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SPECIFICATION

VXT800IWN-01P3-B

☒ Preliminary Specification

☐ Final Specification



CUSTOMER:

Made By:

Checked By:

Approved By:

Quality:

Date:

Note:

Approved By:

Date:

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Records of Revision

[illegible]

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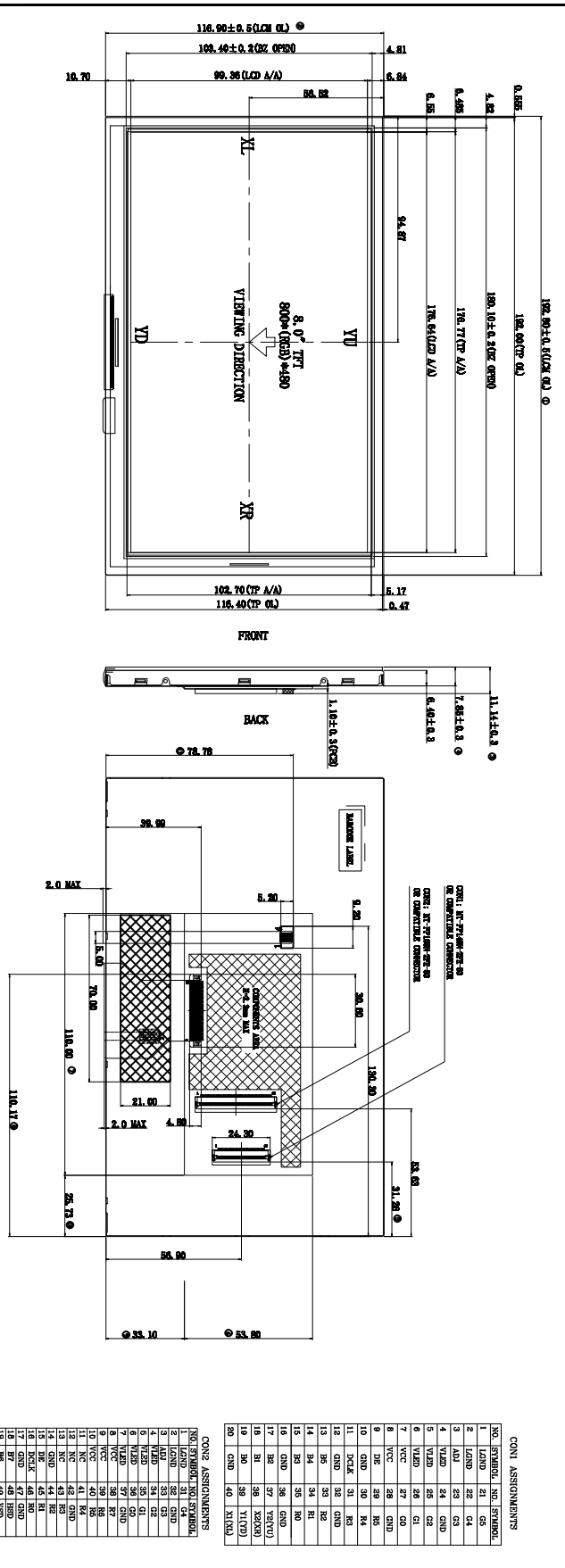
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1. General Specification

Item	Contents	Unit
LCD type	TFT/Transmissive	
Module size (W*H*T)	192.80*116.90*11.14	mm
Active size (W*H)	176.64*99.36	mm
Pixel pitch (W*H)	0.2208*0.2070	mm
Number of dots	800*480	
Driver IC	NT52001+NT39419B	
Interface type	18/24-Bit RGB	
Top polarizer type	Anti-Glare	
Recommend viewing direction	12	O'clock
Gary scale inversion direction	6	O'clock
Backlight type	27-Dies white LED	
Touch panel type	Resistive	



CON2 ASSIGNMENT		CON2 STUDENT NO. STUDENT	
1	16ND	32	G4
2	16ND	32	GND
3	16ND	33	G5
4	16ND	33	G5
5	16ND	33	G5
6	16ND	36	G5
7	16ND	36	G5
8	16ND	37	GND
9	16ND	38	G7
10	16ND	39	G6
11	16ND	40	G5
12	16ND	41	G5
13	16ND	42	GND
14	16ND	43	G5
15	16ND	44	G2
16	16ND	45	R1
17	16ND	46	R0
18	16ND	47	GND
19	16ND	48	GND
20	16ND	49	GND
21	16ND	50	G5
22	16ND	51	MODR
23	16ND	52	RESIST
24	16ND	53	R/R
25	16ND	54	R/R
26	16ND	55	R/R
27	16ND	56	GND
28	16ND	57	16Y10V
29	16ND	58	16Y10V
30	16ND	59	16Y10V
31	16ND	60	16Y10V

CONJ. ASSIGNMENTS		
NO.	SYMBOL	NO. SYMMBOIS
1	LND	21
2	LD	22
3	ADJ	23
4	VLED	24
5	VLED	25
6	VLED	26
7	VCC	27
8	VCC	28
9	JDE	29
10	OND	30
11	D-CK	31
12	OND	32
13	PD	33
14	PD	34
15	PD	35
16	OND	36
17	PD	37
18	PD	38
19	PD	39
20	OND	40

- 1) **TP Sheet:**
- 2) **Type II to Glass**
- 3) **Operating Voltage: < 50V**
- 4) **Operating Frequency: 50 ~ 700 KHz**
- 5) **Storage Temperature: -50 ~ 70°C**
- 6) **Coarse: Material: PVC**
- 7) **Impurities: 100 ~ 1000**
- 8) **Linearity: < 1.0%**
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Figure 1: Pixel Detail 40:1. A diagram showing a 3x3 grid of pixels. The center pixel is labeled '0.2209'. The pixels to its left and right are labeled '0.0798'. The pixels above and below the center are labeled '0.0798'. The pixels at the corners are labeled '0.0798'.

