WINSTAR

HDMI(DVI) Series Display

User Guide

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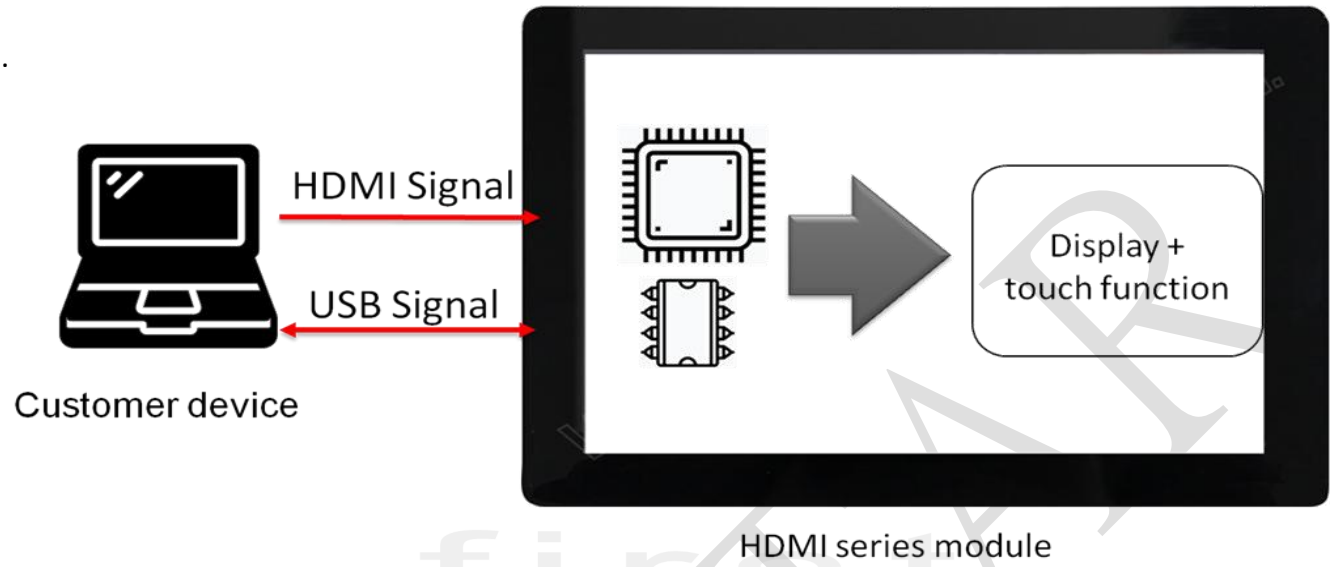
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HDMI Series is plug and play device. There are two IC transfers display and touch signal to master device. For touch panel, there are Mouse Mode (default) and Touch Pad Mode. And capacitive touch panel can update the firmware through USB port. It can work with Windows and Raspbian operating system.

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There are HDMI(DVI) Series size and resolution :

- WF101F/G: 1280x800
- WF70A7/A8: 1024x600
- WF70G/A2 :800x480
- WF50B/F: 800x480
- WF52A: 480x128(Only for Raspberry Pi)
- WF43W: 480x272(Only for Raspberry Pi)

