PRODUCT SPECIFICATION

■ Tentative Specification
□ Preliminary Specification
□ Approval Specification

MODELNAME:YH080MH4002

Version:L 01

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

Version	Contents	Date	Note
L00	Original	2012.10.16	
L01	变更产品型号为YH080MH4002和更新图纸	2024.8.01	
	更新图纸，增加图纸变更记录	2024.8.07	

Contents

1. General Specifications

No.	Item	Specification	Remark
1	LCD size	8.0 inch(Diagonal)	
2	Driver element	a-Si TFT active matrix	
3	Resolution	1024 × 3(RGB) × 768	
4	Display mode	Normally Black, Transmissive	
5	Dot pitch	0.05275(W) × 0.15825(H) mm	
6	Active area	162.05(W) × 121.54(H) mm	
7	Panel size	174.5 (W) × 135.6(H) × 2.8(D) mm	Note 1
8	Surface treatment	Hard coating	
9	Color arrangement	RGB-stripe	
10	View Direction(Gray Inversion)	IPS	
11	Interface	LVDS	
12	Panel power consumption	TBD (Typ.)	
13	Weight	TBD	

Note 1: Refer to Mechanical Drawing.

2. Pin Assignment

2.1. TFT LCD Panel Driving Section

FPC Connector is used for the module electronics interface. The recommended model is FH12A-40S-0.5SH manufactured by Hirose.

Pin No.	Symbol	I/O	Function	Remark
1	VCOM	P	Common Voltage	
2	VDD	P	Power Voltage for digital circuit	
3	VDD	P	Power Voltage for digital circuit	
4	NC	---	No connection	
5	Reset	I	Global reset pin	
6	STBYB	I	Standby mode, Normally pulled high STBYB = “1”, normal operation STBYB = “0”, timing controller, source driver will turn off, all output are High-Z	
7	GND	P	Ground	
8	RXIN0-	I	- LVDS differential data input	
9	RXIN0+	I	+ LVDS differential data input	
10	GND	P	Ground	
11	RXIN1-	I	- LVDS differential data input	
12	RXIN1+	I	+ LVDS differential data input	
13	GND	P	Ground	
14	RXIN2-	I	- LVDS differential data input	
15	RXIN2+	I	+ LVDS differential data input	
16	GND	P	Ground	
17	RXCLKIN-	I	- LVDS differential clock input	
18	RXCLKIN+	I	+ LVDS differential clock input	
19	GND	P	Ground	
20	RXIN3-	I	- LVDS differential data input	
21	RXIN3+	I	+ LVDS differential data input	
22	GND	P	Ground	
23	NC	---	No connection	

24	NC	---	No connection	
25	GND	P	Ground	
26	NC	---	No connection	
27	DIMO	O	Backlight CABC controller signal output	
28	SELB	I	6bit/8bit mode select	Note1
29	AVDD	P	Power for Analog Circuit	
30	GND	P	Ground	
31	LED-	P	LED Cathode	
32	LED-	P	LED Cathode	
33	L/R	I	Horizontal inversion	Note3
34	U/D	I	Vertical inversion	Note3
35	VGL	P	Gate OFF Voltage	
36	CABCEN1	I	CABC H/W enable	Note2
37	CABCEN0	I	CABC H/W enable	Note2
38	VGH	P	Gate ON Voltage	
39	LED+	P	LED Anode	
40	LED+	P	LED Anode	

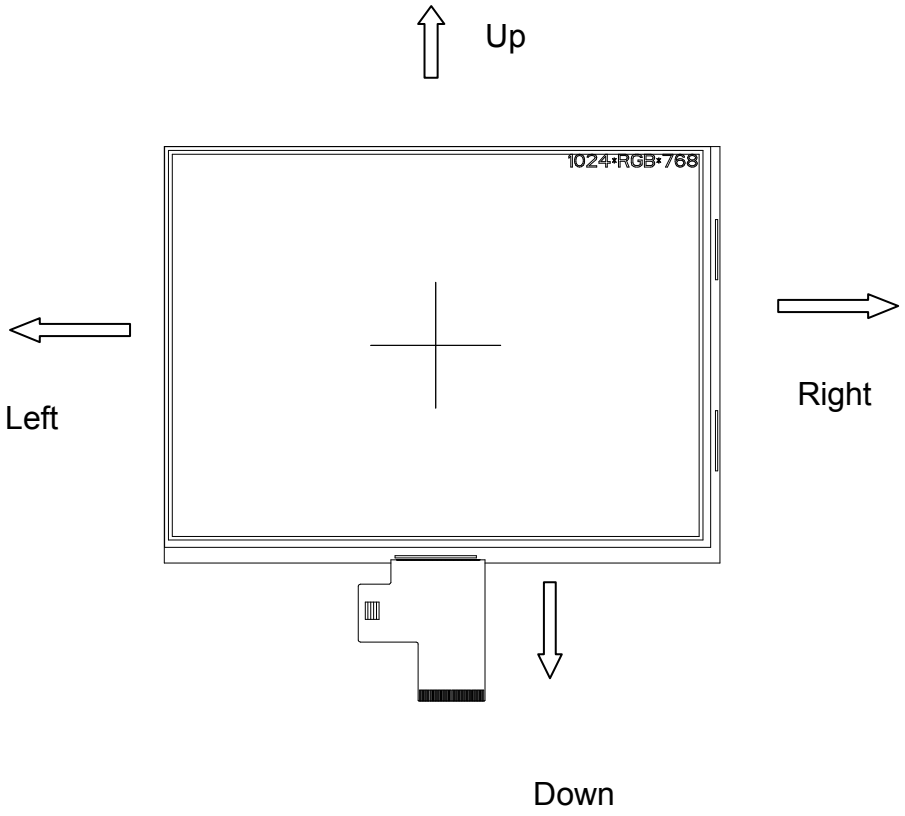
I: input, O: output, P: Power

Note1: If LVDS input data is 6 bits ,SELB must be set to High;
If LVDS input data is 8 bits ,SELB must be set to Low.

