KINGHOME

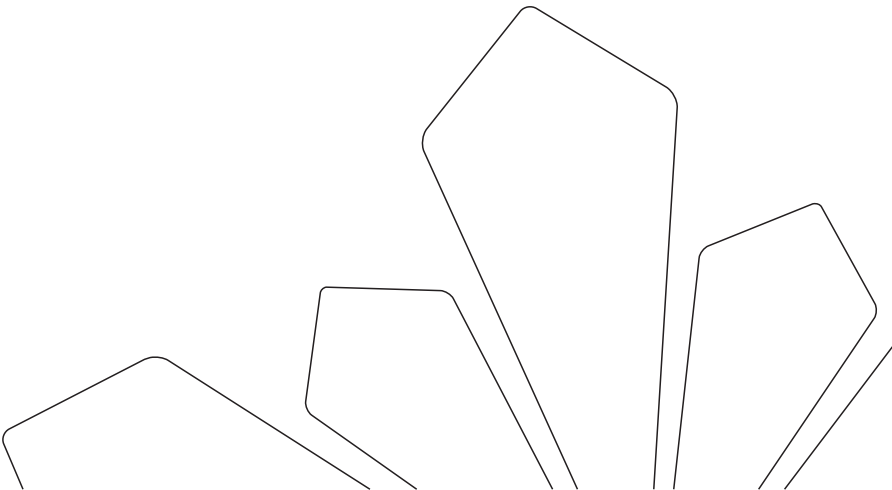## AIR CONDITIONER

INSTRUCTION MANUAL

BACnet Protocol Gateway

Model:
ME30-44/D2(B)

Contents

1 Safety Notices (Please be sure to abide)

WARNING: If not abide strictly, it may cause severe damage to the unit or the people.

NOTICE: If not abide 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.

WARNING!

This product can't be installed at corrosive, inflammable or explosive environment or the place with special requirements, such as kitchen. Otherwise, it will affect the normal operation or shorten the service life of the unit, or even cause fire hazard or serious injury. As for above special places, please adopt special air conditioner with anti-corrosive or anti-explosion function.

2 User Notice

Dear customer:

Please read this manual carefully prior to installation and operation and strictly observe all installation and operation instructions covered in the manual.

Special attentions shall be paid to the following marks:

⚠ WARNING!	This mark indicates operation, which if improperly performed, might lead to the death or serious injury of the users.
ⓘ CAUTION!	This mark indicates operation, which if improperly performed, might possibly result in damage to the device.

⚠ WARNING!
Installation shall be performed by the qualified personnel; otherwise it would result in a fire hazard or electric shock.
Do not place the plug of the power supply into the socket before it is dried and cleaned.
Cut off the power supply before touching the electric element.
Do not touch this device with wet hands; otherwise it would result in electric shock.
Do use the power cable specified in this manual; otherwise it would result in a fire hazard.
When the power cable is reversely connected or the power supply is beyond the rated range, it would result in a fire hazard or even damages to this device.
For PLUGGABLE EQUIPMENT, the socket-outlet shall be installed near the equipment and shall be easily accessible.
Do install this device inside the electric control cabinet which is located indoor and then is locked.
Do install this device where it will not be subject to the electromagnetic interference or heavy dust.

ⓘ CAUTION!
Be sure the specified adaptor is used; otherwise this device would work improperly or even be damaged.
Be sure this device is setup in place; otherwise it would result in communication fault.
Be sure the communication line is connected to the correct interface; otherwise it would result in communication fault.
After connection, lines should be protected with insulating tape to avoid oxidation and short circuits.
Risk of explosion if battery is replaced by an incorrect type, dispose of used batteries according to the instructions.
Normal working conditions for Gateway： ①Temperature : -20~60℃; ②Humidity: less than 85%,except for the condensation of dew; ③Location: indoor (it is highly recommended to install this product in the electric control cabinet), not subject to direct sunlight, rain and snow etc.
Graphics in the instruction manual are for reference only.

3 Function and Parameter

3.1 Functional Overview

BACnet gateway ME30-44/D2(B) for multi VRF unit can realize data exchange between air conditioner and BMS system and provide building interfaces for standard BACnet/IP.Applicable models for this gateway are listed in Attachment B.

The following BACnet protocol gateway ME30-44/D2(B) is shorted as gateway.

3.2 Parameter Specifications

3.2.1 Gateway TCP/IP Parameter (Default)

IP Address:192.168.0.200

Subnet Mask:255.255.255.0

Default gateway:192.168.0.1

⓵CAUTION： After the TCP/IP parameters are altered, the gateway should be restarted, then the parameters can come into effect.

4 Parts and Assembly

This kit includes the following parts. Please check before installation.

