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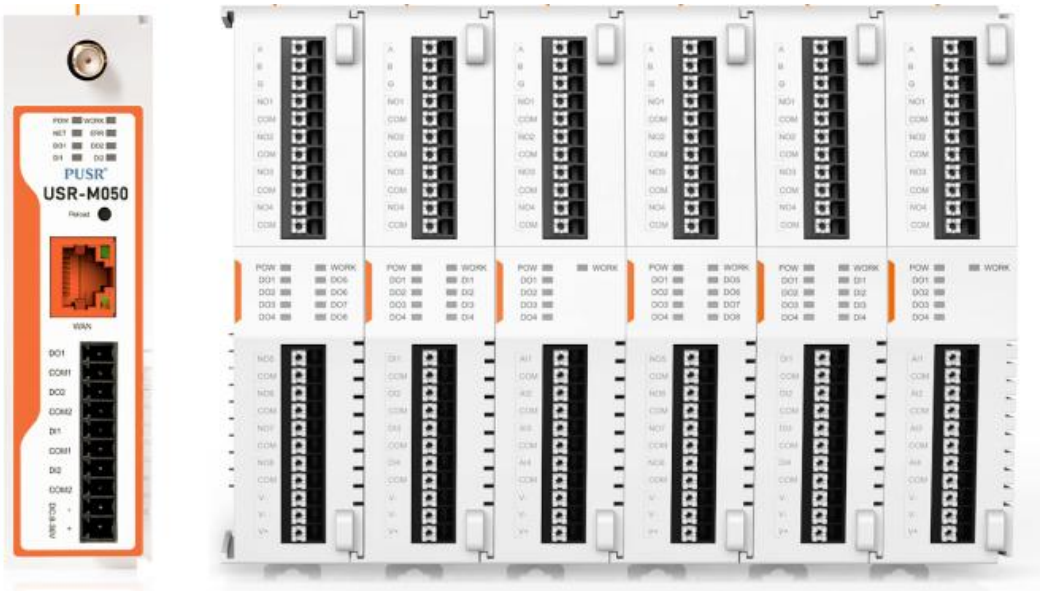
of Industrial IOT

Network IO Controller

USR-M050

User Manual



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1. Product overview

1.1. Product Introduction

The USR-M050 is a new generation of intelligent network port IO controllers designed for industrial automation, equipment monitoring, energy management, and smart warehousing. This product features 2 digital input (DI) and 2 digital output (DO) channels, supporting the expansion of various IO acquisition and control functions. It offers flexible communication capabilities, including dual-band WiFi, Ethernet, and cellular network connections. With its compact design and high performance, it can be easily deployed in various industrial settings, meeting the needs for efficient data collection and remote control. This helps enterprises achieve intelligent upgrades.

The product uses a RISC-V processor, supporting multiple network combinations for more reliable uplink transmission. It integrates 2 DI and 2 DO channels, meeting the control requirements of industrial sites and supporting Modbus and Json protocol controls. It can be widely applied in various industrial intelligent solutions, including smart farming and smart factories.

The product adopts an expandable design in structure, which can be combined and applied by expanding different functional modules to better meet the requirements of different scenarios for the number of IO and communication interfaces. Convenient and fast, saving cost.

1.2. Product Parameter

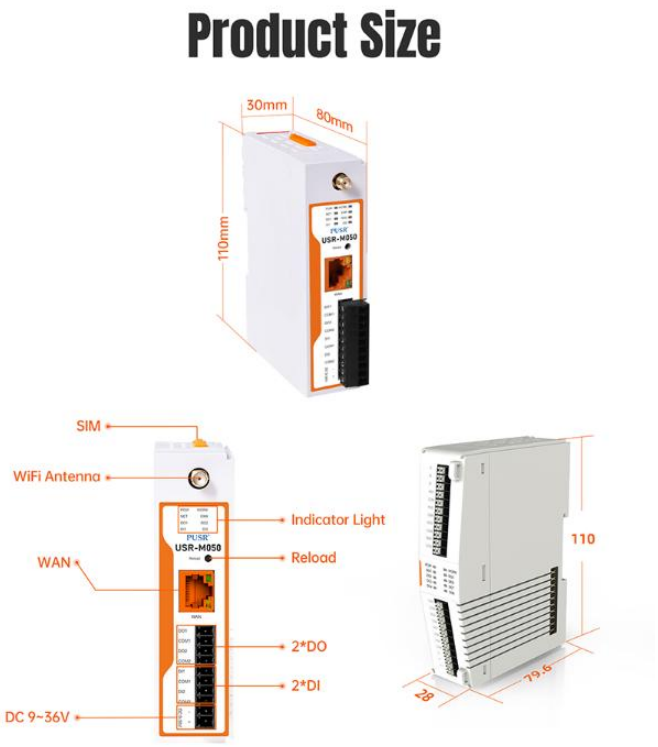
USR-M050 specification parameters		
Power	voltage	DC:9~36V
IO	DI	2 channels, support switch quantity acquisition, 9-36V is high, 0-2V is low, the filtering time can be adjusted
	DO	2 DO on the road, load 3A-250VAC/28VDC
Physical specifications	Size	80 x 30 x 110 (mm)
	weight	<200g
	interface	Terminal, hole diameter 1.5mm (diameter)
	way to install	Rings or rails
	Expanding ways	Sliding rail, built-in connector
Hardware protection	Electrostatic protection	IEC61000-4-2, Level 2, class B
	surge	IEC61000-4-5, Level 2, class B
	pulse group	IEC61000-4-4, Level 2, class B
pilot light	Power	POW, lights up when powered on, goes out when powered off.
	Work	WORK, blinks once every 1s.
	Network	NET, No network outage; WiFi: 2.4G blinks twice, then blinks again after an interval of 2s; WiFi: 5G blinks twice, then blinks again after an interval of 2s;
	DO	Close the light on and turn it off
	DI	Valid input is lit and invalid input is extinguished
Ethernet	standard	1* WAN, 10M/100M, RJ45, MDI/MDIX Switch on
	default	state IP: 192.168.0.7
	DNS server	The default host server is 223.5.5.5, and the default backup DNS server is 8.8.8.8
operational environment	working temperature	-25℃ ~ 70℃
	Storage temperature	-40℃ ~ 85℃
	Working humidity	5% ~ 95% , No condensation
Other features	antenna;	SMA-FExternal thread with internal hole
	networking protocol	ICMP,IPv4,IP,ARP,TCP,UDP,DHCP,DNS,HTTP,MQTT,
	Parameter configuration	built-in Web
	communication link	3 channels: 1 channel of TCP connection + 1 channel of MQTT + 1 channel of Youren Cloud, supporting SSL encryption
	protocol conversion	Modbus RTU/TCP, Json
	time calibration	Supports NTP, browser time synchronization and manual setting, and supports time zone setting

