

ClimaSens

This document describes how to build your own ClimaSens device and set up a system to log the data.

Contents

1. Required hardware.....	3
2. Programming the software	5
3. Build your Smart-ClimaSens	6
1. Wire schematic	6
2. Pinmap	7
4. System installation	8
3. Download “raspbian”	8
4. Download “Win32 Disk Imager”	8
5. Flash the “raspbian” image with “Win32 Disk Imager”	8
6. Enable SSH	9
7. First run	10
Find out the ip address of your raspberry:	10
Connect to your raspberry:	10
5. System configuration	11
1. Change default settings	11
6. Pimatic installation.....	12
1. Prepare for installation	12
2. Install pimatic.....	12
3. Setup user	13
4. Configure auto start	14
5. Access pimatic.....	15
7. Install Pimatic-ClimaSens.....	16

1. Required hardware

Control center:

- Raspberry Pi 3 (not tested with others, Bluetooth required)

For programming:

- Arduino Uno (or similar)

Smart-ClimaSens:

- BLE-Module: JDY-08 with CC2541 Controller
- Battery: CR2032 (3V)
- Clima-Sensor: Si7021 or BME280 (does also measure pressure)
- Optionally:
 - o Light-Sensor: LED 3mm + 10nF capacitor
 - o Magnet-Contact: Reed-Contact

Order list:

Bluetooth Module	JDY-08	
Clima-Sensor	Si7021	
Clima-Sensor	BME280	
Light-Sensor	LED 3mm	
Capacitor	10nF 0805	
Magnet-Contact	Reed-Contact	
	Package	
	Battery Clip	

2. Programming the software

Download and install Arduino IDE from the official homepage.

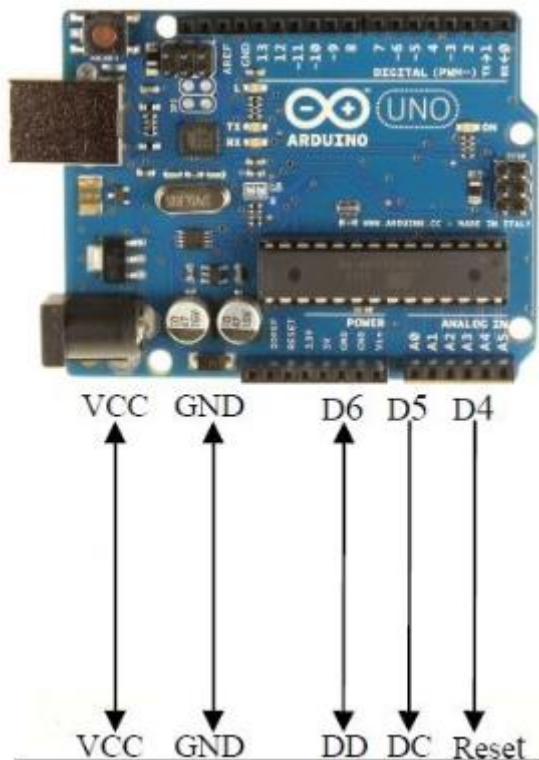
<https://www.arduino.cc/en/Main/Software>

Start Arduino IDE and load the “CCLoader.ino” sketch.

Smart-ClimaSens/Development/Development-Tools/Programming software/CCLoader-master/Arduino/CCLoader/CCLoader.ino

Connect your Arduino to the computer and start loading the sketch.

Connect your Bluetooth module to the Arduino.



Find out the COM-Port of the Arduino.

