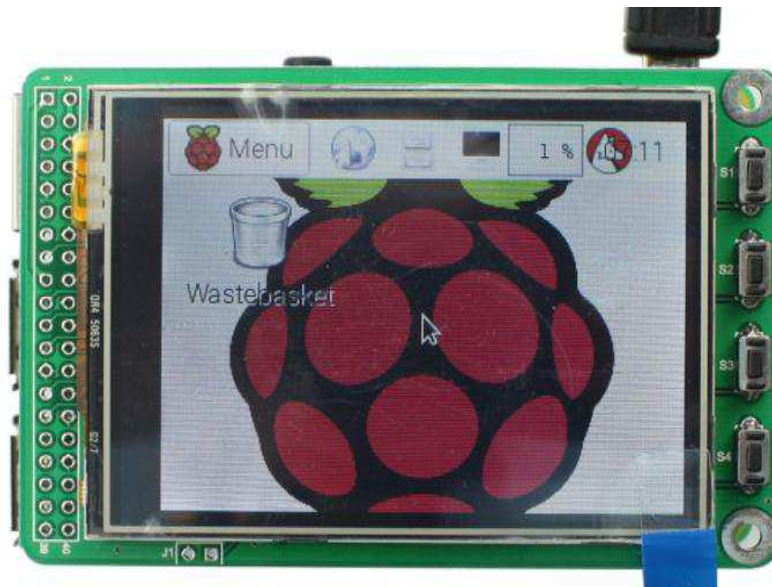




## 2.8 Inch Touch Screen 320x240 TFT LCD Display

Rev 1.2, Mar 2016



## 1. Introduction

Thanks for adafruit team released a LCD driver for Raspberry Pi board, now ArduCAM team designed a compatible LCD module with touch screen for Raspberry Pi. With the LCD module, it provides the friendly user interface and simplifies the portable device design based on Raspberry Pi board.

## 2. Feature

- Well mate with Raspberry Pi B+ boards or Raspberry Pi 2B board or Raspberry Pi 3B board
- 2.8 TFT LCD with touch screen
- 4 user defined buttons
- Alternate port for better expansion

## 3. Hardware Setup

Connect the 40 pin connector on the 2.8 Inch Touch Screen LCD adapter board to the pin header on the Raspberry Pi B+ board or Raspberry Pi 2B board or Raspberry Pi 3B board. Using the plastic standoff spacer between two boards, then fasten the screws.

Buttons	Raspberry pi board pin
S1	GPIO23
S2	GPIO22
S3	GPIO21
S4	GPIO18

4 user defined buttons

## 4. Software Package Setup

### 4.1 Before You Start

You'll need a working install of Raspbian with network access. We'll be doing this from a console cable connection, but you can just as easily do it from the direct HDMI/TV console or by SSH'ing([SmarTTY](#)) in.

### 4.2 DIY Installer Script

Adafruit team has done a great job on 2.8 inch Pi TFT screen driver and installation guide, please follow the software package installation guide from Adafruit [here](#).

If you don't want to download an [premade image](#), you can run this script from inside your existing Raspbian install. It will download the kernel add-ons, and configure your Pi for PiTFT joy.

[The script is available for perusal here](#),if you are interested in how it works,To

download and run it, simply run the following commands.

Start by expanding the filesystem This is required!!!

```
sudo raspi-config
```

```
(expand filesystem)
```

```
sudo reboot
```

The screenshot shows a terminal window titled 'SmarTTY - 192.168.1.119'. The user has run 'sudo raspi-config' and selected 'expand filesystem'. The terminal output shows the disk size (7.2 GiB) and the creation of a new partition of type 'Linux' and size 7.2 GiB. It also shows the partition table being altered and the kernel using the old table until the next reboot. The prompt is now 'pi@raspberrypi:~\$'.

