

# IoT Module Le-ESP32-Board



- For IoT application development, simple WEB server, TCP/IP station
- Powerful and compact control system based on Espressif's ESP32 32-bit microcontroller
- 160 MHz 32-bit dual core CPU, 520 KB RAM, 4 MB Flash
- Digital and analog inputs and outputs
- 3.5" color TFT touch screen 480 x 320 pixels. ILI9488 and AD7843 drivers
- Communications WIFI, Bluetooth, USB, I2C, SPI, CAN Bus
- Connector for rotary encoder or three pushbuttons
- Programming from PC via USB port
- Compatible with Espressif, Arduino, PlatformIo, etc. IDEs.
- Compatible with IoT platforms from Google and Amazon among others
- Supply voltage: 3.5V...12V DC / 100 mA

The module is based on Espressif Systems ESP32 Wi-Fi 32-bit processor, specifically it uses the ESP32-S module, with PCB antenna and coaxial connector for external antenna.

The Le-Esp32-Board module is powered by applying a voltage between 3.5V and 12V DC to connector J12, the polarity is indicated on the board. The micro USB connector is used only for programming the microcontroller.

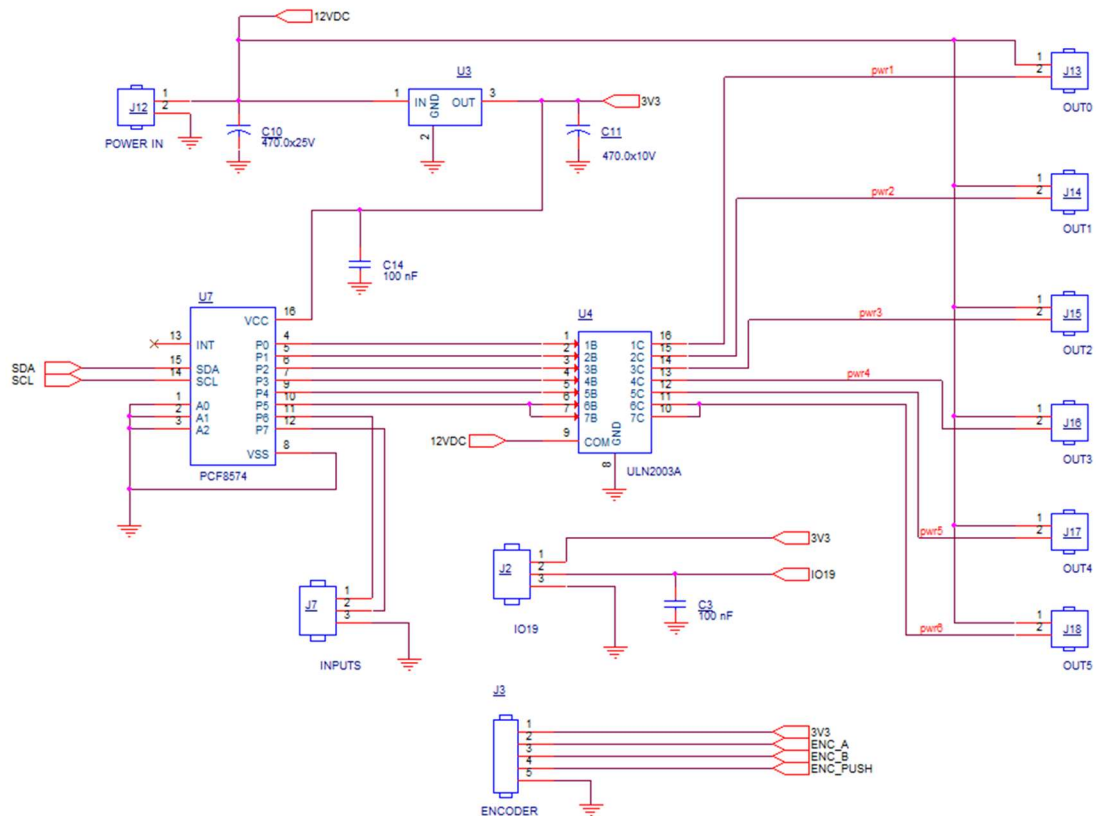


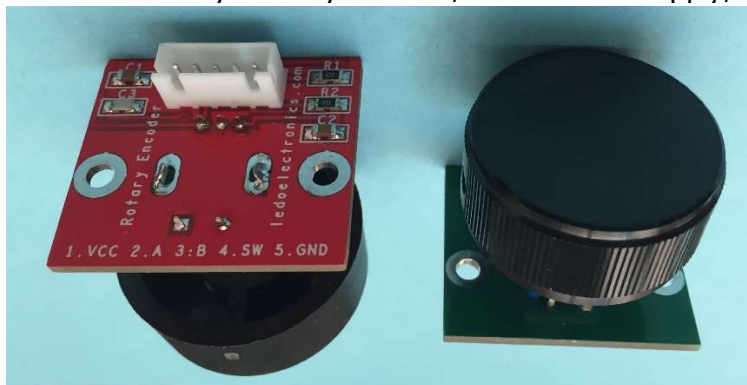
Fig.1. Power circuit and digital I/O.

Fig.1 shows the digital inputs/outputs available on the module. Many of the microcontroller pins have been used to control the various peripherals present on the board such as TFT display, touch screen, communication buses, etc. Therefore, we have added the PCF8574 expander controlled by the I2C bus.

The first six outputs of U7 are passed through the transistor array (U4), and are intended for the control of relays and solenoid valves with a nominal voltage of 12V, and a consumption of up to 500mA.

The two IOs present in connector J7 can be programmed as input or output, just like the inputs and outputs present in connectors J2 and J3.

The J3 connector is intended to be used by a rotary encoder, with its 3.3V supply, and



the A, B and Push signals.

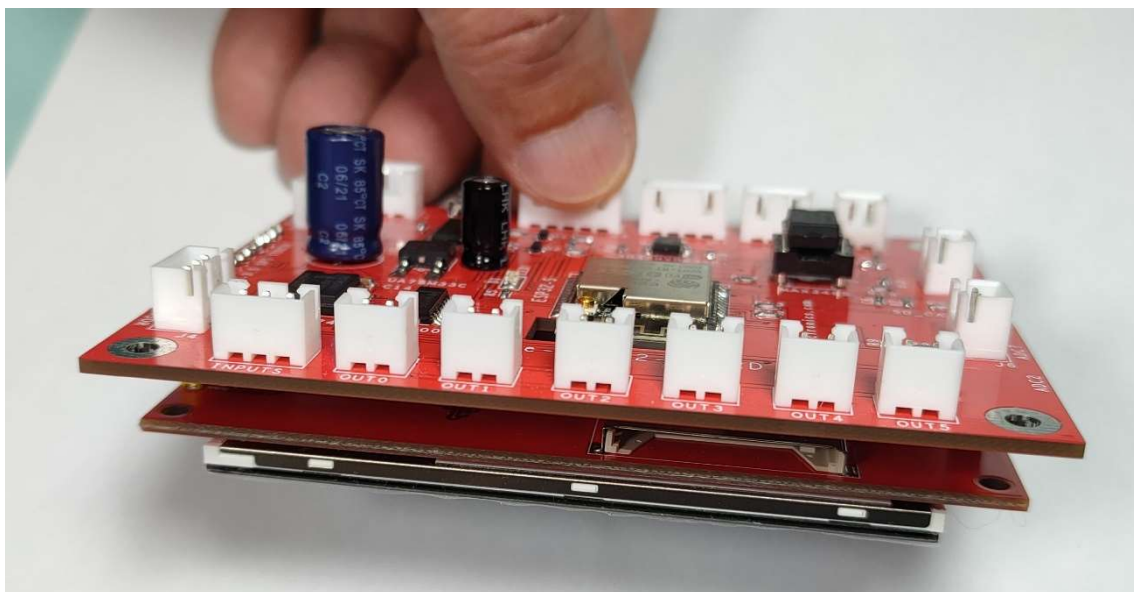
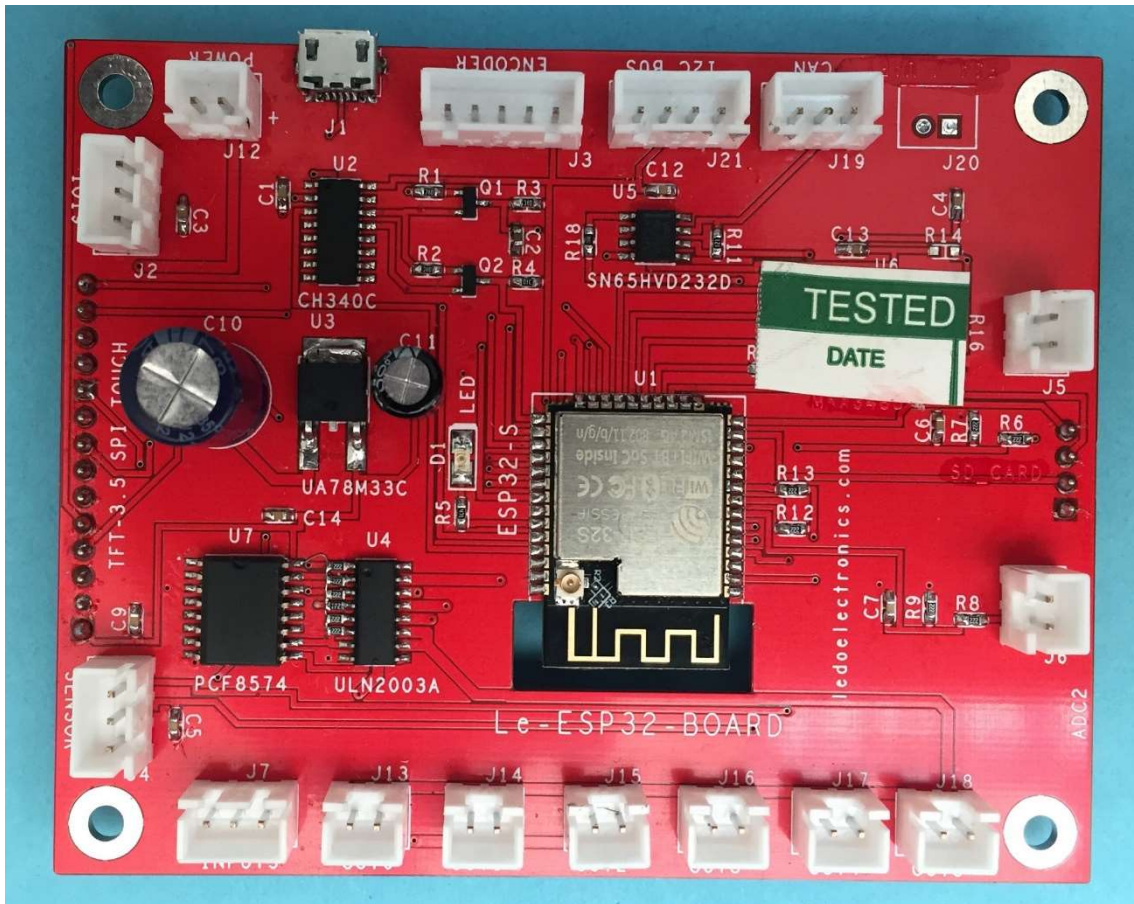


