



Owner's Manual

Original Instructions

Intelligent Controller

Model:
ME20-24/D1(T)

Thank you for choosing this product. Please read this Owner's Manual carefully before operation and retain it for future reference.

If you have lost the Owner's Manual, please contact the local agent or visit www.gree.com or send an email to global@cn.gree.com for the electronic version.

GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

To Users

Thank you for selecting Gree product. Before installing the product, please read this instruction manual carefully to know well about the product and use it correctly. In order to install and use the product correctly to reach the expected operational effect, the following instructions are hereby issued:

(1)The appliance is not intended to be used by the people with physical, sensory or mental handicap or the people without using experience and knowledge (including children), except that they are supervised or guided by a person responsible for their safety when using the appliance. Children should be supervised to ensure that they do not play with the appliance.

(2)This instruction manual is universal manual, some functions introduced in this manual are only applicable to specific products; all the illustrations and information in this manual are only for reference, and the control interface should be subject to the actual interface.

(3)In order to better meet the customers' demand, our company will improve the product continuously and we have the right to conduct necessary modification at any time due to the reason of sales or production, and will reserve the right of modification without further notification.

(4)We will bear no responsibility for the personal injury, property loss or damage of equipment due to improper installation and debugging, unnecessary maintenance, non-observance of related national laws, regulations, and industrial standards, violation of any stipulations of this instruction manual, etc.

(5)The final authority for the interpretation of this instruction manual belongs to Gree Electric Appliances, Inc. of Zhuhai.

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Important Statements

Dear User,

Thank you for choosing Gree air conditioning management system kit. The system includes GREE Intelligent Remote Eudemon and ME20-24/D1(T) and it supports not only the remote control function but also the power billing function of multi VRF. When you have decided to use the power billing function of this system, it is deemed that you've learnt and accepted the following items:

- (1) Gree Electric Appliances Inc. of Zhuhai reserves all rights for the final interpretation of this calculation method.
- (2) This Gree Intelligent Billing System provided by Gree Electric Appliances Inc. of Zhuhai will not accept any test or verification done by any entity or person in terms of the reasonableness of the calculation method.
- (3) Our company will not assume any legal responsibility if product fails to work normally and/or results in other losses because of force majeure such as hacker attack, government regulation, power failure or other network and communication problem.
- (4) When using Gree Intelligent Billing System, make sure the controller is power connected. Our company will not assume any legal responsibility for any losses caused by power failure of the controller.
- (5) All graphics in this manual are for reference only. Please refer to the actual product.

Before installing and using this device, please pay special attention to the following items:

1) Device Installation

- ① Make sure this device is installed indoors in an electric control cabinet that is difficult to reach and is securely locked.
- ② Please install this device in a place without either wave interference or dust.
- ③ Power cord must be arranged separately from communication cables.
- ④ Never lay the power cord and communication cables along with a lightning conductor.

- ⑤ Make sure the indoor unit will not be powered off arbitrarily. Otherwise other indoor units that are in the same system will not function normally (poor cooling, malfunction of lack of indoor unit).
- ⑥ Normal working conditions for controller:
 - a. Temperature: $-20 \sim +60^{\circ}\text{C}$.
 - b. Humidity: less than 85%, except frosting.
 - c. Location: indoor (it is highly recommended to install this product in the electric control cabinet), not subject to direct sunlight, rain and snow etc.

2) Power Supply

- ① Installation must be performed by professional personnel. Improper installation may result in fire hazard or electric shock.
- ② Do not insert the power plug into a power socket until you make sure it is dry and clean.
- ③ Before touching the electric components, make sure the device is power-off.
- ④ Never touch the device with wet hands, otherwise electric shock may occur.
- ⑤ Power cord of stated specification must be used. Poor contact or improper installation may lead to fire hazard.
- ⑥ If power cord is connected inversely or the input power is out of the allowable range, it may lead to fire hazard or even cause damage to the device.

3) Communication

- ① Make sure the communication cables are connected to correct ports, otherwise communication error will occur.
- ② After the circuit is connected, use insulated adhesive bandage to protect the circuit from oxidation and short circuit.

4) Debugging

- ① If main board of outdoor unit needs to be replaced, each DIP switch of the new main board must be the same with that of the original board.
- ② If KWH meter needs to be replaced, the code of the new KWH meter must be different from that of the original KWH meter.
- ③ To ensure accurate billing, prohibit cutting off the power supply of KWH meter. Otherwise, it may lead to abnormal calculation of electricity
- ④ If main board of indoor unit needs to be replaced, the project code of the new main board must be the same with that of the original board.

- ⑤ If the unit or controller needs to be replaced, it's necessary to confirm whether matched resistance is connected to the unit or controller. Configure the new unit or controller according to the confirmed results.
- ⑥ If any change is made to the unit, for instance, adding or reducing units, controller must be restarted. 3min after controller is restarted, start up the Intelligent Billing Eudemon to restart self-check and configuration.
- ⑦ Please power on the controller 3min after the unit is debugged and communication is normal. Do not enable software self-check and configuration until the controller is energized for 3min.
- ⑧ If unit is found with errors, e.g. communication error, system conflict, project code conflict, etc., it is necessary to eliminate errors for the first time to ensure normal calculation.
- ⑨ Please install UPS power supply for the controller and make sure the controller is always energized so as to ensure normal calculation.
- ⑩ If the KWH meter has communication error, please eliminate the error immediately. Otherwise calculation result will be incorrect.
- ⑪ If the indoor unit has communication error for a long time, please confirm whether it is power-off or damaged. If power connection is normal and the unit can be used, please eliminate the error in time.

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 server 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	

 WARNING!
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 Controller: ①Temperature : -20~60°C; 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

Intelligent Controller (Model: ME20-24/D1(T)) is used together with Intelligent Remote Eudemon system, which can realize the supervision and control of multi VRF systems. Using method for Intelligent Remote Eudemon system please see the instruction manual of such software.

Applicable models: GMV6,GMV5S,GMV5,GMV water, GMV ES,GMV Tops, GMV Star.


3.2 Parameter Specifications

3.2.1 Controller TCP/IP Parameter (Default)

IP Address:192.168.1.150

Subnet Mask:255.255.255.0

Default Controller:192.168.1.1

 **CAUTION:**Before using the controller, configure the service IP and service port

first, otherwise, the controller will not work normally. After altering the TCP/IP parameter, restart the controller, the alteration will take effect.

4 Parts and Assembly

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

Controller	1 set
Instruction manual	1 set
Wiring terminal	4 sets

5 Introduction for Controller

5.1 Interface

5.1.1 Diagram of Interface Function

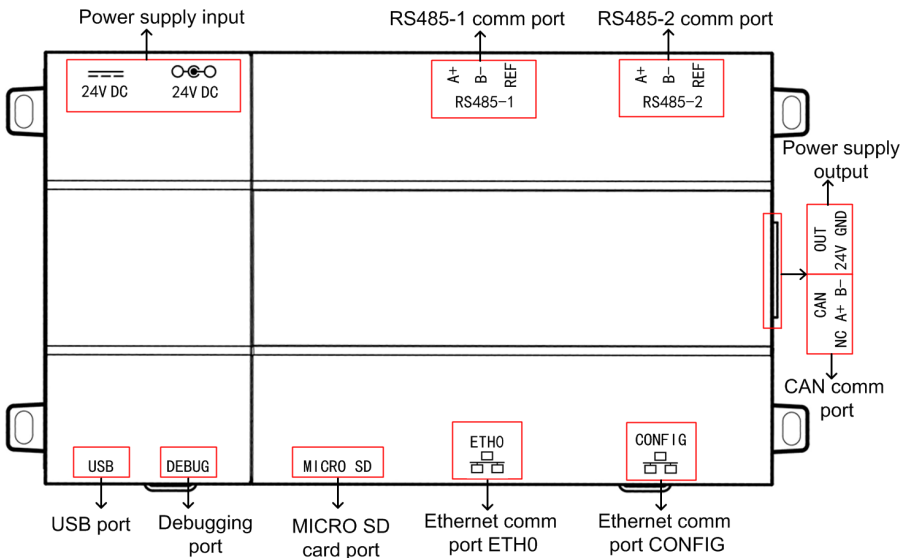


Fig. 5.1 Schematic of interfaces

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 Controller.

