TFT DISPLAY SPECIFICATION



WINSTAR Display Co.,Ltd.
華凌光電股份有限公司

Represented by:

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SPECIFICATION

CUSTOMER : _____

MODULE NO.: WF50-800480FL#0SP16-FC

APPROVED BY: (FOR CUSTOMER USE ONLY)	PCB VERSION: DATA:

SALES BY	APPROVED BY	CHECKED BY	PREPARED BY
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ISSUED DATE: 2023/03/15			

Winstar Display Co., LTD 華凌光電股份有限公司	MODLE NO：
RECORDS OF REVISION	**DOC. FIRST ISSUE**

VERSION	DATE	REVISED PAGE NO.	**SUMMARY**
0	2023/03/15		First issue

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2.Summary

TFT 5.0” is a is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This TFT LCD has a 5.0 inch diagonally measured active display area with 800x480 (800 horizontal by 480 vertical pixel) resolution.

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3.General Specifications

Item	Dimension	Unit
Size	5.0	inch
Dot Matrix	800× 3(RGB) × 480	dots
Module dimension	147.0(W) ×104.0(H) ×4.8	mm
Active area	108(W) ×64.8 (H)	mm
Pixel pitch	0.135(W) ×0.135(H)	mm
LCD type	TFT, Normally Black, Transmissive	
View Direction	80/80/80/80	
Aspect Ratio	5:3	
Driver IC	ST7262 or equivalent	
Interface	LVDS	
Backlight Type	LED ,Normally White	
CTP IC	ILI2511 or equivalent	
CTP Interface	I2C+USB	
CTP FW Version	V 6. 0. 0. 0. 5.28.0.1	
CTP Resolution	16384 * 9600	
With /Without TP	With CTP	
Surface	Glare	

*Color tone slight changed by temperature and driving voltage.

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4.Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	TOP	-20	—	+70	℃
Storage Temperature	TST	-30	—	+80	℃

Note: Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above

1. Temp. □60℃, 90% RH MAX. Temp.＞60℃, Absolute humidity shall be less than 90% RH at 60℃

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5.Electrical Characteristics

5.1. Typical Operation Conditions

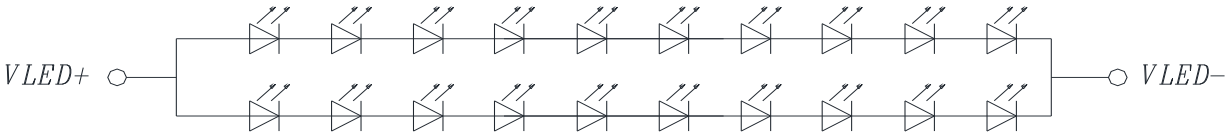
Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Power voltage	VCC	3.1	3.3	3.6	V	
Power voltage	VCCI	3.1	3.3	3.6	V	
Current for Driver(Black)	ICC	-	67.6	102	mA	Vcc=3.3V
Supply CTP	VDDT	4.4	5.0	5.5	V	USB type

5.2. Backlight Driving Conditions

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Voltage for LED backlight	VL	27.5	30	33	V	Note 1
Current for LED backlight	IL	--	40	--	mA	
LED life time	-	--	50,000	-	Hr	Note 2

Note 1: The LED Supply Voltage is defined by the number of LED at Ta=25℃ and I_L =20ma/pcs.

Note 2: The “LED life time” is defined as the module brightness decrease to 50% Original brightness at Ta=25℃ and I_L =20mA/pcs. The LED lifetime could be decreased if operating I_L is lager than 25mA/pcs.



CIRCUIT DIAGRAM(LED 2*10=20 DIES)

8.Optical Characteristics

Item		Symbol	Condition.	Min	Typ.	Max.	Unit	Remark
Response time		Tr+Tf	θ=0°、Φ=0°	-	30	40	.ms	Note 3
Contrast ratio		CR	At optimized viewing angle	800	1000	-	-	Note 4
Color Chromaticity	White	Wx	θ=0°、Φ=0	0.27	0.32	0.37		Note 2,6,7
		Wy		0.295	0.345	0.395		
Viewing angle	Hor.	ΘR	CR≧10	70	80	-	Deg.	Note 1
		ΘL		70	80	-		
	Ver.	ΦT		70	80	-		
		ΦB		70	80	-		
Brightness		-	-	650	750	-	cd/m^2	Center of display
Uniformity		(U)	-	75	-	-	%	Note5

