



DOMÓTICA: Defensa de Prácticas

Máster Universitario en Ingeniería Informática

Pablo Valenzuela Álvarez

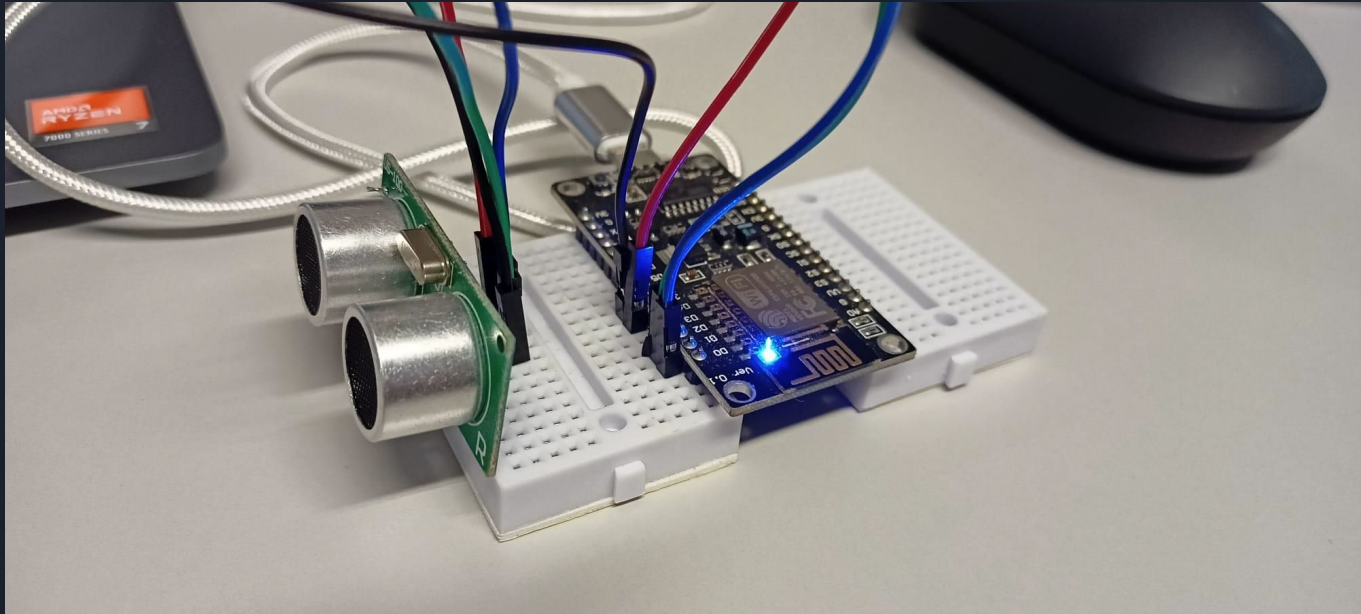


Índice de contenidos

1. Dispositivo IoT - Telémetro
2. Home Assistant

Dispositivo IoT: Telémetro

Primera versión





Dispositivo IoT: Telémetro

Primera versión

Message (Enter to send message to 'NodeMCU 0.9 (ESP-12 Module)' on 'COM3')

```
12:01:43.245 -> Distancia: 8.22  
12:01:44.287 -> Distancia: 9.65  
12:01:45.284 -> Distancia: 19.04  
12:01:46.300 -> Distancia: 11.46  
12:01:47.316 -> Distancia: 69.02  
12:01:48.294 -> Distancia: 14.98  
12:01:49.335 -> Distancia: 36.89  
12:01:50.320 -> Distancia: 38.85  
12:01:51.332 -> Distancia: 11.44  
12:01:52.338 -> Distancia: 31.89  
12:01:53.379 -> Distancia: 43.19  
12:01:54.405 -> Distancia: 69.45  
12:01:55.395 -> Distancia: 70.26
```



