ESP32

Agenda

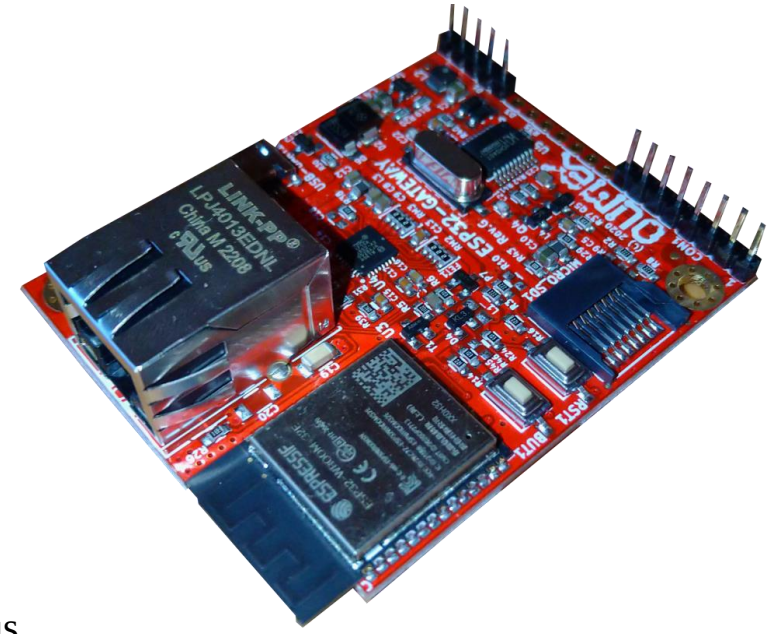
- Overview of ESP32 Hardware
- ESP32 Evaluation Board Overview
- Wireless connectivity and Additional Features + RS485
- Reason for ESP32 and Conclusion

Overview of ESPHome

- The ESP32 is a versatile microcontroller developed by Espressif Systems.
- Known for its powerful capabilities, including a dual-core Tensilica LX6 microprocessor.

