

STROMPI 3 CASE

RB-StromPi3-Case



1. GENERAL INFORMATION

Dear customer,

Thank you for buying our product. The structure and functions of the StromPi3 are explained in the following chapters. We show you which settings must be adjusted that the Raspberry Pi will work with the Strom-Pi perfectly.

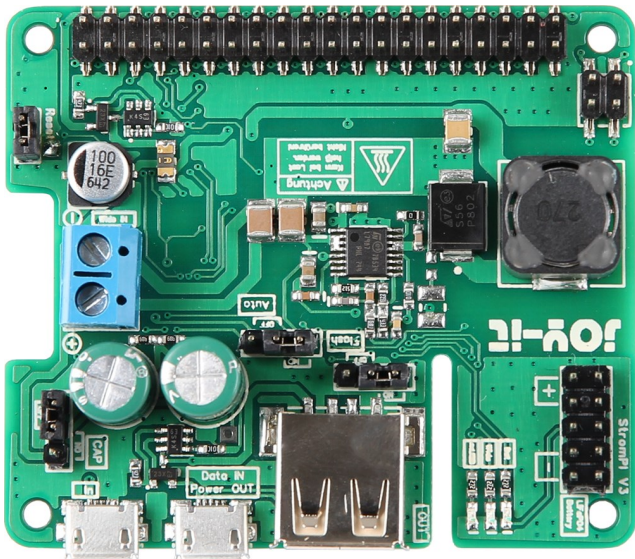
If you get any difficulties with the usage with the device, do not hesitate to contact us.

This high-quality aluminium case offers space for your Raspberry Pi incl. StromPi 3 and Battery Hat (-XL also). A removable cover above the GPIO bar keeps it easily accessible.

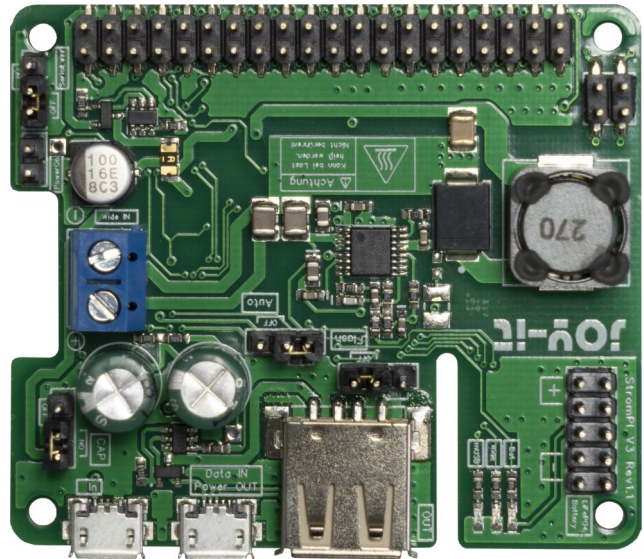
The RB-StromPi3-PCB allows the use of the power button function. In addition, the fan can be operated with this board and optionally controlled.

2. ASSEMBLY OF THE HOUSING

First you have to make sure which revision of the StromPi you have, you can use these pictures for reference:



Rev. 1.0



Rev. 1.1

Please note that if you own the **Rev 1.0** and want to use the PowerOnButton function, you must first perform the PowerOnButton modification described in the StromPi3 manual.

In **Rev 1.1** this modification is already integrated.