Dispositivo IoT: Telémetro

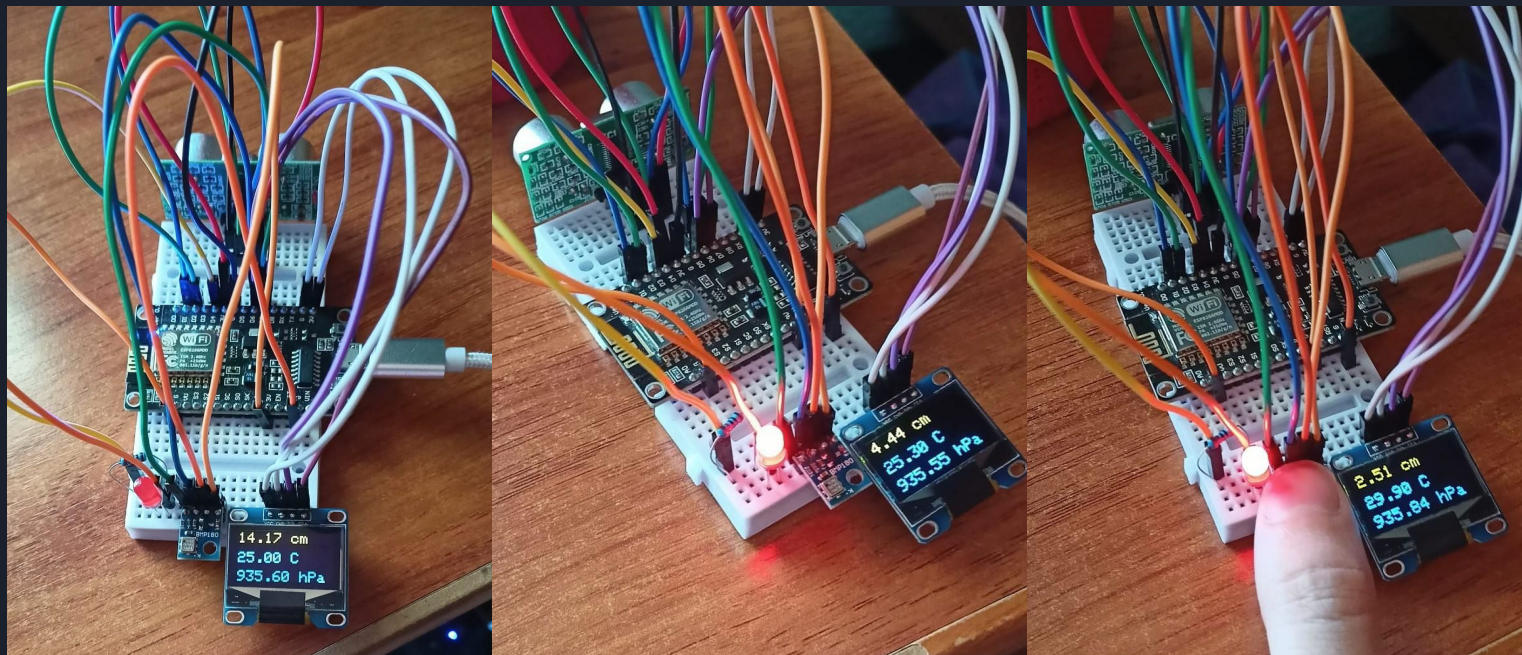
Segunda versión

Se añadió:

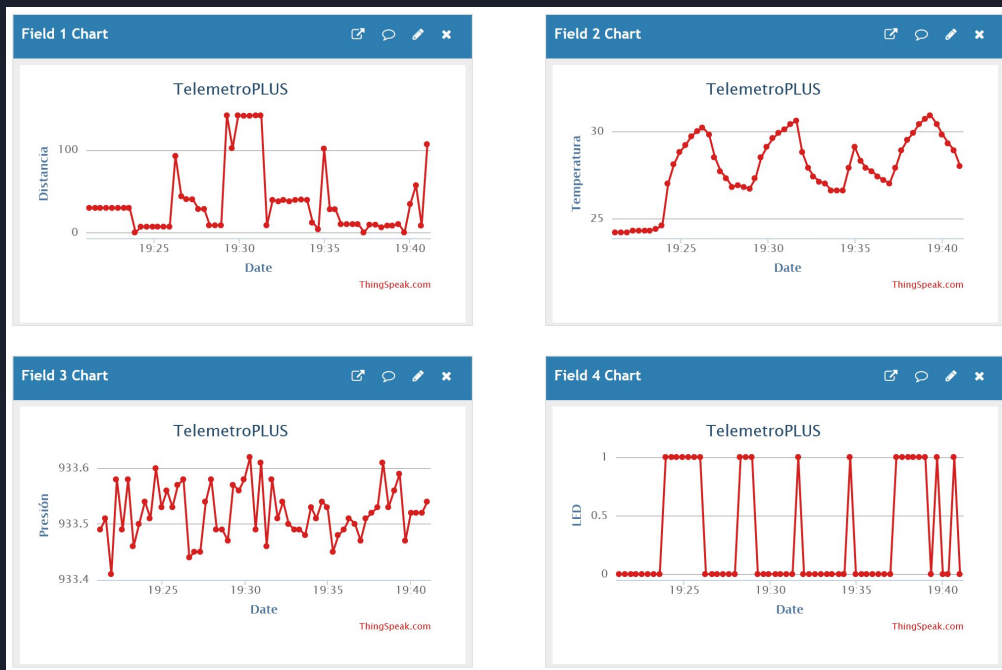
- Diodo LED + Resistencia
- Sensor BMP180
- Pantalla OLED

