

PRODUCT SPECIFICATION

TFT LCD MODULE

MODEL : KWH024Q12-F01 Version: 1.0

【 】 Preliminary Specification

【 ◆ 】 Finally Specification

CUSTOMER'S APPROVAL	
SIGNATURE:	DATE:

- It signifies that you fully understand and accept all the contents of this specification if you sign and send back the first page of this specifications.

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- This specification is subject to change without notice. Please contact FORMIKE or it's representative before designing your product based on this specification.

Table Of Contents

List	Description	Page No.
0	Cover	1
0	Table Of Contents	2
1	Revision Record	3
2	General Description	4
3	External Dimensions	5
4	Interface Description	6
5	Absolute Maximum Ratings	7
6	Electrical Characteristics	7
7	Timing Characteristics	9
8	Backlight Characteristics	11
9	Optical Characteristics	12
10	Reliability Test Conditions And Methods	14
11	Inspection Standard	15
12	Handling Precautions	19
13	Precaution For Use	20

[illegible]

2. General Description

2.1 Description

KWH024Q12-F01 is a Transmissive type color active matrix liquid crystal display (LCD), which uses amorphous thin film transistor (TFT) as switching devices. This product is composed of a TFT LCD panel, driver IC, FPC and backlight unit . The following table described the features of FORMIKE KWH024Q12-F01.

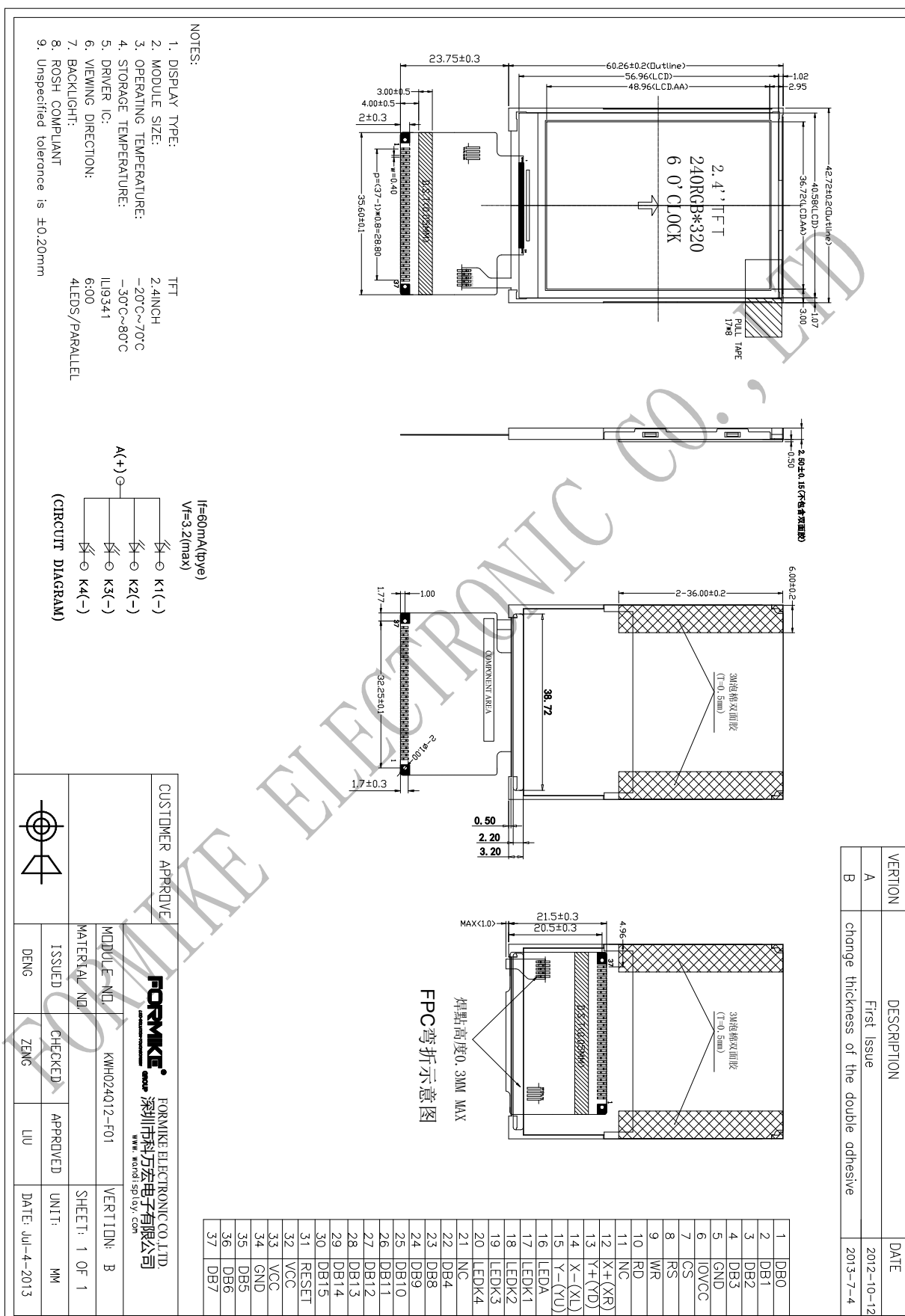
2.2 Application

Mobile phone, Multimedia products
and other electronic Products
Etc.

