![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 OS.

According to:

- EN 61010-1 (General Safety requirements).
- EN 61010-2 (Particular requirements for control equipment).
- IEC 60073
- Fully **CE** and **UL** 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	PNP	TCH
Input Voltage		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		I2C (connect up to 127 elements) – Serial port RS232 // RS485[1]		
TOTAL Inputs	8 (+2)	10	6	10
TOTAL Outputs	8 (+2)	10	14	10
Type of signals[2]				
Analog Input (0-10Vdc)[3]	-	9	-	-
Digital Input (24Vdc)	6	10	6	10
Interrupt Input (HS) (24Vdc)	2 (5Vdc) I/Os configurable	1	-	2
Analog Output (0-10Vdc)[4]	-	7	-	-
Digital Output (24Vdc)	-	10	14	8
PWM Output (10 or 24Vdc)	-	7		
Relay Output	8	-	-	2
Expandability		I2C max. 127 Elements - Serial Port RS232 / RS485		
Enclosure Material		ABS self-extinguishing		
Reference	IS.AB18REL.base	IS.AB20AN.base	IS.AB20PNP.base	IS.AB20TCH.base

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[1] Using cable RS485 // RS232 // I2C (see http://www.industrialshields.com).
[2] See product brochure for specifications.
[3] 10 bits (0 to 1023 Value)
[4] 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		24Vdc	
Max. Current		0.5A	
Size		100x45x115	
Clock Speed		16MHz	
Flash Memory		256KB of which 8KB used by bootloader	
SRAM		8KB	
EEPROM		4KB	
Communications		I2C (connect up to 127 elements) – Serial port RS232 // RS485[5] - Ethernet port	
TOTAL Inputs	13	26	35
TOTAL Outputs	8	16	22
Type of signals[6]			
Analog Input (0-10Vdc)[7]	6	12	16
Digital Input (24Vdc)	13	26	36
Interrupt Input (HS) (24Vdc)	2	4	6
Analog Output (0-10Vdc)[8]	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

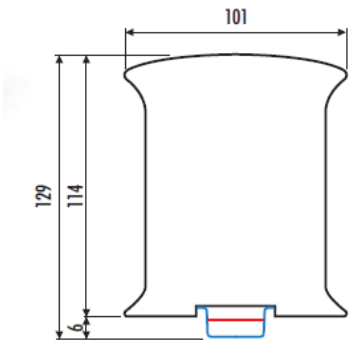[5] Using cable RS485 // RS232 // I2C (see http://www.industrialshields.com).
[6] See product brochure for specifications.
[7] 10 bits (0 to 1023 Value)
[8] 8 bits (0 to 253 value)

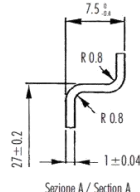# Programmable Controller (PLC)

Dimension PLC:

101

129 114

6

Ardbox Family: width= 45mm.
M-Duino 21 IOs: width= 72.5mm.
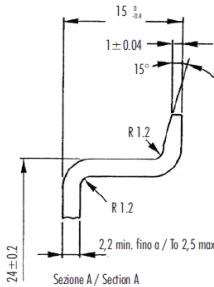**M-Duino 42 IOs: width= 100mm.**
M-Duino 58 IOs: width= 127.5mm.

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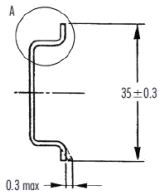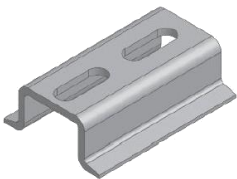
Profilato a cappello TH 35-7,5
Top hat rail TH 35-7,5