Dispositivo IoT: Telémetro

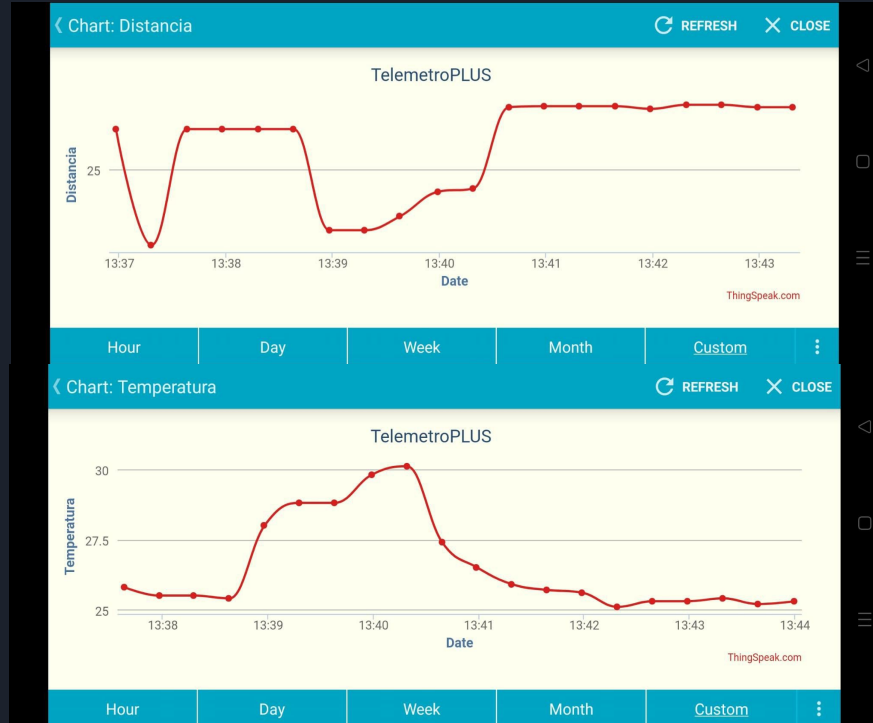
Segunda versión



Dispositivo IoT: Telémetro ThingSpeak



Dispositivo IoT: Telémetro ThingSpeak



Dispositivo IoT: Telémetro

HiveMQ

Connection

● connected

Publish

Topic

QoS

0

Retain☐

Publish

Message

Messages

2024-05-17 10:13:59	Topic: telemetroPLUS/temperatura	Qos: 0
29 10		
2024-05-17 10:13:59	Topic: telemetroPLUS/led	Qos: 0
1		
2024-05-17 10:13:59	Topic: telemetroPLUS/presion	Qos: 0
935		
2024-05-17 10:13:59	Topic: telemetroPLUS/distancia	Qos: 0
2 46		
2024-05-17 10:13:59	Topic: telemetroPLUS/temperatura	Qos: 0
24 00		
2024-05-17 10:13:59	Topic: telemetroPLUS/led	Qos: 0
0		
2024-05-17 10:13:59	Topic: telemetroPLUS/presion	Qos: 0
935		
2024-05-17 10:13:59	Topic: telemetroPLUS/distancia	Qos: 0
36 05		
2024-05-17 10:13:59	Topic: telemetroPLUS/temperatura	Qos: 0
24 20		
2024-05-17 10:13:59	Topic: telemetroPLUS/led	Qos: 0
0		
2024-05-17 10:13:59	Topic: telemetroPLUS/presion	Qos: 0
935		
2024-05-17 10:13:59	Topic: telemetroPLUS/distancia	Qos: 0
36 05		

Subscriptions

Add New Topic Subscription

Qos: 2

telemetroPLUS/distancia

X

Qos: 2

telemetroPLUS/temperatura

X

Qos: 2

telemetroPLUS/presion

X

Qos: 2

telemetroPLUS/led

X



Dispositivo IoT: Telémetro

Tasmota - Instalación

Choose an installation method:

Web Installer ⓘ

Tasmotizer! ⓘ ⓘ ⓘ

esptool.py ⓘ ⓘ ⓘ

OTA Conversion ⓘ

Flash Tasmota directly from your web browser.

1. Connect the ESP device to your computer using USB or serial-to-USB adapter
2. Select the firmware variant suitable for your device

Tasmota Sensors



3. Hit "CONNECT" and select the correct port or find help if no device found

CONNECT

Dispositivo IoT: Telémetro

Tasmota - Configuración

Generic

Tasmota

Module parameters

Module type (Sonoff Basic)

Generic (18)

D3 GPIO0

None

TX GPIO1

None

D4 GPIO2

Relay

1

RX GPIO3

None

D2 GPIO4

SR04 Ech/RX

1

D1 GPIO5

SR04 Tri/TX

1

D6 GPIO12

I2C SCL

D7 GPIO13

I2C SDA

D5 GPIO14

None

D8 GPIO15

None

D0 GPIO16

None

A0 GPIO17

None

Save

Configuration

Tasmota 14.0.0 (release-sensors) by Theo Arends

Generic

Tasmota

BMP180 Temperature

25.9 °C

BMP180 Pressure

933.5 hPa

SR04 Distance

47.9 cm

ON

Toggle

Configuration

Information

Firmware Upgrade

Console

Restart

Tasmota 14.0.0 (release-sensors) by Theo Arends

Generic

TelemetryPLUS

MQTT parameters

Host ()

192.168.0.18

Port (1883)

1883

Client (DVES_A33F4E)

DVES_%06X

User (DVES_USER)

mqttuser

Password

....

Topic = %topic% (tasmota_A33F4E)

tasmota_%06X

Full Topic (%prefix%/%%topic%/)

%prefix%/%%topic%/

Save

Configuration

Tasmota 14.0.0 (release-sensors) by Theo Arends

Home Assistant

Instalación de addons

- File editor
- Terminal & SSH
- Samba Share
- Duck DNS
- Mosquito broker
- TasmAdmin
- ESPHome
- Node-RED



Home Assistant

Samba Share - Configuración

Samba share

Opciones

Username*

pablo

The username you would like to use to authenticate with the Samba server.

Password*

•••••



The password that goes with the username configured for authentication.

Workgroup*

WORKGROUP

Change WORKGROUP to reflect your network needs.