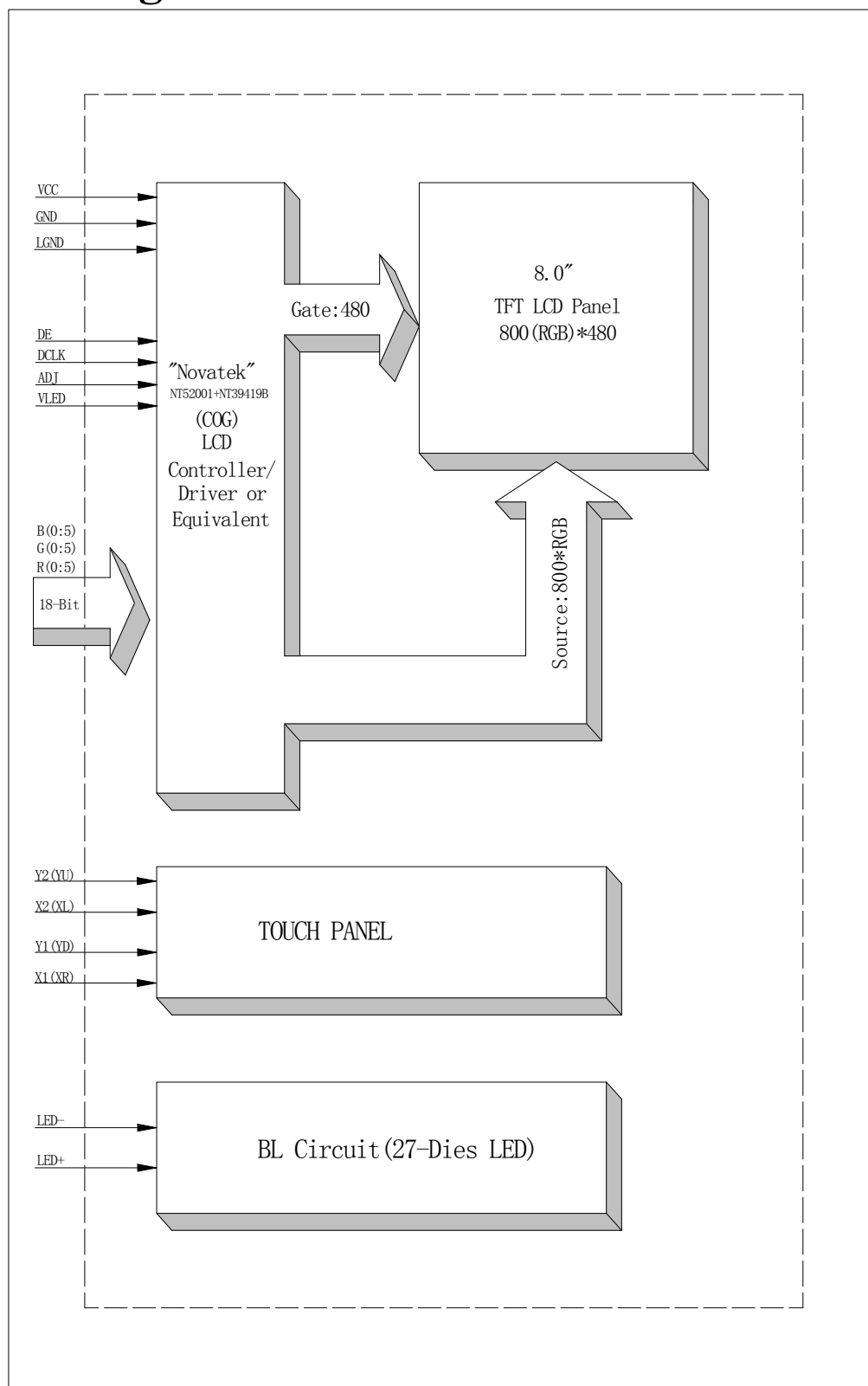
LED CIRCUIT DIAGRAM
8. 7V-9.9V@180mA

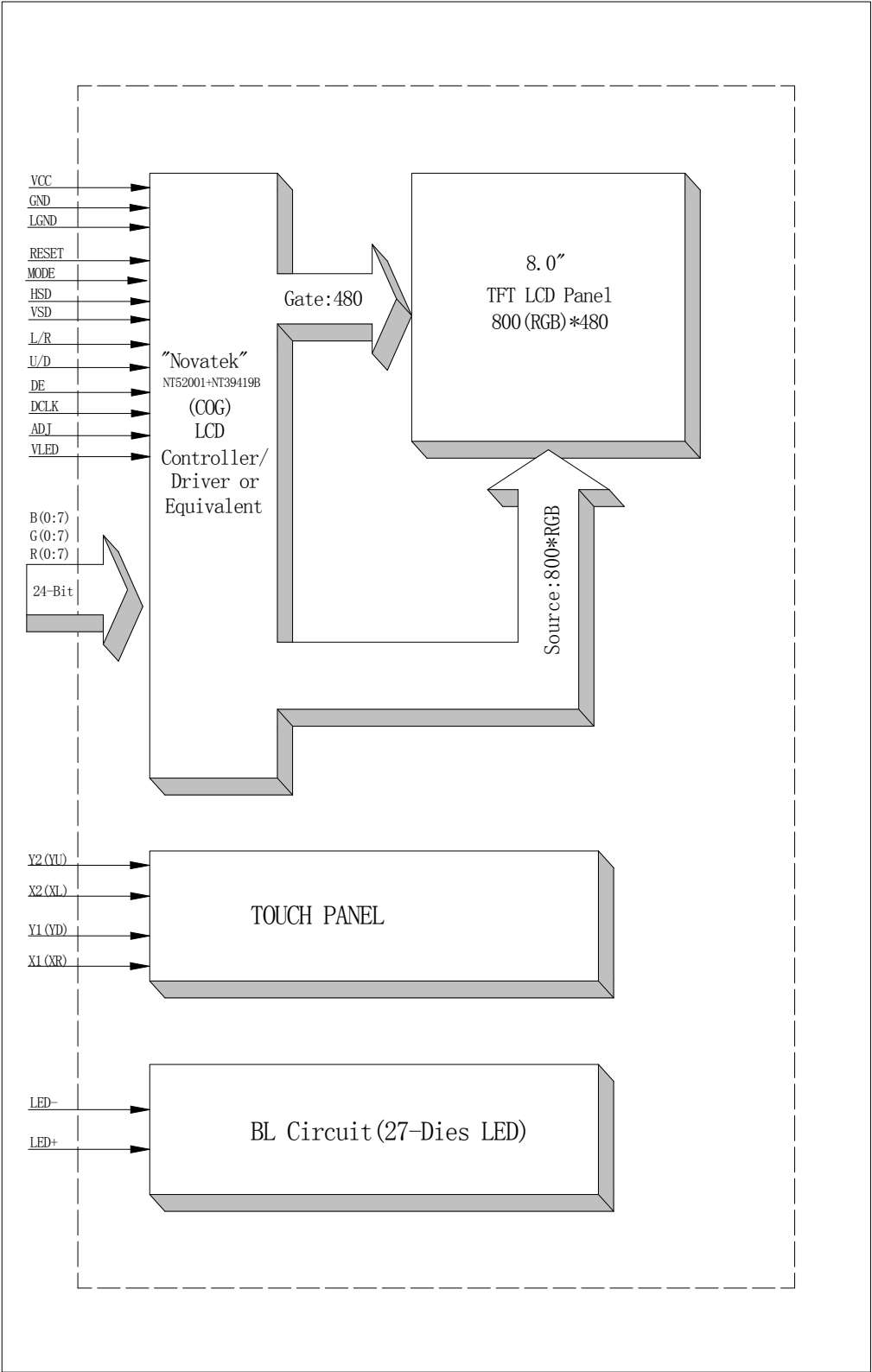
Display Type	TFE TRANSMISSIVE NORMALLY WHITE
Optimum Viewing Direction	12 O'CLOCK
Upper Polarizer Type	Anti-Glare
LCD Driver IC	NT55000+NT93419B
Operating Voltage	VCC=3.3V VLED=5V
Operation Temperature	-20°C TO 70°C
Storage Temperature	-30°C TO 80°C
Interface	24 BIT RGB
Backlight	27-CMH WHITE LED
Surface luminance	360cd/m ²
White X/Y	---/---

				DRAWN	ShengNan	TITLE DRAWING NO. VXT8001WN-01P3-B UNITmmSCALEFIT 3rd Angle  SHEET 1 OF 1
V04.	add some dimension		2019.12.19E	ME CHECKED		
V03.	revise the pin order		2019.08.06D	EE CHECKED		
V02.	Modify the PCB's size		2019.05.05C	APPROVED		
V01.	Update the Drawing		2019.04.29B			
V00.	First Issue		2018.12.03A	CUSTOMER'S APPROVAL		
VER.	AMENDMENT	SIGN	DATE			

Victronix Tecenstar INT'L Co., LTD				
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3. Block Diagram





4. Interface Pin Function

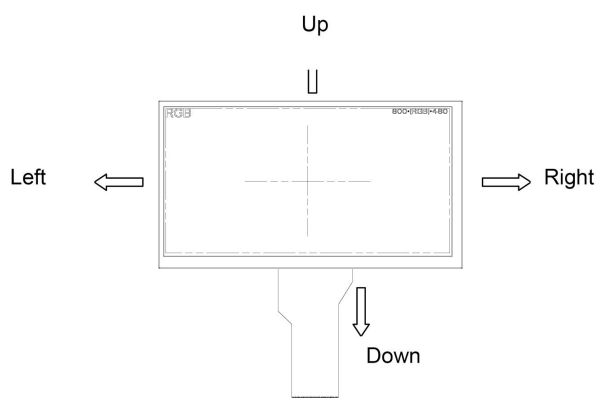
CON1 Pin Assignments

Pin No.	Symbol	Description
1	LGND	LED driver ground
2	LGND	LED driver ground
3	ADJ	PWM Dimmer(Note)
4	VLED	Power Supply for LED(5V)
5	VLED	Power Supply for LED(5V)
6	VLED	Power Supply for LED(5V)
7	VCC	Input Voltage(3.3V)
8	VCC	Input Voltage(3.3V)
9	DE	Data Input Enable
10	GND	Power ground
11	DCLK	Sample clock
12	GND	Power ground
13	B5	Blue data (MSB)
14	B4	Blue data
15	B3	Blue data
16	GND	Power ground
17	B2	Blue data
18	B1	Blue data
19	B0	Blue data (LSB)
20	GND	Power ground
21	G5	Green data(MSB)
22	G4	Green data
23	G3	Green data
24	GND	Power ground
25	G2	Green data
26	G1	Green data
27	G0	Green data(LSB)
28	GND	Power ground
29	R5	Red data(MSB)
30	R4	Red data
31	R3	Red data
32	GND	Power ground
33	R2	Red data
34	R1	Red data
35	R0	Red data(LSB)
36	GND	Power ground
37	Y2(YU)	Touch panel top signal
38	X2(XR)	Touch panel right signal
39	Y1(YD)	Touch panel bottom signal
40	X1(XL)	Touch panel left signal

