ICP DAS CO., LTD.
www.icpdas.com

IIoT Cloud Solution
UA SERIES
IIoT Communication Server

UA Brochure Vol 1.08.02

Microsoft Azure
Certified

ICP DAS UA-5231

ICP DAS UA-5231M

ICP DAS UA-5231M-4GE

OPC UA

MQTT.ORG

UA

IIoT Cloud Solution

UA Series: IIoT Communication Server

Connect **IT** with OT – IoT Devices
### Build **IoT** Global Competitiveness
IIoT Cloud Solution – Launch Industry 4.0

UA Series IIoT Communication Server: Connect IT with OT, Integrate Cloud and Web APPs

The IIoT Cloud Solution of ICP DAS provides UA series of IIoT Communication Server to upgrade the front-end devices to the Cloud, connect IT with OT, link Cloud and Web APPs, and integrate the cloud-based Internet of Things (IoT). This solution can improve system performance and enhance global IIoT competitiveness of the system.
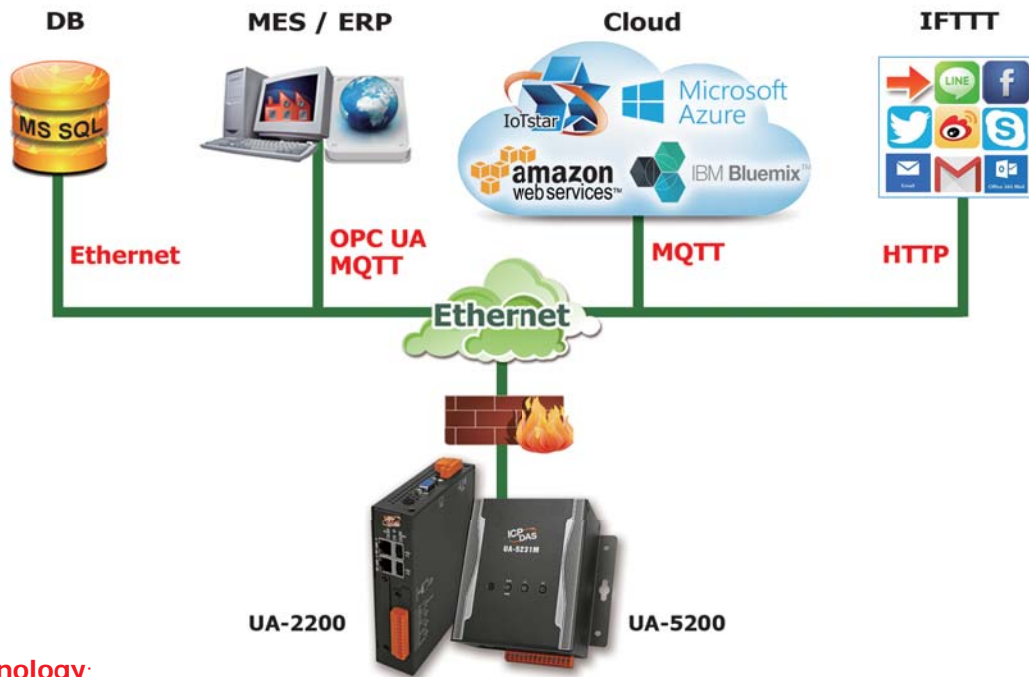
- Built-in **OPC UA,** the industrial communication standard: connect OT to IT for integrating devices to the Cloud.
- Built-in **MQTT,** the active IoT transmission technology: accelerate data exchange and optimize the network resources.
- Support **IFTTT** for Cloud logic control: send device event notifications to LINE, FB, Twitter, Mail, etc. over 500 APPs.
- Support **IoTstar,** the IoT cloud management software: integrate public & private Cloud, manage the Big Data.(Coming soon)
- Support **Data Logger**: save I/O data directly to Local CSV log file or remote database.
- Support **EtherNet/IP** Protocol**:** Connect EIP-2000 Series EtherNet/IP Remote I/O Modules of ICP DAS.
- Support **Modbus** Protocol**:** Connect Modbus TCP/RTU/ASCII Remote I/O Modules.

📁 System Architecture

UA-2200   UA-5200
(OPC UA Server/MQTT)
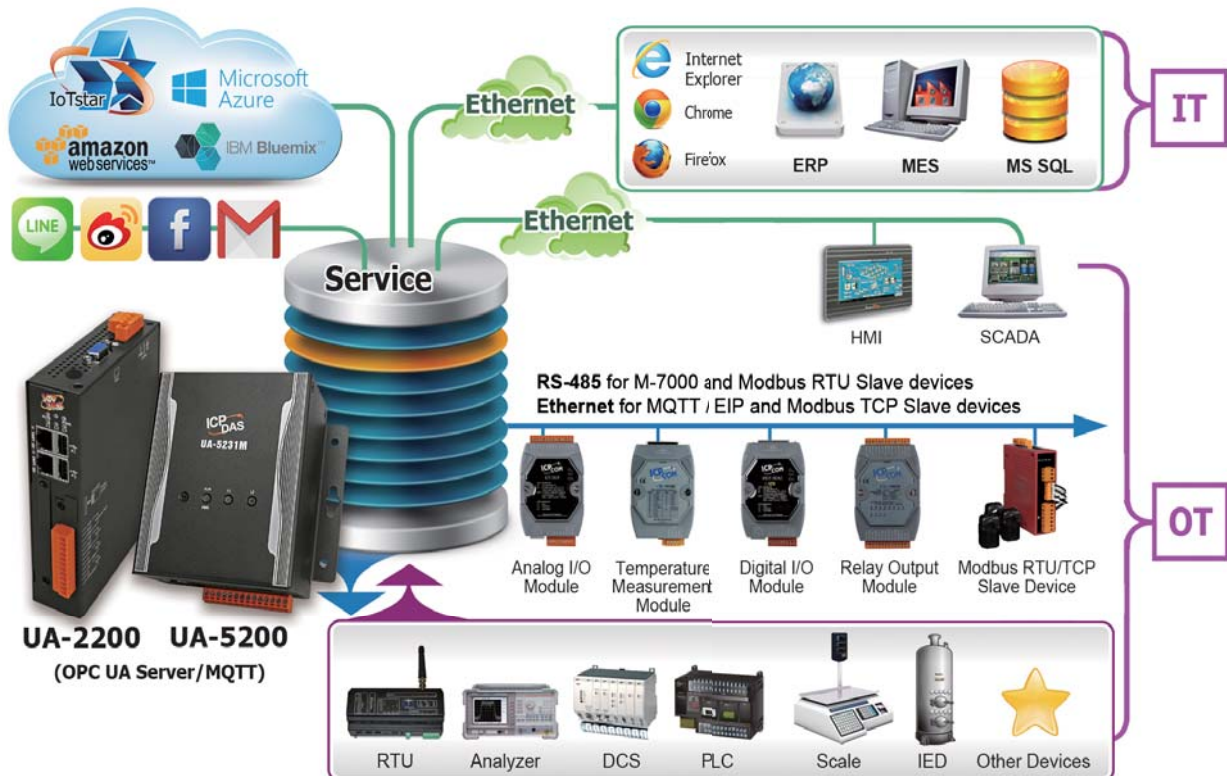
📁 IT Integration Technology

