Graphic 128x64 VFD

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https://learn.adafruit.com/graphic-128x64-vfd

Last updated on 2023-08-29 02:21:59 PM EDT

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Introduction

For blue-glow lovers, this is a graphical VFD with 128x64 bit resolution and a stunning high-brightness/high-contrast look. This module would be a great addition to any project where readability is a must - you can read it in daylight, and at any angle.

The VFD module supports both 8-bit parallel and SPI modes of communication. The SPI protocol allows to write and read pixels so no RAM is required to buffer the display (most 128x64 SPI displays require a full 1K RAM buffer since you cannot read from the display memory). The module requires 5V, and does draw quite a bit of current, up to 500mA. There is a VFD driver and 60V boost circuit on the back. You can probably use 3.3V logic to communicate with the module, as long as it is powered with 5V.
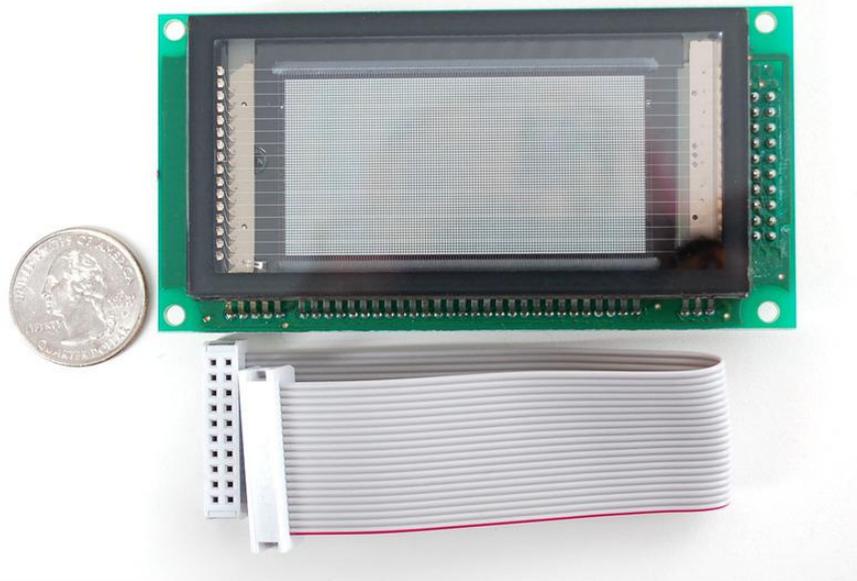
[Pick one up today at the Adafruit shop!](http://adafru.it/773) (http://adafru.it/773)

Powering

Power Requirements

VFDs are fairly power hungry, requiring about 2.5W of power to run. The more 'pixels' that are lit, the more power it uses so be sure to power your project from a wall adapter. Using this display for a battery-powered project isn't going to be easy.

Power is 5VDC, onboard is a boost converter for the VFD's 60V so you don't need to supply that. Do be careful to not touch the high voltage parts when the display is powered. The best way to handle the display is to keep it powered off while touching it and then only turn it on when it's mounted or attached to the box you intend to use.

Wiring

Wiring is fairly simple for the display. On the back is a 20 pin connector (2x10) that is used for all power and data. We supply an IDC cable to make wiring even easier. Note which way the red wire goes, it should be next to the little arrow on pin #1
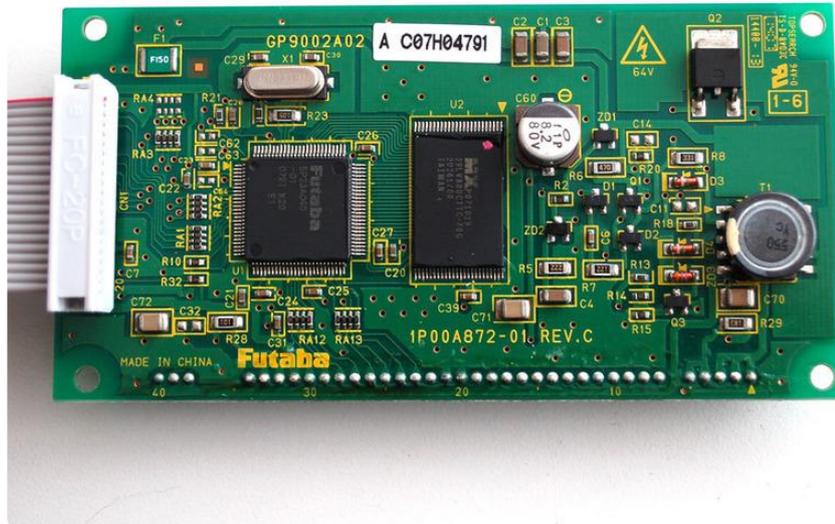
For our tutorial, we'll be using the SPI interface. You can refer to the App Note for the pinouts ()in Table 17. Plug in wires into the following VFD connector pins:

- Pin #8 - MISO (orange)
- Pin #11 - SPI clock (yellow)
- Pin #12 - MOSI (green)
- Pin #13 - Chip Select (blue)
- Pin #14 - Command/Data (violet)
- Pin #9, #18, #19, #20 - Ground (black and brown)
- Pin #15, #16, #17 - +5V (red)

Note that we skip #1-7, and 10.
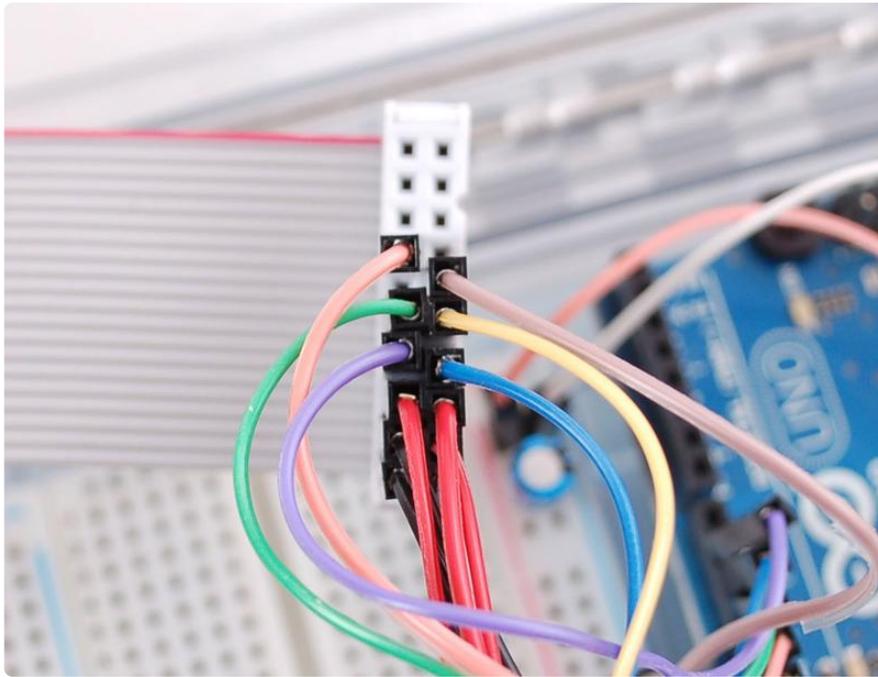
Then you can connect these lines to the Arduino:

- Orange (MISO) to Digital #12
- Yellow (SPI Clock) to Digital #13
- Green (MOSI) to Digital #11
- Blue (CS) to Digital #10
- Violet (C/D) to Digital #9
- All black grounds connect together to GND
- All red +5V connect together to +5V
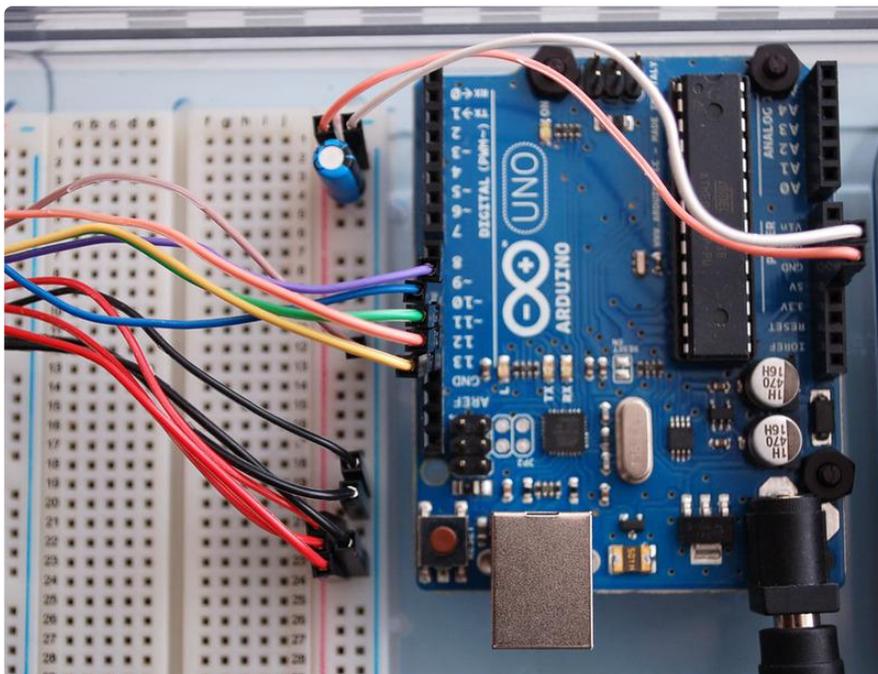
These pin definitions can be changed to anything, but for now let's just use what's in the tutorial as shown. Later on, if you want to change the pins, you can set them in the top of the example file.
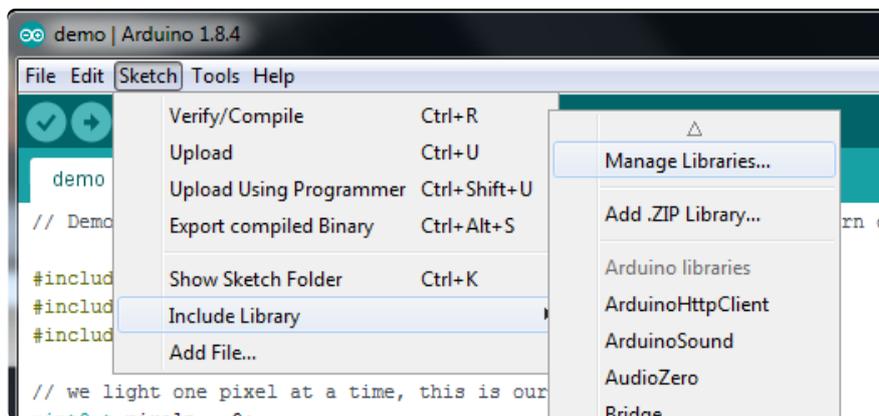
I also added a 100uF capacitor between +5V and GND in the image above but you may not need it

Testing

You can get our interfacing library for Arduino () from the Arduino library manager.

Open up the Arduino library manager:

Search for the Adafruit Graphic VFD library and install it

Search for the Adafruit GFX library and install it

If using an older version of the Arduino IDE (pre-1.8.10), also locate and install the Adafruit_BusIO library (newer versions do this automatically when using the Arduino Library Manager).

We also have a great tutorial on Arduino library installation at:
http://learn.adafruit.com/adafruit-all-about-arduino-libraries-install-use ()

You should now see a new example folder called Adafruit_GP9002 and inside, an example called GraphicVFDtest. Open up that sketch and upload it to your Arduino. You should see the example test sequence displaying!

GFX Library

The Adafruit GFX Graphics Library

(Nearly) all of the Adafruit graphical displays are based on a core set of functions that are provided by the GFX library. These include drawing pixels, lines, rectangles, circles, round-rectangles, triangles and text. For details on how to use the GFX library, visit the tutorial page (). Note that for this monochrome display, only WHITE (VFD pixel lit) and BLACK (VFD pixel off) are supported.

Download

- Adafruit Graphic VFD Library ()
- GFX Library ()
- VFD App Note ()