





HUNAN MACSENSOR COMPANY LIMITED



# **MSR101 Series Product Manual**

Table of Contents

I . MSR101 Series Profile	1
II . Realize Macsensor Cloud Platform Monitoring through MQTT Protoco	2
1.Configure Macsensor platform	2
2.Configure MSR101 RTU	3
3.Macsensor Cloud Platform Display	8
III. Agreement Description	9
1.MQTT Protocol	9
2.MODBUS RTU protocol	9
2.1 Protocol content	9
2.2 Example of Connecting to Macsensor Platform via Modbus rtu Protocol	9
3.TCP Active Reporting Protocol	12
3.1 Protocol Content	12
3.2 Example of Connecting to Macsensor Platform through TCP Active Reporting Protoco	ol12
IV. Output Port Instructions	14
V. Common Failure Analysis	14
VI. Appendix	15

## I . MSR101 Series Profile

MSR101 series are a 3-channel analog acquisition wireless transmission terminal device, which can be used for remote monitoring of real-time data in industry, agriculture, environment, and civil use. The convenient way of accessing the network and accurate measurement promotes its wide applications. With the rise of the mobile Internet, measurement data can be viewed or analyzed remotely through mobile devices and computers.



MSR101 series adopt a brand-new modular design concept, which has better compatibility and scalability, and is convenient for the upgrade and use of subsequent products.





MSR101 series can collect analog of 4-20mA and 0-5000mV. The acquisition of current adopts a 24bit AD chip with a precision level of 0.1. The voltage and current acquisition circuits adopt independent processing circuits to ensure the independence and stability of the data.



Fig. 1-2

Three-channel analog input interface, 4-20ma, 0-5V supported;

One channel output: alarm output and feed output, both use the same port, choose either of them;

DC power supply interface: wide voltage power supply, power supply range +8V $\sim$ +28V DC;

<u>USB interface: used to connect to the upper computer configuration tool for configuration;</u> <u>SIM card holder: phone card installation location, MSR101V2 supports China Mobile & China</u>

Unicom 2G network; MSR101V4 supports China Mobile & China Unicom 2G, 3G, 4G network and Telecom 4G network;

SMA antenna interface: connect to GPRS/4G antenna;

Power button: Long press to restart the device;

<u>Status indicator: the green light is always on under normal conditions. 6 kinds of color display, the</u> <u>operating status of the equipment can be analyzed according to the color (for details, see Chapter 5</u> <u>Common Fault Analysis).</u>

## $\rm II$ .Realize Macsensor Cloud Platform Monitoring through MQTT Protocol

## 1. Configure Macsensor platform

Log in to the Internet of Things platform <u>www.mac-smart-iot.com</u>, users without a platform account can apply for registration. After logging in to the platform account, click the device option in the left toolbar to add a device. In the device creation interface, users can set device-related information. The specific operation interface is shown in the figure below:







Click MORE and then click Add Mapping to add the mapping of the corresponding sensor. The first half of the mapping is the voltage or current range (4-20ma or 0-5V) output by the sensor, and the second half is the range range. For example, sensor-1 is a temperature sensor with an output of 4-20ma, and the temperature measurement range is  $-30^{\circ}C - 110^{\circ}C$ . When adding a mapping, you can set it as shown in the figure below:



Fig.2-2

Click the confirm button to complete the mapping setting. After setting the mapping, select the approximate geographic location of the device on the map, and click Create Device to complete the creation of the device.

