深圳市思迪科科技有限公司
SHENZHEN CDTECH ELECTRONICS

Product Specification

Model Name	S101BWU32EP-FC39
Description	Standard LCD Module 10.1" WUXGA 1920(RGB)x1200 Dots
Date	2021/08/31
Version	1.0

Approved by/Date	**Check by/Date**	**Prepared by/Date**
ZHP 2021/08/31	HL 2021/08/31	ZWF 2021/08/31

Customer Approval	
Date	

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1. Record of Revision

Rev	Issued Date	Description	Editor
1.0	2021/08/31	First Release.	ZWF

2. General Specifications

Feature		Spec
Characteristics	Size	10.1 inch
	Resolution	1920(horizontal)*1200(Vertical)
	Interface	2Port - LVDS
	Connect type	Connector
	Technology type	a-Si
	Pixel pitch (mm)	0.11292(H)*0.11292(V)
	Pixel Configuration	R.G.B.-Stripe
	Display Mode	Normally Black
	LCD Driver IC	TBD
	Viewing Direction	ALL
Mechanical	LCM (W x H x D) (mm)	228.72*148.8*4.9
	Active Area(mm)	216.81 x135.50
	Weight (g)	TBD
	LED Numbers	45 LEDs

Note 1: Requirements on Environmental Protection: RoHs
Note 2: LCM weight tolerance: +/- 5%

3. Input/Output Terminals

No.	Symbol	Description	Note
1-2	VLED-	LED Cathode	
3-4	LED+	LED Anode	
5	NC	No connection	
6	GND	Ground	
7	ELV3P	EVEN + LVDS differential data input	
8	ELV3N	EVEN - LVDS differential data input	
9	GND	Ground	
10	ELV2P	EVEN + LVDS differential data input	
11	ELV2N	EVEN - LVDS differential data input	
12	GND	Ground	
13	ELVCLKP	EVEN + LVDS differential clock input	
14	ELVCLKN	EVEN - LVDS differential clock input	
15	GND	Ground	
16	ELV1P	EVEN + LVDS differential data input	
17	ELV1N	EVEN - LVDS differential data input	
18	GND	Ground	
19	ELV0P	EVEN + LVDS differential data input	
20	ELV0N	EVEN - LVDS differential data input	
21	GND	Ground	
22	OLV3P	Odd + LVDS differential data input	
23	OLV3N	Odd - LVDS differential data input	
24	GND	Ground	
25	OLV2P	Odd + LVDS differential data input	
26	OLV2N	Odd - LVDS differential data input	
27	GND	Ground	
28	OLVCLKP	Odd + LVDS differential clock input	
29	OLVCLKN	Odd - LVDS differential clock input	
30	GND	Ground	
31	OLV1P	Odd + LVDS differential data input	
32	OLV1N	Odd - LVDS differential data input	
33	GND	Ground	
34	OLV0P	Odd + LVDS differential data input	
35	OLV0N	Odd - LVDS differential data input	
36	GND	Ground	
37	I2C-SDA	Reserved for LCD manufacturer’ s use ,	

38	I2C-SCL	not connection	
39	VDD - OTP		
40	EEPEN	Not Connection	
41-45	VDD	Power supply VDD=3.3V (Typ.)	

CTP PIN-MAP

Pin	Signal	Description
1	USB_VDD5V	Power supply
2	DN-	Data- input
3	DP+	Data+ input
4	GND	Ground

4. Absolute Maximum Rating

Item	Symbol	MIN	MAX	Unit	Remark
Digital Supply Voltage	VDD	-0.3	3.9	V	
Operating Temperature	TOPR	-20	+70	℃	
Storage Temperature	TSTG	-30	+80	℃	

5.Electrical Characteristics

5.1 Driving TFT LCD Panel

Parameter		Symbol	Values			Unit	Notes
			Min.	Typ.	Max.		
Power Supply Voltage		VDD	3.0	3.3	3.6	V	
		VRP			300	mV	Ripple
Power Supply Current		IDD	-	300	360	mA	Note 1
Power Consumption		PLCD	-	1	1.2	W	
Rush current		IRUSH	-	-	3.0	A	Note 2
CMOS Interface	Input Voltage	VIH	2.7		3.3	V	
		VIL	0		0.5	V	
	Output Voltage	VOH	2.7		3.3	V	
		VOL	0		0.5	V	

Notes : 1. The supply voltage is measured and specified at the interface connector of LCM.
The current draw and power consumption specified is for VDD=3.3V, Frame rate f_V=60Hz and Clock frequency = 80MHz. Test Pattern of power supply current

5.2 CTP Electrical Characteristics

FPC Design	Item	Description	Remark
COF	IC solution on TP Model	IL2511	
	Touch Count Max	10 point	
	Display Resolution	1920*1200	
	Interface Type	USB	
	Origin of Coordinate	Top left corner	

Parameter	Min	Typ	Max	Unit
Interface Signal Voltage	-	3.3	-	V
Power Voltage	VDD	5.0	-	V

5.3 LED Driving Conditions

Item	Symbol	MIN	TYP	MAX	Unit	Remark
Forward Current	I_F	-	300	-	mA	
Forward Voltage	V_F	17.4	-	18.6	V	
Backlight Power consumption	W_{BL}	5.22	-	5.58	W	
LED Lifetime		-	30000	-	Hrs	

Note 1: Each LED: IF =20 mA, VF =5.8-6.2V.
Note 2: Optical performance should be evaluated at Ta=25℃ only.
Note 3: 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.

