

### Technical Features

MODEL TYPE	ESP32 PLC 14 Module
Input Voltage	12 to 24Vdc (Fuse protection (2.5A) Polarity protection)
Input rated voltage	24Vdc
Rated Power	8 W
I max.	1.5A
Size	100x45x115
Clock Speed	External: 240 MHz Internal: 8 MHz
Flash Memory	4 MB
SRAM	4 MB
PSRAM	2 MB
Communications	USB - RS485 - ETHERNET - WiFi 2.5GHz - BLE 2480 MHz

### General Features

Power supply voltage	DC power supply	12 to 24Vdc
Operating voltage range	DC power supply	11.4 to 25.4Vdc
Power consumption	DC power supply	30 W MAX
External power supply	Power supply voltage	24Vdc
	Power supply current	575 mA
Insulation resistance	20MΩ min.at 500Vdc between the AC terminals and the protective earth terminal.	
Dielectric strength	2.300 VAC at 50/60 Hz for one minute with a leakage current of 10mA max. Between all the external AC terminals and the protective ground terminal.	
Shock resistance	80m/s <sup>2</sup> in the X, Y and Z direction 2 times each.	
Ambient temperature (operating)	-20° to 60°C	
Ambient humidity (operating)	10% to 90% (no condensation)	
Ambient environment (operating)	With no corrosive gas	
Ambient temperature (storage)	-20° to 60°C	
Power supply holding time	2ms min.	
Weight	350g max.	

### I/Os

IO - 0 Digital	Input: GPB 3 - MCP23017SS Output: GPIO 12 - ESP32
IO - 1 Digital	Input: GPB 2 - MCP23017SS Output: GPIO 25 - ESP32
IO - 2 Digital	Input: GPB 4 - MCP23017SS Output: GPIO 26 - ESP32
IO - 3 Digital	Input: GPB 5 - MCP23017SS Output: GPIO 27 - ESP32
IO - 4 Digital	Input: GPA 4 - MCP23017SS
IO - 5 Digital	Input: GPA 6 - MCP23017SS
IO - 6 Digital	Input: GPA 5 - MCP23017SS
IO - 7 Analog 4-20 mA Analog 0-10 V / Digital 3.3-24V	Input: GPIO 32 - ESP32 Input: GPIO 34 - ESP32 Factory Default Configuration
IO - 8 Analog 4-20 mA Analog 0-10 V / Digital 3.3-24V Analog 0-10 V / Digital 3.3-24V	Input: GPIO 33 - ESP32 Input: GPIO 35 - ESP32 Factory Default Configuration
IO - 9 Relay	Output: GPA 7 - MCP23017SS

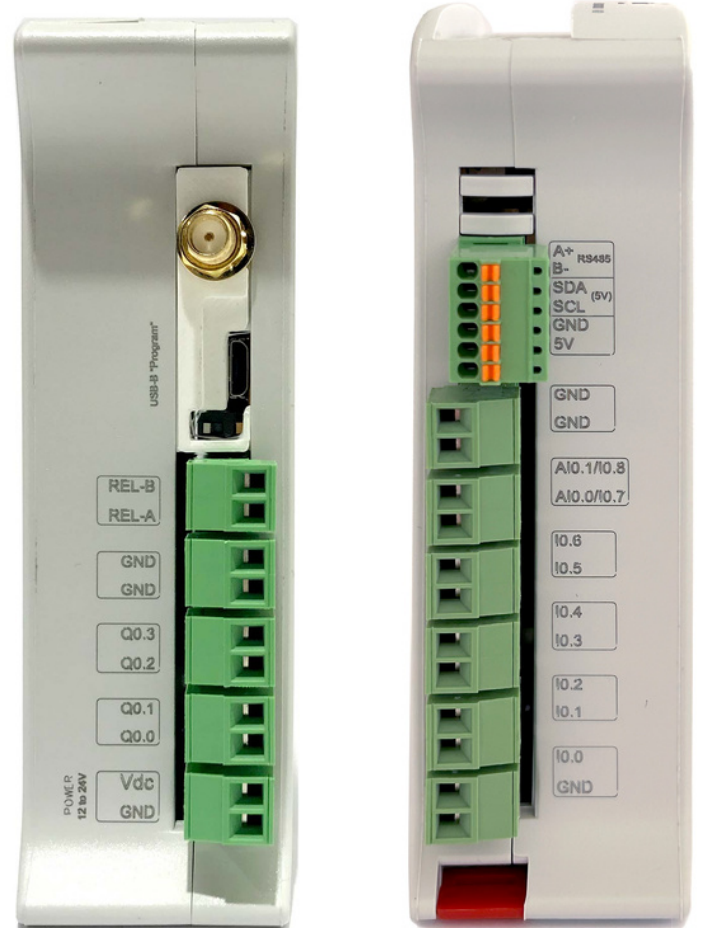
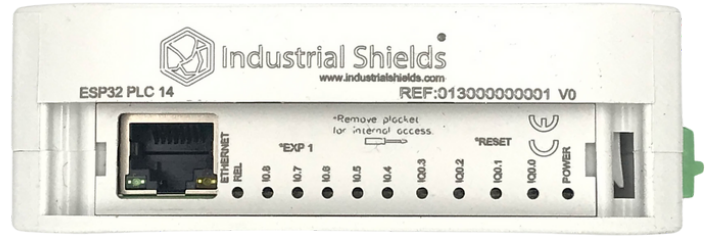
#### Outputs Q0.0 - Q0.1 - Q0.2 - Q0.3

