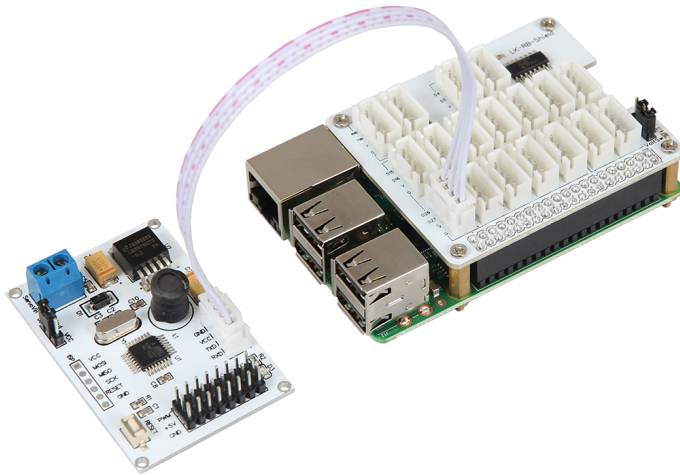


LK-BASE-RB

Baseboard for Raspberry Pi



1. GENERAL INFORMATION

Dear customer,

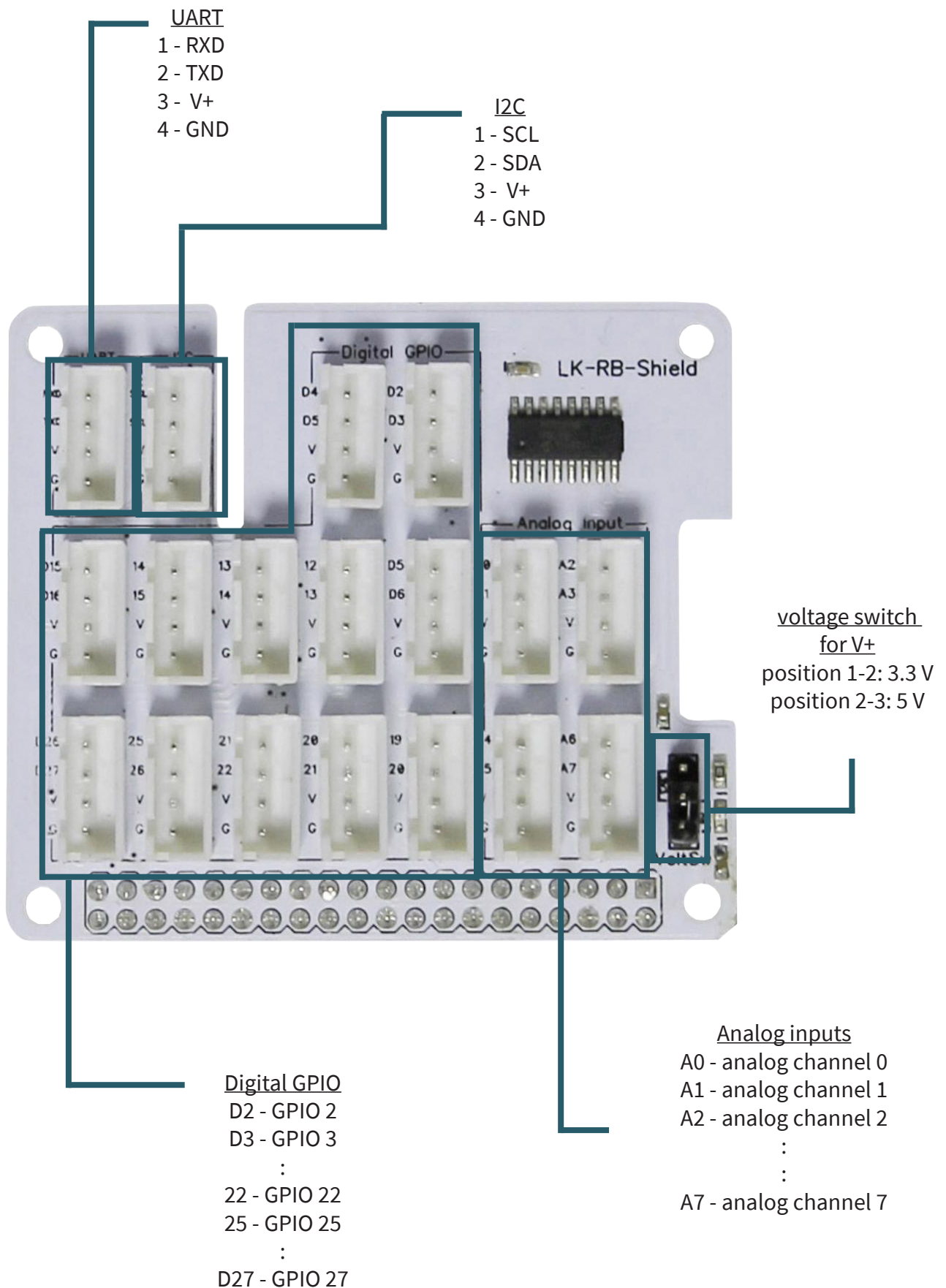
thank you for choosing our product. In the following, we will show you how to use your product.