5.1.3 Communication Interface

CAN comm port: connect it to the AC unit through the 2-core communication line to realize the communication between Controller and the AC which adopts CAN protocol.

RS485-1 comm port: this device will not use this interface temporarily.

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

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

Ethernet comm port ETH0: communicate with Intelligent Remote Eudemon system via netting twine.

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.

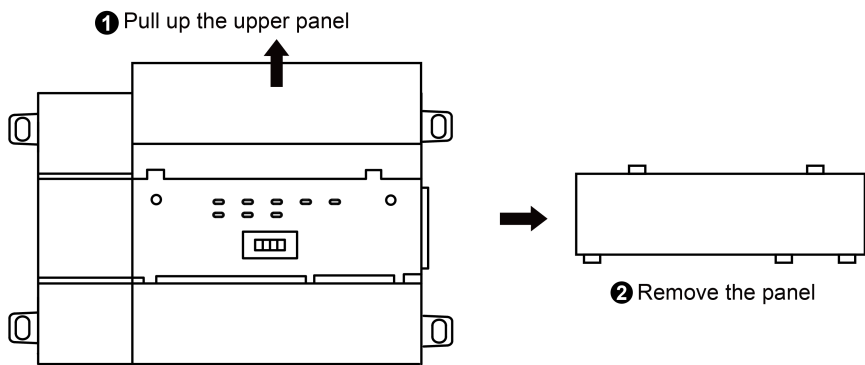


Fig 5.2 Schematic diagram of opening the black transparent board

Indicators, buttons and DIP switch are as shown below.

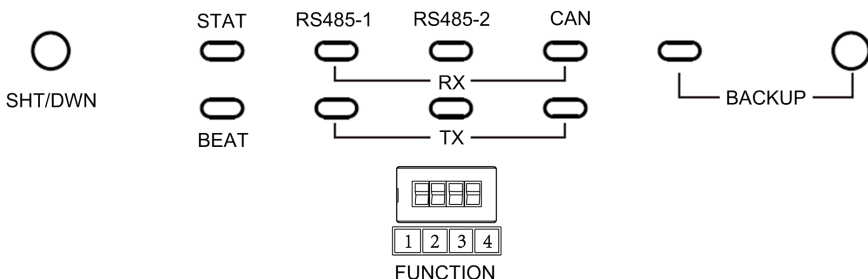


Fig 5.3 The schematic diagram of the Controller LED light board and DIP switch

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	When receiving the data of equipment (eg. AC unit) which connects to Controller, it blinks.
	TX	When transmitting data to the equipment (eg. AC unit) which connects to Controller, it blinks.
RS485-1	RX	For the power billing function, when connected to the KWH meter and receiving the data replied, it blinks.
	TX	For the power billing function, when connected to the KWH meter and the data is transferred to the KWH meter, 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 Controller is normal, it is on.
BEAT		When Controller is running normally, it blinks.
BACKUP		This device does not use this LED indicator.

5.3 Button

SHT/DWN	When the fourth digit of DIP switch code is "1", hold the button for 5s and all indicators will be on. Reset the Controller controller.
BACKUP	Not use this button for this device temporarily.

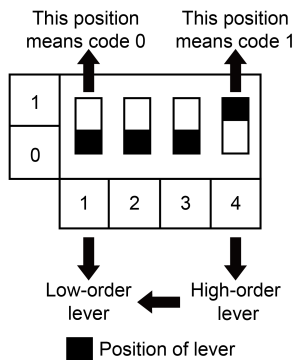
5.4 DIP Switch

! NOTICE!

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

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

5.4.1 Diagram of Dial-up Machine



5.4.2 The 1st Level of Functional DIP Switch—CAN2 Bus Matched Resistance Setting

! NOTICE! Main control ODU or Controller at the top/end of CAN2 bus must be with matched resistance; otherwise the communication might be wrong!

※ CAN2 bus: Specific meaning shall refer to the specification in Fig Internet topological graph.

The No.1 dial-up button in function dial-up machine shall be used in the setting in the matched resistance of CAN2 bus in this Controller.

When the Controller is at the top/end of CAN2 bus, the Controller shall be with the matched resistance, then dial the No.1 function dial-up machine to 1.

When the Controller is not at the top/end of CAN2 bus, the Controller is not with the matched resistance, then dial it to 0.

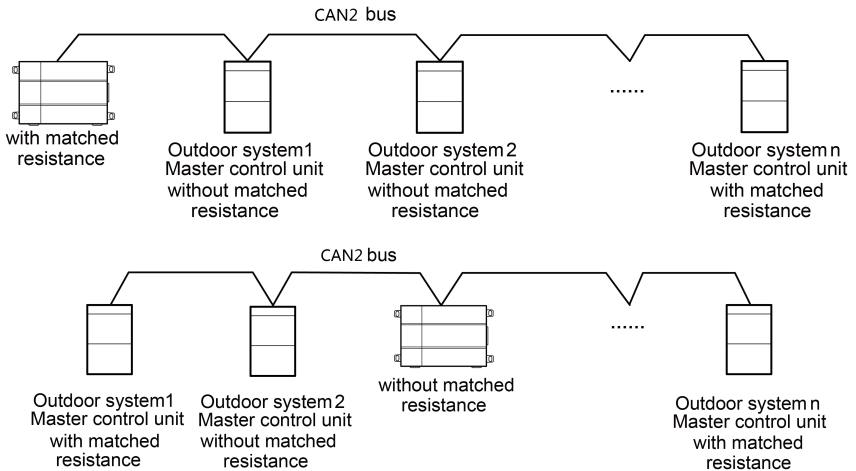


Fig. 5.4 Controller access CAN2 network matching resistance setting

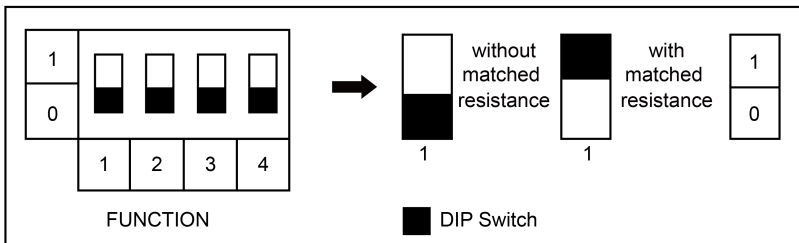
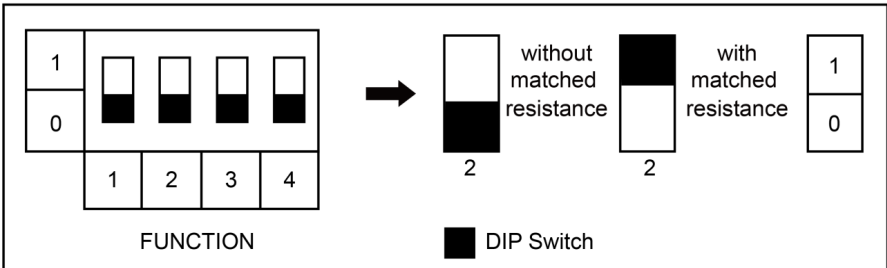


Fig. 5.5 Schematic of dial code

5.4.3 The 2nd Level of Functional DIP Switch—RS-485 Bus Matched Resistance Setting

The 2nd level of the functional DIP switch is used for setting matched resistance for controller in RS-485 bus (It is referred to as the KWH meter communication bus in the network).