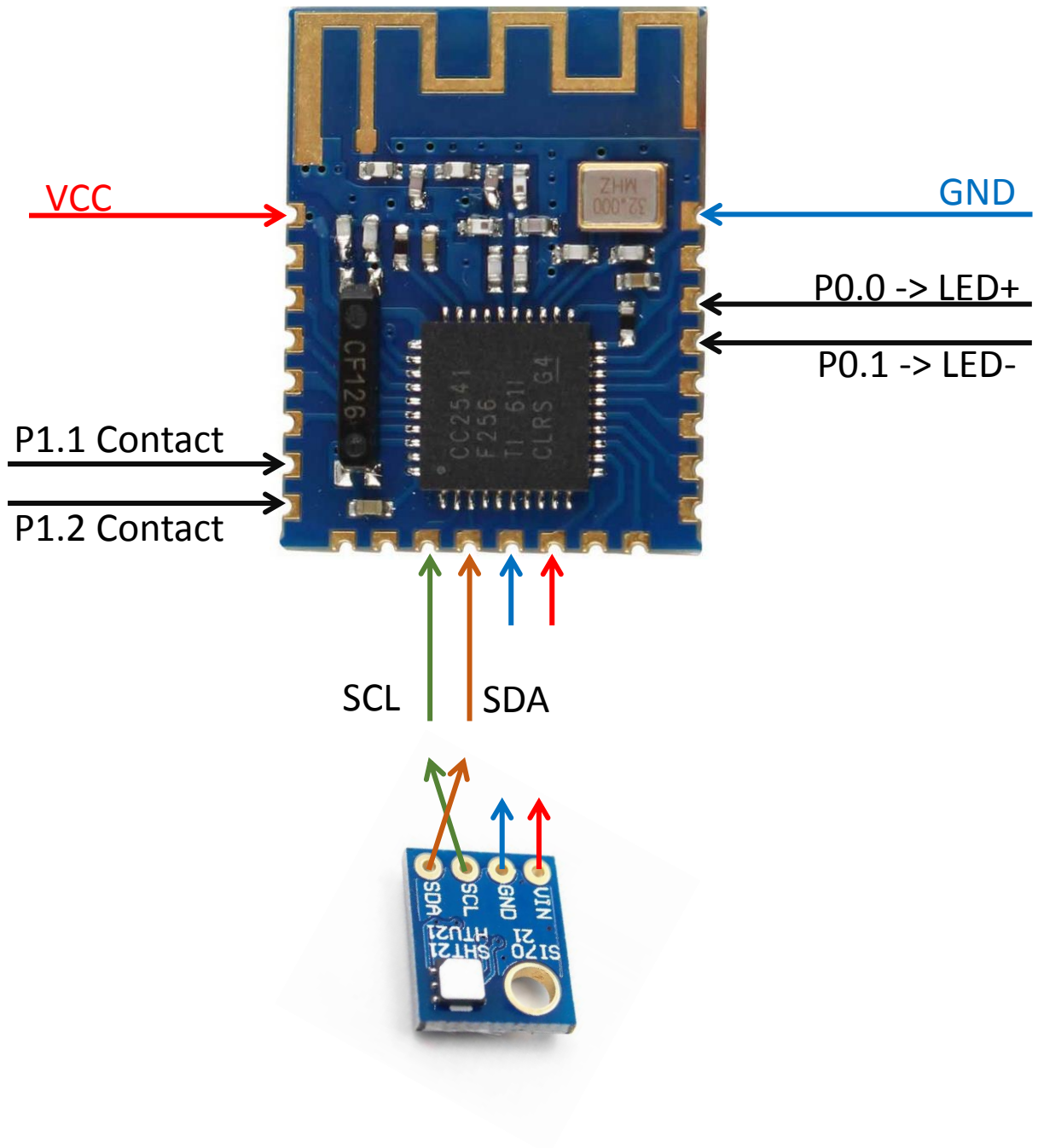
Open the “ConvertAndProgram.bat” and change the COM-Port to yours.

CCLoader.exe **YourComPort** SimpleBLEBroadcaster.bin 0

Execute “ConvertAndProgram.bat”, the programming should start.

