

The background is a dark blue-grey color. It is decorated with various geometric shapes in orange and white. There are circles of different sizes, some with dotted patterns inside. There are hexagons, some solid orange and some outlined in white. There are also triangles and lines. Some shapes are partially cut off by the edges of the frame. The overall style is modern and minimalist.

# Proyecto de Ingeniería de Computadores

Guillermo Vidal Sulé  
Arnau Mariegas



01.

## Esquema

Breve descripción del proyecto y sus componentes

02.

## Sensores

Descripción de los sensores y actuadores usados

03.

## Coste

Coste desglosado y coste total

04.

## Distribuidores

Distribuidores que nos proporcionarán los componentes



# Esquema

## Puerta

Puerta con un cerrojo electromagnetico, e identificacion RFID

## Sensores

Un sensor de temperatura, y varios sensores de movimiento

## Alimentación

Placas solares, conectadas a baterias.

## Comunicación

Comunicación inalámbrica entre módulos mediante el protocolo thread

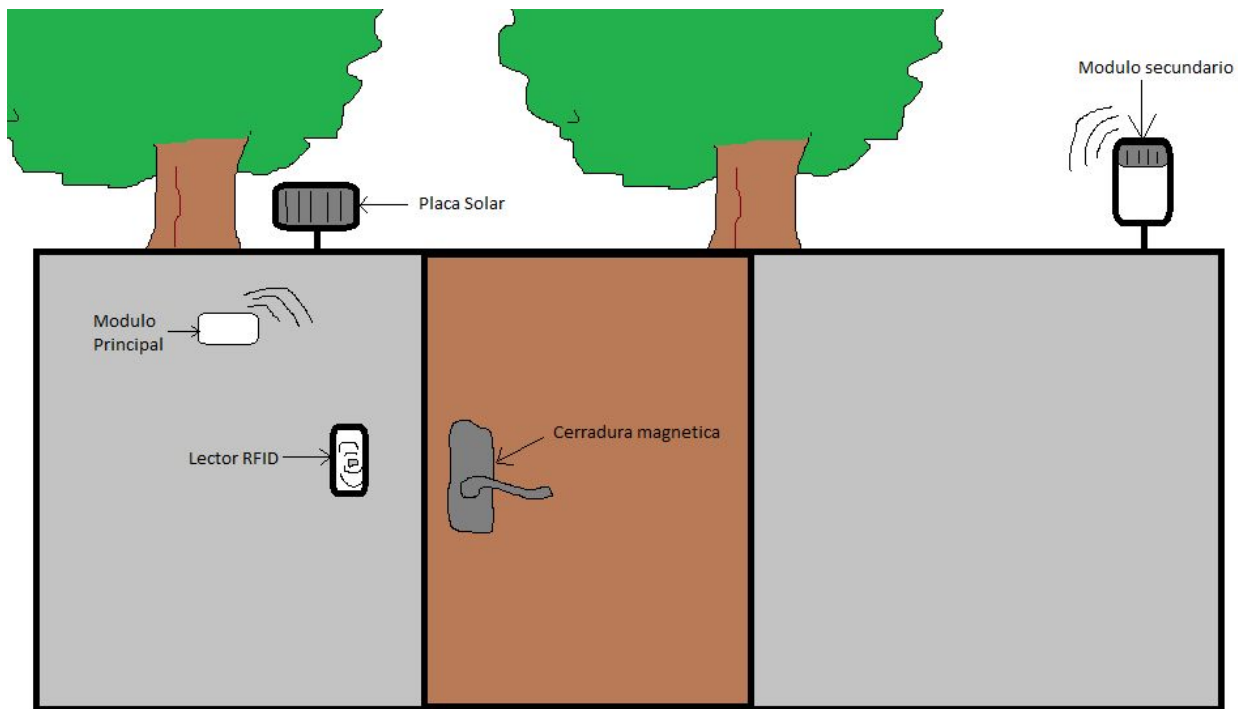
## Módulo central

Módulo central controlado por un arduino mega

## Modulos secundarios

Módulos secundarios escalables, con sensores de movimiento

# Esquema



## Componentes



RFID RC522

**2.5 – 3.3 V**

**13–26 mA**

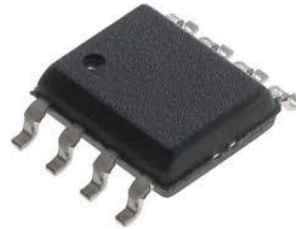
**40 x 60 mm**

**19g**

Protocolo SPI

Rango efectivo: 5cm

Canal de interrupciones



ECS-RTC-SOP8

**1.1 – 5.5 V**

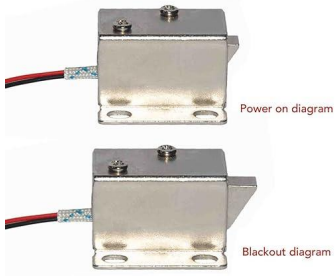
**0.6  $\mu$ A**

**4.9 × 6.0mm**

**2g**

Protocolo I2C

## Componentes



Cerradura  
electromagnética

**6 V**  
**2 A**  
**27 x 28 x 17,5 mm**  
**142g**



Sensor AM312

**3.3–6 V**  
**15  $\mu$ A**  
**10 X 19 mm**  
**4g**  
Angulo: 100°  
Distancia: 3–5 m

## Componentes



Panel Solar