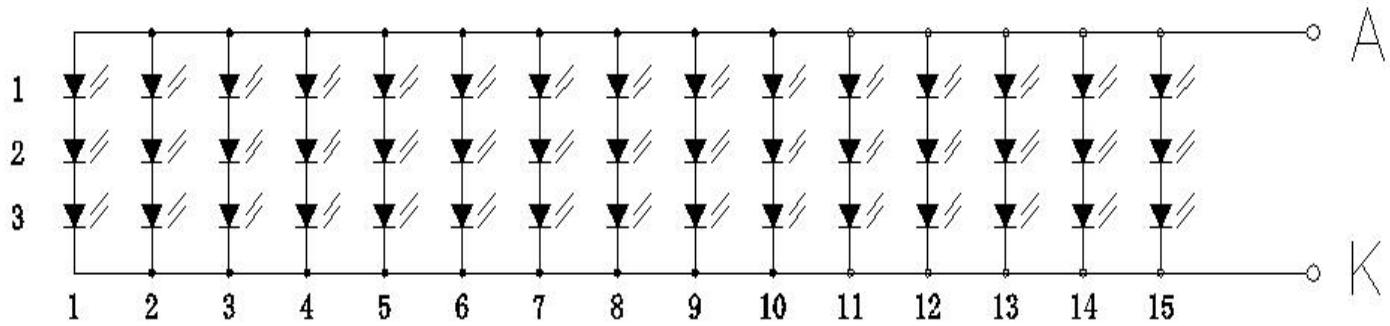
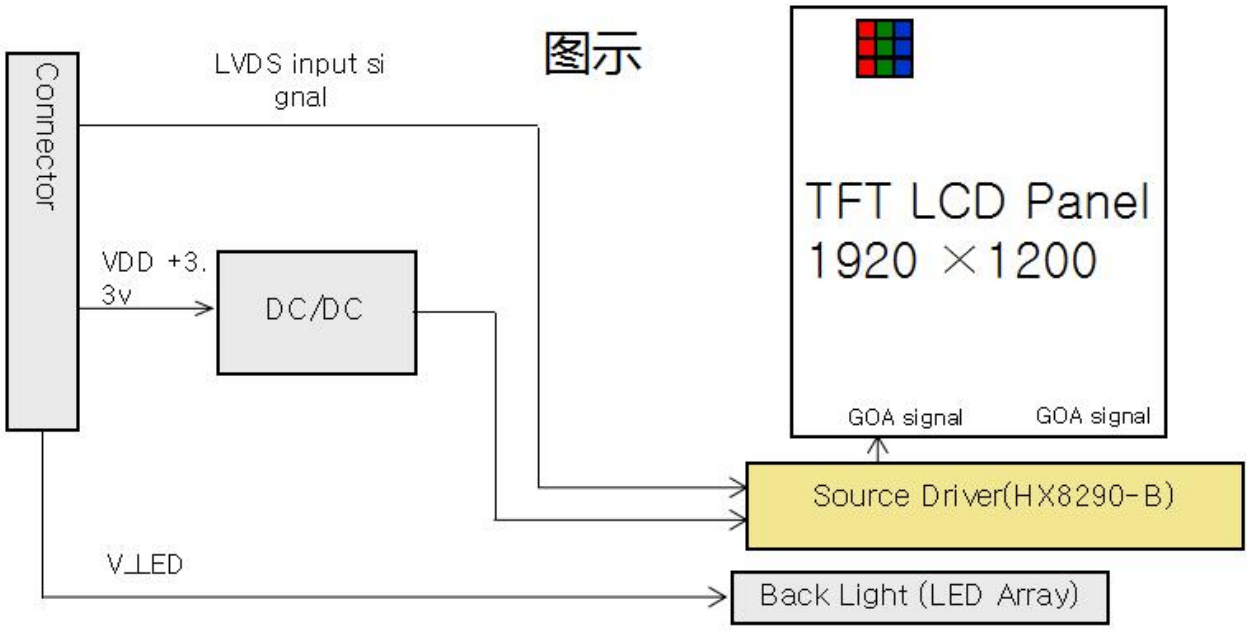


Figure: LED connection of backlight(Constant Current)

