

THE THINGS NETWORK.CAT

TALLER BÀSIC - MONITORITZACIÓ ATMOSFÈRICA AMB UN TTGO LORA32

Xarxa comunitària per l'Internet de les Coses

@ttncat
thethingsnetwork.cat

@thethingsntwrk
thethingsnetwork.org

Introducció

CONSOLA

CONSOLA TTN



Des de la consola de TTN podem **gestionar les passarel·les i aplicacions**. També podem monitoritzar el tràfic que passa o arriba a qualsevol de les dues i veure els continguts si tenim les claus de desxifratge.

Els nodes (*devices*) estan associats a les aplicacions. Podem donar-ne d'alta, configurar el mode en que es connectaran a la xarxa (OTAA o ABP), veure els missatges que envien o enviar nosaltres un missatge a qualsevol dispositiu.

També des de l'aplicació podem fer integracions amb diferents serveis *online* com ara IFTTT.

The screenshot shows the TTN Console Community Edition interface. At the top, there's a navigation bar with 'CONSOLE COMMUNITY EDITION', 'Applications', 'Gateways', and a user profile 'xoseperez'. Below this, the breadcrumb 'Applications > ttncat-taller' is visible. The main content area has tabs for 'Overview', 'Devices', 'Payload Formats', 'Integrations', 'Data', and 'Settings'. The 'Overview' tab is active, showing the 'APPLICATION OVERVIEW' for 'ttncat-taller'. It includes fields for 'Application ID' (ttncat-taller), 'Description' (Aplicatiu de test per els tallers de TTN.cat), 'Created' (2 days ago), and 'Handler' (ttn-handler-eu (current handler)). There are links for 'documentation' and 'manage euis'. Below this, the 'APPLICATION EUIS' section shows a hex string '70 B3 D5 7E D0 00 9F 0C'. At the bottom, the 'DEVICES' section has links for 'register device' and 'manage devices'.

COMPTE PER EL TALLER

URL: console.thethingsnetwork.org

User: ttncat-tallers

Clau: ttncat-tallers



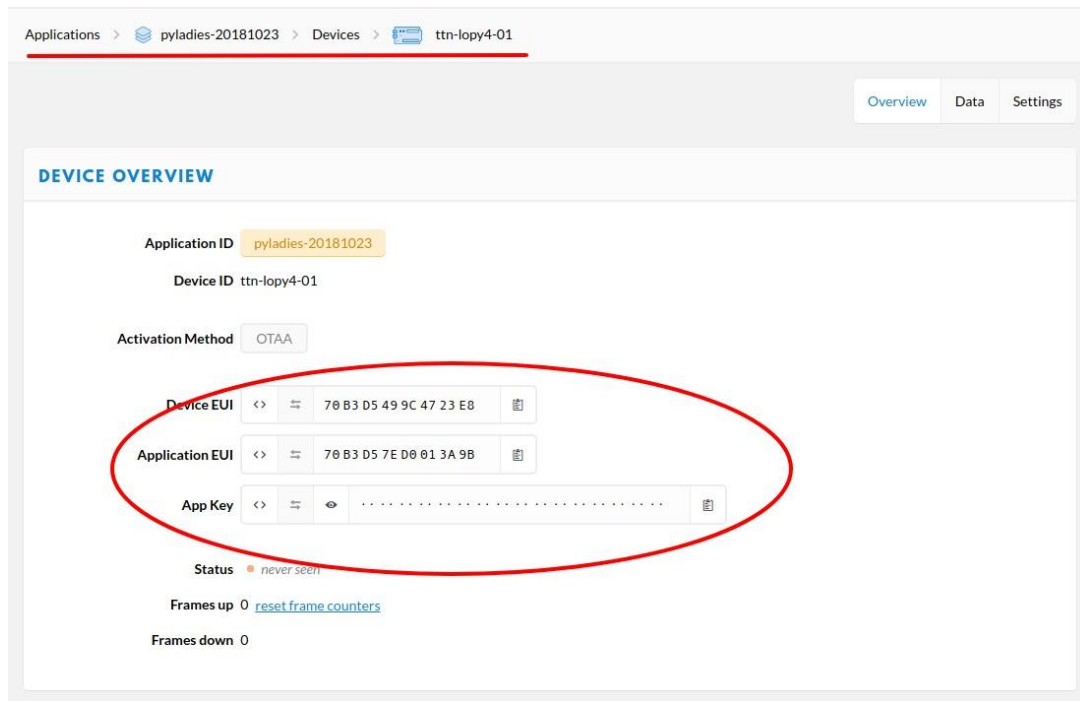
The screenshot shows the login interface of the The Things Network console. At the top left is a small logo, and to its right are the links "HOME" and "CONSOLE". The main content area is a white card with the "THE THINGS NETWORK" logo at the top. Below the logo is a horizontal line, followed by the text "Please log in". Underneath is another horizontal line, then the label "EMAIL OR USERNAME" above a text input field with a user icon on the left. Below that is the label "PASSWORD" above a text input field with a lock icon on the left. A green "Log in" button is positioned to the right of the password field. At the bottom of the card are two links: "Forgot your password?" and "Create an account". Below the card, the footer text reads "You are the network. Let's build this thing together. - The Things Network", followed by links for "Terms and Conditions" and "Privacy Policy".

