

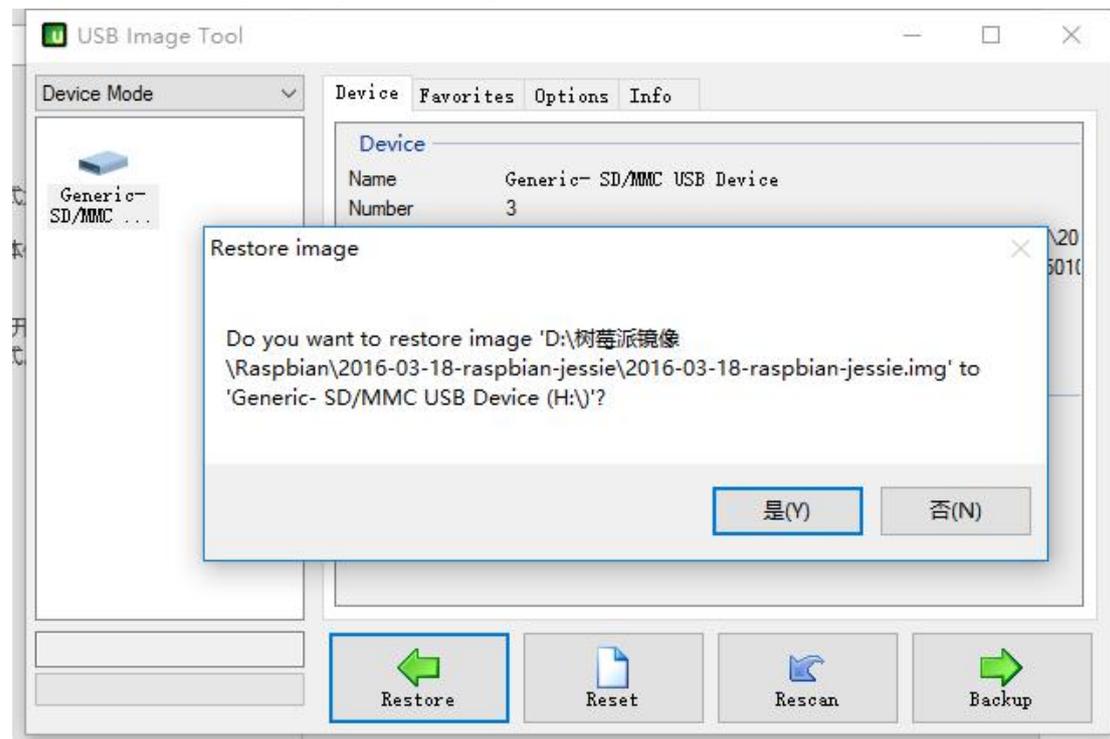
Raspbian TFT configuration& Tutorial

(Compatible with All Versions of Raspberry Pi)