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

CARATTERISTICHE		METODO	UNITA' DI MISURA	BLEND PC/ABS
Meccaniche	Resistenza a trazione allo snervamento	ASTM D638	MPa	68
	Resistenza a trazione a rottura	ASTM D638	MPa	48
	Allungamento a rottura	ASTM D638	%	59
	Modulo in flessione	ASTM D790	MPa	2894
	Prova Izod con intaglio	ISO 180/14	XJ/m²	5.5
Termiche	Temp. di rammollimento Vicat, metodo B	ASTM D1525	°C	114
	Temperatura Ricotta 1,81 MPa	ASTM D648	°C	97
Fisiche	Peso specifico	ASTM D792	gr/cm3	1.21
	Ritiro nello stampo	ASTM D955	%	0.4/0.6
	Melt Flow Index 260°C - 98N	ASTM D1238	gr/10'	11.1
Comportamento alla fiamma	Autoestinguenza (mm di spessore)	UL94	-	V-0 (0.8)
	Filo Incandescen. 3,2 mm	IEC695.2.1	°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	BLEND PC/ABS
Mechanical test	Resistance to tensile stress at yield	ASTM D638	MPa	68
	Tensile strength	ASTM D638	MPa	48
	Ultimate elongation	ASTM D638	%	59
	Flexing modulus	ASTM D790	MPa	2894
	Izod test notched	ISO 180/14	XJ/m²	5.5
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/cm3	1.21
	Mould shrinkage	ASTM D955	%	0.4/0.6
	Melt Flow Index 260°C - 98N	ASTM D1238	gr/10'	11.1
Flame test	Self extinguisher (thickness in mm)	UL94	-	V-0 (0.8)
	Incandescent thread 3.2 mm	IEC695.2.1	°C	960

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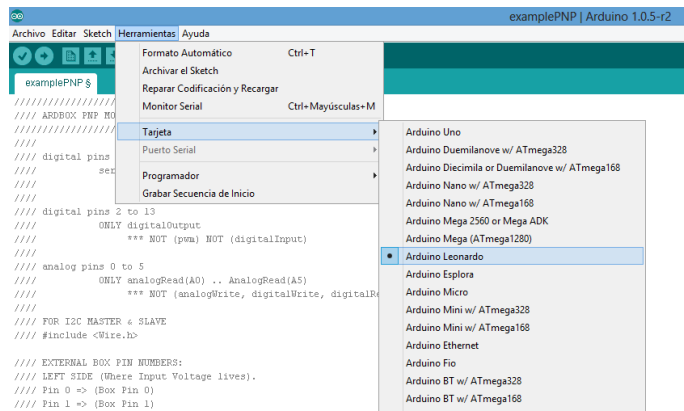
Software Interface:

Arduino IDE is compatible for programm these PLCs. You must to download a start code in www.industrialshields.com at product page in "document files" section and then It's necessary open it with Arduino IDE.

Configuration about Arduino IDE:

All Ardbox PLCs use an Arduino Leonardo and you need to choose these option in Arduino IDE.

Connect all Industrial Shields products
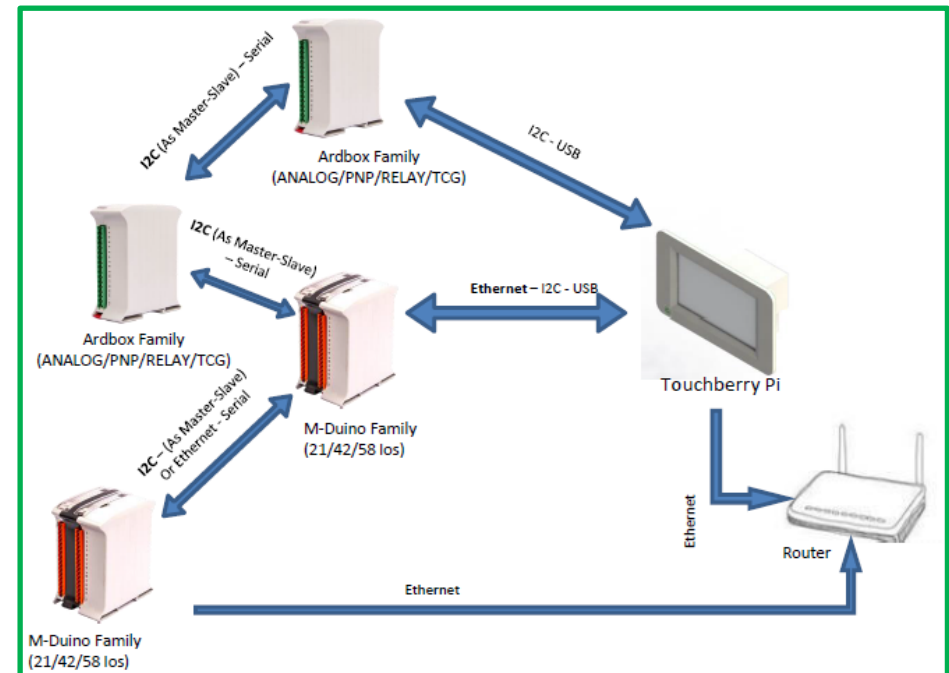
Human Interface (Panel PC)