1.3. Product Selection

Model	Ethernet	Network	Supporting regions	Supported frequency bands
USR-M050-C1	√	LTE Cat1	China	LTE TDD: Band 34/38/39/40/41 LTE FDD: Band 1/3/5/8 GSM: 900/1800MHZ
USR-M050-ETH	√	/	Global	/
USR-M050-EW	√	WiFi 2.4G/5.8G	Global	IEEE 802.11a/b/g/n/ac

2. Hardware Introduction

2.1. Appearance description



Pilot light

Pilot light	Name	Status
power light	POW	Lights on when powered, off when power cut.
Work light	WORK	Blinks once per second during normal operation.
Network indicator light	NET	Off when no network. Cellular 2G: Blinks twice, repeats after 2s interval. Cellular 3G: Blinks three times, repeats after 2s interval. Cellular 4G: Blinks four times, repeats after 2s interval. WiFi 2.4G: Blinks twice, repeats after 2s interval. WiFi 5G: Blinks twice, repeats after 2s interval.
DO1	DO1	Lights on when conducting, off when disconnected.
DO2	DO2	Lights on when conducting, off when disconnected.
DI1	DI1	Lights on for valid input, off for invalid.
DI2	DI2	Lights on for valid input, off for invalid.

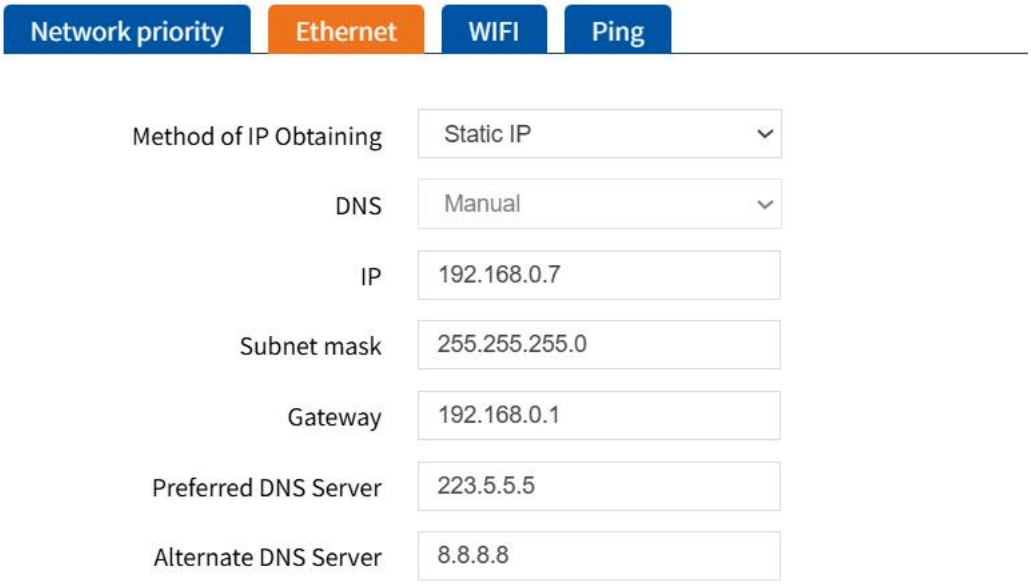
2.2. Communication

2.2.1. Ethernet

The USR-M050 has a standard RJ45 port on the hardware in WAN mode.

Ethernet	Default
WAN	The WAN is static IP: 192.168.0.7 by default and can be switched to DHCP mode

The network port mode can be configured in the built-in web page. The configuration interface is as follows:



2.2.2. IO

The USR-M050 host supports 2 DO and 2 DI. The specific parameters are as follows:

IO	number	standard
DI	2	2 - wire system, supporting switch contact input / counting mode
DO	2	2 - wire system, default normally closed contact (NC) closed, normally open contact (NO) open

3. Product function

This chapter mainly introduces the functions of USR-M050. The functions of USR-M050 include IO function, reporting function, network, communication link, protocol conversion and other functions.

3.1. Network

The USR-M050 supports WiFi, 4G and Ethernet networking. Different models can be selected for network pairing.

model	regions	Network type	default
USR-M050-C1	China	Ethernet +4G cellular network	Ethernet priority (Ethernet-> cellular)
USR-M050-ETH	Global	Ethernet	Ethernet only
USR-M050-EW	Global	Ethernet + dual-band WiFi	Ethernet priority (Ethernet-> WiFi)

3.1.1. Network selection

The USR-M050 supports network combination mode and is equipped with link detection function. It can customize the detection server and quickly detect whether the network is smooth, so as to ensure fast switching between different networks and ensure normal communication of the network.

The parameters are described as follows:

Name	Parametric description	Default parameters
Network priority	The network with the priority connection is preferred. If the network exceeds the timeout and cannot be connected, the alternative network is automatically switched	Ethernet is preferred
Detection cycle	Set link detection interval: can be set to 1-65535s	10s
Probe address 1	Ping address 1, Ping general means that the network is open and supports IP and domain names	223.5.5.5
Probe address 2	Ping address 2, Ping general means that the network is open and supports IP and domain names	8.8.8.8

The network priorities are described as follows:

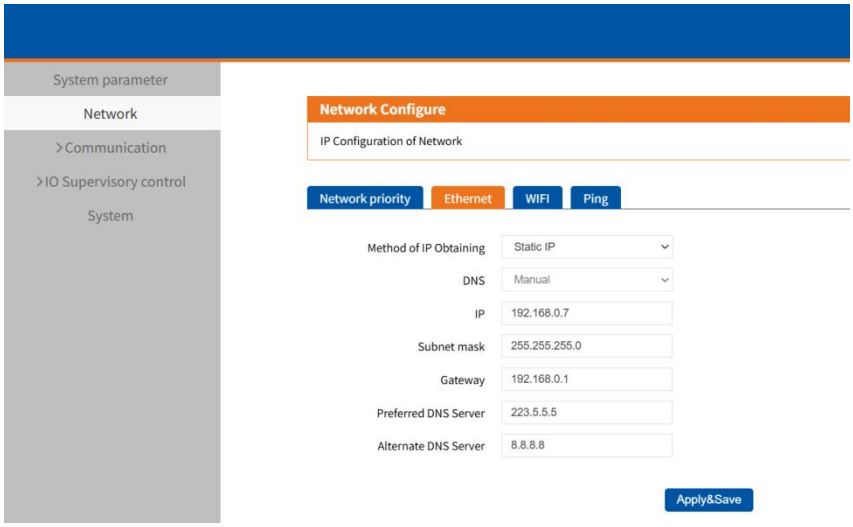
Network priority	explain
Ethernet is preferred	The device is connected to the Ethernet network first. If the Ethernet detection fails, it switches to the WiFi network for network communication
WiFi is preferred	The device is connected to the network through WiFi first. If WiFi detection fails, it switches to Ethernet for network communication
Ethernet only	Only Ethernet communication is allowed and other networks are disabled

Note: Different models of M050 have different networks, so you need to select the appropriate network priority configuration.

3.1.1.1. WAN

The USR-M050 is designed with a network port on the hardware. The network port is a WAN port and is set in static mode by default. The IP address is 192.168.0.7.