2.3 Features:

Features	Description	UNITS
LCD type	2.4" TFT	--
Dot arrangement	240 (RGB) × 320	dots
Driver IC	ILI9341	--
Color Depth	65K/262K	
Interface	CPU 8/16 bits	
Module size	42.72(W) × 60.26 (H) × 2.50(T)	mm
Active area	36.72(W) × 48.96(H)	mm
Dot pitch	0.153 (W) × 0.153 (H)	mm
Back Light	4 White LED In parallel	--
With/Without TSP	Without TSP	
Weight(g)	TBD	

3. External Dimensions



4. Interface Description

PIN NO.	PIN NAME	DESCRIPTION
1	DB0	80-system-16-Bit Data Bus.
2	DB1	80-system-16-Bit Data Bus.
3	DB2	80-system-16-Bit Data Bus.
4	DB3	80-system-16-Bit Data Bus.
5	GND	Ground
6	IOVCC	Power supply for system I/O (+1.8V or+2.8V).
7	CS	Chip select signal, Active "L"
8	RS	Command / Display data selection 0: command; 1: display data
9	WR	Write signal input, Active" L "
10	RD	Read signal input, Active" L "
11	NC	NC.
12	X+(XR)	Touch Panel Right Side Wire
13	Y+(YD)	Touch Panel Down Side Wire
14	X-(XL)	Touch Panel Left Side Wire
15	Y-(YU)	Touch Panel Up Side Wire
16	LED-A	Power supply for LED backlight Anode input
17	LED-K1	Power supply for LED backlight Cathode input
18	LED-K2	Power supply for LED backlight Cathode input
19	LED-K3	Power supply for LED backlight Cathode input
20	LED-K4	Power supply for LED backlight Cathode input
21	NC	NC.
22	DB4	80-system-16-Bit Data Bus.
23	DB8	80-system-16-Bit Data Bus.
24	DB9	80-system-16-Bit Data Bus.
25	DB10	80-system-16-Bit Data Bus.
26	DB11	80-system-16-Bit Data Bus.
27	DB12	80-system-16-Bit Data Bus.
28	DB13	80-system-16-Bit Data Bus.
29	DB14	80-system-16-Bit Data Bus.
30	DB15	80-system-16-Bit Data Bus.
31	RESET	Reset input pin, When reset is "L", Initialization is executed.
32	VCC	Power supply (+2.8V).
33	VCC	Power supply (+2.8V).
34	GND	Ground
35	DB5	80-system-16-Bit Data Bus.
36	DB6	80-system-16-Bit Data Bus.
37	DB7	80-system-16-Bit Data Bus.

5. Absolute Maximum Ratings

The absolute maximum rating is listed on following table. When ILI9341 is used out of the absolute maximum ratings, ILI9341 may be permanently damaged. To use ILI9341 within the following electrical characteristics limitation is strongly recommended for normal operation. If these electrical characteristic conditions are exceeded during normal operation, ILI9341 will malfunction and cause poor reliability.

Item	Symbol	Unit	Value
Supply voltage	VCI	V	-0.3 ~ +4.6
Supply voltage (Logic)	VDDI	V	-0.3 ~ +4.6
Supply voltage (Digital)	VCORE	V	-0.3 ~ +2.0
Driver supply voltage	VGH-VGL	V	-0.3 ~ +32.0
Logic input voltage range	VIN	V	-0.3 ~ VDDI + 0.3
Logic output voltage range	VO	V	-0.3 ~ VDDI + 0.3
Operating temperature	Topr	°C	-40 ~ +85
Storage temperature	Tstg	°C	-55 ~ +110
Note: If the absolute maximum rating of even is one of the above parameters is exceeded even momentarily, the quality of the product may be degraded. Absolute maximum ratings, therefore, specify the values exceeding which the product may be physically damaged. Be sure to use the product within the range of the absolute maximum ratings.			

6. Electrical Characteristics

Item	Symbol	Unit	Condition	Min.	Typ.	Max.	Note
Power and Operation Voltage							
Analog Operating Voltage	VCI	V	Operating voltage	2.5	2.8	3.3	Note2
Logic Operating Voltage	VDDI	V	I/O supply voltage	1.65	2.8	3.3	Note2
Digital Operating voltage	VCORE	V	Digital supply voltage	-	1.5	-	Note2
Gate Driver High Voltage	VGH	V	-	10.0	-	16.0	Note3
Gate Driver Low Voltage	VGL	V	-	-10.0	-	-5.0	Note3
Driver Supply Voltage	-	V	VGH-VGL	15	-	28	Note3
Current consumption during standby mode	I _{ST}	μA	VCI=2.8V, Ta=25 °C	-	-	100	-
Input and Output							
Logic High Level Input Voltage	VIH	V	-	0.7*VDDI	-	VDDI	Note1,2,3
Logic Low Level Input Voltage	VIL	V	-	VSS	-	0.3*VDDI	Note1,2,3
Logic High Level Output Voltage	VOH	V	IOL=-1.0mA	0.8*VDDI	-	VDDI	Note1,2,3
Logic Low Level Output Voltage	VOL	V	IOL=1.0mA	VSS	-	0.2*VDDI	Note1,2,3
Logic High Level Input Current	I _{IH}	μA	-	-	-	1	Note1,2,3
Logic Low Level input Current	I _{IL}	μA	-	-1	-	-	Note1,2,3
Logic Input Leakage Current	I _{LEA}	μA	VIN=VDDI or VSS	-0.1	-	+0.1	Note1,2,3

