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MDT0500D2SSC-HDMI1	800 x 480	HDMI Interface	TFT Module

Specification

Version: 1	Date: 06/07/2021

Revision

1	05/07/2021	First issue

Display Features	
Display Size	5.0”
Resolution	800 x 480
Orientation	Landscape
Appearance	RGB
Logic Voltage	5V
Interface	HDMI
Brightness	400 cd/m^2
Touchscreen	CTP
Module Size	120.70 x 75.80 x 16.10mm
Operating Temperature	-20°C ~ +70°C
Pinout	---
Pitch	---

RoHS compliant

Box Quantity	Weight / Display
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* - For full design functionality, please use this specification in conjunction with the TFP401 specification.(Provided Separately)

Display Accessories

Part Number	Description
MCIB-HDMI/HDMI	Male To Male HDMI Connector
MCIC-USB	USB-to-Micro USB interconnect cable.

Optional Variants

Appearances	Voltage

Summary

TFT 5.0” is a TN transmissive type color active matrix TFT liquid crystal display that use amorphous silicon TFT as switching devices. This module is a composed of a TFT_LCD module, It is usually designed for industrial application and this module follows RoHs,

General Specifications

- Size: 5.0 inch
- Dot Matrix: 800 × 3(RGB) × 480 dots
- Module dimension: 120.7 x 75.8 x 16.1 (Max) mm
- Active area: 108.0 x 64.8 mm
- Pixel pitch: 0.135 x 0.135 mm
- LCD type: TFT, Normally White, Transmissive
- View Direction: 12 o’clock
- Gray Scale Inversion Direction: 6 o’clock
- Aspect Ratio: 5:3
- Backlight Type: LED, Normally White
- TFT Interface: HDMI(only for DVI)
- TFT Controller IC: TFP401
- CTP IC: ILI2130 or Equivalent
- CTP Interface: USB
- CTP FW Version: 0x07.0x00.0x00.0x00.0xA1.0x25.0x50.0x00
- CTP Resolution: 16384*16384
- With /Without TP: With CTP
- Surface: Glare

*Color tone slight changed by temperature and driving voltage.

Interface

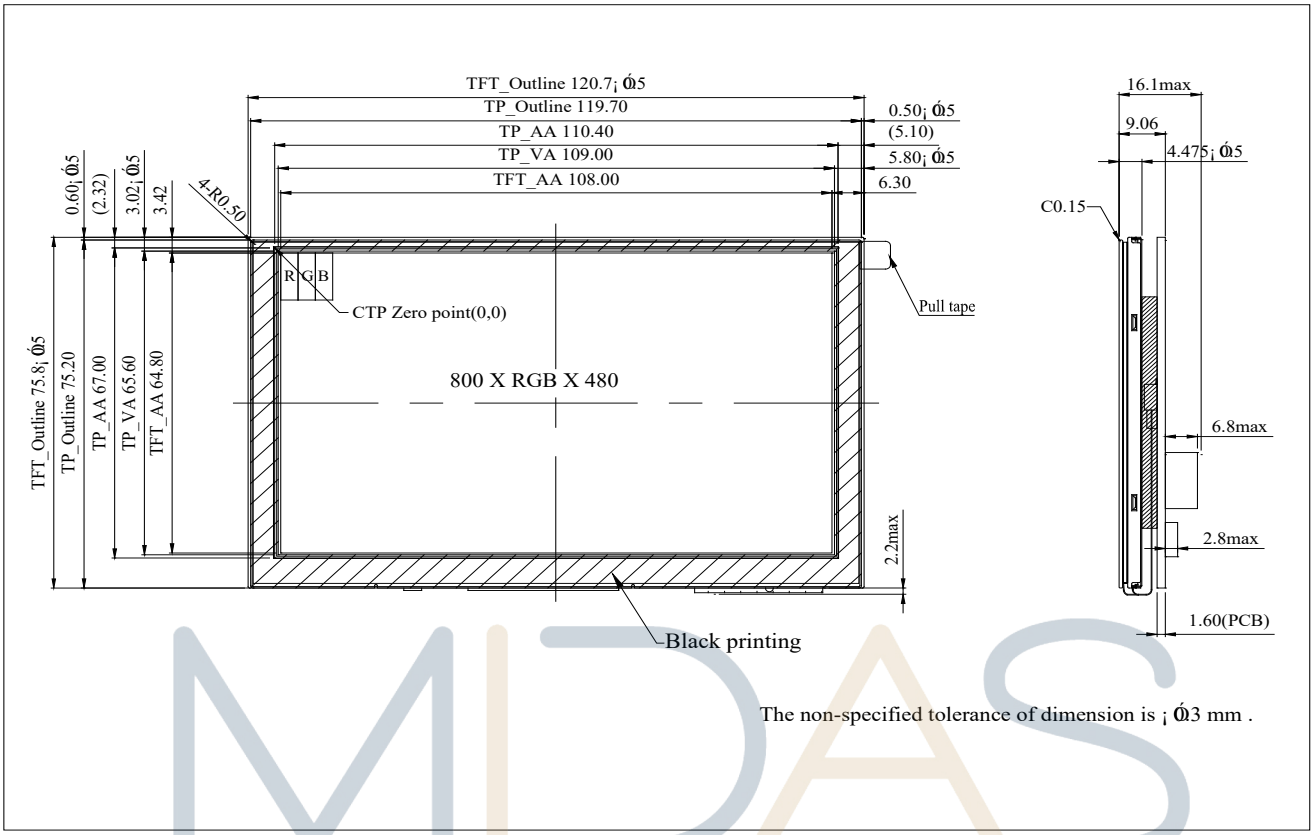
1. CTP USB PIN Definition(CON3)

