

# 3.5inch RPi LCD (B)

From Waveshare Wiki

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## Introduction

3.5 inch Touch Screen TFT LCD Designed for Raspberry Pi

More (<http://www.waveshare.com/product/3.5inch-RPi-LCD-B.htm>)

## Getting Started

The RPi LCD can be driven in two ways: Method 1. install driver to your Raspbian OS. Method 2. use the Ready-to-use image file of which LCD driver was pre-installed.

### Method 1. Driver installation

1. Configure your Pi:

```
sudo raspi-config
```

Set as:

- Select Expand Filesystem.

3.5inch RPi LCD (B)  
320×480



3.5 inch Touch Screen TFT LCD Designed for Raspberry Pi

#### Primary Attribute

**Category:** OLEDs / LCDs, LCD, Raspberry Pi LCD

**Brand:** Waveshare

#### Website

**English:** Waveshare website  
(<http://www.waveshare.com/3.5inch-RPi-LCD-B.htm>)

**Chinese:** 官方中文站点  
(<http://www.waveshare.net/shop/3.5inch-RPi-LCD-B.htm>)

#### Onboard Interfaces

RPi I/Os

- Boot Option -> Desktop Autologin (may differ depending on Raspbian revision)

2. Copy the driver (choose the driver according to your OS) into your OS then Run the following commands:

```
tar xvf LCD-show-*.tar.gz
cd LCD-show/
```

Install the driver and it toggles the mode to LCD display: **Note: Net work connection is required while installing driver to your Pi, or else the touch won't work properly.**

```
chmod +x LCD35B-show
./LCD35B-show
```

*Note: this LCD won't work after apt-get upgrade, in such cases, please edit the config.txt file in the SD card and remove this statement: `dtoverlay=ads7846`*

3. After system rebooting, the RPi LCD is ready to use.

## Method 2. Using Ready-to-use image

The image file with pre-installed driver is located in the IMAGE directory of the CD, or you can download it from #Image. Extract the .7z file and you will get an .img file. Write the image to your micro SD card (How to write an image to a micro SD card for your Pi? See RPi Image Installation Guides for more details). Then insert the card to your Pi, power up and enjoy it.

## Toggle between LCD and HDMI display

Once this LCD is enabled, meanwhile the default settings for HDMI are changed. If you want to use another HDMI monitor, please run the following command:

```
cd LCD-show/
./LCD-hdmi
```

This toggles the mode to LCD display:

```
./LCD35B-show
```

## Screen orientation settings

After touch driver installed, the screen orientation can be set by these commands:

- 0 degree rotation

```
cd LCD-show/
./LCD35B-show 0
```

- 90 degree rotation

```
cd LCD-show/
./LCD35B-show 90
```

- 180 degree rotation

```
cd LCD-show/  
./LCD35B-show 180
```

- 270 degree rotation

```
cd LCD-show/  
./LCD35B-show 270
```

## Touch screen calibration

This LCD can be calibrated using a program called `xinput_calibrator` which is pre-installed on the CD image. However, it was not pre-installed on original Raspbian OS. So in this case, you should get and install the program manually with

```
sudo apt-get install -y xinput-calibrator
```

Enter the following commands for touch screen calibration:

```
sudo DISPLAY=:0.0 xinput_calibrator
```

or select Menu -> Preferences -> Calibrate Touchscreen.

After running these commands, there will be a prompt for four-point calibration shown in the LCD screen. Click the points one by one to finish the touch calibration. Then, the new calibration data will be displayed in the terminal, as shows below. Please get these data for future use.

```
Doing dynamic recalibration:  
Setting new calibration data: 3919, 208, 236, 3913
```

Enter the following command to edit `99-calibration.conf`:

```
sudo nano /etc/X11/xorg.conf.d/99-calibration.conf
```

Then, the old calibration data will be displayed in the terminal:

```
Section "InputClass"  
Identifier      "calibration"  
MatchProduct   "ADS7846 Touchscreen"  
Option "Calibration"  "160 3723 3896 181"  
Option "SwapAxes"    "1"  
EndSection
```

Modify the calibration data to the new calibration data displayed above):

```
Section "InputClass"  
Identifier      "calibration"  
MatchProduct   "ADS7846 Touchscreen"  
Option "Calibration"  "3919 208 236 3913"  
Option "SwapAxes"    "1"  
EndSection
```

Press the keys Ctrl+X, and select the option Y to save the modification.

