# UA-2841M

## UA Series IIoT Communication Server
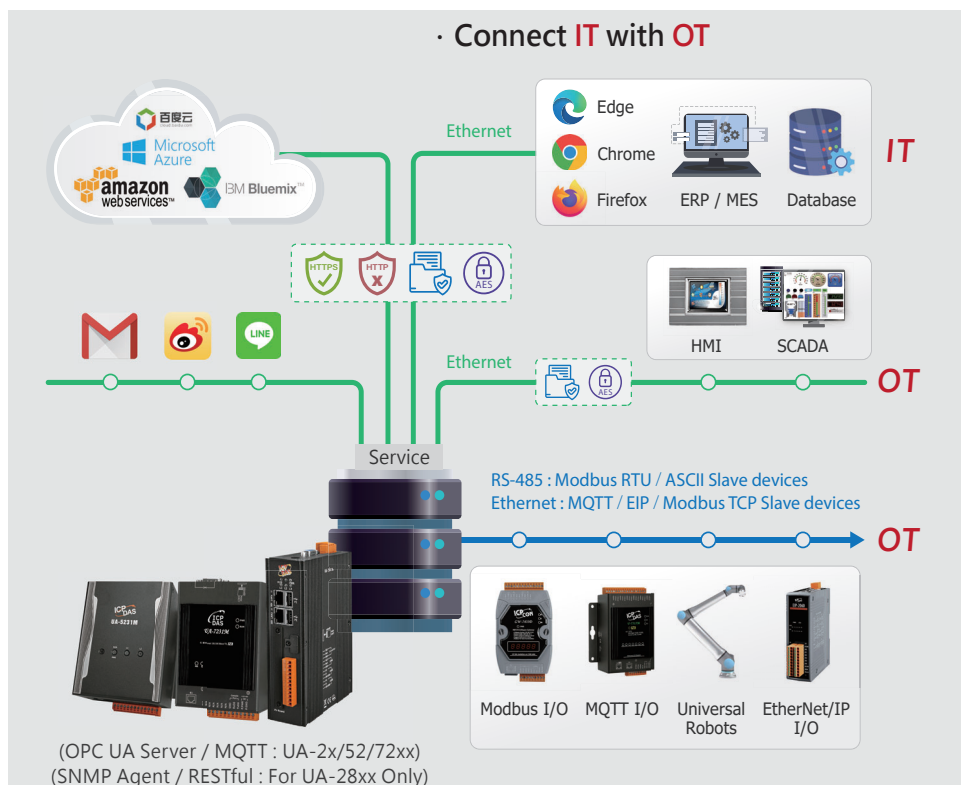### 2 Ethernet Ports

## 🔲 Features

- ■ Simultaneous Writing for Remote Database and Local Data Logger
- ■ Offline Data Recovery Mechanism for Remote Database
- ■ Support to Enable OPC UA, MQTT, SNMP and RESTful at the Same Time
- ■ MQTT Broker (Including WebSocket)
- ■ Support a Complete Information Protection Mechanism - HTTPS, SNMP v3, Communication Encryption, Block List
- ■ IoT Cloud Platform Connection - Microsoft Azure, Amazon Web Services, IBM Bluemix, Alibaba Cloud
- ■ IFTTT Logic Control Triggers the APP Notification Function
- ■ PID Logic Operation Function

## 🔲 Introduction

**UA-2841M** is an **IIoT** (Industrial IoT) **Communication Server** for integrating the system and devices of IT and OT. UA features the IIoT Gateway function that allows users to access the remote I/O modules and controllers via Modbus TCP/RTU/ASCII, MQTT, and EtherNet/IP communication protocols. IIoT gateway function can also convert these I/O data to OPC UA or MQTT protocols for the needs of connecting with the MES, ERP, SCADA and Cloud services. Besides, UA features the Data Logger function that allows users to write the I/O data directly into the remote database (MS SQL / MySQL / MariaDB), and save to the local file (.csv) as the historical records. UA supports Cloud platform that can connect to Amazon AWS, Microsoft Azure or other Cloud platforms to send over the I/O data; and support Cloud logic service platform "IFTTT" which can connect many web APPs that allows users to receive first-hand notification messages through the most commonly used mobile APPs when an event triggered. UA Series enhances the networking and interoperability between IT and OT. Through UA series, users can easily deploy for Industrial IoT.