Technology:

- **OPC UA** : **OPC UA** The **Industrial Communication Standard**

- **MQTT** : **MQTT** The **IoT Active Transmission** Technology

- **IFTTT** : **IFTTT** The **Cloud Logic Control** (**IF T**his **T**hen **T**hat)

- **IoTstar** : The IIoT **Cloud Management** Software(Coming soon)

- **Data Logger** : **LOG DB** I/O data save directly to **Local LOG file** or **Remote Database**

📁 OT Integration Technology
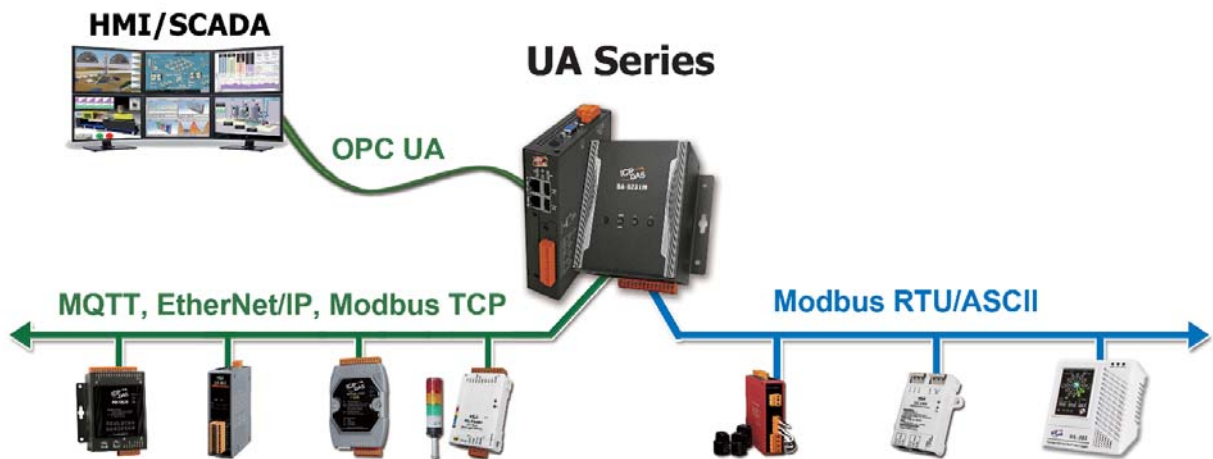
Technology:

- **OPC UA** : **OPC UA** The **Industrial Communication Standard**

- **MQTT** : **MQTT** The **IoT Active Transmission** Technology

- **Mudbus** : **Modbus** A **protocol** widely used within **Industrial Automation Systems**

- **EtherNet/IP** : **Industrial Ethernet protocol,** based on **TCP/IP** protocol and compatible with **factory and enterprise networks**

⊁ UA Introduction

UA-5231 **UA-5231M**

UA-5231M-4GE
UA-5231M-4GC
UA-5231M-3GWA

UA-2241M

Features:

- OPC UA Server
- MQTT Broker/Client
- ARM CPU, 1.0 GHz
- Linux kernel 3.2.14 OS
- Support Data Logger, IFTTT and PID
- 10/100/1000 Mbit/s Ethernet Port
- 4 Serial Ports (RS-232/RS-485)
- Operating Temperature: -25 ~ +75°C

Introduction:

UA Series (UA-5200/UA-2200) is a series of **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, and save to the local file as the historical records. UA supports IoTstar Cloud management platform (Coming soon) and 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.

Model	UA-2241M	UA-5231	UA-5231M	UA-5231M-3GWA	UA-5231M-4GE/4GC
CPU Module					
CPU	ARM CPU, 1.0 GHz				
Memory	microSD socket with one 4 GB microSD card (support up to 32 GB microSDHC card)				
VGA & Communication Ports					
Ethernet (RJ-45)	2	1			
USB 2.0	2	1			
Serial Port	2 x RS-485, 1 x RS-232, 1 x Console port				
Mechanical					
DIM. (W x L x H, mm)	33 x 160 x 129	91 x 132 x 52	117 x 126 x 58		
Installation	DIN-Rail Mounting				
Environmental and Power					
Temperature	Operating: -25 ~ +75°C / Storage: -40 ~ +80°C				
Humidity	Ambient Relative Humidity: 10 ~ 90% RH (non-condensing)				
Input Range	+12 ~ +48 VDC / Consumption: 4.8 W			+12 ~ +48 VDC / Consumption: 6.5 W	
Wireless Communication (Only For **UA-5231M-3GWA / UA-5231M-4GE / UA-5231M-4GC**)					
3G System	3GWA : WCDMA 850/900/1900/2100 MHz 4GE : WCDMA 850/900/2100 MHz 4GC : WCDMA 900/2100 MHz; TD-SCDMA 1900/2100 MHz; CDMA2000 (BC0) 800 MHz				
4G System	4GE : FDD LTE: B1/B3/B5/B7/B8/B20 MHz 4GC : FDD LTE: B1/B3/B8 MHz; TDD LTE: B38/B39/B40/B41 MHz				