VCOM Operation							
VCOM High Voltage	VCOMH	V	Ccom=12nF	2.5	-	5.0	Note3
VCOM Low Voltage	VCOML	V	Ccom=12nF	-2.5	-	0.0	Note3
VCOM Amplitude Voltage	VCOMA	V	VCOMH-VCOML	4.0	-	5.5	Note3
Source Driver							
Source Output Range	Vsout	V	-	0.1	-	DDVDH-0.1	Note4
Gamma Reference Voltage	GVDD	V	-	3.0	-	5.0	Note3
Output Deviation Voltage (Source Output channel)	Vdev	mV	Sout>=4.2V	-	-	20	Note4
			Sout<=0.8V	-	-	15	-
Output Offset Voltage	VOFSET	mV	-	-	-	35	Note7
Booster Operation							
1 st Booster (VClx2) Voltage	DDVDH	V	-	4.95 (Note 5)	-	5.8 (Note 6)	Note3
1 st Booster (VClx2) Drop Voltage	VClx2 drop	%	loading=1mA	-	-	5	Note3
Liner Range	Vliner	V	-	0.2	-	DDVDH-0.2	

Note 1: VDDI=1.65 to 3.3V, VCI=2.5 to 3.3V, AGND=VSS=0V, Ta=-30 to 70 (to +85 no damage) °C.

Note2: Please supply digital VDDI voltage equal or less than analog VCI voltage.

Note3: CSX, RDX, WRX, D[17:0], D/CX, RESX, TE, DOTCLK, VSYNC, HSYNC, DE, SDA, SCL, IM3, IM2, IM1, IM0, and Test pins.

Note4: When the measurements are performed with LCD module. Measurement Points are like Note3.

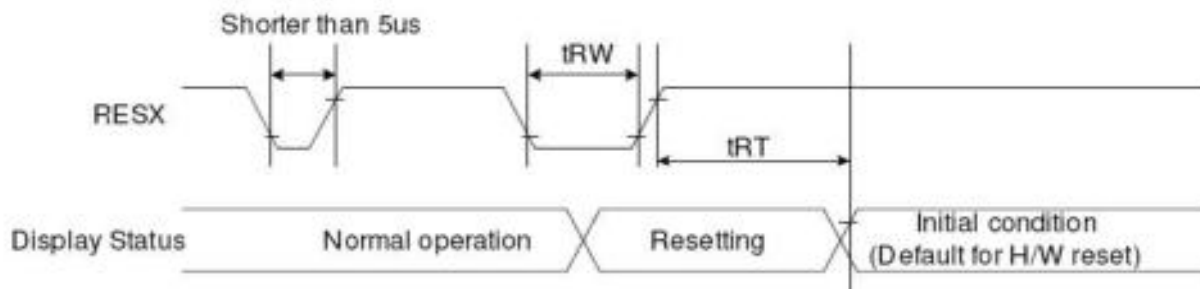
Note5: VCI=2.6V

Note6: VCI=3.3V

Note7: The Max. Value is between with Note 4 measure point and Gamma setting value

7. Timing Characteristics.

7.1 Reset Timing Characteristics.



Signal	Symbol	Parameter	Min	Max	Unit
RESX	tRW	Reset pulse duration	10		uS
	tRT	Reset cancel		5 (note 1,5)	mS
				120 (note 1,6,7)	mS

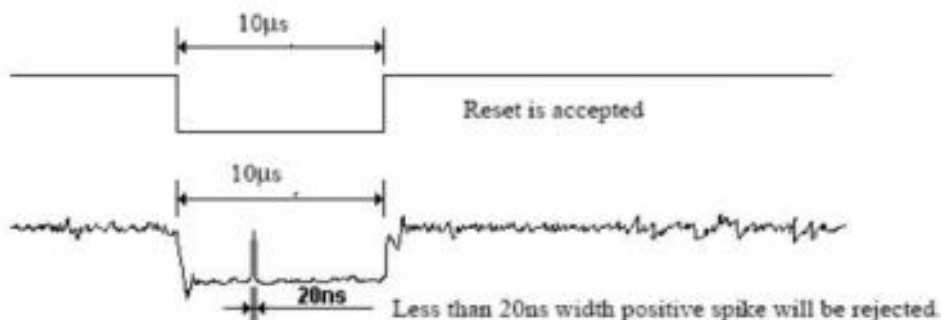
Note 1: The reset cancel includes also required time for loading ID bytes, VCOM setting and other settings from NV memory to registers. This loading is done every time when there is HW reset cancel time (tRT) within 5 ms after a rising edge of RESX.