The first command adds apt.adafruit.com to your repository list, so you can grab code directly from adafruit's servers,

```
curl -SLs https://apt.adafruit.com/add-pin | sudo bash
```

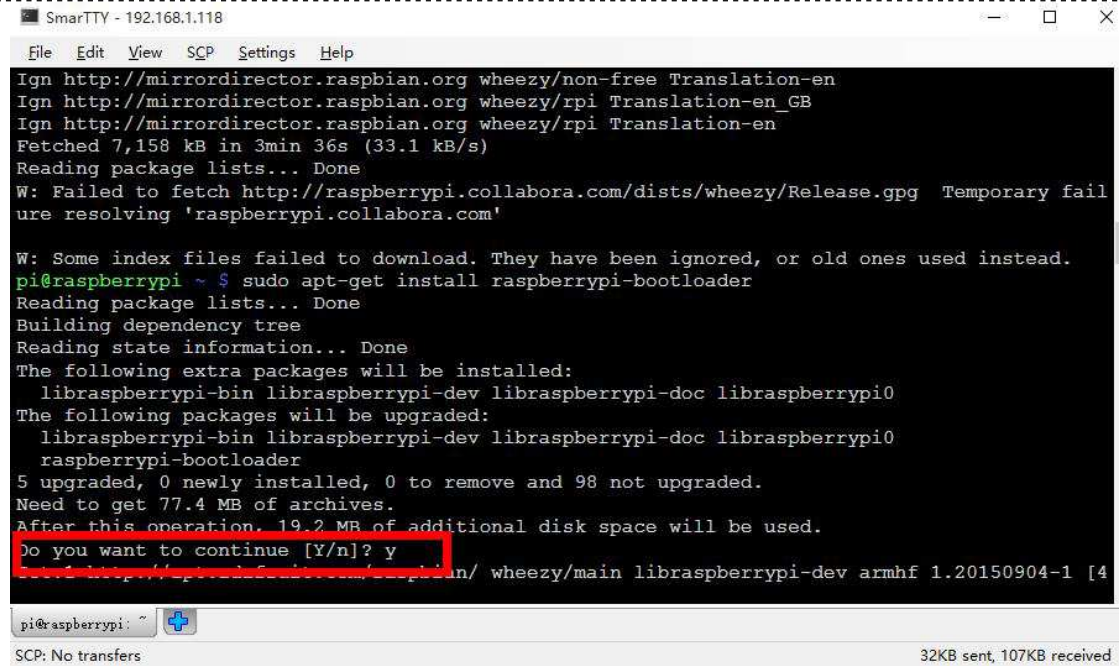
The screenshot shows a terminal window titled 'SmarTTY - 192.168.0.7'. The user has run 'curl -SLs https://apt.adafruit.com/add-pin | sudo bash'. The terminal output shows the Debian GNU/Linux system's free software notice and the successful execution of the command. The prompt is now 'pi@raspberrypi:~\$'.

The next two do the actual download and installation, it'll take a while because

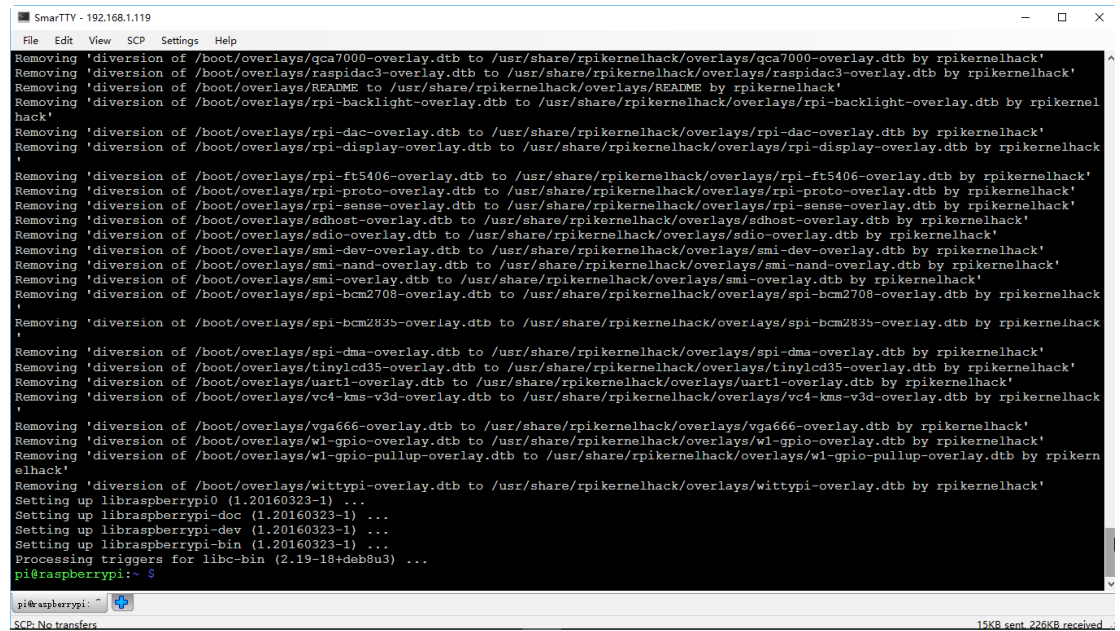
there's a lot of software to replace for PiTFT support.

```
sudo apt-get install raspberrypi-bootloader
```

```
sudo apt-get install adafruit-pitft-helper
```



