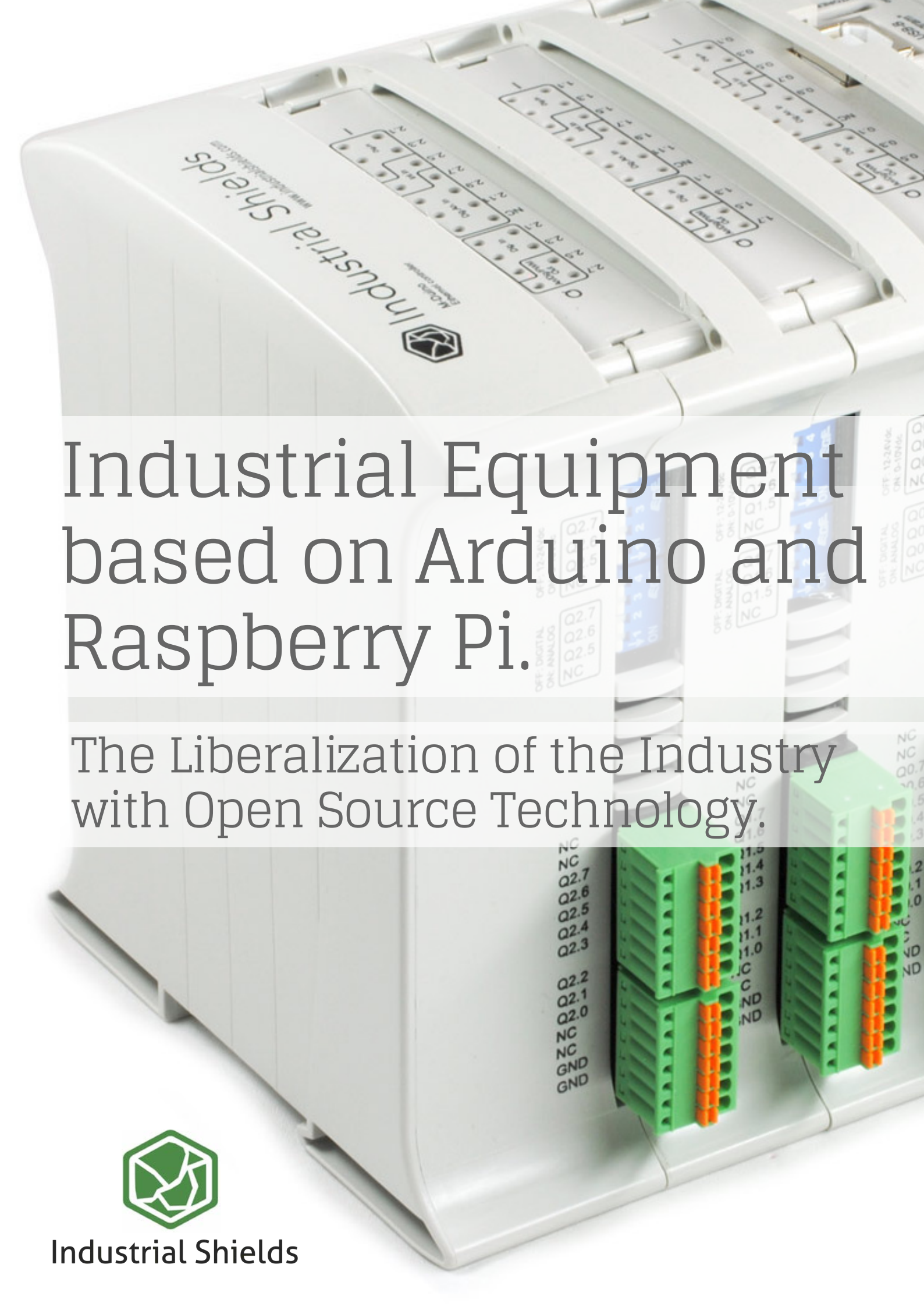


A close-up photograph of a white Industrial Shields Arduino board. The board features several green terminal blocks with orange pins, used for connecting external components. The text "Industrial Shields" and "www.industrialshields.com" are printed on the top of the board. The background is a light gray gradient.

# Industrial Equipment based on Arduino and Raspberry Pi.

The Liberalization of the Industry  
with Open Source Technology.



Industrial Shields

# MDUINO PLUS

- ✓ Plus SECURITY
- ✓ Plus PROTECTION
- ✓ Plus ESD improvement
- ✓ Modbus RTU
  - Half-duplex
  - Full-duplex
- ✓ Modbus TCP
- ✓ RTC
- ✓ MicroSD socket

■ PLC Arduino 19R I/Os  
Relay / Analog / Digital PLUS



**6 Inputs:**

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

**11 Outputs:**

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

■ PLC Arduino 21 I/Os  
Analog / Digital PLUS



**13 Inputs:**

- (6x) Analog (0-10Vdc) / Digital (7-24Vdc) configurable by software
- (7x) Digital Isolated (7-24Vdc).

**8 Outputs:**

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

RS485  
RS232  
SPI  
TTL  
I2C

Original Arduino Mega included



Industrial Standard Communications

Ethernet  
TCP / IP  
Modbus RTU  
Modbus TCP

■ PLC Arduino 38AR I/Os  
Relay / Analog / Digital PLUS



**19 Inputs:**

- (10x) Analog (0-10Vdc, 10bit) / Digital (7-24Vdc) configurables by software
- (4x) Interrupt (7-24Vdc). "Can work like Digital (24Vdc)"
- (5x) Isolated Digital (7-24Vdc)

**19 Outputs:**

- (8x) Relay outputs (220Vac-5A).
- (6x) Analog (0-10Vdc, 8 bit) / Digital (5-24Vdc) / PWM Isolated (5 - 24Vdc)
- (5x) Digital (5-24Vdc)

■ PLC Arduino 38R I/Os  
Analog / Digital / Relay PLUS



**12 Inputs:**

- (8x) 10 bit - Analog (0-10Vdc) / Digital (7-24Vdc) configurable by software
- (4x) Interrupt (24Vdc). "Can work like Digital (24Vdc)"

**22 Outputs:**

- (16x) Relay (220Vac-5A).
- (6x) Analog (0-10Vdc, 8bit) / Digital (24Vdc)

■ PLC Arduino 42 I/Os  
Analog / Digital PLUS



**26 Inputs:**

- (12x) Analog (0-10Vdc) / Digital (7-24Vdc) , configurable by software
- (14x) Digital Isolated (7-24Vdc).

