IoT-02 Board
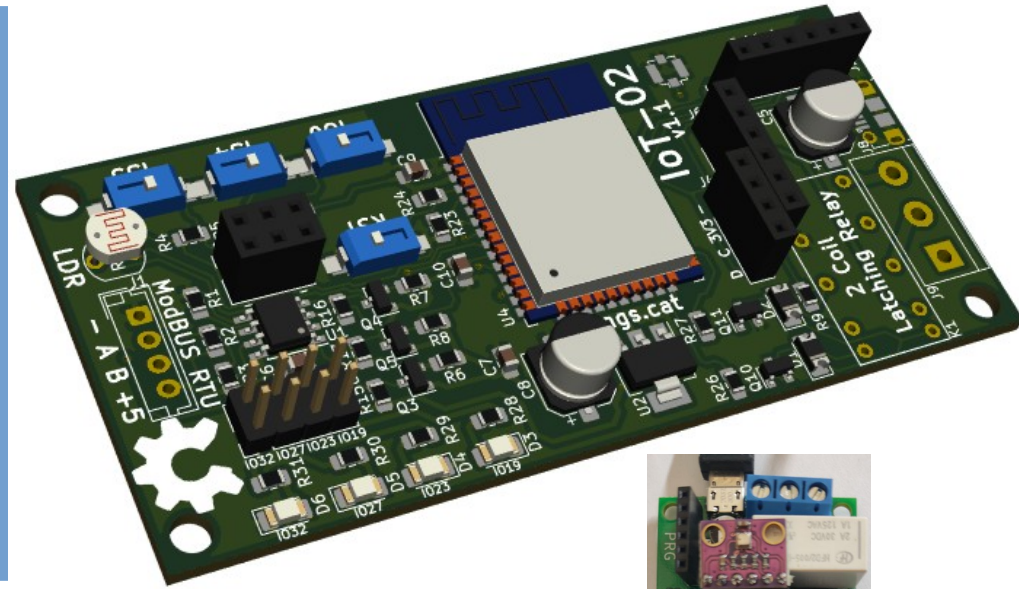

Introduction
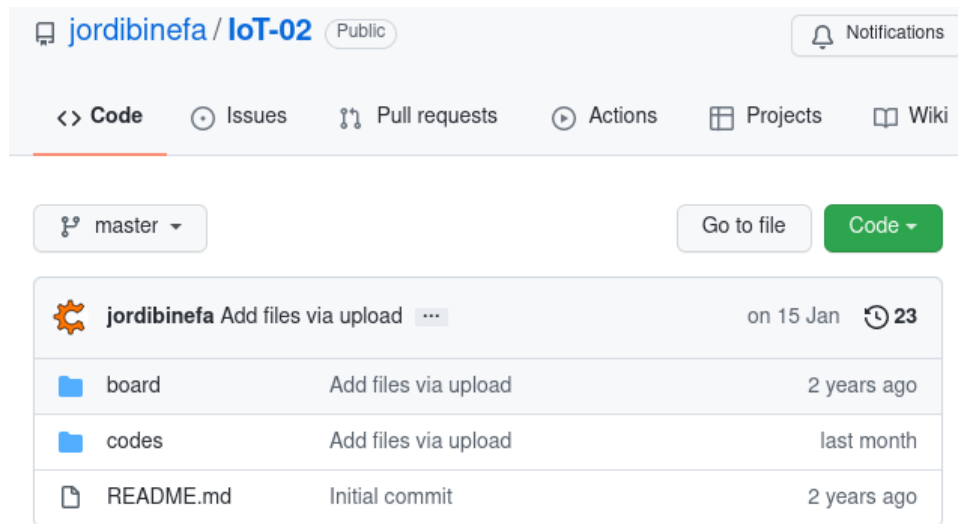