1 Connect HDMI port

1.1 Connect HDMI port

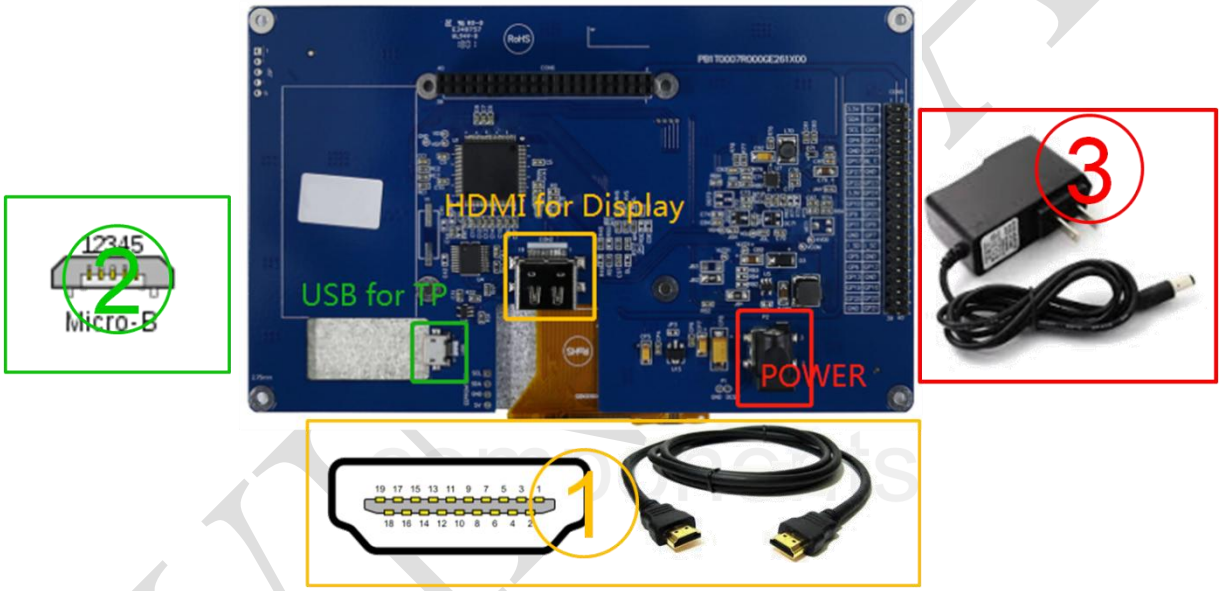
1.2 Connect USB port

The power of 5” module is support by USB port. Please make sure, the power is enough for module. For 7” and 10.1”, it is not necessary connected when module without touch panel.

1.3 Power On

If “power on” before connecting HDMI, there are dummy data on screen. In the same way, it should be power off when HDMI data stop.

1.4 Resolution and display character setting



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2 Backlight

2.1 WF70A8

It support PWM control, and it is able to adjust the duty ratio linearly form 0 to 95%

Parameter	Symbol	Min.	Typ.	Max.	Unit
PWM Control Level (Backlight PWM)	High Level	-	3.3	-	V
	Low Level	-	0	-	V
PWM Control Frequency	-	-	1K	-	Hz

2.2 Other module

There is a backlight enable PIN, please check module SPEC to get right channel. It is pull high on PCB. Keep it NC or follow the rule:

Parameter	Min	Max	Unit
Absolute Voltage		5	V
Backlight Enable	2.8		V
Backlight Disable		0.4	V

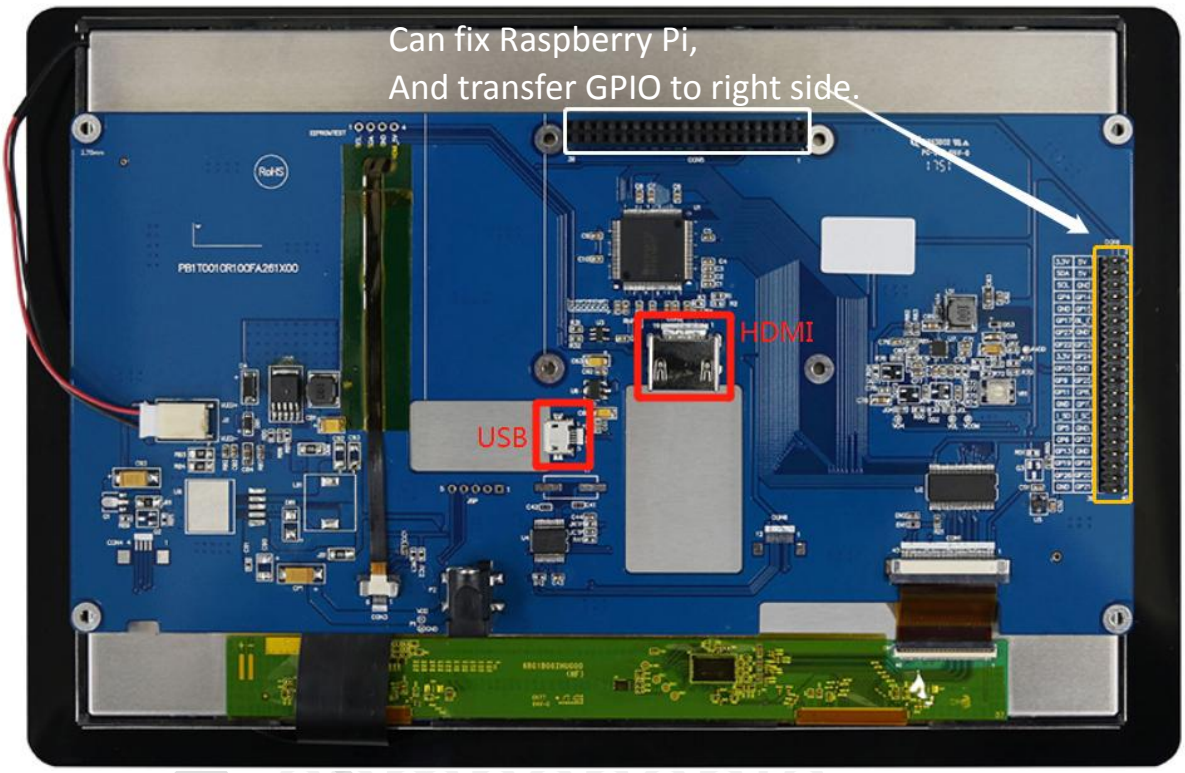
It does not accept PWM signal to adjustment backlight. If you need adjustment function, please contact us for customize.