After creating the device, click the device option in the left menu bar to view the added device, namely GPRS RTU, click the setting connection option of the GPRS RTU, and then enter the device information to view its server IP, server port number and serial number. As shown in Figure 2-3:

_			_
● 监控中心	<b>连接方式</b> 显示连接方式可选择tcp或http任意方		
	TCP协议	GPRS RTU IP:1883.dtup.com MCI-9:1883	
● 设备地图	http协议	序列号:R9A6G7Q88R58W1DP	
	MB RTU	里斯技術 編 輯 就能死刑司	
1422 IB	M8 TCP	所有代码器	
-	mqtt协议。	传感語-1 传感語-2 传感語-3	
简易应用 《	所有设备	■ 出版社志:+連編第 他感謝[0:20012558	
■ 流量卡		16月2日かび	
の 定时任务		<pre>{  *sensorbata**[  *sensorbata**[  */物细型</pre>	联系现
REFER		"addTime":"2015-01-01_12:00:00", "value":"10.0"	11 <
用户中心		//定位型	Т
反体中心		<pre>"softime"":2015-01-01 12:00:00", "1at":30.5 , '/?FXEM (</pre>	
		3	



#### 2.Configure MSR101 RTU

After configuring the relevant parameters on the Macsensor IoT platform, configure the parameters of the MSR101 RTU. After completing the basic networking operations, you can connect to the Macsensor IoT platform to realize remote monitoring of the cloud platform.

2.1 Install the CHR340 driver in the product documentation, power on the device, connect the device to the computer with a USB cable, and you can find the com port corresponding to the



Fig.2-4

**2.2** Open the configuration tool, click the communication setting of the first item on the left side of the configuration tool, the serial port setting pop-up window will appear. For the serial port, select the com port corresponding to the CH340 driver, that is, the com8 port, and the communication baud rate of the USB port is 115200. As shown in Figure 2-5:

操作 语]	1 帮助							
通讯设置	<mark>오</mark> 刷新	<b>↓</b> 导入配置	₹	<mark>。</mark> 写入配置	⊛ 同步时间	◎ 历史数据	🙀 更新固件	■ 设备监听
	$\setminus$							
	Ĭ							
						x		
			串口:	COM8		-		
			波特率:	115200		•		
			确定		取消			

Fig.2-5

After setting the serial port, click the refresh button in the operation menu bar, and all the

configuration options of RTU will appear on the configuration tool interface, as shown in Figures 2-6 and 2-7.

◎ 「====」 == 2:2					
<ul> <li>●</li> <li>●</li></ul>	<mark>。</mark> 写入配置	● 同步时间	◎ 历史数据	🚱 更新固件	■ 设备监听
01.保存配置					
02. 重启设备					
03. 设备名称	: 2GRT	ſU			
04. 设备型号	:				
05. 登录包(序列号)	: R9A6	G7Q88R	58W1DP		
06. 服务器地址	:				
07.服务器端口号	: 1883				
08. 上报时间(秒)	: 30				
09. 通道1类型(电流/电压)	: 电流	4.00mA			
10. 通道2类型(电流/电压)	: 电流	4.00mA			
11. 通道3类型(电流/电压)	: 电流	4.00mA			
12. 通讯方式(MQTT/TCP/MBRTU)	: MQT	т			
13. MQTT username(默认为空)	: MQT	Т			
14. MQTT password(默认为空)	: MQT	TPW			
15. 设备地址(0-255)	: 0				
16. 继电器输出类型(供电/报警)	:供电				
17. 输出电压(0/5/24V)	: 0V				
18.报警对应通道(1-3)	: 0				
19.报警类型(高电平/低电平)	:低电	Ŧ			
20. 报警上限值	: 0				
21. 报警下限值	: 0				
22. 设备工作温度	: <mark>43℃</mark>				
23. 无线信号强度	: 28				
24. SIM卡检测	: <b>有</b> 卡				

Fig.2-6

25. APN(默认为空)		
26. 用户名(默认为空)	:	
27. 密码(默认为空)	:	
28. IMEI	: 8668540356795	
29. 软件版本号	: RTU(17.12.19)	
30. 运营商	: CHINA MOBILE	
31. 无线网络	: EDGE	

Fig.2-7

The options to be configured when using MQTT protocol to connect to the Macsensor platform are as follows:

05 Login package (serial number): Configured as the serial number of the device information bar in the Macsensor platform, required for connecting to the Macsensor platform;

06 Server address: The server address of the data server, a required configuration option (if connecting to other servers, configure it as the IP of other servers)

07 Server port number: a required configuration option(If you are connecting to other servers,

configure it to the corresponding port number of other servers)

**08 Reporting time:** time for data upload, 30 seconds recommended, and the maximum value does not exceed 1000 (using the MQTT protocol and the TCP active reporting protocol need to be configured as a custom value, and there is no need to configure this when using the modbus protocol).