**16 Outputs:**

- (16x) Digital Isolated (5-24Vdc)/ (6 of which) PWM, configurable by software
- (6 of which) Analog (0-10Vdc), configurable by switch

■ PLC Arduino 50RRA I/Os  
Relay / Analog / Digital PLUS



**22 Inputs:**

- (12x) Analog (0-10Vdc, 10bit) / Digital (7-24Vdc) configurables by software
- (10x) Digital Isolated (7-24Vdc). (6 of which are Interrupt)

**36 Outputs:**

- (16x) Relay (220Vac-5A)
- 8x) Analog (0-10Vdc, 8bit) / Digital (5-24Vdc)
- (12x) Digital (5-24Vdc)

■ PLC Arduino 53ARR I/Os  
Relay / Analog / Digital PLUS



**25 Inputs:**

- (14x) Analog (0-10Vdc, 10 bit) / Digital (7-24Vdc) configurables by software
- (5x) Digital (7-24Vdc).
- (6x) Interrupt (7-24Vdc). "Can work like Digital 24Vdc"

**28 Outputs:**

- (15x) Relay (220Vac-5A)
- (8x) Analog (0-10Vdc, 8bit) / Digital (5-24Vdc)
- (5x) Digital (Optoisolated 24Vdc max).

■ PLC Arduino 54ARA I/Os  
Relay / Analog / Digital PLUS



**29 Inputs:**

- (14x) Analog (0-10Vdc, 10 bit) / Digital (7-24Vdc) , configurable by software
- (9x) Digital Isolated (7-24Vdc).
- (6x) Interrupt (7-24Vdc). "Can work like Digital (24Vdc)"

**25 Outputs:**

- (8x) Relay (220Vac-5A)
- (8x) Analog (0-10Vdc, 8 bit)/ Digital (5-24Vdc)
- (9x) Digital (Isolated 24Vdc max)

## Industrial Standard Communications

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

Original  
Arduino Mega  
included

EEPROM 4 KB | SRAM 8 KB  
Flash 256 KB | CPU Speed 16 MHz



■ PLC Arduino 57R I/Os  
Relay / Analog / Digital PLUS



**18 Inputs:**

- (12x) Analog (0-10Vdc, 10 bit) / Digital (7-24Vdc) configurable by software
- (6x) Interrupt (5-24Vdc) "Can work like Digital (24Vdc)".

**31 Outputs:**

- (23x) Relay (220Vac - 5A).
- (8x) Analog (0-10Vdc, 8 bit) / Digital (5-24Vdc)

■ PLC Arduino 57AAR I/Os  
Analog / Digital PLUS



**32 Inputs:**

- (16x) Analog (0-10Vdc, 10bit) / Digital (7-24Vdc) configurable by software
- (6x) Interrupt (5-24Vdc). "Can work like Digital (24Vdc)"
- (10x) Isolated Digital (5-24Vdc)

**25 Outputs:**

- (7x) Relay (220Vac - 5A)
- (8x) Analog (0-10Vdc, 8bit) / Digital (5-24Vdc) / PWM Isolated (5-24Vdc)
- (10x) Digital Isolated (5-24Vdc)

■ PLC Arduino 58 I/Os  
Analog / Digital PLUS



**36 Inputs:**

- (16x) Analog (0-10Vdc) / Digital (7-24Vdc) configurable by software
- (20x) Digital Isolated (7-24Vdc).

**22 Outputs:**

- (22x) Digital Isolated (5-24Vdc)/ (8 of which) PWM configurable by software
- (8 of which) Analog (0-10Vdc)



# REFERENCE LIST - ETHERNET PLC

| Reference        | Description                                                 | Communications    |            |     |       |                 |          |             |          | Inputs / Outputs |              |                 |                |               |              |             |
|------------------|-------------------------------------------------------------|-------------------|------------|-----|-------|-----------------|----------|-------------|----------|------------------|--------------|-----------------|----------------|---------------|--------------|-------------|
|                  |                                                             | Serial TTL (UART) | I2C        | SPI | RS232 | RS485 Half/Full | Ethernet | Wi-Fi & BLE | GPRS/GSM | Digital Input    | Analog Input | Interrupt Input | Digital Output | Analog Output | Relay Output | In/Out 5Vdc |
| IS.MDuino.21+    | M-DUINO PLC Arduino Ethernet 21 I/Os Analog/Digital PLUS    | x2<br>n.11        | x1<br>n.12 | x1  | x1    | x1              | x1       | -           | -        | x13              | x6<br>n.4    | x2<br>n.5       | x8             | x3            | -            | x6<br>n.7   |
| IS.MDuino.42+    | M-DUINO PLC Arduino Ethernet 42 I/Os Analog/Digital PLUS    | x2<br>n.11        | x1<br>n.12 | x1  | x1    | x1              | x1       | -           | -        | x26              | x12<br>n.4   | x4<br>n.5       | x16            | x6            | -            | x6<br>n.7   |
| IS.MDuino.58+    | M-DUINO PLC Arduino Ethernet 58 I/Os Analog/Digital PLUS    | x2<br>n.11        | x1<br>n.12 | x1  | x1    | x1              | x1       | -           | -        | x36              | x16<br>n.4   | x6<br>n.5       | x22            | x8            | -            | x6<br>n.7   |
| IS.MDuino.19R+   | M-DUINO PLC Arduino Ethernet 19R I/Os Analog/Digital PLUS   | x2<br>n.11        | x1<br>n.12 | x1  | x1    | x1              | x1       | -           | -        | x6               | x4<br>n.4    | x2<br>n.5       | x3             | x3            | x8           | x6<br>n.7   |
| IS.MDuino.38R+   | M-DUINO PLC Arduino Ethernet 38R I/Os Analog/Digital PLUS   | x2<br>n.11        | x1<br>n.12 | x1  | x1    | x1              | x1       | -           | -        | x12              | x8<br>n.4    | x4<br>n.5       | x6             | x6            | x16          | x6<br>n.7   |
| IS.MDuino.57R+   | M-DUINO PLC Arduino Ethernet 57R I/Os Analog/Digital PLUS   | x2<br>n.11        | x1<br>n.12 | x1  | x1    | x1              | x1       | -           | -        | x18              | x12<br>n.4   | x6<br>n.5       | x8             | x8            | x23          | x6<br>n.7   |
| IS.MDuino.38AR+  | M-DUINO PLC Arduino Ethernet 38AR I/Os Analog/Digital PLUS  | x2<br>n.11        | x2<br>n.12 | x1  | x1    | x1              | x1       | -           | -        | x19              | x10<br>n.4   | x4<br>n.5       | x11            | x6            | x8           | x6<br>n.7   |
| IS.MDuino.53ARR+ | M-DUINO PLC Arduino Ethernet 53ARR I/Os Analog/Digital PLUS | x2<br>n.11        | x2<br>n.12 | x1  | x1    | x1              | x1       | -           | -        | x25              | x14<br>n.4   | x6<br>n.5       | x13            | x8            | x15          | x6<br>n.7   |
| IS.MDuino.57AAR+ | M-DUINO PLC Arduino Ethernet 57AAR I/Os Analog/Digital PLUS | x2<br>n.11        | x2<br>n.12 | x1  | x1    | x1              | x1       | -           | -        | x32              | x16<br>n.4   | x6<br>n.5       | x18            | x8            | x7           | x6<br>n.7   |
| IS.MDuino.54ARA+ | M-DUINO PLC Arduino Ethernet 54ARA I/Os Analog/Digital PLUS | x2<br>n.11        | x2<br>n.12 | x1  | x1    | x1              | x1       | -           | -        | x29              | x14<br>n.4   | x6<br>n.5       | x17            | x8            | x8           | x6<br>n.7   |
| IS.MDuino.50RRA+ | M-DUINO PLC Arduino Ethernet 50RRA I/Os Analog/Digital PLUS | x2<br>n.11        | x2<br>n.12 | x1  | x1    | x1              | x1       | -           | -        | x22              | x12<br>n.4   | x6<br>n.5       | x20            | x8            | x16          | x6<br>n.7   |

