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P2

2017.3.24

1 OF 31

NV133FHM-N42 V8.0

Product Specification

Rev. P2

CHONGQING BOE OPTOELECTRONICS TECHNOLOGY CO.,LTD

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REVISION HISTORY				
REV.	ECN No.	DESCRIPTION OF CHANGES	DATE	PREPARED
P0	-	Initial Release	2016.12.13	付伟
P1	-	EDID update	2017.03.15	付伟
P2	-	Add note for suggest system design no/l ow NH4+ ions	2017.03.24	付伟
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1.0 General Description

1.1 Application

1.2 General Specification

1.2.1.General LCM Specification(Table 1.)

<Table 1. General Specifications>

Parameter	Specification	Unit	Remarks
Active area	293.76 (H) x 165.24 (V)	mm	13.3''
Number of pixels	1920 (H) x 1080 (V)	pixels	FHD
Pixel pitch	0.153 (H) x 0.153 (V)	mm	
Pixel arrangement	RGB Vertical stripe		
Display colors	262K	colors	
Display mode	Normally Black		
Dimensional outline	306.8(H)*195.7(V) (W/PCB)*2.85(Max)	mm	
Weight	260(max)	g	
Surface Treatment	Anti-glare		
Back-light	Lower Down side, 1-LED Lighting Bar type		Note 1
Power consumption	P _D : 0.9(max)	W	@mosaic pattern
	P _{BL} :2.4(max.)	W	
	3.3(Type.)	W	

Notes : 1. LED Lighting Bar (32*LED Array)

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R2013-9024-O(3/3)

A4(210 X 297)

2.0 ABSOLUTE MAXIMUM RATINGS

The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage and current values are listed in Table 2.

< Table 2. Absolute Maximum Ratings >

Ta=25+/-2°C

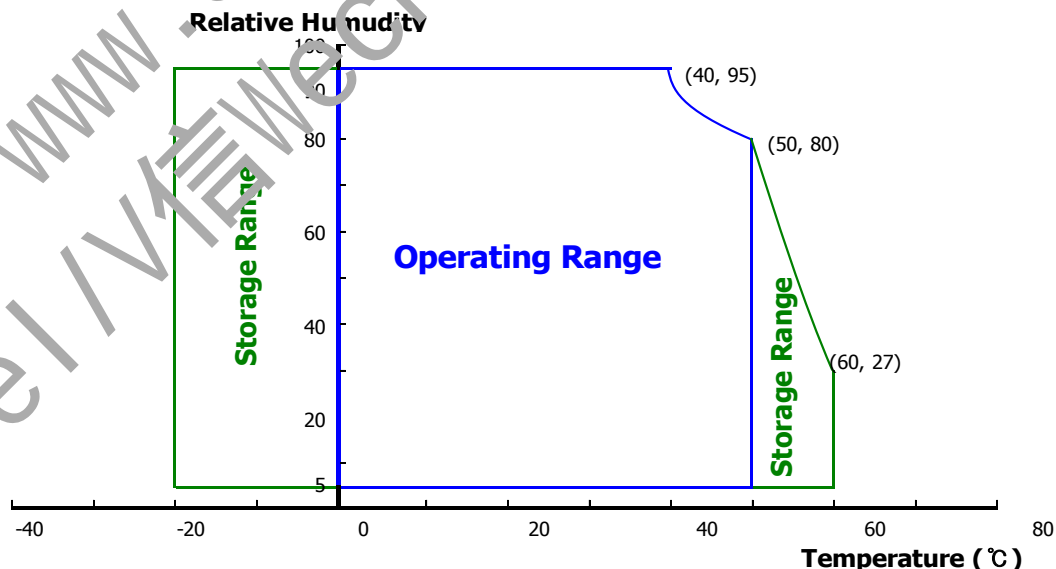
Parameter	Symbol	Min.	Max.	Unit	Remarks
Power Supply Voltage	V _{DD}	-0.5	+1.0	V	Note 1
Logic Supply Voltage	V _{IN}	V _{SS} -0.3	V _{DD} +0.3	V	
Operating Temperature	T _{OP}	0	+50	°C	Note 2
Storage Temperature	T _{ST}	-20	+60	°C	

Notes : 1. Permanent damage to the device may occur if maximum values are exceeded functional operation should be restricted to the condition described under normal operating conditions.

2. Temperature and relative humidity range are shown in the figure below.

95 % RH Max. (40 °C > Ta)

Maximum wet-bulb temperature at 39 °C or less. (Ta > 40 °C) No condensation.



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3.0 ELECTRICAL SPECIFICATIONS

3.1 Electrical Specifications

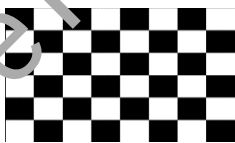
< Table 3. Electrical specifications > Ta=25℃/-2℃

Parameter		Min.	Typ.	Max.	Unit	Remarks
Power Supply Voltage	V _{DD}	3.0	3.3	3.6	V	Note 1
Permissible Input Ripple Voltage	V _{RF}	-	-	100	mV	At V _{DD} = 3.3V
Power Supply Current	I _{DD}		273	-	mA	Note 1
Inrush/Peak Current			-	2	A	Note3
Differential Input Voltage	V _{IO}	120	-	1200	mV	
Power Consumption	P _D	-	0.9	1.5	W	Note 1
	P _{BL}	-	-	2.4	W	Note 2
	P _{total}	-	-	3.9	W	

Notes : 1. The supply voltage is measured and specified at the interface connector of LCM.
The current draw and power consumption specified is for 3.3V at 25℃.

a) Typ : Mosaic Pattern

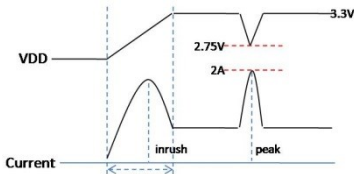
b) Max : R/G/B Pattern



(a)



(b)



(c)

2. $I_F \times V_F \times 32 / \text{efficiency} = P_{LED}$

3. when peak Current is 2A, VDD should be more than 2.75V. (c)