Home Assistant

Samba Share - Acceso

Seguridad de Windows

Escribir credenciales de red

Escriba sus credenciales para conectarse a: 192.168.0.18

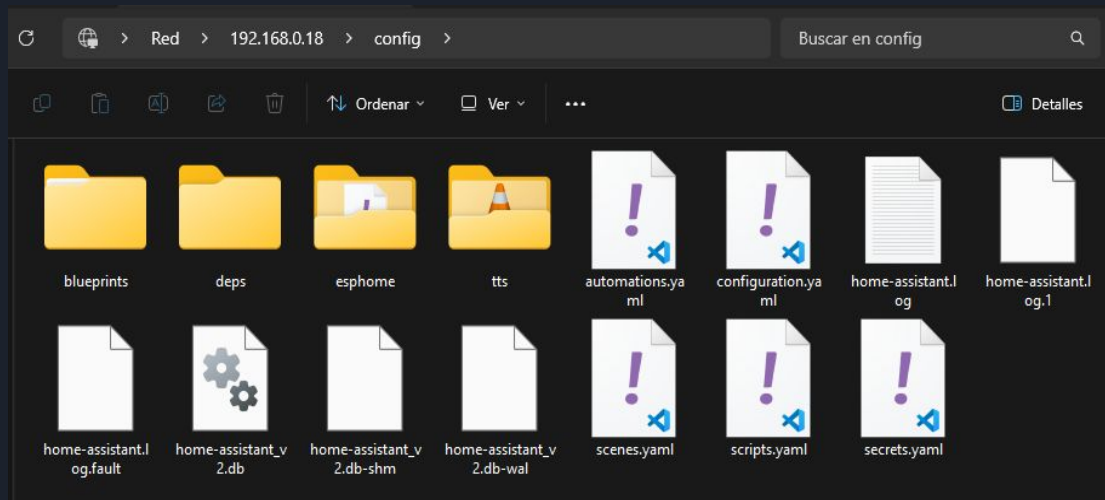
Nombre de usuario

Contraseña

☐ Recordar mis credenciales

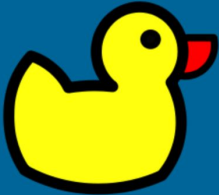
El nombre de usuario o contraseña no es correcto.

Aceptar Cancelar



Home Assistant

Duck DNS - Dominio



Duck DNS

account [redacted]
type free
token [redacted]
token generated 22 hours ago
created date 17 Apr 2024, 16:49:01

domains 1/5

[http://](#) [.duckdns.org](#) [add domain](#)

domain	current ip	ipv6	changed
pvalenzuela	85.136.39.72 update ip	<input type="text" value="ipv6 address"/> update ipv6	22 hours ago delete domain

This site is protected by reCAPTCHA and the Google [Privacy Policy](#) and [Terms of Service](#) apply.

Home Assistant

Duck DNS - Puertos

Redirección de puertos

Nombre del servicio	Dirección IP	Protocolo	Puerto LAN	Puerto público			
homeassistant	192.168.0.18	TCP	8123	8123			
							

