PUSR®
www.pusr.com

Industrial Edge Gateway

USR-M300

IEC104

Data acquisition

Be Honest & Do Best

Your Trustworthy Smart Industrial IoT Partner

Directory

1. Product Introduction

The M300 is a high-performance, scalable, comprehensive edge gateway. The product integrates edge data acquisition, calculation, active reporting, data reading and writing, linkage control, IO acquisition and control functions, etc. The acquisition protocol includes standard Modbus protocol and a variety of common PLC protocols, as well as industry-specific protocols. Active reporting adoptsgroup reporting mode, and Json reporting template is customized to quickly realize the docking of server data formats. At the same time, the product also has routing and VPN and graphical programmingfunctions, graphical module design edge computing functions, to meet customer's own design needs. The product supports TCP/MQTT(S) protocol communication, supports multi-channel connection; supports Modbus RTU/TCP and OPC UA protocol conversion and other functions, and supports fast access to common platforms such as Renyun, Alibaba Cloud, AWS and Huawei Cloud.

The product adoptsLinuxkernel, the main frequency is up to 1.2Ghz; the network adopts WAN/LANplus 4Gcellular design, the uplink transmission is more reliable, and the LANport can beconnected to external cameras and other devices, and the function application can be realized by combining its own routing function; the hardware integrates 2-way DI, 2-wayDO, 2-way AIand 2-way RS485, which not only realizes the industrial field control and acquisition requirements, but also realizes linkage control according to various acquisition point data or status. It can be widely used in intelligent breeding, intelligent factories and other industrial intelligent solutions.

The product adopts expandable design in structure, which can be combined and applied by expanding modules with different functions, so as to better meetthe requirements of IOquantity andcommunication interface in different scenarios. Convenient and cost effective.

2. IEC104 protocol

IEC104 protocol, formally known as IEC60870-5-104, is a standard developed by the International Electrotechnical Commission (IEC) to support network communication between power system automation equipment. The protocol uses TCP/IP as the underlying communication protocol for monitoring and controlling all types of equipment in power systems, including but not limited to substations, generators, switches, etc.

3. Environmental preparation

USR-M3001 set

One net cable

12V/1Apower adapter One

4. Analog Slave Software Configuration

4.1. Create links

IEC104 Server Simulator software is used to simulate slave computer in this test. Click "New Connection", fill in corresponding configuration, and click OK after configuration.

·IP: Enter the IPaddressof the machine

·Server port number: custom.

K: The maximum number of retransmissions before the host receives an acknowledgement during data transmission.

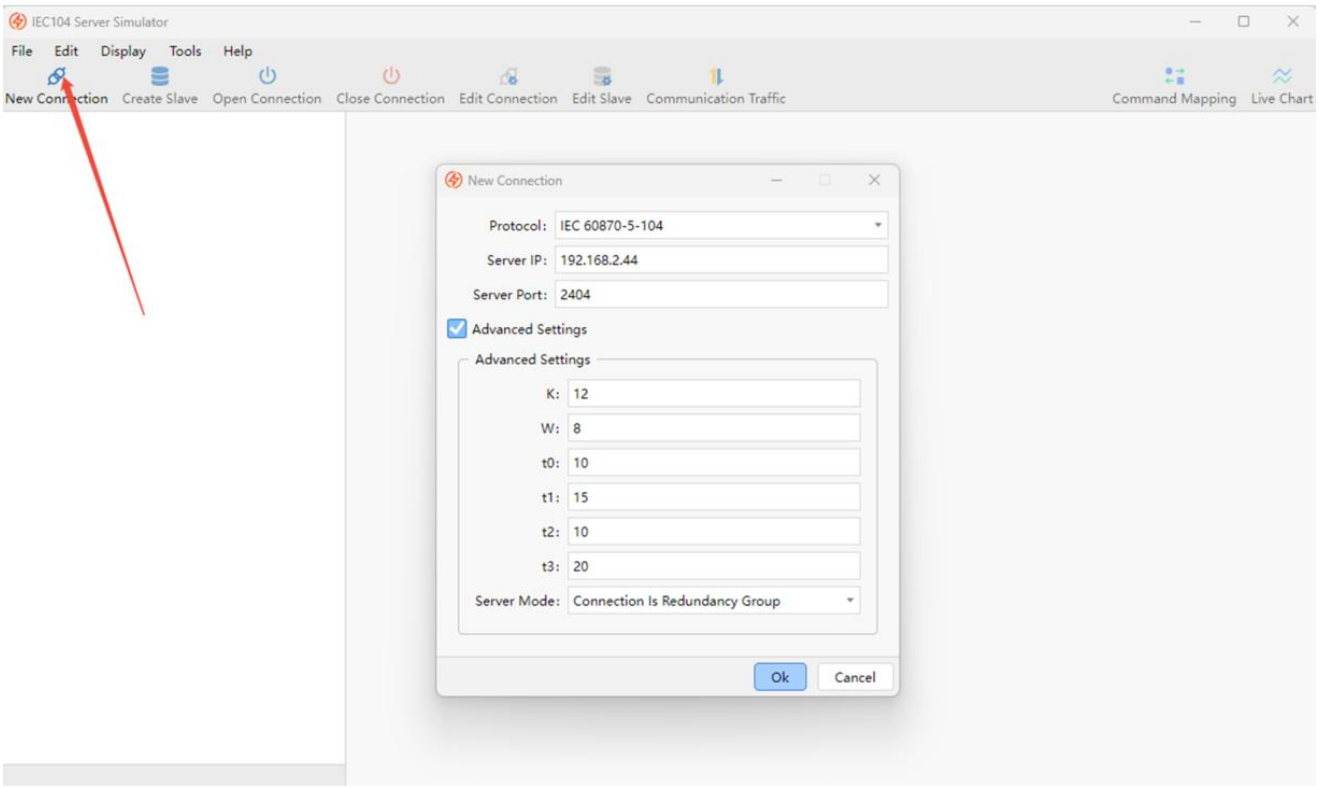
W: The maximum number of unacknowledged data frames a host can send before waiting for an acknowledgement.