Note 2: Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the table below: -

RESX Pulse	Action
Shorter than 5us	Reset Rejected
Longer than 10us	Reset
Between 5us and 10us	Reset starts

Note 3: During the Resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120 ms, when Reset Starts in Sleep Out –mode. The display remains the blank state in Sleep In -mode.) And then return to Default condition for Hardware Reset.

Note 4: Spike Rejection also applies during a valid reset pulse as shown below:



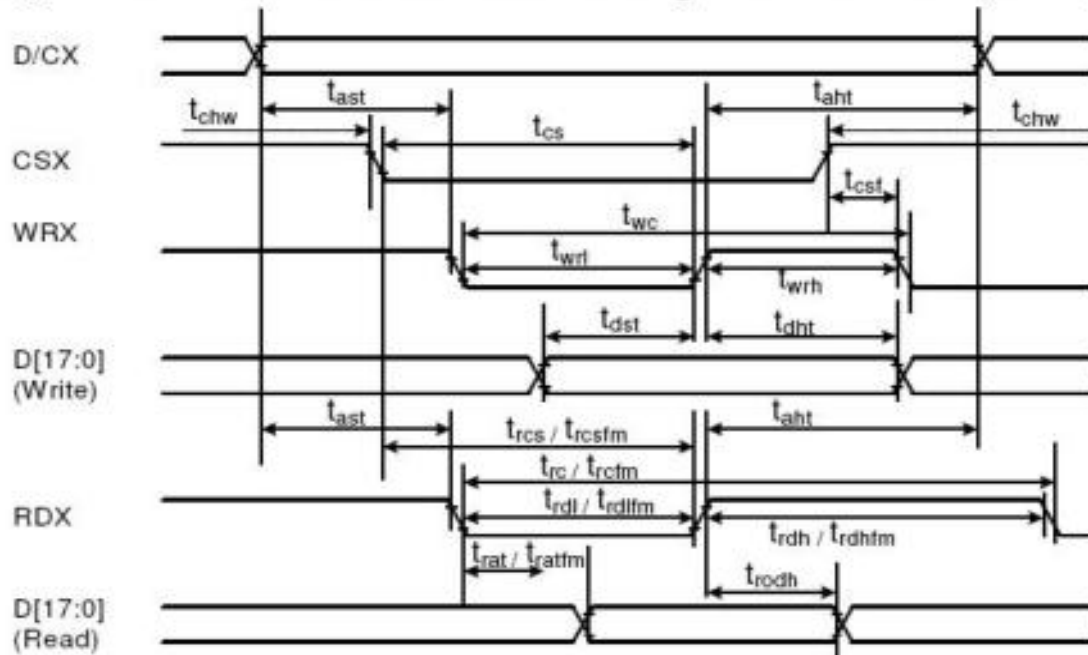
Note 5: When Reset applied during Sleep In Mode.

Note 6: When Reset applied during Sleep Out Mode.

Note 7: It is necessary to wait 5msec after releasing RESX before sending commands. Also Sleep Out command cannot be sent for 120msec.

7.2. i80-System Interface Timing Characteristics.

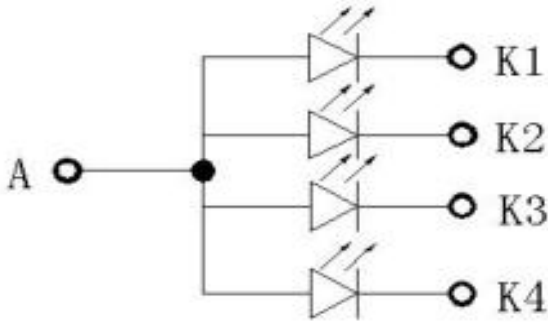
Display Parallel 18/16/9/8-bit Interface Timing Characteristics (8080- I system)



Signal	Symbol	Parameter	min	max	Unit	Description
DCX	tast	Address setup time	0	-	ns	
	taht	Address hold time (Write/Read)	0	-	ns	
CSX	tchw	CSX "H" pulse width	0	-	ns	
	tcs	Chip Select setup time (Write)	15	-	ns	
	trcs	Chip Select setup time (Read ID)	45	-	ns	
	trcsfm	Chip Select setup time (Read FM)	355	-	ns	
WRX	tcsf	Chip Select Wait time (Write/Read)	10	-	ns	
	twc	Write cycle	66	-	ns	
	twrh	Write Control pulse H duration	15	-	ns	
	twrl	Write Control pulse L duration	15	-	ns	
RDX (FM)	trcfm	Read Cycle (FM)	450	-	ns	
	trdhfm	Read Control H duration (FM)	90	-	ns	
	trdlfm	Read Control L duration (FM)	355	-	ns	
RDX (ID)	trc	Read cycle (ID)	160	-	ns	
	trdh	Read Control pulse H duration	90	-	ns	
	trdl	Read Control pulse L duration	45	-	ns	
D[17:0], D[15:0], D[8:0], D[7:0]	tdst	Write data setup time	10	-	ns	For maximum CL=30pF For minimum CL=8pF
	tdht	Write data hold time	10	-	ns	
	trat	Read access time	-	40	ns	
	trattfm	Read access time	-	340	ns	
	trod	Read output disable time	20	80	ns	

