

# Catalogs

1. PRODUCT	۲S	3
2. HARDWA	RE	3
2.1 MOUN'	TING	3
2.2. INSTAI	LATION PRECAUTIONS	
2.2. HIGHI	VARE CONNECTION	О Д
2.3.1. SIM	card installation	
2.3.2. Ante	enna	
2.3.3. Pow	er	
2.3.4. Hard	lware Interface	4
3. EQUIPME	NT CONFIGURATION	5
3.1. BUILT-	IN WEBPAGE	5
3.2. Skim 7	ſHROUGH	6
4 RETICUL	ATION	8
4.1 NETW		0
4.1. INETWO	JKK SWITCHING	8
4.2. CELLU	LAR NETWORK	
4.3.  NEIW		10
4.4. WAN.		10 11
4.5. LAN	NC	12
4.0. KOUT		12
5. EDGE GA	1EWAY	
5.1. MODE	L MANAGEMENT	
5.2. EXPAN	DER	14
5.3. IO FUN	ICTION	
5.4. IO STA	ТЕ	16
5.5. Data I	POINTS	
5.6. proto	COL CONVERSION	
5.7. SERIAL	PORT CONFIGURATION	24
5.8. COMM	UNICATIONS LINK	24
5.9. DATA F	EADING AND WRITING	26
5.10. Data i	<pre>{EPORTING</pre>	
5.11. LINKA	GE CONTROL	
5.12. Impor	T AND EXPORT OF EDGE COMPUTING POINT TABLES	
5.13. GRAPH	ICAL PROGRAMMING	
6. SYSTEM	FUNCTION	33
6.1. SYSTE	M TIME	
6.2. CONFIG	GURATION MANAGEMENT	
6.3. Firmw	/ARE UPGRADE	34
6.4. USER M	/ANAGEMENT	34
6.5. SYSTE	M REBOOT	34
6.6. Mana	GEMENT TOOLS	
6.7. Positi	ONING FUNCTION	

# 1. Products

M300 is a high-performance expandable comprehensive edge gateway. The product integrates edge data collection, calculation, active reporting and data reading/writing, linkage control, IO collection and control, etc. The collection protocols include standard Modbus protocols and a variety of common PLC protocols, as well as industry-specific protocols; the active reporting adopts the group reporting method, and the customized Json reporting template quickly realizes the docking of the server data format. At the same time, the product also has routing and VPN and graphical programming functions, graphical module design edge calculation function to meet the customer's own design needs. The product supports TCP/MQTT(S) protocol communication, support for multiple connections; support for Modbus RTU/TCP and OPC UA protocol conversion and other functions, the product is to support Ali cloud and AWS, Huawei cloud and other commonly used platforms such as rapid access.

The product adopts Linux kernel, the main frequency is up to 1.2Ghz; the network adopts WAN/LAN plus 4G cellular design, the uplink transmission is more reliable, at the same time, the LAN port can be connected to external cameras and other devices, combined with its own routing function can realize the functional application; the hardware integrates 2-channel DI, 2-channel D0 and 2-channel AI and 2-channel RS485, which not only realizes the control and collection needs of the industrial field, but also realizes the linkage control according to the data or status of various collection points. It can not only realize the industrial site control and collection points. It can be widely used in smart farming, smart factory and other industrial intelligent programs.

The product adopts expandable design in the structure, which can be combined and applied by expanding modules with different functions to better meet the needs of different scenarios for the number of IOs and communication interfaces. Convenient and cost saving .

# 2. Hardware

# 2.1. mounting

M300 supports both rail and lug mounting as shown below:



# 2.2. Installation Precautions

Power supply requirements: power supply range 9  $\sim$  36VDC, it is recommended that the standard 12V/1A power supply adapter, such as connecting the expansion machine is recommended to use 12V/2A power supply.

Environmental requirements: M300 working temperature is  $-25^{\circ}C \sim 75^{\circ}C$ , storage temperature:  $-40^{\circ}C \sim 85^{\circ}C$ , the surface of the device may be high temperature, the installation needs to consider the surrounding environment.

Installation: the installation of the rail and lugs, according to the actual needs of the choice, the rail standard 35mm, need to pay attention to the width of the rail.

Avoid direct sunlight, stay away from heat sources or areas with strong electromagnetic interference, if you can't avoid strong interference areas, you can choose to add isolation equipment according to the actual situation.

Before installation, you need to check whether the wiring harness and connectors required for the installation have been fixed and led out to ensure that the device can be wired and installed directly after it is snapped into the rail.

# 2.3. hardware connection

### 2.3.1. SIM card installation

SIM1 is external card, under the device side labeling bezel, push open the bezel to see the SIM card slot.M300's SIM1 is MicroSIM (Medium Card).



# 2.3.2. Antenna

The M300 antenna connector is an SMA connector, align the screw holes of the antenna with the antenna connector of the device, and gently rotate the movable part of the SMA connector of the antenna by hand until it cannot be rotated in position.

# 2.3.3. Power

M300 adopts one-piece terminal, the power supply part is 2PIN one-piece terminal, when using, the power supply can be connected to the product according to the positive and negative corresponding wires. If it is a soft wire, you need to press the white part on the terminal first, then put it into the wire body, and finally release it to press the power cord. Power terminals can be connected to wire diameter 1.0 to 1.5 mm.

The M300 supports grounding, and on the bottom of the unit, there are grounding screws with a logical hole diameter of 2.5mm and a screw length of 6mm.



# 2.3.4. Hardware Interface

M300 dimensions and hardware interfaces are shown below:





# 3. Equipment Configuration

# 3.1. built-in webpage

The parameter configuration of M300 needs to be carried out by entering the built-in web page of the device. After connecting the computer to the LAN port of M300 through the network cable, open the browser and follow the steps below:

1. Ensure that the computer has obtained an IP from the M300, if not, you need to configure the computer to enable automatic IP address acquisition.

Internet	办议版本 4 (TCP/IPv4) P	roperties	×
General			
You car this cap for the	n get IP settings assigned bability. Otherwise, you ne appropriate IP settings.	automatically if your networed to ask your network adr	rk supports ninistrator
OQ	btain an IP address autom	atically	
O Us	e the following IP address		
IP ac	ddress:	192 . 168 . 0 . 1	00
Subr	net mask:	255 . 255 . 255 .	0
Defa	oult gateway:	192.168.0.	1
Oot	otain DNS server address	automatically	
() Us	se the following DNS serve	r addresses:	
Prefe	erred DNS server:	192.168.0.	1
Alter	nate DNS server:	114 . 114 . 114 . 1	14
□v	alidate settings upon exit	A	d <u>v</u> anced
		ОК	Cancel

2. After making sure your computer has gotten an IP from the M300, open your browser, type 192.168.1.1 and hit enter.



3. Enter the username, password, both defaulted to admin.

📌 有人物联网	Welcome to login
	Account Please enter your account number
连接价值 价值连接	password Please enter your password
	login

4. Click the login button to go to the built-in web page

Edge Gateway: ON D4 AD 20:73:B8:80 Graph: OFF D4 AD 20:73:B8:81 Python: OFF ne: 2023-10-27 16:12:46 00:09:44 95 Ethernet Port 1 sottings	Settings:         Flow Usage Monitoring         settings           Data Usage(daily):         0KB           Alarm value(day):         0KB           Data Usage(Monthy):         39730KB           Alarm value(Monthy):         0KB	Performance CPU:   CPU:   Performance  Flash:   CPU:   CPU:   CPU:
Edge Gateway: ON D4:AD:20:73:B8:80 Graph: OFF D4:AD:20:73:B8:81 Python: OFF ne: 2023:10:27:16:12:46 00:09:44 95 Ethernet Port 1 settings	Data Usage(daily): 0KB Alarm value(day): 0KB Data Usage(Monthy): 39730KB Alarm value(Month): 0KB	CPU: 255 Memory: 205 Flash: (1%
D4AD2073B880 Graph: OFF D4AD2073B881 Python: OFF ne: 2023-10-2716:12:46 00:09:44	Alarm value(day): 0KB Data Usage(Monthiy): 39730KB Alarm value(Month): 0KB	Memory: 200
ne: 2023-10-27 16:12:46 00:09:44	Caage(monthy): Alarm value(Month): 0KB	Flash: (1%
00.09.44	Celluk	Flash: 13%
vgs Ethernet Port 1 settings	Cellui	
gs Ethernet Port 1 settings	Cellula	
		ar <u>settings</u>
Mode: WAN	Status:	networking
Status: Connected	Mode:	sim1first
Ethernet Port 2	Signal L	evel:
Mode: LAN	signal:	
Status: Disconnected	Connect	tion Time: 00:00:00
US Location	i i i i i i i i i i i i i i i i i i i	
Longitude:	Netmask	c
Latitude:	DNS-1:	
UTC:	DNS-2:	
	IAC(LAC	oj;
	23 Longitude: Latitude: UTT: Satellite:	Longitude:  Latitude:  UTC:  Satellite:  Cellite:

Note: If you can't access the built-in web page, you can turn off the extra network card and try again.

# 3.2. Skim through

The "Overview" page shows the network connection status, system information and data usage of M300, through which you can quickly understand the operation of the gateway. The "Overview" page is displayed by default after logging into M300 WEB page, or click "Overview" to enter this page, the information displayed on the page is as follows: 1. System Information, click Settings to modify the host name of the product.

System I	nformation					settings
Name:	USR-M300	IMEI:		Edge Gatewa	ay:ON	
Model:	USR-M300	MAC-1:	D4:AD:20:73:B8:80	Graph:	OFF	
Firmware Version:	V1.0.13.000001.0003	MAC-2:	D4:AD:20:73:B8:81	Python:	OFF	
OS:	Linux	Device Time:	2023-10-27 16:13:01			
SN:	02800123090200009246	Operation Time:	00:09:59			

2. Traffic monitoring to show the current day and month's traffic consumption, you can also set the alarm traffic value,

when the consumption exceeds the warning, the traffic data will change to red font.

