

## 3.5 inch LCD for Raspberry PI User Manual



## 1. General Description

The Innomaker 3.5 inch screen is a optimized partner for Raspberr Pi 3/4 display output. It features an integrated capacitive touch panel, you can operate your Raspberry Pi without mouse and keyboard. much better user experience than resistive touch screen.

The screen work by the SPI interface of Raspberry Pi with separate framebuffer. So the Raspberry Pi can be programmed to display different interface through this 3.5 screen and HDMI port at the same time.

On-board high precision I2C real-time clock chip DS3231 and EEPROM extended function is reserved , make the display suit a variety of applications.

Notice:

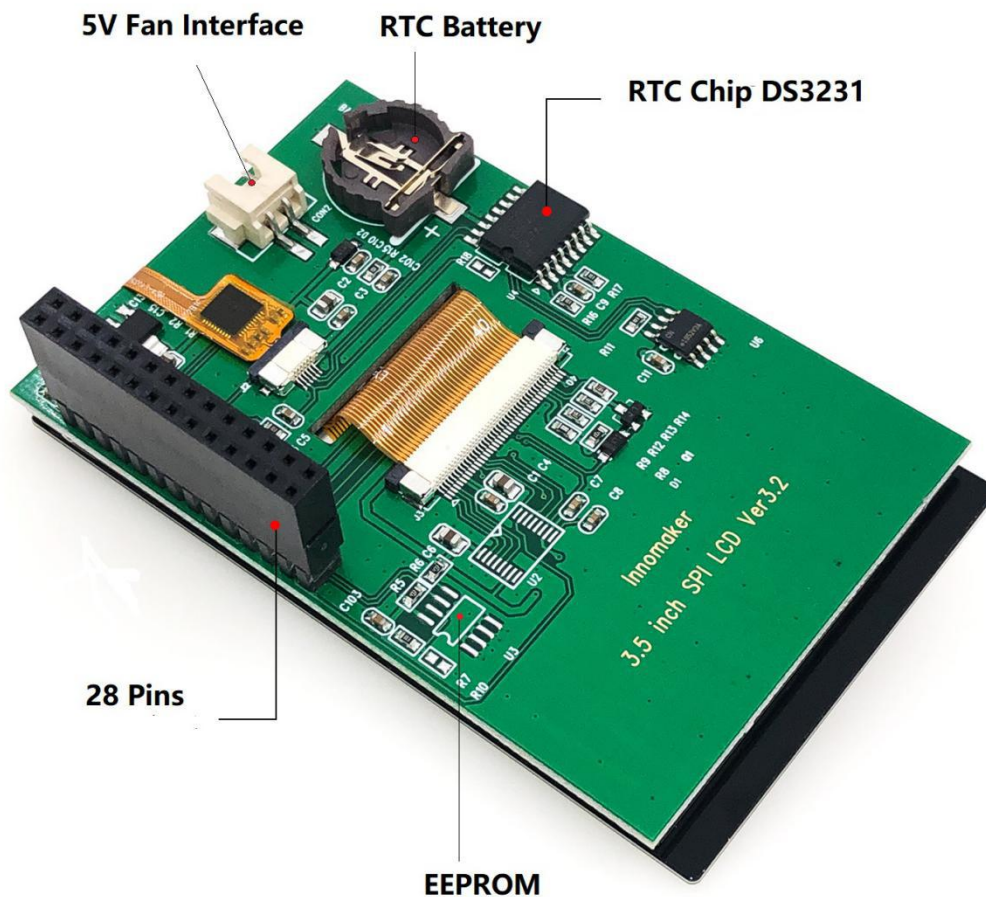
1. Need to install the driver, If you are not familiar with the Raspberry Pi, it is strongly recommended you that use the system with the driver installed.
2. A few customers got wrong connection, so the screen will burn up in a minute.
3. Does not support other systems and single board computer . Only be applicable for Raspberry Pi3 and Pi 4 product lines.

## 2. Features

1. Compatible with Raspberry Pi 3 and Pi 4 via the 28-pin connector. Connects directly to the Raspberry Pi board, no additional cables required, no soldering.
2. The screen work by SPI interface, support and display rotation function and display separately function for Raspberry Pi.
3. 480\*320 Pixels highlight resolution and capacitive touch, allow you to control your raspberry Pi by touching the screen with your fingers , Accurate and easy operating.
4. On-board extremely accurate I2C real-time clock chip DS3231 and continuous timing battery backup. A EEPROM extended function is reserved.
5. Comes with user manual and friendly technology support. For more information please refer to our wiki.