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

The LinkerKit baseboard module for the Raspberry Pi allows the application of LinkerKit products directly with the Raspberry Pi. It is equipped with the common UART and I2C interfaces as well as up to 12 digital and 4 analog LinkerKit products.

2. PINOUT

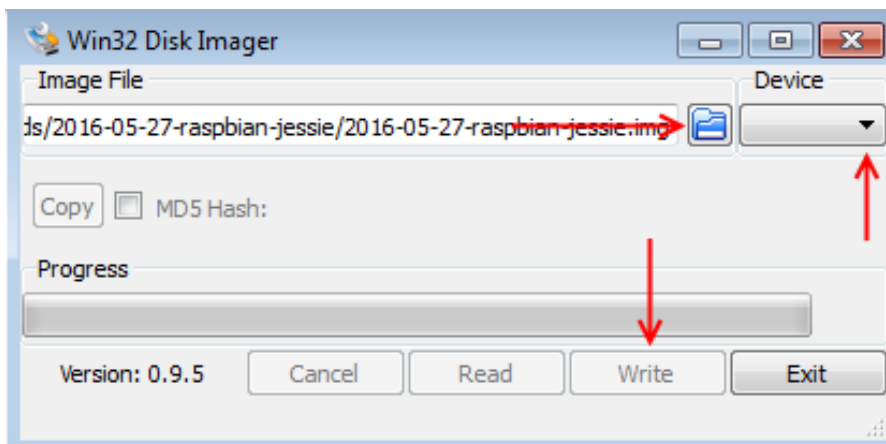
In the following picture is a detailed connection diagram which shows the different slots of the LinkerKit baseboard module.



3. INSTALLATION OF THE RASPBERRY PI

Should you have the current Raspbian version on your Raspberry Pi, you can skip this step and head to the next steps right away. The latest image of the operating system can be downloaded at the [Raspberry Pi website](#).

With the **"Win32 Disk Imager"** - programm it is possible to copy the downloaded image to your SD-card. For that you have to choose like in the following picture, the image and the selected device. After that, you have to start the writing process with Write.



If this step is finished, you can insert the written SD-card into your Raspberry Pi and continue.

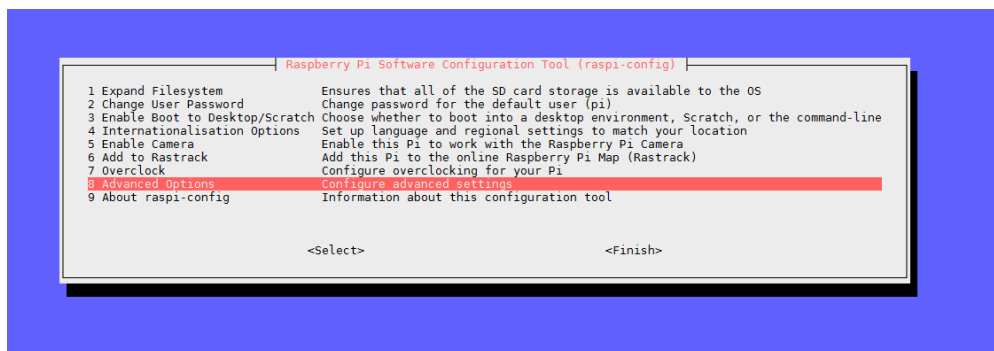
4. ACTIVATION OF THE NECESSARY MODULES

To use the baseboard with all its functions, it is necessary to activate the modules of the SPI and I2C interface. In the following, it is explained how to activate these modules.