Flow Usage Monitoring	settings
Data Usage(daily):	0KB
Alarm value(day):	0KB
Data Usage(Monthly):	39730KB
Alarm value(Month):	0KB

3. Device performance, mainly shows the current CPU utilization, memory and flash of the device.

Performa	ince	
CPU:	23%)	
Memory:	29%	
Flash:	(1%	

4. Ethernet Interface Connection Status

WAN		settings			
Mode:	WAN				
WAN IP:	192.168.1.85				
Netmask:	255.255.255.0		Ethernet F	Port 1	settings
Gateway:	192.168.1.1				
DNS-1:	119.29.29.29		Mode:	WAN	
DNS-2:	8.8.8.8		Status:	Connected	
LAN		settings	Ethernet F	Port 2	
LAN IP:	192.168.2.1				
Netmask:	255.255.255.0		Mode:	LAN	
DHCP Service:	ON		Status:	Disconnected	

5. Cellular Network Connection Status

Cellular		settings
Status:	Networking success	
Mode:	sim1first	
Network Type:	FDD-LTE(4G)	
Signal Level:	28	
Signal:	-57dBm	
Connection Time:	00:00:08	
ICCID:	89861122229041745859	
IP Address:	10.31.21.48	
Netmask:	255.255.255.224	
DNS-1:	218.2.2.2	
DNS-2:	218.4.4.4	
TAC(LAC):	5277	
Cell ID:	8D85F34	

# 4. reticulation

The USR-M300 supports both Ethernet and cellular networks, and both networks can be operated at the same time. the M300 supports the free cooperation of the two networks to meet different needs.

# 4.1. Network Switching

Network switching function is mainly to set up the preferred network, when the preferred network can not be networked, through the set rules to detect the network timeout in order to quickly realize network switching. Network switching is mainly through the PING method for his test. The configuration method is as follows:

- 1. Go to the built-in webpage and find the Network  $\rightarrow$  Network Switching interface.
- 2. Set parameters such as network priority and probe server address, and click Apply to complete the configuration.

	C Overview	Network C Euge	computing (	- System management	C Python Application
Network Switch	> Network Switch	ning			
Cellular	Network Swit	tching			
thernet Port	* Network priority:	Ethernet Primary	~		
VAN	* Ping Interface:	Custom	$\sim$		
AN	* Ping Server1:	119.29.29.29			
outing	Ping Server2:	8.8.8.8			
	* Ping Interval:	10	S		
	* Ping package	32	byte		
	* Ping Timeout:	2000	ms		
	apply	2000	115		

#### Parameter Description:

- Network Priority: The network that prioritizes data transmission in case of multiple networks, 4 modes are selectable.
- Detection Mode: type of detection destination address, either Custom or Gateway.
- Detection Address: When Custom is selected for Detection Mode, you need to set the target address for detection.
- Probe Period: the interval between probe packet transmissions.

- Ping packet size: the data length of the probe packet.
- Ping Timeout Time: After the probe message is sent out, no reply after timeout is considered as probe failure.

## 4.2. cellular network

#### Configuration method:

1. Go to the built-in webpage and find the "Network -> Cellular" screen.

2. Enable the cellular network, configure the corresponding parameters, click Apply to complete the configuration of the cellular network, the configuration takes effect immediately without rebooting.

🛠 USR IoT	[·] Overview	Network	Edge Computing	System Ma	nagement	[·] Python	Application					🚯 簡体中文 🛛 🧑 admin
Network Switch	> Cellular											i
Cellular	Cellular											
Ethernet Port	Status con	nected										
WAN	Active SIM:	SIM2			Signal:		28(-57dBm)			IP Address:	10 31 21 48	
LAN	ICCID:	898611	22229041745859		Network Sta	atus: (	Connected			Netmask:	255.255.255.224	
Routing	CIMI:	460113	432429534		LAC:	ŧ	5277			Gateway:	10.31.21.49	
	Operator:	CHN-C	T		Cell ID:	Time:	8D85F34			DNS:	218.2.2.2	
	Network Type.	PDD-LI	E(4G)		connection	Time.	00.00.59					
	Configurat	ion										
	Enable Cellula											
	Network											
				* SIM Mode:	SIM1 Primary		~	* Maximum of	3			
								dials:				
				* DNS Mode:	Auto		~	* Detection	SIM1&SIM2	~		
								Interface:				
				DNS1:				* Detection	10	s		
								Interval:				
				DNS2:				* Max Ping Tries:	4			
				^ MTU:	1500			* Ping Timeout:	5	8		
				* Signal	-100dbm		~	* Ping Server1:	119,29,29,29			
				Threshold:								
				* Signal Check	60		5	Ping Server2:	8.8.8.8			
V1.0.19				Interval:								

#### Parameter Description:

- Dual SIM mode: set the SIM that prioritizes the connection to the network.
- DNS acquisition method: the acquisition method of DNS server address, you can choose to acquire it automatically or configure it manually.

• DNS1 and DNS2: When manual setting is selected for DNS acquisition method, you need to fill in the address of the DNS resolution server.

- MTU: Maximum Transmission Unit, in bytes.
- Signal Threshold: The minimum value to confirm the signal stability, if the detected signal is lower than this value,
- the signal is considered unstable, and the network will be switched when it is unstable for several times.
- Signal query interval: the interval between single signal detections.

• Maximum dialing times: When SIM1 has not dialed successfully within the set maximum dialing times, the device will switch to SIM2 for dialing.

- Link Probe: Selects the network channel to probe.
- Probe Interval: the interval between each probe message sent.
- Detection Count: Maximum number of retries in case of detection failure.

• Detection Timeout Time: If no response packet is received within the set detection timeout time, the detection is considered to have failed.

• Probe Address: the address at which the device probes the interaction.

#### SIM card parameter description

- APN: Used to identify the service type of the WCDMA/LTE network
- User name: Specifies the user name of the user accessing the external PDN network. Provided by the operator.
- Password: Specifies the password for users accessing the external PDN network. Provided by the operator.
- Network mode: user selects the type of mobile network used by the device, AUTO/4G/3G/2G can be selected
- PIN Code: The PIN code is the personal identification number of the SIM card. If PIN Code is enabled, the device

fails to dial when PIN Code is not set or is set incorrectly;

- Authentication Method:
  - $\succ$  NONE: Automatically selects an authentication method

 $\succ$  PAP: Password Authentication Protocol, which provides a simple plaintext authentication method through two handshakes.

 $\succ$  CHAP: Challenge Handshake Authentication Protocol, which confirms the digest information through three handshakes for secure authentication.

> PAP& CHAP:Support the above two authentication methods.

# 4.3. Network Port

M300 is equipped with two Ethernet interfaces, RJ45 standard, supporting 10M/100M, of which network port 1 is WAN port by default, network port 2 is LAN port, network port 1 supports switching to LAN.

🛠 USR IoT	🕑 Overview 🕃 Network 🕃 Edge Computing 🕞 System Management 💮 Python Application	() ###文 😡
Network Switch	Ethernet Port	
Cellular	Ethernet Port	
Ethernet Port	Ethernet Port 1 Ethernet Port 2	
WAN	Work Mode WNN Work Mode LNN	
LAN	¢ changed to LAN	
Routing		
V1.0.19		

# 4.4. WAN

Such parameters are used when network port 1 is used as a WAN port. There will be two pieces of Ethernet connection status information and parameter configuration in the WAN port interface as follows:

1.Go to the built-in web page and find the "Network  $\rightarrow$  WAN" screen.

2. Configure the corresponding parameters and click Apply to complete the WAN configuration, which takes effect immediately without rebooting.

🛠 USR IoT	[·] Overview	[·] Network	[+] Edge Computing	💽 System Man	agement	•] Python Application					⑦ 關係中文	🧔 adm
Network Switch	> WAN											
Cellular	WAN											
Ethernet Port	Status	connected										
WAN	Network Tv	pe: dhcp		WAN IP:	192.168.1	1.85	Gateway IP:	192.168.1.1	MAC:	D4:AD:20:73:B8:80		
LAN	Netwask:	255.255.25	5.0	DNS:	119.29.29	9.29	Receive:	154.7 KB(902)	Send:	261.3 KB(1014)		
Routing	Connection	Time: 00:06:41										
	Configu	re										
				* Network Mode:	DHCP	~						
				* DNS Mode:	Manual	~						
				* DNS 1	119.29.29.29							
				* DNS 2	8.8.8.8							
				• MTU:	1500							
V1.0.19												

#### Parameter Description:

- Network Mode: the way for Ethernet to get local IP, default DHCP, can also be modified to static IP address.
- Static address: IP address of the Ethernet interface, the default value of the WAN port is 192.168.0.7
- Subnet Mask: Subnet mask of the Ethernet interface.
- Gateway: subnet mask of the Ethernet interface.

• DNS acquisition method: the acquisition method of DNS server address, you can choose to acquire it automatically or configure it manually.

• DNS server:When you select manual setting for DNS acquisition method, you need to fill in the address of DNS resolution server.

• MTU: Maximum Transmission Unit, in bytes.

# 4.5. LAN

The two network ports of M300, network port 1 can be set to LAN mode, and network port 2 supports only LAN mode by default, and the two network ports share a common set of LAN configuration. The LAN function supports the DHCP IP assignment function, and the device accessing the LAN can obtain an IP address from the gateway.

#### The operation process is as follows:

1. Go to the built-in web page and find the "Network -> LAN" screen.

2. Configure the corresponding parameters and click Apply to complete the LAN configuration, which takes effect immediately without rebooting.

