Datasheet
M-Duino 19R+
WiFi & BLE

Industrial Shields®
**Technical Features**

**CONECTABLE PLC ARDUINO 24Vcc M-ĐÚINO**

**MODEL TYPE**
M-Duino HF WiFi & BLE

**Input Voltage**
12 to 24Vdc; 4 pins reserved for protection (2.5A Polarity protection)

**Input rated voltage**
24Vdc

**Rated Power**
30 W

**I max.**
1.5A

**Size**
101x71x195

**Clock Speed**
16MHz

**Flash Memory**
256KB of which 8KB used by bootloader

**SRAM**
8KB

**EEPROM**
4KB

**Communications**
I2C, Ethernet, USB, RS485, RS232, SPI (2x) Rx, Tx (Arduino pins) WiFi, BLE, Max232-Max485-W5500

**USB consideration**
Only for uploading or debugging. NOT connected as a serial

![Diagram of M-Duino HF WiFi & BLE](image)

**General Features**

- **Power supply voltage:** DC power supply 12 to 24Vdc
- **Operating voltage range:** DC power supply 11.4 to 25.6Vdc
- **Power consumption:** DC power supply 30 W MAX.
- **External power supply:** Power supply voltage 24Vdc
- **Power supply voltage:** Power supply voltage 700Ma
- **Insulation resistance:** 2000 MΩ at 500Vdc between the AC terminals and the protective earth terminal
- **Dielectric strength:** 2300 VAC at 50/60 Hz for one minute with a leakage current of 30mA max. Between all the external AC terminals and the protective ground terminal.
- **Shock resistance:** 80m/s^2 in the X, Y and Z direction 2 times each.
- **Ambient temperature (operating):** 0º to 60ºC
- **Ambient humidity (operating):** 10% to 90% (no condensation)
- **Ambient environment (operating):** With no corrosive gas
- **Ambient temperature (storage):** -20º to 60ºC
- **Power supply holding time:** 2ms min.
- **Weight:** 378g max.

### INPUTS (x6)

- **An/Dig Input 10bit (0-10Vcc) - (x4)**
  - 0 to 10Vdc
  - Input Impedance: 39K
  - Separated PCB ground
  - Galvanic Isolation
  - Rated Voltage: 10Vdc
  - 7 to 24Vdc
  - I min: 2 to 12 mA
  - Galvanic Isolation
  - Rated Voltage: 24 Vdc

- **Digital Isolated Input (24Vcc) - (x6)**
  - 7 to 24Vdc
  - I min: 2 to 12 mA
  - Galvanic Isolation
  - Rated Voltage: 24 Vdc

- **Interrupt Isolated Input HS (24Vcc) - (x2)**
  - 7 to 24Vdc
  - I min: 2 to 12 mA
  - Galvanic Isolation
  - Rated Voltage: 24 Vdc

### Outputs (x11)

- **Analog Output 8bit (0-10Vcc) - (x3)**
  - 0 to 10Vdc
  - Separated PCB ground
  - Galvanic Isolation
  - Rated Voltage: 10Vdc

- **Digital Isolated Output (24Vcc) - (x6)**
  - 5 to 24Vdc
  - I max: 70 mA
  - Galvanic Isolation
  - Diode protected for relay
  - Rated Voltage: 24Vdc

- **Digital Isolated Output Relay - (x6)**
  - 220V Vdc
  - I max: 5A
  - Galvanic Isolation
  - Diode protected for relay
  - Rated Voltage: 24Vdc

- **PWM Isolated Output 8bit (24Vcc) - (x3)**
  - 5 to 24Vdc
  - I max: 70 mA
  - Galvanic Isolation
  - Diode protected for relay
  - Rated Voltage: 24Vdc

**DataSheet Rev. 20200428**
Performance Specifications

<table>
<thead>
<tr>
<th>Arduino Board</th>
<th>Arduino Mega 2560</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control method</td>
<td>Stored program method</td>
</tr>
<tr>
<td>I/O control method</td>
<td>Combination of the cyclic scan and immediate refresh processing methods.</td>
</tr>
<tr>
<td>Programming language</td>
<td>Arduino IDE. Based on wiring (Wiring is an Open Source electronics platform composed of a programming language, &quot;similar to the C&quot;)</td>
</tr>
<tr>
<td>Microcontroller</td>
<td>ATmega2560</td>
</tr>
</tbody>
</table>

**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](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 address: [http://apps.industrialshields.com/main/arduino/boards/package_industrialshields_index.json](http://apps.industrialshields.com/main/arduino/boards/package_industrialshields_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” to the search filter and select to the list and click “Install”.
- Close the “Boards Manager”. Once it is performed that steps, you are available to select each PLC that you wish to work on “Tools” -> “Boards” : M-Duino...


**Warnings**

- 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.

**Technical Support**

- You can contact us using the best channel for you.
  - E-mail: support@industrialshields.com
  - Website: [www.industrialshields.com](http://www.industrialshields.com)
  - Visit our Blog, Forum or Ticketing system
  - Check the user guides
  - Visit our Channel

<table>
<thead>
<tr>
<th>Symbology</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="https://www.industrialshields.com/assets/symbols/ind.png" alt="Symbol" /></td>
<td>Indicates that the equipment is suitable for direct current only; to identify relevant terminals</td>
</tr>
<tr>
<td><img src="https://www.industrialshields.com/assets/symbols/ind.png" alt="Symbol" /></td>
<td>Indicates that the equipment is suitable for alternating current only; to identify relevant terminals</td>
</tr>
<tr>
<td><img src="https://www.industrialshields.com/assets/symbols/ind.png" alt="Symbol" /></td>
<td>To identify the control by which a pulse is started.</td>
</tr>
<tr>
<td><img src="https://www.industrialshields.com/assets/symbols/ind.png" alt="Symbol" /></td>
<td>To identify an earth (ground) terminal in cases where neither the symbol 5018 nor 5019 is explicitly required.</td>
</tr>
<tr>
<td><img src="https://www.industrialshields.com/assets/symbols/ind.png" alt="Symbol" /></td>
<td>To identify the switch by means of which the signal lamp(s) is (are) switched on or off.</td>
</tr>
<tr>
<td><img src="https://www.industrialshields.com/assets/symbols/ind.png" alt="Symbol" /></td>
<td>CE marking indicates that a product complies with applicable European Union regulations</td>
</tr>
<tr>
<td><img src="https://www.industrialshields.com/assets/symbols/ind.png" alt="Symbol" /></td>
<td>Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury</td>
</tr>
<tr>
<td><img src="https://www.industrialshields.com/assets/symbols/ind.png" alt="Symbol" /></td>
<td>To indicate hazards arising from dangerous voltages</td>
</tr>
</tbody>
</table>