Note: $T_a = -30$ to 70 °C, $V_{DDI}=1.65V$ to $3.3V$, $V_{CI}=2.5V$ to $3.3V$, $V_{SS}=0V$

8. Backlight Characteristics.



Item	Symbol	MIN	TYP	MAX	UNIT	Test Condition	Note
Supply Voltage	Vf	3.0	3.2	3.4	V	If=60 mA	-
Supply Current	If	-	60	-	mA	-	-
Reverse Voltage	Vr	-	-	5	V	10uA	
Power dissipation	Pd	-	192	-	mW	-	
Luminous Intensity for LCM		-	280	-	Cd/m²	If=60 mA	
Uniformity for LCM	-	80	-	-	%	If=60 mA	
Life Time	-	50000	-	-	Hr	If=60 mA	-
Backlight Color	White						

9.Optical Characteristics

The test of Optical specifications shall be measured in a dark room (ambient luminance ≤ 1 lux and temperature = $25 \pm 2^\circ\text{C}$) with the equipment of Luminance meter system (Topcon SR-UL1R and Westar TRD-100A) and test unit shall be located at an approximate distance 50cm from the LCD surface at a viewing angle of θ and Φ equal to 0° . The center of the measuring spot on the Display surface shall stay fixed.

The backlight should be operating for 30 minutes prior to measurement. Optimum viewing angle (Human Eye) direction is 6 o'clock.

Optical Specifications

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Threshold Voltage		Vsat		1.9	2.1	2.3	V	Fig.1
		Vth		1.1	1.3	1.5	V	
Viewing Angle	Horizontal	Θ3	CR> 10	40	45		°	Note 1
		Θ9		40	45		°	
	Vertical	Θ12		45	50		°	
		Θ6		15	20		°	
Contrast Ratio		CR	Θ= 0°	350	500			Note 2
Transmittance		T(%)	Θ= 0°	4.8	5.1			Note 3
NTSC		%	Θ= 0°	55	60			
Reproduction Of color	Red	Rx	Θ= 0°	0.611	0.626	0.641		Note 4
		Ry		0.317	0.332	0.347		
	Green	Gx		0.267	0.282	0.297		
		Gy		0.574	0.589	0.604		
	Blue	Bx		0.122	0.137	0.152		
		By		0.134	0.149	0.164		
White		Wx	Θ= 0°	0.284	0.299	0.314		
		Wy		0.318	0.333	0.348		
Response Time		Tr+Tf	Θ= 0°		25	40	ms	Note 5

Note:

- Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing are determined for the horizontal or 3, 9 o'clock direction and the vertical or 6, 12 o'clock direction with respect to the optical axis which is normal to the LCD surface (see FIG.2).
- Contrast measurements shall be made at viewing angle of $\Theta = 0^\circ$ and at the center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white, then to the dark (black) state. (See FIG. 2) Luminance Contrast Ratio (CR) is defined mathematically.

$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

3. Transmittance is the value with Polarizer.

4. B1 purchases Color Filter from DW, the color chromaticity coordinates specified reference this Color Filter.

5. The electro-optical response time measurements shall be made as FIG.3 by switching the "data" input signal ON and OFF.

The times needed for the luminance to change from 10% to 90% is T_f and 90% to 10% is T_r .

