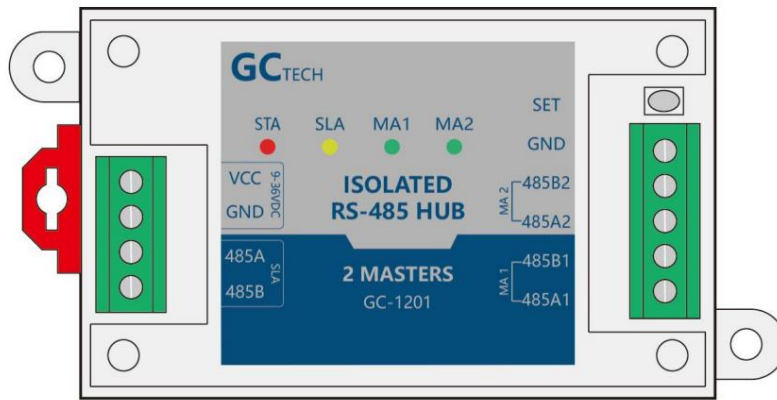


GC-1201 Two-way Buffer Isolated RS-485 Hub (HUB)

Product Manual

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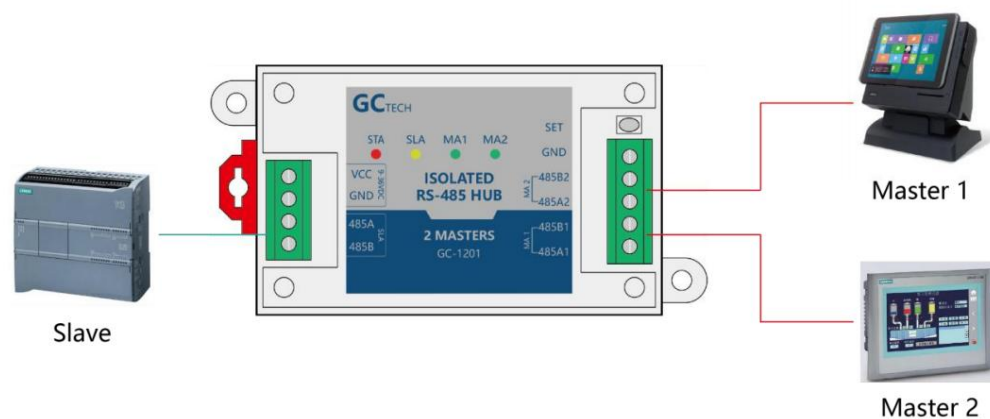
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1. Product overview

GC-1201 two-way buffer isolation RS485 hub is a communication device that supports two-way RS485 master devices and one or more RS485 slave devices, and is used to solve communication conflicts caused by two master stations communicating with slave stations at the same time. The problem is that master station 1 will only return master station 1 but not master station 2 when master station 1 queries slave station data, and master station 2 will only return master station 2 instead of master station 1 when querying slave station data. The interface between the master station and the slave station uses photoelectric isolation technology to protect the master station equipment from interference. The circuit design has 15KV ESD protection and 5KA lightning surge protection devices, which can effectively isolate the damage caused by lightning strikes and static electricity to the equipment. Each of the three communication interfaces has a communication indicator light, and the status of each communication interface can be seen intuitively. Transparent data transmission between master station and slave station interface, communication format and baud rate can be set by software.

This product is suitable for automatic control system, monitoring system, alarm, access control system, IC card charging, Integrated RS485 communication system for meter reading, one-card, parking lot charges, etc.



2. Features

Power input DC9-36V with over-current and reverse connection protection.

Support communication between two RS485 master devices and one or more RS485 slave devices. Support module ID setting (only limited to Modbus-RTU protocol). The baud rate and communication format can be set independently. The signal interface has static electricity, lightning strike and surge protection. The communication and power supply between the master station and the slave station interface are completely isolated. The 32-bit MCU and high-speed optocoupler are used, and the baud rate can reach up to 115200. The communication port of the slave station supports a maximum of 250 nodes.

