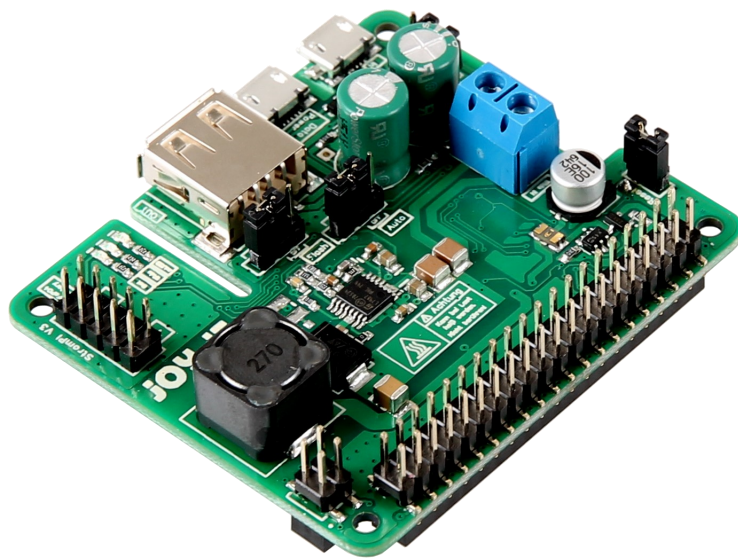


# joy-it®



StromPi 3

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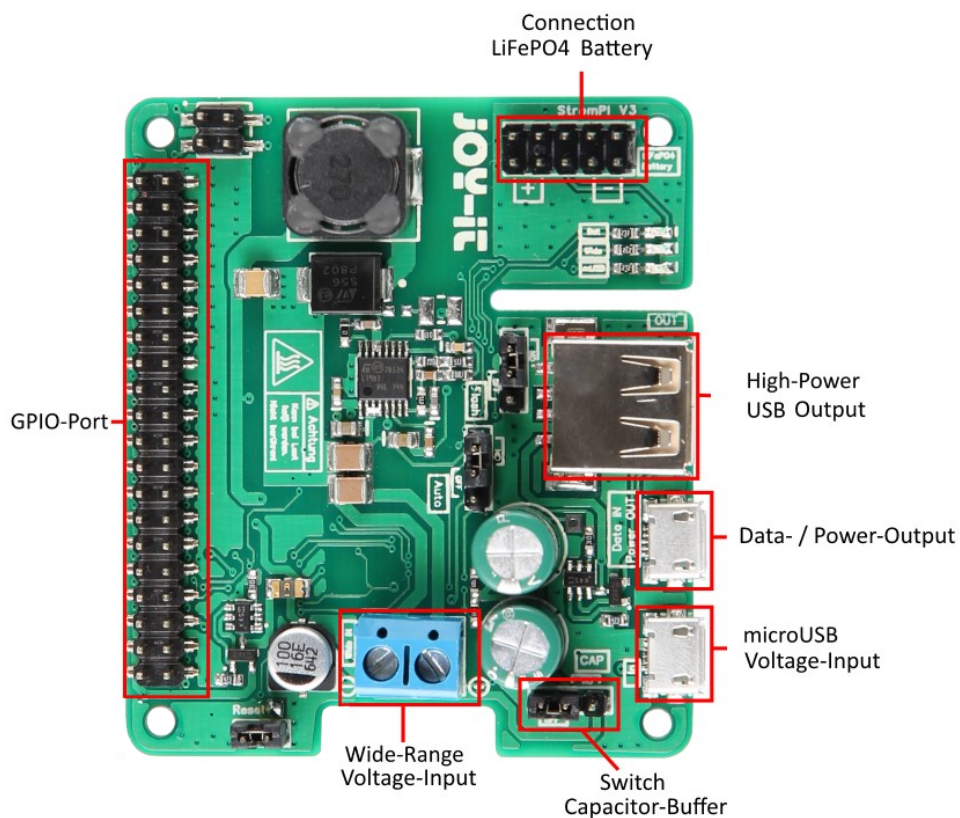
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## 1. INTRODUCTION

Dear customer,  
thank you for choosing our product.  
In the following, we will show you what to observe during the use.  
If you encounter any unexpected problems during use, please do not hesitate to contact us.