**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.7:** If using pin 2 and pin 3, (x2) In are lost | **n.11:** USB Only meant for uploading or debugging, not always connected as a serial in a project! | **n.12:** 2 Inputs are lost



# REFERENCE LIST - GPRS PLC

| Reference    | Description                                                        | Communications    |            |     |           |                 |          |             |            | Inputs / Outputs |              |                 |                |               |              |             |
|--------------|--------------------------------------------------------------------|-------------------|------------|-----|-----------|-----------------|----------|-------------|------------|------------------|--------------|-----------------|----------------|---------------|--------------|-------------|
|              |                                                                    | Serial TTL (UART) | I2C        | SPI | RS232     | RS485 Half/Full | Ethernet | Wi-Fi & BLE | GPRS/GSM   | Digital Input    | Analog Input | Interrupt Input | Digital Output | Analog Output | Relay Output | In/Out 5Vdc |
| 006001000200 | M-DUINO PLC Arduino Ethernet & GPRS 21 I/Os Analog/Digital PLUS    | x2<br>n.13        | x1<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x13              | x6<br>n.4    | x2<br>n.5       | x8             | x3            | -            | x6<br>n.7   |
| 006001000400 | M-DUINO PLC Arduino Ethernet & GPRS 42 I/Os Analog/Digital PLUS    | x2<br>n.13        | x1<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x26              | x12<br>n.4   | x4<br>n.5       | x16            | x6            | -            | x6<br>n.7   |
| 006001000600 | M-DUINO PLC Arduino Ethernet & GPRS 58 I/Os Analog/Digital PLUS    | x2<br>n.13        | x1<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x36              | x16<br>n.4   | x6<br>n.5       | x22            | x8            | -            | x6<br>n.7   |
| 006001000100 | M-DUINO PLC Arduino Ethernet & GPRS 19R I/Os Analog/Digital PLUS   | x2<br>n.13        | x1<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x6               | x4<br>n.4    | x2<br>n.5       | x3             | x3            | x8           | x6<br>n.7   |
| 006001000300 | M-DUINO PLC Arduino Ethernet & GPRS 38R I/Os Analog/Digital PLUS   | x2<br>n.13        | x1<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x12              | x8<br>n.4    | x4<br>n.5       | x6             | x6            | x16          | x6<br>n.7   |
| 006001000500 | M-DUINO PLC Arduino Ethernet & GPRS 57R I/Os Analog/Digital PLUS   | x2<br>n.13        | x1<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x18              | x12<br>n.4   | x6<br>n.5       | x8             | x8            | x23          | x6<br>n.7   |
| 006001000700 | M-DUINO PLC Arduino Ethernet & GPRS 38AR I/Os Analog/Digital PLUS  | x2<br>n.13        | x2<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x19              | x10<br>n.4   | x4<br>n.5       | x11            | x6            | x8           | x6<br>n.7   |
| 006001000800 | M-DUINO PLC Arduino Ethernet & GPRS 53ARR I/Os Analog/Digital PLUS | x2<br>n.13        | x2<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x25              | x14<br>n.4   | x6<br>n.5       | x13            | x8            | x15          | x6<br>n.7   |
| 006001000900 | M-DUINO PLC Arduino Ethernet & GPRS 57AAR I/Os Analog/Digital PLUS | x2<br>n.13        | x2<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x32              | x16<br>n.4   | x6<br>n.5       | x18            | x8            | x7           | x6<br>n.7   |
| 006001001000 | M-DUINO PLC Arduino Ethernet & GPRS 54ARA I/Os Analog/Digital PLUS | x2<br>n.13        | x2<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x29              | x14<br>n.4   | x6<br>n.5       | x17            | x8            | x8           | x6<br>n.7   |
| 006001001100 | M-DUINO PLC Arduino Ethernet & GPRS 50RRA I/Os Analog/Digital PLUS | x2<br>n.13        | x2<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x22              | x12<br>n.4   | x6<br>n.5       | x20            | x8            | x16          | x6<br>n.7   |
| 006001001200 | PLC ARDUINO ARDBOX 20 I/Os ANALOG HF MODBUS & GPRS                 | -                 | x1<br>n.1  | -   | x1<br>n.2 | x1<br>n.3       | -        | -           | x1<br>n.14 | x10              | x6<br>n.4    | x2<br>n.5       | x10            | x5<br>n.6     | -            | x2<br>n.15  |
| 006001001300 | PLC ARDUINO ARDBOX 20 I/Os RELAY HF MODBUS & GPRS                  | -                 | x1<br>n.8  | -   | x1<br>n.9 | x1<br>n.10      | -        | -           | x1<br>n.14 | x10              | x6<br>n.4    | x2<br>n.5       | -              | x2<br>n.6     | x8           | x2<br>n.15  |

n.1: 1 In. & 1 Dig. Out are lost | n.2: 2 In & 2 Relays are lost | n.3: 2 In. & 2 Dig. Out & 2 An. Out. 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 Out are lost | n.7: If using pin 2 and pin 3, (x2) In are lost | n.8: 1 In. & 1 Relay are lost | n.9: 2 In. & 2 Relay are lost | n.10: 2 In. & 2 Relay are lost | n.11: USB Only meant for uploading or debugging, not always connected as a serial in a project! | n.12: 2 Inputs are lost | n.13: If using Serial 1, GPRS/GSM is 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!