CONSOLA TTN

Cada dispositiu té unes claus per accedir a la xarxa (**network session key**) i connectar-se amb un aplicatiu (**application session key**).

Aquestes claus es poden gravar al firmware (**ABP, Activation by Personalisation**) o negociar-se en el moment de fer el *join* (**OTAA, Over the Air Activation**).

Amb OTAA el dispositiu caldrà estar donat d'alta a l'aplicatiu (**Device EUI**).



Applications > pyladies-20181023 > Devices > ttn-lop4-01

Overview Data Settings

DEVICE OVERVIEW

Application ID **pyladies-20181023**

Device ID **ttn-lop4-01**

Activation Method **OTAA**

Device EUI <> 70 B3 D5 49 9C 47 23 E8

Application EUI <> 70 B3 D5 7E D0 01 3A 9B

App Key <>

Status ● never seen

Frames up 0 [reset frame counters](#)

Frames down 0

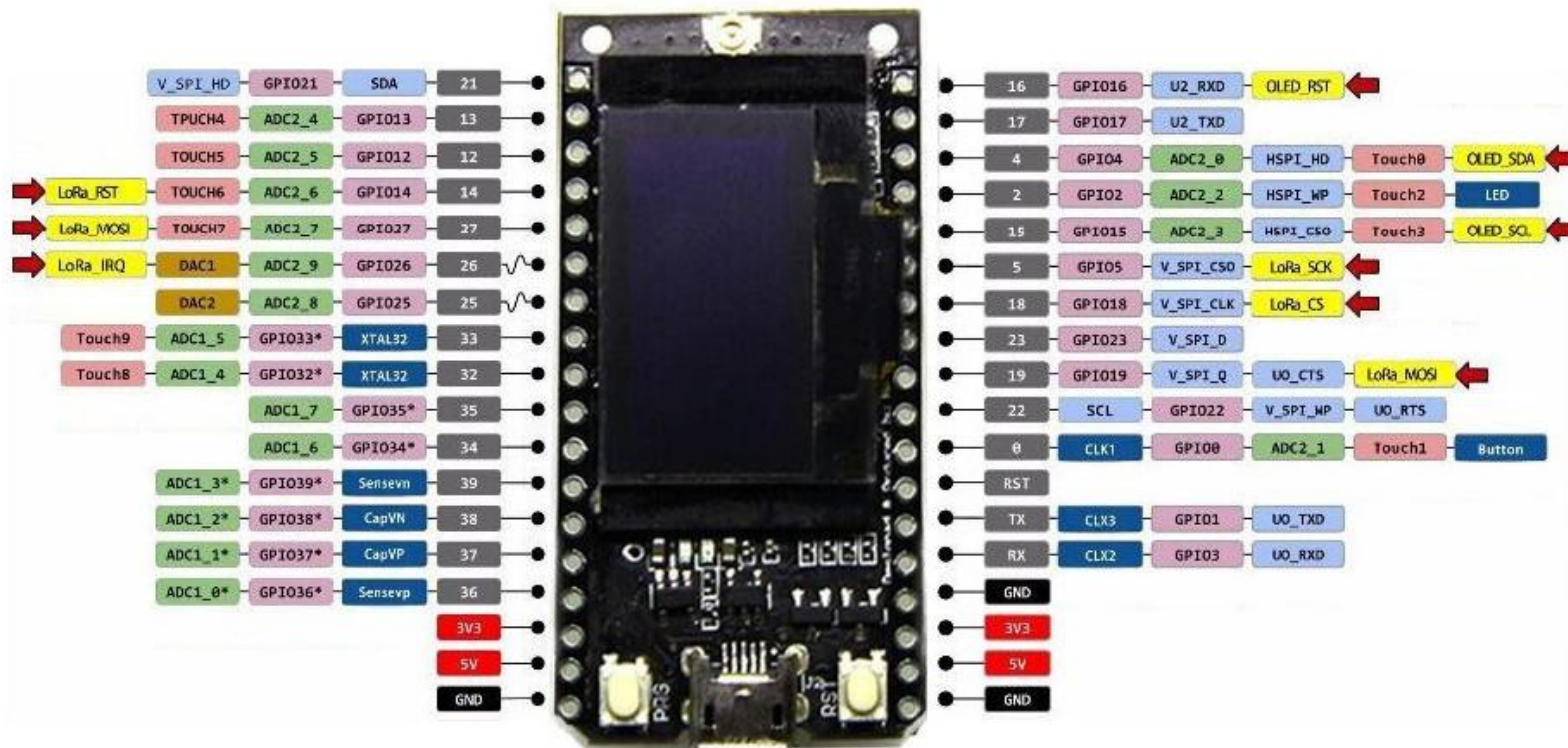
HARDWARE

TTGO LORA32 - CARACTERÍSTIQUES

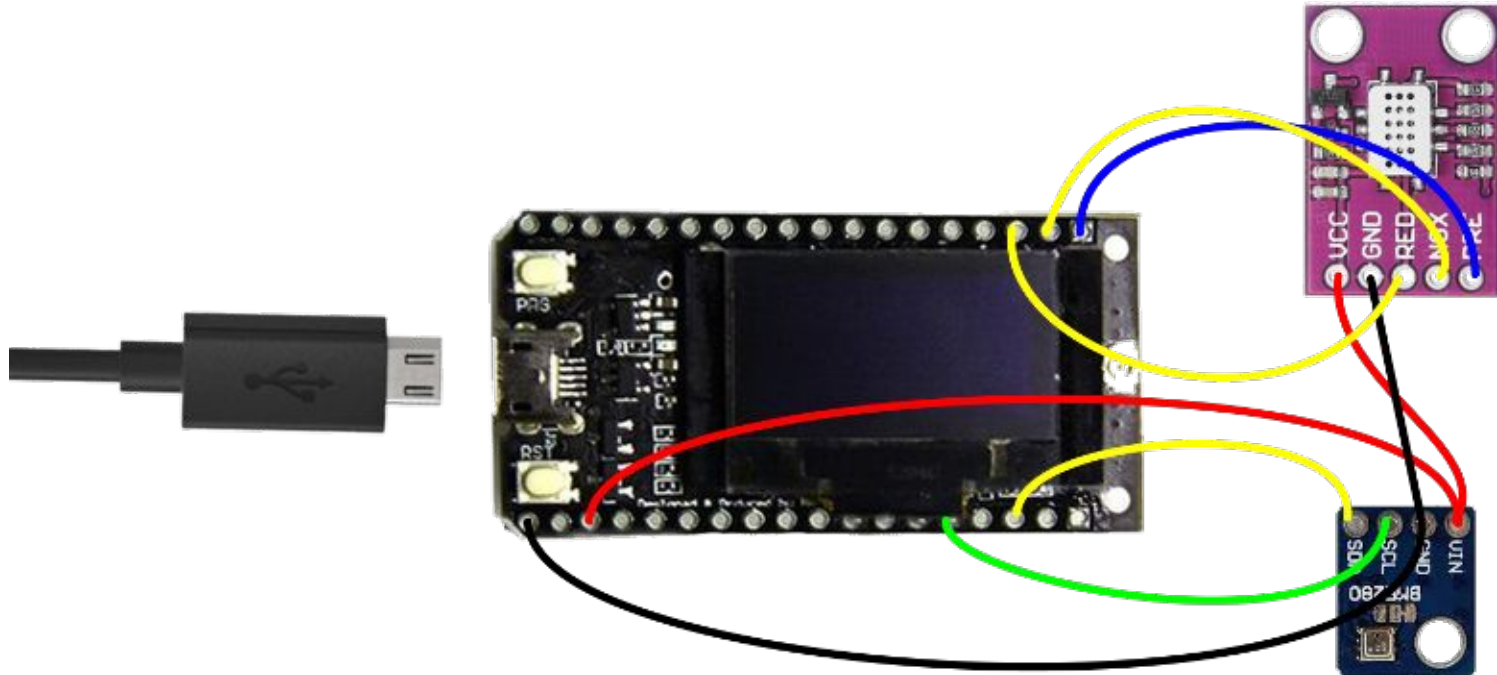
- Basat en el ESP32 de Espressif
 - Xtensa dual-core 32-bit LX6
 - 240 MHz
 - 4MB external flash
 - 512Kb RAM
- Multiconectivitat
 - WiFi
 - Bluetooth LE
 - LoRa
- Integra un SX1276
 - Interfície SPI
- Programable en C
- Compatible amb l'IDE d'Arduino
- 12€



