



## U-7502M

### OPC UA I/O Module

with 3-channels AI, 6-channels DI, 3-channels relay outputs and 2-port Ethernet Switch

### Introduction

**U-7502M** is a UA I/O module that provides 3 analog input, 6 digital input, and 3 relay output 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 / Client, 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   | Function  |
|--|---|
| OPC UA Server / Client <ul style="list-style-type: none"> <li>• OPC Unified Architecture: 1.02</li> <li>• Core Server Facet</li> <li>• Data Access Server Facet</li> <li>• Method Server Facet</li> <li>• UA-TCP UA-SC UA Binary</li> <li>• User Authentication:               <ul style="list-style-type: none"> <li>- Anonymous</li> <li>- Username/Password</li> <li>- X.509 Certificate</li> </ul> </li> <li>• Security Policy:               <ul style="list-style-type: none"> <li>- None</li> <li>- Basic128Rsa15 (Sign, Sign &amp; Encrypt)</li> <li>- Basic256 (Sign, Sign &amp; Encrypt)</li> </ul> </li> <li>• Can Execute with MQTT and RESTful API Communication Simultaneously</li> <li>• Max. Session Connections: 3 (Server only)</li> </ul> | Web Interface for Configuration <ul style="list-style-type: none"> <li>• The system operation can be performed through the browser without installing software tools.</li> <li>• Use AES 256 encryption algorithm to encrypt web page setting data for general communication.</li> <li>• HTTPS upgrades the security of web communication.</li> </ul> |
| MQTT Client  | Scaling <ul style="list-style-type: none"> <li>• Convert the analog signal to a more readable value.</li> <li>• Function is only available for modules with AI/O.</li> </ul>  |
| RESTful API  | Security <ul style="list-style-type: none"> <li>• Information Security: Provide HTTPS, Port Binding, Allowlist, ICMP drop functions.</li> <li>• Data security: Provide Certificate (X.509), Communication Encryption (SSL/TLS) functions.</li> </ul>  |
|  | Rule Setting <ul style="list-style-type: none"> <li>• Provide simple logic condition rule setting, let UA I/O do automatic condition judgment and action control, to achieve simple intelligentization.</li> </ul>  |
|  | Schedule <ul style="list-style-type: none"> <li>• Provide schedule function to execute the set rules at a specific time.</li> </ul>   |
|  | Event Log <ul style="list-style-type: none"> <li>• When the I/O value changes, record the current I/O value for easy device tracking in the future.</li> </ul>  |
|  | IoTstar Setting <ul style="list-style-type: none"> <li>• Support IoTstar cloud management software developed by ICP DAS.</li> </ul>   |

### Features

- Support OPC UA Server / Client 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: 3 x AI, 6 x DI and 3 x relay outputs
- Dual-port Ethernet Switch for Daisy-Chain Topology
- IEEE 802.3af-compliant Power over Ethernet (PoE)



## System Specifications

| CPU Module            |   |
|-----------------------|---|
| CPU                   | 32-bit CPU (400 MHz)  |
| Watchdog Timer        | Module, Communication(Programmable)                           |
| Isolation             |   |
| 2-way Isolation       | I/O: 2500 VDC   |
| EMS Protection        |   |
| ESD (IEC 61000-4-2)   | ±4 kV Contact for each terminal<br>±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, Switch Ports                       |
| PoE                   | Yes   |
| LAN bypass            | Yes   |
| Security              | ID, Password and IP Filter                                    |

| Power                       |                             |
|-----------------------------|-----------------------------|
| Reverse Polarity Protection | Yes                         |
| Consumption                 | 4.1 W                       |
| Powered from PoE            | IEEE 802.3af, Class2        |
| Powered from Terminal Block | +12 to +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

