Contents [hide]

GREE GBM-NL100 GMLink IoT Gateway

Product Information

- The GMLink IoT Gateway is designed to facilitate communication between various devices in a smart home or building automation system.
- It allows for remote monitoring and control of connected devices through a centralized platform.

Product Usage Instructions

- Select a suitable location for the GMLink IoT Gateway, ensuring it is within range of the devices it will communicate with.
- Connect the gateway to a power source and ensure it has a stable internet connection.
- Follow the manufacturer’s instructions for pairing the gateway with your devices.
- Access the platform supported by the product using the provided credentials.
- Monitor and control connected devices remotely through the platform interface.
- Follow any specific instructions provided by the manufacturer for utilizing the advanced features of the gateway.
- Regularly check for software updates for the gateway to ensure optimal performance.

- In case of any issues or malfunctions, refer to the troubleshooting section of the manual or contact customer support.

To Users

Thank you for choosing Gree products. Before you install and operate the product, please read this manual carefully, so that you can understand and use this product properly. For the correct installation and operation of our product and for achieving the expected operating effect, please be aware of the following:

1. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
2. In order to ensure the reliability of the product, the product will consume some power in the standby state to maintain the normal communication of the system.
3. Please select a reasonable model according to the actual engineering situation, otherwise, the stability of the system will be affected.
4. This product cannot be installed in corrosive, flammable, and explosive environments and the places with special requirements. Otherwise, it will cause the abnormal operation of the device or shorten its service life, and even cause fire or serious injury. For the above special occasions, special products with corrosion prevention or explosion prevention should be selected.
5. If you need to install, remove, or repair the product, you should contact our designated customer service phone number (4008365315) to seek professional support. Otherwise, if there is related damage, our company may not be able to bear the relevant legal responsibility.
6. When using the platform supporting this product, your network device model, MAC address, device unique identification code, IMEI number, point information, and error/alarm information will be collected for binding the device and data display on the platform. If you refuse to provide the corresponding information, you may not be able to use certain functions or services normally.
7. Data storage: The storage period of your information will be processed by the

minimum period of local law in the People's Republic of China. According to the quantity, nature, and sensitivity of the personal information, we will determine the storage period of data (retain for a longer period unless required by specific law), and we will delete or anonymize the data beyond the service period.

8. If you need to delete, change, access, obtain, or cancel the authorized data collection of your data, please send an email to green_tech@cn.gree.com to inform us and provide real and effective contact information. We have set up a dedicated personal information protection department. Under normal circumstances, we will reply to the email within 15 days.
9. All illustrations and information in the manual are for reference only. In order to make the product better adapt to customers, our company will continue to make improvements and innovations. If the product is adjusted, please refer to the actual product.

Special Statement

Dear users:

Thank you for choosing the GMLink edge controller product series (hereinafter referred to as "edge controller"). When you decide to use this series of controllers, it means that you have understood and accepted the following terms:

1. If the product is unable to work and/or losses are caused due to hacker attacks, government regulation, power failure, network failure, communication line failure or other reasons or force majeure, our company may not be able to bear the relevant legal responsibilities.
2. When using the edge controller, we must ensure that all controllers in the system are powered on. For all losses caused by the power failure of the edge controller, our company may not be able to bear the relevant legal responsibility.
3. The pictures listed in this manual are for illustration only, and the final effect is subject to the actual product.

Before installing and using this device, you should pay attention to the following contents and matters:

Device installation

1. Please be sure to install the device indoors in a hard-to-reach and locked electric control cabinet.
2. Please install the device in a place free from electromagnetic interference or dust.
3. The power cable and communication cable must be routed separately.
4. Do not lay the power cable and communication cable along the lightning conductor.
5. In a residential environment, the operation of this device may cause radio interference.
6. Normal working environment requirements for the edge controller:
    - Temperature: -10~+60℃.
    - Humidity is less than or equal to 85%.
    - Installed in the indoor electric control cabinet to avoid direct sunlight, rain and snow, etc.

Power supply

1. The installation must be done by professionals. Improper installation may lead to fire or electric shock.
2. Make sure that the power plug is dry and clean before inserting it into the socket.
3. Before touching the electrical components, ensure that the device is powered off.
4. Do not touch the device with wet hands, which may lead to an electric shock.
5. Be sure to use the power cable with the specified specifications. Poor contact or improper installation may lead to fire.
6. If the power cable is incorrectly connected or the input power is out of the allowable range, fire hazard and damage to the device may be caused.
7. It cannot be directly connected to the port of the outdoor cable.

Communication

1. Ensure that the communication cable (see Schedule 1) is connected to the correct interface, otherwise, communication failure may occur.
2. After connecting the wire, insulation tape should be used for protection to avoid oxidation and a short circuit.

Safety Notices (Please be sure to abide)

-  **Warning:** If not abided by strictly, it may cause severe damage to the unit or the people.
-  **Note:** If not abided by strictly, it may cause slight or medium damage to the unit or the people.
-  This sign indicates that the operation must be prohibited. Improper operation may cause severe damage or death to people.
-  This sign indicates that the items must be observed. Improper operation may cause damage to people or property.

Product Overview

GMLink edge controller is a kind of communication module used for electromechanical equipment integration and remote monitoring. The device complies with relevant national regulations and laws. It is a single antenna device which is applicable for scenes with low transmission rates. The following diagram shows the appearance of the edge controller:

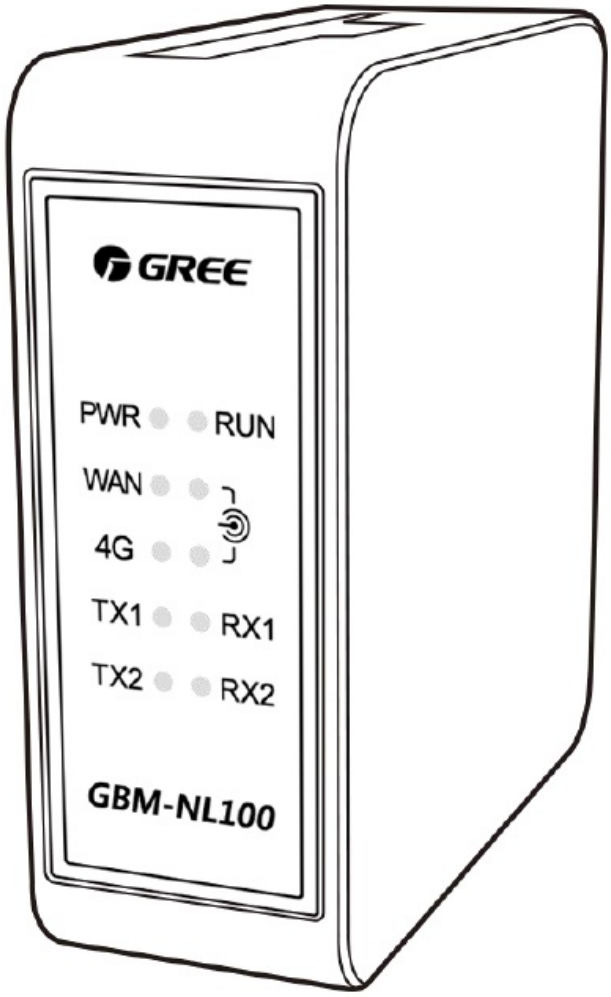


Figure 2.1 Schematic Diagram of Edge Controller

1. Support configuration programming, and quickly realize the secondary development on the site
2. Eight I/O interfaces onboard, supporting I/O device integration;
3. One RS485 interface, supporting access to a Modbus RTU device;
4. Support access to the I/O expansion module, which can be expanded to 64 control units;
5. Remote monitoring can be achieved through a wireless 4G network and a wired Ethernet.
6. Support SMS alarm, event control, timer, and other functions. This system supports a maximum of 2000 points.
7. Access to the GMLink network controller is required to achieve wireless data transmission.

