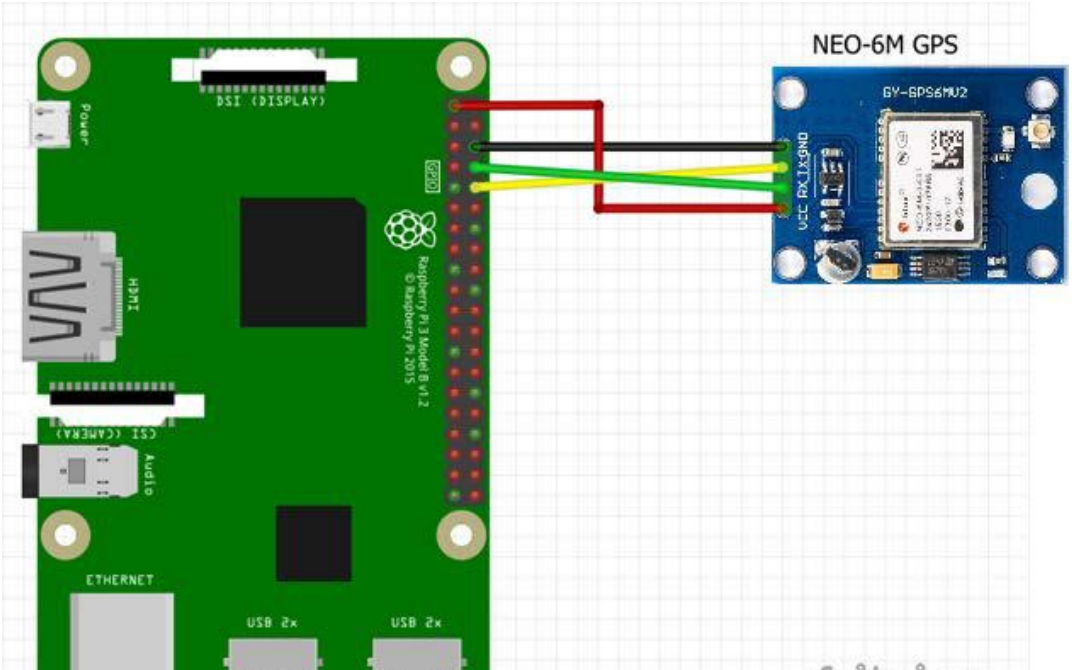
Welcome!

And thank you for purchasing our **AZ-Delivery NEO-6M GPS Module** for the Raspberry Pi, Arduino or PC! On the following pages, we will go through the first steps of the installation process of the Raspberry Pi.
We wish you a lot of fun!

The GPS module from Ublox comes with an active antenna, which provides a strong signal. The power supply must be between 3 and 5V. The built-in data backup battery provides a fast GPS fix.

Wiring up the GPS receiver with the Raspberry Pi:



The GPS module has only 4 Pins: VCC, GND, RX and TX.

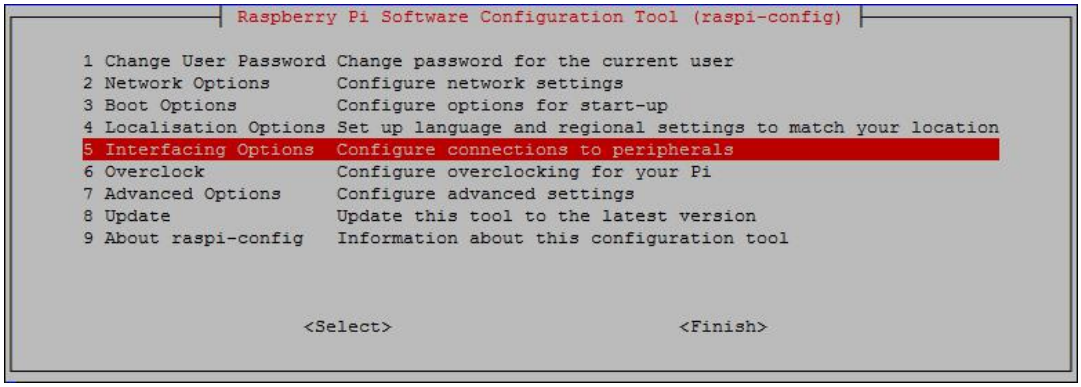
VCC is connected to **PIN 1 (3,3V)** on the Raspberry	Red wire
GND is connected to **PIN 6 (GND)**	Black wire
TX and RX are crosswise connected:	
TX is connected to **PIN 10 (RX)**	Yellow wire
RX is connected to **PIN 8 (TX)**	Green wire

After everything has been wired, the Raspberry Pi can be started.