By default, Outputs 0 to 3 give 5V at HIGH level, but they can be changed to provide Vdc by software.

- Q0 - 0: GPB 7 - MCP23017SS
- Q0 - 1: GPB 6 - MCP23017SS
- Q0 - 2: GPA 1 - MCP23017SS
- Q0 - 3: GPA 0 - MCP23017SS

Vdc is Power Supply Voltage and it can be from 12 to 24Vdc

Pitch for FK-MC 0,5/10-ST-2,5 conector: 2.50 mm  
Pitch for MC 1,5/ 2-ST-3,81 conector: 3.81 mm



### Wireless Operation details

Operating Frequency	WiFi	2.4 GHz to 2.5 GHz
	BLE	2402-2480 MHz (40 Channels)
Transmission Power (EIRP)	WiFi	at 2.5 GHz, Power : 9dBm
	BLE	at 2480 MHz, Power: 2.7dBm

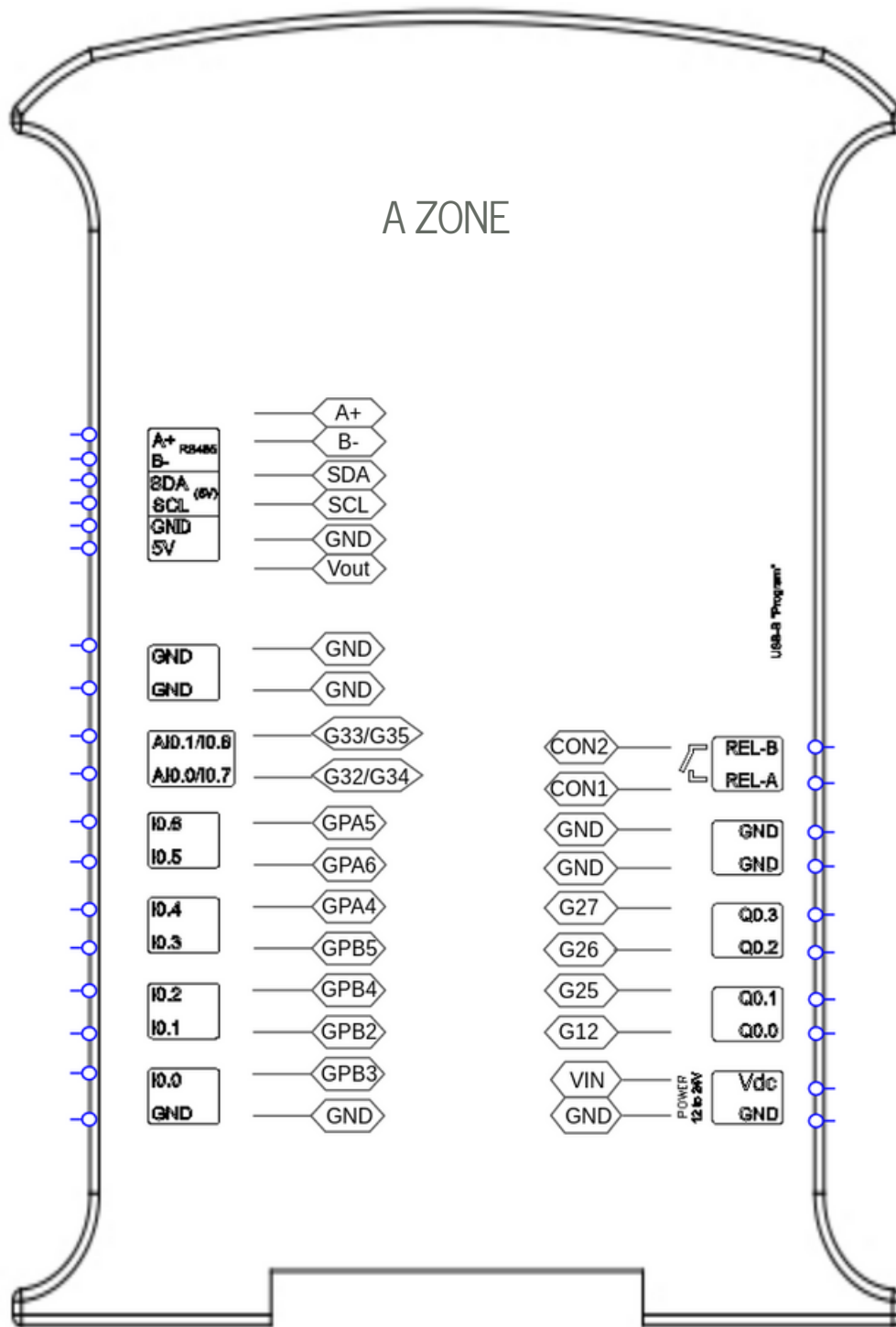
#### Expandability

ModbusRTU with RS485: 32 elements

#### Warning

Consider that depending on your selection when acquiring the PLC, the model you use will have either two analog inputs of 0-10Vdc or 4-20mA, but both cannot coexist in the same PLC, nor be modified by software.





**RS-485**

- RxD: GPIO 16
- TxD: GPIO 17
- RE, DE: GPIO 5

**Relay Output:**

- Pin GPA7 from MCP23017



## Performance Specifications

<b>CPU</b>	ESPRESSIF ESP-WROOM-32U
<b>Control method</b>	Stored program method
<b>I/O control method</b>	Combination of the cyclic scan and immediate refresh processing methods.
<b>Programming language</b>	Arduino IDE. Based on wiring (Wiring is an Open Source electronics platform composed of a programming language. "similar to the C")
<b>Microcontroller</b>	ESP32

### Install Arduino IDE and the Industrial Shields boards

The steps to follow to install our equipment's to Arduino IDE are:

- Open the Arduino IDE, versión 1.8.0 or superior. If you don't have it yet , you can download here <https://www.arduino.cc/en/Main/Software> .
- Press the "Preferences" option to "File" menu and open the preferences window.
- In the text box "Additional boards manager URLs", add the direction: [http://apps.industrialshields.com/main/arduino/boards/package\\_index.json](http://apps.industrialshields.com/main/arduino/boards/package_index.json)
- Close the preferences window with the "OK" button.
- Click on "Tools" menu, and open the "Boards" submenu, and click the "Boards Manager" option, to open the Boards Manager window.
- Search "industrialshields-esp32" to the search filter and select to the list and click "Install"
- Close the "Boards Manager". Once ait is performed that steps, you are available to select each PLC that you wish to work on "Tools" -> "Boards" : Industrial Shields ESP32...

### Warnings

It must be used a long micro USB-B type cable with the thin plastic part (contour of 2mm).