The modification will be valid after rebooting the system. Enter the following command for system reboot:

```
sudo reboot
```

**Notices: In case of inaccurate touch, please perform screen calibration again and reboot the system.**

## Install Virtual Keyboard

### 1. Install matchbox-keyboard

```
sudo apt-get install update
sudo apt-get install matchbox-keyboard
sudo nano /usr/bin/toggle-matchbox-keyboard.sh
```

### 2. Copy the statements below to toggle-matchbox-keyboard.sh and save.

```
#!/bin/bash
#This script toggle the virtual keyboard
PID=`pidof matchbox-keyboard`
if [ ! -e $PID ]; then
killall matchbox-keyboard
else
matchbox-keyboard -s 50 extended&
fi
```

### 3. Execute the commands:

```
sudo chmod +x /usr/bin/toggle-matchbox-keyboard.sh
sudo mkdir /usr/local/share/applications
sudo nano /usr/local/share/applications/toggle-matchbox-keyboard.desktop
```

### 4. Copy the statements to toggle-matchbox-keyboard.desktop and save.

```
[Desktop Entry]
Name=Toggle Matchbox Keyboard
Comment=Toggle Matchbox Keyboard`
Exec=toggle-matchbox-keyboard.sh
Type=Application
Icon=matchbox-keyboard.png
Categories=Panel;Utility;MB
X-MB-INPUT-MECHANSIM=True
```

### 5. Execute commands as below. **Note that you need to use "Pi " user permission instead of root to execute this command**

```
nano ~/.config/lxpanel/LXDE-pi/panels/panel
```

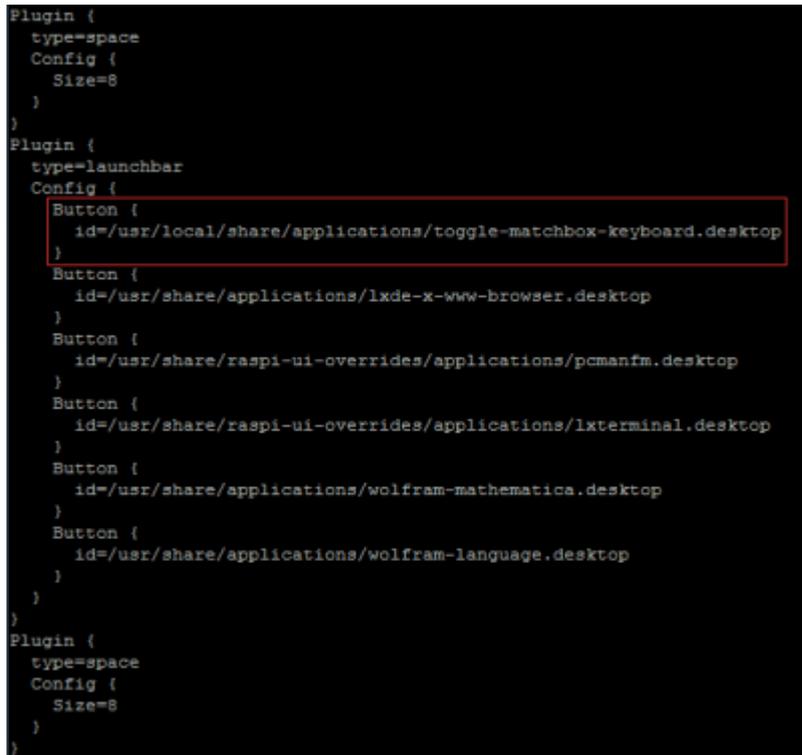
### 6. Find the statement which is similar to below: (It maybe different in different version)

```
Plugin {
type = launchbar
Config {
Button {
```

```
id=lxde-screenlock.desktop
}
Button {
id=lxde-logout.desktop
}
}
```