4G System Note: **UA-5231M-4GE**: Frequency Band for EMEA, Korea, Thailand, India and Taiwan
**UA-5231M-4GC**: Frequency Band for China

UA Series

▸▸ UA Features

◾ Built-in OPC UA Server Service

Compliance with IEC 62541 Standard. Provides functions of **Active Transmission, Transmission Security Encryption(SSL/TLS), User Authentication (X.509 Certificates/Account password), Communication Error Detection and Recovery**, etc. to connect SCADA or OPC UA Clients. Allowed up to 8000 OPC UA tags and up to 20 sessions for the OPC UA Client connection.
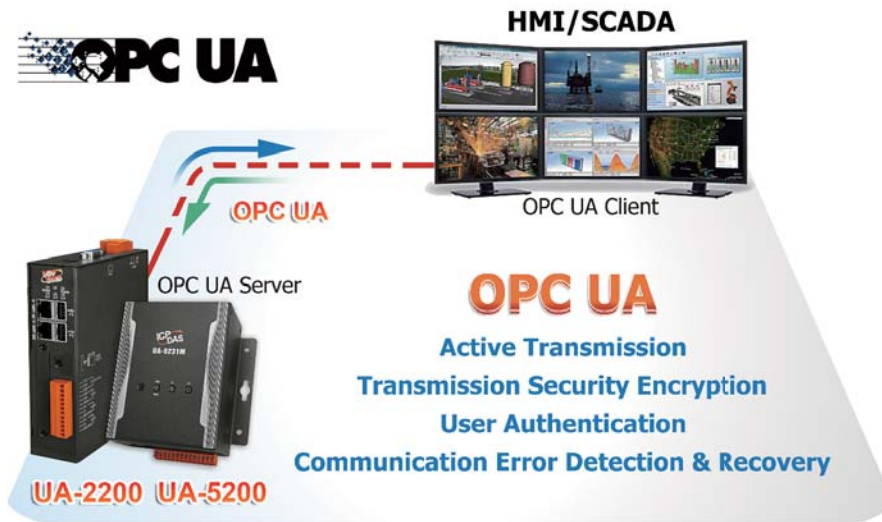
◾ Built-in MQTT Broker Service

MQTT Broker inside and Compliance with MQTT V.3.1.1 protocol. Provides functions of **IoT Active M2M Transmission, QoS Quality Service, Retain Mechanism, Identity Verification, Encryption, Last Will, MQTT Client Drivers**, etc. The Broker can connect up to 400 MQTT Clients.

UA Series
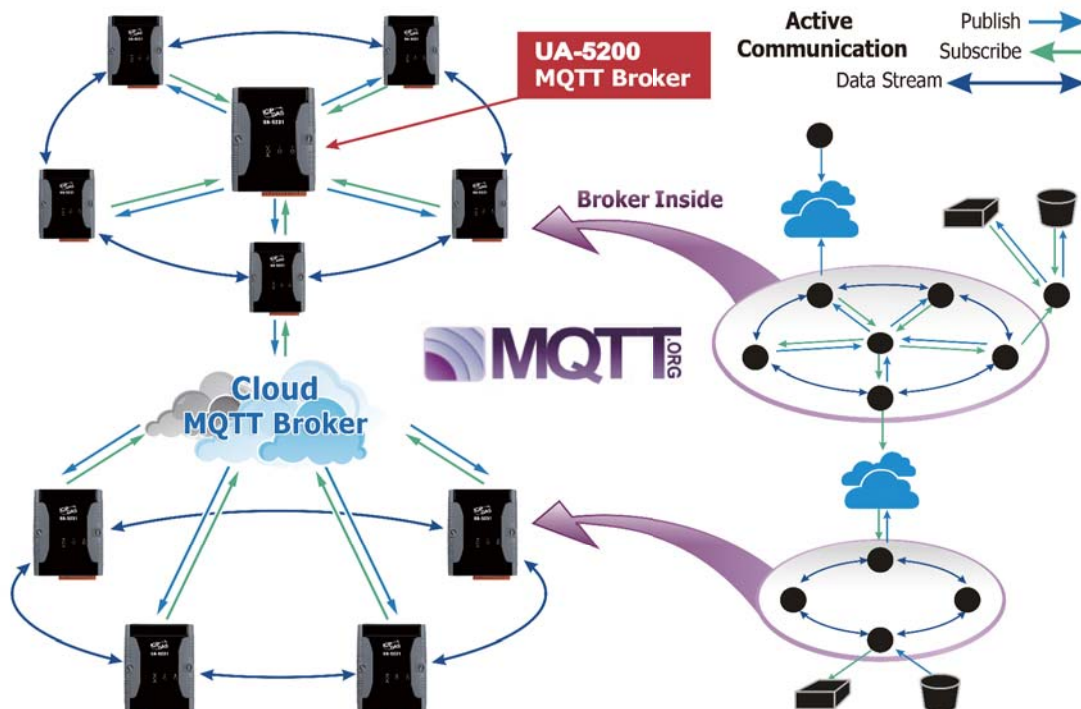
## Support Logic Control IFTTT To Send Event Messages To LINE, FB... APPs

UA can combine the IFTTT cloud platform functions and send messages to more than 500 Web APPs (such as LINE, Facebook, Twitter, Calendar, Mail, Sina Weibo... etc.) when the special events occur. The device I/O change can be set to trigger the event of the IFTTT cloud service, and then the preset "That" Web Service (e.g. LINE) will do the action follow the IFTTT (If This, Then That) logic control, for example, the LINE will send a message to the specific user or group to handle the event immediately.