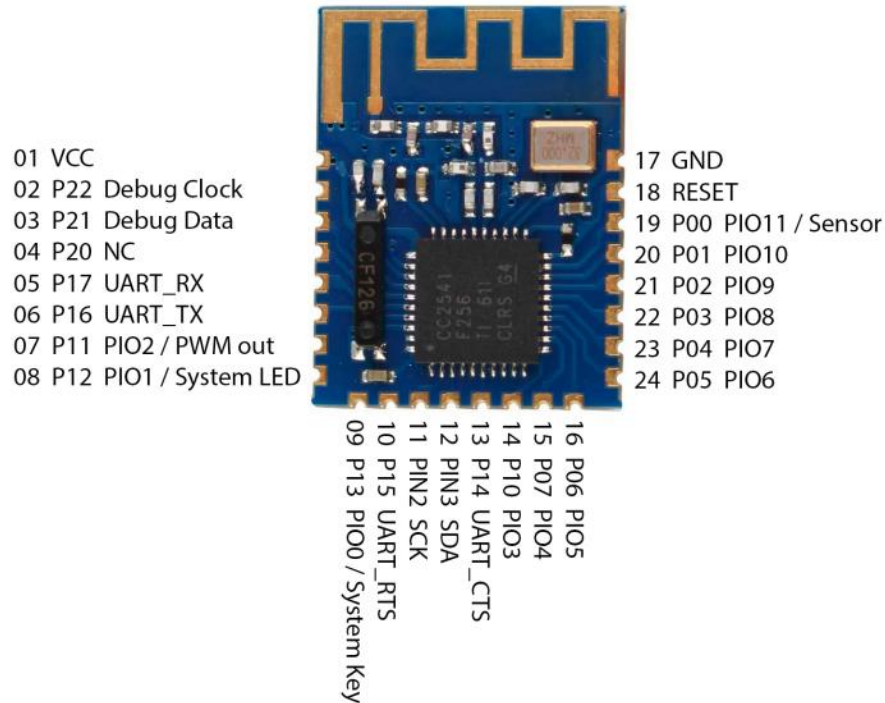
3. Build your Smart-ClimaSens

1. Wire schematic



2. Pinmap

JDY-08 PINMAP with HM-10 firmware



Component	Component Pin	Controller Pin	Controller Pin Number
Power Supply	Vcc	Vcc	01
	GND	GND	17
Sensor	Vin		
	GND		
	SCL		
	SDA		
Contact	1	P11	07
	2	P12	08
LED	+	P00	19
	-	P01	20

4. System installation

3. Download “raspbian”

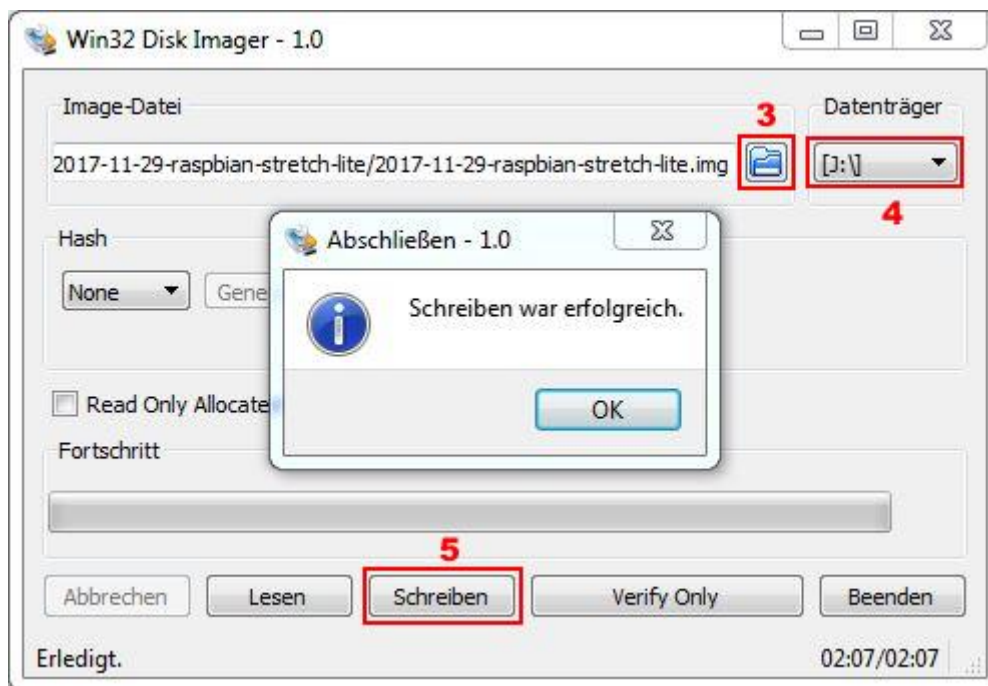
<https://www.raspberrypi.org/downloads/raspbian/>