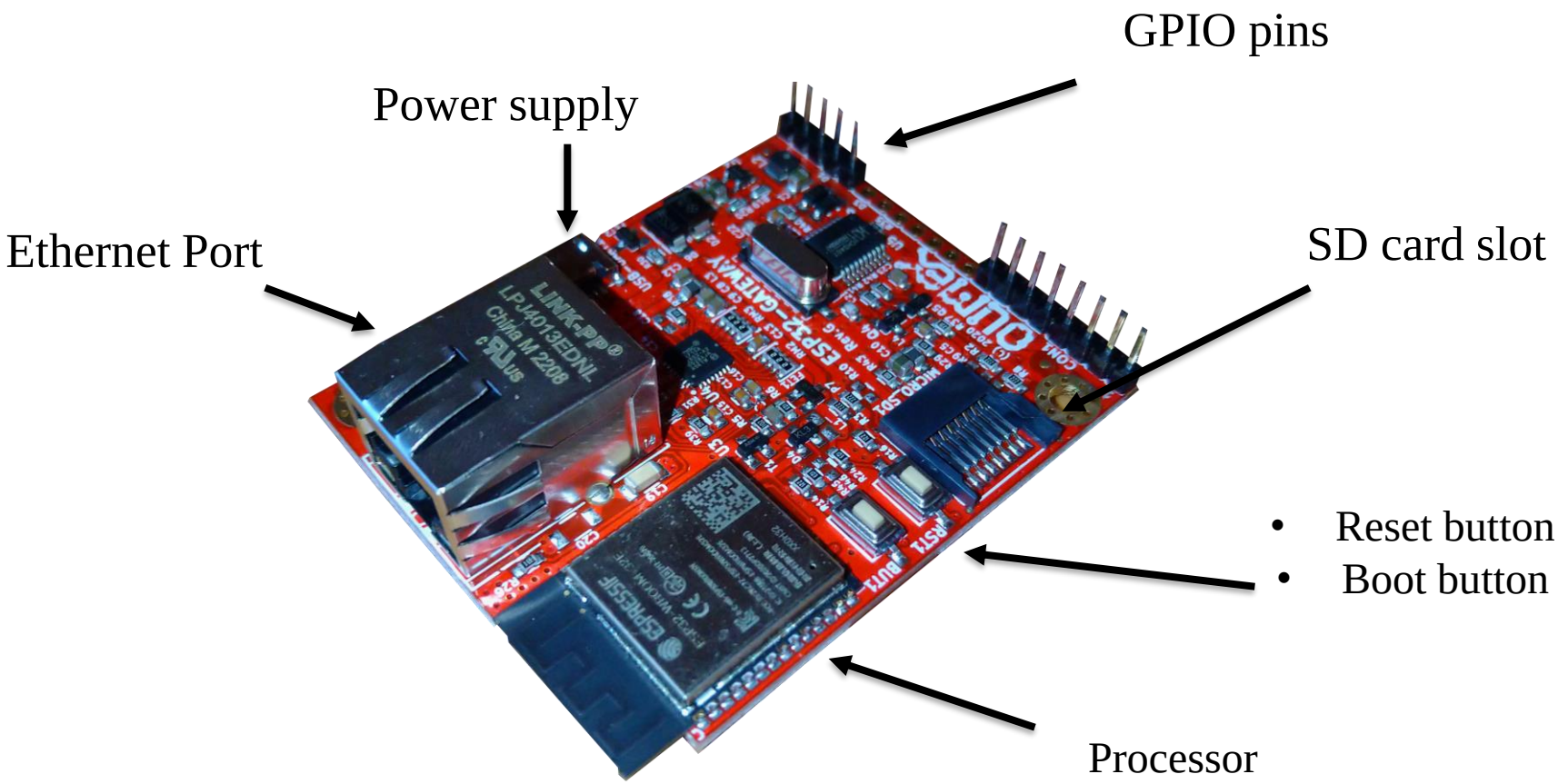
Features :

- **Dual-Core Processing:** ESP32 features a dual-core architecture, allowing for parallel processing and improved performance.
- **Wireless Connectivity:** Built-in Wi-Fi and Bluetooth capabilities enable seamless communication and data exchange.
- **GPIO Pins:** The ESP32 is equipped with a generous number of GPIO pins, providing flexibility for interfacing with various devices and peripherals.
- **Integrated Peripherals:** It includes several integrated peripherals such as SPI, I2C, UART, and more, enhancing its compatibility with a wide range of sensors and actuators.



