LCD 128X64

Controllable via SPI and parallel
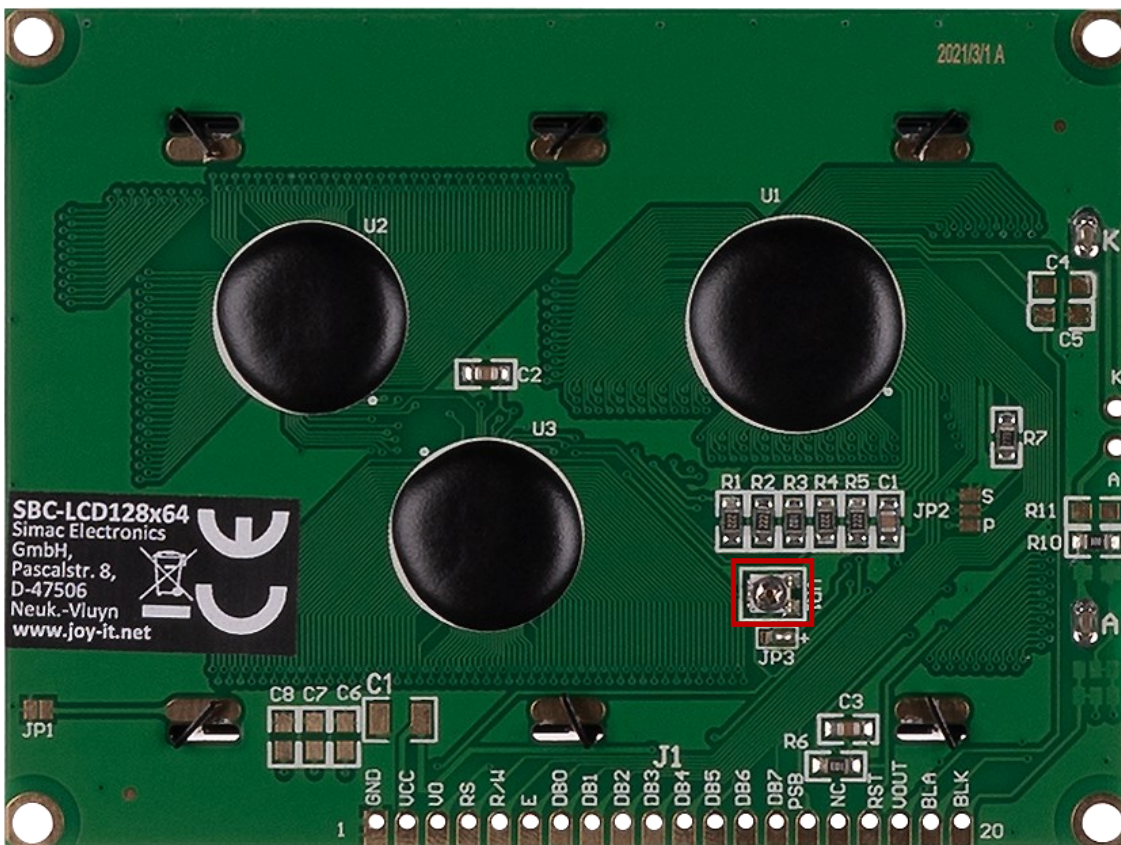
JOY-IT