	Overview	Network	dge Computing 🛛 💽 System N	lanagement 🛛 🔂 F	ython Application				🚯 新林中文  👰 adm
Network Switch	> LAN								
Cellular	LAN								
Ethernet Port	Status	connected							
WAN	IP:	192.168.2.1	Netmask:	255.255.255.0		MAC: D4:AD:2	0:73:B8:81	Connection Time: 00:15:29	
LAN	Send:	2.3 KB(12)	Receive:	2.6 KB(20)					
Routing	Configure	DHCP Server List							
			* LAN IP	192.168.2.1					
			* Netmasi	255.255.255.0					
			* DHCP Service						
			* Starting Address	192.168.2.2					
			* Ending Address	192.168.2.100					
			* Lease Time	1440	min				
			* DNS	8.8.8					
V1.0.19									
3 The IP a	address	assigned t	o the LAN port	t device (	an he view	ed in the	"DHCP Service	List"	
	Overview	(·) Network	Ige Computing [+] System M	lanagement 🔃 P	ython Application	cu in the	bildr Service	LISU .	🚯 🛍 क्रिक्स र 🍙 adm
Network Switch	> LAN								
Cellular									
	LAN								
Ethernet Port	LAN	onnected.							
Ethernet Port WAN	LAN Status	onnected 192,168,2,1	Netmask:	255 255 255 0		MAC: D4AD2	0.73.88.81	Connection Time: 00:15:49	
Ethernet Port WAN LAN	LAN Status C IP: Send:	onniecked 192.168.2.1 2.6 KB(17)	Netmask: Receive:	255 255 255 0 2.8 KB(25)		MAC: D4AD3	0.73.86.81	Connection Time: 00:15:49	
Ethernet Port WAN LAN Routing	LAN Status C IP: Send:	192 168 2.1 2.6 KB(17)	Netmask: Receive:	255 255 255 0 2.8 KB(25)		MAC: D4AD2	0 73 86 81	Connection Time: 00:15:49	
Ethernet Port WAN LAN Routing	LAN Status C IP: Send: Configure	192 168 2.1 2.6 KB(17) DHCP Server List	Netmask: Receive:	255 255 255 0 2.8 KB(25)		MAC: DEAD:	0 73 88 81	Connection Time: 00.15.49	
Ethernet Port WAN LAN Routing	LAN   Status C IP: Send: Configure   DHCP Ho	192 168 2 1 26 KB(17) DHCP Server List st List	Netmask: Receive:	255 255 255 0 2.8 KB(25)		MAC: D4AD2	0 73 56 51	Connection Time: 00.15.49	
Ethernet Port WAN LAN Routing	LAN Status ( IP: Send: Configure	192 168 2 1 2.6 KB(17) DHCP Server List at List Hostname M100	Netmask: Receive:	255 255 255 0 2.8 KB(25) IPv4 192 162 25		MAC: D4AD3	0.73 88.81 MAC D 20 64 40 E2	Connection Time: 00.15.49	<b>256 Time</b>
Ethernet Port WAN LAN Routing	LAN Status C IP: Send: DHCP Ho	192.168.2.1 2.6 KB(17) DHCP Server List st List Hostname M100	Netmask: Receive:	205 255 255 0 2.8 kB(25) IPv4 192 168 2.9		MAC: D4 AD : D4 AD : D4 AD :	0.73 BE 81 MAC D 20 64 A0 E2	Connection Time: 00:15:49	<b>ase Time</b> 3 59 38
Ethernet Port WAN LAN Routing	LAN Status C IP: Send: DHCP Ho	Minerated 192.168.2.1 2.6.KB(17) DHCP Server List st List Hostname M100 List	Netmask: Receive:	285.255.255.0 2.8 KB(25) IPv4 192.168.2.9		MAC: DEAD:	0.73 86 81 MAC D 20 64 A0 E2	Connection Time: 00.1549	ase Time 3 59 38
Ethernet Port. WAN LAN Routing	LAN   Status  P: Send:   DHCP Ho	Arrested 192.168.2.1 2.6 KB(17) DHCP Server List st List Hostname M100 List	Netmask: Receive:	255.255.255.0 2.8 KH(25) 192.168.2.9		MAC: DEAD:	0 73 88 81 MAC D 20 64 40 E2	Connection Time: 001549	ase Time 3.59.38 Add Delete
Ethernet Port WAN LAN Routing	LAN   Status  P: Send:   DHCP Ho   Static IP	annected 19216821 26KB(17) DHCP Server List st List Hostname M100	Hostname	285 255 255 0 2.8 KH(25) IPv4 192.168 2.9	1	MAC: DEAD:	0 73 86 81 MAC D 20 64 40 E2	Connection Time: 00.15.49	ase Time 3.59.38 Add Delete Operation
Ethernet Port	LAN   Status  P: Send:   DHCP Ho   Static IP	Interded 192.168.2.1 2.6 KB(17) DHCP Server List st List Hostname M100 List	Hostname	205 205 205 0 2.8 KB(25) IPv4 192 168 2.9	IPv4 No dt	MAC: D4 AD 2	073 98.81 MAC D 20 64 A0 E2	Connection Time: 00:15:49	ase Time 3.59.36 Add Octobe Operation
Ethernet Port WAN Routing	LAN Status Figure DHCP Ho Static IP	International Intern	Hostname	285 285 285 0 2 8 KB(25) IPv4 192 168 2 9	Pv4 No di	MAC: D4 AD : D4 AD : D4 A	0.73 B6 81 MAC D 20 64 A0 E2	Connection Time: 00:15.49	ase Time 3.59.38 Add Delete Operation
Ethernet Port WAN Routing	LAN Status Send: Configure DHCP Ho Static IP	Interestand 19216821 2.6 KB(17) DHCP Server List st List M100 List	Hostname	285.255.255.0 2.8 KB(25) IPv4 192.168.2.9	IPv4 No di	MAC: D4AD:	0.73 86 81 MAC D 20 64 A0F E2	Connection Time: 00:15:49	ase Time 3 59 38 Add Delete Operation
Ethernet Port	LAN Status Send: Configure DHCP Ho Static IP	AVERUATIVE 192:168:2:1 2:6:K8(17) DHCP Server List st List Hostname M100 List	Hostname	255.255.255.0 2.8 KH(23) 192.160.2.9	n IPv4 No d	MAC: DEAD:	0.73 86 81 MAC D 20:06 A 00 E2	Connection Time: 001549	ase Time 3 59 38 Add Detet Operation
Ethernet Port	LAN   Status   P: Send:   DHCP Ho   Static IP	annetted 19216821 26KB(T7) DHCP Server List st List Hostname M100 List	Hostname	285 255 255 0 2.8 KH(25) IPv4 192.168 2.9	r IPv4 No di	MAC: DEAD:	0.73 88 81 MAC D 20 64 40 E2	Connection Time: 001549	ase Time 3.59.38 Add. Delete Operation
Ethernet Port	LAN   Status   P:   Send:   DHCP Ho   Static IP 	Interested 192.168.2.1 2.6.KB(17) DHCP Server List st List Hostname M100 List	Hostname	255 255 255 0 2.8 KB(25) IPv4 192.168 2.9	iPv4 No di	MAC: DEAD:	073 BE 81 MAC D 20 64 A0 E2	Connection Time: 001549	ase Time 2 59 38 Add Octobe Operation
Ethernet Port	LAN Status F: Send: DHCP Ho Static IP	Averacited 192.168.2.1 2.6 KB(17) DHCP Server List st List M100 List	Netmask: Receive: Accinate Notmane	255 255 255 0 2.8 (81(25)) IPv4 192 168 2.9	Pred No di	MAC: DLAD:	073 98.81 MAC D 20 64 A0 E2	Connection Time: 00:15:49	ase Time 3.59 38 Add Delete Operation

4. If you need to assign a static IP address to the LAN port device, in the "Static Address Assignment List" of the "DHCP List", click the Add button, and fill in the device host name, MAC address and the desired static IP address.

### Parameter Description:

- LAN IP: the IP address of the LAN, you can access the built-in web page of the gateway by changing the address
- Subnet Mask: The subnet mask of the LAN port.
- $\bullet$  Gateway: subnet mask of the LAN port.
- $\bullet$  DHCP service: the function of assigning IPs to LAN devices
- ullet Starting Address: the minimum address to assign an IP address range to a LAN port device.
- ullet End Address: the maximum address of the IP address range assigned to the LAN port device.
- $\bullet$  Validity period: the valid time for the gateway to assign an address to the LAN port device.
- $\bullet$  DNS server address: the server address used for domain name resolution of the LAN port device.

# 4.6. routing

The M300 supports the routing function as follows:

1. Go to the built-in web page and find the "Network  $\rightarrow$  Routing" interface.

2. You can see the current routing table supported by the gateway in the routing interface.

3. If you want to create a routing rule, you can click the "Add" button in the "Static IPv4 Route" column to configure it.

4. For example, the WAN ports of Routers A and B are both connected to the 192.168.0.0 network, Router A's LAN port is subnetted to 192.168.2.0, and Router B's LAN is subnetted to 192.168.1.0. Now, if we want to make a route on Router A, so that when we access the 192.168.1.x address, it will be forwarded to Router B automatically. Since it is going to all 192.168.1.x segments, the subnet mask is set to 255.255.255.0 when adding the route, or 255.255.255.255.255 if the destination IP is set to a fixed IP address, such as 192.168.1.7.



# 5. Edge Gateway

Edge gateway function mainly means that M300 acts as a host, actively sends polling acquisition commands, periodically acquires the point data of serial and network port devices as well as the data acquired by IO interfaces, calculates the results according to the formula set for each point and saves them to the virtual registers of M300, and then, according to the grouping of the report, report conditions and Json template set in advance, actively reports the data to the server. Meanwhile, the edge gateway is also equipped with protocol conversion and linkage functions to meet the server's function of actively collecting equipment point table and the demand of local fast closed-loop management and agile alarm. The prerequisite for the realization of M300 edge gateway function is that customers configure the slave and point information

of the equipment to be collected in advance, and configure the related serial port, network port and link parameters to ensure the smoothness of the physical channel and the network channel.

