



## Product Specifications

<b>Customer</b>	
<b>Model Name</b>	H080VWS40E1K301-CT12
<b>Description</b>	Standard LCD Module 1024 (RGB)x600 Dots 8.0" TFT LCD
<b>Date</b>	2023/02/14
<b>Revision</b>	A1

<b>Customer Approval</b>	
<b>Date</b>	
The above signature represents that the product specifications, testing regulation, and warranty in the specifications are accepted	

<b>Engineering</b>			
<b>Check</b>	<b>Date</b>	<b>Prepared</b>	<b>Date</b>



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## 2 General Specifications

	Feature	Spec
Characteristics	Size	8 inch
	Resolution	1024 (horizontal)*600(Vertical)
	Interface	LVDS
	Connect type	Connector
	Color Depth	16.7M
	Technology type	a-Si
	Display Spec. Pixel pitch (mm)	0.1725(H)*RGB*0.1656(V)
	Pixel Configuration	R.G.B. Vertical Stripe
	Display Mode	Normally White
	Driver IC	HX8282_A02+HX8696_A01
	Surface Treatment	HC
	Viewing Direction	6 O'clock
Mechanical	LCM(W x H x D) (mm)	192.80*117.00*6.50
	LCM+CTP(W x H x D) (mm)	216.00*139.00*11.09
	Active Area(mm)	176.64*99.36
	With /Without TSP	Without TSP
	Weight (g)	TBD
	LED Numbers	39LEDs

Note 1: Viewing direction is follow the data which measured by optics equipment.

Note 2: Requirements on Environmental Protection: RoHS

Note 3: LCM weight tolerance: +/- 5%



### 3 Input/Output Terminals

model is FH12A-40S-0.5SH manufactured by Hirose.

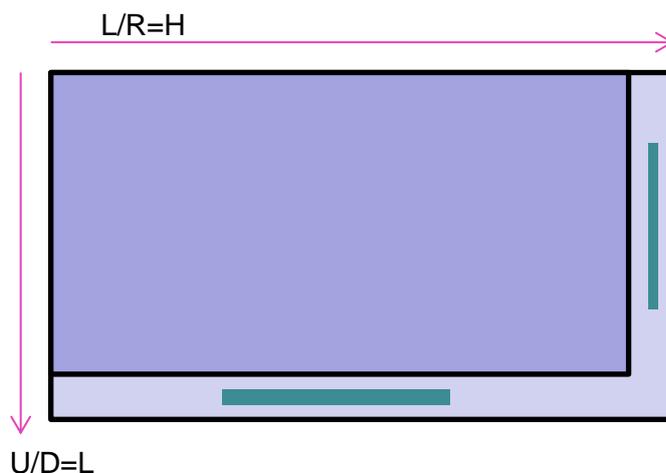
Pin No.	Symbol	Description	Remark
1	VCOM	Common Voltage	
2	VDD	Digital power_3.3V	
3	VDD	Digital power_3.3V	
4	NC	Not connect	
5	RESET	Global reset pin	
6	STBYB	Standby mode	
7	GND	Ground	
8	RXIN0-	Negative LVDS differential data input	
9	RXIN0+	Positive LVDS differential data input	
10	GND	Ground	
11	RXIN1-	Negative LVDS differential data input	
12	RXIN1+	Positive LVDS differential data input	
13	GND	Ground	
14	RXIN2-	Negative LVDS differential data input	
15	RXIN2+	Positive LVDS differential data input	
16	GND	Ground	
17	RXCLKIN-	Negative LVDS differential clock input	
18	RXCLKIN+	Positive LVDS differential clock input	
19	GND	Ground	
20	RXIN3-	Negative LVDS differential data input	
21	RXIN3+	Positive LVDS differential data input	
22	GND	Ground	
23	NC	Not connect	
24	NC	Not connect	
25	GND	Ground	
26	NC	Not connect	
27	NC(DIM0)	Not connect	
28	SELB	6bit/8bit mode select	Note2
29	AVDD	Power for Analog Circuit	
30	GND	Ground	

Pin No.	Symbol	Description	Remark
31	LED-	LED cathode	
32	LED-	LED cathode	
33	L/R	Horizontal inversion	Note1
34	U/D	Vertical inversion	Note1
35	VGL	Negative power for TFT	
36	NC	Not connect	
37	NC	Not connect	
38	VGH	Positive power for TFT	
39	LED+	LED Anode	
40	LED+	LED Anode	



Note.1

Scan Control Input		Scanning direction
L/R	U/D	
High	Low	Up to Down, Left to Right
Low	Low	Up to Down, Right to Left
High	High	Down to Up, Left to Right
Low	High	Down to Up, Right to Left



Note. 2

- SELB="H (3.3V)": 6 bit ;
- SELB="L (GND)": 8 bit ;

#### 4. 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 2-1, 2-2.

< Table 2-1. Environment Absolute Maximum Ratings >

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Power supply voltage 1	VDD	-0.5	-	+3.96	V
Power supply voltage 2	AVDD	-0.5	-	+14.85	V
Logic Output Voltage	V <sub>OUT</sub>	-0.5	-	+5.0	V
Input voltage	V <sub>in</sub>	-0.5	-	AVDD+0.5	V
Operation temperature	T <sub>OPR</sub>	-20	-	+70	°C
Storage temperature	T <sub>STG</sub>	-30	-	+80	°C

Note: (1) All of the voltages listed above are with respect to GND=0V.

(2) Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above.



< Table 2-2. TFT LCD Module >

Parameter	Symbol	Min.	Max.	Unit	Remarks
Power supply voltage	$V_{DD}$	-0.5	3.96	V	
	$V_{GH}$	-0.5	VGL+40.0	V	
	$V_{GL}$	-20.0	0.3	V	
	$AV_{DD}$	-0.5	14.85	V	

\*1)Liquid Crystal driving voltage

Due to the characteristics of LC Material, this voltage varies with environmental temperature.

