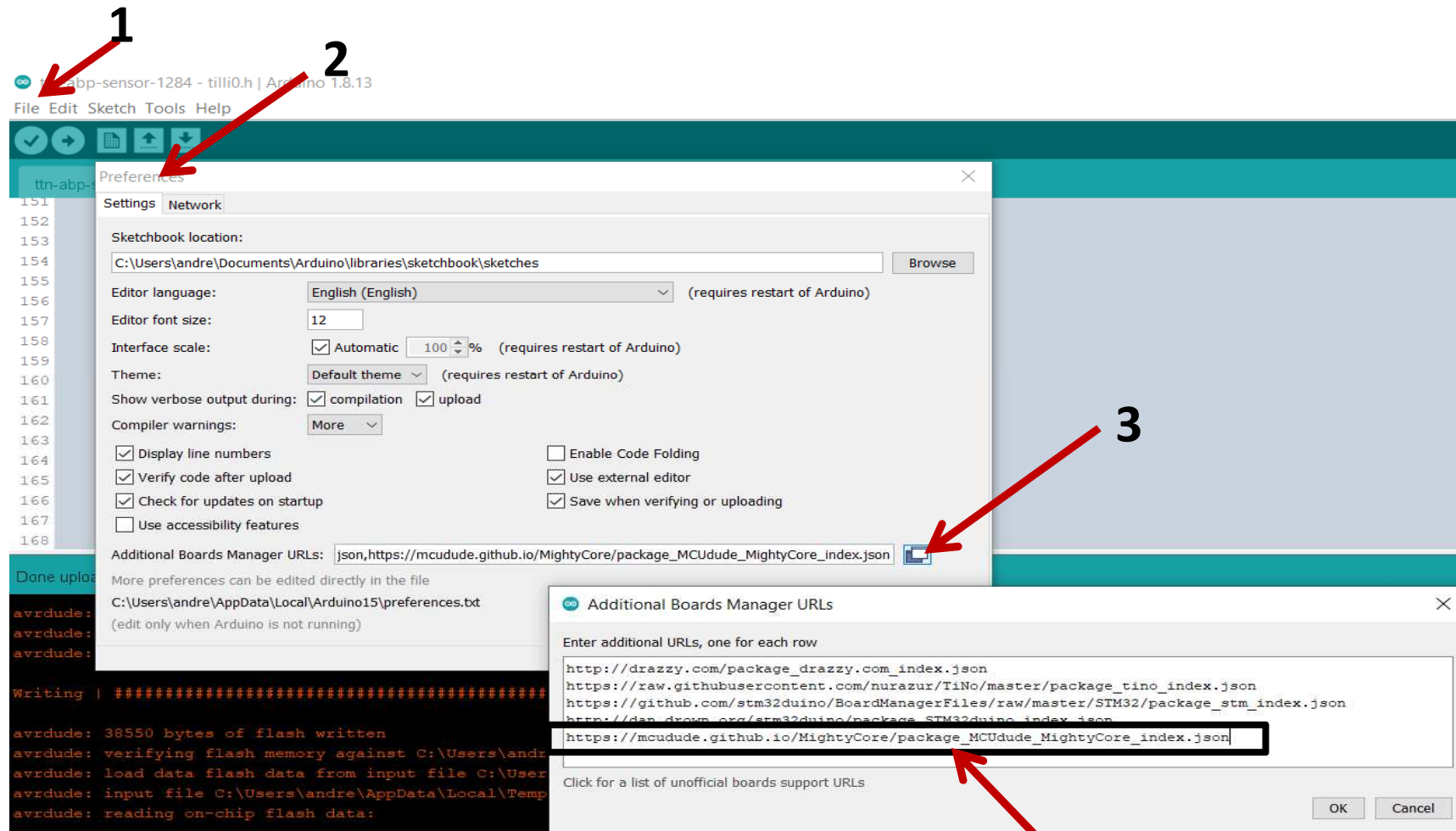




Setup and Configuration

# Include MightyCore in Arduino IDE



1

2

3

Additional Boards Manager URLs

Enter additional URLs, one for each row

```
http://drazzy.com/package_drazzy.com_index.json
https://raw.githubusercontent.com/nurazur/TiNo/master/package_tino_index.json
https://github.com/stm32duino/BoardManagerFiles/raw/master/STM32/package_stm_index.json
https://dan-drown.org/stm32duino/package_STM32duino_index.json
https://mcudude.github.io/MightyCore/package_MCUdude_MightyCore_index.json
```

