

# Curs 0007940600 Automatització i domòtica amb dispositius comercials connectats per radiofreqüència



[github.com/jnogues](https://github.com/jnogues)



@fpFormacio  
Estiu 2022

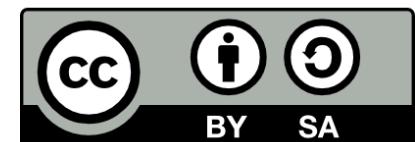


Jaume Nogués

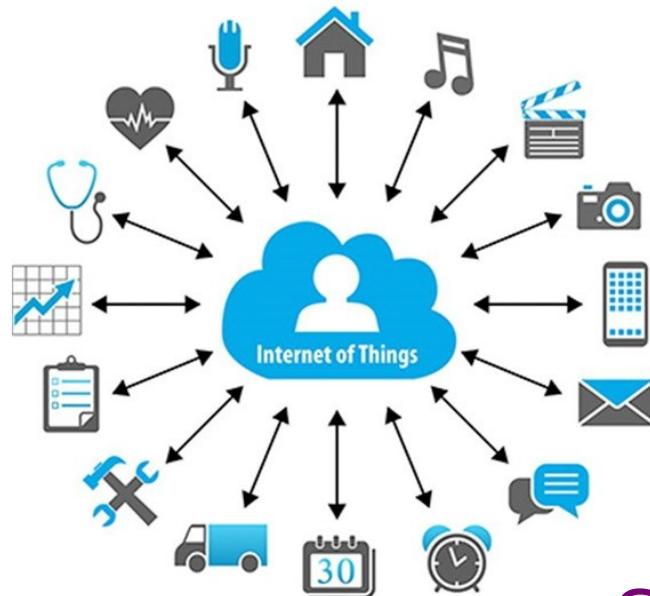


TBBT

TBBT



# Què és IoT?



La Internet de les coses (IoT) és la tecnologia que permet el control de dispositius a través de la xarxa, així com la interconnexió d'aparells amb o sense intervenció humana.

