# Datasheet Ardbox HF+ DALI Family



# 🔊 Industrial Shields

#### Technical Features **CONECTABLE PLC ARDUNO 24Vcc ARDBOX**

MODEL TYPES	Ardbox Analog HF+ DALI/ Ardbox Relay HF+ DALI
Input Voltage	12 to 24Vdc (Fuse protection (2.5A) Polarity protection)
Input rated voltage	24Vdc
Rated Power	30 W
I max.	1.5A
Size	100x45x115
Clock Speed	16MHz
Flash Memory	32KB of which 4KB used by bootloader
SRAM	2.5KB
EEPROM	1KB
Communications	12C, USB, RS485, RS232, SP11 (2x) Rx, Tx (Arduino pins) Max232-Max485-W5500, DALI
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 25.4Vdc
Power consumption	DC power supply	30 W MAX.
External power supply	Power supply voltage	24Vdc
	Power supply capacity	700mA
Insulation resistance	20MΩ min.at 500Vdc bet terminals and the protection	
Dielectric strength	2.300 VAC at 50/60 Hz f leakage current of 10mA r Between all the external A protective ground termina	nax. C terminals and the
Shock resistance	80m/s2 in the X, Y and Z 2 times each.	direction
Ambient temperature (operating)	0° to 60°C	
Ambient humidity (operating)	10% to 90% (no condensat	tion)
Ambient environment (operating)	With no corrosive gas	
Ambient temperature (storage)	-20° to 60°C	
Power supply holding time	2ms min.	
Weight	350g max.	

# ANALOG I/O

## INPUTS (x10)

An/Dig Input 10bit (0-10Vcc) - (x8)	0 to 10Vdc Input Impedance: 39K Separated PCB ground Rated Voltage: 10Vdc 7 to 24Vdc I min: 2 to 12 mA Galvanic Isolation Rated Voltage: 24 Vdc	An/Dig Input 10bit (0-10Vcc) - (x8)	0 to 1 Input Sepa Rated 5 to 2 I min Galva Rated
Digital Input (24Vcc) - (x1)	7 to 24Vdc I min: 2 to 12 mA Galvanic Isolation Rated Voltage: 24 Vdc	Digital Input (24Vcc) - (x1)	5 to 2 I min Galva Rateo
Interrupt Input HS (24Vcc) * - (x1) * The Interrupt isolated Inputs can also work as Digital isolated Inputs	7 to 24Vdc I min: 2 to 12 mA Galvanic Isolation Rated Voltage: 24 Vdc	Interrupt Input HS (24Vcc) * - (x1) - The Interrupt isolated Inputs can also work as Digital isolated Inputs	5 to 2 1 min Galva Rateo
Expandability		Expandability	

I2C - 127 elements - Serial Port RS232/RS485 I2C - 127 elements - Serial Port RS232/RS485

## OUTPUTS (x10)

Analog Output 8bit (0-10Vcc) - (x7) • The Analog outputs can also work as Digital outputs	0 to 10Vdc I max: 20 mA Separated PCB ground Rated Voltage: 10Vdc	Digital Output
Digital Isolated Output (24Vcc) - (x3)	5 to 24Vdc I max: 70 mA Galvanic Isolation Diode Protected for Relay Rated Voltage: 24Vdc	Analog (0-10Vo
		also work
PWM Isolated Output 8bit (24Vcc) - (x7) * The PWM outputs can also work as Digital outputs	5 to 24Vdc I max: 70 mA Galvanic Isolation Diode Protected for Relay Rated Voltage: 24Vdc	

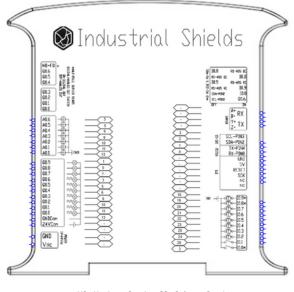
#### **RELAY I/O** INPUTS (x10)