Pin	Symbol	Function	Remark
1	5V	Power 5V	
2	D-	Data line -	
3	D+	Data line +	
4	NC	No connection	
5	GND	Power Ground	

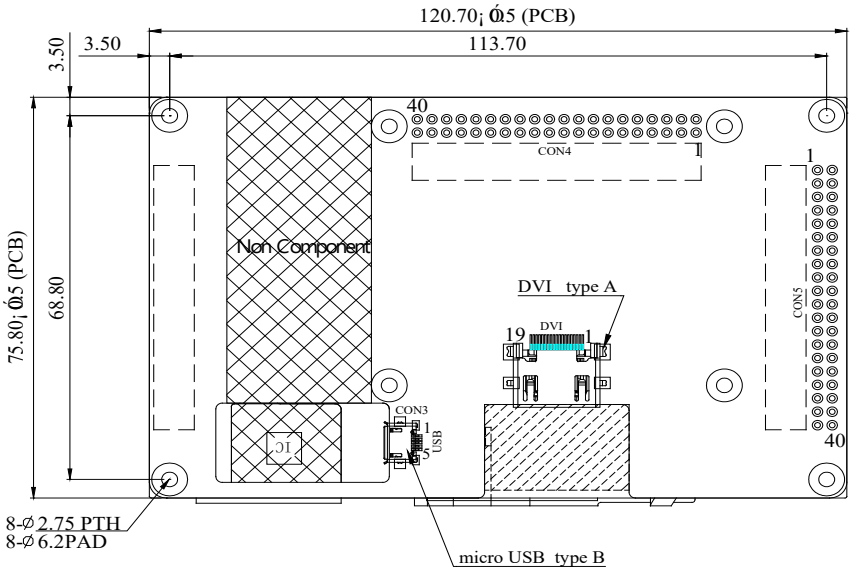
2. DVI

Pin	Symbol	Function	Remark
1	RX2+	TMDS DATA2 +	
2	GND	Ground	
3	RX2-	TMDS DATA2 -	
4	RX1+	TMDS DATA1 +	
5	GND	Ground	
6	RX1-	TMDS DATA1 -	
7	RX0+	TMDS DATA0 +	
8	GND	Ground	
9	RX0-	TMDS DATA0-	
10	RXC+	TMDS DATA CLOCK+	
11	GND	Ground	
12	RXC-	TMDS DATA CLOCK-	
13	NC	No connection	
14	NC	No connection	
15	SCL	Serial Clock	
16	SDA	Serial Data	
17	GND	Ground	
18	5V	Power 5V	
19	Detect	Hot plugging Detect	

Contour Drawing



The non-specified tolerance of dimension is ¡ Ó3 mm .