The data of M300 native IO interface and expanded IO interface will be automatically added and saved to the point list, the device internal self-retrieval to get the data, IO points and edge points use the same set of point list for data calculation and data reporting.

#### Edge Gateway Usage Flow:

1. Select the mode of edge computing, using fixed logic edge computing, into the configuration parameters can be, if you need to customize the logic, you need to turn on the graphical programming mode.

2. The steps for computing operations using fixed logic edges are performed as follows:

a. Configure the data point location, the data point location information is mainly used by the gateway for active polling use.

- b. Configure the communication link to establish a data channel between the gateway and the server.
- c. Configure the serial port parameters to establish a data channel between the gateway and the serial picked device.
- d. Configure the reporting group, the user according to the expectation, the points will be grouped and according
- to the set conditions of the data collected by the gateway will be reported to the server.

e. Configure the protocol conversion or data read/write function to establish a channel for the server to issue commands and realize the server to read and write data.

f. Choose whether or not to configure the IO function according to the user's own expectations.

g. Once the configuration is complete, save and restart to enable data collection and reporting.

### 5.1. Model management

M300 supports two edge computing modes, an edge gateway function with default logic of the gateway, and an edge gateway function with user-defined logic developed using graphical design. Users can choose the current edge computing mode of M300 according to their actual needs.

The procedure is as follows:

1. Go to the built-in webpage and find the "Edge Computing -> Mode Management" interface.

2. Just select the appropriate edge computing mode and click Apply.

3. If you choose "Graphical Edge", after clicking "Apply", you need to reboot the device to take effect, after rebooting and entering the built-in webpage, wait for about 2min, wait for the graphical design program to finish launching, then in the mode management interface, find the "Graphical Design" button, click on it. Enter the graphical design interface to develop the function logic of graphical edge.

USR IoT		Overview	[·] Network	Edge Computing	💽 System Management	<b>Python Application</b>
Edge Mode		> Edge N	Mode			
Preset Extensio		Edge M	ode			
IO Module	~	Edge Comp	uting: Graphical P	rogramminc ~		
Data Point				<b>3</b>		
Protocol			Design Flow: G	raphical Design Design, it can be used normally afte	er the device restarts 2 minutes.	
Edge Gateway	~					

### 5.2. expander

M300 supports the access of expanders, and the time sequence of expanders can be automatically recognized. To ensure the correct installation of the application, it is necessary to configure the time sequence of expanders before use, so that the gateway automatically recognizes the sequence of the installed expanders and compares it with the set sequence, and if the corresponding position of the expander does not correspond to the preset type, the expander in the corresponding position will carry out a positional error alarm through the indicator. Error Alarm.

When the position is wrong, the host word light and the word light of the expander will flash at the same time with high

frequency, flashing once in 0.25s, going out for 2s after flashing 4, and then carrying out high-frequency flashing at the same time. If the position is correct, the indicator light flashes on and off according to a 1s cycle.

Procedure for adding an expander:

1. Go to the built-in webpage and find the "Edge Computing -> Extender Management" interface.

2. Click the "+" sign in the interface to add expanders according to the sequence. Currently, M300 internal expanders only support three models, and the models will be added through firmware upgrade later.

3. After adding, click Apply and reboot to take effect.

Edge Computing

🛧 USR IoT	[∙] Ov	erview 😳 Network	Edge Computing	System Management	Python Application		
Edge Mode		> Preset Extension IO					
IO Module	×	Expansion machine	access preset				
Data Point Protocol Edge Gateway	×	1 Туре: 601 ∦ Edt 1	2 Type: 4	ALDO	3 Type: 800 & Edit 10 Delete	4 Type: 40400 ∉Edit © Delete	+ Add extension machine

After the expander is added, all the functions related to the expander IO will be automatically displayed from the web page, which mainly involves the IO management interface as well as the data representation, and will be described in detail in the section on related functions.

# 5.3. IO function

A USR Id

IO function mainly contains DI function and DO function, DI is mainly the detection mode setting, can be set to switch detection, can also be set to counting mode, rapid detection of pulse changes to realize the counting function. The main operation logic of the DI function setting:

1. Go to the built-in webpage and find the "Edge Computing -> IO Management -> IO Functions" interface.

Edge Mode		Edge Computing > IO Mor	ule > IO Module								
Preset Extensio O Module	~	р									
IO Module		DI01		D102		DI11		DI12		DI13	
Status		DI Mode:	Digital Input	DI Mode:	Digital Input	DI Mode:	Digital Input	DI Mode:	Digital Input	DI Mode:	Digital Input
ata Point		Filter time:	50 ms	Filter time:	50 ms	Filter time:	50 ms	Filter time:	50 ms	Filter time:	50 ms
rotocol		Counter Mode:	Rising edge	Counter Mode:	Rising edge	Counter Mode:	Rising edge	Counter Mode:	Rising edge	Counter Mode:	Rising edge
dge Gateway	~	Count Frequency:	5ms	Count Frequency:	5ms	Count Frequency:	5ms	Count Frequency:	5ms	Count Frequency:	5ms
		Maximum range:	10000	Maximum range:	10000	Maximum range:	10000	Maximum range:	10000	Maximum range:	10000
		Exceeds Maxinum range:	юор	Exceeds Maxinum range:	юор	Exceeds Maxinum range:	кор	Exceeds Maxinum range:	loop	Exceeds Maxinum range:	юор
			∉ Edit		🖉 Edit		🖉 Edit		4. Edit		∉ Edit
		DI14		DI15		DI16		DI17		DI18	
		DI Mode:	Digital Input	Di Mode:	Digital Input	DI Mode:	Digital Input	DI Mode:	Digital Input	DI Mode:	Digital Input
		Filter time:	50 ms	Filter time:	50 ms	Filter time:	50 ms	Filter time:	50 ms	Filter time:	50 ms
		Counter Mode:	Rising edge	Counter Mode:	Rising edge	Counter Mode:	Rising edge	Counter Mode:	Rising edge	Counter Mode:	Rising edge
		Count Frequency:	5ms	Count Frequency:	5ms	Count Frequency:	5ms	Count Frequency:	5ms	Count Frequency:	5ms
		Maximum range:	10000	Maximum range:	10000	Maximum range:	10000	Maximum range:	10000	Maximum range:	10000
		Exceeds Maxinum range:	loop	Exceeds Maxinum range:	юор	Exceeds Maxinum range:	loop	Exceeds Maxinum range:	loop	Exceeds Maxinum range:	юор
			∠ Edit		∠ Edit		2 Edit		∠ Edit		l⊄ Edit
		DI41		D142		DI43		D144			
		Di Mode:	Digital Input	DI Mode:	Digital Input	DI Mode:	Digital Input	DI Mode:	Digital Input		
V1 0 19		Filter time:	50 ms	Filter time:	50 ms	Filter time:	50 ms	Filter time:	50 ms		
* 1.0.10		Counter Mode:	Rising edge	Counter Mode:	Rising edge	Counter Mode:	Rising edge	Counter Mode:	Rising edge		

2. Modify the input mode of each DI and the corresponding parameters of the mode according to the actual needs of users. There is an "Edit" button on each DI function tab, after clicking it, it will enter the DI configuration interface, and you can select switching or counting mode.

Edit		
* DI Mode:	O Digital Input O Counter	
* Counter Mode:	• Rising edge	
* Count Frequency:	5	ms
* Maximum range:	10000	
* Exceeds Maxinum r ange:	loop Stop	
	cancel	sure

3. Once the configuration is complete, click OK to finish configuring the DI features.

4. DO Function: DO Function Currently M300 only supports reboot hold function, reboot hold means that after soft reboot, DO still maintains the state before reboot. After selecting Enable, all DOs will support this function, including the DOs of the expander and the host. The reboot hold function is off by default, and you can choose to turn it on.

# 5.4. IO state

IO status means that you can view the IO status parameters, DO switching status, DI input status, as well as DI count value and AI acquisition value in the M300's built-in web page.

The IO status interface is mainly for the convenience of the user to view the status of the IO, in which DO can realize the status view and control.

🛠 USR IoT	53	Overview 💽 Networ	k [·] Edge Computi	ng 💽 System M	anagement	💽 Python Appli	cation					S 20443		
Edge Mode		Edge Computing > IO Module	Status											
Preset Extensio		Status												
IO Module IO Module	^	DO Status read and control												
Status Data Point Protocol Edge Gateway	÷	D001	D002	D021	D022	DO23		0024	D031	DO32	0033	DO34		
		×	~	~	DO35	DO36	D037	DO38	DO41		0042	DO43	D044	
		DI Status												
				DI01	D102	DI11	DI12	DI13	0	0114	DI15	DI16	DI17	DI18
		DI41	DI42	D143	D144									
		Al Status												
		AI01 0.000uA	AI02 0.000uA	Al21 0.000u	A	ai22 0.000uA	AI23 0.0000	ıA	AI24 0.000uA					

# 5.5. Data Points

The data point table is the core database of the edge gateway function, the data and data related information used in the edge gateway's collection, reporting, data reading and writing, protocol conversion and linkage control are all obtained from this point table. Therefore, it is especially important to add all the point data information that needs to be processed in detail in the process of using.

The data point table contains two main elements, slaves and points. Up to 20 slaves can be added, two of which are fixed slaves, the IO slave and the virtual point slave. The remaining 18 slaves can be added on demand. Corresponding data points can be added under each slave, and the total number of points under all slaves except the virtual slave is up to 2000. The points under each slave are actively polled and collected from the corresponding interface according to the protocol specified by the slave, and the collected data are stored in the virtual registers in the product.

Because each slave corresponds to a different protocol, the parameters required for adding points are also different,

so you can configure them according to the actual situation. Among them, IO points can only be added to IO slaves, computing points can only be added to virtual slaves, and a maximum of 500 computing points can be added to virtual slaves.

