SMART DISPLAY MODULE SPECIFICATION

9.3 Inch Smart Display	
Model:	UEDX60160093-HMD-H
Version:	V1.0
Date:	2024-10-16

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Customer Confirmation

Approved by	Notes

REVISION HISTORY

Revision	Date	Contents of Revision Change	Remark
V1.0	20241016	Preliminary release	

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1. Introduction

1.1 Features

Brief Info:

1) 9.3inch standard monitor with 600*1600 hardware resolution.
2) Also monitor Raspberry Pi, BB Black, Banana Pi and other mainstream mini PCS
3) When used as a Raspberry Pi monitor, it supports Raspbian, Ubuntu, WIN10IOT and other systems, with single o 'clock control and no drive
4) When used as a computer monitor, it supports Windows 7/8/81/10
5) Support common game consoles such as Microsoft PS4, XBOX360,3D printer and Ren Tianxue

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On-board chip：LT6911C

HDMI1.4 to Dual-port MIPI DSI/CSI/LVDS with Audio

1) HDMI1.4 Receiver

   a. Compliant with the HDMI 1.4 specification with TMDS data rates up to 3.4Gbps per channel

   b. Support HDCP 1.4

   c. Adaptive receiver Equalization for PCB, cable and connector losses

2) Single/Dual-Port MIPI® DSI/CSI Transmitter

   a. Compliant with DCS1.02, D-PHY1.2& DSI1.02 &CSI-2 1.0

   b. 1 Clock Lane, and 1~4 Configurable Data Lanes per port

   c. 1/2 configurable port

   d. 80Mbps~1.5Gbps per data lane

   e. Maximum 64pixels overlap for each half

   f. Both non-burst and burst video mode supported

   g. Support RGB666, Loosely RGB666, RGB888, RGB565, 16-bit YCbCr4:2:2,20-bit YCbCr4:2:2,24-bit YCbCr 4:2:2 Video Format

   h. Video stream copy mode for each port

   i. Side-by-side 3D support

3) Single/Dual-Port LVDS Transmitter

   a. Compatible with VESA and JEIDA standard

   b. 1/2 Configurable Port

   c. 1 clock lane and 4 configurable data lanes per port

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d. Support Maximum Data Rate 1.2Gbps/lane

e. Output Color Depth supports 6-bit and 8-bit

f. Video stream copy mode for each port

g. Side-by-side 3D support

4) Miscellaneous

a. 3.3V/1.2V Supply Power

b. Internal CSC support conversions between YCbCr 4:4:4 and RGB, and between YCbCr 4:2:2 and YCbCr 4:4:4

c. Support SPDIF and 2-channel IIS audio output

d. Support 100KHz I2C slave

e. Integrated Microprocessor

f. Temperature Range: -40° C ~ +85° C

g. ESD 2kV HBM

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Display：

1) Size:9.3 Inch
2) Resolution:600(W)*3(RGB)*1600(H)
3) Pixel Driving element：IPS TFT
4) Interface Mode： MIPI 4 Lanes
5) Driver IC：FL7707N
6) Viewing Direction：80/80/80/80(Typ）Deg
7) Display mode：Normally black
8) Luminance：500 cd/m^2
9) Display Color：16.7M
10) Operation Temperature：-20~70℃
11) Storage Temperature：-30~80℃