Gateway	1 set
Instruction manual	1 set

5 Introduction for Gateway

5.1 Interface

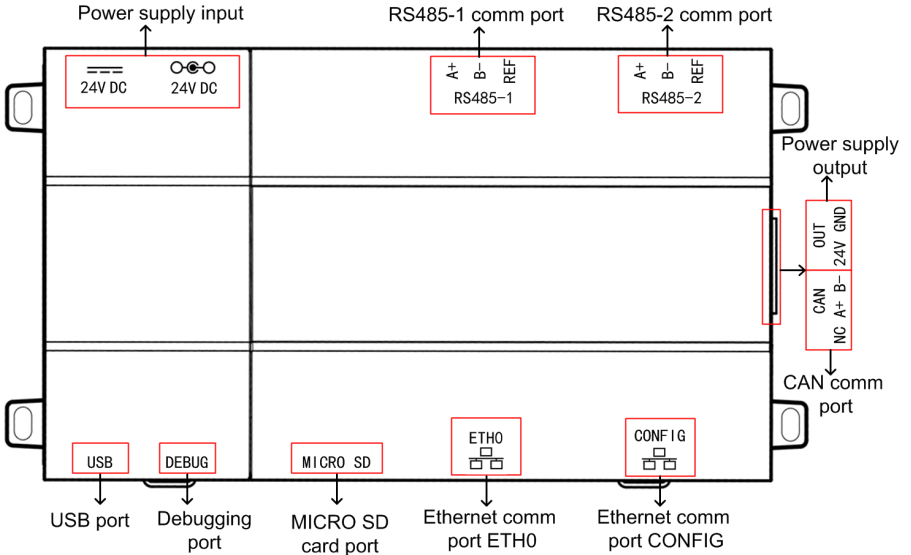### 5.1.1 Diagram of Interface Function

Fig. 5.1 Schematic of protocol gateway interfaces of multi VRF unit

5.1.2 Power

The input power supply is 24V DC, there are two power supply input interfaces, only one is needed during operation; the power supply output is not applicable in this device, please do not connect to electric appliance, otherwise it may cause malfunction of gateway.

5.1.3 Communication Interface

CAN comm port: this device will not use this communication interface temporarily.

RS485-1 comm port: connect to the unit(s) or the connection between adjacent gateways.

RS485-2 comm port: this device will not use this communication interface temporarily.

USB and SD card port: this device will not use this interface temporarily.

Ethernet comm port ETH0: realize communication through network cable and

BMS.

Ethernet comm port CONFIG: this device will not use this interface temporarily.

5.2 LED Display

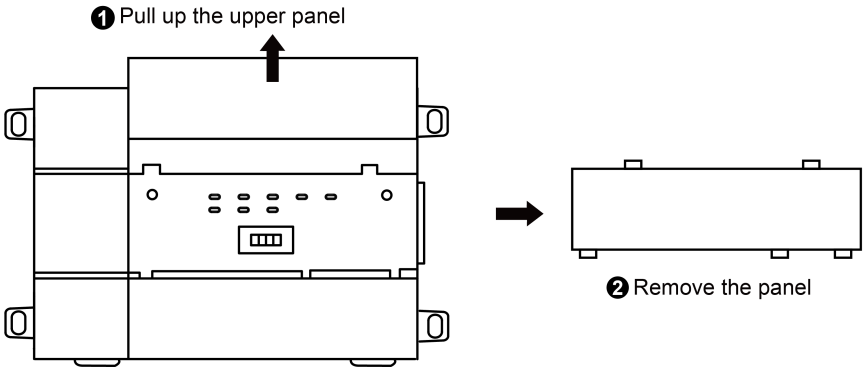As shown in the picture below, open the black transparent front panel.

❶ Pull up the upper panel

❷ Remove the panel

Fig 5.2 Schematic diagram of opening the black transparent board

Indicators, buttons and DIP switch are as shown below.

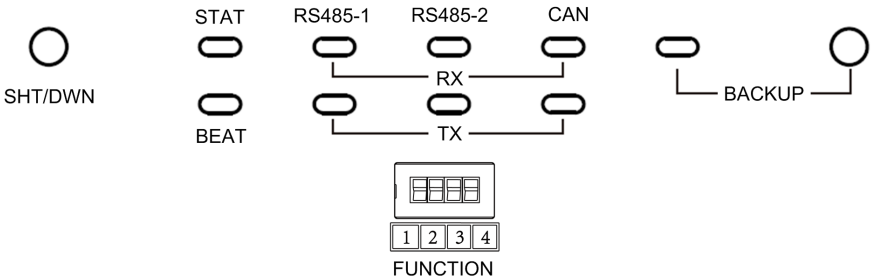| STAT | RS485-1 | RS485-2 | CAN |
		RX	
SHT/DWN			BACKUP
BEAT		TX	

FUNCTION

Fig 5.3 The schematic diagram of the gateway LED light board and DIP switch

The above LED indicator is mainly consist of two parts: status indicator (run, power) and communication indicator (CAN and RS485). The following table is the working status of each indicator.