Fixed Slave Introduction:

name (of a thing)	Parameter Description	point
IO slave	Mainly add the IO interface data of M300 mainframe and expander as point data for other functions of the edge gateway, and the analog data can be added to the calculation formula.	Number of slave points up to the number of M300 IOs, included in the range of 2000 real points

#### Add a description of the slave parameters:

name (of a thing)	Parameter Description	default parameter
Slave Name	1-64 bytes, as the slave's unique identifier, non-repeatable	unoccupied
Slave Description	Supports 1-64 bytes, including alphanumeric, Chinese, underscore and ligatures	unoccupied
Acquisition Protocol	Protocols used for active rounds of slave point acquisition, supporting Modbus and a variety of PLC protocols	Modbus TCP
pre-waiting time	Waiting time before each point acquisition command is sent, range $0^\circ 65535 \mathrm{ms}$	unoccupied
merged capture	Several points with consecutive addresses in a single slave are combined into a single command for acquisition.	write out (a prescription, check, invoice etc)
slave address	Slave code of the lower device, some protocol settings	1
serial port serial number	The number of the serial port used for point acquisition commands sent to the serial port device, and some of the protocol settings	1
IP	When collecting from the network port, M300 acts as Client and needs to fill in the target IP and some protocol settings.	192.168.1.1
ports	When collecting from the network port, M300 is used as Client, you need to fill in the target port and some protocol settings.	102

Introduction to Point General Parameters:

name (of a thing)	Parameter Description	default parameter
Point Name	1-64 bytes, point uniquely identified, all point names under all slaves are not repeatable	unoccupied
Number of points	Points with consecutive addresses under the same slave can be added in batches	unoccupied
Read/Write Status	Read/write status of points, different point types support different read/write types	fill out or in (information on a form)
prioritization	When all points are polled, the high priority points are prioritized to ensure that they are collected according to the cycle training rotation, ensuring that the high priority points are collected in real time.	unoccupied
data computation	Point calculation formula, the collected data is calculated according to the formula inside the device and then provided to other functions.	unoccupied
timeout	The maximum time to wait for a reply after issuing a command during the point polling acquisition process, the timeout automatically abandons this acquisition, does not update the historical data and executes the next acquisition command.	2000ms
unit (of measure)	Non-mandatory parameters, set as needed	unoccupied

Note: Prioritization feature under development.

communications protocol	PLC Brands	PLC model or description
Modbus	Delta, ABB, Hollis, Modicon	Delta DVP/AH500/AS200 Series, AC500 (ABB), LK Series (Holliday)
PPI	Siemens (company name)	S7-200
S7comm	Siemens (company name)	s7-200 smart, *s7-1200, *s7-1500, *s7-300, *s7-400

MPI	Siemens (company name)	*\$7-300, *\$7-400						
FX Protocol	Mitsubishi, Huichuan	FX2N/FX3U (Mitsubishi), *H1UPLC/H2UPLC (Huichuan)						
MC 3C/3E	Mitsubishi	*FX5U/FX5U network port						
FINS TCP	Omron (brand)	*CP Series						
FATEK	Yonghong prefecture in Yunnan (Dai and Jingpo autonomous prefecture)	FATEK Series (Serial, *TCP)						
DVP Series	Delta (name)	DVP series (RTU, *TCP, *ASCII)						
KV Uplink Protocol	Gaines (name)	*kv5500, *kv-121v, *kv-1000						
Melsoft	Mitsubishi	*Q06H						
Mevtocl serial port	Matsushita (name)	*FP-X series						
virtual-point	Calculation point independent of the collection point	Virtual points can also be called calculation points, through the M300 internal collection of point calculation results for the assignment of the new points obtained, the maximum 500 virtual points, not in the range of 2000 real points						

Note: Agreements marked with \* are under development.

#### The specific procedure for adding slaves and points is as follows:

- (1) Go to the built-in webpage and find: Edge Computing -> Data Points Interface.
- (2) To add a slave, press the "Add" button in the upper right corner of the interface.

K USR IoT 🖂 🖸	Dverview 🖂 Network 🔀 Edge Computi	ing 💽 System Management	Python Application	🕤 新水中文 🈡 admi
Edge Mode	> Data Point			
Preset Extensio	Data Point			
IO Module	Slave	Add	×	
Status	Version: 1698301695	* Slave Name:	device1	Node Priority
Data Point Protocol	<b>local_io</b> M300-IOA/80	Humiture * Slave Description	Please enter   device 1 888	
Edge Gateway 👋	Acquisition protocol: local_io协议	* Acquisition prot Acquisition prot	Acquisition protocol: mb-full/kk #Exit BDxite	
		* Prewaiting tim e:	Please enter #6	
	List of slave points	* Merge acquisiti	J 📀 Open 🔿 Close	
		on: * IP	192.168.1.1	Delete
	ID Node name	Data Type * Port	Timeoutins)         Data         Computational formula           102	Operation
		* Salve Address	t 1	Can 1
			cancel sure	
V1.0.19				

(3) Select the added slave, then add points in "Slave - Point List", you can add points in batch, the number of points option is automatically configured according to the number of points added, the point name will be automatically generated in sequence, if the point name is fixed, you can modify the point name after the addition is complete.

😤 USR IoT	83	Overview	- 83	Network 🔡	Edge Computin	g [+] Syste	m Management	Python Application					🚯 盤体中文 🛛 🧑 admin
Edge Mode		Dat	ta Point										
Preset Extensio		Data	Point										
IO Module		Slav	e				Add		×				
IO Module Status		Version:	: 16983016	395			* Node name	Please enter			Add	Import	xport Node Priority
Data Point		100	cal_io			Humiture	Register	0 ~ 1 00001(bit)	_	device1			
Protocol		МЗ	M300 IO从初 1										
Edge Gateway		Acc	Acquisition protocol: local_iothix Acquisition pro				* Data Type	1		Acquisition prote			
							er				Edit Belete		
							* Read Write Stat	Only Read 🧿 Read/White 🔘 Only Write					
		List	of slave	e points			us						
							* Priority	Level 1 V					Add Delete
			ID	Node name	Da	ta Type	Data Computa III tional		- 1	Timeout(ms)	Data	Computational formula	Operation
			1	Temperature		ishort	* Timeout	2000 ms		2000	289		Edit Delete
			2	Humidity	3	ishort	Unit	Please enter		2000	269		Edit Delete
									_		Total 2 15/page	× Last 1	Next Go to 1
								cancel	sure				
V1.0.19													

(4) After the points are added, if new slaves and points are needed, you can follow the above steps to repeat the operation and finalize the points.

(5) After the points are added, there will be a "reboot" prompt in the interface, if the configuration has been completed, you can reboot, if there are other configurations, you can also wait for all the configurations to be completed before rebooting.

🛠 USR IoT	[·] Over	view [·]	Network [·] Edge	e Computing	System Management	• Python Application					👧 📾 🕸 🚱
Edge Mode		Data Point		The pa the gal	rameters you modify take effec eway after all Settings are com	t only after you reboot the gateway. plete.	To avoid repeated reboot, reboot	reboot			
Preset Extensio	D	ata Point									
IO Module	^ ]:	lave									
IO Module Status	Ve	rsion: 16983951	191						Add	Import Ex	port Node Priority
Data Point Protocol		Iocal_io M300 IO从初	ı	Humite	ıre	<mark>  Virtualiz</mark> v	er				
Edge Gateway	~	Acquisition p	rotocol: local_io协议	Acquisiti	on protocol: mb-rtu协议	Acquisition	protocol: virtual-point协议				
	<u>I</u>	ist of slave	e points								
		ID	Node name	Data Type	Address	Read Write Status	Priority	Timeout(ms)	Data	Computational formula	Operation
		1	DO44	bit	DO 44	Read/Write	Level 1	2000	0		Edit Delete
		2	DO43	bit	DO 43	Read/Write	Level 1	2000	0		Edit Delete
		3	DO42	bit	DO 42	Read/Write	Level 1	2000	0	0.000	Edit Delete
		4	DO41	ы	DO 41	Read/Write	Level 1	2000	1		Edit Delete
		5	DI44	bit	DI 44	Only Read	Level 1	2000	0	1000	Edit Delete
		6	D143	bit	DI 43	Only Read	Level 1	2000	0		Edit Delete
		7	D142	bit	DI 42	Only Read	Level 1	2000	0		Edit Delete
		8	DI41	bit	DI 41	Only Read	Level 1	2000	0		Edit Delete
V1.0.19								Total 38	15/page v Last	1 2 3	Next Go to 1

# 5.6. protocol conversion

The protocol conversion function is mainly for the server to take the initiative for data collection, because the terminal slave devices have different protocols, the server can not all docking, so the M300 will convert all the slave devices point data into a unified protocol format, so as to facilitate the server to carry out a unified protocol for the collection of data.

Protocol conversion currently supports three protocols, Modbus RTU, Modbus TCP, and OPC UA (Server).

#### • Modbus RTU

The Modbus RTU protocol conversion function needs to add the points of different protocols in the data point table to the point mapping table of the function and assign the corresponding Modbus register address to each point, and after the addition is completed, the corresponding point data will be converted into standard Modbus protocol data. When receiving the Modbus RTU command from the server, the data of the corresponding address will be composed into a standard Modbus RTU packet to reply to the server, thus realizing that the server collects and controls the points of M300 through unified data.

Modbus RTU protocol conversion supports two kinds of data channels, one is socket connection, supporting TCP Client and TCP Server, and the other is RS485 communication, which is mainly used in the field to dock the 485 interface configuration screen.

Specific operational procedures:

1. Go to the built-in webpage, find "Edge Computing->Protocol Conversion->Modbus RTU", enable Modbus RTU;

2. Communication connection configuration, first select whether to enable RS485 connection, if there is an external RS485 screen you can turn on this function.

3. Configure server connection communications, select protocol channels, and other parameters.

4. Configure the Modbus slave address, which is the address of M300 as a slave, and is used when the server sends commands to collect data from M300. Click Apply to complete the basic configuration.