## 5. Electrical Characteristics

### 5.1 Electrical Specifications

$T_a=25\pm 2^\circ\text{C}$

< Table 3. Electrical specifications >

Parameter	Symbol	Values			Unit	Notes
		Min	Typ.	Max		
Power Supply Input Voltage	VDD	2.3	3.3	3.6	Vdc	
Power Supply Ripple Voltage	VRP			-	mV	
Analog Voltage	AVDD	10.85	11	11.15	V	
TFT Gate ON Voltage	VGH	19	20	21	V	
TFT Gate OFF Voltage	VGL	-7.8	-6.8	-5.8	V	
TFT Common Electrode Voltage	VCOM	2.35	3.35	4.35	V	

### 5.2 LVDS mode DC electrical characteristics

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Differential input high Threshold voltage	$R_{XVTH}$	-	-	+0.1	V	$R_{XVCM}=1.2V$
Differential input low threshold voltage	$R_{XVTL}$	-0.1	-	-	V	
Input voltage range (singled-end)	$R_{XVIN}$	0	-	$V_{DD}-1.2+ V_{ID} /2$	V	-
Differential input common Mode voltage	$R_{XVCM}$	$ V_{ID} /2$	-	$V_{DD}-1.2$	V	-
Differential input voltage	$ V_{ID} $	0.2	-	0.6	V	-
Differential input leakage Current	$RV_{XIZ}$	-10	-	+10	$\mu A$	-
LVDS Digital Operating Current	Iddlvds	-	15	30	mA	Fclk=65MHz, VDD=3.3V
LVDS Digital Stand-by Current	Istlvds	-	10	50	$\mu A$	Clock & all Functions are stopped

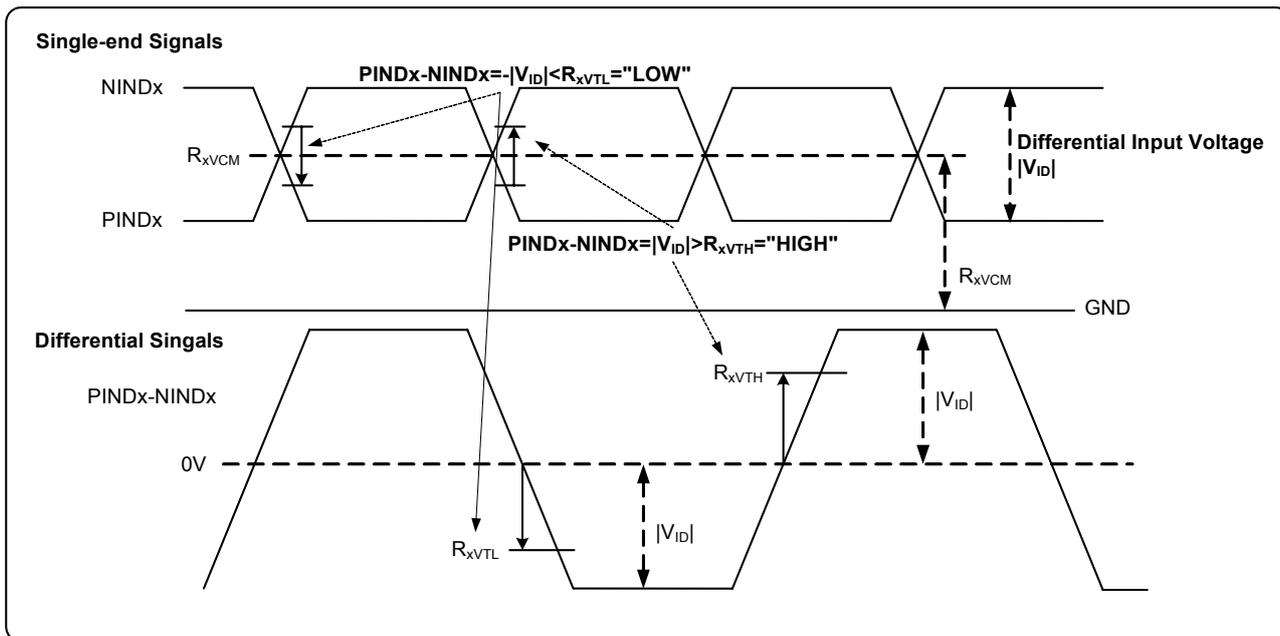


Figure 9.1: Single-end signals

## 5.2 Driving Backlight

< Table 4. Backlight Unit Specifications >

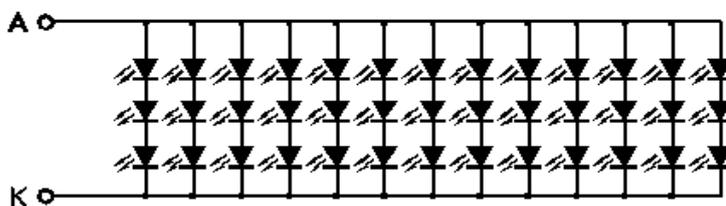
[Ta = 25 ± 2 °C]

Items	Symbol	Min	Typ	Max	Unit	Remark
Forward Current	$I_F$	-	520	-	mA	39LEDs (3LED Serial, 13LED Paralle l)
Forward Voltage	$V_F$	8.4	9.0	10.6	V	
Backlight Power Consumption	-	-	4.68	-	W	
Operating Life Time	-	30000	-	--	Hrs	$I_F = 520\text{mA}$ Note 3

Note1: The LED driving condition is defined for each LED module (3 LED Serial, 13 LED Parallel). For each LED:  $I_F = 40\text{mA}$ ,  $V_F = 3.0\text{V}$

Note2: Under LCM operating, the stable forward current should be inputted. And forward voltage is for reference only.

Note3:  $I_F$  is defined for one channel LED. Optical performance should be evaluated at  $T_a = 25^\circ\text{C}$  only. If LED is driven by high current, high ambient temperature & humidity condition. The life time of LED will be reduced. Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data.