IoT-02 Board

- Project repository

- Electronic schematic

- Key components

- Arduino IDE settings

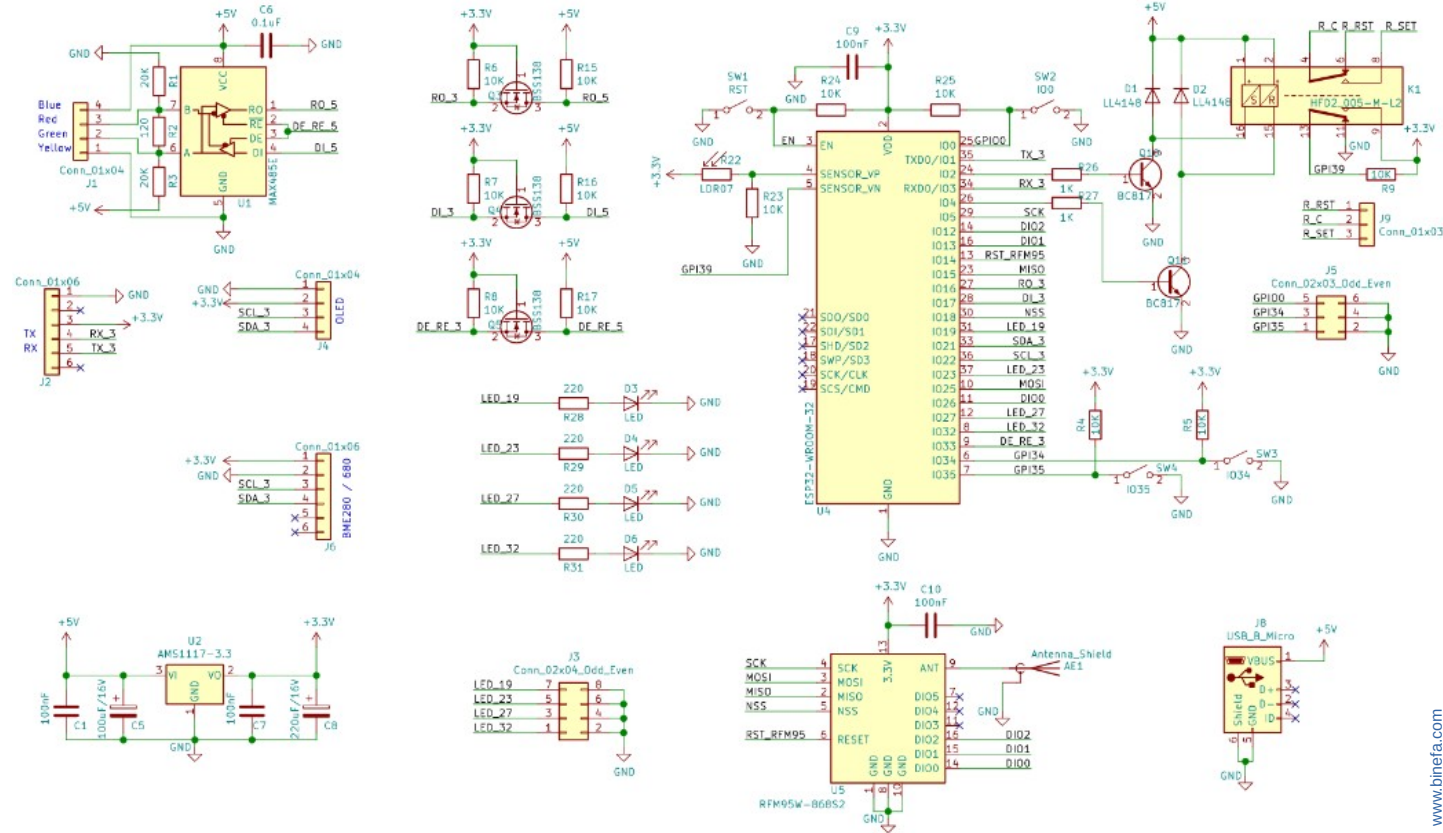- Firmware programming
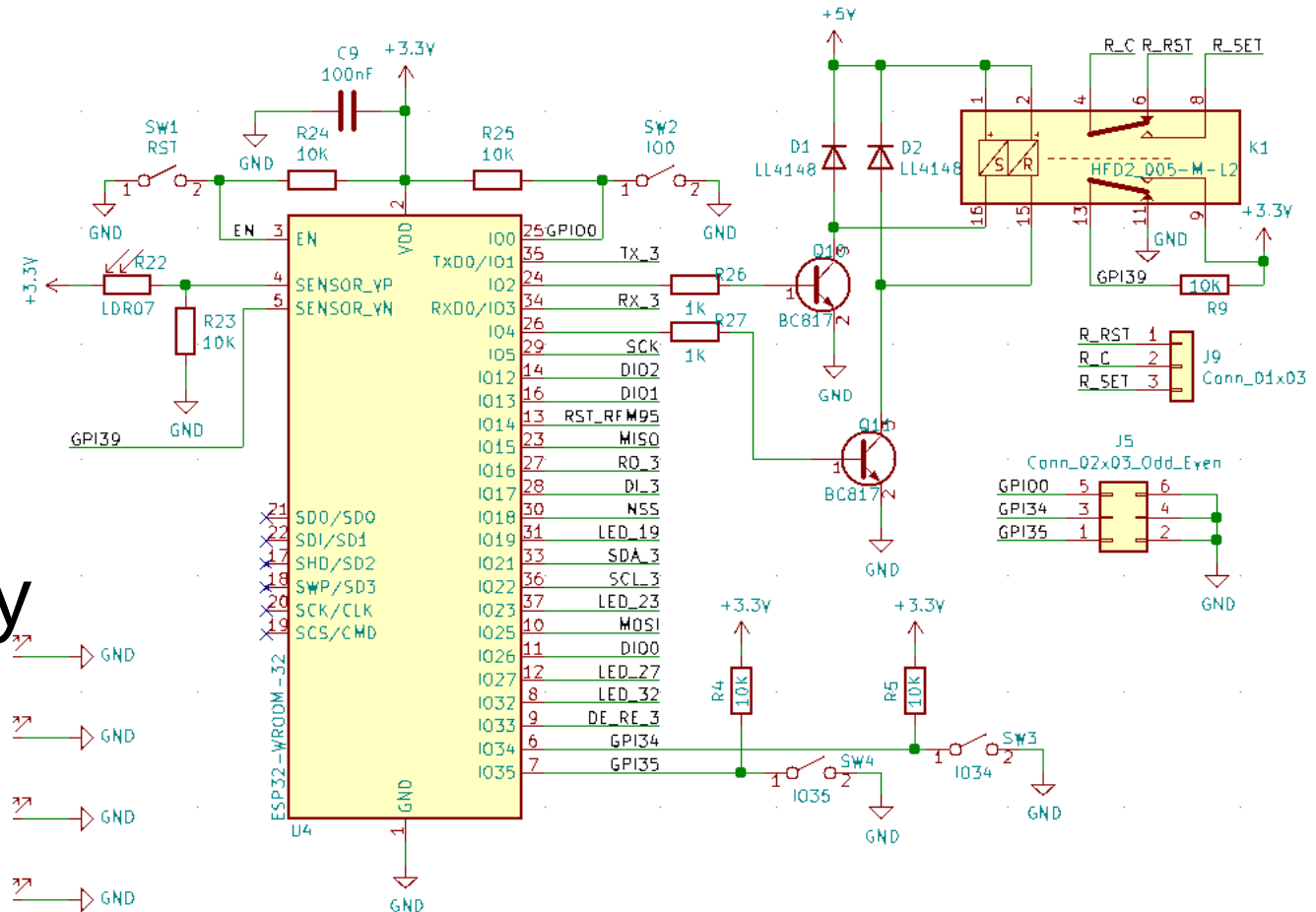
IoT-02 Board