# REFERENCE LIST – WIFI PLC

| Reference    | Description                                                                       | Communications    |            |     |           |                 |          |             |            | Inputs / Outputs |              |                 |                |               |              |             |
|--------------|-----------------------------------------------------------------------------------|-------------------|------------|-----|-----------|-----------------|----------|-------------|------------|------------------|--------------|-----------------|----------------|---------------|--------------|-------------|
|              |                                                                                   | Serial TTL (UART) | I2C        | SPI | RS232     | RS485 Half/Full | Ethernet | Wi-Fi & BLE | GPRS/GSM   | Digital Input    | Analog Input | Interrupt Input | Digital Output | Analog Output | Relay Output | In/Out 5Vdc |
| 007001000200 | M-DUINO PLC Arduino Ethernet & WiFi & Bluetooth LE 21 I/Os Analog/Digital PLUS    | x2<br>n.13        | x1<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x13              | x6<br>n.4    | x2<br>n.5       | x8             | x3            | -            | x6<br>n.7   |
| 007001000400 | M-DUINO PLC Arduino Ethernet & WiFi & Bluetooth LE 42 I/Os Analog/Digital PLUS    | x2<br>n.13        | x1<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x26              | x12<br>n.4   | x4<br>n.5       | x16            | x6            | -            | x6<br>n.7   |
| 007001000600 | M-DUINO PLC Arduino Ethernet & WiFi & Bluetooth LE 58 I/Os Analog/Digital PLUS    | x2<br>n.13        | x1<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x36              | x16<br>n.4   | x6<br>n.5       | x22            | x8            | -            | x6<br>n.7   |
| 007001000100 | M-DUINO PLC Arduino Ethernet & WiFi & Bluetooth LE 19R I/Os Analog/Digital PLUS   | x2<br>n.13        | x1<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x6               | x4<br>n.4    | x2<br>n.5       | x3             | x3            | x8           | x6<br>n.7   |
| 007001000300 | M-DUINO PLC Arduino Ethernet & WiFi & Bluetooth LE 38R I/Os Analog/Digital PLUS   | x2<br>n.13        | x1<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x12              | x8<br>n.4    | x4<br>n.5       | x6             | x6            | x16          | x6<br>n.7   |
| 007001000500 | M-DUINO PLC Arduino Ethernet & WiFi & Bluetooth LE 57R I/Os Analog/Digital PLUS   | x2<br>n.13        | x1<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x18              | x12<br>n.4   | x6<br>n.5       | x8             | x8            | x23          | x6<br>n.7   |
| 007001000700 | M-DUINO PLC Arduino Ethernet & WiFi & Bluetooth LE 38AR I/Os Analog/Digital PLUS  | x2<br>n.13        | x2<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x19              | x10<br>n.4   | x4<br>n.5       | x11            | x6            | x8           | x6<br>n.7   |
| 007001000800 | M-DUINO PLC Arduino Ethernet & WiFi & Bluetooth LE 53ARR I/Os Analog/Digital PLUS | x2<br>n.13        | x2<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x25              | x14<br>n.4   | x6<br>n.5       | x13            | x8            | x15          | x6<br>n.7   |
| 007001000900 | M-DUINO PLC Arduino Ethernet & WiFi & Bluetooth LE 57AAR I/Os Analog/Digital PLUS | x2<br>n.13        | x2<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x32              | x16<br>n.4   | x6<br>n.5       | x18            | x8            | x7           | x6<br>n.7   |
| 007001001000 | M-DUINO PLC Arduino Ethernet & WiFi & Bluetooth LE 54ARA I/Os Analog/Digital PLUS | x2<br>n.13        | x2<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x29              | x14<br>n.4   | x6<br>n.5       | x17            | x8            | x8           | x6<br>n.7   |
| 007001001100 | M-DUINO PLC Arduino Ethernet & WiFi & Bluetooth LE 50RRA I/Os Analog/Digital PLUS | x2<br>n.13        | x2<br>n.12 | x1  | x1        | x1              | x1       | -           | x1<br>n.14 | x22              | x12<br>n.4   | x6<br>n.5       | x20            | x8            | x16          | x6<br>n.7   |
| 007001001200 | PLC ARDUINO ARDBOX 20 I/Os ANALOG HF MODBUS & WiFi & Bluetooth LE                 | -                 | x1<br>n.1  | -   | x1<br>n.2 | x1<br>n.3       | -        | -           | x1<br>n.14 | x10              | x6<br>n.4    | x2<br>n.5       | x10            | x5<br>n.6     | -            | x2<br>n.15  |
| 007001001300 | PLC ARDUINO ARDBOX 20 I/Os RELAY HF MODBUS & WiFi & Bluetooth LE                  | -                 | x1<br>n.8  | -   | x1<br>n.9 | x1<br>n.10      | -        | -           | x1<br>n.14 | x10              | x6<br>n.4    | x2<br>n.5       | -              | x2<br>n.6     | x8           | x2<br>n.15  |

**n.1:** 1 In. & 1 Dig. Out are lost | **n.2:** 2 In & 2 Relays are lost | **n.3:** 2 In. & 2 Dig. Out & 2 An. Out. 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 Out are lost | **n.7:** If using pin 2 and pin 3, (x2) In are lost | **n.8:** 1 In. & 1 Relay are lost | **n.9:** 2 In. & 2 Relay are lost | **n.10:** 2 In. & 2 Relay are lost | **n.11:** USB Only meant for uploading or debugging, not always connected as a serial in a project | **n.12:** 2 Inputs are lost | **n.13:** If using Serial 1, GPRS/GSM is 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).