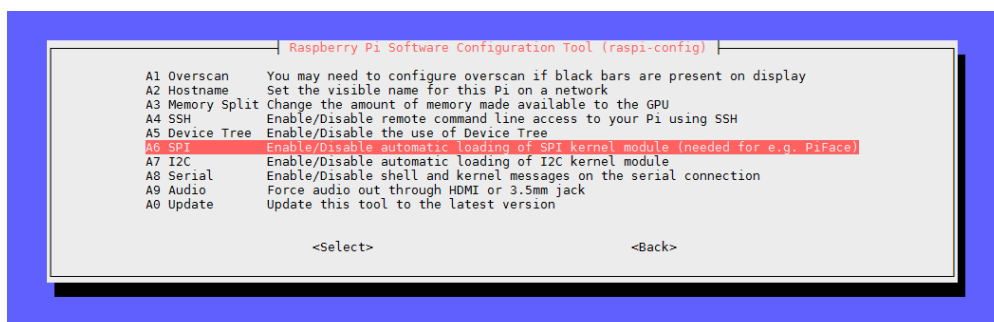
Open the Raspberry Pi configuration menu via the command line (Strg + Alt + T).

```
sudo raspi-config
```

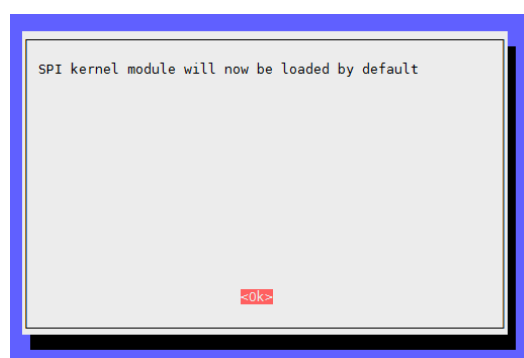
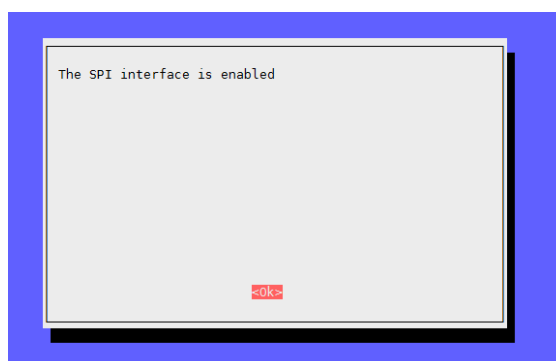
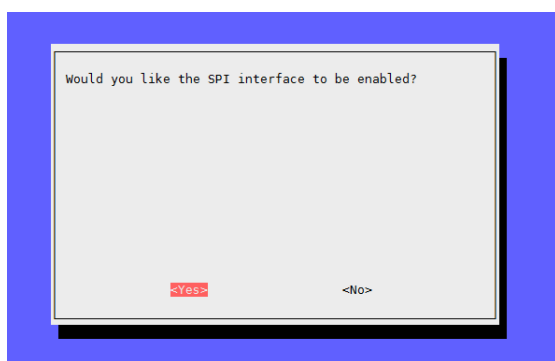
In the opening window choose the menu Advanced Options.



Activate the option SPI.

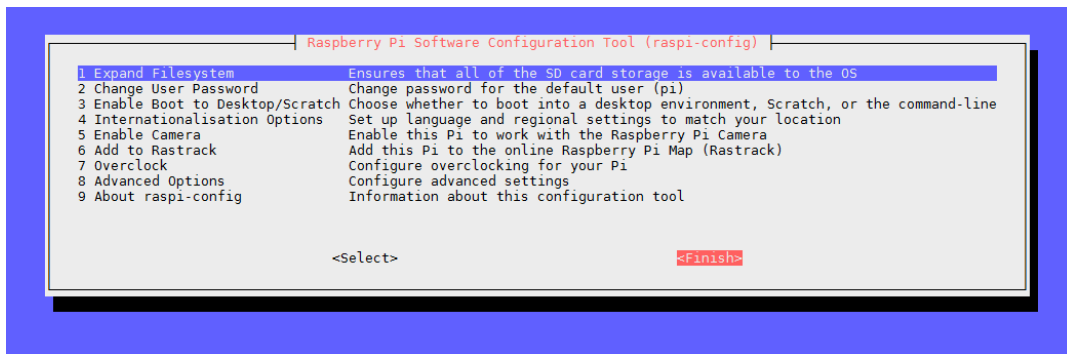


Confirm in the following window with Yes or rather OK.



Rerun these steps with the option “I2C” as well.

Leave the configuration menu with Finish and restart the Raspberry Pi.



```
sudo reboot
```

After the restart, perform an update of the system.

```
sudo apt-get update
```

```
sudo apt-get upgrade
```

Now once again, a restart is necessary.

