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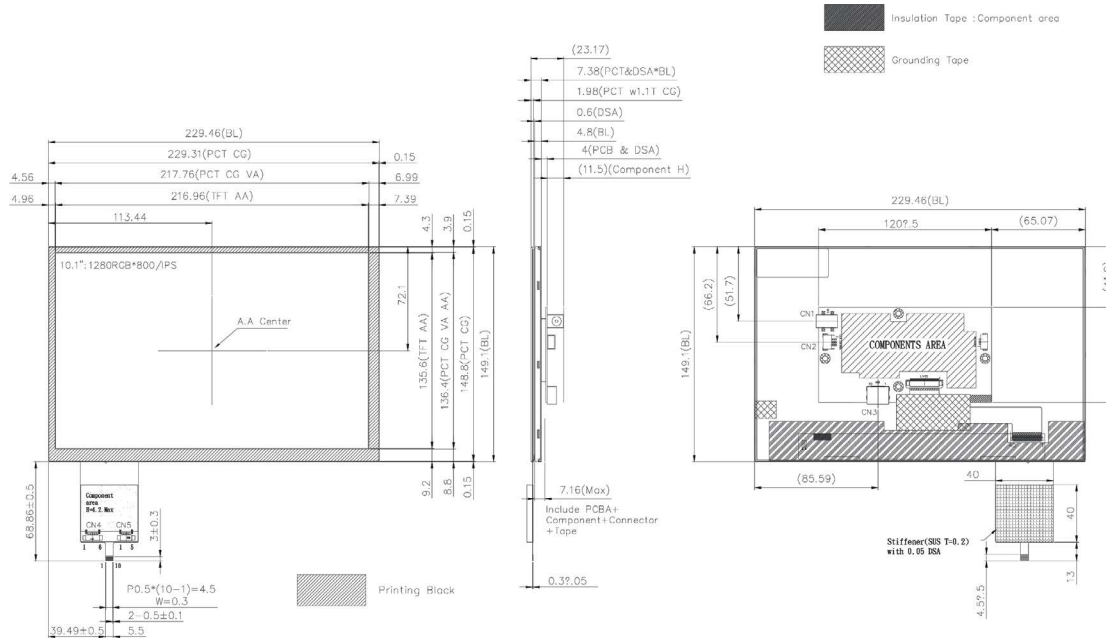
## Description

MP010836 is a 10.1 (16:10) inch diagonally measured active display with high resolution WXGA 1280 × 800 display and high brightness. This model is composed of a TFT LCD panel, backlight system, a projected capacitive touch panel and HDMI interface. It is designed to make Raspberry Pi usage easy. You can simply use this TFT display with your Raspberry Pi, or also you can use this as computer display with any device which has HDMI output. This 10.1" TFT model comes in 1280 × 800 resolution that would be great for embedded computing usage too.

## Features

No.	Item	Specification	Unit
1	Panel Size	10.1"	Inch
2	Number of Pixels	1280 (W) × RGB × 800 (H)	Pixels
3	Active Area	216.96 (W) × 135.6 (H)	mm
4	Pixel Pitch	0.1695 (W) × 0.1695 (H)	mm
5	Outline Dimension	229.46 (W) × 149.1 (H) × 23.17 (T)	mm
6	Number of Colours	16.7M	--
7	Display Mode	IPS / Normally Black / Transmissive	--
8	View Direction	Free direction	--
9	Display Format	RGB vertical stripe	--
10	Surface Treatment	Clear (7H)	--
11	Contrast Ratio	900 (Typ.)	--
12	Luminance (cd/m <sup>2</sup> )	1250 (Typ.)	cd/m <sup>2</sup>
13	Video Input Interface	HDMI (Compliance HDMI V1.4)	--
14	Backlight	White LED	--
15	Operation Temperature	-30 to 80	°C
16	Storage Temperature	-30 to 80	°C
17	Weight	(455)	g

## Mechanical Specification



## Pin Description

**Power Input (CN1) [DC JACK:SCD480CCS000B00GE or compatible]**

Pin No.	Symbol	I/O	Function	Note
1	12V	P	Power Supply +12V	
2	GND	P	Ground	

**Back-light Control (CN2) [WAFER P2.0mm:2001S-03-RTE or compatible]**

Pin No.	Symbol	I/O	Function	Note
1	GND	P	Ground	
2	PWM	I	Back-light Dimming control (internal pull up to 3.3V)	*1
3	N.C.	-	N.C.	