## 3. Hardware Description

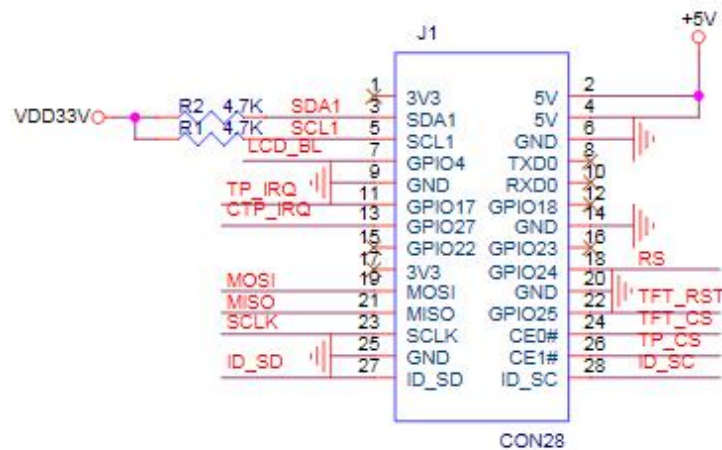
### 3.1 Overview



### 3.2 Screen Size(Only Screen, not contain PCBA backboard)

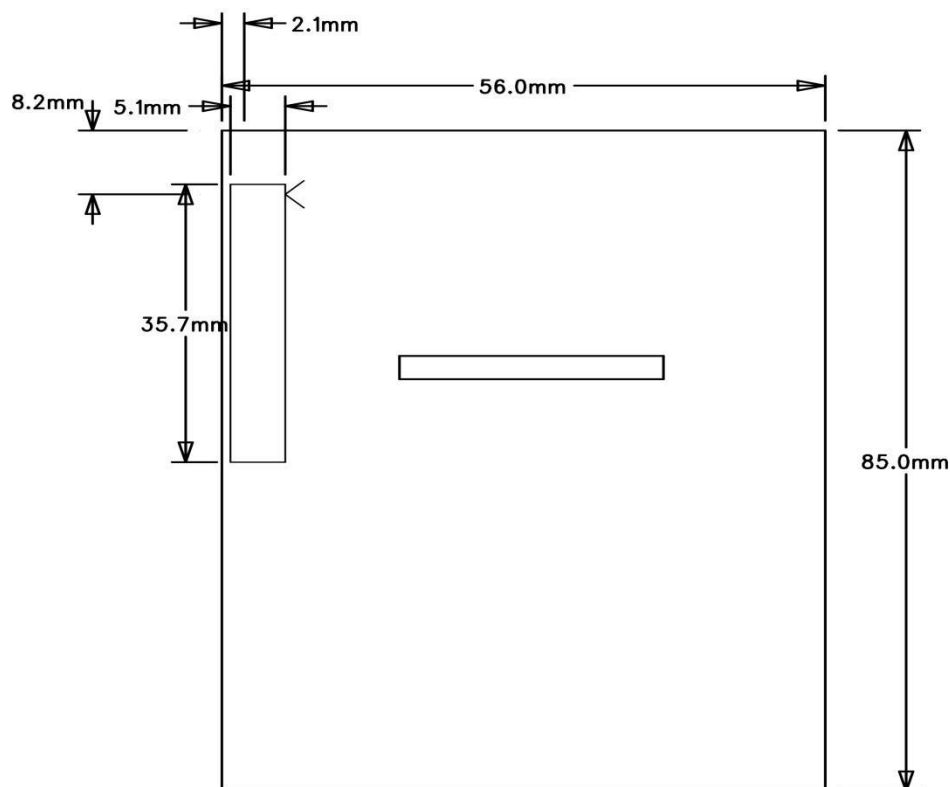
Item	Specification	Unit
Screen Size	53.30*83.32*2.26	mm
Display Area	49.00*73.40	mm
Resolution Ratio	320(RGB)*480 Dots	mm
Structure Type	COG + FPC + BL	mm
Operation Temperature	-20-70	°C
Storage Temperature	-30-70	°C
Display Type	Transmissive 3.5" QVGA TFT, COG	

### 3.3 PINOUT USAGE- FEMALE 28 PIN CONNECTOR

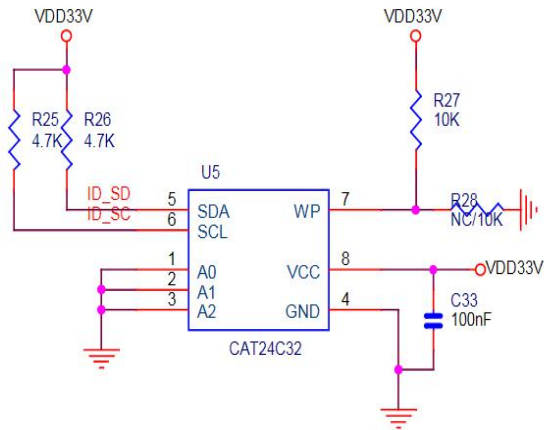


18	GPIO_24	Screen RS signal
19	GPIO_10/MOSI	MOSI Signal Used For Screen
21	GPIO_9/MISO	MISO Signal Used For Screen
22	GPIO_24	Screen Reset Signal
23	GPIO_11/SCLK	SCLK Signal, Used For Screen
26	GPIO_7/CE1	Screen CS Signal
27, 28	ID SCL and ID SDA	Reserved for an ID EEPROM on the Raspberry Pi. These pins are always reserved and should never be used to connect external components

### 3.4 Physical Dimensions

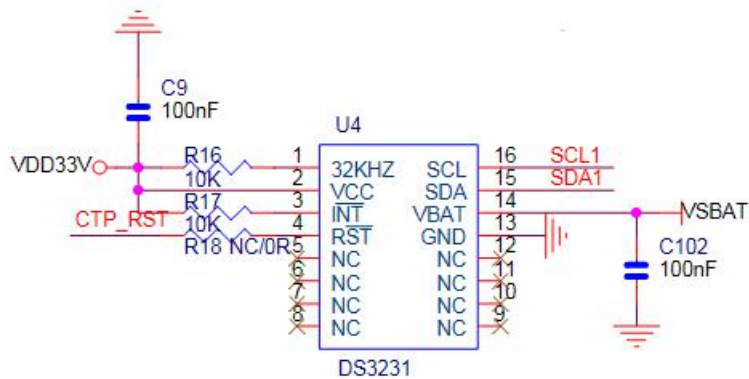


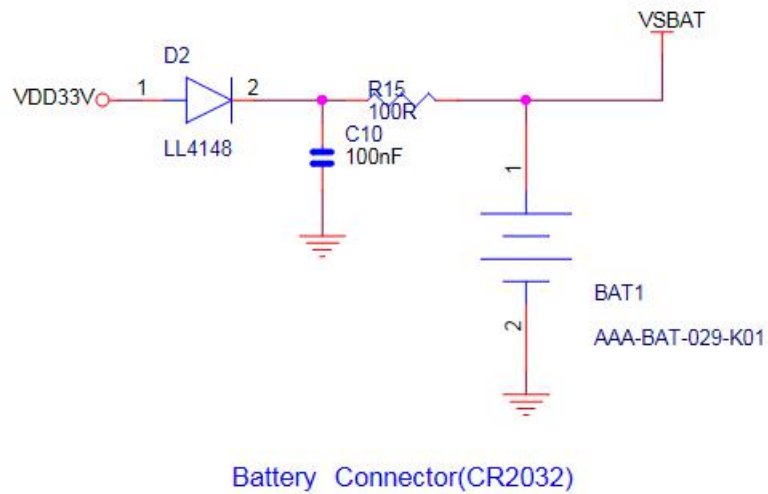
### 3.5 ID EEPROM: (U3, No soldering on-board )



Pin 27 and 28 are always reserved for an ID EEPROM on the Raspberry Pi. Independently which card you use. It's useless for most application. If you want to use this function, you need to solder the IC, resistance and capacitance by yourself.