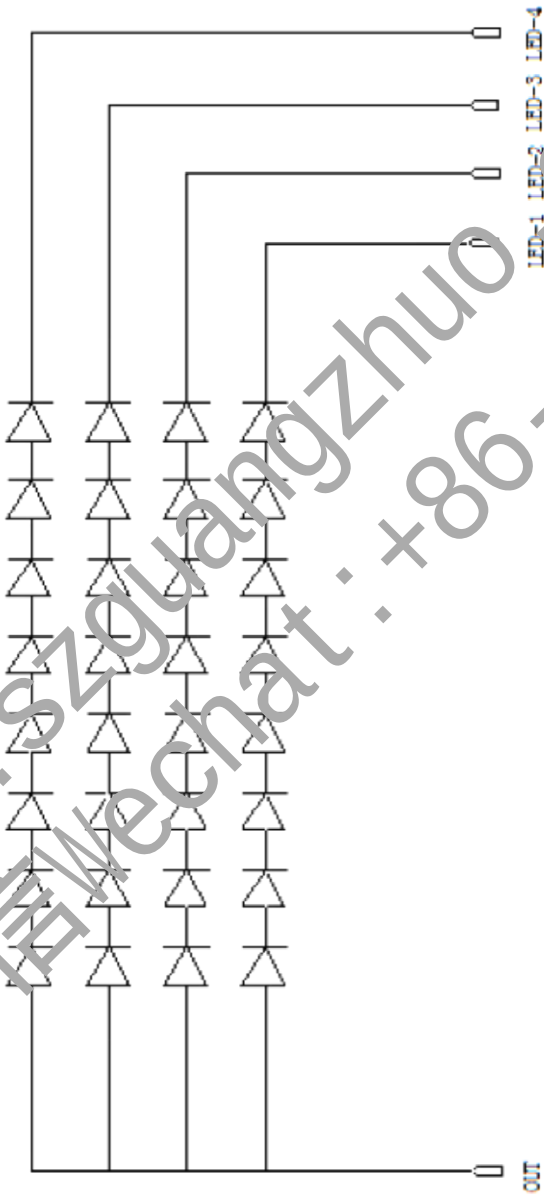
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3.2 Backlight Unit							
< Table 4. LED Driving guideline specifications >							
Ta: 25±2°C							
Parameter		Min.	Typ.	Max.	Unit	Remarks	
LED Forward Voltage		V _F	-	-	2.9	V	-
LED Forward Current		I _F	-	20.5	-	mA	-
LED Power Consumption		P _{LED}	-	-	2.4	W	Note 1
LED Life-Time		N/A	15,000	-	-	Hour	I _F = 20mA
Power supply voltage for LED Driver		V _{LED}	6	12	21	V	
EN Control Level	Backlight on		2.0		5.0	V	
	Backlight off		0		1.0	V	
PWM Control Level	PWM High Level		2.0		5.0	V	
	PWM Low Level		0		0.1	V	
PWM Control Frequency		F _{PWM}	200	-	10,000	Hz	
Duty Ratio		-	1	-	100	%	

Notes : 1. Power supply voltage12V for LED Driver
 Calculator Value for reference I_F × V_F × 32/ efficiency = P_{LED}
 2. The LED Life-time define as the estimated time to 50% degradation of initial luminous.
 3. 1% duty cycle is achievable with a dimming frequency less than 1KHz.

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3.3 LED structure



4.0 OPTICAL SPECIFICATION

4.1 Overview

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 (Goniometer system and TOPCON BM-5) 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° . We refer to $\theta 0=0$ ($=\theta 3$) as the 3 o'clock direction (the "right"), $\theta 0=90$ ($=\theta 12$) as the 12 o'clock direction ("upward"), $\theta 0=180$ ($=\theta 9$) as the 9 o'clock direction ("left") and $\theta 0=270$ ($=\theta 6$) as the 6 o'clock direction ("bottom"). While scanning θ and/or ϕ , the center of the measuring spot on the Display surface shall stay fixed. The backlight should be operating for 30 minutes prior to measurement. VDD shall be $3.3 \pm 0.3\text{V}$ at 25°C . Optimum viewing angle direction is 6 o'clock.

4.2 Optical Specifications

<Table 5. Optical Specifications>

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle range	Horizontal	Θ_3	CR > 10	-	85	-	Deg.	Note 1
		Θ_9		-	85	-	Deg.	
	Vertical	Θ_{12}		-	85	-	Deg.	
		Θ_6		-	85	-	Deg.	
Luminance Contrast ratio		CR	$\Theta = 0^\circ$	600	800	-	-	
Luminance of White	5 Points	Y_w	$\Theta = 0^\circ$ ILED = 20.5mA	187	220	-	-	
White Luminance uniformity	5 Points	ΔY_5		-	80%	-	-	Type.
	13 Points	ΔY_{13}		62.5%	71%	-	-	
White Chromaticity		x_w	$\Theta = 0^\circ$	0.283	0.313	0.343	-	
		y_w		0.299	0.329	0.359	-	
Reproduction of color	Red	x_R	$\Theta = 0^\circ$	-0.03	0.590	+0.03	-	
		y_R			0.350		-	
	Green	x_G			0.330		-	
		y_G			0.555		-	
	Blue	x_B			0.153		-	
		y_B			0.119		-	
Gamut		-	-	-	45	-	%	
Response Time (Rising + Falling)		T_{RT}	Ta= 25° C $\Theta = 0^\circ$	-	30	35	Ms	Note 6
Cross Talk		CT	$\Theta = 0^\circ$	-	-	-	%	

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Notes :

1. Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing angles 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 FIGURE 1).

2. Contrast measurements shall be made at viewing angle of $\theta = 0$ 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 FIGURE 1) Luminance Contrast Ratio (CR) is defined mathematically.

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

3. Center Luminance of white is defined as luminance values of 5 point average across the LCD surface. Luminance shall be measured with all pixels in the view field set first to white. This measurement shall be taken at the locations shown in FIGURE 2 for a total of the measurements per display.

4. The White luminance uniformity on LCD surface is then expressed as : $\Delta Y = \text{Minimum Luminance of 5(or 13) points} / \text{Maximum Luminance of 5(or 13) points}$.
(see FIGURE 2 and FIGURE 3).

5. The color chromaticity coordinates specified in Table 5 shall be calculated from the spectral data measured with all pixels first in red, green, blue and white. Measurements shall be made at the center of the panel.

6. The electro-optical response time measurements shall be made as FIGURE 4 by switching the "data" input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is Tr, and 90% to 10% is Td.

7. Cross-Talk of one area of the LCD surface by another shall be measured by comparing the luminance (YA) of a 25mm diameter area, with all display pixels set to a gray level, to the luminance (YB) of that same area when any adjacent area is driven dark.
(See FIGURE 5).

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4.3 Optical measurements

Figure 1. Measurement Set Up

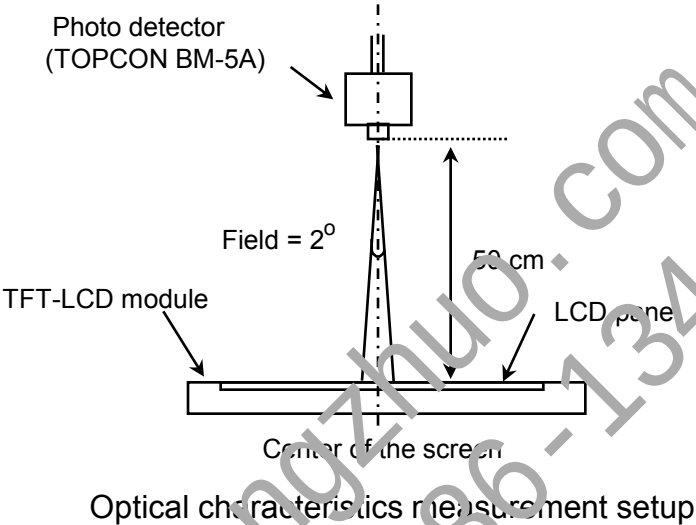
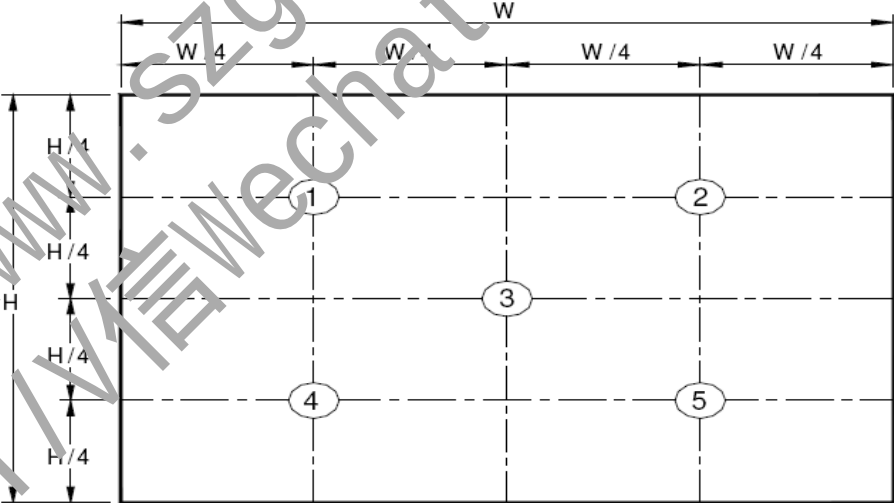