TTGO LORA32 - PINOUT



CONNEXIONS



SOFTWARE

MONITORITZACIÓ ATMOSFÈRICA



<https://github.com/ttnecat/airquality>



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Node de monitorització de qualitat de l'aire amb TTN [Edit](#)

[Manage topics](#)

[4 commits](#) [1 branch](#) [0 releases](#) [1 contributor](#) [GPL-3.0](#)

Branch: [master](#) [New pull request](#) [Create new file](#) [Upload files](#) [Find file](#) [Clone or download](#)

 **xoseperez** Arduino IDE tutorial for ESP32 Latest commit 37187a3 34 minutes ago

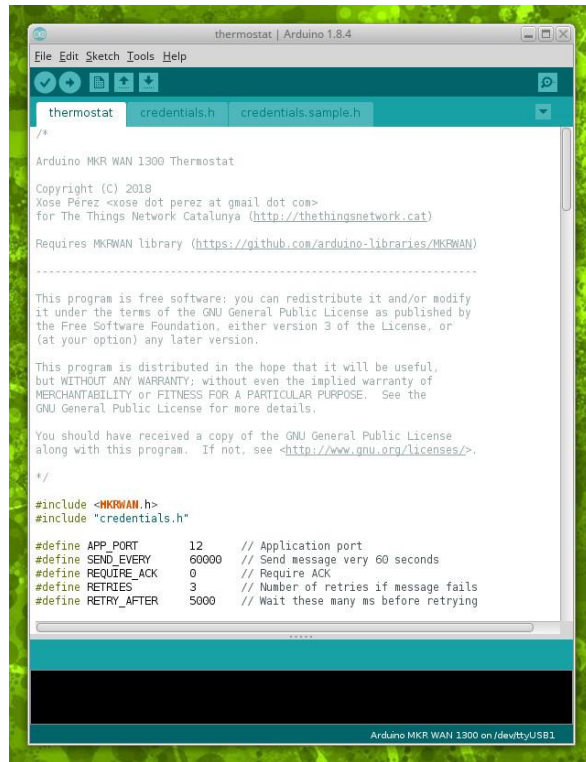
docs	Initial commit	4 hours ago
images	Added logos and libraries	3 hours ago
tgo-lora32	Arduino IDE tutorial for ESP32	34 minutes ago
.gitignore	Initial commit	4 hours ago
LICENSE	Initial commit	4 hours ago

