



INDUSTRIAL SHIELDS

Products Datasheet

Safety in industrial applications: new industrial equipment by Industrial Shields provides economical solutions for industrial applications that require flexibility, safety and high performance.

The economic automation products

Compact PLC

Small, reliable and flexible controller.

Connectable controller PLC

Communicate with all your applications.

Panel PC

Human machine interface with Linux-Android OS.

According to:

- EN 61010-1 (General Safety requirements).
- EN 61010-2 (Particular requirements for control equipment).
- IEC 60073
- Fully CE and RoHS certificated
- Short-Circuit, Over Load and ESD protected



- ✓ Reliable
- ✓ Economic
- ✓ DIN rail mounting
- ✓ Flexible uses
- ✓ Fast programming with internet community

Programmable Controller (PLC)

Ardbox Family.

The most complete compact PLC

Relay



Analog



Input Voltage	12-24Vdc		
Max. Current	0.5A		
Size	100x45x115		
Clock Speed	16MHz		
Flash Memory	32KB of which 4KB used by bootloader		
SRAM	2.5KB		
EEPROM	1KB		
Communications	USB - I2C ¹ - RS232/RS485 - SPI communication ²		
TOTAL Inputs	10	10	
TOTAL Outputs	10	10	
Type of signals			
Analog Input (0-10Vdc) ³	6 ⁴	9 ⁵	
Digital Input (24Vdc)	10	10	
Interrupt Input (HS) (24Vdc)	-	1	
	I/Os configurable		
Analog Output (0-10Vdc) ⁵	2	7	
Digital Output (24Vdc)	-	9	
PWM Output (10 or 24Vdc)	-	6	
Relay Output	8	-	
Expandability	I2C max. 127 Elements - Serial Port RS232/RS485 - SPI		
Enclosure Material	ABS self-extinguishing		
Reference	IS.AB18REL.base	IS.AB20AN.base	

¹ I2C communication requires a pull-up resistor ([IS.ACI2C-4.7K](#))

² GSM/GPRS, Bluetooth, Wi-fi... extendable

³ 10 bits (0 to 1023 Value)

⁴ These Analog Input signal can work like digital Inputs (24Vdc)

⁵ 8 bits (0 to 253 value)

Programmable Controller (PLC)

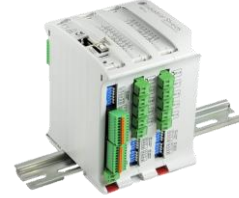
M-Duino Family

The connectable PLC with Ethernet

M-Duino 19R IOs



M-Duino 38R IOs



M-Duino 57R IOs



Input Voltage	12-24Vdc		
Max. Current	0.5A		
Size	100x45x115		
Clock Speed	16MHz		
Flash Memory	256KB of which 8KB used by bootloader		
SRAM	8KB		
EEPROM	4KB		
Communications	Ethernet port -USB - I2C ⁶ - RS232 ⁷ /RS485 - SPI communication ⁸ - (3x) Rx,Tx Pins ⁹		
TOTAL Inputs	6	12	18
TOTAL Outputs	11	22	31
Type of signals ¹⁰			
Analog Input (0-10Vdc) ¹¹	4	8	12
Digital Input (24Vdc)	6	12	18
Interrupt Input (HS) (24Vdc)	2	4	6
Analog Output (0-10Vdc) ¹²	3	6	8
Digital Output (24Vdc)	3	6	8
PWM Output (10 or 24Vdc)	3	6	8
Relay Output (220Vac – 8A)	8	16	23
Expandability	I2C max. 127 Elements - Serial Port RS232 / RS485 (it can connect all Ardbox family products as expand I/Os modules)		
Enclosure Material	ABS self-extinguishing		
Reference	IS.MDuino.19	IS.MDuino.38	IS.MDuino.57

⁶ I2C communication requires a pull-up resistor ([IS.ACI2C-4.7K](#))

⁷ Check product version.

⁸ Using MISO, MOSI, SS pins of Arduino You can connect additional modules (GSM, GPRS, ...)

⁹ Using Rx, Tx Arduino Pins. Rx, Tx is not compatible for RS485

¹⁰ See product brochure for specifications.

¹¹ 10 bits (0 to 1023 Value)

¹² 8 bits (0 to 253 value)

Programmable Controller (PLC)

M-Duino Family

The connectable PLC with Ethernet

M-Duino 21 IOs



M-Duino 42 IOs



M-Duino 58 IOs



Input Voltage	12-24Vdc		
Max. Current	0.5A		
Size	100x45x115		
Clock Speed	16MHz		
Flash Memory	256KB of which 8KB used by bootloader		
SRAM	8KB		
EEPROM	4KB		
Communications	Ethernet port -USB - I2C ¹³ - RS232 ¹⁴ /RS485 - SPI communication ¹⁵ - (3x) Rx,Tx Pins ¹⁶		
TOTAL Inputs	13	26	36
TOTAL Outputs	8	16	22
Type of signals			
Analog Input (0-10Vdc) ¹⁷	6	12	16
Digital Input (24Vdc)	13	26	36
Interrupt Input (HS) (24Vdc)	2	4	6
Analog Output (0-10Vdc) ¹⁸	3	6	8
Digital Output (24Vdc)	8	16	22
PWM Output (10 or 24Vdc)	3	6	8
Expandability	I2C max. 127 Elements - Serial Port RS232 / RS485 (it can connect all Ardbox family products as expand I/Os modules)		
Enclosure Material	ABS self-extinguishing		
Reference	IS.MDuino.21	IS.MDuino.42	IS.MDuino.58

