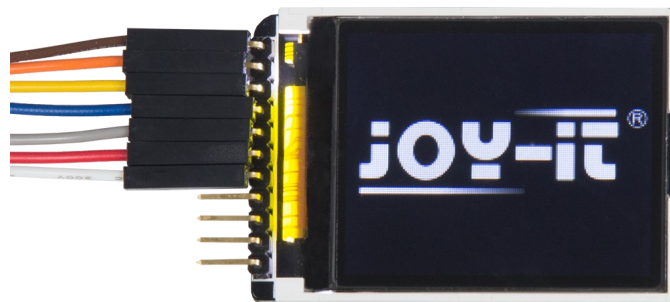


joy-it



1.8" TFT-Display

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1. INTRODUCTION

Dear customer,

Thank you very much for choosing our product.

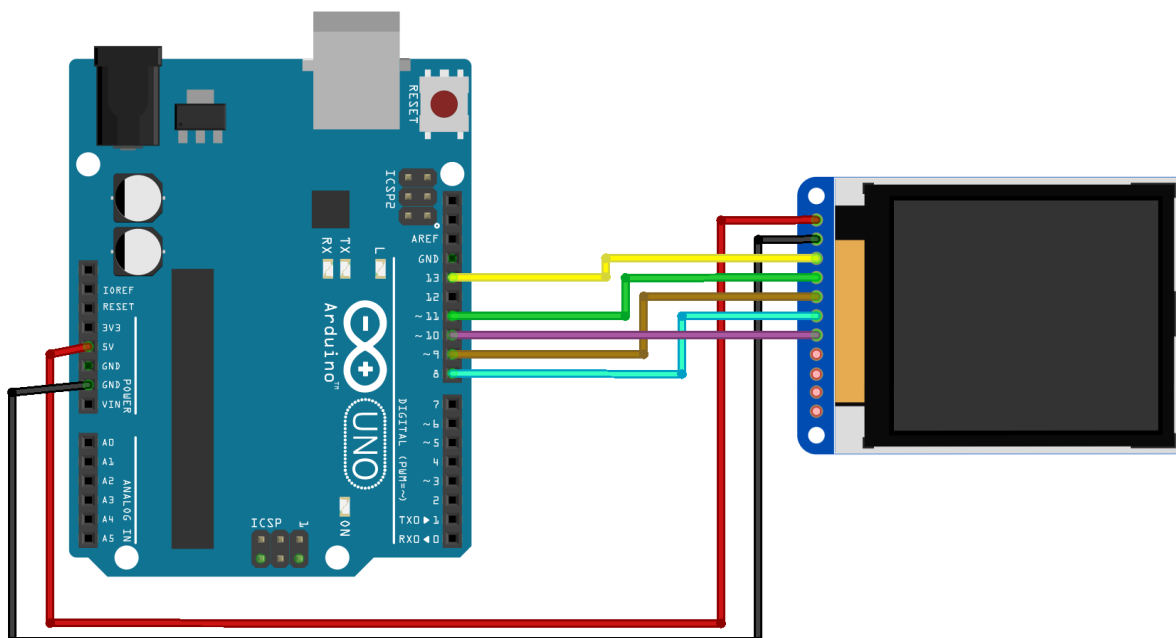
In the following we will show you what has to be observed during commissioning and use.

Should you encounter any unexpected problems during use, please feel free to contact us.

