■ Tentative Specification
□ Preliminary Specification
□ Approval Specification

MODENAME:YH133FHM-N30
Version:EA01

Customer: Common

APPROVED BY **SIGNATURE**

Name / Title
Note

Please return 1 copy for your confirmation with your signature and comments.

Approved By	Checked By	Prepared By

REVISION HISTORY

（ ）Preliminary Specification

（√）Final Specification

Revision No.	Page	Description of Changes	Date	Prepared
1.0	-	Preliminary Release	2024.01.30	
1.1	4/5/11	Change Color gamut	2025.03.15	
	11	Change White Chromaticity	2025.03.15	
	11	Change Reproduction of Color	2025.03.15	
	32	Change EDID	2025.03.15	

Contentes

1.0 GENERAL DESCRIPTION

1.1 Introduction

YH133FHM-N30 is a color active matrix TFT LCD module using amorphous silicon TFT's (Thin Film Transistors) as an active switching devices. This module has a 13.3 inch diagonally measured active area with FHD resolutions (1920 horizontal by 1080 vertical pixel array). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe and this module can display 16.7M(6bit+2FRC) colors and color gamut 72%. The TFT-LCD panel used for this module is a low reflection and higher color type. Therefore, this module is suitable for Notebook PC. The LED driver for back-light driving is built in this model.
All input signals are eDP1.2 interface compatible.

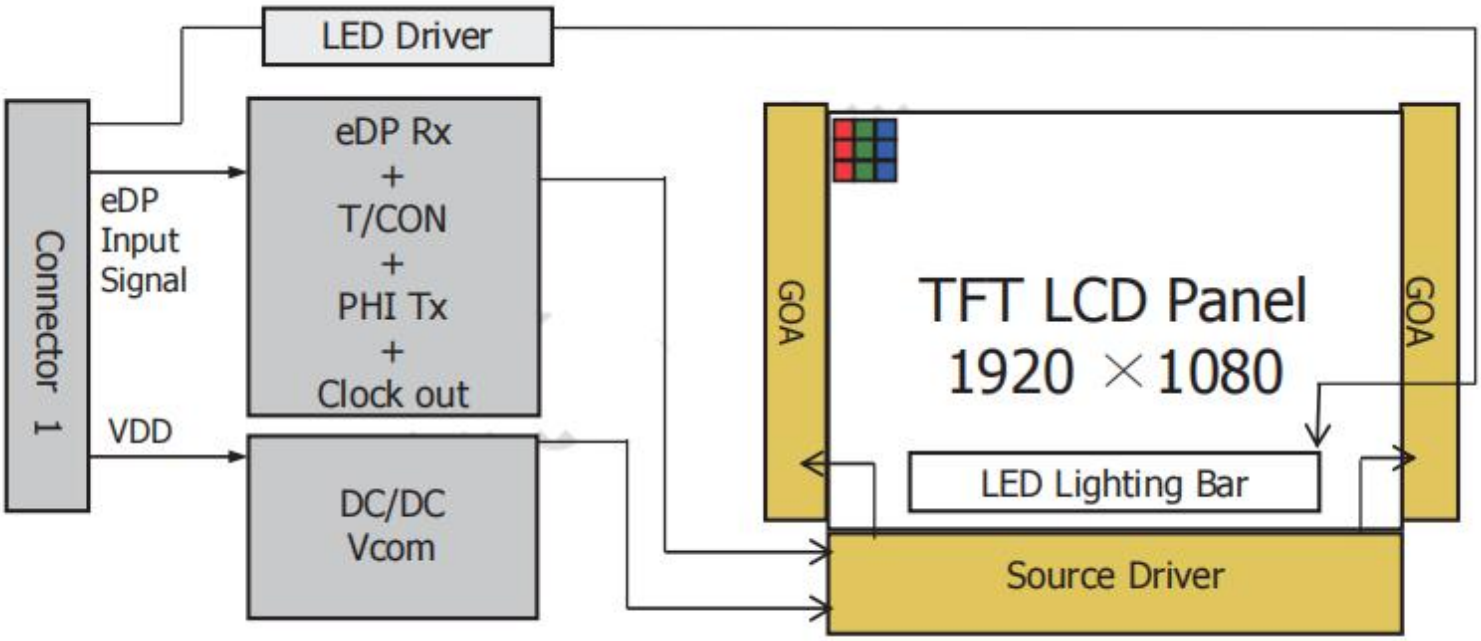


Figure 1. Drive Architecture

1.2 Features

- 2 lane eDP interface with 2.7Gbps link rates
- Thin and light weight
- 16.7M(6bit+2FRC)color depth, color gamut 72%
- Single LED lighting bar (Bottom side/Horizontal Direction)
- Data enable signal mode
- Side mounting frame
- Green product (RoHS & Halogen free product)
- On board LED driving circuit
- Low driving voltage and low power consumption
- On board EDID chip

1.3 Application

●Notebook PC (Wide type)

1.4 General Specification

The followings are general specifications at the model LCM133NX0115C. (listed in Table 1)

<Table 1. General Specifications>

Parameter	Specification	Unit	Remarks
Active area	293.76(H) *165.24(V)	mm	
Number of pixels	1920 (H) *1080 (V)	pixels	
Pixel pitch	153(H) *153(V)	um	
Pixel arrangement	RGB Vertical stripe		
Display colors	16.7M(6bit+2FRC)		
Color gamut	72%	NTSC	
Display mode	Normally Black		
Dimensional outline	-	mm	
Weight	TBD	g	
Surface treatment	Anti-Glare		
Back-light	Bottom edge side, 1-LED lighting bar type		Note 1
Power consumption	-	W	@Mosaic
	-	W	
	-	W	@Mosaic

Notes : 1. LED Lighting Bar (54*LED Array)

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℃

Parameter	Symbol	Min.	Max.	Unit	Remarks
Power Supply Voltage	V_{DD}	-0.3	4.0	V	Note 1
Logic Supply Voltage	V_{IN}	V_{SS}-0.3	V_{DD}+0.3	V	
Operating Temperature	T_{OP}	-20	+70	℃	Note 2
Storage Temperature	T_{ST}	-20	+75	℃	

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.

90 % RH Max. (40℃ ≥ Ta) Maximum wet - bulb temperature at 39℃ or less. (Ta > 40℃) No condensation.

