

# listing

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# Basic settings

**Basic Setting**

Data Collect  Enable  Disable

Collect Period  Seconds **Polling cycle**

Report Period  Seconds **Real-time reporting cycle**

Enable Cache   Cache History Data

Cache Days  day **Historical data storage cycle**

Cache Path  Path Where Data Is Stored

Send Minute Data

Minute Data Period  Minutes **Minute data reporting cycle**

Send Hour Data  **Hourly data reporting period, default is 1 hour**

Send Day Data  **Daily data reporting cycle, default is 1 day**

[Save & Apply](#) [Save](#) [Reset](#)

Acquisition cycle: how often the device polling

Reporting cycle: how often the collected data is reported to the center.

Enable cache: offline data can be cached locally and uploaded online.

Minute data, hourly data: the corresponding minute and hourly reporting cycle will be used only when using the environmental protection 212 protocol.

## 1、 Interface settings

### Interface settings are lower computer parameters

1.1, the serial port contains RS485 and RS232, default support ModbusRTU protocol acquisition

> View

> Setup

> Secure

> VPN

> Advanced

√ Data Collect

Basic Setting

**Interface Setting**

Modbus Rules Setting

Server Setting

Data query

> Administrate

Logout

## Interface Setting

COM1/RS485    COM2/RS232

Enabled     Enable     Disable

Baudrate    9600

Databit    8

Stopbit    1

Parity    None

Frame Interval    200 ms

COM Protocol    Modbus

Command Interval    1 ms

Baud rate: need to be consistent with the lower computer, the default is 9600, currently supported baud rates are:

9600 frame interval is recommended to use 200;

Default serial port supports Modbus RTU protocol acquisition. If the gateway actively collects, then select Modbus.

## Interface Setting

COM1/RS485    COM2/RS232

Enabled     Enable     Disable

Baudrate    9600

Databit    8

Stopbit    1

Parity    None

Frame Interval    200 ms

COM Protocol    Modbus

Command Interval    1 ms

Data Bit: There are two choices for data bit: 8 bits and 7 bits, and the default is 8 bits.

Stop Bit: There are two choices for stop bit: 2-bit and 1-bit, the default is 1-bit.

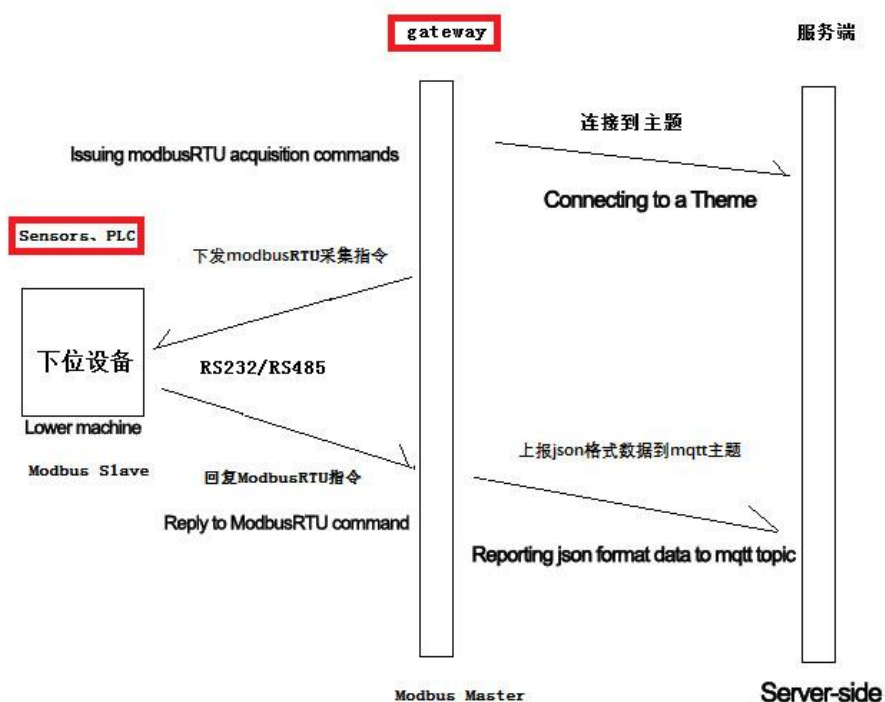
Parity Bit: Parity has no parity, odd parity, even parity, the default is no parity.

Frame Interval: Set the appropriate frame interval according to the baud rate, **the recommended frame interval is 200 for 9600.**

Communication protocol: the transmission protocol of serial port data, currently supports ModbusRTU protocol acquisition and pass-through.

**Note: under the transmission protocol, the server side encapsulation type should also choose transmission, so that the transmission function can be used normally.**

Reporting Center: Select the corresponding reporting center number when transmitting, the gateway can configure 5 centers by default.



