![GREE logo] **GREE**
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Owner's Manual

Original Instructions

Gree Intelligent Billing System

Model:

ME30-24/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's product. Please read this instruction manual carefully before installing and using the product, so as to master and correctly use the product. In order to guide you to correctly install and use our product and achieve expected operating effect, we hereby instruct as below:

(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 responsibility for their safety. Children should be supervised to ensure that they do not play with the appliance.

(2) In order to ensure reliability of product, the product may consume some power under stand-by status for maintaining normal communication of system and preheating refrigerant and lubricant. If the product is not to be used for long, cut off the power supply. Please energize and preheat the unit in advance before reusing it.

(3) Please properly select the model according to actual using environment, otherwise it may impact the using convenience.

(4) This product has gone through strict inspection and operational test before leaving the factory. In order to avoid damage due to improper disassembly and inspection, which may impact the normal operation of unit, please do not disassemble the unit by yourself. You can contact with the special maintenance center of our company if necessary.

(5) For personal injury or property loss and damage caused by improper operation such as improper installation and debugging, unnecessary maintenance, violation of related national laws and rules and industrial standard, and violation of this instruction manual, etc., we will bear no liability.

(6) When the product is faulted and cannot be operated, please contact with our maintenance center as soon as possible by providing the following information.

　　1) Contents of nameplate of product (model, cooling/heating capacity, product No., ex-factory date).

2) Malfunction status (specify the situations before and after the error occurs).

(7) All the illustrations and information in the instruction manual are only for reference. In order to make the product better, we will continuously conduct improvement and innovation. We have the right to make necessary revision to the product from time to time due to the reason of sales or production, and reserve the right to revise the contents without further notice.

(8) The final right to interpret for this instruction manual belongs to Gree Electric Appliances Inc. of Zhuhai.

Important Statements

Dear User,

   Thank you for choosing Gree Intelligent Billing System. This system consists of two parts: Intelligent Billing Eudemon (computer software) and ME30-24/D1(T) (controller). It should be used with KWH meter, current transformer and router. By deciding to use this system, you understand and accept the following terms:

   （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 ～ +60℃.

    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.

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 System Overview

Gree Intelligent Billing System includes (without limitation to) Intelligent Billing Eudemon, ME30-24/D1(T) (controller), KWH meter, router and current transformer. System will automatically collect data from the air conditioning system and KWH meter and then distribute power consumption based on logical calculation.

Applicable models: GMV5(3PH), GMV5C(3PH), GMV5 MAX(3PH), GMV5 HR(3PH), GMV5 SLIM(3PH), GMV5 MINI(3PH).

2.1 System Structure

User should prepare the following parts based on actual engineering conditions. Please check before installation.

Name	Quantity	Supply Type
Intelligent Billing Eudemon	As required	Standard supply
Router	As required	Self-supplied by user
ME30-24/D1(T)	Some	Standard supply
Electronic KWH meter	Some	Self-supplied by user
Current transformer	Some	Self-supplied by user

2.2 Network Topology

One set of Gree Intelligent Billing System includes an Intelligent Billing Eudemon (computer software), some controllers, some KWH meters and current transformers. One controller can be connected to 16 systems at most and 255 indoor units in maximum. User can determine the number of controller in an Intelligent Billing System according to the number of units in a project. The number of KWH meters and current transformers should be determined according to units' load and the maximum electric current.
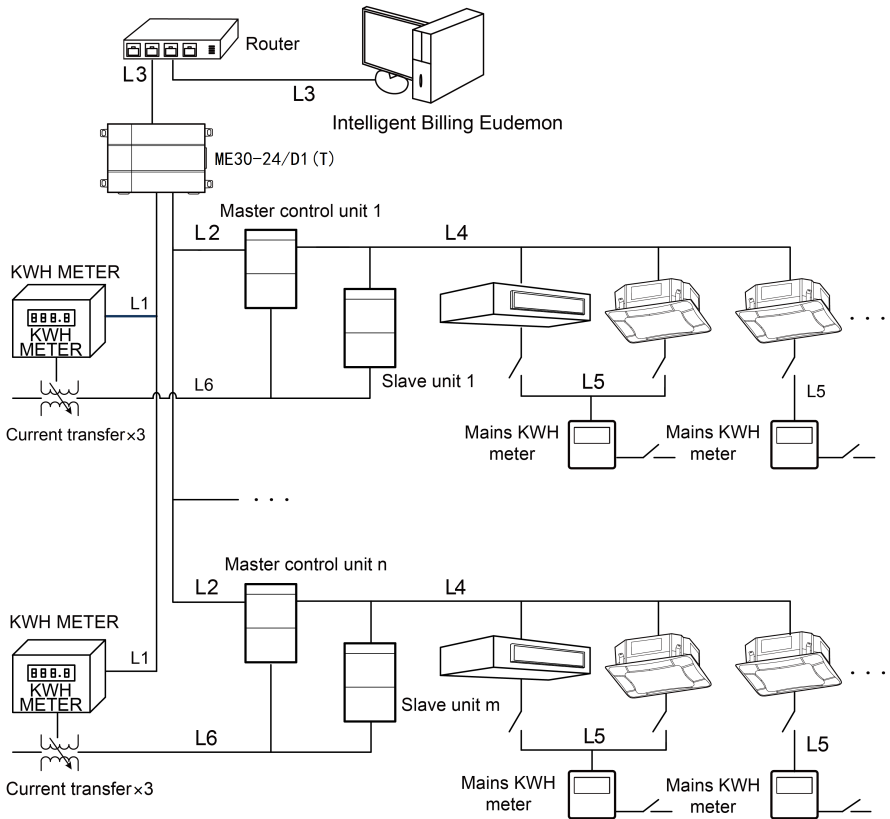
Instructions on Network Topological Diagram

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 to L1 should not exceed 16.

L2: L2 in the above diagram is CAN2 bus, which consists of controller and the master outdoor unit. Total length of L2 should not exceed 500m and the number of outdoor units connected to L2 should not exceed 16 (excluding slave modules). (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. Each controller and the Intelligent Billing Eudemon must be connected to router's LAN port.