CON2 Pin Assignments

Pin No.	Symbol	Description
1	LGND	LED driver ground
2	LGND	LED driver ground
3	ADJ	PWM Dimmer(Note)
4	VLED	Power Supply for LED(5V)
5	VLED	Power Supply for LED(5V)
6	VLED	Power Supply for LED(5V)
7	VLED	Power Supply for LED(5V)
8	VCC	Input Voltage(3.3V)
9	VCC	Input Voltage(3.3V)
10	VCC	Input Voltage(3.3V)
11	NC	No connect
12	NC	No connect
13	NC	No connect
14	GND	Power ground
15	DE	Data Input Enable
16	DCLK	Sample clock
17	GND	Power ground
18	B7	Blue data (MSB)
19	B6	Blue data
20	B5	Blue data
21	B4	Blue data
22	GND	Power ground
23	B3	Blue data
24	B2	Blue data
25	B1	Blue data
26	B0	Blue data(LSB)
27	GND	Power ground
28	G7	Green data(MSB)
29	G6	Green data
30	G5	Green data
31	G4	Green data
32	GND	Power ground
33	G3	Green data
34	G2	Green data
35	G1	Green data
36	G0	Green data(LSB)
37	GND	Power ground
38	R7	Red data(MSB)
39	R6	Red data
40	R5	Red data
41	R4	Red data
42	GND	Power ground
43	R3	Red data

44	R2	Red data
45	R1	Red data
46	R0	Red data(LSB)
47	GND	Power ground
48	HSD	Horizontal Sync Input
49	VSD	Vertical Sync Input
50	GND	Power ground
51	MODE	DE / SYNC mode select. Normally pulled high H : DE mode. L : HSD/VSD mode.
52	RESET	Global reset pin.
53	L/R	Left/Right control(Note)
54	U/D	Up/Down control(Note)
55	NC	No connect
56	GND	Power ground
57	Y2(YU)	Touch panel top signal
58	X2(XR)	Touch panel right signal
59	Y1(YD)	Touch panel bottom signal
60	X1(XL)	Touch panel left signal



NOTE:

L/R:Source Right or Left sequence control. Normally pulled high.

L/R = “L”, shift left: last data = S1←S2←S3.....←S1200 = first data.

L/R = “H”, shift right: first data = S1→S→S3.....→S1200 = last data.

U/D:Gate Up or Down scan control. Normally pulled low.

U/D = “L”, STV2 output vertical start pulse and U/D pin output logical “0” to Gate driver.

U/D = “H”, STV1 output vertical start pulse and U/D pin output logical “1” to Gate driver.

ADJ:On/Off Control Input and Dimming Command Input. A voltage greater than 0.7V will turn on the chip. When the EN/DIM pin voltage (with respect to INGND) rises from 0.7V to 1.4V, the LED current will change from 0% to 100% of the maximum LED current. To use PWM dimming , apply a 100Hz to 1kHz square wave signal with amplitude greater than 1.4V to this pin.

5. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage For Analog	VCC	-0.3	5.0	V
Supply Voltage For Logic	VCC	-0.3	5.0	V
LED Driver Supply Voltage	V _{LED}	-0.3	17	
LED Driver PWM	PWM	-0.3	6.0	
Supply current (One LED)	I _{LED}		30	mA
Operating temperature	T _{OP}	-20	+70	C
Storage temperature	T _{ST}	-30	+80	C

Note: The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

6. Electrical Characteristics

6.1 Input Power

Item	Symbol	Min	Typ.	Max	Unit	Applicable terminal
Supply Voltage For Analog	VCC	3.0	3.3	3.6	V	
Supply Voltage For Logic	VCC	3.0	3.3	3.6	V	
Digital Power Supply Current	I _{VCC}	-	100	140	mA	
Supply Current For LCD	I _{CC}	-	-	220	mA	Black pattern
Power Consumption	P _L	-	330	462	mW	
VSYNC Frequency	F _V	-	60	-	MHz	
DCLK Frequency	DCLK	26.4	33.26	46.8	MHz	
Input Voltage	V _{IL}	GND	-	0.3VCC	V	
	V _{IH}	0.7 VCC	-	VCC		
Input leakage Current	I _{LKG}	-		-	μA	

6.2 Backlight Driving Conditions

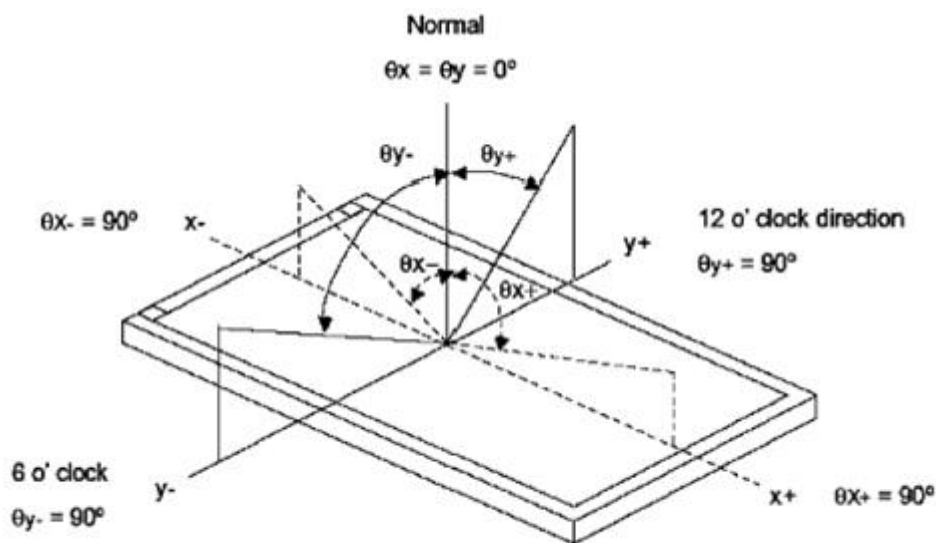
Item	Symbol	Value			Unit	Remark
		Min.	Typ.	Max.		
Voltage for LED Backlight	V _F	8.7	9.6	9.9	V	I _L =180mA
Current for LED Backlight	I _L		180		mA	
Power Consumption	P		1.728		W	
Power Supply Voltage for LED	V _{LED}	4.7	5.0	5.3	V	
Power Current Voltage for LED	I _{LED}	-	610	854	mA	BLU=180mA V _{LED} =5V
Power Consumption	P _{LED}	-	3050	4270	mW	
ADJ Signal Logic Level High	V _{IH}	2	-	3.6	V	
ADJ Signal Logic Level Low	V _{IL}	0	-	1	V	
LED Life Time		30,000	50,000		Hr	Note

Note: Brightness to be decreased to 50% of the initial value at ambient temperature TA=25℃

7. Optical Characteristics

ITEM		SYMBOL	CONDITIONS	SPECIFICATIONS			UNIT	NOTE
				MIN	TYP.	MAX		
Luminance		L	$I_L = 180\text{mA}$	280	360	500	Cd/m^2	
Contrast Ratio		CR	$\theta = 0^\circ$	400	500			
Response Time		T_{ON}	25°C		10	20	ms	
		T_{OFF}			15	30		
CIE Color Coordinate	Red	X_R	Viewing normal angle					
		Y_R						
	Green	X_G						
		Y_G						
	Blue	X_B						
		Y_B						
	White	X_W						
		Y_W						
Viewing Angle	Hor.	θ_{X+}	$CR \geq 10$	60	70		Degree	Gray scale inversion
		θ_{X-}		60	70			
	Ver.	θ_{Y+}		40	50			
		θ_{Y-}		60	70			
Uniformity	Un			80			%	