## 🔲 System Architecture



· Connect IT with OT

(OPC UA Server / MQTT : UA-2x/52/72xx)
(SNMP Agent / RESTful : For UA-28xx Only)

## ■ Hardware Specifications

| Model | UA-2841M |
|---|---|
| **Main Unit** | |
| CPU | ARM Quad-Core 1.6 GHz |
| System Memory | DDR4 SDRAM 2 GB |
| Storage | Flash 8 GB<br>microSD socket with one 4 GB microSD card (support up to 32 GB microSDHC card or 2 TB microSDXC card)<br>mini PCIe Socket, Solid-state drive (SSD) can be expanded by accessories |
| Non-Volatile Memory | FRAM 64 KB<br>MRAM 128 KB |
| Real Time Clock | Provide second, minute, hour, date, day of week, month, year |
| **Display** | |
| Signal | VGA (Analog RGB), reserved |
| **LED Indicators** | |
| Status | 1 x PWR (Power), 1 x RUN (Running), 3 x User Defined LEDs |
| **I/O Expansion** | |
| I/O Type | Support 1 optional XV-board to expand I/O or RS-485 ports (*1) |
| **COM Ports** | |
| Console Port | RS-232 (RxD, TxD and GND); Non-isolated |
| COM 2 | RS-232 (RxD, TxD and GND); Non-isolated |
| COM 3 | RS-485 (Data+, Data-); 2500 VDC isolated |
| COM 4 | RS-485 (Data+, Data-); 2500 VDC isolated |
| **HMI** | |
| Rotary Switch | 1 x 10 Position (0 ~ 9) |
| **Ethernet** | |
| Ports | 2 x RJ-45, 10/100/1000 Based-TX ( Auto-negotiating, Auto MDI/MDI-X, LED indicators ) |
| **USB** | |
| Connector | 2 x 2.0 host |
| **Power** | |
| Input Range | +12 ~ +48 VDC |
| Consumption | 10 W |
| **Mechanical** | |
| Casing | Metal |
| Dimensions (mm) | 42 x 164 x 129 (W x L x H) |
| Installation | DIN-Rail Mounting |
| **Environmental** | |
| Operating Temperature | -25 ~ +75°C |
| Storage Temperature | -40 ~ +80°C |
| Humidity | 10 ~ 90% RH (non-condensing) |

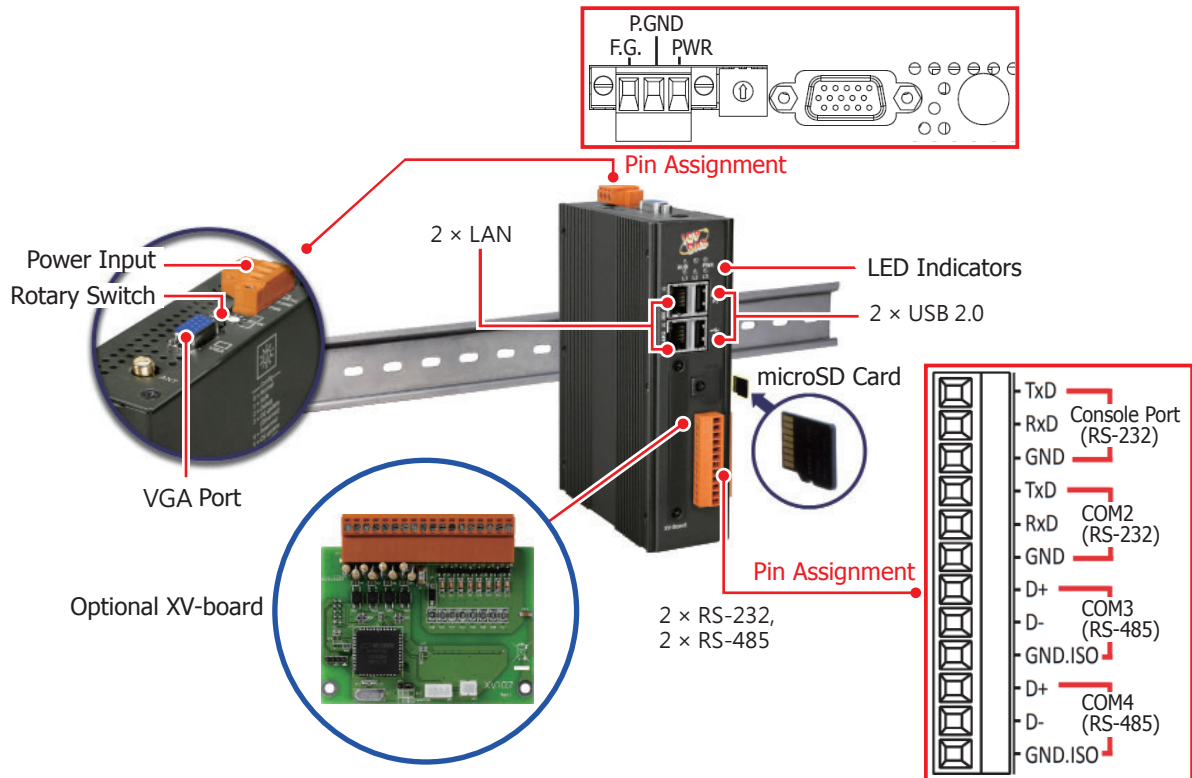*1. Refers to the **UA website Supported List** for the available **XV-board** and supported UA models.