T0: The longest time the host waits for an acknowledgement after sending a message.

T1: The longest time the slave sends an acknowledgement after receiving a message.

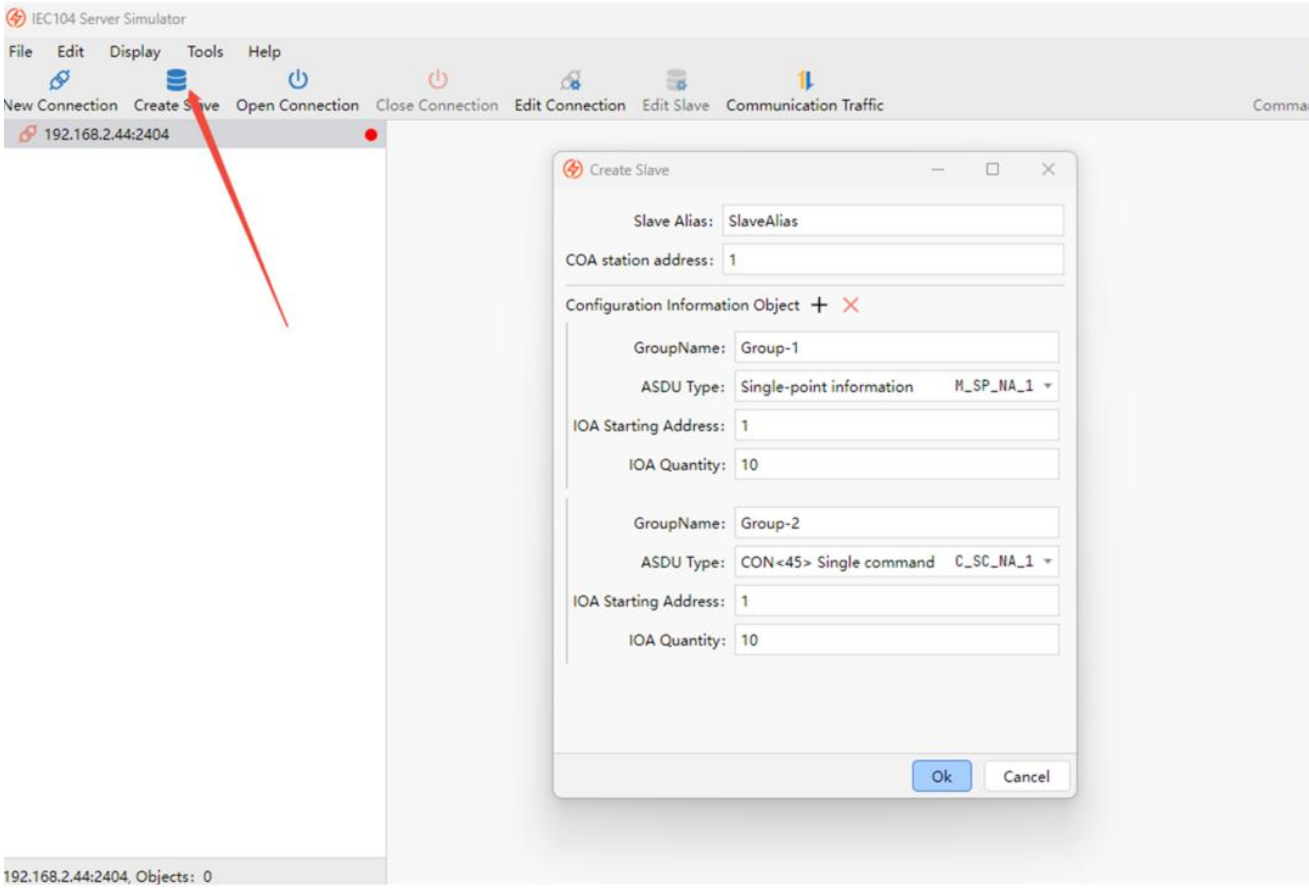
T2: The longest time the host sends a life-detection request without receiving any data or acknowledgement. Note: T2 <T1