🛠 USR IoT	[·] Overview	[·] Network	[·] Edge Computing	[+] System Management	• Python Application				😗 開休中文  😡 adm
Edge Mode	> Prot	ocol							
Preset Extensio	Protoc	ol							
IO Module	Mo	dbus RTU	Modbus RTU 🧲	)					- î
Status	Mo	dbus TCP	Basic settings						
Data Point	(	DPC UA	Connection Config	I					
Protocol			* RS485:		Connection registration	SN 🗸	* Protocol:	TCP Server V	
Edge Gateway	×				data:				
			Local Port:	502	Server Address:		Remote Port:		
			Maximum of Client:	2					
			Slave Configuration	n					
			* Slave Address:	1	* 32 bit integer byte	AB CD v	* 32 bit float byte order:	AB CD 🗸	
		Ŧ	64 bit integer byte order: apply	ABCDEFGH	order:				I
			Node mapping t	able					
								-	
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5. Add a point mapping table and pull the data points that need to do the protocol conversion from the already added data point table.

6. Click the Add button to add a point, set the mapped address type and mapped slave address of the point, and the server will determine the acquisition command to be issued based on this address.

K USR IoT			[·] Edge Computing	[·] System Management						6 BR##X 😡 ad
Edge Mode	> Protoco	ı								
Preset Extensio	Protoco	I.								
IO Module IO Module		us RTU	Add						×	A
Status Data Point	Modb	us TCP C UA	Mapping the initial address: 4X ~	1						
		Ľ	Point selection: Add points							~
Edge Gateway			ID	Position Name	Slave	Mapping Address	Data Type	Read Write Status		
										Add Delete Read Write Status Operation
								cancel su	•	Last 1 Next Go b 1
V1.0.19										

7. In the pop-up window, click the "Add Points" button, the point selection interface will pop up, select the corresponding slave under the point, and then click OK.

×

cancel sure

😤 USR IoT											
Edge Mode	> Protocol										
Preset Extensio	Protocol										
IO Module		Add	Point selection					×			^
Status	Modbus TCP	Mapping 1	Select Salve:	Humiture ~	Please enter	Query					
Data Point	OPC UA			Node Name	Slave	Data Type	Read Write Status	A .			
Protocol		Point sele		Humidity	Humiture	16位无符号	Read/Write				
Edge Gateway				Temperature	Humiture	16位无符号	Read/Write				
							cancel	Ţ	•	Auto Detertor Read Write Status Operation	
							cancel	sur			
V1.0.19											

8. After the interface will be added to the point, confirm whether the point is added to complete, if not added to complete, you can repeat the previous step to continue to add, if you add a, click OK can be.

Add

dd points					
	Position Name	Slave	Mapping Address	Data Type	Read Write Status
	Humidity	Humiture	40001	16位无符号	Read/Write
	dd points	dd points  Posttion Name Humidity	dd points           Position Name         Slave           Humidity         Humiture	dd points           Position Name         Slave         Mapping Address           Humidity         Humiture         40001	dd points           Position Name         Slave         Mapping Address         Data Type           Humidity         Humiture         40001         16位无符号

🛠 USR IoT	50	Overview	[+] Networ	ж (	Bdge Computing	[-] System Management	Python Application						《 简体中文	🧔 admi
Edge Mode		> Protocol				The parameters you modify take effe- the gateway after all Settings are con	t only after you reboot the gatew plete.	ry. To avoid repeated n	eboot, reboot reboot	×				
IO Module	~	Modbus	RTU		Connection Config									•
Status Data Point		Modbus	TCP JA		* RS485:		Connection registrati	Jn SN Ja:	~	* Protocol:	TCP Server	~		
Protocol Edge Gateway	y.				Local Port	2	Server Addre	S: 192.168.1.110		Remote Port:				
Lage batchay					Slave Configuratio	<b>n</b>	* 32 bit integer by	te AB CD	~	* 32 bit float byte order:	AB CD	~		
					64 bit integer byte order:	ABCDEFGH								
				Ŧ	apply									
					Node mapping t	able						Add	Delete	┑┃
					-	ID Positio	n Name So	urce(slave)	Data Type	Mapping A	ddress	Read Write Status	Operation	
						1 Hur	nidity	Humiture	16位无符号	4000	и	Read/Write	Edit Delete	
														_
V1.0.19														

9. After completing the point addition, you need to reboot the device, and the application will take effect after the reboot.

#### • Modbus TCP

Modbus TCP and RTU for point operation is the same, are through the point mapping table for data points in the table of the point of the protocol conversion, but Modbus TCP only support Socket a data channel, support TCP Client and TCP Server. Refer to the Modbus RTU operation procedure for operation.

#### • OPC UA

OPC UA is a protocol used more often in the industrial control industry, M300 mainly integrates the Server of OPC UA, and the data channel only needs to configure the local port. The data channel only needs to be configured with local ports. Add the points that need to be converted to the protocol to the point mapping table and you can use it.

The OPC UA usage process is relatively simple, with the following steps:

1. Go to the built-in webpage, find "Edge Computing->Protocol Conversion->OPC UA", enable OPC UA.

2. Configuring Communication Ports

3. Add a point mapping table and pull the data points that need to do the protocol conversion from the already added data point table.

4. Click the Add button to add a point, click the Add Point button in the pop-up window, the point selection interface will pop up, select the point under the corresponding slave, and then click OK.

K USR IoT			EC EC	lge Computing	[+] System Manag								🕤 简体中文 🈡	admin
Edge Mode	Protocol				The parameters you modi the gateway after all Settin	fy take effect only a ngs are complete.	after you reboot the ga	ateway. To avoid repeated reboot, rebi	xot reboot ×					
Preset Extensio	Protocol													
IO Module	Modbus R	A UTU	dd	Point selection						×	×			
Status	Modbus T	CP	*Poi	Select Salve:	Humiture ~	Please enter		Query						
Data Point					Position Name	SI	lave	Data Type	Read Write Status					
					Humidity	Hum	niture	16位无符号	Read/Write					
Edge Gateway					Temperature	Hum	niture	16位无符号	Read/Write					
													Add Delete	
												Read Write Status	Operation	
													Go to 1	
										•				
									cancel sur	e	sure			
V1.0.19														

5. Will be added to the point interface, confirm whether the point is added to complete, if not added to complete, you can repeat the previous step to continue to add, if you add a, click OK can be.



6. After completing the point addition, you need to reboot the device, and the application will take effect after the reboot.

# 5.7. Serial Port Configuration

(1) Go to the built-in webpage and open the "Edge Computing->Edge Gateway->Serial Port Management" interface.

(2) Depending on the actual requirements, you can configure the relevant parameters for serial port 1 and serial port 2 of the device.

🛠 USR IoT	(·) Overview	[·] Network	단 Edge Computing	[-] System Management	Python Application	🚯 🖏 🖓 admin
Edge Mode	Edge Compu	ting > Edge Gateway >	Serial Port			
Preset Extensio	Serial P	ort				
IO Module	~ UA	RT01	UART01			
Data Point	UA	RT02	Basic setting	s		
Protocol			* Baud Rate:	9600	~	
Edge Gateway	<u>^</u>		* Data Bit:	8	×	
Communication			* Stop Bit:	1	~	
Data Query/Co			* Parity Bit:	NONE	~	
Data Reporting Linkage Control						
		Ŧ				
V1.0.19						

# 5.8. Communications link

Communication links are mainly used to create a data interaction channel between the gateway and the server. M300 supports a total of two communication links, which can be connected to two different servers for data interaction. The operation steps take link 1 as an example:

1. Go to the built-in webpage and open the "Edge Computing -> Edge Gateway -> Communication Link" interface.

2. Enable link 1, select the corresponding communication protocol, M300 supports TCP\UDP\HTTP\MQTT communication protocols

3. After determining the communication protocol, the corresponding configuration parameters will be displayed, and the parameters that do not correspond to the protocol will be hidden, you only need to configure the parameters that have been displayed, after the configuration is complete, click Apply.

🛠 USR IoT 🛛 🔅	] Overview [+] Network	😳 Edge Computing	System Management 💦 Python Application	💿 局体中文 🛛 🧔 admin
Edge Mode	Edge Computing > Edge Gateway >	Communication		Î
Preset Extensio	Communication			
IO Module ~	Communication1	Communication1		
Data Point	Communication2	Basic settings Publish	settings Subscribe settings	
Edge Gateway		Communication Protocol:	MQIT ~	
Serial Port		* Protocol Select:	MQIT-3.1.1 ~	
Communication Data Query/Co		* Remote Server Address:	a1SOBI3xXX5.iot-as-mqtt.cn-shanghal.aliyuncs.c	
Data Reporting		* Client ID:	a1SO8I3xX5.M300Jsecuremode=2,signmethod	
Linkage Control		" Remote Port:	1883	
		* Heartbeat time:	60 s	
	*	* Reconnection Internal:	5 s	
		* Clean Session:		
		* Connection verification:		
		* Username:	M3008a15O8I3xIX5	
		* Password:	04ea29d94d37cd75ca7aa257179541dfb11c88b	
		* Enable Last Will:		
		* SSL Protocol:	TLSI.2 V	
V1.0.19		*Authentication Mode:	Self signed certificate 🗸	

4. If you choose the MQTT protocol or AliCloud, AWS, etc., after configuring the corresponding connection parameters, you also need to configure the corresponding communication topics, and you can configure up to 8 publish topics and up to 8 subscribe topics. Both publish and subscribe topics are presented in a list.

5. Click the Add button, enter the theme name, if you need to substitute the MAC address, just fill in MAC in the theme and configure the other parameters, then OK to generate the theme.

Add			ł
* topic:	Please enter		
* QOS:	QOS0	~	
* mssage retained:	o false 🔿 true		
Description:	Please enter		
		cancel	sure

6. Subscribe to the topic the same configuration method.

7. After you finish configuring publish topics or subscribe topics, you need to click Apply. After all topics are configured and applied, you need to reboot the device to take effect.