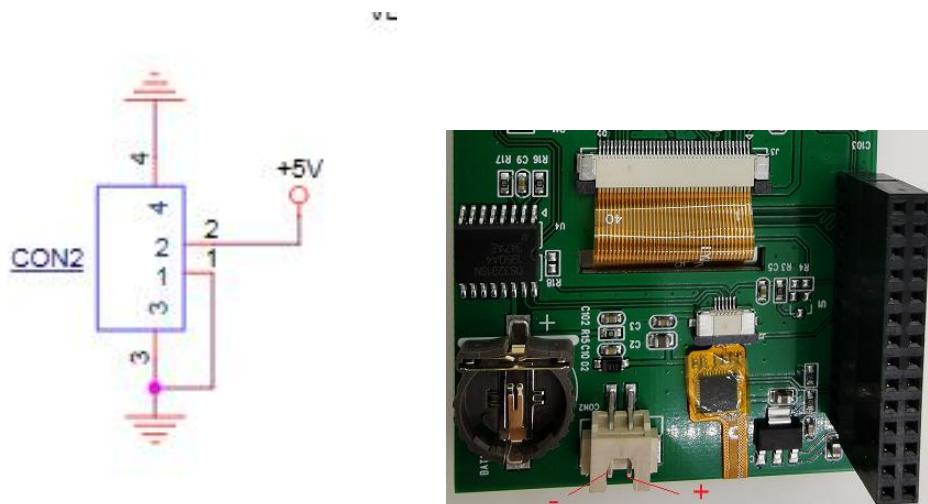
### 3.6 RTC DS3231 And Battery:





### 3.7 Fan Interface (CON2)

On-board a 5V Fan interface for Raspberry Pi heat dissipation.



## 4. Software Description

### 4.1 Overview

There are two methods to use the 3.5 screen with Raspberry Pi. One is load the innomaker release image, and the other is install the screen driver/tools to the Raspbian you're already using or a fresh Raspbian version.

### 4.2 Load Inno-maker Release Image

If you are not familiar with the Raspberry Pi, it is strongly recommended you that use the system with the driver installed. Please download it from our wiki:

Prepare a at least 16Gb Class 10 level TF card. Load the image file onto the TF card, using the instructions provided on the Raspberry Pi website for Linux, Mac or PC:

<https://www.raspberrypi.org/documentation/installation/installing-images/README.md>

Note: If you are using Raspberry Pi 4, do not connect the HDMI port to other screen. Otherwise the 3.5 screen will show nothing

### 4.3 Automatic Install Driver to Brand-New Raspbian

#### 4.3.1 Load Raspberry Pi image

Prepare a at least 16Gb Class 10 level TF card. Load the image file onto the TF card, using the instructions provided on the Raspberry Pi website for Linux, Mac or PC:

<https://www.raspberrypi.org/documentation/installation/installing-images/README.md>

Raspbian Image download:

<https://www.raspberrypi.org/downloads/>

#### 4.3.2 Tools/Driver Download

There are two ways to get the tools and drivers into Raspberry Pi.

**1) Use Raspberry Pi terminal get from github directly. And check whether is download successful. Make sure your Raspberry Pi is connect to network. You will get the 'lcd-3.5-inch-r-c' folder.**

Support: [support@inno-maker.com](mailto:support@inno-maker.com) [www.inno-maker.com/wiki](http://www.inno-maker.com/wiki)

Bulk Price: [sales@inno-maker.com](mailto:sales@inno-maker.com)



```
sudo git clone https://gitee.com/inno-maker/lcd-3.5-inch-r-c
```

```
pi@raspberrypi:~ $ sudo git clone https://gitee.com/inno-maker/lcd-3.5-inch-r-c
Cloning into 'lcd-3.5-inch-r-c'...
remote: Enumerating objects: 109, done.
remote: Counting objects: 100% (109/109), done.
remote: Compressing objects: 100% (53/53), done.
remote: Total 109 (delta 45), reused 109 (delta 45), pack-reused 0
Receiving objects: 100% (109/109), 1.81 MiB | 570.00 KiB/s, done.
Resolving deltas: 100% (45/45), done.
pi@raspberrypi:~ $ ls
Desktop  Documents  Downloads  lcd-3.5-inch-r-c  MagPi  Music  Pictures  Public  Templates  thinclient_drives  Videos
pi@raspberrypi:~ $
```

2) Download from below link, and copy them to your Raspberry Pi by U disk or telnet.

<https://gitee.com/inno-maker/lcd-3.5-inch-r-c>

### 4.3.3 Automatic Install The Driver

1) Go into the lcd-3.5-inch-r-c folder, Using chmod command set all the read, write, and execute permissions for these file. It's very important step, otherwise you could not to install properly.

```
sudo chmod -R a+rw * *
```

```
pi@raspberrypi:~ $ ls
Bookshelf  Documents  lcd-3.5-inch-r-c  Pictures  Templates  Videos
Desktop    Downloads  Music            Public    thinclient_drives
pi@raspberrypi:~ $ cd lcd-3.5-inch-r-c/
pi@raspberrypi:~/lcd-3.5-inch-r-c $ ls
4.19.118  4.19.75  5.4.51  innolcd3.5_autoinstall.sh  LICENSE  setup.zip
4.19.57   4.19.97  5.4.83  lcd_setup                  README.md
pi@raspberrypi:~/lcd-3.5-inch-r-c $ sudo chmod -R a+rw *
pi@raspberrypi:~/lcd-3.5-inch-r-c $
```