## 2. OVERVIEW



Under heavy load the StromPi 3 can heat up. Do not touch the board during operation to avoid burns. Also allow a good air supply to prevent the unit from overheating.

### 3. POWER SOURCES

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The StromPi 3 can be supplied from three different power sources. In the event of a power failure, the StromPi 3 automatically switches continuously to the power source configured as secondary.

#### MICROUSB

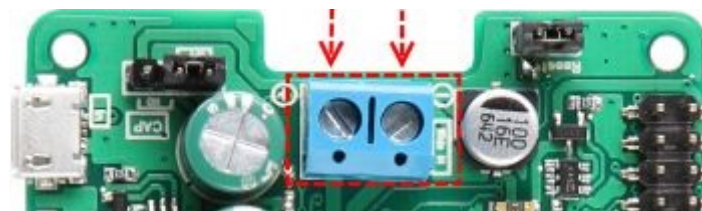
The StromPi 3 can, as usual, be powered via a microUSB connector.



#### WIDE-RANGE

In "Wide" mode, the StromPi 3 can be operated via a voltage source in the range of 6 - 61V. Simply connect any power source, such as power supplies or an on-board power supply, to the marked connector.

Attention! The voltage source must be in the range of 6 - 61V when switched on. Please pay attention to the polarity to avoid damage to the Raspberry Pi and the StromPi.



## BATTERY-UNIT

The StromPi3 can also be extended with an optional 1000mAh LiFePO4 battery to include a rechargeable emergency power source.

The separately available battery unit is simply connected to the StromPi 3 and can then be prioritized as a voltage source.

With the GPIO bar in place, there are no restrictions on the use of the battery unit.



## 4. SERIAL CONSOLE

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A special innovation of the StromPi 3 is the configuration option.

You can configure and adapt your StromPi 3 according to your wishes.

These include input prioritization, optional shutdown, alarm and power-off modes.

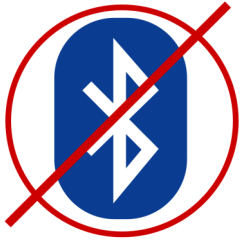
### ACTIVATING THE SERIAL COMMUNICATION

To use these functions, the module screen is required.

Open the console on your Raspberry Pi and install the module by entering the following commands:

```
sudo apt-get install screen
```

```
sudo apt-get install python-serial python3-serial
```



If you are using a 3rd generation Raspberry Pi, it is now necessary to deactivate the Bluetooth interface, otherwise the serial interface cannot be used for communication.

Open the **config.txt** file with the following command:

```
sudo nano /boot/config.txt
```

Add the following line to the end of the file:

```
dtoverlay=pi3-miniuart-bt  
enable_uart=1  
core_freq=250
```

```
pi@raspberrypi: ~  
File Edit Tabs Help  
GNU nano 2.7.4 File: /boot/config.txt  
  
# Additional overlays and parameters are documented /boot/overlays/README  
# Enable audio (loads snd_bcm2835)  
dtparam=audio=on  
  
dtoverlay=pi3-miniuart-bt  
enable_uart=1  
core_freq=250  
  
^G Get Help    ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify  
^X Exit        ^R Read File  ^\ Replace    ^U Uncut Text ^T To Spell
```

Save the file with the key combination **Ctrl+O** and exit the file with the combination **Ctrl+X**.

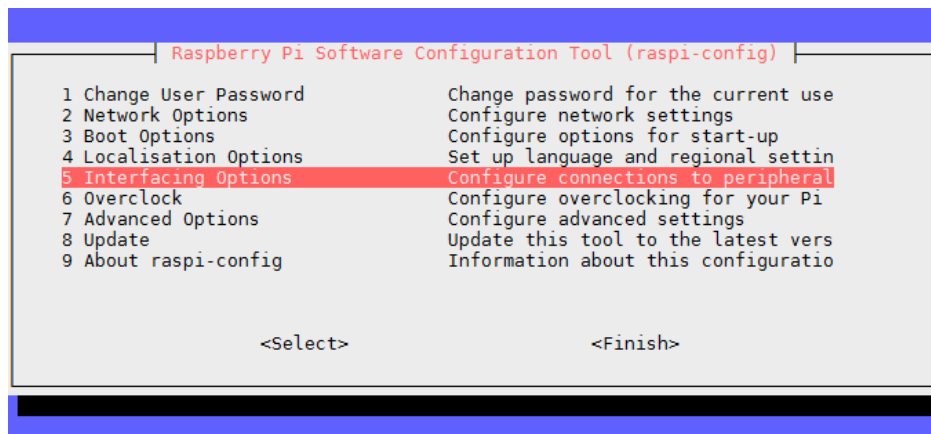
In addition, it is necessary to activate the serial interface of the Raspberry Pis and to deactivate the serial console.