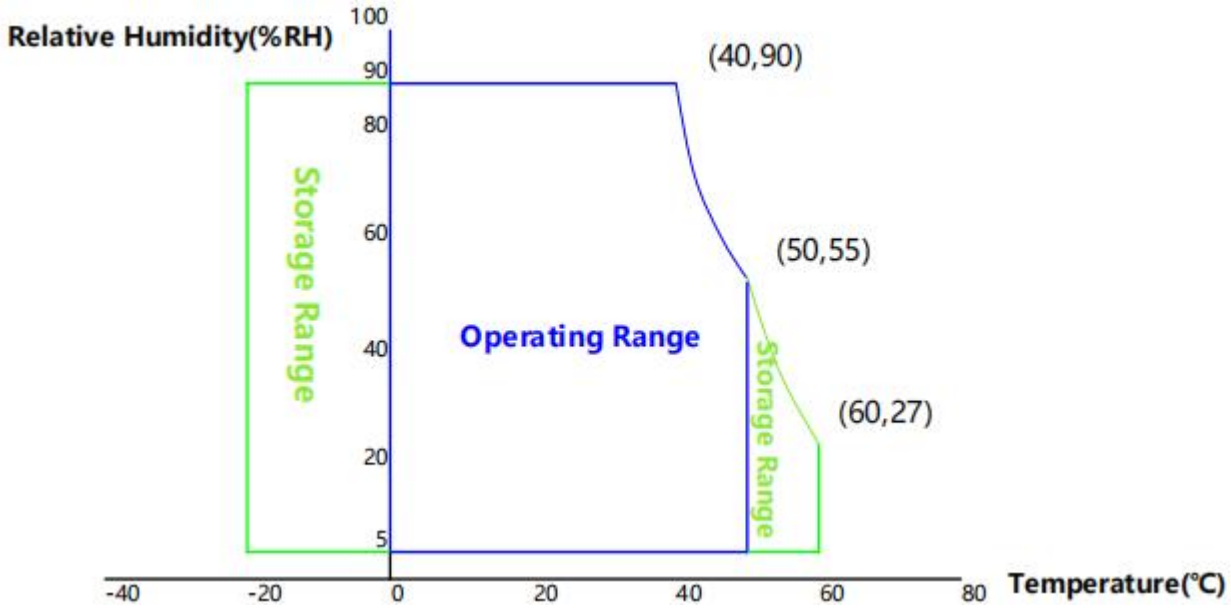


Figure 2. Temperature and Relative Humidity Range

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}	-10% VDD	-	+10% VDD	V	Note 4
Power Supply Inrush Current		I_{nrush}	-	-	1.5	A	Note3
Power Supply Current	Mosaic	I_{DD}	-	192	-	mA	Note1
	RGB		-	-	200	mA	
Power Consumption	Mosaic	P_M	-	0.63	-	W	
	RGB	P_{RGB}	-	-	0.66	W	
	BLU	P_{BL}	-	4.05	-	W	Note2
	Total	P_{Total}	-	4.68	-	W	@Mosaic

3.0 ELECTRICAL SPECIFICATIONS

3.1 Electrical Specifications

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) Mosaic pattern 8*6
b) R/G/B patterns

Figure 3. Power Measure Patterns

2. Calculated value for reference (V_{LED} * I_{LED})
3. Measure condition (Figure 4)

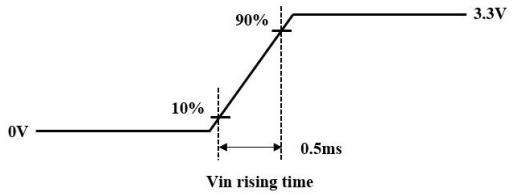
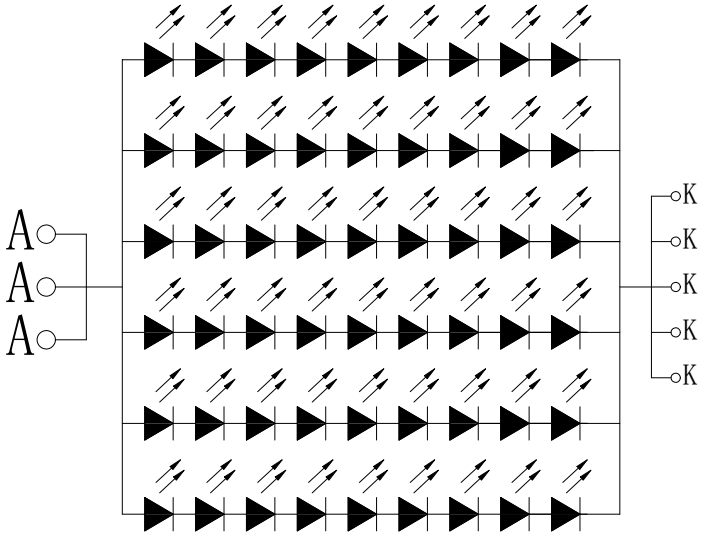


Figure 4. Inrush Measure Condition

4. Input voltage range:3.0~3.6V.Test condition: Oscilloscope bandwidth 20MHz, AC coupling

3.2 LED Structure

Figure 6. LED Structure



Backlight LED Circuit

4.0 OPTICAL SPECIFICATION

4.1 Overview

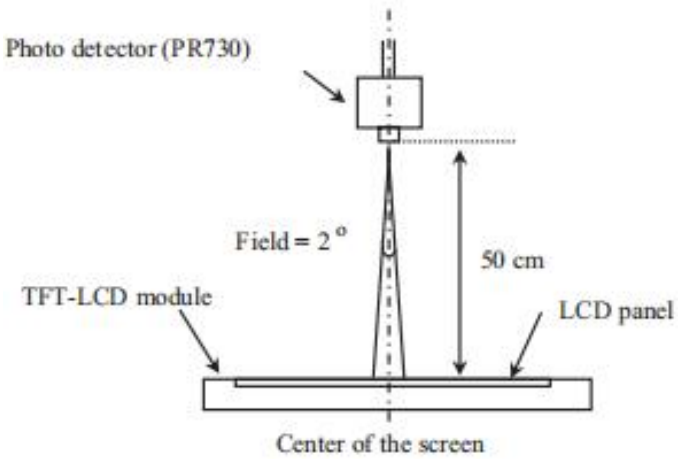
The test of optical specifications shall be measured in a dark room (ambient luminance≤1 lux and temperature = 25±2℃) with the equipment of luminance meter system (PR730&PR810) and test unit shall be located at an approximate distance 50cm from the LCD surface at a viewing angle of θ and Φ equal to 0° .We refer to θØ=0 (=θ3) as the 3 o'clock direction (the "right"), θØ=90 (= θ12) as the 12 o'clock direction ("upward"), θØ=180 (= θ9) as the 9 o'clock direction ("left") and θØ=270(= θ6) as the 6 o'clock direction ("bottom"). While scanning θand/or Ø, 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+/- 0.3V at 25℃.