If the controller needs to be the joint with matched resistance in RS-485 bus, the 2nd level should be set with matched resistance.



5.4.4 The 4th Level of Functional DIP Switch—Controller Reset Selection Bits

When there's an error in configuring Controller IP address, subnet mask, default Controller, Controller name or Controller ID from the webpage, and the webpage can't be accessed, user can reset the Controller to restore factory default information. Dial the fourth digit of the DIP switch code to "1", hold SHT/DWN button for 5s to restore the default information of factory setting of the Controller.

6 Application

6.1 Long-distance Monitor System

The controller(ME20-24/D1(T)) is equipped with the monitoring function for multi VRF. It realizes the monitor of Intelligent Remote Eudemon System on CAN bus Gree multi VRF through controller(ME20-24/D1(T)).

6.1.1 Internet Topological Graph

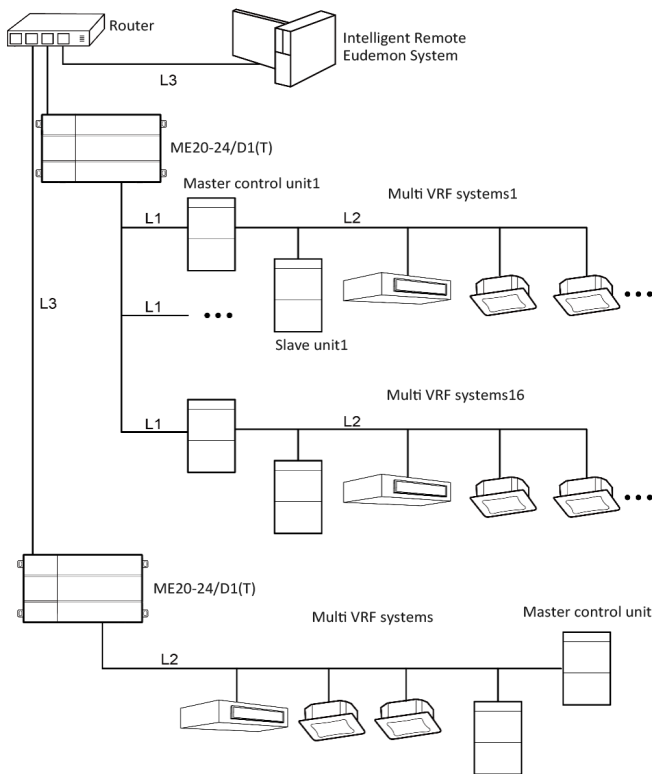


Fig. 6.1 Network topology

topological graph statement:

CAN2 bus network: L1 shown in Fig. 6.1 is CAN2 bus, which consists of controller and master outdoor unit of system; one CAN2 network can connect to 16 sets of outdoor units and 255 sets of indoor units. When the quantity of outdoor units exceeds 16 or the quantity of indoor units exceeds 255, it should be divided into two CAN2 networks.

CAN1 bus network: L2 shown in Fig. 6.1 is CAN1 bus, which consists of network and all the outdoor units and indoor units of system; one CAN1 network can connect to 80 sets of indoor units at most.

Network table: L3 shown in Fig. 6.1 is general network cable, the controller can connect to Intelligent Remote Eudemon via the network cable.

System: one system consists of one set of outdoor units (one set of outdoor unit

is a module set, can consist 1~4 modules, that is, 1~4 sets of outdoor units) and its indoor units.

Quantity of units can be connected to Intelligent Controller: one Intelligent Controller supports one CAN2 network, can connect to 16 sets of systems or 255 sets of indoor units.

Note: L3 in Fig. 6.1 is standard netting twine, L1 and L2 are twisted-pairs.

6.2 Power billing of Gree multi VRF

The controller(ME20-24/D1(T)) provides the function of power billing of multi VRF. Please refer to Chapter 8 for concrete description and debugging method for power billing function.

7 Product Installation

7.1 Product Size and Spatial Size for Electric Control Cabinet Installation

7.1.1 Product Size

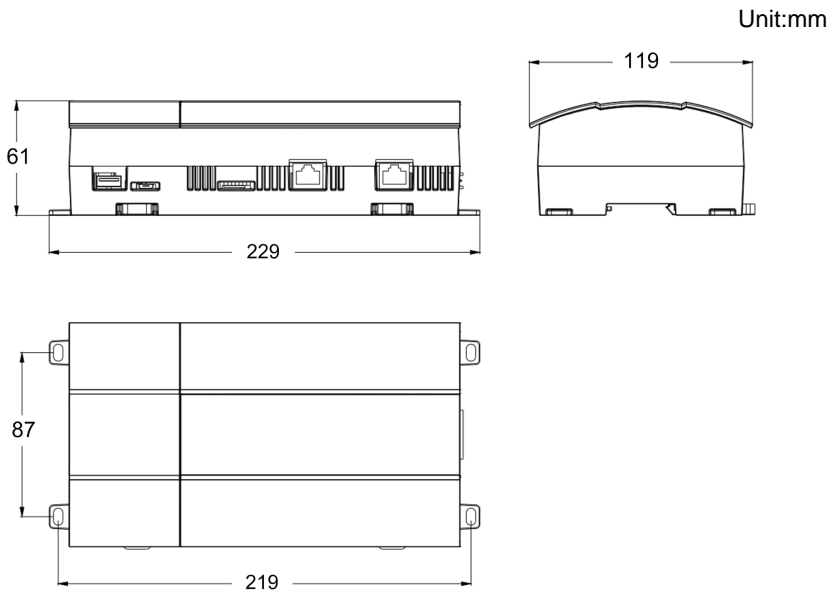


Fig. 7.1 Controller product size chart

Notice for installation and operation:

- (1) Ensure the specification of power input. Otherwise, Controller can't work normally or even be damaged.
- (2) Ensure the dial code setting of Controller 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 Controller 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

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

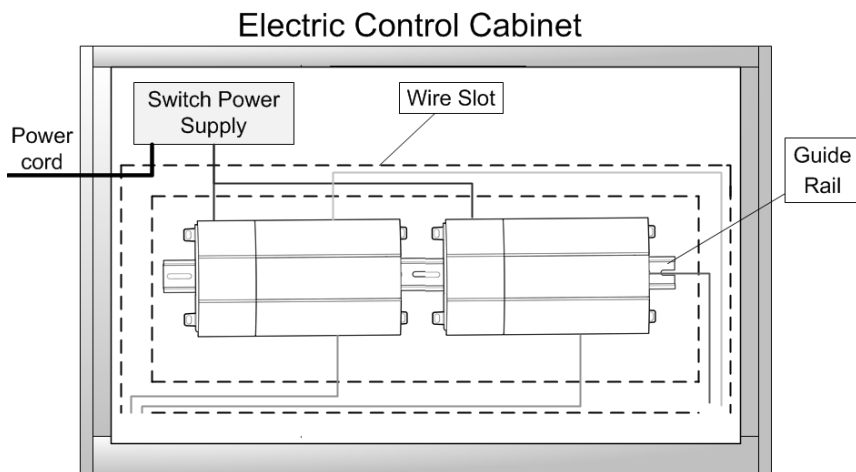


Fig. 7.2 Controller installation guide

⚠ WARNING! Power cord and communication line of Controller must conduct routing separately (the distance shall be over 15cm); otherwise, it might lead to Controller 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 Selection of Communication Wire Material

7.2.1 Material Selection for Communication line

- (1) Model selection of Controller and Intelligent Remote Eudemon system communication line shall use standard Ethernet communication line, the length of network cable between Controller and router (computer, switchboard, etc.) shall not exceed 80m.
- (2) Communication line model selection for Controller and AC unit.