The IP address of the WAN port can be obtained dynamically or statically.



The parameters are described as follows:

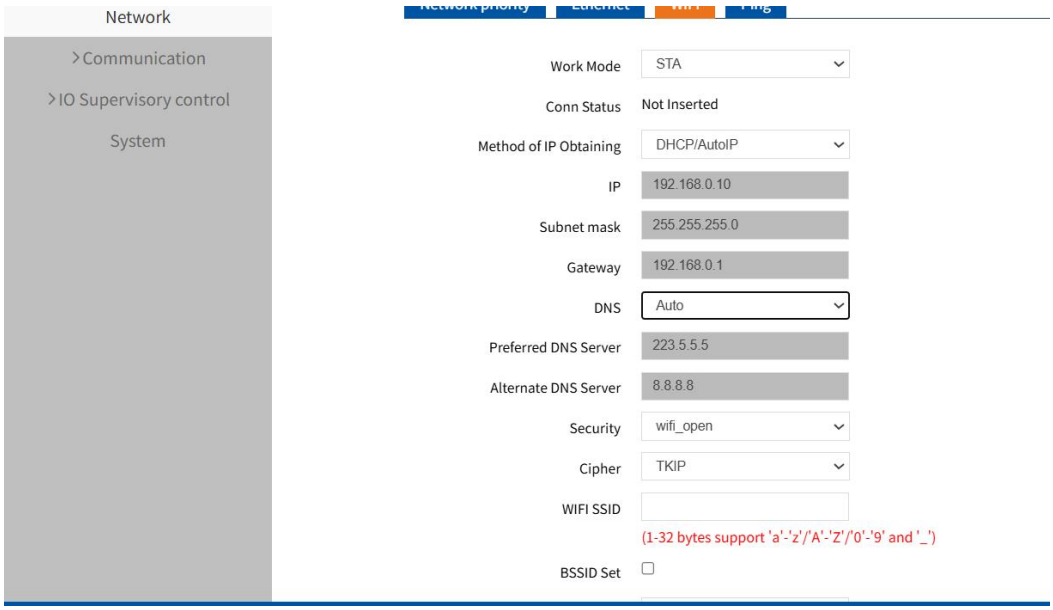
Name	parametric description	Default parameters
IP access mode	**Automatic Acquisition**: The WAN interface acts as a DHCP client, obtaining information such as IP address and subnet mask via DHCP. **Static Configuration**: Manually configure information such as IP address and subnet mask for the Ethernet interface.	DHCP
DNS Access	**Automatic Configuration**: Automatically obtain DNS resolver addresses from the public network. **Manual Configuration**: Manually set DNS server addresses (ideal for LAN communication).	Manual configuration
IP	In manual setting mode, manually configure the device's IP address for network identification of the device.	192.168.0.7
subnet mask	In manual setting mode, WAN subnet range	255.255.255.0
Gateway address	the gateway address of the WAN port	192.168.0.1

Preferred DNS	DNS server IP can be set	223.5.5.5
Alternate DNS	DNS server IP can be set	8.8.8.8

3.1.1.3. WiFi

The USR-M050-EW version supports WiFi network, can connect to 2.4G or 5.8G band WiFi, and support the WiFi search function.

The default configuration interface is as follows:



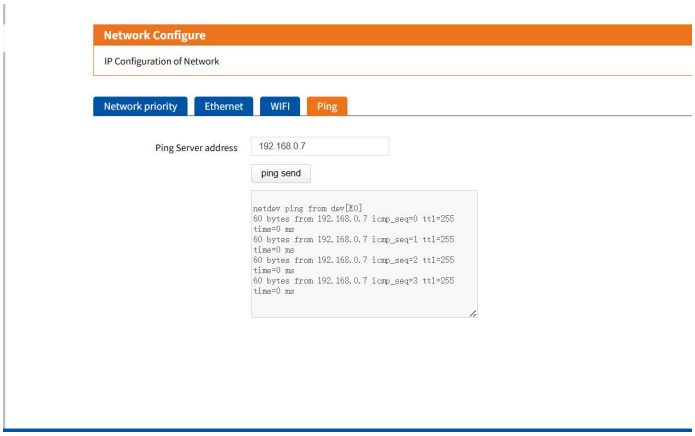
The parameters are described as follows:

Name	parametric description	Default
work pattern	STA: A mode in which a device connects to a wireless network (such as a router) as a client for Internet access or communication.	STA
connection status	Not connected: The device is not connected to any Wi-Fi network; Connected: The device has been correctly connected to the WiFi network;	
IP access method	Automatic acquisition: The WAN acts as a DHCP client, using the DHCP method to obtain information such as the IP address and subnet mask. Static setting: Manually configure the IP address, subnet mask and other information for the Ethernet interface.	automatic acquisition
IP	In manual mode, manually configure the IP address of the device for network identification	192.168.0.10
subnet mask	In manual setup mode, WAN subnet range	255.255.255.0
Gateway address	In manual configuration mode, WAN port gateway address	192.168.0.1
DNS access method	Automatic acquisition: Automatically obtain the DNS server address from the router or network via DHCP. Manual setting: The user specifies the DNS server by themselves.	automatic acquisition
first choice DNS	DNS and server IP can be set	223.5.5.5
reserve DNS	DNS and server IP can be set	8.8.8.8
safe mode	Open: No password, not safe. WPA/WPA2-PSK: Common encryption (e.g., password protection for home routers). WPA3: The latest standard for higher security.	Open
Encryption Suite	TKIP: Old encryption protocol (WPA), low security, obsolete. CCMP: Mainstream encryption (WPA2/WPA3, based on AES), currently the most secure. TKIP/CCMP: Mixed mode (compatible with old devices), sacrifices security, not recommended. GCMP: Next - generation encryption (WPA3), faster and more secure than CCMP.	TKIP
WIFI SSID	Wi-Fi SSID is the name of the wireless network, used for device identification and connection.	
BSSID Setting	BSSID is the unique hardware identifier (i.e., MAC address) of a wireless access point (AP), used to distinguish different APs under the same SSID (such as in the case of multi-router networking).	
Password	Used to verify the device's connection permission and prevent unauthorized access.	
Search	The device actively scans the SSIDs (wireless network names) broadcasted around, displays the list of connectable Wi-Fi, and you can select and connect after searching.	

3.1.2. Network diagnosis

Online diagnostic function, Ping tool.

The network diagnostic function is Ping tool, which can directly ping a specific address;



3.2. Communication link

3.2.1. TCP

TCP communication includes two working modes, TCP Client and TCP Server. TCP Client supports SSL encryption, and the default parameter is TCP Server mode with port number 20108. In TCP Server mode, the maximum support for two Client access control is provided.

