

STEMinds

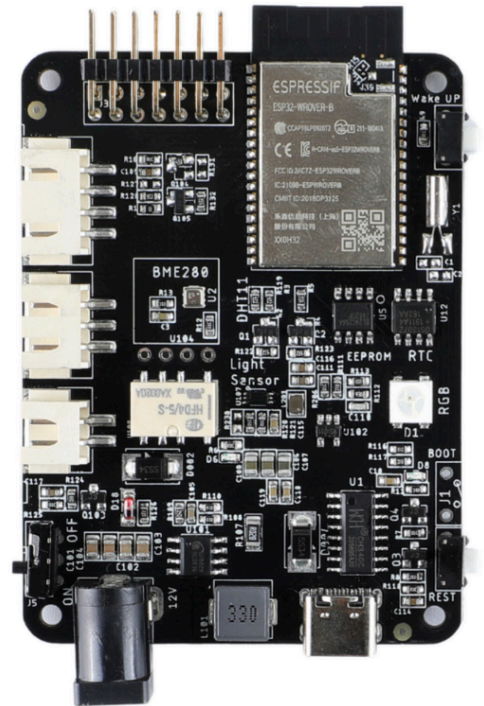
Eduponics Mini V1.0 ESP32 development board Data-sheet

Eduponics Mini V1.0

The STEMinds Eduponics Mini kit is ESP32 based development board designed for learning the subjects of IoT and smart agriculture. The board includes many built-in sensor and support both C programming language in Arduino IDE environment and MicroPython in Thonny IDE.

Features

- * Based on the ESP32-WROOVER Micro-controller
- * Pre-loaded with MicroPython software
- * USB Type-C programming interface (CH340 chip), 12V DC power interface
- * On/Off switch
- * Reset button
- * Wake-up button (useful for deep-sleep functionality)
- * RTC DS1307 Module
- * HFD4/5S relay
- * 4P XH2.54 interface for water quantity sensor
- * 3P XH2.54 interface for soil moisture sensor
- * 2P XH2.54 interface for pump
- * WS2812 RGB LED
- * BH1750 I2C Light sensor
- * BME280 Temperature, humidity and barometric pressure sensor
- * Extension for DHT11/DHT22 (sensor not included)
- * AT24C02 I2C EEPROM
- * IO Extension pins, 12V, 5V and 3.3V output.



Eduponics Mini Kit

The Eduponics Mini can be purchased as standalone board or part of a kit, for the kit it will include the following extra components:

- * x1 Eduponics Mini ESP32 development board
- * 12V2A DC American Power supply
- * USB Type-C USB data cable
- * 12V submersible water pump
- * STEMinds soil moisture sensor (either long or short, based on the purchase)
- * Contact-less waterproof water quantity sensor + 2 sided stickers
- * Irrigation water hose

Useful applications

- * Smart watering solutions
- * IoT weather station and environmental control
- * Green house controller for mushrooms, flowers and all kind of plants
- * Smart irrigation system
- * Accurate data collection for data scientific and environmental analysis
- * Educational purposes and real life applications

Support & Documentation

STEMinds offers complete support and documentation, the documentation is officially available at wiki.steminds.com and the software is open source and available at the official STEMinds GitHub repository: <https://github.com/steminds/eduponics-mini>

Hardware pinout

| Sensor name | VCC | I/O | IO Pin |
|--------------------------|---------------------|----------|--------------------|
| BME280 | 3.3V VCC | I2C 0x76 | SCL IO23, SDA IO26 |
| DHT11 | 3.3V VCC | Output | IO19 |
| DS1307 RTC | 5V VCC | I2C 0x68 | SCL IO23, SDA IO26 |
| WS2812 RGB | 5V VCC | Output | IO13 |
| BH1750 Photo-diode | 3.3V VCC | I2C 0x5C | SCL IO23, SDA IO26 |
| AT24C02 EEPROM | 5V | I2C 0x50 | SCL IO23, SDA IO26 |
| Wakeup button | 3.3V VCC | Input | IO36 |
| Soil Moisture 3P XH2.54 | 5V VCC | Input | IO35 |
| Relay pump 2P XH2.54 | 5V VCC (output 12V) | Output | IO23 |
| Water quantity 4P XH2.54 | 5V VCC | Input | IO21 |

Schematic

For the complete schematic at high resolution, please refer to our GitHub repository:

https://github.com/STEMinds/Eduponics-Mini/raw/main/hardware/Eduponics_Mini_V1.0_schematic.pdf