2) There is a automatic install script in folder.

```
pi@raspberrypi:~/lcd-3.5-inch-r-c $ sudo chmod -R a+rw *
pi@raspberrypi:~/lcd-3.5-inch-r-c $ ls
4.19.118  4.19.57  4.19.75  4.19.97  5.4.51  5.4.83  innolcd3.5_autoinstall.sh  lcd_setup  LICENSE  README.md  setup.zip
pi@raspberrypi:~/lcd-3.5-inch-r-c $
```



www.inno-maker.com

Design Service, Production Service

3) Run it. Here is one error report, please ignore it

`./innolcd3.5_autoinstall.sh`

```
pi@raspberrypi:~/lcd-3.5-inch-r-c $ ls
4.19.113  4.19.57  4.19.75  4.19.97  5.4.51  5.4.83  innolcd3.5_autoinstall.sh  lcd_setup  LICENSE  README.md  setup.zip
pi@raspberrypi:~/lcd-3.5-inch-r-c $ ./innolcd3.5_autoinstall.sh
-----INNO-MAKER LCD35 CT auto install script v0.1-----
./innolcd3.5_autoinstall.sh: line 6: warning: command substitution: ignored null byte in input
5.4.83-v7l+
Raspberry Pi 4 Model B Rev 1.1
PWD: /home/pi/lcd-3.5-inch-r-c/5.4.83/pi4
-----make install---START:
sudo install -p -m 644 touch/ft6236.ko /lib/modules/5.4.83-v7l+/kernel/drivers/input/touchscreen/
sudo install -p -m 644 ili9486-i2c.ko /lib/modules/5.4.83-v7l+/kernel/drivers/input/touchscreen/
sudo install -p -m 644 lcd35_spi.dtbo /boot/overlays/
sudo install -p -m 644 fbtft/fbtft.ko /lib/modules/5.4.83-v7l+/kernel/drivers/staging/fbtft/
#sudo install -p -m 644 fbtft/fbtft_device.ko /lib/modules/5.4.83-v7l+/kernel/drivers/staging/fbtft/
sudo install -p -m 644 fbtft/fb_ili9486.ko /lib/modules/5.4.83-v7l+/kernel/drivers/staging/fbtft/
sudo /sbin/depmod -a 5.4.83-v7l+
sudo /sbin/modprobe ft6236
sudo /sbin/modprobe ili9486-i2c
sudo /sbin/modprobe fbtft
#sudo /sbin/modprobe fbtft_device
sudo /sbin/modprobe fbtft_ili9486
modprobe: FATAL: Module fbtft_ili9486 not found in directory /lib/modules/5.4.83-v7l+
make: *** [Makefile:45: install] Error 1
-----make install---END.
-----lcd setup---START.
Setup InnoMaker 3.5 inch TFT and touch panel on RPI!
Configure the LCD display 0 degrees
System setup is complete, restart the system!
-----lcd setup---END.
INNO-MAKER: reboot now?(y/n):
```

4) Enter 'Y' to reboot Raspberry Pi and can get the screen show. If the HDMI port of Raspberry Pi is connected to other screen, please pull out the HDMI cable. Otherwise the screen show nothing. If the touch not works properly, please refer to the chapter 4.4.

## 4.4 Manual Install Driver to Brand-New Raspbian

We take Raspberry Pi 4 and Linux version 5.4.83(Release data 2021-01-11) image as an example.

### 4.4.1 Load Raspberry Pi image

Prepare a at least 16Gb Class 10 level TF card. Load the image file onto the TF card, using the instructions provided on the Raspberry Pi website for Linux, Mac or PC:

<https://www.raspberrypi.org/documentation/installation/installing-images/README.md>

Raspbian Image download:

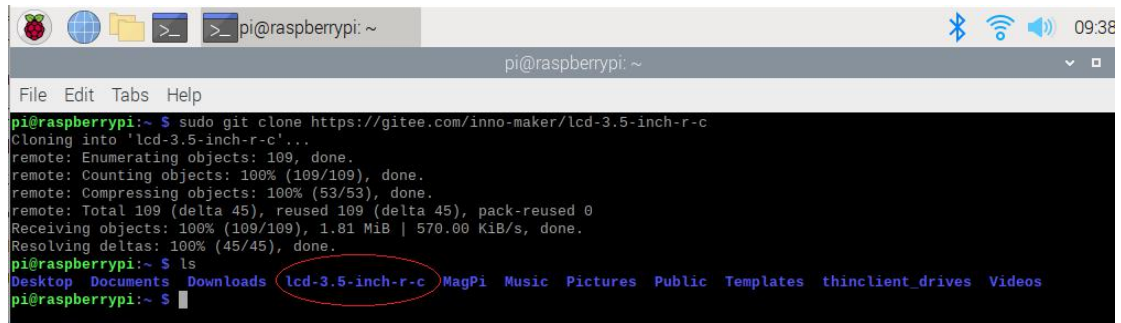
<https://www.raspberrypi.org/downloads/>

### 4.4.2 Tools/Driver Download

There are two ways to get the tools and drivers into Raspberry Pi.

5) Use Raspberry Pi terminal get from github directly. And check whether is download successful. Make sure your Raspberry Pi is connect to network. You will get the 'lcd-3.5-inch-r-c' folder.

sudo git clone https://gitee.com/inno-maker/lcd-3.5-inch-r-c



```

pi@raspberrypi:~$ sudo git clone https://gitee.com/inno-maker/lcd-3.5-inch-r-c
Cloning into 'lcd-3.5-inch-r-c'...
remote: Enumerating objects: 109, done.
remote: Counting objects: 100% (109/109), done.
remote: Compressing objects: 100% (53/53), done.
remote: Total 109 (delta 45), reused 109 (delta 45), pack-reused 0
Receiving objects: 100% (109/109), 1.81 MiB | 570.00 KiB/s, done.
Resolving deltas: 100% (45/45), done.
pi@raspberrypi:~$ ls
Desktop  Documents  Downloads  lcd-3.5-inch-r-c  MagPi  Music  Pictures  Public  Templates  thinclient_drives  Videos
pi@raspberrypi:~$
  
```

6) Download from below link, and copy them to your Raspberry Pi by U disk or telnet.