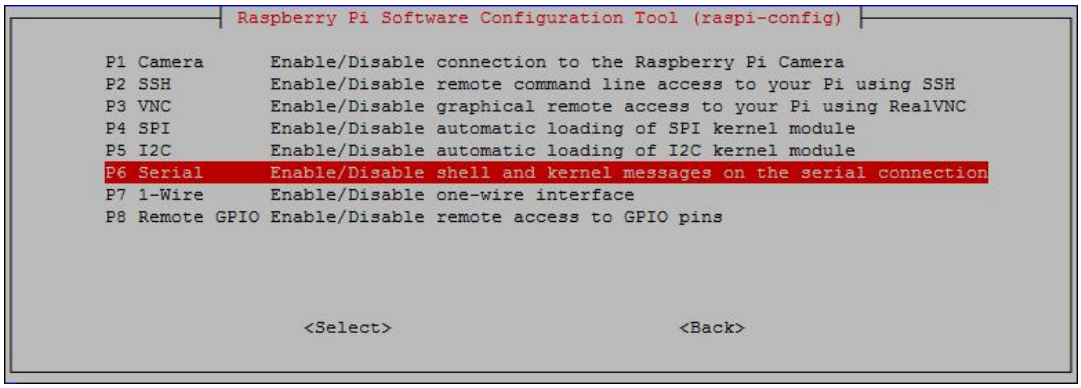
Additional information: These instructions are based on Raspberry Pi Image from 29.11.2017 (Stretch - Lite) – updates may require slight modifications to the instructions.

The GPS receiver sends its data via the serial interface. You can activate this on the Raspberry Pi in the Raspberry configuration menu:

sudo raspi-config



After, select sub-item P6 (Serial), located in menu 5 (Interfacing Options):



We will be asked a few questions:

Would you like a login shell to be accessible over serial? -> **<No>**
Would you like the serial port hardware to be enabled? -> **<Yes>**

The serial login shell is disabled
The serial interface is enabled -> **<Ok>**

With **<Finish>** we exit the *raspi-config* menu.

Now the Raspberry Pi should be updated:

```
sudo apt-get update
sudo apt-get upgrade
```

Do you want to continue? [Y/n] -> **y** (enter *Y* and confirm with *Enter*)

Now that the Raspberry Pi is updated, we can install the software.

```
sudo apt-get install minicom gpsd gpsd-clients
```

minicom:	terminal program
gpsd:	GPS Deamon
gpsd-clients	GPS viewer program

Do you want to continue? [Y/n] -> **y**

If an error occurs,

E: Unable to fetch some archives, maybe run apt-get update or try with -- fix-missing?

Then simply enter the following command:

```
sudo apt-get update --fix-missing
```

And after that start again the installation:

```
sudo apt-get install minicom gpsd gpsd-clients
```

The Raspberry Pi 3 will then use the serial interface for the Bluetooth module and put a software interface on the GPIO pins. Since these are very inaccurate, we will have to put the hardware interface back on the GPIO pins:

In order to do that, we have to go to the boot configuration:

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

And fill in the following lines, right at the end:

dtoverlay=pi3 -miniuart-bt
enable_uart=1
force_turbo=1

Explanation:

dtoverlay=pi3 -miniuart-bt	Put Bluetooth on mini UART
enable_uart=1	Clock frequency upon constant frequency
force_turbo=1	Baud rate is not dependent on the System Clock

With CTRL + O, we store the file again and we exit NANO

With CTRL + X, we reboot the Raspberry:

sudo reboot

After a reboot, we should set the serial interface to a baud rate of 9600:

stty -F /dev/ttyAMA0 9600

We can check if that has already been taken up:

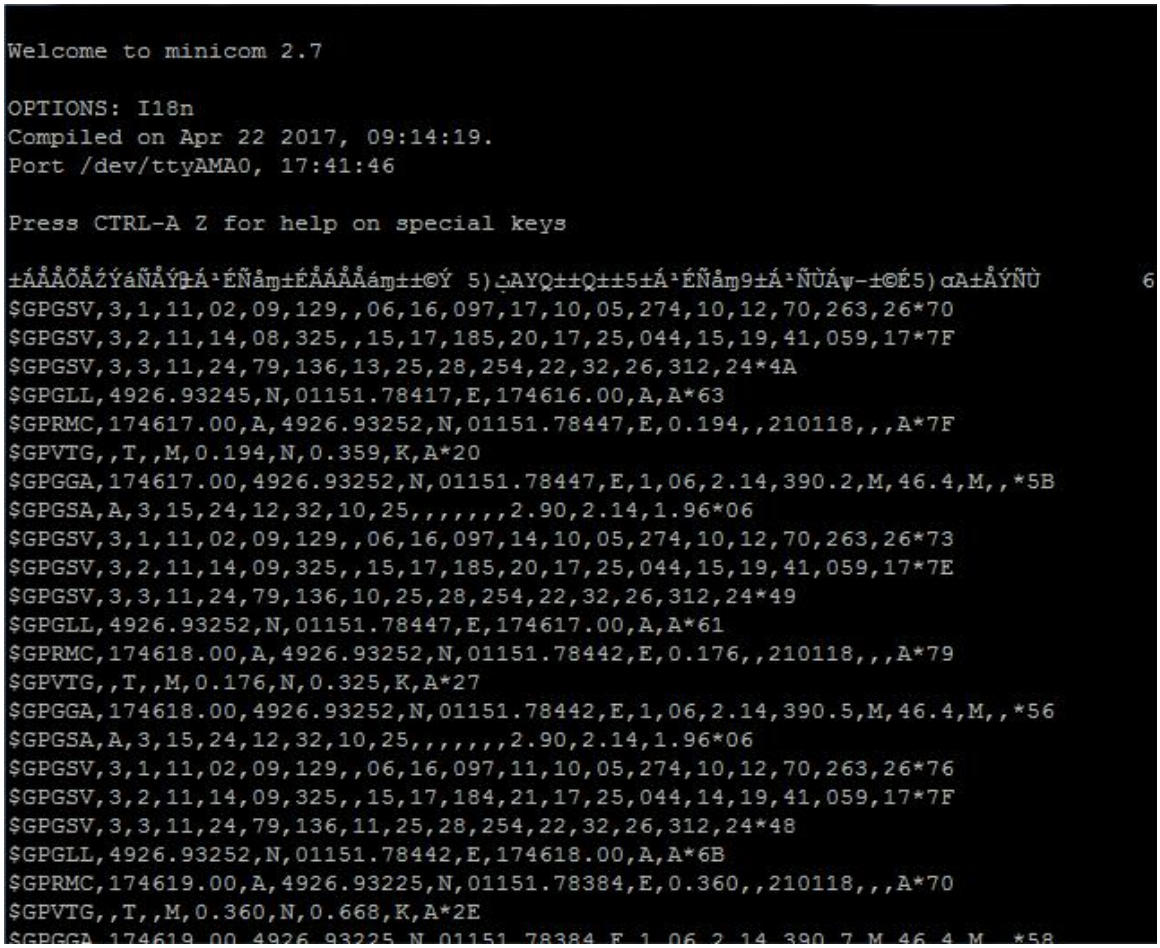
stty -F /dev/ttyAMA0

The following output should now appear:

pi@raspberrypi:~ $ stty -F /dev/ttyAMA0
speed 9600 baud; line = 0; -brkint -imaxbel
pi@raspberrypi:~ $

Have a look at the terminal program and check if the GPS receiver also sends data:

minicom -b 9600 -o -D /dev/ttyAMA0



If your output is similar to the image above, then everything has worked out.

Pres first CTRL + A, and then Q; and by confirming with *YES*, you will exit the minicom.

Now we should configure the GPS-Deamon and let it report our position.

sudo nano /etc/default/gpsd

The last line reads: **GPSD_OPTIONS=""**
We change this line to: **GPSD_OPTIONS="/dev/ttyAMA0"**

Save again with CTRL + O and exit the Nano with CTRL + X

Then we determine the socket and the serial interface:

sudo gpsd /dev/ttyAMA0 -F /var/run/gpsd.sock -n

and then we reboot the Raspberry:

sudo reboot

After the reboot is complete, we can start the GPS client:

cgps -s

The following outcome, in addition to other supplementary information, comes from the GPS receiver:

```
lqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqklqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqk
x    Time:       2018-01-21T18:57:50.000Z   xxPRN:   Elev:  Azim:  SNR:  Used: x
x    Latitude:    49.440000 N               xx  14     28     305    11     N   x
x    Longitude:   11.860000 E               xx  24     44     147    11     Y   x
x    Altitude:   389.4 m                    xx  25     58     280    16     Y   x
x    Speed:      0.8 kph                    xx  29     28     207    12     Y   x
x    Heading:    286.9 deg (true)           xx  31     09     309    26     Y   x
x    Climb:      -4.3 m/min                 xx  32     35     278    25     Y   x
x    Status:     3D FIX (114 secs)          xx                                  x
x    Longitude Err:    +/- 38 m             xx                                  x
x    Latitude Err:     +/- 43 m             xx                                  x
x    Altitude Err:     +/- 49 m             xx                                  x
x    Course Err:       n/a                  xx                                  x
x    Speed Err:        +/- 4 kph            xx                                  x
x    Time offset:      0.093                xx                                  x
x    Grid Square:      JN59wk               xx                                  x
mqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqjmqqqqqqqqqqqqq-DL1FLO-qqqqqqqqqqqj
```

You did it! Your GPS receiver is up and running!

Now it is time to learn and put your own projects into practice.

And for more hardware, our online store is always at your disposal:

https://az-delivery.de

Enjoy!

Imprint

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