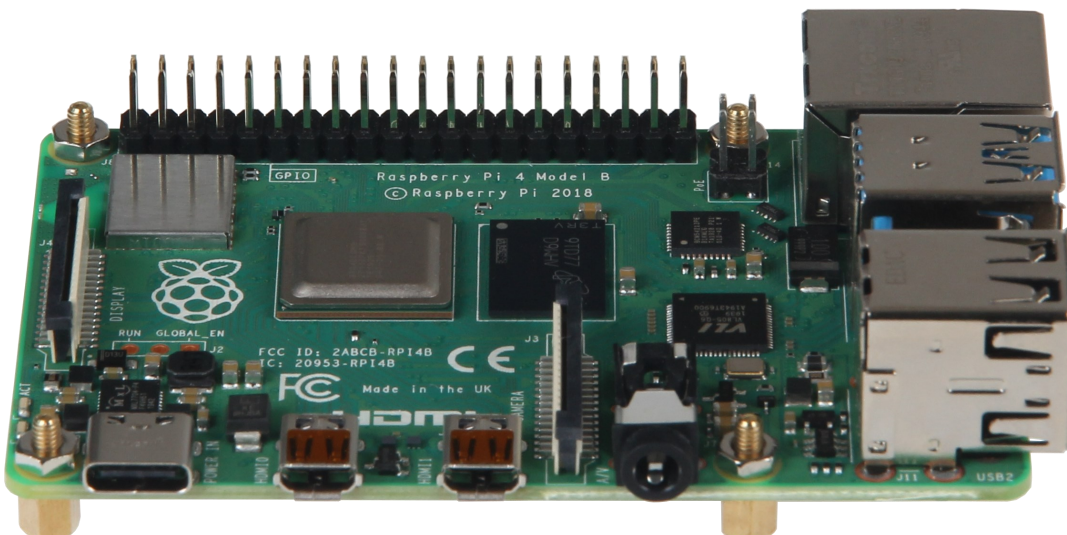
The case is delivered with the Raspberry Pi 4 side panels already screwed on and must first be disassembled.

If you want to install a Raspberry Pi 3, you have to remove all parts.

If you want to use a Raspberry Pi 4, you can leave the side panel for the HDMI and power connections installed.

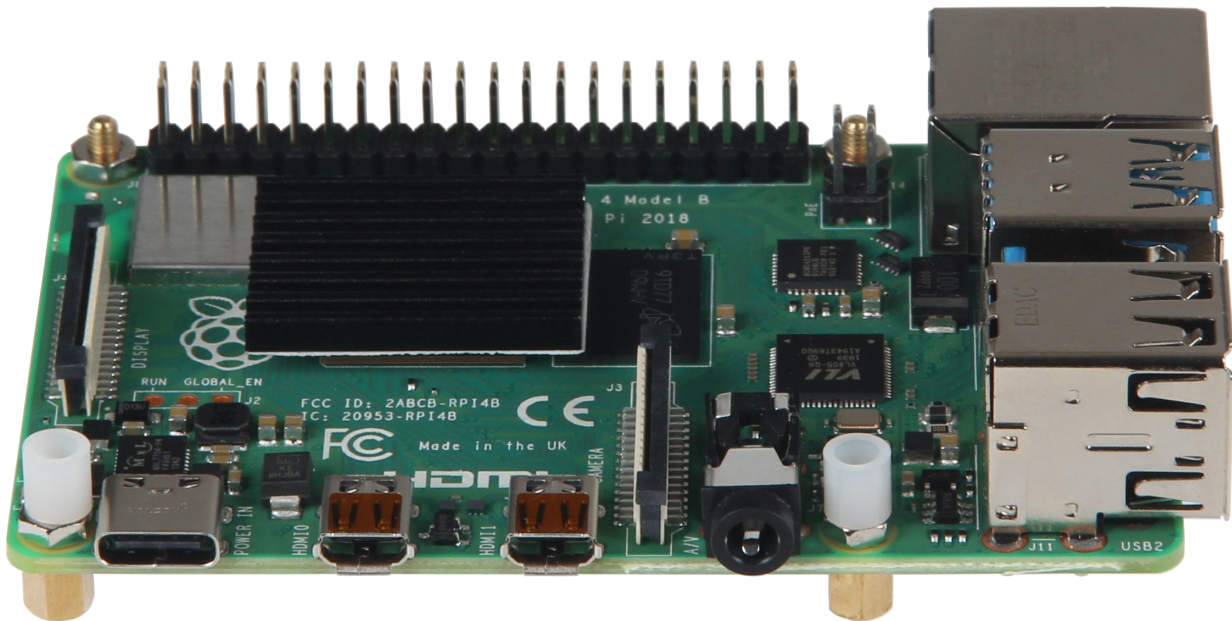
In both cases the fan must also be removed first.

Now screw the spacers with the nuts to your Raspberry Pi.



