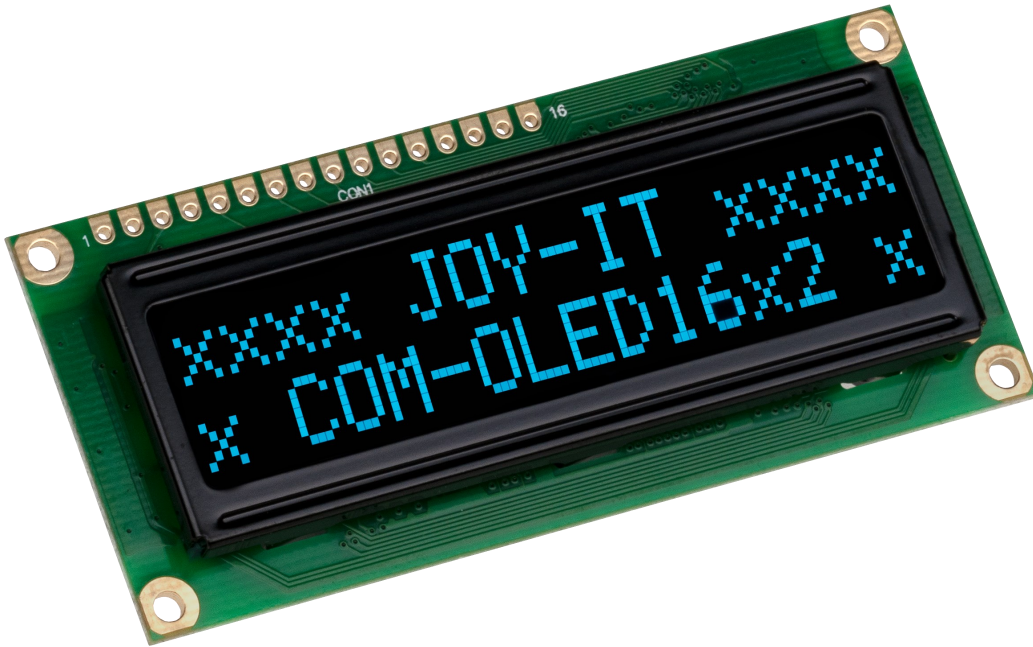


# OLED DISPLAYMODUL 16X2

Controllable via SPI, Parallel 6800 and 8080



## 1. GENERAL INFORMATION

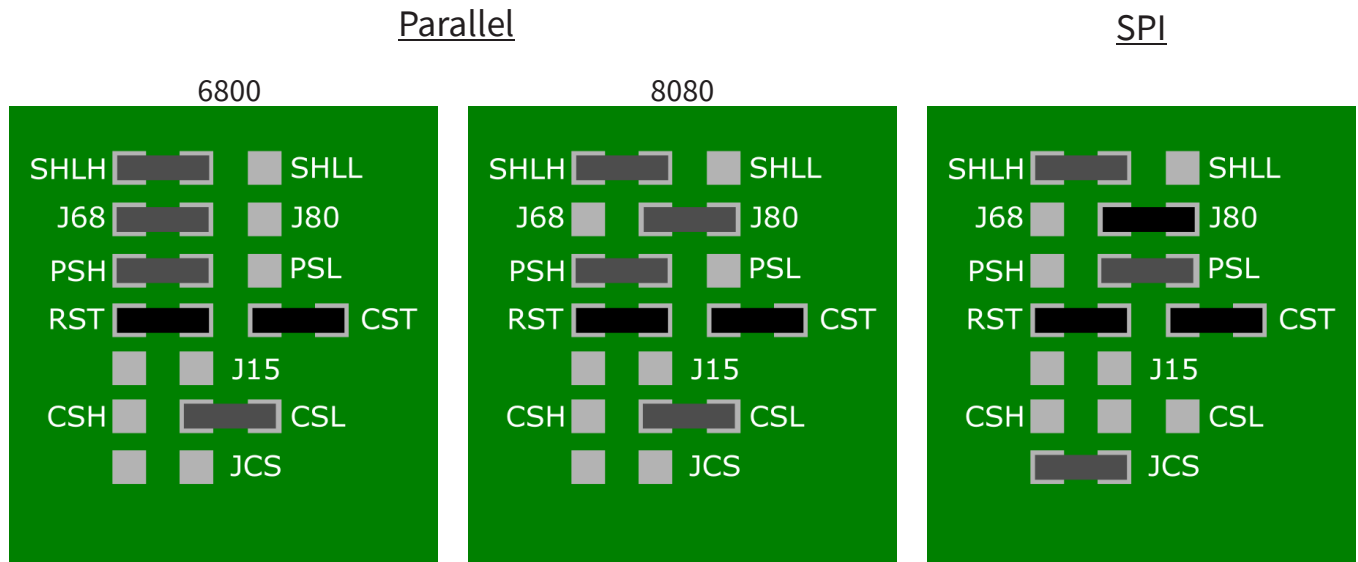
Dear customer,

Thank you for purchasing our product. In the following, we will show you which things should be noted during the use.

Should you encounter any unexpected problems, do not hesitate to contact us.