4.2 Optical Specifications

<Table 5. Optical Specifications>

Parameter		Symbol	Condition	Min	Typ	Max	Unit	Remark
Viewing Angle Range	Horizontal	Θ_3	CR > 10	75	80	-	Deg.	Note 1
		Θ_9		75	80	-	Deg.	
	Vertical	Θ_{12}		75	80	-	Deg.	
		Θ_6		75	80	-	Deg.	
Luminance Contrast Ratio		CR	Θ = 0°	1000	1500	-		Note 2
Luminance of White	9 Points (Central Point)	Y_W	Θ = 0° I_{LED} = 20mA	450	500	-	cd/m²	Note 3
White Luminance Uniformity	9 Points	ΔY9		75	80	-	%	Note 4
White Chromaticity		W_x	Θ = 0°	0.263	0.293	0.323		Note 5
		W_y		0.279	0.309	0.339		
Reproduction of Color	Red	R_x	Θ = 0°	Typ. -0.03	0.638	Typ. +0.03		
		R_y			0.333			
	Green	G_x			0.302			
		G_y			0.612			
	Blue	B_x			0.158			
		B_y			0.056			
Color Gamut	NTSC	CG	-	-	72	-	%	@CIE1931
Response Time (Rising + Falling)		T_{RT}	Ta= 25℃ Θ = 0°	-	30	35	Ms	Note 6
Cross Talk		CT	Θ = 0°	-	-	2.0	%	Note 7

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 7).



Optical characteristics measurement setup
Figure 7. Measurement Set Up

2. Contrast measurements shall be made at viewing angle of Θ= 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 7) 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 9 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 8 for a total of the measurements per display.

4. The White luminance uniformity on LCD surface is then expressed as : ΔY =Minimum Luminance of 9 points / Maximum Luminance of 9 points.(see Figure 8).

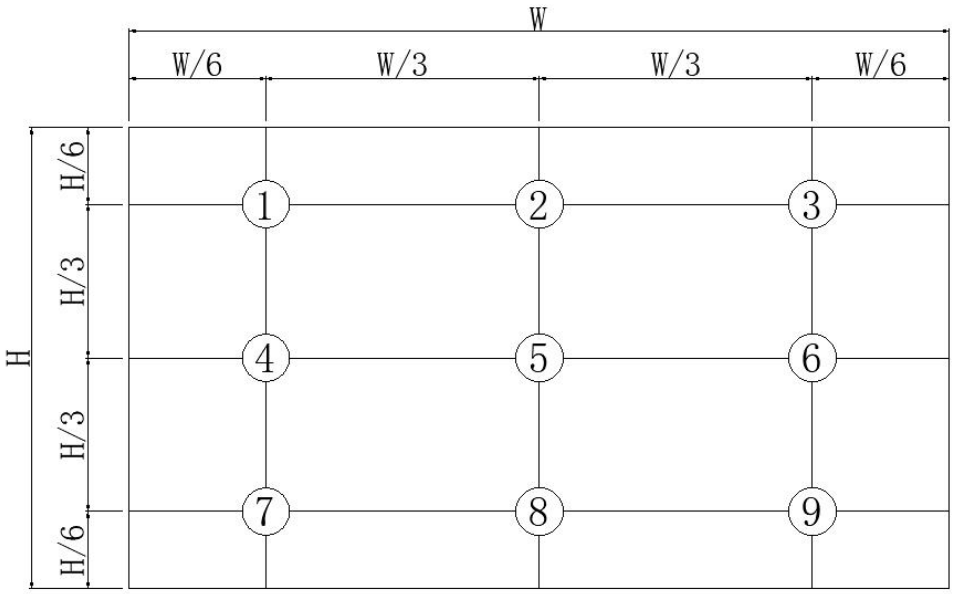


Figure 8. White Luminance and Uniformity Measurement Locations (9 points)

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 shown in Figure 9 by switching the “data” input signal ON and OFF. Tr: The luminance to change from 10% to 90% ,Tf: The luminance to change from 90% to 10% .

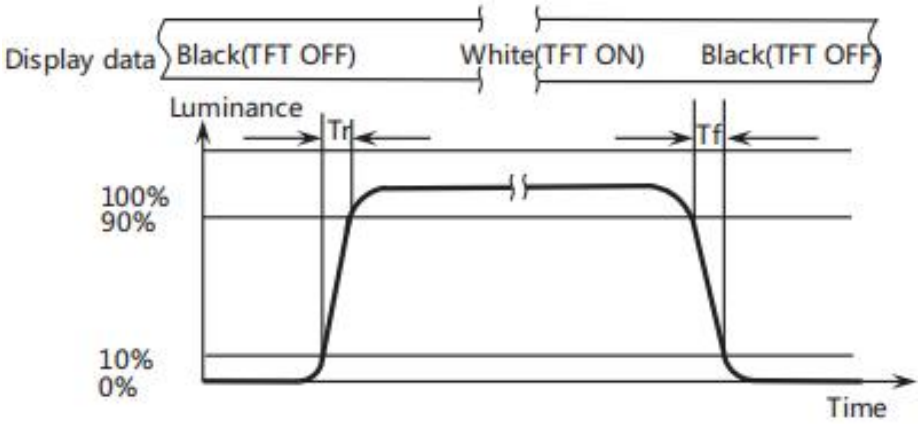
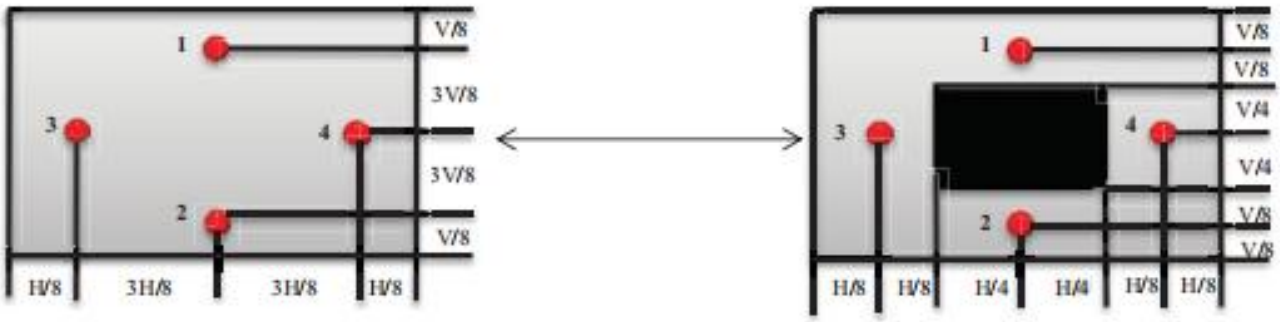


Figure 9. Response Time Testing

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 10).



$$\text{Cross Talk (\%)} = \left| \frac{Y_B - Y_A}{Y_A} \right| \times 100$$

Figure 10. Cross Talk Modulation Test Description

Where:

Y_A = Initial luminance of measured area (cd/m^2)

Y_B = Subsequent luminance of measured area (cd/m^2)

The location 1/2/3/4 measured will be exactly the same in both patterns. The test background gray is from L64 to L192.Take the largest data as the result.