## 5.3 Timing

### 5-3-1. LVDS signal

#### LVDS mode AC electrical characteristics

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Clock frequency	$R_{XFCLK}$	20	-	71	MHz	-
Input data skew margin	$T_{RSKM}$	500	-	-	pS	$ V_{ID} =400mV$ $R_{XVCM}=1.2V$ $R_{XFCLK}=71MHz$
Clock high time	$T_{LVCH}$	-	$4/(7 * R_{XFCLK})$	-	ns	-
Clock low time	$T_{LVCL}$	-	$3/(7 * R_{XFCLK})$	-	ns	-
PLL wake-up time	$T_{emPLL}$	-	-	150	$\mu s$	-

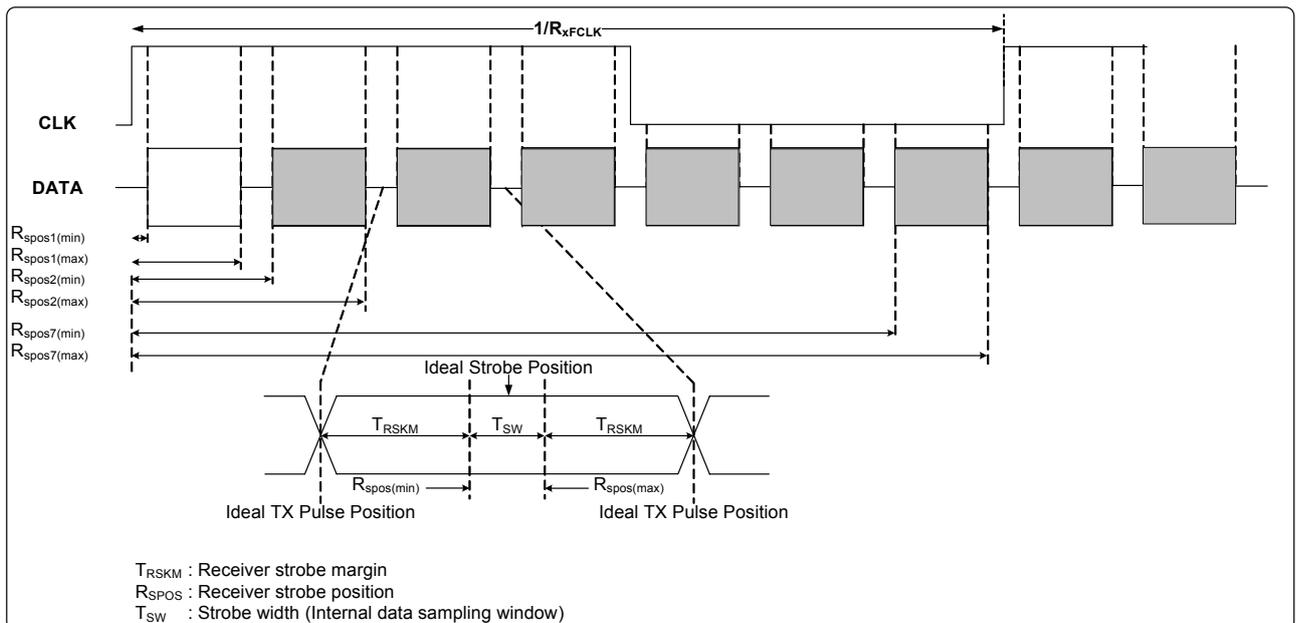
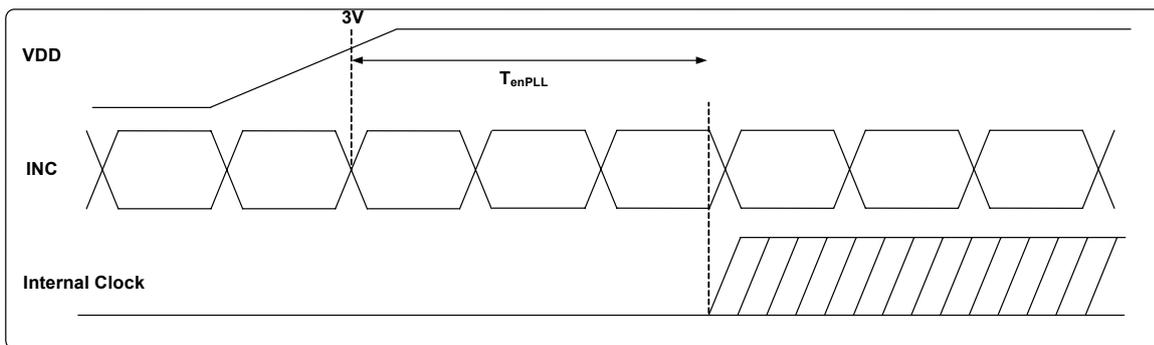
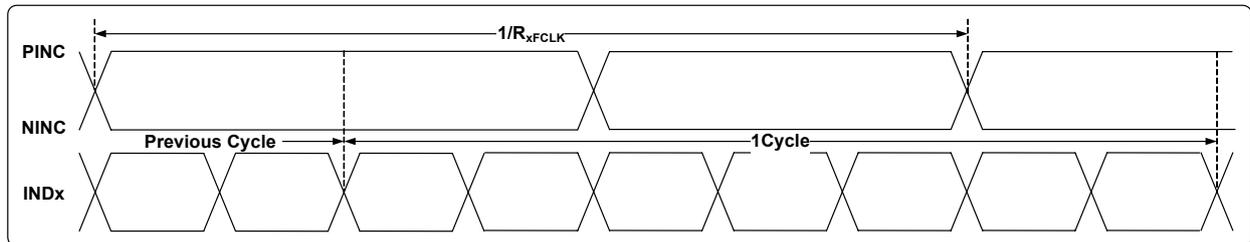


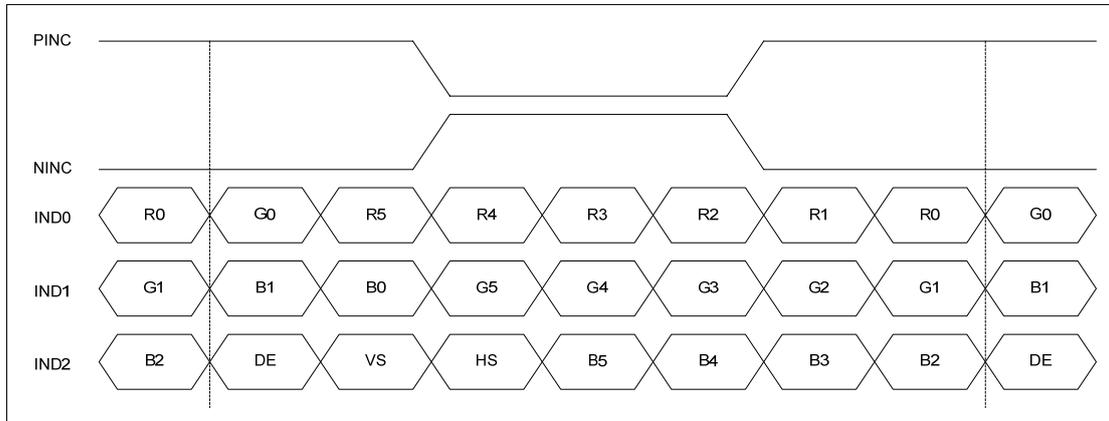
Figure 10.1: LVDS figure

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Modulation Frequency	$SSC_{MF}$	23	-	93	KHz	-
Modulation Rate	$SSC_{MR}$	-	-	$\pm 3$	%	LVDS clock =71MHz center spread