Wire type	L(m)Communication line between Controller and AC units	Wire diameter(mm ²)	Wire standard	Remark
Light-weight/normal PVC jacket twisted copper wire	$L \leq 500$	$\geq 2 \times 0.75$	IEC 60227-5:2007	Total communication length shall not exceed 500m

7.2.2 Communication Connection Method

- (1) Communication connection between Controller and Intelligent Remote Eudemon system:

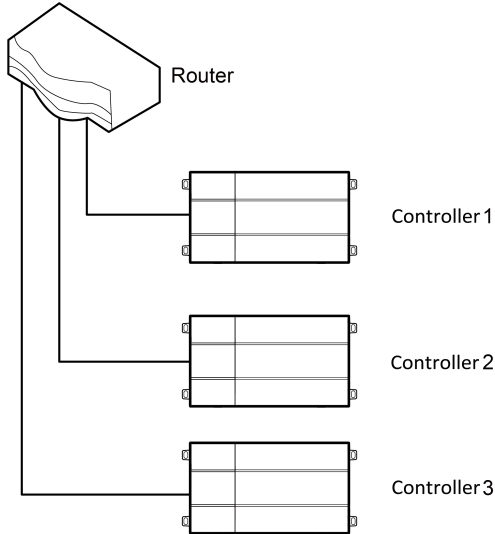


Fig. 7.3 Connecting method between Controller and router

(2) Communication connection between Controller and AC units (n is the quantity of ODU system, $n \leq 16$)

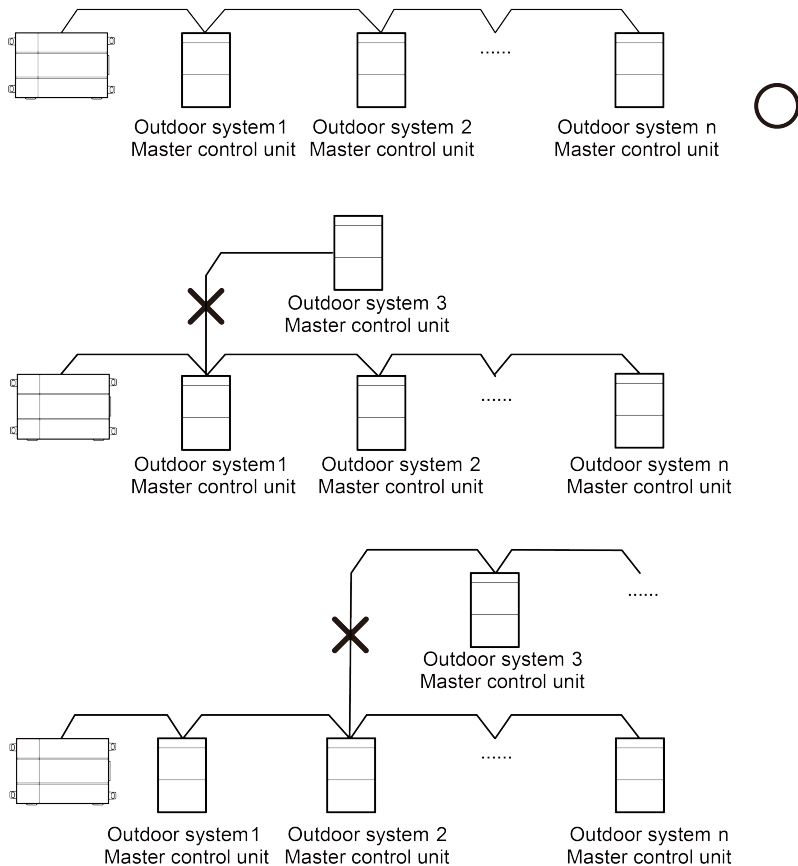


Fig. 7.4 Connecting method of Controller

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

7.2.3 Communication Connection Configuration

(1) Communication line connection between Controller and PC:

Connection diagram between Controller and PC user side:

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

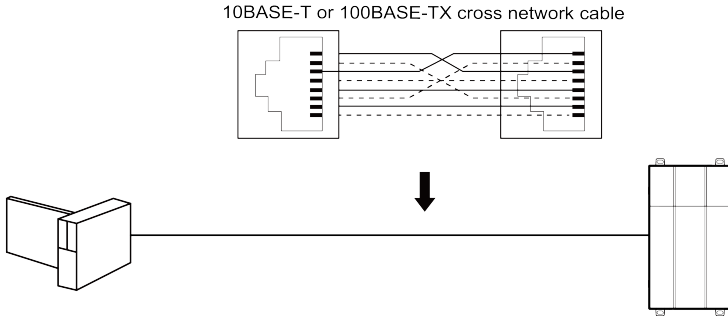


Fig. 7.5 Controller connects to personal computer directly

- 2) Adopt parallel network cable, Controller shall go through router to connect to PC.

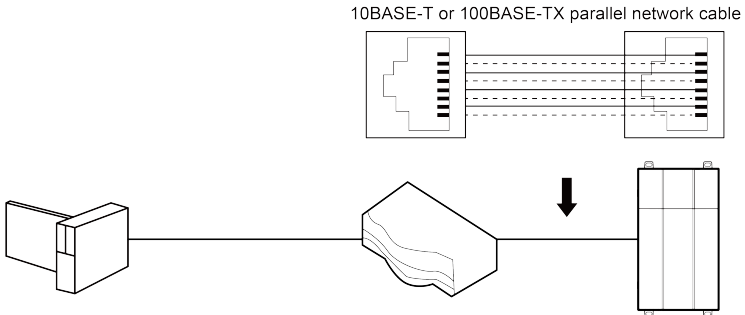


Fig. 7.6 Controller connects to personal computer via router

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

When Controller is connected to main control unit of ODU, ODU with the address dial-up of 0 must be connected.

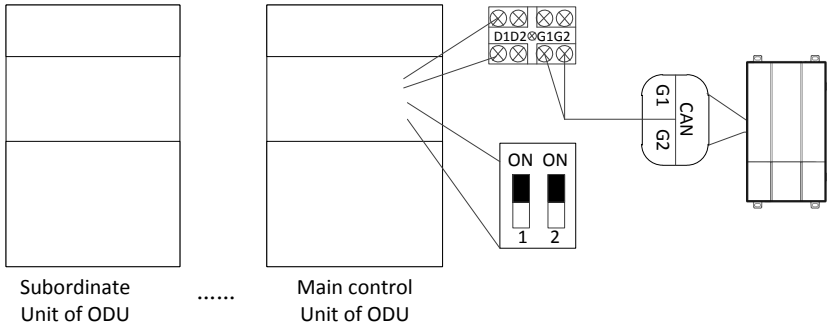


Fig. 7.7 Communication connection between Controller and unit

(3) Controller configuration:

Before setting the parameters of Controller, please set the IP address of PC as the same with the IP address in the same network segment of Controller, as refer to appendix A; and then open the browser (IE10 and above version, Firefox or Google), input the default IP address of Controller: <http://192.168.1.150>, default user name: config, password: config; after selecting the language, it will enter the login interface, as is shown in the following fig.