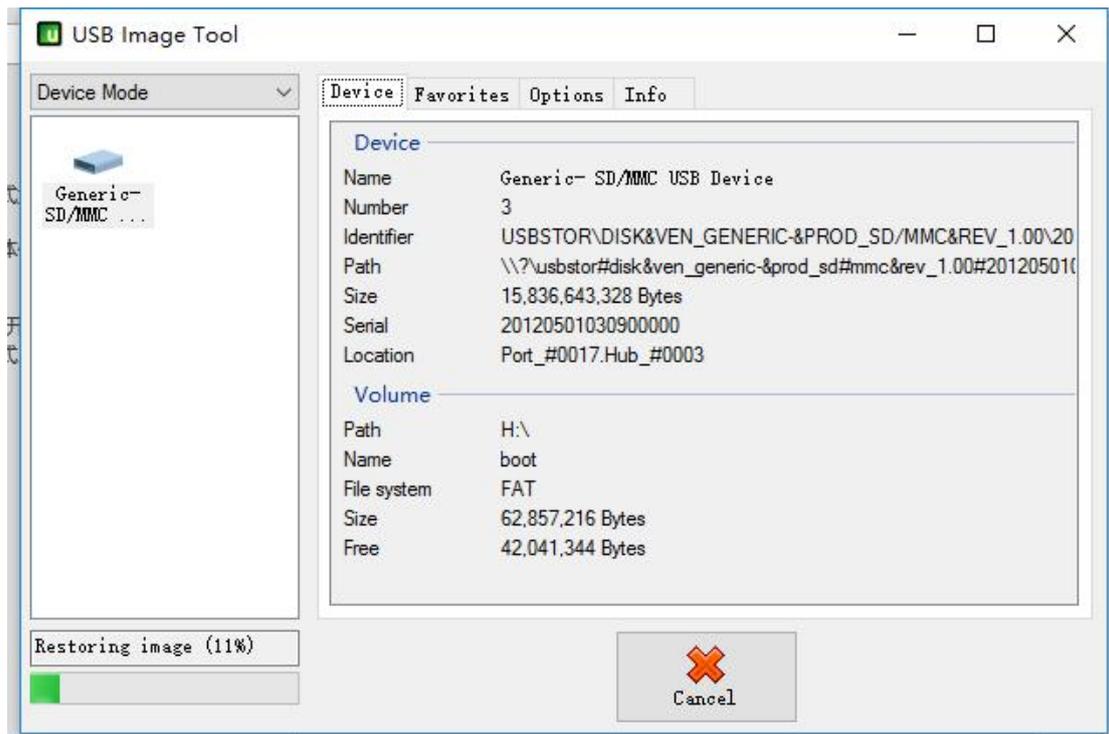
Attention: All resistive screens need to be calibrated due to the differences of screens and operating systems.

In this Tutorial, the latest image is used for demonstration. Its address is

2016-03-18-raspbian-jessie.img



1. Programming the system.



2, Modify config.txt configuration. Add or modify the following fields

a) For 800*480

```

24 # uncomment if hdmi display is not detected and composite is being output
25 hdmi_force_hotplug=1
26
27 # uncomment to force a specific HDMI mode (here we are forcing 800x480!)
28 hdmi_group=2
29 hdmi_mode=1
30 hdmi_mode=87
31 hdmi_cvt 800 480 60 6 0 0 0

```

b) For 1024*600

```

20 # uncomment if hdmi display is not detected and composite is being output
21 hdmi_force_hotplug=1
22
23 # uncomment to force a specific HDMI mode (here we are forcing 1024x600!)
24 hdmi_group=2
25 hdmi_mode=2
26 hdmi_mode=87
27 hdmi_cvt=1024 600 60 3 0 0 0

```

c) For 1280*800

```

20 # uncomment if hdmi display is not detected and composite is being output
21 hdmi_force_hotplug=1
22
23 # uncomment to force a specific HDMI mode (here we are forcing 1280x800!)
24 hdmi_group=2
25 hdmi_mode=2
26 hdmi_mode=87
27 hdmi_cvt=1280 800 60 3 0 0 0

```

3, Extend Partition

Step 1

```
pi@raspberrypi: ~
login as: pi
pi@192.168.3.188's password:

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Fri Mar 18 08:58:33 2016
pi@raspberrypi:~$ sudo raspi-config
```