3. Specifications

Module Parameters

| Item | parameter |
|------------------------------------|--|
| Model | GC-1201 |
| Working Voltage | DC9-36V (more than 36V may be damaged) 100mA |
| Working Current | |
| Product | 100x54x32mm |
| Dimensions | 75g(N.W.) 100g(G.W.) -40 °C to 85 °C, |
| Product Weight Working Environment | Relative humidity: 5% to 95% |

Communication

| Parameter | |
|-----------------------------------|--|
| Item Communication | Parameters Isolated RS-485 (isolation voltage 2500V) |
| Type Communication | Modbus RTU/Modbus ASCII and other one-response-one-response protocols |
| Protocol Data | transparent |
| Transmission | transmission |
| Communication | 1000 meters 1200-115200bps, default 9600 (8, n, 1) stop bit |
| Distance | can be set, check bit can be set |
| Baud Rate Other Protection Levels | RS-485 interface each line 600W lightning surge protection, ±15KV ESD protection |

4. Interface and function description

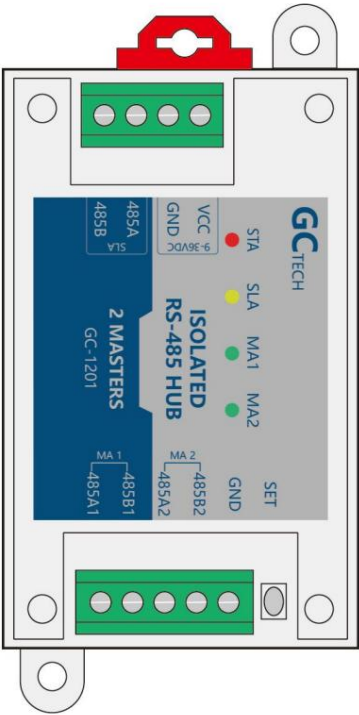
Interface

Definition

| Input Terminal Identification | | Define |
|-------------------------------|------|----------------------------|
| 1 | VCC | power supply 9-36V |
| 2 | GND | power supply negative pole |
| 3 | 485A | RS-485 slave |
| 4 | 485B | |

Output

| terminal identification | | definition |
|-------------------------|-------|----------------------|
| 1 | 485A1 | RS-48 Master 1 |
| 2 | 485B1 | |
| 3 | 485A2 | RS-485 Master 2 |
| 4 | 485B2 | |
| 5 | GND | GND (RS-485) Setting |
| 6 | SET | button |



4.1. The power supply interface

is DC9-36V power supply input, and the power supply current is greater than or equal to 100mA. The voltage should not exceed 36V or the circuit will be damaged. The interface marked "VCC" is connected to the positive pole of the power supply, and the mark "GND" is connected to the negative pole of the power supply. The power interface has reverse connection protection, and it will not be damaged if it is reversed.

4.2. The communication

interface equipment has 3 groups of communication interfaces, MA1 and MA2 are connected to RS485 master station equipment, and SLA is connected to RS485 slave station equipment. There can be one or more slave stations, and up to 250 slave stations can be connected. "A" is connected to "A" of the 485 port of the device, "B" is connected to "B" of the 485 port of the device, and "GND" is the grounding port.

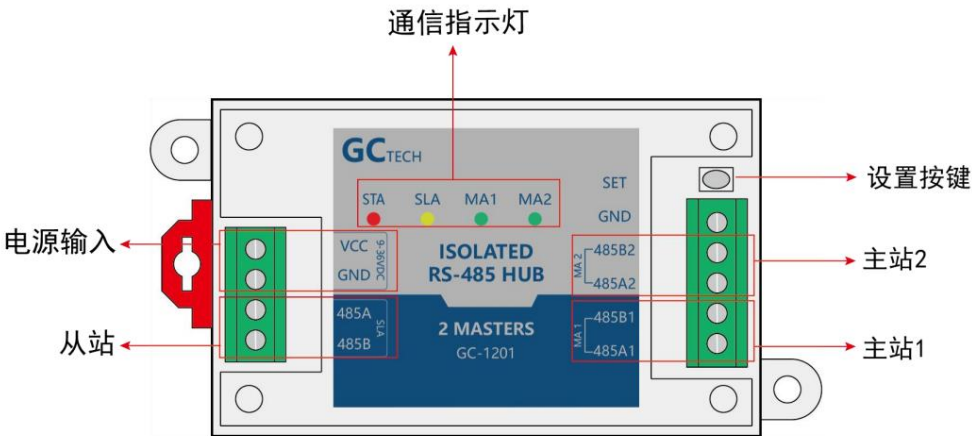
4.3. Setting button This button has two functions:

1. Press and hold for 3 seconds, the indicator light of MA1 communication port will flash, release it to enter the parameter configuration mode, MA1 communication Its parameters can be set through the software by connecting the computer with the port, and it can be exited by power off and restarting in this mode.
2. Press and hold for 7 seconds (the indicator light of MA1 communication port will flash after 3 seconds, continue to press and hold at this time), the indicator light of STA will flash quickly, and the default parameters will be restored. The default parameters are 9600 baud rate, 8 data bits, 1 stop bit, no parity, and the communication timeout is 1000MS.

4.4. Indicator light

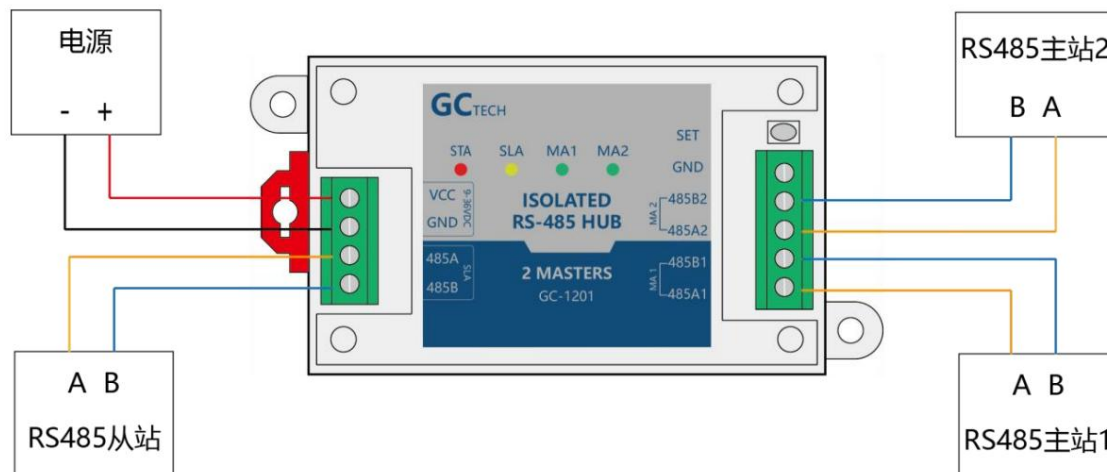
- 1.Power indicator light: The red STA indicator light is always on after power on.
2. Communication indicator light: each of the three communication ports (SLA, MA1, MA2) has a communication indicator light. The indicator light flashes when data is received, and the MA1 indicator light flashes when entering parameter setting mode.

| indicator light | Function | color | Status and meaning |
|--------------------|---|------------------------|---|
| STA | status indicator | red | 1. Steady on: The module is working normally |
| | | | 2. Blinking in normal mode: There is an error in data communication 3. |
| | | | Long press the SET button and then flashing quickly: The module is initialized successfully |
| SLA slave station | communication indicator flashes yellow | low: the slave station | has data communication |
| MA1 Master station | station 1 communication indicator green | | 1. Blinking in normal mode: master station 1 has data communication 2. |
| | | | Blinking evenly at intervals of 1 second in setting mode: means entering parameter setting mode |
| MA2 master station | station 2 communication indicator flashes green | master station 2 | has data communication |