L4: it indicates CAN1 bus, which is used for the communication between indoor unit and outdoor unit. Please refer to the Owner's Manual 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 units 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 at most.
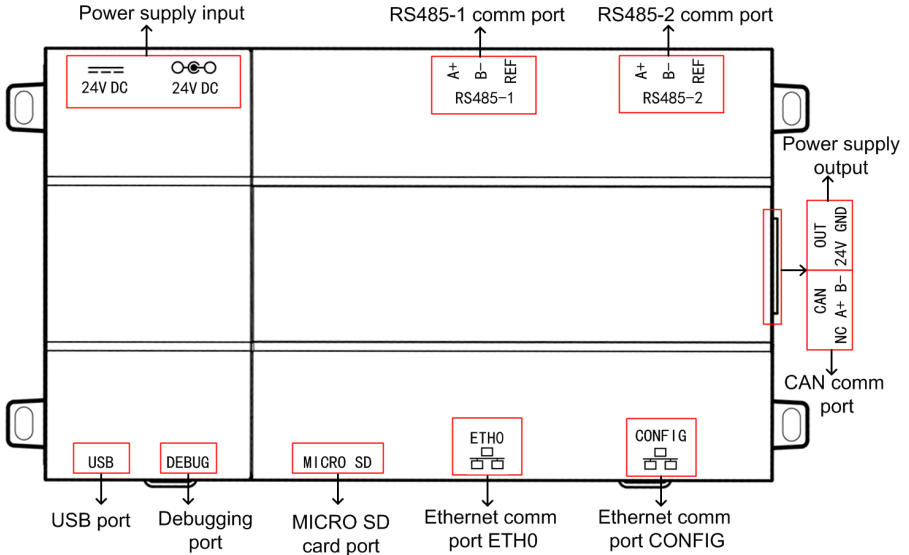
NOTE!

① The device ID of each controller under one router should not be identical. Otherwise communication will not work!

② Please consult professional technical personnel for the selection of electric meter.

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3 System Details

3.1 Controller

3.1.1 Diagram of Ports

Power supply input   RS485-1 comm port   RS485-2 comm port

24V DC   24V DC

A+ B- REF
RS485-1

A+ B- REF
RS485-2

Power supply output

OUT
CAN
NC A+ B- 24V GND

CAN comm port

USB   DEBUG   MICRO SD   ETH0   CONFIG

USB port   Debugging port   MICRO SD card port   Ethernet comm port ETH0   Ethernet comm port CONFIG

3.1.2 Power Supply

Power supply should be 24V DC. Please pay attention to the following matters:

(1) Never touch the port of power input when the controller is energized.

(2) Controller must be configured with UPS. Gree will not take any responsibility for any loss caused by power consumption calculation problem because of power failure of the controller.

(3) There are two input ports of power source, only one needs to be used.

(4) Power supply output is not available in this device, please do not connect to power consumption equipment, otherwise it may cause malfunction of controller.

3.1.3 Communication Ports

CAN comm port: Connect to air conditioners via two-core communication cable to obtain data from air conditioners.

RS485-1 comm port: Connect to the bus of KWH meter via three-core communication cable to obtain electricity quantity from KWH meter.

RS485-2 comm port: currently not available for this device.

USB, DEBUG, MICRO SD card ports: currently not available for this device.

Ethernet comm port ETH0: Connect via network cable to the computer that is installed with Intelligent Billing Eudemon.
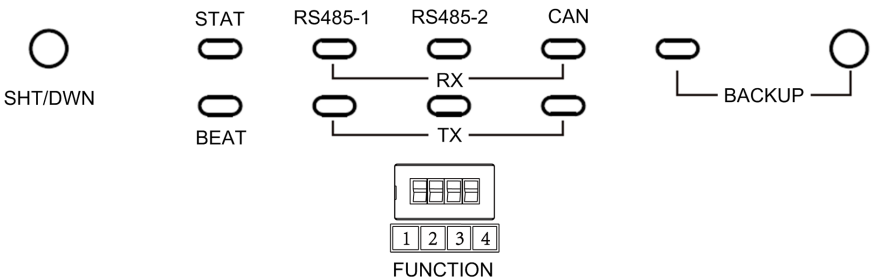
Ethernet comm port CONFIG: Configure the device ID of controller through communication between the Internet and the computer.

3.1.4 LED

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

❶ Pull up the upper panel

❷ Remove the panel
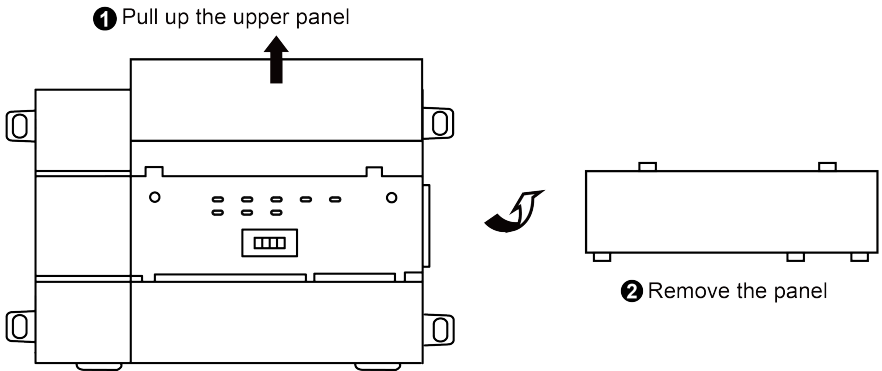
Indicators, buttons and DIP switch are as shown below.

CAN	RX	When data is received, this LED indicator will be flickering.
	TX	When data is sent, this LED indicator will be flickering.
RS485-1	RX	When data from the KWH meter is received, this LED indicator will be flickering.
	TX	When data is transferring to the KWH meter, this LED indicator will be flickering.

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| RS485-2	RX	This LED display is not applicable to this device.
	TX	This LED display is not applicable to this device.
STAT		If power supply of ME30-24/D1(T) is normal, this indicator will be on.
BEAT		If ME30-24/D1(T) is operating normally, this indicator will be flickering.
BACKUP		This LED display is not applicable to this device.