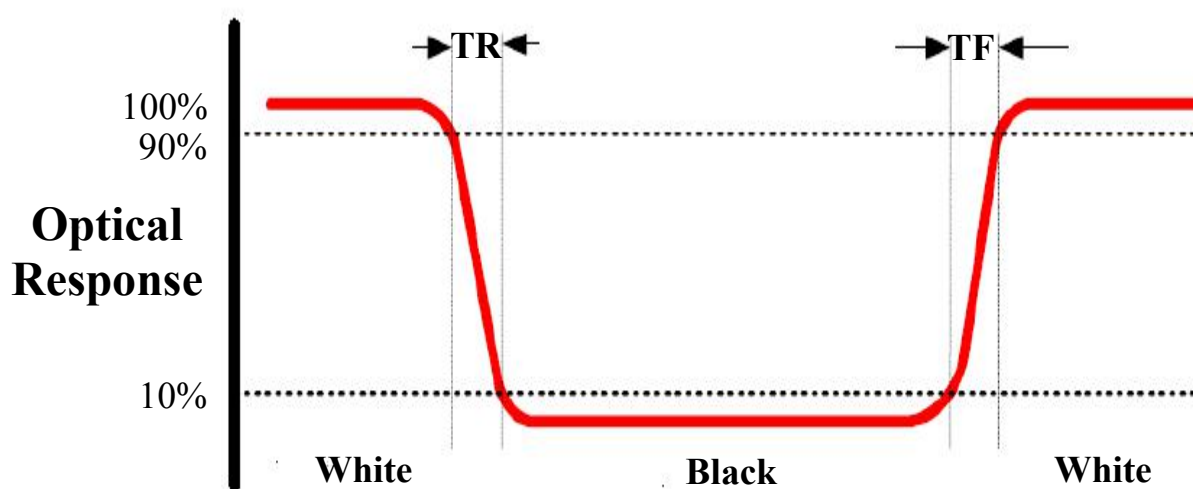
Note 1: Definition of Viewing Angle θ_x and θ_y :



Note 2: Definition of contrast ratio CR:

$$CR = \frac{\text{Luminance of white state}}{\text{Luminance of black state}}$$

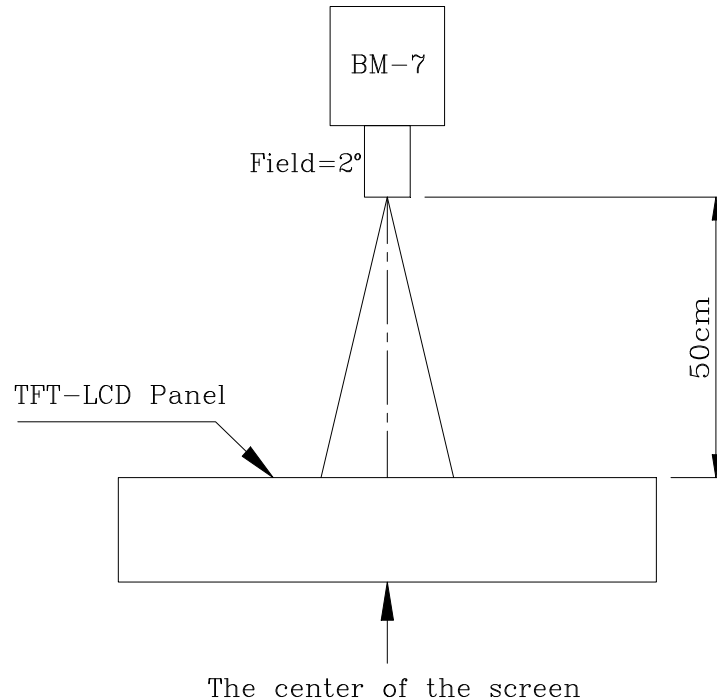
Note 3: Definition of Response Time(T_r , T_f)



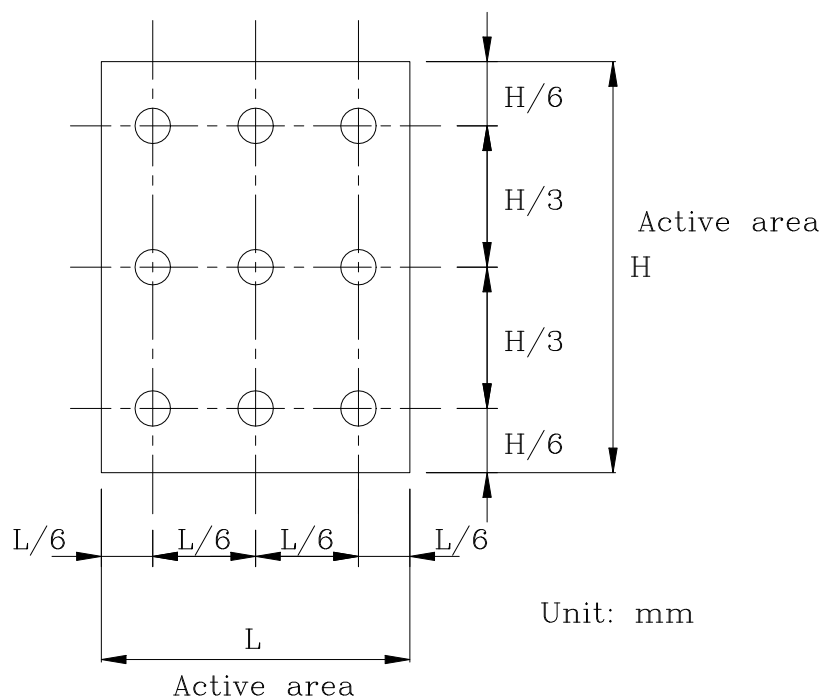
Note 4: Definition of Luminance

①The Brightness Test Equipment Setup

Field=2°(As measuring “black” image, field=2°is the best testing condition)



