Datasheet
M-Duino 21+

Industrial Shields®
### Technical Features

**M-Duino 24Vcc M-DUINO**

**MODEL TYPE**
M-Duino

**Input Voltage**
12 to 24Vdc

**Input rated voltage**
24Vdc

**Rated Power**
30 W

**I max.**
1.5 A

**Size**
10.1x7.0x1.95

**Clock Speed**
16 MHz

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

**SRAM**
8KB

**EEPROM**
4KB

**Communications**
I2C, Ethernet, USB, RS485, RS232, SPI

**USB consideration**
Only for uploading or debugging, not connected as a serial cannot be working in a final application

### 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**: 20MO 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^2 in the X, Y, and Z direction
- **Ambient temperature (operating)**: 0’ 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**: 378g max.

### Inputs (x13)

- **An/Dig Input 10bit (0-10Vcc) - (x5)**
  - 0 to 10Vac
  - Input impedance: 39K
  - Separated PCB ground
  - Rated Voltage: 10Vac
  - 7 to 24Vac
  - 1mA: 2 to 12 mA
  - Galvanic Isolation
  - Rated Voltage: 24 Vdc

- **Digital Isolated Input (2-4Vcc) - (x5)**
  - 7 to 24Vac
  - 1mA: 2 to 12 mA
  - Galvanic Isolation
  - Rated Voltage: 24 Vdc

- **Interrupt Isolated Input HS (2-4Vcc) - (x2)**
  - 7 to 24Vac
  - 1mA: 2 to 12 mA
  - Galvanic Isolation
  - Rated Voltage: 24 Vdc

### Outputs (x8)

- **Analog Output Bist (0-10Vcc) - (x3)**
  - 0 to 10Vac
  - 1mA: 20 mA
  - Separated PCB ground
  - Rated Voltage: 10Vac

- **Digital Isolated Output (5-24Vcc) - (x5)**
  - 5 to 24Vac
  - 1mA: 20 mA
  - Galvanic Isolation
  - Diode protected for Relay
  - Rated Voltage: 24Vdc

- **Digital Isolated Output Relay - (x3)**
  - 220Vac
  - 1mA: 5A
  - Galvanic Isolation
  - Diode protected for Relay
  - Rated Voltage: 24Vdc

- **PWM Isolated Output Bist (2-4Vcc) - (x3)**
  - 5 to 24Vac
  - 1mA: 70 mA
  - Galvanic Isolation
  - Diode protected for Relay
  - Rated Voltage: 24Vdc

### Additional Features

- **Start of I2C - 127 elements - Serial Port RS232/RS485**
- **Max232-Max485-W5500**
- **I2C, Ethernet, USB, RS485, RS232, SPI | (2x) Rx, Tx (Arduino pins)**
- **DataSheet Rev. 20221201**

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**Connectable PLC Arduino 24Vcc M-Duino**

**Properties:**
- Arduino Mega included
- Technical Features
- General Features
- Inputs (x13)
- Outputs (x8)

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**System Shield 30W MAX.**

**Supported Platforms:**
- Arduino Mega
- Industrial Shields

**Other Features:**
- **Supply Voltage:**
  - 12 to 24Vdc
- **Rated Power:**
  - 30 W
- **I max:**
  - 1.5 A
- **Size:**
  - 10.1x7.0x1.95
- **Clock Speed:**
  - 16 MHz

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**Original Arduino Mega included**

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**DataSheet Rev. 20221201**
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_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…

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.

- 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.

**Technical Support**

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

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