Smart home

connected home

D2D device to device

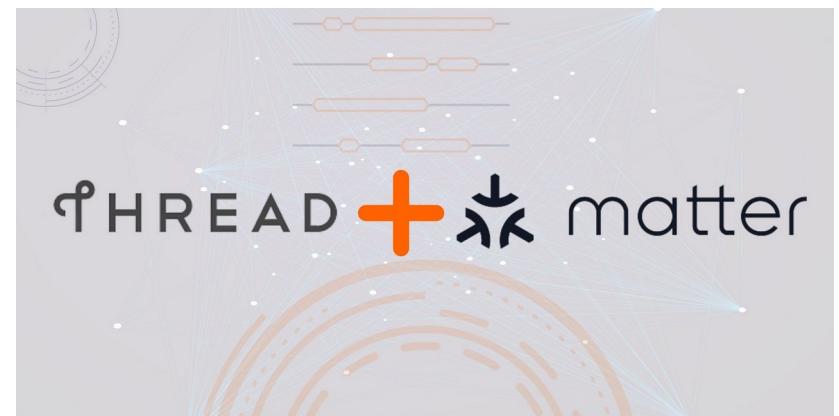
M2M machine to machine

SMART FACTORY

SMART FARM

Connected car

# Sistemes

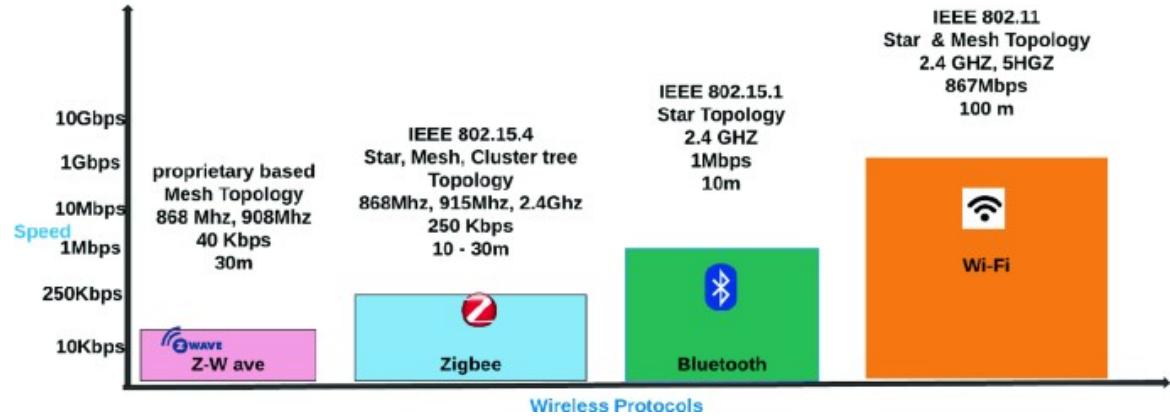


# Sistemes

WIFI: 2,4 GHz

zigbee: 2,4 GHz

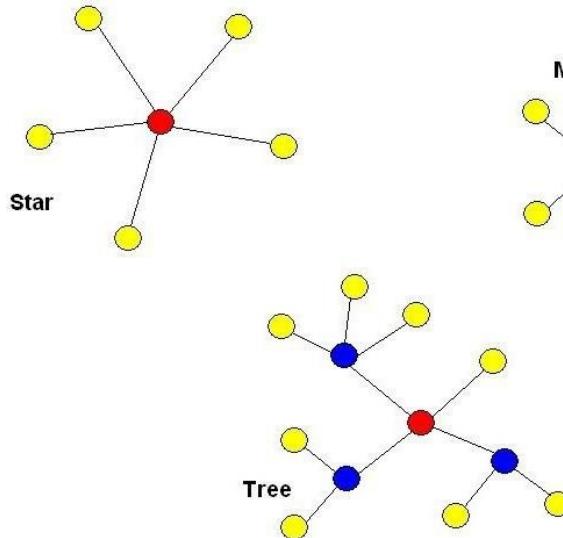
Z-wave: 868 MHz



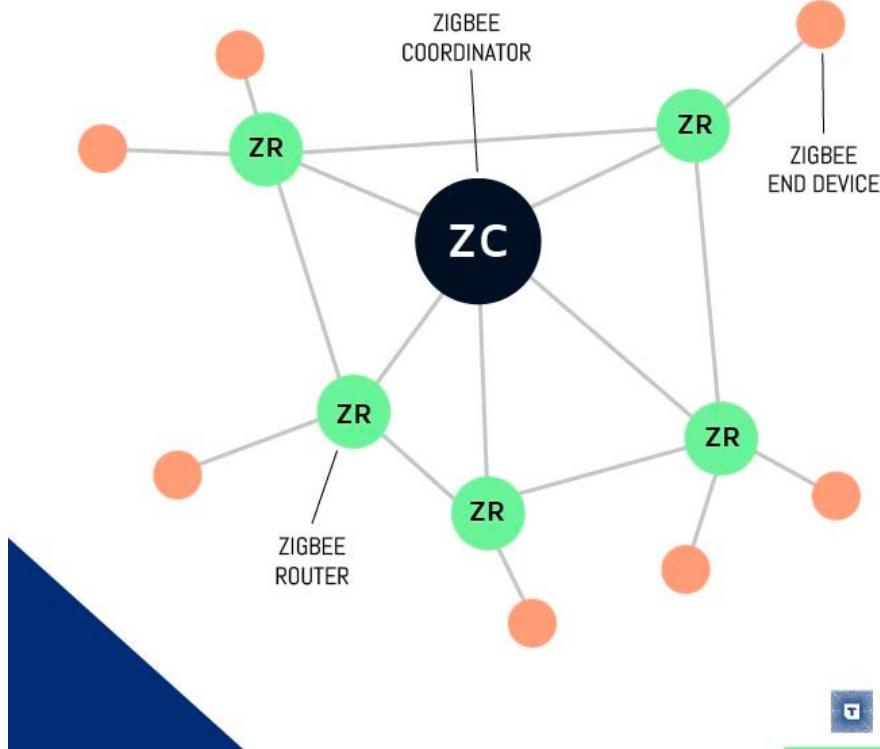
Variable	Wi-Fi	Z-Wave	ZigBee	Thread	BLE
Year first launched in Market	1997	2003	2003	2015	2010
PHY/MAC Standard	IEEE 802.11.1	ITU-T G.9959	IEEE 802.15.4	IEEE 802.15.4	IEEE 802.15.1
Frequency Band	2.4 GHz	900 MHz*	2.4 GHz	2.4 GHz	2.4 GHz
Nominal Range (0 dBm)	100 m	30 – 100 m	10 – 100 m	10 – 100 m	30 m
Maximum Data Rate	54 Mbit/s	40-100 kbit/s	250 kbit/s	250 kbit/s	1 Mbit/s
Topology	Star	Mesh	Mesh	Mesh	Scatternet
Power Usage	High	Low	Low	Low	Low
Alliance	Wi-Fi Alliance	Z-Wave Alliance	ZigBee Alliance	Thread Group	Bluetooth SIG

