ESP32-based Industrial PLC

Liberalisation of Industry with Open Source Technology
**10 IOS MODULE**

- 10 IOS Digital Module ESP32
  - 10 GPIOs
  - RS485 - Ethernet - WiFi

- 10 IOS Relay Module ESP32
  - 10 GPIOs
  - RS485 - Ethernet - WiFi

**Industrial Protocols**
RS485 · RS232 · SPI · Modbus RTU

**EEPROM 1KB | SRAM 2.5 KB | Flash 32 KB | CPU Speed 16 MHz**

**REFERENCE LIST - 10IOS**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Serial TTL (UART)</th>
<th>I2C</th>
<th>SPI</th>
<th>RS232</th>
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<th>Ethernet</th>
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<th>Interruption Inputs</th>
<th>Digital Outputs</th>
<th>Analog Outputs</th>
<th>Relay Outputs</th>
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* This device has a total of 10 IOs that can be configured as Input or as Output
ESP32 PLC

**ESP32 PLC 19**

**6 Inputs:**
- (2x) Digital Optoisolated (5-24Vdc)
- (4x) Analog (0-10Vdc, 11bit) / Digital (5-24Vdc) configurables by software

**11 Outputs:**
- (3x) Analog (0-10Vdc, 12bit) / Digital (5-24Vdc) / PWM Isolated (5-24Vdc)
- (8x) Relay (220Vac - 5A)

**ESP32 PLC 21**

**13 Inputs:**
- (7x) Digital Optoisolated (5-24Vdc)
- (6x) Analog (0-10Vdc, 11bit) / Digital (5-24Vdc) configurables by software

**8 Outputs:**
- (5x) Digital Optoisolated (5-24Vdc)
- (3x) Analog (0-10Vdc, 12bit) / Digital (5-24Vdc) / PWM Isolated (5-24Vdc)

**ESP32 PLC 38AR**

**19 Inputs:**
- (9x) Digital Optoisolated (5-24Vdc)
- (10x) Analog (0-10Vdc, 11bit) / Digital (5-24Vdc) configurables by software

**19 Outputs:**
- (5x) Digital Optoisolated (5-24Vdc)
- (6x) Analog (0-10Vdc, 12bit) / Digital (5-24Vdc) / PWM Isolated (5-24Vdc)
- (8x) Relay (220Vac-5A).

**ESP32 PLC 38R**

**12 Inputs:**
- (4x) Digital Optoisolated (5-24Vdc)
- (8x) Analog (0-10Vdc, 11bit) / Digital (5-24Vdc) configurables by software

**22 Outputs:**
- (6x) Analog (0-10Vdc, 12bit) / Digital (5-24Vdc) / PWM Isolated (5-24Vdc)
- (16x) Relay (220Vac - 5A)

**ESP32 PLC 42**

**26 Inputs:**
- (14x) Digital Optoisolated (5-24Vdc)
- (12x) Analog (0-10Vdc, 11bit) / Digital (5-24Vdc) configurables by software

**16 Outputs:**
- (10x) Digital Optoisolated (5-24Vdc)
- (6x) Analog (0-10Vdc, 12bit) / Digital (5-24Vdc) / PWM Isolated (5-24Vdc)

**Industrial Standard Communications**

- Ethernet
- WiFi
- Bluetooth LE
- TCP / IP
- Modbus RTU
- Modbus TCP
- RS485
- Serial Port
- SPI
- I2C
ESP32 PLC 57R

- 18 Inputs:
  - (6x) Digital Optoisolated (5-24Vdc)
  - (12x) Analog (0-10Vdc, 11bit) / Digital (5-24Vdc) configurables by software
  - (6x) Interrupt (5-24Vdc), "Are part of the Digital inputs (5-24Vdc)"

- 33 Outputs:
  - (9x) Analog (0-10Vdc, 12bit) / Digital (5-24Vdc) / PWM Isolated (5-24Vdc)
  - (24x) Relay (220Vac - 5A)