Ta=25±2℃

Note 1: Definition of viewing angle range

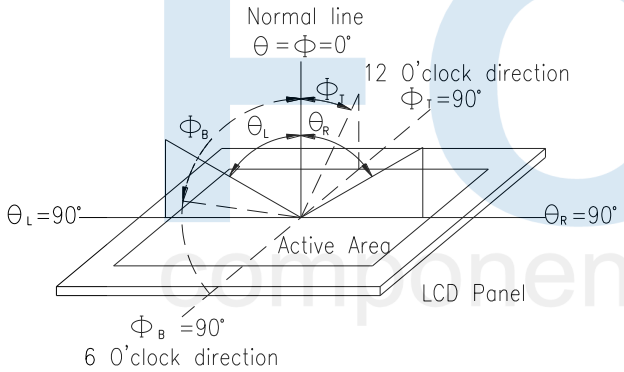


Fig. 8.1. Definition of viewing angle

Note 2: Test equipment setup:

After stabilizing and leaving the panel alone at a driven temperature for 10 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7or BM-5 luminance meter 1.0° field of view at a distance of 50cm and normal direction.

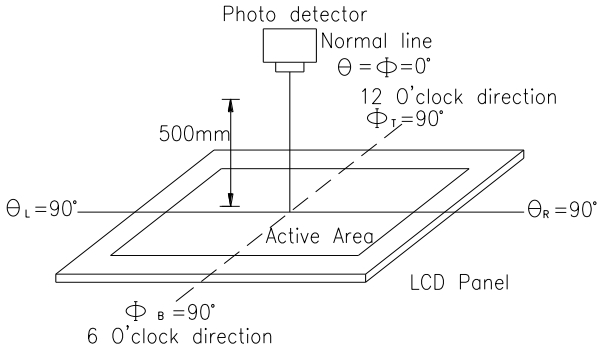


Fig. 8.2. Optical measurement system setup

Note 3: Definition of Response time:

9.Interface

9.1. LCM PIN Definition

FPC Connector is used for the module electronics interface.

Pin	Symbol	Function	Remark
1	NC	No connection	
2	VCC	Power voltage	
3	VCCI	Power supply for digital I/O pins.	
4	NC	No connection	
5	GRB	Global reset pin. When GRB is “L”, internal initialization procedure is executed	
6	DISP	Display on/off	
7	GND	Power Ground	
8	RXIN0-	LVDS input lane: RX0-/ RX0+ (RX0N/RX0P)	
9	RXIN0+		
10	GND	Power Ground	
11	RXIN1-	LVDS input lane: RX1-/ RX1+(RX1N/RX1P)	
12	RXIN1+		
13	GND	Power Ground	
14	RXIN2-	LVDS input lane: RX2-/ RX2+(RX2N/RX2P)	
15	RXIN2+		
16	GND	Power Ground	
17	RXCLKIN-	LVDS input lane, detail pin define please refer to LVDS Input Pin Mapping Table. (DCLKN/ DCLKP)	
18	RXCLKIN+		
19	GND	Power Ground	
20	RXIN3-	LVDS input lane: RX3-/ RX3+(RX3N/RX3P)	
21	RXIN3+		
22	GND	Power Ground	
23-24	NC	No connection	
25	FMT	LVDS_FMT sets LVDS data format. LVDS_FMT: L = VESA Mode (Default); H = JEIDA Mode LVDS_FMT is not used in RGB interface and should be connected to “L”.	
26-27	NC	No connection	

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<table>
<tr><td>28</td><td>SELB</td><td>SELB sets VSYNC polarity in RGB interface and sets LVDS 3- / 4- lane in LVDS interface.
<table>
<tr><th>MCU Type</th><th>VDPOL</th><th>Function Description</th></tr>
<tr><td rowspan="2">RGB interface</td><td>L</td><td>VSYNC polarity: positive</td></tr>
<tr><td>H</td><td>VSYNC polarity: negative(Default)</td></tr>
<tr><td rowspan="2">LVDS interface</td><td>L</td><td>LVDS 3 lane</td></tr>
<tr><td>H</td><td>LVDS 4 lane(Default)</td></tr>
</table></td><td></td></tr>
<tr><td>29</td><td>NC</td><td>No connection</td><td></td></tr>
<tr><td>30</td><td>GND</td><td>Power Ground</td><td></td></tr>
<tr><td>31-32</td><td>VLED-</td><td>Power for LED backlight (Cathode)</td><td></td></tr>
<tr><td>33</td><td>L/R</td><td>Horizontal scan direction control pin. This pin must be connected to “H” or “L” according to system application
<table>
<tr><th>HDIR</th><th>Function Description</th></tr>
<tr><td>L</td><td>From right to left</td></tr>
<tr><td>H</td><td>From left to right(Default)</td></tr>
</table></td><td></td></tr>
<tr><td>34</td><td>U/D</td><td>Vertical scan direction control pin. This pin must be connected to “H” or “L” according to system application.
<table>
<tr><th>VDIR</th><th>Function Description</th></tr>
<tr><td>L</td><td>From down to up.</td></tr>
<tr><td>H</td><td>From up to down. (Default)</td></tr>
</table></td><td></td></tr>
<tr><td>35</td><td>NC</td><td>No connection</td><td></td></tr>
<tr><td>36-37</td><td>GND</td><td>Power Ground</td><td></td></tr>
<tr><td>38</td><td>NC</td><td>No connection</td><td></td></tr>
<tr><td>39-40</td><td>VLED+</td><td>Power for LED backlight (Anode)</td><td></td></tr>
</table>