4. Download “Win32 Disk Imager”

http://www.chip.de/downloads/Win32-Disk-Imager_46121030.html

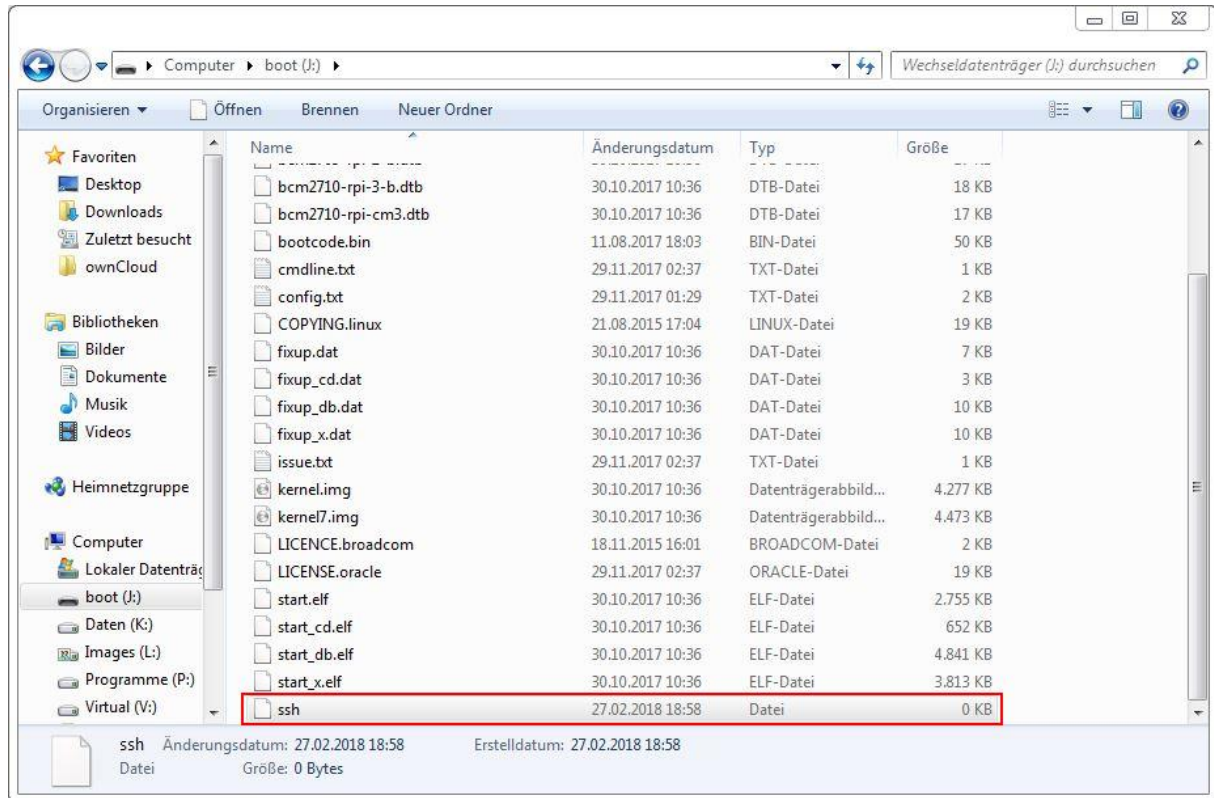
5. Flash the “raspbian” image with “Win32 Disk Imager”