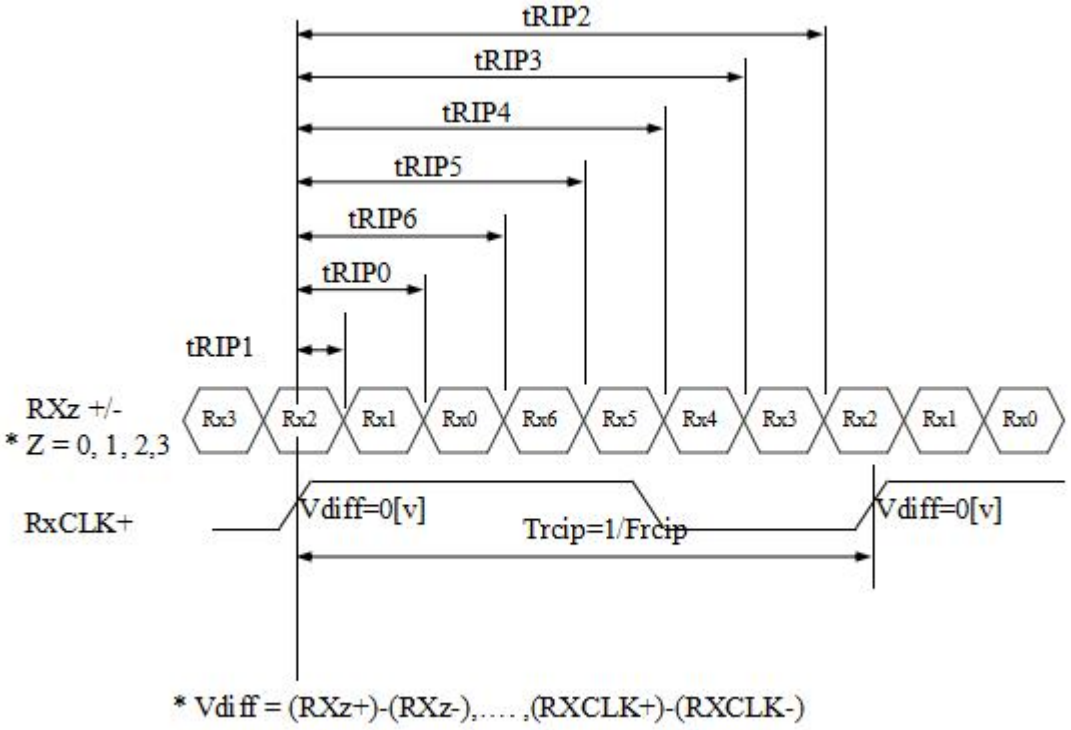
5.4 Block Diagram



6.Interface Timing

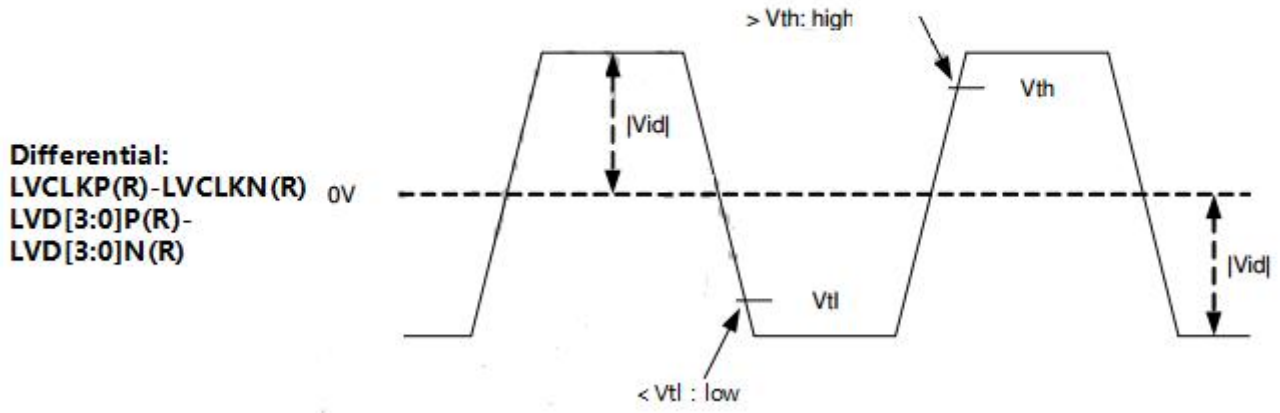
6.1 AC Electrical Characteristics

Item	Symbol	Min	Typ	Max	Unit	Remark
CLKfrequency	Frcip	20	-	85	MHZ	
CLKIN Period	tRCIP	11.76	-	-	nsec	
Input Data 0	tRIP1	tRCIP/7×(-0.2)	0.0	tRCIP/7×0.2	nsec	
Input Data 1	tRIP0	tRCIP/7×0.8	tRCIP/7	tRCIP/7×1.2	nsec	
Input Data 2	tRIP6	tRCIP/7×1.8	tRCIP/7×2	tRCIP/7×2.2	nsec	
Input Data 3	tRIP5	tRCIP/7×2.8	tRCIP/7×3	tRCIP/7×3.2	nsec	
Input Data 4	tRIP4	tRCIP/7×3.8	tRCIP/7×4	tRCIP/7×4.2	nsec	
Input Data 5	tRIP3	tRCIP/7×4.8	tRCIP/7×5	tRCIP/7×5.2	nsec	
Input Data 6	tRIP2	tRCIP/7×5.8	tRCIP/7×6	tRCIP/7×6.2	nsec	