You can do this either via the Raspberry Pi Configuration or via the Raspi-Config.

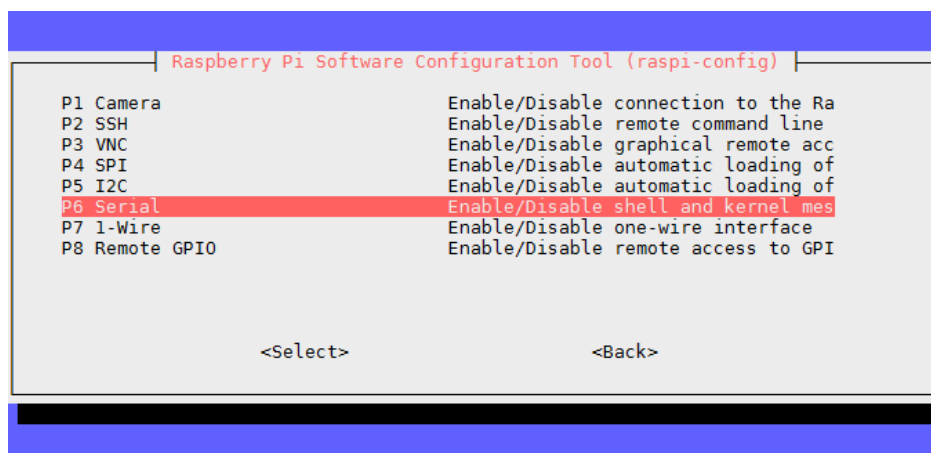
To do this via the Raspi-Config, enter the following command in a terminal window on your Raspberry Pi:

```
sudo raspi-config
```

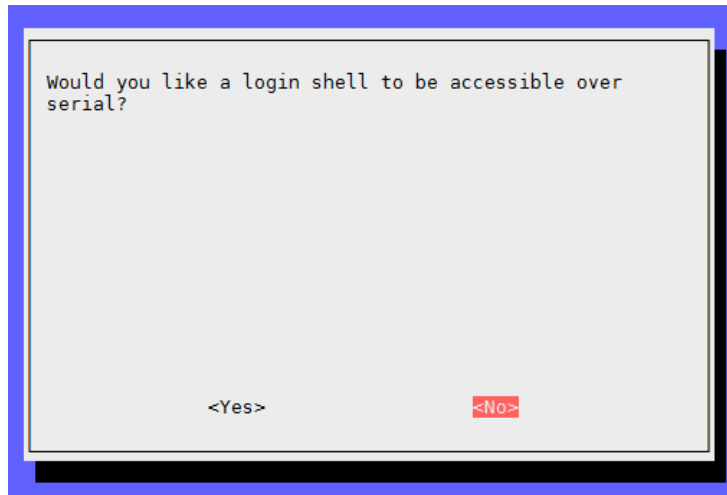
Use the arrow keys on your keyboard to navigate to the "**5 Interfacing Options**" menu item.



Select "**P6 Serial**" here.



Answer the question "**Would you like a login shell to be accessible over serial?**" with „**No**".



Answer the question "**Would you like the serial port hardware to be enabled?**" with „**Yes**".



After a new confirmation you can leave the menu with "**Finish**".  
Answer the question about restarting the device with "**Yes**".  
The serial port is now enabled and the serial console is disabled.



