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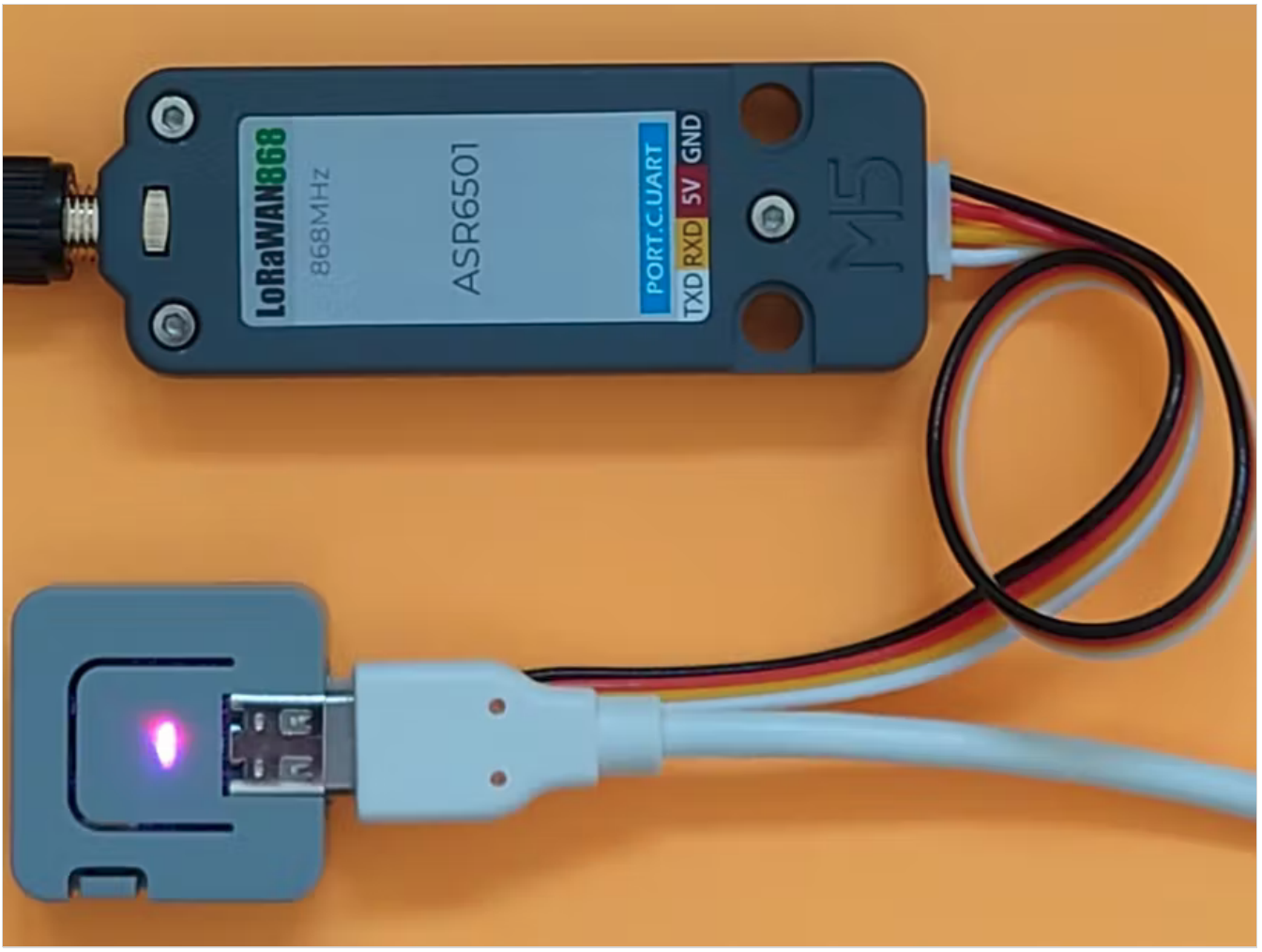
Using The Things Network with ATOM Lite and LoRaWAN Unit

Learn how to send messages to The Things Network with MicroPython. You will need a The Things Network Gateway near you.

Intermediate(/projects?difficulty=intermediate) Full instructions provided 2 hours 1,964



Things used in this project

Hardware components

	M5Stack ATOM Lite ESP32 Development Kit (/products/atom-lite-esp32-development-kit)	× 1	(/products/buy/73250?s=BAhJIhM0MDM3NTUsUHJvamVjdAY6BkVG%0A)
	M5Stack LoRaWAN Unit 868MHz	× 1	(/products/buy/87705?s=BAhJIhM0MDM3NTUsUHJvamVjdAY6BkVG%0A)

Software apps and online services

MicroPython Firmware for ESP32 v1.14 Download esp32-idf3-20210202-v1.14.bin from the download page.		(https://micropython.org/download/#esp32)
The Things Network Go to https://www.thethingsnetwork.org and sign up for an account if you don't have one.		(https://www.thethingsnetwork.org/)

Story

First, make sure that there is a The Things Network gateway near you. You can find out with the world map on https://www.thethingsnetwork.org (https://www.thethingsnetwork.org). If there is no gateway near, you can setup your own. Instructions for adding gateways can be found here

https://www.thethingsindustries.com/docs/gateways/adding-gateways. (https://www.thethingsindustries.com/docs/gateways/adding-gateways.)

Due to regulatory differences, The Things Network uses different frequency plans in different regions of the world. Please make sure that you have the correct version of LoRaWAN Unit: 868 is the right one for Europe, Russia, the Middle East and Africa and 915 is the one for Australia and the Americas. Detailed and authoritative information on frequency plans can be found here https://www.thethingsnetwork.org /docs/lorawan/frequencies-by-country. (https://www.thethingsnetwork.org /docs/lorawan/frequencies-by-country/)

Read more

Code

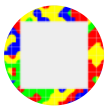
main.py Python

Fill in your DevEUI, AppEUI and AppKey in line 7.

(/code_files/529706/download)

```
from cooperative_multitasking import Tasks
from machine import UART
from lora_states import NOT_JOINED, JOINING, JOINED, SENDING, SENT, RETRY
from asr6501 import ASR6501

tasks = Tasks()
uart2 = UART(2, tx=26, rx=32)
uart2.init(baudrate=115200, bits=8, parity=None, stop=1, txbuf=256, rxbuf=2
modem = ASR6501(uart2, '...', '...', '...')  # DevEUI, AppEUI, AppKey as he
count = 0

def modem_state_changed():
    return modem.has_state_changed()

def start_join():
    yellow()
    modem.send_join()
    tasks.when_then(modem_state_changed, end_join)

def end_join():
    state = modem.get_state()
    if state == JOINING:
        tasks.when_then(modem_state_changed, end_join)
    elif state == JOINED:
        green()
```

Credits



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