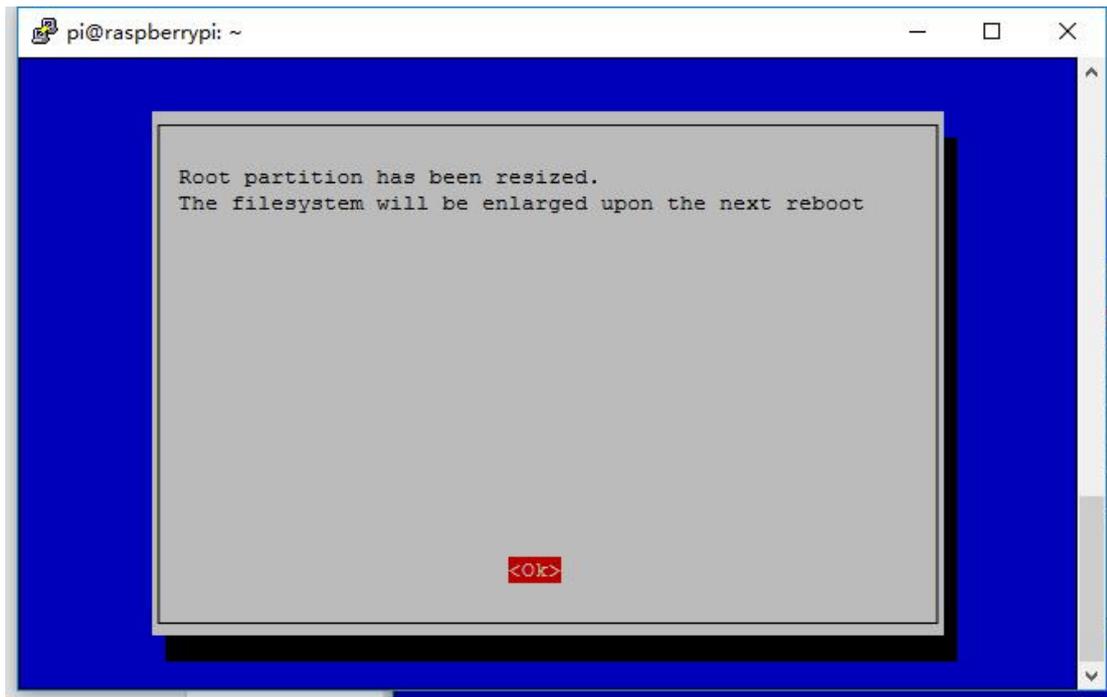
Step2

```
pi@raspberrypi: ~
Raspberry Pi Software Configuration Tool (raspi-config)

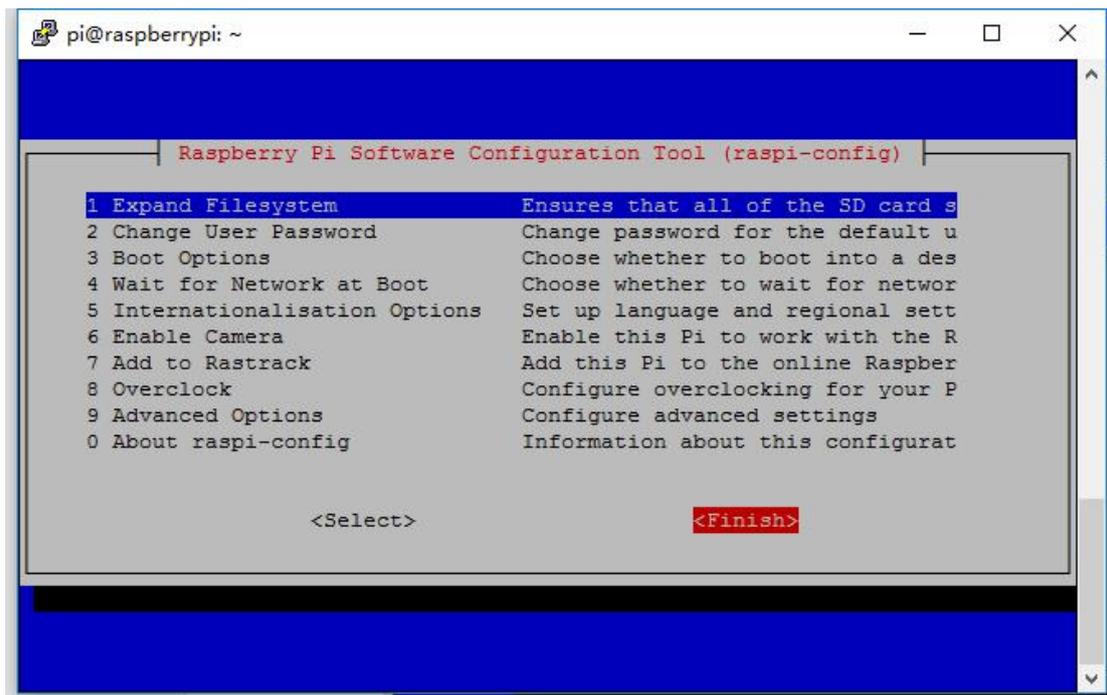
1 Expand Filesystem      Ensures that all of the SD card s
2 Change User Password   Change password for the default u
3 Boot Options           Choose whether to boot into a des
4 Wait for Network at Boot Choose whether to wait for networ
5 Internationalisation Options Set up language and regional sett
6 Enable Camera          Enable this Pi to work with the R
7 Add to Rastrack        Add this Pi to the online Raspber
8 Overclock              Configure overclocking for your P
9 Advanced Options       Configure advanced settings
0 About raspi-config     Information about this configurat

                <Select>                <Finish>
```