## ■ Software Specifications

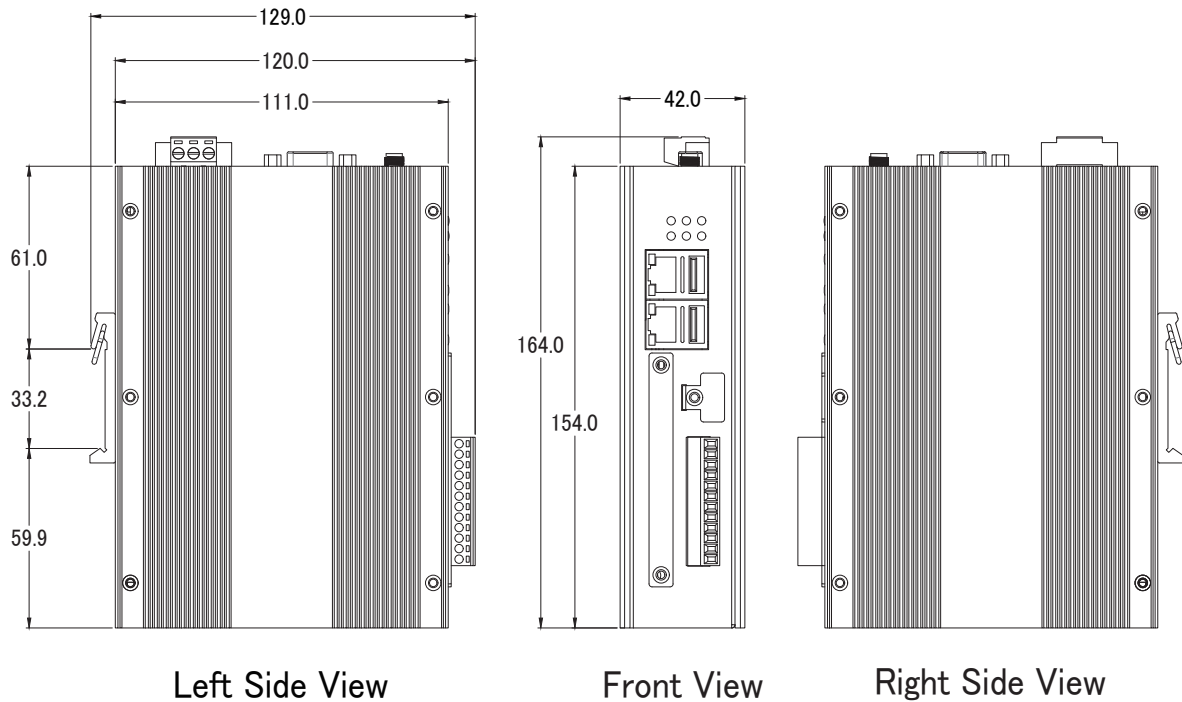| Model | UA-2841M |
|---|---|
| **OS** | |
| Linux | Linux Kernel 5.10.72 |
| **Protocol** (Note 1, Note 2) | |
| OPC UA Server | • OPC Unified Architecture: 1.02<br>• Core Server Facet<br>• Data Access Server Facet<br>• Method Server Facet<br>• UA-TCP UA-SC UA Binary<br>• User Authentication: Username/Password, X.509 Certificate<br>• Security Policy:<br>  > None<br>  > Basic128Rsa15 (Sign / Sign & Encrypt)<br>  > Basic256 (Sign / Sign & Encrypt)<br>  > Basic256Sha256 (Sign / Sign & Encrypt)<br>  > Aes128_Sha256_RsaOaep (Sign / Sign & Encrypt)<br>  > Aes256_Sha256_RsaPss (Sign / Sign & Encrypt)<br>• Recommend to keep the maximum number of sessions within 50 connections. Max. 8000 Tags. |
| MQTT Broker | Support the MQTT v3.1.1 protocol, provide MQTT message transmission and distribution management, and support TLS(1.3)/SSL and Web Socket communications.<br>Recommend to keep the connection number of Clients within 500. Max. 2100 Client Devices.(Note 1) |
| MQTT Client | Connect the MQTT Broker to read/control the devices supporting the MQTT protocol.<br>Or connect the MQTT Broker to externally read/control the devices supporting other protocols that link with the UA series (MQTT Ver. 3.1.1; TLS Ver. 1.3). Max. 500 Connections. (Note 1) |
| Modbus TCP Master | To read or control the devices that support standard Modbus TCP Slave protocol.<br>Recommend to keep the maximum number of devices within 250 connections. |
| Modbus RTU/ASCII Master | A max. of 3 ports: COM2, COM3, COM4 to connect other Modbus RTU Slave devices (e.g. M-7000).<br>Recommend no more than 32 devices per port (32*3 port) for better communication quality. |
| EtherNet/IP Scanner | Support connect EIP-2000 series modules of ICP DAS.<br>Recommend no more than 125 devices per UA. |
| SNMP | Provide SNMP Agent service, for users to external access the devices connected with the UA through the SNMP communication. Max. 10 read commands and 10 write commands at the same time. |
| RESTful | Provide RESTful API service, for users to external access the devices connected with the UA through the HTTP communication. Max. 20 read commands and 1 write command at the same time. |
| Firewall | |
| Dynamic Blocklist | Set conditions to monitor the connection status of the service port. When the external IP connections exceed the condition setting value, the dynamic blocklist will automatically block the subsequent connection of the IP to avoid a large number of abnormal connections from blocking network services and protect system stability. |
| **Data Logger** (Note 2) | |
| Local Data Logger | Record I/O data, and save to the local MicroSD card or SSD in CSV format. |
| Remote Database | Record I/O data, and send to the remote database of MS SQL / MySQL / MariaDB.<br>Recommend Max. 2 Databases per Time, Max. 1000 Tags per database connection. |
| **Function** (Note 2) | |
| Internal Module | Can create virtual variables as an intermediary for reading, writing, or data exchange. |
| PID Function | Combine the remote I/O devices for the PID logic control system. |
| **IoT Service Integration** (Note 2) | |
| Microsoft Azure | MQTT Service can connect to MS Azure IoT Hub for Cloud platform service. |
| Amazon Web Services | MQTT Service can connect to AWS IoT Core for Cloud platform service. |
| IBM Bluemix | MQTT Service can connect to IBM Bluemix for Cloud platform service. |
| IFTTT | Support Logic event sending to IFTTT Web platform. IFTTT Logic Trigger APP (Line, Twitter, Gmail ...) |