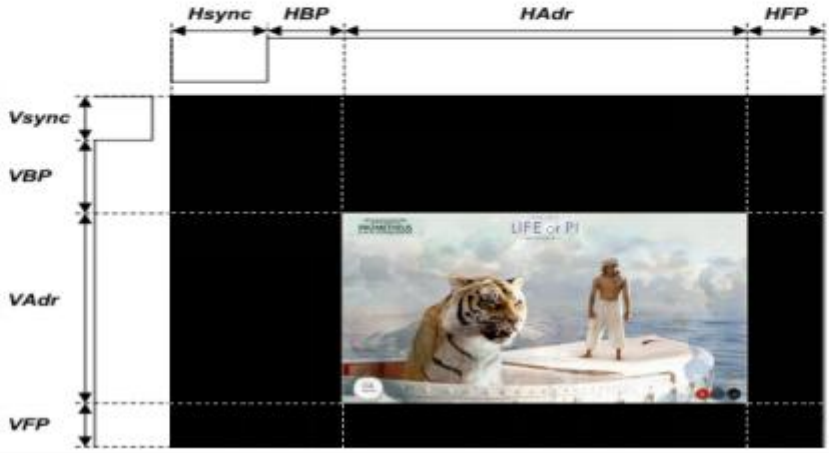
6.2 Timing table

Item	Symbol	Condition	MIN	TYP	MAX	Unit
Differential input high Threshold voltage	Vth	Vcm=1.2V	-	-	+0.1	V
Differential input low Threshold voltage	Vtl	-	-0.1	-	-	V
Differential input common Threshold voltage	Vcm	-	1	1.2	1.7-|Vid|/2	V
LVDS input voltage	Vinlv	-	0.7	-	1.7	V
Differential input voltage	|Vid|	-	0.35	-	0.6	V
Differential input leakage voltage	Ilvleak	-	-10	-	+10	uA

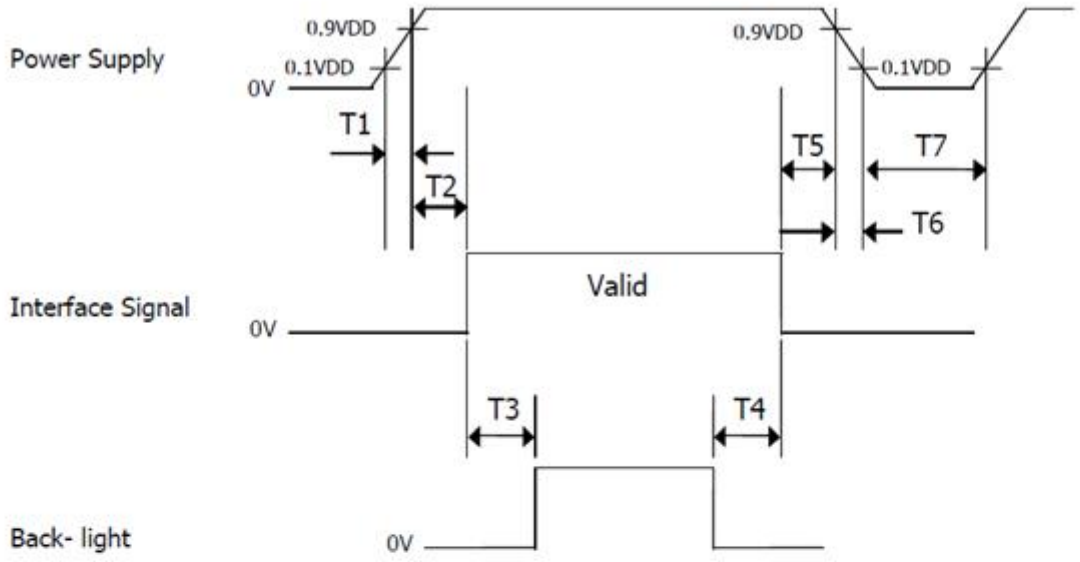


< Table5. LVDS Timing Parameter >

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK Frequency	Fdclk	74.5	77.56	85	MHz
Horizontal display area	Thd		960		DCLK
HSYNC period time	Th	989	1040	1248	DCLK
Horizontal Blank	THB	29	80	288	DCLK
HSYNC pulse width	Thp	2	10	255	DCLK
HSYNC back porch	thbp	3	6	255	DCLK
HSYNC Front porch	thfp	24	64	260	DCLK
Vertical display area	Tvd		1200		H
VSYNC period time	Tv	1243	1243	1560	H
Vertical Blank	TVB	43	43	360	H
VSYNC Pluse width	Tvp	4	4	20	H
VSYNC back porch	Tvbp	20	20	255	H
VSYNC front porch	Tvfp	19	19	260	H
Frequency	fV	-	60	-	Hz