CAN	RX	This device does not use this LED indicator.
	TX	This device does not use this LED indicator.
RS485-1	RX	When the gateway receives data on the 485 bus, it blinks.
	TX	When the gateway sends data to the 485 bus, it blinks.
RS485-2	RX	This device does not use this LED indicator.
	TX	This device does not use this LED indicator.
STAT		When power supply of Gateway is normal, it is on.
BEAT		When Gateway is running normally, it blinks.

BACKUP	This device does not use this LED indicator.

5.3 Button

| SHT/DWN	Hold the button for 5s and all indicators will be on; the gateway will be reset and restarted.
BACKUP	Not use this button for this device temporarily.

5.4 DIP Switch

ⓘNOTICE!

Before using this device, please conduct DIP switch setting first, otherwise the unit will not function normally!

Gateway dial-up setting area is consisting of function DIP switch code.

5.4.1 Diagram of Dial-up Machine
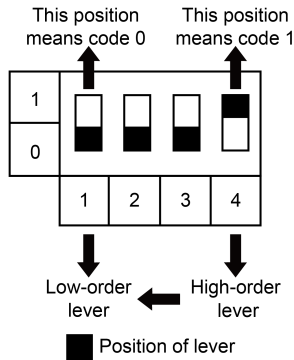
5.4.2 The 2st Lever of Functional DIP Switch—485 Bus Matched Resistance Setting

The 2nd dial code of the function dialer is used for setting the matching resistance of the gateway of 485 bus.

When the controller is at the beginning/end of the 485 bus, the controller needs to be set to be with matching resistance, then the second bit of function dialer is set to 1; when the controller is not at the beginning/end of the 485 bus, set the controller to be without matching resistance, and set the dial code to 0.
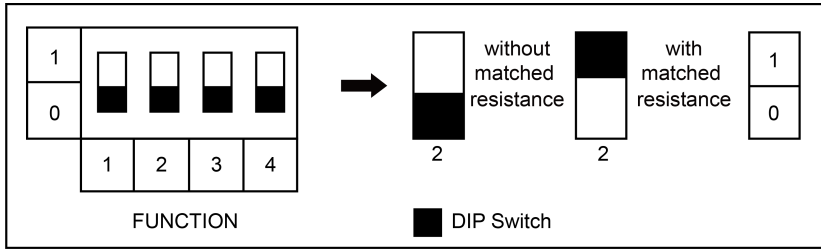
Fig. 5.4 Schematic of dial code

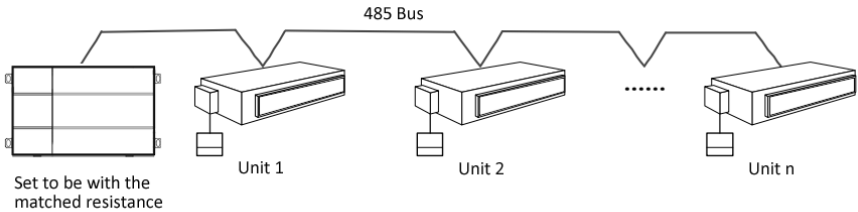Fig. 5.5 Schematic diagram of scenes that should set DIP switch code
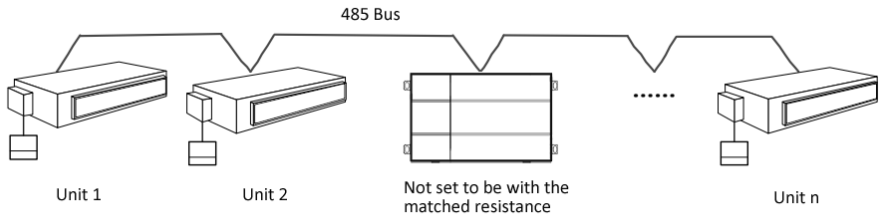

Fig. 5.6 Schematic diagram of scenes that no need to set DIP switch code

6 Application

6.1 Building Management System (BMS)

This gateway has provided BACnet standard protocols, which can connect to building management system (BMS). It can monitor RS485 protocol Kinghome unit by Building Management System through the gateway.