3.1.5 Button

SHT/DWN	When you press the button, the indicator STAT will flash. Press and hold the button for 5s and all the indicators will go out. The ME30-24/D1(T) is restarted.
BACKUP	Not use this button for this device temporarily.

3.1.6 DIP Switch

※Before using this device, set the DIP switch first. Otherwise the device will not work.

Controller DIP switch code setting area is composed of function DIP switch code.

3.1.6.1 Diagram of DIP Switch
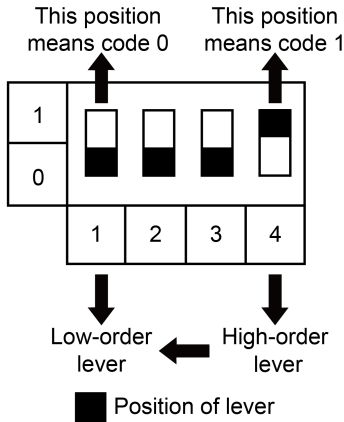
### 3.1.6.2 The 1st Lever of Functional DIP Switch—CAN2 Bus Matched Resistance Setting

The master outdoor unit or controller at the beginning or ending place of CAN2 bus must be set with matched resistance. Otherwise communication will not work!

※CAN2 bus: Please refer to 2.2 Network Topological Diagram for its specific meaning.

The 1st lever of the functional DIP switch is used for setting matched resistance for controller in CAN2 bus.

If controller is at the beginning / ending place of CAN2 bus, it should be set with matched resistance, which means the 1st lever should be switched to 1.

If the controller is not at the beginning / ending place of CAN2 bus, it should be set without matched resistance, which means the 1st lever should be switched to 0.
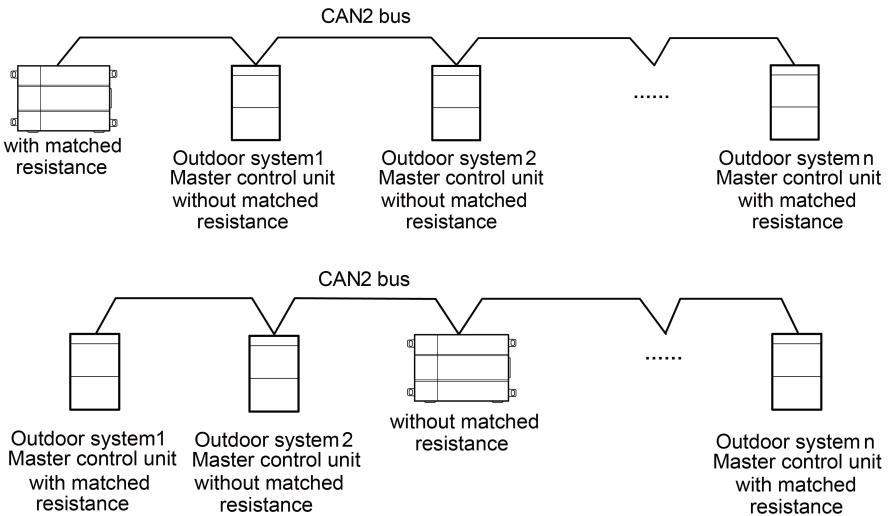
"n" refers to the number of outdoor systems, n≤16.

Diagram of Matched Resistance DIP Switch:

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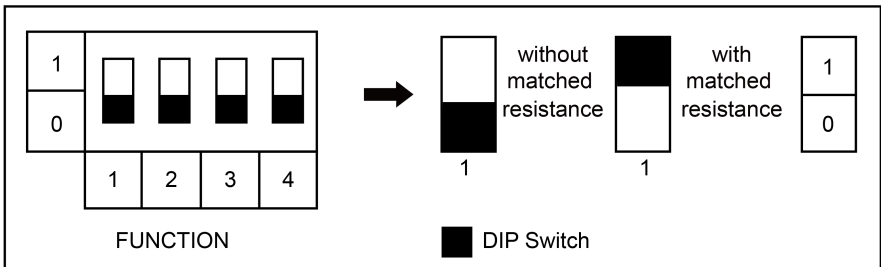
3.1.6.3The 2nd Lever of Functional DIP Switch—RS-485 Bus Matched Resistance Setting

The 2nd lever 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 lever should be set with matched resistance.
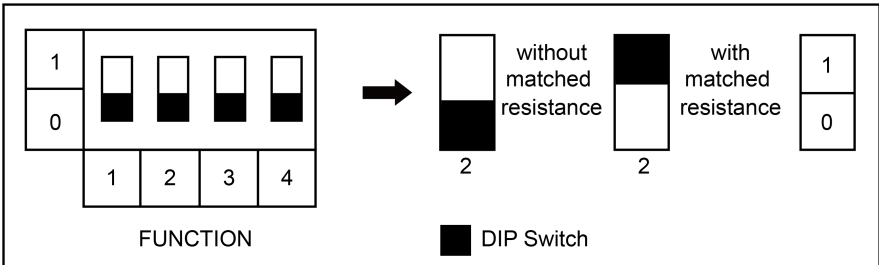
3.2 KWH Meter & Current Transformer

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.

3.3 Router

In Gree Intelligent Billing System, router is necessary for the communication between controller and the computer software.

3.3.1 Selection Requirements for Router

Router should be selected according to the actual engineering conditions. Please select a router that is made by a well-known brand with high product quality. Make sure the router's DHCP function is available and MAC address can be

configured and connected to the terminal. Controller and the computer that is installed with Intelligent Billing Eudemon must be connected to router's LAN ports.

（1） Router's type: enterprise router, industrial router.

（2） Support protocol (including but not limited to): TCP/IP, DHCP, ICMP, HTTP, UPnP.

（3） Number of LAN ports: select as required.