Support IoT Cloud Platforms Connection and IoTstar Cloud Management

UA can actively connect with the IoTstar platform for users to manage UA series via the IoTstar(Coming soon), or connect to Amazon AWS, Microsoft Azure or other IoT platforms to send over the I/O data. The IoTstar Features:

1. Based on Public Cloud: Microsoft Azure, IBM Bluemix, Amazon AWS
2. Based on Private Cloud: Microsoft Windows 7/8/10
3. Data Analysis and Report by Public Tools
4. Remote Management and Maintenance
5. Remote Monitoring and Control
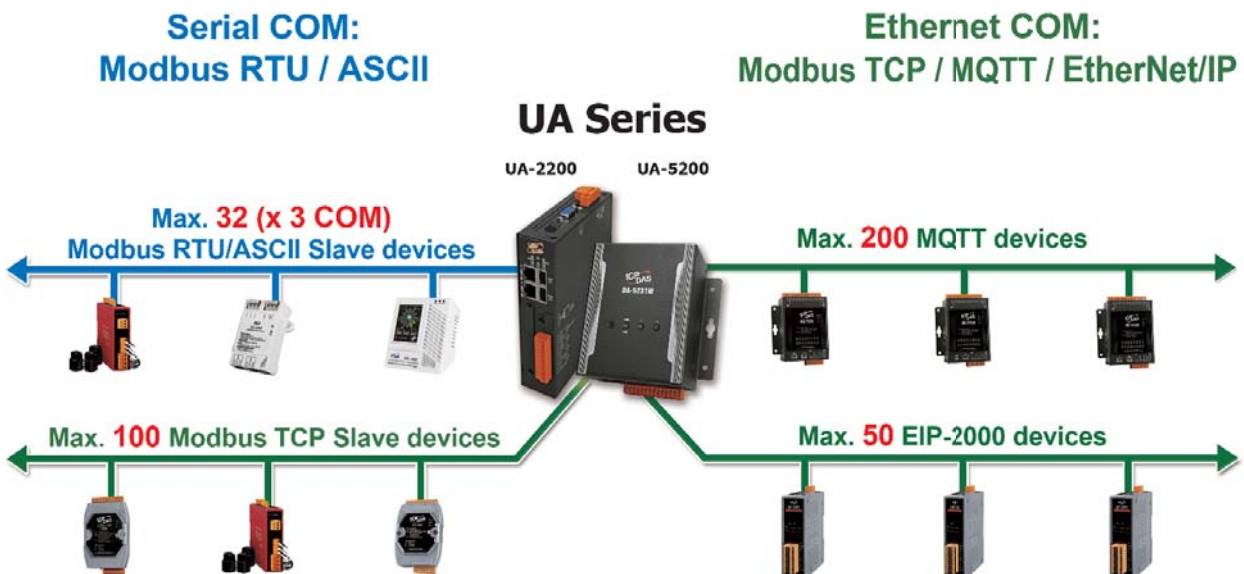6. Cloud Big Data
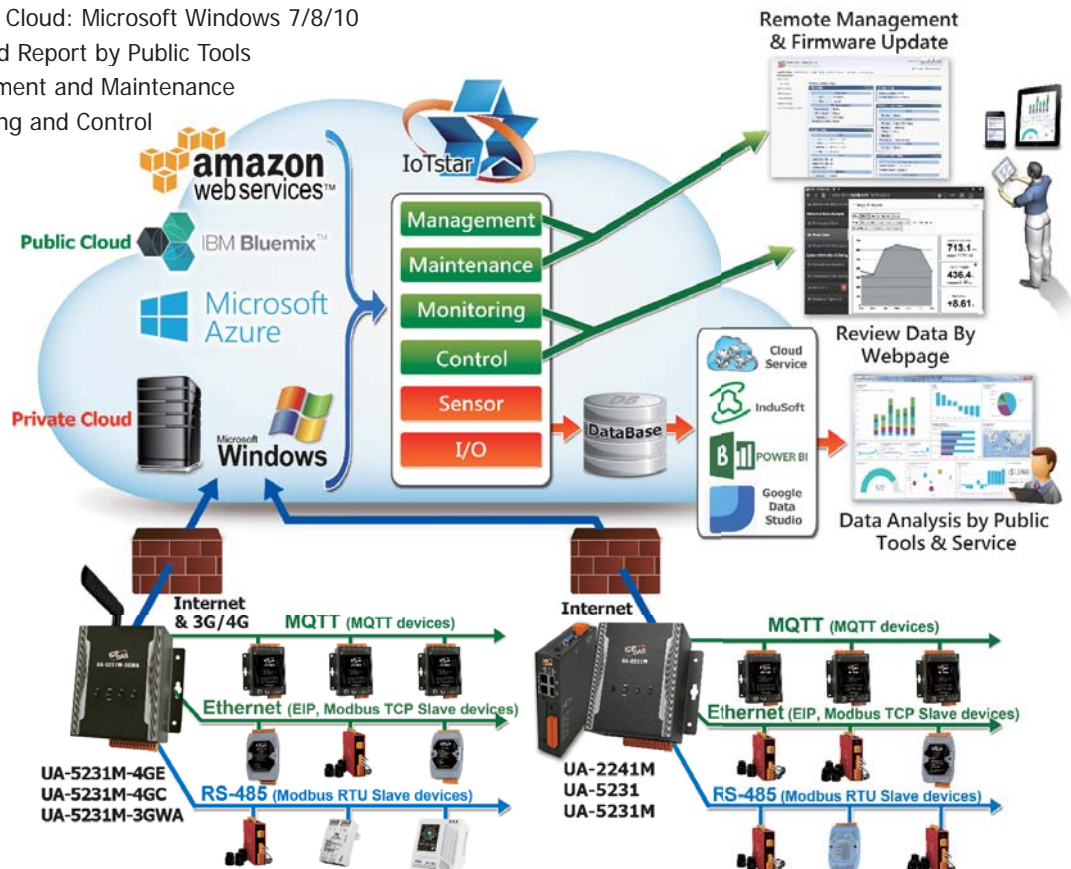
UA Series