7. Append these statements to add an button option:

```
Button {
id=/usr/local/share/applications/toggle-matchbox-keyboard.desktop
}
```



```
Plugin {
type=space
Config {
Size=8
}
}
Plugin {
type=launchbar
Config {
Button {
id=/usr/local/share/applications/toggle-matchbox-keyboard.desktop
}
Button {
id=/usr/share/applications/lxde-x-www-browser.desktop
}
Button {
id=/usr/share/raspi-ui-overrides/applications/pcmanfm.desktop
}
Button {
id=/usr/share/raspi-ui-overrides/applications/lxterminal.desktop
}
Button {
id=/usr/share/applications/wolfram-mathematica.desktop
}
Button {
id=/usr/share/applications/wolfram-language.desktop
}
}
}
Plugin {
type=space
Config {
Size=8
}
}
```

8. reboot your Raspberry Pi. If the virtual keyboard is installed correctly, you can find that there is a keyboard icon on the left of the bar

```
sudo reboot
```

## How to work with a camera

1. Select "Enable Camera" -> "<YES>"

```
sudo raspi-config
```

2. Copy the Camera driver to the OS of Pi then:

```
unzip camera.zip
cd camera
sudo chmod 777 Camera
sudo cp update\ camera/95-stmpe.rules /etc/udev/rules.d/
```

3. Create a file called wheezy.list.

```
sudo nano /etc/apt/sources.list.d/wheezy.list
```

Append:

```
deb http://archive.raspbian.org/raspbian wheezy main
```

Exit with save.

4. Create a file called 10defaultRelease.

```
sudo nano /etc/apt/apt.conf.d/10defaultRelease
```

Append:

```
APT::Default-release \"stable\";
```

Exit with save.

5. Create a file called libsd1.

```
sudo nano /etc/apt/preferences.d/libsd1
```

Append:

```
Package: libsd11.2debian  
Pin: release n=jessie  
Pin-Priority: -10  
Package: libsd11.2debian  
Pin: release n=wheezy  
Pin-Priority: 900
```

Exit with save.

6. Last, execute the commands:

```
sudo apt-get update  
sudo apt-get -y --force-yes install libsd11.2debian/wheezy  
sudo apt-get install evtest tslib libts-bin xinput  
sudo apt-get install python-pip  
sudo apt-get install python2.7-dev  
sudo pip install picamera==1.10  
sudo reboot  
sudo TSLIB_FBDEVICE=/dev/fb1 TSLIB_TSDEVICE=/dev/input/touchscreen ts_calibrate
```

Camera will be enabled by the steps above.

## Resource

- User manual (<http://www.waveshare.com/w/upload/3/3e/RPi-LCD-User-Manual.pdf>)

## Image

Description: if you felt hard to install driver, try the image with driver pre-installed.

- LCD35B-161122.7z (<https://drive.google.com/open?id=0BxFRtACVZx9fNIhjMVN5SDVERW8>)

## Driver

If the touch screen doesn't work properly, please install the driver: LCD-show-170703.tar.gz, but not LCD-show-161112.tar.gz.

- LCD-show-170703.tar.gz (network connection is required while installing) (<http://www.waveshare.com/w/upload/0/00/LCD-show-170703.tar.gz>)
- LCD-show-161112.tar.gz (<http://www.waveshare.com/w/upload/4/4b/LCD-show-161112.tar.gz>)

## Software

- Panasonic SDFormatter ([http://www.waveshare.com/w/upload/d/d7/Panasonic\\_SDFormatter.zip](http://www.waveshare.com/w/upload/d/d7/Panasonic_SDFormatter.zip))
- Win32DiskImager (<http://www.waveshare.com/w/upload/7/76/Win32DiskImager.zip>)
- PuTTY (<http://www.waveshare.com/w/upload/5/56/Putty.zip>)

## LCD Panel Dimension

- 3.5inch RPi LCD (B) panel dimension (<http://www.waveshare.com/w/upload/2/2f/3.5inch-rpi-lcd-b-panel-dimension.pdf>)

## FAQ

### Question:

Why does the touchscreen not work well?