Home Assistant

Tasmota - Añadir dispositivo

Descubierto



ibeacon
iBeacon Tracker

CONFIGURAR

IGNORAR



LEDBLE-096E7D (6E7D)
LED BLE

CONFIGURAR

IGNORAR



SAGEM F@ST3686
UPnP/IGD

CONFIGURAR

IGNORAR



tasmota
Tasmota

CONFIGURAR

IGNORAR



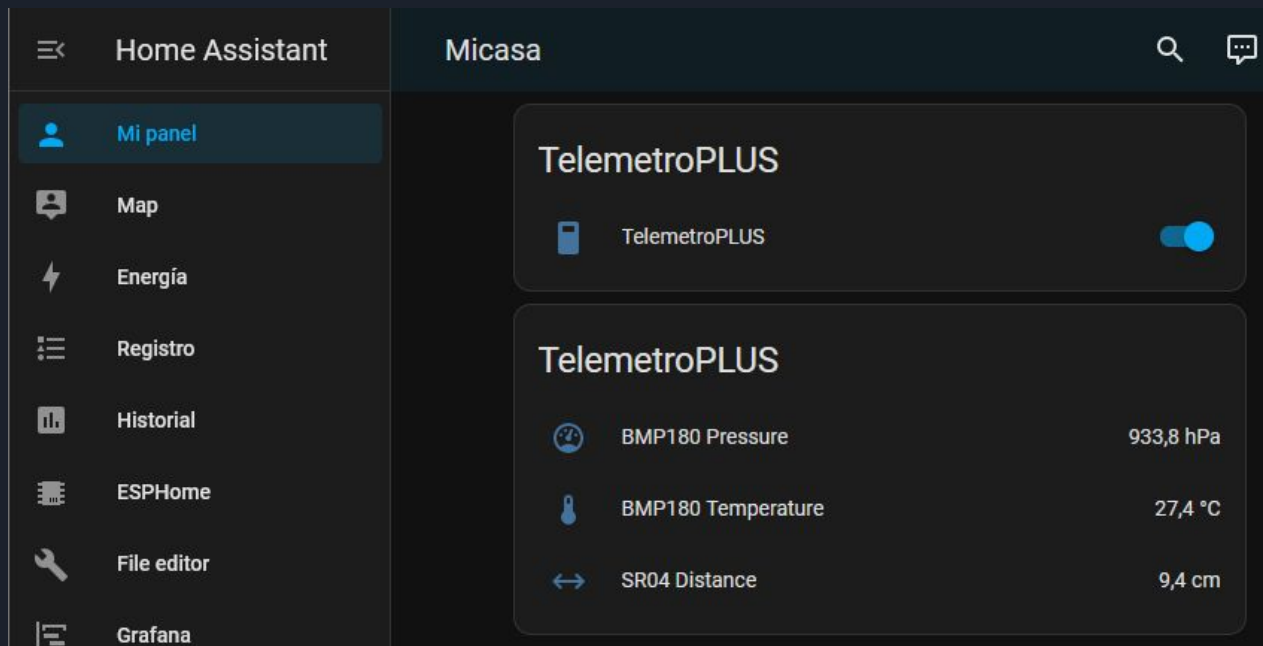
vodafone
DLNA Digital Media Server

CONFIGURAR

IGNORAR

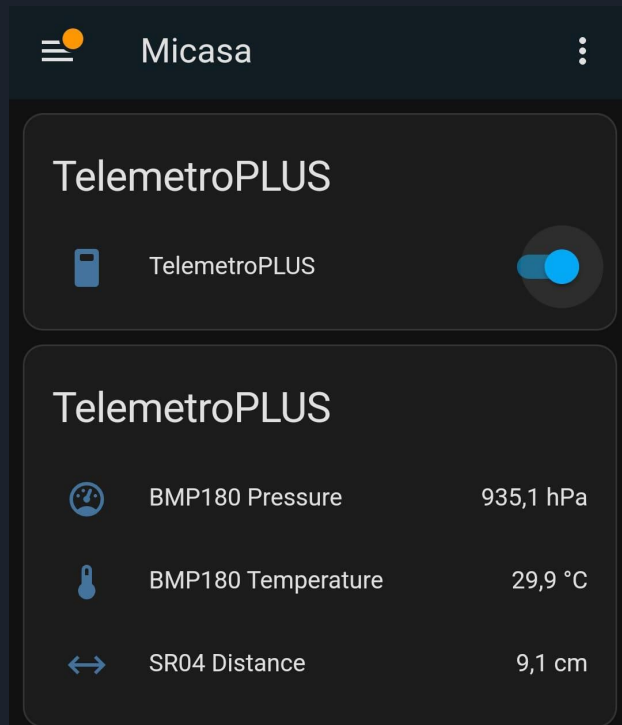
Home Assistant

Tasmota - Añadir panel



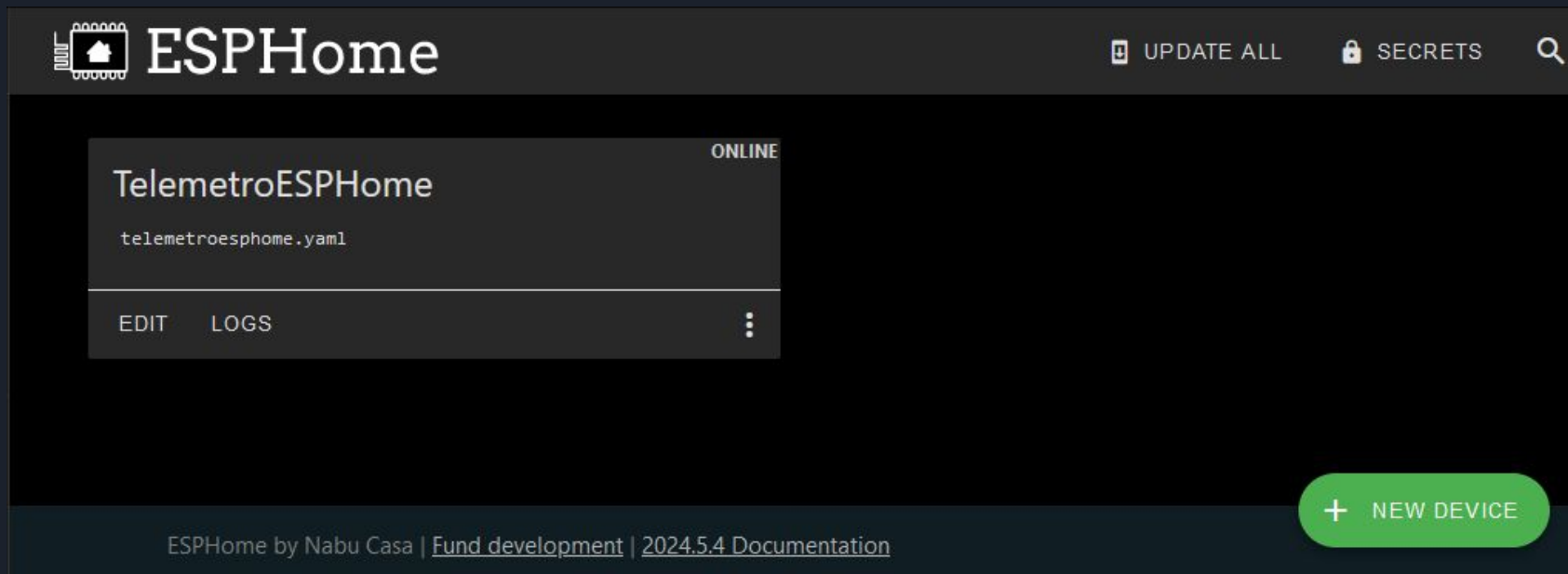
Home Assistant

Tasmota - Añadir panel



Home Assistant

ESPHome - Crear dispositivo





Home Assistant

ESPHome - Instalar código

How do you want to install telemetroesphome.yaml on your device?

Wirelessly

Requires the device to be online



Plug into this computer

For devices connected via USB to this computer



Plug into the computer running ESPHome Dashboard

For devices connected via USB to the server



Manual download

Install it yourself using ESPHome Web or other tools





CANCEL

Home Assistant



ESPHome - Añadir dispositivo

Descubierto






ibeacon
iBeacon Tracker

CONFIGURAR IGNORAR





SAGEM F@ST3686
UPnP/IGD

CONFIGURAR IGNORAR



TelemetroESPHome
ESPHome

CONFIGURAR IGNORAR



vodafone
DLNA Digital Media Server

CONFIGURAR IGNORAR

Home Assistant

ESPHome - Código

```
i2c:  
  sda: 13 # D7  
  scl: 12 # D6
```

```
sensor:  
  
  - platform: ultrasonic  
    trigger_pin: 5 # D1  
    echo_pin: 4 # D2  
    name: "Distancia"  
    id: distancia  
    timeout: 20m  
    unit_of_measurement: cm  
    update_interval: 2s  
    filters:  
      - multiply: 100.0  
  
  - platform: bmp085  
    temperature:  
      name: "Temperatura"  
      id: temperatura  
    pressure:  
      name: "Presión"  
      id: presion  
      update_interval: 2s
```

```
switch:  
  - platform: gpio  
    name: "LED"  
    id: led  
    pin: 2 # D4
```