2. USAGE WITH AN ARDUINO

2.1 CONNECTING THE DISPLAY

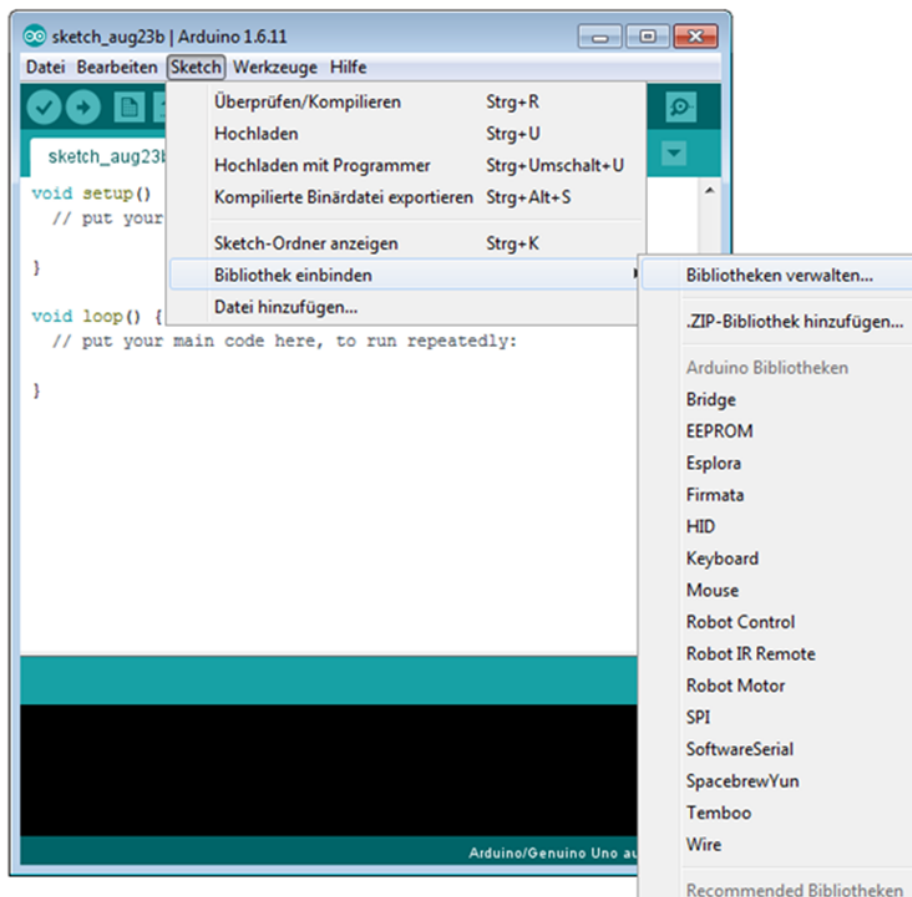
Connect the display to the pins of your Arduino as shown in the following figure and table.



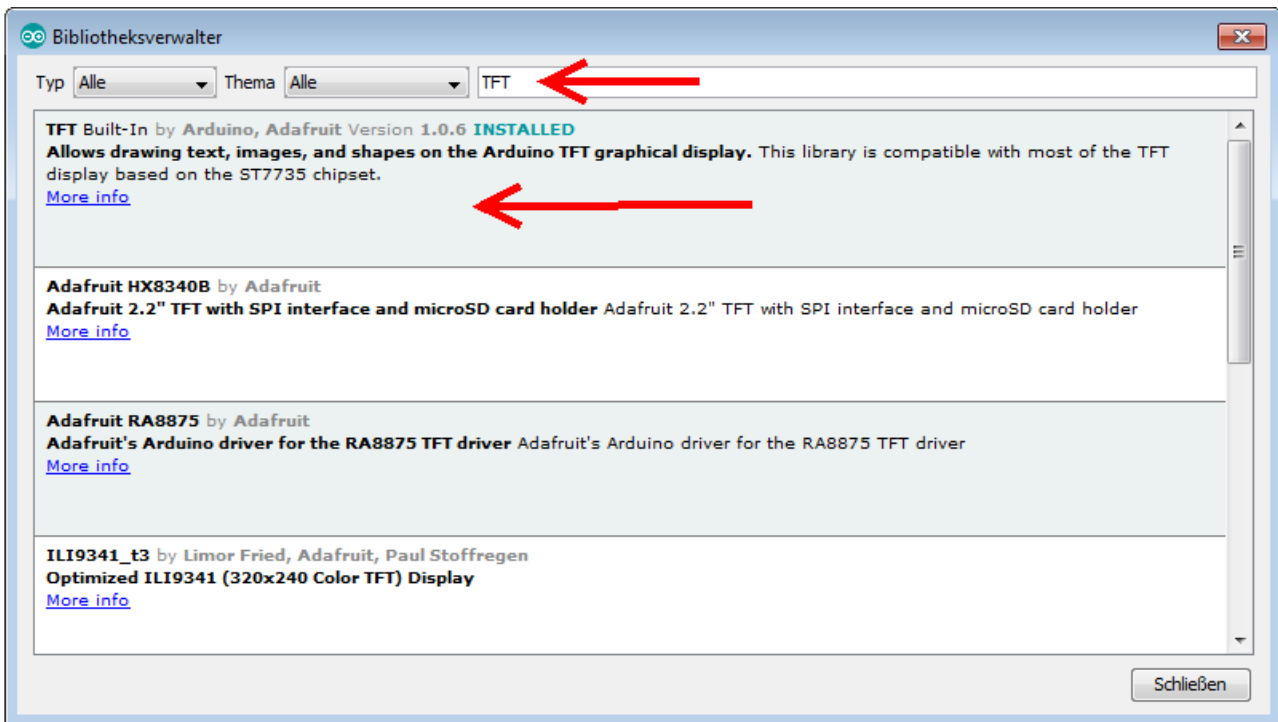
TFT PIN	Arduino PIN
VCC	5V
GND	GND
SCL	13
SDA	11
RS/DC	9
RES	8
CS	10