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.(Refer to Figure 10)

5.0 INTERFACE CONNECTION

5.1 Electrical Interface Connection

The electronics interface connector is LV03030-13100 .
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	LANE1_N	eDP RX Channel 1 Negative
4	LANE1_P	eDP RX Channel 1 Positive
5	H_GND	Ground
6	LANE0_N	eDP RX channel 0 negative
7	LANE0_P	eDP RX channel 0 positive
8	H_GND	Ground
9	AUX_CH_P	eDP AUX CH positive
10	AUX_CH_N	eDP AUX CH negative
11	H_GND	Ground
12	LCD_VCC	Power Supply, 3.3V (typ.)
13	LCD_VCC	Power Supply, 3.3V (typ.)
14	NC	No Connection
15	H_GND	Ground
16	H_GND	Ground
17	HPD	Hot plug detect output
18	BL_GND	LED Ground
19	BL_GND	LED Ground
20	BL_GND	LED Ground
21	BL_GND	LED Ground
22	BL_ENABLE	LED enable pin(+3.3V Input)
23	BL_PWM	System PWM Signal Input
24	NC	No Connection
25	NC	No Connection
26	BL_POWER	LED Power Supply 9V-21V
27	BL_POWER	LED Power Supply 9V-21V
28	BL_POWER	LED Power Supply 9V-21V
29	BL_POWER	LED Power Supply 9V-21V
30	NC	No Connection

5.2 eDP Interface

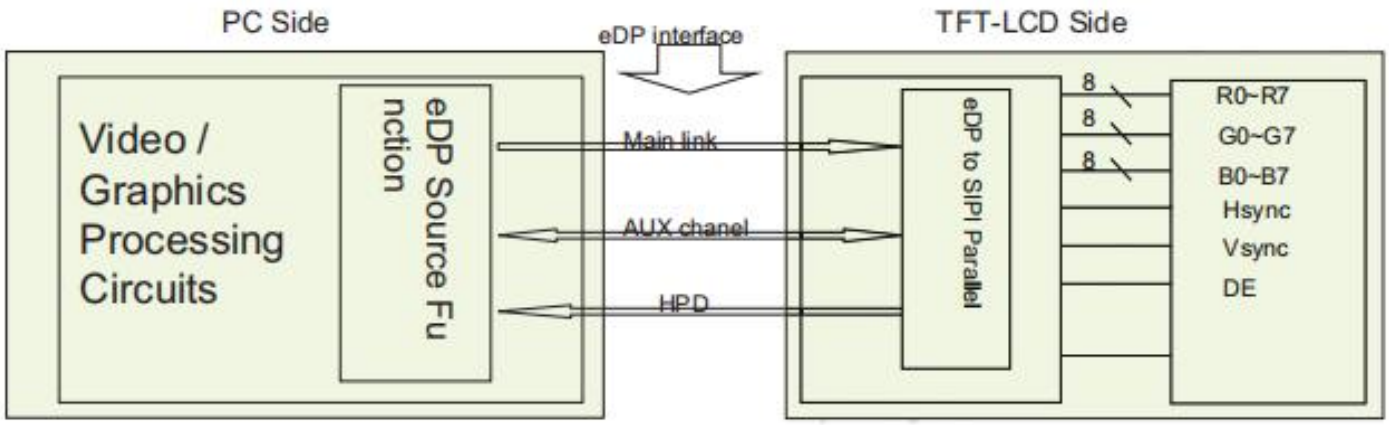


Figure 11. eDP Interface Architecture

5.3.eDP Input signal

Lane 0	Lane 1
R0-7:0	R1-7:0
G0-7:0	G1-7:0
B0-7:0	B1-7:0
R2-7:0	R3-7:0
G2-7:0	G3-7:0
B2-7:0	B3-7:0
R4-7:0	R5-7:0
G4-7:0	G5-7:0
B4-7:0	B5-7:0