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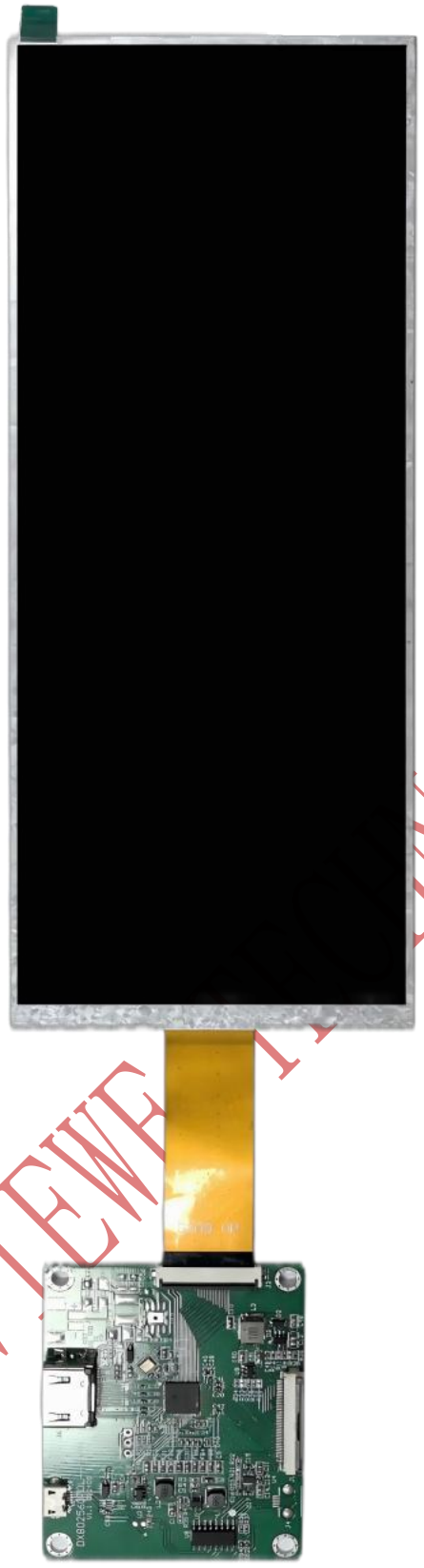
1.2 Appearance picture



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2. Product information

2.1 Display Interface Description

Pin No.	Symbol	I/O	Description
1	GND	P	Power Ground
2	D0P	I/O	MIPI data0 Positive input
3	D0N	I/O	MIPI data0 Negative input
4	GND	P	Power Ground
5	D1P	I	MIPI data1 Positive input
6	D1N	I	MIPI data1 Negative input
7	GND	P	Power Ground
8	CLKP	I	MIPI clk Positive input
9	CLKN	I	MIPI clk Negative input
10	GND	P	Power Ground
11	D2P	I	MIPI data2 Positive input
12	D2N	I	MIPI data2 Negative input
13	GND	P	Power Ground
14	D3P	I	MIPI data3 Positive input
15	D3N	I	MIPI data3 Negative input
16	GND	P	Power Ground
17	GND	P	Power Ground
18-19	IOVCC	P	Power supply for digital circuits +1.8V input
20-23	NC	-	No connect
24	RESET	I	Reset pin
25	STBYB	I	Select standby mode
26	NC	-	No connect
27	GND	P	Power Ground
28-29	LEDK	P	LED Negative
30	GND	P	Power Ground
31	NC	-	No connect
32-33	GND	P	Power Ground
34	NC	-	No connect
35-36	LEDA	P	LED Positive
37	GND	P	Power Ground
38-39	VCC	P	Power supply for digital circuits +3.3V input
40	NC	-	No connect

I：Input；O：Output；P：Power

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2.2 Hardware Interface Description

