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EN

N-LINE
SERIES

BMS

BMS
MODBUS

USER MANUAL

BMS CONTROL SYSTEM

N-LINE SERIES:
Selected Models

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Content

PRECAUTIONS

⚠ WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

Read the following if you use the device in European countries:

The device can not be operated by children under 7 years old, disabled people and people without experience and knowledge. Instructions should include a description of the correct and safe handling of the device and information about possible dangers. Children should not play with the device. Cleaning and servicing should be carried out by authorized people.

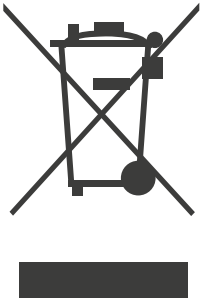
UTILIZATION:

Do not dispose of this product together with unsorted municipal waste.
It's necessary to transfer this type of waste for special processing.
It's illegal to throw the device together with other household waste.
There are several ways to get rid of this type of equipment:

A. The city organizes electronic waste collection, you can pass the device without the cost.
B. When you buy a new device the seller will accept the old device without any fees.
C. Manufacturer will take the product from buyer produkt

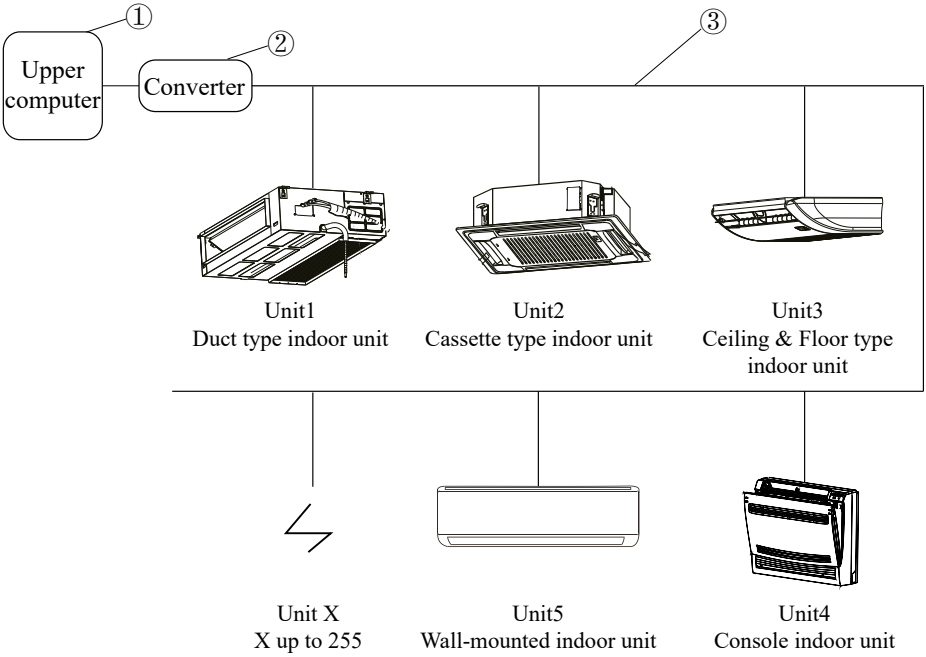
A. without charging it with costs.
B. Products of this type, contains valuable elements, it can be sold sprzedane on purchase of metals.

Throwing the device „on wild" exposes you to the risk of losing your health. Dangerous substances from the device can penetrate to groundwater screating a danger of getting through to people's food chain.