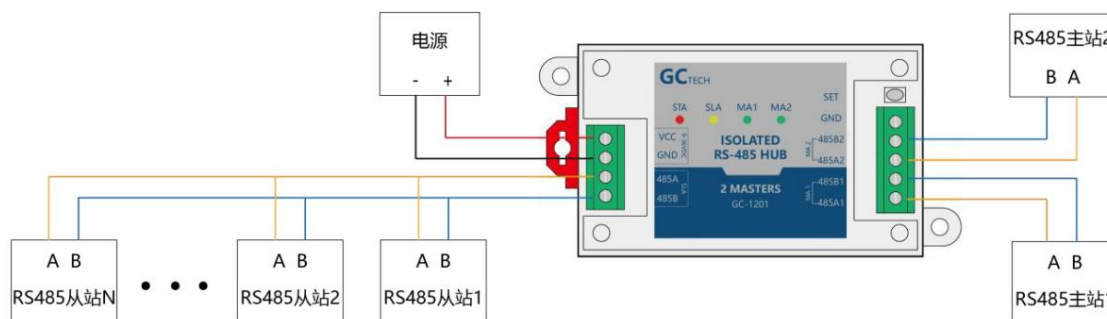


4.5. Typical application wiring method 1.

The connection method between two RS485 master stations and one RS485 slave station