## 2. INTERFACES

This display can be controlled by different interfaces. It is possible to switch between these interfaces by re-soldering resistors on the back of the display.  
The display is delivered in 6800 Parallel.



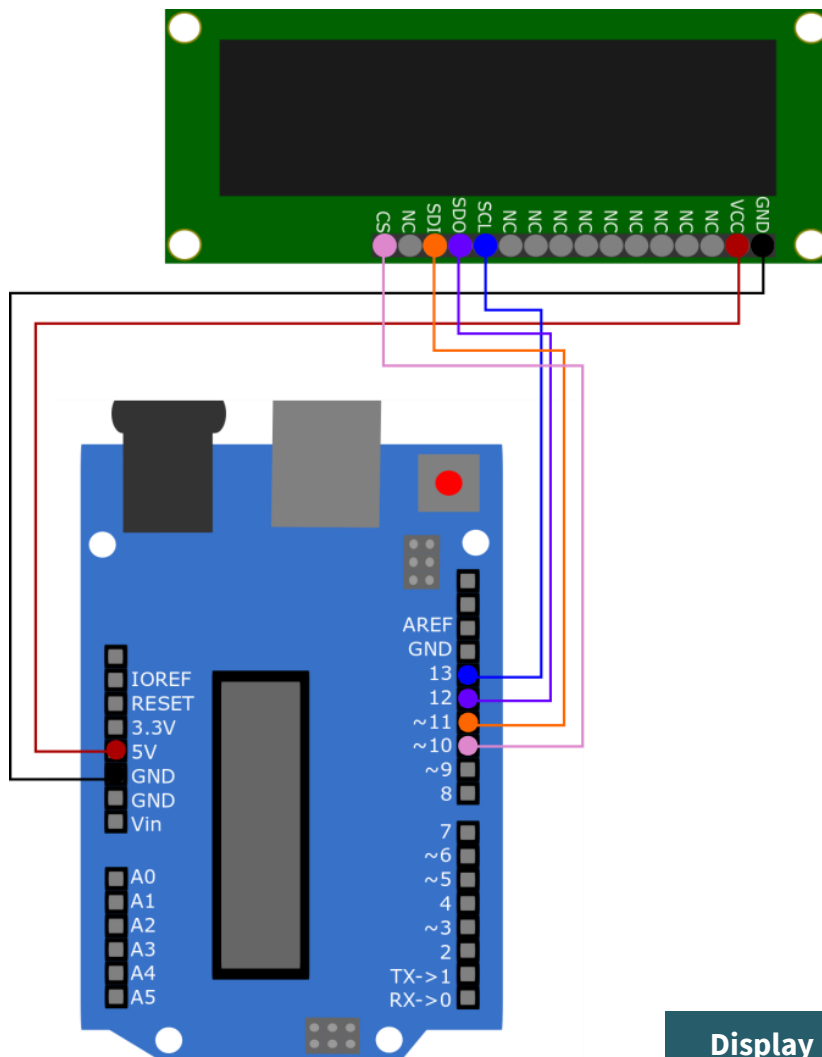
The resistors marked in black (marked with X in the table) are Don't Care resistors. This means that it does not matter, where these resistors are set.

