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NEXT VISION DISPLAY

SPECIFICATION

CUSTOMER : _____

MODULE NO.: NT101-C001ML

Version	01
Engineer	
Date	2018/9/26

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Customer:
Approved by

NEXT VISION DISPLAY CO., LTD.

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Documents Revision History:

Rivision	Date	Description	Changed By
01	2018/9/26	New released	

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1. General Description

- The model NT101-C001ML is a Color TFT LCD supplied by Next Vision Display.
- This main Module has a 10.1 inch diagonally measured active display area with 1024(RGB)X600 resolution. Each pixel is divided into Red, Green and Blue sub-pixels and dots, which are arranged in vertical stripes.
- NT101-C001ML has been designed to apply the HDMI interface method that enables low power, high speed, and high contrast.

2. Mechanical Specification

ITEM	Standard Value	Unit
Display Mode	Normally White, Transmissive LCD	--
Module Dimension	235.00(W)*143.00(H)*5.15(T)	mm
Resolution	1024(RGB)X 600	Pixels
Active Display Area	222.72(W)×125.28(H)	mm
Viewing Direction	6 O'clock	--
Gray inversion direction	12 O'clock	
LED Backlight Color	White	--
Color Numbers	16.7M	
Interface	LCD：HDMI， CTP：USB	--
Support system	Win/7/Win8/Win10(plug and play)	--
	Android,Linux (configured in requests)	
Power Consumption	USB(300mA)+External 12V(450mA)	mA

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3. Absolute Max Ratings & Electrical Specification

- **Absolute Max Rating**

Item	Min.	Typ	Max	Unit	Remark
Operating temperature	-20	--	70	° C	
Storage temperature	-30	--	80	° C	
Humidity	--	--	90%	RH	@60° C

Note:

*1) Liquid Crystal driving voltage.

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

*2) Temp.>60℃, Absolute humidity shall be less than 90%RH at 60℃
*3) Temp.≤60℃, 90%RH MAX.
*4) The recommended operating conditions refer to a range in which operation of this product is guaranteed. Should this range is exceeded, the operation cannot be guaranteed even if the values may be without the absolute maximum ratings.

Accordingly, please make sure that the module is used within this range. And these current values are measured under the condition that all devices are stopped, each component is stable and logic signal is input.

■ TFT Electrical Specification

Parameter of DC characteristics	Symbol	Min.	Typ.	Max.	Unit
Power supply Voltage	USB1&USB2	-	5.0	-	V
Backlight Power	EX PWR	9	12	-	V
Power supply Current	USB1	-	300	-	mA
	USB2	-	450	-	mA
	EX PWR	-	320(9V)	-	mA
		-	250(12V)	-	mA

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Power supply for the LCD:

There are two kinds of the power supply for the LCD, the default is the first one.

(1)USB1+USB2 (for Backlight Power), USB1 is used for touch and some circuits except the backlight.
(2)USB1+EX PWR (for Backlight Power), USB1 is used for touch and some circuits except the backlight. When customers want to use this mode to power the LCD, you should contact us, because it must be add some components if you use this mode to power the LCD.

■ CTP Electrical Specification

Item	Specification	Unit	Remar
CTP type	Glass cover+glass sensor	--	
Resolution	1024x600	Pixel	
Surface Hardness	6H(min)	--	
Transparency ratio	86%(min)	--	
CTP interface	USB	--	
CTP support points	10 points(Max)	--	

CTP supply voltage	3.3	V	
CTP Sampling rate	20~100	Hz	

4. Optical Specification

Item	Symbol	**Condition**	Min.	Typ.	Max.	Unit	Note
Brightness	Bp	θ=0°	200	300	-	cd/m^2	
Uniformity	ΔBp	Φ=0°	70	75	-	%	
Viewing Angle	θ1 (Φ=90° or270°)	12 o'clock	50	60	-	Deg	Cr≥10
		6 o'clock	50	60	-		
	θ2 (Φ=0° or 180°)	9 o'clock	60	70	-		
		3 o'clock	60	70	-		
CIE	Wx	θ=0° Φ=0°	0.27	0.31	0.35		
	Wy		0.28	0.32	0.36		
Contrast Ratio	Cr		--	350		-	
Response Time	t_{on}		-	25	50	ms	
	t_{off}		-			ms	

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Note.1 These items are measured by C light.
Note.2 Definition of Viewing Angle(θ,ψ),refer to Fig.1 as below :