Components

The edge controller kit contains the following components.

Component name	Quantity	Configuration mode
GMLink edge controller	1	Equipped as standard
Owner’s Manual	1	Equipped as standard
Qualification certificate	1	Equipped as standard
8-bit connection terminal	1	Equipped as standard
6-bit connection terminal	2	Equipped as standard
Antenna	1	Equipped as standard

Open the kit and check if the package is good. If the package is damaged, immediately notify the relevant personnel to replace.

Network Topology

- The control system topology of the GMLink edge controller is shown in the following figure:

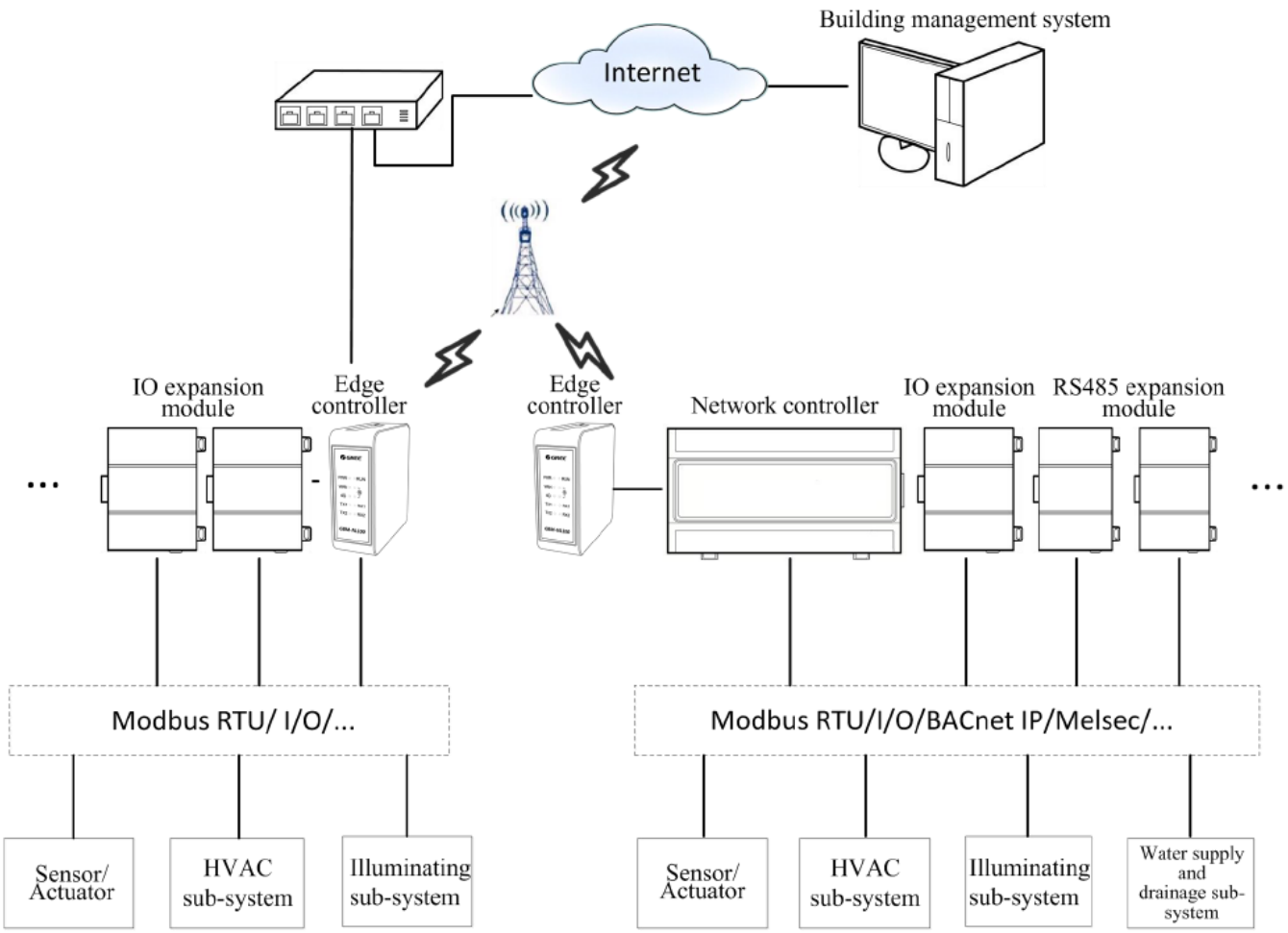


Figure 2.2 Control System Topology

Detailed Instructions of Product

Interface Description

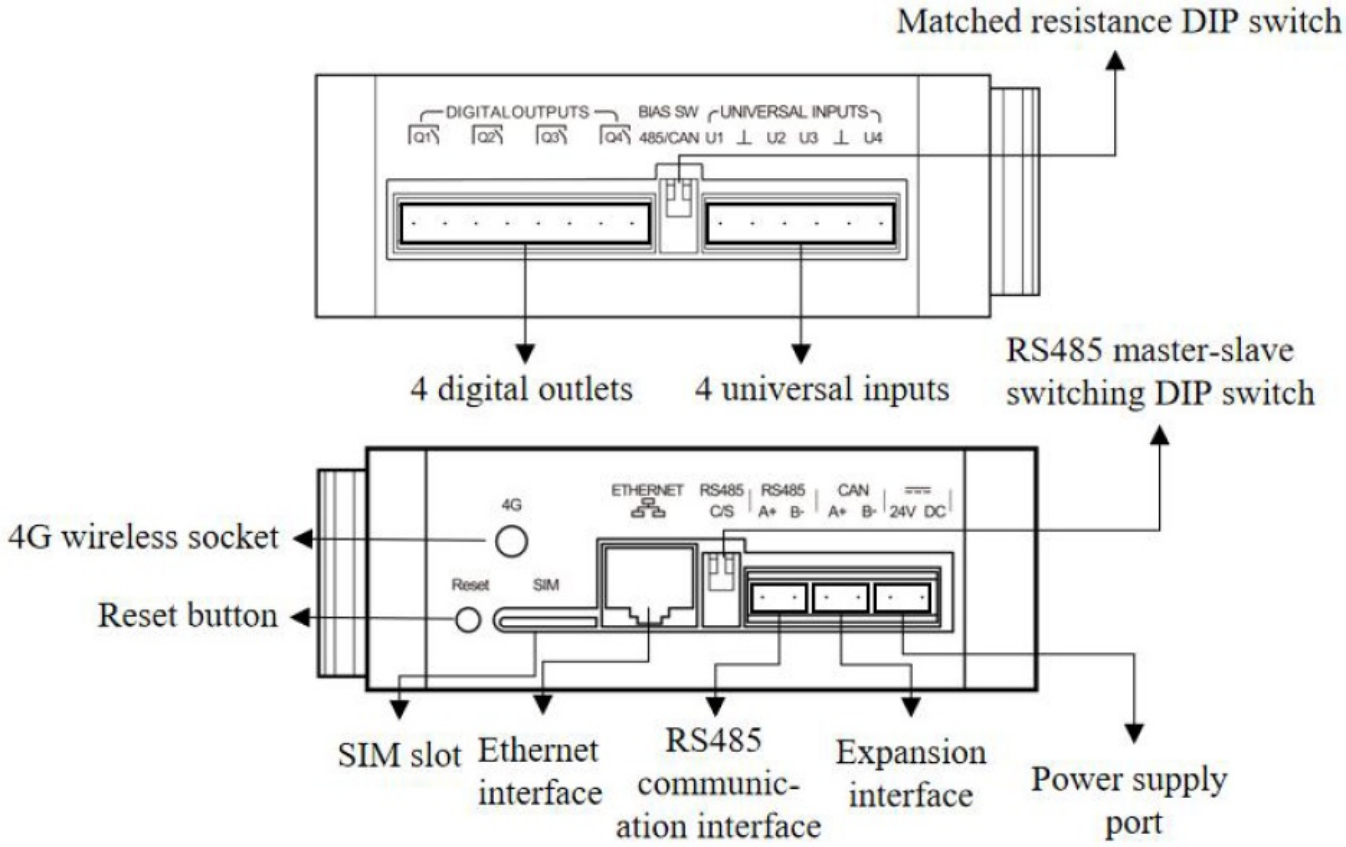


Figure 3.1 Edge Controller Interface Diagram

- Power input
  - 1 Working voltage: 24VDC or 24Vac 60Hz (Class 2 Power Supply, output short protected);
- Maximum current: 70mA

Open Type, Operating Control, Type 1. B, Class Ⅱ Control.

Caution!

When the quantity of expansion modules connected to expansion interfaces reaches a certain level (not more than 10 are recommended), the bus current may be insufficient. Therefore, you need to add additional power supplies to ensure the normal operation of expansion modules.

Hardware interface

Interface	Hardware features	Functions

Ethernet interface	Default IP: 192.168.0.200 Interface type: RJ45, 10/100Mbit	l Configuration programming software communication: access to the GMOS development software at the PC side through a standard network cable; l Device integration: access to the GMLink network controller for data transmission; l Data sharing: access to the BMS building management system.
RS485 communication interface	Twisted pair: A+, B- Bus terminal resistance (set by DIP switch): 120Ω Electrical characteristics: Electrical isolation	l Device integration: can be configured as a communication master station, integrated with Modbus RTU and other protocol devices;