- Project repository:
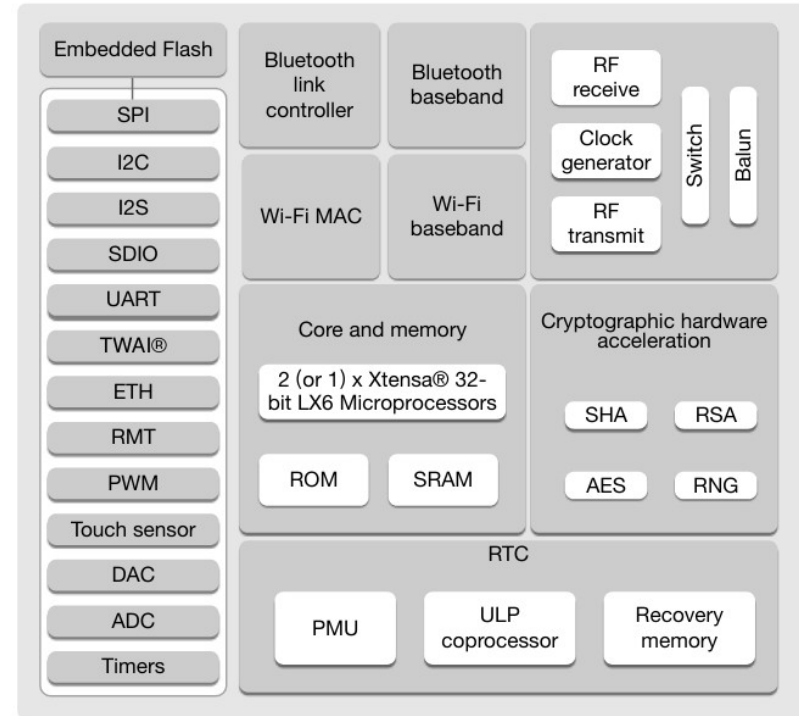 https://github.com/jordibinefa/IoT-02