2.2 INSTALLING THE LIBRARY

Before you transfer the source code in chapter 2.3 to your Arduino, you must first add the **TFT library**. As shown in Figure 2, click on **Sketch** → **Include library** → **Manage libraries**.



In the library manager that opens, search for the library of the same name under the search term **TFT** and install it.



You can now select an example code under **File** → **Examples** → **TFT** and try it out, or continue with step 3.

2.3 EXAMPLE-CODE

Below you can find a code example with which you can display any text on the display. Please copy the entire code to your Arduino.

```
#include <TFT.h>
#include <SPI.h>

//PIN-Einstellungen
#define cs  10
#define dc  9
#define rst  8

TFT TFTscreen = TFT(cs, dc, rst);

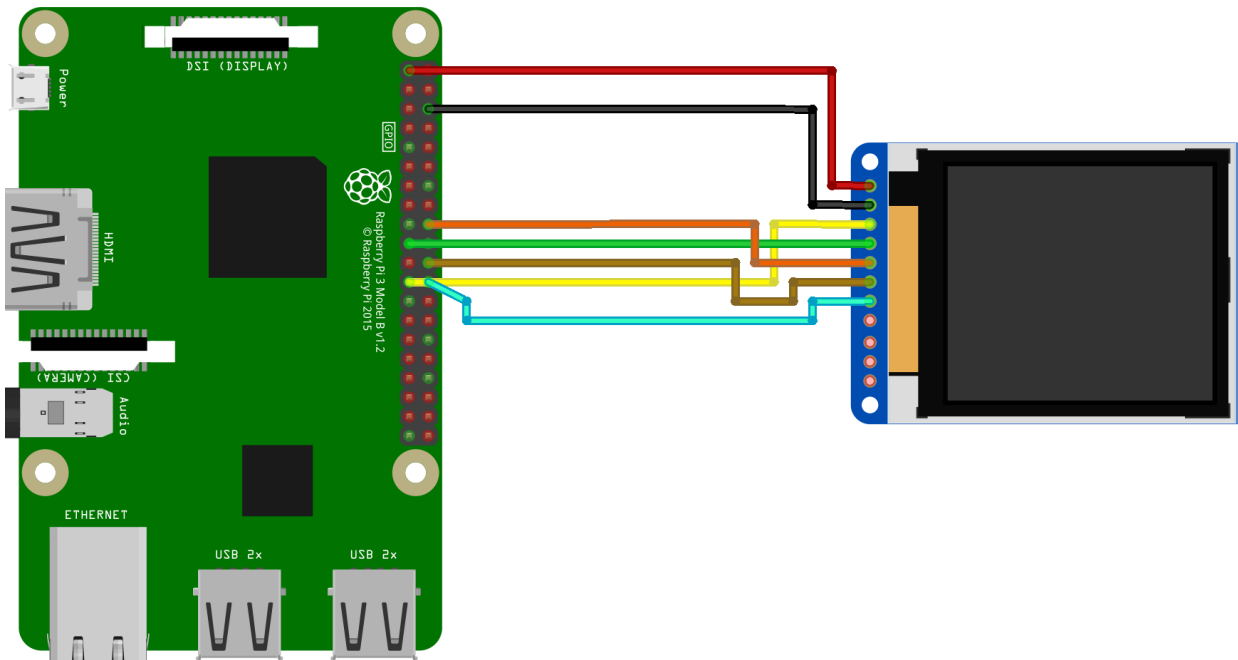
void setup() {
  TFTscreen.begin();
  //Hintergrund: Schwarz
  TFTscreen.background(0, 0, 0);
  //Textfarbe: Weiß
  TFTscreen.stroke(255, 255, 255);
}

void loop() {
  //Schriftgröße einstellen
  TFTscreen.setTextSize(3);
  //Text ausgeben
  TFTscreen.text("joy-IT", 0, 0);
  //Schriftgröße einstellen
  TFTscreen.setTextSize(2);
  //Text ausgeben
  TFTscreen.text("1.8 TFT LCD", 0, 40);
  //Schriftgröße einstellen
  TFTscreen.setTextSize(1);
  //Text ausgeben
  TFTscreen.text("ST7735", 0, 60);
  delay(250);
}
```