6.3 Power ON/OFF Sequence



< Table8. Sequence Table >

Parameter	Values			Units
	Min	Typ	Max	
T1	0	-	10	ms
T2	0	-	50	ms
T3	200	-	-	ms
T4	500	-	-	ms
T5	0	-	50	ms
T6	0	-	10	ms
T7	500	-	-	ms

7. Optical Characteristics

Items		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark	Note
Response time		Tr+Tf	-	-	30	35	ms	FIG.1	Note4
Contrast Ratio		CR		700	900	-	-	FIG.2	Note1
Luminance Uniformity		YU		70	80		%		Note3
Surface luminance		LV	θ =0°	550	650	-	cd/m2	FIG.2	Note2
Viewing angle		θ_T	Center CR≥10	75	80	-	deg	FIG.3	Note6
		θ_B		75	80	-	deg	FIG.3	
		θ_L		75	80	-	deg	FIG.3	
		θ_R		75	80	-	deg	FIG.3	
Chromaticity	Red	R_X	θ =0° ∅=0° Ta=25°	0.594	0.644	0.694	-	FIG.2 CIE1931	Note5
		R_Y		0.294	0.344	0.394	-		
	Green	G_X		0.265	0.315	0.365	-		
		G_Y		0.582	0.632	0.682	-		
	Blue	B_X		0.107	0.157	0.207	-		
		B_Y		0.004	0.054	0.104	-		
	White	W_X		0.260	0.310	0.360	-		
		W_Y		0.270	0.320	0.370	-		

Note1. Definition of contrast ratio

Contrast ratio(Cr) is defined mathematically by the following formula. For more information see FIG.2.

$$\text{Contrast ratio} = \frac{\text{Luminance measured when LCD on the “White” state}}{\text{Luminance measured when LCD on the “Black” state}}$$

For contrast ratio, Surface Luminance, Luminance uniformity and CIE,the testing data is base on TOPCON’s BM-5 or BM-7 photo detector or compatible.

Note2. Definition of surface luminance.

Surface luminance is the luminance with all pixels displaying white. For more information see FIG.2.

Lv = Average Surface Luminance with all white pixels(P1,P2,P3, ...,Pn)

Note3. Definition of luminance uniformity

The luminance uniformity in surface luminance is determined by measuring luminance at each test position 1 through n, and then dividing the maximum luminance of n points luminance by minimum luminance of n points luminance.For more information see FIG.2.

$$YU = \frac{\text{Minimum surface luminance with all white pixels (P1,P2,P3,.....,Pn)}}{\text{Maximum surface luminance with all white pixels (P1,P2,P3,.....,Pn)}}$$

Note4. Definition of response time

The response time is defined as the LCD optical switching time interval between “White” state and

"Black"state.Rise time (Tr) is the time between photo detector output intensity changed from 90% to 10%. And fall time (Tf) is the time between photo detector output intensity changed from 10% to 90%.
For additional information see FIG1.

Note5. Definition of color chromaticity (CIE1931)

CIE (x,y) chromaticity,The x,y value is determined by screen active area center position P5.For more information see FIG.2.

Note6. Definition of viewing angle

Viewing angle is the angle at which the contrast ratio is greater than 10. Angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see FIG.3.

For viewing angle and response time testing, the testing data is base on Autronic-Melchers' s ConoScope or DMS series Instruments or compatible.

FIG.1.The definition of response Time

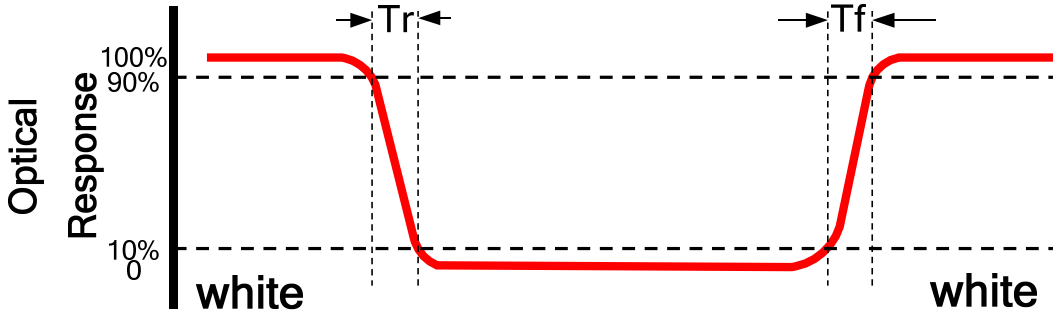


FIG.2. Measuring method for contrast ratio, surface luminance, luminance uniformity, CIE (x,y) chromaticity

Size : S≤5"(see Figure a) A : 5 mm B : 5 mm
H,V : Active area
Light spot size ∅=5mm(BM-5) or ∅=7.7mm (BM-7)50cm distance or compatible distance from the LCD surface to detector lens.
test spot position : see Figure a.
measurement instrument : TOPCON's luminance meter BM-5 or BM-7 or compatible (see Figure c).