ESP32 PLC 57ARR

- 32 Inputs:
  - (16x) Digital Optoisolated (5-24Vdc)
  - (16x) Analog (0-10Vdc, 11bit) / Digital (5-24Vdc) configurables by software
  - (6x) Interrupt (5-24Vdc), "Are part of the Digital inputs (5-24Vdc)"

- 27 Outputs:
  - (10x) Digital Optoisolated (5-24Vdc)
  - (9x) Analog (0-10Vdc, 12bit) / Digital (5-24Vdc) / PWM Isolated (5-24Vdc)
  - (8x) Relay (220Vac - 5A)

ESP32 PLC 58

- 24 Outputs:
  - (15x) Digital Optoisolated (5-24Vdc)
  - (9x) Analog (0-10Vdc, 12bit) / Digital (5-24Vdc) / PWM Isolated (5-24Vdc)

Industrial Standard Communications

- WiFi - Bluetooth LE
- RS485 - Serial Port - SPI - I2C
- Ethernet - TCP / IP - Modbus RTU / TCP

ESP32 PLC

- SRAM 512 KB | CPU Speed 160/240 MHz
### Reference List - ESP32 PLC

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n.4: From (Xx) Digital, (Yx) can be configured as Analog (Xx = Total Digital Input, Yx = Number of Analog Inputs) | n.5: From (Xx) Digital, (Zx) can be configured as Switch (Xx = Total Digital Inputs, Zx = Number of Switch pins) | n.11: USB only for uploading or debugging, not always connected as serial in a project! | n.12: If pin 2 and pin 3 are used, (x2) inputs are lost | n.13: Optional
Our ESP32-based PLCs use original boards assembled inside all devices. ESP32 boards are also programmed with Arduino IDE.

Some of the most notable benefits of using the Arduino IDE are as follows:

- Free software licences
- Standard libraries available
- Documentation and examples available, ready to use
- Industrial Shields libraries available to facilitate the programming of our PLCs
In October 2012, **Industrial Shields** was born was created through the initiative of an engineer who, searching a more flexible PLC at a better price, decided to develop his own solution using **Open Source Hardware**.

Therefore, **Industrial Shields** is the brand that provides **Open Source Hardware** for industrial use, including all the required design and security, combining the best of both worlds.

**Industrial Shields** designs, produces and markets the range of products based on **Open Source Hardware**.

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Boot & Work Corp. S.L. is a company committed to the promotion, development, manufacture and sale of products based on Open Source technology to liberalise the industrial sector and boost the growth of its customers.

The aim of our company is to provide low cost solutions for automation in industrial environments.

**Open Source Hardware** solutions are being introduced in the industrial sector, it is a growing market and we are its pioneers.

The balance between quality and price is very important to us and therefore to the market; by using open source solutions we can provide more specifications at a better price.

In addition, open source solutions are more flexible and accessible than standard industrial solutions, and the software is licence-free.

At Industrial Shields we are convinced of a focused perspective on **Industry 4.0 and the Internet of Things**.
Through the IEEE-UNEDsb, we got to know Arduino and use it for prototyping machinery. We create the first Shields for industrial use for labelling machinery and automatic production lines.

Boot & Work Corp. is created with the aim of standardising a product based on Open Source technology for use in industrial environments.

Boot & Work Corp wins the award for the best innovative company in Barberà del Valles. First prototype units. The Ardbox is getting closer.

We create the Industrial Shields brand, from where we start marketing the first family of basic products. The first unit is sold online to Libya.

Industrial Shields has commercialised equipment based on Open Source technology in more than 20 countries.

5 distributors in different countries (UK, Germany, USA, Mexico and Italy) and more than 500 customers in all types of industrial sectors.

We have more than 17 distributors in 15 countries on all continents and have reached more than 75 countries.

We are present in more than 100 countries, more than 40 distributors worldwide. Development of new products: PLC with WiFi and GPRS/GSM.

Presence in more than 100 countries, more than 40 distributors worldwide. New developments: Raspberry PLC, Dali PLC, LoRa PLC.
Industrial Shields has been working all over the world through distributors, or in direct contact with customers.

Our sales, technical and support team will help you by phone, email, skype; or by using the ticketing system or chatting directly on our website.

Please contact us. We are here to help and assist you.

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