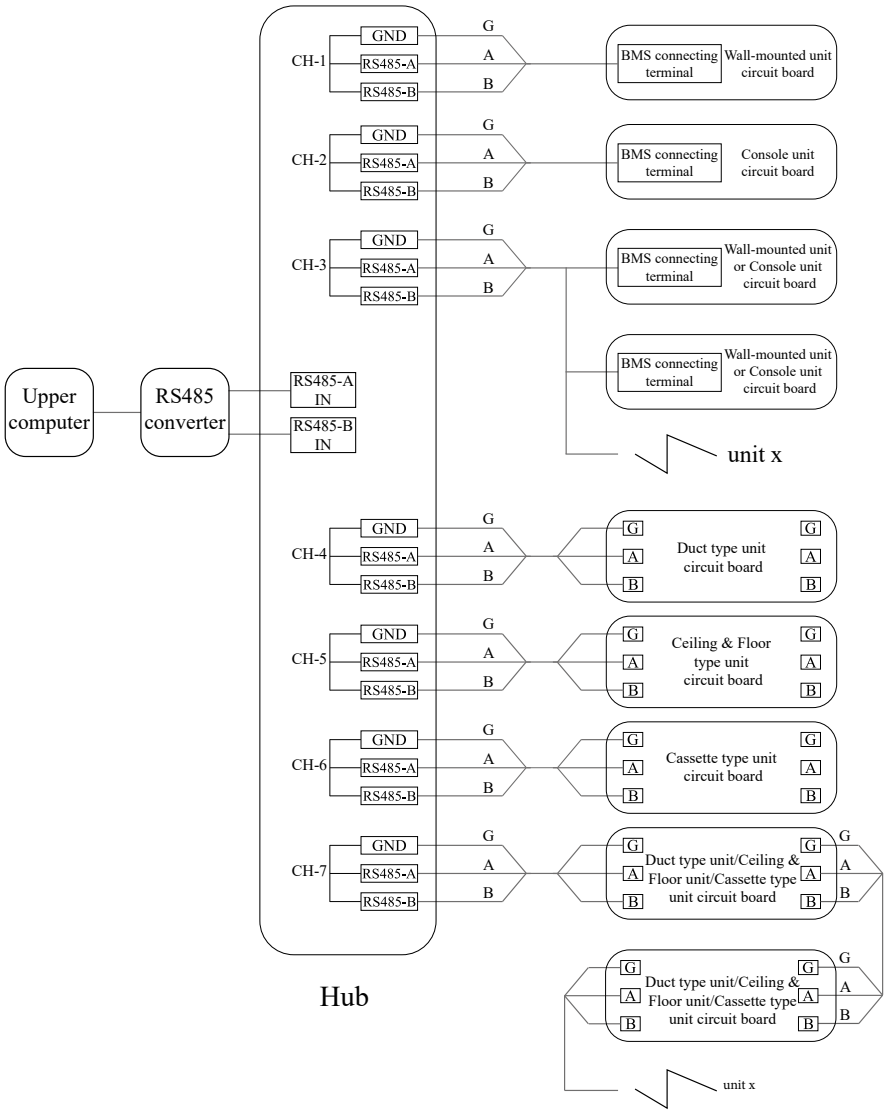
BMS (BUILDING MANAGEMENT SYSTEM) OVERVIEW

This BMS can form an air conditioner LAN with 255 air conditioner indoor units, so as to centrally control all air conditioners in the local area network, and have the functions of sending various control commands, status settings, and queries to each air conditioner indoor unit to meet the various control needs of users.
This BMS unit supports Modbus RTU communication protocol.



1. Upper computer: The upper computer that can directly issue control instructions, such as the Personal computer, the Centralized controller, etc.
2. Converter: RS485 converter, such as RS485 to USB converter, can be directly connected to the upper computer.
3. Connecting line: BMS connecting cable, including G A B three kinds of cable.

BMS(BUILDING MANAGEMENT SYSTEM) OVERVIEW

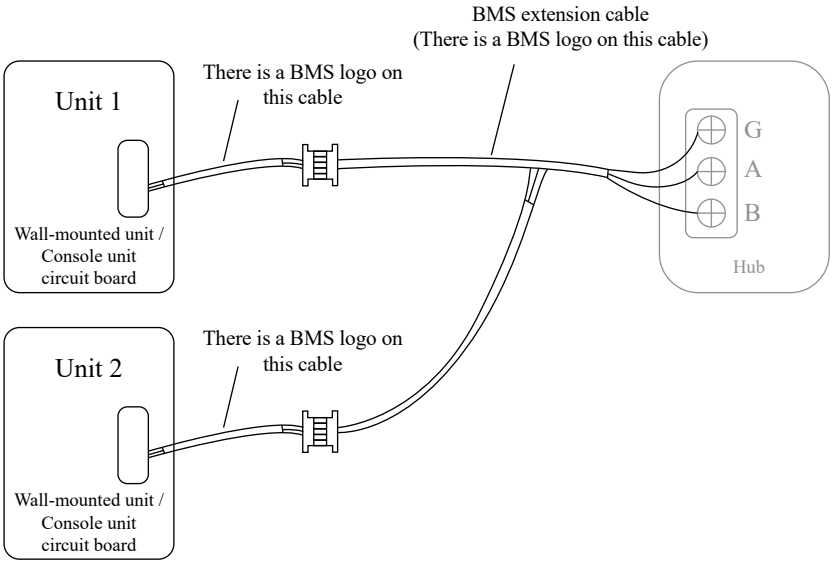


⚠ NOTE

Note: A maximum of 255 air conditioner indoor units can be connected to one upper computer.

1. Wall-mounted unit, console unit BMS wiring operation

- Use tools to open the indoor unit electrical control box and find the terminal of the BMS cable on the circuit board (there is a BMS logo on the BMS cable).
- Take out the BMS extension cable in the accessory and connect the BMS terminal with its terminal end.
- Use the other end of the BMS extension cable the G A B cable to connect the G A B interface on the hub (the other end of the hub is connected to the RS485 converter). Note: If you want to connect the Wall-mounted indoor unit and the Console indoor unit in parallel, you need to cut the extension cable connected to the BMS terminal on the circuit board of the indoor unit, and connect it with the BMS extension cable connected to another indoor unit.

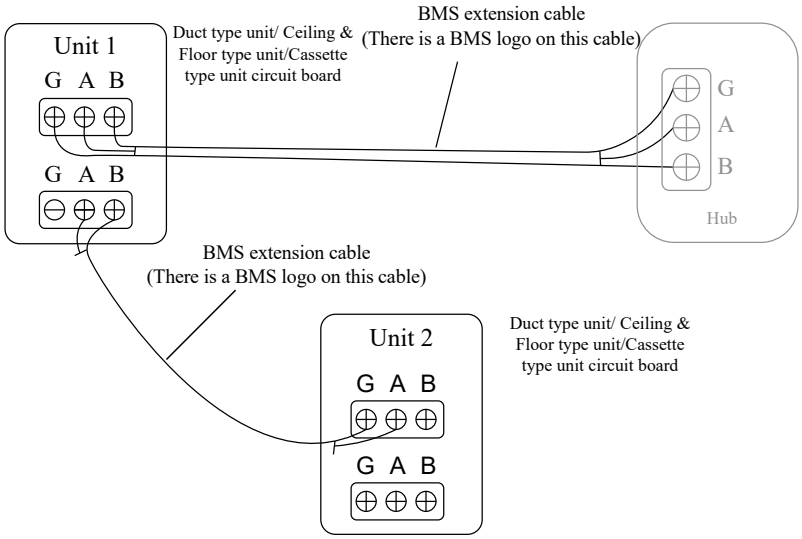


2. Duct type unit, Ceiling & Floor type unit, Cassette type unit BMS wiring operation

- Use tools to open the indoor unit electrical control box and find the G A B interface on the circuit board (there are two G A B interfaces on the circuit board).
- Take out the BMS extension cable in the accessory and connect it to the G A B interface on the circuit board with one end.
- Use the other end of the BMS extension cable the G A B cable to connect the G A B interface on the hub (the other end of the hub is connected to the RS485 converter).connected to another indoor unit.