09-11 Channel type: The value on the configuration tool is the measured value when the sensor is connected. Each channel can be selected individually. Select the current type (4-20ma) to connect to the current type sensor, and the voltage type (0-5V) to connect to the voltage type sensor.

**12 Communication method:** Here we choose the MQTT protocol, it supports three communication protocols: MQTT, MODBUS RTU, and TCP.

13-14 mqtt protocol user name and password: Macsensor IoT platform MQTT protocol user name 15 Device address (0-255): Required when using MODBUS RTU protocol, modbus address of RTU device.

**16-21 RTU relay**: These 6 items are the configuration items of RTU output port, which can be configured as power supply output or alarm output. Choose either of them. (For details, see the instructions for use of the output port)

25-27 APN: Configuration item for using APN private network card

28 IMEI: Network access license number (No need to configure under normal circumstances) (Note: other unexplained options are fixed items, no configuration required)

**2.3** After the configuration is complete, click to save the configuration, and restart the device, select the device monitoring button in the menu bar, the device print message information box will pop up, and the current working status of the device can be viewed in the information box. As shown in Figure 2-8:

2 设备监听	X
GPRS网络初始化完成AT+CSQ	🔄 十六进制显示
+CSQ: 22,5	开始监听
OK	
连接服务器成功 MQTT连接OK	
AT+CSQ	清除
+CSQ: 27,0	
OK ■MQTT发布消息OK	

Fig.2-8

#### 3. Macsensor Cloud Platform Display

After configuring the Macsensor platform and MSR101 RTU device, you can monitor the relevant information of the equipment transmission data on the Macsensor cloud platform. The Macsensor console interface is shown in Figure 2-9. (In addition to displaying data on the Macsensor platform in the form of tables, there are other display methods such as historical curves and configurations. For details, please refer to the application display and help center of the Macsensor platform)

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#### Fig.2-9

#### **III.** Agreement Description

MSR101 RTU integrates MQTT, MODBUS RTU, and TCP actively report. The specific descriptions of the three agreements are as follows;

#### 1. MQTT protocol

The MQTT protocol is a message transmission protocol in the publish/subscribe mode of the client-server architecture. The client connects to the server through the network and publishes the message to the server. After receiving the message, the server forwards the application message to eligible client subscriptions.

The server address and port number configured by MSR101 RTU when connecting with Macsensor is the server address and port number of the server, and the serial number assigned by the Macsensor platform is the client ID and subject. MSR101 RTU will publish the message, and the Macsensor server can display the transmitted data content on the corresponding device after receiving the message.

#### 2. MODBUS RTU protocol

#### 2.1 Protocol Content

MSR101 RTU contains the 03 function code of the standard MODBUS RTU protocol, whose function is to read the data of one or more holding registers. The detailed communication format is as follows:

Command format: [device address] [command number 03] [start register address high 8 bits] [low 8 bits] [read register number high 8 bits] [low 8 bits] [CRC check low 8 bits][ CRC check high 8 bits]

Device response: [device address][command number 03][number of returned bytes][data1][data2]...[datan][CRC check low 8 bits][CRC check high 8 bits]

MSR101 RTU contains a total of 10 registers, the register addresses are from 0 to 9, so the maximum register address that can be read is 9, and the data of up to 10 registers can be read.