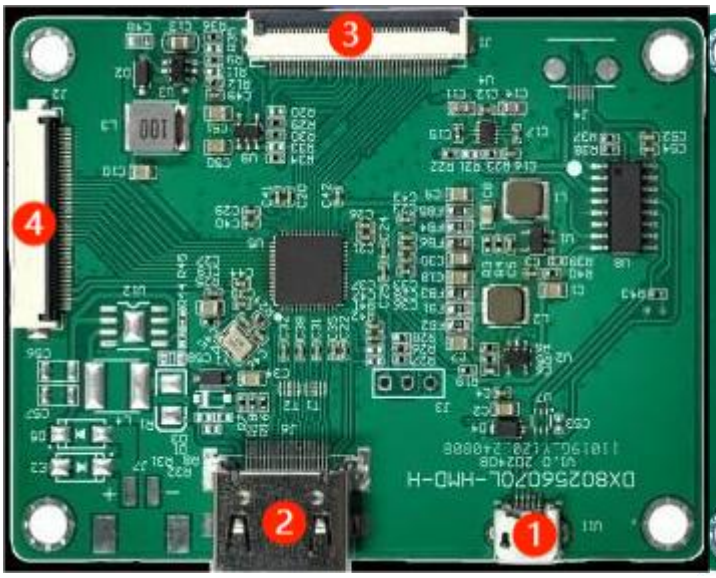

Figure 1

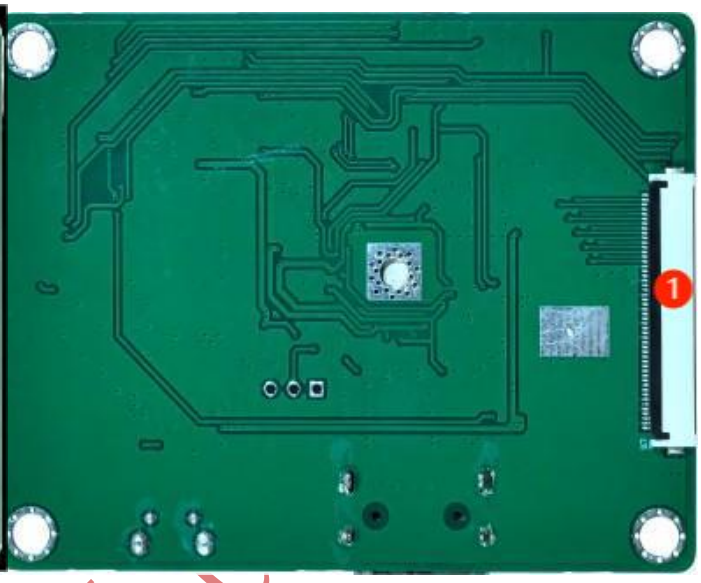

Figure 2

Figure 1：

① power supply interface, used for power supply

② Display: HDMI interface, used to connect the motherboard and LCD display for HDMI transmission

③ Display Interface：40pin display interface for another product

④ Extending the interface

Figure 2：

① Display Interface：50pin display interface for this product

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2.3 Display Information

Item	Specification	Unit	Remark
Pixel Driving element	IPS TFT	-	-
Screen Size	9.3	Inch	Diagonal
Resolution	600(W)*3(RGB)*1600(H)	Dots	
Module Power Consumption	-	Watt	
Active Area	82.94(W)*221.18(H)	mm	-
Pixel pitch (W*H)	0.04608(W)*0.13824(H)	um	-
Module Size (W*H*D)	89(W)*231(H)*7.3(D)	mm	
Driver IC	FL7707N	-	
Interface Mode	MIPI 4LANE	-	
Display mode	Normally Black	-	
Luminance	500	cd/m^2	Typ.
Viewing Direction	80/80/80/80(Typ)	Deg	-
Display Color	16.7M	Colors	24bits
LED life time	30,000 Hours	-	

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2.4 Timing Characteristics (Ta=+25°C,GND=0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Clock frequency	RxFCLK	-	69	75.0	MHz	
Horizontal Display Area	Thd		600		DCLK	
HS Pulse Width	Thpw	-	8	-	DCLK	
HS back porch	Thbp	-	58	-	DCLK	
HS front porch	Thfp	-	58	-	DCLK	
1 horizontal line	Th	-	724	-	DCLK	
Vertical Display Area	Tvd		1600		H	
VS Pulse Width	Tvpw	-	4	-	H	
VS back porch	Tvbp	-	16	-	H	
VS front porch	Tvfp	-	16	-	H	
1 vertical field	Tv	-	1636	-	H	
Frame rate	FR		60		HZ	

2.5 Voltage & Current

Item	Conditions	Min	Typ	Max	Unit
Power Voltage	DC	4. 0	5.0	5.5	V
Operation Current	VCC= +5V, Maximum backlight current		260		mA
	VCC= +5V,backlight off	-	150	-	mA
Recommended power supply:5V 1A DC					

2.6 Reliability Test

Item	Conditions	Min	Typ	Max	Unit
Working Temperature	60%RH at 5V voltage	-20	25	70	C
Storage Temperature	---	-30	25	80	C
Working Humidity	25°C	10%	60%	90%	RH
ESD	---	Contact: ±4KV Air: ±8KV			KV

