

## Description

The specification is model MP015129 is a colour active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This model is composed of a TFT LCD panel, a driving circuit, a backlight system. This TFT LCD has a 9.0 (16:9) inch diagonally measured active display area with WSVGA (1024 horizontal by 600 vertical pixels) resolution.

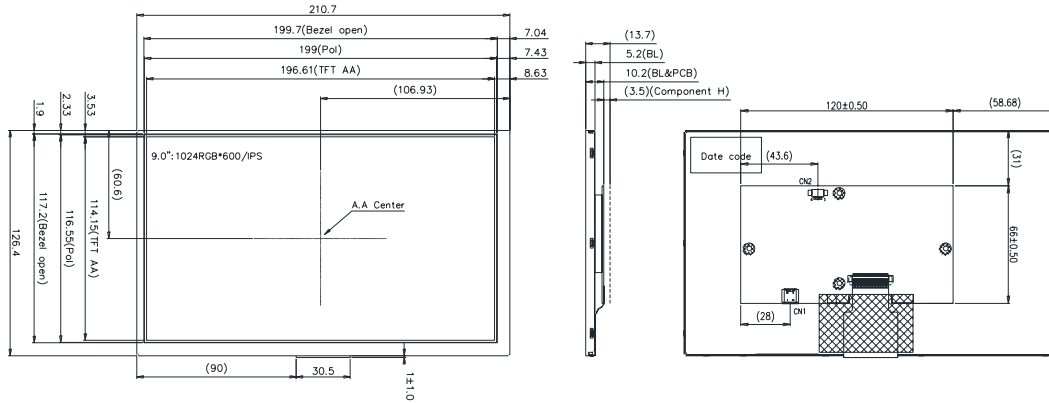
## Features

- Supports VESA DisplayPort Alt. Mode 1a
- DisplayPort 1.3
- Build-in OSD function.

## Specification

No.	Item	Specification	Unit
1	Panel Size	9"	Inch
2	Number of Pixels	1024 (W) × RGB × 600 (H)	Pixels
3	Active Area	196.6 (W) × 114.15 (H)	mm
4	Pixel Pitch	0.192 (W) × 0.19025(H)	mm
5	Outline Dimension	210.7 (W) × 126.4 (H) × 13.7 (T)	mm
6	Number of Colours	16.7M	--
7	Display Mode	IPS / Normally Black / Transmissive	--
8	Viewing Direction	Free direction	--
9	Display Format	RGB vertical stripe	--
10	Surface Treatment	Anti-Glare (3H)	--
11	Contrast Ratio	600 (Typ.)	--
12	Luminance (cd/m <sup>2</sup> )	900 (Typ.)	cd/m <sup>2</sup>
13	Interface	Type-C (5V/3A)	--
14	Backlight	White LED	--
15	Operation Temperature	0 to 70	°C
16	Storage Temperature	-30 to 80	°C
17	Weight	TBD	g

## Mechanical Specification



No.	Pin Name	No.	Pin Name
A1	GND	B12	GND
A2	Tx1+	B11	Rx1+
A3	Tx1-	B10	Rx1-
A4	VBUS	B9	VBUS
A5	CC1	B8	SBU2
A6	D+	B7	D-
A7	D-	B6	D+
A8	SBU1	B5	CC2
A9	VBUS	B4	VBUS
A10	Rx2-	B3	Tx2-
A11	Rx2+	B2	Tx2+
A12	GND	B1	GND

## Pin Description

Pin No.	Symbol	I/O	Function
A1	GND	P	Ground
A2	TX1+	I/O	High speed data path TX for DP Alt Mode.
A3	TX1-	I/O	
A4	VBUS	P	Cable bus power +5V only.
A5	CC1	I/O	Type-C Port Configuration Channel
A6	D+	I/O	USB 2.0 Interface.
A7	D-	I/O	
A8	SBU1	I/O	USB Type-C Sideband Use 1
A9	VBUS	P	Cable bus power +5V only.
A10	RX2-	I/O	High speed data path RX for DP Alt Mode.
A11	RX2+	I/O	

A12	GND	P	Ground
B1	GND	P	Ground
B2	TX2+	I/O	High speed data path TX for DP Alt Mode.
B3	TX2-	I/O	
B4	VBUS	P	Cable bus power +5V only.
B5	CC2	I/O	Type-C Port Configuration Channel
B6	D+	I/O	USB 2.0 Interface.
B7	D-	I/O	
B8	SBU2	I/O	USB Type-C Sideband Use 2
B9	VBUS	P	Cable bus power +5V only.
B10	RX1-	I/O	High speed data path RX for DP Alt Mode.
B11	RX1+	I/O	
B12	GND	P	Ground