## OPENING THE SERIAL CONSOLE OF THE STROMPI 3

You can open the StromPi 3 console with the following command:

```
sudo screen /dev/serial0 38400
```



**Attention!** The system now waits for another entry and may not display your next keystrokes.

Enter the following command and confirm it with Enter, even if you may not see your entry:

```
startstrompiconsole
```

The serial console of the StromPi 3 opens. You can view the current configuration setting of your device with the **show-status** command.

The **help** command provides a general overview.

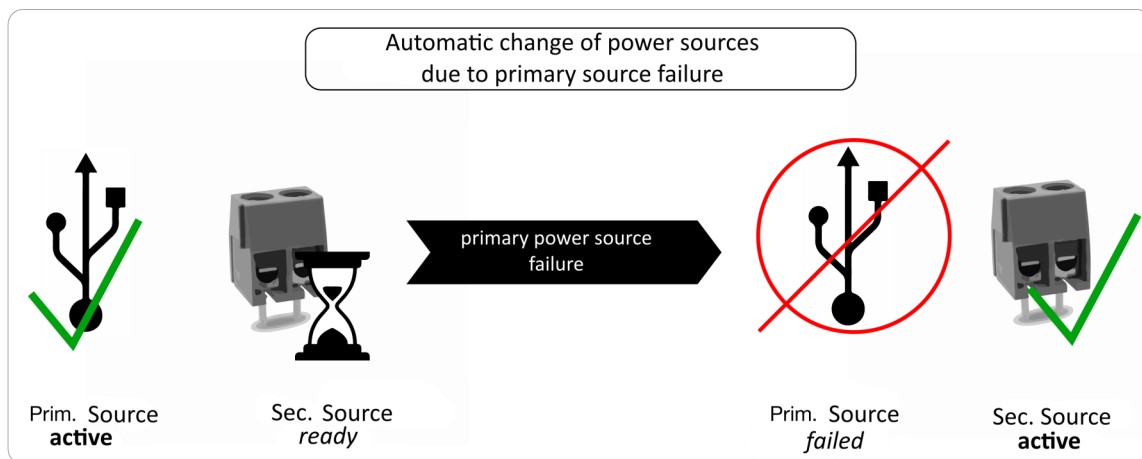
```
-----  
Welcome to the StromPi 3 Console  
-----  
Type help to view a list of available commands.  
[When you press ENTER the previous command would be executed again]  
> |
```

## 5. INPUT PRIORITIZATION

The voltage source from which the StromPi 3 draws its energy can be set according to your wishes and application.

In addition, a second power source can be selected, which automatically takes over the supply in case the first source fails.

The factory setting is configured to use the microUSB input as the main power source. If this fails, the wide-range input is automatically switched on as an alternative source.



A total of four different modes are available. The primary voltage source serves as the main power source. The secondary voltage source is automatically switched on in case the primary source fails.

MODE	PRIM. POWER SOURCE	SEC. POWER SOURCE
Mode 1	microUSB	Wide-Range
Mode 2	Wide-Range	microUSB
Mode 3	microUSB	Battery
Mode 4	Wide-Range	Battery

You can activate the mode with the following command:

```
strompi-mode <modenumber>
```

## 6. TIME-CONTROLLED APPLICATIONS

---



The StromPi 3 also has a real-time clock.

If the power fails, even time-controlled applications are not endangered. Time-controlled startup and shutdown of the Raspberry Pis are also no problem!

### 6.1 REAL TIME CLOCK

The real-time clock (RTC) of the StromPi 3 can be configured with the following commands:

#### CONFIGURATION OF THE TIME

```
set-clock <hour> <minute> <second>
```

Example:

```
set-clock 20 00 00
```

#### CONFIGURATION OF THE DATE

```
set-date <day> <month> <year> <weekday>
```

Example:

```
set-date 01 06 18 5
```

The entry "**weekday**" stands for the numeric day of the week:

- 1: **Monday**
- 2: **Tuesday**
- 3: **Wednesday**
- 4: **Thursday**
- 5: **Friday**
- 6: **Saturday**
- 7: **Sunday**



**Attention!** When entering commands, make sure that they are entered correctly. The system does not accept any other entries.

