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.

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
Inputs/Outputs

Digital Inputs
- Input Voltage, High: > 5 V DC (max. 24 V DC)
- Input Voltage, Low: < 3.3 V DC
- Imax: 70 mA
- Protection: Diode
- Number of Digital Inputs: 4
- 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)
- Imax: 10 mA
- Protection: Diode
- Number of Digital Outputs: 4
- Galvanic Isolation: Yes
- Status Led: Yes

Analog Outputs
- Output Range: 0 to 10 V DC
- Type of Inputs: Referenced Single Ended (analog output share the same common reference on the device)
- Imax: 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
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)

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
- Imax (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-)
**Power Supply**

**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.

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**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

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**Marking**

CE

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**Contact us**

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