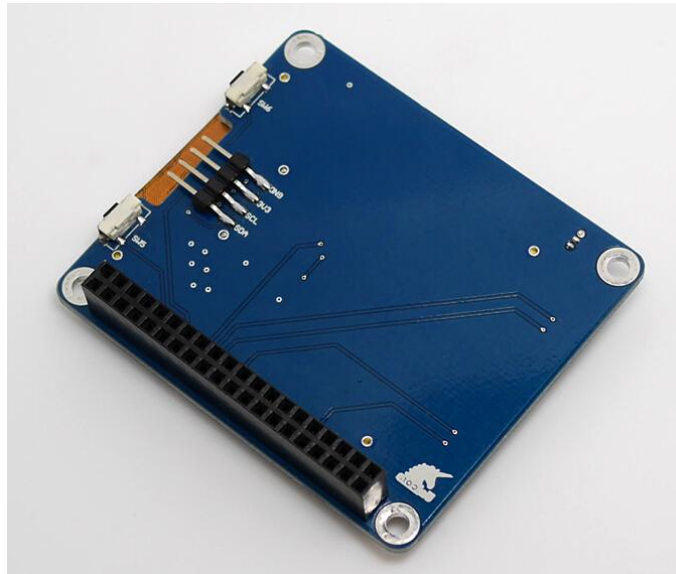


## 2.2 inch TFT Display HAT v0.2a



### Features:

- **Demensions:** 65mm×56.5mm, it's a standard raspberry pi HAT expansion size;
- **Resolution:** 320 x 240, 2.2 inch, High PPI display screen;
- **With 6 keyboards;**
- **With IR function;**
- **1x I2C Out Conector ;**

U-Geek Workshop:

<http://www.aliexpress.com/store/1954241>

<https://www.youtube.com/channel/UCJs08zU2NKF4Kj8WIXCURVw>



How to use this screen:

## 1. Easy method;

Use the full firmware with driver from:

<https://sourceforge.net/projects/u-geek/files/2.2TFT/>

(Easy method, and this is the advised use method;)

## 2. DIY method;

you can use this module by the following step

### step 1.

Download the official firmware, then upgrade to the latest kernel

`sudo rpi-update`

### step 2.

Installation gpio libraries and drivers

`sudo apt-get install gcc python-pygame python-dev`

`sudo wget https://pypi.python.org/packages/source/R/RPi.GPIO/RPi.GPIO-0.5.11.tar.gz`

`sudo tar zxvf RPi.GPIO-0.5.11.tar.gz`

`cd RPi.GPIO-0.5.11`

`sudo python setup.py install`

### step 3.

Config file to enable I2C and SPI Interface

`sudo nano /boot/config.txt`

Add the following line:

`dtoverlay=i2c_arm=on, spi=on`

### step 4.

Config modules to startup screen.

`sudo nano /etc/modules`

Add the following line:

`fbtft_device name=pitft rotate=270 speed=48000000`

`fps=30`

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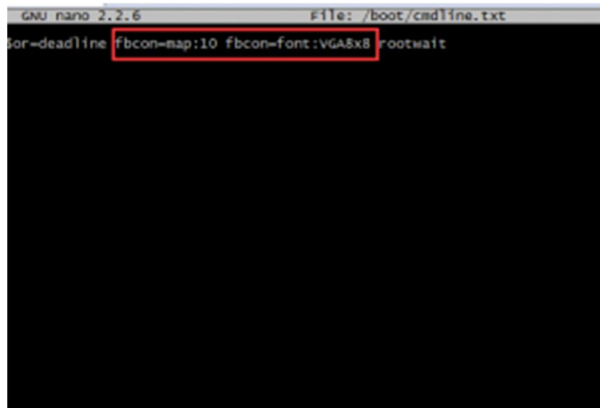
step 5.

Config cmdline file to display the console;

`sudo nano /boot/cmdline.txt`

Add the following line before "rootwait"

`fbcon=map:10 fbcon=font:VGA8x8`



step 6.

Save then restart;

## How to use the IR function:

Description:

1. IR receiver function:
  - Operating frequency: 38K HZ
  - Receiving distance: 18-20m
  - Reception angle: +/- 45 degrees
2. The infrared transmitter function
  - Wavelength: 940nm
  - Transmitting distance: 7-8m

Preparation: Burn into raspbian system;

1. Start the Raspberry Pi, login Raspberry Pi through SSH, the user name: pi, default password: raspberry

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2. Update and install lirc software, run the following command:

**sudo apt-get update**

**sudo apt-get install lirc**

```
pi@volumio:~$ sudo apt-get update
Get:1 http://mirrordirector.raspbian.org wheezy Release.gpg [490 B]
Get:2 http://mirrordirector.raspbian.org wheezy Release [14.4 kB]
Get:3 http://mirrordirector.raspbian.org wheezy/main Sources [6,066 kB]
Get:4 http://mirrordirector.raspbian.org wheezy/main armhf Packages [6,886 kB]
Ign http://mirrordirector.raspbian.org wheezy/main Translation-en_GB
Ign http://mirrordirector.raspbian.org wheezy/main Translation-en
Fetched 13.0 MB in 37min 3s (5,830 B/s)
Reading package lists... Done
pi@volumio:~$

就结 ssh2: AES-256-CTR 27, 15 27行,105列 Linux 大写 数字

pi@volumio:~$ sudo apt-get install lirc
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  libftdi1 liblircclient0
Suggested packages:
  lirc-x setserial ir-keytable
The following NEW packages will be installed:
  libftdi1 liblircclient0 lirc
0 upgraded, 3 newly installed, 0 to remove and 62 not upgraded.
Need to get 616 kB of archives.
After this operation, 1,921 kB of additional disk space will be used.
Do you want to continue [Y/n]?
```

2. Edit the config.txt, and add configuration. use GPIO PIN 26;

**sudo nano /boot/config.txt**

Add the following line into the config.txt file:

**dtoverlay=lirc-rpi, gpio\_in\_pin=26**

```
GNU nano 2.2.6 File: /boot/config.txt
gpu_mem=16
hdmi_drive=2
dtoverlay=hifiberry-dacplus
dtoverlay=lirc-rpi,gpio_in_pin=26
dtparam=act_led_trigger=heartbeat

Get Help writeout Read File Prev Page
Exit Justify Where Is Next Page
```

3. Edit LIRC config file to enable infrared function;

**sudo nano /etc/lirc/hardware.conf**

Modify the following lines:

**LIRCD\_ARGS="--uinput"**

**DRIVER="default"**

**DEVICE="/dev/lirc0"**

**MODULES="lirc\_rpi"**

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<https://www.youtube.com/channel/UCJs08zU2NKF4Kj8WIXCURVw>



4. Run "sudo reboot" to restart the Raspberry Pi, then run "ls /dev/l\*" to view the infrared device is enabled

```
pi@volumio:~$ sudo ls /dev/l*
/dev/lirc0 /dev/loop1 /dev/loop3 /dev/loop5 /dev/loop7
/dev/loop0 /dev/loop2 /dev/loop4 /dev/loop6 /dev/loop-control
pi@volumio:~$
```

It's enabled if you can view the above red mark;

## 5.Record Button

```
sudo /etc/init.d/lirc stop
```

```
sudo irrecord -n -d /dev/lirc0 ~/lircd.conf
```

Record your IR remote control Follow the prompts, such as "pause", "nextsong", "prevsong", "stop", "volumeup", "volumedown" etc.

```
Don't stop pressing buttons until two lines of dots (2x80) have been
generated.

Press RETURN now to start recording.
.....
Found const length: 106849
Please keep on pressing buttons like described above.
irrecord: no data for 10 secs, aborting
Creating config file in raw mode.
Now enter the names for the buttons.

Please enter the name for the next button (press <ENTER> to finish recording)
pause

Now hold down button "pause".
Got it.
Signal length is 67

Please enter the name for the next button (press <ENTER> to finish recording)
nextsong

Now hold down button "nextsong".
Got it.
Signal length is 67

Please enter the name for the next button (press <ENTER> to finish recording)
prevsong

Now hold down button "prevsong".
Got it.
Signal length is 67

Please enter the name for the next button (press <ENTER> to finish recording)
stop

Now hold down button "stop".
Got it.
Signal length is 67

Please enter the name for the next button (press <ENTER> to finish recording)
pi@volumio:~$
```

then you can get a lircd.conf file; override the old lircd.conf file;

```
sudo cp ~/lircd.conf /etc/lirc/lircd.conf
```

6. Startup lirc software;

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## **sudo /etc/init.d/lirc start**

```
pi@volumio:~$ sudo /etc/init.d/lirc start
[ ok ] Loading LIRC modules:.
[ ok ] Starting remote control daemon(s) : LIRC :.
```

7. Run the following command to view & check record result

**sudo irw**

Then press those record button;

8. You can view those button name to run irsend command;

`irsend LIST /home/pi/lircd.conf ""`

maybe it's following content:

`irsend: 000000000000c837 pause`

`irsend: 00000000000048b7 nextsong`

9. Now you can use the infrared transmitter, recorded before launching the remote control key coding, use that will extend the board as a rotary tool. Launch the command reference command:

`irsend SEND_ONCE /home/pi/lircd.conf pause`

`irsend SEND_ONCE /home/pi/lircd.conf nextsong`

`irsend SEND_ONCE /home/pi/lircd.conf KEY_VOLUMEDOWN`

`irsend SEND_ONCE /home/pi/lircd.conf KEY_VOLUMEUP`

Appendix:

U-Geek Workshop:

<http://www.aliexpress.com/store/1954241>

<https://www.youtube.com/channel/UCJs08zU2NKF4Kj8WIXCURVw>



# U-geek Workshop

<http://www.aliexpress.com/store/1954241>

1. LIRC <http://www.lirc.org/>
2. APP <http://www.datscharf.dk/amote/>

U-Geek Workshop:  
<http://www.aliexpress.com/store/1954241>  
<https://www.youtube.com/channel/UCJs08zU2NKF4Kj8WIXCURVw>