（4） Transmission rate: $\geq$ 100Mbps.
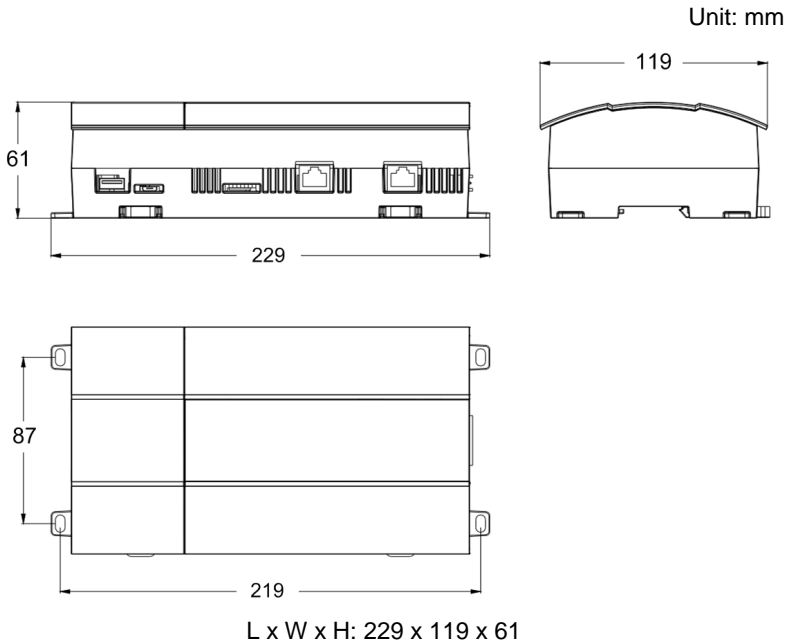
（5） Configuration mode: WEB page management.

3.4 Intelligent Billing Eudemon

Please refer to the instruction manual of Intelligent Billing Eudemon.

4 Installation Guide

4.1 Controller Dimensions and Installation Dimensions for Electric Control Cabinet

4.1.1 Controller Dimensions

Unit: mm

L x W x H: 229 x 119 x 61

4.1.2 Installation Dimensions for Electric Control Cabinet of the controller

The controller should be installed in the electric control cabinet. The guide rail should be horizontally fixed with multiple screws. The controller is installed on the guide rail parallel in front side. The installation is shown in the figure as below (for reference only).

Electric Control Cabinet
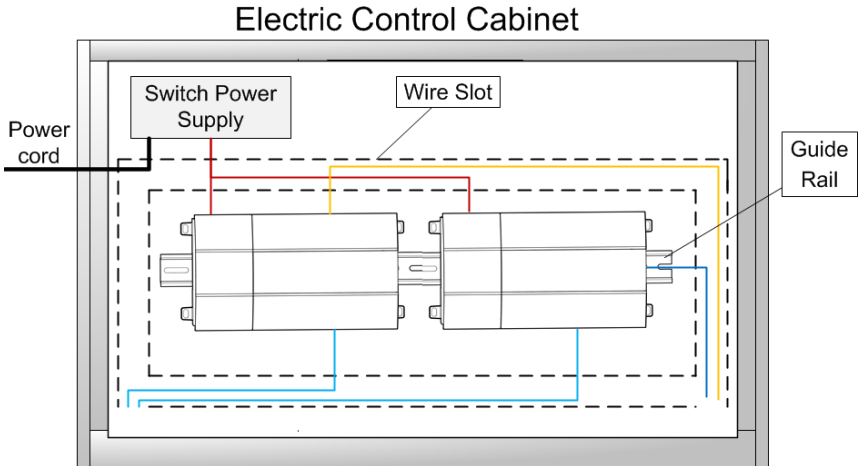
Power cord of controller and communication wire should be arranged separately (the distance should be over 15cm), otherwise it may cause communication error of controller!

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.

4.2 Dimensions and Installation of KWH Meter & Current Transformer

Please refer to the installation instruction manuals of specific KWH meter and current transformer for the dimensions and installation of KWH meter and current transformer.

4.2.1 Setting Requirements for KWH Meter

In order to guarantee calculation accuracy, please set the KWH meter according to the following requirements:

（1）When configuring the KWH meter, please set the current transformation ratio according to actual requirement.

（2） Set the voltage transformation ratio of KWH meter to be 1 to prevent repeated calculation.

（3） Addresses of KWH meters on a same bus must be different from one another. Otherwise communication error will occur.

4.2.2 Connection Diagram of Current Transformer and KWH Meter

Please refer to the installation instruction manuals of specific KWH meter and current transformer.

4.2.3 Wiring Diagram of KWH Meter & Current Transformer

Please refer to the installation instruction manuals of specific KWH meter and current transformer.

4.2.4 Notices for Using KWH Meter

① Please refer to KWH Meter Instruction Manual to install the KWH meter. After wiring is finished, fix the cover of KWH meter in place to avoid security risk.

② Connect voltage in strict accordance with the voltage grade stated on nameplate. If the input voltage is 1.5 times larger than the rated voltage, even for a short time, the instrument may be damaged.

③ Connect wires in strict accordance with the wiring diagram pasted on the back of KWH meter cover. After turning on the power, check the voltage, current, active power, inactive power and their poles displayed by the KWH meter. Check the screen of malfunction display to judge the wire connection and operation status of the instrument.

④ It is suggested to use 3-core shield wire to connect the RS485. The 3 cores will connect terminals with A, B and communication of the meter. The single end of shield layer should be connected to ground securely.

⑤ During installation, tighten up the wiring terminals and hang the instrument on a barrier that is secure, fire-proof and vibration-proof. In

order to have the best visual effect, please install it vertically at a height of 1.8m.

4.2.5 Notices for Using Current Transformer

（1）Please select the current transformer in strict accordance with the range of load. In order to ensure the accuracy of measurement, current under normal load shall reach 60% of the rated value of current transformer as much as possible. This is to avoid long-time overload operation and overheating of iron core and secondary coil, which will wear off or even damage the transformer.

（2）Please use straight-through low voltage type current transformer. It is flexible and able to select transformation ratio according to actual current. Pay attention to the method stated on nameplate when confirming the number of windings. Usually the number of winding is based on the winding crossed through the center of transformer rather than the external winding. If the number of winding is calculated based on the external winding, power calculation will be incorrect.