Do you want to continue? [y/n] y



```

SmarTTY - 192.168.1.119
File Edit View SCP Settings Help
Removing 'diversion of /boot/overlays/smi-overlay.dtb to /usr/share/rpikernelhack/overlays/smi-overlay.dtb by rpikernelhack'
Removing 'diversion of /boot/overlays/spi-bcm2708-overlay.dtb to /usr/share/rpikernelhack/overlays/spi-bcm2708-overlay.dtb by rpikernelhack'
Removing 'diversion of /boot/overlays/spi-bcm2835-overlay.dtb to /usr/share/rpikernelhack/overlays/spi-bcm2835-overlay.dtb by rpikernelhack'
Removing 'diversion of /boot/overlays/spi-dma-overlay.dtb to /usr/share/rpikernelhack/overlays/spi-dma-overlay.dtb by rpikernelhack'
Removing 'diversion of /boot/overlays/tinylcd35-overlay.dtb to /usr/share/rpikernelhack/overlays/tinylcd35-overlay.dtb by rpikernelhack'
Removing 'diversion of /boot/overlays/uart1-overlay.dtb to /usr/share/rpikernelhack/overlays/uart1-overlay.dtb by rpikernelhack'
Removing 'diversion of /boot/overlays/vc4-kms-v3d-overlay.dtb to /usr/share/rpikernelhack/overlays/vc4-kms-v3d-overlay.dtb by rpikernelhack'
Removing 'diversion of /boot/overlays/vga666-overlay.dtb to /usr/share/rpikernelhack/overlays/vga666-overlay.dtb by rpikernelhack'
Removing 'diversion of /boot/overlays/wl-gpio-overlay.dtb to /usr/share/rpikernelhack/overlays/wl-gpio-overlay.dtb by rpikernelhack'
Removing 'diversion of /boot/overlays/wl-gpio-pullup-overlay.dtb to /usr/share/rpikernelhack/overlays/wl-gpio-pullup-overlay.dtb by rpikernelhack'
Removing 'diversion of /boot/overlays/wittypi-overlay.dtb to /usr/share/rpikernelhack/overlays/wittypi-overlay.dtb by rpikernelhack'
Setting up libraspberrypi0 (1.20160323-1) ...
Setting up libraspberrypi-doc (1.20160323-1) ...
Setting up libraspberrypi-dev (1.20160323-1) ...
Setting up libraspberrypi-bin (1.20160323-1) ...
Processing triggers for libc-bin (2.19-18+deb8u3) ...
pi@raspberrypi:~$ sudo apt-get install adafruit-pitft-helper
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  evemu-tools evtest fbi fonts-droid ghostscript kpartx libevemu1 libgs9 libgs9-common libijs-0.35 libjbig2dec0 libpaper-utils libpaper1
  libtss-0.0 libtss-bin tssconf
Suggested packages:
  imagemagick ghostscript-x
The following NEW packages will be installed:
  adafruit-pitft-helper evemu-tools evtest fbi fonts-droid ghostscript kpartx libevemu1 libgs9 libgs9-common libijs-0.35 libjbig2dec0
  libpaper-utils libpaper1 libtss-0.0 libtss-bin tssconf
0 upgraded, 17 newly installed, 0 to remove and 61 not upgraded.
Need to get 7,730 kB of archives.
After this operation, 28.9 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
pi@raspberrypi:~$
SCP: No transfers 15KB sent 229KB received