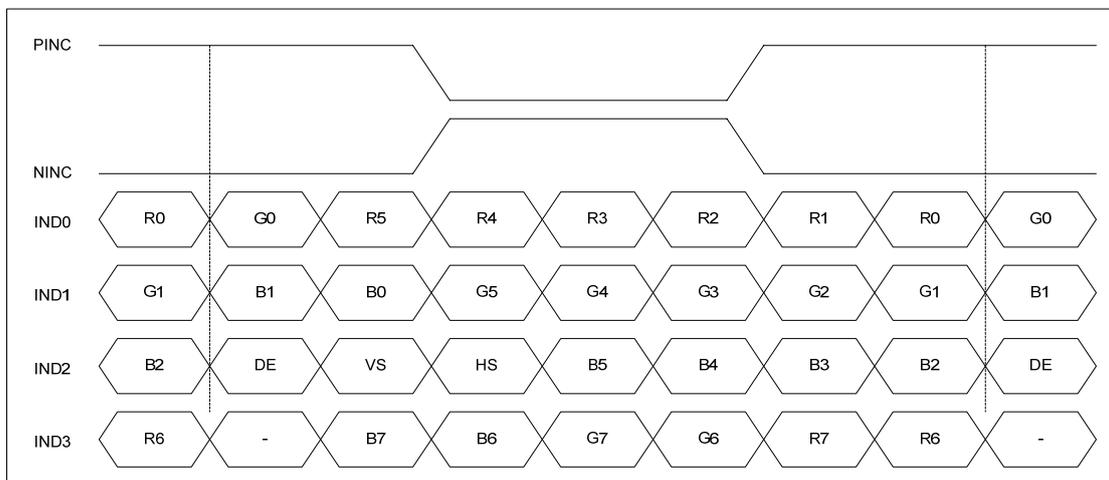
Table 10.3: SSC table



**5-3-2. LVDS mode data input format**



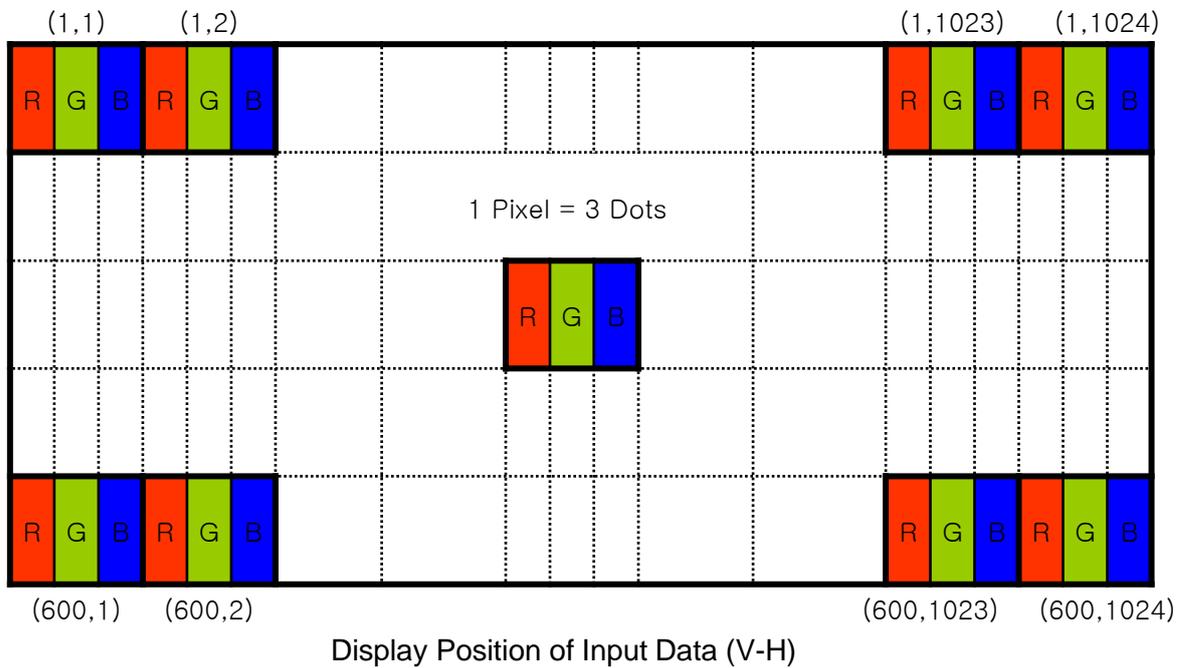
**Figure 10.4: 6-bit LVDS input**



**Figure 10.5: 8-bit LVDS Input**

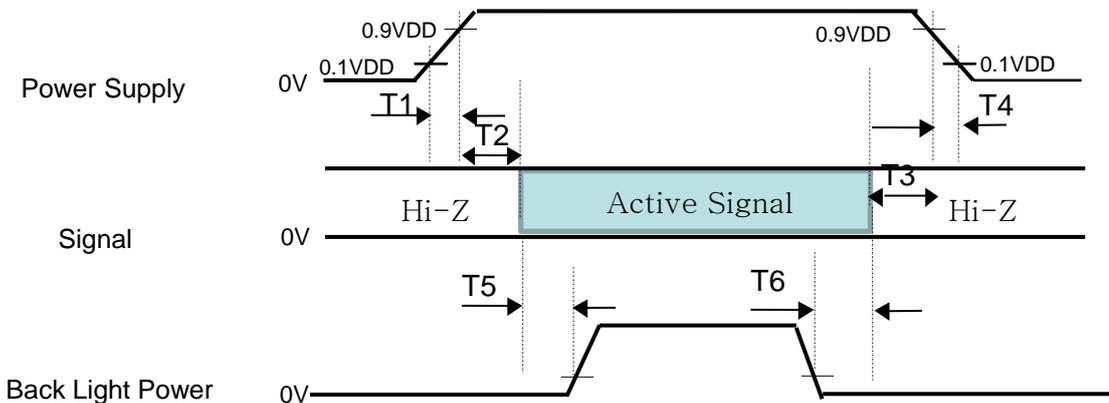


### 5.3.2 Data Input Format



### 5.3.3 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



- $0.5\text{ms} \leq T1 \leq 10\text{ms}$
- $0\text{ms} \leq T2$
- $0\text{ms} \leq T3$
- $0\text{ms} \leq T4 \leq 10\text{ms}$
- $100\text{ms} \leq T5 \leq 300\text{ms}$
- $100\text{ms} \leq T6 \leq 300\text{ms}$