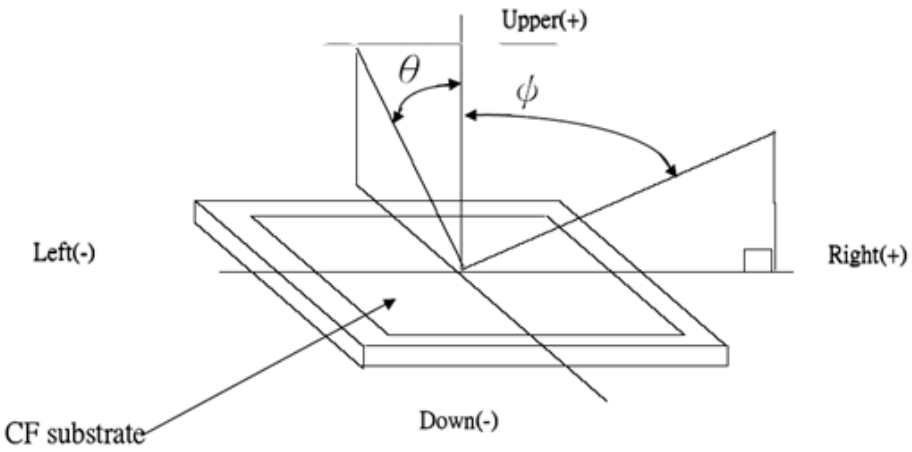
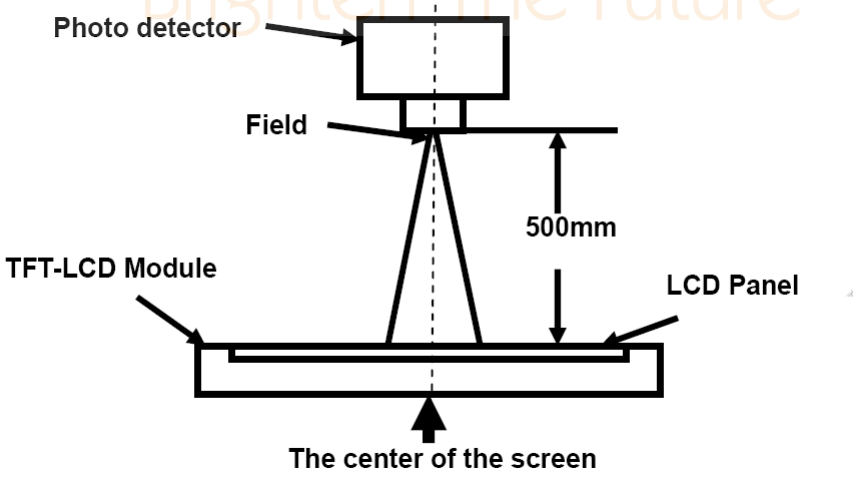


Fig.1 Definition of Viewing Angle

Note.3 Using LC+ EWV Polarizer+Corresponding Backlight, reference only, Measure device：BM-5A (TOPCON)，viewing cone= 1 °，I_L=20mA。

Electro-optical characteristics test method:

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Definition of contrast ratio

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

“White state “:The state is that the LCD should driven by Vwhite.

“Black state”: The state is that the LCD should driven by Vblack.

Vwhite: To be determined

Vblack: To be determined.

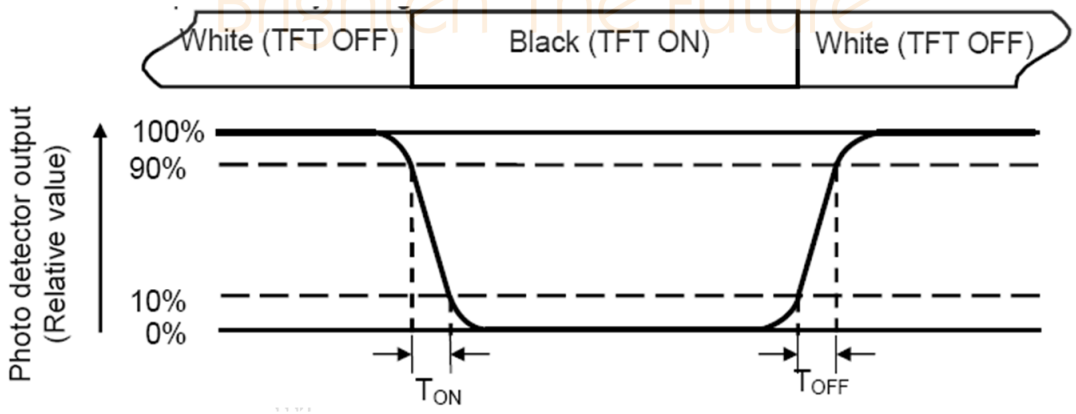
Definition of Response Time:

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

90% to 10%. And fall time (TOFF) is the time between photo detector output intensity changed from10% to 90%.