⚠ NOTE

If you want to connect the Duct type indoor unit, Ceiling & Floor type indoor unit and Cassette type indoor unit in parallel, you need to use the BMS extension cable connected to the circuit board of the indoor unit to connect the circuit board G A B interface of another indoor unit.



⚠ NOTE

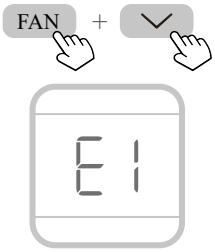
Before installation, determine whether the wiring is correct, and the BMS connection line GND, B, A correspond to gray, blue, and purple cable sequences. Before installation, you need to use tools to open the electric control box, pay attention to the power-off operation, and keep the other wiring harnesses as they are when you finish the BMS connection.

⚠ NOTE

The Wall-mounted indoor unit, Console indoor unit, Duct type indoor unit, Ceiling & Floor type indoor unit and Cassette unit can be connected to multiple indoor units in series through the BMS cable, up to 255 indoor units.

BMS DEVICE ADDRESS SETTING GUIDELINES

Set up using the remote control
Enter parameter settings

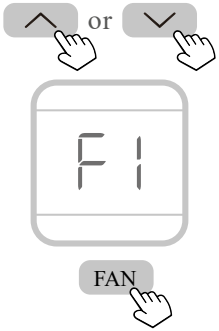


Unplug the battery of the remote control, wait for all icons on the display to turn off, and press the FAN and ∨ buttons together to enter the engineering settings interface within the first 20 seconds after installing the battery. After entering this interface, "E1" will be displayed on screen. Then you can start the parameter setting.

⚠ NOTE

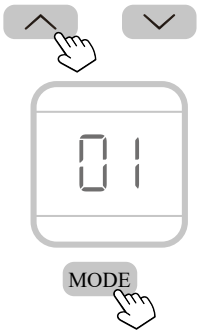
ressing the ⏻ button can exit this mode.

Switch parameter codes and confirm



Press the ∧ or ∨ button to switch parameter code to "F1". And short press the FAN button to enter the unit address setting interface.

Change parameter values

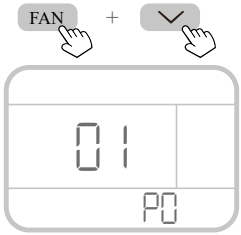


Press ^ or v button to modify the size of the parameter value, adjusting the range "01" to "FF" (hexadecimal) to set 1-255 address number. The specific corresponding table can be referred to in the following table. After setting, short press the MODE button to confirm the setting, or press FAN the button to return to the parameter settings interface.

⚠ NOTE

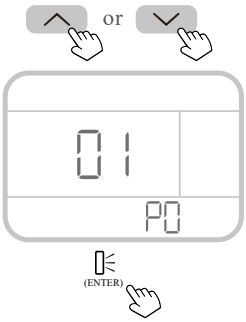
Setting the "00" value cannot set a valid address. You can press ⏻ button to exit this address setting mode and turn off.

Set up using the Wire controller
Enter parameter settings



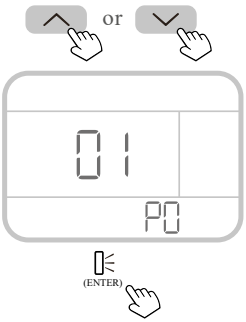
In the power-on or power-off state, press the FAN and v buttons together for 5 seconds to enter the parameter setting interface. Then the "P0" parameter code will be displayed in the area on the screen where the time was originally displayed, and the parameter code will flash.

Switch parameter codes and confirm



You can press the ^ or v button to switch parameter code. When the parameter code is "P0", short press the (ENTER) button to enter the unit address setting interface. In this interface, the parameter code will stop flashing, and the corresponding parameter value will flash.

Change parameter values



Press ^ or v button to modify the size of the parameter value, adjusting the range "01" to "FF" (hexadecimal) to set 1-255 address number. The specific corresponding table can be referred to in the following table. After setting, short press the (ENTER) button to confirm the setting and return, and the parameter code will start flashing.

⚠ NOTE

You can press ⏻ button to exit this address setting mode and turn off.

THE CORRESPONDING TABLE FOR UNIT ADDRESS NUMBERS

serial numbers	unit address numbers	serial numbers	unit address numbers	serial numbers	unit address numbers
1	01	10	0A	247	F7
2	02	11	0B	248	F8
3	03	12	0C	249	F9
4	04	13	0D	250	FA
5	05	14	0E	251	FB
6	06	15	0F	252	FC
7	07	16	10	253	FD
8	08	17	11	254	FE
9	09	~	~	255	FF

Query the unit address number
After setting the unit address, you can query the address in one of the following ways:

– Query the unit address number
In the power-on state, press and hold the MODE and the FAN for 5 seconds, the remote control goes into the query interface, and the interface displays the code "00" (no instructions are sent at this time)
Press ^ or v to adjust the code up and down, adjust to "86" ("00"-"99", cycle in turn)and press the MODE to confirm. At this time, the address number will be displayed on the wire controller and air conditioner display.