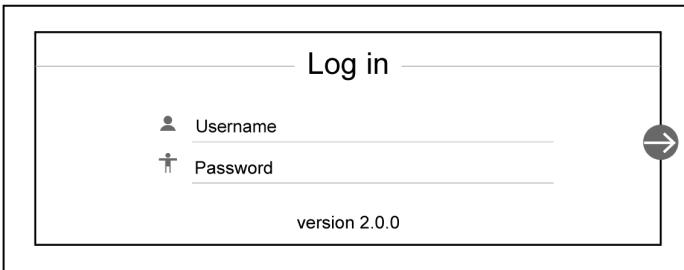
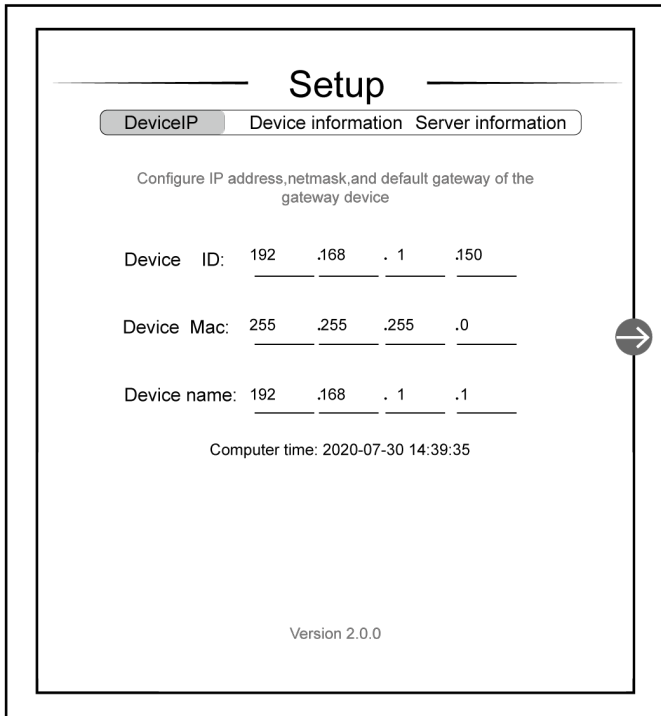


Fig. 7.8 Log on interface

After inputting the user name and password, click the arrow to the configuration interface; set the IP parameter of controller in fig 7.10; set equipment information in fig 7.11; set server information in fig 7.12.



The screenshot shows a web-based configuration interface titled "Setup". At the top, there are three tabs: "DeviceIP" (which is selected and highlighted in grey), "Device information", and "Server information". Below the tabs, a sub-header reads "Configure IP address, netmask, and default gateway of the gateway device". The main content area contains three rows of input fields, each with a label and a value: "Device ID: 192 .168 . 1 .150", "Device Mac: 255 .255 .255 .0", and "Device name: 192 .168 . 1 .1". Below these fields, the "Computer time" is displayed as "2020-07-30 14:39:35". At the bottom center, the version number "Version 2.0.0" is shown. On the right side of the form, there is a circular button with a right-pointing arrow.

Fig. 7.9 Setting interface of network parameters

Setup

DeviceIP Device information Server information

View the gateway device MAC; configure device name and device ID.

Device ID:

Device Mac:

Device name:

Version 2.0.0

Fig. 7.10 Setting interface of equipment information

Setup

DeviceIP Device information **Server information**

Configure server information for gateway device access

Network Type:

Server IP: 192 . 168 . 1 . 102

Server port: 6687

Version 2.0.0

Fig. 7.11 Server setting page

Settable parameters: controller IP address (IP address setting: master unit No. can't be 0 for all; 0 for all means the entire network, e.g. 192.168.1.0; master unit No. can't be 1 for all; 1 for all means the broadcast address, e.g. 192.168.1.255, the user is not recommended for setting, you might fail to visit the controller interface after setting), controller subnet mask, defaulted gateway of controller, equipment name, equipment ID(0~255), network type, service IP, service port (defaulted value is 6687, the Intelligent Remote Eudemon version is below the value of 6688 input in version V2.0). The user shall configure it based on personal demand. After setting, click the arrow, the interface will pop "Restart controller", select "Yes" to restart the controller immediately, select "Cancel" to return to the configuration interface of controller.

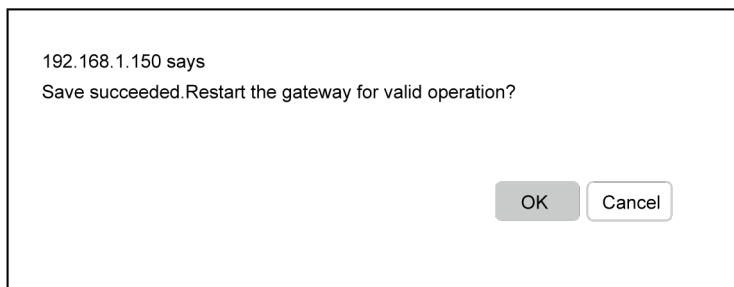


Fig. 7.12 Pop-up window of restart

8 Power billing function

The controller supports power billing function for multi VRF system. The applicable models include: GMV5S All DC inverter multi VRF system, GMV5 DC inverter multi VRF system, GMV ES DC inverter multi VRF, GMV Top villa-type residential central AC, GMV Star residential multi VRF and GMV6 series multi VRF. (Please subject to the reply in consultation sheet for the demand of other models)

To operate the unit safely and reliably, allocate suitable KWH meter and current inductor on the basis of original monitor system. The KWH meter and current inductor are the standard kit, for any damages in usage process, the user shall purchase the product by themselves, but the following technical requirements must be satisfied:

The KWH meter is the mutual inductor type, the electric quantity consumed for the unit is the electric quantity tested in the KWH meter (the indication on the KWH meter) plus the induction ratio of mutual inductor.

8.1 Composition of the system

Parts name	Quantity	Configuration method
GREE Intelligent Remote Eudemon(V2.0 and above)	As required	Standard supply
ME20-24/D1(T)	Several	Standard supply
KWH meter assembly	Several	Self-supplied by user

8.2 KWH Meter & Current Transformer

Controller should be equipped with the applicable KWH meter and current transformer. Users should prepare the KWH meter and current transformer by

themselves. Be sure that they are in compliance with the specified technical requirements.

※The KWH meter should be meter of mutual inductance. Power consumed by the unit is the electricity quantity detected by the meter (reading of the meter) *mutual-inductance ratio of current transformer.

Please select KWH meter and current transformer according to actual engineering status. For more details, please refer to Appendix A in this manual.

The optional KWH meter models are as follows:

Num	Brand	Model
1	ENTES	EPR-04S-96
2	WattNode	WNC-3D-240-MB
3	SIEMENS	PAC3200(Ethernet can be expanded to be RS485)
4	Schneider	iEM3255

8.3 Network topological graph

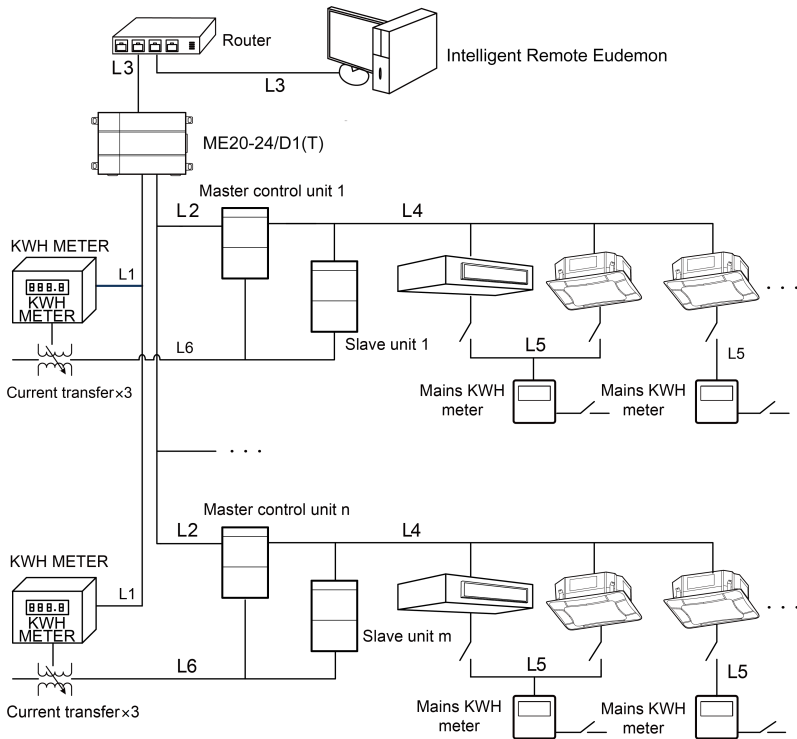


Fig 8.1 Network topological graph which supports power billing

Statement on network topological method :

L1: L1 in the above diagram is RS485 bus, which is used for communication between KWH meter and controller. Total length of L1 should not exceed 500m. The number of KWH meters connected with L1 should not exceed 16.