The device address can be customized, the data type is 32-bit floating point data, and the byte order is high bits first and low bits last. The corresponding relationship between data and register is:

Channel 1 data	Register 0 and 1
Channel 2 data	Register 2 and 3
Channel 3 data	Register 4 and 5
Signal value data	Register 6 and 7
Spare register	Register 8 and 9

### 2.2 Example of Connecting to Macsensor Platform via Modbus rtu Protocol

2.2.1 Configure Macsensor platform

When creating a device, select MB RTU as the connection protocol of the device, which is the modbus RTU protocol. Other settings are the same as when connecting with the MQTT protocol, as shown in Figure 3-1:



Fig. 3-1

After creating the device, click the device option in the left menu bar, and then enter the setting connection interface. The device information and all sensors can be displayed on the page. There is a read and write command input box beside each sensor icon, and you can click to set the read and write command.



Fig.3-2

The read and write commands of MSR101 RTU are set as follows:

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、站地址:	1		从站地址:	1	
功能码:	03 读写	*	功能码:	03 读写	
偏置:	1		偏置:	3	
据格式:	32位 浮点型数	¥	数据格式:	32位 浮点型数	
节顺序:	AB CD		字节顺序:	AB CD	
集周期:	30		采集周期:	30	
	数字	写入		数字	写入
	确定	取消		确定	取消
1-2740-44	1	×	Li öztürtek -	1	
从站地址: 功能码:	1 03 读写	×	从站地址: 功能码:	1 03 读写	
人站地址: 功能码: 偏置:	1 03读写 5	×	从站地址: 功能码: 偏置:	1 03读写 7	
A站地址: 功能码: 偏置: 效据格式:	1 03读写 5 32位浮点型数	× •	从站地址: 功能码: 偏置: 数据稽式:	1 03读写 7 32位浮点型数	
从站地址: 功能码: 偏置: 效据格式: 字节顺序:	1 03读写 5 32位浮点型数 AB CD	× • •	从站地址: 功能码: 偏置: 数据稽式: 字节顾序:	1 03 读写 7 32位 浮点型数 AB CD	
A站地址: 功能码: 偏置: 女据格式: 字节顺序: 采集周期:	1 03读写 5 32位浮点型数 AB CD 30	× • •	从站地址: 功能码: 偏置: 数据格式: 字节顺序: 采集周期:	1 03读写 7 32位浮点型数 AB CD 30	
A.站地址: 功能码: 偏置: ☆据格式: ≥节顺序: 采集周期:	1 03读写 5 32位浮点型数 ABCD 30	× 、 、 、 、	从站地址: 功能码: 偏置: 数据格式: 字节顺序: 采集周期:	1 03读写 7 32位浮点型数 AB CD 30	写入

As shown in the figure, the slave address is the device address of MSR101 RTU (this item can be set in the configuration tool), the function code is 03 function code; the offset of the Macsensor platform cannot be set to 0, so the offset is the register address plus 1, since the MSR101 RTU data type is 32-bit floating point data, and two registers store one data, the offset corresponding to each sensor is 1, 3, 5, and 7 respectively (where 1, 3, and 5 are the analog value of 1, 2,3 channels, 7 is the signal value) byte order select ABCD, that is, the high bits first, the low bits behind; the collection period is the time period for collecting sensor data, this period must be less than the report set in the editing device cycle.

When there are many read and write commands, you can click the batch setting at the bottom left. The result of MSR101 RTU batch setting is as follows:

			读写指令批题	量设置			取	消 保存
序号	传感器	从站地址	功能码	偏置	数据格式	数据位	字节顺序	采集周期
1	传感器-1	1	03 读写 🔻 🔤	1	32位 浮点型数 🔹		AB CD *	30
2	传感器-2	1	03 读写 🔻	3	32位浮点型数 •		AB CD 🔹	30
3	传感器-3	1	03 读写 🔹	5	32位 浮点型数 🔻		AB CD *	30
4	传感器-4	1	03 读写 🔹	7	32位浮点型数 🔹		AB CD •	30