The right input format for the date would be „set-date dd mm yy w“

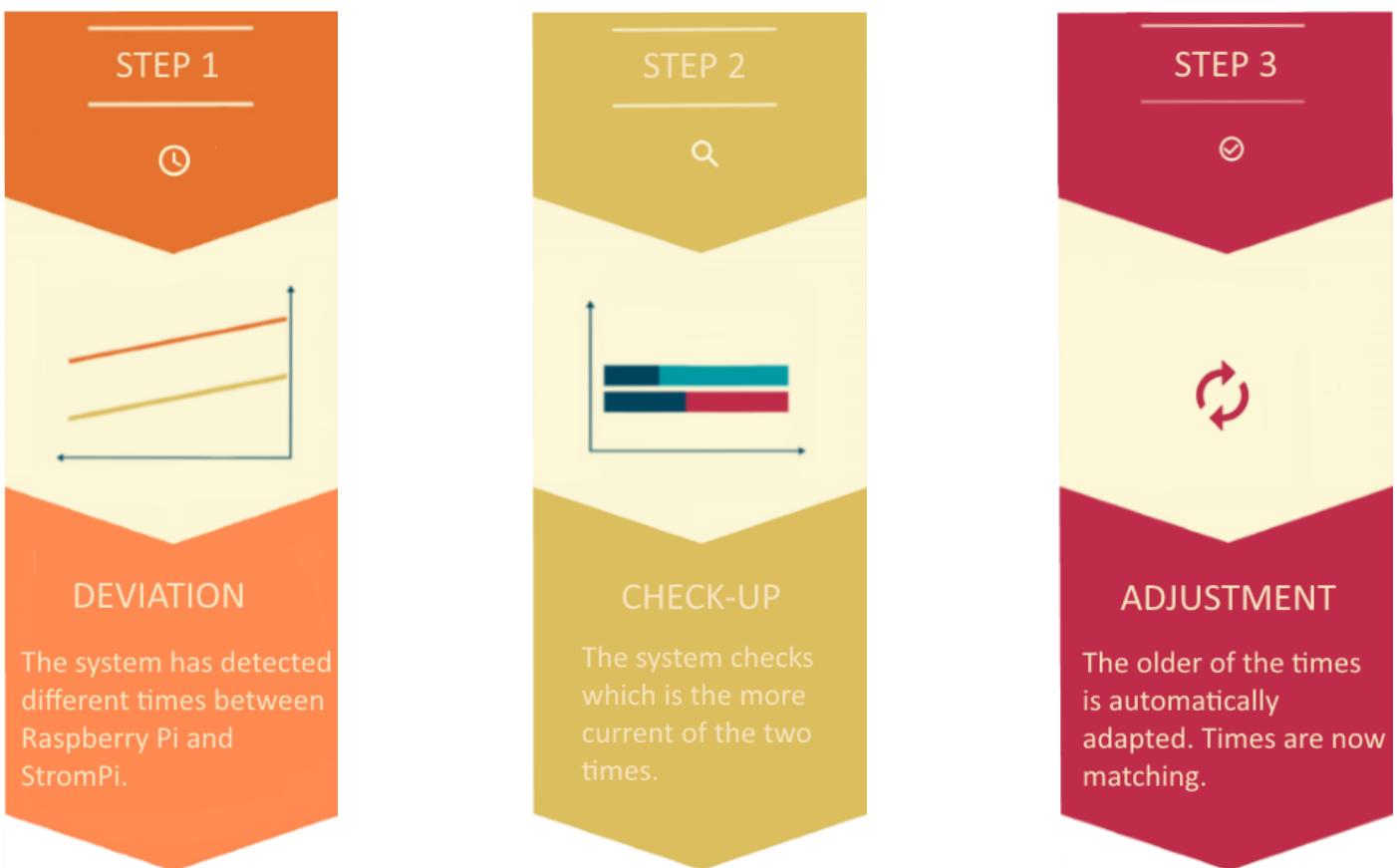
## AUTOMATIC TIME-CONFIGURATION

The StromPi 3 is also capable of automatically detecting and correcting incorrect time configurations.

This is done by a separate script, which must be active in the background.

With this script, if the times of the Raspberry Pis and the StromPi 3 differ from each other, it is assumed that the more current of the two times is the correct time.

In this case, the older time is automatically adjusted to the newer time.



