

# SPARTANS



The Liberalization of the Industry  
with Open Source Technology.



Industrial Shields



■ SPARTAN ARDUINO PLC 16DA



**10 Inputs:**

- (2x) Digital Optoisolated Inputs (7-24Vdc) | can work like interrupt Inputs INT (7-24Vdc)
- (8x) 10 bit Analog Inputs (0-10V) | Digital (7-24Vdc) Inputs configurable by software

**10 Outputs:**

- (3x) Digital Optoisolated Outputs (5-24Vdc)
- (7x) Analog (0-10Vdc) and Digital / PWM Isolated (5 to 24Vdc)



■ SPARTAN ARDUINO PLC 16RDA

**Original Arduino Leonardo included**

EEPROM 1KB | SRAM 2.5 KB | Flash 32 KB | CPU Speed 16 MHz

**10 Inputs:**

- (2x) Digital Optoisolated Inputs (7-24Vdc) | can work like interrupt Inputs INT (7-24Vdc)
- (8x) 10 bit Analog Inputs (0-10V) | Digital (7-24Vdc) Inputs configurable by software

**10 Outputs:**

- (2x) Digital Optoisolated and PWM (5-24Vdc) | 8 bit Analog (0-10V) Outputs configurable by switch
- (8x) Relay (220Vac-5A)

**Industrial Standard** RS485 · RS232 · SPI · I2C · Modbus RTU



**The Spartan family was created from the analysis of our top selling products.**

The sum of the most common configuration among our customers and the optimization of production processes results in a fully functional, robust and reliable equipment, designed for industrial environment and at a very low cost.



■ SPARTAN ARDUINO PLC 19R I/Os  
Relay / Analog / Digital

**6 Inputs:**

- (4x) Analog (0-10Vdc, 10bit) / Digital (7-24Vdc) configurables by software
- (2x) Interrupt (7-24Vdc). "Can work like Digital (24Vdc)"
- (2x) Digital Optoisolated Inputs (7-24Vdc)

**11 Outputs:**

- (8x) Relay (220Vac - 5A)
- (3x) Analog (0-10Vdc, 8bit) / Digital (5 - 24Vdc)



■ SPARTAN ARDUINO PLC 21 I/Os  
Analog / Digital

**13 Inputs:**

- (6x) Analog (0-10Vdc) / Digital (7-24Vdc) configurable by software
- (5x) Digital Isolated (7-24Vdc).
- (2x) Interrupt (7-24Vdc). "Can work like Digital (24Vdc)"

**8 Outputs:**

- (8x) Digital Isolated (5-24Vdc) / (3 of which) PWM Isolated Analog (0-10Vdc) configurable by switch

**Original Arduino Mega included**  
EEPROM 4 KB | SRAM 8 KB  
Flash 256 KB | CPU Speed 16 MHz

**Industrial Standard Communications**

RS485 | RS232 | SPI | TTL | I2C | Ethernet | TCP / IP | Modbus RTU | Modbus TCP

# REFERENCE LIST - SPARTAN PLC

## Communications

## Inputs / Outputs

Reference	Description	Serial TTL (UART)	I2C	SPI	RS232	RS485 Half / Full	Ethernet	Wi-Fi & BLE	GPRS / GSM	Digital Inputs	Analog Inputs	Interrupt Inputs	Digital Outputs	Analog Outputs	Relay Outputs	In / Out 5Vdc
IS.AB20AN.HF+	PLC Arduino ARDBOX 20 I/Os Analog HF Modbus (RS485 configured by default)	-	x1 n.1	x1	x1 n.2	x1 n.3	-	-	-	x10	x8 n.4	x2 n.5	x10	x7 n.6	-	x3 n.7
IS.AB20REL.HF+	PLC Arduino ARDBOX 20 I/Os Relay HF Modbus (RS485 configured by default)	-	x1 n.8	x1	x1 n.9	x1 n.10	-	-	-	x10	x8 n.4	x2 n.5	-	x2 n.6	x8	x3 n.7
IS.MDUino.21+	MDUINO PLC Arduino Ethernet 21 I/Os Analog Digital PLUS	x2 n.11	x1 n.12	x1	x1	x1	x1	-	-	x13	x6 n.4	x2 n.5	x8	x3	-	x2 n.7
IS.MDUino.19R+	MDUINO PLC Arduino Ethernet 19R I/Os Analog Digital PLUS	x2 n.11	x1 n.12	x1	x1	x1	x1	-	-	x6	x4 n.4	x2 n.5	x3	x3	x8	x2 n.7