Note2: When CABC_EN=”00”, CABC OFF.
When CABC_EN=”01”, user interface image.
When CABC_EN=”10”, still picture.
When CABC_EN=”11”, moving image.
When CABC off, don’t connect DIMO, else connect it to backlight.

Note3: When L/R=”0”, set right to left scan direction.
When L/R=”1”, set left to right scan direction.
When U/D=”0”, set top to bottom scan direction.
When U/D=”1”, set bottom to top scan direction.

Note: Definition of scanning direction.
Refer to the figure as below:



3. Operation Specifications

3.1. Absolute Maximum Rating

(GND=AV_{SS}=0V, Note 1)

Item	Symbol	Values		Unit	Remark
		Min.	Max.		
Power voltage	V_{CC}	(-0.3)	(5.0)	V	
	AV_{DD}	(6.5)	(13.5)	V	
	V_{GH}	(-0.3)	(VGL+40)	V	
	V_{GL}	(-20.0)	(0.3)	V	
	V_{GH}-V_{GL}	--	(40.0)	V	
Operation Temperature	T_{OP}	-10	60	℃	
Storage Temperature	T_{ST}	-20	70	℃	

Note 1: 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.

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Voltage for LED backlight	V_L	--	9.3	10.2	V	Note 1
Current for LED backlight	I_L	--	220	--	mA	
LED life time	-	-	20,000	-	Hr	Note 2

Note 1: The LED Supply Voltage is defined by the number of LED at Ta=25℃ and I_L =220mA.

Note 2: The "LED life time" is defined as the module brightness decrease to 50% original brightness at Ta=25℃ and I_L =220mA. The LED lifetime could be decreased if operating I_L is lager than 220mA.

3.1.1. Typical Operation Conditions

(GND=AV_{SS}=0V, Note 1)

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Power voltage	V_{CC}	(3.0)	(3.3)	(3.6)	V	Note 2
	AV_{DD}	(9.8)	(10)	(10.2)	V	
	V_{GH}	(18.6)	(18.9)	(19.2)	V	
	V_{GL}	(-8.1)	(-7.8)	(-7.5)	V	
Input signal voltage	V_{COM}	(2.6)	(3.6)	(4.6)	V	Note 3
Input logic high voltage	V_{IH}	($0.7V_{CC}$)	-	(V_{CC})	V	Note 4
Input logic low voltage	V_{IL}	0	-	($0.3V_{CC}$)	V	

Note 1: Be sure to apply V_{CC} and V_{GL} to the LCD first, and then apply V_{GH}.
Note 2: V_{CC} setting should match the signals output voltage (refer to Note 3) of customer's system board .
Note 3:Typical Vcom is only a reference value, it must be optimized according to each LCM
Note 4: DCLK,HS,VS,RSTB,UPDN,STLR,MODE,DITHB.

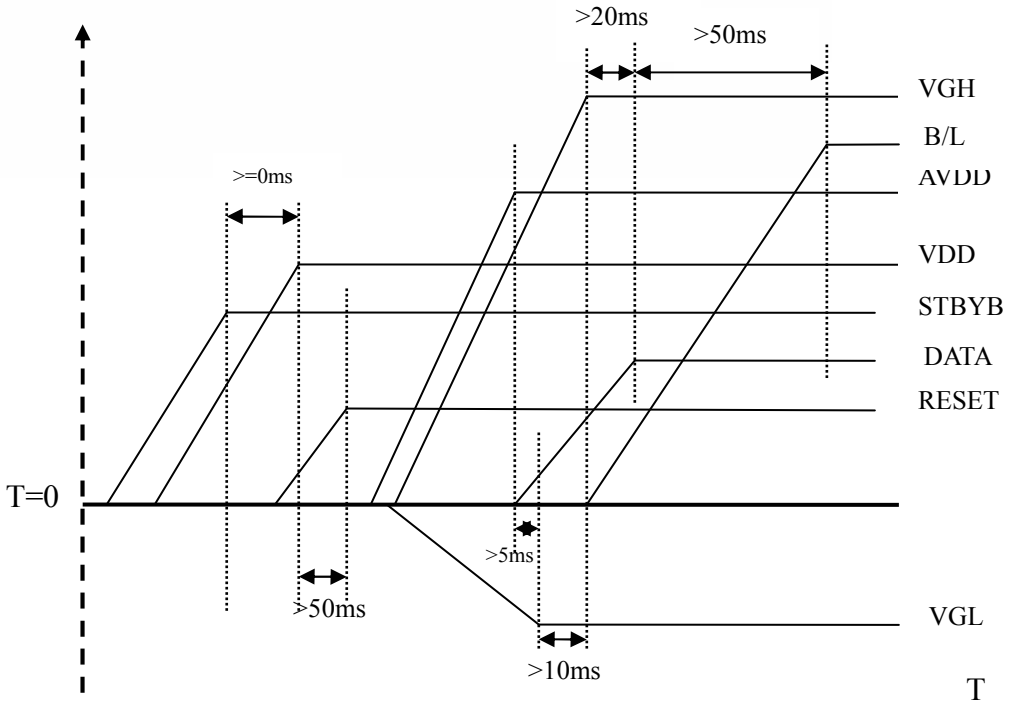
3.1.2. Current Consumption

(GND=AV_{SS}=0V)

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Current for Driver	I_{GH}		0.65	1.0	mA	VGH=18.9V
	I_{GL}		0.65	1.0	mA	VGL=-7.8V
	I_{CC}		35	60	mA	VCC=3.3V
	IAV_{DD}		25	40	mA	AVDD=10.0V