IoT-02 Board

- Schematic

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IoT-02 Board

- CPU (ESP32)
- LDR
- Buttons
- Latching Relay

IoT-02 Board

- CPU (ESP32)

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IoT-02 Board

Latching Relay

HFD2   **SUBMINIATURE DIP RELAY**

Features

- High sensitive: 150mW
- Matching standard16 pin IC socket
- High switching capacity 60W/125VA
- Bifurcated contacts
- Epoxy sealed for automatic wave soldering and cleaning
- Single side stable and latching type available
- Environmental friendly product available (RoHS compliant)
- Outline Dimensions: 20.2 x 10.0 x 10.6 mm

c ⚡ US
File No.:E133481

CONTACT DATA

|	
Contact arrangement	2C
Initial contact resistance	50mΩ
Contact material	see ordering info.
Contact rating (Res. load)	2A 30VDC / 1A 125VAC
Max. switching power	60W / 125VA
Max. switching voltage	220VDC / 250VAC
Max. switching current	2A
Min. applicable load	10mV 10µA
Electrical life	1×10^5 OPS (at 2A 30VDC) / 5×10^5 OPS (at 1A 30VDC)
Mechanical life	1×10^8 OPS

CHARACTERISTICS

Initial insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Contacts to coil	1coil: 1500VAC 1min. / 2coil: 1000VAC 1min.
	Contacts to contact	1000VAC 1min.
Operate time (at nomi. volt.)		Max. 4ms
Release time (at nomi. volt.)		Max. 3ms
Set time (latching)		3ms
Reset time (latching)		3ms
Bounce time		1.5ms
Ambient temperature		-40 ˚C to +85 ˚C
Humidity		5 to 85% RH
Vibration resistance		10 to 55Hz 196m/s² (20g)
Shock resistance	Functional	490m/s² (50g)
	Destructive	980m/s² (100g)
Capacitance	Contact to contact	2.0pF
	Contact set to contact	1.5pF
	Contact to coil	5.0pF
Termination		PCB (DIP)
Unit weight		4.5g
Construction		Sealed IP67