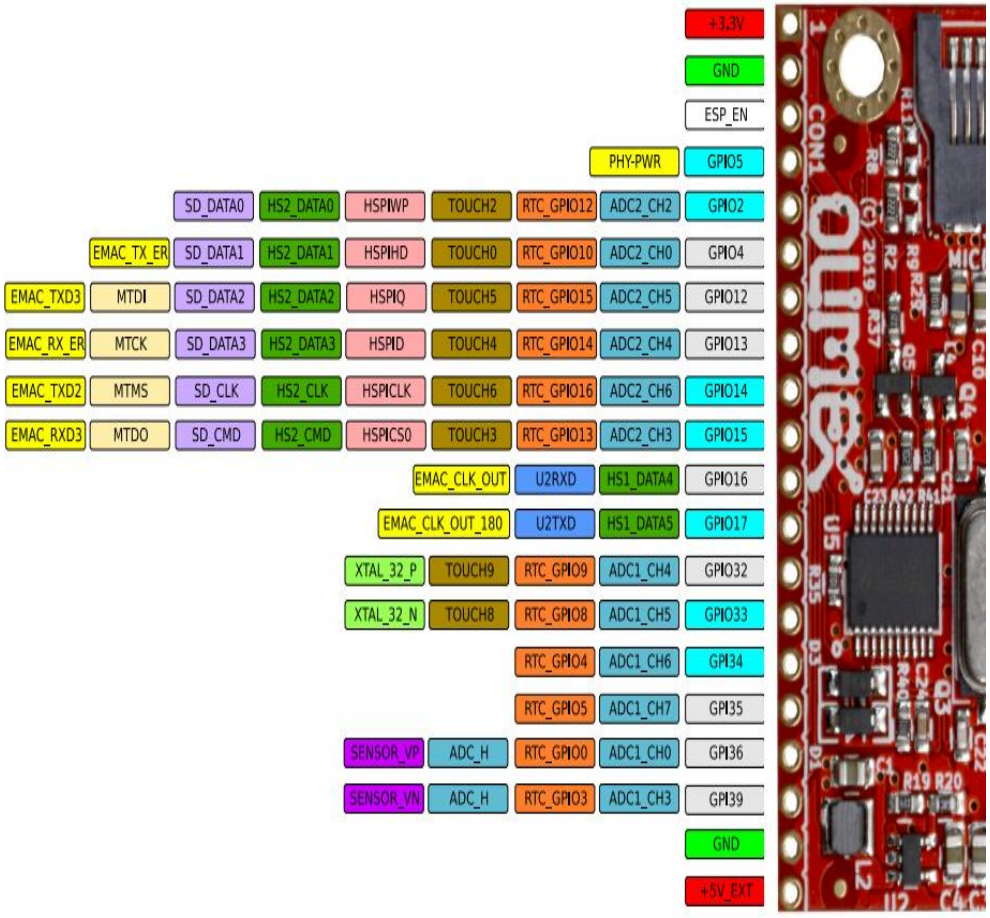
1. ESP32 Hardware

ESP32 Board

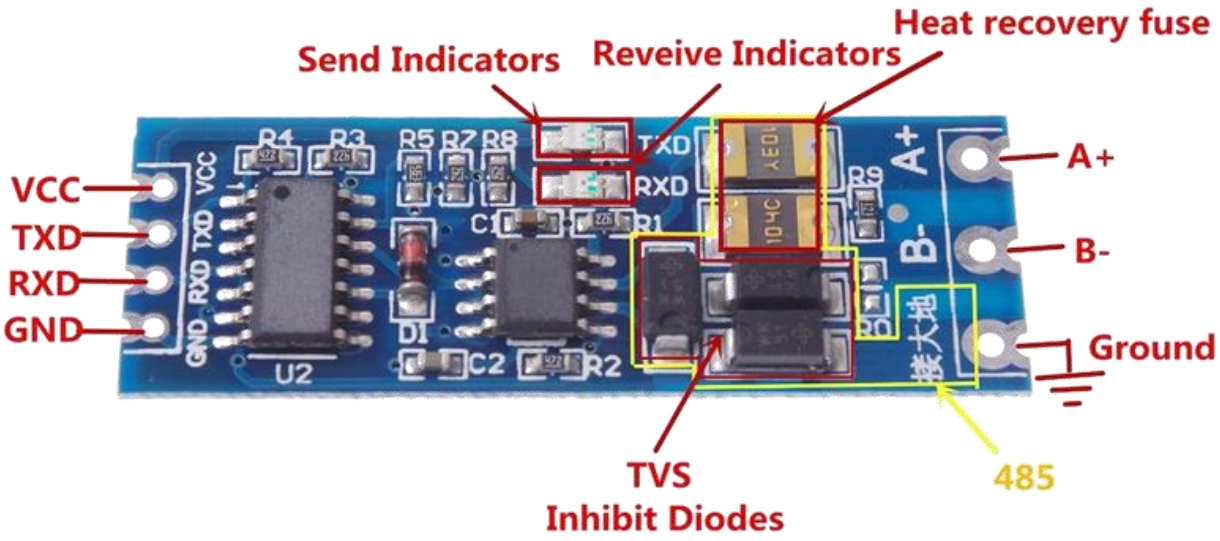

GPIO pins
Power supply
Ethernet Port
SD card slot
• Reset button
• Boot button
Processor