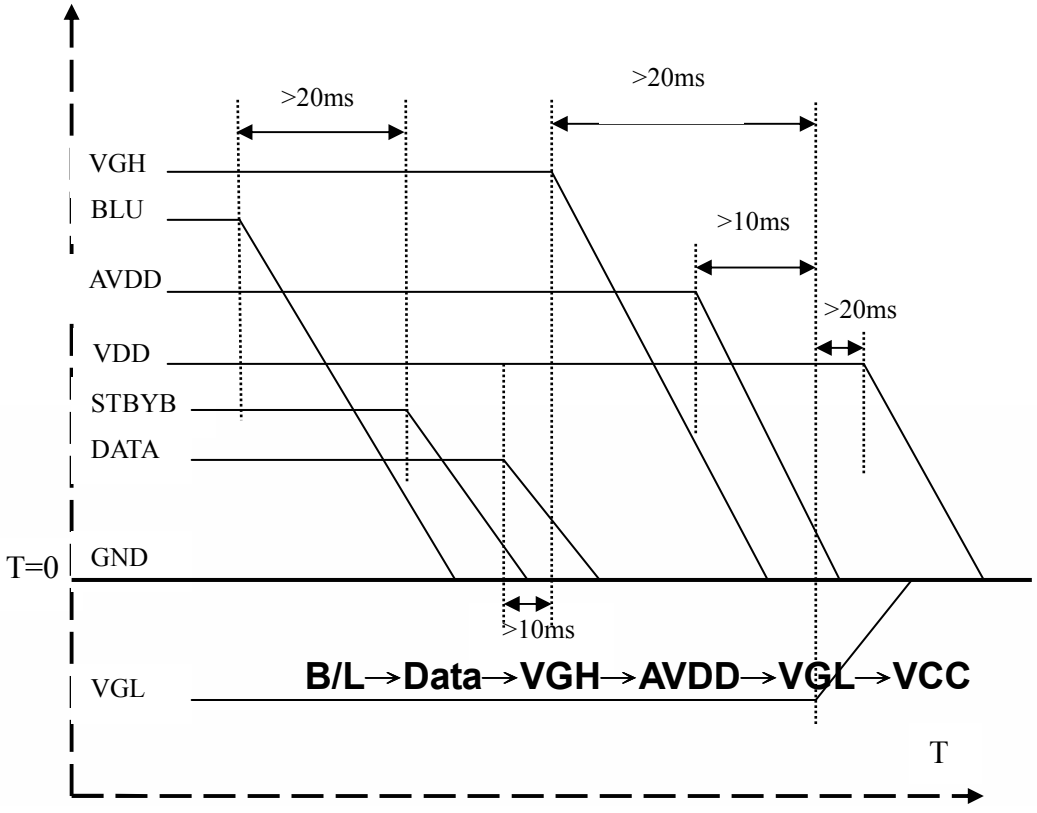
3.2. Power Sequence

3.2.1. Power on:



STBYB → VDD→AVDD→VGL→VGH→DATA→B/L

3.2.2. Power off:



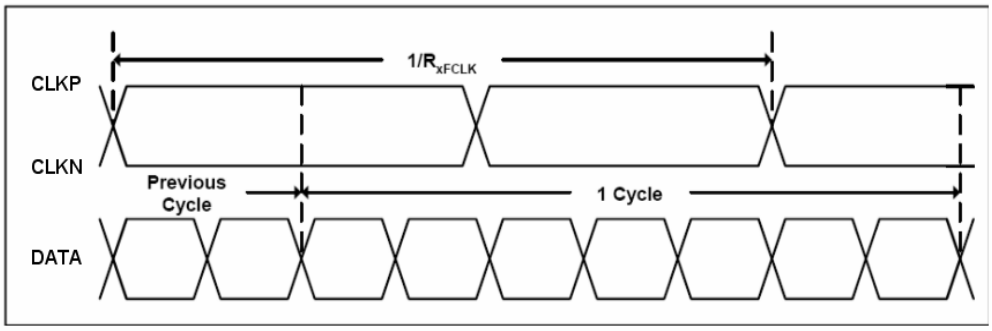
B/L→STBYB→DATA→VGH→VGL→AVDD→VDD

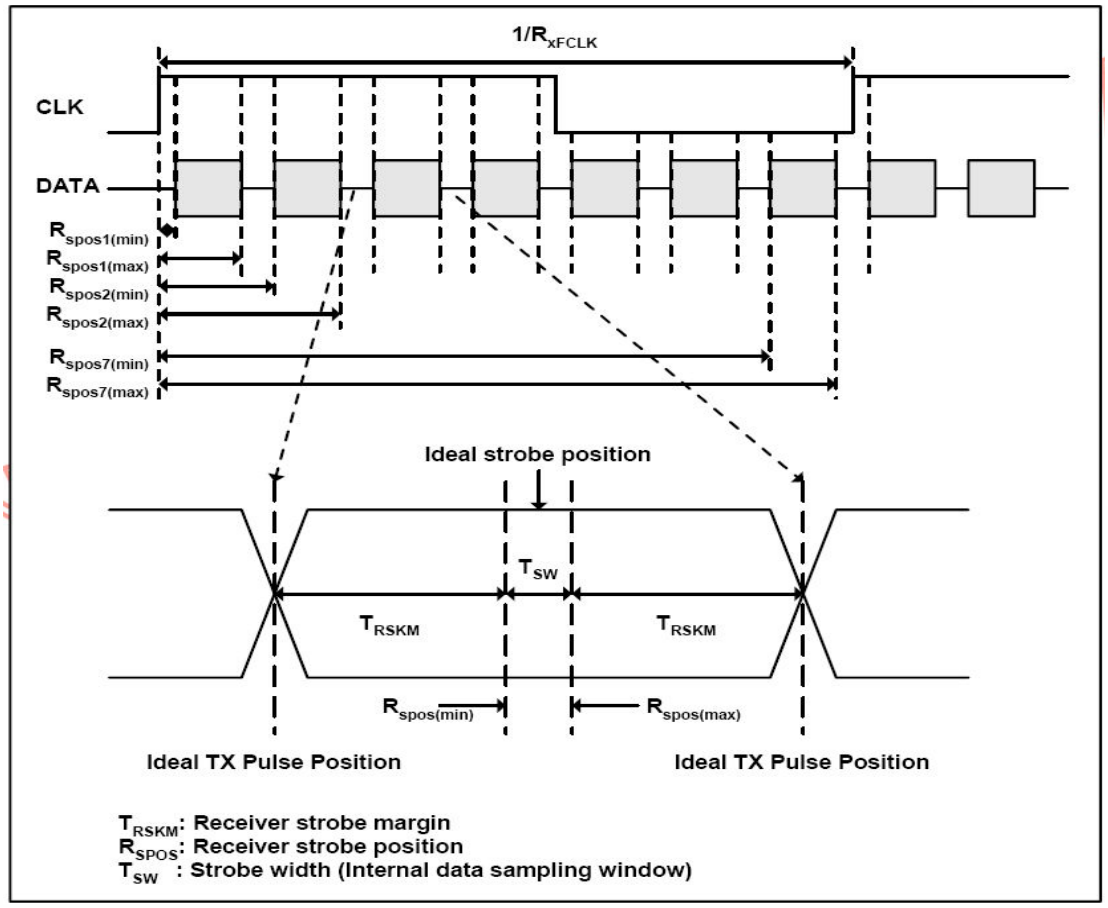
3.3. Timing Characteristics

3.3.1. AC Electrical Characteristics

Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock frequency	R_{xFCLK}	20	-	71	MHz	
Input data skew margin	T_{RSKM}	500	-	-	ps	
Clock high time	T_{LVCH}	-	$4/(7* R_{xFCLK})$	-	ns	
Clock low time	T_{LVCL}	-	$3/(7* R_{xFCLK})$	-	ns	

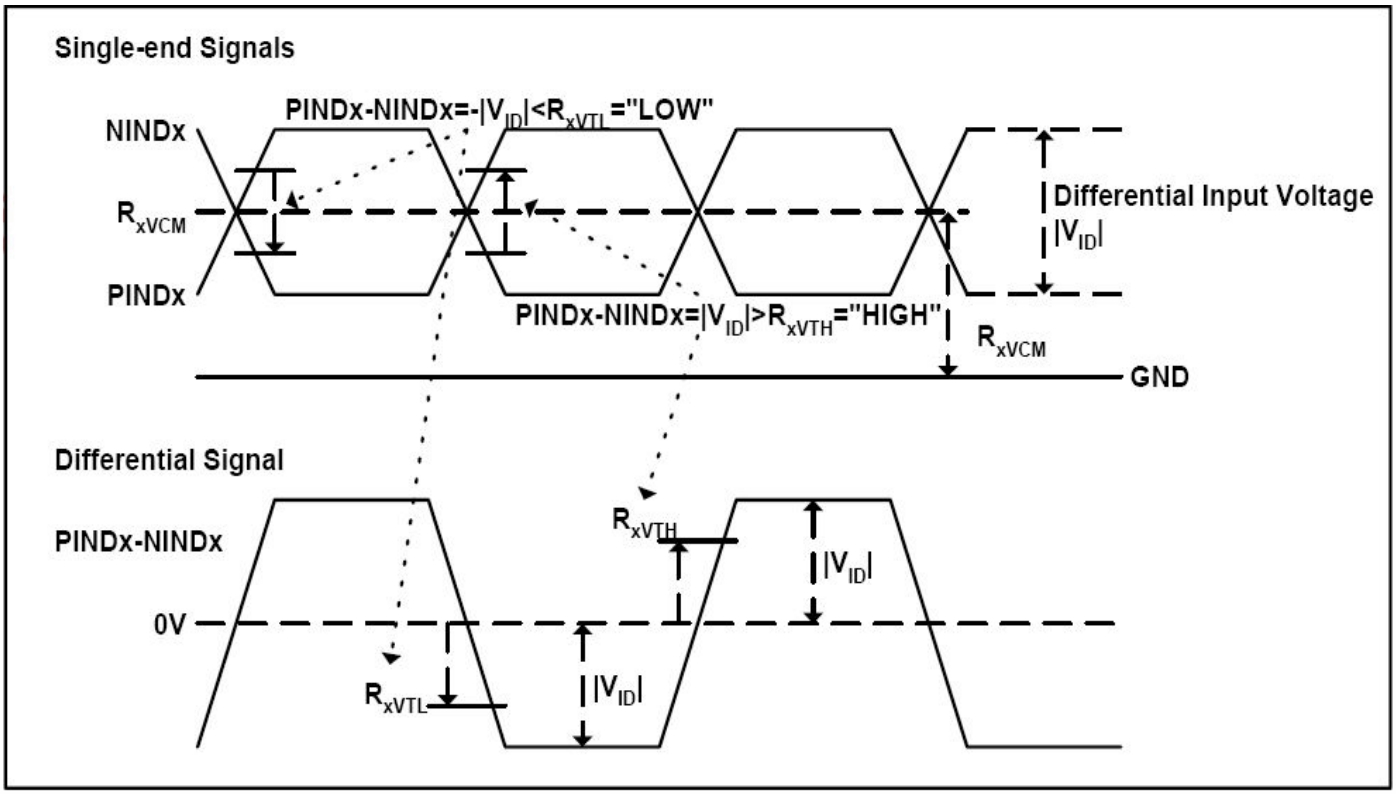
3.3.2. Input Clock and Data Timing Diagram





