



Technical Sales Guide

VRF Protocol Gateway

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1 Introduction to VRF protocol gateway

1.1 Introduction to functions

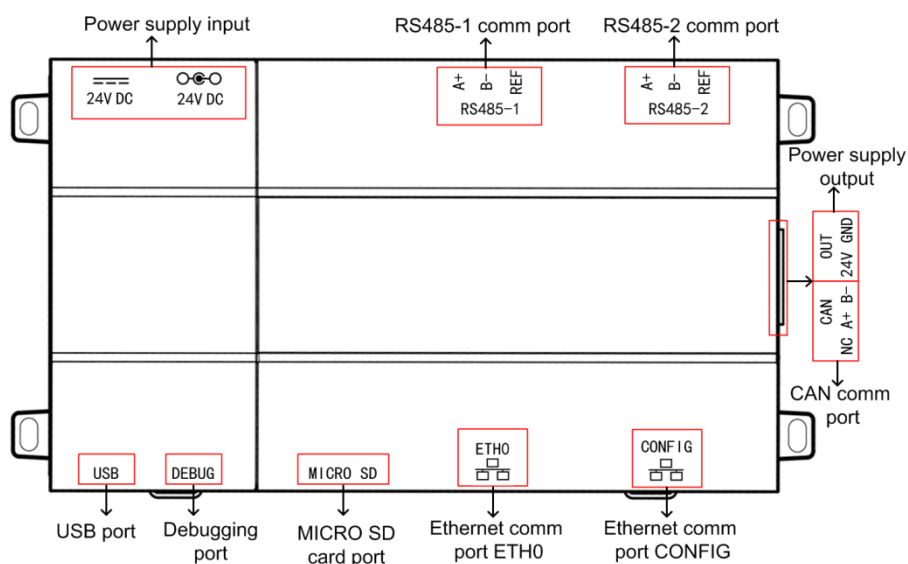
Gree VRF Protocol Gateway ME30-24/D1(BM) can realize the data exchange between air conditioner and Building Management System (the following refers to BMS), providing standard Modbus RTU, Modbus TCP and BACnet/IP building interfaces.

Through the gateway, administrator can conduct data collection, monitor and control of operating status of multi VRF air conditioner in long distance, and can give out alarm of errors of air conditioner in time. Moreover, it can provide protocol interfaces of Modbus RTU, Modbus TCP or BACnet/IP to connect BMS. There is no need for maintenance personnel to set and manage each set of units on the spot, they just need to sit in front of the computer to perform operation management such as viewing the operating status of building air-conditioning system, ON and OFF status of unit, setting of temperature, etc., which not only greatly improves work efficiency, but also reduces labor costs and management costs.

The gateway is applicable to GMV5S all DC inverter multi VRF unit, GMV5 DC inverter multi VRF unit, GMV water source heat pump DC inverter multi VRF unit, GMV ES DC inverter multi VRF unit, GMV Tops residential multi VRF unit, GMV Star residential multi VRF unit, GMV6 multi VRF unit.

Note: Later the Gree VRF Protocol Gateway ME30-24/D1(BM) is called gateway for short.

1.2 Pictures of Appearance and Interfaces

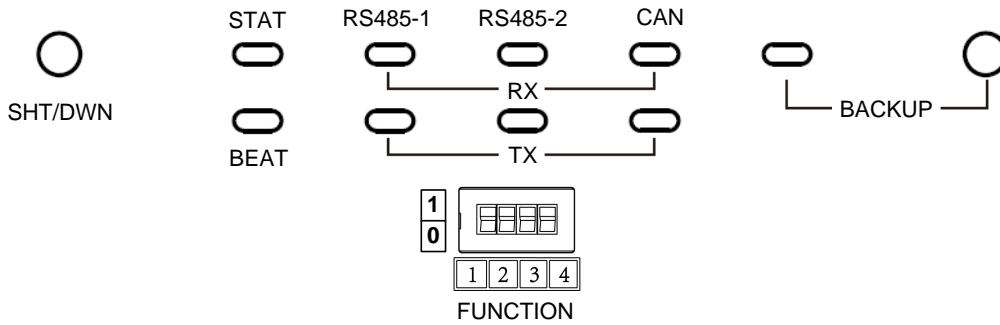


1.3 Component

Gree VRF protocol gateway kit ME30-24/D1(BM) includes the following components:

VRF Protocol Gateway	One set
Instruction manual	One

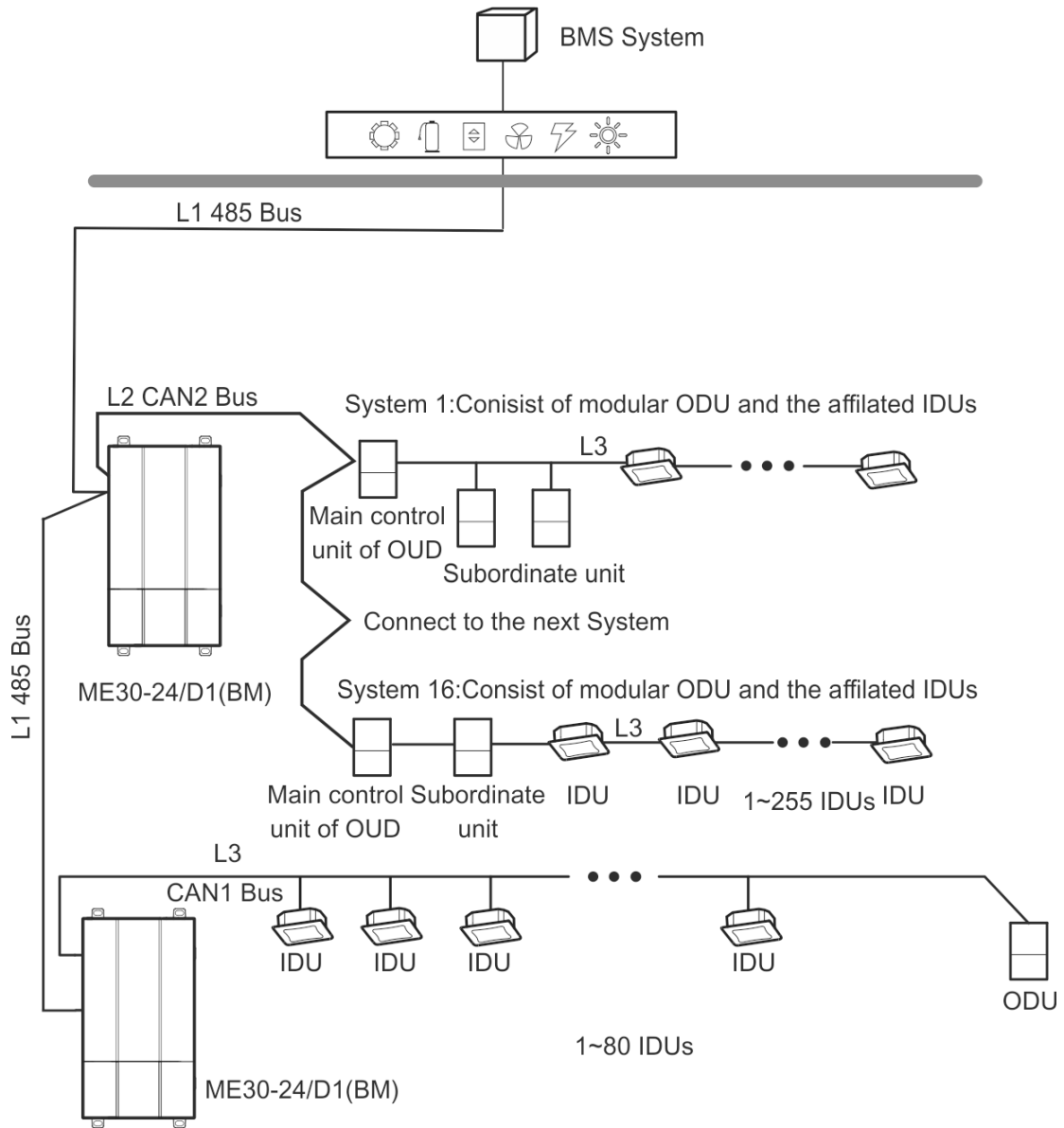
1.4 Interfaces and indicators



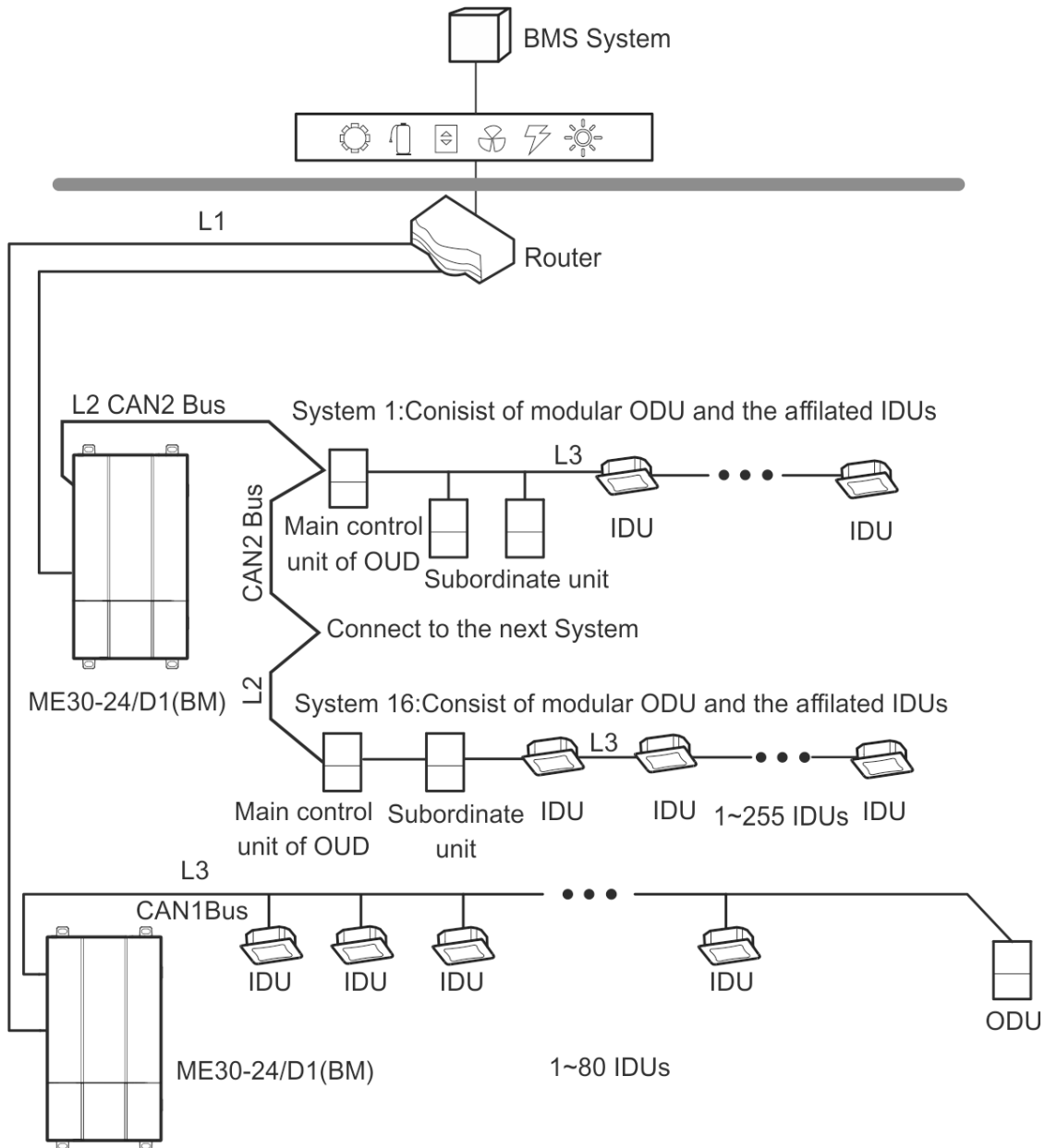
The above LED indicator is mainly consist of two parts: status indicator (run, power) and communication indicator (CAN and RS485). The following table is the working status of each indicator.