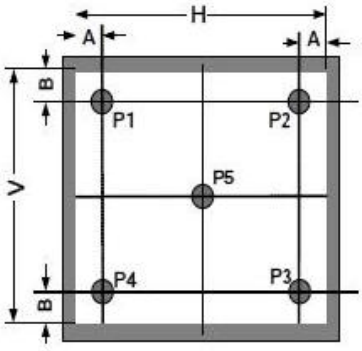


Figure a

Size : 5"＜S≤12.3"(see Figure b) H,V : Active area
Light spot size ∅=5mm(BM-5) or ∅=7.7mm (BM-7)50cm distance or compatible distance from the LCD surface to detector lens.
test spot position : see Figure b.
measurement instrument : TOPCON's luminance meter BM-5 or BM-7 or compatible (see Figure c).

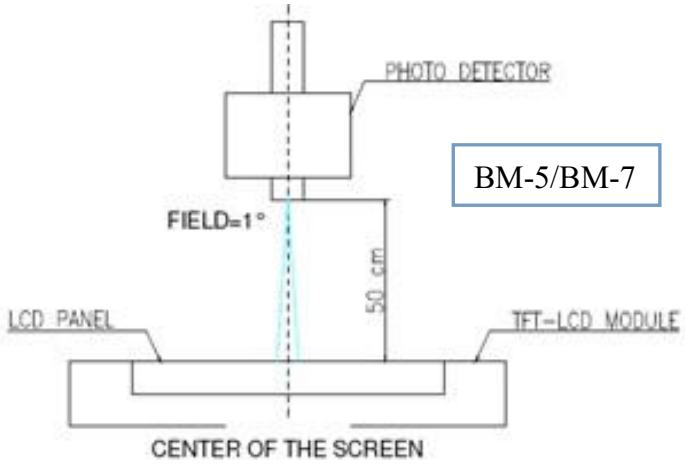


Figure c

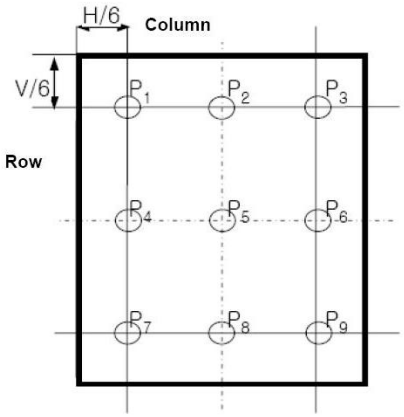
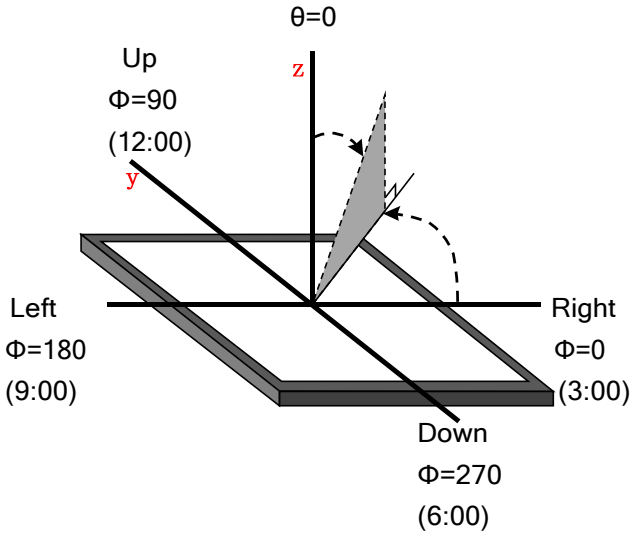