Home Assistant

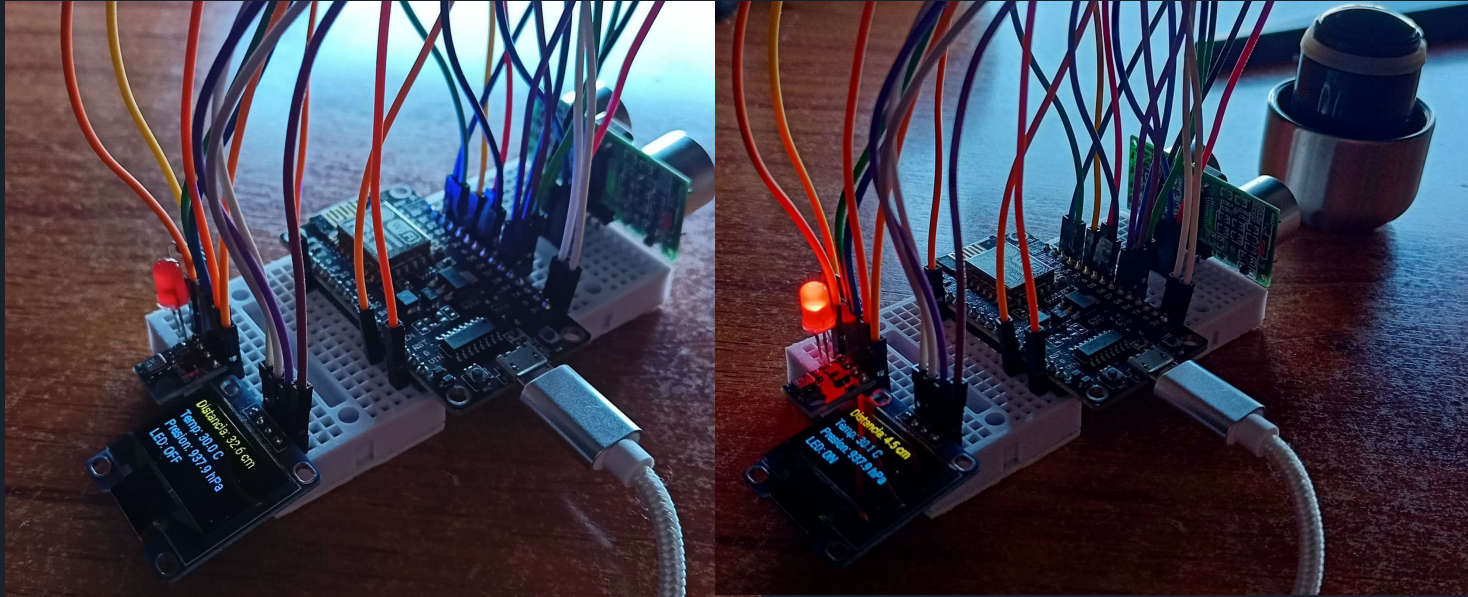
ESPHome - Código

```
font:
  - file: "Roboto-Regular.ttf"
    id: my_font
    size: 12

display:
  - platform: ssd1306_i2c
    model: "SSD1306 128x64"
    address: 0x3C
    lambda: |-
      it.printf(0, 0, id(my_font), "Distancia: %.1f cm", id(distancia).state);
      it.printf(0, 16, id(my_font), "Temp: %.1f C", id(temperatura).state);
      it.printf(0, 32, id(my_font), "Presion: %.1f hPa", id(presion).state);
      it.printf(0, 48, id(my_font), "LED: %s", (id(led).state ? "ON" : "OFF"));
```


Home Assistant

ESPHome - Dispositivo



Home Assistant

Definir automatizaciones

Cuando



La temperatura de TelemetroESPHome Temperatura cambia



Dispositivo
TelemetroESPHome



Disparador
La temperatura de TelemetroESPHome Temperatura cambia



Por encima de
28

°C

Por debajo de

Duración (opcional)

hh	mm	ss
0	: 00	: 00

Home Assistant

Definir automatizaciones

Entonces hacer



^ [Icon] Encender TelemetroESPHome LED



Dispositivo
TelemetroESPHome



Acción
Encender TelemetroESPHome LED



Home Assistant

Definir automatizaciones

Automatizaciones

Escenas

Scripts

Planos

?

Filtros

Buscar 2 au

Agrupar por Categoría

Ordenar por Nombre

↑

Nombre

Última vez disp...