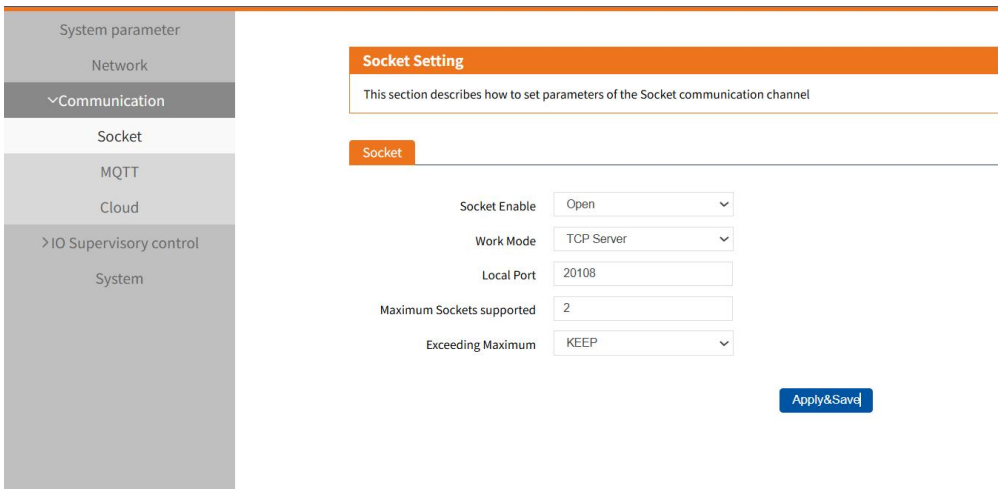
After 2 Clients are connected, for a new Client that wants to connect, there are two processing options to choose from:

• KEEP: Do not allow the new Client to connect, and the new Client cannot connect.

Applicable scenario: New Clients are not allowed to connect, and random disconnection of old devices is acceptable.

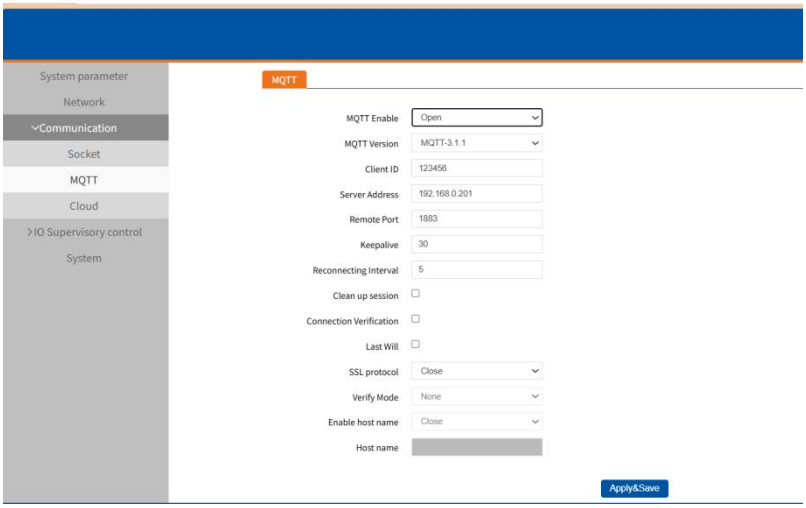
• KICK: Disconnect the old connection to make room.

Applicable scenario: Prioritize ensuring the stable connection of the newly - connecting Client.



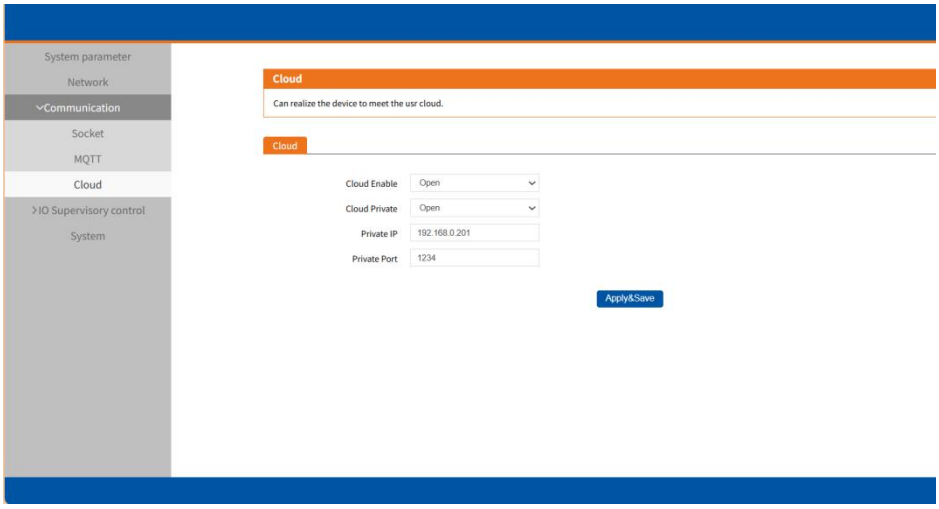
3.2.2. MQTT

The gateway has a built-in MQTT connection channel and supports SSL encryption. The corresponding MQTT functions such as topic and active reporting are used together, so the corresponding function topics are set in the specific functions, and only the connection parameters of the communication link are set in the middle of the communication link.



3.2.3. Cloud

M050 can realize remote management and maintenance of devices through the PUSR Cloud platform. The human cloud remote management is enabled by default, and the human cloud can realize remote device supervision, firmware upgrade, remote built-in web management and other operations.



3.2.4. Edge Gateway

The edge gateway functions include serial port management, communication links, active data point collection, data reporting, and linkage control. In addition, the realization of edge gateway functions needs to be based on the complete configuration of data points.

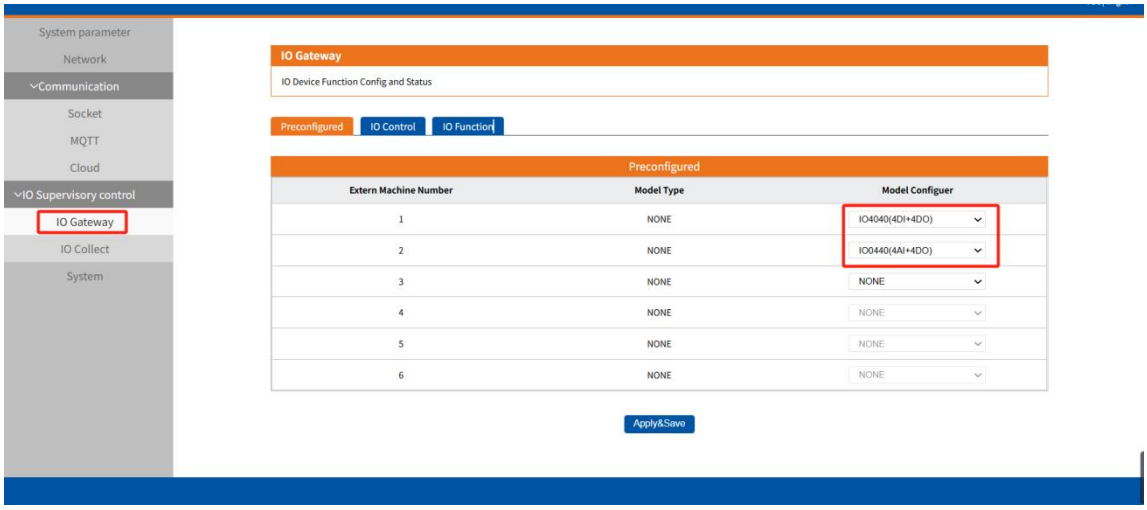
3.3. IO Monitoring

3.3.1. Extension machine management

As a building block IO, USR-M050 collects the building block design and quickly realizes the expansion of IO. Each M050 can realize up to 6 sets of expansion machine access, and each expansion machine supports 8 IO interfaces. The number of DI, DO, AI and AO can be flexibly matched according to the requirements.