Click for a list of unofficial boards support URLs

OK Cancel

avrdude: 38550 bytes of flash written  
avrdude: verifying flash memory against C:\Users\andre\AppData\Local\Temp\avrdude: load data flash data from input file C:\User  
avrdude: input file C:\Users\andre\AppData\Local\Temp  
avrdude: reading on-chip flash data:

Insert this line

# Install MightyCore

Boards Manager

Type All Filter your search...

ATTENTION! ATtiny Modern has been merged with ATtinyCore. If you have ATtiny Modern installed please click the Remove button and install ATtinyCore..  
[More Info](#)

1.0.7-deprecation-notice Install

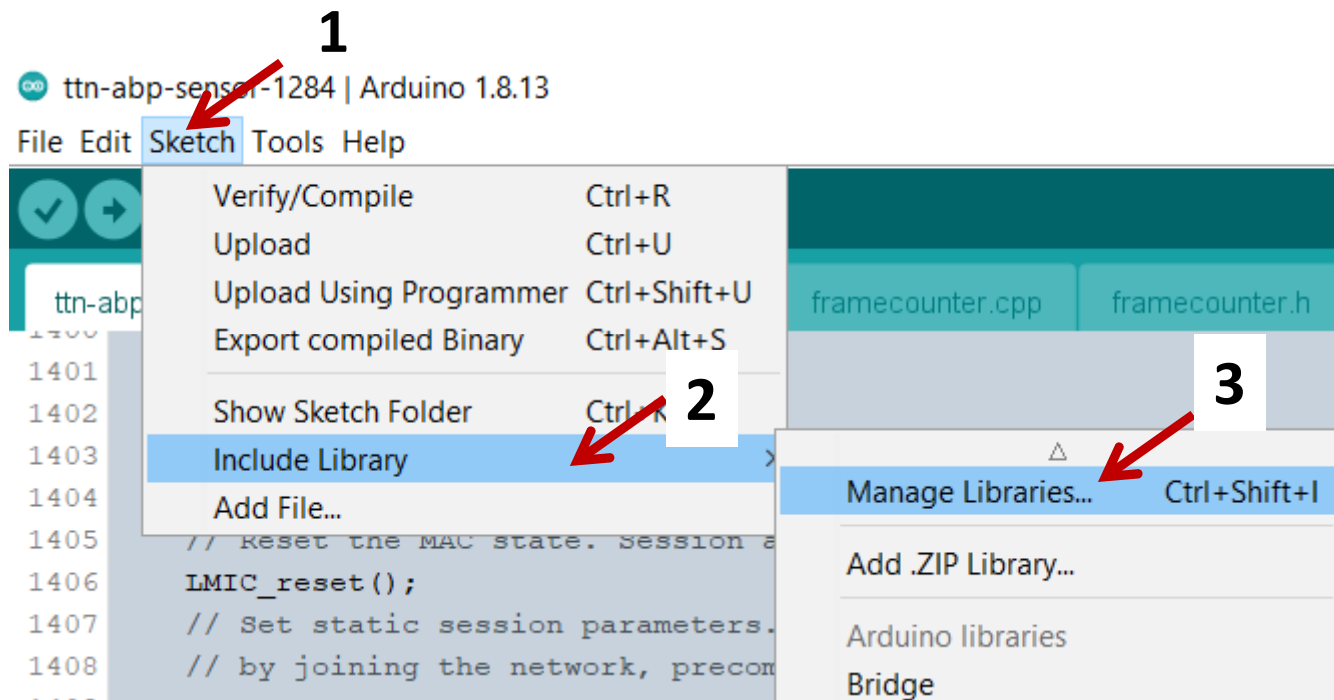
**MightyCore**  
by **MCUdude** version **2.0.5** **INSTALLED**  
Boards included in this package:  
ATmega1284/P, ATmega644/P/PA/A, ATmega324P/PA/A/PB, ATmega164P/PA/A, ATmega32, ATmega16, ATmega8535.  
[Online Help](#)  
[More Info](#)

