UA-7231M

UA Series IIoT Communication Server
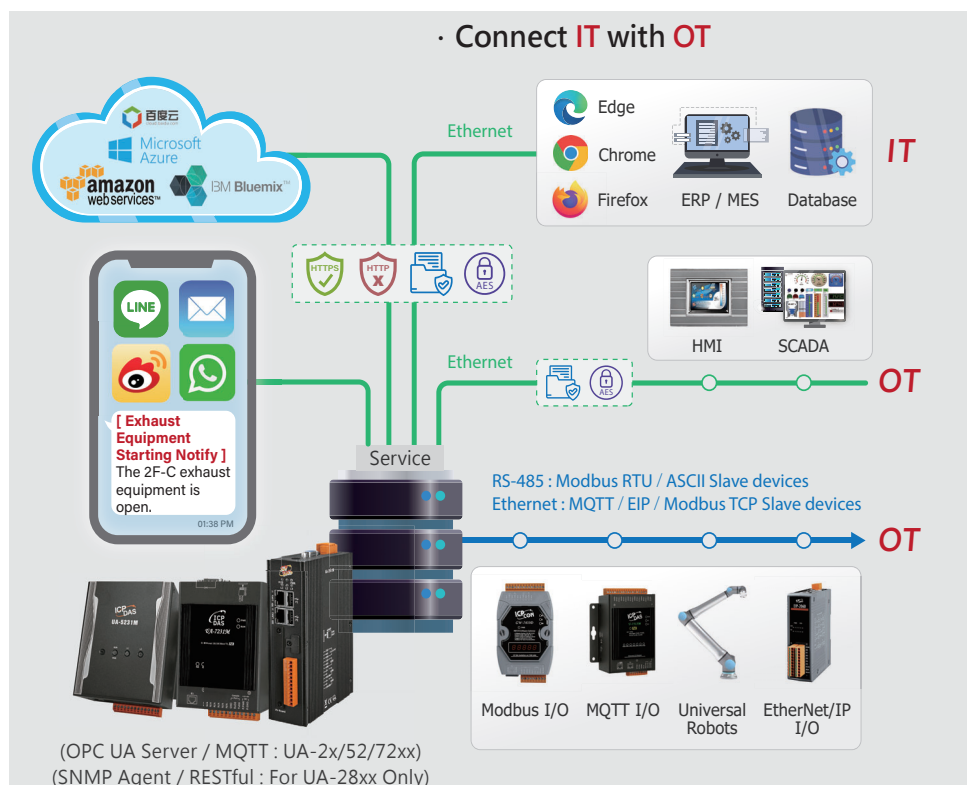1 PoE Ethernet Ports (Metal Case)

🅰 Features

- Simultaneous Writing for Remote Database and Local Data Logger
- Offline Data Recovery Mechanism for Remote Database
- Support to Enable OPC UA and MQTT at the Same Time
- MQTT Broker (Including WebSocket)
- Support a Complete Information Protection Mechanism - HTTPS, Communication Encryption, Dynamic Blocklist, Whitelist
- 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

CE UKCA FC RoHS

🗂 Introduction

UA-7231M 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.
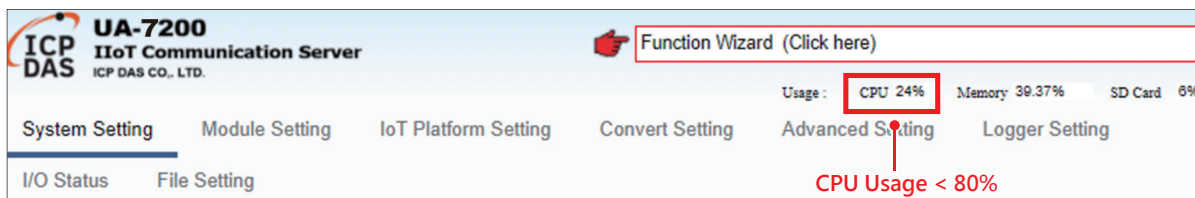
🗂 System Architecture

· Connect IT with OT

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

RS-485 : Modbus RTU / ASCII Slave devices
Ethernet : MQTT / EIP / Modbus TCP Slave devices