Before the USR-M050 access expansion machine is connected, it needs to be pre-configured through the built-in web page to set the access order of different types of expansion machines. After the application is successful, the device will be restarted to take effect. The expansion machines can be connected according to the configuration order on the built-in web page. The built-in web page of M050 will display the IO interface information of the expansion.

The preconfiguration interface is shown in the following figure:

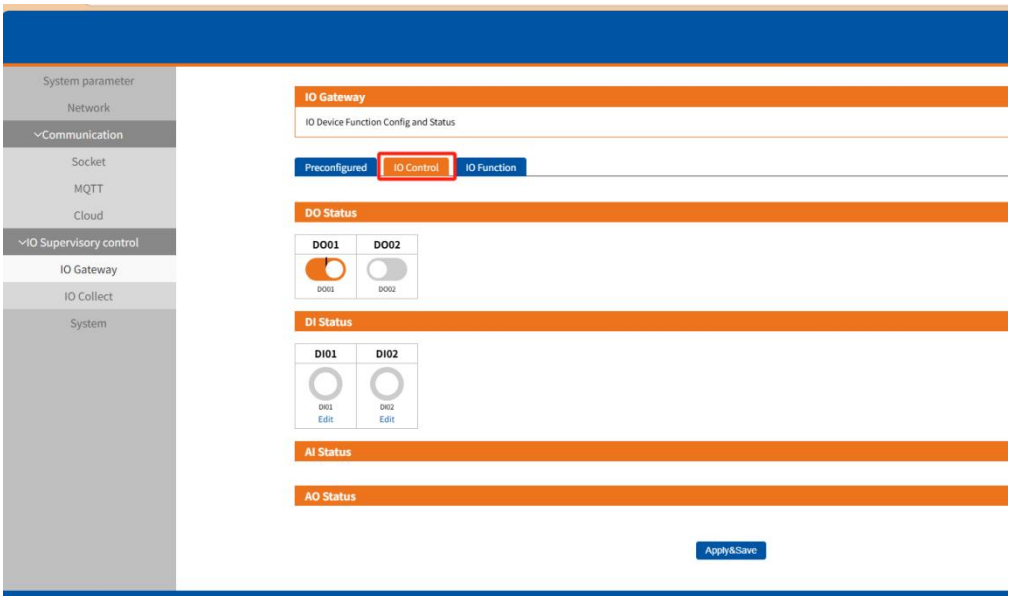


3.3.2. IO control

The built-in web page of USR-M050 is equipped with the status monitoring interface of local IO and extended IO. Through the IO status interface, DO status can be queried and controlled, DI status and data can be viewed, AI data can be viewed, and AO data output control can be performed. The IO status interface is as follows:

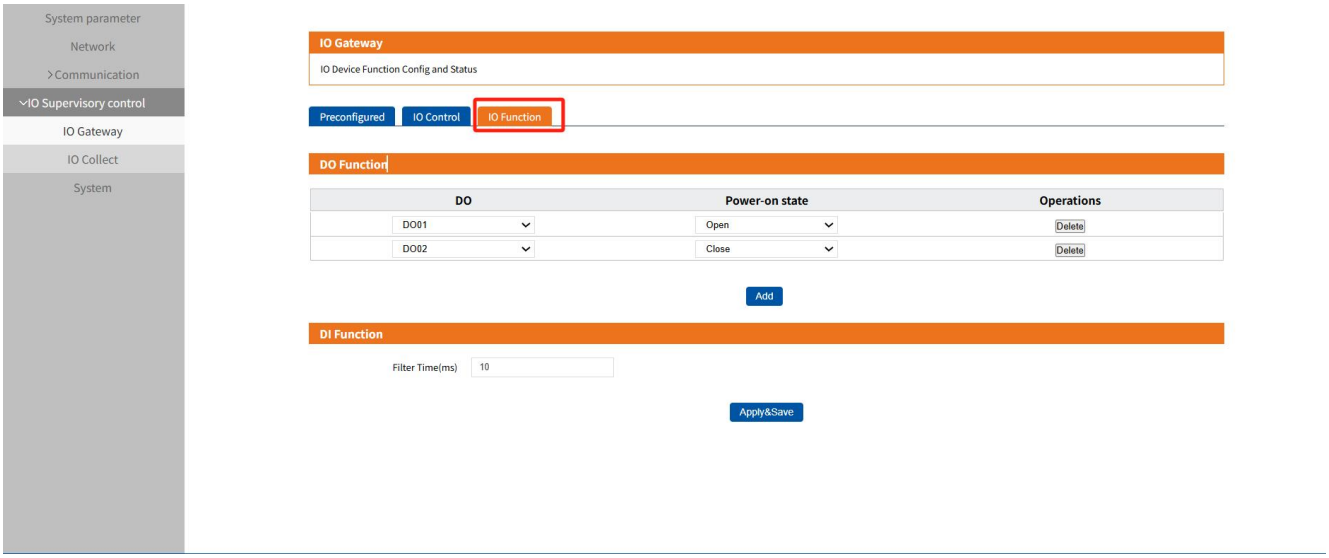
There are two modes of DI status, namely counting mode and switch quantity detection mode. In counting mode, the actual value of counting is displayed on the interface; in switch quantity detection mode, the switching state of DI is displayed. The status of each DI is displayed independently without affecting each other.

AO output supports two modes of voltage and current, which are displayed in uA or mV. The voltage range is 0-10V and the current range is 4-20mA.



3.3.3. IO function

The IO function mainly involves configuring the IO interface function parameters of the M050 host and expansion unit. This includes the filtering time for DI, the power-on status for DO, and the output mode setting function for AO. The IO function configuration is located under the built-in web page path "IO Monitoring-> IO Gateway-> IO Function".



