



Product Specification

Part Name: 8.0 inch TFT Display Module

Customer Part ID:

Topovision Part ID: TVT0800D4-CP

Ver: A

Customer:
Approved by

From: Topovision Technology Co., Ltd.
Approved by

Notes:

1. Please contact Topovision Technology Co., Ltd. before assigning your product based on this module specification
2. The information contained herein is presented merely to indicate the characteristics and performance of our products. No responsibility is assumed by Topovision Technology Co., Ltd. for any intellectual property claims or other problems that may result from application based on the module described herein.

Revision History

Rev.	Date	Contents	Written	Approved
A	2023/11/10	Preliminary Specification	MA	YUAN

Special Notes

Note1.	

1. Introduction

1.1 Scope of application

This specification applies to the LCD module that is supplied by Topovision Technology CO., LTD.

LCD specification: Dots 800xRGBx1280

As to basic specification of the driver IC, refer to the IC (JD9365DA-H3) specification and data book.

All material & processing of the LCD module should be Lead Free.

1.2 TFT features:

Structure: TFT PANNEL+IC +FPC+BL+CTP;

ALL Viewing Type LCD

800 dot-segment and 1280 dot-common outputs;

16.7M Color can be selected by software;

White LED back light;

4lane MIPI interface

1.3 Applications:

2. LCM General specification

ITEM	Standard value	Unit
LCD Type	Normally Black	--
Drive element	TFT active matrix	--
Number of pixels	800*3RGB(H)X1280(V)	Dots
Pixel arrangement	RGB Vertical Stripe	--
Pixel Pitch (W*H)	0.13455(H) X 0.13455(V)	mm
Active area	107.64(H) x 172.22(V)	mm
Viewing direction	ALL O'CLOCK	--
TFT Driver IC	JD9365DA-H	--
TFT interface	4lane MIPI interface	--
Approx. Weight	TBD	g
LCM Size(W*H*T)	114.60(W) ×184.10(H) ×2.45(T)	mm
LCM+CTP Size(W*H*T)	133.00(W) ×197.60(H) ×4.65(T)	mm
Touch structure	G+G	--
Touch Driver IC	GT911	--
Touch Interface	I2C	--

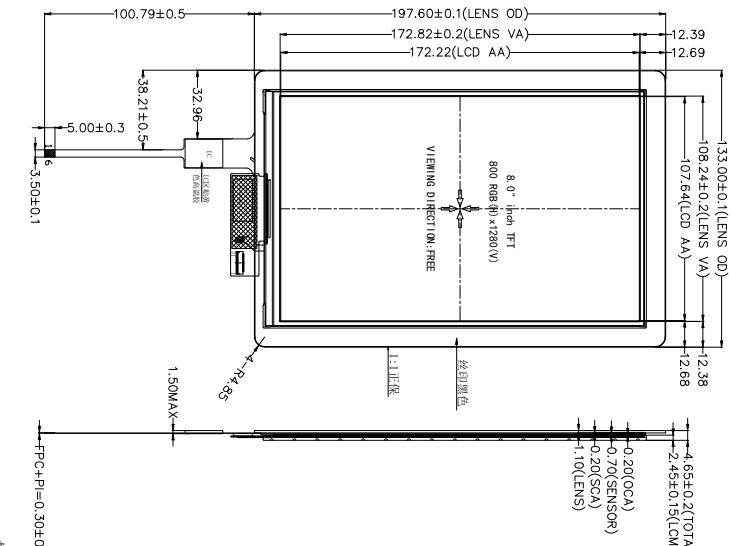
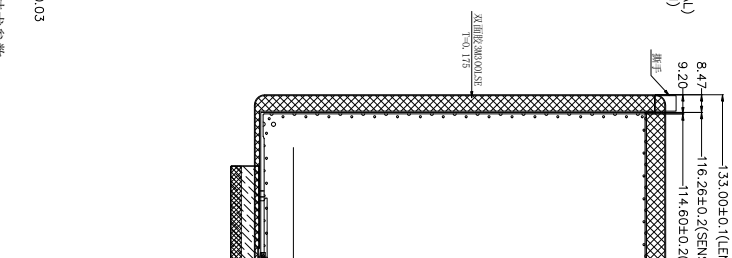
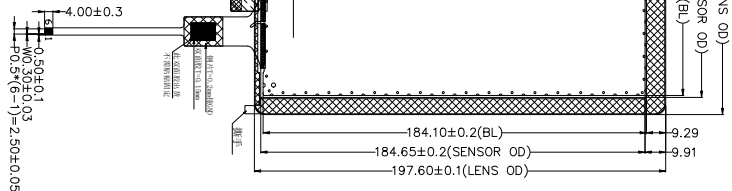
CUSTOMER APPL.	CUSTOMER	DATE	
DRAWN	SCALE	TITLE	LCM OUTLINE DIMENSION
DTG CHK	UNIT	MODEL	TV10800D4-CP
ENGR CHK	mm		
APPROVAL			
DWG NO		PAGE	1/1