Expansion interface	Twisted pair: A+, B- Bus terminal resistance (set by DIP switch): 120Ω	It can be connected to the I/O expansion module through the communication cable.
SIM slot	Card inserting installation	l The SIM card is inserted here, and the SIM cards of the three operators are supported. The SIM drawer is ejected by pressing inwards through the round hole in the SIM drawer
4G wireless socket	\	l Plug in the 4G antenna

Table 3.1 Hardware Interface Description Table

Caution!

- Do not pull out or insert the SIM card when the power is on.
- Onboard I/O interface
- UI: universal input signal acquisition

Analog input		
Signal type	Range	Accuracy
Voltage signal	0-10V	0.02V
Current signal	0-20mA	0.02mA
Resistance signal	0-100kΩ	0.02kΩ

Digital input		
Signal type	Range	Status
Voltage signal	0-10V	<=1V, disconnected, status value is 0 >1V, closed, status value is 1
Resistance signal	\	>=27kΩ, disconnected, status value is 0 <27kΩ, closed, status value is 1

Table 3.3 Digital Input Description

- Using wire type RV90, 18AWG, Use copper Conductors Only
- DO: relay output, normally-opened contact

Signal type	AC	DC
Power-off voltage	0-240V ±10%	0-28V ±10%
Rated current	Max AC 2A (or 240Vac, 1.4A steady for valve load)	

Table 3.4 Relay Output Description

*Using wire type RV90, 18AWG, Use copper Conductors Only

Caution!

The relay output cannot be used for inductive loads, otherwise, external protection is required for inductive loads.

Wiring Instructions

- Universal input (UI) wiring:
- The resistance acquisition wiring way is as follows (U1, U2, U3, U4 are input interfaces, G is ground).

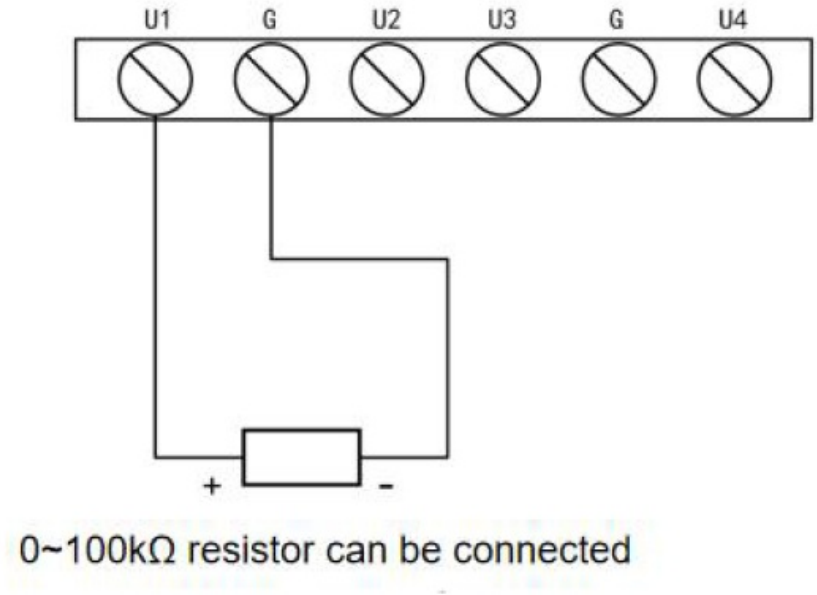


Figure 3.2 Resistance Acquisition Wiring Diagram

- Voltage acquisition wiring way is as follows (U1, U2, U3, U4 are input interfaces, G is ground).

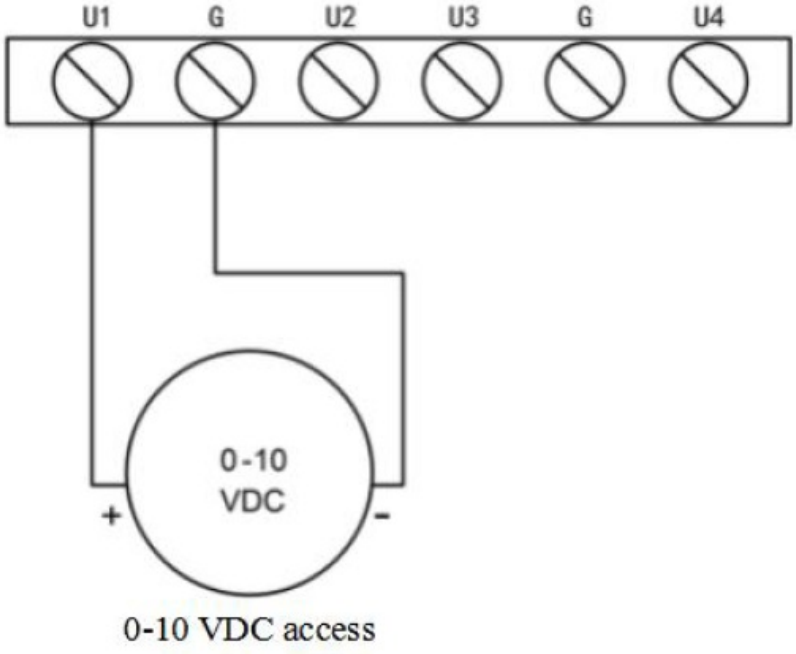


Figure 3.3 Voltage Acquisition Wiring Diagram

- Current acquisition wiring way is as follows (U1, U2, U3, U4 are input interfaces, G is ground).