CON3

PIN NO.	SYMBOL
1	5V
2	D-
3	D+
4	NC
5	GND

DVI

PIN NO.	SYMBOL
1	RX2+
2	GND
3	RX2-
4	RX1+
5	GND
6	RX1-
7	RX0+
8	GND
9	RX0-
10	RXC+
11	GND
12	RXC-
13	NC
14	NC
15	SCL
16	SDA
17	GND
18	5V
19	Detect

The non-specified tolerance of dimension is ¡ Ó3 mm .

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℃

Electrical Characteristics

1. Operating conditions:

Item	Symbol	Condition	Min	Typ	Max	Unit	Remark
Supply Voltage For LCM	VDD	—	4.9	5	5.1	V	—
Supply Current For LCM	IDD	—	—	490	750	mA	Note 1
LED life time	—	—	—	50,000	—	Hr	Note 4

Note 1 : This value is test for VDD =5.0V , Ta=25℃ only

Note 2 : Please make sure to support enough current.

Note3 : CTP driver is base on the mouse driver program and through USB port connect to PC or embedded board.Can only support the single touch.

Note 4: The “LED life time” is defined as the module brightness decrease to 50% original brightness at Ta=25℃ and IL =60mA. The LED lifetime could be decreased if operating IL is larger than 60mA.

DC CHARATERISTICS

Parameter	Symbol	Rating			Unit	Condition
		Min	Typ	Max		
Low level input voltage	V_{IL}	0	-	0.3VDD	V	
High level input voltage	V_{IH}	0.7VDD	-	VDD	V	

Optical Characteristics

Item		Symbol	Condition.	Min	Typ.	Max.	Unit	Remark
Response time		Tr	θ=0°、Φ=0°	-	10	20	.ms	Note 3
		Tf		-	15	30	.ms	
Contrast ratio		CR	At optimized viewing angle	400	500	-	-	Note 4
Color Chromaticity	White	Wx	θ=0°、Φ=0	0.26	0.31	0.36		Note 2,6,7
		Wy		0.28	0.33	0.38		
Viewing angle (Gray Scale Inversion Direction)	Hor.	ΘR	CR≧10	60	70	-	Deg.	Note 1
		ΘL		60	70	-		
	Ver.	ΦT		40	50	-		
		ΦB		60	70	-		
Brightness		-	-	300	400	-	cd/m²	Center of display
Uniformity		(U)	-	75	-	-	%	Note5

Ta=25±2℃

Note 1: Definition of viewing angle range

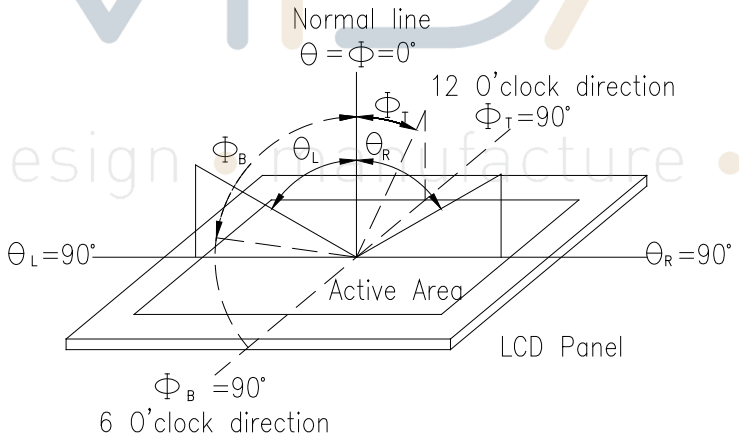


Fig. 9.1. Definition of viewing angle

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.