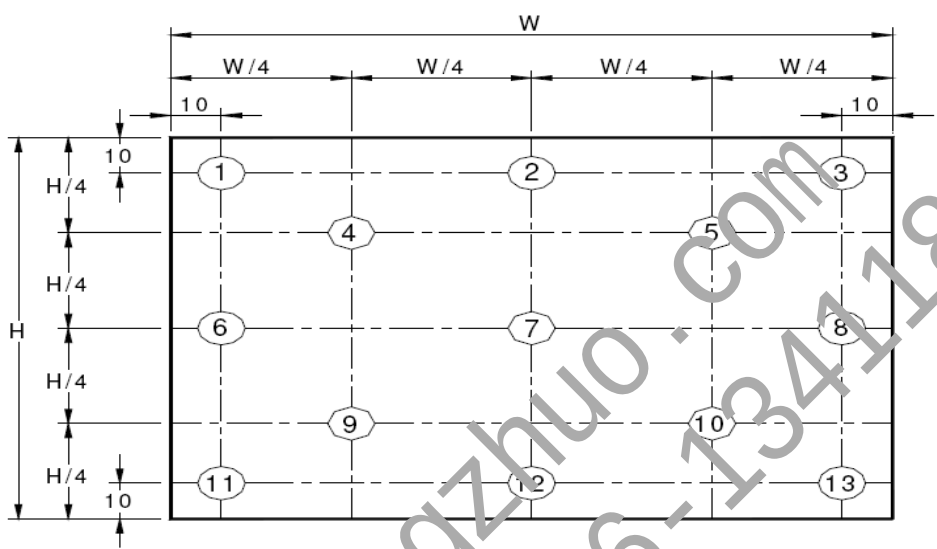
Figure 2. White Luminance and Uniformity Measurement Locations (5 points)



Center Luminance of white is defined as luminance values of center 5 points across the LCD surface. Luminance shall be measured with all pixels in the view field set first to white. This measurement shall be taken at the locations shown in FIGURE 2 for a total of the measurements per display.

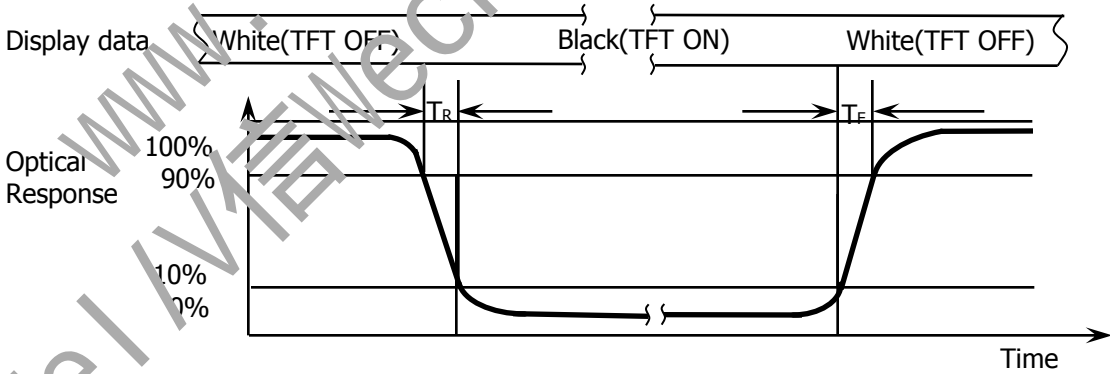
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Figure 3. Uniformity Measurement Locations (13 points)



The White luminance uniformity on LCD surface is then expressed as : $\Delta Y5 = \text{Minimum Luminance of five points} / \text{Maximum Luminance of five points}$ (see FIGURE 2) , $\Delta Y13 = \text{Minimum Luminance of 13 points} / \text{Maximum Luminance of 13 points}$ (see FIGURE 3).

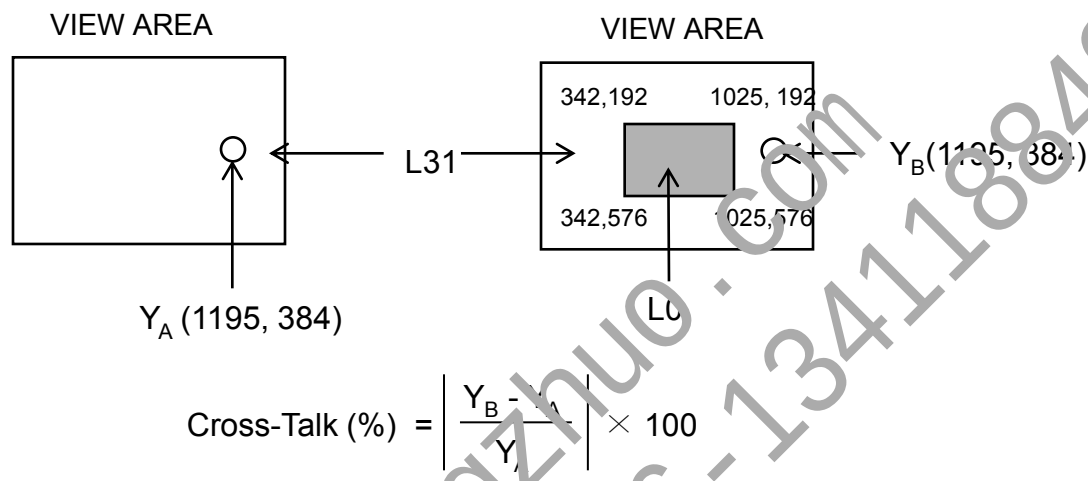
Figure 4. Response Time Testing



The electro-optical response time measurements shall be made as shown in FIGURE 4 by switching the “data” input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is Td and 90% to 10% is Tr.

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Figure 5. Cross Modulation Test Description



Where:

Y_A = Initial luminance of measured area (cd/m²)

Y_B = Subsequent luminance of measured area (cd/m²)

The location measured will be exactly the same in both patterns

Cross-Talk of one area of the LCD surface by another shall be measured by comparing the luminance (Y_A) of a 25mm diameter area, with all display pixels set to a gray level, to the luminance (Y_B) of that same area when any adjacent area is driven dark (Refer to FIGURE 5).