🛠 USR IoT 💦 🖓	·] Overview [·] Network	Edge Computing	[·] System Management	Python Application			nbe 🧔 文中科朝 ③
Edge Mode	Edge Computing > Edge Gateway	> Communication					
Preset Extensio	Communication						
IO Module ~	Communication1	Communication	1 💽				
Data Point	Communication2	Basic settings	Publish settings Subscribe se	ettings			
Protocol							
Serial Port		10	topia	0.05	messes rational	Description	Operation
Communication		- 1	/a1SO8i3xJX5/M300/user/M300_Pub	QOS0	not retained		Edit Delete
Data Query/Co Data Reporting							
Linkage Control							
V1.0.19							

# 5.9. data reading and writing

Data reading and writing function and protocol conversion function have the same role, are used for the server to take the initiative to collect and control the M300 data, the difference is that the data reading and writing do not need to do the protocol conversion, only need to connect to the server through the link, the server sends out the JSON format of the command specified by the M300, you can realize the query and control of all the points in the point table data.

The data read/write function supports multi-link communication, just select the corresponding link to add, and the Json command format for read/write is as follows:

{"rw\_prot": {"ver": "protocol\_version", "dir": "data\_toward", "id": "message\_number", "r\_data": [{"name": "point\_name"}], "w\_data": [{"name": "point\_name", "value": "data"}]}}

Field name	Field Description	Field Selection
rw_prot	Protocol header	
ver	protocol version	1.0.1
dir	The data goes, and the server sends the command to fill in the down	down: server down
id	The code of the data sent down from the server, which can be used as sequence identification	Customer customization, no changes to device responses
r_data	Data Reading Fields	
w_data	Data Control Fields	
name	The name of the point, and the name of the point in the point table can be substituted into the point	
value	Read and write commands only have a write with a value field, which is a valid value for the write	

### Json read and write command field descriptions:

#### Json read/write reply format:

{"rw\_prot": {"ver": "protocol\_version", "dir": "data\_toward", "id": "message\_number", "r\_data": [{"name": "point\_name", "value": "data", "err": "error\_code"}]}], "w\_data": [{"name": "point\_name", "value": "data", "err": "error\_code"}]}}

#### Json read/write reply field description:

Field name	Field Description	Field Selection
rw_prot	Protocol header	
ver	protocol version	1.0.1

dir	Data direction, equipment response content filling up	up: equipment response
id	Information identifiers to maintain consistency with issued orders	
r_data	Data Reading Fields	
w_data	Data Control Fields	
name	Point name, corresponding to the point in the point list	
value	Valid data corresponding to the point	Read error, valid value is null. Write error, value value is a historical value
err	error code	0: Data is executed normally 1: Data error execution

#### Json field error response:

- 1. Json format error: device does not respond
- 2. Any error in any of the three fields, ver, dir, id, is responded to according to the error protocol.

3. If the other fields are correct and only one of the r\_data or w\_data fields is incorrect, the incorrect field is discarded and the correct field is replied to; if both fields are incorrect, the reply is made according to the error protocol.

### 4. Error protocol: "rw\_prot": {"Ver": "1.0.1", "dir": "up", "err": "1"}.

field name	Field Description	Field Selection
rw_prot	Protocol header	
ver	protocol version	1.0.1
dir	Data direction, both upward and downward	up: equipment response
err	error code	0: Normal execution 1: Erroneous execution

#### Description:

a. In case of read and write command error, the value value of the content of the read command reply is null, and the value value of the content of the write command reply is the value of the historical data.

b. The maximum limit of read/write operation is 5 data points each for read/write operation at the same time:

#### Specific procedures for reading and writing data:

1) Go to the built-in webpage and open the "Edge Computing -> Edge Gateway -> Data Read/Write" interface.

2) Enable the data read/write function, add communication links, here you can only select the already configured communication links and the corresponding topics.

3) Links are added to the communication link for configuration, and commands issued by the server need to follow the Json format of the device, with examples on the built-in web page.

📌 USR IoT 🛛 🔅	Overview 💽 Network	Edge Computing	💽 System Management	Python Application		🚯 開始中交 🈡 admin
Edge Mode	Edge Computing > Edge Gatewar	iy > Data Query/Control				
Preset Extensio	Data Query/Control					
IO Module ~	Data Query/Contr	ol 💽				Add
Data Point	s	select Channel		Public Topic	Subscribe Topic	Operation
Protocol		Link one	/a1SO8i3x.	X5/M300/user/M300_Pub	/a1S08i3xJX5/M300/user/M300_Sub	Delete
Edge Gateway ^ Serial Port Communication Data Query/Co Data Reporting Linkage Control		t';   'var: '1.0.1', 'far: '1.0.1', 'far: '2.24'; 'r_dats':      'name': 'nede010 'name': 'nede010 'value': '6000 'value': '202''   'aute': '1000 'value': '202'' ]	r r r,			
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# 5.10. Data reporting

The data reporting function mainly refers to the data collected by the points configured in the point table through autonomous polling and reported to the server in batches through the reporting group.

- The specific steps are as follows:
- 1) Go to the built-in webpage and open the "Edge Computing -> Edge Gateway -> Data Reporting" interface.
- 2) Click on the: Create button to create an escalation group, up to 2000 groups can be created.
- 3) Set the group name, select the server link and the corresponding topic for reporting, and set the reporting rules.
- 4) To set up the reporting template, the M300 reporting template can be customized, just fill in the name of the point in the value position.

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Edge Mode	Edge Computing > Edge Gateway	Data Reporting			
Preset Extensio	Data Reporting				
IO Module Y	New Import Export	test2	Edit data reporting groups ×		Delete
Data Point		Data Reporting	Basic Information		Edit
Protocol	test1	Basic informatio	* Group name Please enter		
Edge Gateway			* Up channel Please select.		
Serial Port		Action	Data Reporting rules		
Communication Data Query/Co			ng		
Data Reporting			periodic reporti		
Linkage Control			ng		
			Data change Reporting		
			report regulari		
			у		
			Reporting data for Primitive data type		
			Departing Templat //Current*Tende0101**//oltane*Tende0102*1		
			e		
		Node Table			
				Add Impact Expect	Dateta
V1.0.19			cancel sure ort	e Read/Write	Delete V

5) After the group is added, an empty point table will be generated, and the points that need to be reported in the group will be added, and the import of points will be pulled directly from the point table that has been added.

	New Import E	Export	1 testz						Delete
Edge Mode	test1		Data Reporti	ng rules					Edit
Preset Extensio			Basic informa	tion Up channe	Link one				
IO Module			Select node				×		
Data Point				-					
Protocol			Select Slave	local_lo	Please enter	query			
Edge Gateway				Node name	Slave	Data Type	Read Write Status		
Serial Port				AI01	local_io	32位浮点数(ABCD)	Only Read		
Communication				AI02	local_io	32位浮点数(ABCD)	Only Read		
Data Query/Co.				DI01	local_io	bit	Only Read		
Data Reporting				DI02	local_io	bit	Only Read		
Linkage Control				DO01	local_io	bit	Read/Write		
				D002	local_io	bit	Read/Write		
				DI11	local_io	bit	Only Read		
				DI12	local_io	tid	Only Read		
				DI13	local_io	bit	Only Read		
				DI14	local_io	bit	Only Read		
			IN						
							cancel sure		
								Add Import Export	Delete
			ID ID	Node name		Slave Name	Data Type	Read Write Status	Operation
			. 1	Temperature		Humiture	ushort	Read/Write	Delete
			2	Humidity		Humiture	ushort	Read/Write	Delete
							Tot	al 2 10/page V Last 1 No	Go to 1
V1.0.19									

6) Once added, the point data will be reported to the server according to the fix and connection, and the grouping configuration needs to be restarted to take effect.

#### Json Templates

The data upload function will upload the point data to the server in Json format. Customers can customize the configuration of the Json template according to the server's requirements to ensure that the uploaded data format meets the server's parsing requirements, and the Json template can be defined in the actual name of the data point. However, the Json template configuration needs to pay attention to the following points:

1. The Json template in the grouping is empty by default, you can design your own to meet the Json format requirements;

2. Value in the Json template is of character type, you need to fill in the data point name, when the data is reported, the actual collection value corresponding to the point name will be substituted and replaced.

3. Example:

Edge point locations node0101 and node0102 were acquired with values of 30 and 20, respectively;

Json template set to {"Current": "node0101", "Voltage": "node0102"};

The actual reported data format is: {"Current":30, "Voltage":20}.