#### 2.2.2 Configure MSR101 RTU

Open the MSR101 RTU configuration tool (the model used in this example is TP302V2.1), enter the configuration interface, set the login package to the serial number corresponding to the RTU modbus device, and set the server address to the IP in the device information, set the port

number as that in the device information of this device. The reporting time is set to 0, the communication mode is MBRTU, and the device address is set to 1 (consistent with the slave address set on the Macsensor platform) as shown in Figure 3-4:

《 TP助手V2.2					
197 日本 1970 1983 日本 1970 1983 日本 1971 1983 日本 1971 1983 日本 1971 1983 日本 1971 1983 日本 1987 1983 日本 1987 1985 日本 1985 1985 日本 1985	🔽 😁 🥥 😋 🔛 写入截置 网络时间 历史数据 更新固件 设备监听				
01.保存配置			首页 应用展示 设备探	を 帮助中心 (	言思反馈 企业版
2. 重启设备					
)3. 设备名称	: 2GRTU	O Utobarbarba	连接方式	设备信息	
4. 设备型号	1	and a second	显示连接方式 可选择tcp或http任意方式		RTU modbus
5. 登录包(序列号)	: 7F397VQ4CHOB2096C <	10-10 10-10	TCP协议	- 17	IP :== 1 : : uis : 2com
6.服务器地址	:) /\ (), ()(mm) <	۰	nupunx		第四号: 151
7.服务器端口号	it 1 e	设备地图	MB RTU .		序列号:7F397VQ4HOB2096C
8. 上报时间(秒)	:0		MB TCP		重新建取 前 辐 加速制序列号
9. 通道1类型(电流/电压)	:电流 4.00mA	4	mattibilit	所有传感器	
0. 通道2类型(电流/电压)	: 电流 4.00mA X 通讯方式 X	電腦应用	所有设备		78:00.00.1
1. 通道3类型(电流/电压)	: 电流 4.00mA	*		n	(读写指令)
2. 通讯方式(MQTT/TCP/MBRTU)	MBRTU	组态应用		4	
3. MQTT username(默认为空)	: 提交 取消	設備来		•	传感器-4
4. MQTT password(默认为空)		0			读写指令
5. 设备地址(0-255)	:1	定时任务		۲	
6. 继电器输出类型(供电/报警)	:供电	+			
7. 输出电压(0/5/24V)	: 0V	数据 下载		IL DI LO D	
8. 报警对应通道(1-3)	:0	用户中心		1.1	
9. 报警类型(高电平/低电平)	:低电平				
0. 报警上限值	:0				
1. 报警下限值	:0				
2. 设备工作温度	: 45°C				
3. 无线信号强度	: 0				
4. SIM卡检测	:有卡				
「S_APN(野认为空)					

Fig.3-4

After the configuration is complete, click to save the configuration and restart the device, enter the device monitoring interface to view the operating status information of the device.

#### 2.2.3 Macsensor Platform Display

After configuring the platform information and MSR101 RTU, open the Macsensor platform console, and the interface shown in Figure 3-5 will appear.