3.3.3. DC Electrical Characteristics

Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Differential input high Threshold voltage	R_{xVTH}	-	-	+0.1	V	R_{XVCM}=1.2V
Differential input low Threshold voltage	R_{xVTH}	-0.1	-	-	V	
Input voltage range (singled-end)	R_{xVIN}	0	-	2.4	V	
Differential input common mode voltage	R_{xVCM}	$\|V_{ID}\|/2$	-	$2.4-\|V_{ID}\|/2$	V	
Differential voltage	$\|V_{ID}\|$	0.2	-	0.6	V	
Differential input leakage current	RV_{xliz}	-10	-	+10	uA	

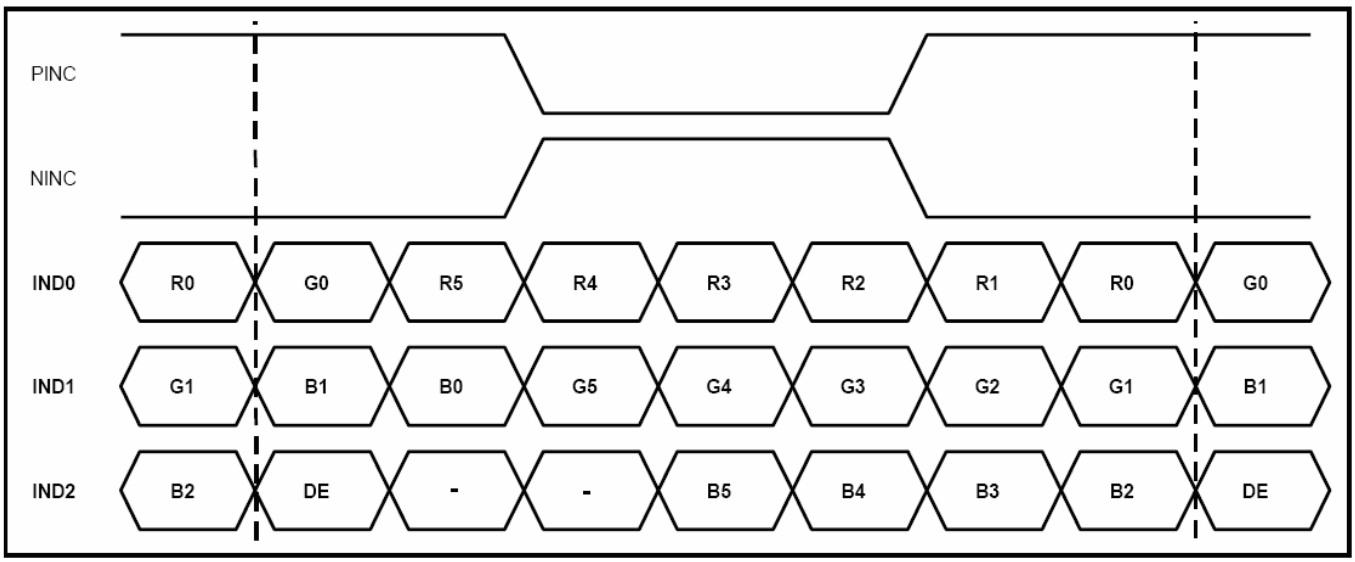


3.3.4. Timing

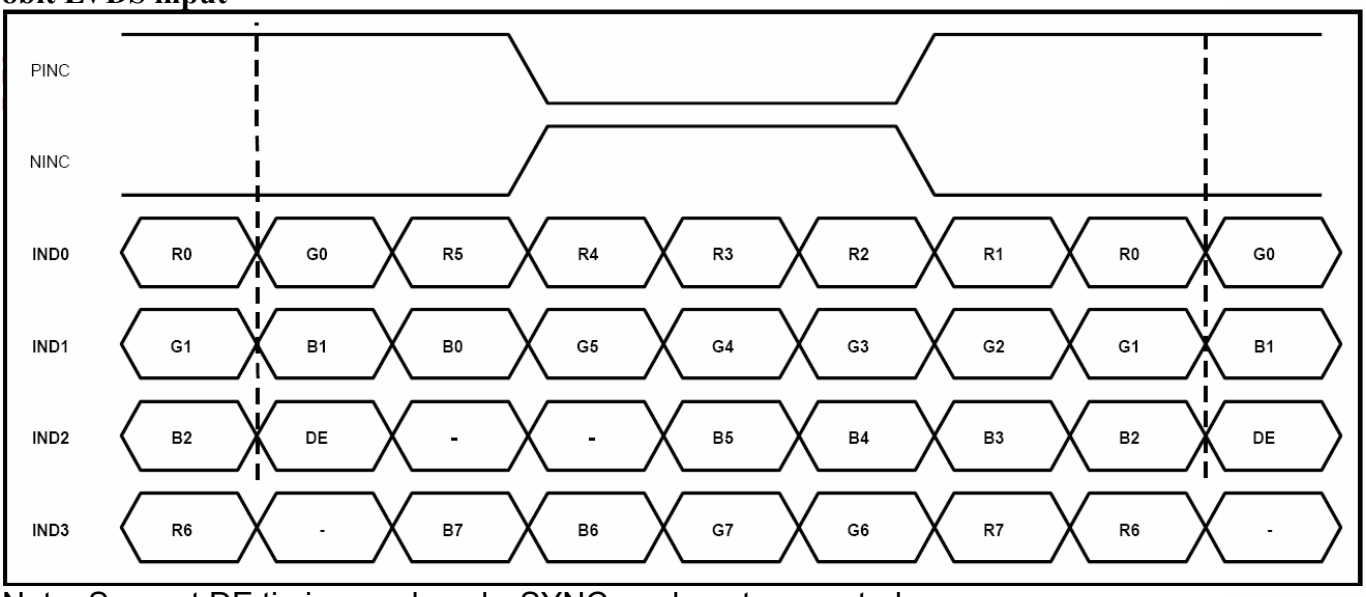
Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock Frequency	fclk	52	65	71	MHz	Frame rate
Horizontal display area	thd		1024		DCLK	
HS period time	th	1114	1344	1400	DCLK	
HS Blanking	thb	90	320	376	DCLK	
Vertical display area	tvd		768		H	
VS period time	tv	778	806	845	H	
VS Blanking	thb	10	38	77	H	

3.3.5. Data Input Format

6bit LVDS input



8bit LVDS input



Note: Support DE timing mode only, SYNC mode not supported.