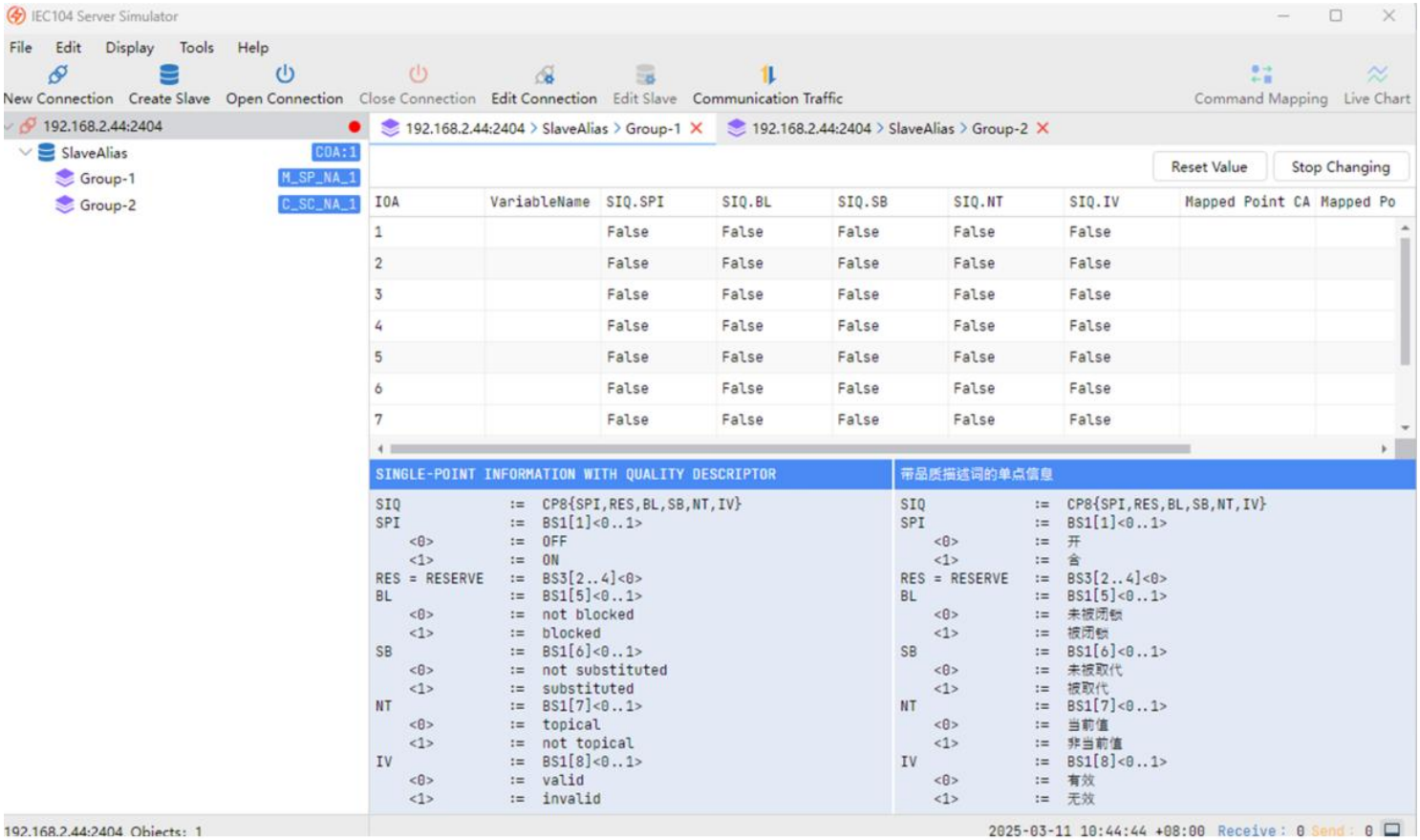
T3: The longest time the host waits for a response after sending a life-detection request.