1.2、Network port directly connected to the modbus TCP protocol of the host computer, the gateway default TCP client, the host computer IP and port can be configured

- ▼ **Data Collect**
  - Basic Setting
  - Interface Setting**
  - Modbus Rules Setting
  - Server Setting
  - Data query
- > **Administrate**
- Logout

Baudrate	9600	▼
Databit	8	▼
Stopbit	1	▼
Parity	None	▼
Frame Interval	200	ms ⓘ
COM Protocol	Modbus	▼
Command Interval	1	ms ⓘ

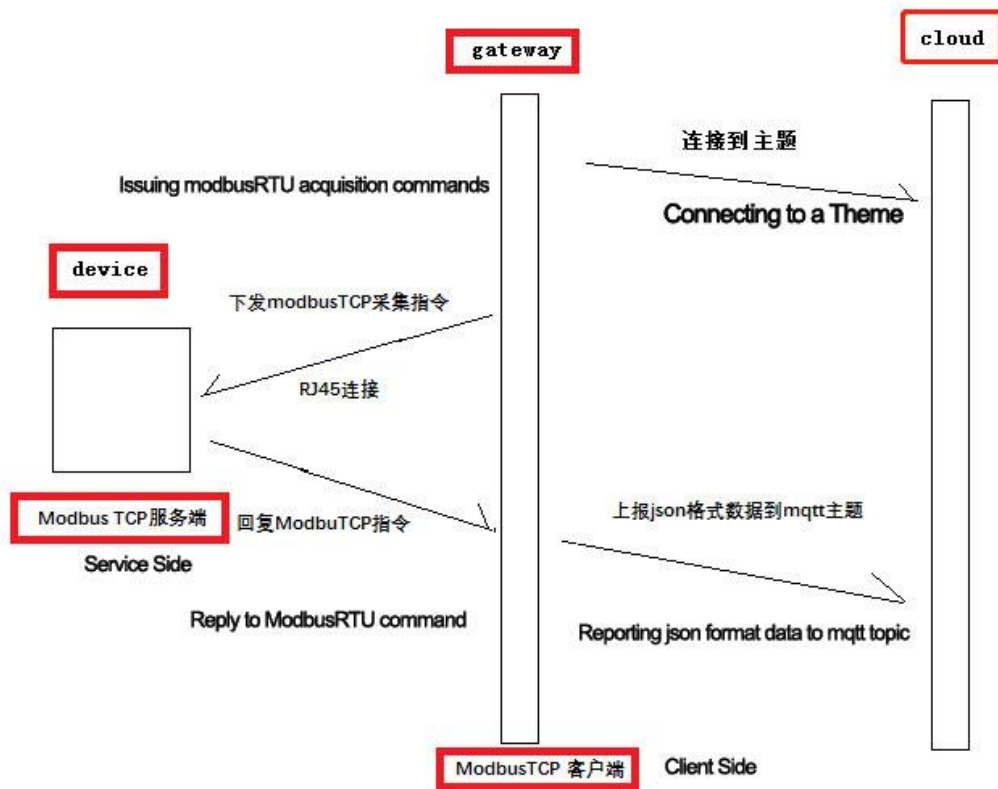
### TCP Server Setting

TCP Server1	TCP Server2	TCP Server3	TCP Server4	TCP Server5
Enabled <input checked="" type="radio"/> Enable <input type="radio"/> Disable				
Server Address	192.168.1.10			
Server Port	9010			
Frame Interval	100	ms ⓘ		
COM Protocol	Modbus	▼		
Command Interval	1	ms ⓘ		

**Server address:** ip address of ModbusTCP server (lower machine)

**Server port:** port of ModbusTCP server.

**Protocol:** If you choose Modbus, it supports modbusTCP protocol, and you need to fill in the number of the center when you choose pass-through.



## II、 Collection rules

- > View
- > Setup
- > Secure
- > VPN
- > Advanced
- > **Data Collect**
  - Basic Setting
  - Interface Setting
  - Modbus Rules Setting**
  - Server Setting
  - Data query
- > Administrate
- Logout

### Modbus Rules Setting

Modbus Rules Configure import and export

Order	Device Name	Interface	Factor Name	Device ID	Function Code	Start Address	Count	Data Type	Reporting Center	Enable	
2	Soil moisture	COM1	SoilMoisture	1	3	1	1	signed 16 Bits AB	1	<input checked="" type="checkbox"/>	<a href="#">Edit</a> <a href="#">Delete</a>
3	Soil EC	COM1	ec	1	3	2	1	signed 16 Bits AB	1	<input checked="" type="checkbox"/>	<a href="#">Edit</a> <a href="#">Delete</a>
1	Soil temperature	COM1	SoilTemperature	1	3	0	1	signed 16 Bits AB	1	<input checked="" type="checkbox"/>	<a href="#">Edit</a> <a href="#">Delete</a>
	Wind Speed Sensor	COM1	Wind Speed	4	3	1	1	signed 16 Bits AB	1	<input checked="" type="checkbox"/>	<a href="#">Edit</a> <a href="#">Delete</a>

**New Modbus Rule**

Order	Device Name	Interface	Factor Name	Device ID	Function Code	Start Address	Count	Data Type	Reporting Center	
<input type="text"/>	<input type="text"/>	COM1	<input type="text"/>	0-255	0-255	0-65535	1-120	Unsigned 16Bits	1-2-3-4-5	<a href="#">Add</a>

Save & Apply
Save
Reset

Device Name : Customizable

Interface : Serial port or modbusTCP interface

Factor Name : English code, required field

Reporting Center: Corresponding to the server side of the center

Suppose we want to read the 40001 register data from the thermometer by 01 03 00 00 00 01 84 0A and then divide the data by 10, keeping one decimal place, and pass it to the variable temp, then first add a rule according to the following configuration.