```

Do you want to continue? [y/n] y

```

SmarTTY - 192.168.1.119
File Edit View SCP Settings Help
Selecting previously unselected package libtss-bin.
Preparing to unpack .../libtss-bin_1.0-12_armhf.deb ...
Unpacking libtss-bin (1.0-12) ...
Selecting previously unselected package evtest.
Preparing to unpack .../evtest_1:1.32-1_armhf.deb ...
Unpacking evtest (1:1.32-1) ...
Selecting previously unselected package kpartx.
Preparing to unpack .../kpartx_0.5.0-6+deb8u2_armhf.deb ...
Unpacking kpartx (0.5.0-6+deb8u2) ...
Selecting previously unselected package adafruit-pitft-helper.
Preparing to unpack .../adafruit-pitft-helper_0.8.0-1_armhf.deb ...
Unpacking adafruit-pitft-helper (0.8.0-1) ...
Processing triggers for fontconfig (2.11.0-6.3) ...
Processing triggers for man-db (2.7.0.2-5) ...
Processing triggers for mime-support (3.58) ...
Setting up fonts-droid (1:4.4z2-6+rpil) ...
Setting up libevemu1:armhf (1.2.0-2) ...
Setting up libijs-0.35:armhf (0.35-10) ...
Setting up libpaper1:armhf (1.1.24+nmu4) ...

Creating config file /etc/papersize with new version
Setting up tssconf (1.0-12) ...
Setting up libtss-0.0:armhf (1.0-12) ...
Setting up evemu-tools (1.2.0-2) ...
Setting up libjbig2dec0 (0.11+20120125-1) ...
Setting up libgs9-common (9.06-dfsg-2+deb8u1) ...
Setting up libgs9 (9.06-dfsg-2+deb8u1) ...
Setting up ghostscript (9.06-dfsg-2+deb8u1) ...
Setting up fbi (2.09-1) ...
Setting up libpaper-utils (1.1.24+nmu4) ...
Setting up libtss-bin (1.0-12) ...
Setting up evtest (1:1.32-1) ...
Setting up kpartx (0.5.0-6+deb8u2) ...
Setting up adafruit-pitft-helper (0.8.0-1) ...
Processing triggers for libc-bin (2.19-18+deb8u3) ...
pi@raspberrypi:~$
pi@raspberrypi:~$
SCP: No transfers 15KB sent 310KB received

```

It's normal for the Pi to pause and/or take a while at this step for many minutes, theres a lot of kernel software to replace.

This will install the "2.8 Resistive" type of PiTFT into the current install.

```

sudo adafruit-pitft-helper -t 28r

```

```

SmarTTY - 192.168.1.119
File Edit View SCP Settings Help
Unpacking adafruit-pitft-helper (0.8.0-1) ...
Processing triggers for fontconfig (2.11.0-6.3) ...
Processing triggers for man-db (2.7.0-2.5) ...
Processing triggers for mime-support (3.56) ...
Setting up fonts-droid (1:4.4.4r2-6rpl) ...
Setting up libevemu1:armhf (1.2.0-2) ...
Setting up libijs-0.35:armhf (0.35-10) ...
Setting up libpaper1:armhf (1.1.24+nmu4) ...

Creating config file /etc/papersize with new version
Setting up tsoconf (1.0-12) ...
Setting up libts-0.0-0:armhf (1.0-12) ...
Setting up evemu-tools (1.2.0-2) ...
Setting up libbig2dec0 (0.11+20120125-1) ...
Setting up libgs9-common (9.06-dfsg-2+deb8u1) ...
Setting up libgs9 (9.06-dfsg-2+deb8u1) ...
Setting up ghostscript (9.06-dfsg-2+deb8u1) ...
Setting up fb (2.09-1) ...
Setting up libpaper-utils (1.1.24+nmu4) ...
Setting up libcs-bin (1.0-12) ...
Setting up evtest (1:1.32-1) ...
Setting up kpartx (0.5.0-6+deb8u2) ...
Setting up adafruit-pitft-helper (0.8.0-1) ...
Processing triggers for libc-bin (2.19-18+deb8u3) ...
pi@raspberrypi:~$ sudo adafruit-pitft-helper -t 28r
Type = 28r
[PITFT] Checking init system...
Found systemd
/boot is mounted
[PITFT] Updating X11 default calibration...
[PITFT] Updating X11 setup tweaks...
Moving /usr/share/X11/xorg.conf.d/99-fturbo.conf to /home/pi
Adding 'export FRAMEBUFFER=/dev/fb1'
[PITFT] Updating tslib default calibration...
[PITFT] Updating SysFS rules for Touchscreen...
Would you like the console to appear on the PiTFT display? [y/n] y
pi@raspberrypi:~$
SCP: No transfers 16KB sent, 311KB received
  