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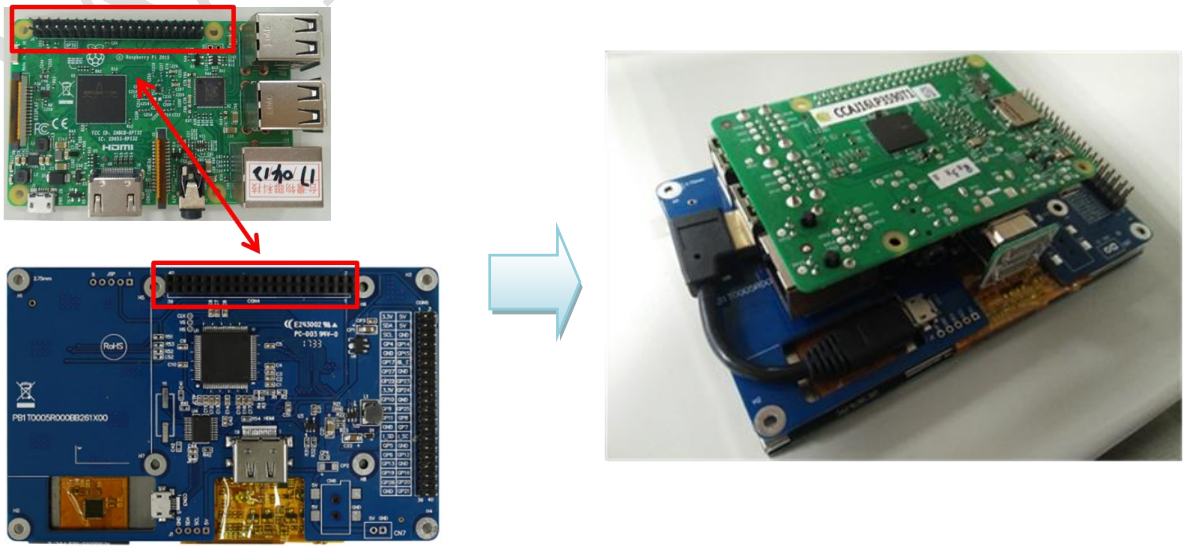
3 With Raspberry PI and Raspbian

3.1 Hardware

There are 2 parts must connect to Raspberry Pi: HDMI port and USB port (if there is touch function or it is 5” module). The GPIO socket on the top is just for fixing Raspberry Pi and transfers Raspberry Pi’s PIN to the right side. Therefore, Raspberry Pi’s I/O can be used normally to control other devices or application.



After combine Raspberry Pi with module. There are optional accessories including HDMI connector, USB cable and spacer support. With then, you can use Raspberry PI more easily. (6.2 Optional accessories)



3.2 Display Character Setting in Raspbian

Raspbian is Raspberry Pi official OS. Use it with module, you should add or change setting in config.txt file of the SD card. The setting value as blow:

Part No.	Setting
43W	hdmi_drive=1 hdmi_group=2 hdmi_mode=87 hdmi_timings=480 0 1 41 2 272 0 13 3 32 0 0 0 60 0 9009000 3
50B/F	hdmi_group=2 hdmi_mode=87 hdmi_cvt 800 480 60 6 0 0 0
52A*	dtparam=audio=on hdmi_group=2 hdmi_mode=87 hdmi_timings=480 1 40 16 16 128 0 1 3 1 0 0 0 60 0 9009000 3 hdmi_drive=1
70A7/70A8	hdmi_group=2 hdmi_mode=87 hdmi_cvt 1024 600 60 6 0 0 0
70G/A2	hdmi_group=2 hdmi_mode=87 hdmi_cvt 800 480 60 6 0 0 0
101F/G	hdmi_group=2 hdmi_mode=87 hdmi_cvt 1280 800 60 6 0 0 0

*Note: It is unconventional resolution. The display image may be incomplete.