4.2. Create Slave Station

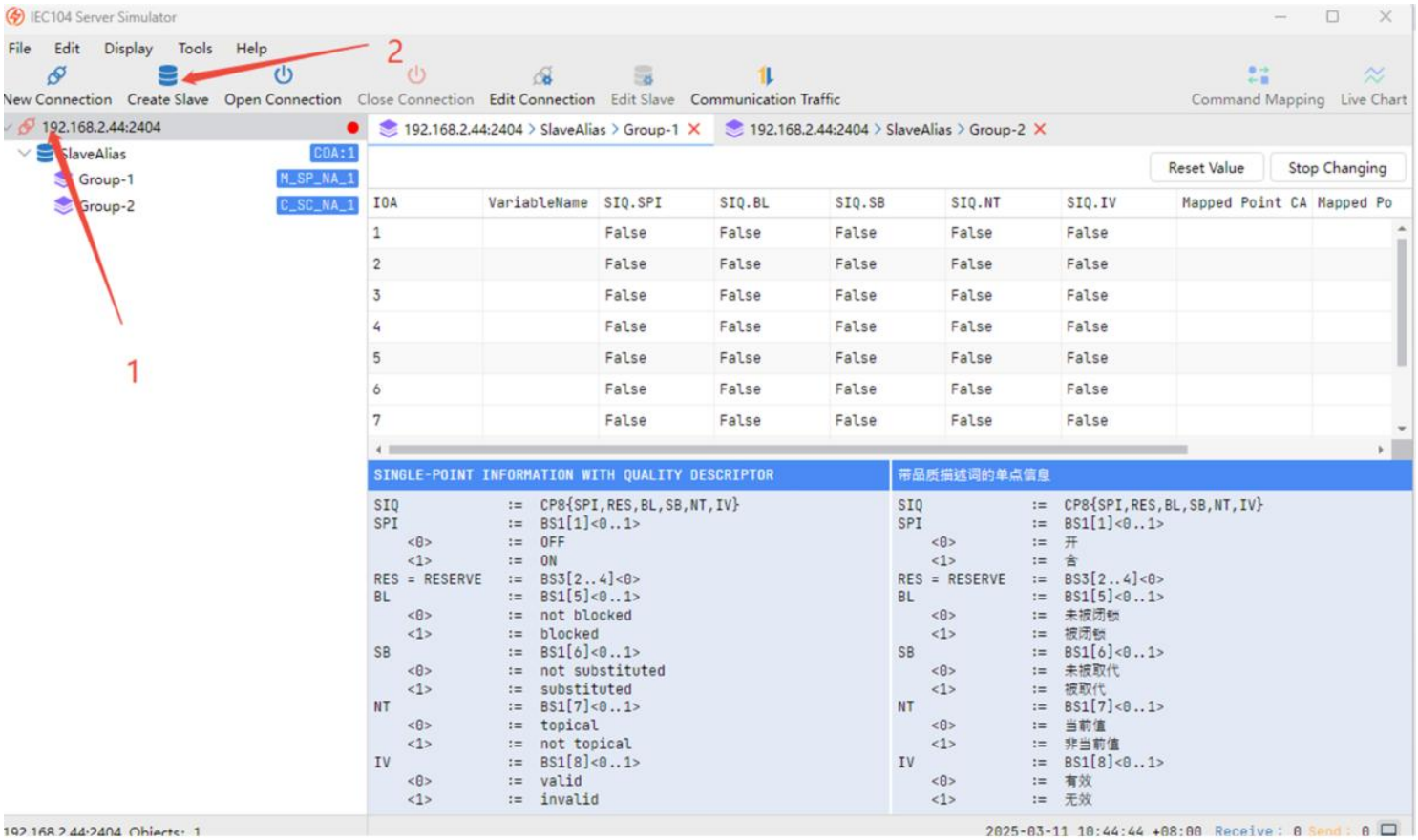
Click on the established link, then "Create Slave Station", configure "COA" The address of the station "," the corresponding slave configuration ". Click OK after configuration. Double-click the slave station to open the interface and modify the data.





4.3. Open the connection

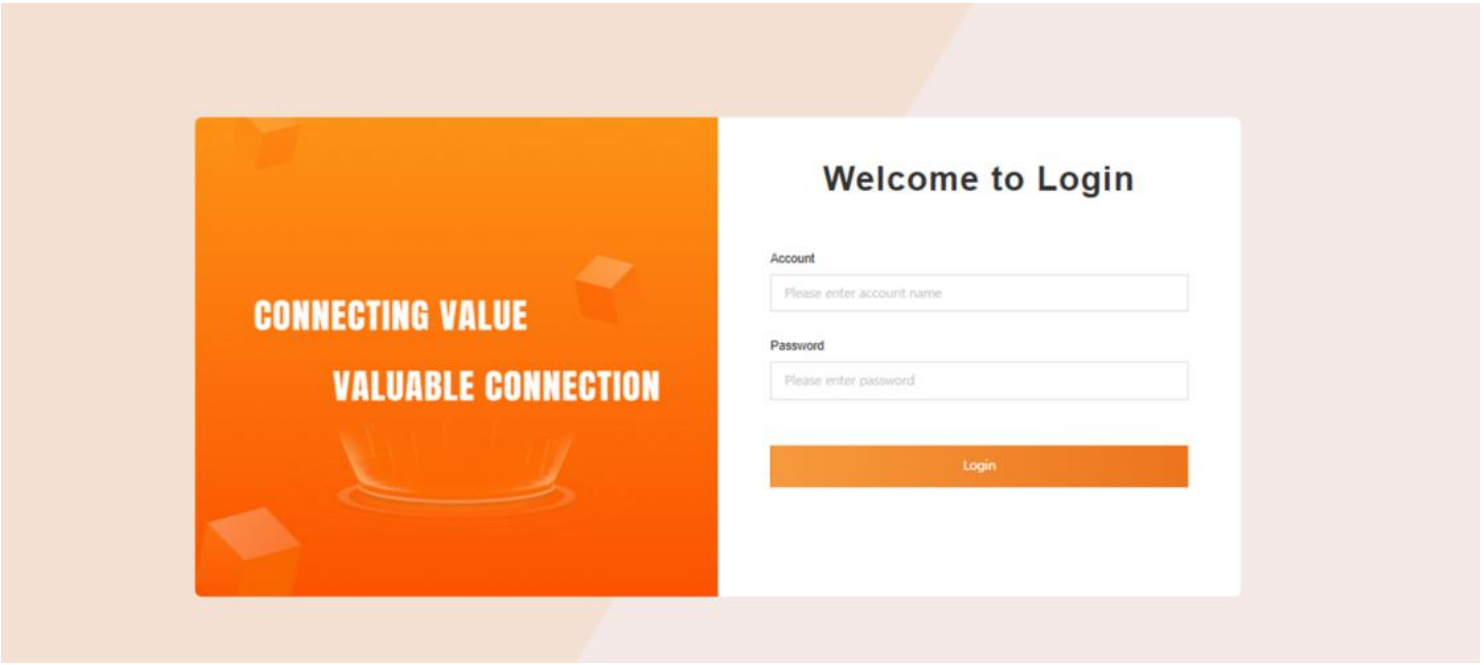
Select the corresponding link and click "Open Link".