（3）When wiring for the current transformer, the secondary side must be reliably grounded. Dotted terminal must be consistent with one another.

（4）When the current transformer is working normally, secondary open-circuit is forbidden because it will generate high voltage and affect personal and property safety.

4.3 Dimensions and Installation of Router

For dimensions and installation of router, please refer to the installation and instruction manual of the specific router.

4.4 Installation of Intelligent Billing Eudemon

For installation of Intelligent Billing Eudemon, please refer to the installation manual of the software.

4.5 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.

4.5.1 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 $\leq$ 500	$\geq$ 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 $\leq$ 500	$\geq$ 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.

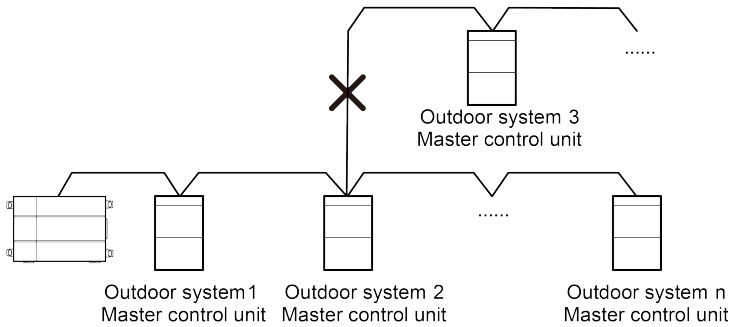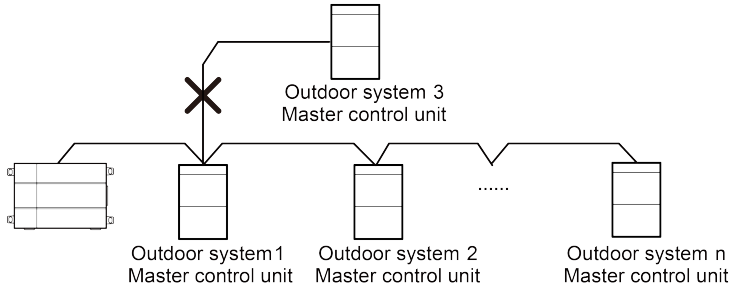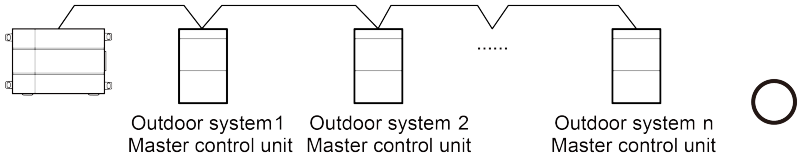## 4.5.2 Communication Connection Method

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

（1） Communication connection between controller and KWH meter.
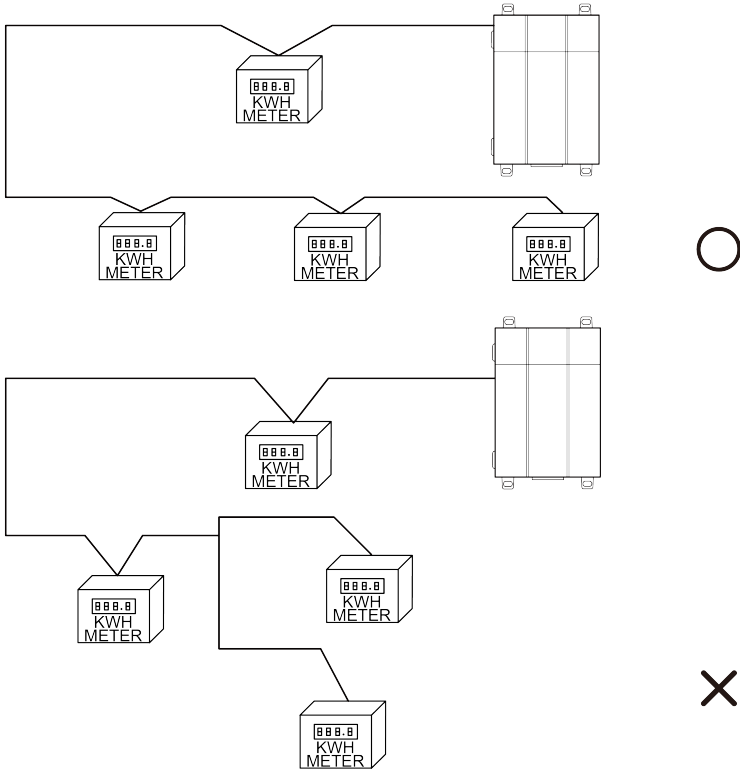
The number of KWH meters connected to one controller should not exceed 16.

（2） Communication connection between controller and air conditioners.

Outdoor system1   Outdoor system 2   Outdoor system n
Master control unit Master control unit   Master control unit

Outdoor system 3
Master control unit

Outdoor system1   Outdoor system 2   Outdoor system n
Master control unit Master control unit   Master control unit

Outdoor system 3
Master control unit

Outdoor system1   Outdoor system 2   Outdoor system n
Master control unit Master control unit   Master control unit

"n" refers to the number of outdoor systems. n≤16.

4.5.3 Communication Connection Steps

Intelligent Billing Eudemon

Router ❻

System 1 ■ Position of lever

Master control units DIP switch setting

ON
1 2 3 4 5
SA2

ON
1 2
SA8

G1 G2

ME30-24/D1(T)

Slave unit

... Master control unit ❶

❷

❺

KWH meter n
A B

KWH meter1
A B

❸

❹

❺

System 2 ■ Position of lever

Master control units DIP switch setting

ON
1 2 3 4 5
SA2

ON
1 2
SA8

G1 G2

ME30-24/D1(T)

Slave unit

... Master control unit ❶

❷

KWH meter n
A B

KWH meter1
A B

❸

❹

（1） Communication cable connection between controller and air conditioners:

Step 1: Confirm the master control unit that controller is going to connect, as shown above. Switch the 2 levers of main board DIP switch SA8 to the "ON" position, which means that the module is the master control unit. Meanwhile, make sure the address code of each refrigeration system connected to the controller is different. SA2 is an address DIP switch. Please refer to "4.2.2 (2) Communication connection between controller and air conditioners" and adopt series connection. See step ① in the above diagram.

