Welcome!

And thank you for purchasing our **AZ-Delivery SPI 1,77" TFT-Displays**! On the following pages, we will take you through the first steps of connecting the display to displaying script images and graphics. We wish you a lot of fun!

http://flyt.it/TFT_1-77

The AZ-Delivery TFT-Display is a practical and energy-saving module, which is able to display multi-line information, graphics or simple animations without the need to use powerful computer technology. For example, Arduino's sensor readings can be read and shown directly onto the display. The display can be powered by the controller.

Overview of the most important information

- RGB display with 6-bit colour depth (262.144 colours)
- Resolution: 128 x 160 Px

- Dimensions (LxWxH)
  - Board: 34 x 54 x 3,5 mm (incl. pins approx. 12 mm high)
  - Display unit: 34 x 43 x 2,4 mm
  - Display area: 28 x 35 mm

- Power consumption
  - up to 40 mA at 3,3 V on LEDA (recommended)
  - up to 80 mA at 5 V on LEDA (display will heat up!)

- ST7735 display driver
- control via SPI

On the following pages, you will find information about

- **connecting to a controller**

And a guide for

- **control via two libraries**.

Overview of all Links

ST7735 datasheet:

» *http://pdf1.alldatasheetde.com/datasheet-pdf/view/326213/SITRONIX/ST7735.html*

Application programming interfaces:

» Arduino IDE: *https://www.arduino.cc/en/Main/Software*

» Web-Editor: *https://create.arduino.cc/editor*

Arduino library:

» TFT LCD Library:
https://www.arduino.cc/en/Reference/TFTLibrary

» Adafruit ST7735 Library:
https://github.com/adafruit/Adafruit-ST7735-Library

» Adafruit GFX Library:
https://github.com/adafruit/Adafruit-GFX-Library

Interesting information from AZ-Delivery

» AZ-Delivery NEO-6M GPS module:
https://az-delivery.de/products/neo-6m-gps-modul

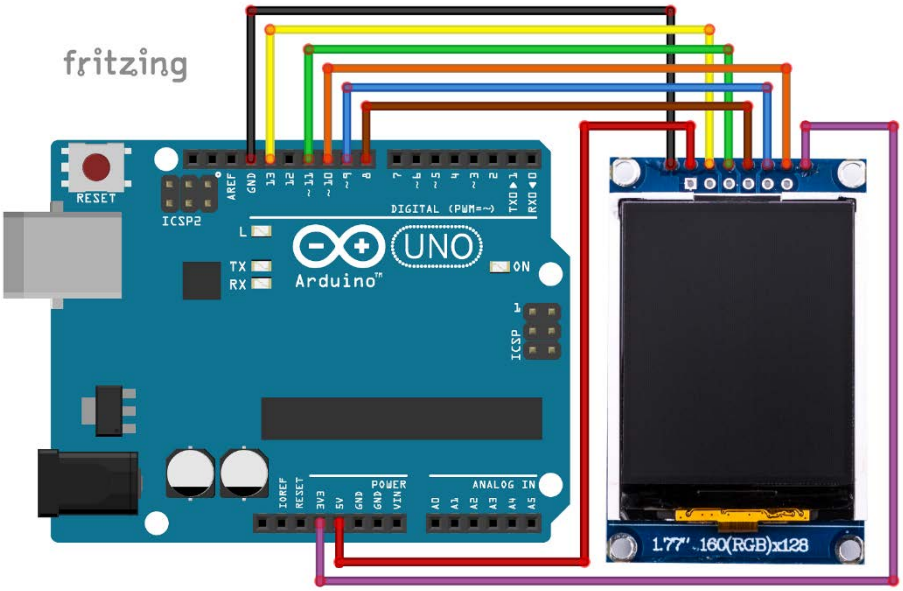
» Additional Arduino accessories:
https://az-delivery.de/collections/arduino-zubehor

» AZ-Delivery G+Community:
https://plus.google.com/communities/115110265322509467732

» AZ-Delivery on Facebook:
https://www.facebook.com/AZDeliveryShop/

Connecting to a controller

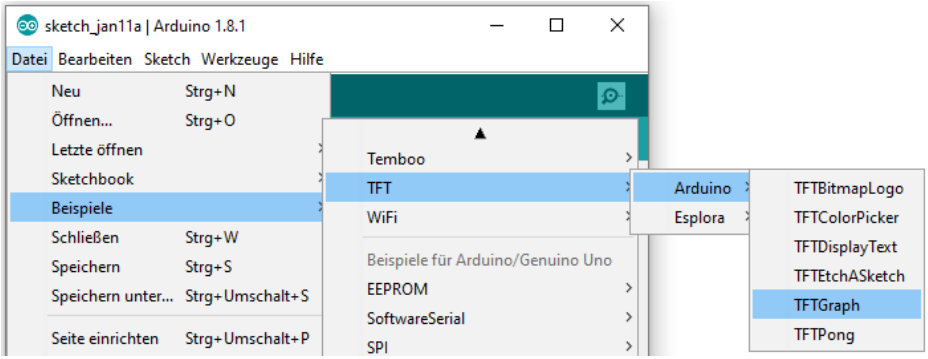
The TFT display is located on a board, where all the necessary inputs and outputs for the connection to a microcontroller had already been **executed by a pin header**. Connect the pins to your controller as follows. For that, in this manual, we use an **AZ-Delivery UNO:**



UNO	>	**TFT**
GND	–	(1) GND
5V	–	(2) VCC
13	–	(3) SCK (rate)
11	–	(4) SDA (MISO / data input)
8	–	(5) RES (Reset)
9	–	(6) RS (Command / Data Selection)
10	–	(7) CS (Chip Select / Address)
3.3V	–	(8) LEDA (Backlight)