	Parallel		SPI
	6800	8080	
SHL	H	H	H
J68 / J80	J68	J80	X
PS	H	H	L
CS	L	L	Open
JCS	X	X	Short

### 3. USE WITH ARDUINO

#### 3.1. Connection

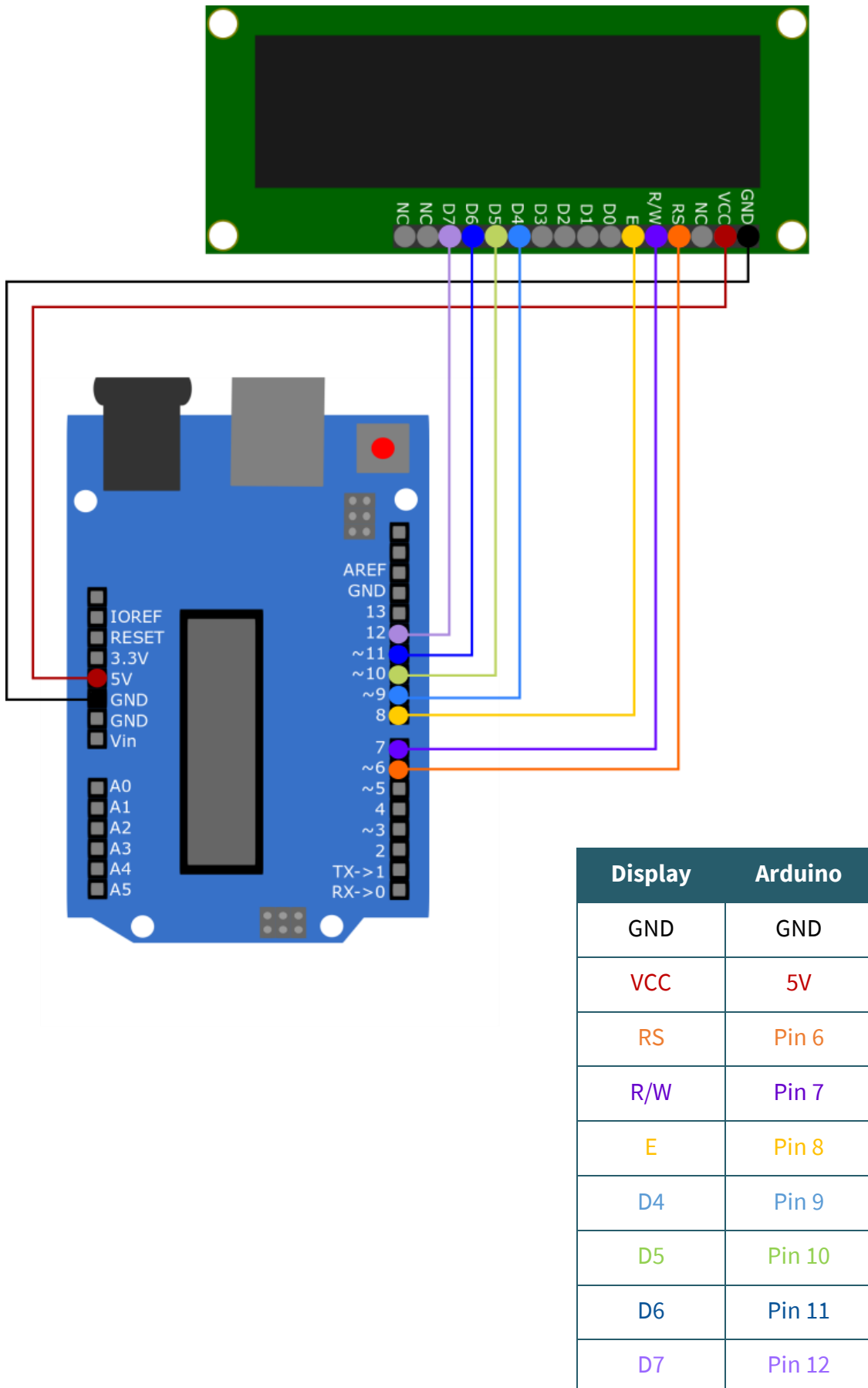