4 Rotate screen in Raspbain

4.1 Rotate the display

Depend different rotation degree, add the instruction to the config.txt file in SD card. , After reboot Raspberry Pi, the screen has been rotated. (Note: not for touch panel yet.)

Rotation degree	Instruction
0°	display_rotate=0
90°	display_rotate=1
180°	display_rotate=2
270°	display_rotate=3

Table1: Display rotate instruction

4.2 Mouse mode rotate setting

(1) Install terminal program

sudo apt-get install xterm

(2) Create the directory ~/.config/autostart

mkdir -p ~/.config/autostart

(3) Create the file **~/.config/autostart/lxterm-autostart.desktop** and put following text in it (for 90 degree rotation)

[Desktop Entry]
Encoding=UTF-8
Name=Terminal autostart
Comment=Start a terminal and list directory
Exec=/usr/bin/lxterm -e ' DISPLAY=:0 xinput --set-prop “WINSTARTP Mouse” “Coordinate Transformation Matrix” 0 1 0 -1 0 1 0 0 1'

The code “0 1 0 -1 0 1 0 0 1” is for 90° rotation. Please see the following as reference for other degree:

degree	instruction
0°	1 0 0 0 1 0 0 0 1
90°	0 1 0 -1 0 1 0 0 1
180°	-1 0 1 0 -1 1 0 0 1
270°	0 -1 1 1 0 0 0 0 1

4.3 Pad mode rotate setting

(1) Write command

sudo apt-get install xserver-xorg-input-libinput

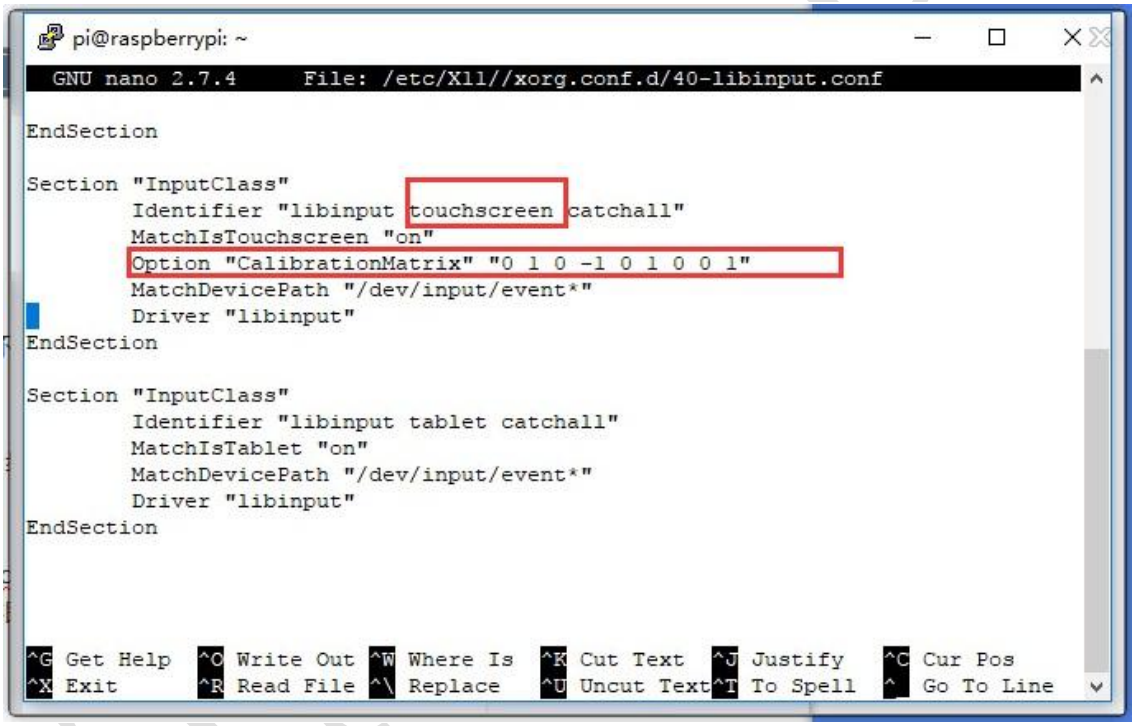
sudo mkdir /etc/X11/xorg.conf.d

sudo cp /usr/share/X11/xorg.conf.d/40-libinput.conf /etc/X11/xorg.conf.d/

sudo nano /etc/X11/xorg.conf.d/40-libinput.conf

(2) Search (Ctrl +W) 'touchscreen' keyword in 40-libinput-conf file. Then add Instruction below it and save the file.