 TOPOVISION DISPLAY

Pin No	Assignment
1	RST
2	VDD
3	GND
4	INT
5	SDA
6	SCL



FPC弯折示意图



- NOTES:
1. DISPLAY TYPE: 8.0", TFT LCD
 2. DISPLAY MODE: transmissive **Normally Black**
 3. VIEWING DIRECTION: **80/80/80(TYP)**
 4. DRIVER IC: J9D3650D-H3
 5. LCM (White) 9 AVG 1/6) :
Brightness: cd/m² (TYP)
Uniformity: 70%(MIN)
 6. BACK LIGHT: 24 chip white LEDs IF=60mA VF=2
 7. OPERATING TEMP: -20° C TO 70° C, STORAGE TEMP
 8. * Critical Parameter, () ref Parameter, [] Unspecified Tolerances: ±0.20mm
- Modification mark:
9. SUGGESTION: TP window size unilateral increase
10. REQUIREMENTS ENVIRONMENTAL PROTECTION: Rodis

- | | |
|--|--|
| 2. 工作电压: 2.8V~3.3 V
3. 透光率: ≥80%
4. 表面硬度: 6H
5. 工作温度: -20℃~+70℃, ≤90%RH
6. 储存环境温度: -30℃~+70℃, ≤90%RH
7. 未使用环境: ±0.2mm | 技术参数:
1. CG-1 TPO Glass+PFC
CG-1: 1mm
TPO Glass-0.7mm 导电玻璃
引线:PFC (PI/NH-0.5mm)
总厚度: 2.0±0.15mm(不含辅料)
IC:G191 |
|--|--|

技术参数:

1. CG+ITO Glass+FPC
CG:1.1mm
ITO Glass:0.7mm 导电玻璃
引线:FPC (PINCH=0.5mm)
总厚度:2.0±0.15mm(不含辅料)

2. 工作电压: 2.8V-3.3 V
3. 透光率: $\geq 80\%$

4. 表面硬度: 6H
5. 工作环境: $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$, $\leq 90\% \text{RH}$
6. 储存环境: $-30^{\circ}\text{C} \sim +70^{\circ}\text{C}$, $\leq 90\% \text{RH}$
7. 未注尺寸公差按 $\pm 0.2 \text{mm}$

Modification mark:

SUGGESTION: TP window size unilateral increase 0.3~0.5mm than LCM A.A

3. Absolute Maximum Rating

Characteristics	Symbol	Min.	Max.	Unit
LCM Operating Temperature	T _{OPR}	-20	+70	°C
LCM Storage Temperature	T _{STG}	-30	+70	°C
TP Operating Temperature & Humidity(20% ~ 90%RH)	T _{OPR}	-20	+70	°C
TP SStorage Temperature & Humidity(20% ~ 90%RH)	T _{STG}	-30	+70	°C
Humidity	RH	--	90	%

4. Electrical Characteristics

4.1 TFT DC Characteristics

Characteristics	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage for I/O	VDDIO	1.65	1.8	3.6	V
Supply Voltage for(DC/DC)	VDD	2.5	3.3	3.6	V

4.2 Back-Light Unit Characteristics

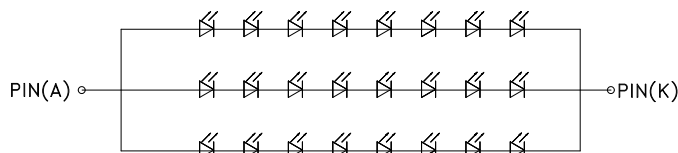
The back-light system is an edge-lighting type with 21 white LEDs. The characteristics of the back-light are shown in the following tables.

Characteristics	Symbol	Min.	Type	Max.	Unit	Notes
Forward Voltage	V _F	22.4	--	25.6	V	--
Forward current	I _F	--	60	--	mA	--
Luminance(With LCD+CTP)	L _v	--	800	--	cd/m ²	--
LED life time	N/A	--	30,000	--	Hr	Note 1

Note:

- (1) The “LED life time” is defined as the module brightness decrease to 50% of original brightness at I_L=20mA/LED. The LED life time could be decreased if operating I_L is larger than 25mA/LED.