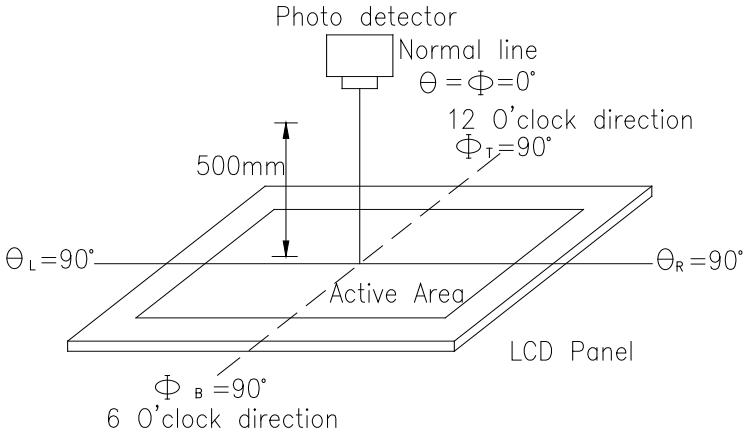
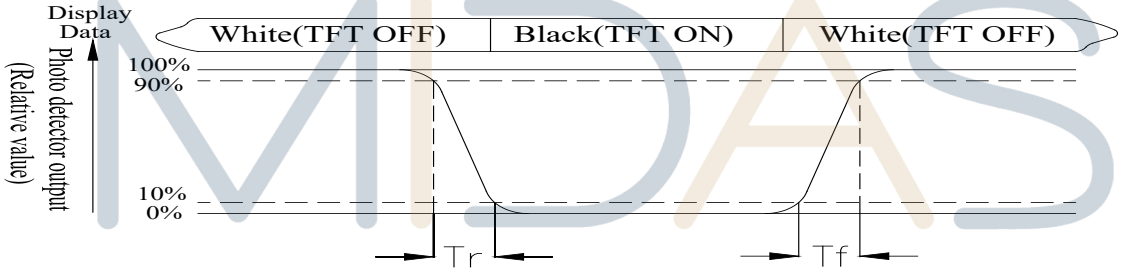


Fig. 9.2. Optical measurement system setup

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, 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%



Note 4: Definition of contrast ratio:
The contrast ratio is defined as the following expression.

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

Note 5: Definition of Luminance Uniformity
Active area is divided into 9 measuring areas (reference the picture in below). Every measuring point is placed at the center of each measuring area.
Luminance Uniformity (U) = Lmin/Lmax x100%
L = Active area length
W = Active area width

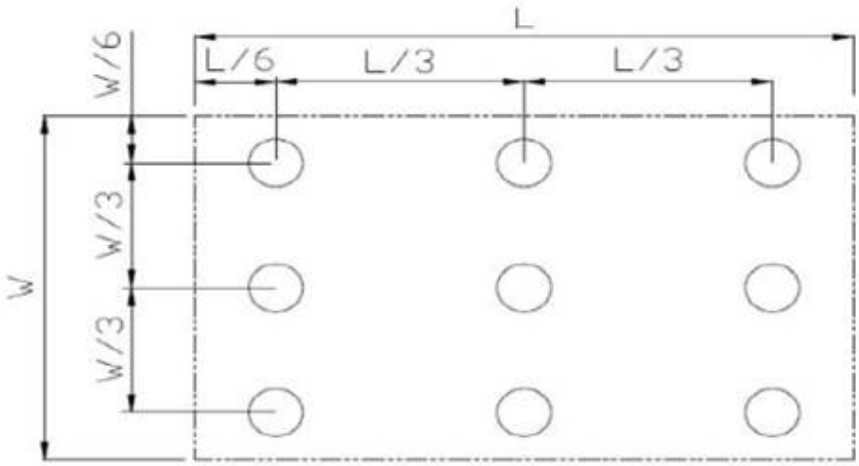


Fig9.3. . Definition of uniformity

Note 6: Definition of color chromaticity (CIE 1931)
Color coordinates measured at the center point of LCD

Note 7: Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

Reliability

Content of Reliability Test (Wide temperature, -20℃~70℃)

Environmental Test			
Test Item	**Content of Test**	**Test Condition**	**Note**
High Temperature storage	Endurance test applying the high storage temperature for a long time.	80℃ 200hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30℃ 200hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.	70℃ 200hrs	——
Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	-20℃ 200hrs	1
High Temperature/ Humidity Operation	The module should be allowed to stand at 60℃,90%RH max	60℃,90%RH 96hrs	1,2
Thermal shock resistance	The sample should be allowed stand the following 10 cycles of operation -20℃ 25℃ 70℃ 30min 5min 30min 1 cycle	-20℃/70℃ 10 cycles	——
Vibration test	Endurance test applying the vibration during transportation and using.	Total fixed amplitude : 1.5mm Vibration Frequency : 10~55Hz One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes	3
Static electricity test	Endurance test applying the electric stress to the terminal.	VS=±600V(contact) ,±800v(air), RS=330Ω CS=150pF 10 times	——

Note1: No dew condensation to be observed.

Note2: The function test shall be conducted after 4 hours storage at the normal Temperature and humidity after remove from the test chamber.

Note3: The packing have to including into the vibration testing.