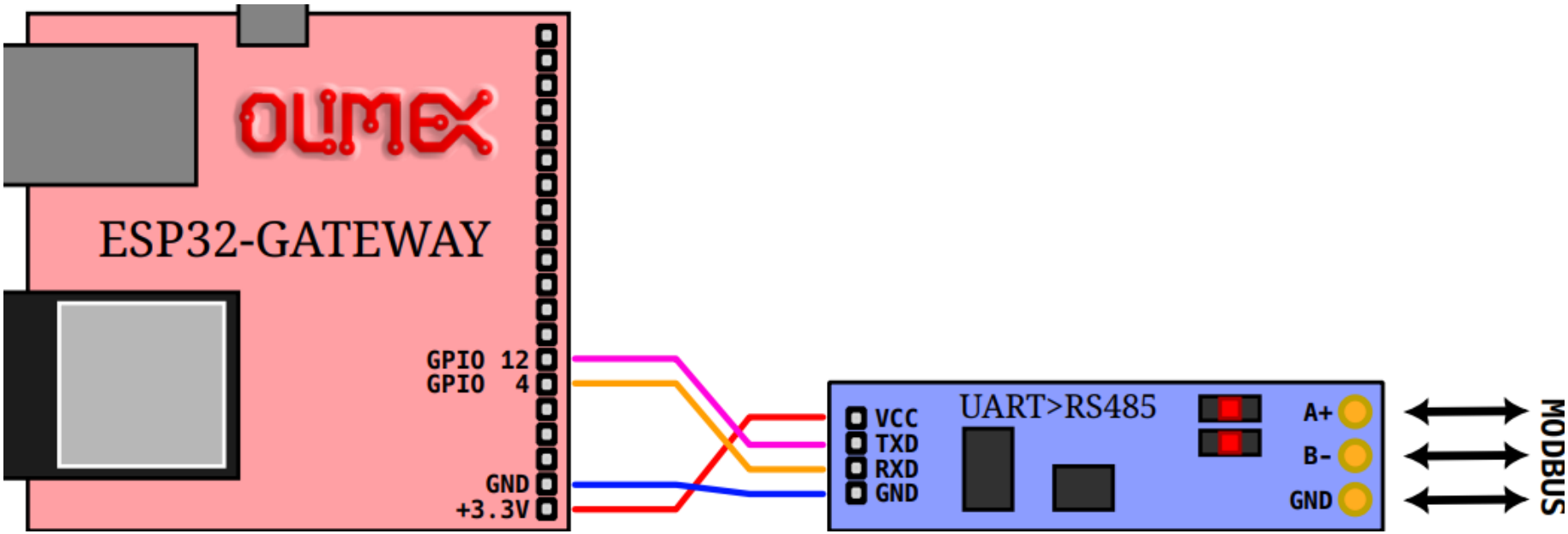
Wireless connectivity and GPIO pins

- Clock frequency range (e.g., 80 MHz to 240 MHz).
- Memory details: SRAM, Flash memory
- Integrated 802.11 b/g/n Wi-Fi transceiver.
- Support for WPA/WPA2/WPA3 security protocols.
- Integrated Bluetooth v4.2 and BLE capabilities.
- Support for I2C, SPI, and UART.
- Upto 18, 12-bit ADC
- Two 8-bit DCA



RS485


Send Indicators
Reveive Indicators
Heat recovery fuse
VCC
TXD
RXD
GND
A+
B-
Ground
TVS
Inhibit Diodes
485
R4
R3
R5
R7
R8
TXD
RXD
C1
R1
R9
D1
C2
R2
U2


OLIMEX
ESP32-GATEWAY
GPIO 12
GPIO 4
GND
+3.3V
VCC
TXD
RXD
GND
UART>RS485
A+
B-
GND
MODBUS

Reasons to Use ESP32

- **Dual-Core Processor**
- **Wireless Connectivity**
- **Abundance of GPIO Pins**
- **Low Power Modes**
- **Affordability**
- **Arduino Compatibility**