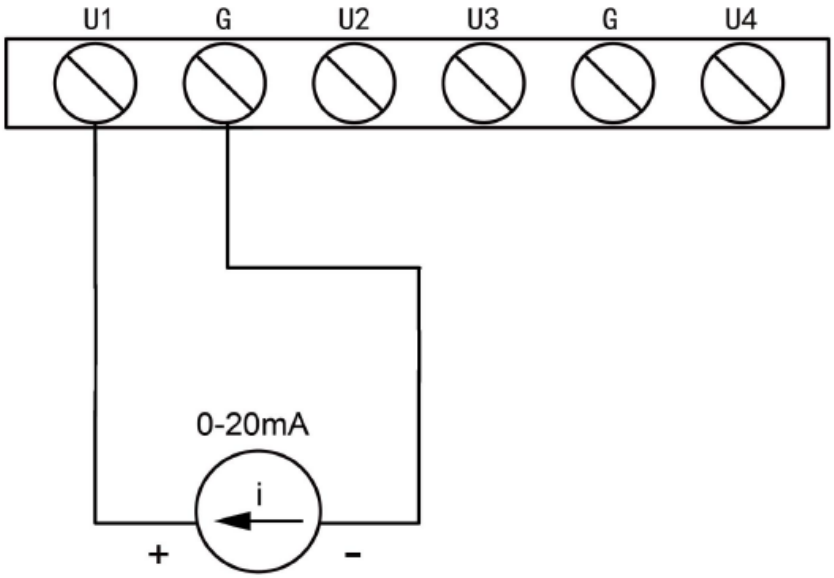


Figure 3.4 Current Acquisition Wiring Diagram

- Digital quantity acquisition wiring is as follows (U1, U2, U3, U4 are input interfaces, G is ground).

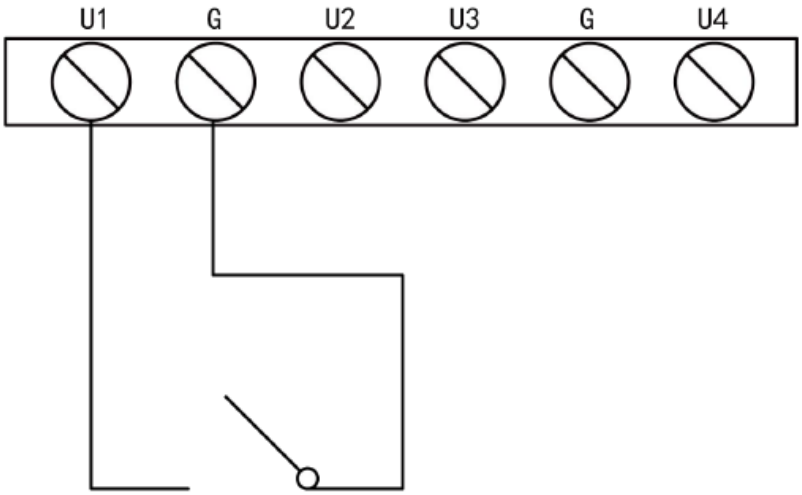


Figure 3.5 Digital Quantity Detection Wiring Diagram

Relay output DO wiring:

- The wiring of the relay output interface is shown as follows.

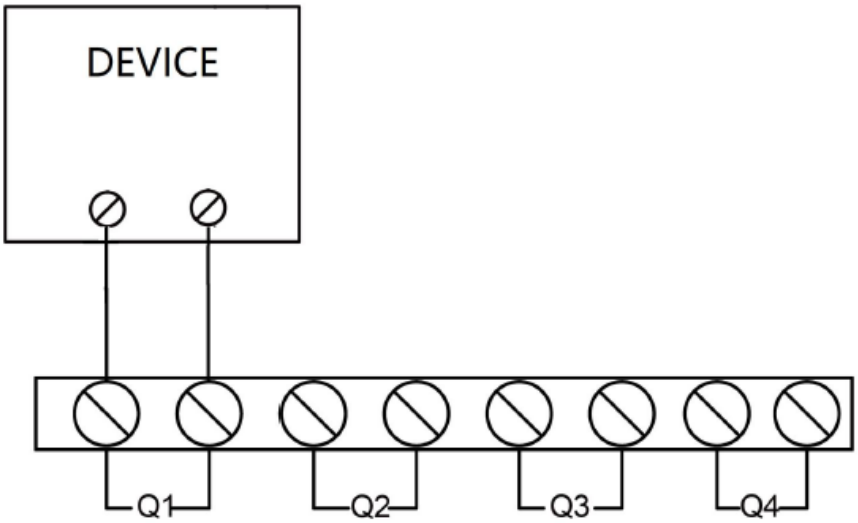


Figure 3.6 Relay Output Wiring Diagram

LED Indicator, Button and Dip Switch

1. Indicator

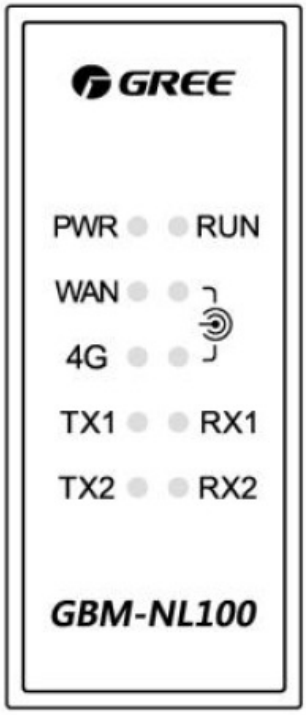


Figure 3.8 Indicator Diagram

Description of indicator status after power-on:

Indicator status	**Description**
All indicators are always on	Self-detect after power-on

Indicator description in normal operation:

Indicator	**Color**	**Status**	**Description**
PWR	Red	Always on	The power supply is normal
RUN	Green	Blinks 1s/time	The system is running normally
WAN	Green	Always on	The server connection fails
		Blinks 1s/time	Data is being transmitted
		Always off	The protocol opening function is not configured

4G	Green	Blinks 2s/time	The network is being connected
		Blinks 500ms/time	Data is being transmitted
	Green	Always on	The signal strength is indicated by two i ndicators arranged up and down. Indicat or 1 is on the top, and Indicator 2 is on t he bottom. For details, see Table 3.6

TX1	Green	Blinks	RS485 data is sent
RX1	Orange	Blinks	RS485 data is received
TX2	Green	Blinks	CAN data is sent
RX2	Orange	Blinks	CAN data is received

