

# Arduino-Based Programmable Industrial IoT Gateway Matrix-310



## Features

- Arduino-Based Programmable Industrial IoT Gateway
- Rugged Design for Harsh Industrial Environment
- Espressif ESP32 Xtensa® Dual-Core 32-bit LX6 Microprocessor, 240 MHz
- Onboard 520KB SRAM, 4MB Flash
- Easy Software Development (IDE/C-language/Arduino/Micro Python)
- Suitable for Accessing Modbus Device
- One LAN Port, 10/100Mbps Ethernet
- Two Serial Ports: 1xRS-485 & 1xRS-232
- Wireless (Can Be Enable): IEEE 802.11 b/g/n, 2.4GHz Single Band
- 2xDigital Inputs and 1xRelay Out
- ID Setting by Rotary Switch
- One Micro-SD Socket Internally
- Wide-Range Temperature Operating
- DIN-Rail Mounting, Optional Wall-Mounting
- Protective Earthing Design with Chassis Ground Screw

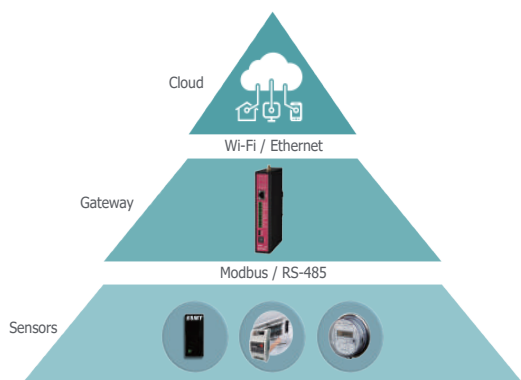
**ARDUINO ESP32**

## ■ Introduction

Matrix-310 is an Arduino-based industrial IoT gateway with multi-communication for available/reliable dual networks. Robustly designed with extreme temperatures, and wide-range power supply tolerances, Matrix-310 is a reliable IoT gateway 365/7/24 operation in a harsh environment.

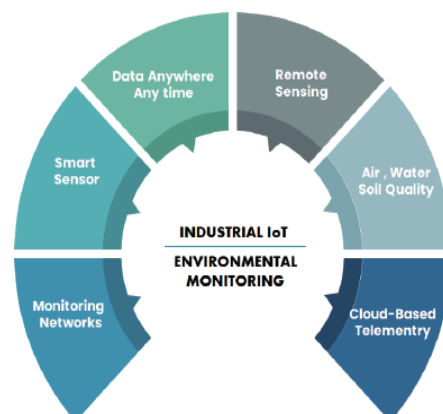
It features Dual Serial ports and digital In/Out connectivity for transmission of acquired data to the cloud makes it ideal for real-time monitoring and predictive maintenance also optimization and deployment of factory applications, such as industrial automation, environment monitoring and smart city infrastructure.

## ■ Applications



### Industrial IoT Automation

Amounts of data will be collected, shared and sent to Cloud-based service by implement the IIoT (or Industrial Internet or Industry 4.0) by leveraging intelligent, connected devices in their factories. To increase automation in homes, schools, stores, and in many industries.



### Intelligent Management for Environment Monitoring

Techniques designed to observe an environment, characterize its quality, and establish environmental parameters, accurately quantifying the impact an activity has on an environment.

# Arduino-Based Programmable Industrial IoT Gateway

## Matrix-310

### ■ Advantages

#### *Easy to Use C/C++ Platform (Arduino ESP32)*

- Matrix-310 is C/C++ programmable, Arduino(ESP32) compatible industrial IoT platform
- Install Arduino core(ESP32) through board manager of Arduino IDE

#### *Free Application Development Tools*

- Free Xtensa C/C++ toolchain
- Free Arduino official IDE
- Free Microsoft Arduino plugin for VS code
- Example codes to access Cloud APIs
- Example codes to access Modbus RTUs

#### *Robust Designed for Industrial Environment*

- 9-40VDC wide-range power input
- Solid steel metal housing against EMI hazard
- Fanless operating in harsh environment
- Convenient installation both DIN-rail and wall mounting
- High reliable protective earthing design with chassis ground screw

#### *Rich Features Fulfill Versatile Application*

- Dual serial port (RS-232 & RS-485), dual networks available
- 2x opto-isolation digital input & 1x relay out
- 1x 8-position rotary switch to setup device ID or application mode
- 1x Micro-SD socket reserved for mass data retention

### ■ Specifications

#### *SOC (ESP32-WROOM-32U)*

- MCU: ESP32-D0WD-V3, Xtensa® dual-core 32-bit LX6 microprocessor
- Frequency: Up to 240MHz
- SDRAM: 520KB for data and instructions
- Flash: 448KB for booting and core functions
- Wi-Fi (ESP32): 802.11b/g/n, 2.4GHz single band

#### *Network Interface*

- Type: 1x 10/100Mbps Ethernet (SPI interface)
- Connector Type: RJ45

#### *TTY (Serial) Ports*

- COM1: Isolated RS-485 (1500Vrms isolation)
- COM2: RS-232
- Signal: RS-485 (Data+, Data-), RS-232 (TX/RX)
- Connector: Terminal block
- LED Indicator: YES

#### *Digital Input*

- 2 x Digital Input channels
- Isolation Protection: 5000Vrms (Photo-Coupler)
- Logical High: 5~24VDC
- Logical Low: 0~1.5VDC

#### *Relay Output*

- 1x Digital Output Channels (Relay)
- Contact Rating: 125VAC@0.5A / 30VDC@1.0A
- Max. Switching Voltage: 125VAC / 60VDC
- Max. Switching Current: 2A

#### *General*

- WatchDog (WDT): YES (ESP32)
- Real-Time Clock(RTC): YES (ESP32)
- Power Input: +9~+40 VDC (terminal block)
- Typical Consumption: 12VDC@150mA
- Indicator: PWR, READY, LAN, UART, Wi-Fi, Status
- Dimensions (WxLxH): 30 x 140 x 95mm (1.18 x 5.51 x 3.74in)
- Net Weight: 424.5g (0.931lb)
- Operating Temperature: 0~70°C (32~158°F)
- Regulation: CE Class A, FCC Class A
- Installation: DIN-rail mounting & Wall mounting

#### *SD Slot*

- 1x Micro-SD socket inside (SPI interface)
- SD 2.0 compliant, supports SDHC

#### *Console*

- 1 x microUSB console port
- Authoring & Debug

#### *ID setting*

- 1x 8-position rotary switch
- Device ID setting or Application mode selection

### ■ Ordering Information

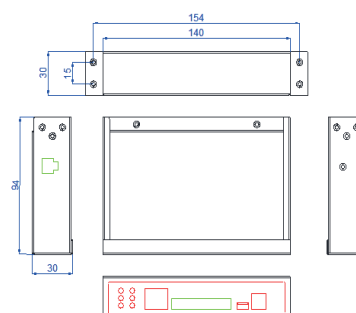
#### *Matrix-310*

- Arduino-Based Programmable Industrial IoT Gateway

### ■ Mounting



### ■ Dimension (unit:mm)



## Assured Systems

Assured Systems is a leading technology company with over 1,500 regular clients in 80 countries, deploying over 85,000 systems to a diverse customer base in 12 years of business. We offer high-quality and innovative rugged computing, display, networking and data collection solutions to the embedded, industrial, and digital-out-of-home market sectors.

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