5.0 INTERFACE CONNECTION.**5.1 Electrical Interface Connection**

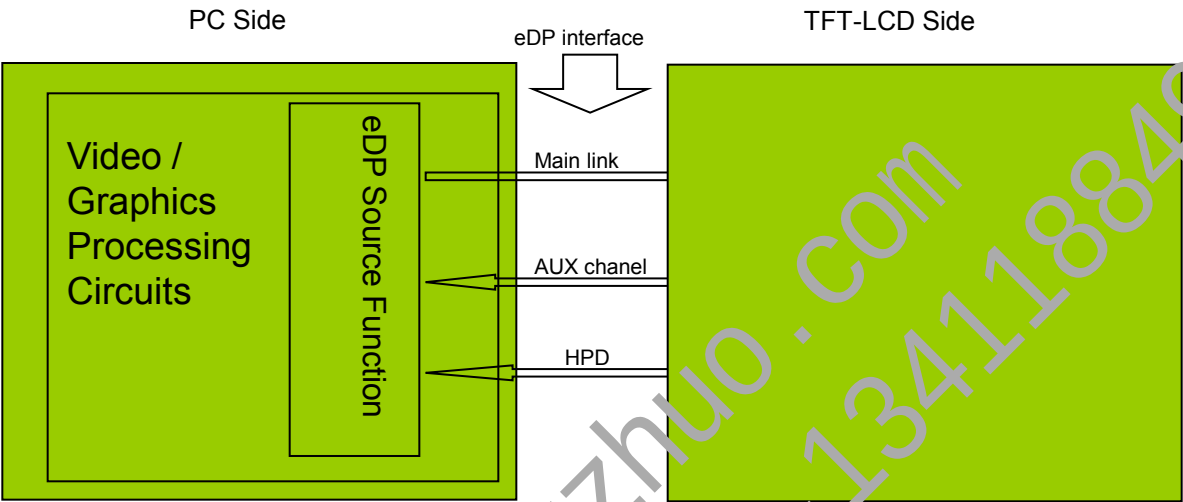
The electronics interface connector is UJU IS050-L30B-C10 or Compatible.

The connector interface pin assignments are listed in Table 6.

<Table 6. Pin Assignments for the Interface Connector>

Terminal	Symbol	Functions
Pin No.	Symbol	Description
1	NC	No connection
2	H-GND	Ground
3	LAN1_N	Complement Signal Link_Lane1
4	LAN1_P	True Signal Link_Lane1
5	H-GND	Ground
6	LAN0_N	Complement Signal Link_Lane0
7	LAN0_P	True Signal Link_Lane0
8	H-GND	High Speed Ground
9	AUXP	True Signal Link_Auxiliary Channel
10	AUXN	Complement Signal Link_Auxiliary Channel
11	H-GND	Ground
12	LCD_VCC	Power Supply, 3.3V (typ.)
13	LCD_VCC	Power Supply, 3.3V (typ.)
14	BIST	Panel self test enable
15	H-GND	Ground
16	H-GND	Ground
17	HPD	HPD(Hot Plug Detect) Signal Pin
18	BL_GND	High Speed Ground
19	BL_GND	High Speed Ground
20	BL_GND	High Speed Ground
21	BL_GND	High Speed Ground
22	BL_EN	Backlight on/off Control pin
23	BL_PWM	Back light PWM Dimming
24	NC	No connection
25	NC	No connection
26	BL_PWR	Backlight power
27	BL_PWR	Backlight power
28	BL_PWR	Backlight power
29	BL_PWR	Backlight power
30	NC	No connection

5-2. eDP Interface



Note. Transmitter : NT71832 or equivalent.
Transmitter is not contained in Module.

5.3.eDP Input signal

Lane 0	Lane 1
R0-5:0 G0-5:4	R1-5:0 G1-5:4
G0-3:0 B0-5:2	G1-3:0 B1-5:2
B0-1:0 R2-5:0	B1-1:0 R3-5:0
G2-5:0 B2-5:4	G3-5:0 B3-5:4
B2-3:0 R4-5:2	B3-3:0 R5-5:2
R4-1:0 G4-5:0	R5-1:0 G5-5:0
B4-5:0 R6-5:4	B5-5:0 R7-5:4
R6-3:0 G6-5:2	R7-3:0 G7-5:2
G6-1:0 B6-5:0	G7-1:0 B7-5:0

5.4 Back-light & LCM Interface Connection

<Table 7. Pin Assignments for the BLU & LCM Connector>

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	LED	LED cathode connection	6	GND	Ground
2	LED	LED cathode connection	7	NC	No Connection
3	LED	LED cathode connection	8	Vout	LED anode connection
4	LED	LED cathode connection	9	Vout	LED anode connection
5	NC	No Connection	10	Vout	LED anode connection

6.0 SIGNAL TIMING SPECIFICATION

6.1 The NV133FHM-N42 V8.0 is operated by the DE only.

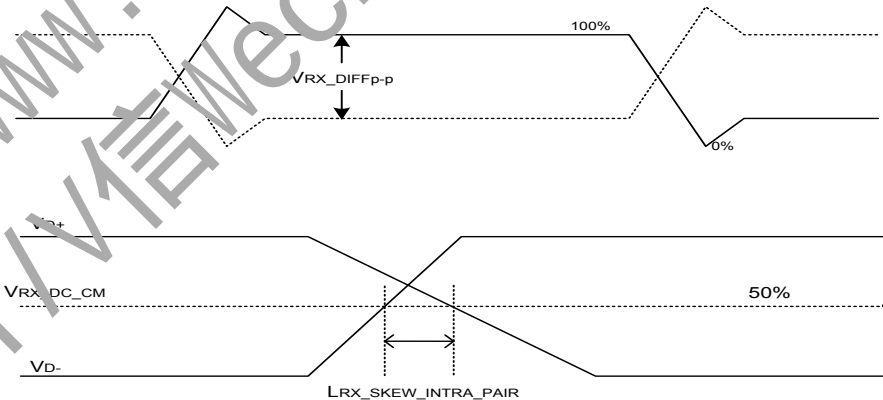
Item		Symbols	Min	Typ	Max	Unit
Clock	Frequency	1/Tc	100	145.5	50	MHz
Frame Period		Tv	1112	1102	1138	lines
			-	50	-	Hz
			25	16.67	16.33	ms
Vertical Display Period		Tvd		1080	-	lines
One line Scanning Period		Th	2080	2200	2400	clocks
Horizontal Display Period		Thd		920	-	clocks

6.2 eDP Rx Interface Timing Parameter

The specification of the eDP Rx interface timing parameter is shown in Table 8.