Figure 1. The definition of V_{th} & V_{sat}

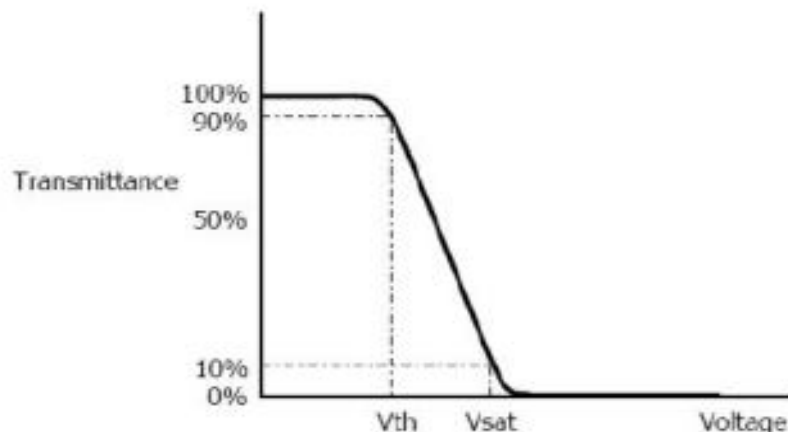


Figure 2. Measurement Set Up

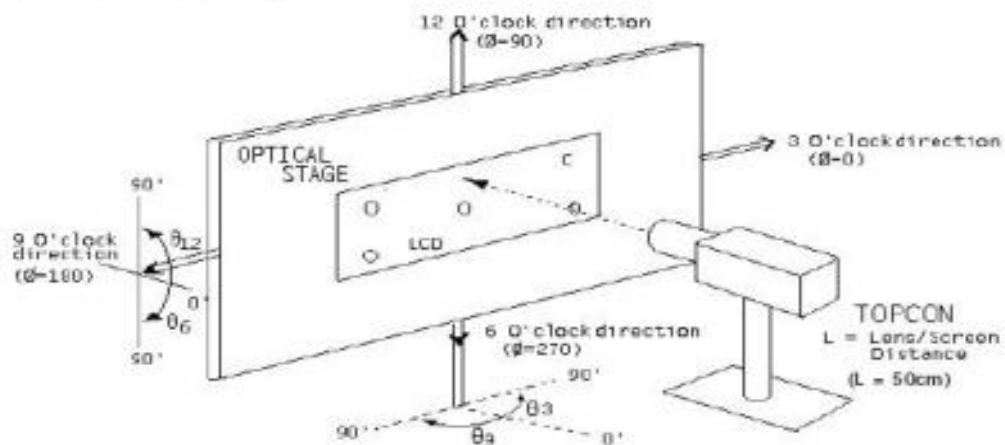
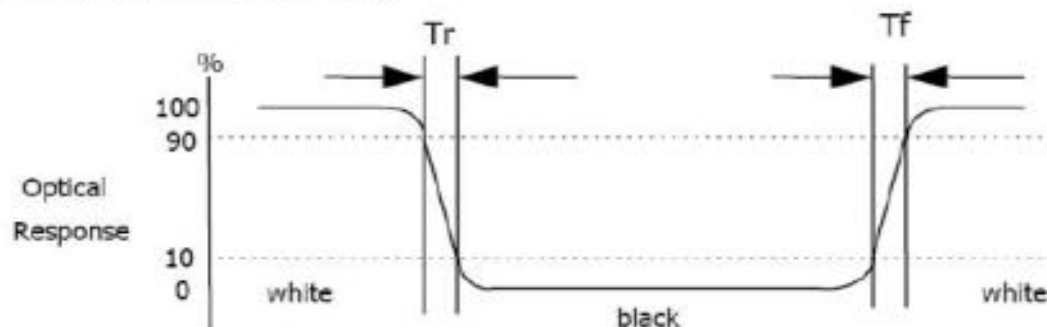


Figure 3. Response Time Testing



10. RELIABILITY

No.	Test Item	Test Condition	Remark
1	High Temperature Storage	+80℃± 2℃, 96 hrs	Note
2	Low Temperature Storage	-30℃± 2℃, 96 hrs	Note
3	High Temperature Operation	+70℃± 2℃, 96 hrs	Note
4	Low Temperature Operation	+20℃± 2℃, 96 hrs	Note
5	High Temperature & High Humidity Storage Test	+50℃± 5℃, 90%R.H, 96 hours	Note
6	Temperature Cycle (non operation)	-30℃ ← +25℃ → +80℃ (30mins ← 5mins → 30mins) 10 Cycles	Note
7	Electronic Static Discharge	Air Discharge: 2KV to with 5 times	Discharge for each polarity Mode of Operation: Single Discharge, successive discharge at least 1 sec
		Ambiance: 15℃~35℃, 30%~60%R.H Resistance(Rd): 330Ω ±10% Capacitance(Cs + Cd): 150pF±10%	
8	Vibration (Packaged)	Frequency range: 10Hz ~ 55 Hz Amplitude: 1.5mm Direction of X.Y. Z for 3 Hrs in total	
9	Drop Test (Packaged)	Height: 80cm, Time: 1 1 corner, 3 edged, 6 surfaces	

Note : Recovery Time should be 2~4 hours at room temperature (20±8℃) and humidity (below 60% R.H). No abnormalities in functions and appearance

11.INSPECTION CRITERION

11.1 Scope

Display Quality Evaluation

Mechanics Specification

11.2 Sampling Plan

MIL-STD-105E

Unless there is other agreement, the sampling plan for incoming inspection shall follow MIL-STD-105E

Lot size: Quantity per shipment as one lot (different model as different lot).

Sampling type: Normal inspection, single sampling

Sampling level: Level II.

11.3 Acceptable Quality Level

Item	Major	Minor
Appearance	1.0%	1.5%
Electrical	0.65	1.0%

11.3.1 Classification of defects:

11.3.1.1 Major defect

Any defect may result in functional failure, or reduce the usability of product for its purpose. For Example: Electrical failure, deformation and etc.

11.3.1.2 Minor defect

The criteria on major or minor judgment will be according with the classification of defects.