#### 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 turn on after power for logic and interface signal are valid.



## 6 Optical Characteristics

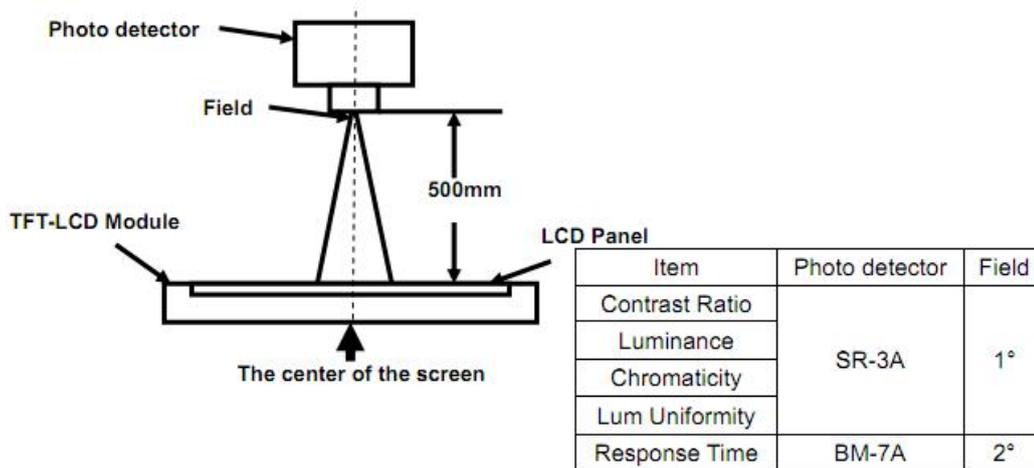
Items	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing angles	$\theta_T$	Center $CR \geq 10$	-	70	-	Degree.	Note2
	$\theta_B$		-	75	-		
	$\theta_L$		-	75	-		
	$\theta_R$		-	75	-		
Contrast Ratio	CR	$\Theta = 0$	600	800	-	-	Note1 Note3
Response Time	$T_{ON}$	25° C	-	25	35	ms	Note1
	$T_{OFF}$		-	25	35		Note4
Chromaticity	$X_W$	Backlight is on	0.3145	0.3445	0.3745	-	Note1
	$Y_W$		0.3428	0.3728	0.4028	-	Note5
Uniformity	U		70	80	-	%	Note1 Note6
Luminance (LCM+CTP)	L		-	1000	-	Cd/m <sup>2</sup>	Note1 Note7

### Test Conditions:

1. IF=520mA(one channel),the ambient temperature is 25.
2. The test systems refer to Note 1 and Note 2.

Note 1:Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 5 minutes operation, the optical properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel



Note 2: Definition of viewing angle range and measurement system.  
viewing angle is measured at the center point of the LCD by CONOSCOPE(ergo-80).

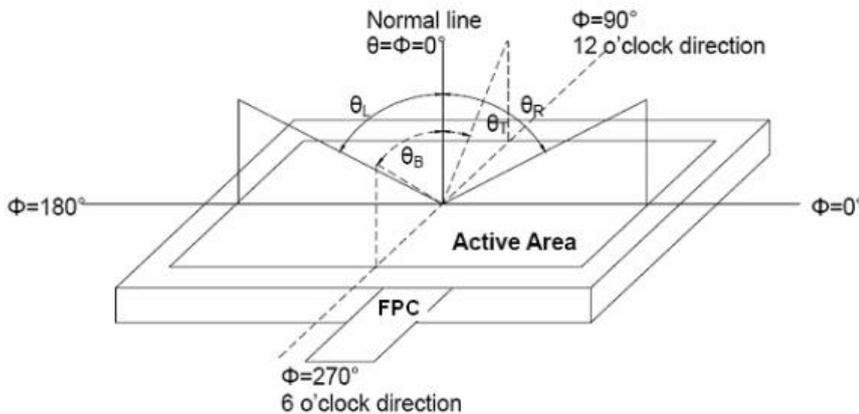


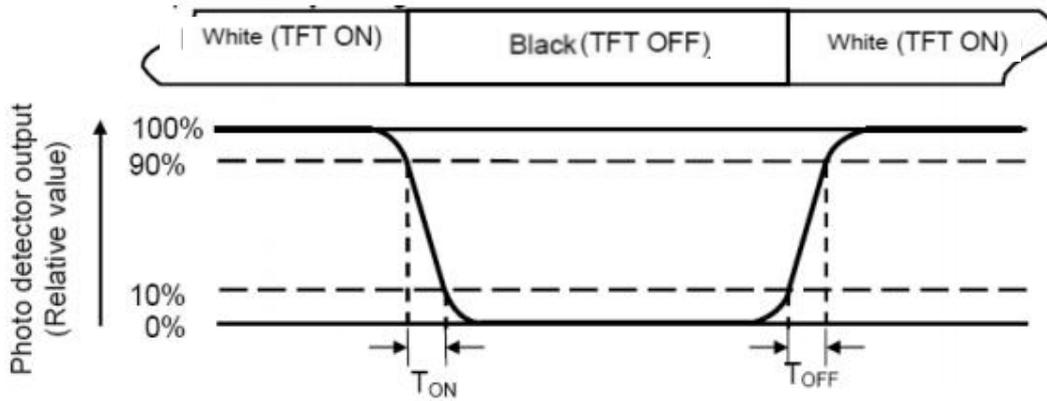
Fig. 1 Definition of viewing angle

Note 3: Definition of contrast ratio

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

Note 4: Definition of Response time

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



Note 5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of LCD.