6.2 Internet Topological Graph

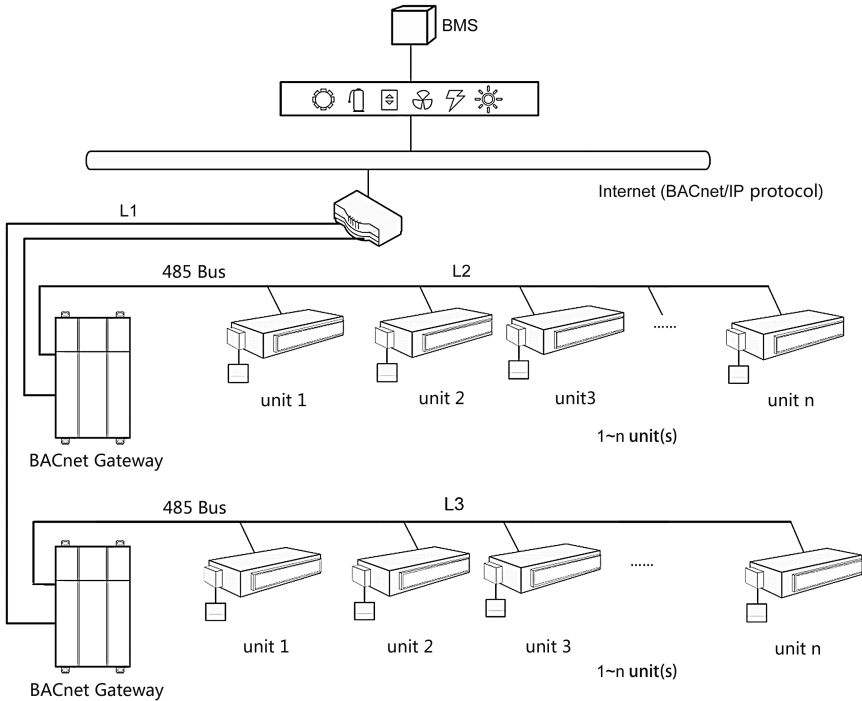Fig. 6.1 Communication network topology

Network topology instruction::

485 bus: 485 bus: The wire indicated by L2 in fig, 6.1 is 485 bus. One 485 bus can connect 255 units at the most.

Cable: The wire indicated by L2 in fig. 6.2 is the normal cable. The gateway can be connected to BMS by the cable.

Units' quantity that can be connected to the gateway: One gateway can connect 255 units at the most.

7 Product Installation

7.1 Product Size and Spatial Size for Electric Control Cabinet Installation
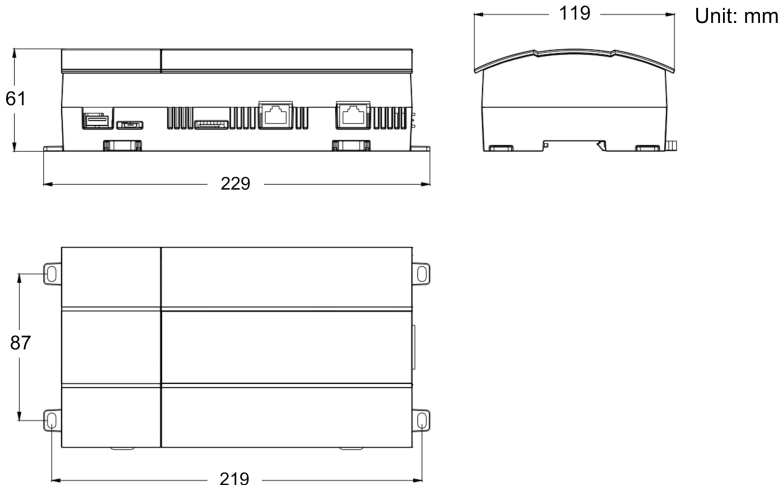
7.1.1 Product Size

Fig. 7.1 Gateway product size chart

Notice for installation and operation:

（1）Ensure the specification of power input. Otherwise, Gateway can't work normally or even be damaged.

（2）Ensure the dial code setting of Gateway is correct. Otherwise, there will be communication malfunction.

（3）Ensure that the communication cord has connected to the correct interface. Otherwise, there will be communication malfunction.

（4）Do not place Gateway in direct sunlight or high-temperature and humid environment. Place it in the central control cabinet.

7.1.2 Spatial Size for Electric Control Cabinet Installation

Gateway shall be installed in electric control cabinet; the front of gateway shall be hung upward and fixed with 4 screws. See the following fig (for reference).
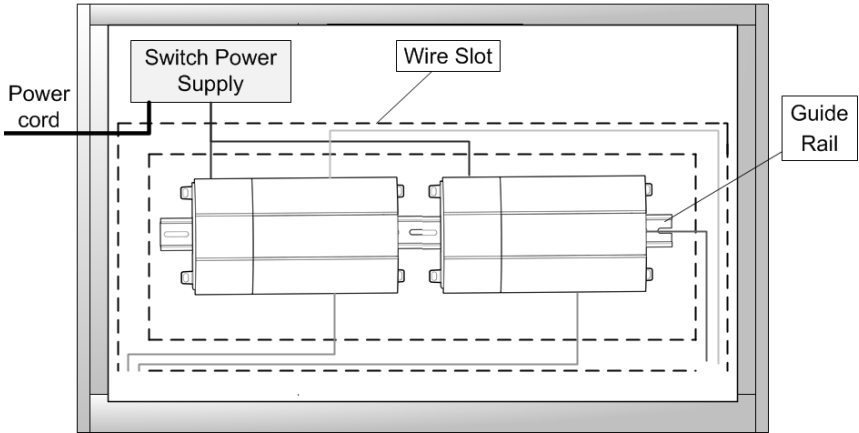
Electric Control Cabinet

Fig. 7.2 Gateway installation guide

⚠**WARNING!** Power cord and communication line of Gateway must conduct routing separately (the distance shall be over 15cm); otherwise, it might lead to Gateway communication malfunction!