4. Optical Specifications

Item	Symbol	Condition	Values			Unit	Remark
			Min.	Typ.	Max.		
Viewing angle (CR≥ 10)	θ_L	Φ=180°(9 o'clock)	75	85	-	degree	Note 1
	θ_R	Φ=0°(3 o'clock)	75	85	-		
	θ_T	Φ=90°(12 o'clock)	75	85	-		
	θ_B	Φ=270°(6 o'clock)	75	85	-		
Response time	T_{ON}	Normal θ=Φ=0°	-	25	50	msec	Note 3
	T_{OFF}		-	14	28	msec	Note 3
Contrast ratio	CR		600	800	- -		Note 4
Color chromaticity	W_X		0.238	0.288	0.388	-	Note 2 Note 5 Note 6
	W_Y		0.276	0.326	0.376	-	
Luminance L			300	330	-	cd/m2	Note 6

Test Conditions:

1. V_{CC}=3.3V, the ambient temperature is 25℃.
2. The test systems refer to Note 2.

Note 1: Definition of viewing angle range

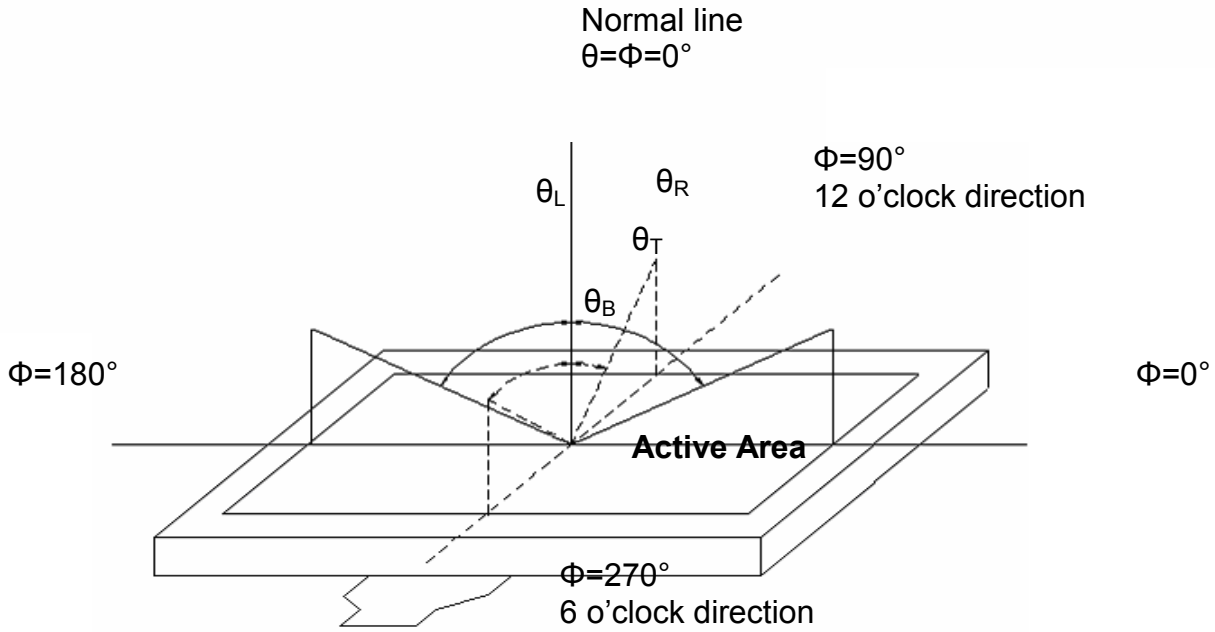


Fig. 4-1 Definition of viewing angle

Note 2: Definition of optical measurement system.

