ICP DAS

U-7515M

OPC UA I/O Module
with 7-channels RTD Inputs
and 2-port Ethernet Switch

Features

- Support OPC UA Server and MQTT Client Protocol
- Support RESTful API via HTTP and HTTPS
- Support to Execute OPC UA, MQTT and RESTful API Simultaneously
- Support Scaling For Analog Signal Converting
- Support Logic Function Rule Setting: IF, THEN, ELSE
- Support Schedule: to Execute the Set Rules at a Specific Time.
- Support Event Log: Record the I/O Change for Device Tracking
- Support IoTstar Cloud Management Software.
- Built-in Web Server to Provide the Web User Interface
- I/O Channels: 7 x RTD Inputs
- Dual-port Ethernet Switch for Daisy-Chain Topology
- IEEE 802.3af-compliant Power over Ethernet (PoE)

Introduction

U-7515M is a UA I/O module that provides 7 RTD Input channels. It has a built-in dual-port Ethernet switch to implement daisy-chain topology. The cabling is much easy and can reduce the total cable and switch cost. It follows IEEE 802.3af (Class 2) compliant Power over Ethernet (PoE) specification. It allows receiving power from PoE enabled network by Ethernet pairs. This feature provides greater flexibility and efficiency to simplify system design, save space, and reduce wirings and power sockets. It provides a Web UI to configure/control/monitor the modules, connections, and I/O status via a web browser. It is easy, fast, and no extra APP needed.

In industrial communication, UA I/O provides OPC UA Server, MQTT Client and RESTful API protocols (can execute all communications at the same time.). Users can choose the networking mode according to their cases. And to transmit the values of the built-in I/O channels to the cloud system or field control system for displaying, analysis or strategy. Support Scaling. Let the analog signal be converted into a more readable value. Support logic function rule setting IF, THEN, ELSE, can set up logical condition/action for I/O and virtual point; Provide schedule function to execute the set rules at a specific time; and support RESTful API function, can read/write I/O and virtual point through HTTP or HTTPS.

Software Specifications

Protocol	

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:
	   - Anonymous
	   - Username/Password
	   - X.509 Certificate
	● Security Policy:
	   - None
	   - Basic128Rsa15 (Sign, Sign & Encrypt)
	   - Basic256 (Sign, Sign & Encrypt)
	● Max. Session Connections: 3
	● Can Execute with MQTT and RESTful API Communication Simultaneously

MQTT Client	● Connect to the MQTT Broker to read or control the I/O channel value by the publish/subscribe messaging mechanism. (MQTT Ver. 3.1.1; TLS Ver. 1.2)
RESTful API	● User can read/write the I/O & Virtual points through HTTP and HTTPS.

Function	
Web Interface for Configuration	● The system operation can be performed through the browser without installing software tools. ● Use AES 256 encryption algorithm to encrypt web page setting data for general communication. ● HTTPS upgrades the security of web communication.
Scaling	● Convert the analog signal to a more readable value. ● Function is only available for modules with AI/O.
Security	● Infromation Security: Provide HTTPS, Port Binding , Allowlist, ICMP drop functions. ● Data security: Provide Certificate (X.509), Communication Encryption (SSL/TLS) functions.
Rule Setting	● Provide simple logic condition rule setting, let UA I/O do automatic condition judgment and action control, to achieve simple intelligentization.
Schedule	● Provide schedule function to execute the set rules at a specific time.
Event Log	● When the I/O value changes, record the current I/O value for easy device tracking in the future.
IoTstar Setting	● Support IoTstar cloud management software developed by ICP DAS.

■ System Specifications

CPU Module	
CPU	32-bit CPU (400 MHz)
Watchdog Timer	Module, Communication(Programmable)
Isolation	
2-way Isolation	I/O: 3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each terminal ±8 kV Air for random point
EFT (IEC 61000-4-4)	±2 kV for Power Line
Surge (IEC 61000-4-5)	±2 kV for Power Line
LED Indicators	
Status	Run, Ethernet, I/O
Ethernet	
Ports	2 x RJ-45, 10/100 Base-TX, Swtich Ports
PoE	Yes
LAN bypass	Yes
Security	ID, Password and IP Filter
Power	
Reverse Polarity Protection	Yes
Consumption	3.2 W
Powered from PoE	IEEE 802.3af, Class2
Powered from Terminal Block	+12 ~ +48 VDC
Mechanical	
Dimensions (mm)	97 x 120 x 47 (W x L x H)
Installation	DIN-Rail mounting
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +80 °C
Humidity	10 ~ 90% RH, Non-condensing