Option "CalibrationMatrix" "0 1 0 -1 0 1 0 0 1"



The code "0 1 0 -1 0 1 0 0 1" is for 90° rotation. Please see the following as reference for other degree:

degree	instruction
0°	1 0 0 0 1 0 0 0 1
90°	0 1 0 -1 0 1 0 0 1
180°	-1 0 1 0 -1 1 0 0 1
270°	0 -1 1 1 0 0 0 0 1

(3) Reboot Raspberry Pi.

sudo reboot

5 Touch Panel

5.1.1 Operator System Support

Hardware	PC		Raspberry Pi			Other
OS	Win 7	Win 10	Raspbain	Ubuntu 18.04/20.10	Win10 IOT	Android
RTP	O	O	O	O	O	X
CTP	O	O	O	O	O	Coming soon

*With other OS, please contact us for more information.

5.1.2 Resistive Touch Panel

It is recommended to calibrate every year.
With Windows OS, please download the Calibration tool from https://touch-base.com/oem/microchip/.

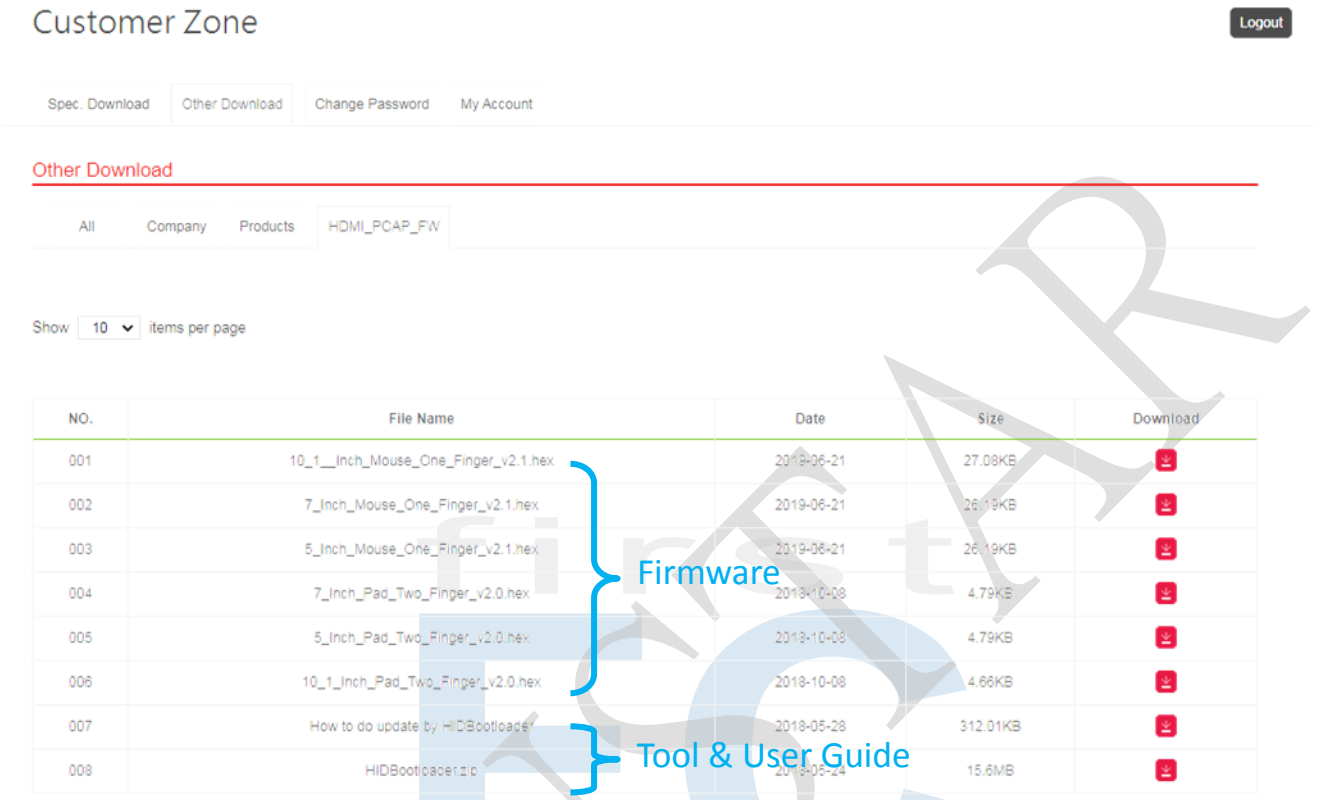
With Raspbian OS, plese fallow the steps below:

```
Before starting, make sure you are on-line.
Requires:
#sudo apt-get update
#sudo apt-get install git-core
#sudo apt-get install git make g++ libusb-1.0-0-dev libgtk2.0-dev
#cd ~
#git clone https://github.com/tom-2015/rpi-AR1100.git
#cd rpi-AR1100/
#make
#sudo chmod +x AR1100
#sudo ./AR1100 -c 9 -m
```