■ Hardware Specifications

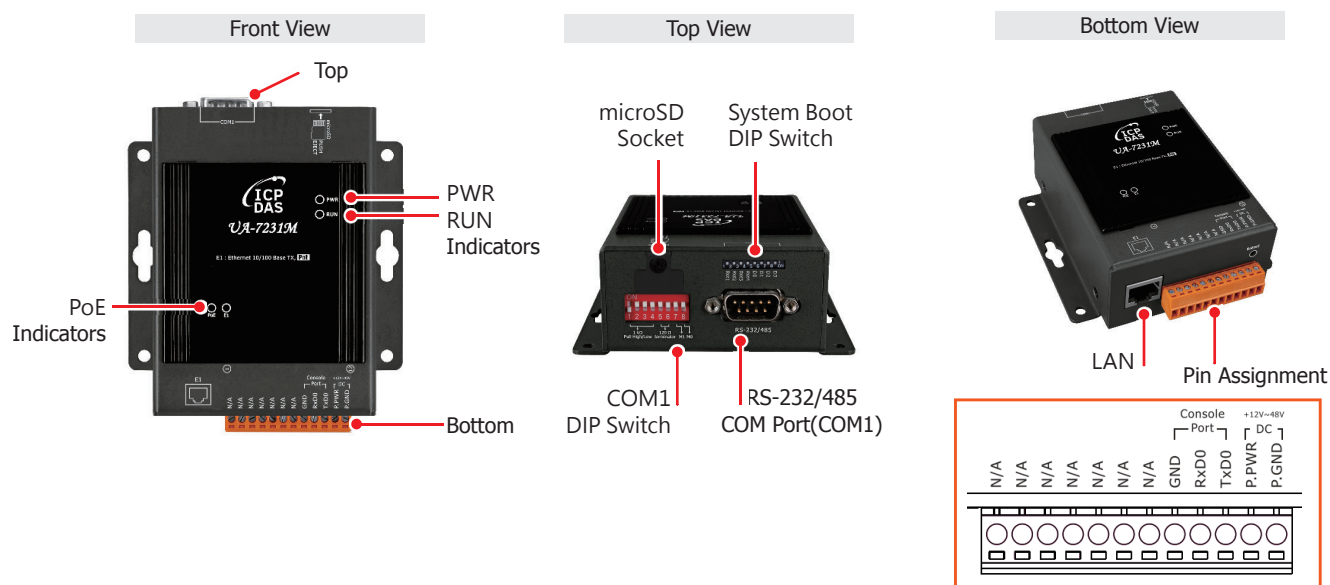| Model	UA-7231M
Main Unit	
CPU	ARM CPU, 1.0 GHz
System Memory	DDR3 SDRAM 512 MB
Storage	Flash eMMC 8 GB
	microSD socket with one 4 GB microSD card (support up to 32 GB microSDHC card)
Non-Volatile Memory	FRAM 64 KB
Real Time Clock	Provide second, minute, hour, date, day of week, month, year
LED Indicators	
Status	1 x PWR 1 x RUN 1 x Ethernet 1 x PoE
COM Ports	
Ports	1 x 5-wire RS-232/485 (COM1)
Bias Resistor	Switch-selectable (1 kΩ for RS-485, Non-Resistor for RS-232) (COM1 DIP Switch)
Terminal Resistor	Switch-selectable (120 Ω, Enable/Disable) (COM1 DIP Switch)
Isolation	Isolated
HMI	
DIP Switch	1 x 9 Position (1 ~ 8, ON) (System Boot DIP Switch)
Ethernet	
Ports	1 x RJ-45, 10/100 Base-TX
PoE	PoE (IEEE 802.3af, Class 1)
Power	
Input Range	+12 ~ +48 VDC
Consumption	3.5 W
Mechanical	
Casing	Metal
Dimensions (mm)	97 x 114 x 38 (W x L x H)
Installation	DIN-Rail
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-40 ~ +80°C
Humidity	5 ~ 90% RH, non-condensing

■ Software Specifications

Model	UA-7231M
OS	
Linux	Linux Kernel 3.2.14
Protocol (Note 1, Note 2)	

OPC UA Server	● OPC Unified Architecture: 1.02
	● Core Server Facet
	● Data Access Server Facet
	● Method Server Facet
	● UA-TCP UA-SC UA Binary
	● User Authentication: Username/Password, X.509 Certificate
	● Security Policy:
	   > None
	   > Basic128Rsa15 (Sign / Sign & Encrypt)
	   > Basic256 (Sign / Sign & Encrypt)
	   > Basic256Sha256 (Sign / Sign & Encrypt)
	   > Aes128_Sha256_RsaOaep (Sign / Sign & Encrypt)
	   > Aes256_Sha256_RsaPss (Sign / Sign & Encrypt)
	● Recommend Max. 20 Client Sessions, and Max. 8000 Tags (Note 1) (Without using encrypted communication).

MQTT Broker	Support the MQTT v3.1.1 protocol, provide MQTT message transmission and distribution management, and support TLS(1.2)/SSL and Web Socket communications. Recommend to keep the connection number of Clients within 200. Max. 400 Client Devices. (Note 1)
MQTT Client	Connect the MQTT Broker to read/control the devices supporting the MQTT protocol. 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. 1.2). Recommend Max. 200 Connections. (Note 1)
Modbus TCP Master	To read or control the devices that support standard Modbus TCP Slave protocol. mmend Max. 100 modules. (Note 1)
Modbus RTU/ASCII Master	A max. of 1 port: COM1 to connect other Modbus RTU Slave devices (e.g. M-7000). Recommend Max. 32 devices per port (32*1 port=32) for better communication quality. (Note 1)
EtherNet/IP Scanner	Support connect EIP-2000 series modules of ICP DAS. Recommend Max. 50 devices per UA. (Note 1)
Firewall	
Whitelist	List IP addresses and ranges allowed through the firewall to prevent unauthorized access and system attacks.
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. Recommend Max. 1 Database per Time, and Max. 1000 Tags.
Function (Note 2)	
PID Function	Combine the remote I/O devices for the PID logic control system.
Internal Module	Can create virtual variables as an intermediary for reading, writing, or data exchange.
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 ...)