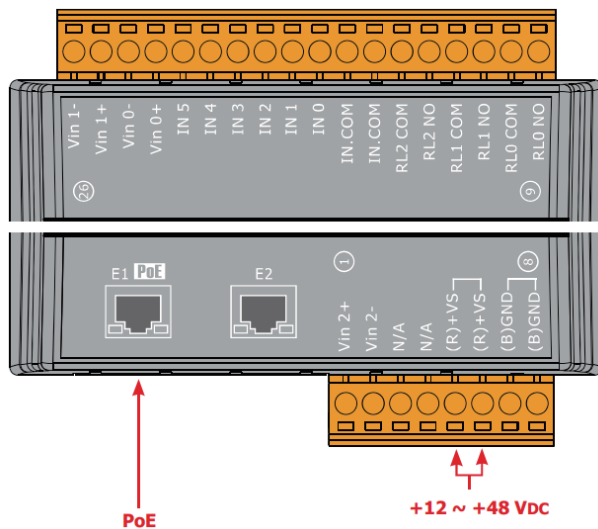
| Analog Input                     |   |
|----------------------------------|---|
| Channels                         | 3 (Differential)  |
| Type                             | Voltage, Current  |
| Range                            | ±150 mV, ±500 mV, ±1 V, ±5 V,<br>±10 V 0 to 20 mA, ±20 mA, 4 to 20<br>mA(Jumper Selectable) |
| Resolution                       | 16-bit  |
| Accuracy                         | Normal Mode: ±0.1%<br>Fast Mode: ±0.5% or better  |
| Sampling Rate                    | Normal Mode: 10 samples/second<br>(Total)<br>Fast Mode: 50 samples/second<br>(Total)        |
| Input Impedance                  | Voltage: 2 MΩ<br>Current: 125 Ω   |
| Common Mode Rejection            | 86 dB (min.)  |
| Normal Mode Rejection            | 100 dB  |
| Overvoltage Protection           | 240 Vrms  |
| Overcurrent Protection           | 50 mA at 110 VDC (max.)   |
| Individual Channel Configuration | Yes   |
| Open Wire Detection              | Yes   |
| Zero Drift                       | ±20 μV/°C   |
| Span Drift                       | ±25 ppm/°C  |
| Isolation                        | ±400 VDC, Virtual Channel to<br>Channel Isolation   |

| Digital Input/Counter  |                                       |
|------------------------|---------------------------------------|
| Channels               | 6                                     |
| Type                   | Wet Contact                           |
| Sink/Source (NPN/PNP)  | Sink/Source                           |
| ON Voltage Level       | +10 ~ +50 VDC                         |
| OFF Voltage Level      | +4 VDC (max.)                         |
| Max. Counts            | 4,294,967,295 (32-bit)                |
| Frequency              | 100 Hz                                |
| Min. Pulse Width       | 5 ms                                  |
| Input Impedance        | 10 kΩ, 0.5W                           |
| Overvoltage Protection | +70 VDC                               |
| Digital Output         |                                       |
| Load Current           | 5.0 A/channel at 25°C                 |
| Relay Output           |                                       |
| Channels               | 3                                     |
| Type                   | Power Relay, Form A (SPST N.O.)       |
| Contact Rating         | 5 A @ 250 VAC/24 VDC (Resistive Load) |
| Operate Time           | 6 ms (Typical)                        |
| Release Time           | 3 ms (Typical)                        |
| Electrical Endurance   | 10 <sup>5</sup> ops.                  |
| Mechanical Endurance   | 2 × 10 <sup>7</sup> ops.              |
| Power on Value         | Programmable                          |
| Safe Value             | Programmable                          |

## Wire Connections

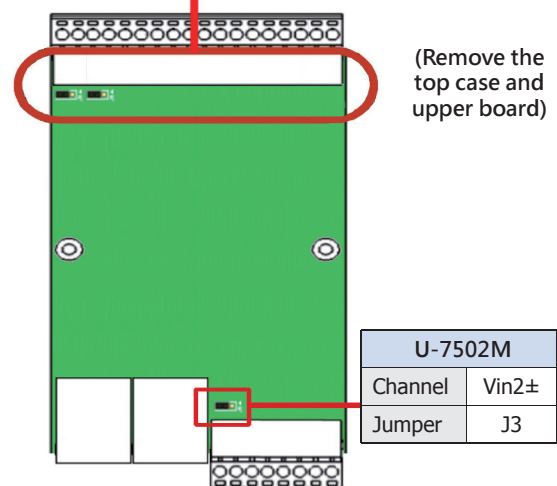
| Voltage Input         |                        | Current Input           |  |
|-----------------------|------------------------|-------------------------|--|
|                       |                        |                         |  |
| Digital Input/Counter | Readback as 1          | Readback as 0           |  |
|                       | +10 ~ +50 VDC          | OPEN or <4 VDC          |  |
| Sink                  |                        |                         |  |
| Source                |                        |                         |  |
| Power Relay           | ON State Readback as 1 | OFF State Readback as 0 |  |
|                       | +10 ~ +50 VDC          | OPEN or <4 VDC          |  |
| Relay Output          |                        |                         |  |