■ PLC Arduino Ardbox  
20 I/Os Analog HF



Original Arduino Leonardo included

#### 10 Inputs:

- (10x) Digital (7-24Vdc).
- (6x) of 10x, Analog (0-10Vdc) configurable by Switch

#### 7 Outputs:

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

■ PLC Arduino Ardbox  
20 I/Os RELAY HF



#### 10 Inputs:

- (10x) Digital (7-24Vdc).
- (6x) of 10x, Analog (0-10Vdc) configurable by Switch

#### 8 Outputs:

- (8x) Relay (220Vac-5A)

■ GPRS/SIM Controller 19R



#### 6 Inputs

- (4x) Analog (0-10Vdc, 10bit) / Digital (5-24Vdc) configurables by software
- (2x) Interrupt Inputs (5-24Vdc). "Can work like Digital (24Vdc)"

#### 11 Outputs

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

## Industrial Protocols

RS485 · RS232 · SPI · I2C · Modbus RTU

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



Panel PC's for industrial environment using Linux, Android or Windows 10 IoT OSs.

#### TFT

10.1" TouchScreen LVDS, 315 nits, 170° viewing angle.  
Format 16:9, 1366x768.

#### 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

8x GPIO , SPI , I2C , UART

#### LAN connectivity

10/100 Ethernet (RJ-45)

## CPU

**RaspberryPi B3 +**  
Quad-core A53  
(ARMv8) 64-bit @  
1.4GHz

#### Tinker Board

Rockchip Quad-  
Core RK3288

## SOFTWARE

Linux    Android    Windows 10 IoT

You can choose among these three Operating Systems to boot the Panel PC.

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



Original Raspberry Pi3 included



Choose the processor  
That fits your project

Original Tinker Board included



TinkerTouch 7" ■

Panel PC based on TinkerBoard (ASUS), encasing a 7" TouchScreen.

From 12 to 24Vdc

10x GPIOs Optoisolated (5-24Vdc) configurable.

1x RS485-RS232\* - 1x Serial TTL - 1x I2C - 1x SPI - RTC (Real Time Clock)

UPS included

# REFERENCE LIST - ARDBOX

| Reference      | Description                                                               | Communications    |           |     |           |                 |          |             |            | Inputs / Outputs |              |                 |                |               |              |             |
|----------------|---------------------------------------------------------------------------|-------------------|-----------|-----|-----------|-----------------|----------|-------------|------------|------------------|--------------|-----------------|----------------|---------------|--------------|-------------|
|                |                                                                           | Serial TTL (UART) | I2C       | SPI | RS232     | RS485 Half/Full | Ethernet | Wi-Fi & BLE | GPRS/GSM   | Digital Input    | Analog Input | Interrupt Input | Digital Output | Analog Output | Relay Output | In/Out 5Vdc |
| IS.AB20AN.HF+  | PLC Arduino ARDBOX 20 I/Os Analog HF Modbus (RS485 configured by default) | -                 | x1<br>n.1 | x1  | x1<br>n.2 | x1<br>n.3       | -        | -           | -          | x10              | x6<br>n.4    | x2<br>n.5       | x10            | x7<br>n.6     | -            | x3<br>n.7   |
| IS.AB20REL.HF+ | PLC Arduino ARDBOX 20 I/Os Relay HF Modbus (RS485 configured by default)  | -                 | x1<br>n.8 | x1  | x1<br>n.9 | x1<br>n.10      | -        | -           | -          | x10              | x6<br>n.4    | x2<br>n.5       | -              | x2<br>n.6     | x8           | x3<br>n.7   |
| 006001001200   | PLC ARDUINO ARDBOX 20 I/Os ANALOG HF MODBUS & GPRS                        | -                 | x1<br>n.1 | -   | x1<br>n.2 | x1<br>n.3       | -        | -           | x1<br>n.14 | x10              | x6<br>n.4    | x2<br>n.5       | x10            | x2<br>n.6     | -            | x2<br>n.15  |
| 006001001300   | PLC ARDUINO ARDBOX 20 I/Os RELAY HF MODBUS & GPRS                         | -                 | x1<br>n.8 | -   | x1<br>n.9 | x1<br>n.10      | -        | -           | x1<br>n.14 | x10              | x6<br>n.4    | x2<br>n.5       | -              | x2<br>n.6     | x8           | x2<br>n.15  |
| 007001001200   | PLC ARDUINO ARDBOX 20 I/Os ANALOG HF MODBUS & WiFi & BLUETOOTH LE         | -                 | x1<br>n.1 | -   | x1<br>n.2 | x1<br>n.3       | -        | x1<br>n.17  | -          | x10              | x6<br>n.4    | x2<br>n.5       | x10            | x2<br>n.6     | x8           | x3<br>n.7   |
| 007001001300   | PLC ARDUINO ARDBOX 20 I/Os RELAY HF MODBUS & WiFi & BLUETOOTH LE          | -                 | x1<br>n.8 | -   | x1<br>n.9 | x1<br>n.10      | -        | x1<br>n.17  | -          | x10              | x6<br>n.4    | x2<br>n.5       | -              | x2<br>n.6     | x8           | x3<br>n.7   |

**n.1:** 1 In. & 1 Dig. Out are lost | **n.2:** 2 In. & 2 Relays are lost | **n.3:** 2 In. & 2 Dig. Out & 2 An. Out. 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 Out are lost | **n.7:** If using pin 2 and pin 3, (x2) In are lost | **n.8:** 1 In. & 1 Relay are lost | **n.9:** 2 In. & 2 Relay are lost | **n.10:** 2 In. & 2 Relay are lost | **n.11:** USB Only meant for uploading or debugging, not always connected as a serial in a project | **n.12:** 2 Inputs are lost | **n.13:** If using Serial 1, GPRS/GSM is 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).

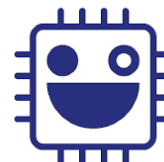
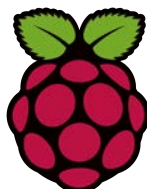