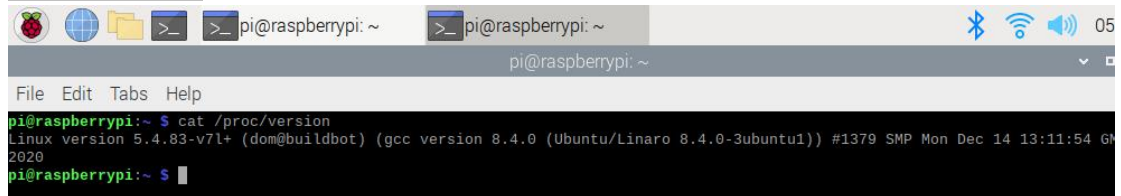
<https://gitee.com/inno-maker/lcd-3.5-inch-r-c>

#### 4.4.3 Check Basic Information

Check the basic information of your Raspberry Pi to choose the right driver. We take Raspberry Pi 4 and Linux version 4.19.97(Release data 2020-02-13) as an example.

1) Check the kernel version of your Raspbian

cat /proc/version



```

pi@raspberrypi:~$ cat /proc/version
Linux version 5.4.83-v7l+ (dom@buildbot) (gcc version 8.4.0 (Ubuntu/Linaro 8.4.0-3ubuntu1)) #1379 SMP Mon Dec 14 13:11:54 GMT 2020
pi@raspberrypi:~$
  
```

2) Check the hardware version of your Raspberry Pi

cat /proc/device-tree/model



```

pi@raspberrypi:~$ cat /proc/device-tree/model
Raspberry Pi 4 Model B Rev 1.1pi@raspberrypi:~$
  
```

#### 4.4.4 Driver Install

1)Go into the lcd-3.5-inch-r-c folder, Using chmod command set all the read, write, and execute permissions for these file. It's very important step, otherwise you could not to install properly.

sudo chmod -R a+rw \* \*

```
pi@raspberrypi: ~/lcd...
pi@raspberrypi: ~/lcd-3.5-inch-r-c
File Edit Tabs Help
pi@raspberrypi:~$ ls
Desktop Documents Downloads lcd-3.5-inch-r-c MagPi Music Pictures Public Templates thinclient_drives Videos
pi@raspberrypi:~$ cd lcd-3.5-inch-r-c/
pi@raspberrypi:~/lcd-3.5-inch-r-c$ sudo chmod -R a+rw *
pi@raspberrypi:~/lcd-3.5-inch-r-c$
```

2) Choose the folder named same as the version of your Raspbian. Here we choose 5.4.83 version.

```
pi@raspberrypi:~$ ls
Bookshelf Documents lcd-3.5-inch-r-c Pictures Templates Videos
Desktop Downloads Music Public thinclient_drives
pi@raspberrypi:~$ cd lcd-3.5-inch-r-c/
pi@raspberrypi:~/lcd-3.5-inch-r-c$ ls
4.19.118 4.19.57 4.19.75 4.19.97 5.4.51 5.4.83 innolcd3.5_autoinstall.sh lcd_setup LICENSE README.md setup.zip
pi@raspberrypi:~/lcd-3.5-inch-r-c$
```

3) Choose the hardware version you are using. Here we choose PI4 folder.

```
pi@raspberrypi:~$ ls
Bookshelf Documents lcd-3.5-inch-r-c Pictures Templates Videos
Desktop Downloads Music Public thinclient_drives
pi@raspberrypi:~$ cd lcd-3.5-inch-r-c/
pi@raspberrypi:~/lcd-3.5-inch-r-c$ ls
4.19.118 4.19.57 4.19.75 4.19.97 5.4.51 5.4.83 innolcd3.5_autoinstall.sh lcd_setup LICENSE README.md setup.zip
pi@raspberrypi:~/lcd-3.5-inch-r-c$ cd 5.4.83/
pi@raspberrypi:~/lcd-3.5-inch-r-c/5.4.83$ ls
pi3 pi4
pi@raspberrypi:~/lcd-3.5-inch-r-c/5.4.83$ cd pi4/
pi@raspberrypi:~/lcd-3.5-inch-r-c/5.4.83/pi4$
```

4) Make Install. Here is one error report, please ignore it

make install

```
pi@raspberrypi:~/lcd-3.5-inch-r-c/5.4.83/pi4$ make install
sudo install -p -m 644 touch/ft6236.ko /lib/modules/5.4.83-v7l+/kernel/drivers/input/touchscreen/
sudo install -p -m 644 ili9486-i2c.ko /lib/modules/5.4.83-v7l+/kernel/drivers/input/touchscreen/
sudo install -p -m 644 lcd35_spi.dtbo /boot/overlays/
sudo install -p -m 644 fbtft/fbtft.ko /lib/modules/5.4.83-v7l+/kernel/drivers/staging/fbtft/
#sudo install -p -m 644 fbtft/fbtft_device.ko /lib/modules/5.4.83-v7l+/kernel/drivers/staging/fbtft/
sudo install -p -m 644 fbtft/fb_ili9486.ko /lib/modules/5.4.83-v7l+/kernel/drivers/staging/fbtft/
sudo /sbin/depmod -a 5.4.83-v7l+
sudo /sbin/modprobe ft6236
sudo /sbin/modprobe ili9486-i2c
sudo /sbin/modprobe fbtft
#sudo /sbin/modprobe fbtft_device
sudo /sbin/modprobe fbtft_ili9486
modprobe: FATAL: Module fbtft_ili9486 not found in directory /lib/modules/5.4.83-v7l+
make: *** [Makefile:45: install] Error 1
pi@raspberrypi:~/lcd-3.5-inch-r-c/5.4.83/pi4$
```