Figure b

FIG.3.The definition of viewing angle

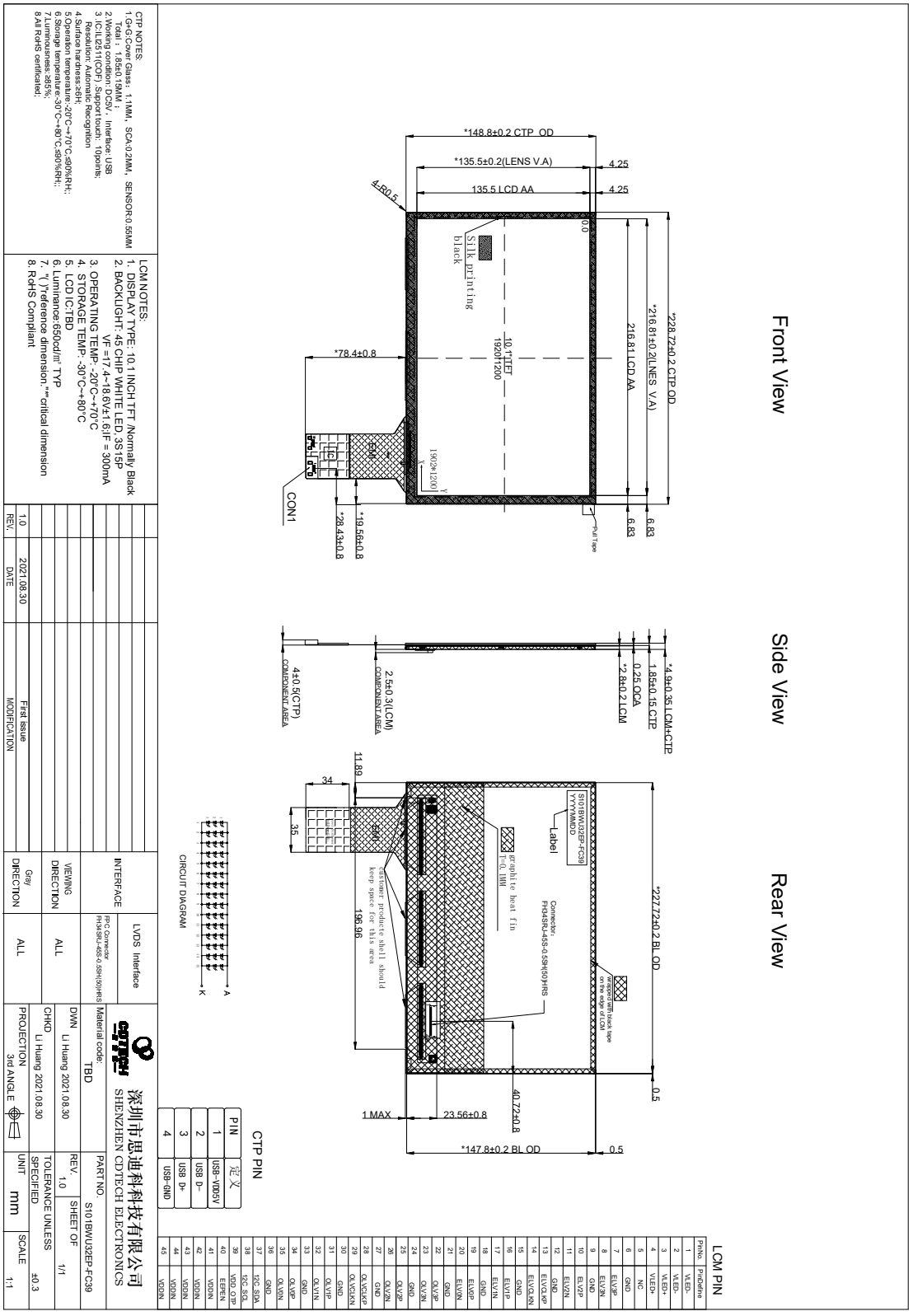


8. Environmental / Reliability Tests

No	Test Item	Condition	Remarks
1	High Temperature Operation	Ts= +70℃, 96hrs	IEC60068-2-1:2007 GB2423. 2-2008
2	Low Temperature Operation	Ta= -20℃, 96hrs	IEC60068-2-1:2007 GB2423.1-2008
3	High Temperature Storage	Ta= +80℃,96hrs	IEC60068-2-1:2007 GB2423. 2-2008
4	Low Temperature Storage	Ta= -30℃, 96hrs	IEC60068-2-1:2007 GB2423.1-2008
5	High Temperature & Humidity Operation	Ta= +60℃, 90% RH max,96 hours	IIEC60068-2-78:2001 GB/T2423.3-2006
6	Thermal Shock (Non-operation)	-30℃ 30 min ~ +80℃ 30 min Change time: 5min, 20 Cycle	Start with cold temperature, end with high temperature IEC60068-2-14:1984, GB2423.22-2002
7	ESD	C=150pF, R=330 Ω, 5 points/panel , Air:±8KV, 5 times Contact: ±4KV, 5 times (Environment: 15℃ ~ 35℃, 30% ~ 60%, 86Kpa ~ 106Kpa)	IEC61000-4-2:2001 GB/T17626.2-2006
8	Vibration (Non-operation)	Frequency range: 10~55Hz, Stroke: 1.5mm , Sweep: 10Hz~55Hz~10Hz 2 hours for each direction of X .Y. Z. (6 hours for total)	IEC60068-2-6:1982 GB/T2423.10-1995
9	Mechanical Shock (Non-operation)	Half Sine Wave 60G ,6ms,±X,±Y,±Z 3times for each direction	IEC60068-2-27:1987 GB/T2423.5—1995
10	Package Drop Test	Height: 60 cm, 1 corner, 3 edges, 6 surfaces	IEC60068-2-32:1990 GB/T2423.8-1995

Notes:
1. The test result shall be evaluated after the sample has been left at room temperature and humidity for 2 hours without load. No condensation shall be accepted. The sample will not be accepted if appear these defects:
1).Air bubble in the LCD;
2).Seal leak
3).Non-display
4).missing segments
5).Glass crack
6).CR reduction >40%
7).IDD increase >100%
8).Brightness reduction >50%
9).Color coordinate tolerance >0.05
2.≤7.0 inch：The size of sample is 5pcs；
　＞7.0 inch：The size of sample is 2pcs；
3. One test sample must complete each test item;
4.In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judge as a good part.
5.In the test of High Temperature Operation and High Temperature & Humidity Operation ,the operation temperature is the surface temperature of module.