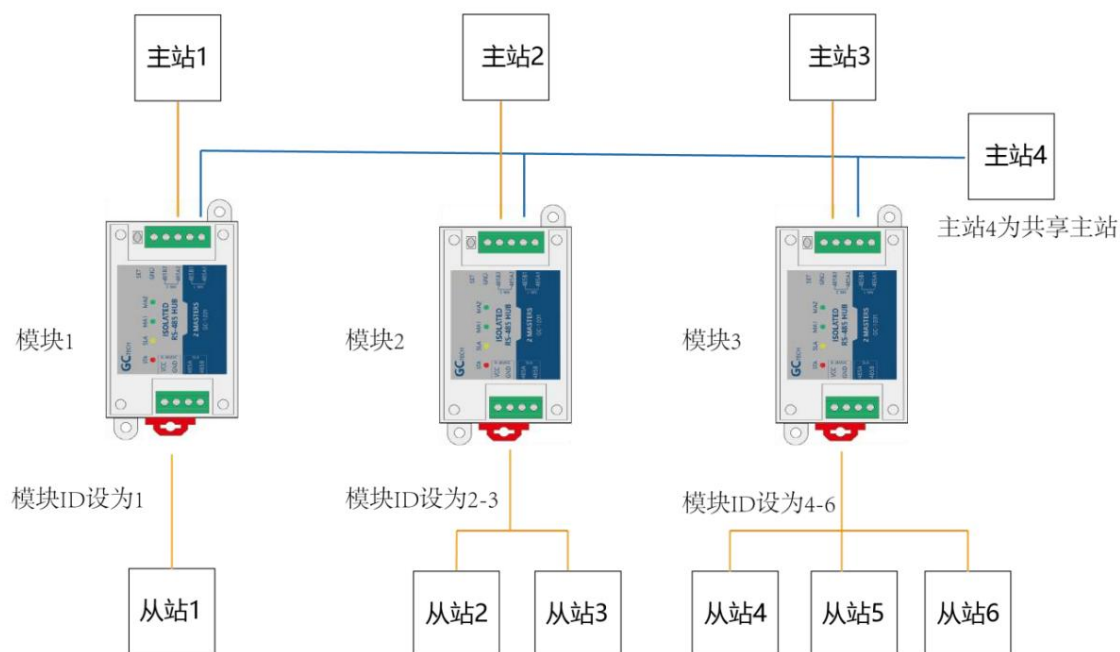


2. The connection method of communication between two RS485 master stations and multiple RS485 slave stations

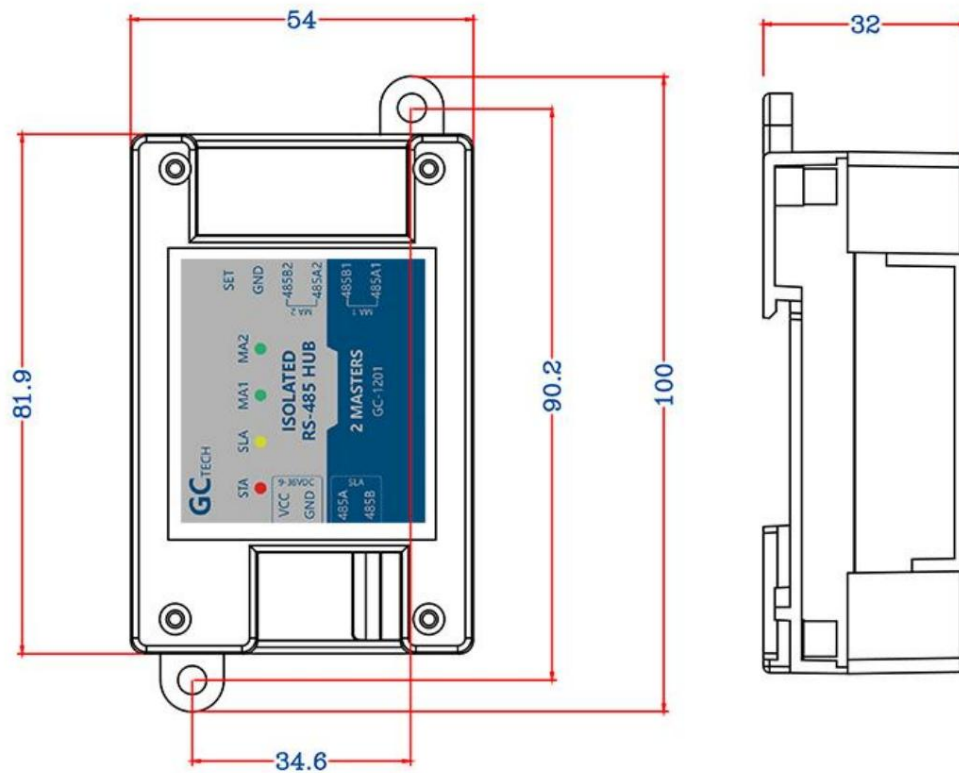


3. Multiple modules share the master station connection method

as shown in the figure. The wiring method needs to enable the "module ID binding" function



4.6 Dimensions



如图 长宽高尺寸: 100*54*32mm

5. Parameter Configuration Description

Connect according to the wiring method in the figure below, open the setting software on the computer, find the corresponding serial port number and select it, the baud rate, data bit, stop bit, check bit should be selected to be consistent with the MA1 port of the hub. The factory default baud rate of the hub is 9600, 8 data bits, 1 stop bit, and no parity.



GC1201配置工具V2

连接设备

串口号: COM5 校验位: 无校验

波特率: 9600 停止位: 1

数据位: 8

打开串口

参数设置步骤

1. 电脑通过usb转485线连接模块MA1接口
2. 长按SET键直到MA1绿灯闪烁, 进入设置
3. 设置好通讯参数跟MA1保持一致
4. 点击“打开串口”

MA1通讯设置

波特率: 数据位: 停止位: 校验位:

MA2通讯设置

波特率: 数据位: 停止位: 校验位:

SLA通讯设置

波特率: 数据位: 停止位: 校验位:

模块ID绑定

☐ 启用 起始地址: 结束地址: (0-255)

☐ 禁用

说明: 1. 参数可设置0-255
2. 起始地址到结束地址范围内, 通讯有效
3. 该功能目前只适用Modbus-RTU协议

主站超时设置

主站1超时: MS (0-65535)

主站2超时: MS (0-65535)

读取配置 应用配置

注: 参数设置完成模块断电重启生效

STEP1 After the serial port parameters are selected, click the "Open Serial Port" button

STEP2 Press and hold the setting button of the hub for 3 seconds until the MA1 communication indicator flashes, then release the button.

STEP3 Click the "Read Configuration" button on the software. After the communication is successful, the parameter information of the hub will be read and displayed on the software.

STEP4 Set the parameters in the software option according to the needs, then click the "Apply Configuration" button, and the "Save Saved successfully", click the "OK" button

STEP5 Restart the module, and the parameters will take effect.

Reminder: If you forget the parameters, you can press and hold the **SET** button for **10 seconds** until the red light flashes. After power off and restarting, the module will Parameter initialization.

5.1. Software description 1.

The communication parameters of the three channels can be set independently through the configuration

software. 2. The data frame can be filtered through the "module ID binding" function. 3. Timeout function of the master

station: the master station of the hub does not receive the reply data from the slave station in time, and will switch to the next channel forcibly.