– Query the unit address number using the wire controller
The query way is the same as that of setting the unit address. When you enter the unit address setting interface, the address number will be displayed on the wire controller screen.

COMMUNICATION PROTOCOLS

1.1 Communication Interface Definition

Communication Interface Definition	
Communication method	RS-485
Communication protocols	Modbus RTU
Baud	9600bps
Data bit	8 bit/LSB First
Parity check	Not have
Stop bit	1 bit
Hosts	Upper computer
Pragmatic	Protocol converter

1.2 The modbus basic protocol

1.2.1 Read operation (03H)

Address	XX
Function code	03
First register high address	XX
First register low address	XX
The high bit of the number of registers	XX
The low bit of the number of registers	XX
CRC low calibration classifier for honorific people	XX
CRC Calibrat on height classifier for honorific people	XX

Read operation response (03H)

Address	XX
Function code	03
Byte count	XX
Data High Byte	XX
.....	.....
Data Low Byte	XX
CRC low calibration classifier for honorific people	XX
CRC Calibration height classifier for honorific people	XX

1.2.2 Write operation (06H)

Address	XX
Function code	06
First register high address	XX
First register low address	XX
Data High Byte	XX
Data Low Byte	XX
CRC low calibration classifier for honorific people	XX
CRC Calibration height classifier for honorific people	XX

Write operation response (06H)

Address	XX
Function code	06
First register high address	XX
First register low address	XX
Data High Byte	XX
Data Low Byte	XX
CRC low calibration classifier for honorific people	XX
CRC Calibration height classifier for honorific people	XX

1.2.3 Write operations (10H)

Address	XX
Function code	10
First register high address	XX
First register low address	XX
Number of registers highs	XX
Number of registers lows	XX
Nibbles criticize (i.e Enumerate shortcomings)	XX
High character data rate classifier for segments, e.g.lessons, train wagons, biblical verses	XX
.....	.....
Low data character classifier for segments, e.g.lessons, train wagons, biblical verses	XX
CRC calibration lows	XX
CRC calibrationa high (i.e. local maximum)	XX

Write operations (10H)

Address	XX
Function code	10
First register high address	XX
First register low address	XX
The high bit of the number of registers	XX
The low bit of the number of registers	XX
CRC low calibration classifier for honorific people	XX
CRC Calibration height classifier for honorific people	XX

1.2.4 Exception Code

Address	XX
Function code	XX (Note 3)
Exception codes	01H Illegal functions 02H Illegal data address 03H Illegal data value
CRC Checksum Low	XX
CRC Checksum High	XX

⚠ NOTE

The exception code is the highest bit of the normal function code plus one, such as 83H for read operation 03H, 86H for writing a single word 06H, and 10H for writing multiple words. 90H.

ADDRESS OF EQUIPMENT

By adjusting the DIP switches of the protocol converter, the device address of the protocol converter can be set, allowing the host computer to control multiple unit air conditioning systems simultaneously. A maximum of 255 device addresses can be set (meaning the host computer can control a maximum of 255 air conditioning systems simultaneously).

serial numbers	BM2-1	BM2-2	BM2-3	BM2-4	BM3 (carousel)	device address
1#	OFF	OFF	OFF	OFF	0	1
2#	OFF	OFF	OFF	OFF	1	2
3#	OFF	OFF	OFF	OFF	2	3
4#	OFF	OFF	OFF	OFF	3	4
5#	OFF	OFF	OFF	OFF	4	5
...	...	...	...	...	...	...
15#	OFF	OFF	OFF	OFF	E	15
16#	OFF	OFF	OFF	OFF	F	16

serial numbers	BM2-1	BM2-2	BM2-3	BM2-4	BM3 (carousel)	device address
17#	OFF	OFF	OFF	ON	0	17
18#	OFF	OFF	OFF	ON	1	18
19#	OFF	OFF	OFF	ON	2	19
20#	OFF	OFF	OFF	ON	3	20
21#	OFF	OFF	OFF	ON	4	21
22#	OFF	OFF	OFF	ON	5	22
...	...	...	...	...	...	...
31#	OFF	OFF	OFF	ON	E	31
32#	OFF	OFF	OFF	ON	F	32
...	...	...	...	...	...	...
241#	ON	ON	ON	ON	0	241
242#	ON	ON	ON	ON	1	242
243#	ON	ON	ON	ON	2	243
244#	ON	ON	ON	ON	3	244
245#	ON	ON	ON	ON	4	245
246#	ON	ON	ON	ON	5	246
247#	ON	ON	ON	ON	6	247
...	...	...	...	...	...	...
255#	ON	ON	ON	ON	E	255

DATA ADDRESS ALLOCATION RULES

3.1 Unit machine

Equipment Classification	Address range	Equipment Classification	Address range
Indoor unit 1 (wall-mounted, unit) machine)	0x0200 - 0x03FF	Outdoor unit 1	0xA600--0xA7FF

DATA DEFINITIONS

The following data is used by the host computer to read and control the internal unit's attributes. Addresses 0x0201-0x021A are readable and writable data, used by the host computer to control the internal unit and read back control information. The other data is read-only data, used by the host computer to read the corresponding internal unit's operating status.