# Topologia

zigbee: 2,4 GHz

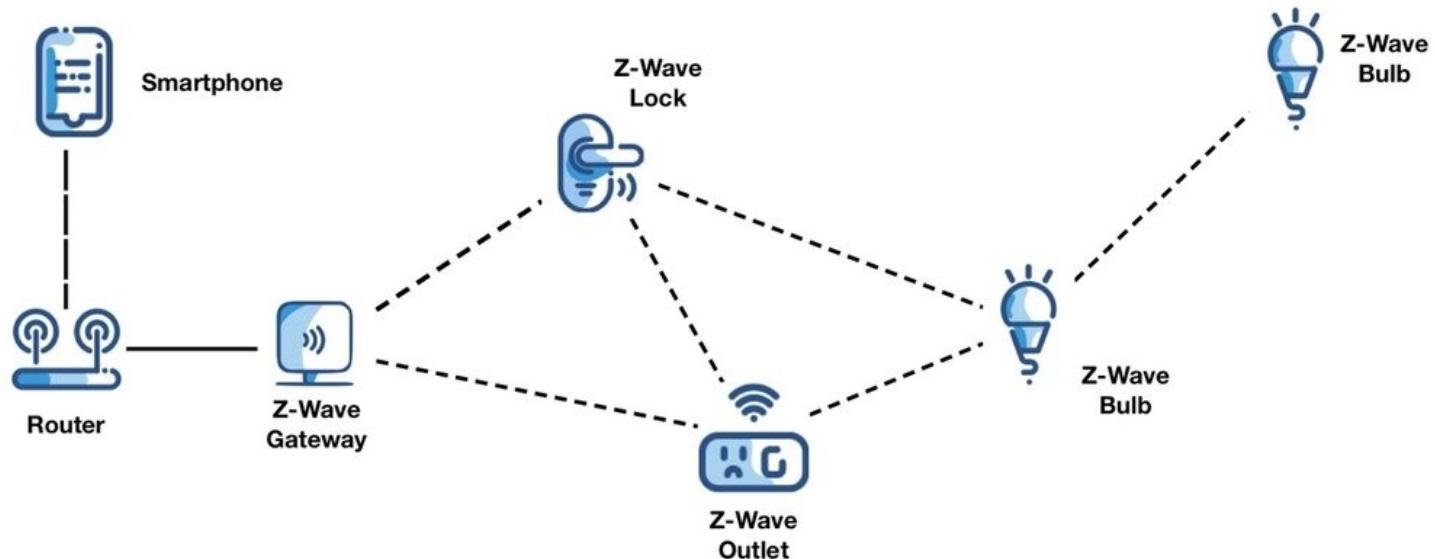


## Zigbee Mesh Network Topology



# Topologia

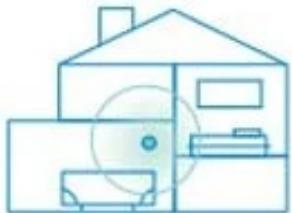
Z-wave: 868 MHz



# Topologia

Wifi i wifi mesh: 2,4 GHz

## POR QUE ES MEJOR UNA RED DE MALLA WIFI



**ROUTER  
NORMAL**



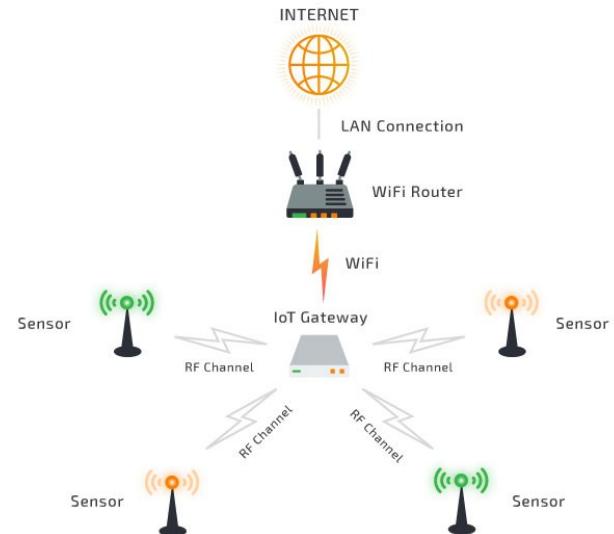
**ROUTER CON  
AMPLIFICADOR  
REPETIDOR  
PLC**



**SISTEMA  
MESH-WIFI  
RED MALLA**

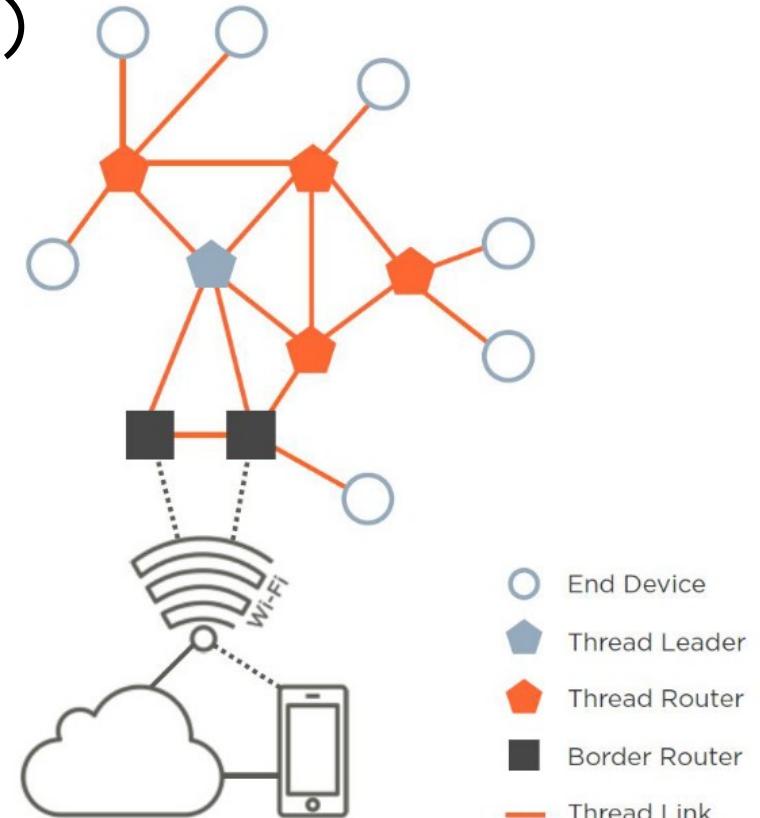
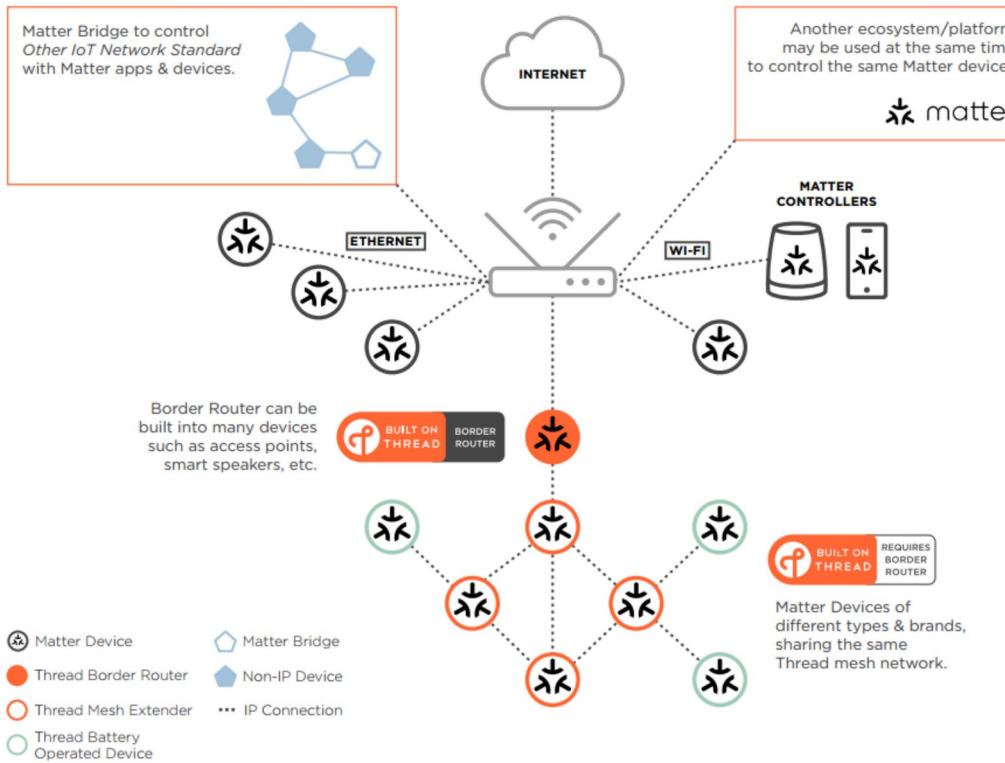


IoT network with a star topology

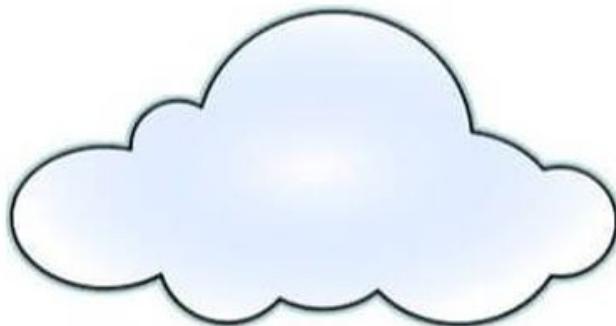


# Topologia

## Thread i Matter (nova zigbee)



# Topologia



vs.