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Definition of color chromaticity (CIE1931)

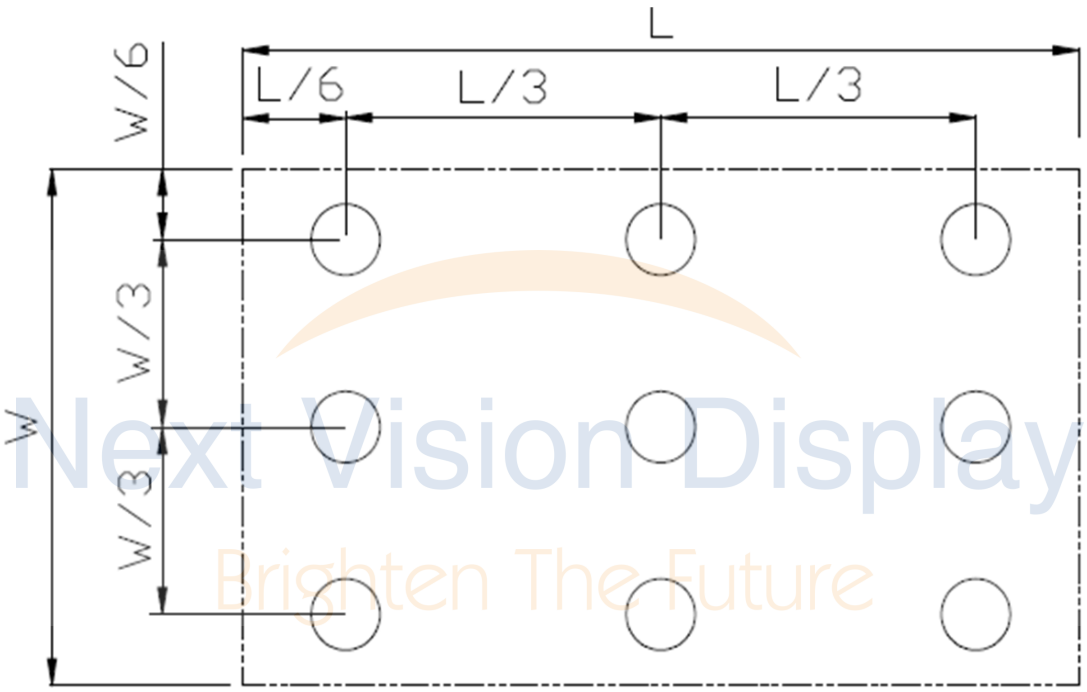
Color coordinates measured at center point of LCD