1. Unzip the raspbian image
2. Open Win32 Disk Imager
3. Select the image file
4. Select your SD-Card
5. “Write” to the SD-Card



6. Enable SSH

Open your SD-Card with the windows explorer and create a file called “ssh”



7. First run

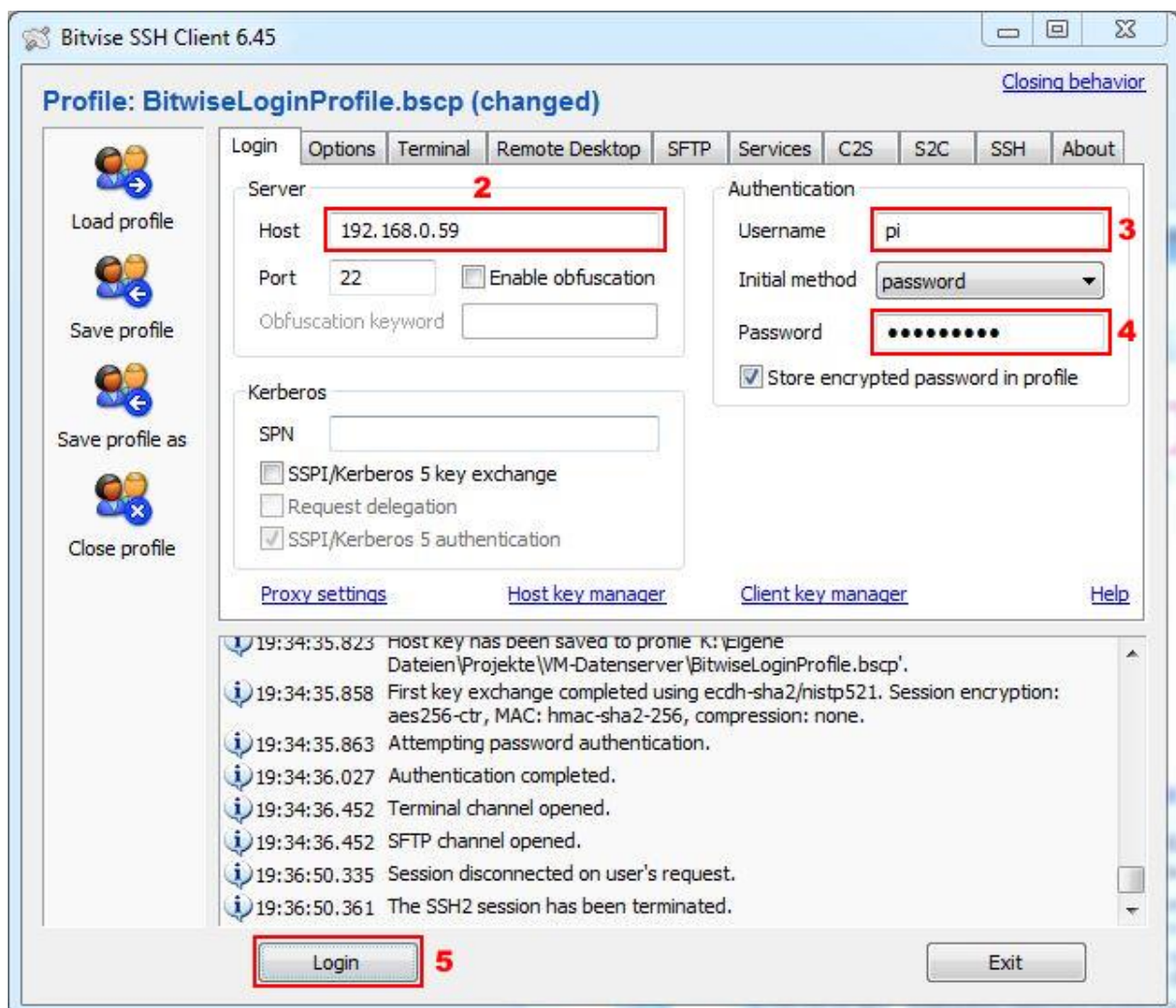
- Put the SD-Card into your raspberry
- connect the patch cable with your local network
- plug in the power supply