Equipmnet Classification : Internal Machines			
Register address	Function code	Element	Realm
0x0200	03	Reserve	
0x0201	03/06/10	On/Off	1: On; 0: Off;
0x0202	03/06/10	Internal machine setting mode	0: Invalid data; 1: Refrigeration; 2: Dehumidification; 3: Delivery of the 4: Heat production; 5: Automatic; Note: Mode settings need to be controlled according to mode limitations
0x0203	03/06/10	Setting temperature precision of the inner unit: 0.1°C;. [Transmission value = 10 x Actual value]	160-310 Note: When the equipment is in power-on, cooling mode and energy-saving function is enabled, if the set temperature is lower than 26°C, energy saving must be disabled simultaneously. When the equipment is in power-on, heating mode and energy-saving function is enabled, if the set temperature is higher than 25°C, energy saving must be disabled simultaneously. When the device has set upper and lower temperature limits, the temperature adjustment should be limited to these ranges.
0x0204	03/06/10	Setting of the internal machine	0: Invalid data 1: Automatic speed control 2: Low grade 3: Lower middle class 4: Mid-range 5: Medium to high grade 6: High-grade 7: Ultra High Speed **Note:** When the device is running in dehumidification mode, the host computer can only set the fan speed to low. When the host computer activates the mute function, the fan speed needs to be set to low simultaneously. When the host computer activates the high-power function, the high fan speed needs to be set simultaneously.
0x0205	03/06/10	Up and Down Sweep Setting Status	0: Invalid; 1: Close; 2: Sweep;
0x0206	03/06/10	Left and Right Sweep Setting Status	0: Invalid; 1: Close; 2: Sweep;
0x0207	03/06/10	Powerful	1: On; 0: Off; **Note:** When the host computer activates the highpower function, the high fan speed must be set simultaneously.
0x0208	03/06/10	Mute	1: On; 0: Off; **Note:** When the host computer activates the silent function, the fan speed needs to be set to low simultaneously.

Equipmnet Classification : Internal Machines			
Register address	Function code	Element	Realm
0x0209	03/06/10	Energy saving ECO	1: On; 0: Off; **Note:** When the host computer controls the energysaving function, if the equipment is in a shutdown state or a mode other than cooling/ heating mode, an energy-saving shutdown message should be sent. When the control device is operating in cooling mode and the set temperature is below 26°C, or when the control device is operating in heating mode and the set temperature is above 26°C. At 25°C, the energy-saving function needs to be turned off.
0x020A	03/06/10	Sleep	1: On; 0: Off; **Note:** When controlling the sleep function via the host computer, if the device is in a powered-off state or a mode other than cooling/ heating mode, a sleep shutdown message should be sent.
0x020B	03/06/10	Electrical auxiliary heating	1: On; 0: Off; **Note:** When controlling the electric auxiliary heating function via the host computer, if the equipment is in the off state or not in heating mode. In this case, the auxiliary electric heating function should be turned off.
0x020C	03/06/10	Well-being	1: On; 0: Off; **Note:** When the host computer controls the health function, if the device is powered off, a "health function off" message should be sent.
0x020D	03/06/10	Digital display	1: On; 0: Off;
0x020E	03/06/10	Gentle Breeze	1: On; 0: Off; **Note:** When the host computer controls the gentle breeze function, if the device is powered off or not in cooling mode, the gentle breeze function should be turned off.
0x020F	03/06/10	Self-cleaning	1: On; 0: Off; **Note:** When the host computer controls the selfcleaning function, if the device is powered on, a message should be sent to disable the self-cleaning function.
0x0210	03/06/10	Reserve	
0x0211	03/06/10	Display temperature unit	1: Fahrenheit; 0: Celsius;
0x0212	03/06/10	Display temperature type	1: Ambient temperature; 0: Set temperature;
0x0213	03/06/10	Power-down memory	1: Yes; 0: No;
0x0214	03/06/10	Mode Limitation	0: Unlimited; 1: Heating is prohibited; 2: Refrigeration and dehumidification are prohibited.
0x0215	03/06/10	Set upper limit temperature value in °C; [Transmitted value = Actual value]	Set upper temperature limit: 26~31
0x0216	03/06/10	The unit for setting the lower limit of temperature is °C. [Transmitted value = Actual value]	Set the lower limit of the temperature range: 16~25

Equipmnet Classification : Internal Machines			
Register address	Function code	Element	Realm
0x0217	03/06/10	Timer On Setting Time Unit: minutes	0x0000~0xFFFF **Note:** Sending 0 from the host computer indicates that the timer function is off; sending other values from the host computer indicates the set countdown in minutes.
0x0218	03/06/10	Timer shutdown setting time Unit: minutes	0x0000~0xFFFF **Note:** Sending 0 from the host computer indicates that the timer function is off; sending other values from the host computer indicates the set countdown in minutes.
0x0219	03/06/10	New body-feeling design	1: On; 0: Off; **Note:** The host computer settings are now set to "New Personal Sense".
0x021A	03/06/10	Indoor unit ambient temperature Unit: 0.1°C; [Transmitted value = Actual value x 10 + 1000]	0.0°C~50.0°C

4.1.2 0x0300~0x0322 - Indoor unit status 2

Equipmnet Classification : Internal Machines			
Register address	Function code	Element	Realm
0x0300	03	Program version information [Software version is used to distinguish different versions of the same software platform]	0x0000~0xFFFF
0x0301	03	Reserved	
0x0302	03	Reserved	
0x0303	03	Reserved	
0x0304	03	Equipment type	See Appendix 1
0x0305	03	Reserved	
0x0306	03	Rated capacity Unit: Hectopascals [Nominal Value]	0x0000~0xFFFF
0x0307	03	Reserved	
0x0308	03	Reserved	
0x0309	03	Reserved	
0x030A	03	Reserved	
0x030B	03	Reserved	
0x030C	03	Indoor unit reset complete	1: Completed; 0: Not completed;
0x030D	03	Quick Test	1: Quick test; 0: Normal;