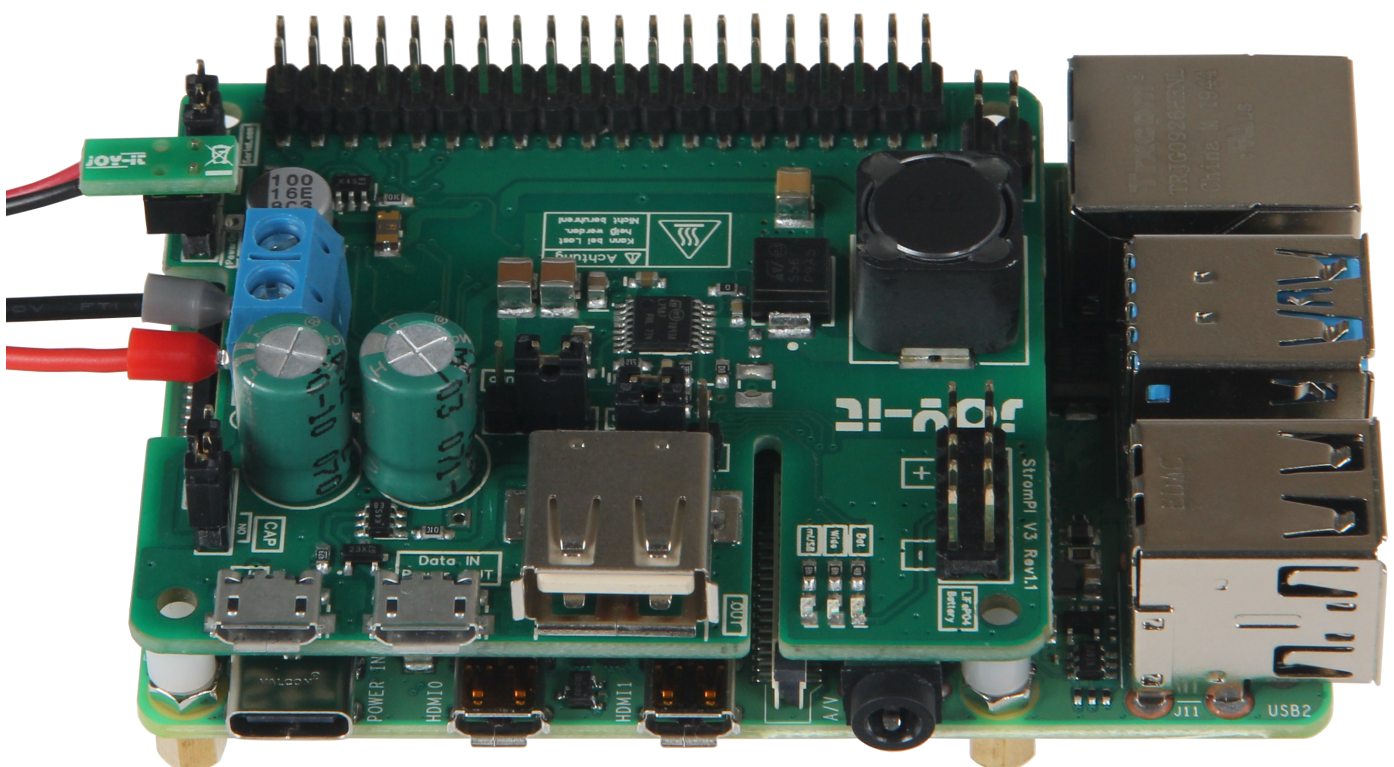
Now put on the two plastic spacers, as shown in the picture.

Also remove the foil from the aluminium heat sink and put it on the CPU of the Raspberry Pis.



Now place your StromPi on the Raspberry Pi and connect the cable for the wide-range power supply. Please note that, depending on the cable you use for this, you will have to insert it already through the hole provided in the back panel.

Also Connect the included cable to the reset pins of your StromPis as shown in the picture below. With the Rev 1.1 these are labeled Power On.