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

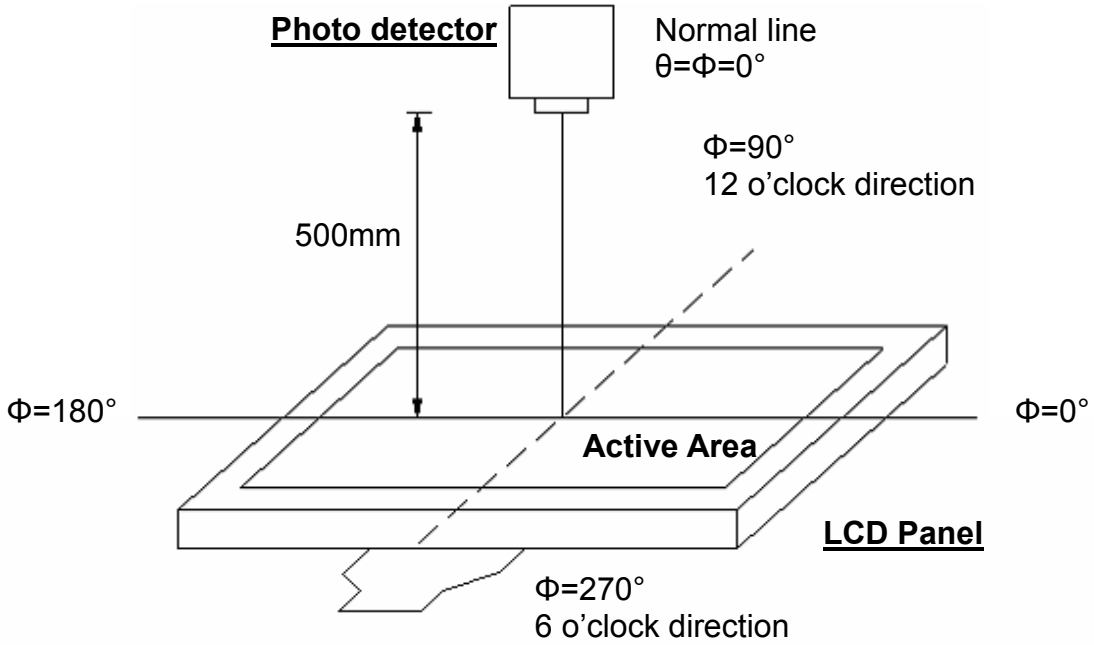


Fig. 4-2 Optical measurement system setup

Note 3: Definition of Response time

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

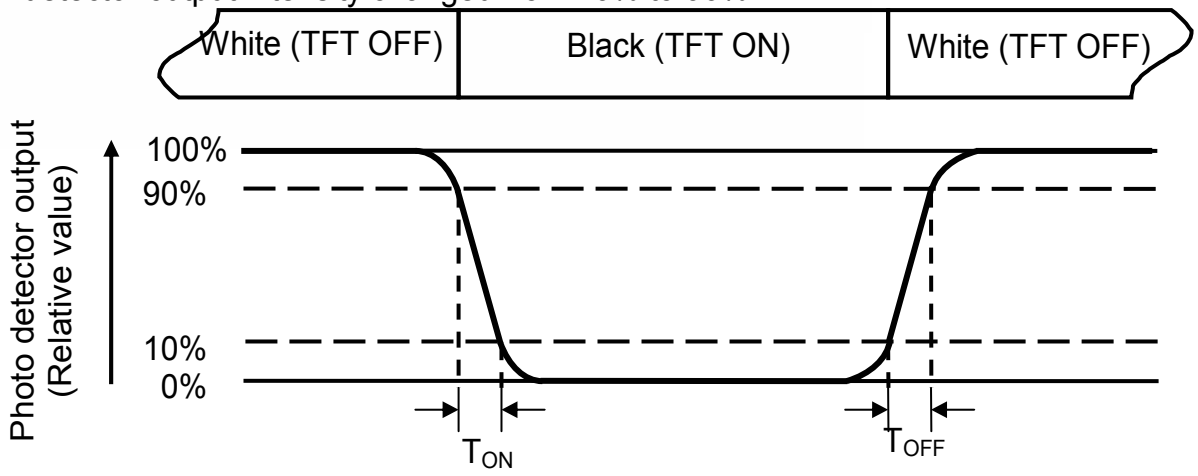


Fig. 4-3 Definition of response time

Note 4: Definition of contrast ratio

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

Note 5: Definition of color chromaticity (CIE1931)
Color coordinates measured at center point of LCD.

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

Note 7: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer to Fig. 4-4).Every measuring point is placed at the center of each measuring area.

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

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

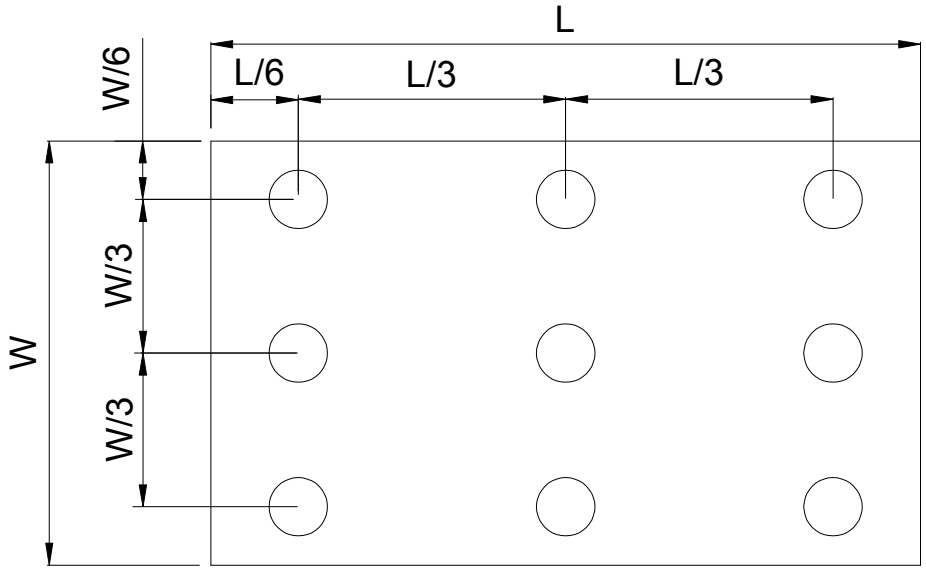


Fig. 4-4 Definition of measuring points

B_{max}: The measured maximum luminance of all measurement position.
B_{min}: The measured minimum luminance of all measurement position.

5. Reliability Test Items

(Note3)

Item	Test Conditions	Remark
High Temperature Storage	Ta = 70℃ 240hrs	Note 1，Note 4
Low Temperature Storage	Ta = -20℃ 240hrs	Note 1，Note 4
High Temperature Operation	Ts = 60℃ 240hrs	Note 2，Note 4
Low Temperature Operation	Ta = -10℃ 240hrs	Note 1，Note 4
Operate at High Temperature and Humidity	+40℃, 90%RH 240hrs	Note 4
Thermal Shock	-10℃/30 min ~ +50℃/30 min for a total 100 cycles, Start with cold temperature and end with high temperature.	Note 4

Note 1: Ta is the ambient temperature of samples.
Note 2: Ts is the temperature of panel's surface.
Note 3: In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but don't guarantee all of the cosmetic specification.
Note 4: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