## 4.4.5 Setup the Screen

1) Back to the lcd-3.5-inch-r-c folder. And go into the 'lcd\_setup' folder.

```
pi@raspberrypi:~/lcd-3.5-inch-r-c/5.4.83/pi4$ cd ../../
pi@raspberrypi:~/lcd-3.5-inch-r-c$ ls
4.19.118 4.19.57 4.19.75 4.19.97 5.4.51 5.4.83 innolcd3.5_autoinstall.sh lcd_setup LICENSE README.md setup.zip
pi@raspberrypi:~/lcd-3.5-inch-r-c$ cd lcd_setup/
pi@raspberrypi:~/lcd-3.5-inch-r-c/lcd_setup$
```

2) Run setup.sh. Complete the screen initialization Settings

./setup.sh

```
pi@raspberrypi:~/lcd-3.5-inch-r-c/lcd_setup $ ./setup.sh
Setup InnoMaker 3.5 inch TFT and touch panel on RPI!
Configure the LCD display 0 degrees
System setup is complete, restart the system!
pi@raspberrypi:~/lcd-3.5-inch-r-c/lcd_setup $
```

#### 4.4.6 Reboot

Reboot the Raspberry Pi and get the screen show. If the HDMI port of Raspberry Pi is connected to other screen, please pull out the HDMI cable. Otherwise the screen show nothing. If the touch not works properly, please refer to the chapter 4.4.

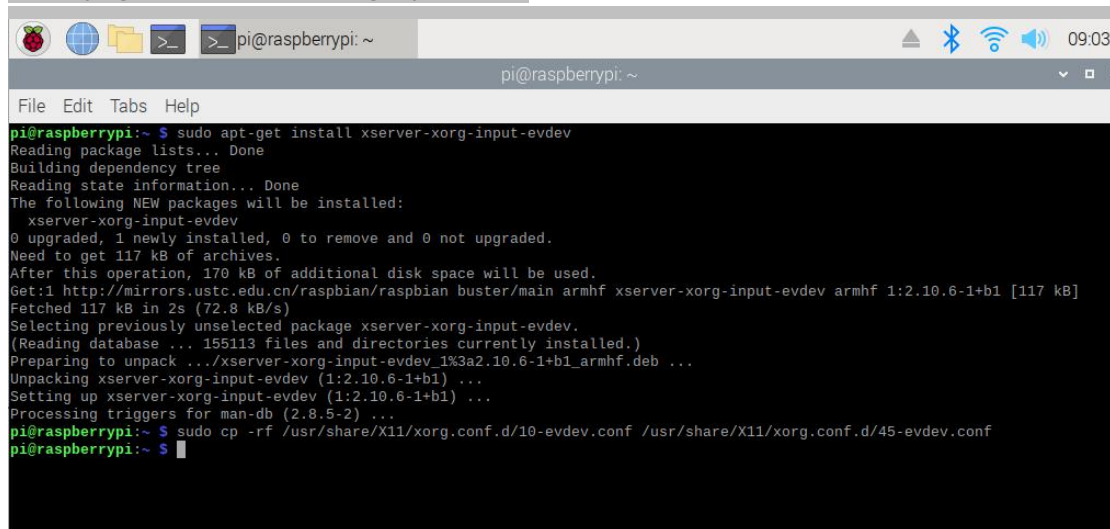
```
sudo reboot
```

### 4.5 Touch Setting

If your screen display normally, but the touch not be able to work properly after you follow the above steps install the screen. For example, you touch the middle of the screen but the mouse goes to somewhere else of the screen.

1) The system need to install Xorg-input-evdev. Keep Raspberry PI always connect to the network and Execute following commands to terminal of Raspberry Pi.

```
sudo apt-get install xserver-xorg-input-evdev
```



```
pi@raspberrypi:~ $ sudo apt-get install xserver-xorg-input-evdev
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  xserver-xorg-input-evdev
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 117 kB of archives.
After this operation, 170 kB of additional disk space will be used.
Get:1 http://mirrors.ustc.edu.cn/raspbian/raspbian buster/main armhf xserver-xorg-input-evdev armhf 1:2.10.6-1+b1 [117 kB]
Fetched 117 kB in 2s (72.8 kB/s)
Selecting previously unselected package xserver-xorg-input-evdev.
(Reading database ... 155113 files and directories currently installed.)
Preparing to unpack .../xserver-xorg-input-evdev_1%3a2.10.6-1+b1_armhf.deb ...
Unpacking xserver-xorg-input-evdev (1:2.10.6-1+b1) ...
Setting up xserver-xorg-input-evdev (1:2.10.6-1+b1) ...
Processing triggers for man-db (2.8.5-2) ...
pi@raspberrypi:~ $ sudo cp -rf /usr/share/X11/xorg.conf.d/10-evdev.conf /usr/share/X11/xorg.conf.d/45-evdev.conf
pi@raspberrypi:~ $
```

2) Then enter the command below:

```
sudo cp -rf /usr/share/X11/xorg.conf.d/10-evdev.conf /usr/share/X11/xorg.conf.d/45-evdev.conf
```



```

pi@raspberrypi: ~
File Edit Tabs Help
pi@raspberrypi:~$ sudo apt-get install xserver-xorg-input-evdev
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  xserver-xorg-input-evdev
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 117 kB of archives.
After this operation, 170 kB of additional disk space will be used.
Get:1 http://mirrors.ustc.edu.cn/raspbian/raspbian buster/main armhf xserver-xorg-input-evdev armhf 1:2.10.6-1+b1 [117 kB]
Fetched 117 kB in 2s (72.8 kB/s)
Selecting previously unselected package xserver-xorg-input-evdev.
(Reading database ... 155113 files and directories currently installed.)
Preparing to unpack .../xserver-xorg-input-evdev_1%3a2.10.6-1+b1_armhf.deb ...
Unpacking xserver-xorg-input-evdev (1:2.10.6-1+b1) ...
Setting up xserver-xorg-input-evdev (1:2.10.6-1+b1) ...
Processing triggers for man-db (2.8.5-2) ...
pi@raspberrypi:~$ sudo cp -rf /usr/share/X11/xorg.conf.d/10-evdev.conf /usr/share/X11/xorg.conf.d/45-evdev.conf
pi@raspberrypi:~$

```

3) Reboot. Touch screen correction successful.