3.3.4. IO collection

3.3.4.1. Slave Configuration

- Slave Name
- Slave Information
- protocol type
- Slave address

3.3.4.2. Data point configuration

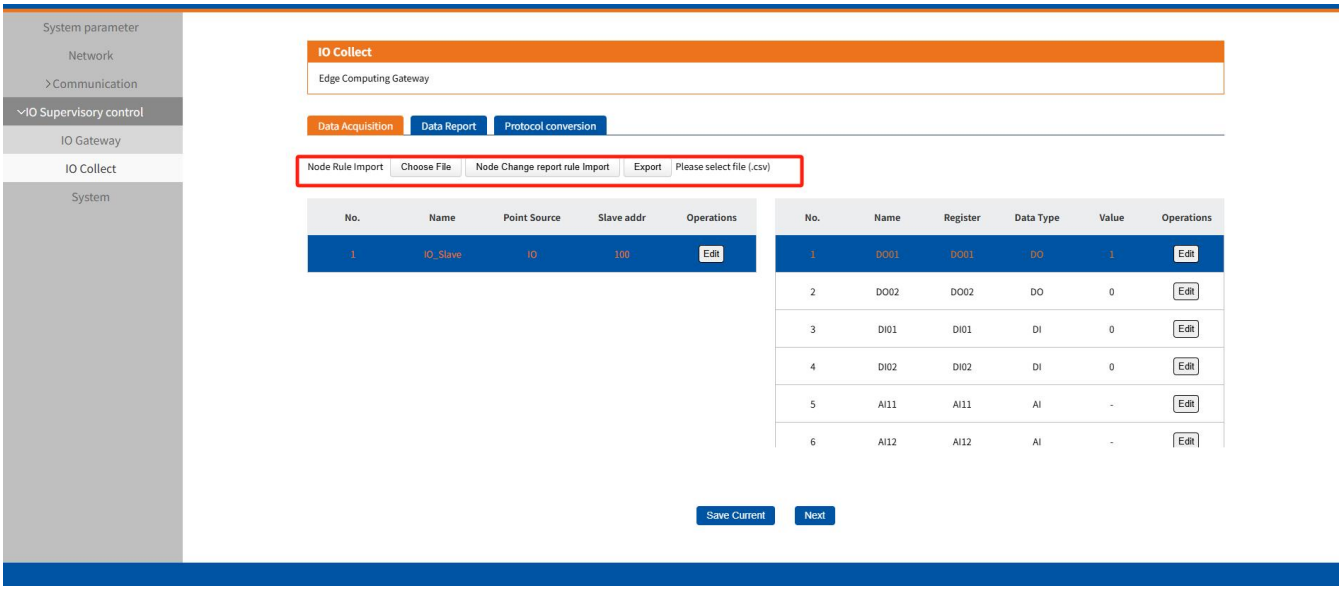
- Data point name: The unique identifier of the data point, which is used in the json template for both data reporting and data query functions.
- Detailed information: Point description information.
- Register address: The register address of the data point.
- Data type: The data type of the data point indicates the length of the data and how the expected edge computing gateway parses it.
- Decimal places: After data is collected and calculated, if there are decimal places, you can set the length of decimal places to be displayed.
- Change reporting: After the data point is obtained, it is compared with the historical data. If the change exceeds the set range, the data is reported immediately.
- Change range: the range of judgment whether to report after data point change.

- The collection formula involves entering a calculation formula to perform basic arithmetic operations on the collected data points.%s represents the actual data collected, for example, if the formula is%s + 1, the value after parsing and collecting will be +1 and then reported. In the virtualizer's calculation formula,%s represents other points, such as the virtualizer's value = point 1 multiplied by 2 + point 2, thus the formula is%s * 2 +%s, with node0101 and node0102.
- Control formula: Fill in the calculation formula, calculate the data issued by the platform, and write the corresponding data points.

3.3.4.3. Configuration Parameters Import/Export

In the case of single-point change reporting needs, you can export the default data acquisition configuration in.csv file format, edit it in batches using office and other software, and then import it into the device to achieve quick configuration.

Similarly, if multiple devices of a customer need to be configured with the same point parameters, the point configuration file can also be exported to quickly realize the point configuration of multiple devices.

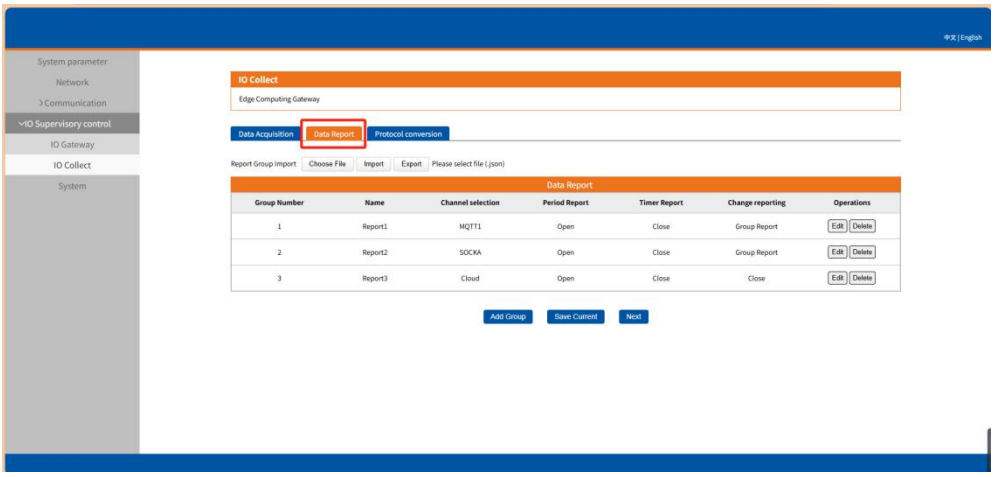


3.3.5. Data reporting

The data collected by IO is stored in the device's virtual registers. Through the device's active reporting feature, this data can be transmitted to the customer's server platform without the server issuing a collection command. For edge reporting, customers must set the reporting conditions and data templates. The device then transmits the data to the customer's server based on these settings.

The edge reporting supports three kinds of reporting conditions: periodic reporting, change reporting and timed reporting; the reporting channel can be selected from MQTT, TCP and someone cloud transmission.

Data reporting within the gateway can be performed in groups. Groups can be created flexibly, and each group can select a separate link, reporting conditions, and reporting templates. Groups are independent of each other, and up to three groups can be created. The maximum reporting data template for each group is 4KB.



3.3.5.1. Data reporting

- **Periodic reporting: Data is actively reported at a certain time interval, and the reporting period can be configured.**
- **Report changes**: If the absolute value of the difference between the new data and the old data collected at a point is greater than or equal to the set change range, the data at that point is immediately reported. The change range can be configured.
- **Report regularly**: 24-hour mode requires the NTP function to be enabled to correct the device clock before it can be used normally. It supports four timing logics:

  1. Whole-hour updates: Starting at midnight (0 o'clock), send an update every full hour.
  2. Quarter-hour updates: Starting at midnight (0 o'clock), send an update every 15 minutes.
  3. Minute-by-minute updates: Starting at midnight (0 o'clock), send an update every single minute.
  4. Fixed-time reporting: You can choose a fixed time point every day for reporting.
     For example, if you select 12:05, the data will be reported at 12:05 every day.

- **Error filling:** After the data point collection fails, the value in the data template will be replaced with the fill content to report, such as {"temperature":"error"}。
- **Reporting data format:** When reporting data, the data point value is of numerical type, such as {"temperature": 30, "humidity": 40}
  If the server requires the reported format to be a character string type, you can change the reported data type to a string. The reported data will become {"temperature": "30", "humidity": "40"}.