### Answer:

[Collapse]

Now, we only provide touch screen drivers for Raspbian and Ubuntu Mate. How to install the driver? See: [#Method\\_1.\\_Driver\\_installation](#)

### Question:

Why does the image in the CD not work on my Pi?

### Answer:

[Collapse]

- The image in the CD may differ depending on batches, however, some Images are just available for Pi 2 (or before, but not for Pi 3). In such cases you can download the latest version from Raspberry Pi website (<https://www.raspberrypi.org/downloads/raspbian/>) and install the driver. See: [#Method\\_1.\\_Driver\\_installation](#)
- Make sure the hardware connection is correct and connects fine.
- Make sure you've written the image to your SD card using the software File:Win32DiskImager.zip rather than just copy and paste.
- It is strongly recommended to use a stand-alone 5V/2A power adapter, because the USB port of PC might not have enough power to support the Pi and LCD.

## Question:

What are the power requirements?

## Answer:

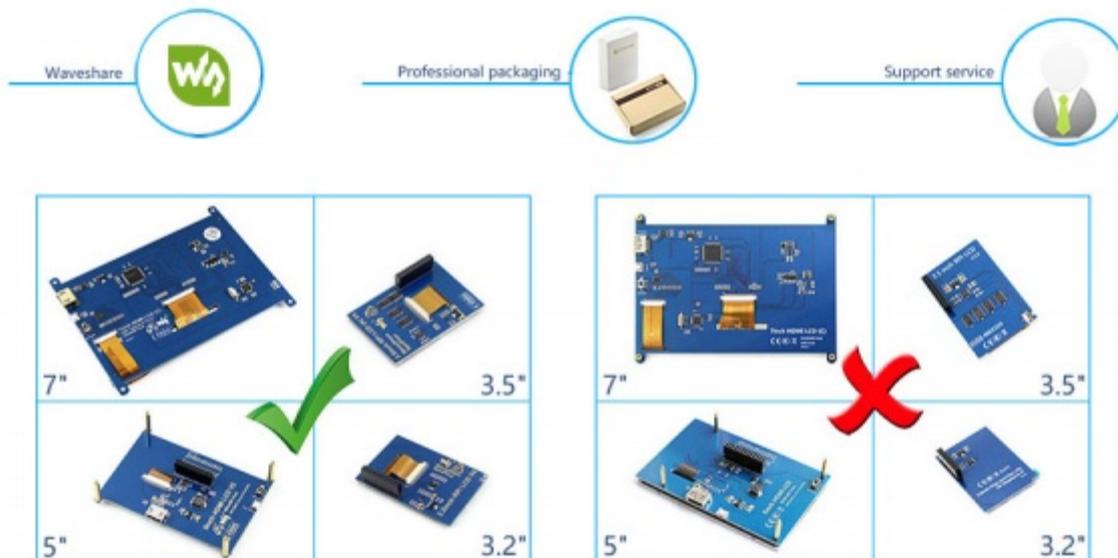
[Collapse]

When working with 5V input, the current is about 150mA.

## Anti-Piracy

Since the first-generation Raspberry Pi released, Waveshare has been working on designing, developing, and producing various fantastic touch LCDs for the Pi. Unfortunately, there are quite a few pirated/knock-off products in the market. They're usually some poor copies of our early hardware revisions, and comes with none support service.

To avoid becoming a victim of pirated products, please pay attention to the following features when purchasing:



(Click to enlarge (<http://www.waveshare.com/w/upload/6/6d/RPi-LCD-Anti-Piracy-1.jpg>))

## Beware of knock-offs

Please note that we've found some poor copies of this item in the market. They are usually made of inferior materials and shipped without any testing.

You might be wondering if the one you're watching or you've purchased in other non-official stores is original, feel free to contact us.

## Support

Contact your seller (fast response and most recommended)



or send emails to **service@waveshare.com** (not fast enough but please be patient) for help.

Our working time: 09:00-18:00 (**UTC+8** Monday to Saturday)

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