# REFERENCE LIST - PANEL PC

|              |                              |                                                                                                                                                                                           | Communications    |            |            |       | Inputs / Outputs |          |             |          |                  |                |
|--------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------|-------|------------------|----------|-------------|----------|------------------|----------------|
| CPU          | Reference                    | Description                                                                                                                                                                               | Serial TTL (UART) | I2C        | SPI        | RS232 | RS485 Half/Full  | Ethernet | Wi-Fi & BLE | GPRS/GSM | Digital Input    | Digital Output |
| NO CPU       | IS.TBENCL.10.1AL             | Panel PC 10.1" Industrial EMC Aluminum - No CPU included                                                                                                                                  | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
| Raspberry PI | 003000300100                 | TouchBerry PI 7" - 10 Configurable I/Os - RS485 - RS232 - UPS Included                                                                                                                    | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
|              | IS.TBENCL.10.1AL_RPIB3_X     | Touchberry PI 10.1 B3+ (Panel PC Industrial EMC Aluminum - Raspberry PI B3 Included)                                                                                                      | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
|              | IS.TBENCL.10.1AL_RPIB3_16SD  | Touchberry PI 10.1 B3+ (Panel PC Industrial EMC Aluminum - Raspberry PI B3 Included + 16Gb µSD Card without OS)                                                                           | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
|              | IS.TBENCL.10.1AL_RPIB3_16LSD | Touchberry PI 10.1 B3+ (Panel PC Industrial EMC Aluminum - Raspberry PI B3 Included + µSD Card with Raspbian)                                                                             | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
|              | 003000100100                 | Touchberry PI 10.1 B3+ UPS (Panel PC Industrial EMC Aluminum - Raspberry PI B3 Included + µSD Card with Raspbian - UPS included)                                                          | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
|              | 003000200100                 | Touchberry PI 10.1 B3+ UPS & RTC & RS485 (Panel PC Industrial EMC Aluminum - Raspberry PI B3 Included + µSD Card with Raspbian - UPS,RTC,RS485 functions included)                        | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
| Asus         | 003001400100                 | TinkerTouch 7" - 10 Configurable I/Os - RS485 - RS232 - UPS Included - Linux installed into eMMC                                                                                          | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
|              | 003001400200                 | TinkerTouch 7" - 10 Configurable I/Os - RS485 - RS232 - UPS Included - Android Installed into eMMC                                                                                        | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
|              | 003001100100                 | TinkerTouch S 10.1 (Panel PC Industrial, Aluminum enclosure, EMC compliance - ASUS Quad-Core, 2GB, 16Gb eMMC+MicroSD slot - LINUX)                                                        | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
|              | 003001200100                 | TinkerTouch S 10.1 UPS (Panel PC Industrial, Aluminum enclosure, EMC compliance - ASUS Quad-Core, 2GB, 16Gb eMMC+MicroSD slot - UPS function included - LINUX)                            | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
|              | 003001300100                 | TinkerTouch S 10.1 UPS & RTC & RS485 (Panel PC Industrial, Aluminum enclosure, EMC compliance - ASUS Quad-Core, 2GB, 16Gb eMMC+MicroSD slot - UPS,RTC,RS485 functions included - LINUX)   | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
|              | 003001100200                 | TinkerTouch S 10.1 (Panel PC Industrial, Aluminum enclosure, EMC compliance - ASUS Quad-Core, 2GB, 16Gb eMMC+MicroSD slot - ANDROID)                                                      | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
|              | 003001200200                 | TinkerTouch S 10.1 UPS (Panel PC Industrial, Aluminum enclosure, EMC compliance - ASUS Quad-Core, 2GB, 16Gb eMMC+MicroSD slot - UPS function included - ANDROID)                          | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |
|              | 003001300200                 | TinkerTouch S 10.1 UPS & RTC & RS485 (Panel PC Industrial, Aluminum enclosure, EMC compliance - ASUS Quad-Core, 2GB, 16Gb eMMC+MicroSD slot - UPS,RTC,RS485 functions included - ANDROID) | x1<br>n.18        | x1<br>n.18 | x1<br>n.18 | -     | x1               | x1       | x1          | -        | x26 GPIO<br>n.18 |                |

n.1: 1 In. & 1 Dig. Out are lost | n.2: 2 In & 2 Relays are lost | n.3: 2 In. & 2 Dig. Out & 2 An. Out. 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 Out are lost | n.7: If using pin 2 and pin 3, (x2) In are lost | n.8: 1 In. & 1 Relay are lost | n.9: 2 In. & 2 Relay are lost | n.10: 2 In. & 2 Relay are lost | n.11: USB Only meant for uploading or debugging, not always connected as a serial in a project!! | n.12: 2 Inputs are lost | n.13: If using Serial 1, GPRS/GSM is 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, Wi-Fi & BLE are not available | n.17: If using Wi-Fi & 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).



# LIBRARIES, COMMUNICATIONS, PROTOCOLS

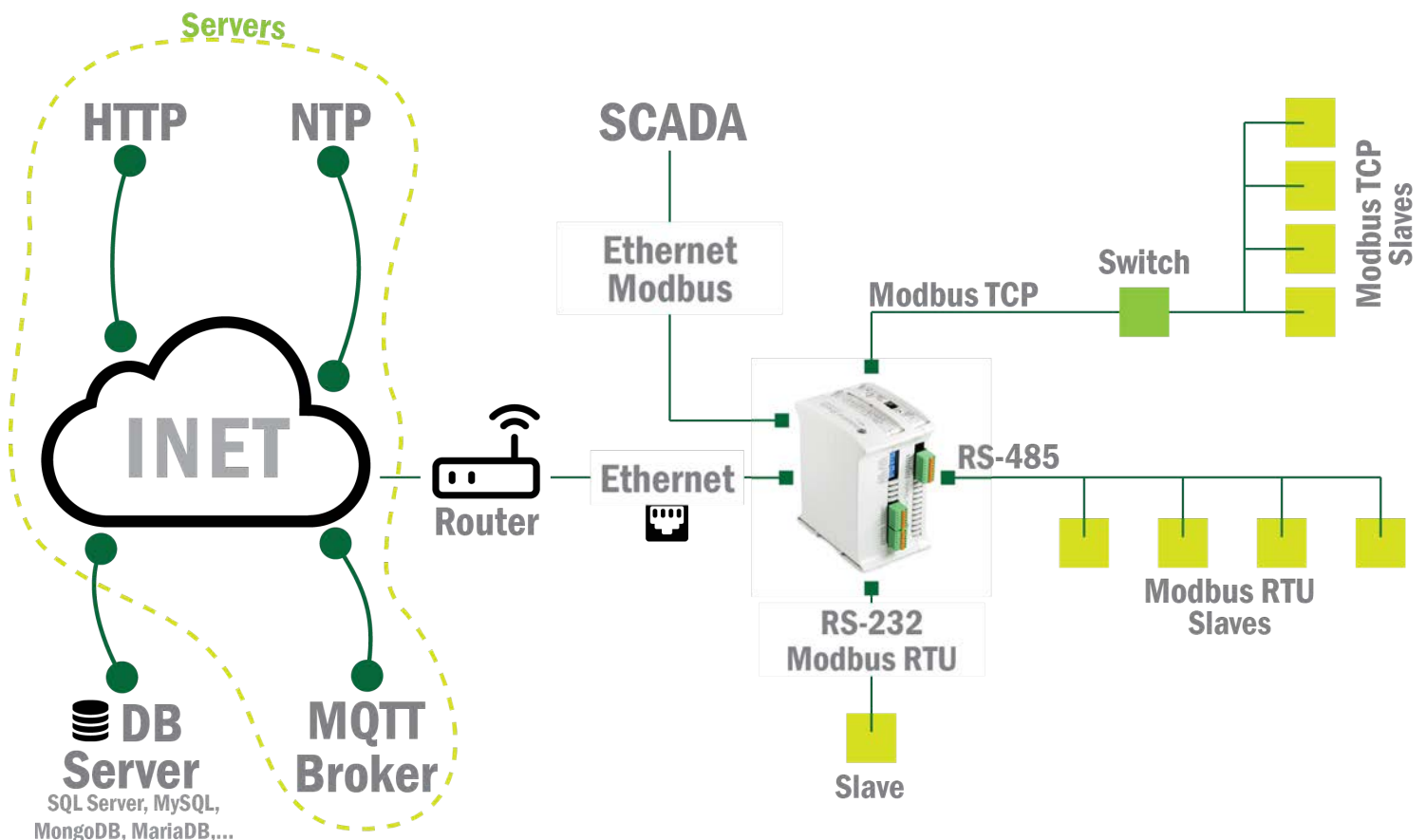
Available Libraries in our Blog and GitHub