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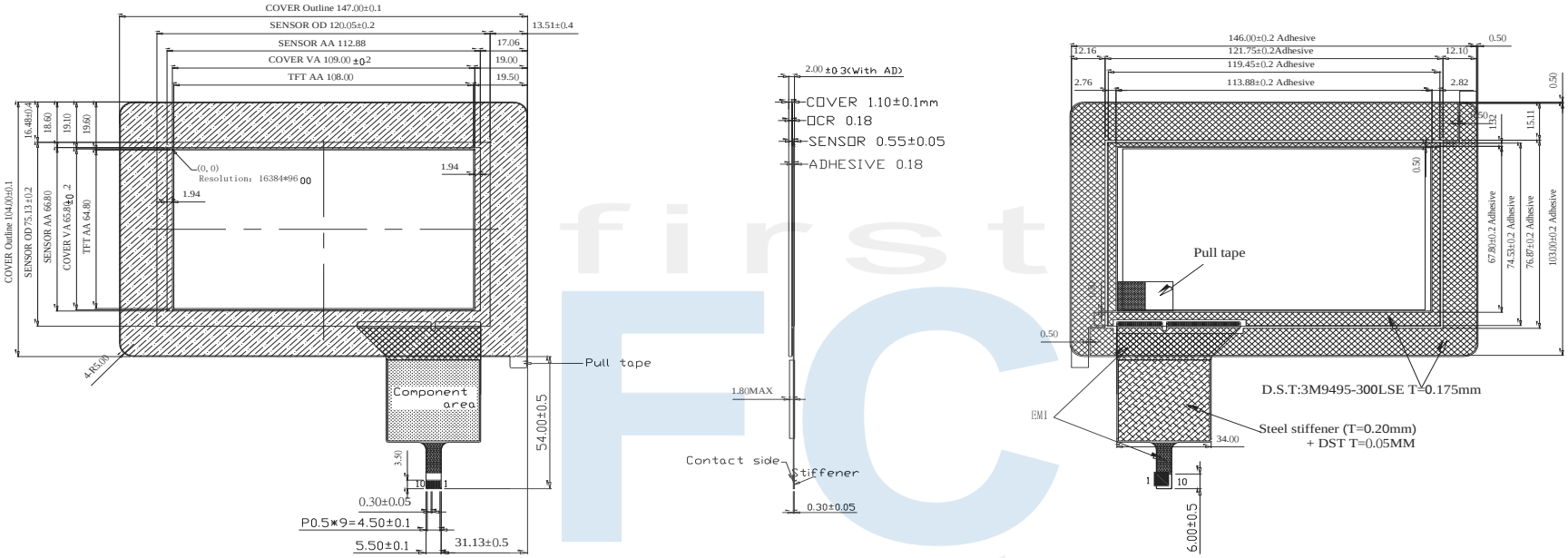
9.2. CTP PIN Definition

Pin	Symbol	Function	Remark
1	USB_VSS	System ground	
2	USB_VDD 5V	Power supply	
3	USB_D+	Data +	
4	USB_D-	Data -	
5	VSS	System ground	
6	SDA	I2C data input and output	
7	SCL	I2C clock input	
8	RST	External Reset, Low is active	
9	INT	External interrupt to the host	
10	VDDT 3.3	Power supply	