Font and graphics with the standard library

The **ST7735** display driver, which is built into the **AZ-Delivery SPI 1,77" TFT,** is so popular that it can be accessed via the **TFT library,** which can be directly installed with the Arduino IDE on your computer.
You can also load a prefabricated sketch on your controller, for example, "TFTGraph":

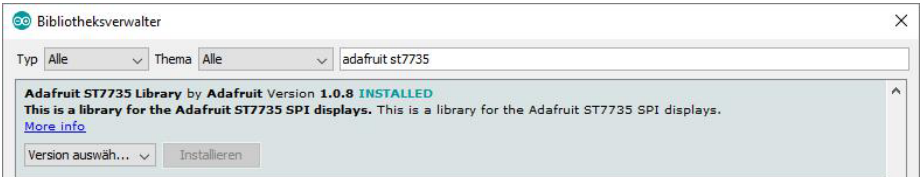


If you look at the code of the example sketches, you will find out that you can already issue individual graphics and texts with the following commands:

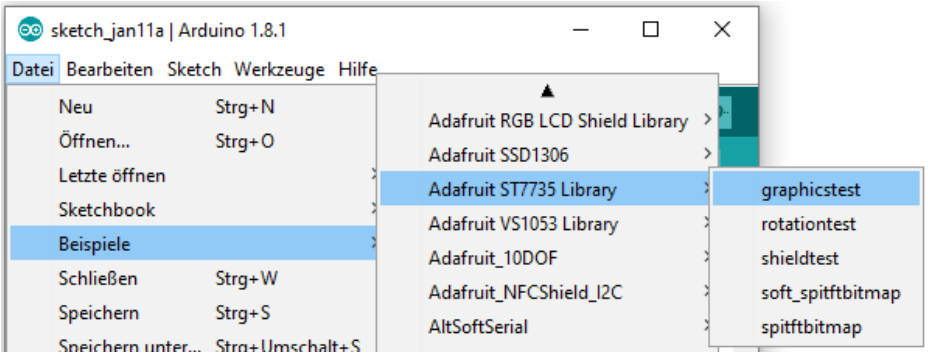
```
// Hintergrundfarbe (RGB):
TFTscreen.background(250, 16, 200);
// Linienfarbe (RGB):
TFTscreen.stroke(250, 180, 10);

// Linie von Punkt zu Punkt zeichnen
TFTscreen.line(x1,  y1,  x2,  y2);

// Text schreiben
TFTscreen.text("Hier steht der Text", x, y);
```

Advanced graphics features

If you would like to have more options for the creation of your display, you can use **Adafruit's GFX-library**. In order to use it with the display, you must first install, via the library's manager, the "**Adafruit GFX Library**" and the "**Adafruit ST7735 Library**":



Now when you open the "**graphictest**" sketch, you will find plenty of creative options for design possibilities, starting from the definition of a single pixel to line and rectangles, to more advanced and complex shapes like the media buttons.



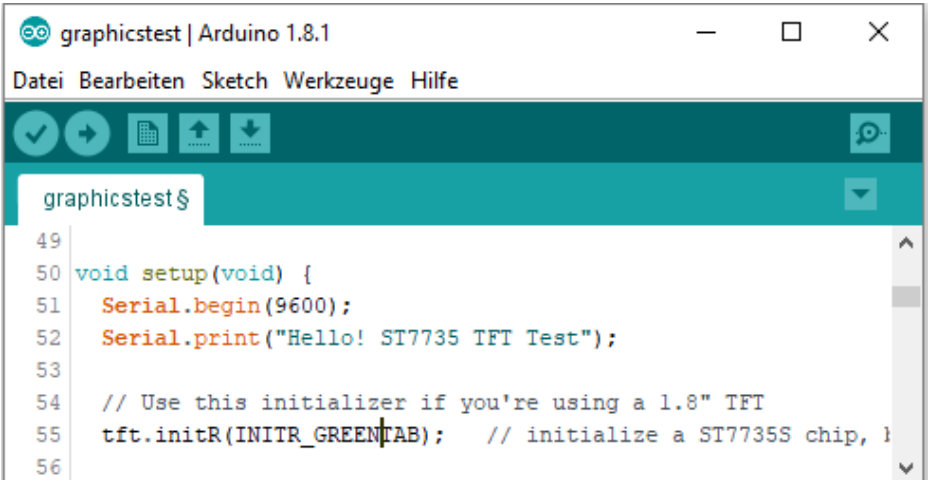
In order for the code to work, you will still have to make a small adjustment, as Adafruit reverses **Pins 8 and 9** in comparison to the TFT library. Just change the **lines 32 and 34** according to your circuit.

```
29 // For the breakout, you can use any 2 or 3 pins
30 // These pins will also work for the 1.8" TFT shield
31 #define TFT_CS     10
32 #define TFT_RST    8  // you can also connect this to the Ardu
33                       // in which case, set this #define pin t
34 #define TFT_DC     9
35
```

Now you can upload the sketch or you can look at the code and assemble your own creations.

Information:

In rare cases, this library may cause a shining edge on the display. If that is the case with you, change the "**INITR_BLACKTAB**" variable to "**INITR_GREENTAB**" in the **setup()**-method on line 55.



You did it! Congratulations!

Now it is time to learn. With the help of the **AZ-Delivery SPI 1,77" TFT-Displays,** you can not only display static graphics and text but also exhibit what your connected sensors have to say without relying and being dependent on the connection to a computer! You can get these sensors, as well as other hardware, form your online store at:

https://az-delivery.de

Enjoy!

Imprint

https://az-delivery.de/pages/about-us