You can calibrate with 4 or 25 points, 9 is the default. And it is only support mouse mode.

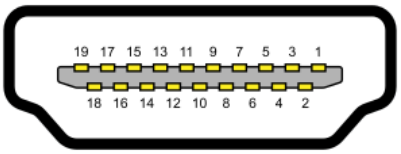
5.1.3 Capacitive Touch Panel

The default mode is Mouse Mode (single touch). If you want Pad Mode (2 finger), there are firmware change tool on WINSTAR distributor download page.



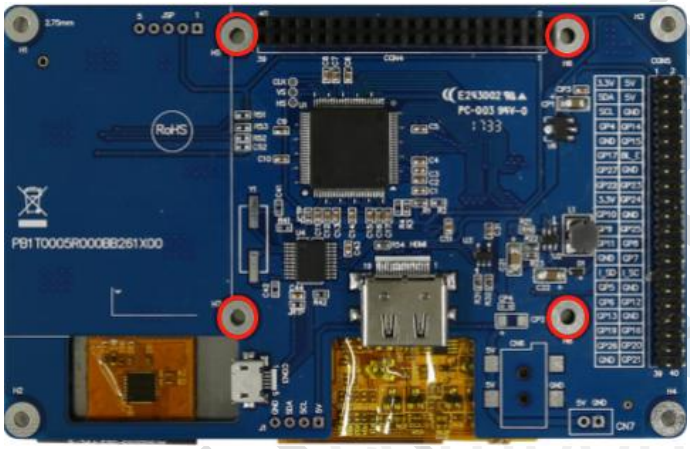
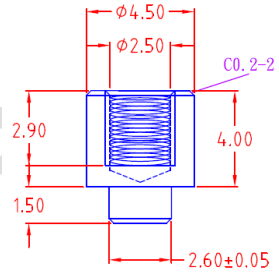
6 Connector information

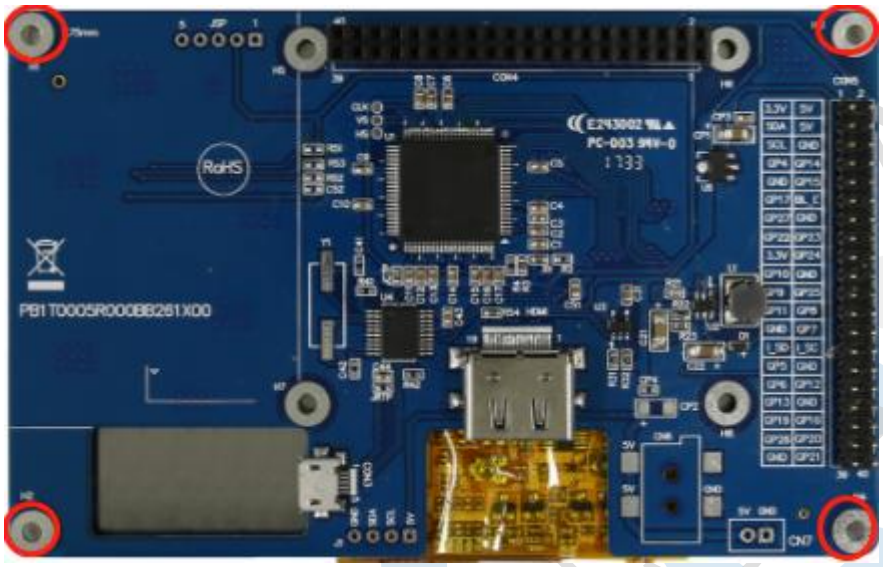
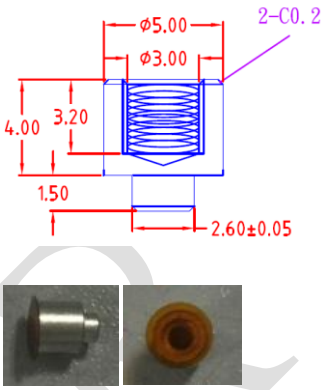
6.1 Connector on PCB