5.2. "Module ID Binding" function 1. "Enable" This function

can filter the data frames passing through the module. 2. You can set a continuous address from "Start Address" to "End

Address", and the data frames within this address range can be communicated through the module. Note that "End Address" is greater than or equal to "Start Address." 3. If

you only need to set one address, the "Start Address" and "End Address" should be the same. 4. "Start address" and "end address" can be set to be the same as the

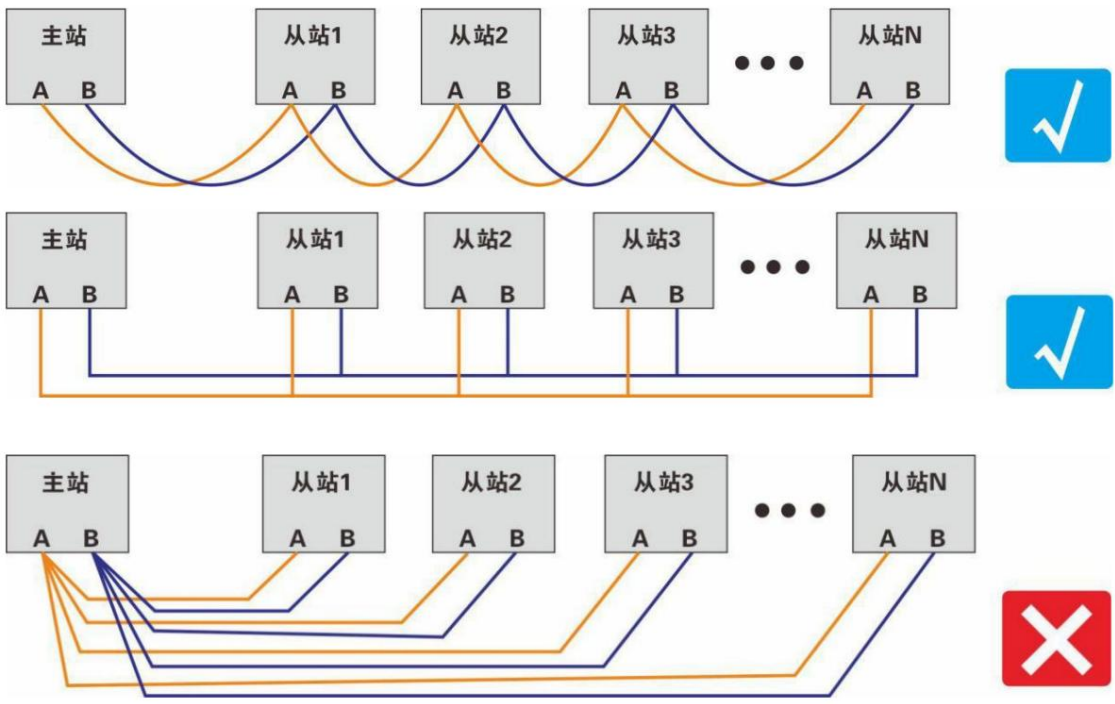
address of the slave station module connected to the SLA port.

5. This function is currently only applicable to the Modbus-RTU protocol.

Six, RS485 communication wiring specifications and precautions

6.1. RS485 bus wiring specification 1. Adopt the standard

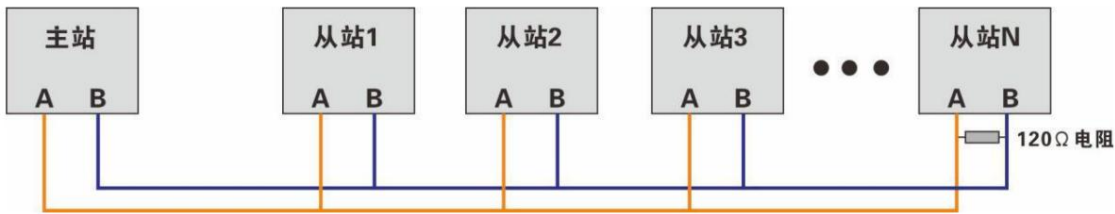
RS485 bus wiring method, commonly known as the hand-in-hand connection method, and avoid the star connection method as much as possible.