Provide Function Wizard Web UI for easily step-by-step setup

The Web UI of UA provides a wizard-like "Step Box" in the Function Wizard area to guide user step by step to complete the project or function. It provides many items for setting the Communication Conversion, Azure Connecting, Local Data Logger, Remote Database, Function Configuration, PID Operation, Condition Trigger the APP Message Notification (Line, Facebook, Twitter) and will be more. It will help users to set projects easily and quickly.
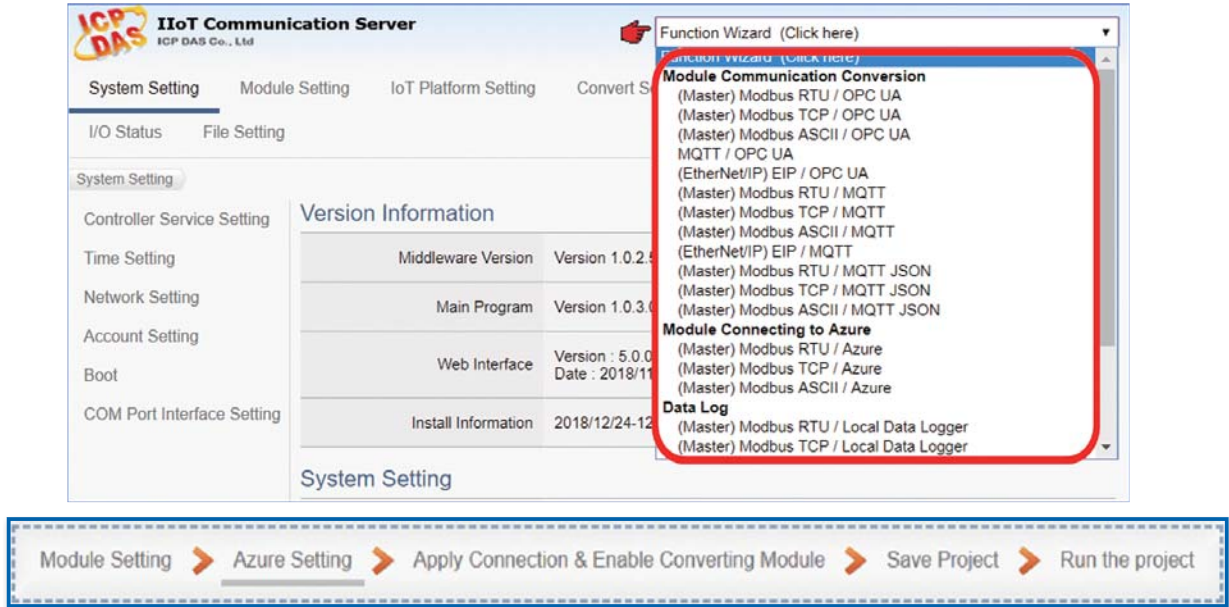
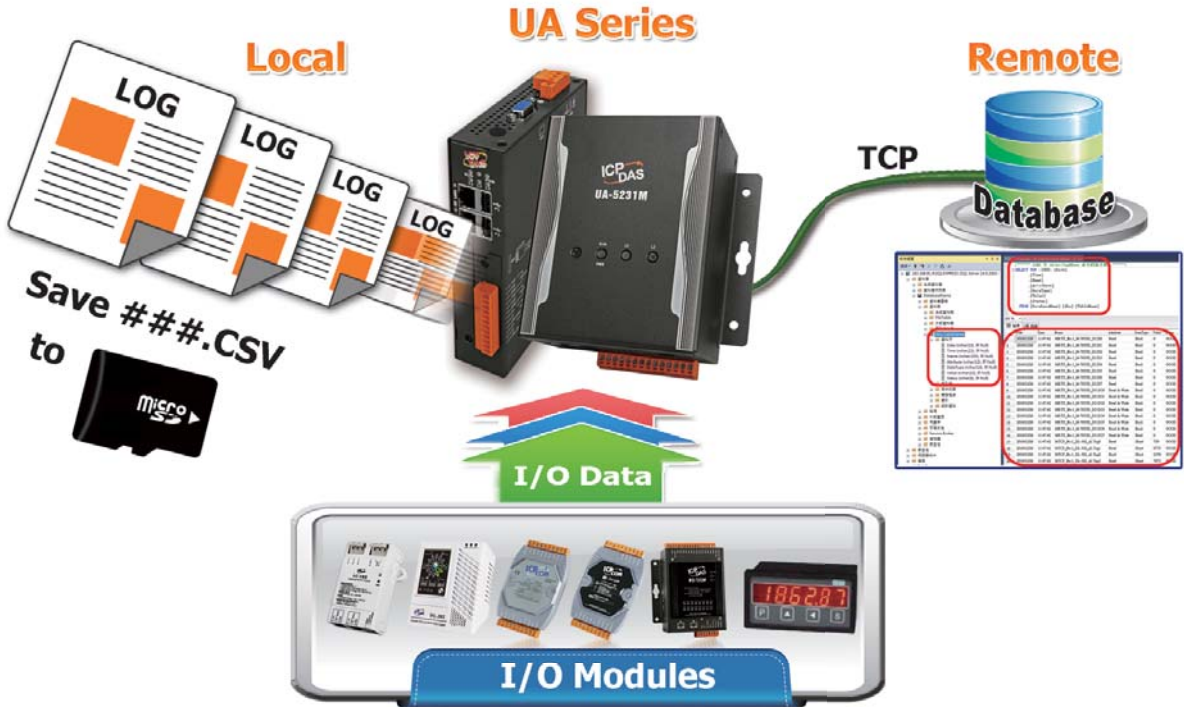## Support Ethernet and Serial Communication Modules