| Application Layer | MySQL           | SQL Server | SimpleComm | Modbus TCP | MQTT | http | Raw Data | NTD         | Raw Data | Modubs RTU | SimpleComm | Raw Data | Modubs RTU | SimpleComm | Sensor Data | Sensor Data | Sensor Data |
|-------------------|-----------------|------------|------------|------------|------|------|----------|-------------|----------|------------|------------|----------|------------|------------|-------------|-------------|-------------|
|                   | Data Base       |            |            |            |      |      |          |             |          |            |            |          |            |            |             |             |             |
| 4. TRANSPORT      | TCP             |            |            |            |      |      |          | UDP         |          |            |            |          |            |            |             |             |             |
| 3. NETWORK        | IP              |            |            |            |      |      |          |             |          |            |            |          |            |            |             |             |             |
| 2. DATA LINK      | Ethernet / WiFi |            |            |            |      |      |          |             |          |            |            |          |            |            |             |             |             |
| 1. PHYSICAL       | GPRS            |            |            |            |      |      |          | Serial UART |          |            |            |          |            |            |             |             |             |

 <https://github.com/IndustrialShields>

 <https://www.industrialshields.com/blog/industrial-shields-blog-1>

With our PLC's you can communicate using several protocols like RS-232, RS-485, Modbus TCP, or using ethernet, etc.  
It's possible to send and receive information from several server types (HTTP, NTP, MQTT) or DB Servers.



# OPEN MOTE

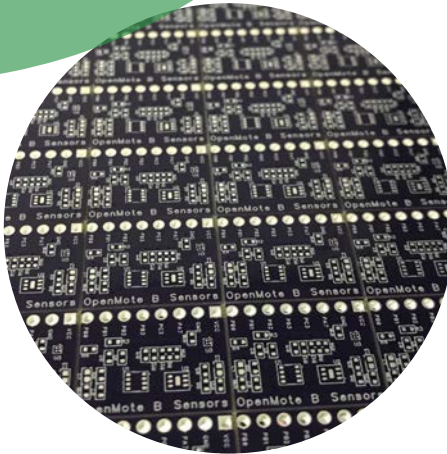
OpenMote B is a Super LOW consumption mote for the IoT applications. It is the reference for the IETF 6TiSCH Working Group and is supported by all the Open Source 6TiSCH implementation in Contiki and OpenWSN projects.

- **High Autonomy (>10 years\*)**
- **Less than 50µA Consumption**
- **USB Interface**

## Tech Features

### Technical characteristics:

- Temperature sensor, Humidity sensor, Pressure sensor, Luminosity sensor
- 4x Leds indicators
- 2xAA Battery placeholder
- 2.4GHz SMA Antenna
- SubGHz SMA Antenna



### Main Features

- Ti CC2538 SoC (512kb Flash 32kb RAM)
- Atmel AT86RF215 SubGHz Radio (868/915MHz)
- Supports all IEEE802.15.4g modulations
- Simultaneous dual radio Operation

### Programming

- Programming over BSL
- Supported in Contiki and OpenWSN for experimentation
- JTAG and OCD compliant
- USB Interface

### OpenMote B

OpenMote B is a Raspberry compatible IoT hardware in compliance with the standard IEEE802.15.4g and it can be programmed by Open Source platforms.

OPEN MOTE

## Power Supply



Din RAIL Power Supply 120W

- AC-DC, 120W, 1 Output 5A at 24Vdc



Din RAIL Power Supply 180W

- AC-DC, 180W, 1 Output 7.5A at 24Vdc



Din RAIL Power Supply 240W

- AC-DC, 240W, 1 Output 10A at 24Vdc



Din RAIL Power Supply 30W

- AC-DC, 30W, 1 Output 2.5A at 12Vdc



Din RAIL Power Supply 30W

- AC-DC, 30W, 1 Output at 24Vdc



Din RAIL Power Supply 50W

- AC-DC, 50W, 1 Output at 24Vdc

POWER SUPPLY



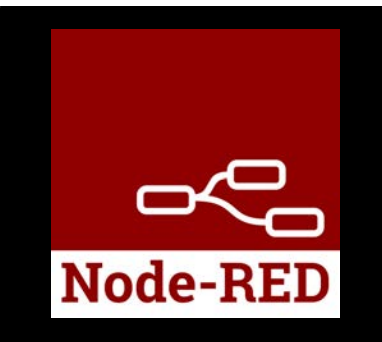
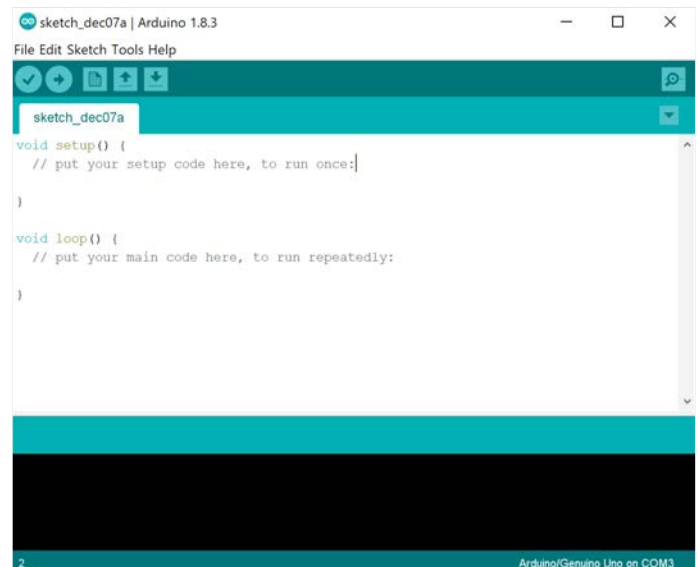
# SOFTWARE