## Pin Assignments

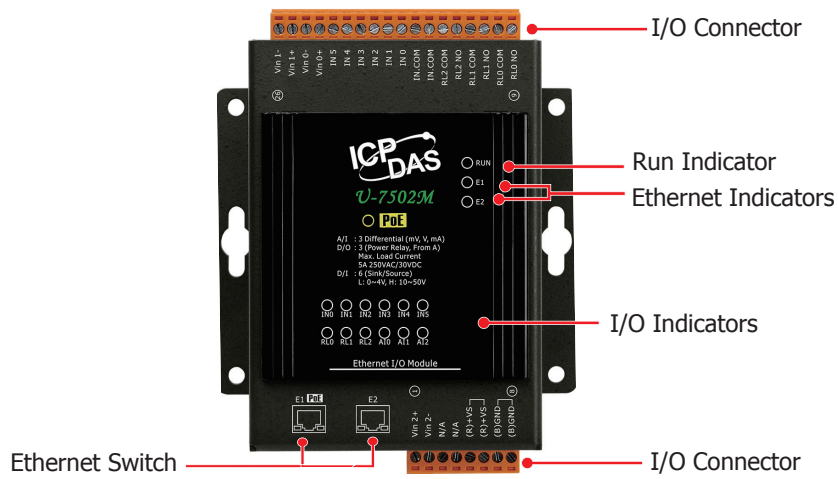


## Jumper Location

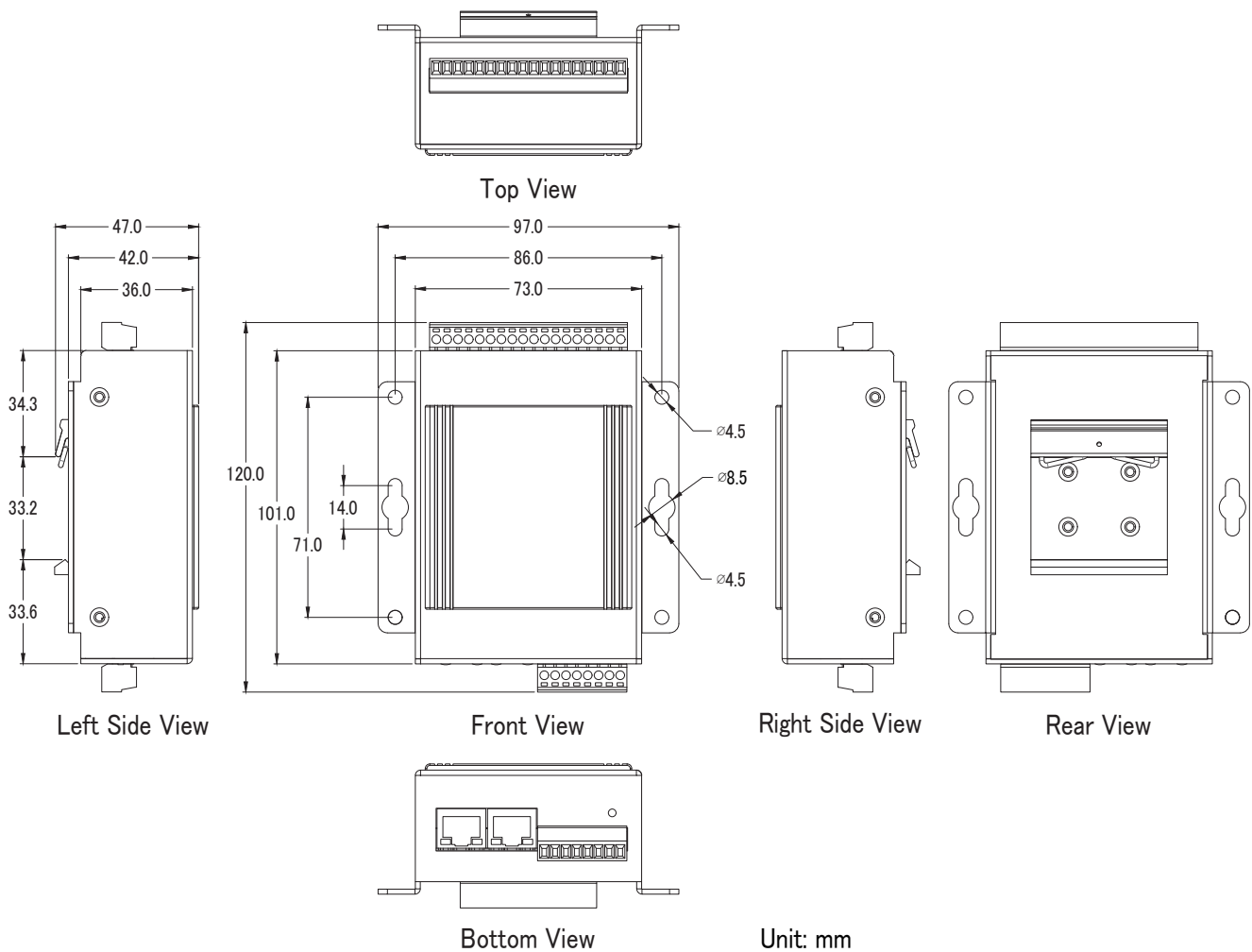
| U-7502M  |          |       |
|----------|----------|-------|
| Channel  | Vin1±    | Vin0± |
| Jumper   | J2       | J1    |
| Location | Jumper → |       |



## Appearance



## Dimensions (mm)



## Ordering Information

|                   |  |
|-------------------|--|
| <b>U-7502M CR</b> | OPC UA I/O Module with 3-channels AI, 6-channels DI, 3-channels relay outputs and 2-port Ethernet Switch. (RoHS) |
|-------------------|--|