Step3



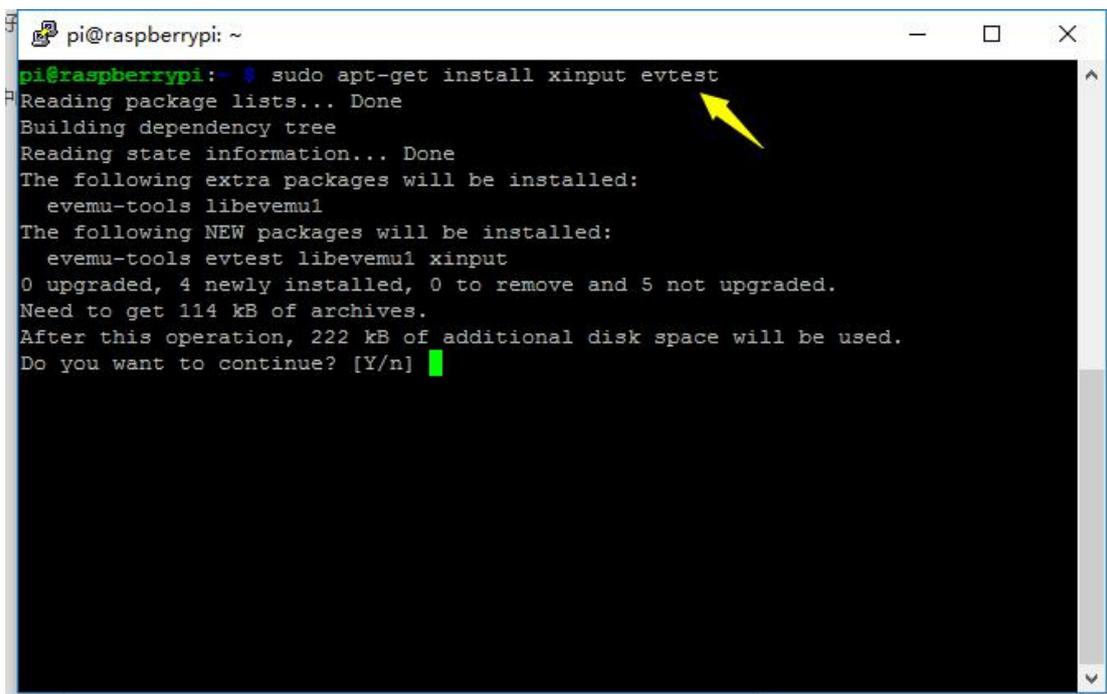
Step4



Step5



4, Installation of testing platforms (sudo apt-get install xinput evtest).



5, Execute the following command (sudo evtest) and select the touch device to start the test. There should be a response when the screen is touched during the test.

```
pi@raspberrypi: ~
pi@raspberrypi:~$ sudo evtest
No device specified, trying to scan all of /dev/input/event*
Available devices:
/dev/input/event0:      ADS7846 Touchscreen
Select the device event number [0-0]: 0
Input driver version is 1.0.1
Input device ID: bus 0x0 vendor 0x0 product 0x0 version 0x0
Input device name: "ADS7846 Touchscreen"
Supported events:
Event type 0 (EV_SYN)
Event type 1 (EV_KEY)
  Event code 330 (BTN_TOUCH)
Event type 3 (EV_ABS)
  Event code 0 (ABS_X)
    Value      0
    Min        0
    Max       4095
  Event code 1 (ABS_Y)
    Value      0
    Min        0
    Max       4095
  Event code 24 (ABS_PRESSURE)
    Value      0
    Min        0
```