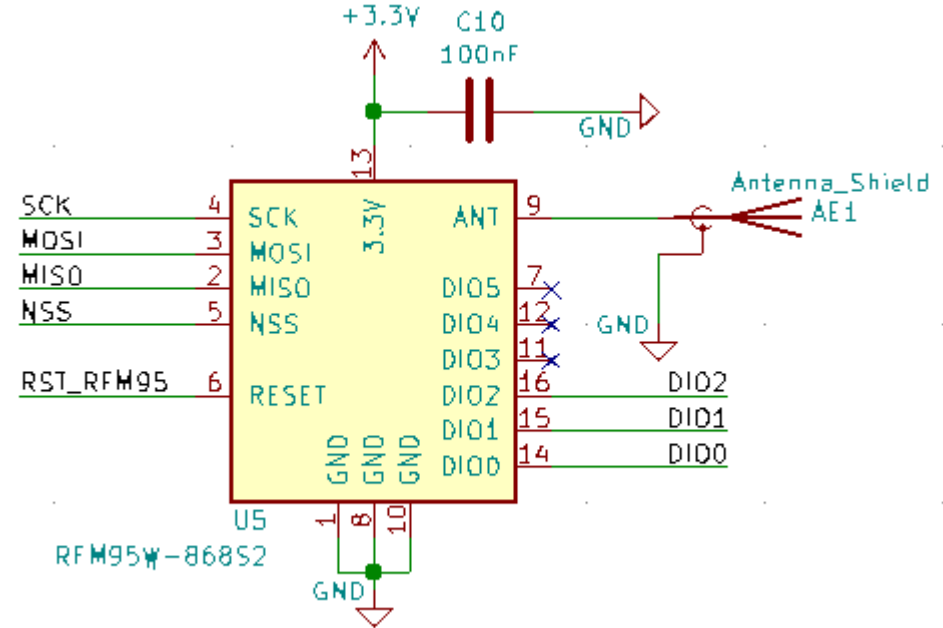www.binefa.com

IoT-02 Board

- ModBus
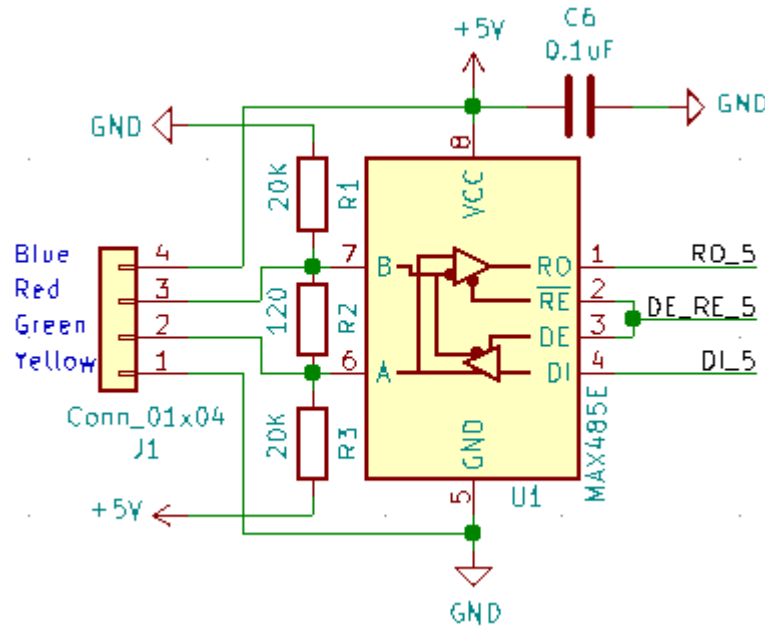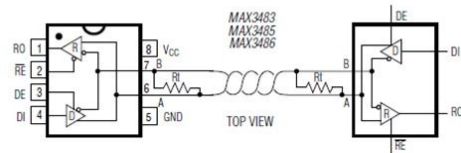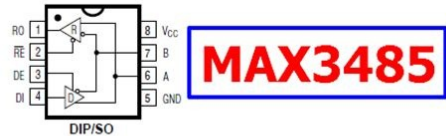
USB to RS485 Converter:
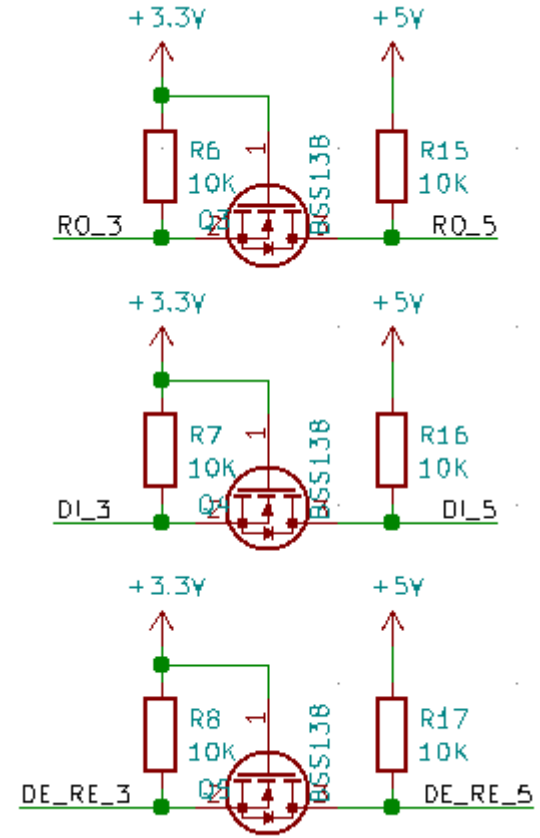
ProSoft Technology video explaining ModBus RTU and ModBus TCP
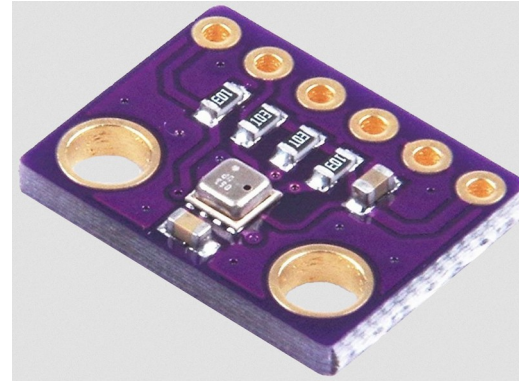
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IoT-02 Board