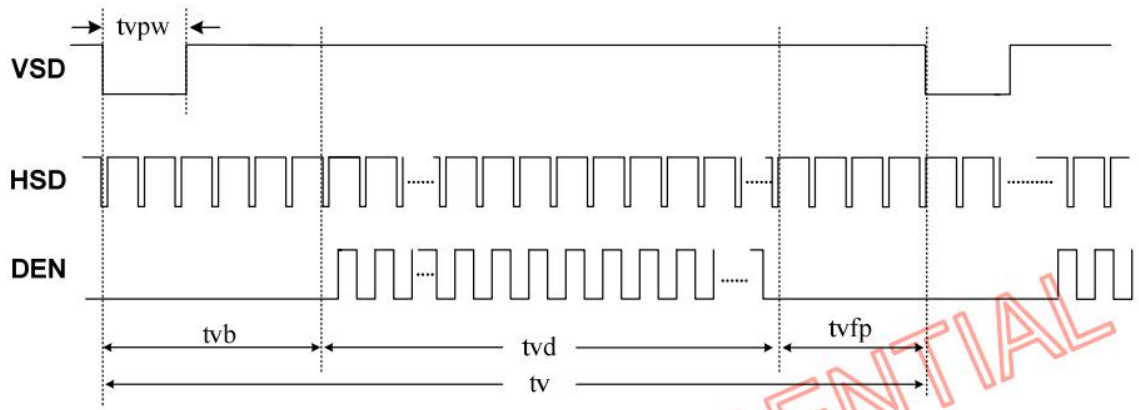
②The Brightness Test Point Setup



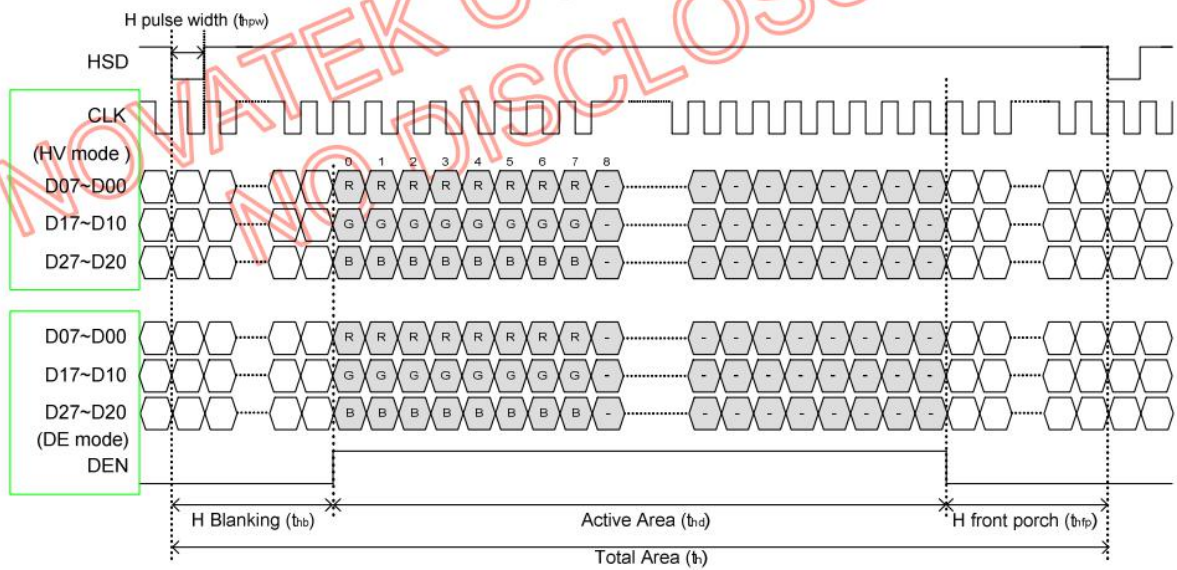
8. Timing Characteristics

8.1 Data Input Format

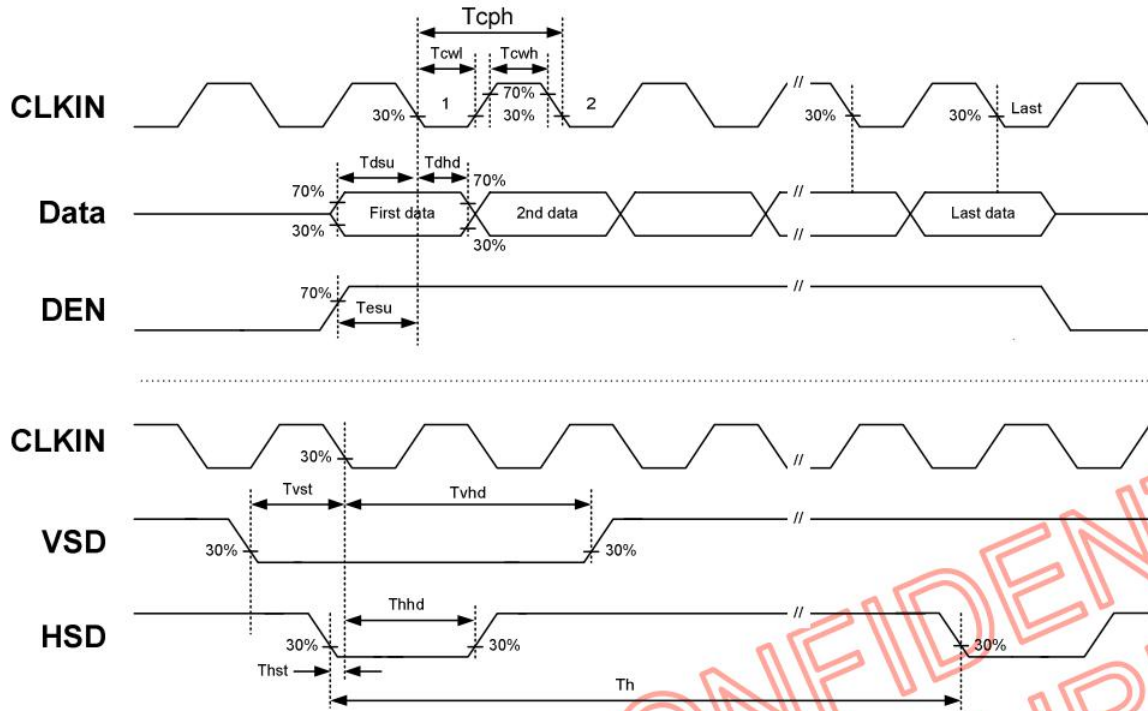
Vertical input timing



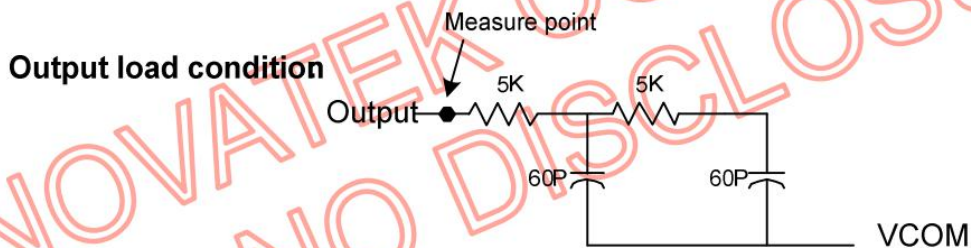
Horizontal input timing



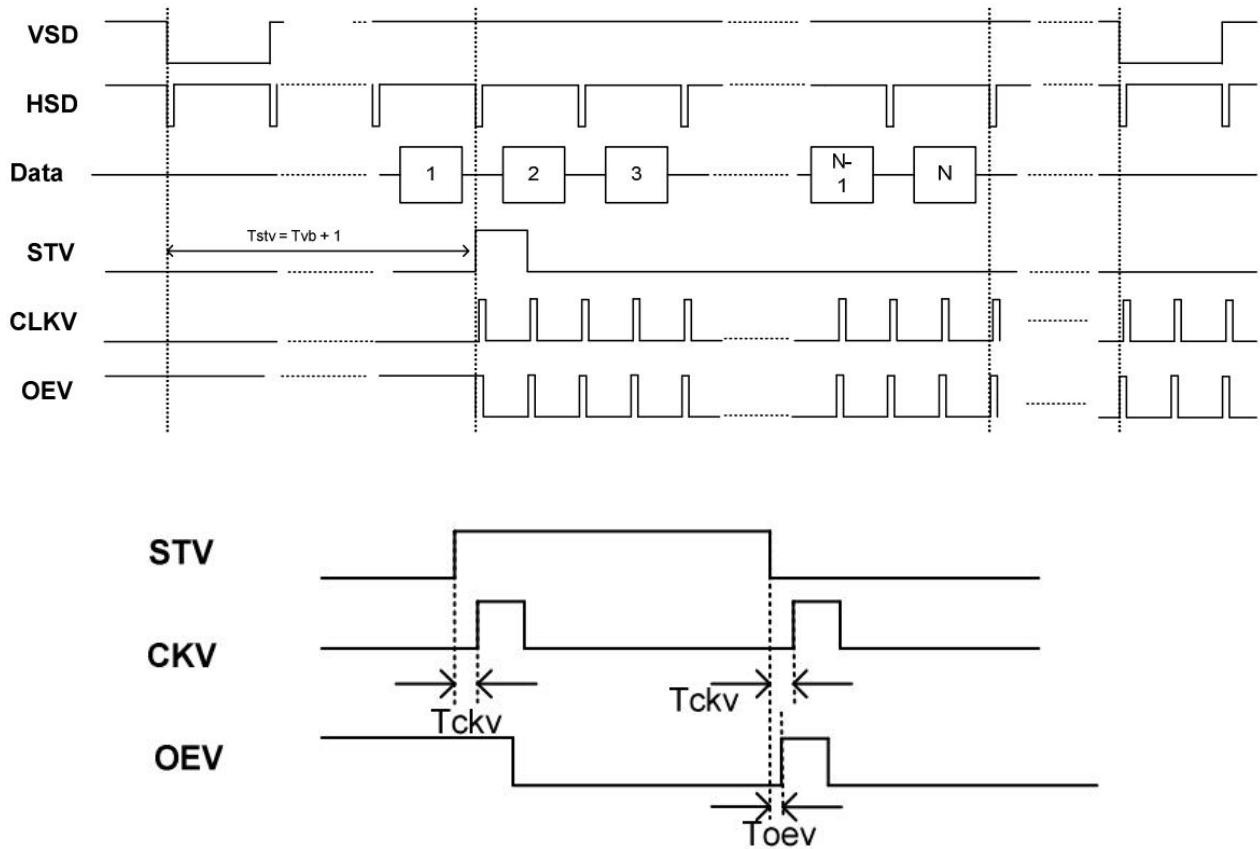
8.2 Input Clock and Data Timing Diagram



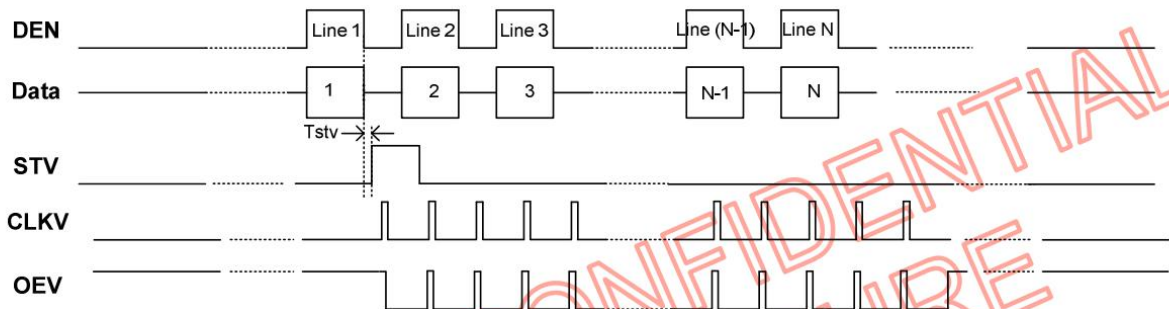
8.3 Source Output



8.4 Vertical Timing Diagram (HV mode)



8.5 Vertical Timing Diagram (DE mode)



8.6 Timing Table

AC Electrical Characteristics

(VDD= 3.0 to 3.6V, AVDD= 6.5 to 13.5V, GND=AGND= 0V, TA= -20 to +85℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
VDD Power On Slew rate	T _{POR}	-	-	20	ms	From 0V to 90% VDD
RSTB pulse width	T _{Rst}	1	-	-	ms	CLKIN = 40MHz
CLKIN cycle time	T _{cph}	20			ns	
CLKIN pulse duty	T _{cwh}	40	50	60	%	
VSD setup time	T _{vst}	8	-	-	ns	
VSD hold time	T _{vhd}	8	-	-	ns	
HSD setup time	T _{hst}	8	-	-	ns	
HSD hold time	T _{hhd}	8	-	-	ns	
Data set-up time	T _{dsu}	8	-	-	ns	D0[7:0], D1[7:0], D2[7:0] to CLKIN
Data hold time	T _{dhd}	8	-	-	ns	D0[7:0], D1[7:0], D2[7:0] to CLKIN
DEN setup time	T _{esu}	8	-	-	ns	
DEN hold time	T _{ehd}	8	-	-	ns	
Output stable time	T _{sst}	-	-	6	us	10% to 90% target voltage. CL=120pF, R=10K ohm

Timing Table

Parallel 24-bit RGB Mode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
CLKIN Frequency	F _{clk}	-	33.3	50	MHz	VDD = 3.0V ~3.6V
CLKIN Cycle Time	T _{clk}	20	30	-	ns	
CLKIN Pulse Duty	T _{cwh}	40	50	60	%	T _{clk} =T _{cwh} +cwl
	T _{cwl}	40	50	60	%	
VSD to STV	T _{stv}	-	24	-	H	HV mode
DEN to STV	T _{stv}		4		CLKIN	DE mode
STV pulse width	T _{wstv}	-	0.5	-	H	
STV to CKV	T _{ckv}	-	18	-	CLKIN	
STV to OEV	T _{oev}	-	2	-	CLKIN	
CKV Pulse Width	T _{wckv}	-	66	-	CLKIN	
OEV Pulse Width	T _{woev}	-	50	-	CLKIN	

For 800x480 panel

Horizontal input timing

Parameter		Symbol	Value			Unit
Horizontal display area		thd	800			DCLK
DCLK frequency		fclk	Min.	Typ.	Max.	MHz
			-	33.3	50	
1 Horizontal Line		th	862	1056	1200	DCLK
HSD pulse width	Min.	thpw	1			
	Typ.		-			
	Max.		40			
HSD Back Porch (Blanking)		thb	46	46	46	
HSD Front Porch		thfp	16	210	354	

Vertical input timing

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Vertical display area	tvd	480			H
VSD period time	tv	510	525	650	H
VSD pulse width	tpw	1	-	20	H
VSD Back Porch (Blanking)	tvb	23	23	23	H
VSD Front Porch	tvfp	7	22	147	H

9. Standard Specification for Reliability

9.1 Standard Specification for Reliability of LCD Module

No	Test Item	Condition	Remarks
1	High Temperature Operation	T _s = +70℃, 240 hours	IEC60068-21:2007 GB2423.2-2008
2	Low Temperature Operation	T _a = -20℃, 240 hours	IEC60068-2-1:2007 GB/2423.1-2008
3	High Temperature Storage	T _a = +80℃, 240 hours	IEC60068-21:2007 GB/2423.2-2008
4	Low Temperature Storage	T _a = -30℃, 240 hours	IEC60068-21:2007 GB/2423.1-2008
5	Storage at High Temperature and Humidity	T _a = +60℃, 90% RH max, 240 hours	IEC60068-2-78 :2001 GB/T2423.3—2006
6	Thermal Shock (non-operation)	-30℃ 30 min~+80℃ 30 min, Change time: 5min, 20 Cycle	Start with cold temperature, End with high temperature, IEC60068-214:1984, GB/2423.22-2002
7	ESD	C=150pF, R=330Ω, 5 point/panel Air: ±8Kv, 5 times; Contact: ±4Kv, 5 times (Environment: 15℃~35℃, 30%~60% RH, 86Kpa~106Kpa)	IEC61000-42:2001 GB/T17626.2-2006