Note 6: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer Fig. 2). Every measuring point is placed at the center of each measuring area.

Luminance Uniformity(U) =  $L_{min} / L_{max}$

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

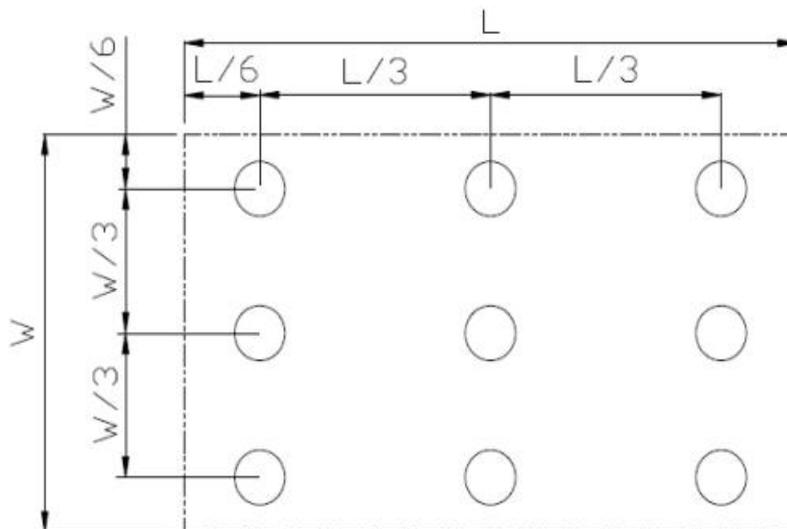


Fig. 2 Definition of uniformity

$L_{max}$ : The measured maximum luminance of all measurement position.

$L_{min}$ : The measured minimum luminance of all measurement position.

Note 7: Definition of Luminance :

Measure the luminance of white state at center point.



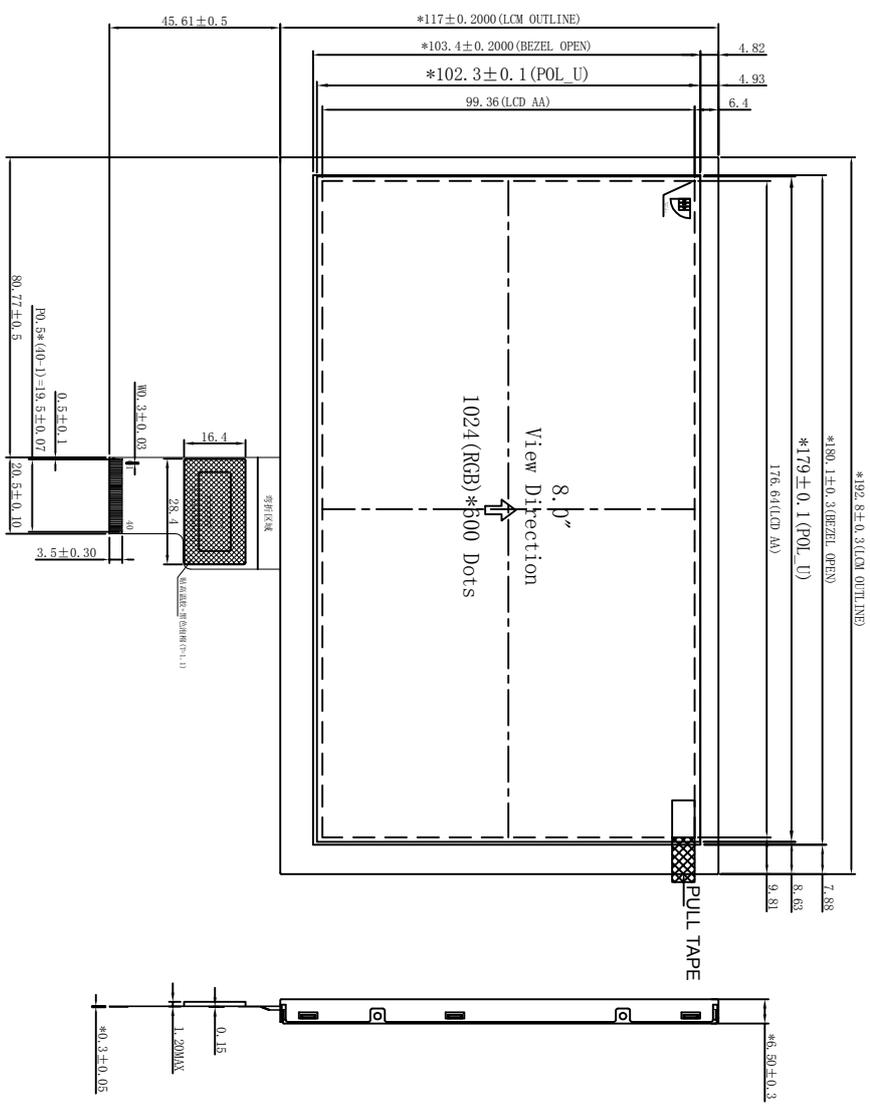
## 7 Environmental / Reliability Tests

No	Test Item	Condition	Remarks
1	High Temperature Opeartion	Ts= +70°C , 96hrs	Note 1 IEC60068-2-2, GB2423. 2-89
2	Low Temperature Opeartion	Ta= -20°C , 96hrs	Note 2 IEC60068-2-1 GB2423.1-89
3	High Temperature Storage	Ta= +80°C , 96hrs	IEC60068-2-2 GB2423. 2-89
4	Low Temperature Storage	Ta= -30°C , 96hrs	IEC60068-2-1 GB/T2423.1-89
5	High Temperature & Humidity Storage	Ta= +60°C , 90% RH max, 96 hours	IEC60068-2-3 GB/T2423.3-2006
6	Thermal Shock (Non-operation)	-20°C 30 min ~ +70°C 30 min Change time: 5min, 20 Cycle	Start with cold temperature,end with high temperature IEC60068-2-14, GB2423.22-87
7	Electro Static Discharge (Opeartion)	C=150pF, R=330 Ω , 5 points/panel Air: ±8KV, 5 times; Contact: ±4KV, 5 times; (Environment: 15°C ~ 35°C , 30% ~ 60%, 86Kpa ~ 106Kpa)	IEC61000-4-2 GB/T17626.2-1998
8	Vibration (Non-operation)	Frequency range: 10~55Hz, Stroke: 1.mm Sweep: 10Hz~55Hz~10Hz 2 hours for each direction of X .Y. Z. (package condition)	IEC60068-2-6 GB/T2423.5-1995
9	Shock (Non-operation)	60G 6ms, ± X, ±Y , ± Z 3 times for each direction	IEC60068-2-27 GB/T2423.5-1995
10	Package Drop Test	Height: 80 cm, 1 corner, 3 edges, 6 surfaces	IEC60068-2-32 GB/T2423.8-1995