Name	Port type	Note
HDMI	Standard Type A HDMI port 	
USB port	Micro-B 	For 5” module, please make sure it support enough power.(Please check module SPEC)
POWER JACK	PLUG 5.5mm x 2.1mm Positive pole of the power supply is internal.	The power jack is for 7” and 10.1” module. Please make sure the driven current meet the module specification.

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6.2 Optional accessories

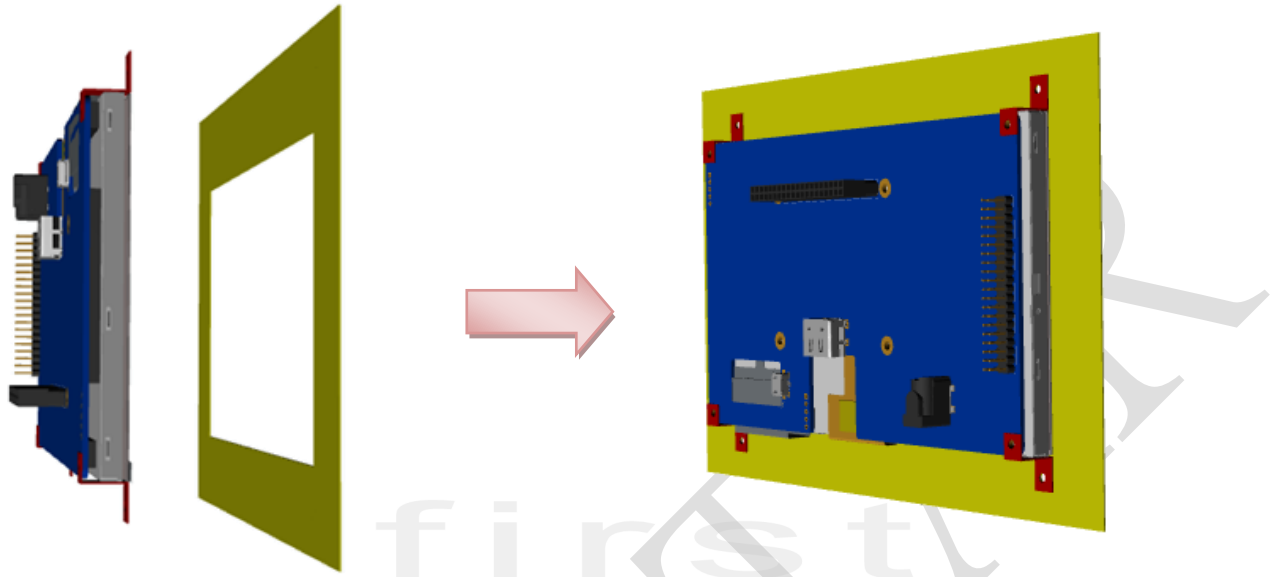
Item, Part No and description	Photo
HDMI connector for Raspberry Pi WWHDMI-00# Note: The HDMI port in Raspberry Pi 4 is micro HDMI. Please have others cable with it.	
Touch panel cable for Raspberry Pi OTP1XXXXXXXXXXXX0155 Note: The cable length is **not** suitable for 4”3 module.	
Spacer Φ 2.5mm OT81XXXXXXXXXXX0011 It can put on the 4 holes mark in red by SMT process  And there are the 4 holes(Φ 2.75mm) on corresponding position of Raspberry pi.  With screw, you can combine Raspberry pi on PCB more firmly. Note: It is just for positioning or combines Raspberry Pi with PCB, It	 

is not recommended to hang on the client device by this support alone.	
Spacer Φ 3.00 mm OT81XXXXXXXXXXX0012 It can put on red mark by SMT process. Note: It is just for positioning, not to hang on the client device by this support alone. The double-sided tape between the PCB and the module cannot bear the weight of the module, and there is a risk of separation 	