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.
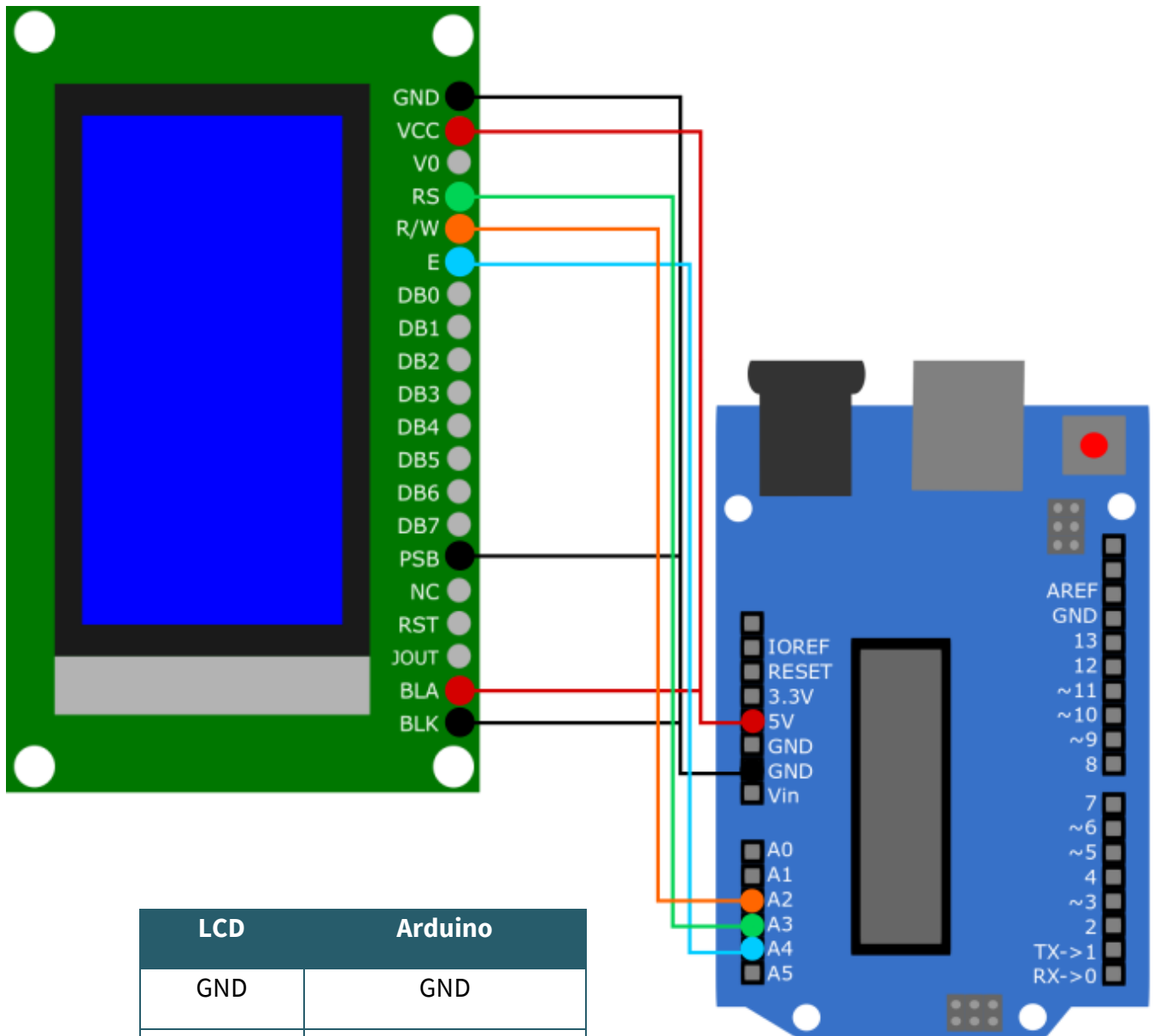
2. CONTRAST SETTINGS

On the back of the display there is a potentiometer with which you can adjust the contrast.

3.1   SPI

3.1.1 Connection

LCD	Arduino
GND	GND
VCC	5V
RS	A3
R/W	A2
E	A4
PSB	GND
BLA	5V
BLK	GND

3.1.2 Library

We use the **U8g2 library** for the Arduino, which was published by _oliver_. You can find this library in your Arduino IDE under **Tools → Manage libraries...** . If you have successfully downloaded the library, you can find examples under **File → Examples → U8g2 Examples**.

3.1.3 Code Example

Here we will explain how to use a code example of the U8g2 library. We will use the example _GraphicsTest_.