FIRMWARE (IDE ARDUINO)

<https://github.com/ttnecat/airquality/tree/master/ttgo-lora32>

1. Instal·leu l'**IDE d'Arduino**
2. Instal·leu support per **plaques ESP32**
Instal·leu biblioteques
3. Obriu el **codi** d'exemple
<https://github.com/ttnecat/airquality/ttgo-lora32>
4. Configureu **credencials**
5. Seleccioneu **placa i port**
6. **Compileu** el programa
7. **Pugeu-lo** a la targeta
8. Obriu terminal sèrie per monitoritzar els missatges que van sortint...

En aquest punt el nostre node està enviant missatges. Ara ens falta rebre'ls...



```
thermostat | Arduino 1.8.4
File Edit Sketch Tools Help

thermostat credentials.h credentials.sample.h

/*
Arduino MKR WAN 1300 Thermostat

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Xose Pérez <xose dot perez at gmail dot com>
for The Things Network Catalunya (http://thethingsnetwork.cat)

Requires MKRWAN library (https://github.com/arduino-libraries/MKRWAN)

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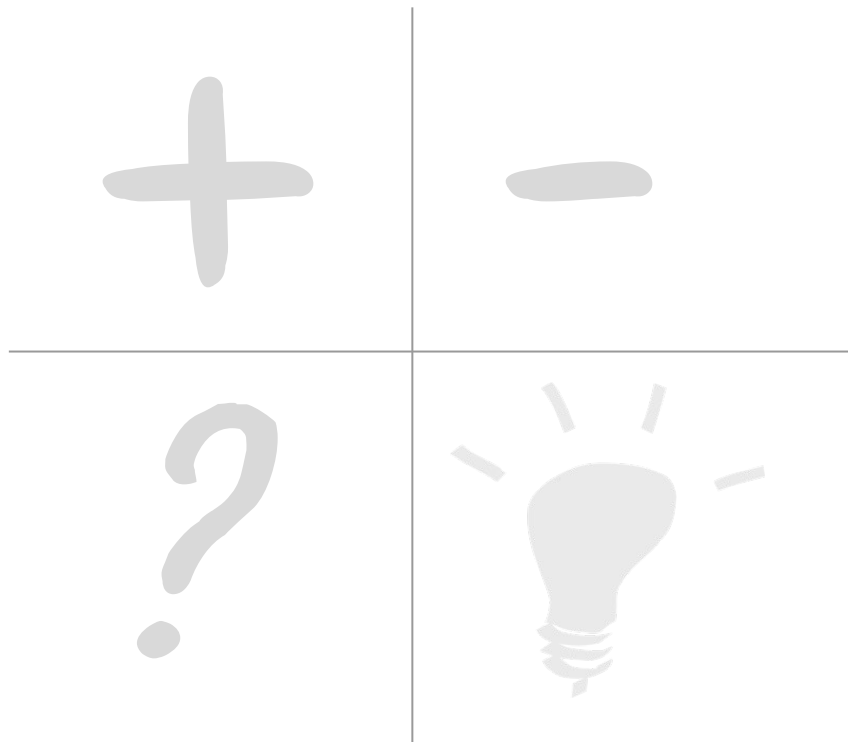
*/

#include <MKRWAN.h>
#include "credentials.h"

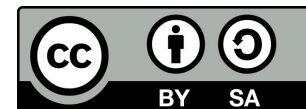
#define APP_PORT 12 // Application port
#define SEND_EVERY 60000 // Send message every 60 seconds
#define REQUIRE_ACK 0 // Require ACK
#define RETRIES 3 // Number of retries if message fails
#define RETRY_AFTER 5000 // Wait these many ms before retrying
```

QUÈ T'HA SEMBLAT

GRÀCIES



thethingsnetwork.cat - ttn.cat
@ttnocat a twitter
@ttnocat a quitter.cat/GNUSocial



Gràfics de la Wikipedia i de The Things Network