### 3.2 key Pad CN2 (50271-0040L-002 or compatible)

Pin	Symbol	I/O	Function
1	Power on/off	I	Power On/Off control.
2	Brightness increased	I	Brightness Increase.
3	Brightness decrease	I	Brightness decrease.
4	GND	P	Ground

## 4. Absolute Maximum Ratings

### 4.1 Electrical Absolute Rating

#### 4.1.1 TFT LCD Module

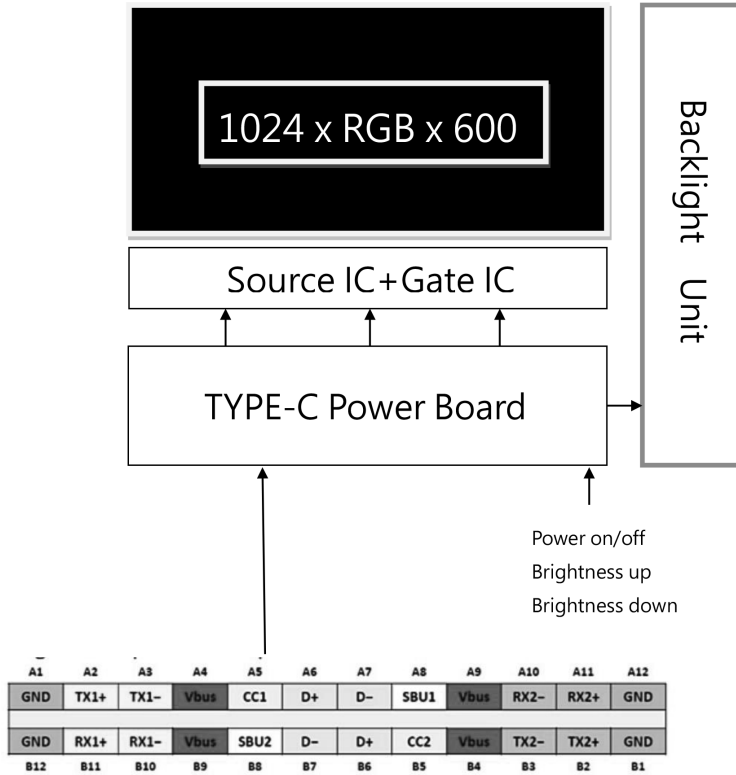
Item	Symbol	Values		Unit
		Min	Max.	
Power supply voltage	VBUS	-0.3	6	V

#### 4.1.2 Environment Absolute Rating

Item	Symbol	Values			Unit	Note
		Min	Typ	Max.		
Operating Temperature	Topa	0		70	°C	Ambient temperature
Storage Temperature	Tstg	-30		80	°C	

## 5. Block Diagram

### 5.1 TFT LCD Module



## 6. Electrical Characteristics

### 6.1 TFT LCD Module

Item	Symbol	Values			Unit	Note
		Min.	Typ.	Max.		
Supply Voltage	VBUS	-	5	5.5	V	
Required current	IBUS	-	940	1040	mA	(1)
LED life time	-	-	50000	-	Hr	(2)

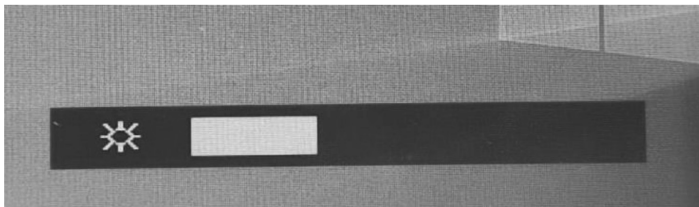
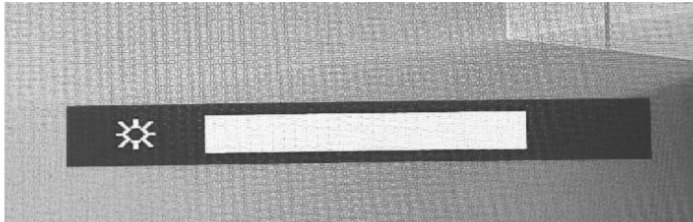
Note 1: under brightness 100%

Note 2: The "LED life time" is defined as the module brightness decrease to 50% original brightness that the ambient temperature is 25°C 60% RH.

## 6.2 OSD Function

Built-in OSD function, connected to the external key pad to CN2, can control the screen switch On/Off and backlight brightness control.

The adjusted brightness level will be automatically memorized.