- Under the Ethernet communication, UA supports Modbus TCP, MQTT and ICP DAS EtherNet/IP modules:
    * Up to 100 Modbus TCP Slave module connections
    * Up to 200 MQTT module connections
    * Up to 50 EtherNet/IP EIP-2000 module connections
- Under the Serial communication, UA provides 3 RS-232/RS-485 Serial ports to support Modbus RTU/ASCII modules:
    * Up to 32 Modbus RTU/ASCII Slave modules per COM
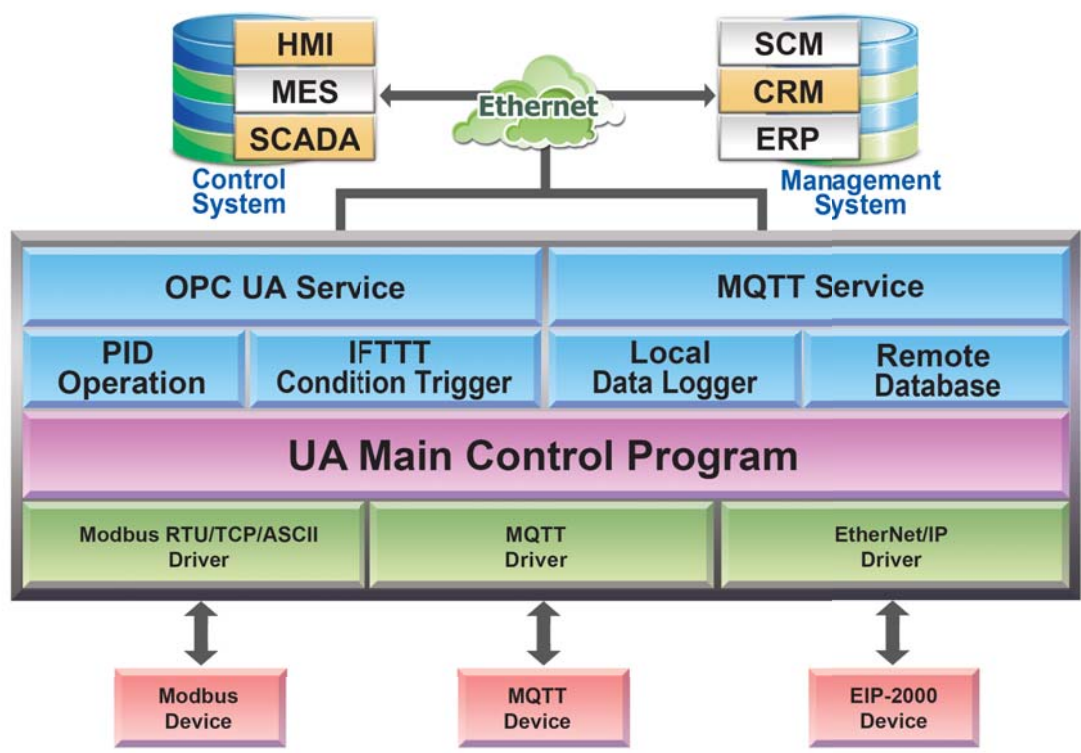- Through the UA Web UI, users can quickly set up the modules and display the real-time status.

Save I/O Data Directly into Remote Database & Local Side LOG File

UA series can collect devices I/O status and then directly save into remote side SQL Database. UA series can also save I/O data into a CSV log file on the local side. Furthermore, users can set the time interval of which CSV file to generate and divide on the local side.
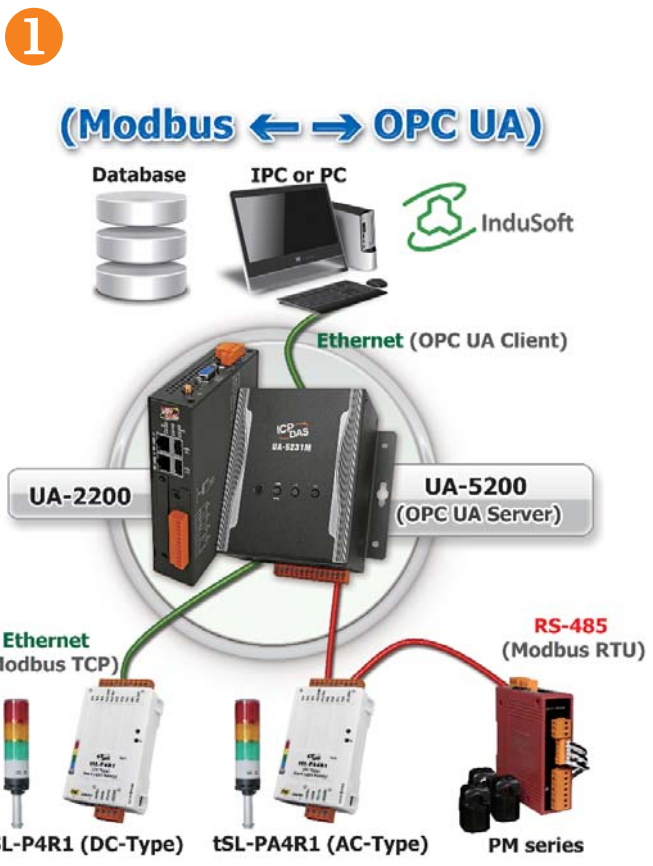

▸ Functions

UA Series

▸▸ Solutions

❶

(Modbus ⟷ OPC UA)

- Database
- IPC or PC — InduSoft
- Ethernet (OPC UA Client)
- UA-2200
- UA-5200 (OPC UA Server)
- Ethernet (Modbus TCP)
- RS-485 (Modbus RTU)
- tSL-P4R1 (DC-Type)
- tSL-PA4R1 (AC-Type)
- PM series

❷

(Modbus ⟷ MQTT)

- Ethernet
- Ethernet (MQTT)
- UA-2200
- UA-5200
- Ethernet (Mobus TCP)
- CL-200
- DL-300
- DL-100-E

❸

(MQTT ⟷ OPC UA)

- Database
- IPC or PC — InduSoft
- Ethernet
- Ethernet (OPC UA Client)
- UA-2200
- UA-5200 (OPC UA Server)
- Ethernet (MQTT)
- MQ-7200M
- SV-2201
- DL-302

❹

(MQTT ⟷ MQTT)

- Ethernet
- Ethernet (MQTT)
- UA-2200
- UA-5200
- Ethernet (MQTT)
- MQ-7200M
- SV-2201
- DL-302