You can download the time update script [here](#). Download the archive, extract the script and copy it to your Raspberry Pi.

The script can be copied into the autostart of your Raspberry Pis as follows:

```
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.

```
python /home/pi/RTCSerial.py &
```

```
GNU nano 2.7.4 File: /etc/rc.local Modified
#!/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
python /home/pi/RTCSerial.py &
exit 0
```

If you have not copied the script into the folder `"/home/pi"`, you have to adjust the path accordingly.

Save the file with the key combination **CTRL+O**, confirm with **Enter** and exit the editor with the combination **CTRL+X**.

The changes take effect after a restart.

## 6.2 SHUT-DOWN TIMER & POWER-OFF ALARM



Attention! For the automatic shutdown and startup an additional script is necessary, which receives and processes the shutdown signal of the StromPis. You can download the script [here](#).

Download the archive, extract the script and copy it to your Raspberry Pi.

The script can be copied into the autostart of your Raspberry Pis as follows:

```
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.

```
python /home/pi/serialShutdown.py &
```

```
GNU nano 2.7.4 File: /etc/rc.local Modified
#!/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
python /home/pi/serialShutdown.py &
exit 0
```

If you have not copied the script into the folder `"/home/pi"`, you have to adjust the path accordingly.

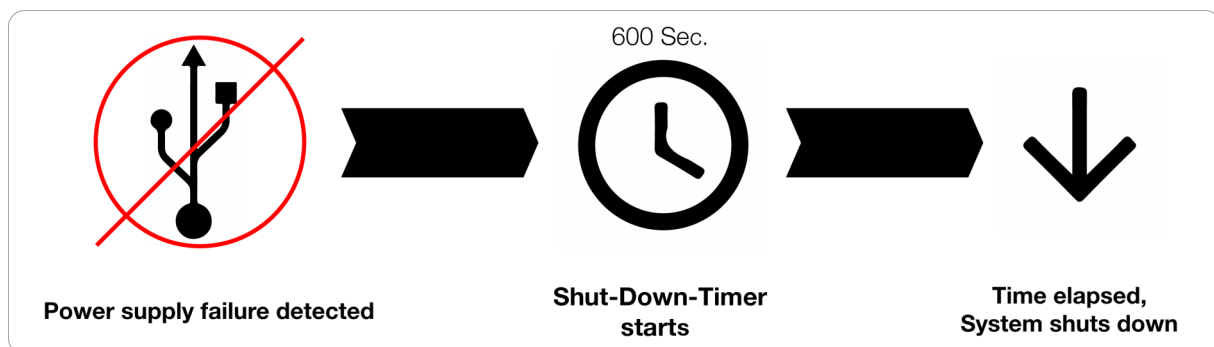
Save the file with the key combination **CTRL+O**, confirm with **Enter** and exit the editor with the combination **CTRL+X**.

The changes take effect after a restart.

## SHUTDOWN-TIMER

The StromPi 3 has a shutdown timer that automatically shuts down your Raspberry Pi after a primary power failure is detected. You can individually adjust the time span when the shutdown takes place after the power supply fails to suit your needs.

For example, if you set the shutdown timer to 600 (600 seconds -> 10 minutes), the system behaves as follows:



The time span can be set with the following command:

```
set-timer <seconds>
```

The timer can be activated or deactivated with the following command:

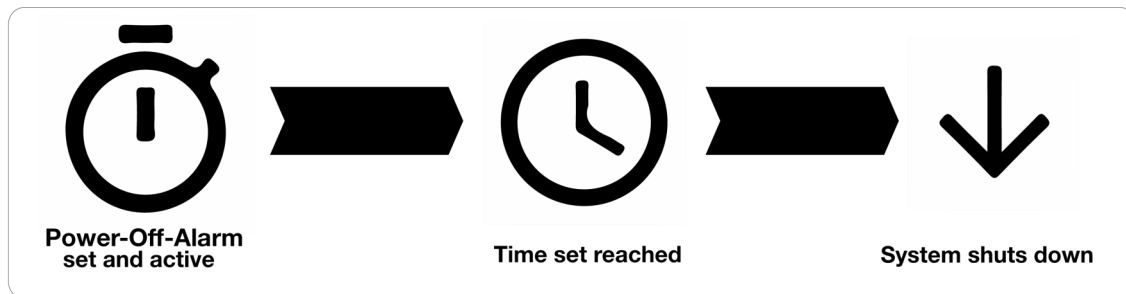
```
shutdown-enable <Option>
```



**Attention!** Only use single-digit numbers for the option entry. A 1 activates the alarm, a 0 deactivates the alarm.

## POWER-OFF-ALARM

The StromPi 3 can shut down your Raspberry Pi time-controlled.