This example can be found under **File → Examples → U8g2 → full_buffer → GraphicsTest**. In this code, you need to uncomment line 185 before you can execute it using the Upload button. This is because line 185 contains the declaration of the display using SPI. Of course, you can use the other examples in the same way by uncommenting the same line in the other code examples.

```
181  //U8G2_ST7920_192X32_F_SW_SPI u8g2(U8G2_R0, /* clock=*/ 18 /* A4 */ , /* data=*/ 16 /* A2 */, /* CS=*/ 17 /* A3 */, /* reset=*/ U8X8_PIN_NONE);
182  //U8G2_ST7920_160X32_F_8080 u8g2(U8G2_R0, 8, 9, 10, 11, 4, 5, 6, 7, /*enable=*/ 18, /*cs=*/ U8X8_PIN_NONE, /*dc=*/ 17, /*reset=*/ U8X8_PIN_NONE);
183  //U8G2_ST7920_160X32_F_SW_SPI u8g2(U8G2_R0, /* clock=*/ 18 /* A4 */ , /* data=*/ 16 /* A2 */, /* CS=*/ 17 /* A3 */, /* reset=*/ U8X8_PIN_NONE);
184  //U8G2_ST7920_128X64_F_8080 u8g2(U8G2_R0, 8, 9, 10, 11, 4, 5, 6, 7, /*enable=*/ 18 /* A4 */, /*cs=*/ U8X8_PIN_NONE, /*dc/rs=*/ 17 /* A3 */, /*reset=*/ 15 /* A1 */);    // Remember to set R/W to 0
185  U8G2_ST7920_128X64_F_SW_SPI u8g2(U8G2_R0, /* clock=*/ 18 /* A4 */ , /* data=*/ 16 /* A2 */, /* CS=*/ 17 /* A3 */, /* reset=*/ U8X8_PIN_NONE);
186  //U8G2_ST7920_128X64_F_SW_SPI u8g2(U8G2_R0, /* clock=*/ 13, /* data=*/ 11, /* CS=*/ 10, /* reset=*/ 8);
187  //U8G2_ST7920_128X64_F_SW_SPI u8g2(U8G2_R0, /* clock=*/ 14, /* data=*/ 13, /* CS=*/ 15, /* reset=*/ 16); // Feather HUZZAH ESP8266, E=clock=14, RW=data=13, RS=CS
188  //U8G2_ST7920_128X64_F_HW_SPI u8g2(U8G2_R0, /* CS=*/ 10, /* reset=*/ 8);
```

Note that under **Tools**, **Board** and **Port** must be correctly selected.