New Modbus Rule

Order	Device Name	Interface	Factor Name	Device ID	Function Code	Start Address	Count	Data Type	Reporting Center
5	temp	COM1	temp	1	3	0	1	Signed 16Bits B	1

Save & Apply Save Reset

> View  
> Setup  
> Secure  
> VPN  
> Advanced  
v Data Collect  
Basic Setting  
Interface Setting  
**Modbus Rules Setting**  
Server Setting  
Data query  
> Administrate  
Logout

### Modbus Rules - temp - COM1

enabled

Order: 5

Device Name: temp

Belonged Interface: COM1

Factor Name: temp Multiple Factors Are Separated By Semicolon

Alias Name: - Multiple Aliases Are Separated By Semicolon

Device ID: 1 0~255

Function Code: 3 0~255

Start Address: 0 0~65535

Count: 1 1~120

Data Type: Unsigned 16Bits AB A highest byte

Reporting Center: 1 Multiple Servers Are Separated By Minus

Unit: - Multiple Units Are Separated By Semicolon

Operator: / 0 + - \* /

Operand: 10

Accuracy: 1 0~6

Enable Webshow  After checking, you can query the collected data of the configuration item on the web page

Back to Overview Save & Apply Save Reset

Serial number: collection rule number

Device Name: the name of the collected device can be filled in, which can be used for remarks, generally only use alphanumeric combination naming.

Belonging Interface: the corresponding interface settings of the collection, select the interface that has been opened, and the interface that has not been opened will not be displayed.

Factor Name: mandatory, indicates the name of the collected and reported factor (key,

value key inside the key-value pairs), refer to the environmental protection protocol code or customized code, such as: a01001, if a rule collects more than one factor (not more than 60), separated by a semicolon in English.

Alias: Remark information of factor name, can be left blank.

Device ID: Modbus device ID, 0-255 (decimal).

Function Code: Generally 03 function code, read register data, 1-255 (decimal).

Starting Address: register starting address, the offset address is used here, 40001 corresponds to 0, the default configurable range is 0-65535 (decimal).

Number: the number of register data, a factor of 16-bit type occupies one register, 32-bit or float type occupies two registers, N factors are multiplied by N according to the data type, and the configurable range is 0-120 (decimal).

Data type: select the corresponding data type according to the actual situation, the same acquisition rule, the data type is consistent.

Unit: the unit of the collection factor is just a remark parameter, and the unit is usually not carried when the data is reported.

Operator: One operation can be performed on the raw collected data.

Precision: the number of decimal places retained by the data, rounded by default.

**Example:**

Case: / stands for Divide by.

Operand: 10 stands for collected data divided by 10

### III、 Input/Output Configuration

Corresponding to the gateway's ADC interface, DI interface, relay interface data acquisition, if you can not use these interfaces, you can not configure.



## IV、Server-side configuration

The screenshot displays the 'Server Setting' configuration page. The sidebar on the left includes options like View, Setup, Secure, VPN, Advanced, Data Collect, and Administrate. The 'Server Setting' option is highlighted. The main configuration area includes:

- Enabled:  Enable  Disable
- Protocol: MQTT
- Encapsulation Type: JSON
- Server Address: k0mw2NeGTC5.iot-as-mqtt.cn-sha
- Server Port: 1883
- MQTT Public Topic: /sys/k0mw2NeGTC5/soilsensor/thi
- MQTT Subscribe Topic: (empty)
- MQTT Username: soilsensor&k0mw2NeGTC5
- MQTT Password: D1D5A8689607C037096BC027A8
- Client ID: tr341|securemode=3,signmethod=l
- Enable TLS/SSL:
- Enable Self Defined Variable:
- Self Defined Variable Name1: method (Max 128 Bytes ASCII)
- Self Defined Variable Value1: thing.event.property.post (Max 128 Bytes ASCII)
- Self Defined Variable Name2: (empty) (Max 128 Bytes ASCII)
- Self Defined Variable Value2: (empty) (Max 128 Bytes ASCII)
- Self Defined Variable Name3: (empty) (Max 128 Bytes ASCII)
- Self Defined Variable Value3: (empty) (Max 128 Bytes ASCII)

(The data in the picture is for demonstration purposes.)

4.1 Support TCP, UDP client, MQTT client and http client to connect to the center.

**Note:** Mqtt protocol reporting, data is reported to the platform through the release of the subject, the platform issued control instructions are issued through the registration of the subject, in addition to connecting to the same MQTT broker, the clientid parameter must not be repeated.