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) = Lmin/ Lmax

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

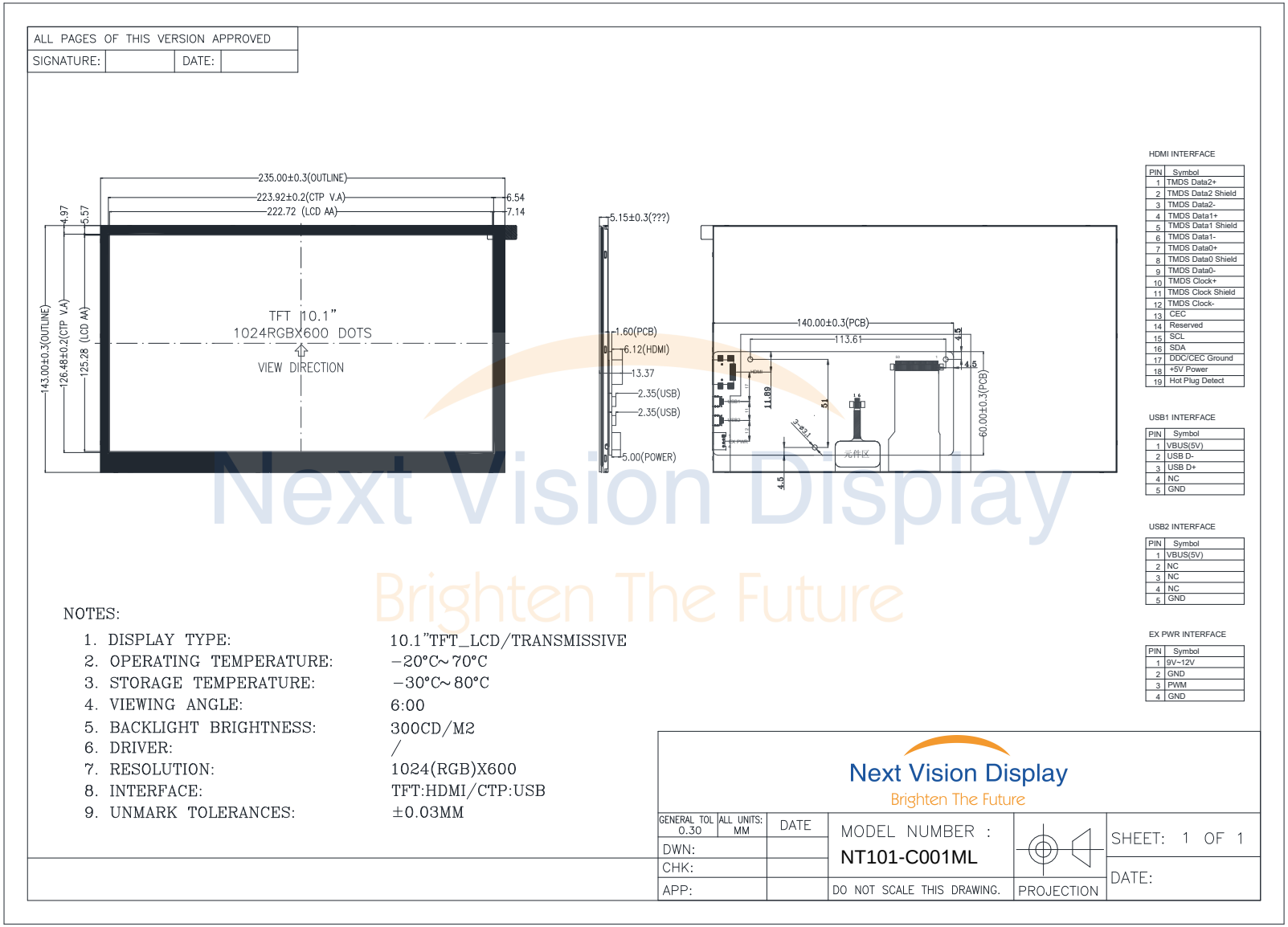


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Lmax: The measured maximum luminance of all measurement position.

Lmin: The measured minimum luminance of all measurement position.

5. Mechanical Diagram



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6. Interface Pin Connections

6.1 HDMI interface：

NO.	Symbol	DESCRIPTION
1	TMDS Data2+	Positive side of channel 2 TMDS low-voltage signal differential input pair
2	TMDS Data2 Shield	Ground
3	TMDS Data2-	Negative side of channel 2 TMDS low-voltage signal differential input pair
4	TMDS Data1+	Positive side of channel 1 TMDS low-voltage signal differential input pair
5	TMDS Data1 Shield	Ground
6	TMDS Data1-	Negative side of channel 1 TMDS low-voltage signal differential input pair
7	TMDS Data0+	Positive side of channel 0 TMDS low-voltage signal differential input pair
8	TMDS Data0 Shield	Ground
9	TMDS Data0-	Negative side of channel 0 TMDS low-voltage signal differential input pair
10	TMDS Clock+	Positive side of reference clock. TMDS low-voltage signal differential input pair
11	TMDS Clock Shield	Ground
12	TMDS Clock-	Negative side of reference clock. TMDS low-voltage signal differential input pair
13	CEC	No Connection
14	Reserved(N.C.)	No Connection
15	SCL	DDC SCL
16	SDA	DDC SDA
17	DDC/CEC Ground	Ground
18	+5V Power	+5V Power
19	Hot Plug Detect	Hot Plug Detect

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6.2 USB1 interface：

NO.	Symbol	DESCRIPTION
1	VUSB	USB Power(5V)
2	D-	USB Data-
3	D+	USB Data+
4	NC	No connection
5	GND	Power Ground

6.3 USB2 interface：

NO.	Symbol	DESCRIPTION
1	VUSB	USB Power(5V)
2~4	NC	No connection
5	GND	Power Ground

6.4 EX PWR Interface Description：

NO.	Symbol	DESCRIPTION
1	9V~12V	External power input(9V~12V)
2	GND	Power Ground
3	PWM(EN)	(1)Backlight On/Off Control Input. A high input at EN turns on the converter, and a low input turns it off. The EN pin cannot be left floating. (2)You should add a PWM signal to this pin when you need to adjust the brightness of the LCD. The frequency of the PWM is from 100Hz to 1000Hz. The voltage of the PWM signal is 3.3V.
4	GND	Power Ground

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Application Note:

(1)The EX PWR interface is not used default, when you want to use this port, you should contact our technicians.

(2)If the customer does not have additional GPIO to control the backlight, then must be connect a resistance to R41(0 ohm) on the PCB.