Arduino IDE is the Original platform to program Arduino boards

Our Arduino based PLCs use Original Arduino boards assembled inside all devices

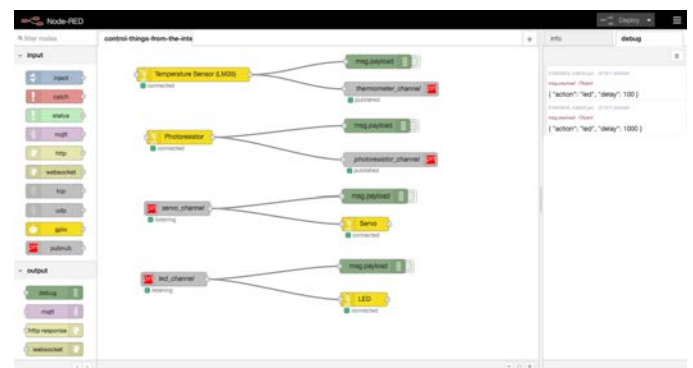
- Free software licenses
- Standard Libraries available
- Documentation and examples available, ready to use
- Industrial Shields libraries available to facilitate the programming of our PLC's



NodeRED. Platform to develop Apps, Servers, Dashboards and more.

Node-Red is a programming tool for wiring together hardware devices, APIs and online services in new and interesting ways. It is very intuitive, easy and fast-programming. It is an excellent tool for working graphically.

- It provides a browser-based editor that makes it easy to wire together flows using nodes.
- Online debugging application



Our PLC's can be programmed with all software platforms compatible with Arduino IDE.

Electron · Codebender · Stino · Eclipse · Visual Studio · Gedit · Komodo Edit · MariaMole · Zeus · Atmel Studio · AVR-GCC · CodeBlocks · ROBOTC for Arduino · Xcode · ArduinoDroid · Notepad++ · Programino · and more...



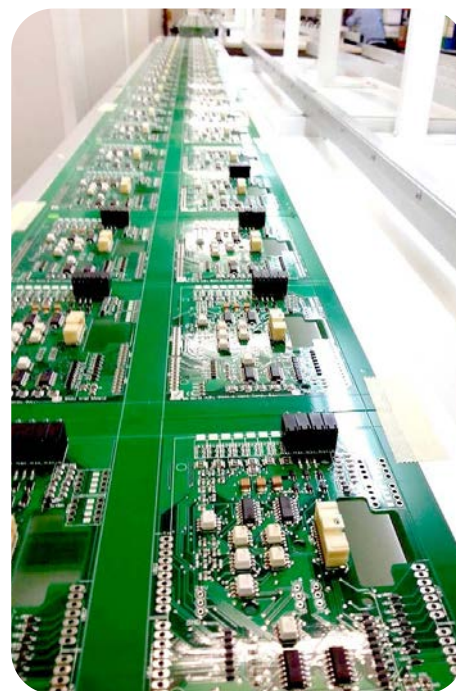
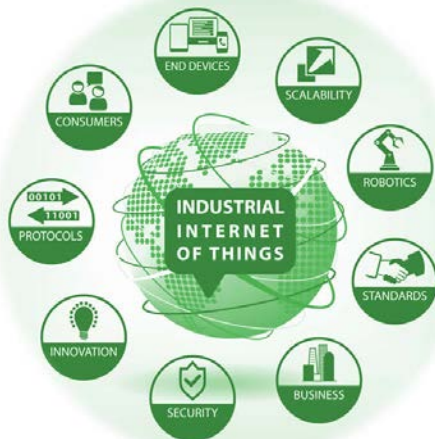
Our Panel PC's can work with Linux and Android, it means that If your team have knowledge enough you can create a custom applications for the Panel PC's. You have more flexibility to fit the needs of your installation or application.



**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**.



Bigdata  
Cloud Computing  
Flexible Hardware  
Industrial Internet of Things

COMPANY

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.

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

Incompliance 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



**RoHS**  
COMPLIANT



Expecting  
final  
auditory



# EVOLVING

## 2007

Through the IEEE-UNEDsb we started to know Arduino and we used it to manufacture machinery as a prototype.



## 2010

We created the first Shields for industrial use for machinery of the labeling sector and automatic production lines.

## 2012

Boot & Work Corp. is created with the objective of standardizing a product based on Open Source technology for use in industrial environments.



## 2013

Boot & Work Corp wins the award for the best Innovative company in Barberá del Valles. First prototype units. The Ardbox is coming.

## 2014

We created the Industrial Shields brand from where we started to market a first basic family of products. First unit sold online to Lybia.



## 2015

Industrial Shields has commercialized equipment based on Open Source technology to more than 20 countries.

## 2016

5 distributors in different countries (UK, Germany, USA, Mexico and Italy) and more than 500 clients in industrial sectors of all kinds.



## 2017

We have more than 17 distributors in 15 countries from all continents and we have reached more than 75 countries.

## 2018

International trade shows in Barcelona, Paris and Bangalore. Investment in improving facilities, quality process, industrial certifications.



## 2019

Presence in more than 90 countries, more than 20 distributors worldwide. New products developments, PLC with WiFi and GPRS/GSM.



Presence in more than 90 countries



Contact with us, let's get in touch

**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.

**Get in touch with us. We are here, glad to help and support you.**



Fabrica del Pont 1-11  
(Recinte industrial del Pont Vell)  
Sant Fruitós de Bages 08272 (Barcelona)  
Spain



[industrialshields@industrialshields.com](mailto:industrialshields@industrialshields.com)



Tel: (+34) 938 760 191



<https://www.industrialshields.com>

CONTACT WITH US