```

Would you like the console to appear on the PiTFT display? [y/n] y

```

SmarTTY - 192.168.1.119
File Edit View SCP Settings Help
Setting up libevemu1:armhf (1.2.0-2) ...
Setting up libijs-0.35:armhf (0.35-10) ...
Setting up libpaper1:armhf (1.1.24+nmu4) ...

Creating config file /etc/papersize with new version
Setting up tsoconf (1.0-12) ...
Setting up libts-0.0-0:armhf (1.0-12) ...
Setting up evemu-tools (1.2.0-2) ...
Setting up libbig2dec0 (0.11+20120125-1) ...
Setting up libgs9-common (9.06-dfsg-2+deb8u1) ...
Setting up libgs9 (9.06-dfsg-2+deb8u1) ...
Setting up ghostscript (9.06-dfsg-2+deb8u1) ...
Setting up fb (2.09-1) ...
Setting up libpaper-utils (1.1.24+nmu4) ...
Setting up libcs-bin (1.0-12) ...
Setting up evtest (1:1.32-1) ...
Setting up kpartx (0.5.0-6+deb8u2) ...
Setting up adafruit-pitft-helper (0.8.0-1) ...
Processing triggers for libc-bin (2.19-18+deb8u3) ...
pi@raspberrypi:~$ sudo adafruit-pitft-helper -t 28r
Type = 28r
[PITFT] Checking init system...
Found systemd
/boot is mounted
[PITFT] Updating X11 default calibration...
[PITFT] Updating X11 setup tweaks...
Moving /usr/share/X11/xorg.conf.d/99-fturbo.conf to /home/pi
Adding 'export FRAMEBUFFER=/dev/fb1'
[PITFT] Updating tslib default calibration...
[PITFT] Updating SysFS rules for Touchscreen...
Would you like the console to appear on the PiTFT display? [y/n] y
[PITFT] Updating console to PiTFT...
Updating /boot/cmdline.txt
[PITFT] Updating /etc/modules...
Adding stmpa_ts
Would you like GPIO #23 to act as a on/off button? [y/n] y
pi@raspberrypi:~$
SCP: No transfers 16KB sent, 312KB received
  
```

Would you like GPIO #23 to act as a on/off button? [y/n] y

```

SmarTTY - 192.168.1.119
File Edit View SCP Settings Help
Setting up libpaper-utils (1.1.24+nmu4) ...
Setting up libcs-bin (1.0-12) ...
Setting up evtest (1:1.32-1) ...
Setting up kpartx (0.5.0-6+deb8u2) ...
Setting up adafruit-pitft-helper (0.8.0-1) ...
Processing triggers for libc-bin (2.19-18+deb8u3) ...
pi@raspberrypi:~$ sudo adafruit-pitft-helper -t 28r
Type = 28r
[PITFT] Checking init system...
Found systemd
/boot is mounted
[PITFT] Updating X11 default calibration...
[PITFT] Updating X11 setup tweaks...
Moving /usr/share/X11/xorg.conf.d/99-fturbo.conf to /home/pi
Adding 'export FRAMEBUFFER=/dev/fb1'
[PITFT] Updating tslib default calibration...
[PITFT] Updating SysFS rules for Touchscreen...
Would you like the console to appear on the PiTFT display? [y/n] y
[PITFT] Updating console to PiTFT...
Updating /boot/cmdline.txt
[PITFT] Updating /etc/modules...
Adding stmpa_ts
Would you like GPIO #23 to act as a on/off button? [y/n] y
[PITFT] Adding GPIO #23 on/off to PiTFT...
Adding rpi_power_switch to /etc/modules
Adding rpi_power_switch
Adding rpi_power_switch config to /etc/modprobe.d/adafruit.conf
grep: /etc/modprobe.d/adafruit.conf: No such file or directory
Adding rpi_power_switch
[PITFT] Updating /boot/config.txt...
[PITFT] Success!
[PITFT] Notes:
Please don't run rpi-update, or you'll have to re-install a kernel
with PiTFT support. For more info, see:
https://learn.adafruit.com/adafruit-pitft-28-inch-resistive-touchscreen-display-raspberry-pi/faq
pi@raspberrypi:~$
SCP: No transfers 16KB sent, 314KB received
  
```

That's it!

Run sudo reboot to try out your fancy new PiTFT:

*sudo reboot*