<Table 8. eDP Rx Interface Timing Specification>

Item	Symbol	Min	Typ	Max	Unit	Remark
Spread spectrum clock	SSC		0.5		%	
Differential peak-to-peak input voltage at package pins	VRX-DIFFp-p	120	0	1200	mV	
Rx input DC common mode voltage	VRX_DC_CM	-	GND	-	V	
Differential termination resistance	RRX-DIFF	90	100	110	Ω	
Single-ended termination resistance	RRX-SE	45	50	55	Ω	
Rx short circuit current limit	IRX_SHORT			50	mA	
Intra-pair skew at Rx package pins (HBR) RX intra-pair skew tolerance at HBR	LRX_SKEW_INTRA_PAIR	-		100	ps	

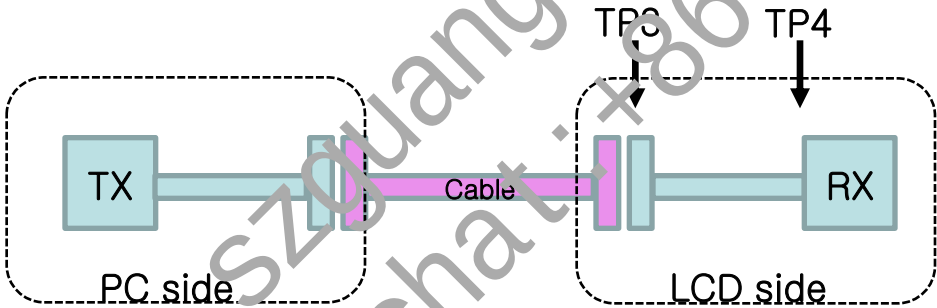


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6.3 Other T-con IC set

- (1) 2 lane eDP1.2 Interface with 2.7Gbps Link Rates
- (2) This panel DPCP revision is 1.1
- (3) This Panel does not support PSR Function
- (4) This Panel does not support MBO Function
- (5) This Panel does not enable SSC
- (6) This Panel does not enable SDRRS Function

6.4 eDP Mainlink eye diagram test point



Mainlink eye diagram test point

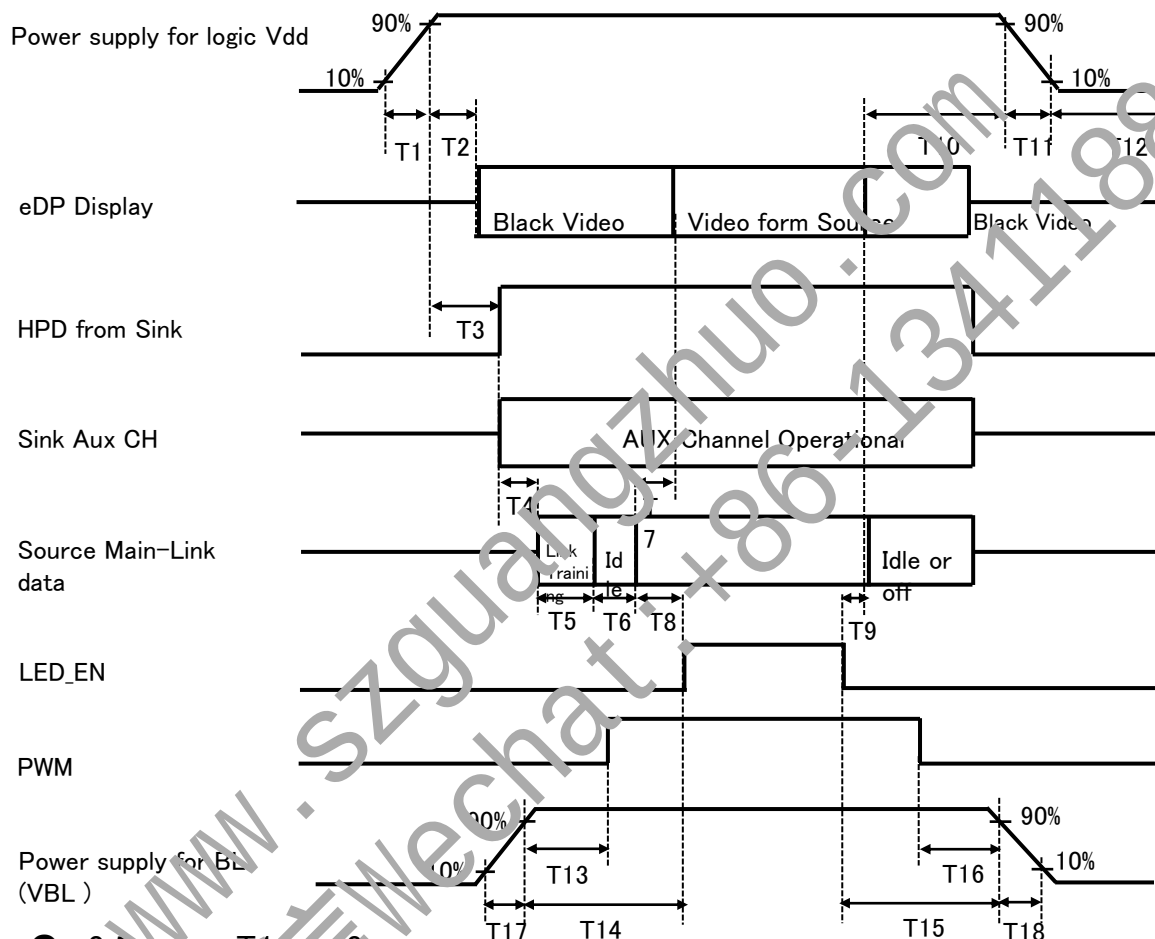
Notes: Mainlink eye diagram at TP3 needs to be measured on the sink side(LCD Panel). The spec of sink eye vertices at TP3 should follow VESA DisplayPort™ Standard Version1. Revision 1a and Vesa Embedded DisplayPort Standard Version 1.2.

7.0 INPUT SIGNALS, BASIC DISPLAY COLORS & GRAY SCALE OF COLORS

	Colors & Gray scale	Data signal																	
		R0	R1	R2	R3	R4	R5	G0	G1	G2	G3	G4	G5	B0	B1	B2	B3	B4	B5
Basic colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	Green	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Light Blue	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Red	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Purple	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray scale of Red	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	↑					↑					↑							
	▽	↓					↓					↓							
	Brighter	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	▽	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Gray scale of Green	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	△	↑					↑					↑							
	▽	↓					↓					↓							
	Brighter	0	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0
	▽	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0
	Green	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
Gray scale of Blue	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	Darker	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	△	↑					↓					↑							
	▽	↓					↓					↓							
	Brighter	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1
	▽	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
Gray scale of White & Black	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0
	Darker	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0
	△	↑					↑					↑							
	▽	↓					↓					↓							
	Brighter	1	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1
	▽	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

8.0 POWER SEQUENCE

To prevent a latch-up or DC operation of the LCD module, the power on/off sequence shall be as shown in below



- $0.5\text{ms} \leq T1 \leq 10\text{ms}$
- $0\text{ms} \leq T2 \leq 200\text{ms}$
- $0\text{ms} \leq T3 \leq 200\text{ms}$
- $10\text{ms} \leq T13$
- $20\text{ms} \leq T14$
- $0.5\text{ms} \leq T17 \leq 20\text{ms}$
- $200\text{ms} \leq T3+T4+T5+T6+T8$

- $0\text{ms} \leq T7 \leq 50\text{ms}$
- $0\text{ms} \leq T10 \leq 500\text{ms}$
- $3\text{ms} \leq T11 \leq 10\text{ms}$
- $500\text{ms} \leq T12$
- $20\text{ms} \leq T15$
- $10\text{ms} \leq T16$
- $0.5\text{ms} \leq T18 \leq 20\text{ms}$
- $0\text{ms} \leq T9$

Notes:

1. When the power supply VDD is 0V, keep the level of input signals on the low or keep high impedance.

2. Do not keep the interface signal high impedance when power is on. Back Light must be turned on after power for logic and interface signal are valid.

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9.0 RELIABILITY TEST

The Reliability test items and its conditions are shown in below.