Note: Interface can support both USB and I2C,USB is main function

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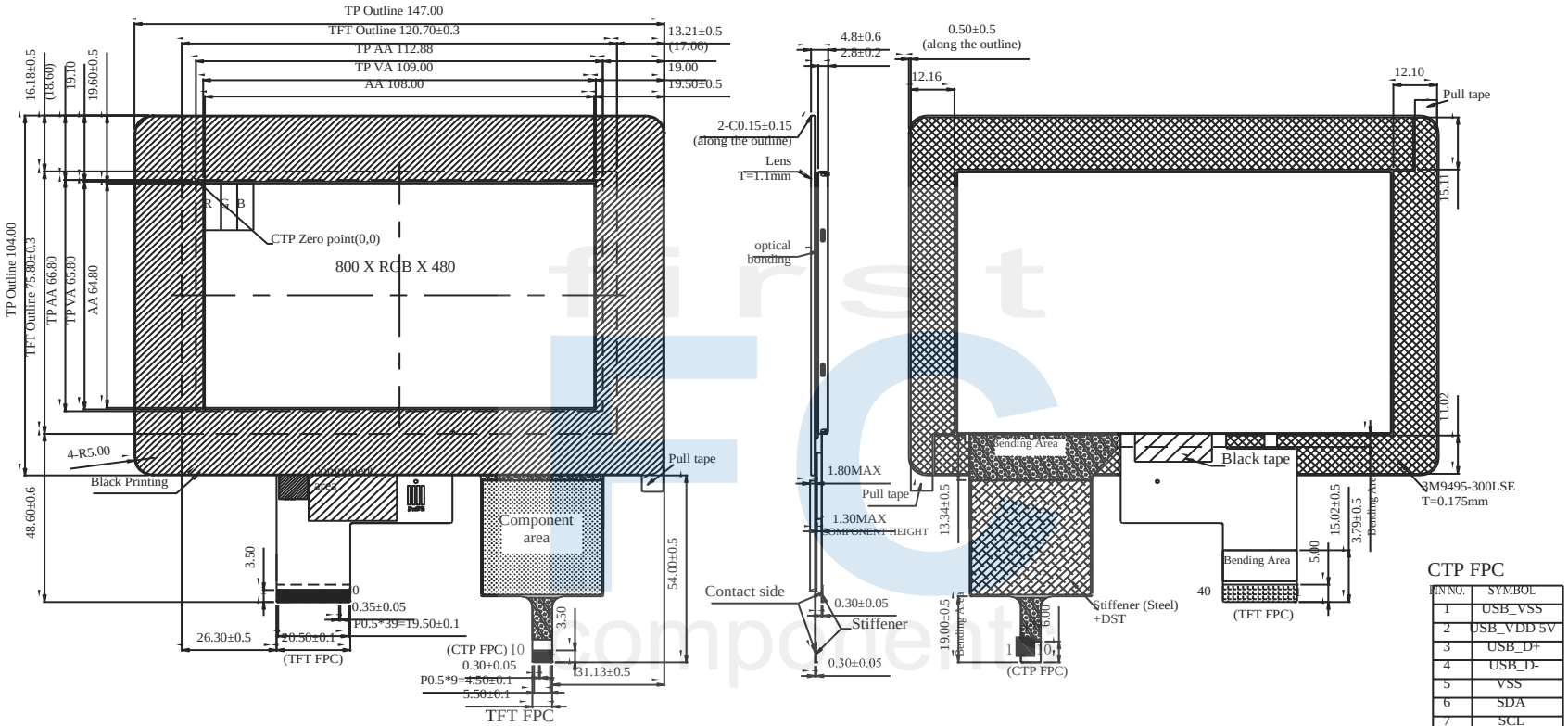
11.Touch Panel Information



PIN NO.	SYMBOL
1	USB_VSS
2	USB_VDD 5V
3	USB_D+
4	USB_D-
5	VSS
6	SDA
7	SCL
8	RST
9	INT
10	VDDT 3.3

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12.Contour Drawing



PIN NO.	SYMBOL	PIN NO.	SYMBOL	PIN NO.	SYMBOL	PIN NO.	SYMBOL
1	NC	11	RXIN1-	21	RXIN3+	31	VLED-
2	VCC	12	RXIN1+	22	GND	32	VLED-
3	VCCI	13	GND	23	NC	33	L/R
4	NC	14	RXIN2-	24	NC	34	U/D
5	GRB	15	RXIN2+	25	FMT	35	NC
6	DISP	16	GND	26	NC	36	GND
7	GND	17	RXCLKIN-	27	NC	37	GND
8	RXIN0-	18	RXCLKIN+	28	SELB	38	NC
9	RXIN0+	19	GND	29	NC	39	VLED+
10	GND	20	RXIN3-	30	GND	40	VLED+

CTP FPC

PIN NO.	SYMBOL
1	USB_VSS
2	USB_VDD 5V
3	USB_D+
4	USB_D-
5	VSS
6	SDA
7	SCL
8	RST
9	INT
10	VDDT 3.3

The non-specified tolerance of dimension is ±0.3 mm .