**STM32F4xx boards**  
by **stm32duino**  
Boards included in this package:  
STM32 Discovery F407, STM32F4Stamp F405, Netduino2 F405.  
[Online Help](#)  
[More Info](#)

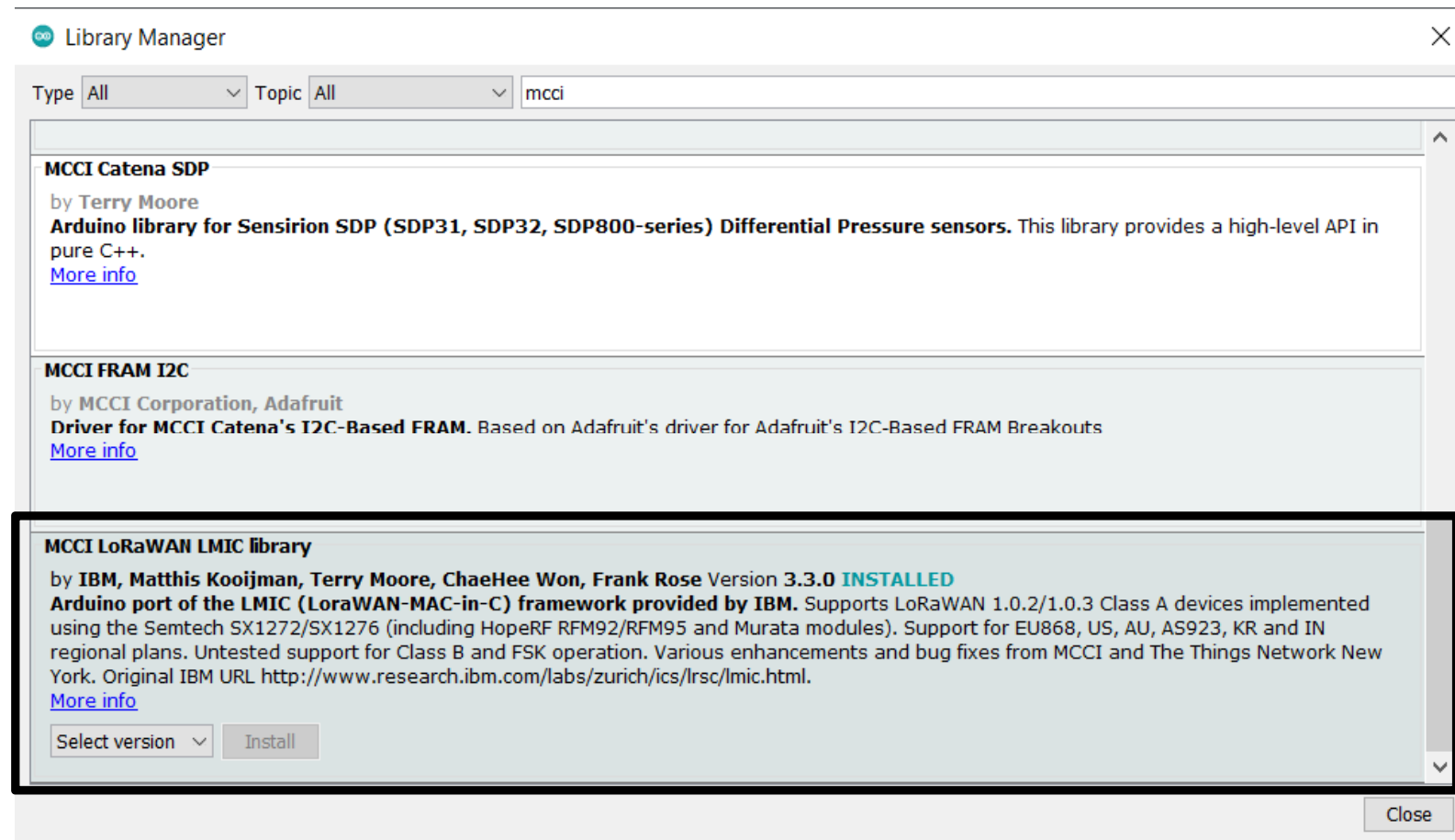
**STM32F1xx/GD32F1xx boards**  
by **stm32duino** version **2020.8.9** **INSTALLED**  
Boards included in this package:

Close

# Install MCCI LoRaWAN LMIC library 1/2



# Install MCCI LoRaWAN LMIC library 2/2



Alternatively download zipped library. Then:  
Sketch -> Include Library -> Include .ZIP Library

# Choose Compile Parameters 1/2

Choose ATmega644

ttn-abp-sensor-1284 - tilli0.h | Arduino 1.8.13

File Edit Sketch Tools Help

Auto Format Ctrl+T

Archive Sketch

Fix Encoding & Reload

Manage Libraries... Ctrl+Shift+I

Serial Monitor Ctrl+Shift+M

Serial Plotter Ctrl+Shift+L

WiFi101 / Wi-FiNINA Firmware Updater

Board: "ATmega644" >

Clock: "Internal 1 MHz" >

BOD: "BOD disabled" >

Compiler LTO: "Enabled" >

Variant: "644P / 644PA" >

Pinout: "Standard pinout" >

Bootloader: "Yes (UART0)" >

Port: "COM5" >

Get Board Info

Programmer >

Burn Bootloader

Boards Manager...

Arduino AVR Boards >

Arduino AVR Boards (in sketchbook) >

ATtiny Universal >

breadboard-avr (in sketchbook) >

MightyCore >

STM32 Boards (selected from submenu) >

STM32F1 Boards (STM32duino.com) >

TiNo-avr >

ATmega1284

● ATmega644

ATmega324

ATmega164

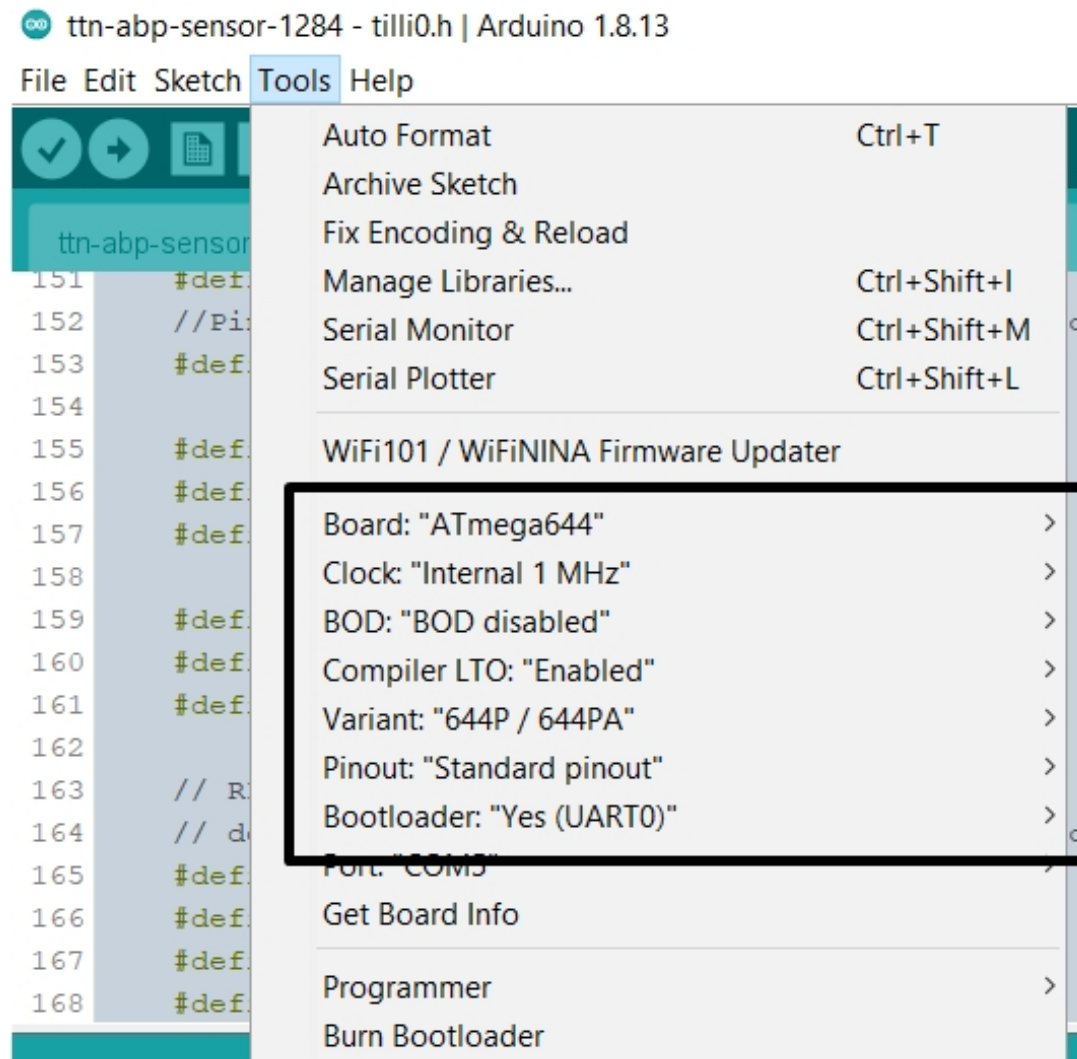
ATmega32

ATmega16

ATmega8535

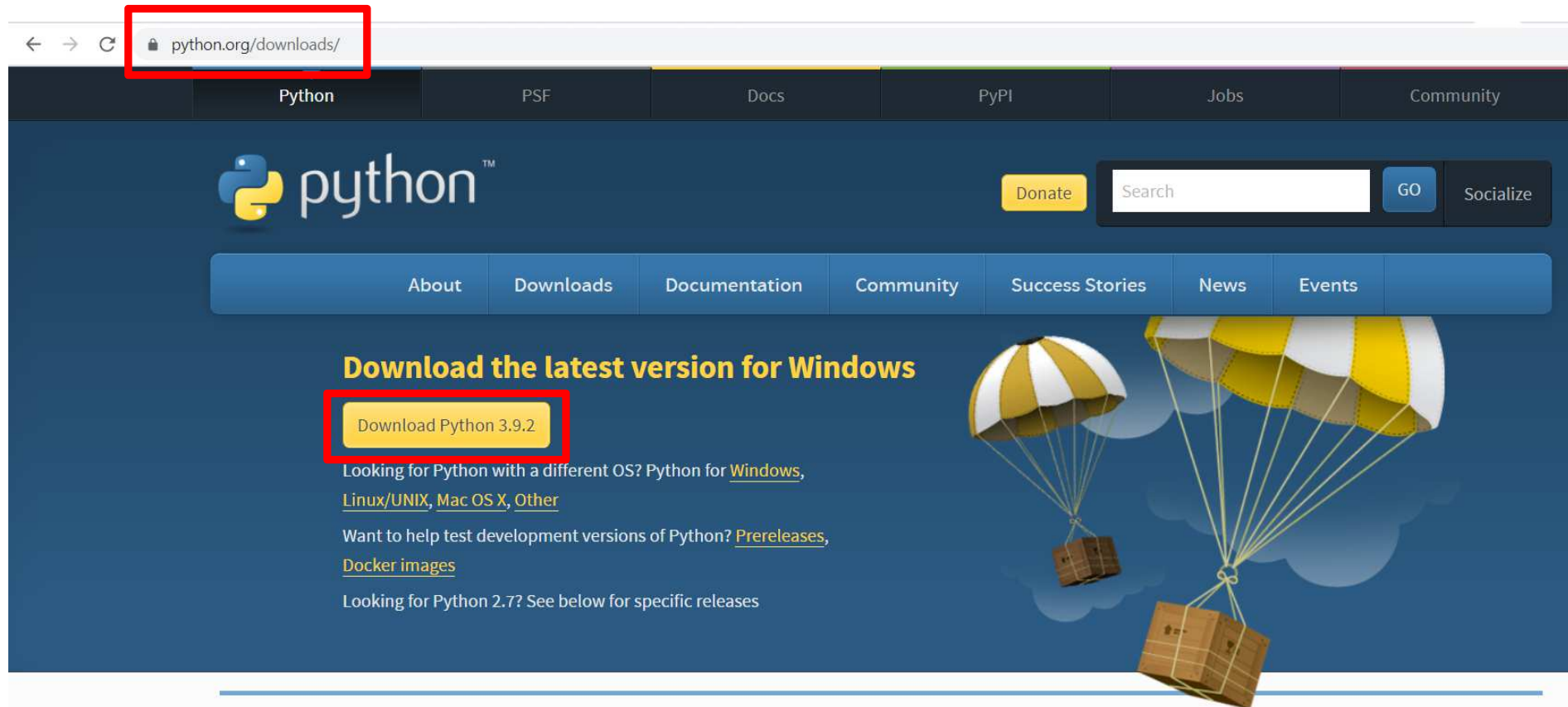
Done uploading.