\*1: When PWM not connected, back-light default is typical brightness.

## HDMI (CN3) [HDMI A TYPE:PHD0911A2301E or compatible]

Pin No.	Symbol	I/O	Function
1	TMDS 2+	I	TMDS Data2+
2	GND	P	TMDS Data2 Shield
3	TMDS 2-	I	TMDS Data2-
4	TMDS 1+	I	TMDS Data1+
5	GND	P	TMDS Data1 Shield
6	TMDS 1-	I	TMDS Data1-
7	TMDS 0+	I	TMDS Data0+
8	GND	P	TMDS Data0 Shield
9	TMDS 0-	I	TMDS Data0-
10	TMDS CLK+	I	TMDS Clock+
11	GND	P	TMDS Clock Shield
12	TMDS CLK-	I	TMDS Clock-
13	N.C.	-	N.C.
14	N.C.	-	N.C.
15	DDC_SCL	I	IIC SCL to EDID ROM
16	DDC_SDA	I/O	IIC SDA to EDID ROM
17	GND	P	DDC/CEC Ground
18	HD_5V	P	+5V Power
19	HPD	O	Hot Plug Detect

## PCT Control:IIC (CN4) [WAFER P1.25mm:50271-0060L-002 or compatible]

Pin No.	Symbol	I/O	Function
1	GND	P	Ground
2	VDD	P	Power supply for 12C
3	SCL	I	IIC SCL to PCT Controller
4	SDA	I/O	IIC SDA to PCT Controller
5	INT	O	Interrupt
6	RESET	I	Reset

## PCT Control:USB (CN5) [WAFER P1.25mm:50271-0050L-002 or compatible]

Pin No.	Symbol	I/O	Function
1	GND -EARTH	P	Earth Ground(Shield)
2	VDD_5V		Power supply for USB I/F
3	GND		Power Ground
4	D+	I/O	USB data +
5	D-		USB data -

## PCT Control:IIC and USB (FPC)

Pin No.	Symbol	I/O	Function
1	GND	P	Ground
2	VDD		Power supply for I2C
3	SCL	I	IIC SCL to PCT Controller
4	SDA	I/O	IIC SDA to PCT Controller
5	INT	O	Interrupt signal to inform the host processor that touch data is ready for read
6	RESET	I	External low signal reset the chip.
7	VDD_5V	P	Power supply for USB I/F
8	D+	I/O	USB data +
9	D-		USB data -
10	GND	P	Ground

## Absolute Maximum Ratings

### Electrical Absolute Rating HDMI TFT LCD Module

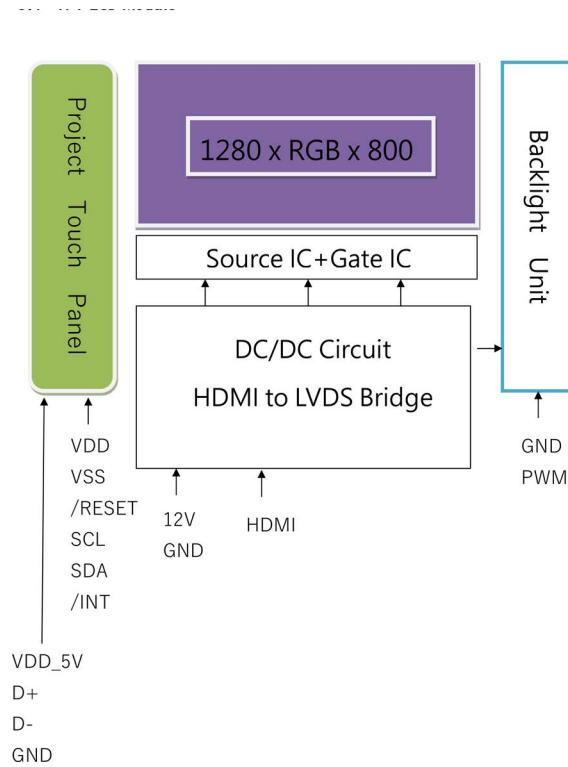
Item	Symbol	Values		Unit
		Min	Max.	
Power supply voltage	12V	10	14	V