Backlight circuit diagram shown in below:



5. Module Function Description

Pin No.	Symbol	LCM Functional	Notes
1-3	LEDA	Power supply for backlight anode input terminal.	
4	NC	NC	
5-8	LEDK	Power supply for backlight cathode input terminal.	
9	GND	Power Ground	
10	GND	Power Ground	
11	MIPI_D2+	High speed interface data differential signal input/output pins	
12	MIPI_D2-	High speed interface data differential signal input/output pins	
13	GND	Power Ground	
14	MIPI_D1+	MIPI-DSI Data differential signal input pins	
15	MIPI_D1-	High speed interface data differential signal input/output pins	
16	GND	Power Ground	
17	MIPI_CLK+	High speed interface clock differential signal input/output pins	
18	MIPI_CLK-	High speed interface clock differential signal input/output pins	
19	GND	Power Ground	
20	MIPI_D0+	High speed interface data differential signal input/output pins	
21	MIPI_D0-	High speed interface data differential signal input/output pins	
22	GND	Power Ground	
23	MIPI_D3+	High speed interface data differential signal input/output pins	
24	MIPI_D3-	High speed interface data differential signal input/output pins	
25	GND	Power Ground	
26	TE	Serves TE (Tearing Effect) pin on MPU interface	
27	RESET	Reset pin. Setting either pin low initializes the LSI	
28	ID(NC)	NC	
29	VDDIO/1.8V	power supply for the I/O circuit	
30-31	VDD/3.3V	power supply for DC/DC circuit	

CTP PIN Description:

Pin No.	Symbol	CTP Functional	Notes
1	CTP_RST	Touch panel reset	
2	CTP_VCC	Touch panel Power supply 2.8~3.3V	
3	GND	Power Ground	
4	CTP_INT	Touch panel interrupt output	
5	CTP_SDA	Touch panel I2C data	
6	CTP_SCL	Touch panel I2C clock	

6. Timing Characteristics

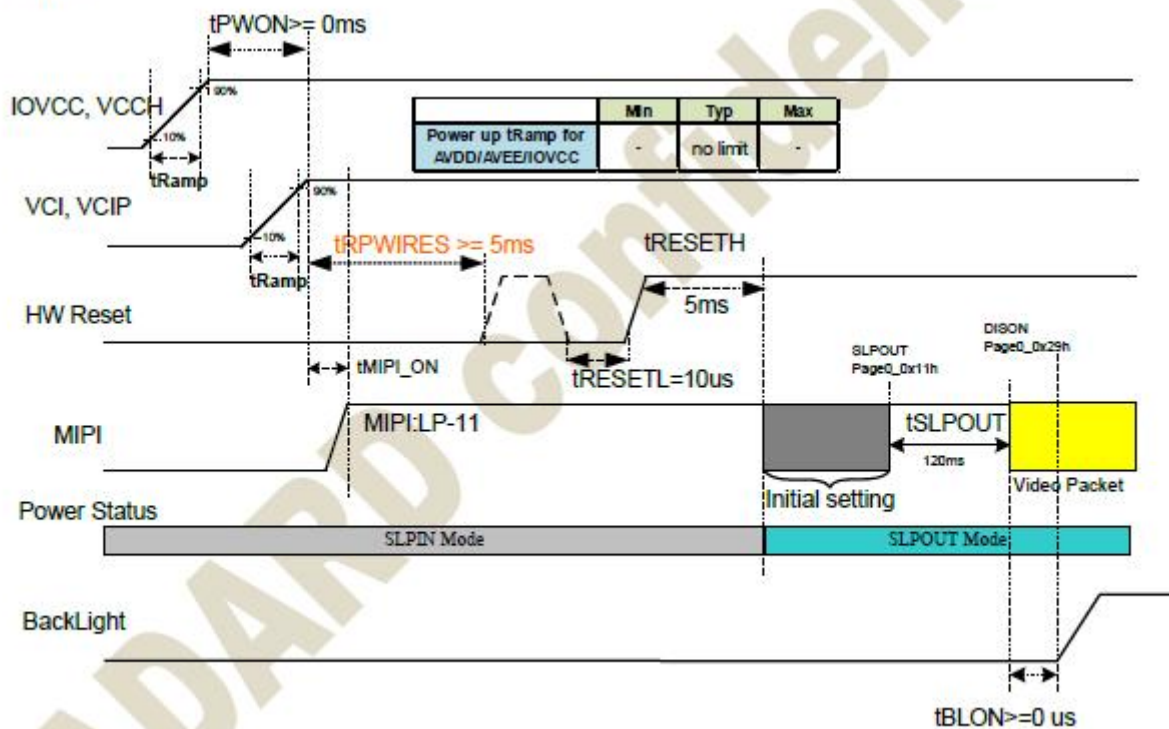
Power on sequence for differential power mode