L2: L2 in the above diagram is CAN2 bus, which is composed of controller and the master outdoor unit. Total length of L2 should not exceed 500m and the number of outdoor units should not exceed 16 (excludes slave module). (In theory, the total length of CAN2 bus should not exceed 500m. In actual application, wire material and environmental condition will affect the communication distance. Please refer to the actual case.)

L3: L3 in the above diagram is the standard Ethernet connection line. Each network cable should not be over 80m's long. All the controllers shall be connected to router's LAN ports. The computer installed with Intelligent Billing Eudemon shall be connected the LAN port of the same router.

L4: it indicates CAN1 bus, which is used for the communication between indoor unit and outdoor unit. please refer to the Owner's Manual of air conditioners for the length of L4.

L5: it indicates the power supply lines of indoor unit, getting the power from nearby family lighting circuit.

L6: it indicates the power supply lines of outdoor unit. An electric meter can connect one refrigeration system at the most.

When adopting network topology method, the power consumption of indoor unit is directly calculated by the family electric meter because the indoor unit directly connects to family lighting circuit. The billing system only conducts the statistics and distribution for the power consumption of outdoor unit.

CAN2 network: One CAN2 network can be connected with 16 outdoor units and 255 indoor units in maximum. If there are over 16 sets of outdoor unit or over 255 indoor units, two CAN2 networks must be used.

One controller can only be connected with one CAN2 network. One set of Intelligent Billing Eudemon can be connected with 16 controllers.

8.4 Connection of Communication Cables

System is made up of different parts, so each part must be able to communicate effectively. Communication connection includes:

- (1) Communication between controller and the computer that is installed with Intelligent Billing Eudemon.
- (2) Communication between controller and air conditioners.
- (3) Communication between controller and KWH meters.

8.4.1 Selection of Materials for Communication Cables

- (1) Select communication cable for controller and KWH meter

Cable type	Communication cable for ME30-24/D1(T) and KWH meter L(m)	Cable size (mm ²)	Cable standard	Remark
Shielding light/general PVC sleeve twisted pair copper core soft wire	L≤500	≥2×0.75	IEC 60227-5:2007	If communication distance is over 500m, optoelectronic isolated relay device should be added.

- (2) Select communication cable for controller and air conditioners.

Cable type	Communication cable for ME30-24/D1(T) and air conditioners L(m)	Cable size (mm ²)	Cable standard	Remark
Shielding light/general PVC sleeve twisted pair copper core soft wire	L≤500	≥2×0.75	IEC 60227-5:2007	Total length of communication cable should not exceed 500m.

- (3) Select standard Ethernet communication cable for the communication between controller and the computer that is installed with Intelligent Billing Eudemon.

8.4.2 Communication Connection Method

All communication cables of the controller must adopt series connection instead of Y-connection.

(1) Communication connection between controller and KWH meter.

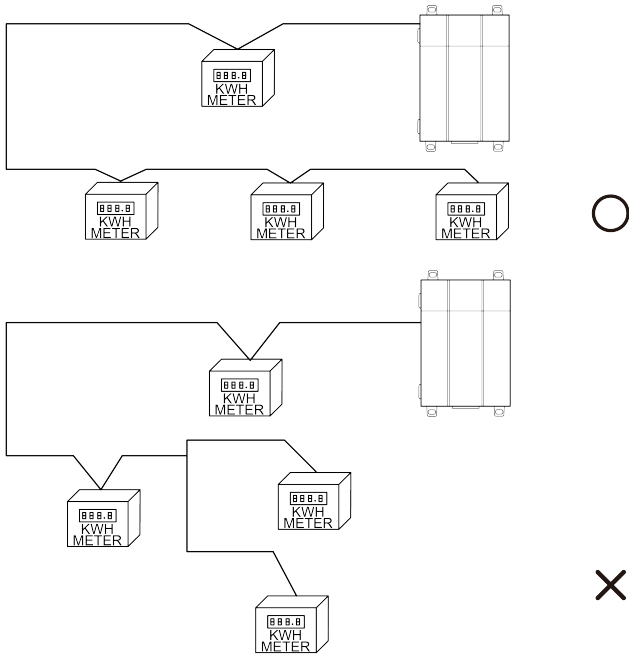
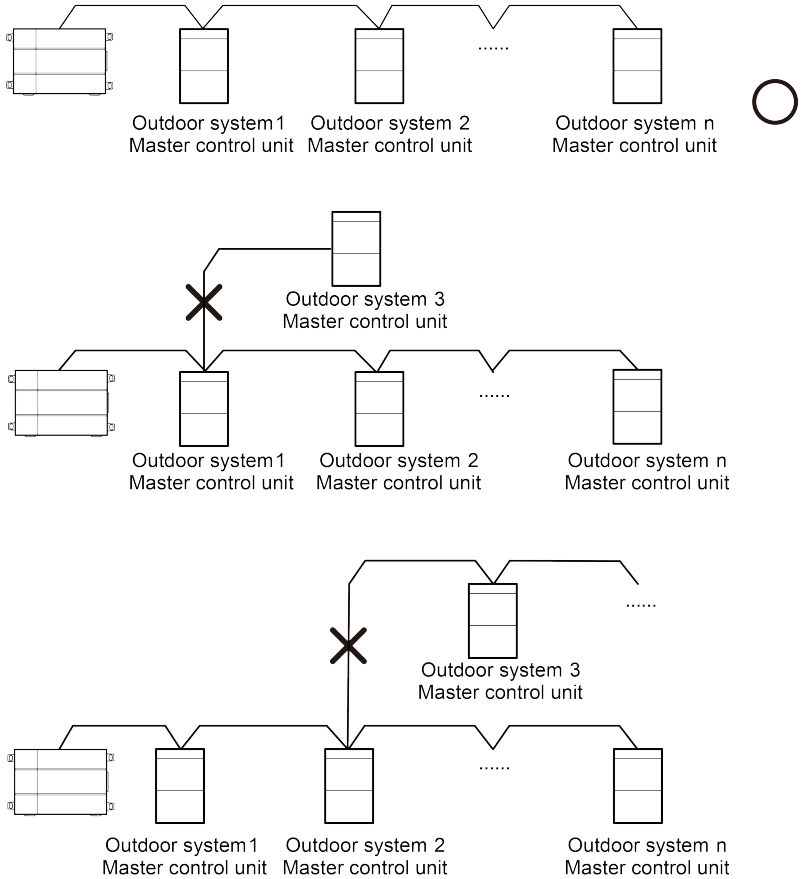


Fig 8.2 Connection method of KWH meter

The number of KWH meters connected to one controller should not exceed 16.

(2) Communication connection between controller and air conditioners.



“n” refers to the number of outdoor systems. $n \leq 16$.

8.4.3 Communication connection configuration of controller and KWH meter

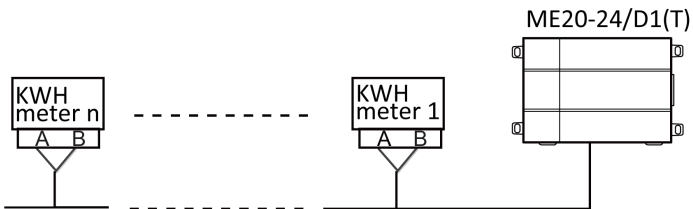


Fig 8.3 Communication connection of controller and KWH meter

Step 1: Connect the RS485-1 communication interface A+ and B- port of the smart controller to the A and B port of KWH meter; Step 2: Conduct serial connection with communication cord 485 for the KWH meter in a Intelligent Remote Eudemon System, as is shown in Fig 8.3.