3.3.5.2. Json templet

The data reporting function will upload the point data to the server in Json format. Customers can customize the Json template according to the requirements of the server to ensure that the uploaded data format meets the parsing requirements of the server. The actual name of the data point can be defined in the Json template. However, the following points should be paid attention to when configuring the Json template:

1、 The current default Json template format is: {"key": "value"};

2、 Key is the user-defined data, which can be set as the actual physical name of the data point. When the data is reported, no modification is made to the key;

3、 Value is a character type, which needs to fill in the name of the data point. When the data is reported, the actual collected value corresponding to the point name will be replaced.

4、 For example:
The collected values of edge points node0101 and node0102 are 30 and 20 respectively;
The Json template is set to {"Current": "node0101", "Voltage":"node0102"};
The actual report data format is: {"Current": 30, "Voltage": 20}.
In addition to data points, the addition of JSON templates can also include specific identifiers such as product firmware version, SN, MAC and other parameters.
For example, when reporting the time stamp, set the Json template to "{" time ":" sys_timestamp "}", and the actual data reported by the device is "{" time ":" 1681985788 "}". The list of identifiers that can be filled into the Json template is as follows:

Symbol	Meaning	Example of report content
sys_ver	Product firmware version number	V1.0.14.000000.0000
sys_imei	IMEI	864452061930390
sys_sn	SN	02700122093000012356
sys_mac	MAC	D4AD20474662
sys_iccid	ICCID	89861122219045577705
sys_local_time	Local time	2023-07-07,09:30:18
sys_utc_time	UTC time (0 time zone)	2023-07-07T01:07:44Z
sys_timestamp	time stamp	1681985788
sys_csq	CSQ Signal	18

3.3.6. protocol conversion

The protocol conversion function is mainly used in the scenario where the server actively issues protocol commands to obtain data from M050 or control the point position. After M050 is connected to the server through the protocol conversion link, the standard protocol command issued by the server can realize the collection and control of all point data of M050. The current protocol conversion supports two protocol standards, namely Modbus and Json. The protocol conversion only supports single communication, and the protocol can be selected by specific protocol.

Channel selection: You can choose TCP or MQTT communication links. There are two communication links to choose from, but only one is supported.

3.3.6.1. Json

Json format message is a commonly used message format in the current Internet of Things communication. After enabling the Json function, data can be read and written through the existing communication link.
Json conversion command format: (multiple point data can be obtained at the same time)

{"rw_prot": {"Ver": "protocol version", "dir": "data direction", "id": "information number", "r_data": [{"name": "point name"}], "w_data": [{"name": "point name", "value": "data"}]}}

Json read and write command field description:

Field name	Field description	field selection
rw_prot	Protocol header	
ver	Version of the agreement	1.0.1
dir	The data moves to the server, which issues a command to fill in down	down: Server sends
id	The encoding of the data sent by the server can be used as sequence recognition	custom
r_data	Data read field	
w_data	Data control field	
name	The name of the point can be substituted for the point if it is consistent with the name of the point in the point table	
value	Only the write command has the value field, which is the valid value to be written	

Json read/write reply format:

{"rw_prot": {"Ver": "Protocol Version", "dir": "Data Direction", "id": "Information Number", "r_data": {"name": "Point Name", "value": "data", "err": "Error Code"}}, "w_data": {"name": "Point Name", "value": "data", "err": "Error Code"}]}."

Json read and write reply field description:

Field name	Field description	field selection
rw_prot	Protocol header	
ver	Version of the agreement	1.0.1
dir	Data direction, device reply "up"	up: The device replies
id	Information identification code	
r_data	Data read field	
w_data	Data control field	
name	The name of the point corresponds to the point in the point table	
value	The corresponding valid data at the point	**Read Error: Value is null** **Write error: value is historical data.**
err	Error code	0: The data is executing normally 1: Data errors are executed

Json field error response:

1. Json format error: The device does not reply

2、Ver, dir, id, any of the errors will be replied according to the error protocol.

3、 If other fields are correct, and only one of the r_data or w_data fields is incorrect, the incorrect field shall be discarded, and the correct field shall be replied; if both fields are incorrect, reply according to the wrong protocol.

4、 EP (Error Protocol) : "rw_prot": {"Ver": "1.0.1","dir": "up","err":"1"}

Field name	Field description	field selection
rw_prot	Protocol header	
ver	Version of the agreement	1.0.1
dir	Data movement	up: The device replies
err	Error code	0: Execute normally 1: Execute with error

Explain: When the read or write command is incorrect, the value in the reply content of the read command is empty, and the value in the reply content of the write command is the historical data value.

3.4. System function

3.4.1. Parameter Setting

function	functional description	Default parameters
Host name	The host name of the product	M050
user name	user name	admin
password	password	admin
Web port number	The port number used to modify the web service	80
Parameter export	Click "Export" to download the configuration parameters of expandable IO	
Parameter import	After selecting the file upload, click "Import" to download the configuration parameters of the expandable IO	

3.4.2. Time calibration

In order to ensure the coordination of M050 and other devices and the accuracy of the customizer, users need to accurately configure the system time in advance when using M050. The system time of M050 supports three ways: NTP time calibration, browser time synchronization and manual configuration.

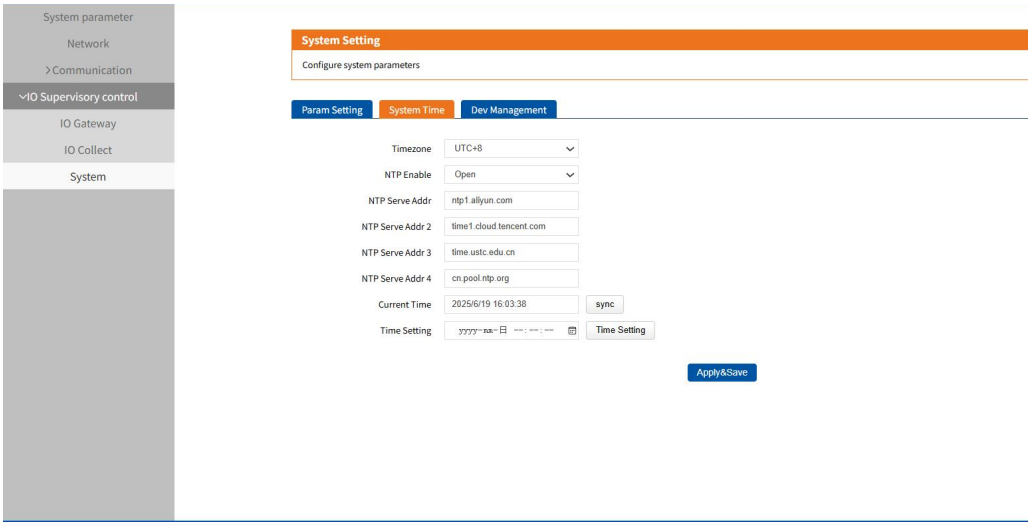
NTP time setting: The system time is calibrated by obtaining accurate time through the network NTP server. The NTP function is enabled by default, and users need to change the available NTP server to use it

Manual time adjustment: manually configure the system time through the time setting function of the system time interface. After selecting the time, click the "set" button to update the system time.