The thin real line shown in the figure is communication wire and weak current wire, the thick real line is strong current wire. Above lines are only for reference.

7.2 Gateway and BMS Communication Connecting Method

7.2.1 Material Selection for Communication line

(1) Model selection of Gateway and BMS communication line shall use standard Ethernet communication line, the length of network cable between gateway and router (computer, switchboard, etc.) shall not exceed 80m

(2) Communication line model selection for Gateway and AC unit

Wire type	L(m)Communication line between gateway and AC units	Wire diameter(mm^2)	Wire standard	Remark
Light-weight/normal PVC jacket twisted copper wire	L≤ 500	≥ 2×0.75	IEC 60227-5:2007	Total communication length shall not exceed 500m

7.2.2 Communication Connection Method
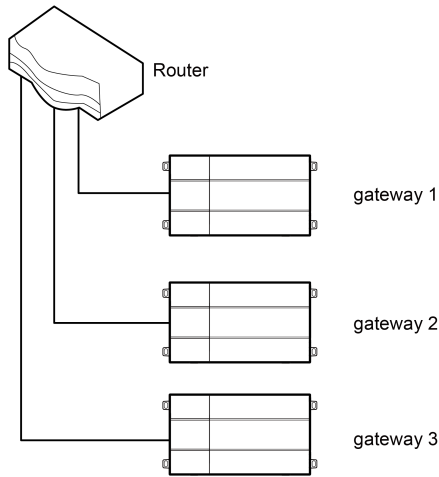
(1) Communication connection between Gateway and BMS

Fig. 7.3 Connecting method between gateway and router

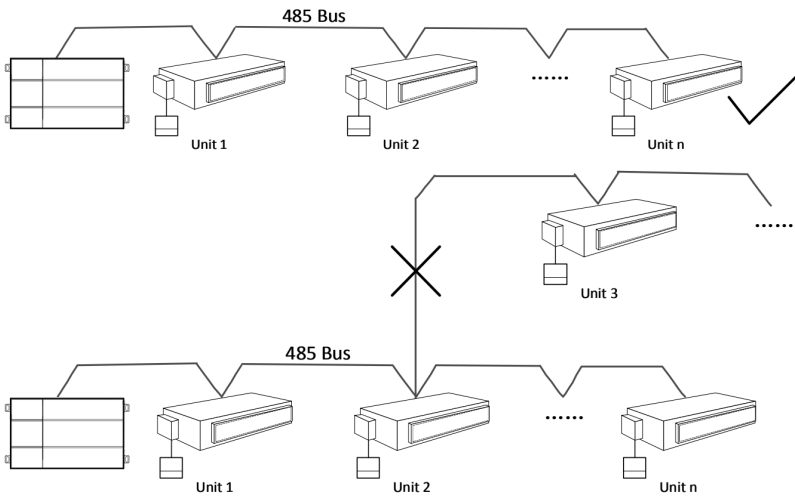(2) Communication connection between Gateway and AC units (n is the quantity of unit(s), n ≤ 255)

Fig. 7.4 Connecting method of gateway

🛈 **NOTICE!** All communication connection lines under Gateway must be in series connection, star connection shall not be adopted.

7.2.3 Communication Connection Configuration

(1) Communication line connection between Gateway and PC:

Connection diagram between Gateway and PC user side:

1) Adopt cross connection network cable, Gateway shall directly connect to PC.

10BASE-T or 100BASE-TX cross network cable
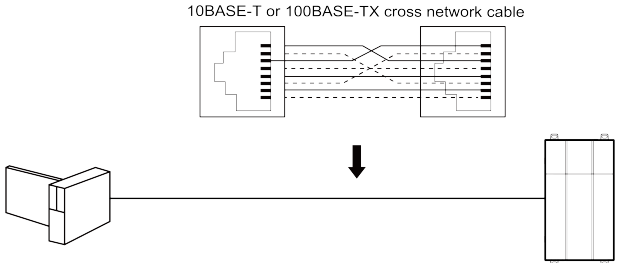
Fig. 7.5 Gateway connects to personal computer directly

2) Adopt parallel network cable, Gateway shall go through router to connect to PC.
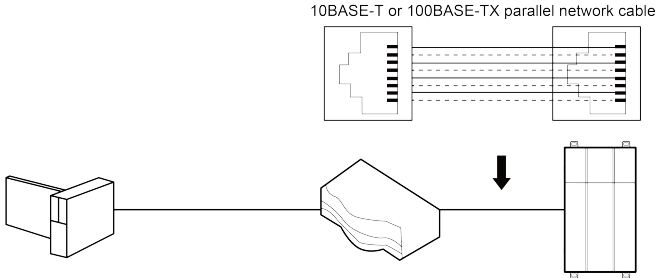
10BASE-T or 100BASE-TX parallel network cable