5.4 Data Input Forma

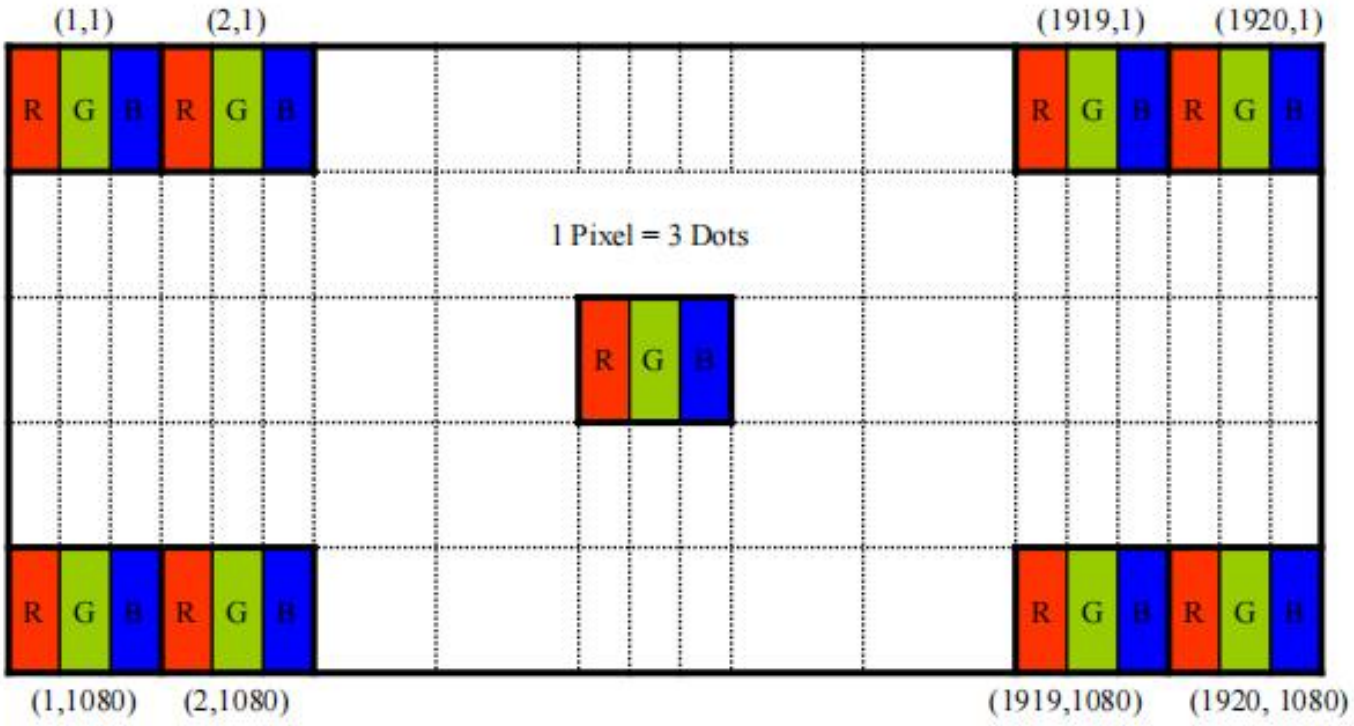


Figure 12. Display Position of Input Data (V-H)

6.0 SIGNAL TIMING SPECIFICATION

6.1 The YH133FHM□N30 Is Operated By The DE Only

< Table 7. Signal Timing Specification >

Item		Symbols	Min	Typ	Max	Unit
Clock	Frequency	1/Tc	-	152.5	-	MHz
Frame Period		Tv	-	1140	-	lines
			-	60	-	Hz
			-	16.7	-	ms
Vertical Display Period		Tvd	-	1080	-	lines
One line Scanning Period		Th	-	2230	-	clocks
Horizontal Display Period		Thd	-	1920	-	clocks

Note : The above is as optimized setting.

6.2 eDP Rx Interface Timing Parameter

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

<Table 8. eDP Main-Link RX TP4 Package Pin Parameters>

Item	Symbol	Min	Typ	Max	Unit	Remark
Spread spectrum clock (Link clock down-spreading)	ssc	-	0.5	-	%	
Differential peak-to-peak input voltage at package pins	$V_{RX-DIFFp-p}$	100	-	1320	mV	
Rx input DC common mode voltage	$V_{RX\_DC\_CM}$	-	-	-	V	
Differential termination resistance	$R_{RX-DIFF}$	80	100	120	Ω	
Single-ended termination resistance	R_{RX-SE}	40	-	60	Ω	
Rx short circuit current limit	I_{RX_SHORT}	-	-	20	mA	
Intra-pair skew at Rx package pins (HBR) RX intra-pair skew tolerance at HBR	$L_{RX\_SKEW\_INTRA\_PAIR}$	-	-	150	ps	