## 4.6 Display Rotation

We can rotate the display mode for different applications. Changes will take effect after you reboot.

```

pi@raspberrypi:~/lcd-3.5-inch-r-c/lcd_setup$ ./setup.sh : display properly.
pi@raspberrypi:~/lcd-3.5-inch-r-c/lcd_setup$ ./setup.sh 90 : display is rotated 90 degrees.
pi@raspberrypi:~/lcd-3.5-inch-r-c/lcd_setup$ ./setup.sh 180 : display is rotated 180 degrees.
pi@raspberrypi:~/lcd-3.5-inch-r-c/lcd_setup$ ./setup.sh 270 : display is rotated 270 degrees.

```

```

pi@raspberrypi: ~/lcd-3.5-inch-r-c/lcd_setup
File Edit Tabs Help
pi@raspberrypi:~$ cd lcd-3.5-inch-r-c/lcd_setup/
pi@raspberrypi:~/lcd-3.5-inch-r-c/lcd_setup$ ./setup.sh 180
Setup InnoMaker 3.5 inch TFT and touch panel on RPI!
System common file already installed !
user-app Directory already exist!
xorg.conf.d Directory already exist!
Configure the LCD display 180 degrees
System setup is complete, restart the system!
pi@raspberrypi:~/lcd-3.5-inch-r-c/lcd_setup$

```

## 4.7 Backlight Control

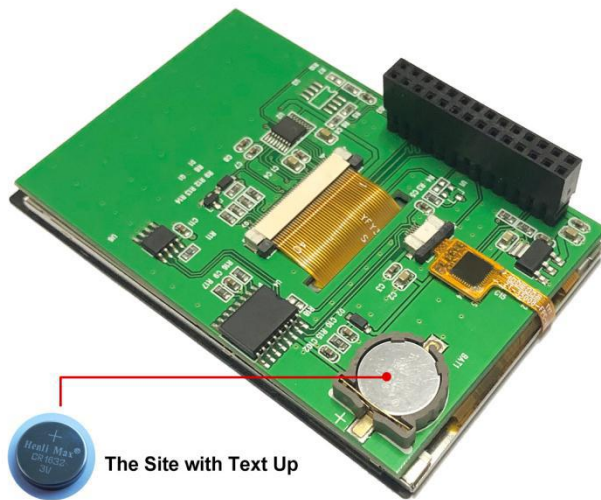
Turn off the backlight: `echo 1 | sudo tee /sys/class/backlight/fb_ili9486/bl_power`

Turn on the backlight: `echo 0 | sudo tee /sys/class/backlight/fb_ili9486/bl_power`

## 4.8 RTC Setting

Due to cost and size Raspberry pi didn't put hardware RTC on board. Updates the system time need to connect to the Internet via NTP time service. We added a DS3231 and on-board and continuous timing battery backup

- 1) Install battery.



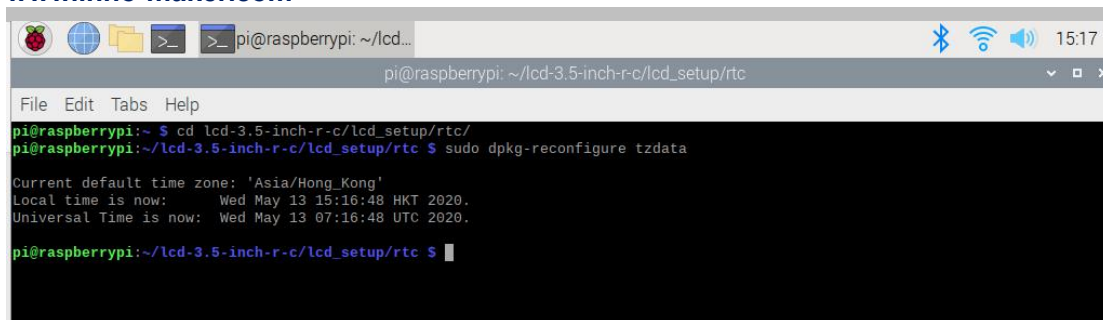
- 2) Go in the rtc folder .

```
cd lcd-3.5-inch-r-c/lcd_setup/rtc/
```



- 3) Initializes the hardware clock

```
sudo cp hwclock-set /lib/udev/hwclock-set
```



```

pi@raspberrypi: ~/lcd-3.5-inch-r-c/lcd_setup/rtc/
pi@raspberrypi:~/lcd-3.5-inch-r-c/lcd_setup/rtc $ sudo dpkg-reconfigure tzdata

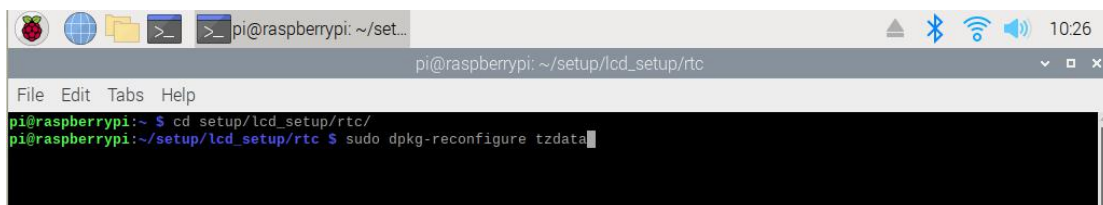
Current default time zone: 'Asia/Hong_Kong'
Local time is now:      Wed May 13 15:16:48 HKT 2020.
Universal Time is now:  Wed May 13 07:16:48 UTC 2020.

pi@raspberrypi:~/lcd-3.5-inch-r-c/lcd_setup/rtc $

```

4) Select the correct time Zone.