Table 3.5 Indicator Description

Status of indicator 1	Status of indicator 2	Signal strength
On	On	Strong
On	Off	Less strong
Off	On	Medium
Off	Off	Weak

Table 3.6 Description of Signal Strength Indicator

Button

- Button description (see Figure 3.1 for specific positions)

Reset: Holding for 2s, the edge controller will restore the IP address of the Ethernet interface to the default IP address (192.168.0.200) and then restart

Dip switch

1. BIAS SW
    1. CAN: When the edge controller is connected to the expansion module, a matching resistor shall be set.
    2. RS485: If the communication distance of the RS485 bus of the edge controller is long or the communication quality is poor, a matching resistor shall be set. Matching resistance DIP setting diagram:

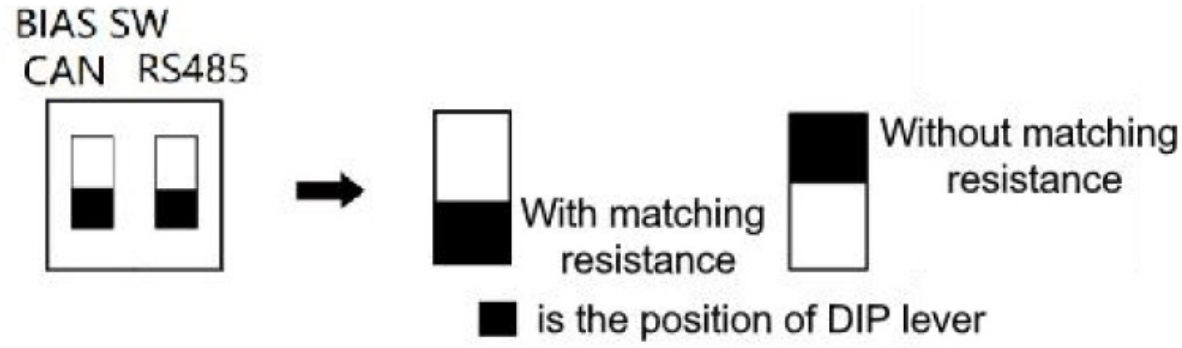


Figure 3.9 Matching Resistance DIP Setting Diagram

RS485 C/S

When the controller is the primary communication station, the DIP switch should be set as follows

Figure 3.10 Primary Station Setting Diagram

GMOS Development Software

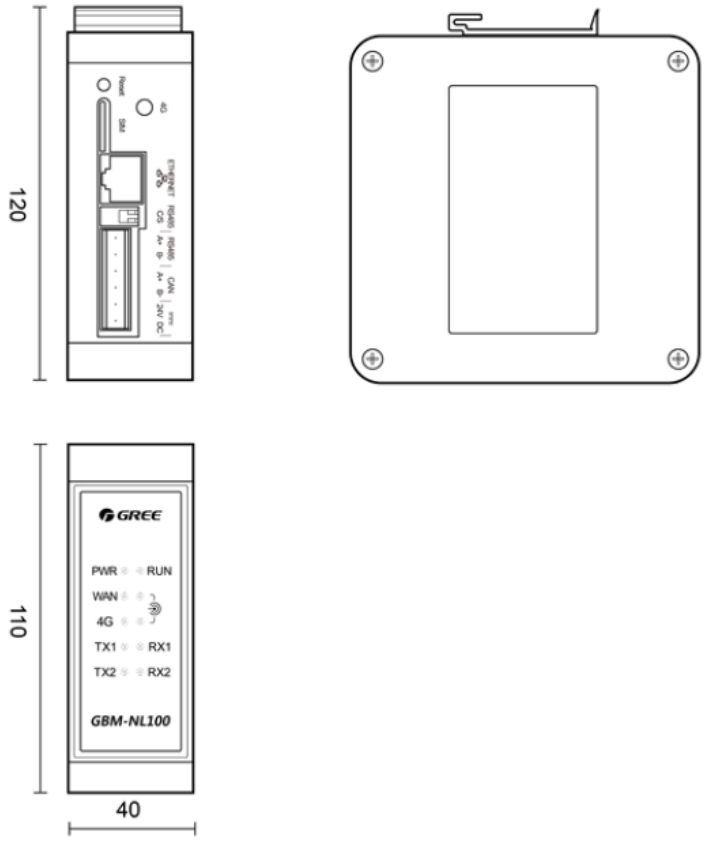
- The GMOS development software is compatible with GMLink controller products.

- It provides engineering management, point configuration, logic programming, and other functions to meet the requirement,s such as onsite device access, device operation logic development, and protocol opening. For details, see the GMOS development software instructions.

Product Installation Guide

Controller Dimensions

Unit: mm



Length × width × height: 40×120×110

Figure 4.1 Three Dimensions View

Precautions

- **A.** Purpose of control: BUILDING AUTOMATION CONTROLS AND SYSTEMS, Operating Control, Edge Control;
- **B.** Using wire type RV90, 18AWG, Use Copper Conductors Only;
- **C.** Indoor use only;
- **D.** Pollution Degree 2;

- **E.** Rated impulse voltage:2500V;
- **F.** The device must be installed professionally. The installation must be controlled and requires special training.
- **G.** The intended use is generally not for the general public .It is generally intended for industrial/commercial use.
- **H.** The connector is located in the transmitter enclosure and can only be accessed by disassembling the transmitter, which is normally required. The does not have access to the connector.