CAN	RX	When receiving the data of equipment (eg. AC unit) which connects to gateway, it blinks.
	TX	When transmitting data to the equipment (eg. AC unit) which connects to gateway, it blinks.
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.
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 gateway controller.
BACKUP		Not use this button for this device temporarily.

2 Network topology



Topology 1. Gateway and BMS adopt Modbus RTU communication method



Topology 2. Gateway and BMS adopt Modbus TCP or BACnet protocol communication method

485 bus: L1 shown in Fig. 1 is 485 bus, one 485 bus can connect to 254 gateways at most.

Network table: L1 shown in Fig. 2 is general network cable, the gateway can connect to BMS via the network cable.

CAN1 network: L3 shown in Fig. 1 and Fig. 2 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.

CAN2 network: L2 shown in Fig. 1 and Fig. 2 is CAN2 bus, which consists of gateway 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.

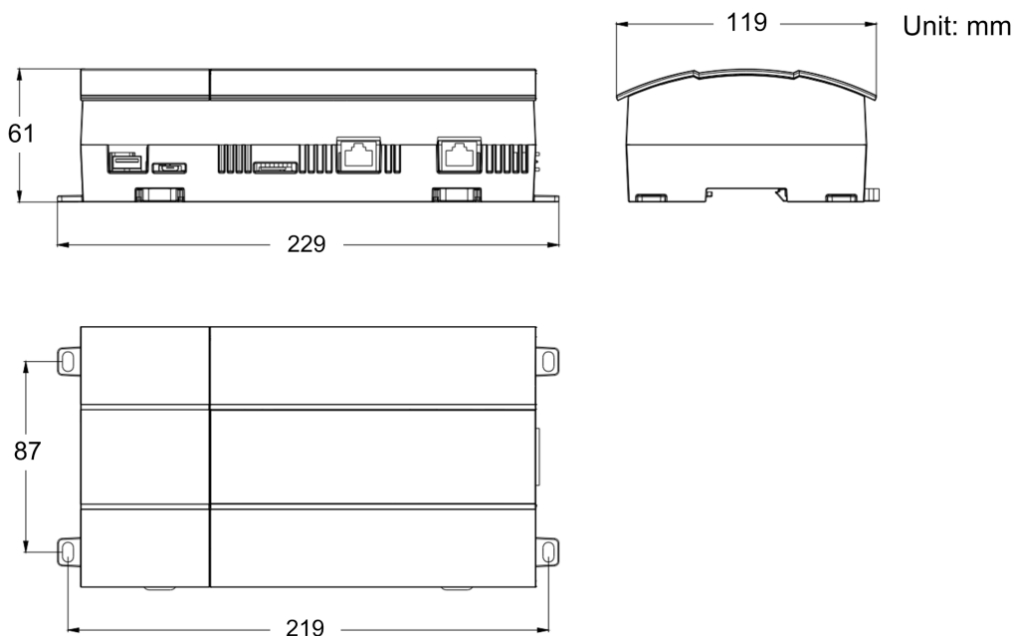
System: One system consists of one set of outdoor unit (one set of outdoor unit is a module set, which can consist of 1~4 modules, that is, 1~4 sets of outdoor units) and its indoor unit.

Connectable quantity of units of gateway: One gateway can connect to 16 sets of outdoor units and 255 sets of indoor units at most.