9.Mechanical Drawing



CTP NOTES:
1.CP-Cover glass: Glass: 1.1MM, SCA:0.2MM, SENSOR:0.55MM
Total: 1.85±0.15MM;
2.Working condition: DC5V, Interface: USB
3.IC:ILI2511(COF), Support touch: 10points;
Resolution: Automatic Recognition
4.Surface hardness:≥6H;
5.Operation temperature:-20°C~+70°C,≤90%RH;
6.Storage temperature:-30°C~+80°C,≤90%RH;
7.Lumination:≥85%;
8.All RoHS certificated;

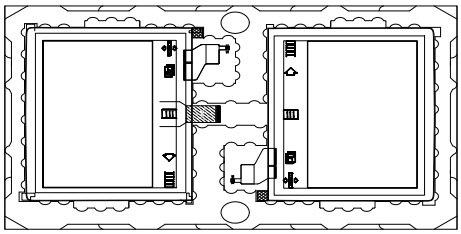
LCM NOTES:
1. DISPLAY TYPE: 10.1 INCH TFT /Normally Black
2. BACKLIGHT: 45 CHIP WHITE LED 3S15P
VF =17.4~18.6V±1.6/IF = 300mA
3. OPERATING TEMP: -20°C~+70°C
4. STORAGE TEMP: -30°C~+80°C
5. LCD IC:TBD
6. Luminance:650cd/㎡ TYP
7. "( )"reference dimension,"*" critical dimension
8. RoHS Compliant

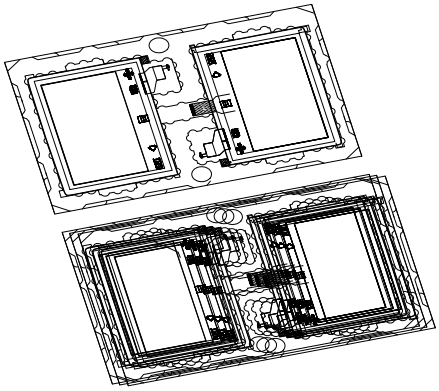
REV.	DATE	MODIFICATION	DIRECTION	INTERFACE	VIEWING DIRECTION	LVDS Interface
1.0	2021.08.30	First issue	Grey		ALL	ALL

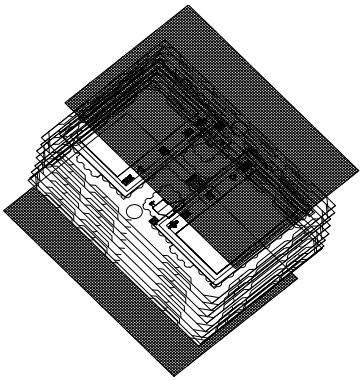
FPC Connector FH34SRJ-45S-0.5SH(50)HRS

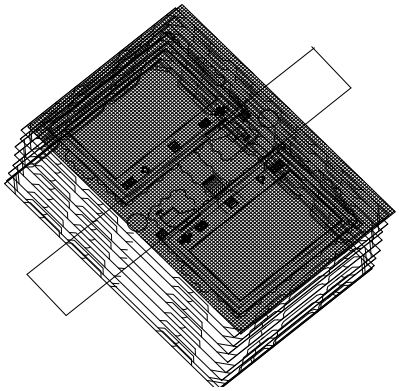
深圳市思迪科科技有限公司 SHENZHEN CDTECH ELECTRONICS			
Material code: TBD	DWN Li Huang 2021.08.30	CHKD Li Huang 2021.08.30	PROJECTION 3rd ANGLE
PART NO. S101BWU32EP-FC39	REV. 1.0	SHEET OF 1/1	
TOLERANCE UNLESS SPECIFIED	UNIT mm	SCALE 1:1	±0.3

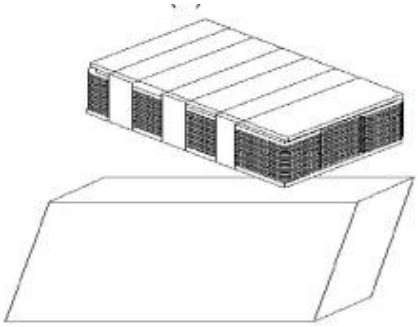
10.Packing

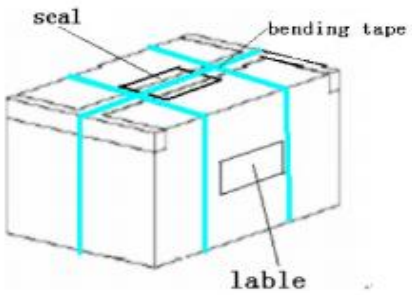












11. Precautions for Use of LCD modules

11.1 Handling Precautions

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

11.1.2. 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.

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

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

11.1.5. 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
- Ketene
- Aromatic solvents

11.1.6. Do not attempt to disassemble the LCD Module.

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

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

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

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

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

11.1.8.4. 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.

11.2 Storage Precautions

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

11.2.2. 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%

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

11.3 Transportation Precautions

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