Find out the ip address of your raspberry:

- Using the client list of your router
- Or an app on your smartphone like "Fing":
<https://play.google.com/store/apps/details?id=com.overlook.android.fing&hl=de>

Connect to your raspberry:

1. Get a SSH-Client like "Bitwise-SSH"
2. Type in the IP-Address of your pi
3. Type in the username "pi"
4. Type in the password "raspberry"
5. Login to the raspberry

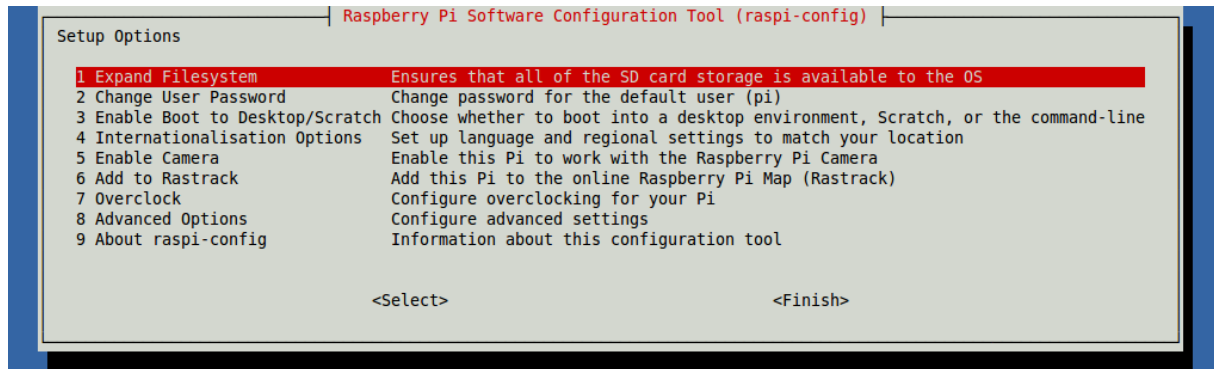


5. System configuration

1. Change default settings

Use raspi-config to change the default system settings

```
sudo raspi-config
```



Some useful changes:

- User password
- Network-Settings -> Wifi
- Internationalization Options
- Update

6. Pimatic installation

1. Prepare for installation

Download “nodejs”

```
wget https://nodejs.org/dist/v4.6.2/node-v4.6.2-linux-armv7l.tar.gz -P /tmp
```

Move to local directory

```
cd /usr/local
```

Unpack the folder

```
sudo tar xzvf /tmp/node-v4.6.2-linux-armv7l.tar.gz --strip=1
```

Install “git”

```
sudo apt-get install build-essential git
```

Move to user directory

```
cd ~
```

Create a directory for pimatic

```
mkdir pimatic-app
```

2. Install pimatic

Run the installation of pimatic

```
npm install pimatic --prefix pimatic-app --production
```