CLOUD COMPUTING VS LOCAL COMPUTING

# Topologia

- Amb HUB i amb cloud
- Amb HUB i sense cloud
- Sense HUB i amb cloud
- Sense HUB i sense cloud
- Amb internet o sense internet

# Productes comercials wifi

- Shelly
- Sonoff
- Tuya
- Simon 270
- Garza

# Productes comercials z-wave

- Simon 100
- Fibaro
- Altres

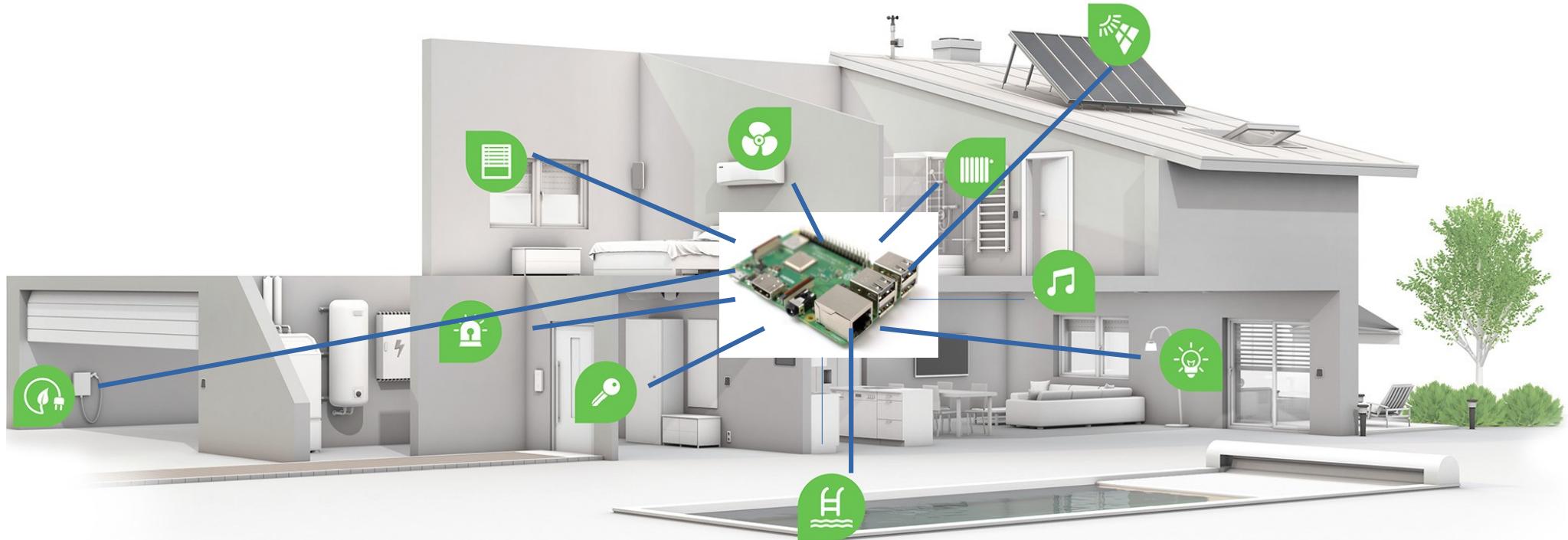
# Productes comercials zigbee

- Ikea Tradfri
- Philips HUE
- Valena next
- Aqara
- Lidl
- Altres

# Assistents de veu

- Amazon Alexa
- Google Nest
- Apple Siri

# Hub's domòtics

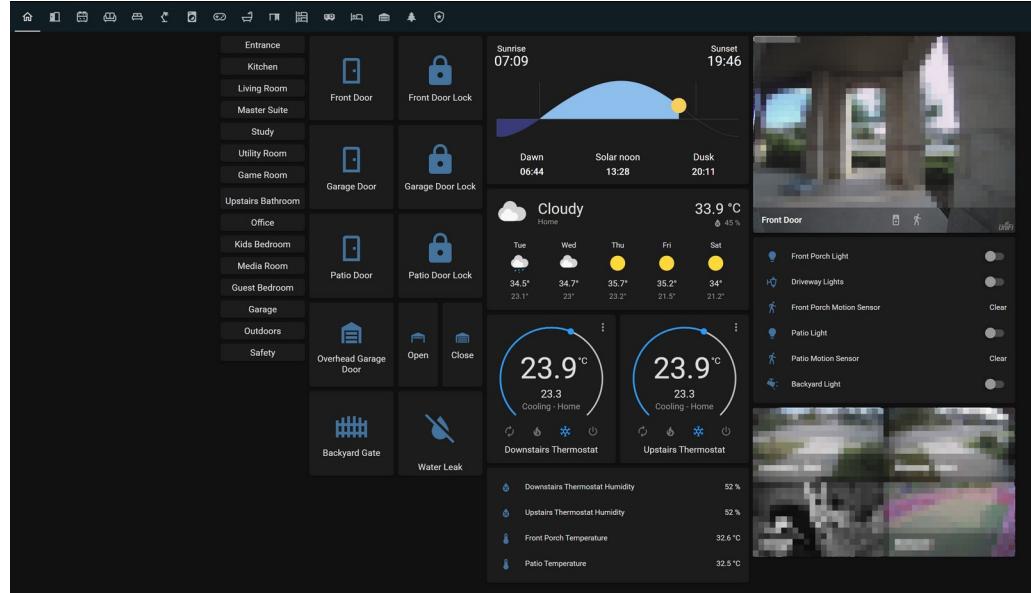


# Hub's domòtics

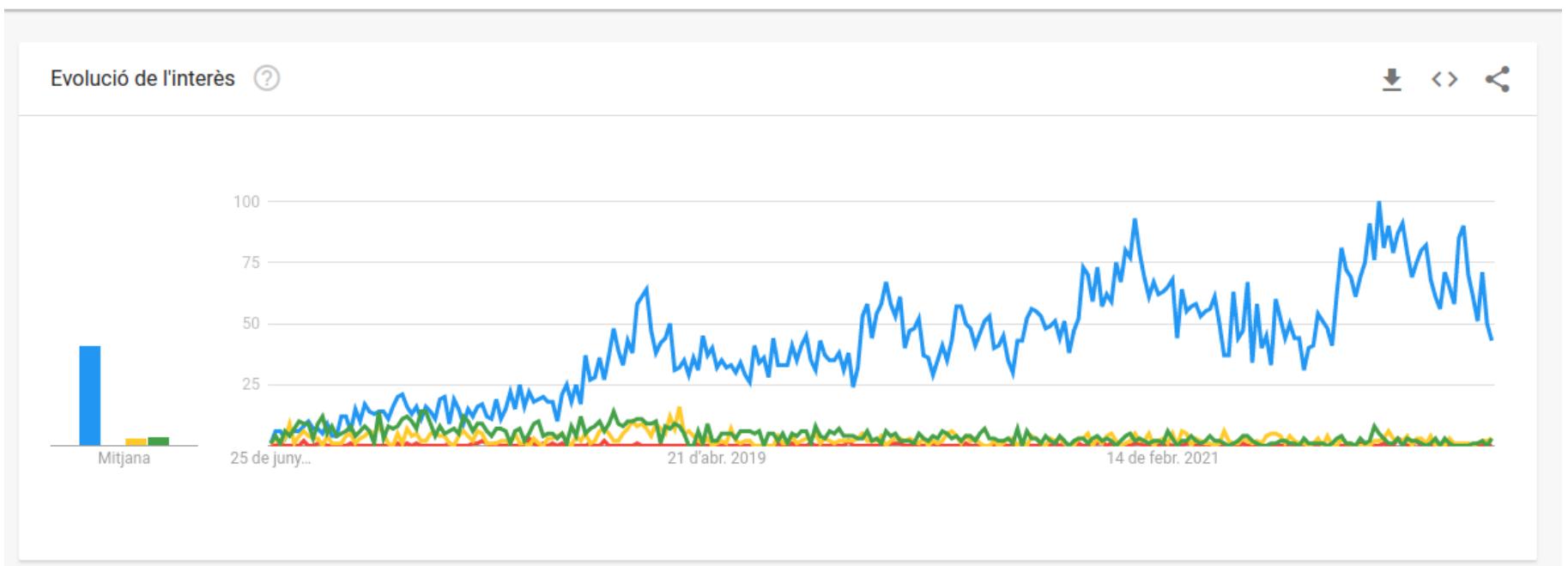
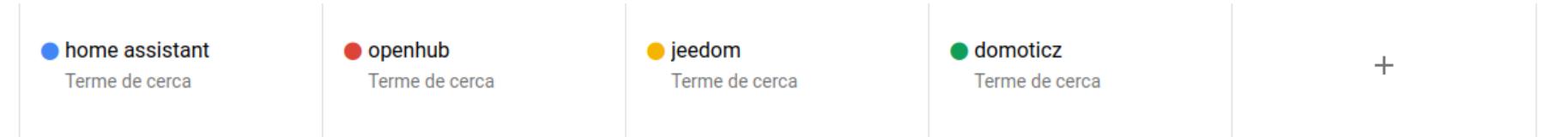
- Home assistant
- OpenHUB
- Jeedom
- Domoticz
- Loxone