##### 3.1.1 SPI



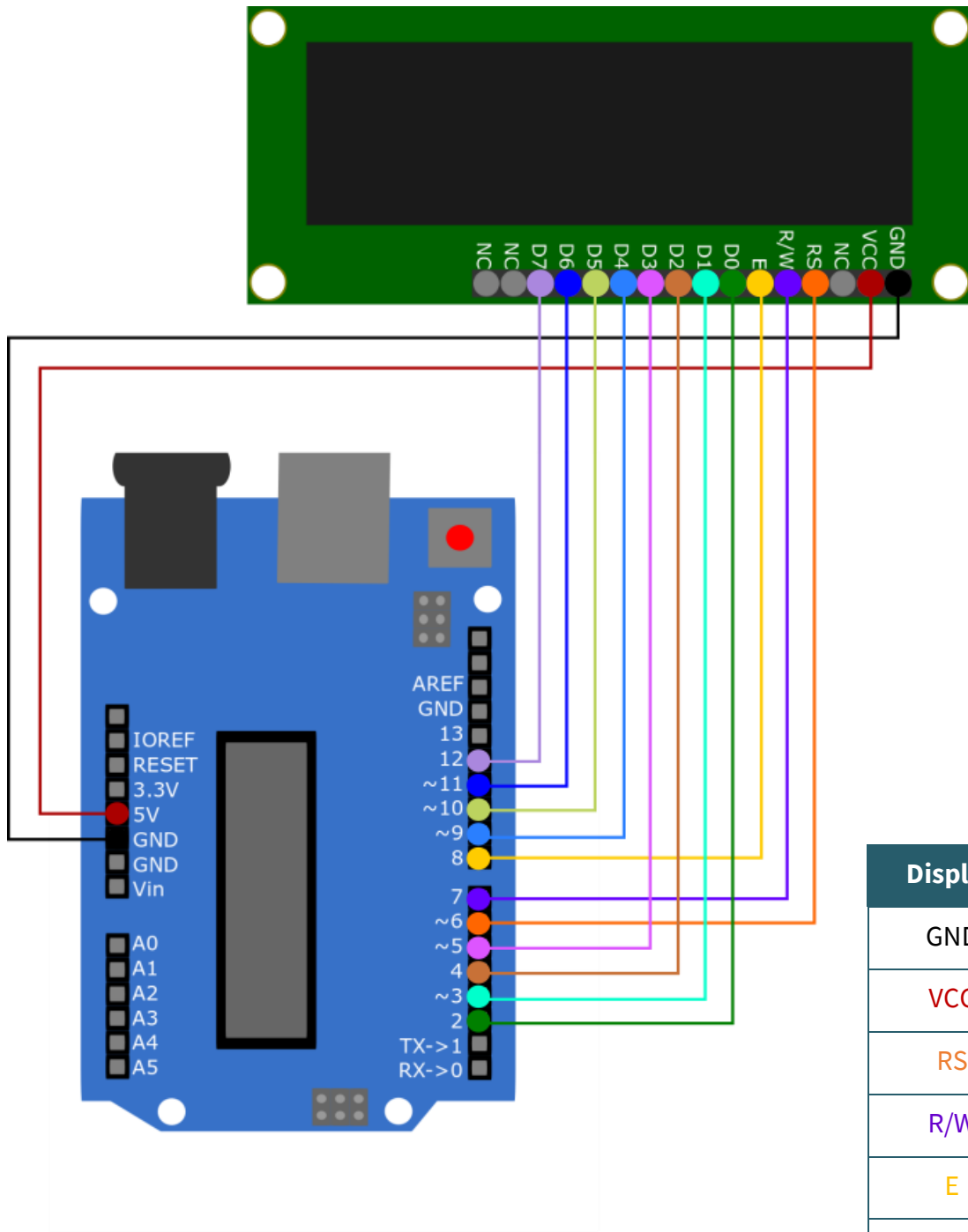
Display	Arduino
GND	GND
VCC	5V
SCL	Pin 13
SDO	Pin 12
SDI	Pin 11
CS	Pin 10