5. Configuration M300

5.1. Connection

Connectthe LAN port of the M300 to the computer and enter the built-in page of the M300 through the LAN port IP (192.168.1.1) in the browser of the computer. Enter your account password (default password is admin). Then click Login.



5.2. Configure data points

（1）Under the interface of "Edge Calculation"-"Data Point", click "Add" slave machine. The relevant instructions are as follows. Click "OK" after configuration.

（2）·Slave Name: Custom.

（3）·Slave Description: Custom.

（4）·Acquisition protocol: SelectIEC104.

（5）·Polling interval: the time interval from the completion of the current point acquisition to the acquisition of the next point.

（6）·Combined acquisition: combining multiple consecutive points together.

（7）·Slave switch: Whether to enable the slave.

（8）IP: IP address of the slave device.

（9）ASDU: Slave device COA address, i.e. slave address.

（10）Port number: The port number of the slave device.

（11）COT: The specific reason for the data transfer. default is 2

（12）CICNA: The cycle time for the master to send a message requesting all data to the slave.

（13）CCINA: is the cycle time for the master to send a request for all electrical data to the slave.

（14）K: The maximum number of retransmissions before the host receives an acknowledgement during data transmission.

（15）W: The maximum number of unacknowledged data frames a host can send before waiting for an acknowledgement.

（16）T0: The longest time the host waits for an acknowledgement after sending a message.

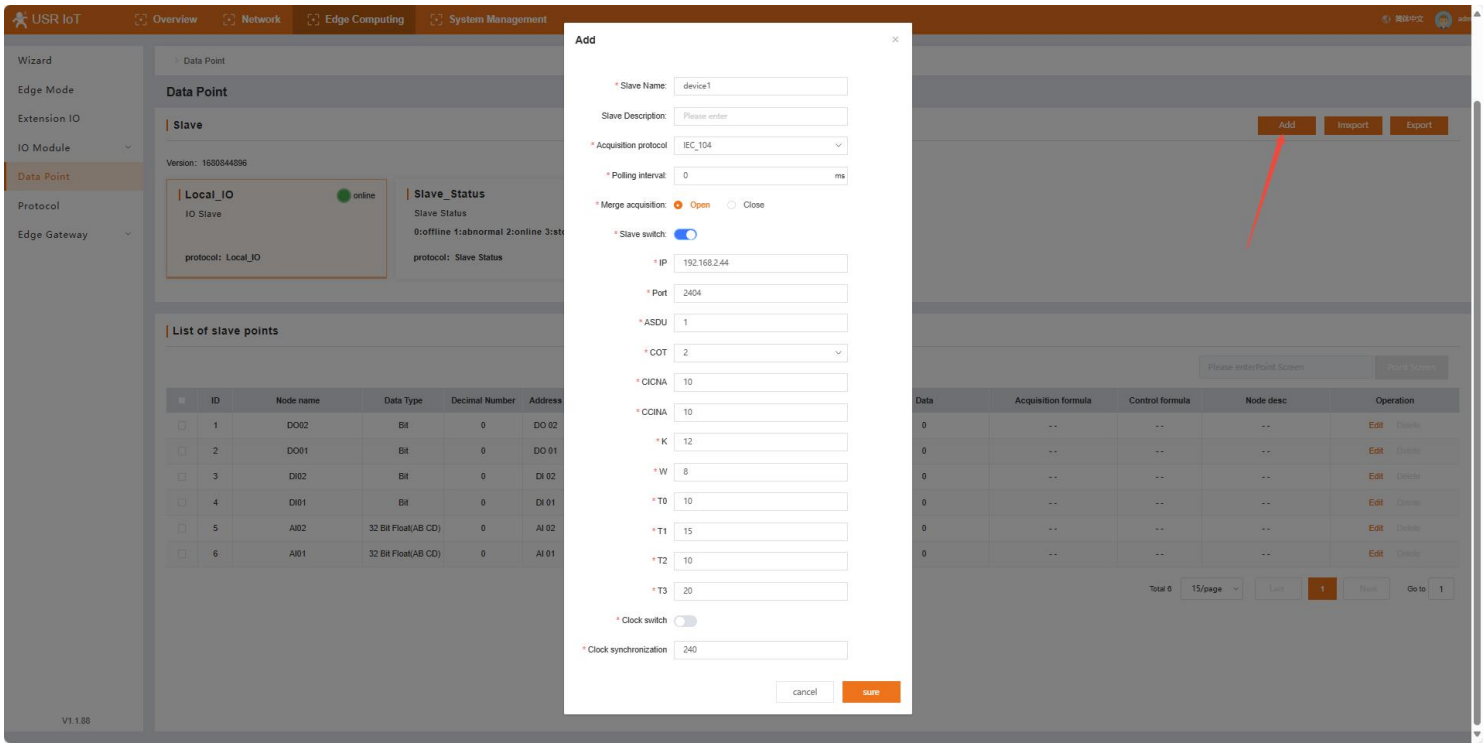
（17）T1: The longest time the slave sends an acknowledgement after receiving a message.