Step 2: Connect A+, B- terminals of CAN communication port of the controller to the corresponding G1, G2 terminals of the patch board of master control unit via communication cables. See step ② in the above diagram.

Communication cable connection between controller and KWH meter:

Step 1: Connect A+, B- terminals of RS485-1 communication port of the controller to the A, B terminals of KWH meter via communication cables. See step ③.

Step 2: Connect the KWH meters in one Intelligent Billing System in series via 485 communication cable. See step ④.

（2） Controller DIP switch setting:

Step 1: Please refer to 3.1.6.2 ~ 3.1.6.3 to set matched resistance for the controller.

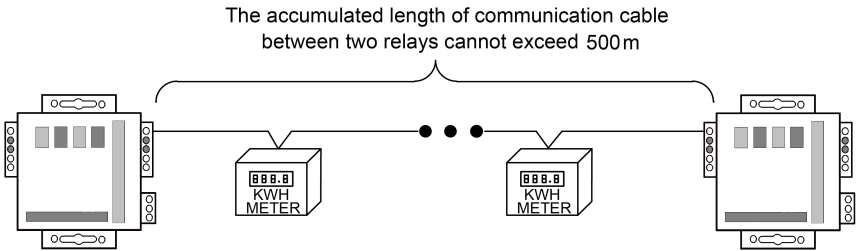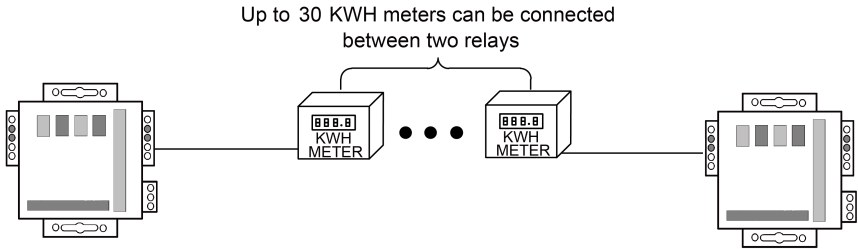（3） Communication cable connection between controller and Intelligent Billing Eudemon software:

Step 1: Prepare a router with DHCP function.

Step 2: Connect ETH0 internet port of controller with routers, computers with routers respectively with the connecting wire of standard Ethernet. Controller and the computer must be connected to LAN ports of the same router. See step ⑤.

! NOTE!

① 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).

Up to 30 KWH meters can be connected
between two relays

The accumulated length of communication cable
between two relays cannot exceed 500m

② In "3.1.6.2 The 1st Lever of Functional DIP Switch—CAN2 Bus Matched Resistance Setting", setting method of controller matched resistance is introduced. Likewise, the master outdoor unit at the beginning/ending place of CAN 2 bus should be set with matched resistance. Below is the setting positions and method for GMV5 DC Inverter Multi VRF Units:

Master control unit

Communication matched resistance
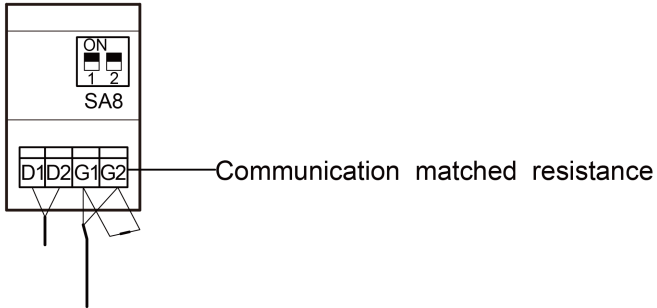
②　IP of ETH0 internet port of controller and the IP of CONFIG internet
port (192.168.2.150) must be in different network segments, that's IP
of LAN port of router that connects the controller ETH0 internet port
and the IP of CONFIG internet port of compressor must be in the
different network segments. Otherwise it will cause the
communication fault.

5 Product Debugging

In order to make sure that the Intelligent Billing System can work accurately
and reliably, it is necessary to conduct separate debugging and joint debugging for
each part of the system.

5.1 Debugging of Air Conditioning System

The controller needs to obtain the real-time status of air conditioners to ensure
reliable calculation, so before debugging the calculation system, we have to debug
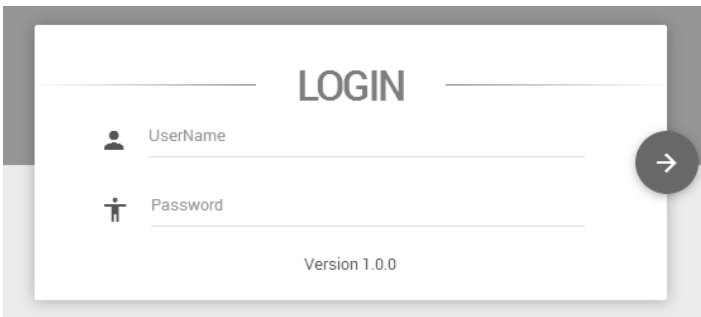the air conditioning units. Debugging requirements are as below:

（1）Make sure each indoor unit project code under the CAN2 bus is different.
（2）All outdoor and indoor units must be power connected.
（3）No communication error occurs to the units.
（4）Make sure there is no way to disconnect power of any indoor unit
arbitrarily after all the indoor units are power connected. Otherwise, other
indoor units in the system will be affected.