**5 V**  
**200 mA**  
**100 x 70mm**  
**116g**

Condiciones de luminosidad:  
1000W/m<sup>2</sup>, 25°C



Sensor MCP970X

**2.3–5.5 V**  
**15 uA**  
**2 X 2.1 mm**  
**1g**

Rango: -40°C a 150°C

## Componentes



Bateria

**7.4V**  
**4000 mAh**  
**18 x 10 x 3 cm**  
**117g**

Dura mas de 5 dias



Arduino Mega

**7-12 V**  
**65-74 mA**  
**101.5 X 53.3 mm**  
**37g**



## Componentes



Dongle

**1.7 – 5.5V**  
**3.5 $\mu$ A**  
**50 x 14 mm**  
**12.5g**



Kit de desarrollo multiprotocolo

**3.3V**  
**23.88 mA**  
**74.3 X 53.3 mm**  
**21g**

## Componentes



**3.7V**

**3300 mAh**

**5,75 x 7,8 x 0,69 cm**

**55g**

Batería pequeña

## Coste

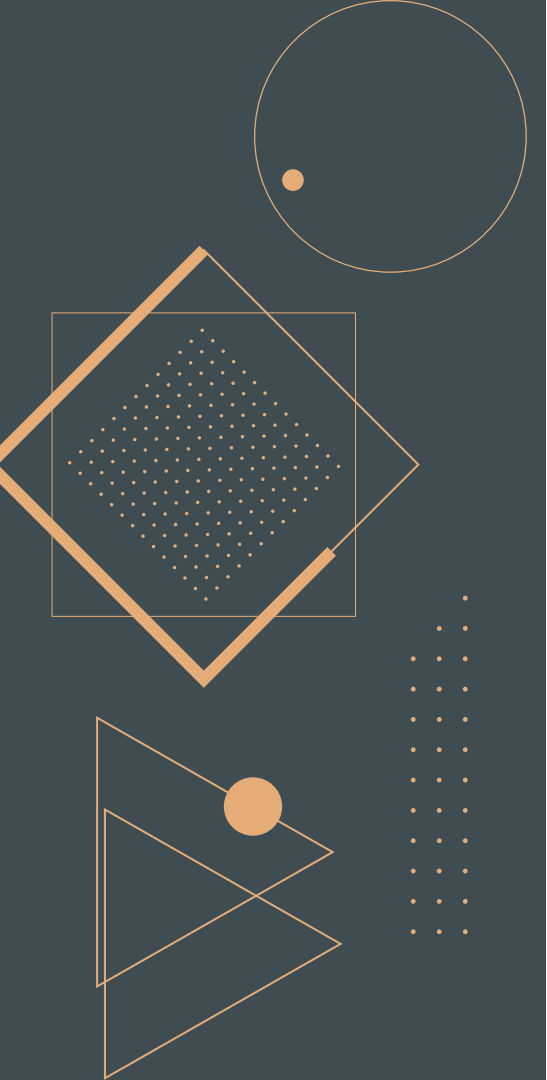
Modulo central	Precio
RFID RC522	1.81€
ECS-RTC-SOP8	0.88€
Cerradura	9.02€
Panel Solar	3.99€
Sensor MCP970	0.61€
Bateria	35.91€
Arduino	42.00€
Total	94.22€

Modulos secundarios	Precio
Placa Solar	3.99€
Bateria	18,99€
Sensor AM312	1.45€
Comunicacion	18.14€
Total	42.57€



# 136.79€

Coste total del proyecto



## ..... Distribuidores .....



AliExpress



Mouser



Amazon



ElectroComponentes



Farnell



Arduino

# Distribuidores

RFID

[https://es.aliexpress.com/item/1005005773837327.html?src=google&aff\\_fcid=d30f976593a84984b988bbfdbb2a721c-1694541208609-09262-UneMJZVf&aff\\_fsk=UneMJZVf&aff\\_platform=aaf&sk=UneMJZVf&aff\\_trace\\_key=d30f976593a84984b988bbfdbb2a721c-1694541208609-09262-UneMJZVf&terminal\\_id=b97007067b044ee884b09d13443ae7bf&afSmartRedirect=y](https://es.aliexpress.com/item/1005005773837327.html?src=google&aff_fcid=d30f976593a84984b988bbfdbb2a721c-1694541208609-09262-UneMJZVf&aff_fsk=UneMJZVf&aff_platform=aaf&sk=UneMJZVf&aff_trace_key=d30f976593a84984b988bbfdbb2a721c-1694541208609-09262-UneMJZVf&terminal_id=b97007067b044ee884b09d13443ae7bf&afSmartRedirect=y)