# Home assistant

- Demo
- Integrations



# Comparatives



# Comparatives

shelly

Terme de cerca

sonoff

Terme de cerca

+ Afegeix una comparació

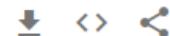
Espanya

12 darrers mesos

Totes les categories

Cerca web

Evolució de l'interès



Mitjana



# Comparatives

zigbee

Terme de cerca

z-wave

Terme de cerca

+ Afegeix una comparació

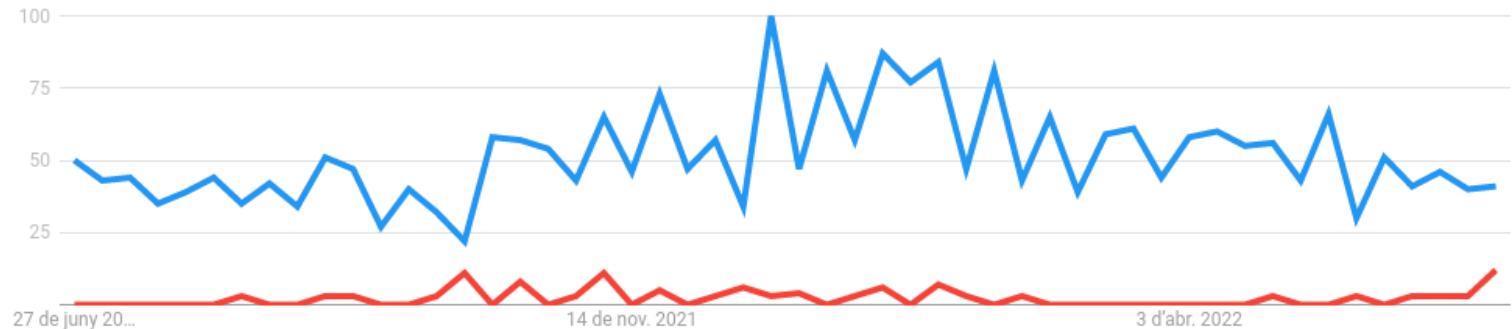
Espanya ▾

12 darrers mesos ▾

Totes les categories ▾

Cerca web ▾

Evolució de l'interès



# Comparatives

ewelink

Terme de cerca

shelly cloud

Terme de cerca

+ Afegeix una comparació

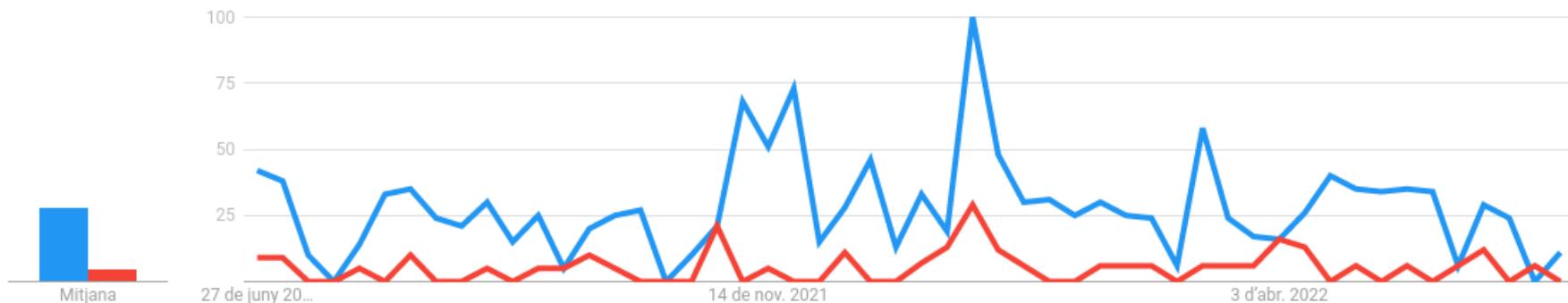
Espanya

12 darrers mesos

Totes les categories

Cerca web

Evolució de l'interès



# Comparatives

ewelink

Terme de cerca

shelly cloud

Terme de cerca

tuya smart

Terme de cerca

+ Afegeix una comparació

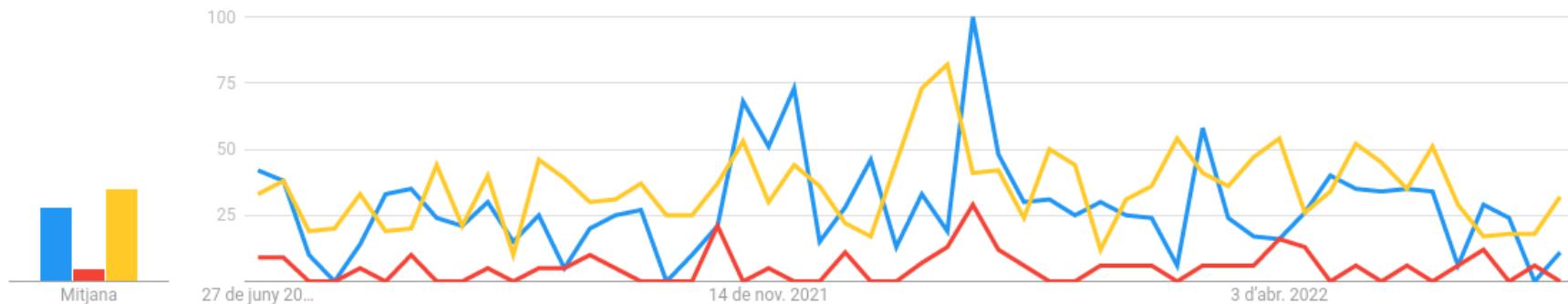
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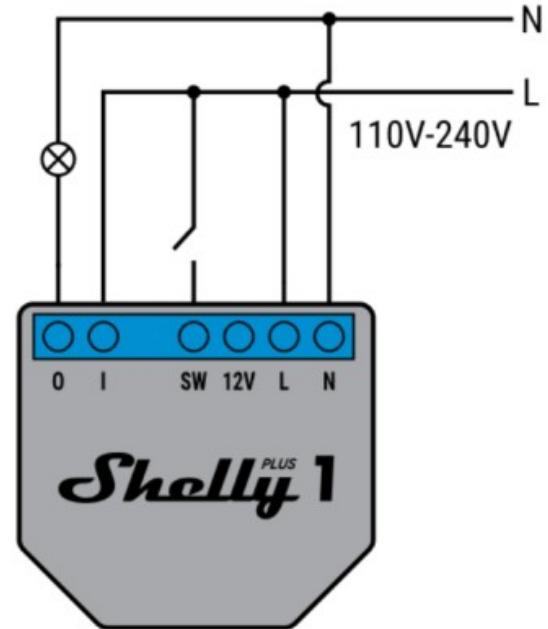