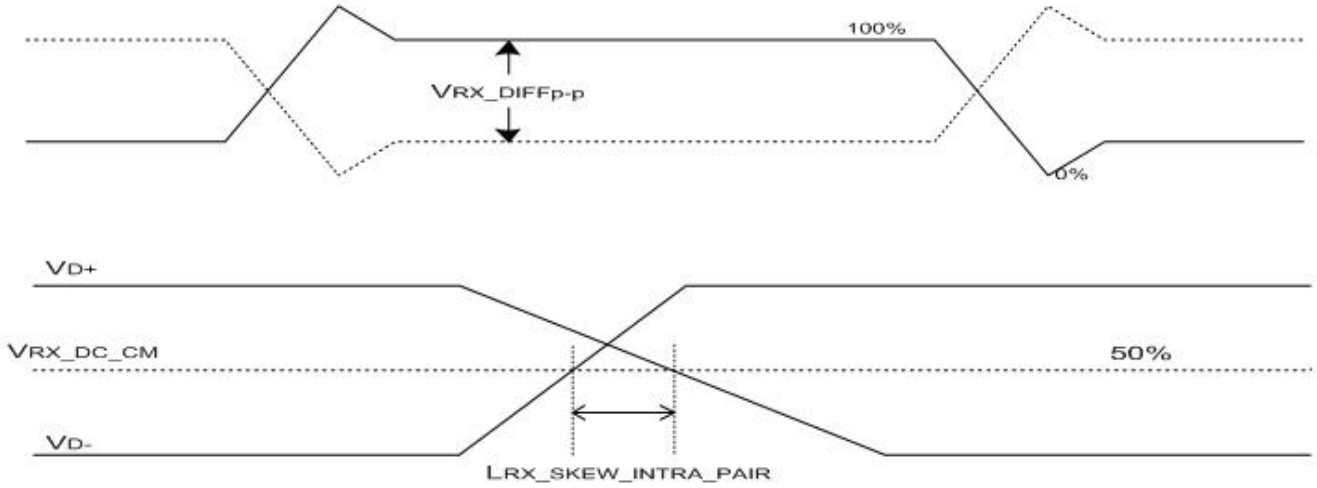


Figure 13. VRX-DIFFp-p & LRX_SKEW_INTRA_PAIR

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

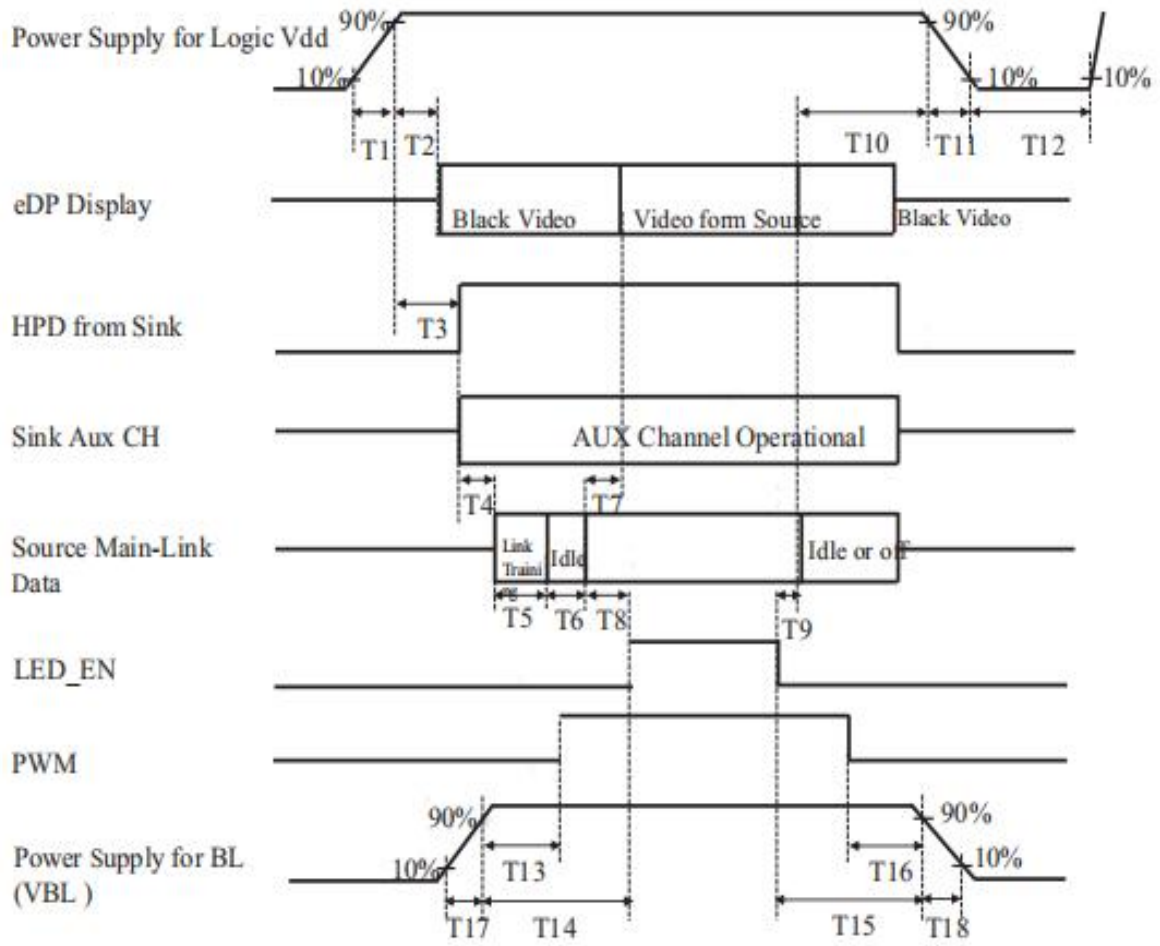
<Table 9. Input Signal & Basic Display Colors & Gray Scale of Colors >

	Colors & Gray scale	Data signal		
		R0 R1 R2 R3 R4 R5 R6 R7	G0 G1 G2 G3 G4 G5 G6 G7	B0 B1 B2 B3 B4 B5 B6 B7
Basic colors	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
	Blue	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	1 1 1 1 1 1 1 1
	Green	0 0 0 0 0 0 0 0	1 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0
	Light Blue	0 0 0 0 0 0 0 0	1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1
	Red	1 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0
	Purple	1 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0	1 1 1 1 1 1 1 1
	Yellow	1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1	0 0 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 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 0 0 0 0 0 0
	Δ	1 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 1 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0
	Δ	⬆	⬆	⬆
	▽	⬇	⬇	⬇
	Brighter	1 0 1 1 1 1 1 1	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0
	▽	0 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0
	Red	1 1 1 1 1 1 1 1	0 0 0 0 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
	Δ	0 0 0 0 0 0 0 0	1 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0
	Darker	0 0 0 0 0 0 0 0	0 1 0 0 0 0 0 0	0 0 0 0 0 0 0 0
	Δ	⬆	⬆	⬆
	▽	⬇	⬇	⬇
	Brighter	0 0 0 0 0 0 0 0	1 0 1 1 1 1 1 1	0 0 0 0 0 0 0 0
	▽	0 0 0 0 0 0 0 0	0 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0
	Green	0 0 0 0 0 0 0 0	1 1 1 1 1 1 1 1	0 0 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
	Δ	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	1 0 0 0 0 0 0 0
	Darker	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 1 0 0 0 0 0 0
	Δ	⬆	⬆	⬆
	▽	⬇	⬇	⬇
	Brighter	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	1 0 1 1 1 1 1 1
	▽	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 1 1 1 1 1 1 1
	Blue	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	1 1 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 0 0 0 0 0 0
	Δ	1 0 0 0 0 0 0 0	1 0 0 0 0 0 0 0	1 0 0 0 0 0 0 0
	Darker	0 1 0 0 0 0 0 0	0 1 0 0 0 0 0 0	0 1 0 0 0 0 0 0
	Δ	⬆	⬆	⬆
	▽	⬇	⬇	⬇
	Brighter	1 0 1 1 1 1 1 1	1 0 1 1 1 1 1 1	1 0 1 1 1 1 1 1
	▽	0 1 1 1 1 1 1 1	0 1 1 1 1 1 1 1	0 1 1 1 1 1 1 1
	White	1 1 1 1 1 1 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.

Figure 14. Power Sequence



- 0.5ms ≤ T1 ≤ 10 ms
- 0ms < T2 ≤ 200 ms
- 0ms < T3 ≤ 200 ms
- T3+T4+T5+T6+T8>200ms
- 0ms < T7 ≤ 50ms
- T7 < T8
- 0ms < T9
- 0ms < T10 < 500 ms
- 0.5ms ≤ T11 ≤ 10 ms
- 500ms ≤ T12
- 0ms < T13
- 0ms < T14
- 0ms < T15
- 0ms < T16
- 0.5ms ≤ T17
- 0.5ms ≤ T18

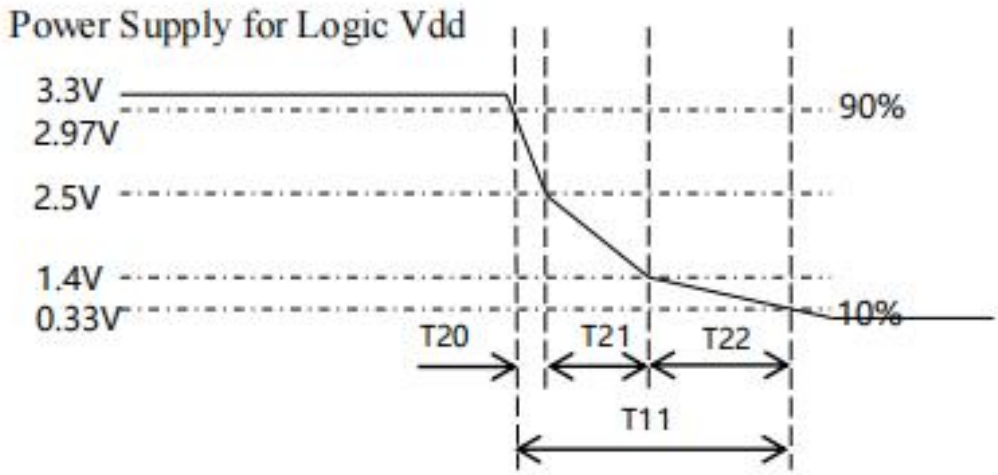


Figure 15. T11 timing requirements

9.0 RELIABILITY TEST

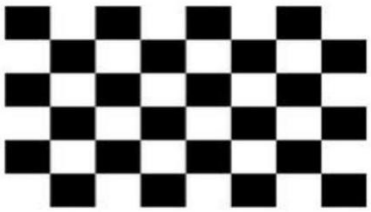
The reliability test items and its conditions are shown in below