Fig. 7.6 Gateway connects to personal computer via router

(2) Communication line connection between Gateway and AC units:

Models of U-Match/Rooftop unit (old models, please refer to Annex B):

BMS

A1
B1

RS485-1

IDU

A-A
B-B

Connect to the next unit
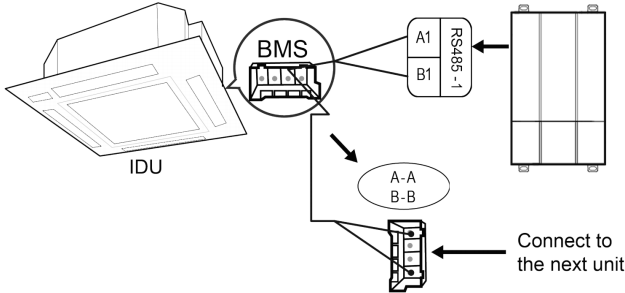
Models of U-Match/Rooftop unit (new models, please refer to Annex B):
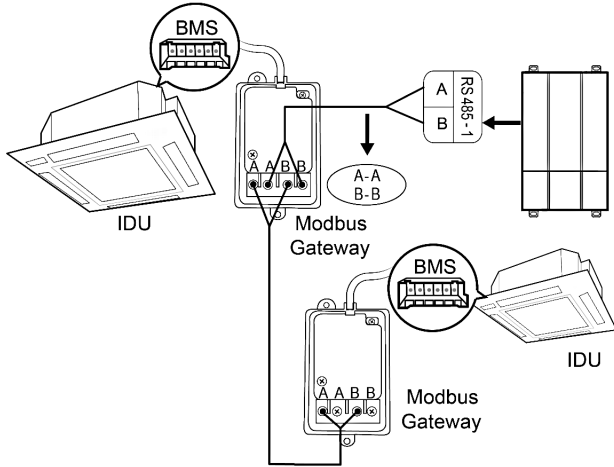
(3) Gateway configuration:

One gateway can connect 255 units at the same time. After installation, the parameters of gateway should be set. Before setting the parameters of gateway, please set the IP address of PC as the same with the IP address in the same network segment of gateway, as refer to appendix A; and then open the browser (IE10 and above version, Firefox or Google), input the default IP address of gateway: http://192.168.0.200, default user name: admin, password: 123456; as shown below.

English ∨

Login

* Username   Please enter user name

* Password   Initial password: 123456

☐ Remember me

Login

Fig. 7.7 Log on interface

Gateway parameters configuration:

After selecting the language and inputting the account name and password, click the arrow to enter the home page of gateway. Click "PRI" bu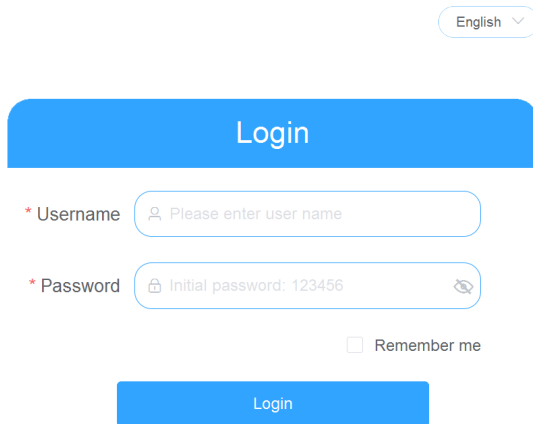tton at the column bar in the upper right corner, see fig 7.8; then enter the page of gateway parameters configuration, see fig. 7.9.

Fig. 7.8 Schematic diagram of "PRI" button

Fig. 7.9 Gateway parameters configuration page

Parameters that can be set: gateway IP address (IP address setting: numbers of master unit can't all be 0; if they are all 0, it indicates the whole network, such as 192.168.0.0; numbers of master unit can't all be 1; if they are all 1, it indicates broadcast address, such as 192.168.0.255. It is not suggested to be set by users. Otherwise, the gateway pages will unable to access), Gateway subnet mask, defaulted gateway,device name and device ID. Users can configurate it by themselves according to actual circumstances.

Default parameters:

① Access platform:Third-party;

② Access protocol:BACnet IP;

③ Communication port :47808;

④ OutTime:1000(ms).

After the parameter setting is completed, click Save and restart the gateway to complete the configuration.

� Caution! The default parameters should not be changed. Otherwise, the gateway may not work normally.

8 Attachment A TCP/IP Setting

This text takes Windows 10 as example to demonstrate the setting of TCP/IP.

（1） Left click the icon "Start" on the computer. When a new window pops up, left click "Settings" to enter "Windows Settings".

（2） Left click "Network & Internet" in the following picture to enter the interface of "Network & Internet". See ① in the picture below.