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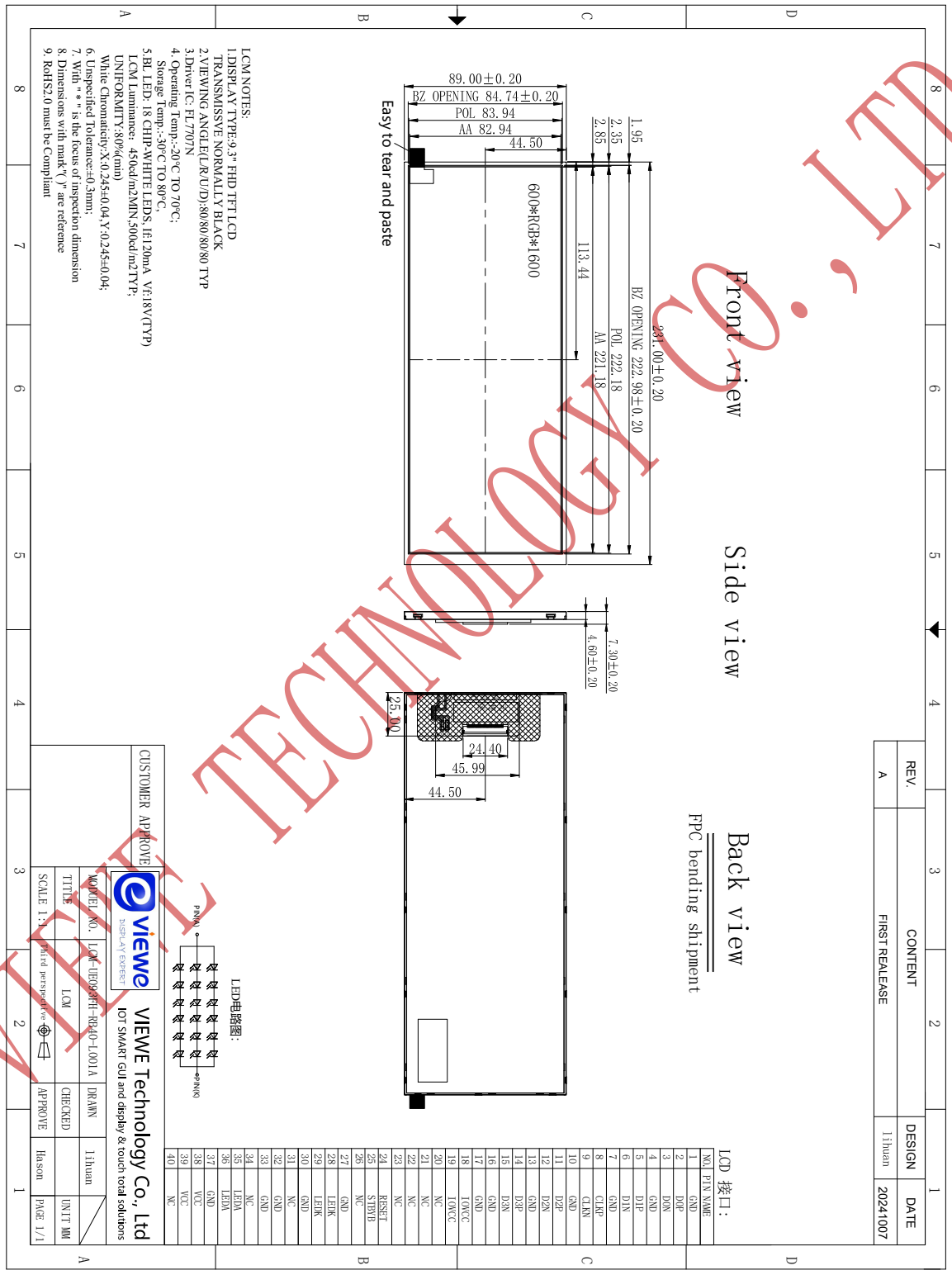
3. MECHANICAL DRAWING