<Table 10. Reliability test>

No	Test Items	Conditions
1	High temperature storage test	Ta = 60 °C , 240 hrs
2	Low temperature storage test	Ta = -20 °C , 240 hrs
3	High temperature & high humidity operation test	Ta = 50 °C , 80%RH, 240 hrs
4	High temperature operation test	Ta = 50 °C , 240 hrs
5	Low temperature operation test	Ta = 0 °C , 240 hrs
6	Thermal shock	Ta = -40 °C ↔ 80 °C (0.5 hr), 100 cycle
7	Drop (non-operating)	60cm/1 corner/3 edges/6 faces
8	Shock test (non-operating)	220G, Half Sine Wave 2msec ± X, ± Y, ± Z Once for each direction
9	Electro-static discharge test (non-operating)	Air : 150 pF, 330Ω, 15 KV Contact : 150 pF, 330Ω, 8 KV

10.0 HANDLING & CAUTIONS

- (1) Cautions when taking out the module

 - Pick the pouch only, when taking out module from a shipping package.
- (2) Cautions for handling the module

 - As the electrostatic discharges may break the LCD module, handle the LCD module with care. Peel a protection sheet off from the LCD panel surface as slowly as possible.
 - As the LCD panel and back - light element are made from fragile glass material, impulse and pressure to the LCD module should be avoided.
 - As the surface of the polarizer is very soft and easily scratched, use a soft dry cloth without chemicals for cleaning.
 - Do not pull the interface connector in or out while the LCD module is operating.
 - Put the module display side down on a flat horizontal plane.
 - Handle connectors and cables with care.
- (3) Cautions for the operation

 - When the module is operating, do not lose CLK, ENAB signals. If any one of these signals is lost, the LCD panel would be damaged.
 - Obey the supply voltage sequence. If wrong sequence is applied, the module would be damaged.

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- (4) Cautions for the atmosphere

 - Dew drop atmosphere should be avoided.
 - Do not store and/or operate the LCD module in a high temperature and/or humidity atmosphere. Storage in an electro-conductive polymer packing pouch and under relatively low temperature atmosphere is recommended.
- (5) Cautions for the module characteristics

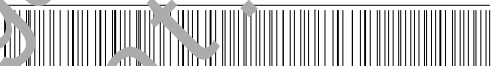
 - Do not apply fixed pattern data signal to the LCD module at product aging.
 - Applying fixed pattern for a long time may cause image sticking.
- (6) Other cautions

 - Do not disassemble and/or re-assemble LCD module.
 - Do not re-adjust variable resistor or switch etc.
 - When returning the module for repair or etc. Please pack the module not to be broken. We recommend to use the original shipping packages.

11.0 LABEL

(1) LCM label

NV133FHM-N42 V8.0

 P/N XXXXXXXX XXXXXXXXXXXXXXXXXXXX
 FRU XXXXXXXX

 MADE IN CHINA 8SXXXXXXXXB1CHXXXXXXXX



 MADE IN CHINA

LCM ID 编码规则:

序号号	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
代码	S	L	S	T	1	2	3	5	9	4	2	0	0	0	1	D	B
描述	GEN		等级	line	年		月	FG-Code后4位				Serial Number					

客户Serial Number 码规则：

	YMD	####
Part Number	MFG Date	S/N
13 digit: num+alphabet	3 digit: Num-alphabet	4 digit: Num-alphabet
Follow Timi PN Rule ML10000004337	Skip "I,O,Q"	SN:4bit, use 0~9 and A~Z numeral-alphabet, skip letter "I,O,Q,U" ; SN must NOT be duplicated.
	Year=last digit of year	
	Month=1-9 for Jan-Sept, A=Oct, B=Nov, C=Dec	
	Day=1-9 for 1 st thru 9 th , A=10, B=11, etc skip "I,O,Q,U"	
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(2) High voltage caution label



HIGH VOLTAGE
CAUTION

RISK OF ELECTRIC SHOCK.
DISCONNECT THE ELECTRIC
POWER BEFORE SERVICING

COLD CATHODE FLUORESCENT LAMP IN LCD
PANEL CONTAINS A SMALL AMOUNT
OF MERCURY. PLEASE FOLLOW LOCAL OR-
DINANCES OR REGULATIONS FOR DISPOSAL.

(3) Box label

BOE

CHONGQING BOE OPTOELECTRONICS
TECHNOLOGY CO., LTD.

MODEL: XXXXXXX-XXX ①

QTY: XX ②

SERIAL NO: XXXXXXXXXXXXX ③

DATE:20XX / XX / XX ④

Box ID 条形码

XXXX-XXXXXX ⑤ XXXX ⑥ XXXX ⑦



Remark :

- Model name
- Product quantity per 1 box
- Box ID, Encoding rules as follow table
- Box Packing date
- Product material number(customer side)