An/Dig Input 10bit (0-10Vcc) - (x8)	0 to 10Vdc Input Impedance: 39K Separated PCB ground Rated Voltage: 10Vdc 5 to 24Vdc Imin: 2 to 12 mA Galvanic Isolation Rated Voltage: 24 Vdc
Digital Input (24Vcc) - (x1)	5 to 24Vdc I min: 2 to 12 mA Galvanic Isolation Rated Voltage: 24 Vdc
Interrupt Input HS (24Vcc) * - (x1) • The Interrupt isolated Inputs can also work as Digital isolated Inputs	5 to 24Vdc I min: 2 to 12 mA Galvanic Isolation Rated Voltage: 24 Vdc

#### OUTPUTS (x10)

Digital Isolated Output Relay - (x8)	250Vac I max: 5A Galvanic Isolation Diode protected for Relay Imax 30Vdc: 3A
Analog Output 8bit	0 to 10Vdc
(0-10Vcc) - (x2)	I max: 20 mA
* The Analog outputs can	Separated PCB ground
also work as Digital outputs	Rated Voltage: 10Vdc

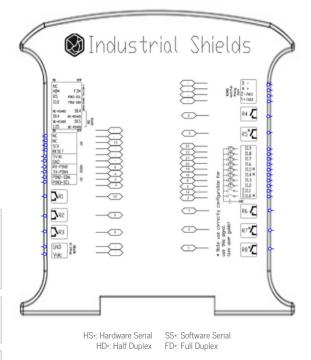
#### Analog Version Pinout



HS∗: Hardware Serial HD\*: Half Duplex

SS\*: Software Serial FD\*: Full Duplex

#### **Relay Version Pinout**







# 💓 Industrial Shields

#### Performance Specifications

Arduino Board	Arduino Leonardo
Control method	Stored program method
I/O control method	Combination of the cyclic scan and immediate refresh processing methods.
Programming language Arduino IDE. Based on wiring (Wiring is an Open Source electronics platform composed of a programming language. "s	
Microcontroller	ATmega32U4
	http://arduino.cc/en/Tutorial/HomePage

#### Install Arduino IDE and the Industrial Shields boards



Install Arduino IDE and the Industrial Shields boards	warnings
The steps to follow to install our equipment's to Arduino IDE are:	Unused pins should not be connected. Ignoring the directive may damage the controller.
$\cdot$ Open the Arduino IDE, versión 1.8.0 or superior. If you don't have it yet , you can download here	Before using this product, it is the responsibility of the user to read the product's User Guide and all accompanying documentation.
https://www.arduino.cc/en/Main/Software .	Industrial Shields PLCs must be powered between 12Vdc and 24Vdc. If a higher voltage is supplied to the equipment can suffer irreversible damage.
Press the "Preferences" option to "File" menu and open the preferences window.	Maintenance must be performed by qualified personnel familiarized with the construction, operation, and hazards involved with the control.
• In the text box "Additional boards manager URLs", add the direction: http://apps.industrialshields.com/main/arduino/boards/package_ind	Maintenance should be performed with the control out of operation and disconnected from all sources of power.
ustrialshields_index.json	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
Close the preferences window with the "OK" button.	room. Entry to the housing, cabinet, or electric control room should be limited to authorized personnel.
• Click on "Tools" menu, and open the "Boards" submenu, and click the "Boards Manager" option, to open the Boards Manager window.	Inside the housting, 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.
$\cdot$ Search "industrial shields" to the search filter and select to the list and click "Install"	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.
• 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	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.
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	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
$\sim$	Indicates that the equipment is suitable for alternating current only; to identify relevant terminals
Л	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 explicily required.
$\otimes$	To identify the switch by means of which the signal lamp(s) is (are) switched on or off.
CE	CE marking indicates that a product complies with applicable European Union regulations
$\triangle$	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
4	To indicate hazards arising from dangerous voltages

### Technical Support

y; to	You can contact with us using the best channel for you:
ıt	support@industrialshields.com
	www.industrialshields.com
the	Visit our Blog, Forum or Ticketing system
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