Equipmnet Classification : Internal Machines			
register address	function code	element	realm
0x030E	03	bit7: Access control function selection (Yes/No)	1: Yes; 0: No;
		bit6: Health feature options with or without	
		bit5: Energy-saving feature selection with or without	
		Bit4: Soften function option with or without	
		bit3: Self-cleaning function option with or without	
		bit2: Electric auxiliary heat function selection with or without	
		bit1: Left and right pendulum function selection with or without	
		bit0: Upper and lower hemming function selection with or without	
0x030F	03	On/Off operation status	1: On; 0: Off;
0x0310	03	Internal machine operation mode	0: Invalid data; 1: Refrigeration; 2: Dehumidifier; 3: Air supply; 4: Heating;
0x0311	03	Inner unit running gear	0: Invalid data; 1: The fan is stopped; 2: Low-end; 3: Mid-to-low range; 4: Mid-range; 5: Mid-to-high-end; 6: High-end; 7: Ultra-high speed; 8: Mute
0x0312	03	Upper and lower sweeping operation status	0: This function is not available; 1: Close; 2: Sweeping air;
0x0313	03	Left and Right Sweep Operational Status	0: This function is not available; 1: Close; 2: Sweeping air;

Equipmnet Classification : Internal Machines			
register address	function code	element	realm
0x0314	03	bit3: Water pumps	1: Turn on; 0: Closed;
		bit2: Electric auxiliary heating status	
		bit1: Reserved	
		bit0: Reserved	
0x0315	03	Access control switch status	0: This function is not available. 1: Close; 2; open; **Note:** Control commands from the host computer are invalid when the access control system is closed.
0x0316	03	Objective speed of the internal machine in r/m; [Transferred value = Actual Value] [Effective for DC units, default for AC units 0;]	0x0000~0xFFFF
0x0317	03	The actual rotational speed of the internal machine in r/m; [Transferred value = Actual Value] [Effective for DC units, default for AC units 0;]	0x0000~0xFFFF
0x0318	03	Unit of ambient temperature of the inner unit: 0.1°; [Transmission value = Actual Value x 10 +1000]	-100.0°~150.0°
0x0319	03	Reserved	
0x031A	03	Indoor unit pipe temperature unit:; [Transmission value = Actual Value x 10 + 1000]	-100.0°~150.0°
0x031B	03	Reserved	
0x031C	03	Indoor unit capacity requirement unit: hectowatts; Accuracy: 1 hectowatt	0x0000~0xFFFF
0x031D	03	Scheduled power-on time setting Unit: minutes;	0x0000~0xFFFF
0x031E	03	Remaining time for scheduled power-on (unit: minutes); A non-zero value indicates that a scheduled power-on operation is in progress; a value of 0 indicates that no scheduled operation is in progress.	0x0000~0xFFFF
0x031F	03	Scheduled shutdown setting time Unit: minutes;	0x0000~0xFFFF
0x0320	03	Remaining time for scheduled shutdown (unit: minutes);	0x0000~0xFFFF
0x0321	03	Indoor unit malfunction	1: Fault; 0: Normal;

Equipmnet Classification : Internal Machines			
register address	function code	element	realm
0x0322	03	bit15: Interior fan malfunction—E6	1: Malfunction; 0: Normal;
		bit14: Water full fault — d4	
		bit13: Mode conflict — PA	
		bit12: Anti-freeze protection — Fu	
		bit11: Interior fan drive failure — b5	
		bit10: Communication failure between main control board and display screen — Eb	
		bit9: Communication failure between indoor and outdoor units — E0	
		bit8: Ambient temperature sensor fault — E1	
		bit7: Reserved	
		bit6: Middle tube temperature sensor fault — E2	
		bit5: Reserved	
		bit4: Reserved	
		bit3: Reserved	
		bit2: EEPROM communication failure	
		bit1: Reserved	
		bit0: Capacity DIP switch malfunction	

4.2 Outdoor unit attributes (unit unit)

The following data is used by the host computer to read the operating status of the outdoor unit.

Equipmnet Classification : Internal Machines			
register address	function code	element	realm
0xA600	03	Program version information [Software versions are used to distinguish the same software platform different versions of the same software platform]	0x0000~0xFFFF
0xA601	03	Reserved	
0xA602	03	Reserved	
0xA603	03	Reserved	
0xA604	03	Equipment type [Outdoor unit:: 0x10; Indoor unit: 0x40]	0x0000~0xFFFF
0xA605	03	Reserved	

Equipmnet Classification : Internal Machines			
register address	function code	element	realm
0xA606	03	Reserved	
0xA607	03	Reserved	
0xA608	03	Reserved	
0xA609	03	Reserved	

Equipmnet Classification : Internal Machines			
register address	function code	element	realm
0xA60A	03	bit7: This outboard unit is faulty	1: Fault; 0: Normal;
		bit6: Reserved	
		bit5: Fast test (time-lapse)	1: Quick test; 0: Normal;
		bit4: Outdoor unit reset completion flag	1: Completed; 0: Not completed;
		bit3: Reserved	
		bit2: Reserved	
		bit1: Oil return status	1: Oil return; 0: Normal;
		bit0: Defrosting status	1: Defrosting; 0: Normal;
0xA60B	03	bit7: Reserved	
		bit6: Inverter compressor 1	
		bit5: Fixed-frequency compressor 1	1: Start; 0: Stop;
		bit4: Reserved	1: Start; 0: Stop;
		bit3: Reserved	
		bit2: Reserved	
		bit1: Outdoor unit fan 1	1: Start; 0: Stop;
		bit0: Reserved	
0xA60C	03	bit15: ST (four-way valve)	1: On; 0: Off;
		bit7: CHi (Inverter compressor heating element)	1: On; 0: Off;
		bit6:CH1 (Compressor heating element)	1: On; 0: Off;
0xA60D	03	Reserved	
0xA60E	03	Reserved	
0xA60F	03	Reserved	