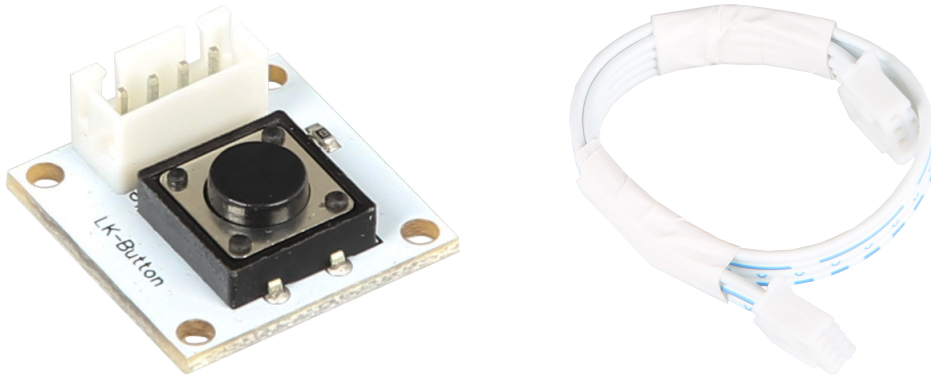
```
sudo reboot
```

After the restart, the baseboard is ready for use.

5. CODE-EXAMPLE: DIGITAL CHANNEL

In the following is a short application example for controlling the additional connections.

To demonstrate it properly, we use a LK-Button1 with a LK-Cable-20 from our LinkerKit series.



```
import RPi.GPIO as GPIO
from time import sleep

# initialize button at digital - PIN 22
button = 22

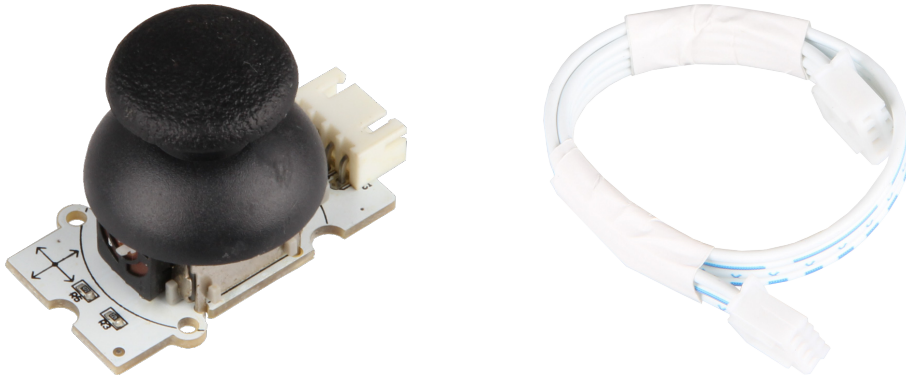
GPIO.setwarnings(False)
GPIO.setmode(GPIO.BCM)
GPIO.setup(button, GPIO.IN, pull_up_down = GPIO.PUD_UP)

while True:
    if GPIO.input(button) == GPIO.HIGH:
        // do something
    else:
        // do something different
```

6. CODE-EXAMPLE: ANALOG CHANNEL

In the following is a short application example for controlling the additional connections.

To demonstrate it properly, we use a LK-Joystick with a LK-Cable-20 from our LinkerKit series. The joystick is connected to A0 and A1.



```
from spidev import SpiDev
from time import sleep
class MCP3008:
    def __init__(self, bus = 0, device = 0):
        self.bus, self.device = bus, device
        self.spi = SpiDev()
        self.open()
        self.spi.max_speed_hz = 1000000 # 1MHz

    def open(self):
        self.spi.open(self.bus, self.device)
        self.spi.max_speed_hz = 1000000 # 1MHz

    def read(self, channel = 0):
        cmd1 = 4 | 2 | (( channel & 4) >> 2)
        cmd2 = (channel & 3) << 6

        adc = self.spi.xfer2([cmd1, cmd2, 0])
        data = (((adc[1] & 15) << 8) + adc[2]) / 4
        return data

    def close(self):
        self.spi.close()

adc = MCP3008()

while True:
    x = adc.read( channel = 0 )
    y = adc.read( channel = 1 )
    print("X: " + str(x) + "Y: " + str(y))
    sleep(0.1)
```

7. FURTHER INFORMATION

Our information and take-back obligation 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 office. Before you can hand over the old appliance, you must remove used batteries and accumulators which are not enclosed by the device.

Return options :

As the end user, you can hand over with the purchase of a new device your old appliance (which has essentially the same functions as the new one) free of charge for disposal. Small devices which do not have outer dimensions greater than 25 cm can be submitted independently of the purchase of a new product in normal household quantities.

Possibility of restitution at our company location during our opening hours :

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

Possibility of restitution nearby :

We send you a parcel stamp with which you can send us your old appliance free of charge. For this possibility, you must contact us via e-mail at service@joy-it.net or via telephone.

Information about packaging:

Please package your old appliance safe during transport. Should you not have a 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.



8. SUPPORT

If any questions remain open or problems arise after your purchase, we are available by e-mail, telephone and with a 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