Please refer to the debugging and installation instructions of air conditioning
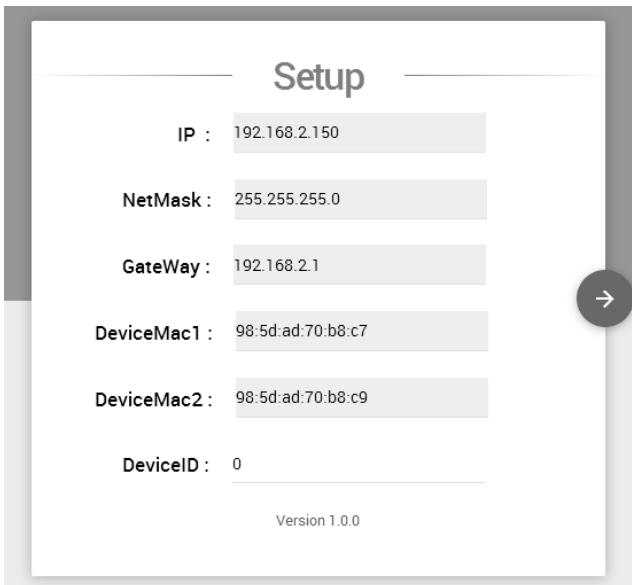units for the debugging methods of air conditioners.

5.2 Configuration of Parameters for Controller

When installation is completed, it is necessary to configure the parameters of the controller. Before configuring the parameters, connect the internet port of PC and CONFIG internet port of controller with a cable, set the IP address of PC as the same with the IP address of CONFIG internet port of controller in the same network segment, turn on the browser (Use IE10 or above, Firefox or Google browser.) and then input the defaulted IP address of controller in the address bar: http://192.168.2.150. Username is "config" and password is "config".

See the figure as below:

After input the username and password, click the arrow to enter into the setting port.

Settable parameters: controller ID. Device ID range: 0 ~ 255. Defaulted value of device ID is 0.

Unsettable parameters: controller IP address, subnet mask of controller, defaulted gateway of controller, MAC address of controller. Among them, DeviceMac1 is mac address of ETH0 network card and DeviceMac2 is mac address of CONFIG network card.

Users can configure according to their own situation. When setting is finished, clock the arrow to restart the controller.

⚠ **NOTE!**

Device ID of controller under the same network (under the same router) can't be repeated. Otherwise, the software can't conduct the communication with the controller.

5.3 Debugging of controller

Controller is an important part of the Intelligent Billing System, so we have to guarantee that the controller can operate reliably and normally.

（1）Before connecting power to the controller, CAN2 bus of the units must be connected to the CAN port of the controller.

（2）Before connecting power to the controller, make sure that all KWH meters can function normally and remember to connect the RS485 bus of KWH meter to the RS485-1 port of the controller.

（3）Before connecting power to the controller, make sure all the units are power connected.

（4）After the controller is power connected, please wait for 3 minutes before using the software for detection.

5.4 Debugging of Software

Intelligent Billing Eudemon is a kind of software for the interaction between man and machine. By using Intelligent Billing Eudemon, user can realize controller configuration, configure engineering information, export billing data and output billing details, etc. To ensure calculation accuracy, please confirm the following information before setting up the software.

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（1）Confirm that all the controller that need for debugging have been powered on and started working, and are connected with computer via a router.

（2）Confirm that room information matches the indoor unit project codes. Otherwise configuration will fail and cause billing mistakes.

（3）Confirm that each KWH meter is corresponding to its conditioning system. Otherwise configuration setting will be wrong and lead to billing mistakes.

（4）The software must be installed in an operating system that is in compliance with requirements (please refer to the instruction manual of the software for the specific requirements).

（5）Confirm that the computer is dedicated to the Intelligent Billing System. Do not install any antivirus software, system management software or game software in the computer. Otherwise the software may not be able to work reliably.

Please refer to the instruction manual of the software for the specific installation and operating methods.

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 ±10 % Or 110...340 V DC ±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

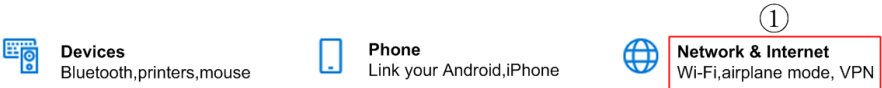| Rated capacity of unit (HP)	Rated capacity of unit (kW)	Mutual-inductance ratio of current transformer
≤18	≤50.4	50/5A
20~36	56~101	100/5A
38~74	106.4~207.2	200/5A
76~88	212.8~246.4	250/5A

Appendix B: TCP/IP Setting

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

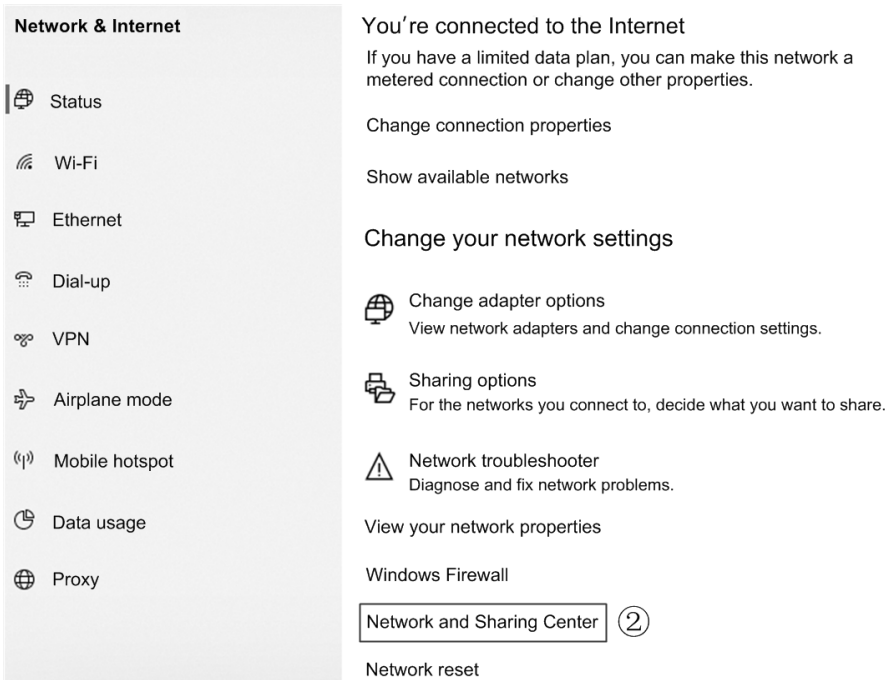（1） Left click the icon "Start" on the computer. When a new window pops up, left click "Settings" to enter "Windows Settings".