■ I/O Specifications

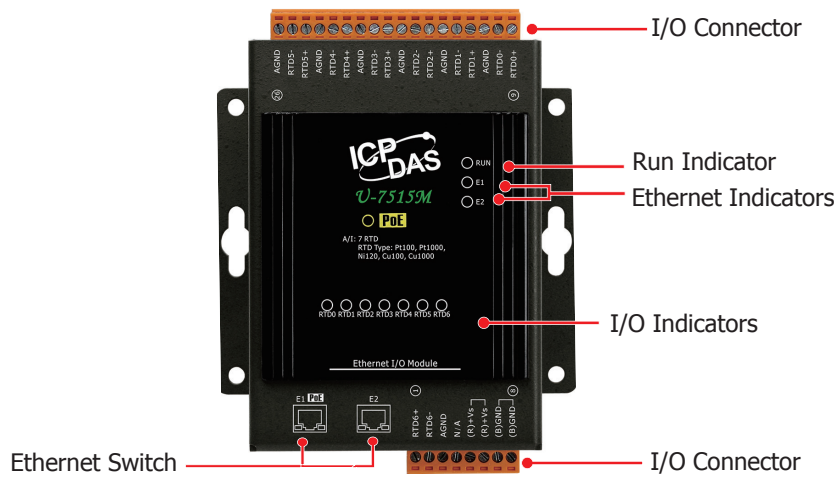| Analog Input	
Channels	7 (Differential)
Type	RTD (2-wire, 3-wire)
Sensor Type	Pt100, Pt1000, Ni120, Cu100, Cu1000
Resistance Measurement	3.2 kΩ (max.)
Resolution	16-bit
Accuracy	±0.05%
Sampling Rate	12 samples/second (Total)
Input Impedance	> 1 MΩ
Common Mode Rejection	150 dB
Normal Mode Rejection	100 dB
Overvoltage Protection	+120 VDC
Individual Channel Configuration	Yes
Open Wire Detection	Yes
3-wire RTD Lead Resistance Elimination	Yes
Zero Drift	±0.5 μV/°C
Span Drift	±20 μV/°C

◼ Wire Connections

Open Collector (Sink)	CH0, 1, 2, 5 and 6	CH3 and CH4
2-wire of RTD	RTDx+ RTDx- AGND	RTD3+ RTD3- AGND RTD4- RTD4+
3-wire of RTD	RTDx+ RTDx- AGND	RTD3+ RTD3- AGND RTD4- RTD4+

◼ Pin Assignments

📁 Appearance

- I/O Connector
- Run Indicator
- Ethernet Indicators
- I/O Indicators
- Ethernet Switch
- I/O Connector

📁 Dimensions (mm)