IO4	TP PEN	J8-14
IO6	UNUSED	
3V3	ENCODER PWR	J3-1
IO2	ENCODER A	J3-2
IO15	ENCODER B	J3-3
IO8	ENCODER PUSH	J3-4
GND	ENCODER GND	J3-5
3V3	POWER	J2-1
IO19	INPUT / OUTPUT	J2-2
GND	GND	J2-3
IO36 (V_P)	ENTRADA ANALOGICA	J4-1
IO39 (V_N)	ENTRADA ANALOGICA	J4-2
GND	GND	J4-3
IO34 (ADC6)	ENTRADA ANALOGICA	J5-1
GND	GND	J5-2
IO35 (ADC7)	ENTRADA ANALOGICA	J6-1
GND	GND	J6-2

Using the PCF8574 expander

<b>PCF8574 IO</b>	<b>USO</b>	<b>CONECTOR</b>
	12V DC	J13-1
P0	SALIDA RELE	J13-2
	12V DC	J14-1
P1	SALIDA RELE	J14-2
	12V DC	J15-1
P2	SALIDA RELE	J15-2
	12V DC	J16-1
P3	SALIDA RELE	J16-2
	12V DC	J17-1
P4	SALIDA RELE	J17-2
	12V DC	J18-1
P5	SALIDA RELE	J18-2
P6	INPUT / OUTPUT	J7-1
P7	INPUT / OUTPUT	J7-2
	GND	J7-3







### ***Conclusions:***

Unlike the rest of the IoT modules on the market, this one is characterized by being compact and versatile, intended to be used also in real process control equipment, it has everything necessary to adapt to a very diverse range of applications, without need to add other modules.