

Datasheet Jolly Module



Jolly is a new electronic module for makers and Arduino UNO lovers. This Arduino Uno-compatible module has integrated Wi-Fi, to infinitely extend the potential of your projects into the new world of IoT. Thanks to the addition of the Wi-Fi interface, the functionality of the Arduino UNO can finally be extended, turning it into an IoT device. To date, all the projects previously made for the board are mutually compatible with this module.

Board Design

The Jolly module takes the place of the **ATMega328P** of the Arduino UNO, replaced with its newer SMD version called **ATMega328PB**. This microcontroller allows us to preserve the full compatibility of the pinout, firmware and hardware architecture of its predecessor, but in a much smaller space. Therefore, an additional microcontroller was inserted to allow the addition of **Wi-Fi functionality**. The most obvious choice was to use an **ESP8285**, equivalent to the ESP8266 but with integrated 2MB flash, an essential feature to keep the board size small.

Finally, since the two microcontrollers do not operate with the same power supply domain (5V for ATMega328PB and 3.3V for ESP8285) we have also included a voltage **regulation and interfacing circuit** between the two chips.

In this way, the board can be easily substituted to the **ATMega328P** without any kind of circuit modification to the Arduino UNO, **ensuring an automatic compatibility with all projects made so far for the Arduino UNO**.

The board is finally equipped with a **BUILTIN LED** and an **integrated Antenna**.

The two microcontrollers are connected to each other through two digital interfaces: one **SPI** and one **UART**. In particular, the SPI interface - which is the same exposed on the pinout of the module - is used for data exchange, while the UART, is the exclusive prerogative of programming, both for the ATMega328PB and the ESP8285.

The serial interface of the latter is active only during the programming phase so as not to interfere with the normal operation of the serial ATMega328PB. The programming of the Wi-Fi chip is possible thanks to the presence of a **boot key** for the latter and a special **firmware** in the ATMega328PB.

The single-sided assembly of the components, together with the presence of castellated holes, make this board perfect both for use on Arduino UNO to replace the ATmega328P, and to be soldered on other boards as a stand-alone module. An **Arduino platform** was developed-dedicated to the programming of the board that allows the firmware of both microcontrollers to be updated, by using the IDE.

Characteristics

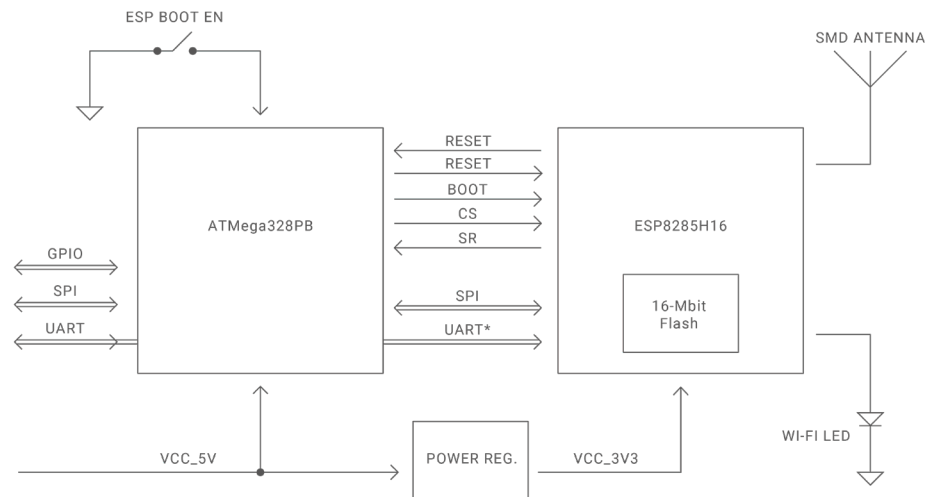
Microchip ATmega328PB

Espressif ESP8285H16

2MB integrated flash

Communication Interface: SPI + UART*

*(used exclusively for ESP8285 programming)



* The UART communication channel is shared with the 328. In case of simultaneous communication the 328 has priority and you will see only its messages.