Windows Settings

Find a setting

Devices
Bluetooth,printers,more

Phone
Link your Android,iPhone

❶
Network&Internet
Wi-Fi,airplane mode,VPN
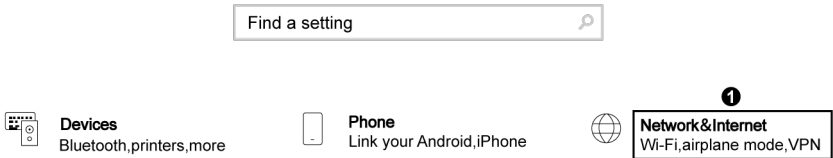
Fig 9.1 Windows settings

（3） Left click "Network and Sharing Center" in the following picture. See ② in the picture below.

Network&Internet

Status

Wi-Fi

Ethernet

Dial-up

VPN

Airplane mode

Mobile hotspot

Data usage

Proxy

You're connected to the Internet

If you have a limited data plan,you can make this network a metered connection or change other properties.

Change connection properties

Show available networks

Change your network settings

Change adapter options
View network adapters and change connection settings.

Sharing options
For the networks you connect to,decide what you want to share.

Network troubleshooter
Diagnose and fix network problems.

View your network properties

Windows Firewall

Network and Sharing Center ❷

Network reset

Fig 9.2 Network and Sharing Center

（4）Find "Ethernet" in the following picture. Left click "Ethernet" and enter the interface of "Ethernet Status". See ③ in the picture below.

View your basic network information and set up connections

View your active networks

TP-WIFI-004   Access type: Internet
Public network   Connections: Ethernet ❸

Fig 9.3 Ethernet settings selection

（5）Left click "Properties" in the following picture and enter the interface of "Ethernet Properties". See ④ in the picture below.
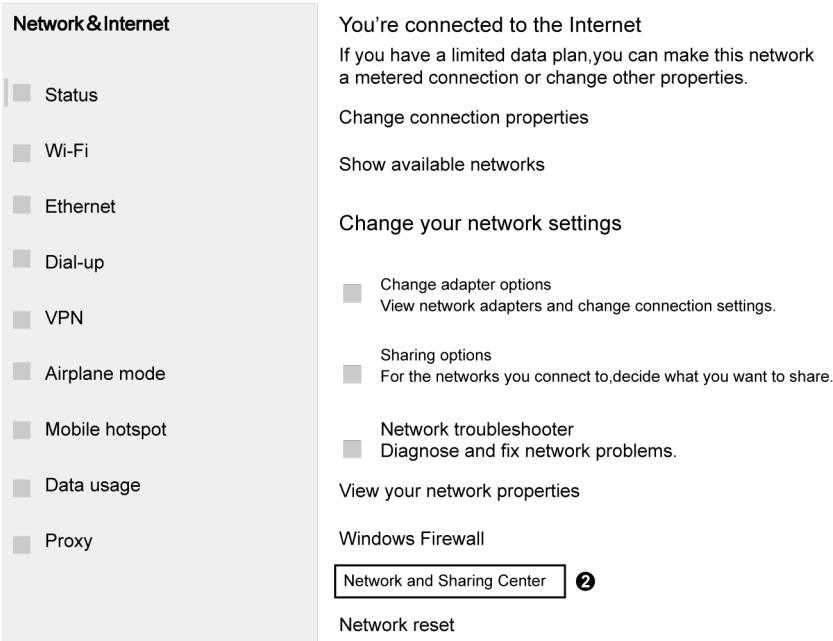
Ethernet Status   ☒

General

Connection

    IPv4 Connectivity：   Internet
    IPv4 Connectivity：   No network access
    Media State：   Enabled
    Duration：   00：11：20
    Speed：   100.0 Mbps

    Details...