4.2, The data reporting protocol can support transmission (serial port settings over there protocols need to choose transmission), JSON, Transparent

4.3, Json format reporting, reporting format default (can be customized according to the requirements of field use format):

{

“deviceid”:"Device number, the attribute name deviceid can be filled in arbitrarily.”,

“ts”:Timestamps are accurate to millisecond values,

```
“params”:{  
    “key”:"value”,  
    “key”:"value”  
}
```

Example data for test acquisition :

```
{  
    "deviceid": "12345678",  
    "ts": 1583723667895,  
    "params": {  
        "temp": 0.21  
    }  
}
```

**Example of the corresponding meaning of the indicator key temp Temperature**

**The parameter deviceid corresponds to the “custom variable name” and “custom variable value” options, which are not configured by default, and three can be configured.**

Enable Self Defined Variable

Self Defined Variable Name1	<input type="text" value="deviceid"/>	<input type="button" value="Max 128 Bytes ASCII"/>
Self Defined Variable Value1	<input type="text" value="123456"/>	<input type="button" value="Max 128 Bytes ASCII"/>
Self Defined Variable Name2	<input type="text"/>	<input type="button" value="Max 128 Bytes ASCII"/>
Self Defined Variable Value2	<input type="text"/>	<input type="button" value="Max 128 Bytes ASCII"/>
Self Defined Variable Name3	<input type="text"/>	<input type="button" value="Max 128 Bytes ASCII"/>
Self Defined Variable Value3	<input type="text"/>	<input type="button" value="Max 128 Bytes ASCII"/>

Connection Status

## V、 Remote telemetry function

Support platform through the MQTT registration theme (or tcp server) to send down the json format data, to achieve the reverse write register operation (support for two json format, multi-factor, reverse operation (reported is done to add, subtract, multiply

and divide, write the time will be reversed operation))

Format 1 :

```
{
  "method":"sendTelemeter",
  "params":{
    "A":12,
    "B":34,
    "C":56
  }
}
```

Format 1 notes:

A,B,C denotes the factor name, 12,34,56 denotes the value to be modified for the corresponding factor

Format 2 :

```
{
  "method":"sendTelemeter",
  "params":[
    {
      "A":111,
      "tcp_num":1,
      "deviceID":1
    },{
      "B":222,
      "com_num":1,
      "deviceID":1
    }
  ]
}
```

Format 2 Notes:

“A”:111, A means the factor name, 111 means the value of the corresponding factor to be modified

“tcp\_num”:1, tcp\_num means the interface is a tcp server, 1 means the number of the interface ‘deviceID’:1 deviceID means the device ID, 1 means the device ID number

“com\_num”:1, com\_num means the interface is a com port, 1

means the number of the interface

## VI、 TEST 1 (ModbusRTU+TCP+JSON)

### 6.1、 List of equipment

NO.	Name	Remarks
1	Gateway	
2	USB to 485/232, network cable	Connect to computer
3	Network debugging assistant, MQTT platform and client tools	Network debugging assistant can simulate TCP server, MQTT platform used to receive data
4	Modbus Slave	Simulate the lower device

### 6.2、 Gateway Configuration (ModbusRTU+TCP+JSON)

- > View
- > Setup
- > Secure
- > VPN
- > Advanced
- > Data Collect
  - Basic Setting
  - Interface Setting
  - Modbus Rules Setting
  - Server Setting
  - Data query
- > Administrate
- Logout

#### Basic Setting

Data Collect  Enable  Disable

Collect Period  Seconds

Report Period  Seconds

Enable Cache   Cache History Data

> View  
 > Setup  
 > Secure  
 > VPN  
 > Advanced  
 > Data Collect  
   Basic Setting  
   **Interface Setting**  
   Modbus Rules Setting  
   Server Setting  
   Data query  
 > Administrate  
 Logout

## Interface Setting

COM1/RS485    COM2/RS232

Enabled     Enable     Disable

Baudrate    9600

Databit    8

Stopbit    1

Parity    None

Frame Interval    200 ms

COM Protocol    Modbus

Command Interval    1 ms

> View  
 > Setup  
 > Secure  
 > VPN  
 > Advanced  
 > Data Collect  
   Basic Setting  
   Interface Setting  
   Modbus Rules Setting  
   Server Setting  
   Data query  
 > Administrate  
 Logout

## Modbus Rules Setting

[Configure import and export](#)

Modbus Rules

Order	Device Name	Interface	Factor Name	Device ID	Function Code	Start Address	Count	Data Type	Reporting Center	Enable	
2	Soil moisture	COM1	SoilMoisture	1	3	1	1	signed 16 Bits	1	<input checked="" type="checkbox"/>	<a href="#">Edit</a> <a href="#">Delete</a>
3	Soil EC	COM1	ec	1	3	2	1	signed 16 Bits	1	<input checked="" type="checkbox"/>	<a href="#">Edit</a> <a href="#">Delete</a>
1	Soil temperature	COM1	SoilTemperature	1	3	0	1	signed 16 Bits	1	<input checked="" type="checkbox"/>	<a href="#">Edit</a> <a href="#">Delete</a>
	Wind Speed Sensor	COM1	Wind Speed	4	3	1	1	signed 16 Bits	1	<input checked="" type="checkbox"/>	<a href="#">Edit</a> <a href="#">Delete</a>
5	temp	COM1	temp	1	3	0	1	signed 16 Bits	1	<input checked="" type="checkbox"/>	<a href="#">Edit</a> <a href="#">Delete</a>