¹³ I2C communication requires a pull-up resistor ([IS.AC12C-4.7K](#))

¹⁴ Check product version.

¹⁵ Using MISO,MOSI,SS pins of Arduino You can connect additional modules (GSM,GPRS, ...)

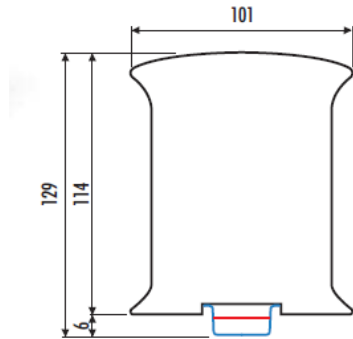
¹⁶ Using Rx, Tx Arduino Pins. Rx,Tx is not compatible for RS485

¹⁷ 10 bits (0 to 1023 Value)

¹⁸ 8 bits (0 to 253 value)

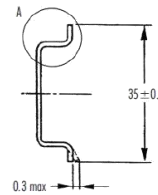
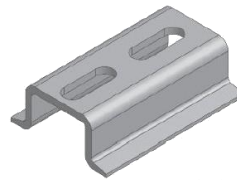
Programmable Controller (PLC)

PLC size

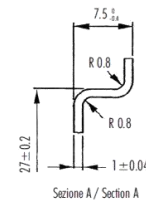


- Ardbox Family: width= 45mm.
- M-Duino 21 IOs: width= 72.5mm.
- M-Duino 42 IOs: width= 100mm.
- M-Duino 58 IOs: width= 127.5mm.
- M-Duino 19R IOs: width= 72.5mm.
- M-Duino 38R IOs: width= 100mm.
- M-Duino 57R IOs: width= 127.5mm.

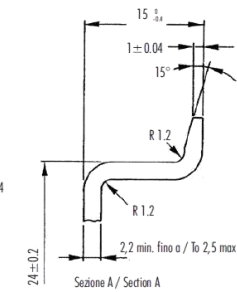
DIN rail mounting



Profilato a cappello TH 35-7,5
Top hat rail TH 35-7,5



Profilato a cappello TH 35-15
Top hat rail TH 35-15



CARATTERISTICHE	METODO	UNITA' DI MISURA	BLENDO PC/ABS
Mecchaniche	Resistenza a trazione allo snervamento	ASTM D638	MPa 48
	Resistenza a trazione a rottura	ASTM D638	MPa 48
	Allungamento a rottura	ASTM D638	% 59
	Modulo di flessione	ASTM D790	MPa 2894
	Prova Izod con intaglio	ISO 180/14	KJ/m ²
Termiche	Temperatura di scorrimento Vicat, metodo B	ASTM D1525	°C 114
	Temperatura Rotta 1.81 MPa	ASTM D648	°C 97
Fisiche	Densità specificata	ASTM D792	gr/cm ³ 1.21
	Ritiro nella stampo	ASTM D955	% 0.4/0.6
	Melt Flow Index 260°C - 98N	ASTM D1288	gr/10'
Comportamento alla fiamma	Autestinguente (mm di spessore)	UL94	- V-0 (0.8)
	Filo laserascendente 3.2 mm	IEC 695.2.1	°C 960

Italtronic si riserva il diritto di modificare il materiale con cui realizza i propri prodotti senza obbligo di preavviso.

FEATURES	TEST METHOD	UNITS	BLENDO PC/ABS
Mechanical test	Resistance to tensile stress at yield	ASTM D638	MPa 48
	Tensile strength	ASTM D638	MPa 48
	Ultimate elongation	ASTM D638	% 59
	Flexing modulus	ASTM D790	MPa 2894
	Izod test notched	ISO 180/14	KJ/m ²
Thermal test	Vicat softening temperature method B	ASTM D1525	°C 114
	Reheating temperature 1.81 MPa	ASTM D648	°C 97
Physical test	Specific gravity	ASTM D792	gr/cm ³ 1.21
	Mold shrinkage	ASTM D955	% 0.4/0.6
	Melt Flow Index 260°C - 98N	ASTM D1288	gr/10'
Flame test	Self extinguisher (thickness in mm)	UL94	- V-0 (0.8)
	Incandescent thread 3.2 mm	IEC 695.2.1	°C 960

Italtronic can operate any change of the materials without being obliged to forewarn.