Activity

                    Sent   Received

    Bytes: 732，000   878，048

                    ❹
    Properties   Disable   Diagnose

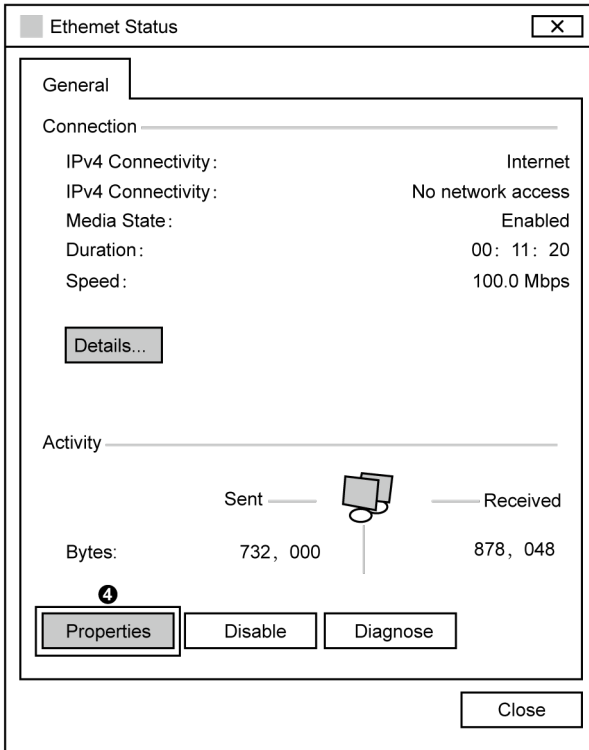   Close

Fig 9.4 Ethernet attribute selection

17

（6） Left click "Internet Protocol Version 4(TCP/IPv4)". See ⑤ in the picture below. Then left click "Properties" as shown in the picture to enter the interface of "Properties of Internet Protocol 4(TCP/IPv4)". See ⑥ in the picture below.
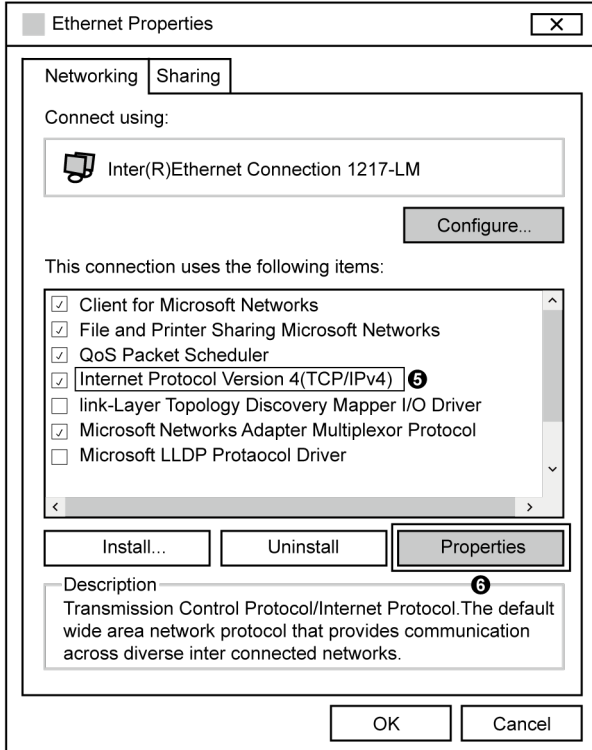

Fig 9.5 Internet Protocol Version 4 (TCP/IPv4) Properties

（7） When you are at the interface of "Properties of Internet Protocol Version 4(TCP/IPv4)" as shown below, change the IP address, subnet mask, default gateway as required (address of network equipment for connecting Gateway must be the same as the network address of Gateway ME30-44/D2(B)). Generally, DNS remains unchanged.
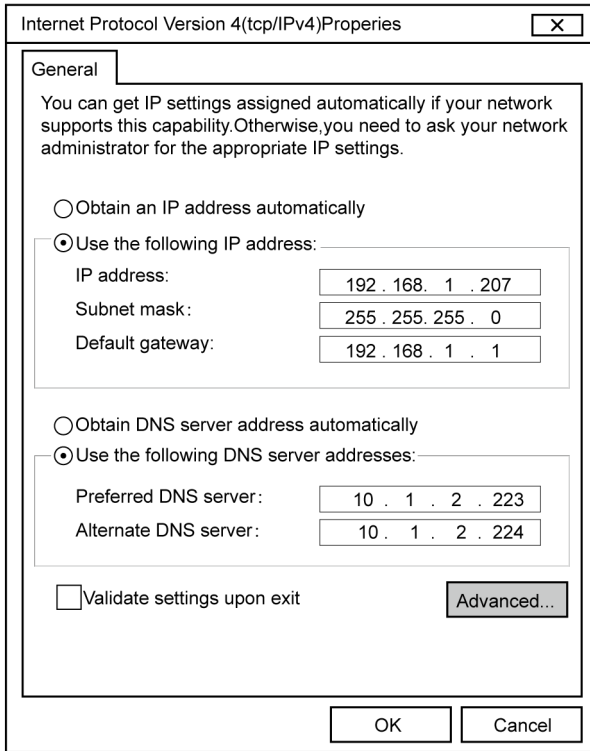
Internet Protocol Version 4(tcp/IPv4)Properies   [×]

General

You can get IP settings assigned automatically if your network supports this capability.Otherwise,you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically
⦿ Use the following IP address:
    IP address: 192 . 168 . 1 . 207
    Subnet mask：   255 . 255 . 255 . 0
    Default gateway: 192 . 168 . 1 . 1

○ Obtain DNS server address automatically
⦿ Use the following DNS server addresses:
    Preferred DNS server：   10 . 1 . 2 . 223
    Alternate DNS server：   10 . 1 . 2 . 224

☐ Validate settings upon exit   [Advanced...]

                                          [OK]   [Cancel]

Fig 9.6 Ethernet IP parameter settings