Equipmnet Classification : Internal Machines			
register address	function code	element	realm
0xA610	03	Actual rated capacity of this machine Unit: 100 watts	0x0000~0xFFFF
0xA611	03	Reserved	
0xA612	03	Variable frequency compressor 1 target frequency Unit: Hz;	0-200;
0xA613	03	Variable frequency compressor 1 operating frequency Unit: Hz;	0-200;
0xA614	03	Outdoor main electronic expansion valve (PLS)	0-500;
0xA615	03	Auxiliary electronic expansion valve opening (PLS)	0-500;
0xA616	03	Outdoor ambient temperature unit: 0.1°C; Transmitted value = Actual value x 10 + 1000	-100.0°C~150.0°C -30.0°C~150.0°C
0xA617	03	Variable frequency drive (VFD) exhaust temperature unit: 0.1°C; Transmitted value = Actual value x 10 + 1000	-100.0°C~150.0°C -30.0°C~150.0°C
0xA618	03	Reserved	
0xA619	03	Reserved	
0xA61A	03	Reserved	
0xA61B	03	Reserved	
0xA61C	03	Reserved	
0xA61D	03	Reserved	
0xA61E	03	Press drive module IPM temperature unit: 0.1°C; Transmitted value = Actual value x 10 + 1000	-100.0°C~150.0°C -30.0°C~150.0°C
0xA61F	03	Condenser outlet pipe temperature 1 Unit: 0.1°C; Transmitted value = Actual value x 10 + 1000	-100.0°C~150.0°C -30.0°C~150.0°C
0xA620	03	Reserved	
0xA621	03	Reserved	
0xA622	03	Reserved	
0xA623	03	Reserved	
0xA624	03	Reserved	
0xA625	03	Reserved	

Equipmnet Classification : Internal Machines			
register address	function code	element	realm
0xA626	03	Reserved	
0xA627	03	Reserved	
0xA628	03	Reserved	
0xA629	03	Reserved	
0xA62A	03	Reserved	
0xA62B	03	Reserved	
0xA62C	03	Reserved	
0xA62D	03	Reserved	
0xA62E	03	Reserved	
0xA62F	03	Drive AC input voltage value unit: 1V;	0-500; Transmitted value = Actual value × 10, Precision: 0.1; Unit: V
0xA630	03	Drive AC input current value unit: 0.1A;	0-500; Transmitted value = Actual value × 100, precision Degree: 0.01; Unit: A
0xA631	03	Compressor phase current value (RMS) unit: 0.1A;	0-500; Transmitted value = Actual value × 100, Precision: 0.01; Unit: A
0xA632	03	Reserved	
0xA633	03	Reserved	
0xA634	03	Reserved	
0xA635	03	Reserved	
0xA636	03	Reserved	
0xA637	03	Reserved	
0xA638	03	Reserved	
0xA639	03	Reserved	
0xA63A	03	Reserved	
0xA63B	03	Reserved	

Equipmnet Classification : Internal Machines			
register address	function code	element	realm
0xA63C	03	Reserved	
0xA63D	03	Reserved	
0xA63E	03	Reserved	
0xA63F	03	Reserved	
0xA640	03	Variable frequency drive 1 bus voltage unit: 1V;	0-800; Transmitted value = Actual value × 10, Precision: 0.1; Unit: V
0xA641	03 03	Reserved	
0xA642	03	Reserved	
0xA643	03	Reserved	
0xA644	03	Reserved	
0xA645	03	Reserved	
0xA646	03	Reserved	
0xA647	03	bit15: Fy - lacking fluoride	1: Fault; 0: Normal;
		bit14: Return gas temperature sensor malfunction — Eh	1: Fault; 0: Normal;
		bit13: Four-way valve commutation failure (four--way valve commutation error) (normal) — F8	1: Fault; 0: Normal;
		bit12: Outdoor coil temperature sensor fault — E3	1: Fault; 0: Normal;
		bit11: Refrigerant leak fault—E4	1: Fault; 0: Normal;
		bit10: Model configuration error — E5	
		bit8: Inverter module fault — E9	1: Fault; 0: Normal;
		bit7: Current sensor fault —EA	1: Fault; 0: Normal;
		bt6: Outdoor main control and drive communication failure — EC	1: Fault; 0: Normal;
		bit5:	1: Fault; 0: Normal;
		bit4: Compressor top temperature switch malfunction —EP	1: Fault; 0: Normal;
		Bit3: Voltage sensor fault — Eu	1: Fault; 0: Normal;
		bit2: High-temperature protection for variable frequency compressor discharge (overheat protection for variable frequency compressor discharge) — P4	1: Protection; 0: Normal;
		bit1: Low-voltage switch protection—H2	1: Protection; 0: Normal;
		bit0: High-voltage switch protection—H1	1: Protection; 0: Normal;