This will take a while

Move to the installation directory

```
cd pimatic-app
```

Copy default configuration

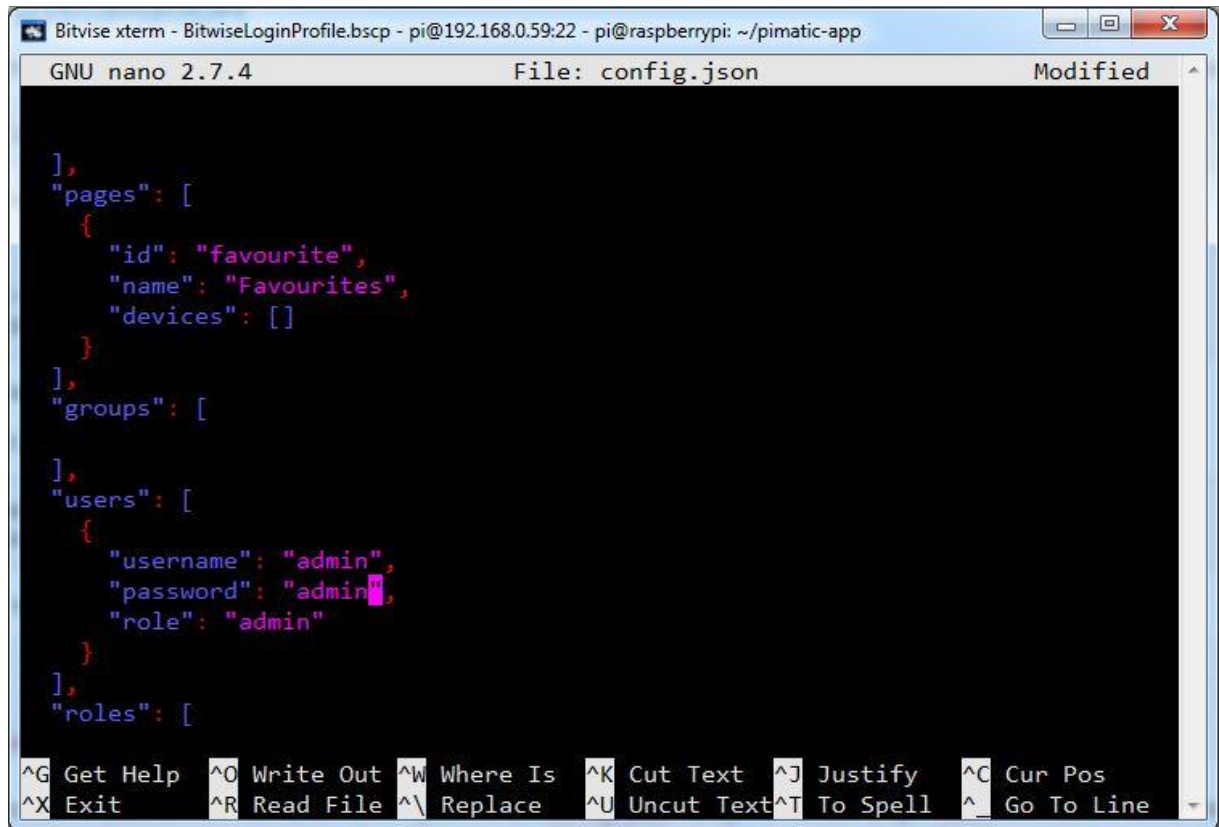
```
cp ./node_modules/pimatic/config_default.json ./config.json
```

3. Setup user

Open the configuration file

nano config.json

Set a password for the admin user



```
Bitwise xterm - BitwiseLoginProfile.bscp - pi@192.168.0.59:22 - pi@raspberrypi: ~/pimatic-app
GNU nano 2.7.4                               File: config.json                               Modified

],
"pages": [
  {
    "id": "favourite",
    "name": "Favourites",
    "devices": []
  }
],
"groups": [
],
"users": [
  {
    "username": "admin",
    "password": "admin",
    "role": "admin"
  }
],
"roles": [
^G Get Help  ^O Write Out ^W Where Is  ^K Cut Text  ^J Justify   ^C Cur Pos
^X Exit      ^R Read File ^\ Replace   ^U Uncut Text ^T To Spell  ^_ Go To Line
```

Save and close the file by entering "Strg" + "C" and confirm with "y" followed by "Return"

Start pimatic

sudo node_modules/pimatic/pimatic.js start

4. Configure auto start

Move to the pimatic directory

```
cd node_modules/pimatic
```

Make pimatic globally available

```
sudo npm link
```

This will take a while

Download "pimatic-init-d" file

```
wget https://raw.githubusercontent.com/pimatic/pimatic/v0.9.x/install/pimatic-init-d
```

Copy the file to pimatic

```
sudo cp pimatic-init-d /etc/init.d/pimatic
```

Make the file executable

```
sudo chmod +x /etc/init.d/pimatic
```

Change the owner of the file to "root"

```
sudo chown root:root /etc/init.d/pimatic
```