3.1 Display



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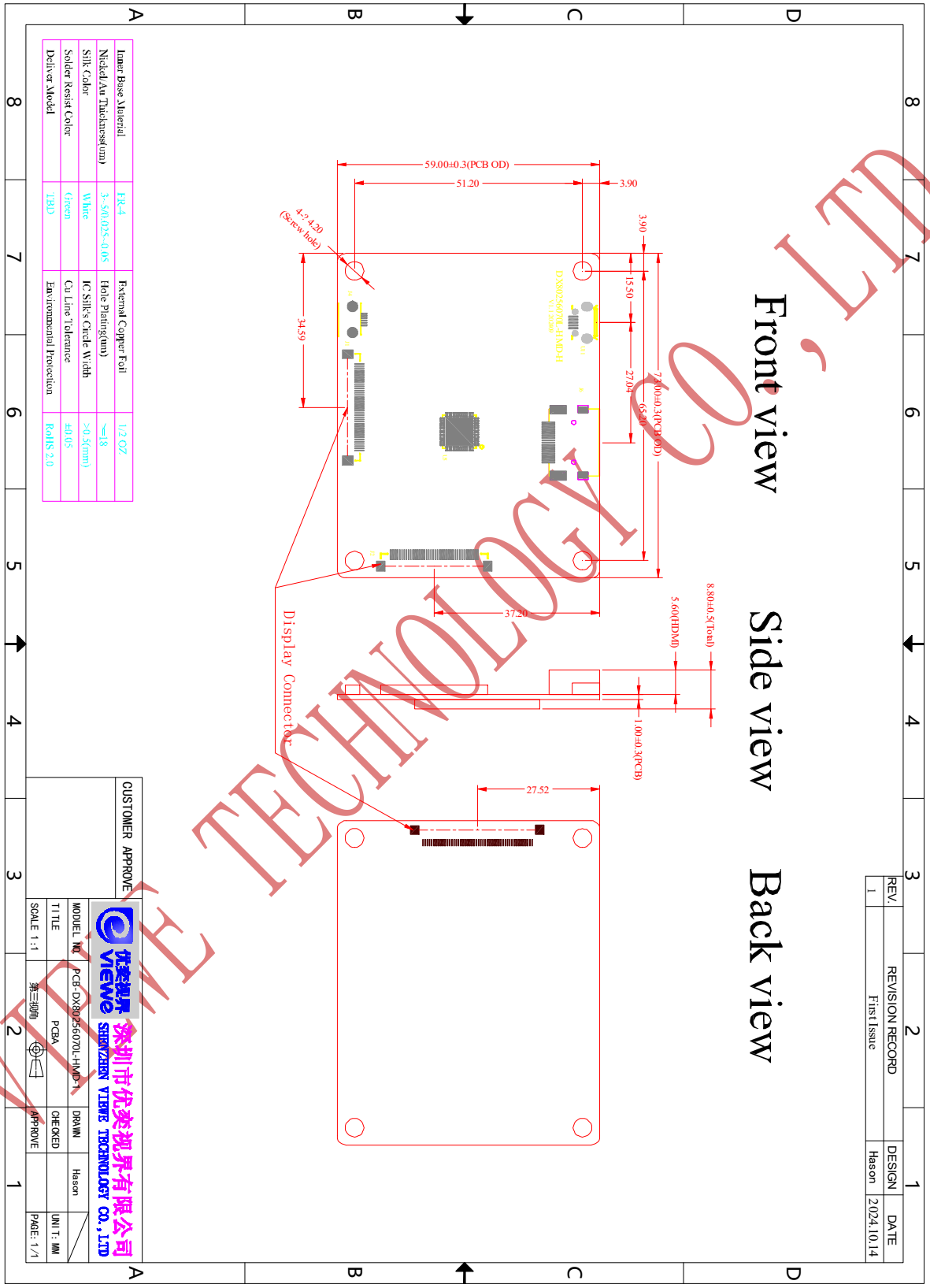
3.2 board



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4. Operating instructions

4.1 Used in Raspberry PI Raspbian/Ubuntu Mate/Win10 IoT Core system

Step 1： Install the official image

A. Download the latest image from the official

B. Install the system according to the steps of the official tutorial

Step 2： Modify the config.txt configuration file Step 1 After the burn is completed, open the config.txt file in the root directory of the Micro SD card and add the following code at the end of the file. Save and safely eject the Micro SD card.

```
hdmi_force_edid_audio=1
max_usb_current=1
hdmi_force_hotplug=1
config_hdmi_boost=7
hdmi_group=2
hdmi_mode=1
hdmi_mode=87
hdmi_drive=2
hdmi_cvt 600 1600 60 6 0 0 0
```

Step 3： Insert the Micro SD card into the Raspberry PI, connect the HDMI cable to the Raspberry PI and the LCD, connect the USB cable to any of the four USB ports of the Raspberry PI, connect the other end of the USB cable to the USB port of the LCD, and then power up the Raspberry PI. If the display and touch are normal, the drive is successful.

4.2 How to use it as a computer monitor

Step 1： Use the HDMI cable to connect the computer HDMI output signal to the LCD HDMI interface;

Step 2： Connect one end of the MicroUSB cable to the USB Touch interface of the LCD, either of the two MicroUSB can be), and the other car is connected to the USB port of the computer;

If there are multiple monitors, please unplug the other monitor interfaces first and test this LCD as the only monitor.

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