Symbol	Min	Typ	Max	Unit	Remark
tRamp	-	no limit	-	us	
tPWON	0	-	-	ms	
tON1	0	-	-	ms	
tMIPI-ON	0	-	tRPWIRES	ms	
tRPWIRES	5	-	-	ms	
tRESETL	10	-	-	us	
tRESETH	5	-	-	ms	
tSLPOUT	120	-	-	ms	
tBLON	0	-	-	ms	

BOOSTM[1:0]=10 (Internal DC/DC power mode : Charge Pump, FP7721)

VCCD=IOVCC=VCCH=1.65V ~ 3.6V, VCI=VCIP=2.5V ~ 4.8V.

Power on:



Burst Mode Data Transmission

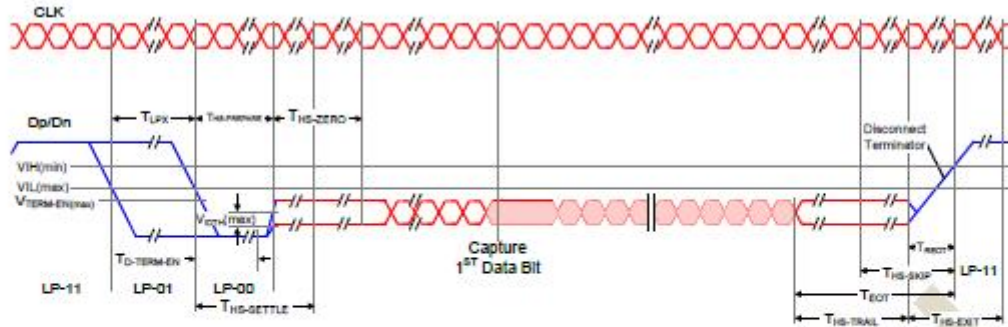


Figure 11.7: High-Speed Data Transmission in Bursts

Parameter	Description	Min	Typ	Max	UNIT
T_{LPX}	Transmitted length of any Low-Power state period	50	-	-	ns
$T_{HS-PREPARE}$	Time that the transmitter drives the Data Lane LP-00 Line state immediately before the HS-0 Line state starting the HS transmission	$40 + 4 \cdot UI$	-	$85 + 6 \cdot UI$	ns
$T_{HS-PREPARE} + T_{HS-ZERO}$	$T_{HS-PREPARE}$ + time that the transmitter drives the HS-0 state prior to transmitting the Sync sequence.	$145 + 10 \cdot UI$	-	-	ns
$T_{D-TERM-EN}$	Time for the Data Lane receiver to enable the HS line termination.	-	-	$35 + 4 \cdot UI$	ns
$T_{HS-SETTLE}$	Time interval during which the HS receiver shall ignore any Data Lane HS transitions.	$85 + 6 \cdot UI$	-	$145 + 10 \cdot UI$	ns
$T_{HS-TRAIL}$	Time that the transmitter drives the flipped differential state after last payload data bit of a HS transmission burst	$\max(n \cdot 8 \cdot UI, 60 + n \cdot 4 \cdot UI)$	-	-	ns
$T_{HS-EXIT}$	Time that the transmitter drives LP-11 following a HS burst.	100	-	-	ns



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Reset input timings

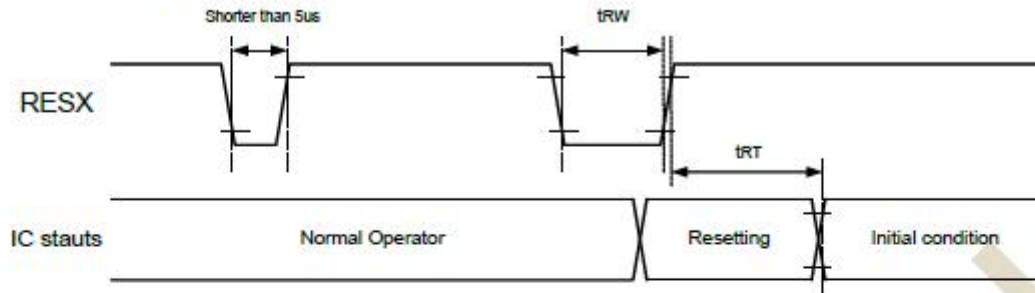


Figure 11.1: Reset input timings

Symbol	Parameter	Related pins	Min.	Max.	Unit
t_{RW}	Reset pulse width ⁽²⁾	RESX	10	-	μs
t_{RT}	Reset complete time ⁽³⁾	-	-	5 (Note 5)	ms
		-	-	120 (Note 6, 7)	ms