To configure a time you can use the following command:

```
poweroff-set-time <hour> <minute>
```



**Attention!** Only use two-digit numbers for the time entries (for example **05 15** for 05:15 AM).

You can activate or deactivate the power-off alarm with this command:

```
poweroff-enable <option>
```



**Attention!** Only use single-digit numbers for the option entry. A **1** activates the alarm, a **0** deactivates the alarm.



## 6.3 ALARM-MODE

The StromPi 3 can automatically start your Raspberry Pi at certain times. The following modes are available:

Mode 1	Daily time alarm
Mode 2	Date controlled time alarm
Mode 3	Weekly time alarm



To configure the alarm mode, use the following command:

```
alarm-mode <modenumber>
```

The alarm can be activated with this command:

```
alarm-enable <option>
```



**Attention!** Only use single-digit numbers for the option entry. A **1** activates the alarm, a **0** deactivates the alarm.



**Attention!** Your Raspberry Pi can only be started via the alarm mode if it has previously been automatically shut down via the power-off alarm. A manual shutdown is alternatively possible with the serial command "**poweroff**".

The following commands can be used to configure the alarm time:

**Configuration of the alarm time:**

```
alarm set-time <hour> <minute>
```



**Attention!** Use only two-digit numbers for entering hours and minutes.

**Configuration of the alarm weekday:**

```
alarm-set-weekday <weekday>
```

The day of the week is the numeric day of the week:

- 1: Monday**
- 2: Tuesday**
- 3: Wednesday**
- 4: Thursday**
- 5: Friday**
- 6: Saturday**
- 7: Sunday**



**Attention!** When entering commands, make sure that they are entered correctly. The system does not accept any other entries.