### 3.1.2 Parallel

#### 3.1.2.1 4-bit



### 3.1.2.2 8-bit



Display	Arduino
GND	GND
VCC	5V
RS	Pin 6
R/W	Pin 7
E	Pin 8
D0	Pin 2
D1	Pin 3
D2	Pin 4
D3	Pin 5
D4	Pin 9
D5	Pin 10
D6	Pin 11
D7	Pin 12

## 3.2. Code example

### 3.2.1 SPI

For the SPI connection, you can use the library [iwi SPI RS0010](#) from [iwi](#), which is published under the [GNU General Public License v3.0](#).

You can download the library [here](#). You can include the downloaded library in your Arduino IDE by selecting the .zip file under **Sketch** → **Include Library** → **Add .ZIP Library...**. Select there the downloaded library and restart your Arduino IDE to be able to use this library.

Copy the following code into your IDE to test your display. This will display three different images on your display. To run the code example, click on **Upload**.

Make sure that **Board** and **Port** are selected correctly under **Tools**.

```
#include "iwi_SPI_RS0010.h"
SPI_RS0010 rs;

void setup(){
    rs.initSPI(12,11,13,10);
    rs.begin(16,2,1);
}
void loop(){
    rs.clearBuf();
    rs.drawLine(0,0,100,16,1);
    rs.displayBuf();
    delay(2000);
    rs.clear();
    rs.clearBuf();
    rs.drawString(0,0,"TEST",1,1,1);
    rs.displayBuf();
    delay(2000);
    rs.clear();
    rs.clearBuf();
    rs.drawBoldString(0,0,"10:45",1,1);
    rs.displayBuf();
    delay(2000);
    rs.clear();
    rs.clearBuf();
}
```

### 3.2.1 Parallel

The display has 6800 and 8080 parallel interfaces. Both interfaces can communicate with 4-bit as well as with 8-bit.

For this purpose, we provide the [OLED16x2-IST0010-Arduino-Library](#) library. This has been published under the [MIT-License](#).

You can download the library [here](#). You can include the downloaded library in your Arduino IDE by selecting the .zip file under **Sketch** → **Include Library** → **Add .ZIP Library...**. Select there the downloaded library and restart your Arduino IDE to be able to use the library.