● (約4000)	我的设备	GPRS RTU	<u> 退出全屏模式 (F11)</u>		序列号:R9A6G7Q88R58W1DP
■ 副 副 副 二 1-0 一 の 一 の 一 の 一 の 一 の の の の の の の の の の の の の	所有设备         添加設置器                GPRS RTU           ③ Q	JD:200132588	<b>传感器1</b> 当前状态: <del>非違源</del> 更新时间:2018-01-23 16:38:19	20.0 °C	∨ 实时曲线 > 历史查询
设备地图 ◆ 触发器	RTU modb 💿 Q	<b>U</b> :200132589	<b>传感器-2</b> 当時秋志: <del>末達鏡</del> 更新討同:2018-01-23 16:38:19	20.3 °c	∨ 实时曲线 > 历史查询
☆ 簡易应用 く 組态应用	,	J ID:200132590	<b>传感器-3</b> 当前状态: <b>未達接</b> 更新时间:2018-01-23 16:38:19	20.6 °c	∨ 实时曲线 > 历史查询
■ 流量卡	(	RTU modbus			序列号:7F397VQ4HOB209 联 系
© 定时任务 ↓ 数据下载		<b>I</b> D:200133749	<b>传感器-1</b> 当前均志: 已 <del>這該</del> 更新时间: 2018-01-23 20:29:17	4.0	我 们 ∨ 实时曲线 > 历史音 <
		JD:200133750	<b>传动器-2</b> 当時均応: 已 <del>國第</del> 更新时间:2018-01-23 20:29:17	4.0	∨ 实时曲线 > 历史查询
XIEHU		UD:200133751	<b>传感器 3</b> 当時均志: 已 <del>這意</del> 更新时间:2018-01-23 20:29:17	4.0	∨ 实时曲线 > 历史查询
		JD:200133752	<b>传感器 4</b> 当時均志: 已 <del>這線</del> 更新时间: 2018-01-23 20:29:17	27.0	∨ 实时曲线 > 历史查询



3. TCP Active Reporting Protocol

3.1 Agreement content

## The format of the MSR101 RTU active report protocol is as follows: <u>#RTU,X.XX, X.XX,X.XX(0D0A)</u>

The data header is #RTU

X.XX is the data, there are three groups of data, the separator is a comma, and the terminator is carriage return and line feed (*\** the separator comma is an English comma)

3.2 Example of Connecting to Macsensor Platform through TCP Active Reporting Protocol 3.2.1 Configure Macsensor platform

When the device is created, the connection protocol is set to TCP protocol. After the device is created, click the set connection option in the device bar to enter the interface to configure the protocol label. The protocol label of MSR101 RTU is shown in Figure 3-6.

<b>⊙</b> 监控中心		设备信息	
₩ 设备 设备地图 兼次器	TCPI6R2 • http://dx. MB RTU MB TCP	RTUTCP         P::::::::::::::::::::::::::::::::::::	
▲	mgttheiz	*分隔符为英文逗号	
く 地本应用		ingenitier/12	
■ 流量卡			联系
の 定时任务		6679e3	我们。
↓ 数据下载	依据协议内容选		-
1 用户中心	择相应的标签并 <	- REITSARA (1-ROTAL) (1-ROTAL) 分编符标签: [Satyan] [SEtatyan] [SN[长旗]] [S7]	
。 反領中心	进行编辑		
	点击可查看接	(小小市和語)     [Tabgag]     [Teabgag]     [Teabgag]	
	收到的数据		
	点击可编辑发 🗲 送数据	─────────────────────────────────────	

Fig.3-6

#### 3.2.2 Configure RTU

Open the MSR101 RTU configuration tool, enter the configuration interface, set the login package to the serial number of the RTU TCP device, change the server address to the IP corresponding to this device, set the port number to the corresponding one in the device information, and set the reporting time to a value other than 0, 30 seconds is recommended. The communication mode is set to TCP, as shown in Figure 3-7:

皇台 道言 释处		
	📴 😁 🥥 🌚 🖾 写入戲畫 同步时间 历史数据 更新固件 设备监听	
1.保存配置		首页 应用展示 设备探索 著助中心 信息反馈 企业版
2. 重启设备		
3. 设备名称	: 2GRTU	◎ 法独立式 迎知法由
4. 设备型号	1	となった。 となった。 目示は思たで可法語にの認知れら任意方
5. 登录包(序列号)	CIDCIDQ3P375H3	RTU TCP
5. 服务器地址	: co.com <	Protection
1.服务器端口号	: 67	第日号: -47
8. 上报时间(秒)	30	http协议 序列号:IYZ4IFJDQ3P37SH3
9. 通道1类型(电流/电压)	:电压0.01V	MB RTU 重新获取 编辑 复制序列号
0. 通道2类型(电流/电压)	:电压0.00V	MR TCP 自定义协议标签 所有传感器
1. 通道3类型(电流/电压)	:电压0.00V TCP	
2. 通讯方式(MQTT/TCP/MBRTU)	TCP主动上报 MQTT	mqttibQ
3. MQTT username(默认为空)	MBRTU	简易应用 所有设备 协议标签 [H:#RTU] [S:,] [D?] [S:,] [D?] [S:,] [D?] [TE:0D0A]
4. MQTT password(默认为空)		「「「「」」「「」」「「」」」「「」」」「「」」」「「」」」」「「」」」」「」」」」
5. 设备地址(0-255)	:1	組态应用
5. 继电器输出类型(供电/报警)	:供电	<b>a</b>
7. 输出电压(0/5/24V)	: 0V	流量卡
8. 报警对应通道(1-3)	:0	
). 报警类型(高电平/低电平)	: 低电平	
). 报警上限值	:0	
L. 报警下限值	:0	
2. 设备工作温度	: 41°C	
3. 无线信号强度	: 27	
1. SIM卡检测	:有卡	
5 APN(附认为空)		

Fig.3-7

After the configuration is complete, click to save the configuration and restart the device, enter

the device monitoring interface to view the operating status information of the device.

## 3.2.3 Macsensor Cloud Platform Monitoring

After configuring the platform information and MSR101 RTU, open the Macsensor platform console, and the monitoring display interface shown in Figure 3-8 will appear:

©	我的设备	<b>D</b> :200132589	更新时间: 2018-01-23 16:38:19	20.J T	
展 设备 ◆	新有设备 添加設备 添加融发器	JD:200132590	<b>传感器-3</b> 当前状态:素 <u>量要</u> 更新时间:2018-01-23 16-38-19	20.6 ·c	∨ 实时曲线 > 历史查询
设备地图	RTU modb	RTU modbus			序列号:7F397VQ4HOB2096C
酸发露 ▲ 简易应用	🖉 RTU TCP 💿 Q	<b>D</b> :200133749	<b>传感器-1</b> 当线攻态: <del>東進度</del> 更新时间 : 2018-01-24 11:25:19	4.0	∨ 实时曲线 > 历史暨询
◆ 组态应用 言 流量卡	(*	D:200133750	<b>传感器-2</b> 当然均态: <del>東連度</del> 更新时间: 2018-01-24 11:25:19	4.0	∨ 实时曲线 > 历史查询
0 定时任务 ↓ 数据下载		J ID:200133751	<b>传感器-3</b> 当時状态: <del>兼進度</del> 更新时间:2018-01-24 11:25:19	4.0	✓ 实时曲线 > 历史查》
』 用户中心		J ID:200133752	<b>传感器-4</b> 当教状态: <b>秉连接</b> 更新时间:2018-01-24 11:25:19	28.0	< >
反馈中心		RTU TCP			序列号:IY24IFJDQ3P37SH3
		J ID:200133811	<b>传感器-1</b> 当該球态: <b>已這接</b> 更新时间: 2018-01-24 11:52:49	0.0 v	∨ 实时曲线 > 历史查询
		J ID:200133812	<b>传感器-2</b> 当時状态: 已速度 更新时间: 2018-01-24 11:52:49	0.0 v	∨ 实时曲线 > 历史登询
		<b>J</b> ID:200133813	<b>传感器-3</b> 当前攻态: 巴 <mark>速接</mark> 更新时间:2018-01-24 11.52-49	0.0 v	∨ 实时曲线 > 历史查询

Fig.3-8

## **IV.Output Port Instructions**

The output port of MSR101 RTU has two output functions: power supply output and alarm output. Only one can be used when using it. As shown in Figure 4-1:

★ TP助手V2.2		
操作 语言 帮助		
3 2 4 7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	🛃 😁 🥥 🎯 📓 写入配置 同步时间 历史数据 更新困伴 设备监听	
01.保存配置		
02. 重启设备		
03. 设备名称	: 2GRTU	
04. 设备型号	:	
05. 登录包(序列号)	: IY24IFJDQ3P37SH3	
06. 服务器地址	: 113.90.237.187	
07. 服务器端口号	: 9002	
08. 上报时间(秒)	: 0	
09. 通道1类型(电流/电压)	: 电流 4.00mA	
10. 通道2类型(电流/电压)	: 电流 4.00mA	
11. 通道3类型(电流/电压)	: 电流 4.00mA	报警
12. 通讯方式(MQTT/TCP/MBRT	J) : MBRTU	供电
13. MQTT username(默认为空)	1	
14. MQTT password(默认为空)	:	
15. 设备地址(0-255)	:1	
16. 继电器输出类型(供电/报警)	:报警	
17. 输出电压(V)	:供电电压	
18. 报警对应通道(1-3)	:1	
19. 报警类型(高电平/低电平)	: 低电平	
20. 报警上限值	: 5	
21. 报警下限值	: 0	
22. 设备工作温度	: 43°C	
23. 无线信号强度	: 27	
24. SIM卡检测	: 有卡	
25 APN( ( 執认 为 空 )		

Fig.4-1

The output port relay output type is divided into power supply type and alarm output type. Power supply output type: the output voltage can be selected from 5V and 24V (when 24V is selected, the power supply voltage of the output port is consistent with that supplied to the device)

Alarm output type: the output voltage can be selected from 5V and 24V (when 24V is selected, the power supply voltage of the output port is consistent with that supplied to the device)

The alarm channel can choose any one of the three channels.

Alarm types are divided into normally open alarms and normally closed alarms. When set as normally open alarms, and the channel value exceeds the upper and lower alarm limits, the output port output is voltage; when set as normally closed alarms and the channel value exceeds the upper and lower alarm limits, the output port outputs 0V.

The value of the upper and lower alarm limits are the upper and lower limits of the current value or voltage value corresponding to each channel.

After setting, click to save the configuration and restart the device.

#### V.Common Failure Analysis

#### 1. GPRS module failed to start

The device monitor interface prints a message that the GPRS module has failed to start up, and the signal light is steady red. The module may be damaged, please contact after-sales personnel.

#### 2. Network startup failed

The device monitor interface prints a network startup failure message, and the signal light flashes purple. It may be due to SIM card running out of credit or there is no signal in the place of use

#### 3. Failed to Access SIM card

The device monitor interface prints a SIM card acquisition failure message, and the signal light flashes in light green. Check whether the card is inserted.

#### 4. Weak signal

The device monitor interface prints a weak signal message, and the signal light flashes in sky blue. Check whether the antenna is used or moved to an open area.

#### 5. Failed to connect to the server

The device monitor interface prints a failure message to connect to the server, and the signal light flashes red. Check whether the server configuration options and port number configuration options are configured correctly, and whether the server is turned on.

#### **VI.** Appendix

Appendix 1: Sensor Wiring Diagram



#### Appendix 2: Protocol Label Table

Data header:		
[H:Data]	String data header	
[HE:Data]	16 hexadecimal data header	
Separator:		
[S:Data]	String separator	
[SE:Data]	hexadecimal separator	
[SN[length]]	known length separator	
Value:		
[D?]	String value of unknown length	
[D[length]]	String value of known length	
[DE[length] ABCD]	Hexadecimal value of known length	
[DEC[length] ABCD]	Hexadecimal string value of known length	
[DF[length] data]	Hexadecimal value of known length, return floating point	
Terminator:		
[T:Data]	string terminator	
[TE:Data]	16 hexadecimal terminator	
[CRC16]	CRC16 check code terminator	
[CRC8]	CRC8 check code terminator	
Note: For the end type that does not appear in the end character (such as sum check), you		
can use [SN[ ]length] as the end character, and users can define the length according to their		
own needs.		

% For more protocol label descriptions, please refer to the platform <u>www.mac-smart-iot.com</u> Developer Center— $\rightarrow$ TCP Development Documents

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