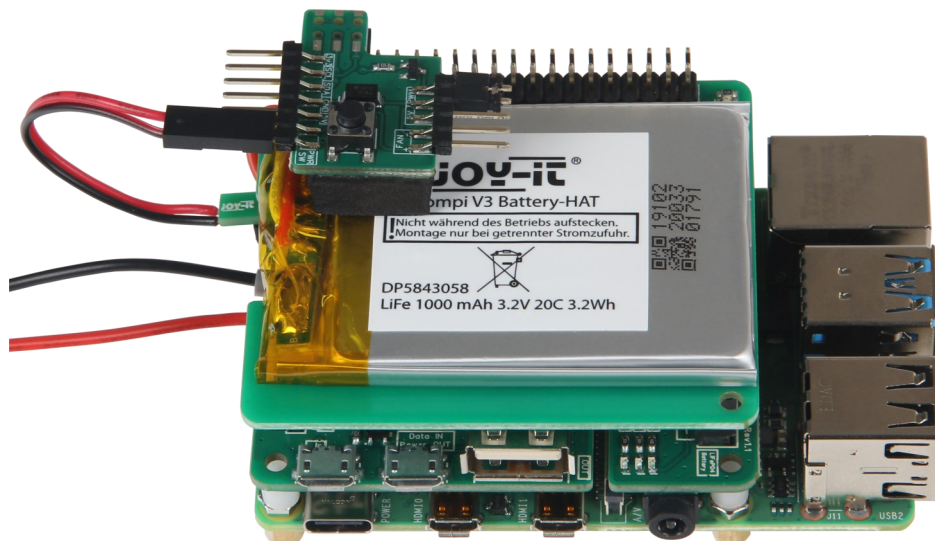
Now you can plug the Battery-HAT onto the StromPi.



Next, plug the supplied circuit board onto the first pins of the Battery-HAT and connect the cables previously soldered to the StromPi to the lower two pins on the left side of the board. It does not matter which cable is plugged to which pin.



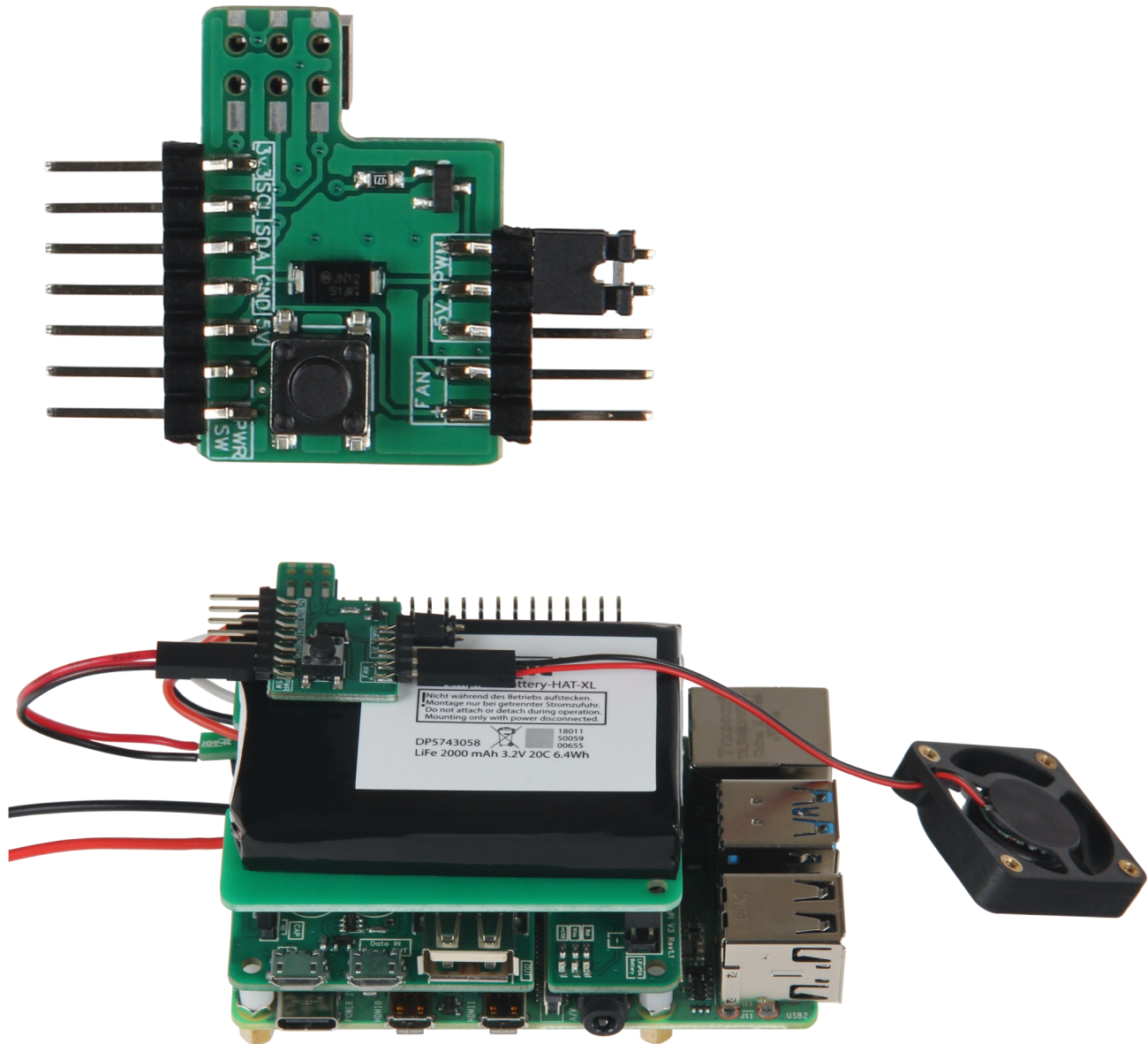
If you use the smaller 1000mAh Battery-HAT, you have to stick the supplied foam spacer on the board from below.



