

Registering at The Things Network

If you do not have an account at The Things Network please sign up at <https://www.thethingsnetwork.org>.

After that, you can login to the console at <https://console.cloud.thethingsnetwork>. I am located in Europe that is why I am using "Europe 1" in the cluster picker. If you were residing in other parts of the world, you would choose maybe "North America 1" or "Australia 1".

Click on "Go to applications" and then on "Add application", fill out the form and submit it. You now see the detail page of your application. The application will collect the data from all your devices. So let's create a first device.

Click on "Add end device" and switch to the tab "Manually". Choose "Over the air activation (OTAA)" and "LoRaWAN Version MAC V1.0.2". Click "Start".

Enter an id for your device in "End device ID" and a name in "End device name"; fill "AppEUI" with "0000000000000000" and "DevEUI" with 16 random hex digits. Click "Network layer settings".

Choose the correct "Frequency plan" and "Regional parameters version" for your country and device. For me, that is "Europe 863-870 MHz (SF9 for RX2 - recommended)" and "PHY V1.0.2 REV B". Choose "Supports class C" and click "Join settings".

Generate a random AppKey with the button right to the input field. Click "Add end device". You now see the detail page of your device.

4. Edit and Upload main.py

From the Code section of this project copy the file `main.py` to your computer and fill in your DevEUI, AppEUI and AppKey in line 7. You find these in the tab "Overview" on the detail page of your device in the The Things Network console. Execute

```
> ampy.exe --port COM6 --delay 3 put main.py
```

to upload the file to your ATOM Lite.

What's next?

The program in `main.py` sends a message with an increasing decimal number coded in ASCII every 5 minutes. To do something more useful you might want to modify it.

Lines 12-57 control joining the network and sending of messages.

Line 36 constructs and sends the messages.

I had some troubles in writing the driver for the ASR6501 chip that does the network stuff in the LoRaWAN Unit. The response lines to the AT+DTRX command are something between capricious and spooky :-). Therefore, line 46 assumes that sending data was successful if the driver cannot decide after 60 seconds. If you are interested in the source code of the driver, it can be found here <https://bitbucket.org/amotzek/micro-python/src/master/src/main/modules/asr6501.py>.

Lines 66-84 define procedures that help to display the status with the NeoPixel of the ATOM Lite: yellow - join is in progress, green - join was successful, blue - send is in progress, magenta - send was successful, red - error.

Happy hacking!