- LoRa Module (SPI)

SPI bus explanation

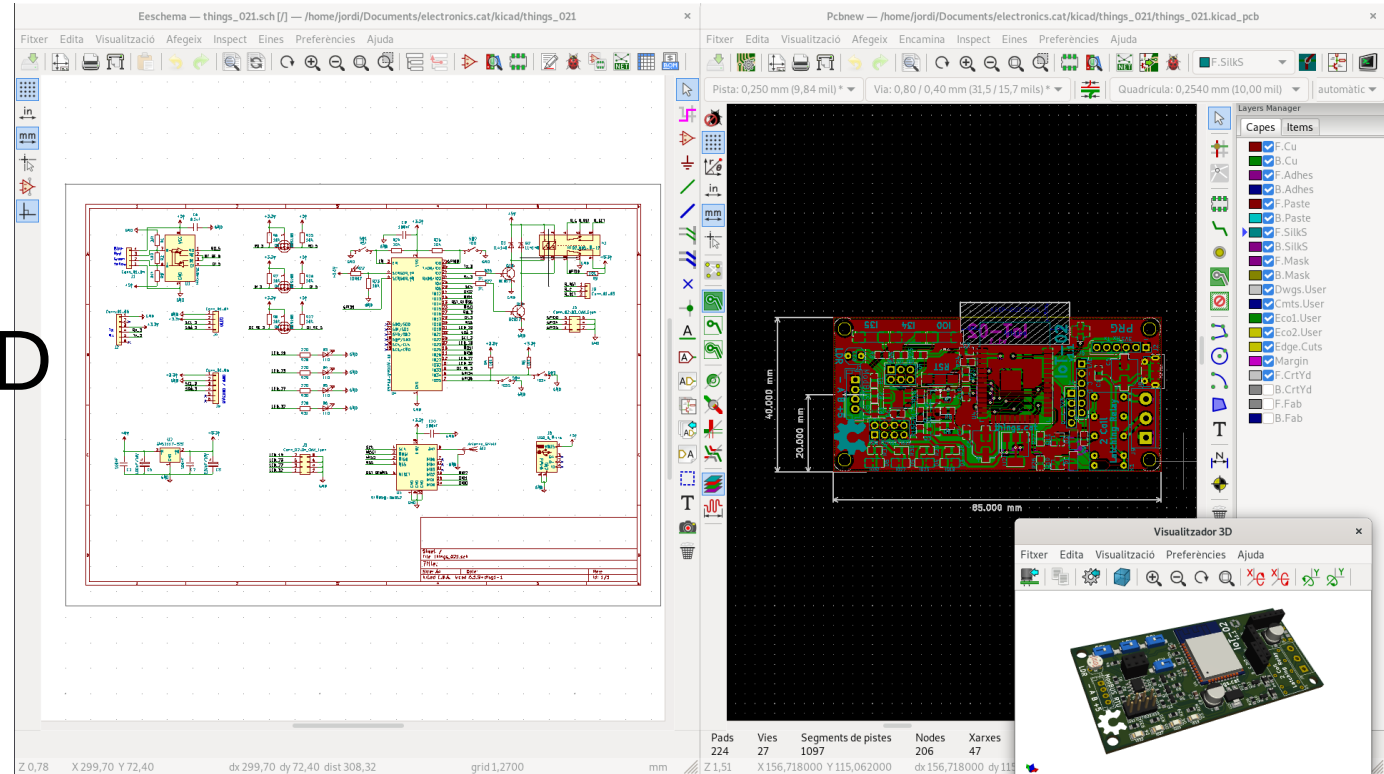www.binefa.com

IoT-02 Board

- I2C (BME280)

- I2C (OLED 0.96")
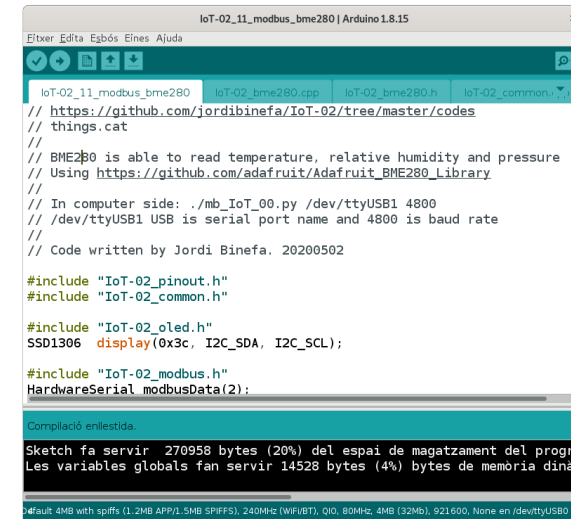

I2C bus explanation

IoT-02 Board

- Made with KiCAD

IoT-02 Board

Programmable with

- Arduino IDE

- Platform IO

IoT-02 Board

Installing ESP32 Add-on in Arduino IDE

- In your Arduino IDE, go to *File / Preferences*. Enter the following into the *Additional Board Manager URLs* :

  https://dl.espressif.com/dl/package_esp32_index.json

- Open the Boards Manager. Go to *Tools / Board: "..." / Boards Manager ...* Search for **ESP32** and press install button for the *ESP32 by Espressif Systems* . Approximately 300MB are automatically downloaded.

- Once it is installed, close the board installation popup. Select *Tools / Board: "..." / ESP32 Dev Module*. Select the Port at *Tools / Port / /dev/ttyUSB0* (in Windows the port is *COMx*)

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IoT-02 Board

Arduino IDE libraries (493MB)

- These libraries are for compiling code examples

Download all GitHub codes and Arduino IDE libraries on your computer. Libraries must be placed in the *libraries* directory inside *Arduino* folder (*/home/user* in GNU / Linux and *My Documents* in Windows)

IoT-02 Board

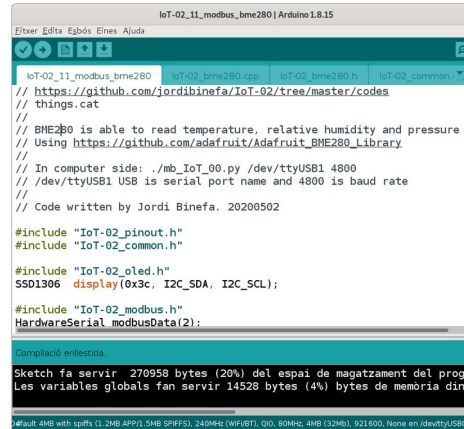**Sequence to select programming mode on IoT-02 board:**

- Press the red button (***RST***)

- Press the ***IO0*** white button

- Stop pressing the red button (***RST***)

- Stop pressing the ***IO0*** white button

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IoT-02 Board

Uploading example firmware

From Arduino IDE, open
IoT-02_07_SSD1306_BME280.ino file,
previously downloaded with other example
codes.