# Choose Compile Parameters 2/2



# Installing *tilli\_configurator.py*

## 1. Install Python 3



Go to [python.org/downloads](https://python.org/downloads)  
Click yellow Download Button





# Installing *tilli\_configurator*

## 2. Install required Python Modules:

- open Console *cmd.exe*
- *pip install serial*
- *pip install win32clipboard*



# running *tilli\_configurator*

In Windows explorer, double click *tilli\_configurator.bat*

- enter com port number
- EEPROM content is listed
- type *help* to see options

```
C:\WINDOWS\system32\cmd.exe

C:\Users\andre\Documents\Arduino\libraries\sketchbook\sketches\LoRa\ttn-abp-sensor-1284>set /P comportnum="COM Port: "
COM Port: 5

C:\Users\andre\Documents\Arduino\libraries\sketchbook\sketches\LoRa\ttn-abp-sensor-1284>python3 tilli_configurator_v001.py COM5 4800 -pwd -ls
index: 62
index of CHECKSUM: 60
ready.
--> Start
--> Tilli 4
calibration mode.
Pass OK
FLAGS_LOW=0xAB
FLAGS_LOW.HEARTBEAT_ENABLE=1
FLAGS_LOW.PCI0_ENABLE=1
FLAGS_LOW.PIR_ENABLE=0
FLAGS_LOW.PCI2_ENABLE=1
FLAGS_LOW.PCI3_ENABLE=0
FLAGS_LOW.LED_ENABLE=1
FLAGS_LOW.LED_BLINK_ACTIVE=0
FLAGS_LOW.USE_CRYSTAL_TIMER=1

FLAGS_HIGH=0
DATABRATE=5
TXPOWER=2
SENDDelay=225
PIR_INHIBIT_DELAY=3
LED_PIN=1
LDRPIN=28
PIRVCCPIN=29
I2CPOWERPIN=15
PCI0PIN=20
PIRPIN=30
PCI2PIN=21
PCI3PIN=-1
PCI0_CONF=10
PIR_CONF=3
PCI2_CONF=10
PCI3_CONF=10
REFERENCE_ADC_VALUE=348
REFERENCE_VCC_VALUE=3300
NMKKEY="2760A49816BBC1C3B13F6316DE410DC7"
APPSKEY="CF47E60F4F757F90C43364AA07EFA33F"
DEVADDR=0x26011967
CHECKSUM=-4251
```



# Assign Device Parameters

Navigate to TTN Console - Applications

Select device

Applications > tilli-boards > Devices > tilli\_1

Overview

### DEVICE OVERVIEW

Application ID tilli-boards

Device ID tilli\_1

Scroll down to "EXAMPLE CODE"

### EXAMPLE CODE

```
1 const char *devAddr = "XXXXXXXXXX";  
2 const char *nwkSKey = "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX";  
3 const char *appSKey = "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX";
```

Copy keys to clipboard

Type “v” then <enter> in *tilli\_configurator*

[illegible]