Real Time Clock

<https://www.mouser.es/ProductDetail/ECS/ECS-RTC-SOP8-5101A-TR?qs=tlSG%2FOW5FFhRwp8GI7vMLg%3D%3D>

Cerradura Magnética

<https://www.amazon.es/Cerradura-Electromagn%C3%A9tico-Estabilidad-Antipalanca-Electromagn%C3%A9tica/dp/B0C6MCLN5Q?th=1>

Sensor PIR

[https://es.aliexpress.com/item/1005005118306641.html?src=google&aff\\_fcid=e71a3923d06846eaa010149c542711cd-1694539457773-03304-UneMJZVf&aff\\_fsk=UneMJZVf&aff\\_platform=aaf&sk=UneMJZVf&aff\\_trace\\_key=e71a3923d06846eaa010149c542711cd-1694539457773-03304-UneMJZVf&terminal\\_id=b97007067b044ee884b09d13443ae7bf&afSmartRedirect=y#nav-specification](https://es.aliexpress.com/item/1005005118306641.html?src=google&aff_fcid=e71a3923d06846eaa010149c542711cd-1694539457773-03304-UneMJZVf&aff_fsk=UneMJZVf&aff_platform=aaf&sk=UneMJZVf&aff_trace_key=e71a3923d06846eaa010149c542711cd-1694539457773-03304-UneMJZVf&terminal_id=b97007067b044ee884b09d13443ae7bf&afSmartRedirect=y#nav-specification)

# Distribuidores

Panel Solar <https://www.electrocomponentes.es/energias-renovables/708-panel-solar-5v-200ma-1w-135x647mm.html>

Batería

[https://www.amazon.es/Batería-4000mAh-Modelo-Control-Remoto/dp/B0CG3VF9KV/ref=sr\\_1\\_136?keywords=bateria+lip+o+2s+7.4v&qid=1694970015&sr=8-136](https://www.amazon.es/Batería-4000mAh-Modelo-Control-Remoto/dp/B0CG3VF9KV/ref=sr_1_136?keywords=bateria+lip+o+2s+7.4v&qid=1694970015&sr=8-136)

Sensor termico

<https://www.mouser.es/ProductDetail/Microchip-Technology/MCP9700BT-E-TT?qs=Y0Uzf4wQF3lsXhjo%252Bepn1A%3D%3D>

Arduino mega <https://store.arduino.cc/products/arduino-mega-2560-rev3>

Dongle <https://www.nordicsemi.com/Products/Development-hardware/nrf52840-dongle>

Kit de desarrollo multiprotocolo

<https://www.mouser.es/ProductDetail/Espressif-Systems/ESP32-H2-DevKitM-1-N4?qs=Jm2GQyTW%2FbglqmLNG8tz4A%3D%3D>

# Distribuidores

Batería Pequeña

[https://www.amazon.es/EEMB-polímero-Recargable-Conector-Certificación/dp/B09DPR4V6L/ref=sr\\_1\\_10?adgrpid=59031113914&hvadid=275313060459&hvdev=c&hvlocphy=9181141&hvnetw=g&hvqmt=e&hvrnd=6662502364276766378&hvtargetid=kwd-313062600456&hydadcr=11858\\_1842850&keywords=batería+lítio+5v&qid=1695073687&sr=8-10](https://www.amazon.es/EEMB-polímero-Recargable-Conector-Certificación/dp/B09DPR4V6L/ref=sr_1_10?adgrpid=59031113914&hvadid=275313060459&hvdev=c&hvlocphy=9181141&hvnetw=g&hvqmt=e&hvrnd=6662502364276766378&hvtargetid=kwd-313062600456&hydadcr=11858_1842850&keywords=batería+lítio+5v&qid=1695073687&sr=8-10)



A vertical orange sidebar on the left side of the slide. It contains several geometric elements: a large circle with a small dark dot inside, a square with a diagonal line and a dotted pattern, a thick dark diagonal line, a small dark circle, and a series of dots arranged in a grid.

**Gracias**

A vertical orange sidebar on the right side of the slide. It contains several geometric elements: a large circle with a dotted pattern inside, a hexagon with a dotted pattern inside, a small dark circle, a series of dots arranged in a grid, a small circle with a dark dot inside, and a hexagon with a dark fill.