（18）T2: The longest time the host sends a life-detection request without receiving any data or acknowledgement. Note: T2< T1

（19）T3: The longest time the host waits for a response after sending a life-detection request.

（20）Clock synchronization: When enabled, the master sends clock synchronization requests to slave devices.

（21）·Clock synchronization period: The time interval between the master sending a clock synchronization request to the slave.


USR IoT
Overview
Network
Edge Computing
System Management
Wizard
Edge Mode
Extension IO
IO Module
Data Point
Protocol
Edge Gateway
Data Point
Data Point
Slave
Add
Import
Export
Local_IO
IO Slave
online
protocol: Local_IO
Slave_Status
Slave Status
protocol: Slave Status
List of slave points
Add
* Slave Name: device1
Slave Description: Please enter
* Acquisition protocol: IEC_104
* Polling interval: 0 ms
* Merge acquisition: Open Close
* Slave switch:
* IP: 192.168.2.44
* Port: 2404
* ASDU: 1
* COT: 2
* CICNA: 10
* CCINA: 10
* K: 12
* W: 8
* T0: 10
* T1: 15
* T2: 10
* T3: 20
* Clock switch:
* Clock synchronization: 240
cancel
sure
V1.1.88

（22）Add a point, click the slave that needs to establish a point, and click "Add" in the "Slave Point List". Configuration requirements are as follows. Click to configure "Sure." Then restart.

（22）·Point Name: Custom.

（23）·Point Description: Custom.

（24）·Register: Select the register type and fill in the address according to the point you need to collect.

（25）·Data type: Select according to the points you need to collect.

（26）·Number of points: the number of points that need to be continuously established for this acquisition.

（27）·Decimal places: The number of decimal places in which data is displayed at the collection point.

（28）·Reading and writing status: Select according to the points you need to collect.