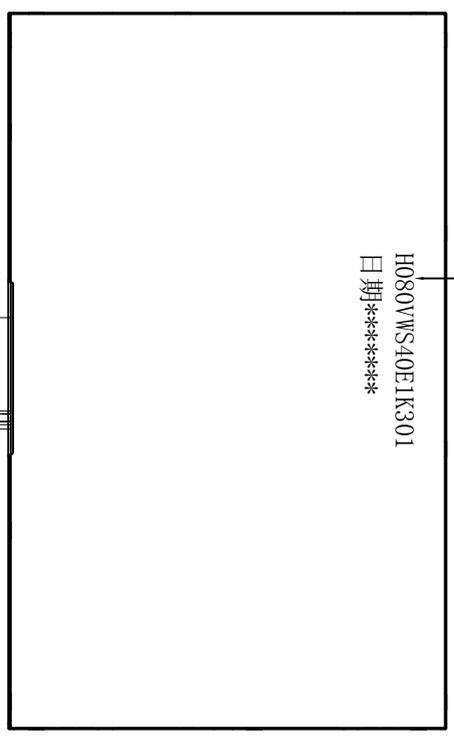
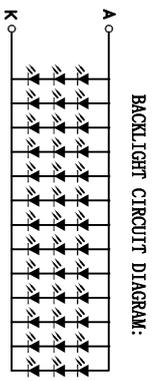
Note: 1. Ts is the temperature of panel's surface.  
2. Ta is the ambient temperature of sample.

## 8 Mechanical Drawing

### 8.1LCM



- LCM NOTES:
1. DISPLAY TYPE: 8.0 INCH TFT /WHITE
  2. BACKLIGHT: 39 CHIP WHITE LED, IN PARALLEL
  3. OPERATING TEMP: -20° C~+70° C
  4. STORAGE TEMP: -30° c~+80° c
  5. RESOLUTION: 1024RGBx600
  6. LCD IC: Source IC:Source IC: HX8282-A02 Gate IC: HX8696-A01
  7. Luminous instensity (9 AVG) : Module: 1300cd/m2 (TYP.)
  8. Uniformity:75% (Min)
  9. “ ( ) ”reference dimension. “ \* ” critical dimension
  10. RoHS Compliant

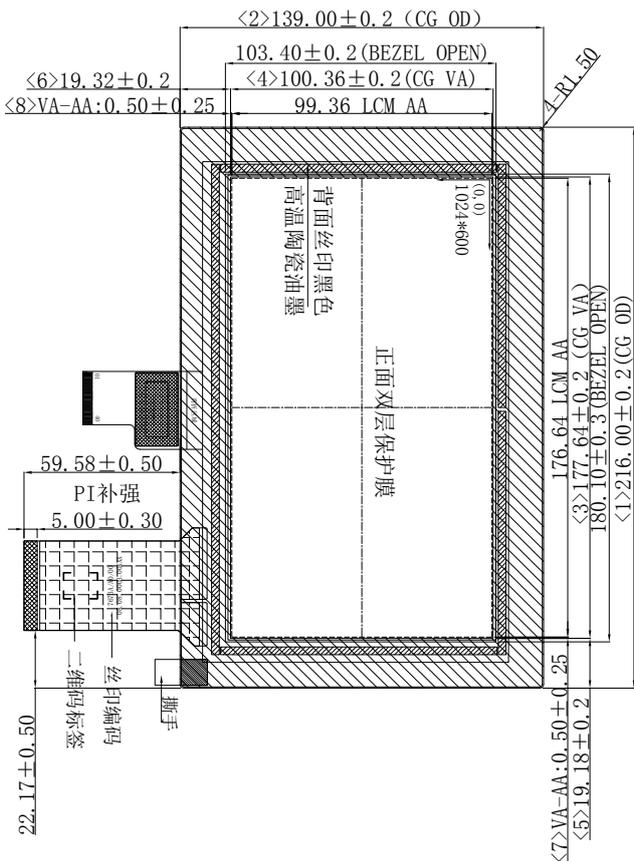


PIN	ASSIGNMENT
1	VCOM
2	VDD
3	VDD
4	NC
5	REST
6	STBRB
7	GND
8	RXTN-
9	RXTN+
10	GND
11	RXTN-
12	RXTN+
13	GND
14	RXTN-
15	RXTN+
16	GND
17	RXTN-
18	RXTN+
19	GND
20	RXTN-
21	RXTN+
22	GND
23	GND
24	NC
25	GND
26	NC
27	(NO DTMO)
28	SEIB
29	AVDD
30	GND
31	LED-
32	LED+
33	L/R
34	U/D
35	VGL
36	NC
37	NC
38	VGH
39	LED+
40	LED-

INTERFACE	LVDS Interface	MODEL NAME TFT Display Module	PART NO. H080VWS40E1K301
	FPC Connector		
VIEWING DIRECTION	6 0' CLOCK	CHMD	TOLERANCE UNLESS SPECIFIED
Gray Scale DIRECTION	12 0' CLOCK	PROJECTION 3RD ANGLE	SCALE: 1:1