# Shelly.cloud



MAKE **IoT** SIMPLE

# Shelly Plus 1

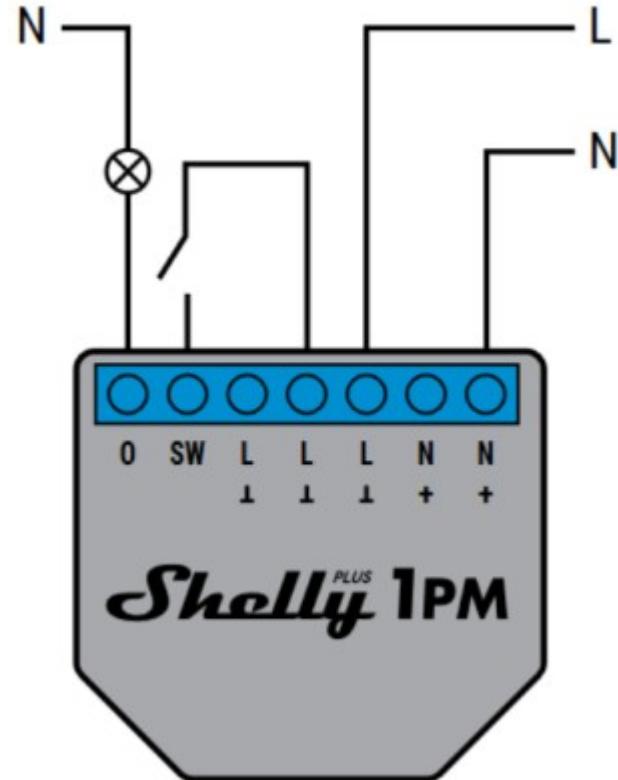


SP1

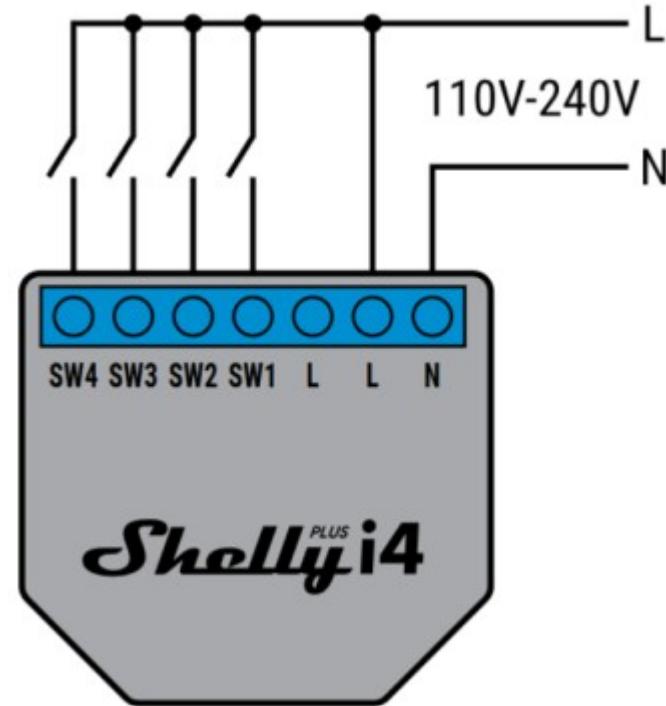
# Shelly Plus 1 PM



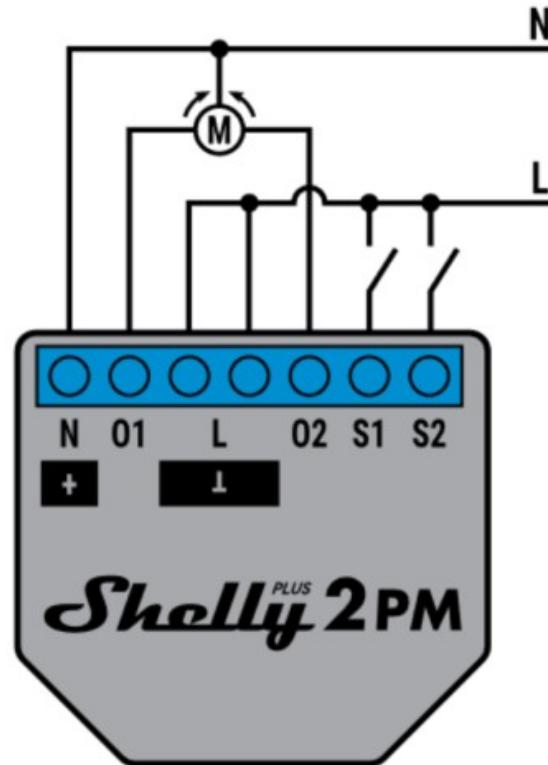
SP1PM



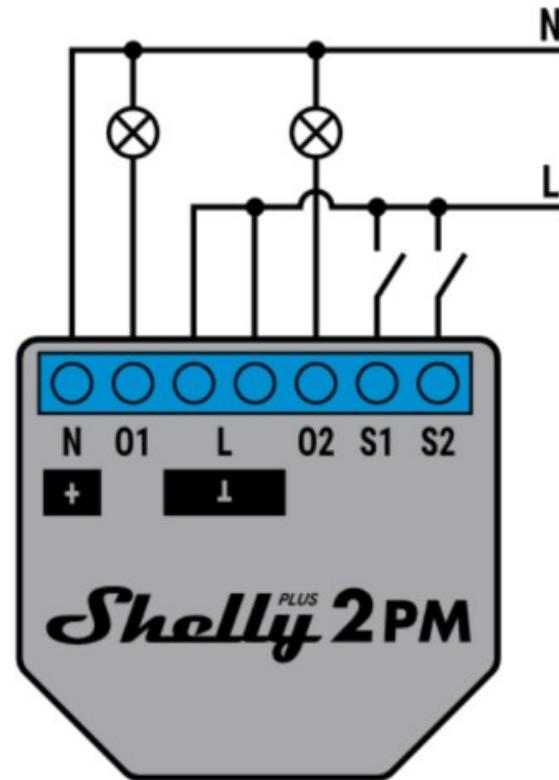
# Shelly Plus i4



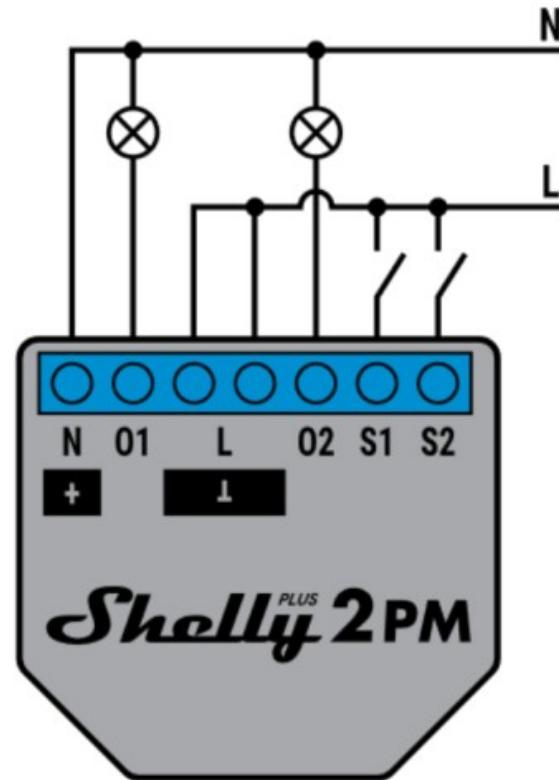
# Shelly Plus 2 PM



# Shelly Plus 2 PM



# Shelly Plus 2 PM



# Compatibilitat



amazon alexa



Google HOME



Yandex Alice

**MQTT**  
enabled



SmartThings



Home Assistant

{ REST }



Homey



HomeSeer