- > View
- > Setup
- > Secure
- > VPN
- > Advanced
- > Data Collect
  - Basic Setting
  - Interface Setting
  - Modbus Rules Setting
  - Server Setting
  - Data query
- > Administrate
- Logout

## Modbus Rules - temp - COM1

enabled  Disable

Order

Device Name

Belonged Interface

Factor Name  Multiple Factors Are Separated By Semicolon

Alias Name  Multiple Aliases Are Separated By Semicolon

Device ID  0~255

Function Code  0~255

Start Address  0~65535

Count  1~120

Data Type  A highest byte

Reporting Center  Multiple Servers Are Separated By Minus

Unit  Multiple Units Are Separated By Semicolon

Operator  0 + - \* /

Operand

Accuracy  0~6

Enable Webshow  After checking, you can query the collected data of the configuration item on the web page

Back to Overview
Save & Apply
Save
Reset

- > View
- > Setup
- > Secure
- > VPN
- > Advanced
- > Data Collect
  - Basic Setting
  - Interface Setting
  - Modbus Rules Setting
  - Server Setting
  - Data query
- > Administrate
- Logout

## Server Setting

Server1 Settings | **Server2 Settings** | Server3 Settings | Server4 Settings | Server5 Settings

Enabled  Enable  Disable

Protocol

Encapsulation Type

Server Address

Server Port

User Defined Register Packet  Max 128 Bytes

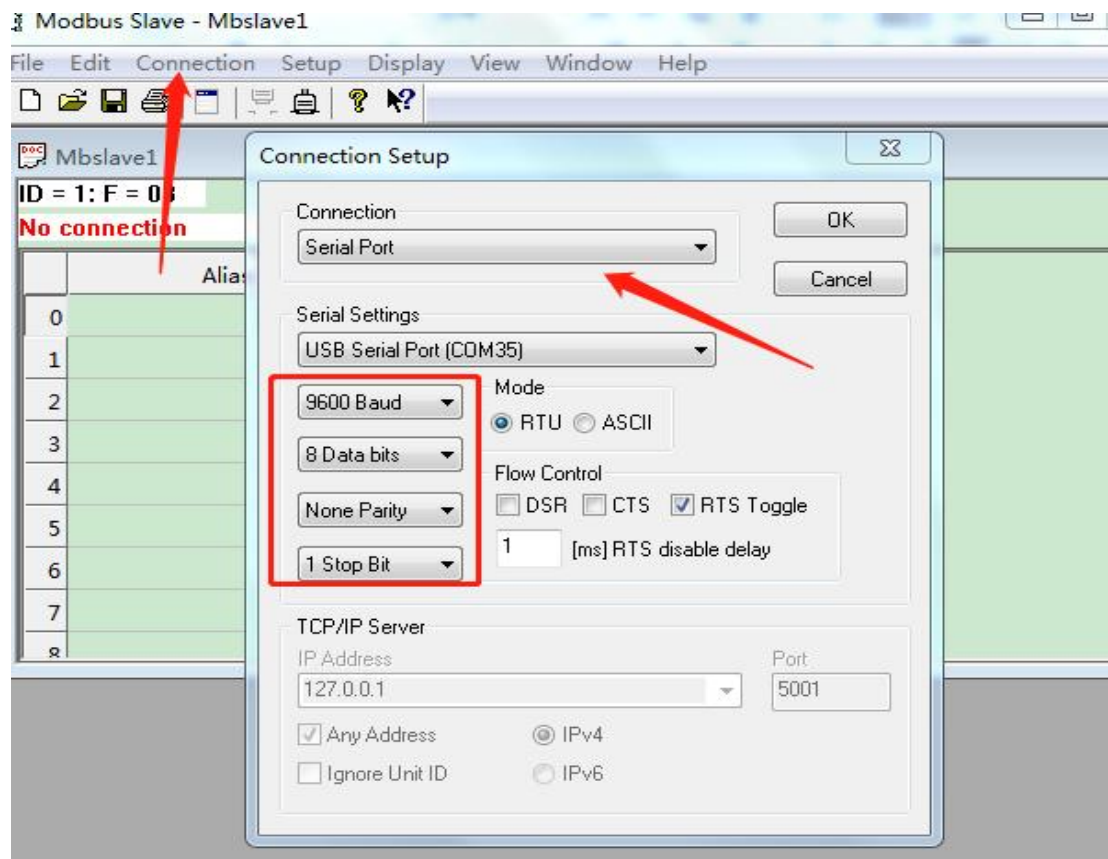
Use HEX Format  Default is ASCII

User Defined Heartbeat Packet  Max 128 Bytes

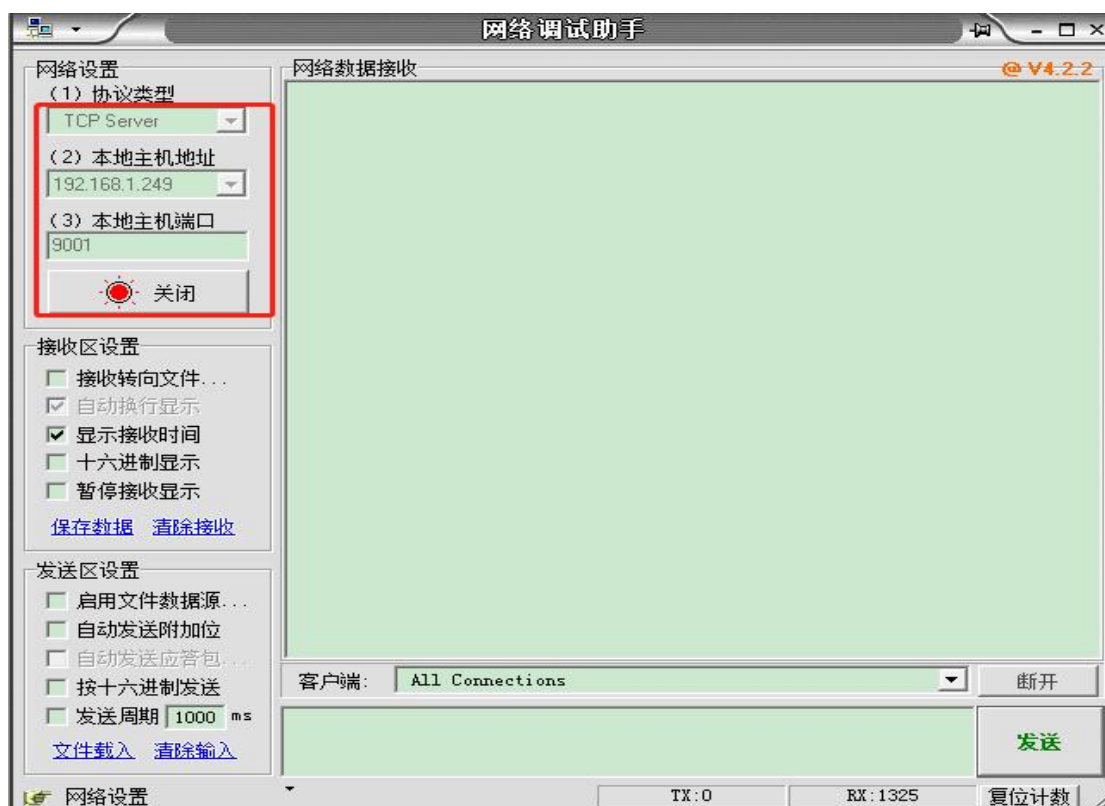
Use HEX Format  Default is ASCII

Heartbeat Interval  Seconds, 0 means No Heartbeat

### 6.3、modbus slave configuration



#### 6.4. Network Debugging Assistant Configuration



Note: Network debugging assistant to open the server function when the computer firewall function should be turned off !