6. General Precautions

6.1. Safety

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

6.2. Handling

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

6.3. Static Electricity

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

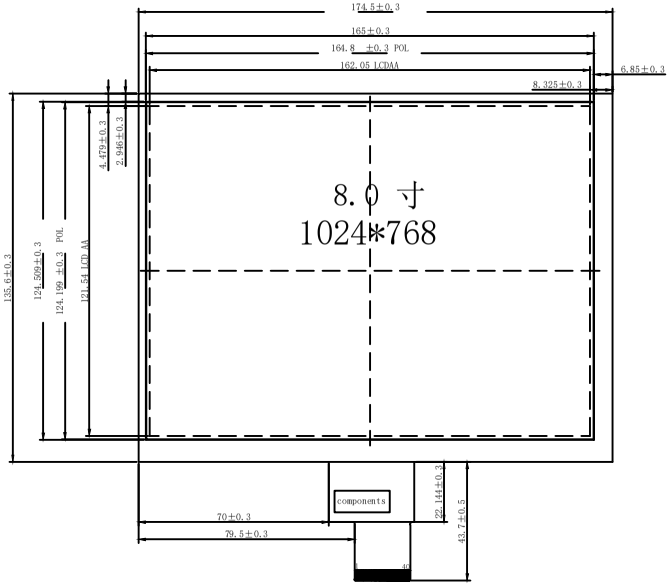
6.4. Storage

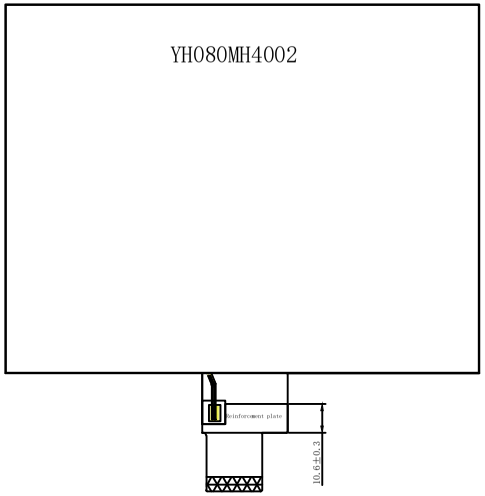
1. Store the module in a dark room where must keep at 25±10℃ and 65%RH or less.
2. Do not store the module in surroundings containing organic solvent or corrosive gas.
3. Store the module in an anti-electrostatic container or bag.

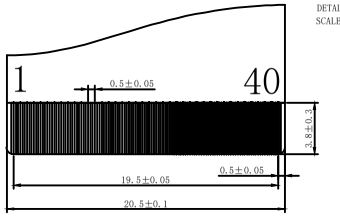
6.5. Cleaning

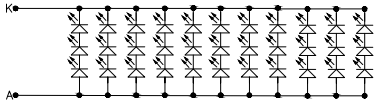
1. Do not wipe the polarizer with dry cloth. It might cause scratch.
2. Only use a soft sloth with IPA to wipe the polarizer, other chemicals might permanent damage to the polarizer.

序号	更 改 记 录	记录人	日 期
L00	First Releose	李 强	2012.10.16
L01	将型号由YH080IM40-35A3B变更为 YH080MH4002	贺 顺 超	2024.8.1
L01	更新图纸铁框开窗数据由165.93mm改为165mm，删除铁框偏光片间距1.38mm的标注偏位的数据	贺 顺 超	2024.8.7









PIN	DESCRIPTION
1	VCOM
2	VDD
3	VDD
4	NC
5	RESET
6	STBYB
7	GND
8	RXIN0-
9	RXIN0+
10	GND
11	RXIN1-
12	RXIN1+
13	GND
14	RXIN2-
15	RXIN2+
16	GND
17	RXCLKIN-
18	RXCLKIN+
19	GND
20	RXIN3-
21	RXIN3+
22	GND
23	NC
24	NC
25	GND
26	NC
27	DIMO
28	SELB
29	AVDD
30	GND
31	LED-
32	LED-
33	L/R
34	U/D
35	VGL
36	EN1
37	EN0
38	VGH
39	LED+
40	LED+

SPECIFICATION:

1. LCD Panel Type : 8.0 Inch(A.A Diagonal) INNOLUX
2. Resolution : 1024RGB(H)*768(V)
3. Display Mode : IPS/ Normally BLACK
4. Viewing Direction : ALL
5. Operating/Storage temperature : -10° C~+60° C/-20° C~+70° C
6. Operating Voltage : VDD=2.8-3.3V for LCD
7. LED Backlight : White, Vf=9.6V typ.(If=220mA)
   TYP Luminance :330 cd/M2,
8. GENERAL TOLERANCE±0.3
9. RoHS compliant

MODEL NUMBER :

YH080MH4002
L01

CUSTOMER NO.:

DATE: 2024-08-07

Item(项目)		Symbol (符号)	min. (最小值)	typ. (中间值)	max. (最大值)	Unit (单位)	Condition (条件)
Main screen 主屏 (BL)	Luminance(亮度)	Lv				cd/m²	(BM-7测试值)
	Uniformity(均匀性)	Avg				%	
	Colour Coordinate (色坐标)	X					(照计度测试值)
		Y					Lv=xxxx mcd
Main screen 主屏 (LCM)	Luminance(亮度)	Lv	300	330		cd/m²	If=220 mA (定电流测试)
	Uniformity(均匀性)	Avg	75	80		%	
	Colour Coordinate (色坐标)	X	0.280	0.310	0.330		样品亮度根据实际做出来样品亮度定
		Y	0.300	0.330	0.340		
Forward Voltage(正向电压)		Vf	8.6	9.6	10.6	V	

●Operating Temperature: -10~+60° C (工 作 温 度) ●Storage Temperature: -20~+70° C (储 存 温 度)

Design by: (设计)	ATEON	(审查)	Approval By: (核准)	Date: (日期)	2024.08.07	Page: (页数)	1/1