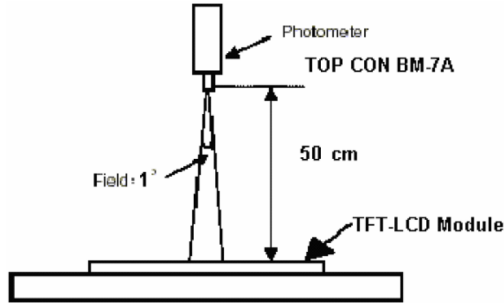


## Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Brightness		--	Note1, Note 3, ( $\theta = 0^\circ$ , Normal Viewing Angle)	720	900	--	cd/m <sup>2</sup>
Uniformity		B-uni		70	75	--	%
Contrast Ratio		CR		400	600	--	--
Response Time		Tr	Center CR $\geq$ 10	--	17	24	ms
		Tf		--	18	26	ms
Colour Chromaticity	White	Wx		0.26	0.31	0.36	--
		Wy		0.28	0.33	0.38	
View angle	Horizontal	$\theta_{x+}$	Center CR $\geq$ 10	80	85	--	
		$\theta_{x-}$					
	Vertical	$\theta_{Y+}$					
		$\theta_{Y-}$					

Note: The following optical specifications shall be measured in a darkroom or equivalent state (ambient luminance  $\leq 1$  lux, and at room temperature). The operation temperature is  $25^\circ\text{C} \pm 2^\circ\text{C}$ . The measurement method is shown in Note1.

Note 1: The method of optical measurement:

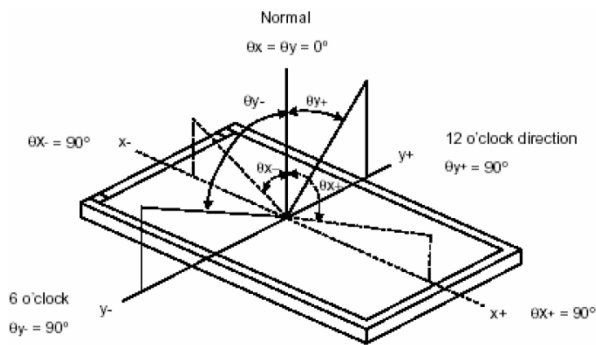


Note2: Measured at the center area of the panel and at the viewing angle of the  $\theta_x = \theta_y = 0^\circ$

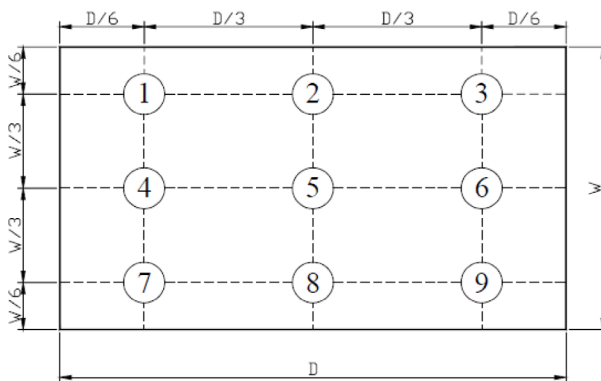
Note3: Definition of Contrast Ratio (CR):

CR = Luminance with all pixels in white state ÷ Luminance with all pixels in Black state

## Definition of Viewing Angle



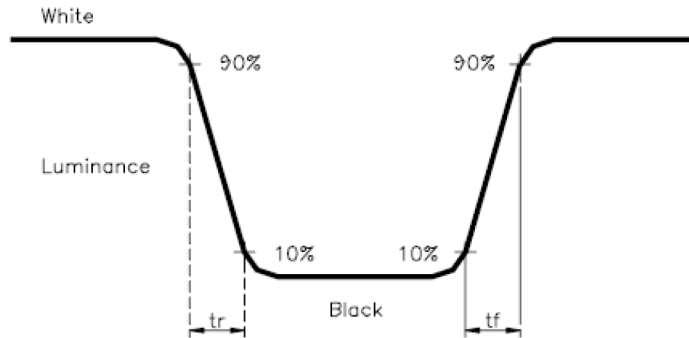
## Definition of Brightness Uniformity (B-uni)



B-uni = (Minimum luminance of 9 points ÷ Maximum luminance of 9 points) X 100%

**Note 6: Definition of Response Time:**

The Response Time is set initially by defining the “Rising Time (Tr)” and the “Falling Time (Tf)” respectively. Tr and Tf are defined as following figure



**Note 7: Definition of Chromaticity:**

The colour coordinates (Wx,Wy),(Rx,Ry),(Gx,Gy),and (Bx,By) are obtained with all pixels in the viewing field at white, red, green, and blue states, respectively.

### Part Number Table

Description	Part Number
TFT LCD Display, USB C, 9", 1024 × 600	MP015129

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