4. Json template can be added in addition to the data points, but also add some specific identification, such as the product's firmware version, SN, MAC and other parameters, these parameters can be processed as a unique identification of the device or device identification information. In the value value position of the Json template directly add the relevant identification name, the device in the reporting process, the identification name will be reported after the corresponding data substitution. For example, to report the timestamp, set the Json template to {"time": "sys\_time"}, and the actual data reported by the device is {"time": "2022-10-08T10:37:45.403Z"}. The list of identifiers that can be filled into the Json template is as follows:

Markings	Hidden meaning	Example of reporting 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_time	UTC time	2022-10-08T10:37:45.403z
sys_utc_time	timestamp	1681985788

# 5.11. linkage control

The linkage function is mainly for the realization of local closed-loop management, rapid alarm and emergency applications,

the product can support 50 internal linkage events, each linkage control can be set to judge the conditions, pull the trigger points, set the trigger mode. In the process of operation, the product is collected through the edge, and the data of the trigger points are calculated to confirm whether the linkage is to be executed according to the judgment conditions, and when the conditions are met, the execution action is processed according to the execution action set for each linkage event. The parameters are described below:

name (of a thing)	Parameter Description	default parameter
Event Name	Linkage event name, user-defined	unoccupied
event switch	Enabling of linked events	mountain pass
Minimum Trigger Interval	When the linkage event meets the triggering conditions for a short period of time for many times, the minimum interval of triggering execution, the triggering within the minimum triggering time does not execute the action and is directly discarded.	unoccupied
trigger point	Linkage conditions to determine the source of the required data, supporting multiple point selection	unoccupied
trigger condition	The judgment conditions of the linked events, meet the conditions to execute the action, support a total of 10 kinds of conditions	unoccupied
trigger method	Trigger logic between multiple points when multiple trigger points are selected	unoccupied
upper threshold	Maximum value of the range of the threshold condition, range $020000$	unoccupied
lower threshold limit	Minimum value of the range of the threshold condition, range $020000$	unoccupied
execute an action	Actions to be performed after the linkage event meets the trigger conditions	unoccupied

#### The following table lists 10 triggering conditions for linkage events:

trigger condition	descriptive	clarification
forward following	If DI is closed, then DO is closed; if DI is disconnected, then DO is disconnected.	Trigger points only support switching
Reverse Follow	If DI is closed, then DO is disconnected; if DI is disconnected, then DO is closed.	Trigger points only support switching
greater than or equal to	Trigger action when the detection value is greater than or equal to the set threshold value.	Setting the lower threshold only
more than	Trigger action when the detection value is greater than the set threshold.	Setting the lower threshold only
less than or equal to	Trigger action when the detection value is less than or equal to the set threshold value.	Setting only the upper threshold limit
less than	Trigger action when the detection value is less than the set threshold.	Setting only the upper threshold limit
Within the zone (including boundaries)	Trigger an action when the detection value is within the threshold range, one action is triggered each time it enters the interval	Setting the upper and lower thresholds
Within the zone (excluding the border)	Trigger an action when the detection value is within the threshold range, one action is triggered each time it enters the interval	Setting the upper and lower thresholds
Outside the zone (including boundaries)	Trigger an action when the detection value is outside the threshold range, and trigger an action once in the out-of-range range.	Setting the upper and lower thresholds
Outside the zone (excluding the border)	Trigger an action when the detection value is outside the threshold range, and trigger an action once in the out-of-range range.	Setting the upper and lower thresholds

#### The linkage event trigger execution supports 4 operations, as shown in the following table:

trigger action	descriptive	clarification
DO action	You can select the DO that will perform the action and what state the selected DO will perform.	DO is single choice
Write Data Points	The current action supports sending commands through the serial port and controlling the action of serial devices.	Supports serial port 1 and serial port 2 only
Reporting platforms	Upload customized alarm information to the cloud platform	MQTT related links require a

	through the link to achieve fast alarms.	separate topic
send SMS messages	Send customized alarm information to cell phone via SMS to achieve quick alarms	SMS content is 70 bytes or less

### Linkage control specific operating procedures:

1. Go to the built-in webpage and open the "Edge Computing  $\rightarrow$  Edge Gateway  $\rightarrow$  Linkage Control" interface.

2. Click the "Create Button" to create the linked events, you can create up to 50 groups of linked events.

3. Set the event name, enable the event, and then configure the event's trigger point, execution action, and auxiliary condition parameters.

* Event Name * Enable	test1	
* Event Name * Enable		
* Enable	D	
Minus Trigger Int		
	100 n	ns
erval		
Trigger condition	Forward Follow	~
* Trigger Event	Select point DI11 ×	
* Trigger mode:	All point match the conditions	/
Ipper Threshold L		
imit:		
ower Threshold L		
imit:		

cancel

4. After all linked events are added, a reboot is required for them to take effect.

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Edge Mode	Edge Computing $\rightarrow$ Edge Gateway $\rightarrow$	Linkage Control		
Preset Extensio	Linkage Control			
IO Module ~	New Import Export	test1	1	Delete
Data Point		Event Info		Edit
Protocol Edge Gateway ^ Serial Port Communication Data Query/Co Data Reporting			Event Name:     tost1       Enable:     Image: Interval:       Minus Trigger Interval:     100       Trigger Event:     D111       Trigger condition:     Forward Follow	
Linkage Control		Execution Action	Upper Threshold Limit: 0	_
			DC Action: DC1 Action: ON Write bit UART:	
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# 5.12. Import and export of edge computing point tables

M300 supports the import and export of data point tables related to edge computing, which mainly involves the data point tables of all data points used in collection, as well as the protocol conversion point tables, reporting group point tables and linkage event tables. These tables will be packaged and compressed in M300 and then exported. The exported point table does not support editing, but can be used for fast copying of parameters between devices.

Edge calculation point table import and export procedure:

- 1. Go to the built-in webpage and find the "System Management -> System Management -> Configuration Management" interface.
- 2. Configuration management interface, edge computing configuration export and import
- 3. The current import export is in zip form and does not support editing.

	Overview [+] Network	Constraint Eage Computing	· System Management	• Python Application	🕄 麓体中文 🈡 adi
System Time	System Management > System	Configuration Management			
LOG	Configuration Mana	gement			
System ^					
Configuration	System Config				
Firmware Upgra	Export:	Export Config			
User Managem	Import:	Import Config			
Reboot	Restore Factory	Restore Factory Configuration			
OSK Cloud Ser	Configuration:				
Access Tools	Edge Computing Config				
Location	Export:	Export Config			
	Import	Import Config			
	Note: Th	e export point table will synchronously	export the data point table, protocol cor	version data point table.	
	inkage c	control event table, and data reporting g	proup table, and will be updated synchro	nously after importing	

# 5.13. graphical programming

Graphical programming is mainly used in M300 for the secondary development of edge computing functions, when the edge computing mode is set to graphical edge, the design of secondary development can be carried out. The graphical design needs to be based on public resources that have been configured to work properly, such as IO functions, data point tables need to be configured in advance.

Graphical Edge Operation Procedure:

1. Go to the built-in webpage, find "Edge Computing -> Mode Management", select the edge computing mode as "Graphical Edge", click Apply and reboot the device.

2. After the device reboots, go to the built-in webpage, still find the "Edge Computing -> Mode Management" interface, network and wait for about two minutes.

3. Clicking on the "Graphical Design" button on the interface will jump you to the Graphical Design link.

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Edge Mode		> Edge N	Mode			
Preset Extensio		Edge M	ode			
IO Module	~	Edge Comp	uting: Graphical Pr	rogramminį 🗸		
Data Point			Design Flow	aphical Design		
Protocol			Enable Graphical E	Design, it can be used normally after	er the device restarts 2 minutes.	
Edge Gateway	~					

		=/ Deploy 👻 🚍
Q filter nodes	0.usr + +	🕆 debug i 🖉 🕸 🗘 👻
common		T selected nodes * 🗎 all *
🖈 inject 🖕		<b>A</b>
debug		
complete		
catch		
++ status		
🔅 link in 🗘	↓ setatience = + + + + + + + + + + + + + + + + + +	
ink call		
ink out		
comment	112231445064778099 加	
~ function	C Area	
tunction		
or, switch o		
orange p		
tamplata		
delau de		
tieney b		
and and a		
Rhar		
<ul> <li>network</li> </ul>		
() mqtt in		
mqtt out		
http in		
http response 🔇		

You can refer to specific tutorials for the specific use of graphical design.

# 6. system function

# 6.1. system time

In order to ensure that M300 and other devices work in coordination, and at the same time to ensure the accuracy of the customizer, users need to accurately configure the system time in advance when using the M300. The system time of the M300 supports three ways: NTP calibration, browser time synchronization, and manual configuration.

NTP Calibration: Get the accurate time to calibrate the system time through the network NTP server, NTP function is enabled by default, users need to change the available NTP server to use.

Manual calibration: Manually configure the system time through the set time function in 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 "Synchronize Browser Time" button to synchronize system time and browser time.

Time zone setting: You can update the current time zone through the time zone option in the system time interface, after selecting the time zone, click the "Modify" button to take effect, and the system time will be updated to the corresponding time zone immediately after the time zone takes effect.

🛠 USR IoT	[·] Overview	• Network	Edge Computing	[·] System Management	Python Application
System Time	> System	Time			
LOG	System	Time			
System PUSR Cloud Ser Access Tools Location	Ƴ Devio Set Ti	ime Zone: UTC + e Time: 2023-10-27 me Please sele	8 16:37:33 ct © Piease select	Modify. Sync With Browser Set	
	NTP   NTP  NTP Server NTP Server	TP ntp.allyun.cc 1: _2: Please enter	um		

## 6.2. configuration management

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

#### • System Configuration

This includes the import, export and factory restore operations of the product's main parameters. Import and export files are mainly used for quick copying of product configuration, so users need to ensure the legitimacy of the files during the import and export process.

#### • Restore Factory Settings

Restore the M300 to its factory default configuration. After users use this operation, they need to reconfigure the parameters of the M300 to use it normally.

#### • Edge Computing Configuration

Edge Computing Configuration supports the import and export of documents related to edge functions, enabling the rapid replication of edge computing functions between products. The current Edge Computing import and export function documents do not support configuration and are only used as documents for passing parameters.

The Edge Computing Configuration export file contains a data point table file, a protocol conversion point mapping table file, a linkage control event table, and a data reporting grouping table.

### 6.3. Firmware Upgrade

Firmware upgrade function interface is used to display the current firmware version number and provide firmware upgrade operation, after selecting the legal firmware, click "Start Upgrade" to wait for the product to be automatically upgraded to complete.

### 6.4. user management

The user management function is mainly the user name and password setting function of the built-in web page of product login, user name supports 4-30 characters and password supports 1-30 characters.

### 6.5. system reboot

In the System Management->System Reboot interface, you can reboot the device immediately, or you can add a timed reboot task, set the reboot time point for the day, and apply it.

The restart task supports a 24-hour clock and is accurate to the minute.

### 6.6. Management tools

Currently, the management tool of M300 only supports SSH, which can be used by enabling it in the interface, and the default user name and password can be obtained by contacting the corresponding technical support.

### 6.7. positioning function

Positioning function when the forward open base station positioning, you can get the location information of the base station, GPS positioning function is under development, will be open in the next issue.