## Environment Absolute Rating

Item	Symbol	Values		Unit	Note
		Min	Max.		
Operating Temperature	Top	-30	80	°C	Ambient temperature
Storage Temperature	Tst				

## Block Diagram

### TFT LCD Module



## Electrical Characteristics

### HDMI TFT LCD Module

Item	Symbol	Values			Unit	Note
		Min	Typ.	Max.		
Supply Voltage	12V	11	12	13	V	
PWM frequency		100	-	10K	Hz	
PWM Duty		17	-	100	%	<17%=OFF
PWM Dimming Voltage	V <sub>PWM-IH</sub>	3.3	-	8	V	
	V <sub>PWM-IL</sub>	-	0.3	-	V	
Supply Current	ICC (12V)	-	720	770	mA	
LED life time		50000	-	-	Hr	(1)

#### Note

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

## Projected Capacitive Touch Panel Specification

### Main Feature

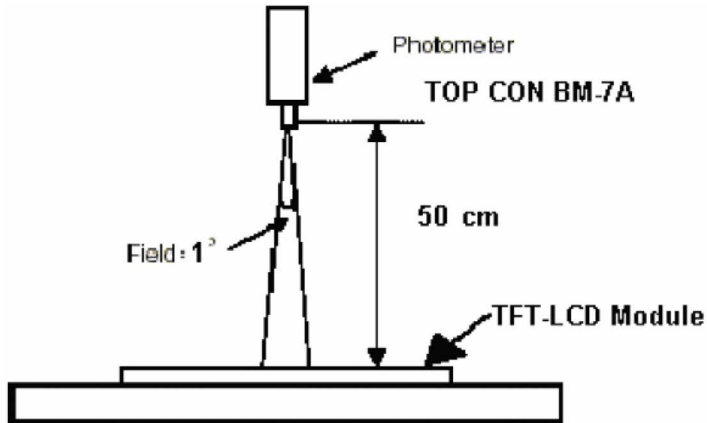
Item	Specification	Unit
Screen Size	10.1 inches	Diagonal
Type	Transparent Type Projected Capacitive Touch Panel	
Input Mode	Human's Finger	
Interface	12C or USB	
Touch number	10 points	
Cover glass pencil-hardness	7H	
Response time	≤25ms	ms
Controller IC	ILI2511	

## Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Brightness		--	Note1, Note 3, ( $\theta = 0^\circ$ , Normal Viewing Angle)	1000	1250	--	cd/m <sup>2</sup>
Uniformity		B-uni		75	80	-	%
Contrast Ratio		CR		700	900	--	--
NTSC				--	73		%
Response Time		Tr+Tf		--	25	35	ms
Colour Chromaticity	White	Wx	Center CR≥10	0.275	0.315	0.355	--
		Wy		0.31	0.35	0.39	
View angle	Horizontal	$\theta_{x+}$	Center CR≥10	70	80	--	
		$\theta_{x-}$					
	Vertical	$\theta_{Y+}$					
		$\theta_{Y-}$					

Note: The following optical specifications shall be measured in a darkroom or equivalent state (ambient luminance ≤1 lux, and at room temperature). The operation temperature is 25°C±2°C. The measurement method is shown in Note1.