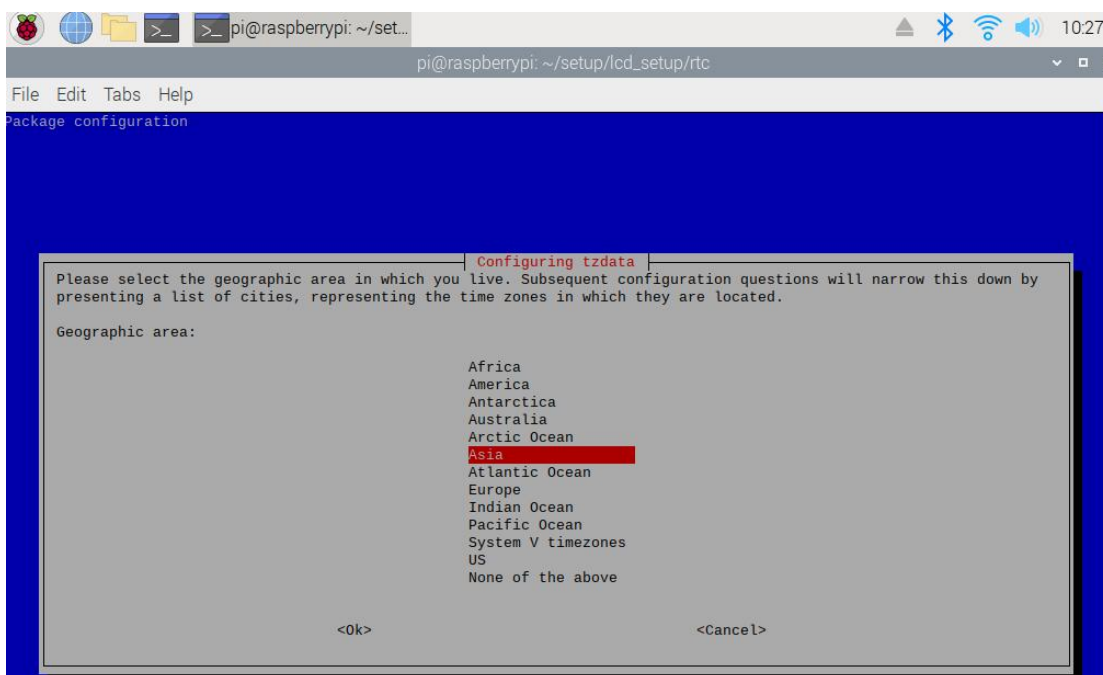
`sudo dpkg-reconfigure tzdata`



```

pi@raspberrypi: ~/setup/lcd_setup/rtc/
pi@raspberrypi:~/setup/lcd_setup/rtc $ sudo dpkg-reconfigure tzdata

```



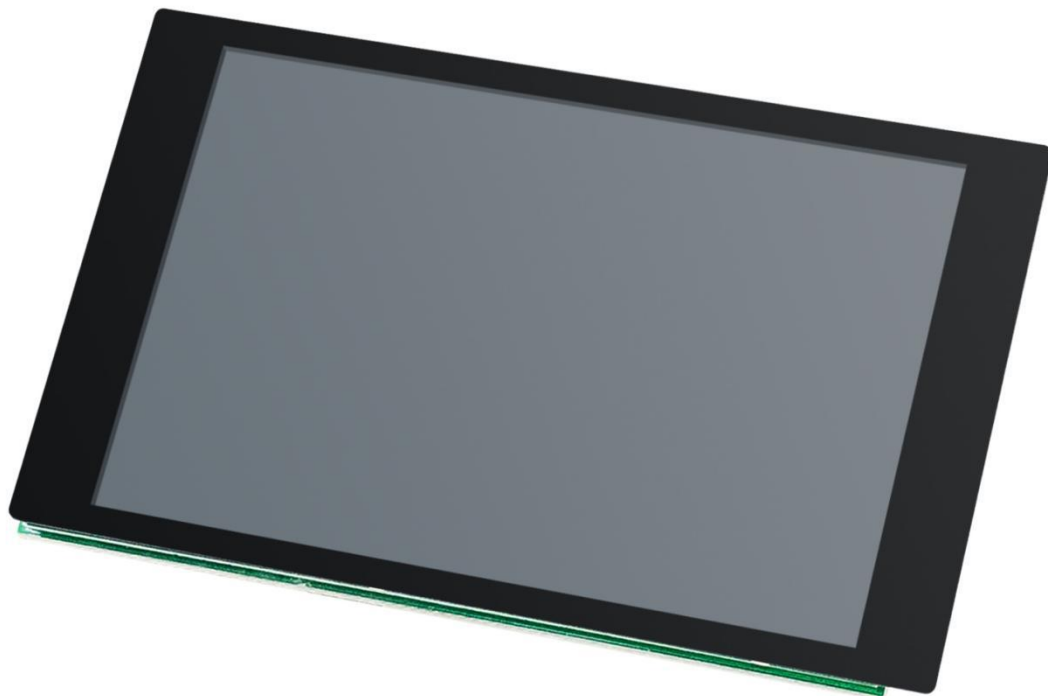


5) Set time: System will automatic update time from network. If you want to set the time different than current time, please disconnect from the network before setting. Otherwise the time will be overwritten.

For example, Set as July 01 2019 at 12:01:20

```
pi@raspberrypi:/setup/lcd_setup/rtc $ sudo date 070112012019.20 //Set time
pi@raspberrypi:/setup/lcd_setup/rtc $ sudo hwclock -w //Write time to hardware
pi@raspberrypi:/setup/lcd_setup/rtc $ sudo hwclock -s //Set System time syncing
//Set System time syncing from //HW RTC
pi@raspberrypi:/setup/lcd_setup/rtc $ sudo hwclock -r //Read time from hardware
```

## 5. Screw Installation







## 6. Version Descriptions

Version	Description	Date	E-mail
V1.1	Thoroughly Redid the driver and tools Installs way	2020.05.13	<a href="mailto:support@inno-maker.com">support@inno-maker.com</a> <a href="mailto:sales@inno-maker.com">sales@inno-maker.com</a>
V1.3	Added the Automatic install script description	2021.2.26	<a href="mailto:support@inno-maker.com">support@inno-maker.com</a> <a href="mailto:sales@inno-maker.com">sales@inno-maker.com</a>

If you have any suggestions, ideas, codes and tools please feel free to email to me. I will update the user manual and record your name and E-mail in list. Look forward to your letter and kindly share.