Panel PC
The connectable PLC with Ethernet

|	Touchberry PI 10.1"	HummTouch 10.1" Linux	HummTouch 10.1" Android

TFT	10.1" Capacitive LVDS, 315n. 170º viewing angle		
Format	16:9, 13bbx/68		
Energy consumption	1.25A – 30W		
Power supply	7 to 24Vdc		
SoC	BroadCom BCM 2835	i.MX6 Dual Lite	
CPU	ARM 11/6JZF-Sa / 700MHz (ARM11 Family)	64 bit, 1GB @ 800Mbps	
GPU	Broadcom VideoCore IV, OpenGL ES 2.0, MPEG-2 and VC-1(license), 1080p30 H. 264/MPEG-4AVC	GC880	
USB	3x 2.0	2x2.0	
Storage	SD / MMC / SDIO slot		
Network connection	I2C (connect up to 127 elements) – Serial port RS232 // RS485 - Ethernet port		
Low level devices	8x GPIO, SPI, I2C, UART	UART, 8GPO, SPI with 2 CS, I2C[9]	
Operative system	Linux	Linux	Android
Reference	IS.TBerry.base	IS.THumLin.base	IS.THumAnd.base

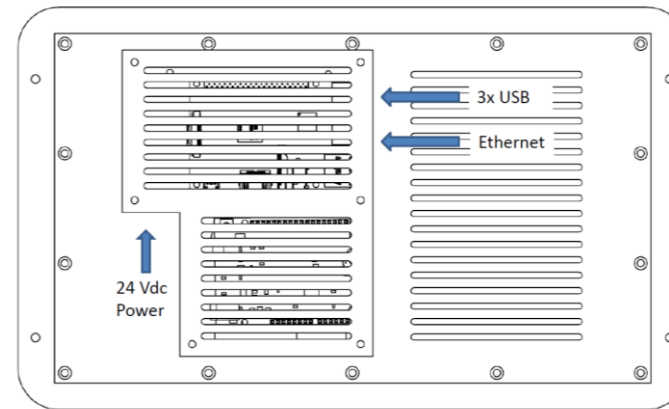[9] Other functions are available via i.MX6 pin muxing.

Human Interface (Panel PC)

Mounting surface Touchberry PI 10.1":
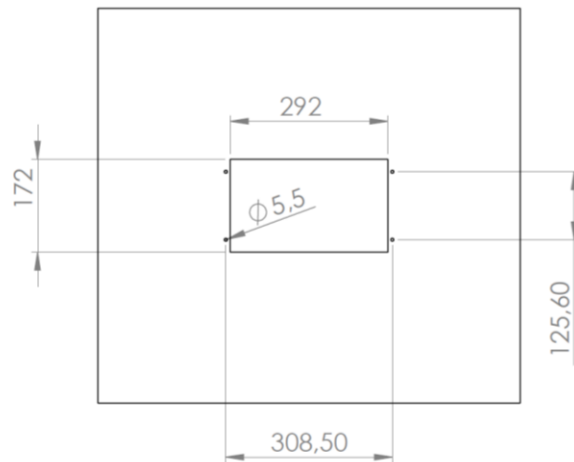
Touchberry Pi

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