Product Installation Methods

The guide rail installation procedures are as follows

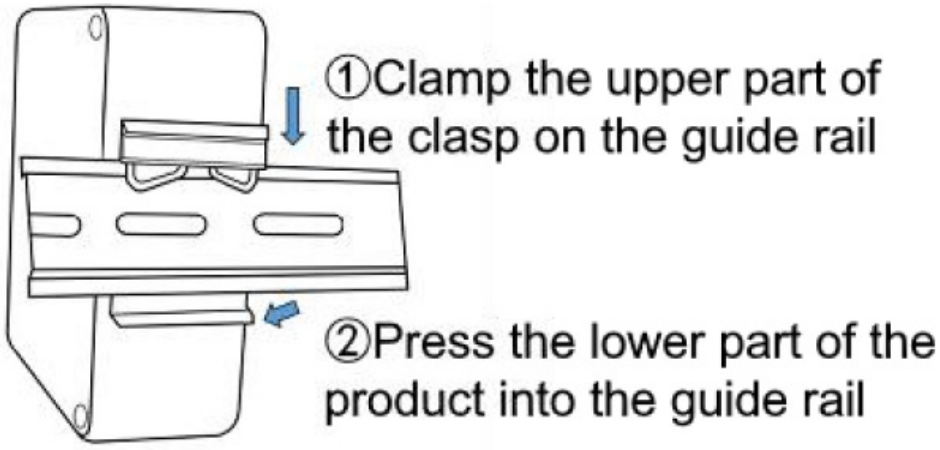
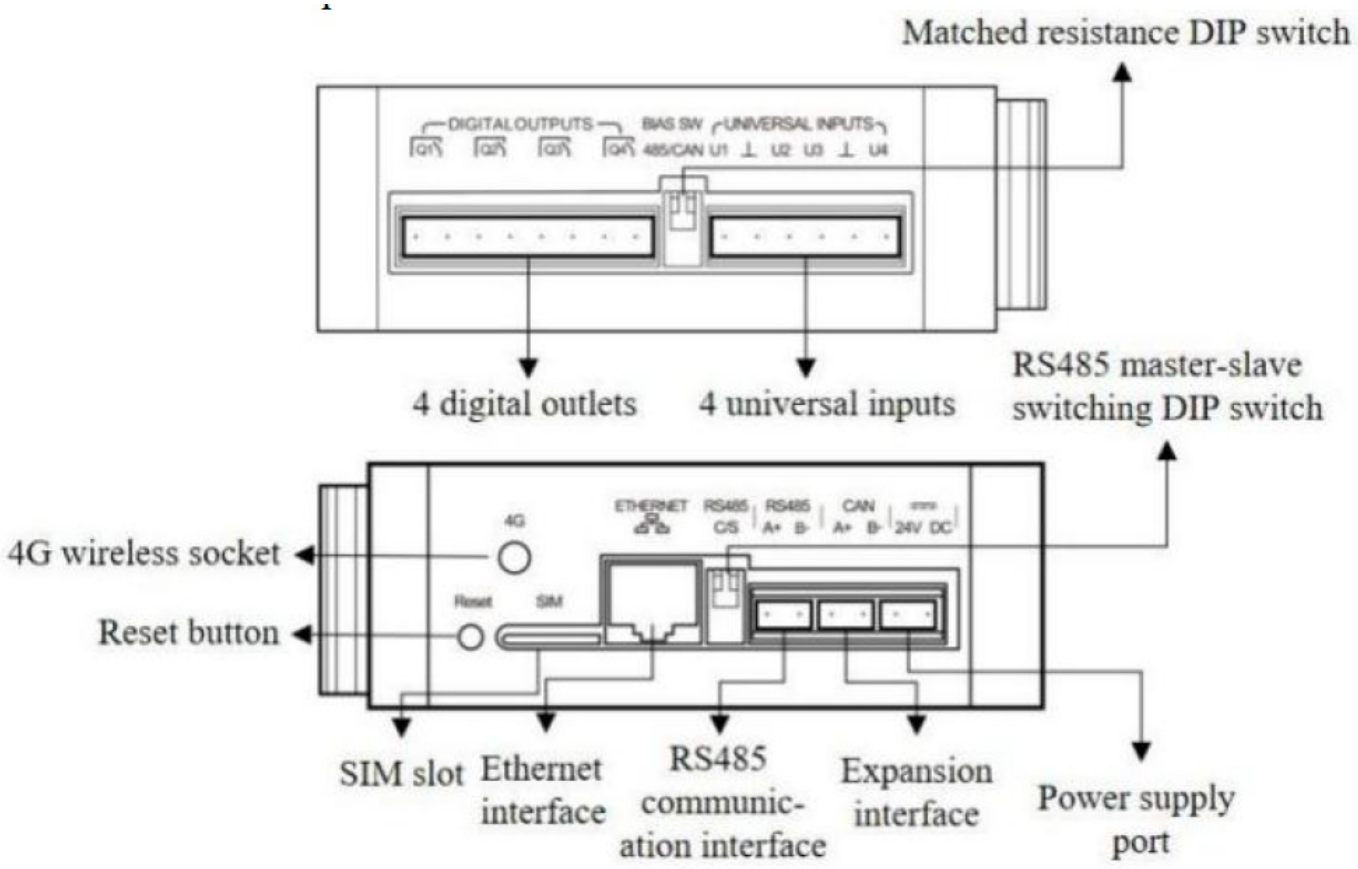


Figure 4.2 Installation Procedure Diagram

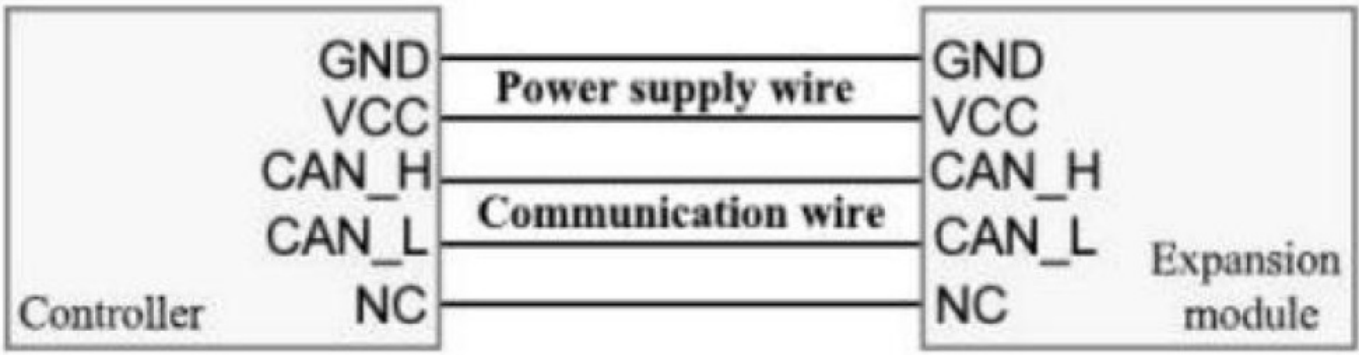
Identification of Terminals of Wiring Diagram

Interface Description:

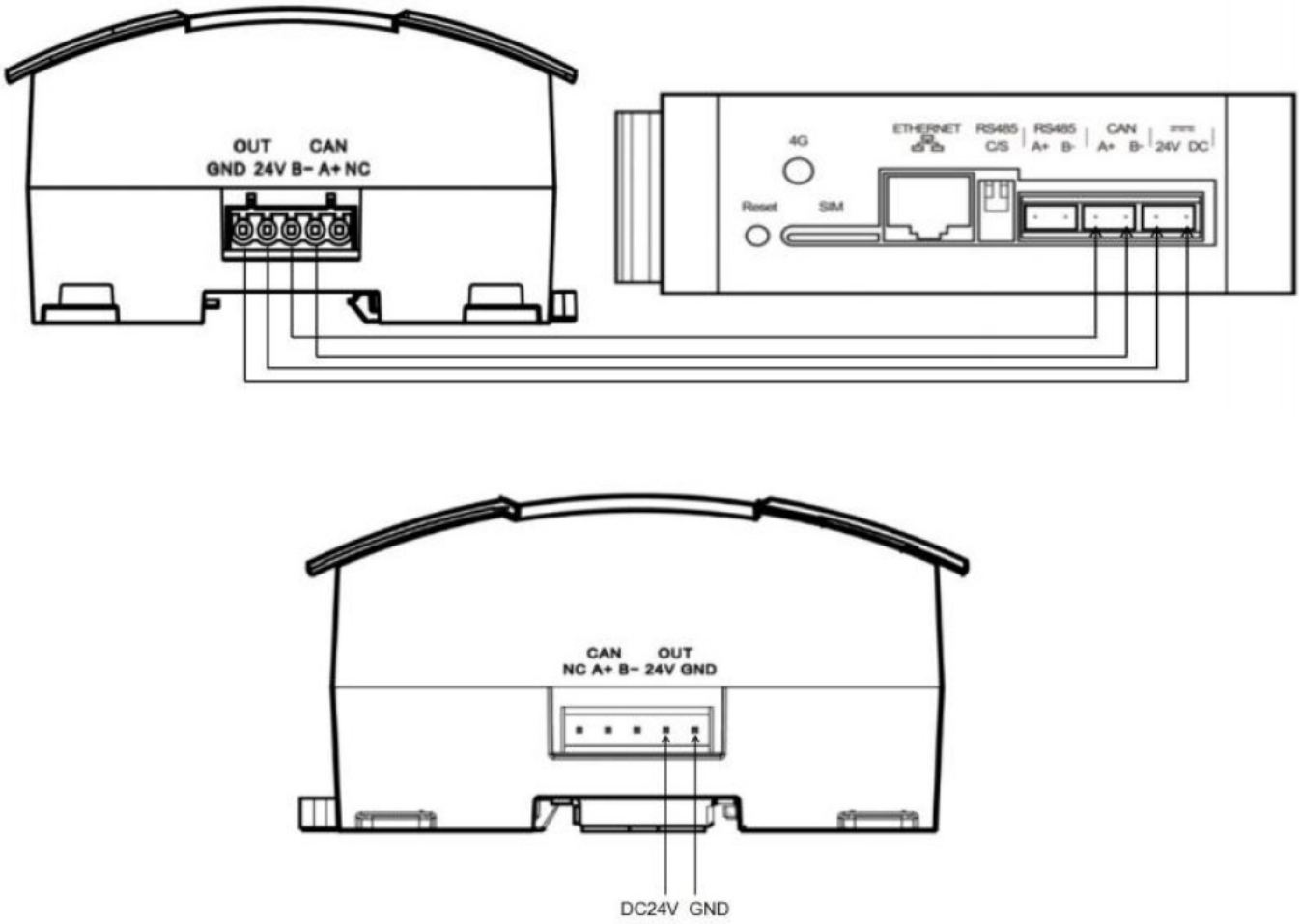


- The branch switch in the installation room shall not be more than 10 A.
- If DIGITAL OUTPUTS is connected to 125V or 240VAC,the cables of which shall be separated from other cables by reinforced insulation or by enough reinforced distance.

System Wiring Diagram

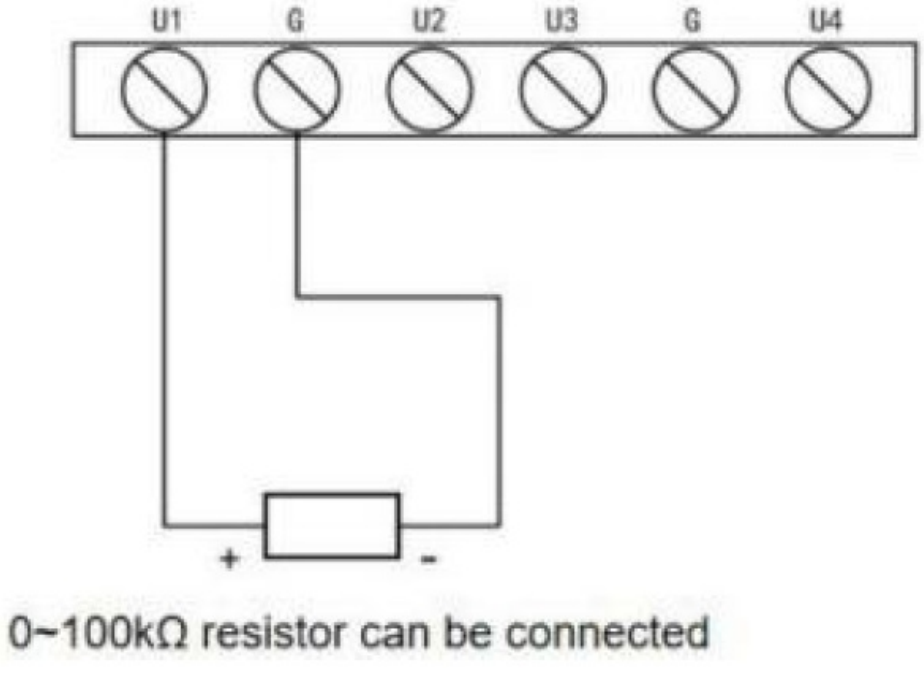


Example diagram:

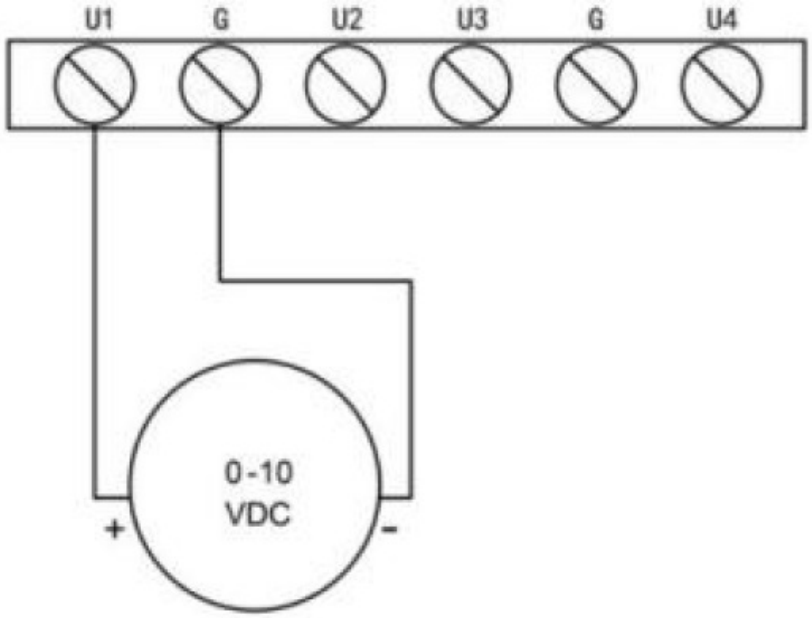


I/O Interface Wiring Instructions:

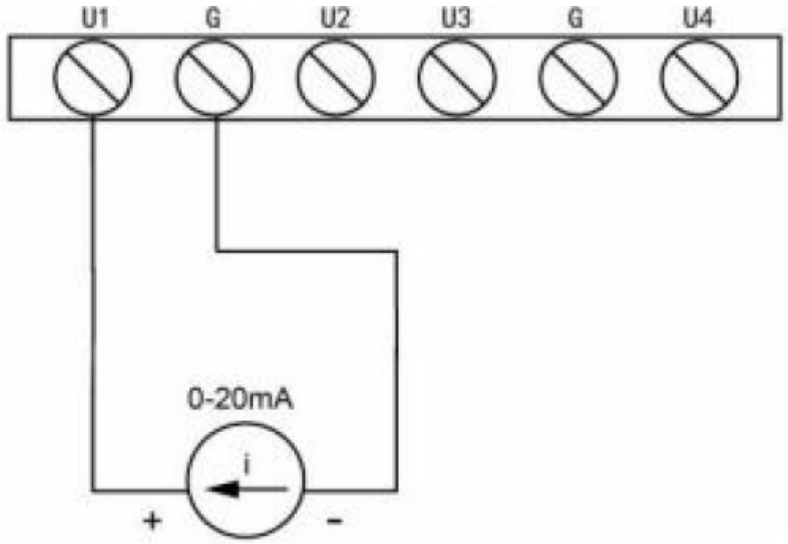
- **A.** Resistance Acquisition Wiring Diagram