2. Use 2-core shielded twisted-pair wires. Refer to the "Wire Type Selection Recommendation Table" for wire diameter and thickness. The length of the bus is no more than 1200 meters, the number of devices connected to the bus is no more than 250, and the length of branch lines is no more than 10 meters. 3. Communication lines should be kept away from interference sources as much as possible. Communication lines should run in weak current wells, and cannot run parallel with strong current or radio frequency signal lines. If they must run parallel lines, the distance should not be greater than 0.5 meters. 4. All devices on the same network segment must have a unified signal ground to avoid common-mode interference.

6.2. Notes on RS485 wiring 1. The maximum communication

distance of 485 communication standard is 1200 meters, but in practical applications, this distance is less than this distance, and the higher the baud rate, the shorter the communication distance. Generally, the communication distance exceeds 500 meters, and the 485 signal relay needs to be added device. 2. To avoid signal reflection when there are many devices connected to the bus, a 120-ohm matching resistor should be connected between the communication port AB of the farthest device.



3. The shielding wire of the communication line should be connected to the ground wire, which is the ground and not the negative pole of the power supply.

Wire selection recommendation table

| Wiring distance | Wire |
|-------------------------|--|
| less than 200 meters | 2x 0.5 Two-core shielded twisted pair |
| 200-500 meters | 2x 0.75 Two-core shielded twisted pair |
| greater than 500 meters | 2x 1.0 Two-core shielded twisted pair |

troubleshooting

1. If the circuit board is not powered on, the indicator light does not light up. Check whether the power cord is connected correctly, whether the positive and negative poles are reversed, and use a multimeter to measure whether the power supply voltage is correct. After troubleshooting, the red indicator light on the circuit board will always be on. 2. Unable to communicate, check whether the 485 line of the communication port is reversed, each communication channel corresponds to an indicator light, and the indicator light flickers when the correct data is received, if there is no flicker, check whether the communication format and baud rate of the hub are consistent with the master station and the baud rate. The slave station is the same, if it is not sure, the parameters can be reset to restore the default value.

After-sales service

When the product has a problem and needs to be repaired, please send the product back to the company with the fault description, so that we can help you solve the problem as soon as possible. From the date of leaving the factory, within one year, all users comply with the transportation, storage and use rules, and any product failures will be repaired free of charge. If the module maintenance exceeds the warranty period, only the replacement material fee will be charged and no other fees will be charged.

If you encounter technical problems related to this product during use, our company will provide free technical guidance, you can call 0571-82306300, or log on to the website www.greatcontroltech.com Download Information. When using the products of our company, please do not replace and disassemble the components on the product circuit board without authorization. If the product cannot be used normally due to your illegal use, even if it is within the warranty period, it will not be repaired for free once it is found out.

important

The company reserves the right to change, upgrade and optimize the specifications contained in the product without prior notice. The copyright of the product specification and the final interpretation right of the product belong to Hangzhou Weikong Technology Co., Ltd.


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GC1201 Configuration Tool V2

connect device

Serial number Check Digit

baud rate stop bit

data bit 

MA1 communication settings

baud rate

data bit

stop bit

Check Digit

MA2 communication settings

baud rate

data bit

stop bit

Check Digit

Module ID Binding

☒ enable initial address - (0-255)

☐ 禁用

illustrate:

1. Parameters can be set from 0-255
2. Communication is valid within the range from the start address to the end address
3. This function is currently only applicable to the Modbus-RTU protocol

STEP1 After the serial port parameters are selected, click the "Open Serial Port" button

Parameter setting steps

1. The computer is connected to the MA1 interface of the module through the USB to 485 cable.
2. Press and hold the SET button until the green light of MA1 flashes,
- enter 3. Set the communication parameters to be consistent with MA1
4. Click "Open Serial Port"

SLA communication settings

baud rate

data bit

stop bit

Check Digit

Master station timeout setting

master 1 timeout MS (0-65535)

master 2 timeout MS (0-65535)

Note: After the parameter setting is completed, the module is powered off and restarted to take effect

" button