6, Touch Output

```
pi@raspberrypi: ~
Event: time 1458727281.574022, type 3 (EV_ABS), code 0 (ABS_X), value 3027
Event: time 1458727281.574022, type 3 (EV_ABS), code 1 (ABS_Y), value 1117
Event: time 1458727281.574022, type 3 (EV_ABS), code 24 (ABS_PRESSURE), value 64999
Event: time 1458727281.574022, ----- EV_SYN -----
Event: time 1458727281.584086, type 3 (EV_ABS), code 0 (ABS_X), value 3129
Event: time 1458727281.584086, type 3 (EV_ABS), code 1 (ABS_Y), value 1035
Event: time 1458727281.584086, type 3 (EV_ABS), code 24 (ABS_PRESSURE), value 64871
Event: time 1458727281.584086, ----- EV_SYN -----
Event: time 1458727281.611924, type 3 (EV_ABS), code 0 (ABS_X), value 3274
Event: time 1458727281.611924, type 3 (EV_ABS), code 1 (ABS_Y), value 968
Event: time 1458727281.611924, type 3 (EV_ABS), code 24 (ABS_PRESSURE), value 64743
Event: time 1458727281.611924, ----- EV_SYN -----
Event: time 1458727281.639516, type 3 (EV_ABS), code 0 (ABS_X), value 3301
Event: time 1458727281.639516, type 3 (EV_ABS), code 1 (ABS_Y), value 844
Event: time 1458727281.639516, type 3 (EV_ABS), code 24 (ABS_PRESSURE), value 64943
Event: time 1458727281.639516, ----- EV_SYN -----
Event: time 1458727281.643792, type 1 (EV_KEY), code 330 (BTN_TOUCH), value 0
Event: time 1458727281.643792, type 3 (EV_ABS), code 24 (ABS_PRESSURE), value 0
Event: time 1458727281.643792, ----- EV_SYN -----
```

7. Install the related platforms for calibrating your touch device (sudo apt-get install libx11-dev libxext-dev libxi-dev x11proto-input-dev evtest libts-bin)

```
pi@raspberrypi: ~  
pi@raspberrypi: ~$ sudo apt-get install libx11-dev libxext-dev libxi-dev x11proto-input-dev evtest libts-bin  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
evtest is already the newest version.  
libts-bin is already the newest version.  
The following extra packages will be installed:  
  libpthread-stubs0-dev libx11-doc libxau-dev libxcb1-dev libxdmcp-dev libxfixes-dev x11proto-core-dev x11proto-fixes-dev x11proto-kb-dev x11proto-xext-dev xorg-sgml-doctools xtrans-dev  
Suggested packages:  
  libxcb-doc libxext-doc  
The following NEW packages will be installed:  
  libpthread-stubs0-dev libx11-dev libx11-doc libxau-dev libxcb1-dev libxdmcp-dev libxext-dev libxfixes-dev libxi-dev x11proto-core-dev x11proto-fixes-dev x11proto-input-dev x11proto-kb-dev x11proto-xext-dev xorg-sgml-doctools xtrans-dev  
0 upgraded, 16 newly installed, 0 to remove and 5 not upgraded.  
Need to get 4,762 kB of archives.  
After this operation, 18.6 MB of additional disk space will be used.  
Do you want to continue? [Y/n] y  
Get:1 http://mirrors.ustc.edu.cn/raspbian/raspbian/ jessie/main libpthread-stubs0-dev armhf 0.3-4 [4,042 B]
```

8, Get the touch calibration platform (sudo apt-get install -y xinput-calibrator).

```
pi@raspberrypi: ~/xinput_calibrator-0.7.5  
pi@raspberrypi: ~/xinput_calibrator-0.7.5$ sudo apt-get install -y xinput-calibrator  
Reading package lists... Done  
Building dependency tree... 50%
```