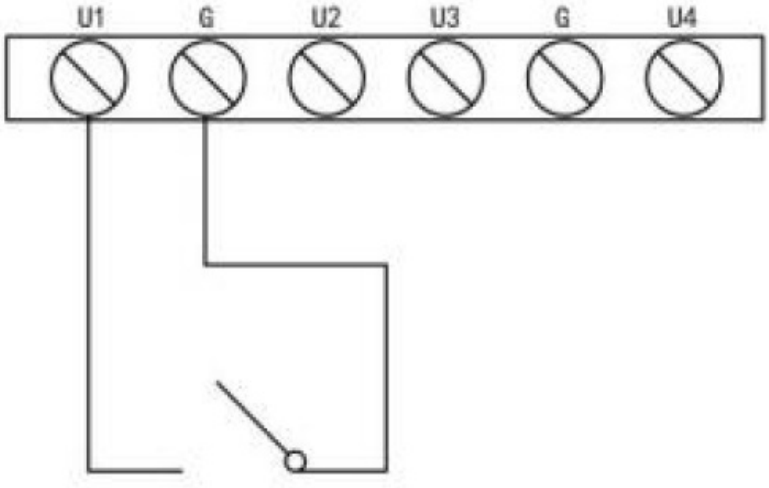
- **B.** Voltage Acquisition Wiring Diagram



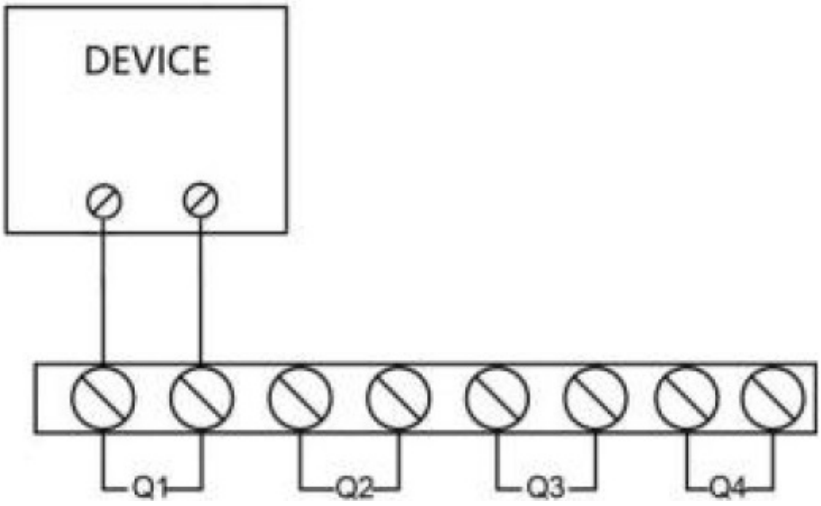
- **C.** Current Acquisition Wiring Diagram



- **D.** Digital Quantity Detection Wiring Diagram



- **E.** Relay Output Wiring Diagram



Selection of Communication Cable Material

The system consists of various components, and each component must communicate effectively to work properly. Communication connections include:

1. The communication between the edge controller and the PC uses the standard Ethernet communication cable.
2. The communication between the edge controller and the device on the RS485 bus needs to be connected with the communication cable, and the length of the communication cable is determined by the actual project.
3. When the edge controller and the expansion module are not in the same guide rail or the quantity of expansion modules is greater than 10, it is necessary to connect with the communication cable.
4. The selection of communication cables must use copper wires only. The specific requirements are shown in the table below.

Material of cable	Communication cable length L(m)	Cable diameter (mm2)	Wire Type	Remark
Common sheath twisted-pair copper cable (RV)	L≤40	≥2×0.75 (AWG 18)	UL2464	The maximum communication distance of the expansion bus is 40m

Common sheath twisted-pair copper cable (RVV)	L≤40	≥2×0.75 (AWG 18)	UL2464	The maximum communication distance of the expansion bus is 40m

FCC STATEMENT

Warning

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
This equipment has been tested and found to comply with the limits for a Class B digital device, under part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used by the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

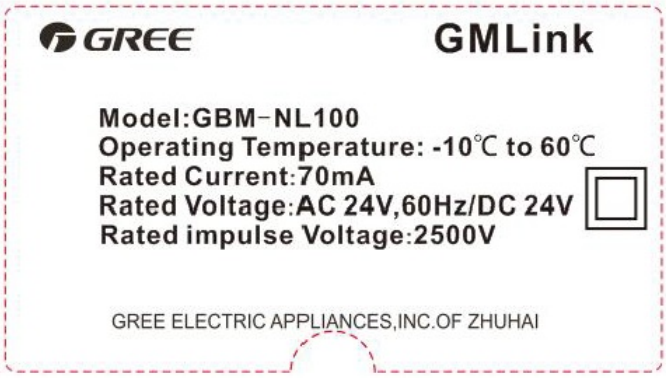
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

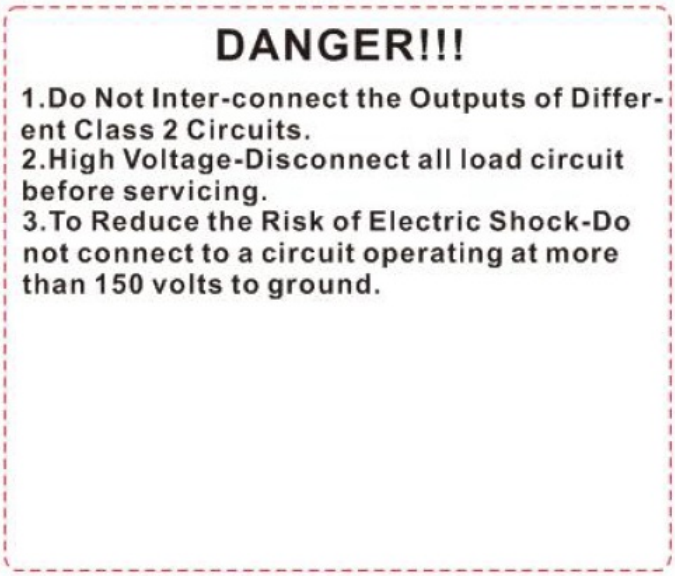
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

For the FCC/IC RF exposure statement

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.





CONTACT

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- Fax: (+88-758) 8869426
- E-mail globak@gongroa.com. www.groe.com

FAQ

- **Q: Can the GMLink IoT Gateway be used in explosive environments?**
  - **A:** No, the product should not be installed in corrosive, flammable, or explosive

environments as it may lead to abnormal operation or safety hazards.

- **Q: How can I request technical support for the product?**
  - **A:** For technical support, contact the designated customer service phone number (4008365315) or send an email to green_tech@cn.gree.com with detailed information about the issue.

Documents / Resources

	GREE GBM-NL100 GMLink IoT Gateway [pdf] Owner's Manual GBM-NL100, GBM-NL100 GMLink IoT Gateway, GMLink IoT Gateway, Io T Gateway, Gateway

References

- User Manual

gateway, GBM-NL100, GBM-NL100 GMLink IoT Gateway, GMLink IoT Gateway, Gree, IoT Gateway

Gree

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