^

Sin agrupar

Apagar LED

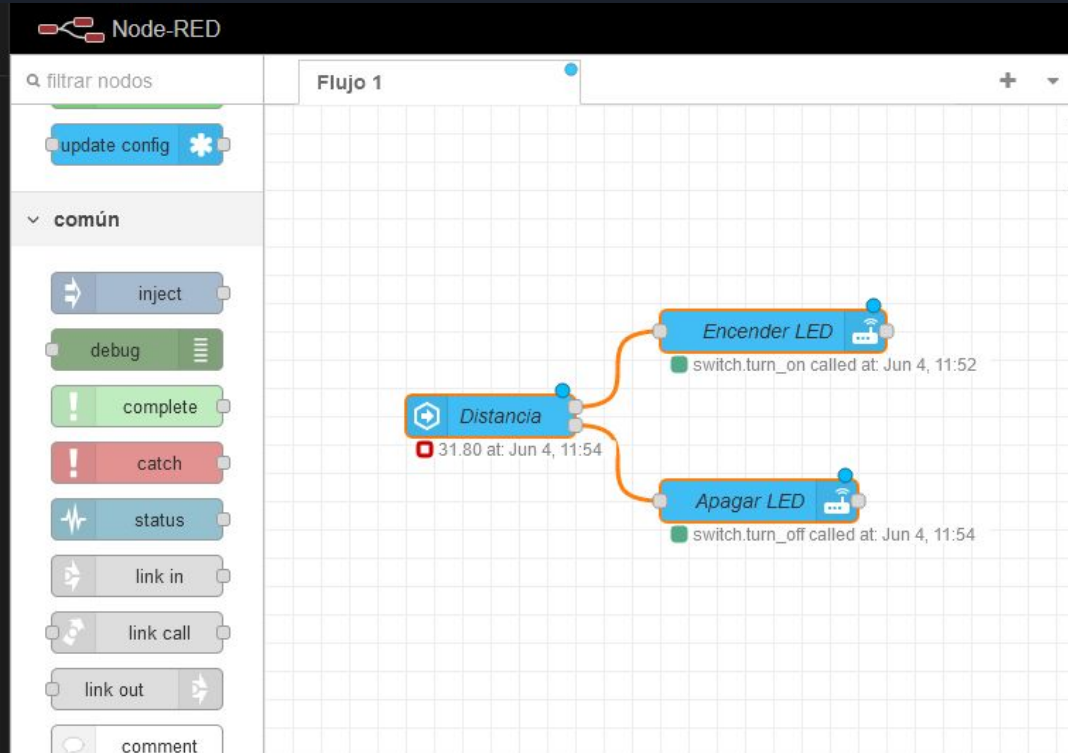
hace 6 minutos

Encender LED

hace 6 minutos

Home Assistant

Node-RED - Creando flujos



Home Assistant

Node-RED - Condiciones

Propiedades

Name: Distancia

Server: Home Assistant

Entity: TelemetroESPHome Distancia exact

If State: < 20

For: 0 minutes

State Type: string

☐ Output on Connect

Propiedades

Name: Encender LED

Server: Home Assistant

Domain: switch

Service: turn_on

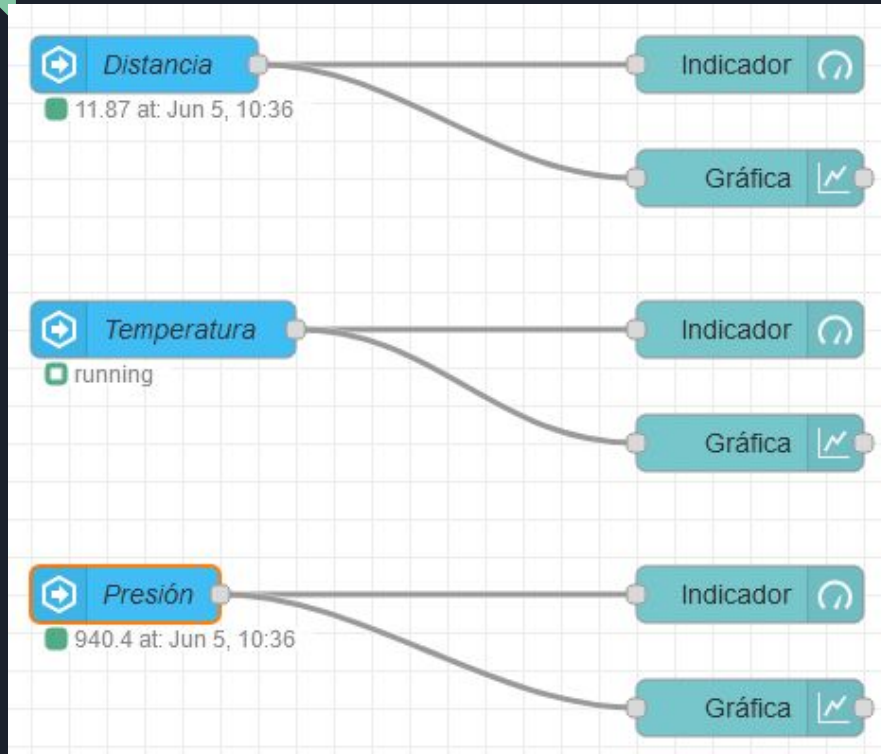
Area:

Device: TelemetroESPHome

Entity: Encender LED

Home Assistant

Node-RED - Dashboard

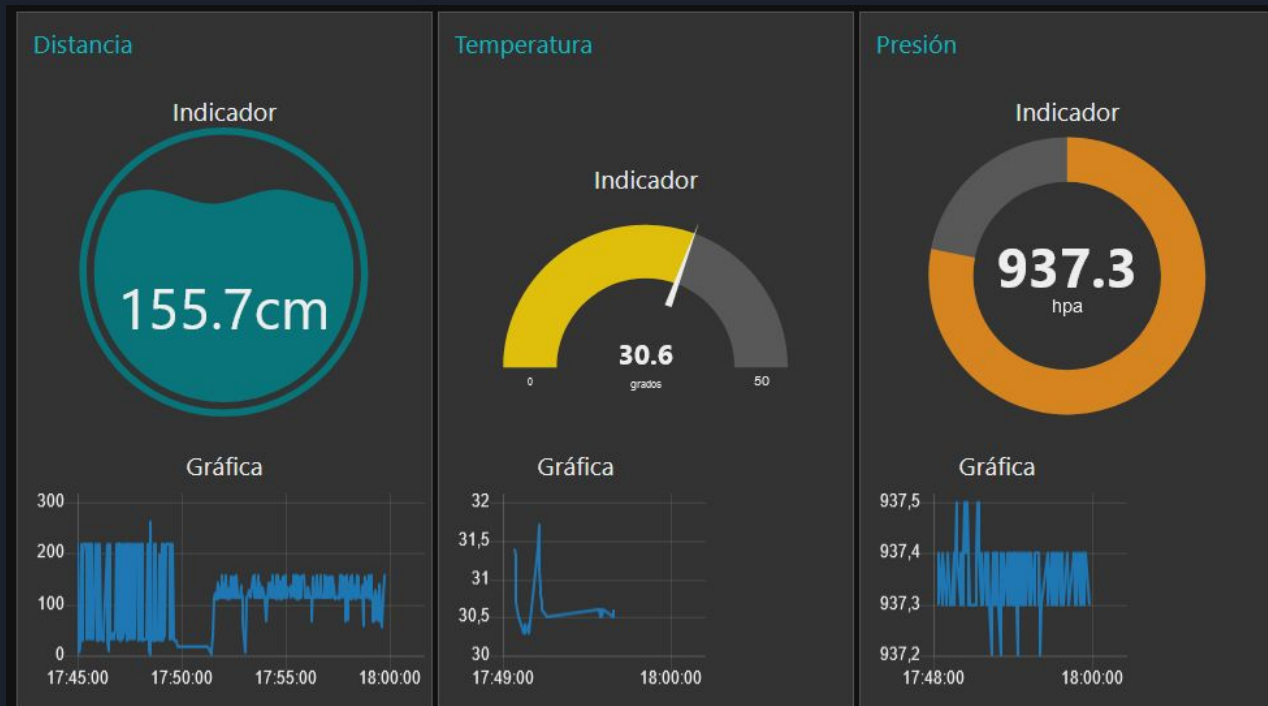


The dashboard interface includes a sidebar with the following structure:

- dashboard** (title bar with icons for info, settings, and a dropdown menu)
- Layout** (selected), **Site**, **Theme** (tabs)
- Tabs & Links** (section header with icons for expand, collapse, add tab, and add link)
- Datos MQTT** (expanded section)
 - > Humedad
 - > Temperatura
 - > Presión
 - > Viento
- Datos telémetro** (expanded section)
 - > Distancia
 - > Temperatura
 - > Presión

Home Assistant

Node-RED - Dashboard



Home Assistant

Node-RED - MQTT

Editar nodo mqtt in

Eliminar Cancelar Hecho

Propiedades

Servidor HiveMQ

Acción Suscríbete a un solo tema

Tema ugr/francis/#

CdS 0

Propiedades

Nombre HiveMQ

Conexión Seguridad Mensajes

Servidor mqtt-dashboard.com Puerto 1883

☒ Conectar automáticamente

☐ Utilizar TLS

Protocolo MQTT V3.1.1

ID Cliente Dejar en blanco para auto generado

Mantener activo 60

Sesión ☒ Usar sesión limpia

Home Assistant

Node-RED - MQTT

depuración [i] [lib] [star] [gear] [stack] [v]

▼ todos los nodos [x] todo ▼

4/6/2024, 16:29:06 nodo: debug 1
ugr/francis/EstMet/windspd : msg.payload : number
4.900000095

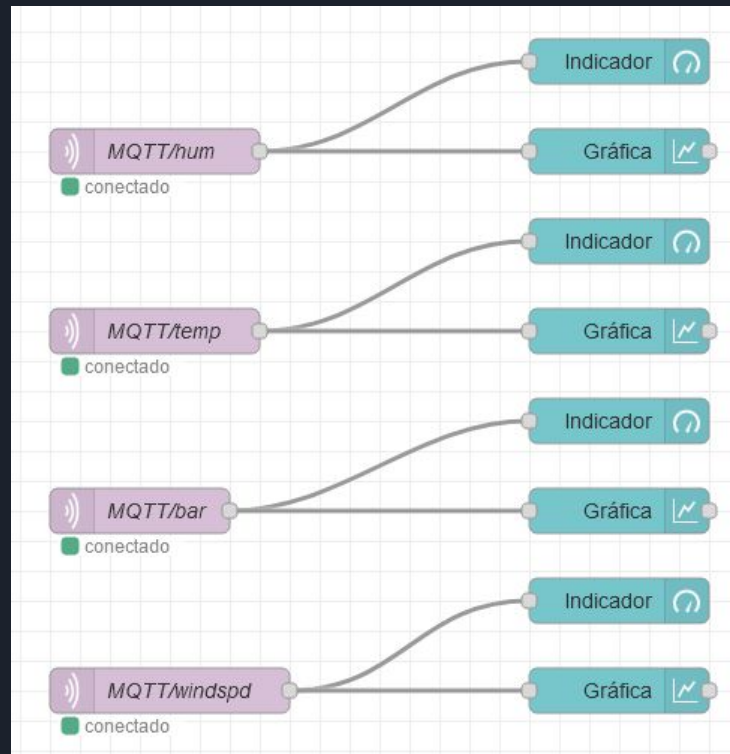
4/6/2024, 16:29:06 nodo: debug 1
ugr/francis/EstMet/bar : msg.payload : number
942.9699707

4/6/2024, 16:29:06 nodo: debug 1
ugr/francis/fuente : msg.payload : string[2]
"on"

4/6/2024, 16:29:06 nodo: debug 1
ugr/francis/EstMet/hum : msg.payload : number
25.26269531

4/6/2024, 16:29:06 nodo: debug 1
ugr/francis/EstMet/shine : msg.payload : number
19585.80078

4/6/2024, 16:29:06 nodo: debug 1
ugr/francis/EstMet/temp : msg.payload : number
33.59999847



Home Assistant

Node-RED - MQTT





Bibliografía

[1] Código telémetro, <https://github.com/Valenz23/DOM>