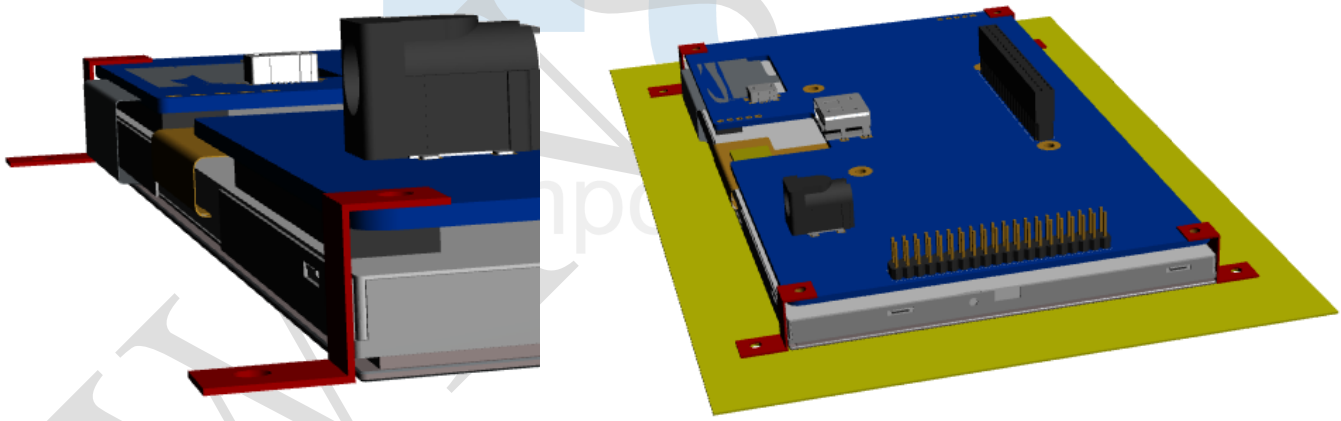
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7 Recommended fixing method

To avoid separation of the PCB from the backlight, fix direction should from inside to outside. There is an example:



You can fix module on the cover or your device with red zigzag iron.
Please change the position and shape of zigzag iron depend on different module and application.



Note: It is not recommend hanging on module by PCB alone. The double-sided tape between the PCB and the module cannot bear the weight of the module, and there is a risk of separation.

8 Q&A

- Why is touch panel not working?
  (1) Please check if touch panel shows on the “Device Manager”.
  ➔Yes, try to remove device of touch panel. Select the correct device from the device information. It will be similar with the picture below. Then re-plug and waiting re-install driver automatic by system.



  ➔No, try plug USB cable again. Make sure the cable is good connected.
  (2) What kind of OS？(See 5.1.1)

- Touch point isn’t on the right place.
  (1) RTP: Please do calibration(See 5.1.2 Resistive Touch Panel)
  (2) CTP: Check if setting of screen resolution is correct. And the desktop is full screen.

- The screen doesn’t show anything.
  (1) Check HDMI cable is good connected.
  (2) Make sure the power current is enough. The backlight should be turn on.
  (3) It need to setting display information with some OS. There is an example for Raspberry Pi(See 3.2)

- There is something wrong with screen. The picture doesn’t in the right place or there are some strange lines on the side.
  (1) Check the resolution and display setting.

- Why there is dummy signal in the beginning before image data?
  (1) See 1.3

- I need right button function of mouse.
  (1) Please change the TP firmware to touch panel Mode (See 5)

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Appendix I History Record

Date	Page	Contents	Editor
2020/6/9		First released	Kaori
2020/6/18	6	Cancel Note about Raspberry PI 4	Kaori
2020/9/14	5,9,12-14	Modify chapter 3, 5 and 6.	Kaori
2021/5/10	3,5,7,16,17	Add new module: 52A, 43W, 70A8 information. Add warning on spacer. Modify chapter 7 fix method and 8 Q&A.	Kaori
2021/9/03	12, 13	Modify description of power jack and touch panel cable.	Kaori
2022/1/11	7,10	Modify 43W setting and write more description on RTP calibration with Raspbian OS.	Kaori

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