Remarks:

- (1) One 485 bus can connect to 254 gateways at most, if there are other 485 equipment in the 485 bus, the connectable gateway should reduce accordingly.
- (2) It is recommended that the connecting quantity of gateway of 485 bus is less or equal to 16.

3 Dimension



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.

4 Model Selection

4.1 Rules for model selection

4.1.1 Goods supply range

S=standard fittings; O=prepared by user; P=purchased by user

Contents	Model	Remarks	Remarks
VRF Protocol Gateway	Gateway component ME30-24/D1(BM)	Can connect to BMS Protocol interfaces: Modbus protocol, CAN protocol Hardware interface: 485-1, CAN, Ethernet Major components: VRF protocol gateway, instruction manual.	S
Power cord	24V DC	There are two power supply input interfaces, during the use, only one is needed to use.	O
Communication cable	Light/general PVC sleeve twisted pair copper cable	2x0.75mm ² , IEC 60227- 5:2007, length of communication cable depends on the engineering demand.	O
Optical isolation convertor	Optical isolation convertor GD01	When it connects to BMS terminal, only by adopting RS232 communication method shall the converter is needed. Major fittings: convertor, DB9 serial port wire.	P
Optical isolation relay	Optical isolation relay RS485	Each time the total distance of communication cable exceeds 800 meters, or the quantity of gateway exceeds 30, one relay should be added. Only when the conditions are satisfied will the relay be added.	P
Network cable	10BASE-T or 100BASE-TX interleaving network cable/10BASE-T or 10BASE-TX parallel network cable	1.If the gateway directly connects to PC, it needs interleaving network cable. 2.If the gateway connects to PC via router, it adopts parallel network cable.	O

4.2 Examples for model selection

4.2.1 Example 1 for model selection

Project situation: Certain project has 20 sets of GMV5 DC inverter multi VRF outdoor units (to form 5 systems) and 250 sets of indoor units. From the farthest unit to the gateway is within 500 meters. It needs to connect to user's BMS, communication distance between gateway and BMS equipment is within 800 meters. User's BMS adopts RS485 communication method.

Model selection: One gateway can connect to 16 systems and 255 sets of indoor units at most.

The project has 5 systems and 250 sets of indoor units, and it needs one gateway.

4.2.2 Example 2 for model selection

Project situation: Certain project has 20 sets of GMV5 DC inverter multi VRF outdoor units (to form 5 systems) and 250 sets of indoor units. From the farthest unit to the gateway is within 500 meters. It needs to connect to user's BMS, communication distance between gateway and BMS equipment exceeds 800 meters. User's BMS adopts RS232 communication method.

Model selection: One gateway can connect to 16 systems and 255 sets of indoor units at most.

The project has 5 systems and 250 sets of indoor units, and it needs one gateway. Communication distance of Modbus bus exceeds 800 meters, it needs one optical isolation relay. BMS adopts RS232 communication method, it needs one optical isolation convertor.

4.2.3 Example 3 for model selection

Project situation: Certain project has 80 sets of GMV5 DC inverter multi VRF outdoor unit (to form 20 systems) and 500 sets of indoor units. From the farthest unit to the gateway is within 500 meters. It needs to connect to user's BMS, communication distance between gateway and BMS equipment exceeds 800 meters. User's BMS adopts RS232 communication method.

Model selection: One gateway can connect to 16 systems and 255 sets of indoor units at most.

The project has 20 systems and 500 sets of indoor units, it needs 2 gateways. BMS adopts RS232 communication method, it needs one optical isolation convertor.

4.2.4 Example 4 for model selection

Project situation: Certain project has 20 sets of GMV5 DC inverter multi VRF outdoor unit (to form 5 systems) and 250 sets of indoor units. From the farthest unit to the gateway is within 500 meters. User's BMS adopts Ethernet communication method.

Model selection: One gateway can connect to 16 systems and 255 sets of indoor units at most.

The project has 5 systems and 250 sets of indoor units, it needs one gateway. When the user's BMS adopt Ethernet communication method, it should connect the gateway into local area network.



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