NOTE!

In an RS485 bus, when there are more than 30 KWH meters connected or the communication distance is over 500m, an optoelectronic isolated relay device must be connected. Connect the R+, R- terminals of the relay device to the A, B terminals of RS485 communication port of a nearby KWH meter (i.e. R+ terminal of relay connects to A terminal of KWH meter. R- terminal of relay connects to B terminal of KWH meter).

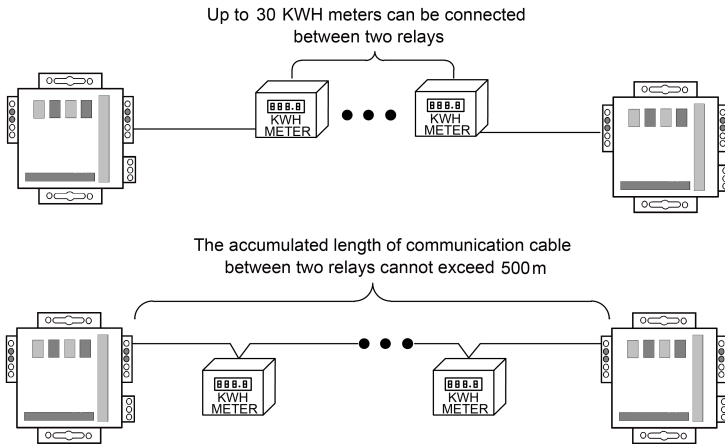


Fig 8.4 Optoelectronic isolation repeater connection among KWH meters

8.5 Function debugging

8.5.1 Function debugging of controller

The intelligent controller is an important component of the Intelligent Remote Eudemon System, which must ensure the normal and reliable operation of the intelligent controller;

- (1) Before the intelligent controller is energized, the CAN2 bus of the unit must be connected to the CAN interface of the intelligent controller;

- (2) Before the intelligent controller is energized, all KWH meters must work normally, and the RS485 bus of the KWH meter must be connected to the RS485-A interface of the intelligent controller;
- (3) Before the intelligent controller is energized, please ensure that all units are powered on;
- (4) After the intelligent controller is energized, please wait for 3 minutes before using the software for detection.

8.5.2 Software function debugging

Intelligent Remote Eudemon is the window of man-machine interaction. The Intelligent Remote Eudemon can realize the functions of controller configuration, engineering information configuration, billing information export, bill output, etc. In order to ensure the accuracy of billing information, please confirm the following information before setting the software.

- (1) It must be ensured that the controller to be debugged has been energized and connected with PC through router;
- (2) It must be ensured that the room information corresponds to the engineering number of indoor unit accurately; otherwise, the bill will be abnormal due to configuration error;
- (3) The corresponding relationship between the KWH meter and air conditioning system must be accurate, otherwise, the bill will be abnormal due to the wrong configuration of the corresponding relationship;
- (4) The software must be installed in the required operating system (see the software statement for specific requirement);
- (5) It's necessary to ensure that the computer is dedicated to the Intelligent Remote Eudemon System and it's forbidden to install anti-virus, system management, game and other software, otherwise, the stable operation and usage of software will be affected.

Please refer to the software manual for specific installation and usage.

9 Appendix A: Selection of KWH Meter & Current Transformer

Selection scheme 1

KWH meter model: ENTES EPR-04S-96

Parameters of ENTES EPR-04S-96

- (1) Measure the 3-phase voltage and electric current. Calculate the forward and reverse active electricity quantity.
- (2) Working voltage: 45-265V AC/DC.
- (3) Measuring voltage: 10-300V AC (L-N), 10-500V AC (L-L).
- (4) Frequency: 45-65Hz.
- (5) Reference current: 0.05-5.5A.
- (6) Communication port: RS-485 port.
- (7) Communication protocol: Modbus RTU.

Current transformer: comply with the following parameters.

Parameters of Current Transformer.

- (1) Rated voltage & frequency: 630V, 50Hz.
- (2) Grade of accuracy: 1.
- (3) Secondary rated current: 5A.
- (4) Rated output load: 5VA.
- (5) Rated primary current of current transformer: Select according to table 1.

Please use the current transformer made by a well-known brand with high reliability.

Table 1: Reference Table of Load and Mutual-Inductance Ratio

Rated capacity of unit (HP)	Rated capacity of unit (kW)	Mutual-inductance ratio of current transformer
≤18	≤50.4	50/5A
20~36	56~101	100/5A
38~74	106.4~207.2	200/5A
76~88	212.8~246.4	250/5A

Selection scheme 2

KWH meter model: Wattnode Modbus WNC-3D-240-MB

Parameters of WNC-3D-240-MB:

- (1) Measure the 3-phase voltage and electric current. Calculate the forward and reverse active electricity quantity.

- (2) Working voltage: 208-240V AC.
- (3) Frequency: 50/60Hz.
- (4) CT Input: 0.333Vac.
- (5) Communication port: RS-485 port.
- (6) Communication protocol: Modbus RTU.

Current transformer: Accu CT ACTL-0750-xxx

Parameters of Accu CT ACTL-0750-xxx.

- (1) Accuracy: 0.75%.
- (2) Frequency: 50 or 60 Hz.
- (3) Output Options: 0.333 Vac, 1 V, 100 mA.
- (4) Rated primary current of current transformer: Select according to table 2.

Table 2: Reference Table of Load and Mutual-Inductance Ratio

ODU capacity (Ton)	ODU capacity (KBTU/h)	Mutual-inductance ratio
6-8	72-96	50A
10-16	120-192	100A
18-24	216-288	150A
26-28	312-336	200A
30	360	250A



NOTE!

- ① “xxx” indicates the full scale current rating.
- ② WNC-3D-240-MB must match with Accu CT ACTL-0750-xxx for operation.

Selection scheme 3

KWH meter model: SIEMENS SENTRON PAC3200

Parameters of SIEMENS SENTRON PAC3200

- (1) Measure the 3-phase voltage and electric current. Calculate the forward and reverse active electricity quantity.
- (2) Voltage input: 95...240 V AC、50/60 Hz $\pm 10\%$ Or 110...340 V DC $\pm 10\%$.
- (3) Measuring voltage: max 690V/400V AC (L-L / L-N).
- (4) Current input: x/5 A.
- (5) Communication port: (Ethernet can be expanded to be RS485).

Current transformer: comply with the following parameters.

Parameters of Current Transformer.

- (1) Rated voltage & frequency: 630V, 50Hz.
- (2) Grade of accuracy: 1.
- (3) Secondary rated current: 5A.
- (4) Rated output load: 5VA.
- (5) Rated primary current of current transformer: Select according to table 3.

Please select a proper current transformer based on local using environment and actual engineering condition (working condition, installation location).

Table 3: Reference Table of Load and Mutual-Inductance Ratio

Rated capacity of unit (HP)	Rated capacity of unit (kW)	Mutual-inductance ratio of current transformer
≤18	≤50.4	50/5A
20~36	56~101	100/5A
38~74	106.4~207.2	200/5A
76~88	212.8~246.4	250/5A



NOTE!

SIEMENS SENTRON PAC3200 must work with communication module. SENTRON PAC RS485; otherwise, it cannot function normally.

Selection scheme 4

KWH meter model: Schneider iEM3255

Parameters of Schneider iEM3255

- (1) Measure the 3-phase voltage and electric current. Calculate the forward and reverse active electricity quantity.
- (2) Voltage input:
 - Measured voltage: Wye: 100 - 277 V L-N, 173 - 480 V L-L ±20%
 - Delta: 173 - 480 V L-L ±20%
 - Overload: 332 V L-N or 575 V L-L
 - Frequency: 50 / 60 Hz ±10%
- (3) Current input: x/5 A.
- (4) Communication port: RS-485 port.
- (5) Communication protocol: Modbus RTU.