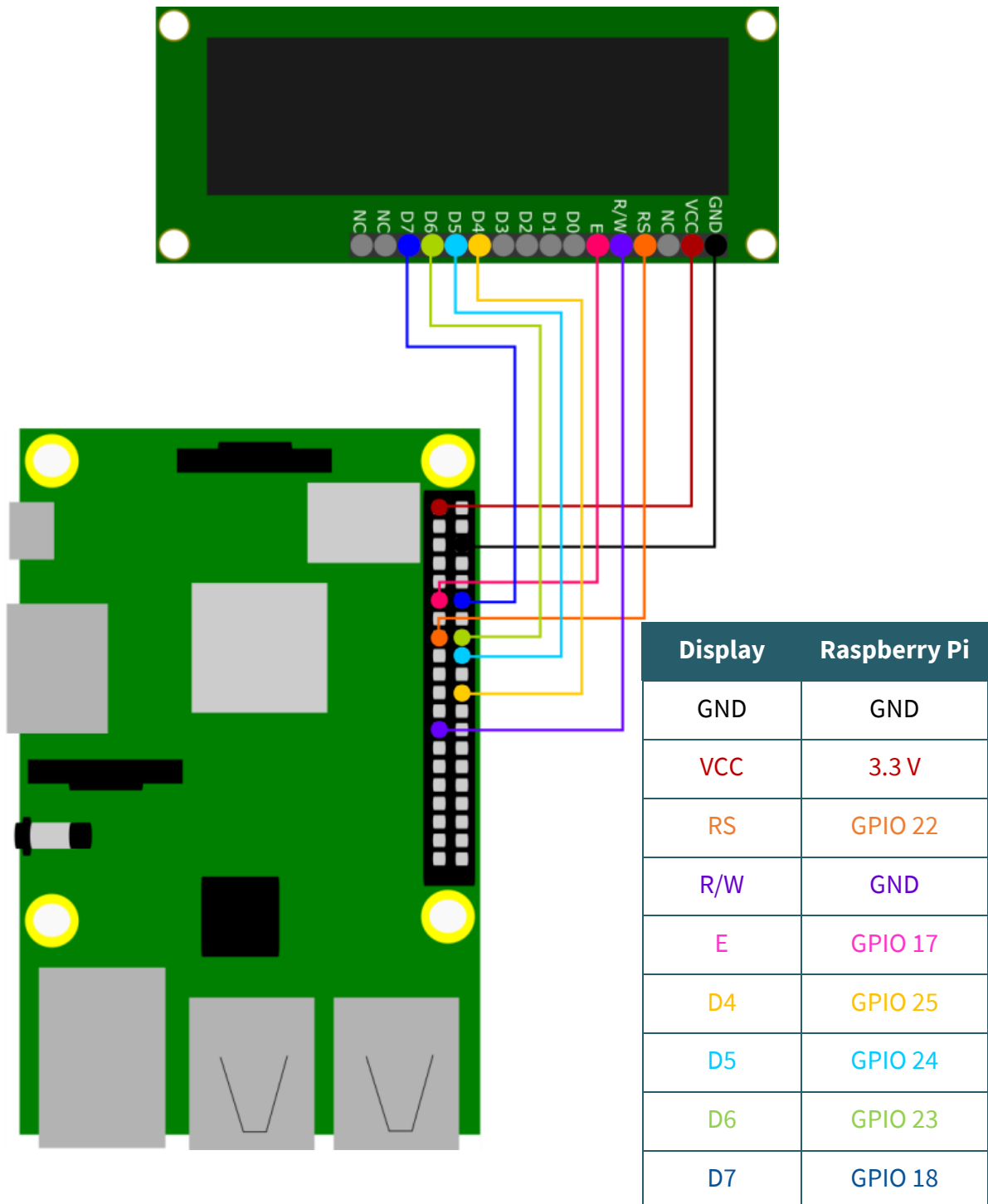
There you will find four examples (4-bit 6800, 4-bit 8080, 8-bit 6800, 8-bit 8080). You can find these under **File** → **Examples** → **OLED16x2-IST0010-Arduino-Library**.

Make sure that **Board** and **Port** are selected correctly under **Tools**.