n.1: 1 Input & 1 Digital Out are lost | n.2: 2 Inputs & 2 Relay are lost | n.3: 2 Inputs & 2 Digital Outputs & 2 Analog Outputs are lost | n.4: From the (Xx) Digital, (Yx) can be configured as Analog (Xx = Total Digital In, Yx = Number of Analog In) | n.5: From the (Xx) Digital, (Zx) can be configured as Interrupt (Xx = Total Digital In, Zx = Number of Interrupt pins) | n.6: If using RS-232 or RS-485 (x2) Analog Output are lost | n.7: If using pin 2 and pin 3, (x2) In are lost | n.8: 1 Inputs & 1 Relay are lost | n.9: 2 Inputs & 2 Relay are lost | n.10: 2 Inputs & 2 Relay are lost | n.11: USB Only meant for uploading or debugging, not always connected as serial in a project! | n.12: 2 Inputs are lost | n.13: If using Serial 1. GPRS/GSM not available | n.14: If using GPRS/GSM, Serial 1 is not available | n.15: Pin 2 is used as GPRS/GSM Module Reset, DON'T USE! | n.16: If using Serial 1, WiFi & BLE are not available | n.17: If using WiFi & BLE, Serial 1 is not available | n.18: Flat ribbon cable with 40-pin IDC connector is required to connect to Raspberry Pi Internal (Not included).

## PANEL PC



Raspberry Pi

## Panel PCs for industrial environment Linux or Android solution

This Panel PC is based on GNU/Linux (Raspbian/Ubuntu) OS installed on an SD card.

It has many interfaces built in: Ethernet, USB, WiFi...

Using the Ethernet port or WiFi network you can remotely control all parameters, data and inputs/outputs of your control system. Furthermore, Touchberry Pi comprises enough I/Os to replace PLCs on simple automation applications.

Open protocols not only allow communication with other Industrial Shields PLCs, but also third-party devices and machinery.

In complex systems, you can create a network between several TOUCHBERRY PI. Providing integral supervision and control solution for entire production plants and real-time data at hand.



Original  
Raspberry Pi  
included

### SOFTWARE

**Linux Android**

Depending on your installation requirements and/or needs you have the flexibility to select the option that fits best with your project.

### CPU

**Raspberry Pi**

Quad-core A53 (ARMv8)  
64-bit @ 1.4GHz

### TFT

10.1" TouchScreen LVDS, 315 nits, 170° viewing angle. Format 16:9, 1280x720.

### Video in

MIPI CSI connector which lets you install an RPF camera module.

### Integrated Storage

SD /MMC / SDIO slot.

### Power supply

12Vdc to 24Vdc (5.5x2.5 Jack)

### Current consumption

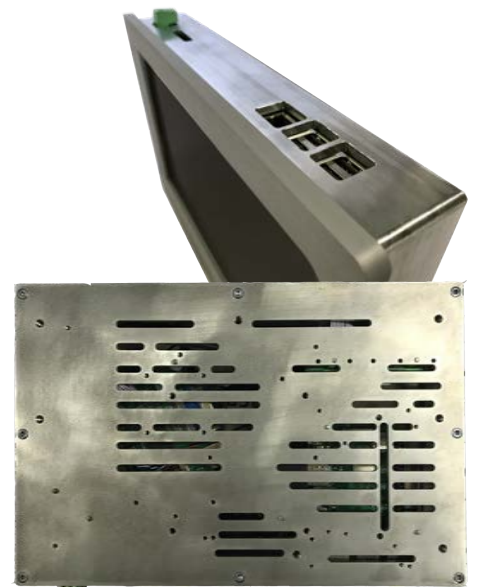
2.5A (12Vdc) // 1,25A (24Vdc)

### Low level devices

10x GPIOs, SPI, I2C, UART

### LAN connectivity

10/100 Ethernet (RJ-45)



Boot & Work Corp. S.L. is a company committed to the promotion, development, manufacture and selling of products based on Open Source technology to liberalize the industrial sector and boost the growth of its customers.

# COMPANY

**Industrial Shields** was born in October 2012 from the hand of an engineer, who, searching for a more flexible PLC equipment and a better price, decided to develop its own solution using **Open Source Hardware**.

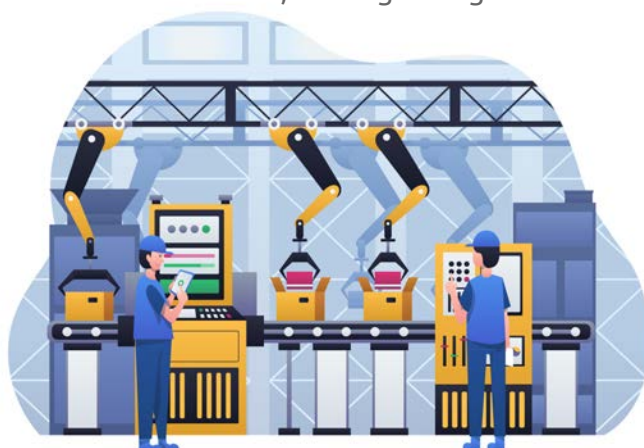
Therefore **Industrial Shields** is the brand that provides **Open Source Hardware** for industrial use, including all design and safety required, combining the best of two worlds.