Set IoT-02 board in programming mode,
connect the red board, and upload the
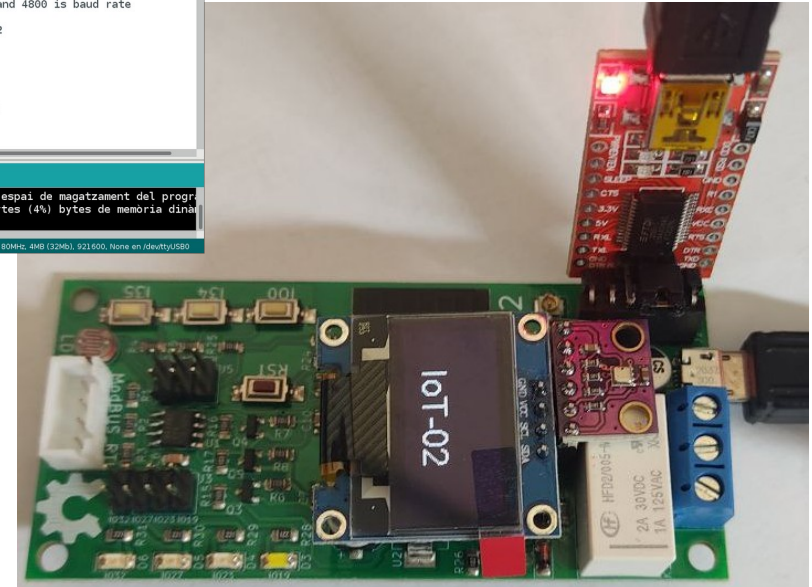firmware by pressing the round button with
right pointing arrow (   )

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IoT-02 Board

Physical connection with other devices
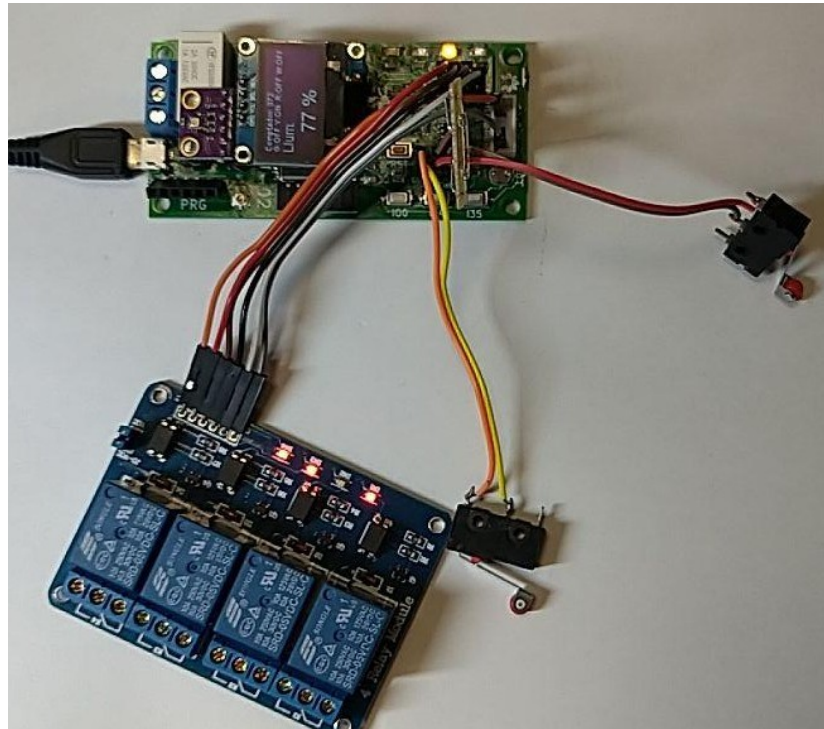
IoT-02 Board

Practical Demonstration

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IoT-02 Board

Question Time

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