### Configuration of the date alarm:

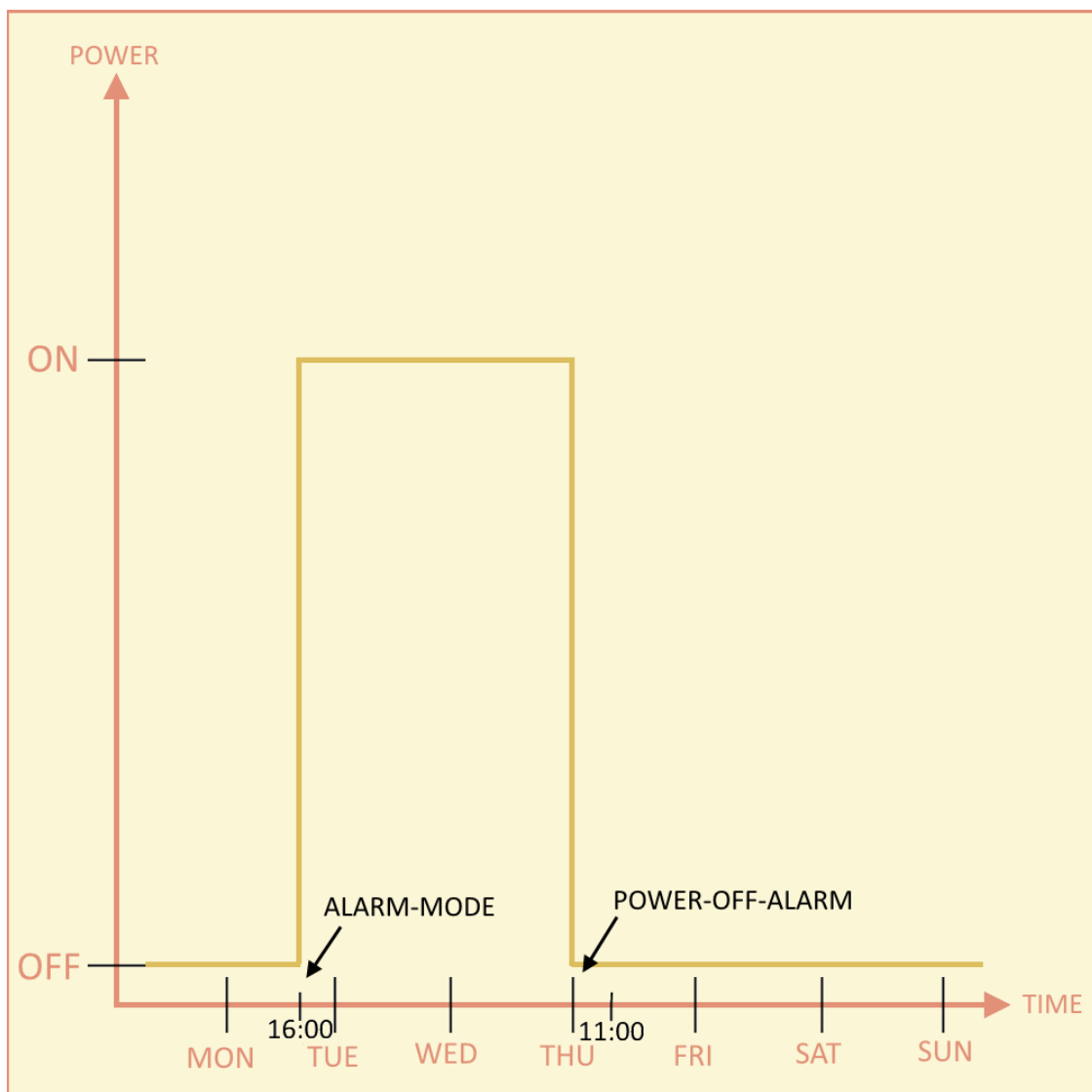
```
alarm-set-date <day> <month>
```



**Attention!** Only use two-digit numbers to specify the day and month (for example: 01 01 for January 1).

The alarm mode and the power-off alarm can of course be combined with each other. You can configure an individual start-stop behavior for your Raspberry Pi (e.g. boot up every Monday at 16:00 and shut down every Wednesday at 11:00).

Thus, your Raspberry Pi is only active in the time window in which the tasks that arise must be processed.



## EXAMPLE OF PRACTICAL APPLICATION

The Raspberry Pi is to be launched daily at 10:00 AM for the opening of a store. An image is to be automatically displayed on a separate monitor for advertising purposes. The Raspberry Pi should shut down punctually, at 6 PM. at the close of business, as it is not needed after closing time.

Configuration and activation for automatic start:

```
alarm-mode 1
```

```
alarm-enable 1
```

```
alarm-set-time 10 00
```

Configuration and activation for automatic shutdown:

```
poweroff-set-time 18 00
```

```
poweroff-enable 1
```

Add script to the autostart so that it runs every time the Raspberry Pi starts:

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

Add the following command at the end, before the "exit 0" statement:

```
python /home/pi/StartScript.py &
```

## 7. SUPPORT

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We also support you after your purchase. If there are any questions left or if you encounter any problems, please feel free to contact us by mail, phone, or by our ticket-support-system on our website.

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

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

Phone: +49 (0)2845 98469 – 66 (11- 18 o'clock)

For more information, please visit our website:

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

## 8. EU DECLARATION OF CONFORMITY

---

Manufacturer: Simac GmbH  
Pascalstr. 8  
47506 Neukirchen-Vluyn

Item Name: JOY-IT StromPi 3

Description: USV / Wide Range Power Supply  
Raspberry PI 3 & other SBC (SingleBoardComputer) 5V


Intended use: Use for prototyping / test setups

Declares that the product is in compliance with the essential requirements of the following directives when used as intended:

2014/30/EU (EMC) & 2011/65/EU (Rohs)

The following standards have been applied to assess the device:

EN 55022:2010+ AC:2011, EN 55024:2010, EN 61000-3-2:2014, EN 61000-3-3:2013

Date	Name of the person responsible	signature	Position in the company
24.08.2018	Xu Lu		chief executive officer