3.2 Parallel (8080)

3.2.1 Connection
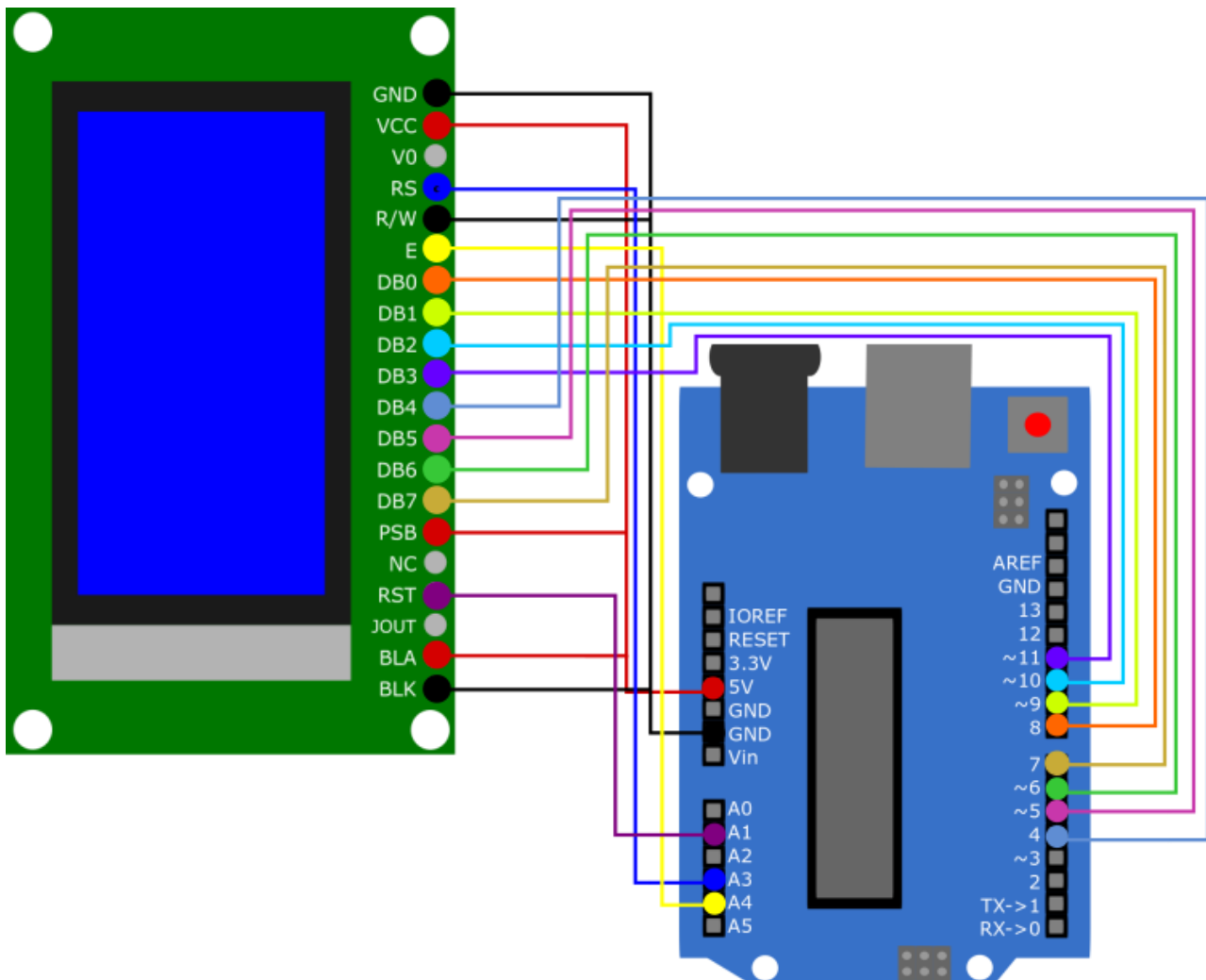
LCD	Arduino
GND	GND
VCC	5V
RS	A3
R/W	GND
E	A4
DB0	Pin 8
DB1	Pin 9
DB2	Pin 10
DB3	Pin 11
DB4	Pin 4
DB5	Pin 5
DB6	Pin 6
DB7	Pin 7
PSB	5V
BLA	5V
BLK	GND

3.2.2 Library

We use the **U8g2 library** for the Arduino, which was published by _oliver_. You can find this library in your Arduino IDE under **Tools → Manage libraries …** . If you have successfully downloaded the library, you can find examples under **File → Examples → U8g2 Examples**.

3.2.3 Code Example

Here we will explain how to use a code example of the U8g2 library. We will use the example _GraphicsTest_.

