# 3.5inch HDMI LCD

From Waveshare Wiki

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**3.5inch HDMI LCD**
**3.5inch HDMI LCD, 480x320, IPS**

480x320, 3.5inch Resistive Touch Screen LCD, HDMI interface, IPS Screen, Designed for Raspberry Pi

**Primary Attribute**

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

**Brand:** Waveshare

**Website**

**English:** Website (http://www.waveshare.com/3.5inch-hdmi-lcd.htm)

**Chinese:** 官网 (http://www.waveshare.net/shop/3.5inch-hdmi-lcd.htm)

**Onboard Interfaces**

| RPi I/Os | HDMI |
| --- | --- |

## Introduction

480x320, 3.5inch Resistive Touch Screen LCD, HDMI interface, IPS Screen, Designed for Raspberry Pi

More (http://www.waveshare.com/3.5inch-hdmi-lcd.htm)

## Getting Started

### Hardware Connection

1. Plug the LCD to your Raspberry Pi:
    - There are 40 pins on Raspberry Pi Model A+/B+/2 B/3 B but only 26 pins on the LCD, so you should pay attention to connecting the pins to your Pi accordingly.
2. Connect the HDMI Connector to both the HDMI interfaces on the LCD and the Pi.
    - You should connect the LCD to Raspberry Pi Model B or Raspberry Pi Zero with an HDMI cable rather than an HDMI Connector.
3. Turn on the "backlight" switch on the back of the LCD.

You can enable the touch in two ways: Method 1. install driver to your Raspbian/Ubuntu Mate OS. Method 2. use the Ready-to-use image file of which LCD driver was pre-installed.

## Method 1. Driver installation

Description: The drivers are not available for NOOBS or any system installed by NOOBS.

- LCD-show-170703.tar.gz (network connection is required while installing)



Hardware connection

(http://www.waveshare.com/w/upload/0/00/LCD-show-170703.tar.gz)

1) Download the Raspbian / Ubuntu Mate image from Raspberry Pi website (https://www.raspberrypi.org/downloads/) and extract it on a PC.

2) Connect your micro SD card to the PC and write the image to the card using Win32DiskImager. How to write an image to a micro SD card for your Pi? See RPi Image Installation Guides for more details)

3) Copy the LCD driver to the micro SD card (or copy the driver to the system of Pi using a USB drive).

4) Append the following lines to the config.txt file which is located in the root of the card:

```
max_usb_current=1
hdmi_group=2
hdmi_mode=87
hdmi_cvt 800 480 60 6 0 0 0
```

5) The LCD will display after booting up. Then open a terminal to install the touch driver which can be found in the /boot/ directory. Note: Please make sure your Pi is connecting to the internet.

```
tar xzvf /boot/LCD-show-*.tar.gz
cd LCD-show/
# There are two LCD resolution modes, choose one of the two to execute.
./LCD35-HDMI-480x320-show
./LCD35-HDMI-800x480-show
```

Touch function will work after restart. For ease of use, you can set the screen orientation, see: #Screen orientation settings.

## 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.

# Audio out from HDMI

There is a 3.5mm jack on the LCD, which is used to play HDMI audio. Steps to use this jack:

```
sudo nano /boot/config.txt          # edit the configuration file
```

Modify this line:

```
hdmi_drive=1
```

to

```
hdmi_drive=2
```

Exit with save: Hit ctrl + x --> Y

```
reboot                              # system reboot
```

```
apt-get install mplayer             # install mplayer
```

```
mplayer music.mp3                   # play music
```

# Custom resolution

Hardware resolution of this LCD is 480x320 but you can change the resolution by software. In Raspbian, these resolution settings can work properly

480×320 800×480 800×600 1024×768 1152×864 1280×720 1280×768 1280×800

1280×960 1280×1024 1360×768 1366×768 1440×900 1600×900 1600×1024 1680×1050

The resolution can be configured by editing the /boot/config.txt file. Modify the line where hdmi_cvt is located, e.g. to change the resolution from 480x320 to 800x480, modify:

```
hdmi_cvt 480 320 60 6 0 0 0
```

to

```
hdmi_cvt 800 480 60 6 0 0 0
```

# Screen orientation settings

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

- 0 degree rotation

```
cd LCD-show/
# Choose one of the two to execute
```

```
./LCD35-HDMI-480x320-show 0
./LCD35-HDMI-800x480-show 0
```

- 90 degree rotation

```
cd LCD-show/
# Choose one of the two to execute
./LCD35-HDMI-480x320-show 90
./LCD35-HDMI-800x480-show 90
```

- 180 degree rotation

```
cd LCD-show/
# Choose one of the two to execute
./LCD35-HDMI-480x320-show 180
./LCD35-HDMI-800x480-show 180
```

- 270 degree rotation

```
cd LCD-show/
# Choose one of the two to execute
./LCD35-HDMI-480x320-show 270
./LCD35-HDMI-800x480-show 270
```

# Touch screen calibration

- This LCD can be calibrated using a program called xinput_calibrator which can be downloaded from Xinput-calibrator_0.7.5-1_armhf
- Extract and copy the software Xinput-calibrator_0.7.5-1_armhf.deb to the Raspbian of your Pi.
- Install it with the commands:

```
sudo dpkg -i -B xinput-calibrator_0.7.5-1_armhf.deb
```

- Click the "Menu" button on the task bar, choose "Preference" -> "Calibrate Touchscreen".
- Finish the touch calibration following the prompts. Maybe rebooting is required to make calibration active.
- You can create a 99-calibration.conf file to save the touch parameters (not necessary if file exists).

```
/ect/X11/xorg.conf.d/99-calibration.conf
```

- Save the touch parameters (may differ depending on LCD) to 99-calibration.conf, as shown in the picture:



# Interface

| PIN NO. | SYMBOL | DESCRIPTION |
|---|---|---|
| 1, 17 | 3.3V | Power positive (3.3V power input) |
| 2, 4 | 5V | Power positive (5V power input) |
| 3, 5, 7, 8, 10, 11, 12, 13, 15, 16, 18, 24 | NC | NC |
| 6, 9, 14, 20, 25 | GND | Ground |
| 19 | TP_SI | SPI data input of Touch Panel |
| 21 | TP_SO | SPI data output of Touch Panel |
| 22 | TP_IRQ | Touch Panel interrupt, low level while the Touch Panel detects touching |
| 23 | TP_SCK | SPI clock of Touch Panel |
| 26 | TP_CS | Touch Panel chip selection, low active |

# Resource

## 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)

## Image

- RPi-3.5inch-HDMI-LCD-Raspbian_480x320-170510.img.7z (https://drive.google.com/open?id=0BwbgcecjOmBqdk5qOVJCMlJKcVk)
- RPi-3.5inch-HDMI-LCD-Raspbian_800x480-170510.img.7z (https://drive.google.com/open?id=0BwbgcecjOmBqZWloaG4yaVQzRms)

## Demo video

- Demo video (https://youtu.be/IfNH5s7vLbI)

## Software

- Panasonic SDFormatter (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)

## General Tutorial Series

- Raspberry Pi Tutorial Series

# 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 then 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 200mA with back light on and 30mA with back light off.

# 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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