**Note 1**: The specifications in the table are the maximum number of connections or usage when using a single Protocol.

**Note 2**: When using multiple Protocol functions, the user needs to control the device number to under 80% of the CPU usage. Please refer to the CPU Usage of the UA Web UI.

## Appearance/Pin Assignment



P.GND
F.G. | PWR
Pin Assignment

Power Input
Rotary Switch
VGA Port

2 × LAN

LED Indicators
2 × USB 2.0

microSD Card

Optional XV-board

2 × RS-232,
2 × RS-485

Pin Assignment

| | |
|---|---|
| TxD | |
| RxD | Console Port (RS-232) |
| GND | |
| TxD | |
| RxD | COM2 (RS-232) |
| GND | |
| D+ | |
| D- | COM3 (RS-485) |
| GND.ISO | |
| D+ | |
| D- | COM4 (RS-485) |
| GND.ISO | |

## Dimensions (Units: mm)



129.0
120.0
111.0
61.0
33.2
59.9

Left Side View

42.0
164.0
154.0

Front View

Right Side View

## Ordering Information

| UA-2841M CR | IIoT Communication Server, Metal, with ARM Quad-core CPU and 2 Ethernet (RoHS) |
|---|---|

## Option Accessories

| I/O Expansion XV-board | XV107, XV107A, XV110, XV111, XV111A, XV116, XV119, XV303, XV306, XV307, XV310 |
|---|---|
| RS-485 Expansion XV-board | XV511i |