Browser time synchronization: In the system time interface, click the "Sync browser time" button to synchronize the system time and browser time.

Time zone setting: The time zone can be updated through the time zone option in the system time interface. After selecting the time zone, click the "Modify" button to make it effective. The system time will be updated to the corresponding time zone immediately after the time zone takes effect.

The setting interface is as follows:



3.4.3. Device management

Configuration management is mainly divided into system configuration and edge computing configuration.

- **Firmware upgrade**

The firmware upgrade feature displays the current firmware version number and enables upgrade operations. After selecting a valid firmware, click "Start Upgrade". The webpage will then transmit the firmware to the M050 gateway. After approximately 3-5 minutes, when the webpage shows a connection interruption, the WORK/NET/DATA indicator lights on the M050 gateway will flash simultaneously. Once the flashing stops and only the WORK indicator remains (flashing once per second), the upgrade is complete. All pre-upgrade parameters will be retained.

Note: Do not power off during the upgrade

- **Factory data reset**

Restore M050 to the factory default configuration. After the user uses this operation, the parameters of M050 need to be reconfigured for normal use

- **Restart immediately**

Click the "Restart immediately" button to restart the M050

- **Restart at scheduled time**

When the timer restart function is enabled, you can add a timer restart task and set the restart time of the day.

Restart task support is available 24 hours a day, accurate to the minute.

3.4.4. Remote Management

The M050 device enables remote management and maintenance through the Youren Cloud Platform, with remote management activated by default. To manage devices remotely, simply add them to the platform for operation. The platform supports remote device monitoring, firmware updates, and built-in web-based management.

3.4.4.1. Equipment operation and maintenance

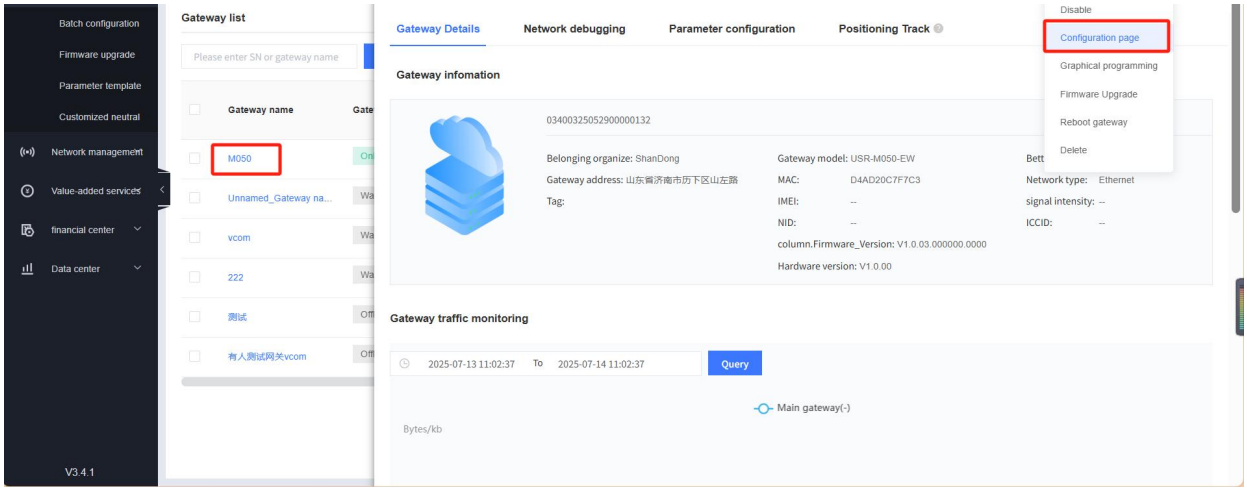
1. Device status

After adding M050 to the human cloud, the current action of the gateway can be determined through the gateway status.

Device status	Describe
on line	The device has electricity, Internet and is successfully connected to the cloud
off-line	The device failed to connect to the cloud. This may be due to a power outage, network outage, or incorrect IP address/port configuration.
Upgrading	IoT firmware upgrade capability
Template trigger alarm	This status is displayed when the monitored equipment variable data exceeds the threshold. For example: temperature and humidity collection, when the temperature and humidity exceed the specification Alarm is triggered when the alarm threshold is set.
Model trigger alarm	This status is displayed when the device variable data under the monitored product/scenario exceeds the threshold. For example: temperature and humidity collection, Alarm is generated when temperature and humidity exceed specified alarm threshold.
Equipment monitoring trigger alarm	This status is displayed when a communication device fails. For example, when the communication device consumes too much traffic and reaches the set warning value When it does, it will alarm and display the status
error	The edge computing template synchronization device failed.

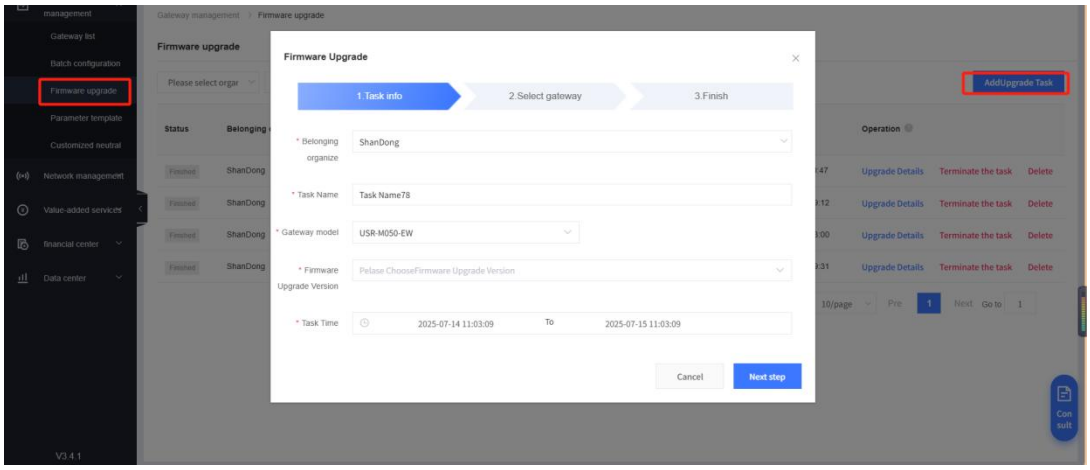
2. Remote built-in web pages

After adding the M050 gateway to the PUSR Cloud "DM" platform, you can remotely access the gateway's built-in web page through PUSR Cloud to configure parameters.



3. Firmware upgrade

Upgrade the firmware version of networked devices with support for batch operations. You can create a firmware upgrade task, preset the execution time, and the firmware upgrade of networked devices will be completed on time when the time node is reached.



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