UA Series

❺

(I/O Event → Comm. APP)

UA-2200   UA-5200

Ethernet (Modbus TCP)

RS-485 (Modbus RTU)

tSL-P4R1 (DC-Type)   tSL-PA4R1 (AC-Type)   PM series

❻

(I/O Event → Mail)

UA-2200   UA-5200

RS-485 (Modbus RTU)   RS-485 (Modbus RTU)

M-7055D   M-7060D   PIR-130

❼

(EtherNet/IP ←→ OPC UA)

Database   IPC or PC   InduSoft

Ethernet (OPC UA Client)

UA-2200   UA-5200 (OPC UA Server)

Ethernet (EtherNet/IP)

EIP-2000   EIP-2000   EIP-2000

❽

(EtherNet/IP ←→ MQTT)

Ethernet (MQTT)

UA-2200   UA-5200

Ethernet (EtherNet/IP)

EIP-2000   EIP-2000   EIP-2000
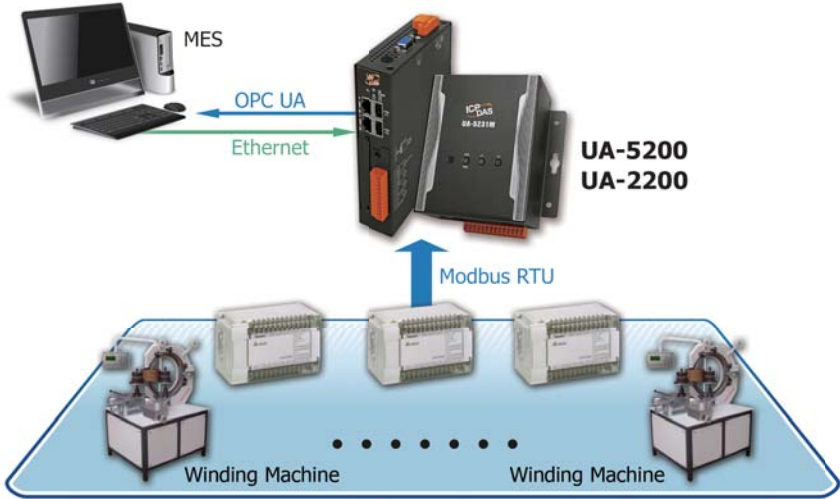
UA Series

‣ Applications

▪ IIoT Factory Application of MES

The Manufacturing Execution System (MES) communicates the factory equipment via OPC UA Client, and the OPC UA Service of the UA-5200 series can seamlessly integrate the system and equipment. The MES is the main solution for today's factory system, and the UA-5200 series IIoT Communication Server is the best choice for the IIoT factory solution.

Application Features:
- Convenient for System Integration
- Unified Access Interface

▪ Pumping Station IoT Application

This application is mainly about how to manage the pumping device data from stations. UA-5231 series uploads the data of all pumping stations to the control center and manages/configures with the IWS software. In this case, the UA-5231 shortens the configuring and adjusting time. Without the complicated PC configuration, the UA-5231 directly connect the Modbus and OPC UA Server by completing all configuration easily and efficiently on the web.

Application Features:
- Cross Web Domain
- Security

UA Series

BA Smart Building IoT Application

This IoT application mainly combines the video intercom indoor host HA-401 with the lighting control, air conditioning, security, temperature, humidity, PM2.5, CH4, HCHO, and other harmful substance sense devices to create a safe and comfortable environment. When there is a special situation happens, UA can quickly trigger the event, send a notify to the Web App (ex: LINE, Weibo, Facebook, Twitter, etc.). The dual UA architecture can reduce the system burden.

Application Features:
- Reduce System Burden
- APP Message Notify
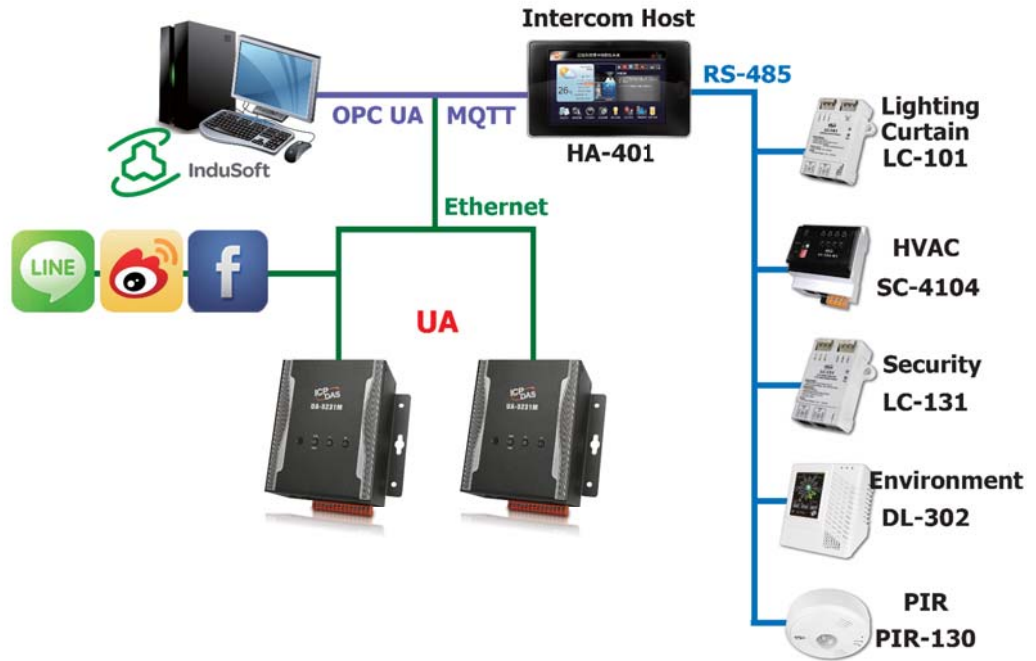
Robotic Arm Co-operation Application

This application allows two robotic arms interactive communication and coordinated operation through the MQTT, and do the data analysis and system monitor/control with the database of SQL, Big Data or SCADA through the OPC UA.