## 6.5、Results

The image shows two software windows. The left window is 'Modbus Slave - Mbslave1'. It features a table with columns 'Alias' and '00000'. The table contains data for rows 0 through 8, with the value '111' highlighted in the '00000' column for row 0. The right window is '网络调试助手' (Network Debug Assistant). It displays network settings for a TCP Server, including IP address '192.168.1.249' and port '15001', both highlighted with red boxes. The '接收数据接收' (Receive Data) section shows a received message: '【Receive from 192.168.1.1 : 42247】: 【2020-04-21 14:56:49.760】 { "params": { "temp": 11.1 } }'. The '发送区设置' (Send Area Settings) section includes options for file-based transmission, automatic sending, and hexadecimal output. The status bar at the bottom shows '就绪!' (Ready!), 'TX:0', 'RX:390', and '复位计数' (Reset Counter).

	Alias	00000
0		111
1		0
2		0
3		0
4		0
5		0
6		0
7		0
8		0

网络设置

- (1) 协议类型: TCP Server
- (2) 本地主机地址: 192.168.1.249
- (3) 本地主机端口: 15001

接收区设置

- 接收转向文件...
- 自动接收显示
- 显示接收时间
- 十六进制显示
- 暂停接收显示

发送区设置

- 启用文件数据库...
- 自动发送附加位
- 自动发送应答包
- 按十六进制发送
- 发送周期: 1000 ms

接收数据接收

```
【Receive from 192.168.1.1 : 42247】:
【2020-04-21 14:56:49.760】 {
  "params": {
    "temp": 11.1
  }
}
```

客户端: All Connections 断开

发送

就绪! TX:0 RX:390 复位计数



## VII、 Test 2 (ModbusRTU+MQTT+JSON)

### 7.1、 List of equipment

NO.	Name	Remarks
1	Gateway	
2	USB to 485/232, network cable	Connect to computer
3	MQTT platform and client tools	MQTT platform to receive data
4	Modbus Slave	Simulate the lower device

### 7.2、 Gateway Configuration (Modbus+MQTT+JSON)

> View  
> Setup  
> Secure  
> VPN  
> Advanced  
▼ Data Collect  
    Basic Setting  
    Interface Setting  
    Modbus Rules Setting  
    Server Setting  
    Data query  
> Administrate  
Logout