11.4 Panel Inspection Condition

11.4.1 Environment:

11.4.2 Room Temperature: $25 \pm 5^{\circ} \text{C}$.

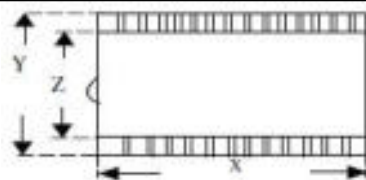
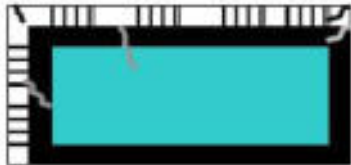
11.4.3 Humidity: $50 \pm 20\% \text{ RH}$.

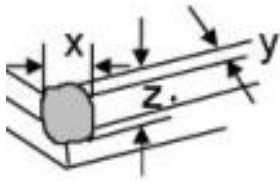
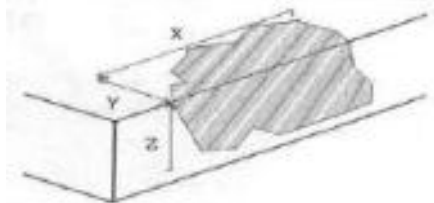
Illumination: 300 ~ 700 Lux.

11.4.4 Inspection Distance: $35 \pm 5 \text{ cm}$

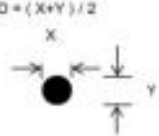
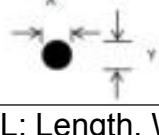
11.5 TFT Inspection Criteria

11.5.1 Visual inspection criterion in cosmetic / appearance

Glass defect			
N o	Item	Criteria	Remark
1	Dimension (Minor)	By engineering diagram	
2	Crack (Major)	Extensive crack	

3	Corner (Minor)	$X \leq 3 \text{ mm}$ $Y \leq 3 \text{ mm}$ $Z \leq T$ Ignore	 T: Glass thickness Z: Thickness X: Length Y: Width
4	Side (Minor)	$X \leq 5 \text{ mm}$ $Y \leq 3 \text{ mm}$ $Z \leq T$ Ignore	 T: Glass thickness Z: Thickness X: Length Y: Width

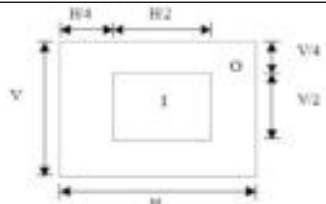
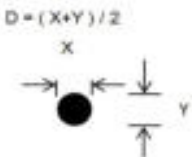
TFT defect in appearance

No	Item	Criteria	Remark
1	Foreign Spot (Minor) Including: Black spot, White spot Pin hole Foreign particle	$D \leq 0.15 \text{ mm}$, Ignore $0.15 \text{ mm} < D \leq 0.3 \text{ mm}$, $N \leq 3$ $0.3 \text{ mm} < D$, $N = 0$ Distance $\geq 5 \text{ mm}$ Ignore if out of Area AA	$D = (X+Y)/2$, X: Length, Y: Width 
2	Foreign Line(Minor) Including: Black line White line Bright line	$W \leq 0.03 \text{ mm}$, Ignore $0.03 \text{ mm} < W \leq 0.05 \text{ mm}$, $L \leq 4 \text{ mm}$, $N \leq 3$ $0.05 \text{ mm} < W \leq 0.08 \text{ mm}$, $L \leq 4 \text{ mm}$, $N \leq 1$ $W > 0.08 \text{ mm}$, $N = 0$ Ignore if out of Area AA	L: Length, W: Width 
3	Polarizer Dent/Air Bubble (Minor)	$D \leq 0.2 \text{ mm}$, Ignore $0.2 \text{ mm} < D \leq 0.3 \text{ mm}$, $N \leq 3$ $0.3 \text{ mm} < D \leq 0.5 \text{ mm}$, $N \leq 1$ $D > 0.50 \text{ mm}$, $N = 0$ Distance $\geq 5 \text{ mm}$	$D = (X+Y)/2$, X: Length, Y: Width 
4	Polarizer Scratches (Minor)	$W \leq 0.03 \text{ mm}$, Ignore $0.03 \text{ mm} < W \leq 0.05 \text{ mm}$, $L \leq 4 \text{ mm}$, $N \leq 3$ $0.05 \text{ mm} < W \leq 0.08 \text{ mm}$, $L \leq 4 \text{ mm}$, $N \leq 1$ $W > 0.08 \text{ mm}$, $N = 0$ Ignore if out of Area AA	L: Length, W: Width 

Other defects			
No	Item	Criteria	Remark
1	FPC (Minor)	Any crack or breakage which effect the function are not allowed Disregard if the dirty removed	
2	Backlight (Minor)	Power up is allowed. Breaking off is not allowed. The scratch which may causes a problem in practical use is not allowed	
3	Bezel (Minor)	Erasable dirt is ignore	

11.5.2 Visual inspection criterion in electrical display

Glass defect			
No	Item	Criteria	Remark
1	No display (Major) Abnormally Short circuit	Not allowed	
2	Missing line (Major)	Not allowed	
3	Darker or lighter line (Major)	Not allowed	
4	Weak line (Minor)	By limit sample	