3. USAGE WITH A RASPBERRY PI

3.1 CONNECTING THE DISPLAY

Connect the display to the pins of your Raspberry Pis as shown in the following figure and table.

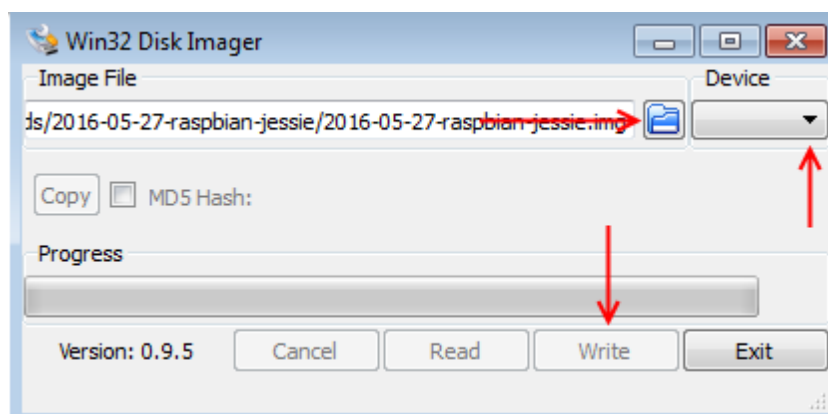


TFT PIN	Raspberry Pi PIN
VCC	PIN 1 (+3.3V)
GND	PIN 6 (GND)
SCL	PIN 23 (SCLK)
SDA	PIN 19 (MOSI)
RS/DC	PIN 18
RES	PIN 22
CS	PIN 24

3.2 INSTALLING THE SOFTWARE

If you are already using a current Raspbian system on your Raspberry, you can skip this step and proceed to step 2.3 immediately.

Install the current Raspbian Image on your SD card using the "Win32 Disk Imager" program, which you can download from the following [link](#).



Once the installation is complete, you can remove the SD card, insert it into your Raspberry Pi and start it.

3.3 INSTALLING THE MODULE

First you have to modify the **config.txt** file.

Open a terminal window and open the file with the following command:

```
sudo nano /boot/config.txt
```

Add the following line to the end of the file.