Application Features:
- Asynchronous Transmission
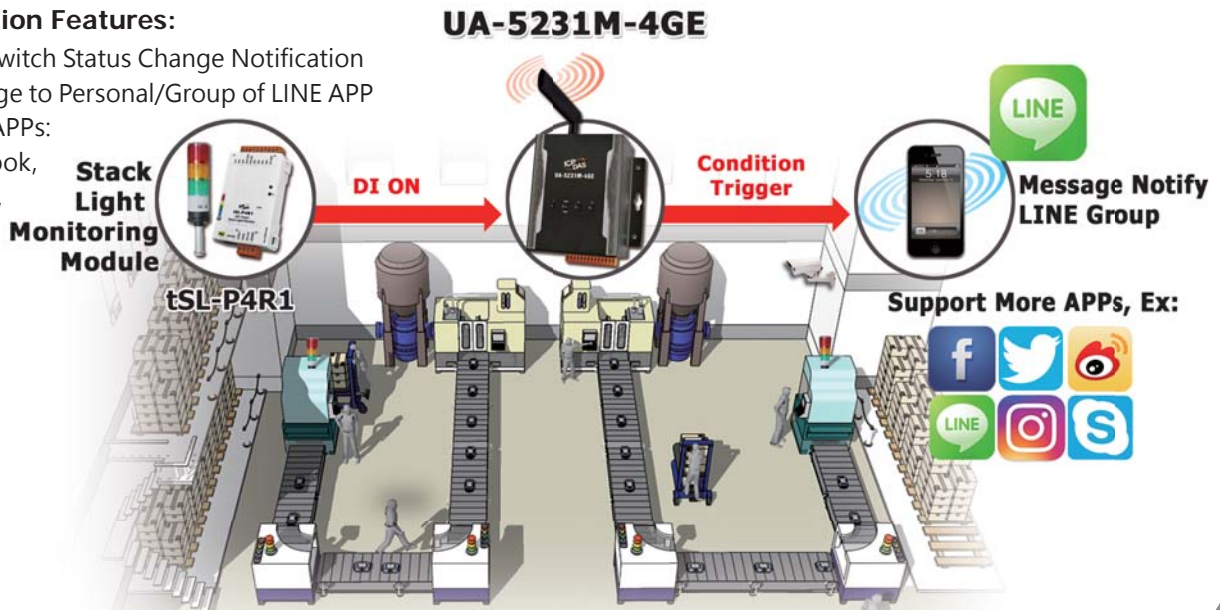- Mobile Monitoring

UA Series
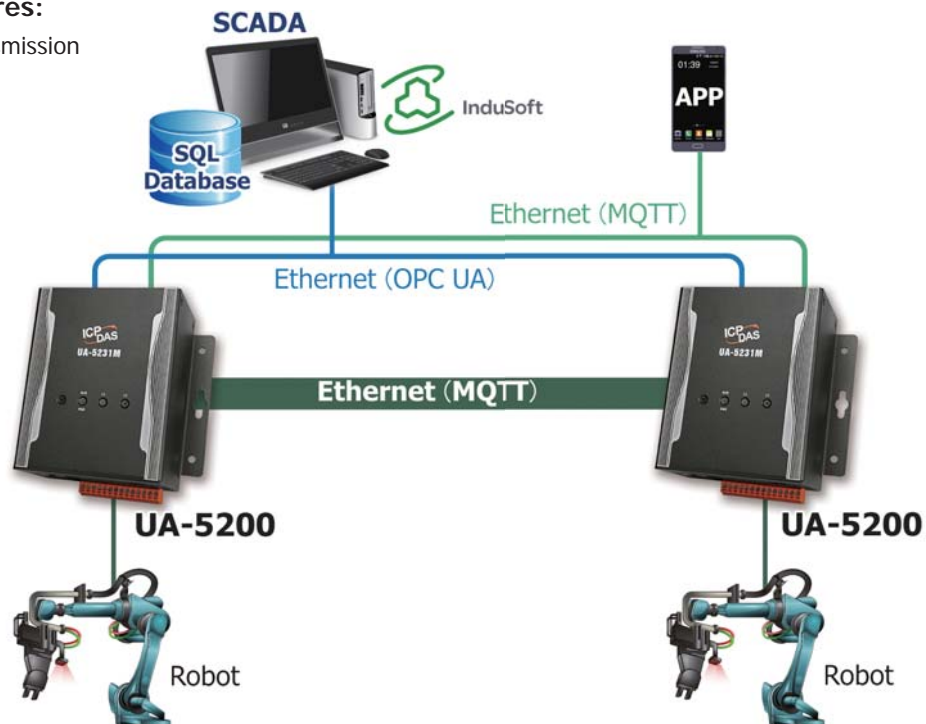
■ Alert Message Notify LINE Group Application

This security application provides active and non-active signal triggers for buildings, factories, etc. Through the IFTTT platform, it can send the message notification to the user-favorite APPs and instantly master the device information.

Application Features:
- DI or Switch Status Change Notification
- Message to Personal/Group of LINE APP
- More APPs: Facebook, Twitter, Skype, Weibo, etc.

UA-5231M-4GE

Stack Light Monitoring Module
tSL-P4R1

DI ON → Condition Trigger →

Message Notify LINE Group

Support More APPs, Ex:

■ CO2 Concentration Monitoring & Notification Application

This application for indoor air quality management combines with LED displays, fresh air equipment, etc. When the CO2 concentration exceeds the limit, the system will display information on the LED display, force to ventilation, and sends notifications via IFTTT platform to pre-assigned web software, such as Gmail, e-mail, Office 365 Mail, etc.

Application Features:
- Dead Band Boundary Trigger
  - High: Danger Alert
  - Low: Safety Notification
- PC/Mobile Mail Notification
  - Gmail
  - e-mail
  - Office 365 Mail
  - Dropbox ......

UA Series
Ethernet
CL-200
iKAN Series
Quality : Good   CO2 : 532
DL-300
DL-300-IP65

Local Distributor