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

Windows Settings

Find a setting _____ 🔍

①

Devices
Bluetooth,printers,mouse

Phone
Link your Android,iPhone

Network & Internet
Wi-Fi,airplane mode, VPN

（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 ②

Network reset

（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
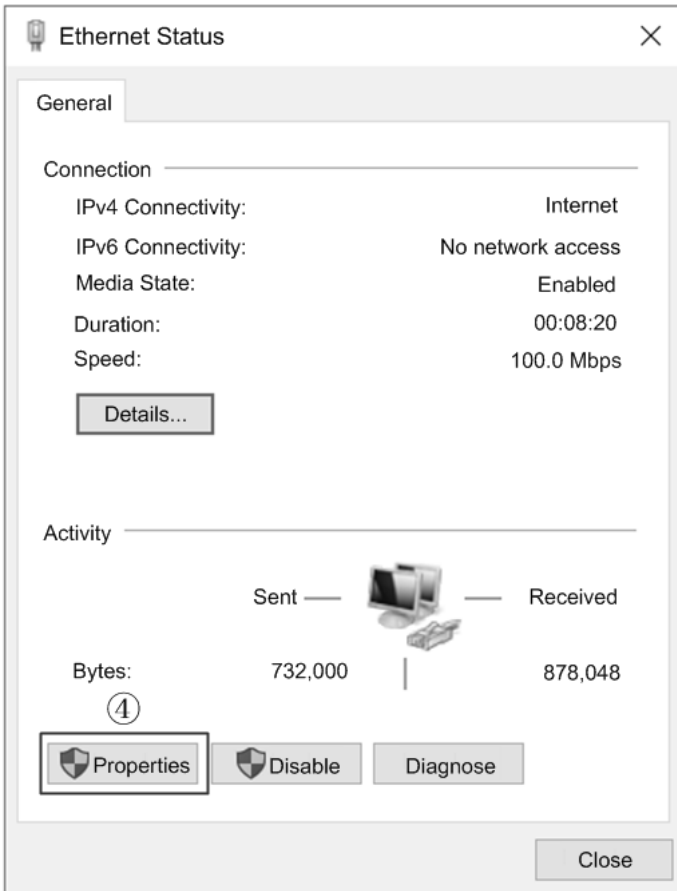
View your active networks

TP-WIFI-004
Public network

Access type: Internet
Connections: ✎ Ethernet ③

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

（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.
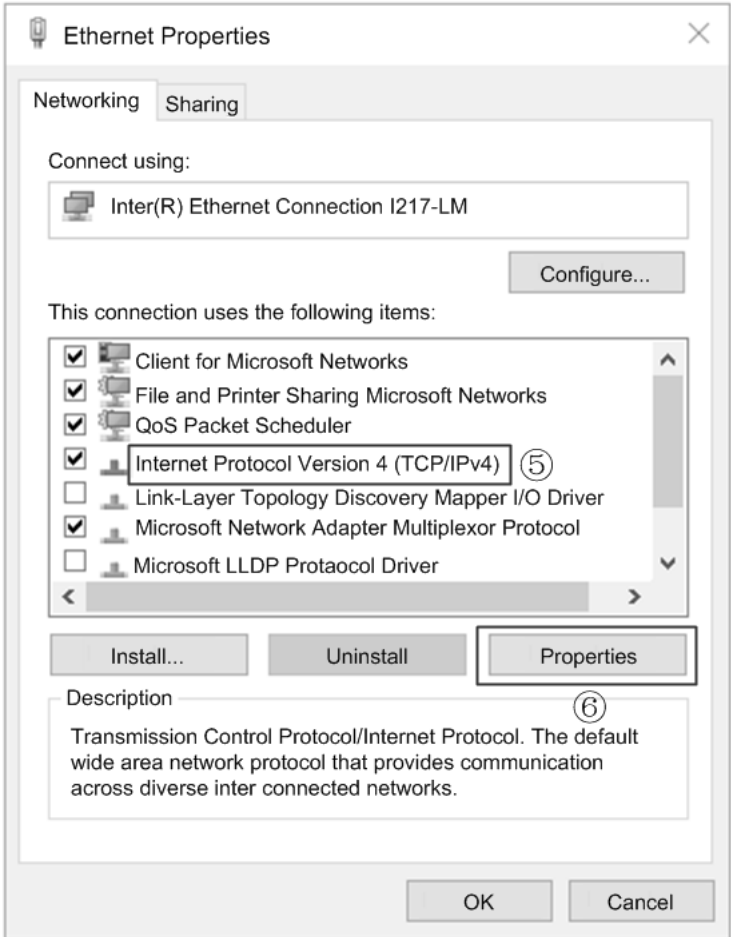
（7） When you are at the interface of "Properties of Internet Protocol Version 4(TCP/IPv4)" as shown below, change the IP address, subnet mask, default gateway as required (address of network equipment for connecting controller must be the same as the network address of controller). Generally, DNS remains 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 . 2 . 10

Subnet mask: 255 . 255 . 255 . 0

Default gateway: 192 . 168 . 2 . 1

◯ Obtain DNS server address automatically
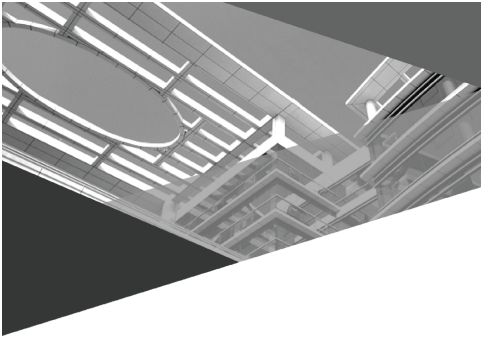
◉ Use the following DNSserver addresses:

Preferred DNS server: 10 . 1 . 2 . 223

Alternate DNS server: 10 . 1 . 2 . 224

☐ Validate settings upon exit   Advanced...

OK   Cancel

600005062113