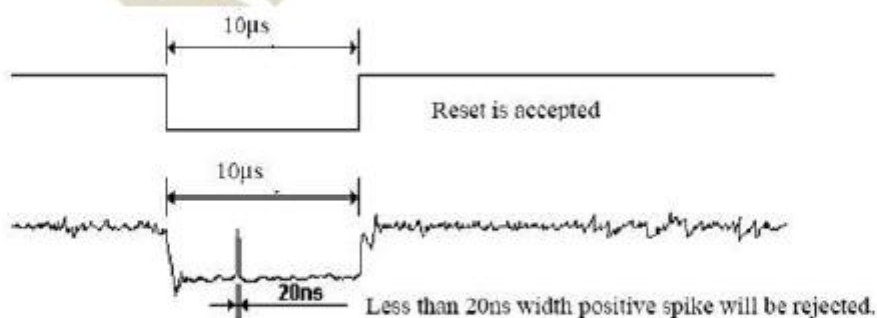
Note: (1) The reset complete time also required time for loading ID bytes from OTP to registers. This loading is done every time when there is HW reset cancel time (t_{RT}) within 5 ms after a rising edge of RESX.

(2) Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the table below.

RESX Pulse	Action
Shorter than 5 μs	Reset Rejected
Longer than 10 μs	Reset
Between 5 μs and 10 μs	Reset Start

(3) During the resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120 ms, when Reset Starts in Sleep Out –mode. The display remains the blank state in Sleep In –mode) and then returns to Default condition for H/W reset.

(4) Spike Rejection also applies during a valid reset pulse as shown below:



(5) When Reset is applied during Sleep In Mode.

(6) When Reset is applied during Sleep Out Mode.

(7) It is necessary to wait 5msec after releasing RESX before sending commands. Also Sleep Out command cannot be sent for 120msec.

(8) After Sleep Out Command, it is necessary to wait 120msec then send RESX.

Table 11.3: Reset timings

7. Optical Characteristics

< Table 11. Optical Specifications >

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle range	Horizontal	Θ_3	CR > 10	-	80	-	Deg.	WV-Pol Note 1
		Θ_9		-	80	-	Deg.	
	Vertical	Θ_{12}		-	80	-	Deg.	
		Θ_6		-	80	-	Deg.	
Luminance Contrast ratio		CR	$\Theta = 0^\circ$	900	1200	-		Note 2
Cell Transmittance		Tr		-	4.8	-	%	W/O APF
White Chromaticity		x_w		TYP. - 0.03	0.306	TYP. + 0.03		Note 3 Base on C Light
		y_w			0.360			
Reproduction of color (C light)	Red	R_x						
		R_y						
	Green	G_x						
		G_y						
	Blue	B_x						
		B_y						
Color Gamut (C light)					-	60%	-	%
Response Time (Rising + Falling)		T_{RT}	Ta= 25° C $\Theta = 0^\circ$	-	-	35	ms	Note 4

Note :

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 .
2. Contrast measurements shall be made at viewing angle of $\Theta = 0$ 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 . Luminance Contrast Ratio (CR) is defined mathematically.

$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

3. Transmittance is the Value with Polarizer.
4. The color chromaticity coordinates specified in Table 6 shall be calculated from the spectral data measured with all pixels first in red, green, blue and white. Calculation is based on C light.
5. The electro-optical response time measurements shall be made as FIGURE 6 by switching the "data" input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is T_r , and 90% to 10% is T_d .

8. Reliability Test Item

No.	Test Item	Test Condition	Notes
1	High Temp. Storage	+70°C / 96H	1. Functional test is OK. Missing Segment, short, unclear segment non-display, display abnormally and liquid crystal leakage un-allowed. 2. No low temperature bubbles, end seal loose and fall, frame rainbow.
2	Low Temp. Storage	-30°C / 96H	
3	High Temp. Operating	+60°C / 96H	
4	Low Temp. Operating	-20°C / 96H	
5	High Temperature / Humidity storage	50°C x 90%RH / 96H	
6	Thermal and cold shock	Static state, -10°C (30min) ~60°C (30min), 10 cycles	

9. Packing Method----TBD

- END -