Datasheet
M-Duino 53ARR+
DALI

Industrial Shields®
**Technical Features**

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

### MODEL TYPE
M-Duino

### Input Voltage
12 to 24Vac; (Fuse protection (2.5A) Polarity protection)

### Input rated voltage
24Vac

### Rated Power
30 W

### I max.
1.5A

### Size
101x193.3x19.5

### Clock Speed
16MHz

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

### SRAM
8KB

### EEPROM
4KB

### Communications
DC, Ethernet, USB, RS485, RS232, SPI, Max232-Max485-W5500, DALI

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

### General Features

**Power supply voltage**
DC power supply 12 to 24Vac

**Operating voltage range**
DC power supply 11.4 to 25.4Vac

**Power consumption**
DC power supply 30 W MAX

**External power supply**
Power supply voltage 24Vac

### Insulation resistance
700MΩ

### Dielectric strength
20MO m at 500Vac between the AC terminals and the protective earth terminal.

### Shock resistance
80m/s² in the X, Y and Z direction

### 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
597g max.

### Inputs (x23)

**An/Dig Input 10bit**
(0-10Vac) - (x14)

- 0 to 10Vac: Input Impedance: 39KΩ
- Separated POB ground
- Rated Voltage: 10Vac
- 7 to 24Vac
- Imin: 2 to 12 mA
- Galvanic Isolation
- Rated Voltage: 24 Vac

**Digital Isolated Input (24Vcc) - (x5)**

- 7 to 24Vac
- Imin: 2 to 12 mA
- Galvanic Isolation
- Rated Voltage: 24 Vac

**Interrupt isolated Input HS (24Vcc) - (x4)**

- 7 to 24Vac
- Imin: 2 to 12 mA
- Galvanic Isolation
- Rated Voltage: 24 Vac

### Outputs (x28)

**Analog Output 8bit**
(0-10Vac) - (x8)

- 0 to 10Vac
- Imax: 20 mA
- Separated POB ground
- Rated Voltage: 10Vac

**Digital Isolated Output (24Vcc) - (x5)**

- 5 to 24Vac
- Imax: 70 mA
- Galvanic Isolation
- Diode protected for Relay
- Rated Voltage: 24Vac

**Digital Isolated Output Relay - (x15)**

- 220V Vac
- Imax: 5A
- Galvanic Isolation
- Diode protected for Relay
- Imax: 24Vac: 410 mA

**PWM Isolated Output 8bit (2-4Vac) - (x8)**

- 5 to 24Vac
- Imax: 70 mA
- Galvanic Isolation
- Diode protected for Relay
- Rated Voltage: 24Vac

### Expansion

I2C - 127 elements - Serial Port RS232/RS485
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.


- 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 these steps, you are available to select each PLC that you wish to work on “Tools” -> “Boards”: M-Duino…

To get more information: https://www.industrialshields.com/first-steps-with-the-industrial-arduino-based-plc-s-and-the-panel-pc-s-raspberry-pi-based#boards

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.

- 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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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<tbody>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>Indicates that the equipment is suitable for direct current only; to identify relevant terminals</td>
</tr>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>Indicates that the equipment is suitable for alternating current only; to identify relevant terminals</td>
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<tr>
<td><img src="image" alt="Symbol" /></td>
<td>To identify the control by which a pulse is started.</td>
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<tr>
<td><img src="image" 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="image" alt="Symbol" /></td>
<td>To identify the switch by means of which the signal lamp(s) is (are) switched on or off.</td>
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<tr>
<td><img src="image" alt="Symbol" /></td>
<td>CE marking indicates that a product complies with applicable European Union regulations</td>
</tr>
<tr>
<td><img src="image" 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="image" alt="Symbol" /></td>
<td>To indicate hazards arising from dangerous voltages</td>
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Technical Support

You can contact us using the best channel for you:

- @ support@industrialshields.com
- www.industrialshields.com
- Visit our Blog, Forum or Ticketing system
- Check the user guides
- Visit our Channel