Now connect the fan to the lower two pins on the right side of the board. The red cable must be connected to the + pin and the black cable to the - pin.

You can either connect the fan permanently to 5V, which will cause it to rotate continuously at full power, or you can control the fan speed with a PWM signal, which allows you to make the fan speed dependent on the CPU temperature of the Raspberry Pi.

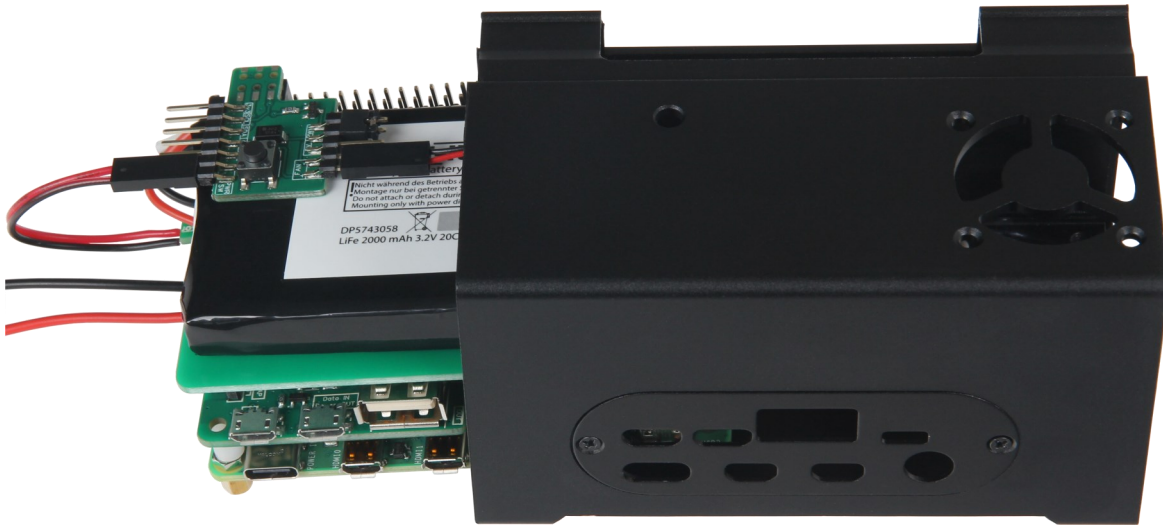
To do this, set the jumper on the right side to either 5V or PWM.



The fan should be aligned with the brass sleeves facing upwards, as shown in the picture. This way the fan blows the warm air out of the case.

A Python script for PWM fan control can be found at the end of this manual.