Call the system to auto start the file

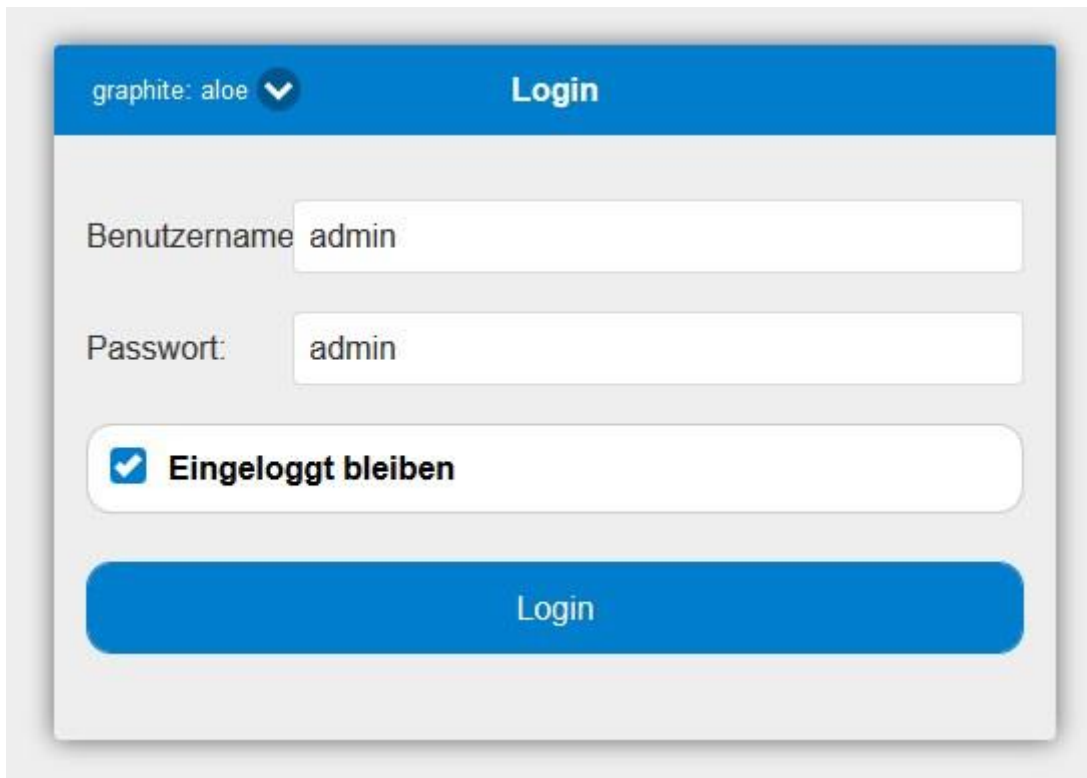
```
sudo update-rc.d pimatic defaults
```

5. Access pimatic

Pimatic is still processing its first start this can take about 10min.



Open your internet browser and type in the IP-Address of your raspberry pi.
The login screen should show up.

A screenshot of the Pimatic login interface. At the top, there is a blue header bar with the text "graphite: aloe" and a dropdown arrow on the left, and the word "Login" in white on the right. Below the header, the background is light gray. There are two white input fields: the first is labeled "Benutzername" and contains the text "admin"; the second is labeled "Passwort:" and contains the text "admin". Below these fields is a white rounded rectangle containing a checked checkbox and the text "Eingeloggt bleiben". At the bottom of the form is a large blue button with the word "Login" in white.

Enter the user name "admin" and the password you have set.

7. Install Pimatic-ClimaSens

Download the “Pimatic-ClimaSens” project

```
git clone https://github.com/FROeHlyEisvogel/Pimatic-ClimaSens.git
```

Move the project to the pimatic plugin directory

```
mv Pimatic-ClimaSens ~/cd node_modules/pimatic/node_modules/
```

Restart your system

```
sudo reboot
```

Now you can see the “Pimatic-ClimaSens” plugin in the pimatic plugin section.