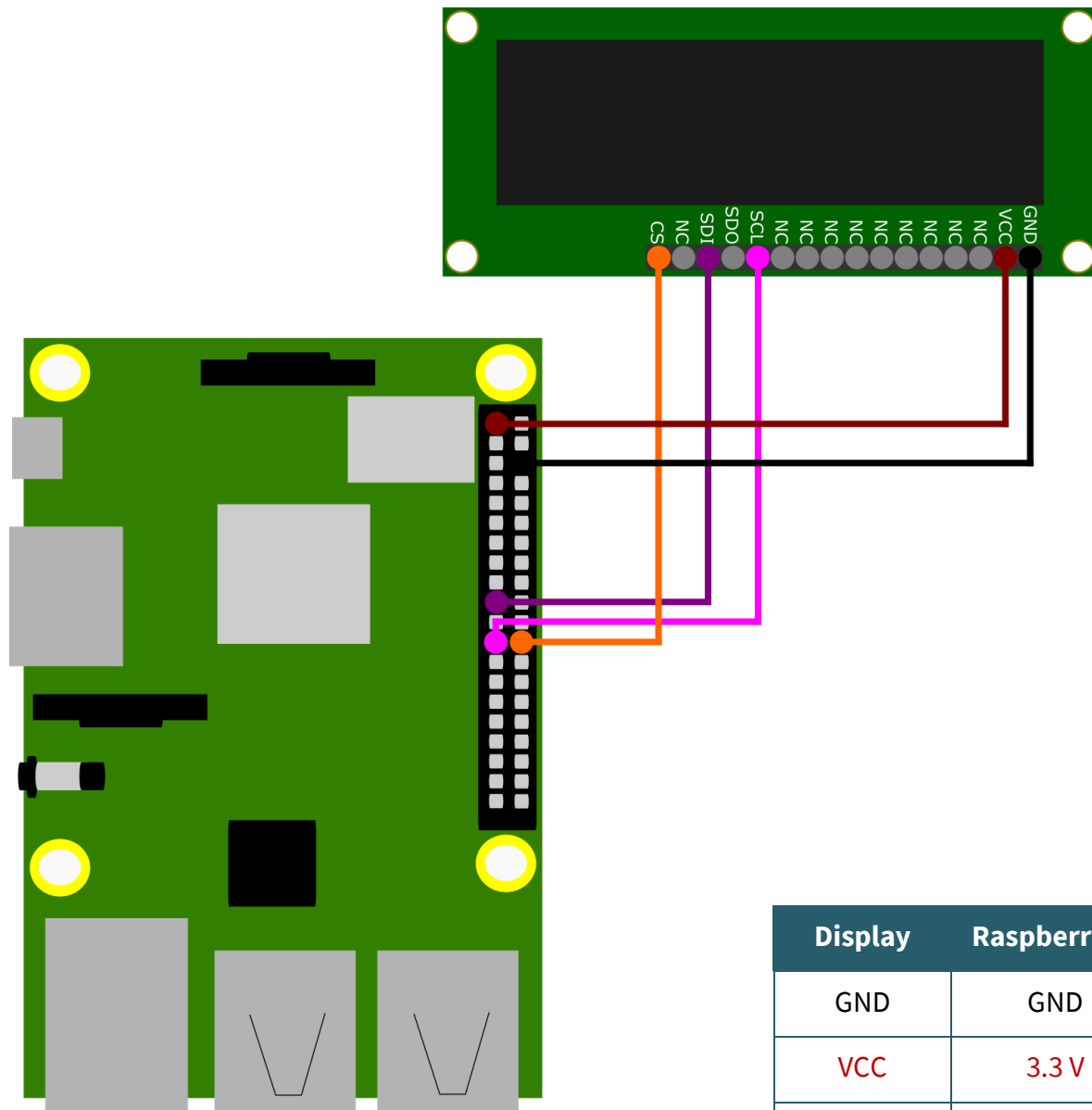
## 4. USE WITH RASPBERRY PI

### 4.1 Connection

#### 4.1.1 4bit Parallel 6800



#### 4.1.2 SPI



Display	Raspberry Pi
GND	GND
VCC	3.3 V
CS	GPIO 8
MOSI	GPIO 10
SCLK	GPIO 11



## 4.2 Code example

### 4.2.1 4bit Parallel 6800

We use the library [luma.oled](#) for this communication type, which was published by [rm-hull](#). It has been published under the [MIT-License](#). However, you must first install the following program to be able to use this library.

```
sudo apt-get update
```

```
sudo apt-get install python3 python3-pip python3-pil libjpeg-dev  
zlib1g-dev libfontconfig-dev liblcms2-dev libopenjp2-7 libtiff5 -y
```