openHAB  
empowering the smart home



iBroker  
Automate your life

SYMC&N



Habitat™  
ELEVATE YOUR ENVIRONMENT



HOOBS  
HOMEBRIDGE OUT OF THE BOX



nymea

# Compatibilitat



Amazon Alexa



Google Home



Yandex Alica



Smart Things



MQTT



Home Assistant

{ REST }



REST



Homey



Hubitat



Hoobs



Symcon



Symcon



Home Seer



Domoticz



Nymea



Open HAB

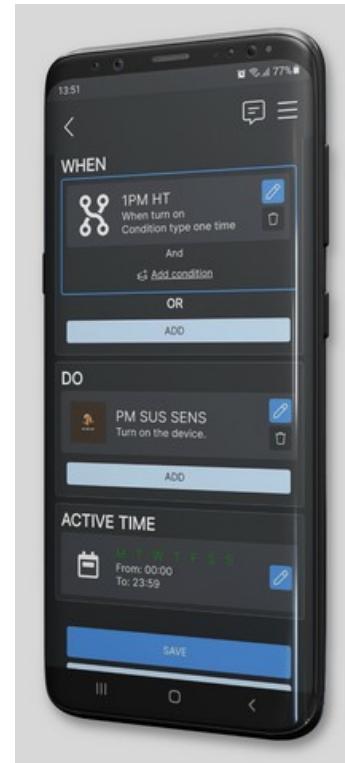
# APP

## Shelly Cloud App

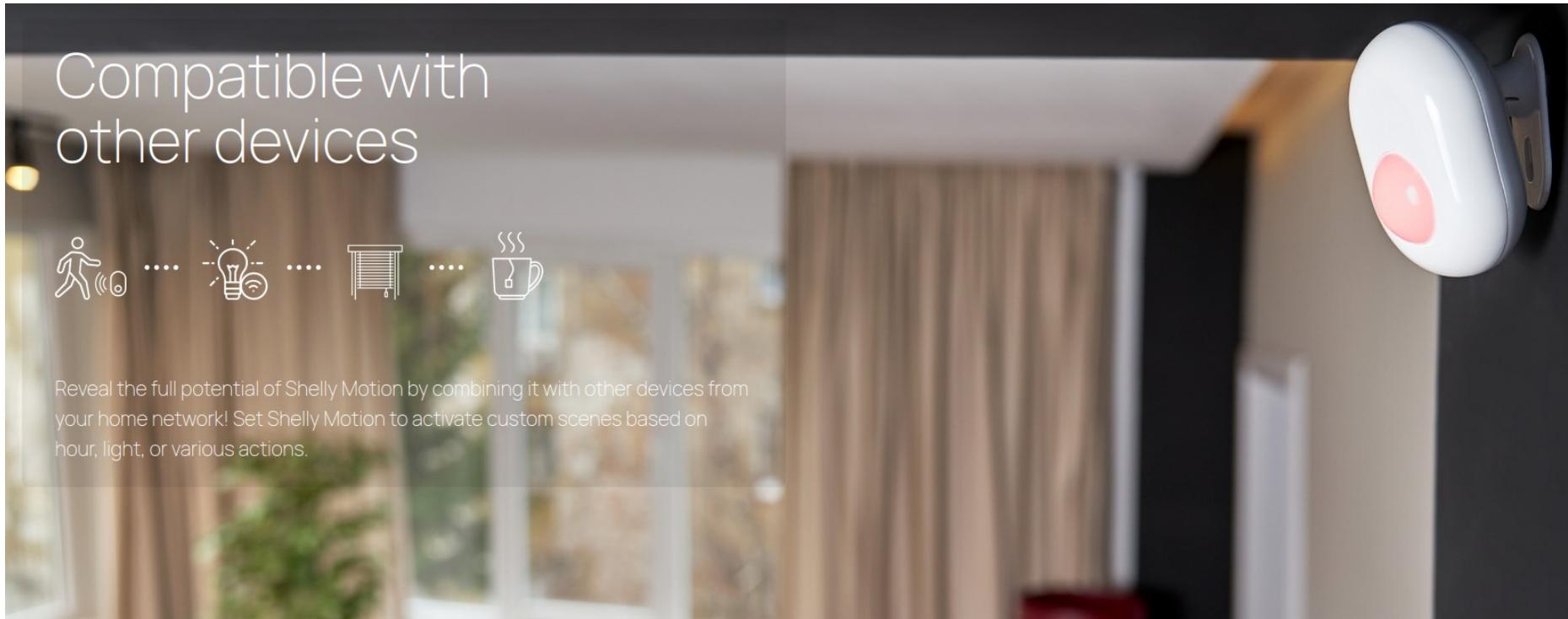
Smart home control, perfected!