8	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)	IEC60068-2-6:1982 GB/T2423.10-1995
9	Mechanical Shock (Non Op)	Half Sine Wave 60G 6ms, ±X, ±Y, ±Z 3 times for each direction	IEC60068-2-27:1987 GB/T2423.5—1995
10	Package Drop Test	Height: 80cm, 1 corner, 3 edges, 6 surfaces	IEC60068-2-32:1990 GB/T2423.8—1995

Note1: T_s is the temperature of panel's surface.

Note2: T_a is the ambient temperature of sample.

9.2 Testing Conditions and Inspection Criteria

For the final test, the testing sample must be stored at room temperature for 24 hours. After the tests listed in Table 9.2, standard specifications for reliability will be executed in order to ensure stability.

No.	Item	Test Model	In section Criteria
01	Current Consumption	Refer To Specification	The current consumption should conform to the product specification.
02	Contrast	Refer To Specification	After the tests have been executed, the contrast must be larger than half of its initial value prior to the tests.
03	Appearance	Visual inspection	Defect free.

9.3 MTBF

MTBF	Functions, performance, appearance, etc. shall be free from remarkable deterioration within 50,000 hours under ordinary operating and storage conditions room temperature (25±5°C), normal humidity (50±10% RH), and in area not exposed to direct sun light.
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10.Specification of Quality Assurance

This standard of Quality Assurance confirms to the quality of LCD module products supplied by Victronix.

10.1 Quality Test

Before delivering, the supplier should conduct the following tests to confirm the quality of products.

- Electrical-Optical Characteristics: According to the individual specification to test the product.
- Appearance Characteristics: According to the individual specification to test the product.
- Reliability Characteristics: According to the definition of reliability on the specification for testing products.

10.2 Delivery Test

Before delivering, the supplier should conduct the delivery test.

- Test method: According to MIL-STD105E.General Inspection Level II take a single Time.
- The defects classify of AQL as following:
Major defect: AQL = 0.65
Minor defect: AQL = 1.5
Total defects: AQL = 1.5

10.3 Non-conforming Analysis & Deal With Manners

10.3.1 Non-conforming Analysis

- Purchaser should provide the data detail of non-conforming sample and the non-conforming.
- After receiving the data detail from purchaser, the analysis of non-conforming should be finished within two weeks.
- If the analysis can't be finished on time, supplier must notice purchaser 3 days in advance.

10.3.2 Disposition of non-conforming

- If any product defect be found during assembling, supplier must change the good for every defect after confirmation.
- Both supplier and customer should analyze the reason and discuss the disposition of non-conforming when the reason of nonconforming is not sure.

10.4 Agreement items

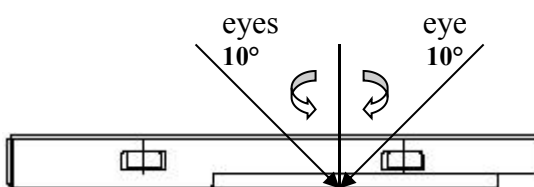
Both parties should negotiate together when the following problems happen.

- There is any problem of standard of quality assurance, and both sides should agree that it must be modified.
- There is any argument item which does not record in the standard of quality assurance.
- Any other special problem.

