

IoT Open-Source micro-controller based on **Arduino MKR1010 / ESP32**

Transform your industrial processes with the power of IoT. Our open-source micro-controller offers unparalleled versatility and connectivity for your most demanding applications.

The **WIS micro-controller** combines the benefits of the Open Source Hardware to provide a reliable and customizable solution for your industry. Elevate your industrial operations with the latest in IoT technology.

Description

Device IOs: 4 DI, 4 DO, 4 AI (0-10V) or DI (selectable), 1 AO and 2 Multifunction pins directly connected to microprocessor.

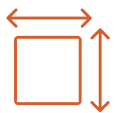
Available with LoRa/LoRaWAN, Narrow Band, LTE, 4G, GPRS

Communication Interfaces: RJ45, RS485 Half Duplex (or UART), I2C and SPI.

Communication Protocols: Wi-Fi and Bluetooth.

Others: RTC, EEPROM, ATECCX08 (cryptographic chipset), µSD interface and Reset Button.

Specifications



Dimensions and Weight

Height x Width x Length (mm)

114 x 46 x 127

Height x Width x Length (inches)

4,488 x 1,811 x 5

Weight

<350 gr



Environmental Conditions

Operating temperature

0 to 60 °C

Storage temperature

-20 to 60 °C

Operating environment

With no corrosive gas

Operating humidity

10 to 90% (non-condensation)

CPU

CPU Type

Arduino MKR1010 (ARM Cortex - M0 32-bit SAMD21)

Espressif ESP32-WROOM-32UE

Clock Speed

MKR1010: 32.768 kHz (RTC), 48 MHz (Processor)

ESP32: 40 MHz (Processor)

Memory

MKR1010 - SAMD21: 256kB Flash, 32kB SRAM

ESP32: 448kB ROM, 520kB SRAM

Cryptographic Chipset

MKR1010: ATECC508

ESP32: ATECC608

EEPROM

512 kB



Right face



Inputs/Outputs

Digital Inputs

Input Voltage, High

> 5 V DC (max. 24 V DC)

Input Voltage, Low

< 3,3 V DC

Imin.

2 mA (at 5 V DC input) -12mA (at 24 V DC input)

Number of Digital Inputs

4 + 4* (Use Analogue Inputs as Digital Inputs)

Reverse Polarity Protection

Yes

Galvanic Isolation

Yes

Status Led

Yes (only on 4 pure Digital Inputs, not Analog ones)

Analog Inputs

Input Range

0 to 10 V DC

Type of Inputs

Referenced Single Ended (all analog inputs share the same common reference on the device)

Input Impedance

39 kΩ

Number of analogue inputs

4

Digital Input usage

Analog Inputs can be used as digital Input Signals (max. 24 V DC)

Resolution ADC

12 bits maximum



Digital Outputs

Output Voltage, High

Vin -1,0V

Input Voltage, Low

GND (Supply Ground)

I_{max}

70 mA

Protection

Diode

Number of Digital Outputs

4

Galvanic Isolation

Yes

Status Led

Yes

Analog Outputs

Output Range

0 to 10 V DC

Output Reference

Referenced Single Ended (analog output share the same common reference on the device)

I_{max}

10 mA

Number of Analog Outputs

1

Resolution DAC

10 bits maximum



Communications

LoRa/LoRaWAN

RN2483 - low-power long-range RF technology-based transceiver module

Radio Region -> Europe

Key Features: Embeds LoRaWAN™ Class A protocol stack

Sub-GHz, 433/868 MHz

European R&TTE Directive

NB Narrow Band

Based on the SARA-R4 Series, an ultra-compact LTE Cat M1/NB1, and EGPRS module

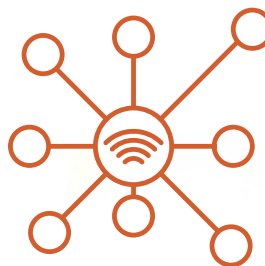
Radio Region -> multi-regional coverage with data up to 1200 kbit/s.

External Buses Available

Ethernet, I2C, SPI, RS485 half-duplex or UART

Wireless communications

Bluetooth and Wi-Fi



Top

Connection Data

Wire Connection Cross Section AWG, min - max

AWG 24 - AWG 14

Solid, min H05(07) V-U, min - max

0,2 mm² - 1,5 mm²

Stranded, min H07 V-R, min - max

0,2 mm² - 2,5 mm²

Flexible, min H05(07) V-K, min - max

0,2 mm² - 2,5 mm²

w. plastic collar ferrule, DIN 46228 pt.4, min - max

0,25 mm² - 2,5 mm²

Ethernet Interface

RJ45 Female Socket

USB (Programming Interface)

Micro-USB Type B Female Socket

External antenna connections

SMA Female

Other

µSD Interface, Reset Button, Real Time Clock

(CR1220 Battery not included)



Left face

Multifunction Pins

Voltage Operation

3,3 V / 5 V directly connected to

Micro-controller pins

Voltage selection

Configurable via DIP switches

Signal functions

Digital Input, Digital Output, Interrupts, PWM

I_{max} (when configured as Output)

<7 mA

Voltage Out Pins

5 V pin

5 V DC for sensor Power Supply (1 A max.)

3.3 V pin

3.3 V DC for sensor Power Supply (300 mA max.)

GND pins

Common reference in all GND pins (Vin-)



Front



Voltage Range (Vin)

11,4V DC to 25,4 V DC

Max Power

30 W

Insulation Resistance

20 MΩ min. at 500 V DC between AC terminals and protective ground terminals

Dielectric strength

2.300 V AC at 50/60 Hz for one minute with a leakage current of 10 mA max.
between all the external AC terminals and the protective ground terminal.

Power supply holding time

2 ms min.



Back



Directives

RoHS

EN 50581

LVD

EN 61010-1, EN 61010-2-201

EMC

IEC 61000-6-1, IEC 61000-6-2, IEC 61000-6-3, IEC 61000-6-4

RED

EN 301 489-1, EN 301 489-52, EN 301 489-3, EN 301 489-17,
EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, EN 301
908-1, EN 301 908-2, EN 301 908-13, EN 301 511

Safety

IEC62311

Marking

CE



Bottom



Contact us



Tel: (+34) 938 760 191



Camí del Grau, 25
Sant Fruitós de Bages 08272 (Barcelona) - Spain



industrialshields@industrialshields.com



<https://www.industrialshields.com>