Top View

Left Side View

Front View

Right Side View

Rear View

Bottom View
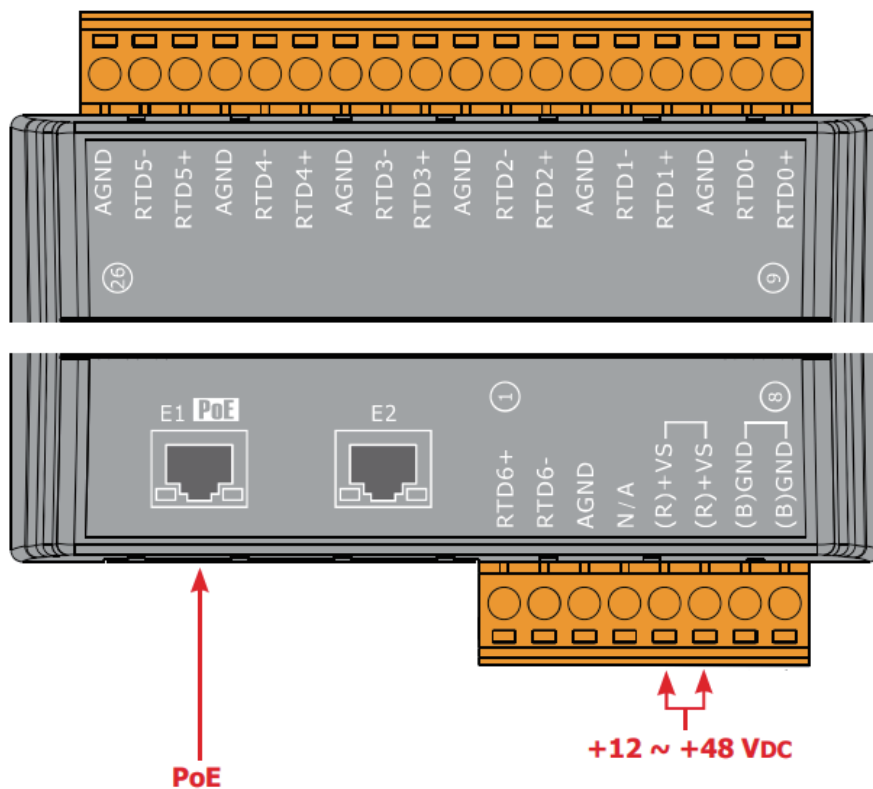
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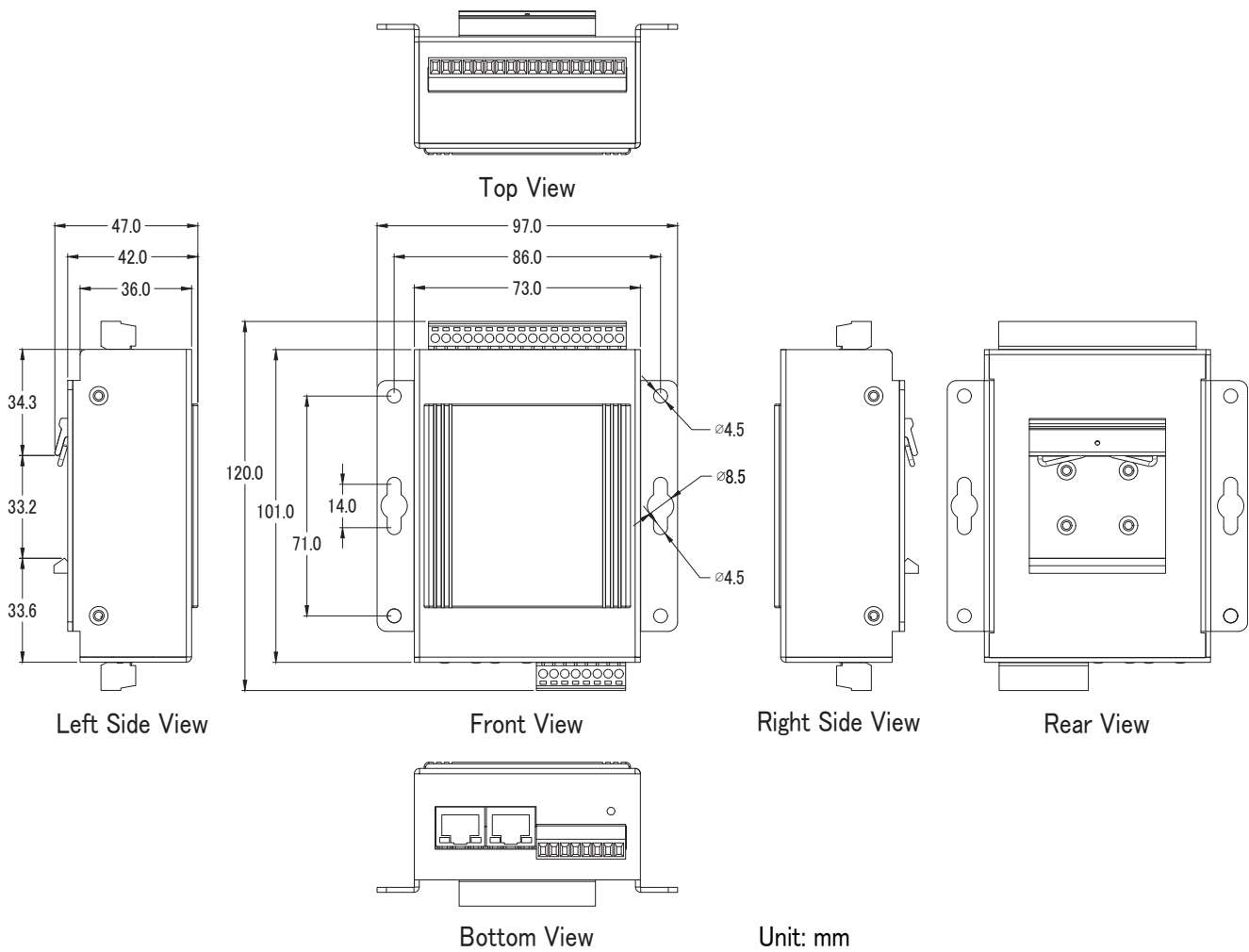
📁 Ordering Information

U-7515M CR	OPC UA I/O Module with 7-channels RTD Inputs and 2-port Ethernet Switch. (RoHS)