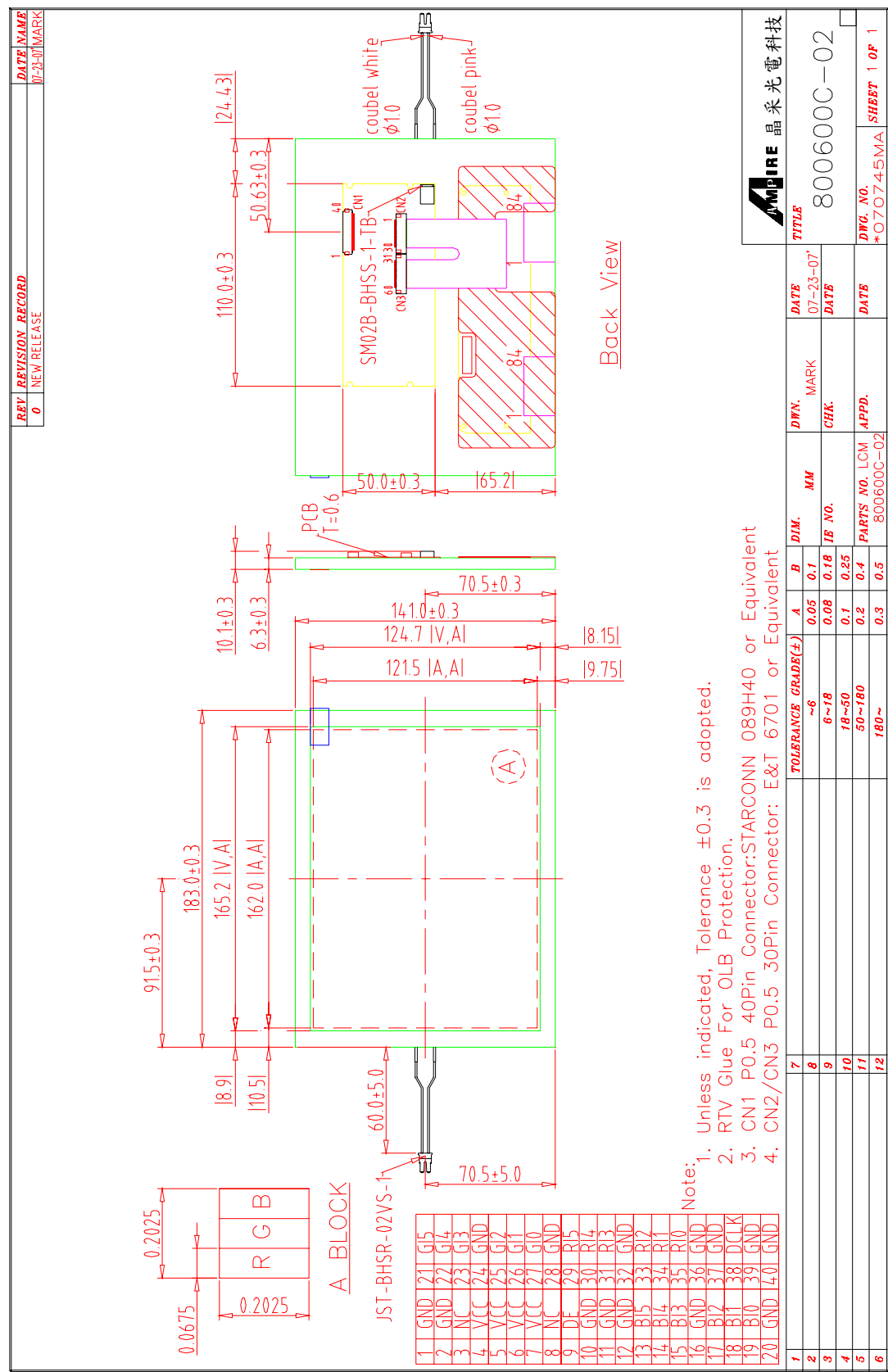
9-4 Storage

1. Store the module in a dark room where must keep at $+25\pm 10^{\circ}\text{C}$ and 65%RH or less.
2. Do not store the module in surroundings containing organic solvent or corrosive gas.
3. Store the module in an anti-electrostatic container or bag.

9-5 Cleaning

1. Do not wipe the polarizer with dry cloth. It might cause scratch.
2. Only use a soft cloth with IPA to wipe the polarizer, other chemicals might permanent damage to the polarizer.

10. OUTLINE DIMENSION



AMP 晶采光電科技

TITLE

800600C-02

DATE

07-23-07

DATE

DATE

DWG. NO.

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