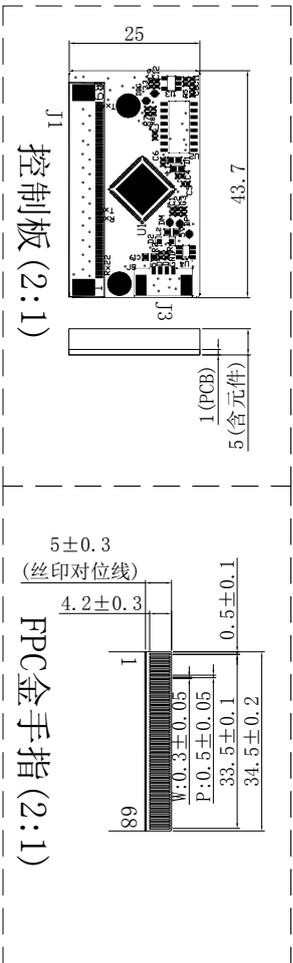
备注：贴合用抗UV的SCA制作



正视图

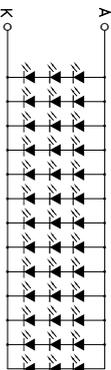
侧视图

(显示+ID+PAD) 30.0 ± 0.3



背视图

BACKLIGHT CIRCUIT DIAGRAM:



J3 (USB PINOUT)	PIN#	Assigment	J1	PIN#	Assigment
2-22	RX22-RX2	33	1	GND	L/R
23-24	RX1-RX0 (NC)	34	2	U/D	
25-26	GND	35	3	V/G	
27-39	TX0-TX12 (NC)	36	4	NC	
40-67	TX13-TX40	37	5	NC	
68	GND	38	6	V/G	
		39	7	LED+	
		40	8	LED-	

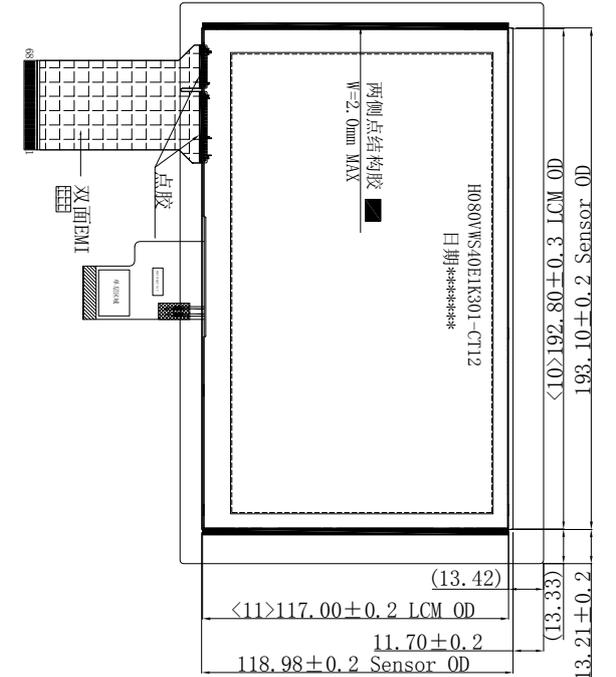
- LCM NOTES:
- DISPLAY TYPE: 8.0 INCH TFT / WHITE
  - BACKLIGHT: 39 CHIP WHITE LED, IN PARALLEL
  - OPERATING TEMP:  $-20^{\circ}C \sim +70^{\circ}C$
  - STORAGE TEMP:  $-30^{\circ}C \sim +80^{\circ}C$
  - RESOLUTION: 1024RGBx600
  - LCD IC: Source IC: HX8282-A02 Gate IC: HX8696-A01
  - Luminous instensity (9 AVG): Module: 1000cd/m<sup>2</sup> (TYP.)
  - Uniformity: 75% (Min)
  - "(")" reference dimension. "\*" critical dimension
  - Rohs Compliant

- CTP技术参数:
- 结构: GG+CL全黏, LCM型号: H080WS40EIK301
  - LENS材质: T3.0钢化玻璃, 高温烧结油墨, 表面硬度  $\geq 6H (750g)$
  - IC (COB): G19110H (RX15\*TX3)
  - 控制板尺寸: 云散TB6-C-ME-C4, USB接口, VDD工作电压5V
  - 透光率:  $\geq 86\%$
  - 工作环境:  $-20^{\circ}C \sim +70^{\circ}C$ ,  $\leq 90\%RH$
  - 储存环境:  $-30^{\circ}C \sim +80^{\circ}C$ ,  $\leq 90\%RH$
  - 未注尺寸按GD 1.1-3级, 未注公差按 $\pm 0.2mm$
  - 标 $\langle \rangle$ 尺寸为重点控制尺寸, 0内尺寸为参考尺寸
  - 所有材料须符合RoHS  包材指令  REACH  无卤素  其它.

INTERFACE	LVDS Interface	MODEL NAME	PART NO.
FPC Connector		TFT Display Module	H080WS40EIK301-CT12
VIEWING DIRECTION	6.0° CLOCK	REV.	A0
Gray Scale	12.0° CLOCK	SHEET OF	1/1
DIRECTION		TOLERANCE UNLESS SPECIFIED	$\pm 0.1$
		PROJECTION	3RD ANGLE
		UNIT	MM
		SCALE	1:1



结构胶



A0

2022.11.10

First Issue



**深圳市勋瑞光电科技有限公司**  
Xunrui photoelectric technology (shenzhen) CO.,LTD.

## 9 Packing

TBD



## 10. Precautions For Use of LCD modules

### 10.1 Handling Precautions

10.1.1. The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

10.1.2. If the display panel is damaged and the liquid crystal substance inside it leaks out, be sure not to get any in your mouth, if the substance comes into contact with your skin or clothes, promptly wash it off using soap and water.

10.1.3. Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

10.1.4. The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.

10.1.5. If the display surface is contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, moisten cloth with one of the following solvents:

- Isopropyl alcohol
- Ethyl alcohol

Solvents other than those mentioned above may damage the polarizer. Especially, do not use the following:

- Water
- Ketone
- Aromatic solvents

10.1.6. Do not attempt to disassemble the LCD Module.

10.1.7. If the logic circuit power is off, do not apply the input signals.

10.1.8. To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

10.1.8.1. Be sure to ground the body when handling the LCD Modules.

10.1.8.2. Tools required for assembly, such as soldering irons, must be properly ground.

10.1.8.3. To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.

10.1.8.4. The LCD Module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.

### 10.2 Storage Precautions

10.2.1. When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

10.2.2. The LCD modules should be stored under the storage temperature range If the LCD modules will be stored for a long time, the recommend condition is:

Temperature : 0℃ ~ 40℃      Relatively humidity: ≤80%

10.2.3. The LCD modules should be stored in the room without acid, alkali and harmful gas.

### 10.3 Transportation Precautions

The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.