<Table 10. Reliability Test>

No	Test Items	Conditions	Remark
1	High temperature storage test	Ta = 60℃ , 240 hrs	
2	Low temperature storage test	Ta = -20℃ , 240 hrs	
3	High temperature & high humidity	Ta = 50℃ , 80%RH, 240 hrs	
4	High temperature operation test	Ta = 50℃ , 240 hrs	
5	Low temperature operation test	Ta = 0℃ , 240 hrs	
6	Thermal shock	Ta = -20℃(0.5 hr) ↔ 60℃ (0.5 hr), 100cycle	
7	Vibration test (non-operating)	1.5G, 10~500Hz, Sine X,Y,Z / Sweep rate : 1 hour	Note 1
8	Shock test (non-operating)	220G, Half Sine Wave 2msec±X,±Y,±Z Once for each direction	Note 1
9	Electro-static discharge test (operating)	Air : 150 pF, 330Ω, ±12KV Contact : 150 pF, 330Ω, ±8 KV	Note 2
10	Image Sticking	25℃ ; 1hrs	Note 3

Notes :

1. The fixture must be hard enough , so that the module would not be twisted or bent.
2. Self- recovery and restart recovery is allowed. No hardware failures.
3. Condition of image sticking test :25℃±2℃
   Operation with test pattern sustained for 1hrs,then change to 50% gray pattern immediately after 5 mins, the mura must be disappeared completely.



(a)Test Pattern(chess board Pattern)

(b)Gray Pattern

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.

(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) Product Label

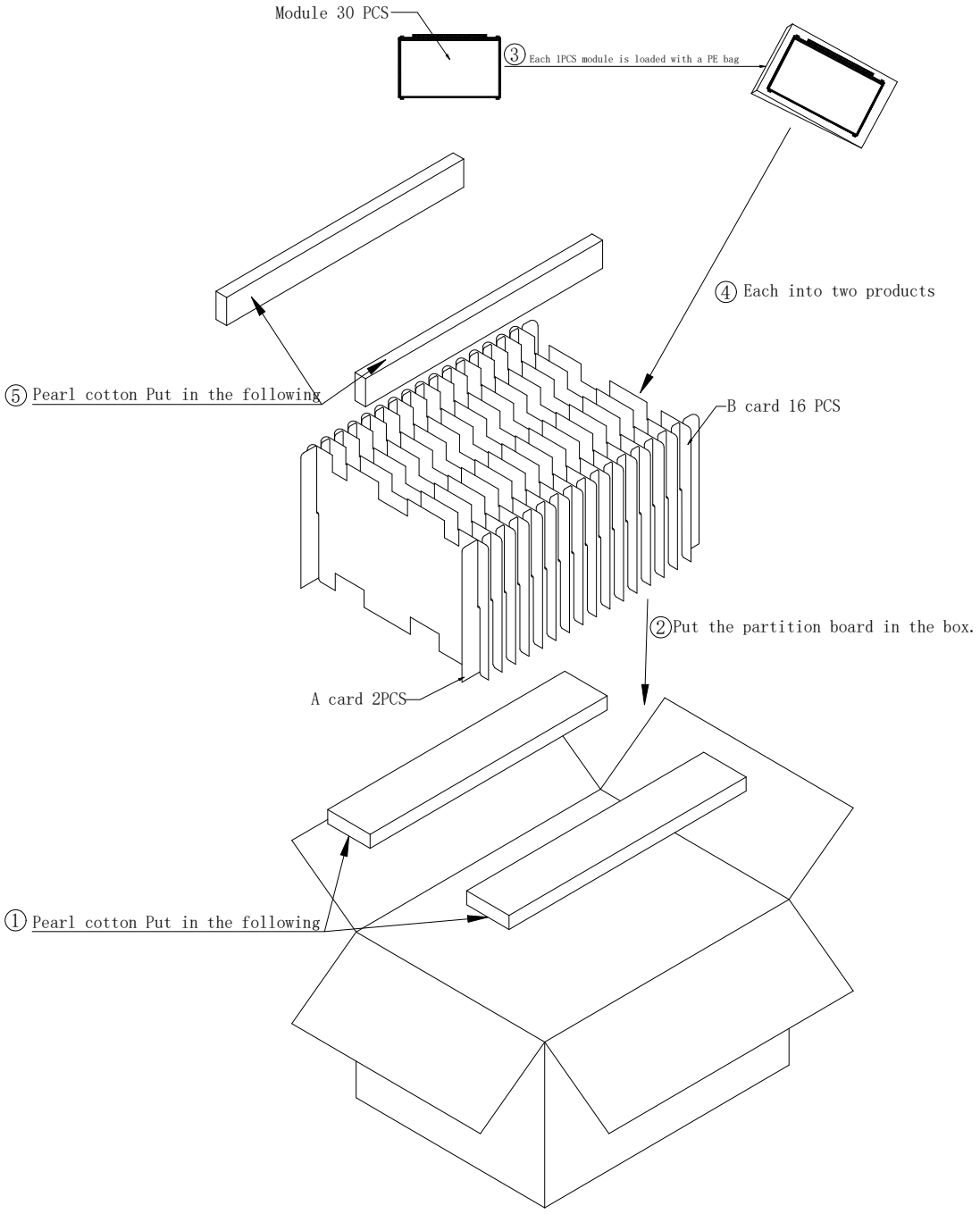
Figure 16. Product Label

① Barcode
② 8-digit date+6-bit stream code
③ Model No. YH133FHB-N30
④ Customer abbreviation+(NEWSTAR)+Backlight model abbreviation