This example can be found under **File → Examples → U8g2 → full_buffer → GraphicsTest**. In this code, you need to uncomment line 184 before you can execute it using the Upload button. This is because line 184 contains the declaration of the display using 8080. Of course, you can use the other examples in the same way by uncommenting the same line in the other code examples.

```
180  //U8G2_ST7920_192X32_F_8080 u8g2(U8G2_R0, 8, 9, 10, 11, 4, 5, 6, 7, /*enable=*/ 18, /*cs=*/ U8X8_PIN_NONE, /*dc=*/ 17, /*reset=*/ U8X8_PIN_NONE);
181  //U8G2_ST7920_192X32_F_SW_SPI u8g2(U8G2_R0, /* clock=*/ 18 /* A4 */ , /* data=*/ 16 /* A2 */, /* CS=*/ 17 /* A3 */, /* reset=*/ U8X8_PIN_NONE);
182  //U8G2_ST7920_160X32_F_8080 u8g2(U8G2_R0, 8, 9, 10, 11, 4, 5, 6, 7, /*enable=*/ 18, /*cs=*/ U8X8_PIN_NONE, /*dc=*/ 17, /*reset=*/ U8X8_PIN_NONE);
183  //U8G2_ST7920_160X32_F_SW_SPI u8g2(U8G2_R0, /* clock=*/ 18 /* A4 */ , /* data=*/ 16 /* A2 */, /* CS=*/ 17 /* A3 */, /* reset=*/ U8X8_PIN_NONE);
184  U8G2_ST7920_128X64_F_8080 u8g2(U8G2_R0, 8, 9, 10, 11, 4, 5, 6, 7, /*enable=*/ 18 /* A4 */, /*cs=*/ U8X8_PIN_NONE, /*dc/rs=*/ 17 /* A3 */, /*reset=*/ 15 /* A1 */);   // Remember to set R/W to 0
185  //U8G2_ST7920_128X64_F_SW_SPI u8g2(U8G2_R0, /* clock=*/ 18 /* A4 */ , /* data=*/ 16 /* A2 */, /* CS=*/ 17 /* A3 */, /* reset=*/ U8X8_PIN_NONE);
186  //U8G2_ST7920_128X64_F_SW_SPI u8g2(U8G2_R0, /* clock=*/ 13, /* data=*/ 11, /* CS=*/ 10, /* reset=*/ 8);
```
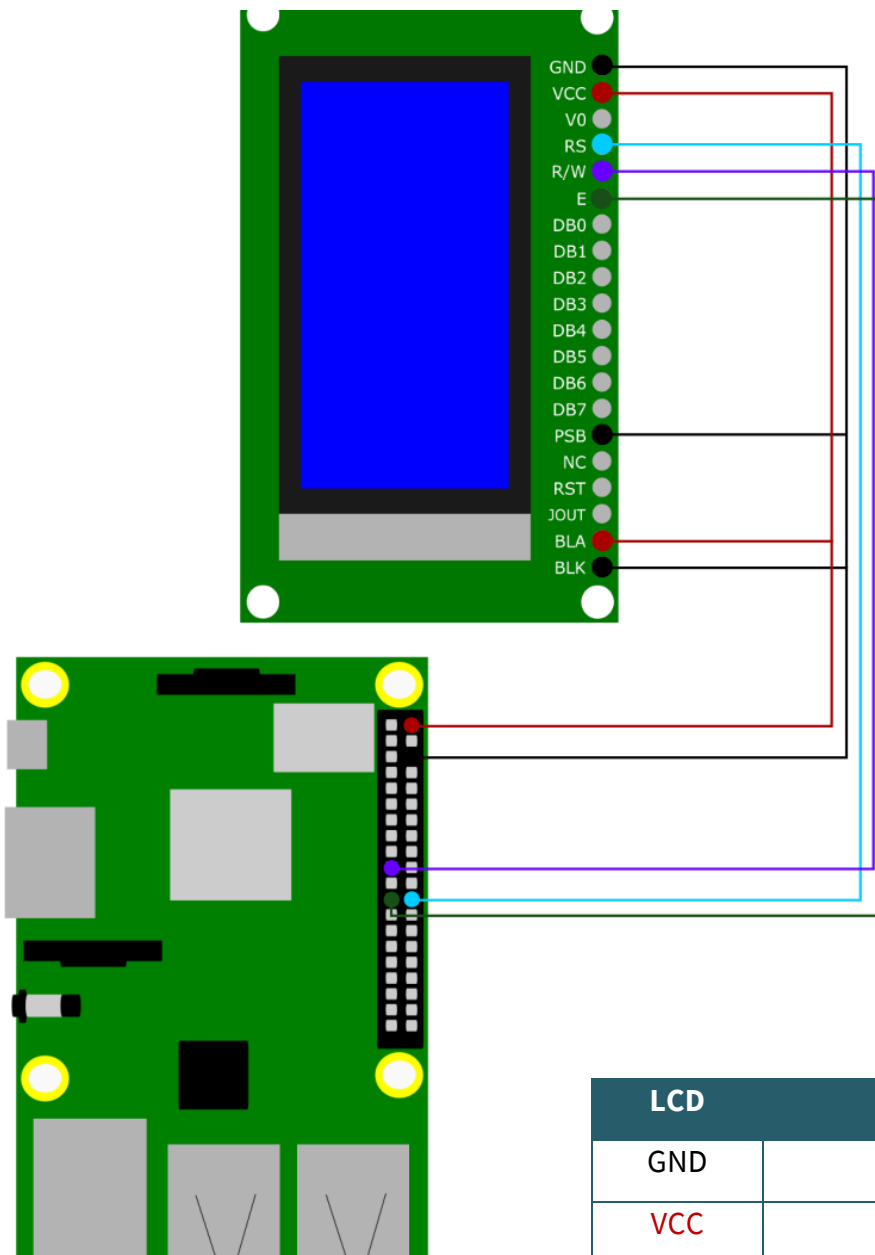
Note that under **Tools**, **Board** and **Port** must be correctly selected.