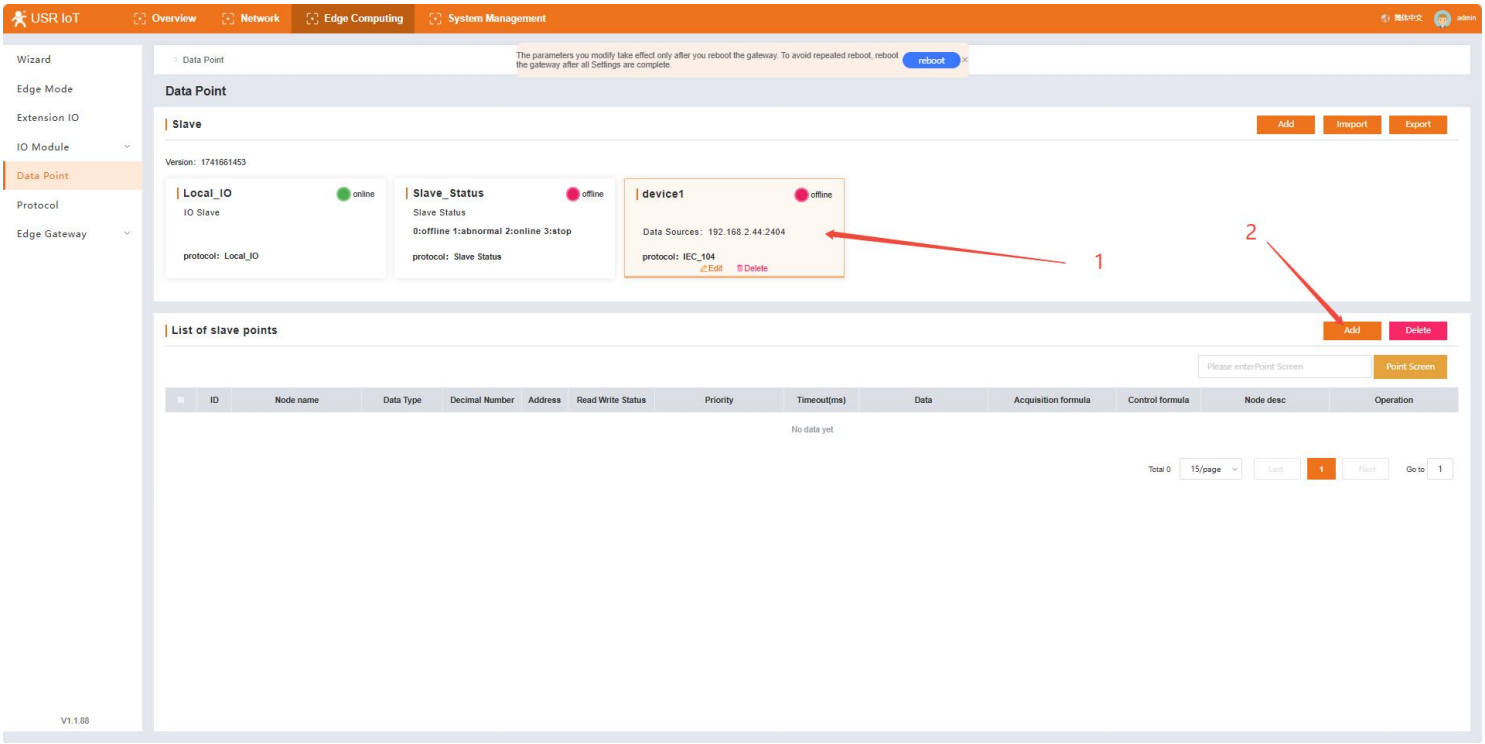
（29）·Priority: The order of priority in which points are collected.

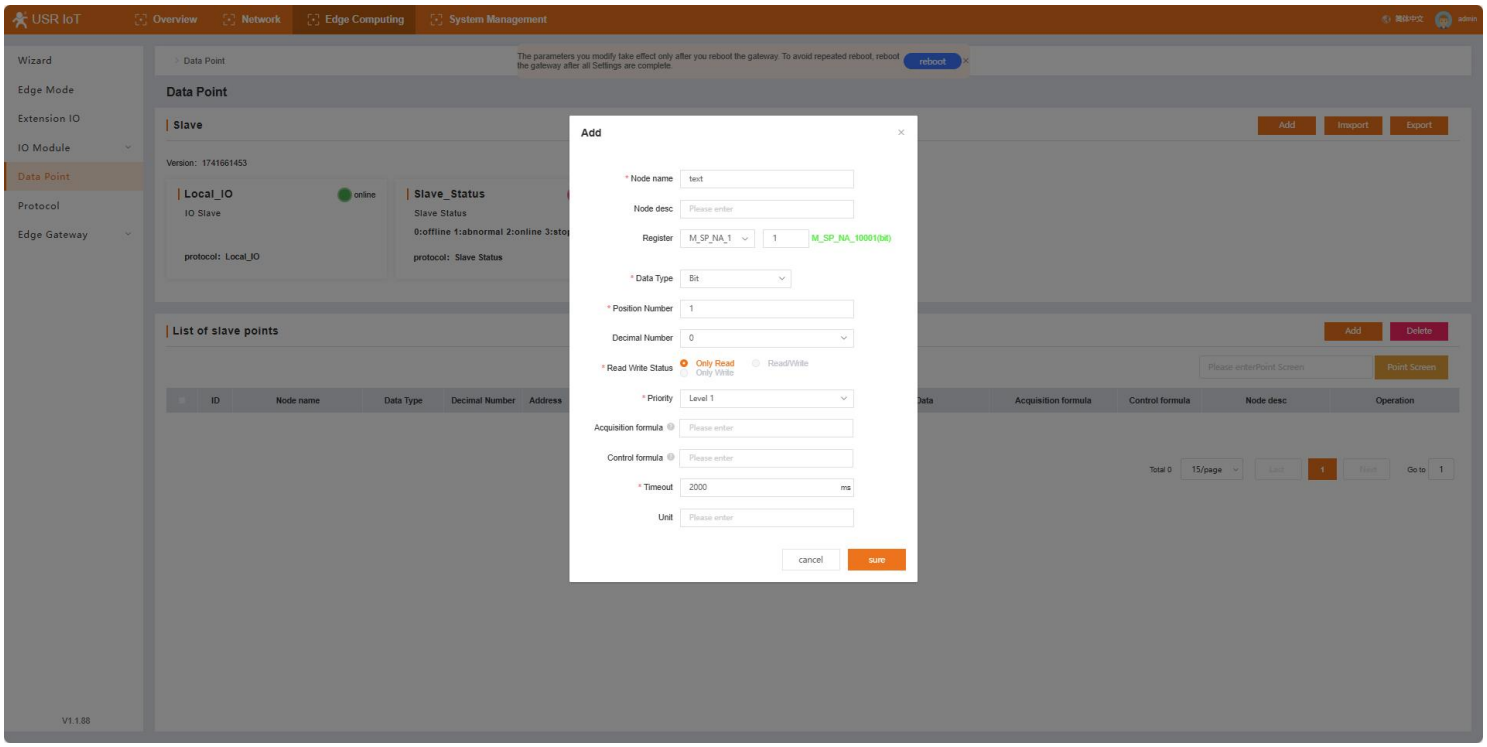
（30）·Collection formula: The data collected at this point is displayed after being calculated by this collection formula.