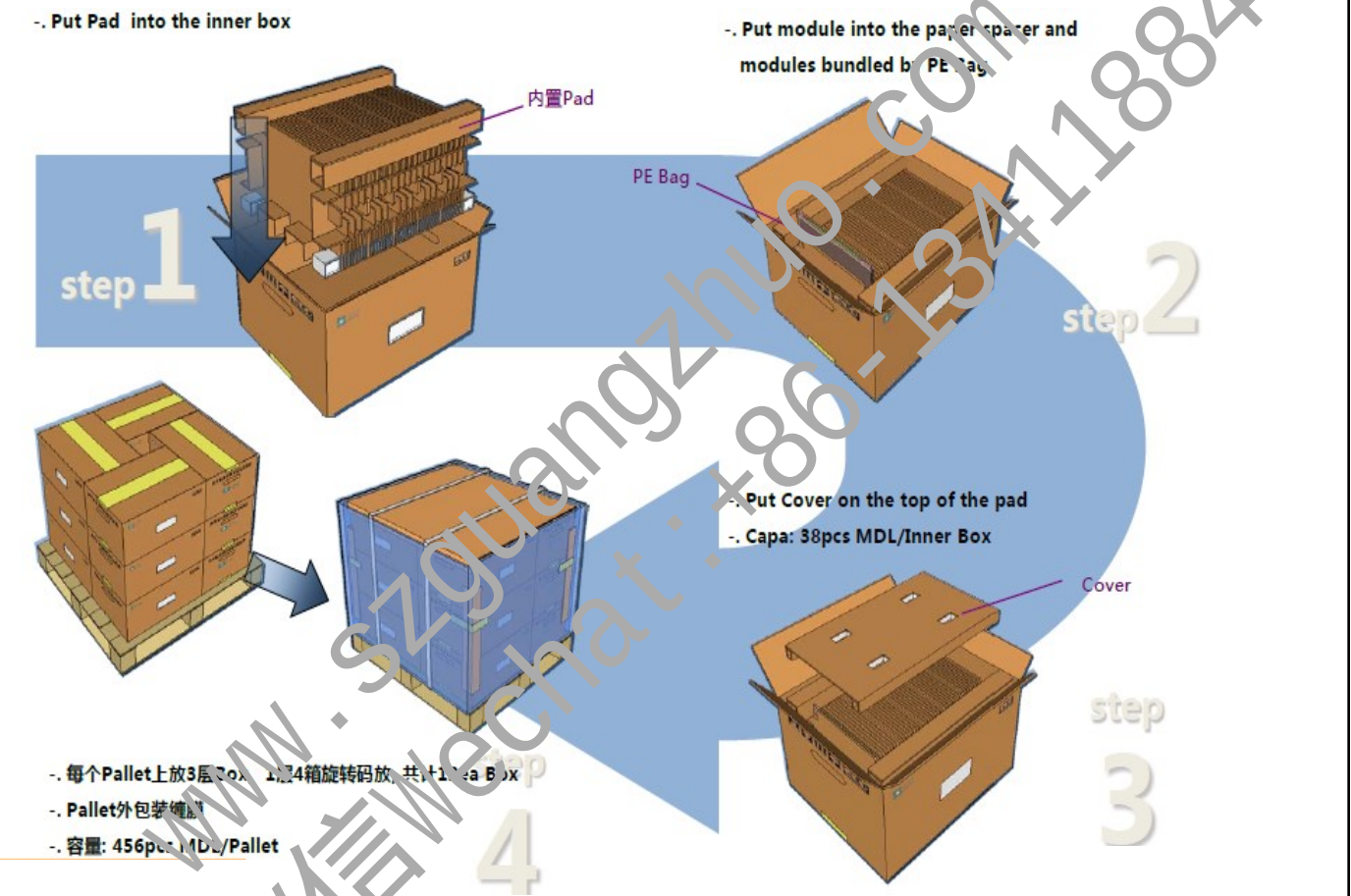
Box ID 编码规则

No.	1	2	3	4	5	6	7	8	9	10	11	12	13
code	X	X	X	X	X	X	X	X	X	X	X	X	X
Describe	GBN code		Grade	B8	Year		Month	Rev	Serial number				

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12.0 PACKING INFORMATION

12.1 Packing order



12.2 Notes

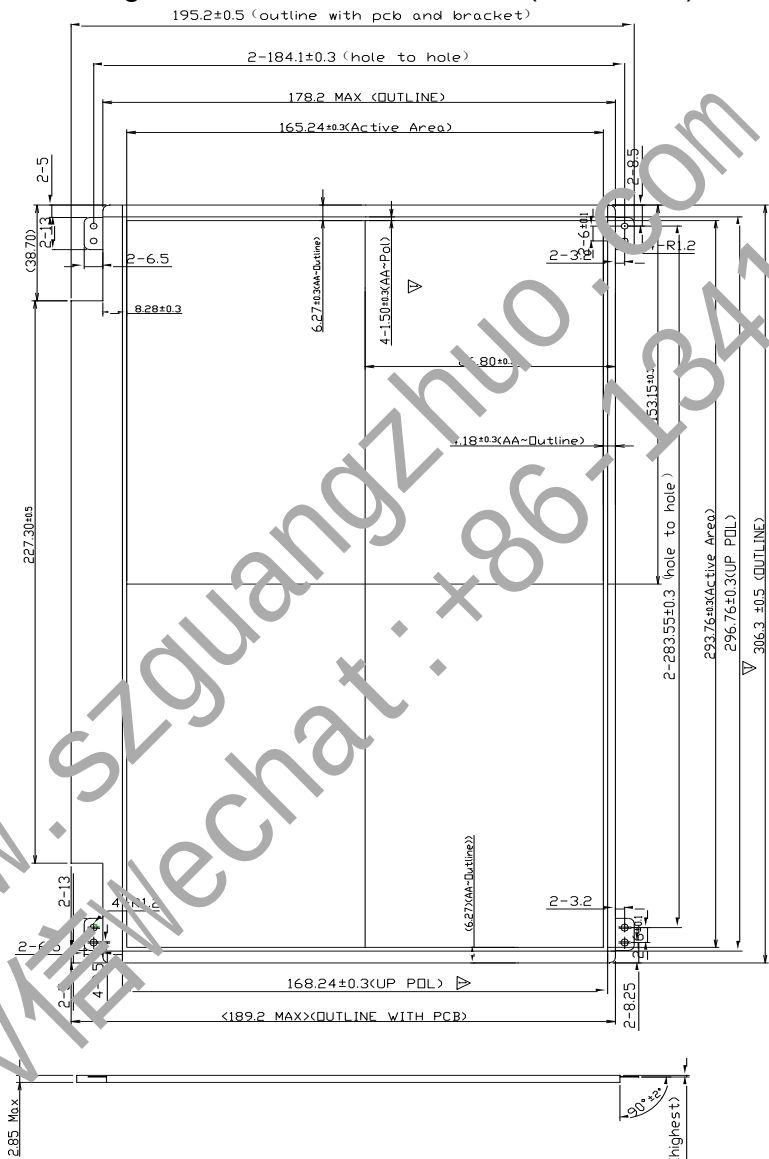
- Box Dimension: TBD
- Package Quantity in one Box: 25pcs
- Total Weight: TBD

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13. MECHANICAL OUTLINE DIMENSION

13.1 Outline Dimension

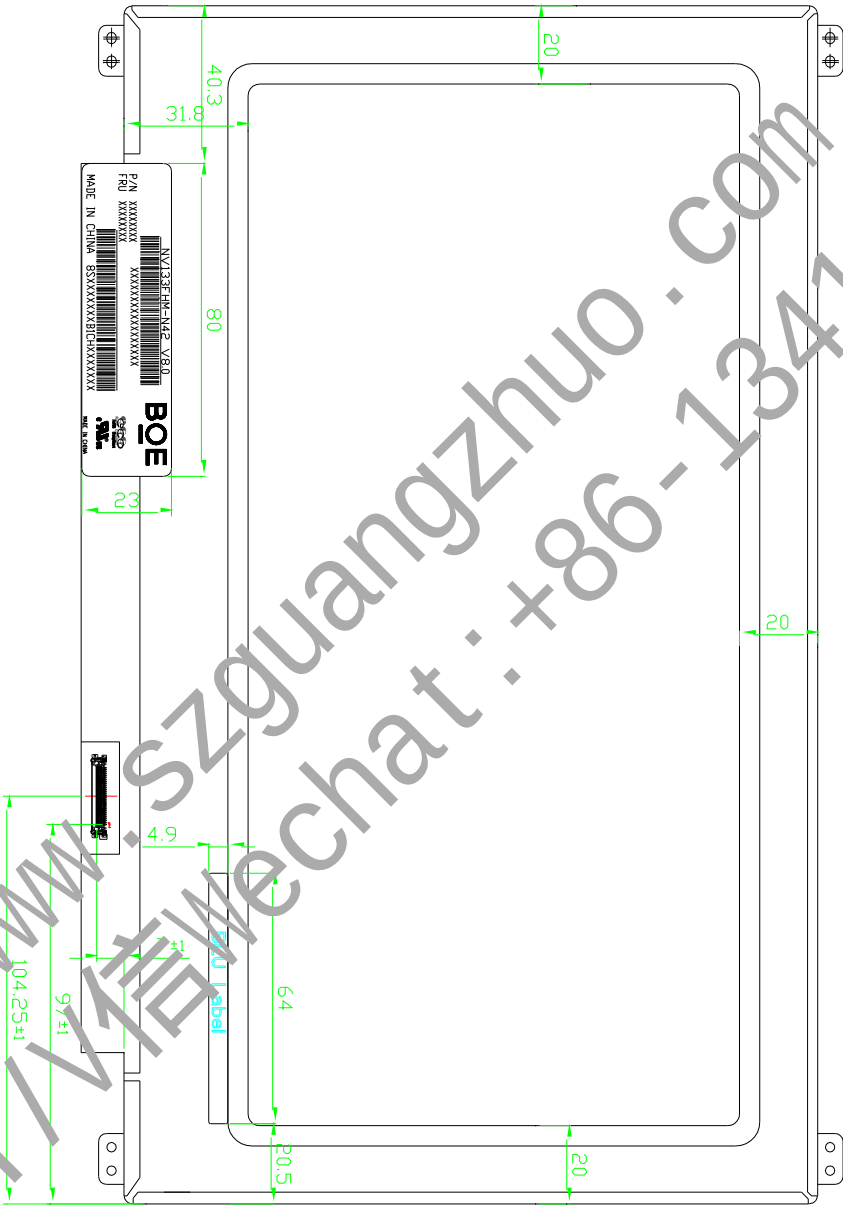
Figure 6. Outline Dimensions (Front view)