9, Restart your Raspberry Pi and then perform a calibration operation (DISPLAY=:0.0 xinput_calibrator).

```
pi@raspberrypi: ~
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed Mar 23 10:19:00 2016
pi@raspberrypi: ~$ DISPLAY=:0.0 xinput_calibrator
Calibrating EVDEV driver for "ADS7846 Touchscreen" id=6
current calibration values (from XInput): min_x=0, max_x=4095 and min_y=
0, max_y=4095

Doing dynamic recalibration:
  Swapping X and Y axis...
  Setting new calibration data: 377, 3981, 123, 3901

--> Making the calibration permanent <--
copy the snippet below into '/etc/X11/xorg.conf.d/99-calibration.conf'
Section "InputClass"
    Identifier      "calibration"
    MatchProduct    "ADS7846 Touchscreen"
    Option "Calibration"    "377 3981 123 3901"
    Option "SwapAxes"      "1"
EndSection
pi@raspberrypi: ~$
```

10. Create a file (/etc/X11/xorg.conf.d/99-calibration.conf) and type in the what is shown below in the yellow box. Please refer to the actual context shown in your display.

```
pi@raspberrypi: ~
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed Mar 23 10:19:00 2016
pi@raspberrypi: ~$ DISPLAY=:0.0 xinput_calibrator
Calibrating EVDEV driver for "ADS7846 Touchscreen" id=6
current calibration values (from XInput): min_x=0, max_x=4095 and min_y=
0, max_y=4095

Doing dynamic recalibration:
  Swapping X and Y axis...
  Setting new calibration data: 377, 3981, 123, 3901

--> Making the calibration permanent <--
copy the snippet below into '/etc/X11/xorg.conf.d/99-calibration.conf'
Section "InputClass"
    Identifier      "calibration"
    MatchProduct    "ADS7846 Touchscreen"
    Option "Calibration"    "377 3981 123 3901"
    Option "SwapAxes"      "1"
EndSection
pi@raspberrypi: ~$ ^C
pi@raspberrypi: ~$
```

11. Type in the calibration context and save it.

```
pi@raspberrypi: ~
Section "InputClass"
    Identifier      "calibration"
    MatchProduct   "ADS7846 Touchscreen"
    Option "Calibration" "377 3981 123 3901"
    Option "SwapAxes" "1"
EndSection

"/etc/X11/xorg.conf.d/99-calibration.conf" [New] 6L, 204C written
```

12, Restart your Raspberry Pi and it's all set. (sudo reboot).

```
PuTTY (inactive)
--> Making the calibration permanent <--
copy the snippet below into '/etc/X11/xorg.conf.d/99-calibration.conf'
Section "InputClass"
    Identifier      "calibration"
    MatchProduct   "ADS7846 Touchscreen"
    Option "Calibration" "377 3981 123 3901"
    Option "SwapAxes" "1"
EndSection
pi@raspberrypi: ~$ ^C
pi@raspberrypi: ~$ ^C
pi@raspberrypi: ~$ ^C
pi@raspberrypi: ~$ sudo vim.tiny ^C
pi@raspberrypi: ~$ ^C
pi@raspberrypi: ~$ sudo vim.tiny /etc/X11/xorg.conf.d/99-calibration.conf
> q^C
pi@raspberrypi: ~$ sudo vim.tiny /etc/X11/xorg.conf.d/99-calibration.conf
pi@raspberrypi: ~$ sudo vim.tiny /etc/X11/xorg.conf.d/99-calibration.conf^C
pi@raspberrypi: ~$ mkdir /etc/X11/xo^C
pi@raspberrypi: ~$ mkdir ^C
pi@raspberrypi: ~$ sudo mkdir /etc/X11/xorg.conf.d/
pi@raspberrypi: ~$ sudo vim.tiny /etc/X11/xorg.conf.d/99-calibration.conf
pi@raspberrypi: ~$ sudo sync;sudo reboot
```