We use the LCD with the Raspberry Pi only via SPI.

4.1 Connection

LCD	Arduino
GND	GND
VCC	5V
RS	GPIO 8
R/W	GPIO 10
E	GPIO 11
PSB	GND
BLA	5V
BLK	GND

4.2 Library

We use the library **u8g2-rpi-demo** from *ribasco*, which is released under the **Apache License 2.0**.
First, download *git* for this purpose. To do this, enter the following commands:

```
sudo apt-get update
```

```
sudo apt-get install git
```

Then run the following command to download the library.

```
git clone https://github.com/ribasco/u8g2-rpi-demo.git
```

Now enter the following commands in the console to download and install all the necessary files.
Some steps in the installation may take time.

```
cd u8g2-rpi-demo/
```

```
sudo apt-get install libcurl4-openssl-dev
```

```
cd ..
```

```
git clone https://github.com/Kitware/CMake.git
```

```
cd CMake
```

```
./bootstrap --system-curl
```

```
wget https://project-downloads.drogon.net/wiringpi-latest.deb
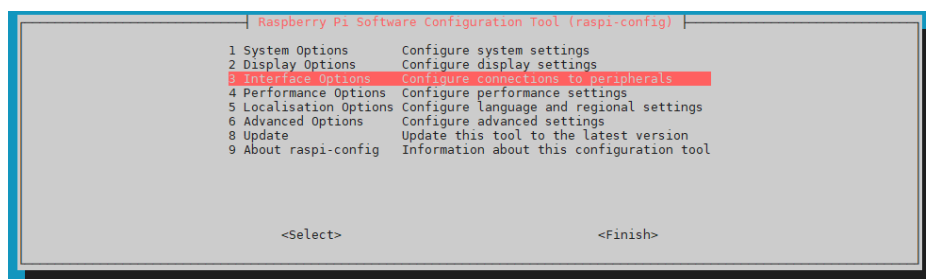```

```
sudo dpkg -i wiringpi-latest.deb
```

```
make
```

```
sudo make install
```

Now enable serial communication by calling the configuration of the Raspberry Pi with the following command.

```
sudo raspi-config
```

Select there under **3 Interface Options → P4 SPI**.

```
┤ Raspberry Pi Software Configuration Tool (raspi-config) ├
P1 Camera       Enable/disable connection to the Raspberry Pi Camera
P2 SSH          Enable/disable remote command line access using SSH
P3 VNC          Enable/disable graphical remote access using RealVNC
P4 SPI          Enable/disable automatic loading of SPI kernel module
P5 I2C          Enable/disable automatic loading of I2C kernel module
P6 Serial Port  Enable/disable shell messages on the serial connection
P7 1-Wire       Enable/disable one-wire interface
P8 Remote GPIO  Enable/disable remote access to GPIO pins


              <Select>                              <Back>
```

Agree with the question „*Would you like the SPI interface to be enabled?*"
with **„Yes"**.

```
    Would you like the SPI interface to be enabled?




                    <Yes>            <No>
```

Finish the activation of the SPI interface **„OK"** and close the configuration with **„Finish"**.

```
    The SPI interface is enabled




                    <Ok>
```

You have now successfully activated the SPI interface. Please reboot your Raspberry Pi.

```
sudo reboot
```

4.3 Usage of the library
You can compile the code example from the library with the following command.

```
cd ~/u8g2-rpi-demo/
```

```
./compile.sh
```

You can press **Y** to confirm starting the sample code immediately after compiling, or run the following command.

```
./build/arm/debug/bin/u8g2demo
```

You can also edit the sample code using the *main.cpp*. If you edit this file, you must recompile it with the first command.

5. OTHER INFORMATION

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

Symbol on Electrial 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 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
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

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