Unused pins should not be connected. Ignoring the directive may damage the controller.

Before using this product, it is the responsibility of the user to read the product's User Guide and all accompanying documentation.

Industrial Shields PLCs must be powered between 12Vdc and 24Vdc. If a higher voltage is supplied to the equipment can suffer irreversible damage.

Maintenance must be performed by qualified personnel familiarized with the construction, operation, and hazards involved with the control.

Maintenance should be performed with the control out of operation and disconnected from all sources of power.

The Industrial Shields Family PLCs are Open Type Controllers. It is required that you install the M-Duino PLC in a housing, cabinet, or electric control room. Entry to the housing, cabinet, or electric control room should be limited to authorized personnel.









Inside the housing, cabinet or electric control room, the Industrial Shields PLC must be at a minimum distance from the rest of the components of a minimum of 25 cm, it can be severely damaged.

Failure to follow these installation requirements could result in severe personal injury and/or property damage. Always follow these requirements when installing M-Duino family PLCs.

In case of installation or maintenance of the M-Duino please follow the instructions marked in the Installation and Maintenance section on the User Guide.

Do not disconnect equipment when a flammable or combustible atmosphere is present. Disconnection of equipment when a flammable or combustible atmosphere is present may cause a fire or explosion which could result in death, serious injury and/or property damage.

### Symbology

	Indicates that the equipment is suitable for direct current only; to identify relevant terminals
	Indicates that the equipment is suitable for alternating current only; to identify relevant terminals
	To identify the control by which a pulse is started.
	To identify an earth (ground) terminal in cases where neither the symbol 5018 nor 5019 is explicitly required.
	To identify the switch by means of which the signal lamp(s) is (are) switched on or off.
	CE marking indicates that a product complies with applicable European Union regulations
	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
	To indicate hazards arising from dangerous voltages


### Technical Support


You can contact with us using the best channel for you:

 [support@industrialshields.com](mailto:support@industrialshields.com)

 [www.industrialshields.com](http://www.industrialshields.com)

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