**Industrial Shields**, designs, produces and markets the range of products based on **Open Source Hardware**. Our company's goal is to provide low cost solutions for automation in industrial environments. The Open Source Hardware solutions are still not widely introduced in the industrial sector, it is a growing market and we are its pioneers.

The balance between quality and cost is very important for us and so for the market, using Open Source solutions we can provide more specifications at a better price.

Even more, the Open Source solutions are more flexible and accessible than the standard industrial solutions, and furthermore, the software is free of licences.

Industrial Shields are convinced with a perspective focused on Industry 4.0 and the Internet of Things.



## QUALITY



**RoHS**  
Compliant

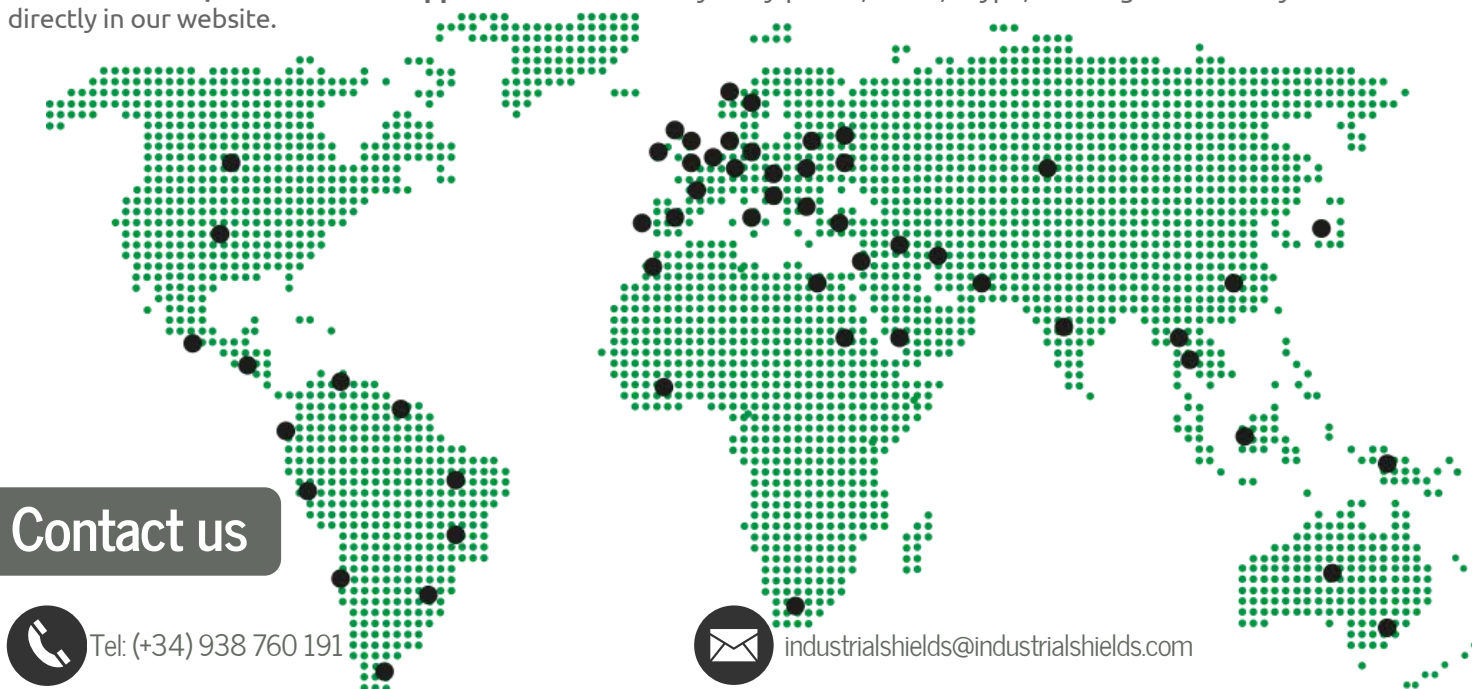


In compliance with :

EN61010-1 | EN61010-2-201 | EN61131-2:2007 (Clause 8: Zone A/B EMC and clause 11:LVD)  
EN61000-6-4:2007 + A1 2011 (Emissions) | EN 61000-6-2:2005 (Immunity) | EMC: FCC Part 15

**Industrial Shields** has been working worldwide through distributors, or in direct contact with the customers. We have been working since 2016 with big players of the market that are selling our products in their websites.

Our **commercial, technical and support team** will assist you by phone, email, skype; or using the ticket system or chat directly in our website.



## Contact us



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