Current transformer: comply with the following parameters.

Parameters of Current Transformer.

- (1) Rated voltage & frequency: 630V, 50Hz.

- (2) Grade of accuracy: 1.
- (3) Secondary rated current: 5A.
- (4) Rated output load: 5VA.
- (5) Rated primary current of current transformer: Select according to table 4.


Please use the current transformer made by a well-known brand with high reliability.

Table 4: Reference Table of Load and Mutual-Inductance Ratio

Rated capacity of unit (HP)	Rated capacity of unit (kW)	Mutual-inductance ratio of current transformer
≤18	≤50.4	50/5A
20~36	56~101	100/5A
38~74	106.4~207.2	200/5A
76~88	212.8~246.4	250/5A

10 Attachment B 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

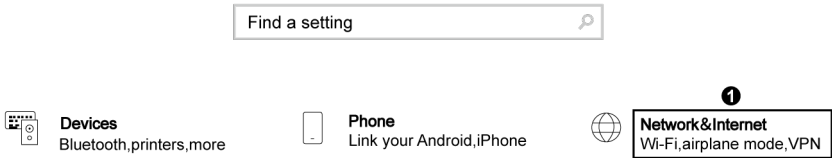


Fig 8.1 Windows settings

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

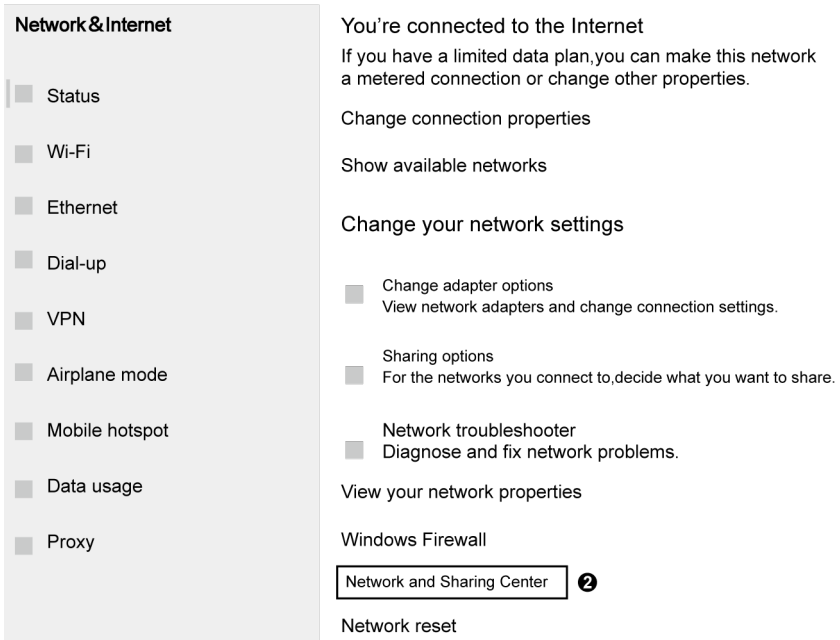


Fig 8.2 Network and Sharing Center

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

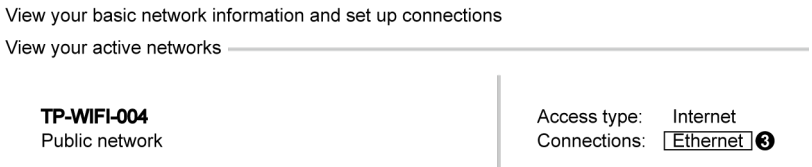


Fig 8.3 Ethernet settings selection

- (5) Left click “Properties” in the following picture and enter the interface of “Ethernet Properties”. See④in the picture below.

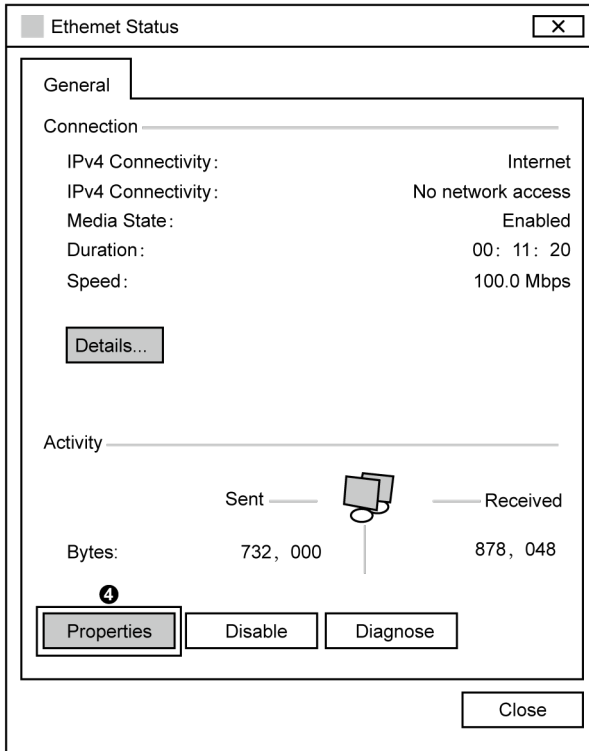


Fig 8.4 Ethernet attribute selection

- (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.

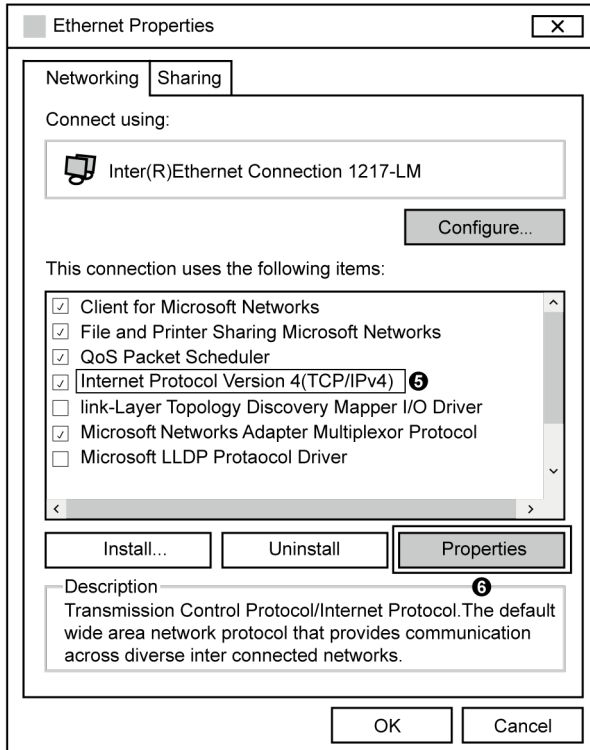


Fig 8.5 Internet Protocol Version 4 (TCP/IPv4) Properties

- (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 Controller as required (address of network equipment for connecting Controller must be the same as the network address of Controller ME20-24/D1(T)). Generally, DNS remains unchanged.

Internet Protocol Version 4(tcp/IPv4)Properties

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

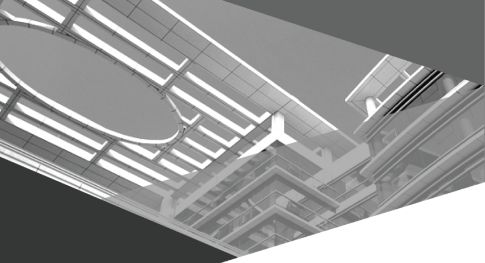
Alternate DNS server: 10 . 1 . 2 . 224

Validate settings upon exit

Advanced...

OK Cancel

Fig 8.6 Ethernet IP parameter settings



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