12.0 PACKING INFORMATION

12.1 Packing Order

Figure 18. Packing Order



14.0 EDID Table

Address (HEX)	Function	Hex	Dec	crc	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	28	40		JDZ	ID = JDZ
09		9A	154			
0A	ID Product Code	2D	45		604	ID = 604
0B		10	16			
0C	32-bit serial No.	00	0		0	
0D		00	0		0	
0E		00	0		0	
0F		00	0		0	
10	Week of manufacture	31	49		5	
11	Year of Manufacture	21	33		2024	Manufactured in 2024
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	A5	165		-	Refer to right table
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	0B	11		-	Refer to right table
19	Red/Green low bits	1B	27		-	Red / Green Low Bits
1A	Blue/White low bits	BB	187		-	Blue / White Low Bits
1B	Red x high bits	A6	166	653	0.638	Red (x) = 10100110 (0.638)
1C	Red y high bits	58	88	341	0.333	Red (y) = 01011000 (0.3327)
1D	Green x high bits	55	85	309	0.302	Green (x) = 01010101 (0.3018)
1E	Green y high bits	9D	157	626	0.612	Green (y) = 10011101 (0.6115)
1F	Blue x high bits	26	38	161	0.158	Blue (x) = 00100110 (0.1575)
20	BLue y high bits	0E	14	57	0.056	Blue (y) = 00001110 (0.0557)
21	White x high bits	4F	79	300	0.293	White (x) = 01001111 (0.293)
22	White y high bits	55	85	316	0.309	White (y) = 01010101 (0.309)
23	Established timing 1	00	0		-	Refer to right table
24	Established timing 2	00	0		-	
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	9C	156		152.5	152.532MHz Main clock
37		3B	59			
38		80	128		1920	Hor Active = 1920
39		36	54		310	Hor Blanking = 310
3A		71	113		-	4 bits of Hor. Active + 4 bits of Hor. Blanking
3B		38	56		1080	Ver Active = 1080
3C		3C	60		60	Ver Blanking = 60
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
48	Detailed timing/monitor descriptor #2	A8	168		122	122.0256MHz Main clock
49		2F	47			
4A		80	128		1920	Hor Active = 1920
4B		36	54		310	Hor Blanking = 310
4C		71	113		-	
4D		38	56		1080	Ver Active = 1080
4E		3C	60		60	Ver Blanking = 60
4F		40	64		-	4 bits of Ver. Active + 4 bits of Ver. Blanking
50		30	48		48	Hor Sync Offset = 48
51		20	32		32	H Sync Pulse Width = 32
52		36	54		3	V sync Offset = 3 line
53		00	0		6	V Sync Pulse width : 6 line
54		58	88		294	Horizontal Image Size = 294 mm (Low 8 bits)
55		C2	194		165	Vertical Image Size = 165 mm (Low 8 bits)
56		10	16		-	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		1A	26		-	

5A	Detailed timing/monitor descriptor #3	00	0			Indicates descriptor #3 is a display Descriptor
5B		00	0			
5C		00	0			Reserved
5D		FE	254			Tag：ASCII String
5E		00	0			Reserved
5F		47	71		G	Manufacture name : G133EB05
60		31	49		1	
61		33	51		3	
62		33	51		3	
63		45	69		E	
64		42	66		B	
65		30	48		0	
66		35	53		5	
67		0A	10			
68		20	32			
69		20	32			
6A		20	32			
6B		20	32			
6C	Detailed timing/monitor descriptor #4	00	0			Indicates descriptor #4 is a display Descriptor
6D		00	0			
6E		00	0			Reserved
6F		FE	254			Tag：ASCII String
70		00	0			Reserved
71		47	71		G	Model name : G133EB05
72		31	49		1	
73		33	51		3	
74		33	51		3	
75		45	69		E	
76		42	66		B	
77		30	48		0	
78		35	53		5	
79		0A	10			
7A		20	32			
7B		20	32			
7C		20	32			
7D		20	32			
7E	Extension flag	00	0		1	0 ： 1個EDID；N-1：N个EDID
7F	Checksum	5F	95	95	-	

15.0 GENERAL PRECAUTIONS

15.1 HANDLING

(1) When the module is assembled, It should be attached to the system firmly using every mounting holes. Be careful not to twist or bend the modules.
(2) Refrain from strong mechanical shock or any force to the module. Otherwise, it may cause improper operation or damage to the module.
(3) Note that polarizers are very fragile and could be easily damaged. Do not press or scratch the surface harder than 1 HB pencil lead.
(4) Wipe off water droplets or oil immediately. If you leave the droplets for a long time, Staining and discoloration may occur.
(5) If the surface of the polarizer is dirty, clean it using some absorbent cotton or soft cloth.
(6) The desirable cleaners are water, IPA (Isopropyl Alcohol) or Hexane. Do not use Ketone type materials(ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanently damage to the polarizer due to chemical reaction.
(7) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth .In case of contact with hands, legs or clothes, it must be washed away thoroughly with soap.
(8) Protect the module from static , it may cause damage to the module.
(9) Use fingerstalls with soft gloves to keep display clean during the incoming inspection and assembly process.
(10) Do not disassemble the module.
(11) Do not pull or fold the LED FPC.
(l2) Do not touch any component which is located on the back side.
(13) Protection film for polarizer on the module shall be slowly peeled off just before use so that the electrostatic charge can be minimized.
(14) Pins of connector shall not be touched directly with bare hands.

15.2 STORAGE

(1) Do not leave the module in high temperature, and high humidity for a long time. It is highly recommended to store the module with temperature from 0 to 35ć and relative humidity of less than 70%.

(2) Do not store the TFT-LCD module in direct sunlight.

(3) The module shall be stored in a dark place. It is prohibited to apply sunlight or fluorescent light during the store.

15.3 OPERATION

(1) Do not connect, disconnect the module in the “ Power On” condition.

(2) Power supply should always be turned on/off by following item 8.0 “ Power on/off sequence “.

(3) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.

(4) The standard limited warranty is only applicable when the module is used for general notebook applications. If used for purposes other than as specified, is not to be held reliable for the defective operations. It is strongly recommended to contact to find out fitness for a particular purpose.

15.4 OTHERS

(1) Avoid condensation of water. It may result in improper operation or disconnection of electrode.

(2) Do not exceed the absolute maximum rating value. (the supply voltage variation, input voltage variation, Variation in part contents and environmental temperature, so on) Otherwise the module may be damaged.

(3) If the module displays the same pattern continuously for a long period of time, it can be the situation when The “ image sticks” to the screen.

(4) This module has its circuitry PCB’s on the rear or bottom side and should be handled carefully to avoid being stressed.