Now, download the library with the following command.

```
sudo -H pip3 install --upgrade luma.oled
```

The luma.oled library is now fully functional. You can now create a new file with the following command. Copy the following code into it.

```
nano luma-ist0010.py
```

```
from luma.core.interface.parallel import bitbang_6800  
from luma.oled.device import ws0010  
import time  
  
# Declare pins RS, E, D4, D5, D6, D7  
parallel = bitbang_6800(RS=22, E=17, PINS=[25,24,23,18])  
  
# set Display  
try:  
    display = ws0010(parallel, selected_font='FT01')  
    display.text = 'Joy-IT' # Show text on the display  
    time.sleep(5)  
    display.text = 'COM-OLED16x2 \nParallel 6800'  
    time.sleep(5)  
    display.cleanup()  
except KeyboardInterrupt:  
    display.cleanup()
```

You can save the file with **CTRL + O** and exit the editor with **CTRL + X**. With the following command you can now execute the file.

```
python3 luma-ist0010.py
```

#### 4.2.2 SPI

We use the library [WS0010SoftwareSPI](#) published under the [MIT-License](#) by [Joy-IT](#), in combination with [Bistring](#), published under the [MIT-License](#) by [scott-griffiths](#), for this communication type.

However, you must first install the following programs to be able to use these libraries.

```
sudo apt-get update
```

```
sudo apt-get install python3-pip python3-dev python3-rpi.gpio git -y
```

```
pip3 install --upgrade pip
```

```
sudo pip3 install bistring
```

Now, download the library with the following command.

```
git clone https://github.com/joy-it/WS0010-Software-SPI.git
```

Next, go to the directory you just added by entering

```
cd WS0010-Software-SPI/
```

Now you can execute the file Test.py directly and view it on your OLED display by entering

```
python3 Test.py
```

To stop the code just press **CTRL + C**.

If this is successful you can also edit the file as needed by typing

```
nano Test.py
```

You can save the file with **CTRL + O** and exit the editor with **CTRL + X**.  
With the following command you can now execute the edited file.

```
python3 Test.py
```

## 5. GENERAL INFORMATION

Our Information and Take-back Obligations according to the Electrical and Electronic Equipment Act (ElektroG)



### Symbol on Electrical and Electronic Products:

This crossed-out bin means that electrical and electronic products do not belong into the household waste. You must hand over your old appliance to a registration place. Before you can hand over the old appliance, you must remove used batteries and replacement batteries which are not enclosed by the device.

### Return Options:

As the end user, you can hand over your old appliance (which has essentially the same functions as the new one bought with us) free of charge for disposal with the purchase of a new device.

Small devices, which do not have outer dimensions bigger than 25 cm can be handed in for disposal independently of the purchase of a new product in normal household quantities.

### 1. Possibility of return at our company location during our opening hours

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

### 2. Possibility of return nearby

We will send you a parcel stamp with which you can send us your old appliance free of charge. For this possibility, please contact us via e-mail at [service@joy-it.net](mailto:service@joy-it.net) or via telephone.

### Information about Package:

Please package your old appliance safe for transport. Should you not have suitable packaging material or you do not want to use your own material, you can contact us and we will send you an appropriate package.

## 6. SUPPORT

If any questions remained open or problems may arise after your purchase, we are available by e-mail, telephone and ticket support system to answer these.

E-Mail: [service@joy-it.net](mailto:service@joy-it.net)

Ticket-system: <http://support.joy-it.net>

Telephone: +49 (0)2845 98469 – 66 (10 - 17 o'clock)

For further information visit our website:

[www.joy-it.net](http://www.joy-it.net)