#### Basic Setting

Data Collect  Enable  Disable

Collect Period  Seconds

Report Period  Seconds

Enable Cache   Cache History Data

[Save & Apply](#) [Save](#) [Reset](#)

> View  
> Setup  
> Secure  
> VPN  
> Advanced  
▼ Data Collect  
    Basic Setting  
    Interface Setting  
    Modbus Rules Setting  
    Server Setting  
    Data query  
> Administrate  
Logout

#### Interface Setting

COM1/RS485    COM2/RS232

Enabled  Enable  Disable

Baudrate

Databit

Stopbit

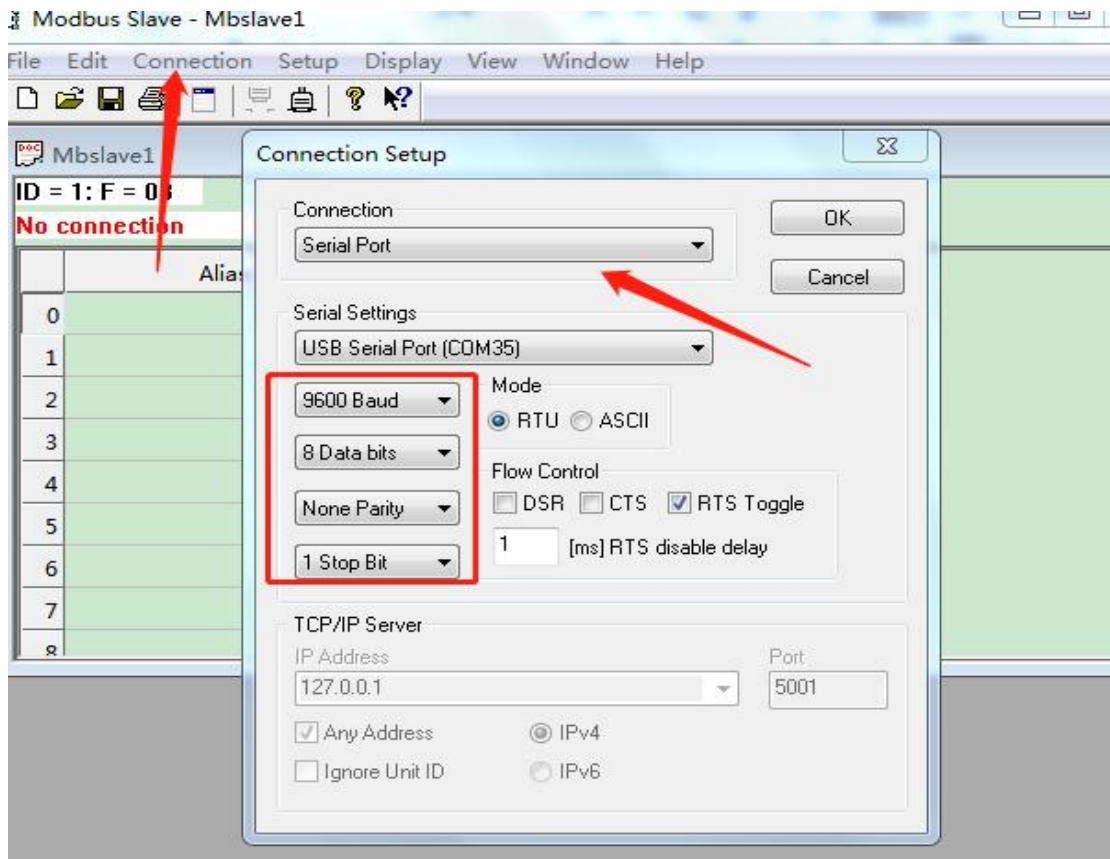
Parity

Frame Interval  ms

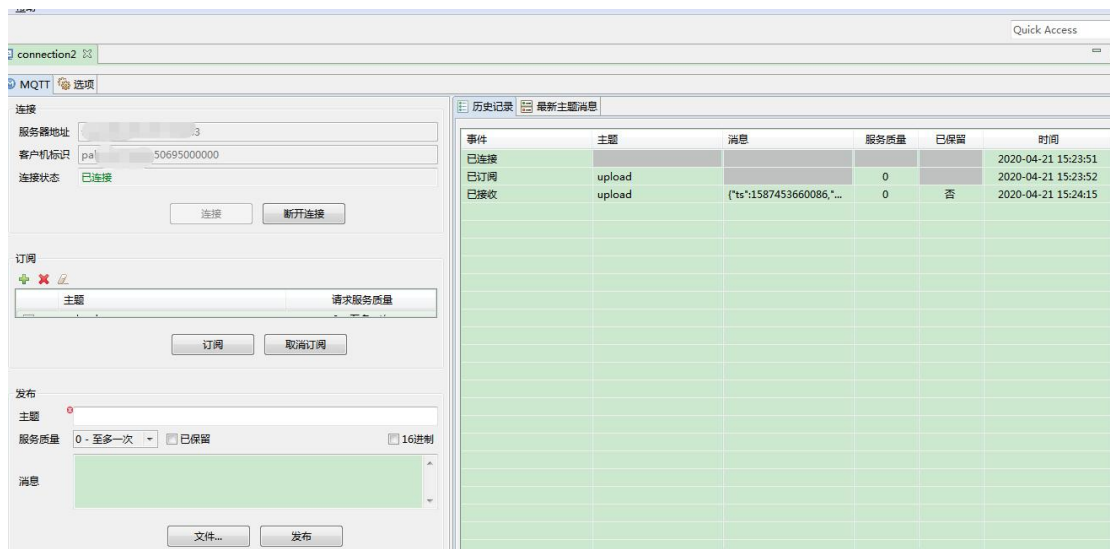
COM Protocol

Command Interval  ms





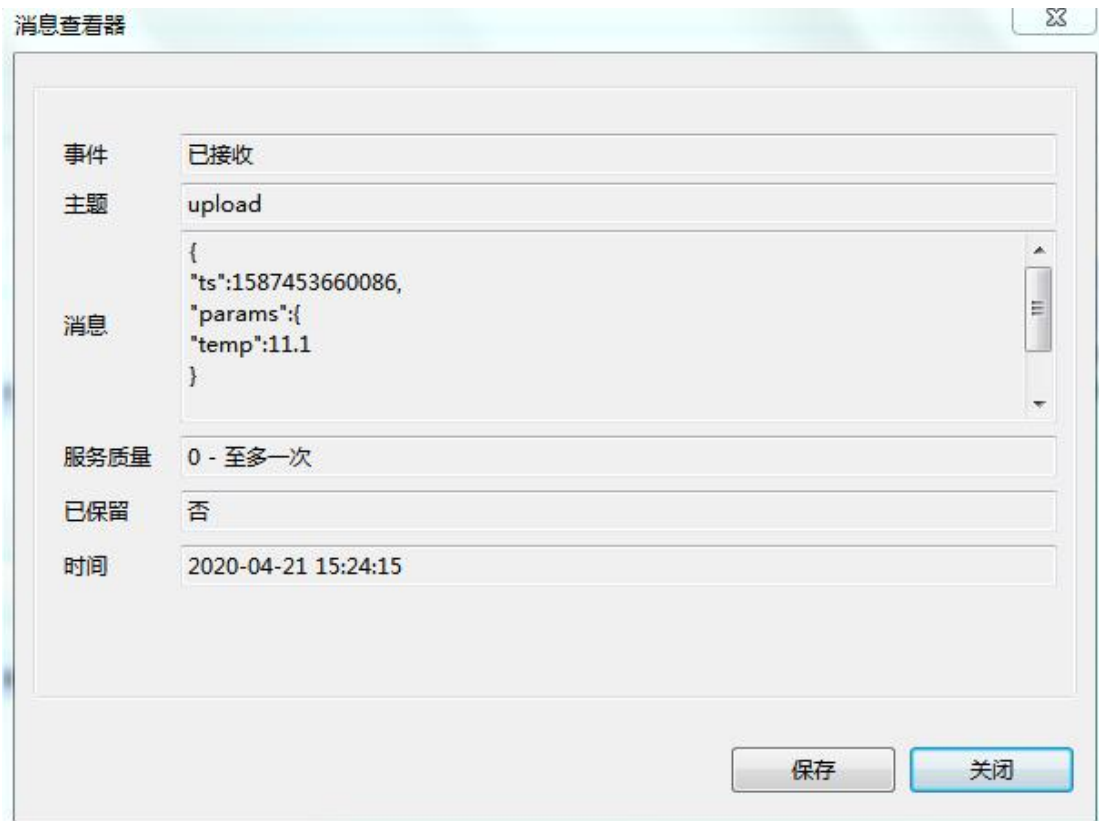
## 7.4、MQTT Client Tools Subscription Gateway Publishing Topics



## 7.5、Results

Receive data from the gateway :

```
{
  "ts":1587454290671,
  "params":{
    "temp":11.1
  }
}
```



If you want to add a deviceid parameter to the reported data, please set the custom parameter name and value in the Netnifty server settings.

启用自定义变量

自定义变量名1  最大128个ASCII字节

自定义变量值1  最大128个ASCII字节

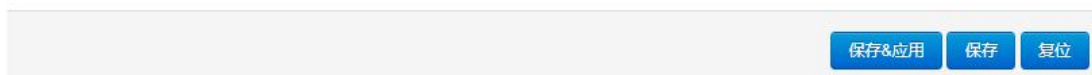
自定义变量名2  最大128个ASCII字节

自定义变量值2  最大128个ASCII字节

自定义变量名3  最大128个ASCII字节

自定义变量值3  最大128个ASCII字节

连接状态 已连接



Saved and applied, the reported data becomes:

```
{
  "ts":1587454170417,
  "deviceid":"12345678",
  "params":{
    "temp":11.1
  }
}
```

}

消息查看器

事件	已接收
主题	upload
消息	<pre>{   "ts":1587454170417,   "deviceid":"12345678",   "params":{     "temp":11.1</pre>
服务质量	0 - 至多一次
已保留	否
时间	2020-04-21 15:32:46

保存 关闭