INDUSTRIAL SHIELDS

Software Interface

INDUSTRIAL SHIELDS PLCs programming environment is Arduino IDE.

It is an open-source and license-free software based on C and C++.

Arduino IDE and infinity of examples are available in:

- <http://www.arduino.org/>
- <https://www.arduino.cc/>



For examples based on Industrial Shields PLCs visit:

<http://blog.industrialshields.com/es/>



INDUSTRIAL SHIELDS is developing a Ladder-IEC 61131 based environment to visually program PLCs.



Industrial Shields Communication Protocols

- TCP/IP
- Modbus RTU
- Modbus TCP
- Web server capacity
- Other Industrial protocols

Human Interface (Panel PC)

The connectable PLC with Ethernet

Touchberry PI 2B 10.1 "

Touchberry PI 3B 10.1 "

HummTouch 10.1" Linux

HummTouch 10.1" Android

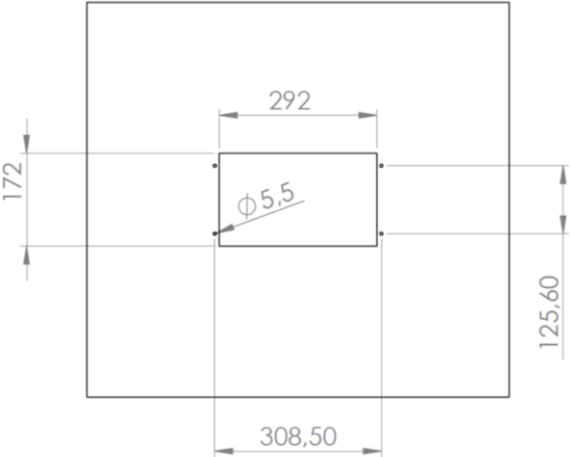


TFT	10.1" Capacitive LVDS, 315n. 170° viewing angle		
Format	16:9, 13bbx/68		
Energy consumption	1.25A – 30W		
Power supply	7 to 18Vdc		
	Raspberry Pi 2B	Raspberry Pi 3B	Humming Bord Base Lite
SoC	BroadCom BCM 2835	Broadcom BCM2387	i.MX6 Dual Lite
CPU	ARM 11 6JZF-Sa 700MHz	Quad-Core ARM Cortex-A53802 1.2GHz	64 bit, 1GB @ 800Mbps
GPU	Broadcom VideoCore IV, OpenGL ES 2.0, MPEG-2 and VC-1(license), 1080p30 H. 264/MPEG-4AVC	Broadcom VideoCore IV, OpenGL ES 2.0, MPEG-2 and VC-1(license) 1080p30 H. 264/MPEG-4AVC	GC880
USB	(3) x 2.0		(2) x 2.0
Storage	SD / MMC / SDIO slot		
Network connection	Ethernet – (3) x TTL - SPI – I ² C		
		Wireless LAN / Bluetooth 4.1	
Low level devices	8x GPIO – SPI - I2C - UART		UART - 8GPO - SPI with 2 CS - I2C ¹⁹
Operative system	Linux / Windows 10 IoT	Linux / Windows 10 IoT	Linux Android
Reference	IS.TBerry.base	IS.TBerry3.base	IS.THumLin.base IS.THumAnd.base

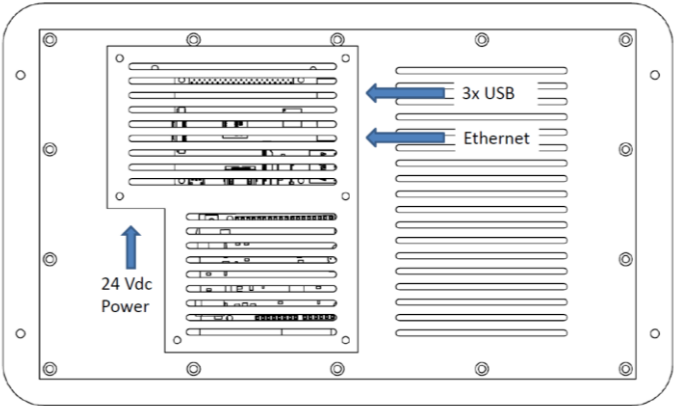
¹⁹ Other functions are available via i.MX6 pin muxing.

Human Interface (Panel PC)

Mounting surface Touchberry PI 2B / 3B 10.1”:



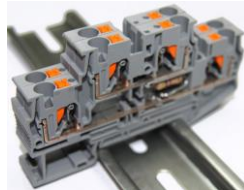
Touchberry Pi



Human Interface (Panel PC)

PLC Accessories

Pull-UP I2C



PT 4 Feed-Through and
Multi-Conductor Terminal
Blocks

Tool-free wiring
(ferrules or solid conductors)

No direct contact with live
parts

Individual potential
distribution and supply

Reference

IS.AC12C-4.7K

D-SUB 37 Wire



2 meter length

-

-

-

IS.ACDSUB37-2M

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