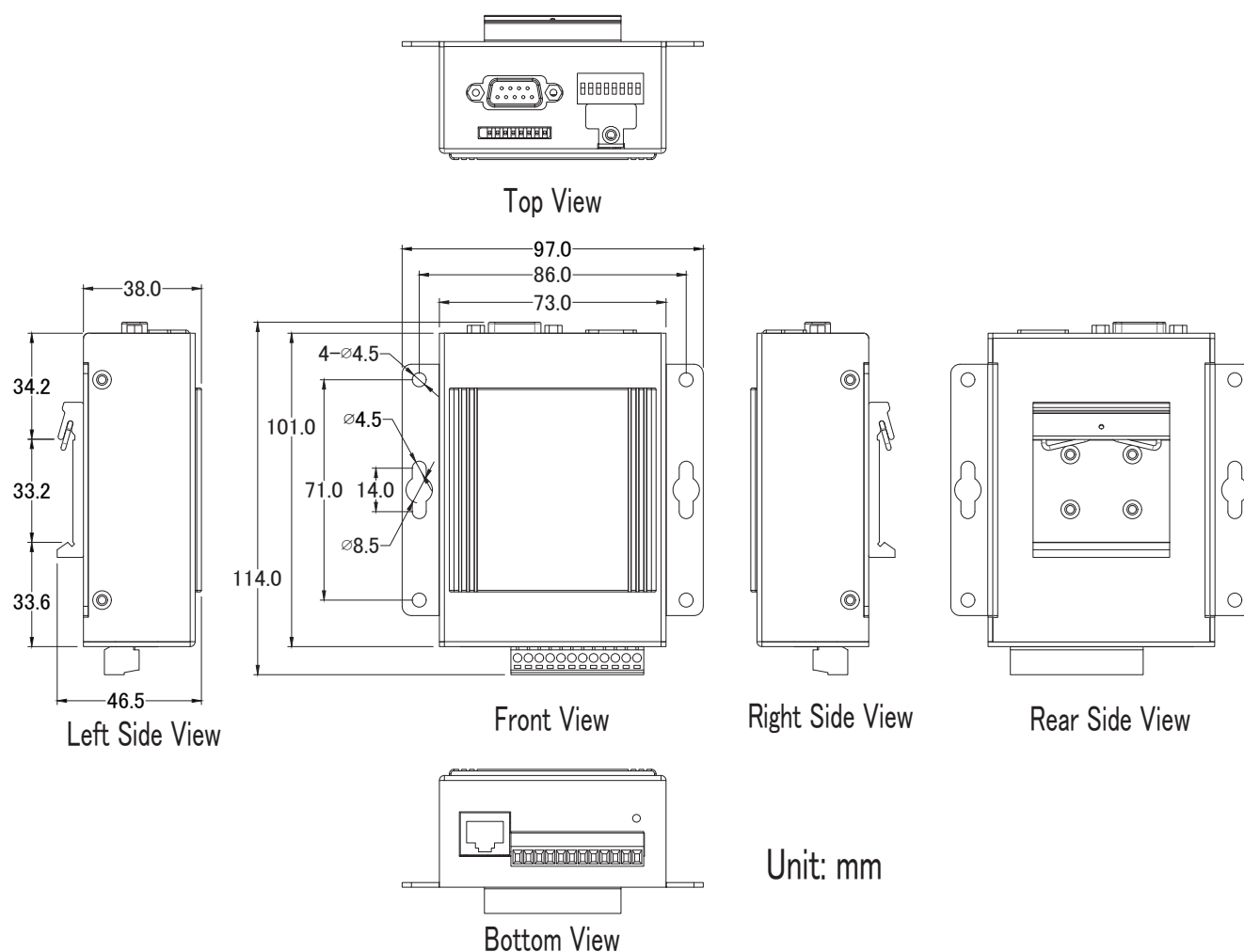**Note 1**: The specifi cations in the table are the maximum number of connections or usage when using a single Protocol.

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. (as the figure below)

▣ Appearance / Pin Assignment

Front View

Top

PWR
RUN
Indicators

PoE
Indicators

Bottom

Top View

microSD
Socket

System Boot
DIP Switch

COM1
DIP Switch

RS-232/485
COM Port(COM1)

Bottom View

LAN

Pin Assignment

N/A	N/A	N/A	N/A	N/A	N/A	N/A	GND	RxD0	TxD0	P.PWR	P.GND

Console Port

+12V~48V DC

▣ Dimensions (Units: mm)

Top View

Left Side View

38.0
34.2
33.2
33.6
46.5

Front View

97.0
86.0
73.0
4−∅4.5
∅4.5
101.0
71.0 14.0
∅8.5
114.0

Right Side View

Rear Side View

Unit: mm

Bottom View

▣ Ordering Information

UA-7231M CR	IIoT Communication Server with 1 PoE Ethernet Ports (Metal Case) (RoHS)