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13.2 Total Solution Outline Dimension

Figure 7. Outline Dimensions (Rear view)



- Remark:** 1. PCBA cover tape will bulge without external force due to the material character of the tape. The tolerance of PCBA cover tape thickness will not exceed 2 mm from surface of polarizer and thickness of PCBA side can be reformed to normal thickness by external force.
2. If system interfere with panel or twist panel while system operation, it may cause ripple or acoustic noise or other side effect. Please prevent such twist or interfere by system operation.
3. The system materials should contain no or less NH₄⁺ ions.

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14.0 EDID Table

Address (HEX)	Function	Hex	Dec	Input values.	Notes
00	Header	00	0	0	EDID Header
01		FF	255	255	
02		FF	255	255	
03		FF	255	255	
04		FF	255	255	
05		FF	255	255	
06		FF	255	255	
07		00	0	0	
08	ID Manufacturer Name	09	9	BOE	ID = BOE
09		E5	229		
0A	ID Product Code	17	23	1815	ID = 1815
0B		07	7		
0C	32-bit serial No.	00	0		
0D		00	0		
0E		00	0		
0F		00	0		
10	Week of manufacture	01	1	1	
11	Year of Manufacture	1A	26	2016	Manufactured in 2016
12	EDID Structure Ver	01	1	1	EDID Ver 1.0
13	EDID revision #	04	4	4	EDID Rev. 0.4
14	Video input definition	95	149	-	digital signal/DP input
15	Max H image size	1D	29	29	29 cm (Approx)
16	Max V image size	11	17	17	17 cm (Approx)
17	Display Gamma	78	120	2.2	Gamma curve = 2.2
18	Feature support	02	2		RGB display, Preferred Timing mode
19	Red/Green low bits	24	36	-	Red / Green Low Bits
1A	Blue/White low bits	10	16	-	Blue / White Low Bits
1B	Red x high bits	97	151	0.590	Red (x) = 10010111 (0.59)
1C	Red y high bits	59	89	0.350	Red (y) = 01011001 (0.35)
1D	Green x high bits	54	84	0.330	Green (x) = 01010100 (0.33)
1E	Green y high bits	8E	142	0.555	Green (y) = 10001110 (0.555)
1F	Blue x high bits	27	39	0.153	Blue (x) = 00100111 (0.153)
20	Blue y high bits	1E	30	0.119	Blue (y) = 00011110 (0.119)
21	White x high bits	50	80	0.313	White (x) = 01010000 (0.313)
22	White y high bits	54	84	0.329	White (y) = 01010100 (0.329)
23	Established timing 1	00	0	-	
24	Established timing 2	00	0	-	

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25	Established timing 3	00	0	-	
26	Standard timing #1	01	1		Not Used
27		01	1		
28	Standard timing #2	01	1		Not Used
29		01	1		
2A	Standard timing #3	01	1		Not Used
2B		01	1		
2C	Standard timing #4	01	1		Not Used
2D		01	1		
2E	Standard timing #5	01	1		Not Used
2F		01	1		
30	Standard timing #6	01	1		Not Used
31		01	1		
32	Standard timing #7	01	1		Not Used
33		01	1		
34	Standard timing #8	01	1		Not Used
35		01	1		
36	Detailed timing/monitor descriptor #1	D0	214	145.5	145.5MHz Main clock
37		38	56		
38		00	120	1920	Hor Active = 1920
39		18	24	280	Hor Blanking = 280
3A		71	113	-	4 bits of Hor. Active + 4 bits of Hor. Blanking
3B		38	56	1080	Ver Active = 1080
3C		16	22	22	Ver Blanking = 22
3D		40	64	-	4 bits of Ver. Active + 4 bits of Ver. Blanking
3E		30	48	48	Hor Sync Offset = 48
3F		20	32	32	H Sync Pulse Width = 32
40		36	54	3	V sync Offset = 3 line
41		00	0	6	V Sync Pulse width : 6 line
42		26	38	294	Horizontal Image Size = 294 mm (Low 8 bits)
43		A5	165	165	Vertical Image Size = 165 mm (Low 8 bits)
44		10	16	-	4 bits of Hor Image Size + 4 bits of Ver Image Size
45		00	0	0	Hor Border (pixels)
46		00	0	0	Vertical Border (Lines)
47		1A	26		Refer to right table

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48	Detailed timing/monitor descriptor #2	00	0	0.0	0MHz Main clock	
49		00	0			
4A		00	0	0	Hor Active = 0	
4B		00	0	0	Hor Blanking = 0	
4C		00	0	-	4 bits of Hor. Active + 4 bits of Hor. Blanking	
4D		00	0	0	Ver Active = 0	
4E		00	0	0	Ver Blanking = 0	
4F		00	0	-	4 bits of Ver. Active + 4 bits of Ver. Blanking	
50		00	0	0	Hor Sync Offset = 0	
51		00	0	0	H Sync Pulse Width = 0	
52		00	0	0	V sync Offset = 0 line	
53		00	0	0	V Sync Pulse width : 0 line	
54		00	0	0	Horizontal Image Size = 0 mm (Low 8 bits)	
55		00	0	0	vertical Image Size = 0 mm (Low 8 bits)	
56		00	0	-	4 bits of Hor Image Size + 4 bits of Ver Image Size	
57		00	0	0	Hor Border (pixels)	
58		00	0	0	Vertical Border (Lines)	
59		00	0			
5A	Detailed timing/monitor descriptor #3	00	0	ASCII Data Sting Tag		
5B		00	0			
5C		00	0			
5D		FE	254			
5E		00	0			
5F		42	66	B	Manufacture name : BOECQ	
60		45	79	O		
61		45	69	E		
62		20	32			
63		43	67	C		
64		51	81	Q		
65		0A	10			
66		20	32			
67		20	32			
68	20	32				
69	20	32				
6A	20	32				
6B	20	32				

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6C	Detailed timing/monitor descriptor #4	00	0		Product Name Tag (ASCII)
6D		00	0		
6E		00	0		
6F		FE	254		
70		00	0		Model name : NV133FHM-N42
71		4E	78	N	
72		56	86	V	
73		31	49	1	
74		33	51	3	
75		33	51	3	
76		46	70	F	
77		48	72	H	
78		4D	77	M	
79		2D	45	-	
7A		4E	78	V	
7B		34	52	4	
7C		32	50	2	
7D		0A	10		
7E	Extension flag	00	0		
7F	Checksum	2D	45	-	