（31）·Control formula: The data sent by M300 to this point needs to be calculated by this formula and sent to the slave.

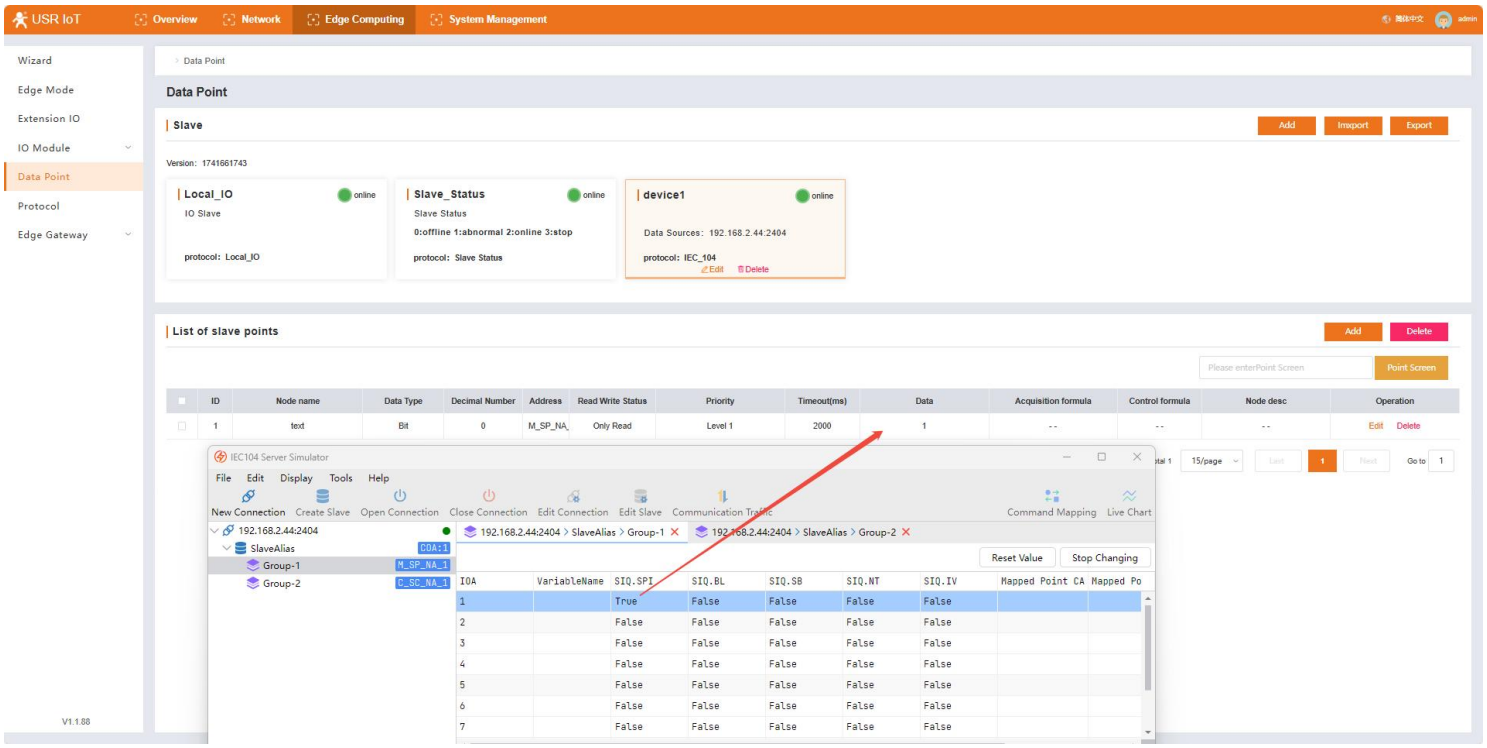
（32）·Timeout time: When collecting this point, the message is not recovered from the slave, wait for this time, and then carry out the next collection.

（33）·Units: The units in which the collected data is displayed.





6.Result



7.Update history

versions	update content	turnover time
V1.0.0	First edition	2025-03-11

Your Trustworthy Smart IOT Partner

PUSR®
www.pusr.com

Official Website: www.pusr.com

Official Shop: shop.usriot.com

Technical Support: h.usriot.com

Inquiry Email: inquiry@usriot.com

Skype & WhatsApp: +86 13405313834

Click to view more: Product Catalog & Facebook & Youtube