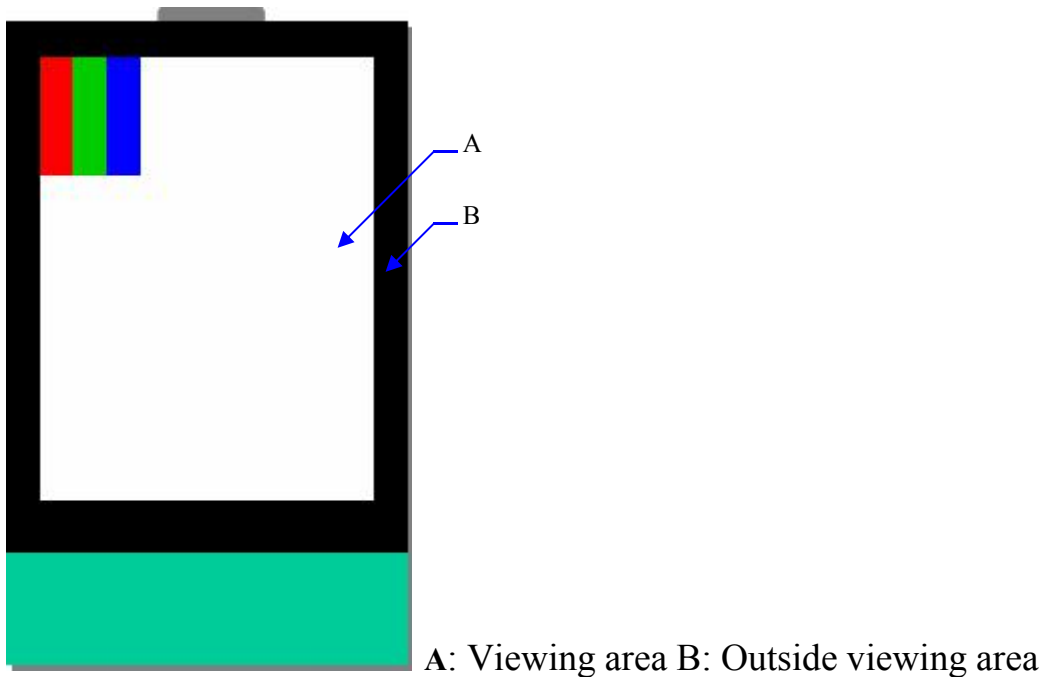
10.5 Standard of The Product Appearance Test

10.5.1 Manner of appearance test

- The test must be under 20W × 2 or 40W fluorescent light, and the distance of view must be at 30±5cm.
- When test the model of transmissive product must add the reflective plate.
- The test direction is base on around 10° of vertical line.
- Temperature: 25±5°C Humidity: 60±10%RH



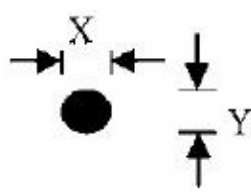
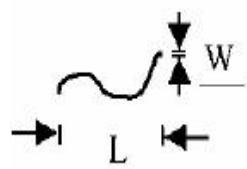
- Definition of area:

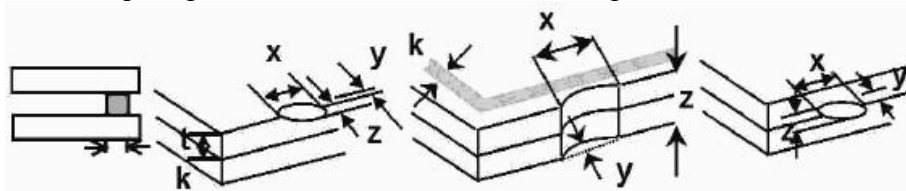
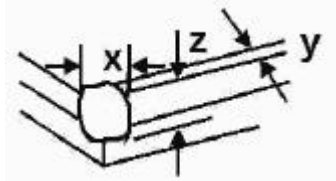


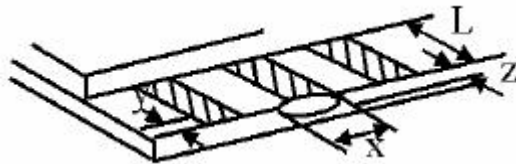
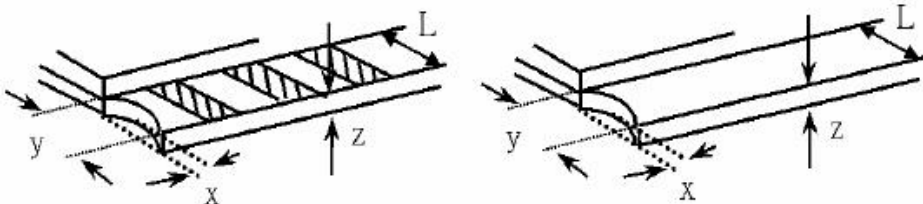
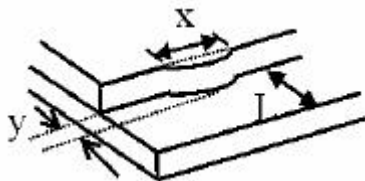
10.5.2 Basic principle

- When the standard can not be described, AQL will be applied.
- The sample of the lowest acceptable quality level must be negotiated by both supplier and customer when any dispute happened.
- New item must be added on time when it is necessary.

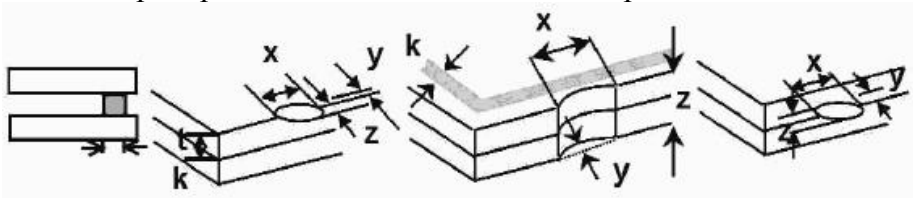
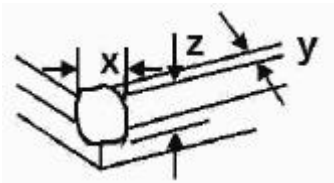
10.6 Inspection Specification

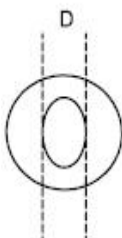
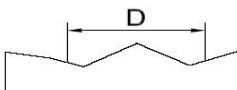
NO.	Item	Criterion	AQL																								
01	Electrical Testing	1.1 Missing vertical, horizontal segment, segment contrast defect. 1.2 Missing character, dot or icon. 1.3 Display malfunction. 1.4 No function or no display. 1.5 Current consumption exceeds product specifications. 1.6 LCD viewing angle defect. 1.7 Mixed product types. 1.8 Flicker	0.65																								
02	Black or White spots or Bright spots or Color spots on LCD (Display only)	2.1 White and black or color spots on display $\cong 0.25\text{mm}$, no more than Five spots. 2.2 Densely spaced: No more than three spots within 3mm.	1.5																								
03	LCD and Touch Panel black spots, white spots, contamination (non – display)	3.1 Round type: As following drawing $\Phi = (X+Y) / 2$  <table><thead><tr><th>Size(mm)</th><th>Acceptable Q'ty</th></tr></thead><tbody><tr><td>$\Phi \cong 0.10$</td><td>Accept no dense</td></tr><tr><td>$0.10 < \Phi \cong 0.20$</td><td>1</td></tr><tr><td>$0.20 < \Phi \cong 0.25$</td><td>1</td></tr><tr><td>$0.25 < \Phi \cong 0.30$</td><td>0</td></tr><tr><td>$0.30 < \Phi$</td><td>0</td></tr></tbody></table> * Densely spaced: No more than two spots within 3mm. 3.2 Line type: (As following drawing)  <table><thead><tr><th>Length(mm)</th><th>Width(mm)</th><th>Acceptable Q'ty</th></tr></thead><tbody><tr><td>---</td><td>$W \cong 0.02$</td><td>Accept no dense</td></tr><tr><td>$L < 2.5$</td><td>$W < 0.08$</td><td>1</td></tr><tr><td>---</td><td>$0.08 \cong W$</td><td>Rejection</td></tr></tbody></table> * Densely spaced: No more than two lines within 3mm.	Size(mm)	Acceptable Q'ty	$\Phi \cong 0.10$	Accept no dense	$0.10 < \Phi \cong 0.20$	1	$0.20 < \Phi \cong 0.25$	1	$0.25 < \Phi \cong 0.30$	0	$0.30 < \Phi$	0	Length(mm)	Width(mm)	Acceptable Q'ty	---	$W \cong 0.02$	Accept no dense	$L < 2.5$	$W < 0.08$	1	---	$0.08 \cong W$	Rejection	1.5
Size(mm)	Acceptable Q'ty																										
$\Phi \cong 0.10$	Accept no dense																										
$0.10 < \Phi \cong 0.20$	1																										
$0.20 < \Phi \cong 0.25$	1																										
$0.25 < \Phi \cong 0.30$	0																										
$0.30 < \Phi$	0																										
Length(mm)	Width(mm)	Acceptable Q'ty																									
---	$W \cong 0.02$	Accept no dense																									
$L < 2.5$	$W < 0.08$	1																									
---	$0.08 \cong W$	Rejection																									