You can save your input with the key combination **CTRL+X** and exit the editor with **CTRL+O**.

```
dtparam=spi=on
```


The file `cmdline.txt` must also be adapted:

```
sudo nano /boot/cmdline.txt
```

Add the following command to the end of the existing first line:

```
fbcon=map:10
```

Next, the **99-fbturbo.conf** file must be modified:

```
sudo nano /usr/share/X11/xorg.conf.d/99-fbturbo.conf
```

Change the following line...

```
Option "fbdev" "/dev/fb0"
```

sodass sie **fb0** in **fb1** ändern. Die Zeile sollte dann wie folgt aussehen:

```
Option "fbdev" "/dev/fb1"
```

so that you change **fb0** to **fb1**. The line should look like this:

```
sudo nano /etc/modules-load.d/fbftft.conf
```

Add the following two lines to the file:

```
spi-bcm2835  
fbftft_device
```

Another file must now be created:

```
sudo nano /etc/modprobe.d/fbftft.conf
```

Insert the following content:

```
options fbftft_device name=sainsmart18 rotate=90
```

The value `rotate=90` allows in our case the rotation of the display by 90°.

You can choose between 0, 90, 180 and 270, which corresponds to the respective degrees.

Now restart your Raspberry Pi with the following command

```
sudo reboot
```

3.4 DISPLAYING AN IMAGE

In order to display an image on the display, a compatible image viewer must first be installed. You can install it with the following command:

```
apt-get -y install fbi
```

You can use the following command to download a suitable example image:

```
wget https://dummyimage.com/100.jpg
```

The downloaded image can now be displayed with the previously installed image viewer.

```
sudo fbi -d /dev/fb1 -T 1 -noverbose -a 100.jpg
```

3.5 PLAYING A VIDEO

In order to relieve the processor as much as possible during the playback of a movie, it is recommended to mirror the graphic output (framebuffer) by the program **fbcp**, so that it can be calculated by the graphics card unit. Therefore, the program has to be installed first.

```
sudo apt-get install cmake
git clone https://github.com/tasanakorn/rpi-fbcp
cd rpi-fbcp/
mkdir build
cd build/
cmake ..
make
sudo install fbcp /usr/local/bin/fbcp
```

The mirroring can be started with the following command:

```
fbcp &
```

You can use the following command to download a suitable example video:

```
wget https://archive.org/download/Test_Avi/MVI_0043.avi
```

You can now play the video with the following command:

```
omxplayer MVI_0043.avi
```

The following command can be used to deactivate mirroring again.

```
killall fbcp
```

4. INFORMATION AND TAKE-BACK OBLIGATIONS

Symbol on electrical and electronic equipment



This crossed-out dustbin means that electrical and electronic equipment does not belong in the household waste. You must return the old appliances to a collection point. Before handing over waste batteries and accumulators that are not enclosed by waste equipment must be separated from it.

Return options

As an end user, you can return your old appliance (which essentially fulfils the same function as the new appliance purchased from us) free of charge for disposal when you purchase a new appliance. Small appliances with no external dimensions greater than 25 cm can be returned in normal household quantities independently of the purchase of a new appliance.

Possibility of return at our company location during opening hours

Simac GmbH, Pascalstr. 8, D-47506 Neukirchen-Vluyn

Possibility of return near you

We will send you a parcel stamp with which you can return the device to us free of charge. Please contact us by e-mail at Service@joy-it.net or by telephone.

Information on packaging

If you do not have suitable packaging material or do not wish to use your own, please contact us and we will send you suitable packaging.

5. SUPPORT

We are also there for you after the purchase. If you still have questions or problems, we are also available by e-mail, telephone and ticket support system.

E-Mail: service@joy-it.net
Ticket-System: http://support.joy-it.net
Phone: +49 (0)2845 98469 – 66 (9:00 - 17:30 o'clock)

For further information please visit our website:

www.joy-it.net