# APP



# Shelly Motion



Compatible with  
other devices



Reveal the full potential of Shelly Motion by combining it with other devices from your home network! Set Shelly Motion to activate custom scenes based on hour, light, or various actions.

SM

# Shelly Pro Series



SP Series

# Wall Switch



WS



# Sonoff



**SONOFF MINIR2**

Wi-Fi DIY Smart Switch

# Sonoff

## Wi-Fi Smart LED Bulb

Equip the light and 16 million colors to instantly amp up the atmosphere of your space in various occasions with smart control, making you feel relaxed and energized.



# Sonoff

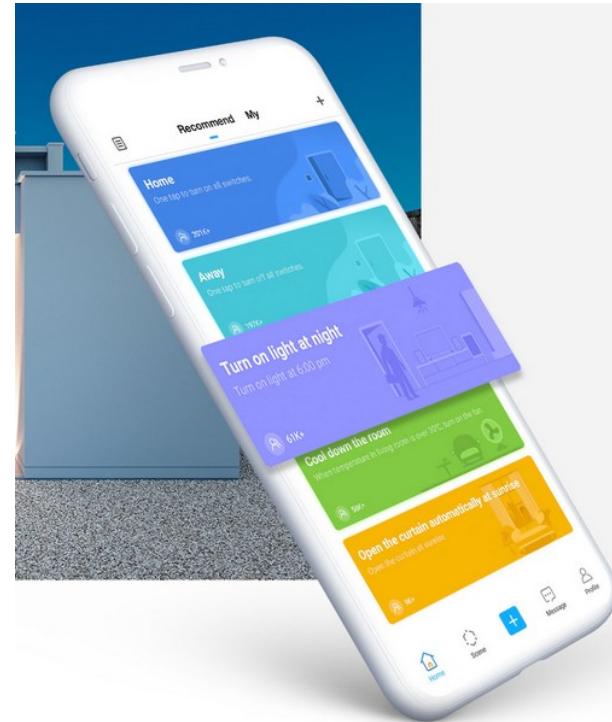
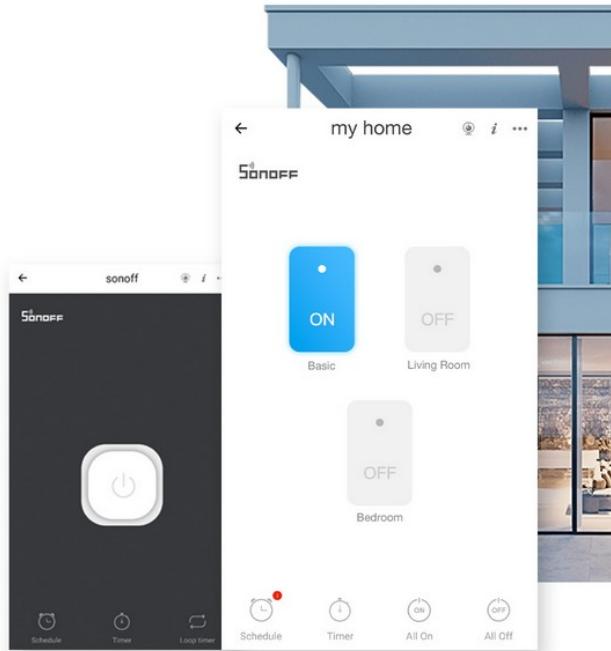
## SONOFF ZigBee 3.0

### USB Dongle Plus

SONOFF Zigbee 3.0 USB Dongle is a universal Zigbee USB stick. It can be used as a universal Zigbee gateway in Home Assistant or other open-source platforms via ZHA or Zigbee2MQTT to locally control all your Zigbee sub-devices, so you don't need to invest on the Zigbee hubs for different brands, all you need is a universal gateway - Dongle Plus!



# ewelink



# ewelink web (pagament)

The eWeLink Web interface for "My Home" displays a grid of device cards:

- 1 Channel Socket/Switch**: Channel is turned on.
- eWeLink Camera**: Camera icon.
- Switch**: Channel 1 is turned on.
- Plug**: Shows power consumption: 231W, 110V, and 2.1A.
- 2 Channel Socket/Switch**: Channel 1 is turned on; Channel 2 is off.

Below the grid, there are two additional cards:

- Garage\_y**: Shows four switch controls.
- Fan**: Shows a circular gauge for "Real Power" at 0W.

My Home

The eWeLink Web interface for "Summer House" displays a grid of device cards:

- 1 Channel Socket/Switch**: Channel is turned on.
- 2 Channel Socket/Switch**: Channel 1 is turned on; Channel 2 is off.
- 3 Channel Socket/Switch**: Channel 1 is turned on; Channel 2 and 3 are off.
- IW100**: Shows three circular gauges for power consumption: 231W, 110V, and 2.1A.
- TH Switch**: Shows a circular gauge for "Humidity" at 45% and a circular gauge for "Temperature" at 73°F.
- Power detection**: Shows a circular gauge for "Realtime stats" at 140 W.

Below the grid, there is one additional card:

- eWeLink Camera**: Camera icon.

Summer House

# Gràcies per la vostra assistència



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github/jnogues