NO.	Item	Criterion			AQL
04	Polarizer bubbles	If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction	Size Φ (mm)	Acceptable Q'ty	1.5
			$\Phi \leq 0.30$	Accept no dense	
			$0.30 < \Phi \leq 0.50$	0	
			$0.50 < \Phi \leq 1.00$	0	
			$1.00 < \Phi$	0	
			Total Q'ty	0	
05	Scratches	Follow NO.3 -2 Line Type.			
06	Chipped glass	Symbols: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length 6.1 General glass chip: 6.1.1 Chip on panel surface and crack between panels:			1.5
					
		z: Chip thickness	y: Chip width	x: Chip length	
		$Z \leq 1/2t$	Not over viewing area	$x \leq 2MM$	
		$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 2MM$	
		⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip 6.1.2 Corner crack:			
					
		z: Chip thickness	y: Chip width	x: Chip length	
		$Z \leq 1/2t$	Not over viewing area	$x \leq 2MM$	
		$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 2MM$	
		⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip			

NO.	Item	Criterion	AQL																
07	Glass crack	Symbols: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length 7.2 Protrusion over terminal: 7.2.1 Chip on electrode pad:  <table><tr><td>y: Chip width</td><td>x: Chip length</td><td>z: Chip thickness</td></tr><tr><td>$y \leq 0.5\text{mm}$</td><td>$x \leq 2\text{MM}$</td><td>$0 < z \leq t$</td></tr></table> 7.2.2 Non-conductive portion:  <table><tr><td>y: Chip width</td><td>x: Chip length</td><td>z: Chip thickness</td></tr><tr><td>$y \leq L$</td><td>$x \leq 2\text{MM}$</td><td>$0 < z \leq t$</td></tr></table> ⊙ If there chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications. ⊙ If the product will be heat sealed by the customer, the alignment mark must not be damaged. 7.2.3 Substrate protuberance and internal crack  <table><tr><td>y: width</td><td>x: length</td></tr><tr><td>$y \leq 1/3L$</td><td>$X \leq 2\text{MM}$</td></tr></table>	y: Chip width	x: Chip length	z: Chip thickness	$y \leq 0.5\text{mm}$	$x \leq 2\text{MM}$	$0 < z \leq t$	y: Chip width	x: Chip length	z: Chip thickness	$y \leq L$	$x \leq 2\text{MM}$	$0 < z \leq t$	y: width	x: length	$y \leq 1/3L$	$X \leq 2\text{MM}$	1.5
		y: Chip width	x: Chip length	z: Chip thickness															
		$y \leq 0.5\text{mm}$	$x \leq 2\text{MM}$	$0 < z \leq t$															
		y: Chip width	x: Chip length	z: Chip thickness															
$y \leq L$	$x \leq 2\text{MM}$	$0 < z \leq t$																	
y: width	x: length																		
$y \leq 1/3L$	$X \leq 2\text{MM}$																		

NO.	Item	Criterion	AQL
08	Cracked glass	No crack is allowed.	1.5
09	Backlight elements	9.1 Illumination source flickers when lit. 9.2 Spots or scratches that appear when lit must be judged. Using LCD spot, lines and contamination standards. 9.3 Backlight doesn't light or color is wrong.	1.5 1.5 0.65
10	Bezel	No scratches with W>0.1 and Length>2.5mm.	1.5
11	PCB、COB	11.1 COB seal may not have pinholes larger than 0.2mm or contamination. 11.2 COB seal surface may not have pinholes through to the IC. 11.3 The height of the COB should not exceed the height indicated in the assembly diagram. 11.4 There may not be more than 2mm of sealant outside the seal area on PCB. And there should be no more than three places. 11.5 Parts on PCB must be the same as on the production characteristic chart, There should be no wrong parts, missing parts or excess parts. 11.6 The jumper on the PCB should conform to the product characteristic chart.	1.5 1.5 1.5 1.5 0.65 0.65
12	FPC	FPC damage per IPC guidelines.(IPC-A-610) Nicks or damage along the edges of the flexible printed circuitry and cutouts,providing the penetration does not exceed 50% of the distance from the edge to the nearest conductor to 2.5mm[0.1in], Whichever is less.	1.5
13	Soldering	13.1 No cold solder joints, missing solder connections, oxidation or icicle. 13.2 No short circuits in components on PCB or FPC. 13.3 Soldering per IPC guidelines.(IPC-A-610)	1.5 0.65

NO.	Item	Criterion	AQL												
14	Touch Panel Chipped glass	Symbols: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Touch Panel Total thickness a: LCD side length L: Electrode pad length 14.1 General glass chip: 14.1.1 Chip on panel surface and crack between panels:  <table><tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></tr><tr><td>$Z \leq t$</td><td>$\leq 1/2 k$ and not over viewing area</td><td>$x \leq 2MM$</td></tr></table> ⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip 14.1.2 Corner crack:  <table><tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></tr><tr><td>$z \leq t$</td><td>$\leq 1/2 k$ and not over viewing area</td><td>$x \leq 2MM$</td></tr></table> ⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq t$	$\leq 1/2 k$ and not over viewing area	$x \leq 2MM$	z: Chip thickness	y: Chip width	x: Chip length	$z \leq t$	$\leq 1/2 k$ and not over viewing area	$x \leq 2MM$	1.5
z: Chip thickness	y: Chip width	x: Chip length													
$Z \leq t$	$\leq 1/2 k$ and not over viewing area	$x \leq 2MM$													
z: Chip thickness	y: Chip width	x: Chip length													
$z \leq t$	$\leq 1/2 k$ and not over viewing area	$x \leq 2MM$													

NO.	Item	Criterion	AQL										
15	Touch Panel(Fish eye、dent and bubble on film)	<table><tr><th>SIZE(mm)</th><th>Acceptable Q'ty</th></tr><tr><td>$\Phi \leq 0.2$</td><td>Accept no dense</td></tr><tr><td>$0.2 < D \leq 0.4$</td><td>5</td></tr><tr><td>$0.4 < D \leq 0.5$</td><td>2</td></tr><tr><td>$0.5 < D$</td><td>0</td></tr></table> 	SIZE(mm)	Acceptable Q'ty	$\Phi \leq 0.2$	Accept no dense	$0.2 < D \leq 0.4$	5	$0.4 < D \leq 0.5$	2	$0.5 < D$	0	1.5
SIZE(mm)	Acceptable Q'ty												
$\Phi \leq 0.2$	Accept no dense												
$0.2 < D \leq 0.4$	5												
$0.4 < D \leq 0.5$	2												
$0.5 < D$	0												
16	Touch Panel Newton ring	Newton ring dimension $\leq 1/2$ touch panel area and not affect font and line distortion($\leq 2.5\%$) , it is acceptable.	1.5										
17	Touch Panel Linearity	Less than 2.5% is acceptable.	1.5										
18	LCD Ripple	Touch the touch panel , can not see the LCD ripple. Pen: R 1.0mm silicon rubber. Operation Force: 80g	1.5										
19	General appearance	19.1 Pin type must match type in specification sheet. 19.2 LCD pin loose or missing pins. 19.3 Product packaging must the same as specified on packaging specification sheet. 19.4 Product dimension and structure must conform to product specification sheet. 19.5 product packaging shall be by trays sized to protect tft and fpc cable, 19.6 cable shall not be bent during transportation. 19.7top tray must be empty.	0.65 0.65 0.65 0.65										

11. Handling Precaution

11.1 Handling of LCM

- Avoid external shock.
- Don't apply excessive force on the surface.
- Liquid in LCD is hazardous substance, do not lick or swallow. When the liquid is attaching to your hand, skin, cloth, etc., wash it thoroughly and immediately.
- Don't operate it above the absolute maximum rating.
- Don't disassemble the LCM.
- The operators should wear protections whenever he/she comes into contact with the module. Never 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.
- The modules should be kept in antistatic bags or other containers resistant to static for storage.
- The module is coated with a film to protect the display surface, be careful when peeling off this protective film since static electricity may be generated.

11.2 Storage

- Store it in an ambient temperature of $25\pm 10^{\circ}\text{C}$, and in a relative humidity of $50\pm 10\%\text{RH}$. Don't expose to sunlight or fluorescent light.
- Store it in a clean environment, free from dust, active gas, and solvent.
- Store it in anti-static electricity container.
- Store it without any physical load.

11.3 Soldering

- Use only soldering irons with proper grounding and no leakage.
- Iron: no higher than $280\pm 10^{\circ}\text{C}$ and less than 3 sec during hand soldering.
- Rewiring: no more than 2 times.

12.Packing Method

No.	Item	Dimensions(mm)	Quantity	Remark
1	LCM Module	192.80*116.90*11.14	30PCS	
2	PALLET	550*340*167 (include 30pcs products/one pallet)	1PCS	
3	CARTON	550*340*167 (include 30pcs products/one carton)	1PCS	