Display Inspection						
No	Item	Criteria				Remark
1	Bright / Dark dot	Items	Area I	Area O	Tota I	 1.1sub-pixel: 1R or 1G or 1B 2.Point defect area ≥ 1/2 sub pixel
		Bright	1	1	1	
		Dark	1	3	3	
		Bright & Dark	2	3	4	
		2 adjacent dots	0	0	0	
		Minimum Distance ≥ 5mm				
2	Tiny bright dot	Visible through 6% ND filter D≤0.15mm, Ignore 0.15mm<D≤0.3mm, N≤3 0.3mm<D≤0.35mm, N≤1 D>0.35mm, N=0 Distance≥5mm Ignore if out of Area AA				D =(X+Y)/2, X: Length, Y: Width 
4	Mura/Waving/ Hot spot	Not visible through 6% ND filter in 50% gray or judge by limit sample if necessary				

* Note:

- Defect which is on the Black Matrix (outside of active area) are not considered as a defect.
- If any specific defect is not included in the above defect table, this defect should be judged by Formike.
- W: Width, L: Length D: Average Diameter N: Count.

12. PRECAUTION RELATING & PRODUCT HANDLING

Display is assembled and adjusted with a high degree of precision. Do not attempt to make any alteration or modification.

12.1 SAFETY

12.1.1 If the LCD panel breaks, be careful not to get the liquid crystal to touch your skin.

12.1.2 If the liquid crystal touches your skin or clothes, please wash it off immediately by using soap and water.

12.2 HANDLING

12.2.1 Avoid any strong mechanical shock which can break the glass.

12.2.2 Avoid static electricity which can damage the CMOS LSI - When working with the module, be sure to ground your body and any electrical equipment you may be using. The followings should be noted:

12.2.2.1 CMOS-LSI is used for the module circuit; therefore operators should be grounded whenever he/she comes into contact with the module.

12.2.2.2 Do not touch any of the conductive parts such as the LSI pads; the copper leads on the PCB and the interface terminals with any parts of the human body.

12.2.2.3 Do not touch the connection terminals of the display with bare hand; it will cause disconnection or defective insulation of terminals.

12.2.2.4 The modules should be kept in anti-static bags or other containers resistant to static for storage.

12.2.2.5 Only properly grounded soldering irons should be used.

12.2.2.6 If an electric screwdriver is used, it should be grounded and shielded to prevent sparks.

12.2.2.7 The normal static prevention measures should be observed for work clothes and working benches.

12.2.3.8 Since dry air is inductive to static, a relative humidity of 50-60% is recommended

12.2.3 Do not remove the panel or frame from the module.

12.2.4 The polarizing plate of the display is very fragile. Please handle it very carefully, do not touch, push or rub the exposed polarizing with anything harder than an HB pencil lead (glass, tweezers, etc.)

12.2.5 Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of plate.

12.2.6 Do not touch the display area with bare hands, this will stain the display area.

12.2.7 Do not use ketonics solvent & aromatic solvent. Use with a soft cloth soaked with a cleaning naphtha solvent.

12.2.8 To control temperature and time of soldering is $300 \pm 10^{\circ}\text{C}$ and 3-4 sec.

To avoid liquid (include organic solvent) stained on LCD Module.

12.3 STORAGE

12.3.1 Store the panel or module in a dark place where the temperature is $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and the humidity is below 60% RH.

12.3.2 Avoid exposure to direct sunlight or to the light of fluorescent lamps.

12.3.3 Do not place the module near organic solvents or corrosive gases.

Do not crush, shake, or jolt the module.

12.4 LIMITED WARRANTY

12.4.1 FORMIKE modules are not consumer products, but may be incorporated by FORMIKE's customers into consumer products or components thereof, FORMIKE does not warrant that its modules and components are fit for any such particular purpose.

12.4.2 The liability of FORMIKE is limited to repair or replacement on the terms set forth below. FORMIKE will not be responsible for any subsequent or consequential events or injury or damage to any personnel or user including third party personnel and/or user. Unless otherwise agreed in writing between FORMIKE and the customer, FORMIKE will only replace or repair any of its Modules which is found defective electrically or visually when inspected in accordance with FORMIKE INSPECTION CRITERIA

12.4.3 No warranty can be granted if any of the precautions state in handling liquid crystal display has been disregarded. Broken glass, scratches on polarizer mechanical damages as well as defects that are caused accelerated environment tests are excluded from warranty.

12.4.4 In returning the modules, they must be properly packaged; there should be detailed description of the failures or defect.

13. OTHERS

13.1 If there is any not specified quality standard in this specification as well as RMA , please refer to < INSPECTION CRITERIA>. Contact FORMIKE to get the complete <INSPECTION CRITERIA> by the contact window or feedback@wandisplay.com.

13.2 Special agreement of <INSPECTION CRITERIA> is recognized only in writhing between FORMIKE and the customer also indicated it before ordering.