Now slide your Raspberry Pi into the housing.



Screw the fan to the case with the long black screws. Make sure that no cable gets to the blades of the fan.



Now fix the Raspberry Pi with the thicker black screws from the bottom of the case.



Next, screw on the back cover for the wide-range input.



Now insert the cover for the GPIO ports.



Install the front cover for the USB and Ethernet ports. Note that the Pi3 and Pi4 require different covers.

Pi 4



Pi 3



If you want to mount the housing on a DIN rail, you can screw the two grub screws into the housing. However, do not tighten the screws until you have placed the housing in the desired position on the DIN rail.



For mounting on a DIN rail, first hook the lower side and then press the upper part. You can still move the housing on the DIN rail. To fix it on the rail, tighten



3. SOFTWARE FOR FAN CONTROL

This program controls the fan speed based on the CPU temperature.

To run the program, you must first download the required library. This is done with the following commands:

```
sudo apt-get update
sudo apt-get upgrade
sudo apt-get install python3-pip
sudo pip3 install gpiozero RPi.GPIO
```

```
from gpiozero import CPUtemperature, PWMLED
from time import sleep

led = PWMLED(2) # PWM-Pin (GPIO2)

startTemp = 55 # Temperature at which the fan switches on

pTemp = 4 # Proportional part
iTemp = 0.2 # Integral part

fanSpeed = 0 # Fan speed
sum = 0 # variable for i part

while True: # Control loop
    cpu = CPUtemperature() # Reading the current temperature values
    actTemp = cpu.temperature # Current temperature as float variable

    diff = actTemp - startTemp
    sum = sum + diff
    pDiff = diff * pTemp
    iDiff = sum * iTemp
    fanSpeed = pDiff + iDiff + 35

    if fanSpeed > 100:
        fanSpeed = 100
    elif fanSpeed < 35:
        fanSpeed = 0

    if sum > 100:
        sum = 100
    elif sum < -100:
        sum = -100

    #print(str(actTemp) + "C, " + str(fanSpeed))

    led.value = fanSpeed / 100 # PWM Output

    sleep(1)
```

To run the program automatically when the Raspberry Pi is started, carry out the following steps.

Enter the following command in the console:

```
sudo nano /etc/rc.local
```

Here you can add the script to the autostart. The following command must be inserted before the exit 0 command.

```
python3 /home/pi/Skriptname.py &
```

If you have not saved the script in the /home/pi/ directory, you will need to change the path accordingly.

```
GNU nano 3.2 /etc/rc.local
#!/bin/sh -e
#
# rc.local
#
# This script is executed at the end of each multiuser runlevel.
# Make sure that the script will "exit 0" on success or any other
# value on error.
#
# In order to enable or disable this script just change the execution
# bits.
#
# By default this script does nothing.
#
# Print the IP address
_IP=$(hostname -I) || true
if [ "$_IP" ]; then
  printf "My IP address is %s\n" "$_IP"
fi
python3 /home/pi/fan_control.py &
exit 0
```

4. ADDITIONAL INFORMATION

Our information and take-back obligations according to the Electrical and Electronic Equipment Act (ElektroG)



Symbol on electrical and electronic equipment:

This crossed-out dustbin means that electrical and electronic appliances do not belong in the household waste. You must return the old appliances to a collection point.

Before handing over waste batteries and accumulators that are not enclosed by waste equipment must be separated from it.

Return options:

As an end user, you can return your old device (which essentially fulfils the same function as the new device purchased from us) free of charge for disposal when you purchase a new device.

Small appliances with no external dimensions greater than 25 cm can be disposed of in normal household quantities independently of the purchase of a new appliance.

Possibility of return at our company location during opening hours:

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

Possibility of return in your area:

We will send you a parcel stamp with which you can return the device to us free of charge. Please contact us by e-mail at Service@joy-it.net or by telephone.

Information on packaging:

If you do not have suitable packaging material or do not wish to use your own, please contact us and we will send you suitable packaging.

5. SUPPORT

If there are still any issues pending or problems arising after your purchase, we will support you by e-mail, telephone and with our ticket support system.

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 please visit our website:

www.joy-it.net