## Note1: The method of optical measurement

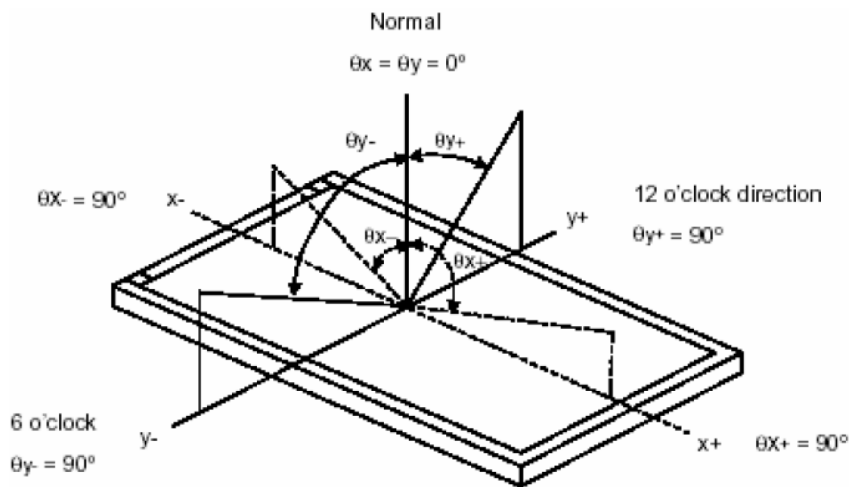


Note2: Measured at the center area of the panel and at the viewing angle of the  $\theta_x = \theta_y = 0^\circ$

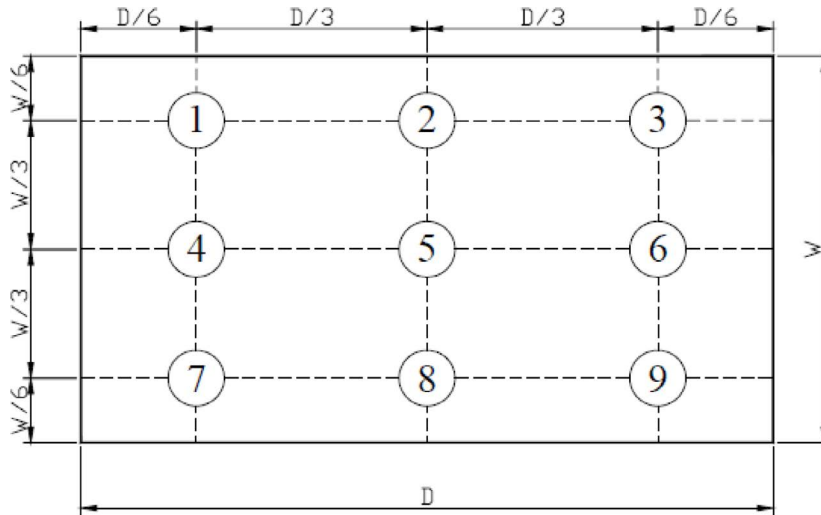
Note3: Definition of Contrast Ratio (CR):

CR = Luminance with all pixels in white state  $\div$  Luminance with all pixels in Black state

## Definition of Viewing Angle



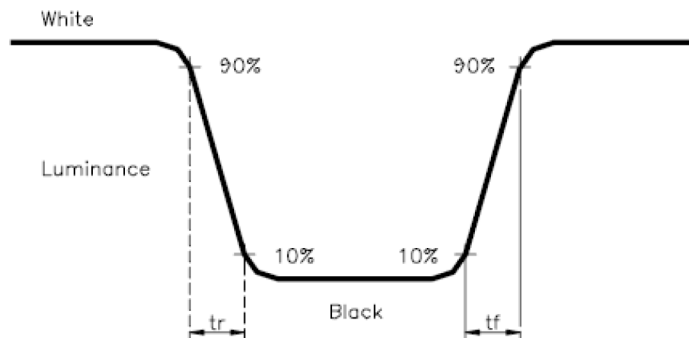
### Definition of Brightness Uniformity (B-uni)



$$B\text{-uni} = (\text{Minimum luminance of 9 points} \div \text{Maximum luminance of 9 points}) \times 100\%$$

### 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 color 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, Capacitive Touch Panel, 10.1", HDMI, 1280 × 800	MP010836

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