Equipmnet Classification : Internal Machines			
register address	function code	element	realm
0xA648	03	bit15: Outdoor central coil temperature sensor malfunction — EJ	1: Fault; 0: Normal;
		bit14: Communication failure between the unit and the inverter compressor drive.	1: Fault; 0: Normal;
		bit13: Outdoor fan 1 drive failure (outdoor fan malfunction) — EF	1: Fault; 0: Normal;
		bit12: Outdoor gas pipe temperature sensor malfunction — En	1: Fault; 0: Normal;
		bit11: EEPROM communication failure — EE	1: Fault; 0: Normal;
		bit10: Outdoor liquid line temperature sensor malfunction — Ey	1: Fault; 0: Normal;
		bit9: High voltage sensor failure — LF	1: Fault; 0: Normal;
		bit8: Low voltage sensor fault — LJ	1: Fault; 0: Normal;
		bit7: Variable frequency drive 1 exhaust sensor malfunction (external exhaust malfunction) — E8	1: Fault; 0: Normal;
		bit6: Power module malfunction — F1	1: Fault; 0: Normal;
		bit5: External tube temperature sensor failure protection — F3	1: Protection; 0: Normal;
		bit4: Refrigerant circulation abnormality protection—F4	1: Protection; 0: Normal;
		bit3: PFC protection — F5	1: Protection; 0: Normal;
		bit2: Compressor phase loss/reverse phase protection—F6	1: Protection; 0: Normal;
		bit1: Module temperature protection — F7	1: Protection; 0: Normal;
		bit0: Outdoor ambient temperature sensor malfunction (outdoor room temperature malfunction) — E7	1: Fault; 0: Normal;
0xA649		bit15: Condenser outlet pipe temperature 1 fault	1: Fault; 0: Normal;
		bit14: Exhaust temperature sensor failure protection — F2	1: Protection; 0: Normal;
		bit13: Module temperature sensor circuit fault — F9	1: Protection; 0: Normal;
		bit12: Compressor phase current detection fault —FA	1: Protection; 0: Normal;
		bit11: Cooling/Heating Overload Protection — Limit	1: Protection; 0: Normal;
		Frequency Derating — FB	

Equipmnet Classification : Internal Machines			
register address	function code	element	realm
0xA649	03	bit10: Overpower protection limit/frequency reduction — FC	1: Protection; 0: Normal;
		bit9: Module current (compressor phase current) protection limit / frequency reduction — FE	1: Protection; 0: Normal;
		bit8: Module temperature protection limit/ frequency reduction — FF	1: Protection; 0: Normal;
		bit7: Communication failure between driver board and main controller	1: Protection; 0: Normal;
		bit6: Driver protection limit/frequency reduction — FH	1: Protection; 0: Normal;
		bit5: Anti-condensation protection - Limit/reduce frequency — FP	1: Protection; 0: Normal;
		bit4: Exhaust protection - Limit/reduce frequency — FJ	1: Protection; 0: Normal;
		bit3: Input voltage sampling fault — JC	1: Fault; 0: Normal;
		bit2: AC input overcurrent — Jh	1: Fault; 0: Normal;
		bit1: AC input undervoltage/overvoltage (AC input voltage abnormality protection) — P1	1: Fault; 0: Normal;
		bit0: DC bus undervoltage — J9	1: Fault; 0: Normal;
0xA64A	03	bit15: DC bus overvoltage — J8	1: Fault; 0: Normal;
		Bit14: Outdoor unit AC current protection limit/ frequency reduction — Fn	1: Protection; 0: Normal;
		bit13: Heatsink overheating shutdown — J6	1: Fault; 0: Normal;
		bit12: IPM current sampling fault — J5	1: Fault; 0: Normal;
		bit11: Input voltage phase loss — J4	1: Fault; 0: Normal;
		bit10: Compressor overcurrent—J3	1: Fault; 0: Normal;
		bit9: Compressor drive failure — J2	1: Fault; 0: Normal;
		bit8: IPM overcurrent — J1	1: Fault; 0: Normal;
0xA64B	03	bit15: Module protection—P0	1: Protection; 0: Normal;
		bit14: Variable frequency compressor overcurrent protection—P2	1: Protection; 0: Normal;
		bit12: Overcooling protection — P5	1: Protection; 0: Normal;
		bit11: Cooling overheat protection — P6	1: Protection; 0: Normal;
		bit10: Overheat protection during heating—P7	1: Protection; 0: Normal;

Equipmnet Classification : Internal Machines			
register address	function code	element	realm
0xA64B	03	bit9: Outdoor temperature too high/low protection - P8	1: Protection; 0: Normal;
		bit8: Driver protection — P9	1: Protection; 0: Normal;
0xA64C	03	Reserved	
0xA64D	03	bit9: (DC fan 1) IPM module protection	1: Protection; 0: Normal;
0xA64E	03	Reserved	
0xA64F	03	Reserved	
0xA650	03	Reserved	
0xA651	03	Reserved	
0xA652	03	Reserved	
0xA653	03	Reserved	
0xA654	03	Reserved	
0xA655	03	Reserved	
0xA656	03	Reserved	
0xA657	03	Reserved	
0xA658	03	Reserved	
0xA659	03	Reserved	
0xA65A	03	Reserved	
0xA65B	03	Outdoor unit operating mode	0: Invalid; 1: Shutdown Mode 2: Cooling Mode 3: Heating Mode 4: Dehumidification Mode 5: Reserved

Appendix 1:

ID	Equipmenttype
0x1010	One tow outside machine
0x1020	Multi-unit in-unit
0x2010	Air Duct Inside Unit
0x2020	Smallpox in-unit
0x2030	Wall-mounted internal units
0x2040	Seat Crane Inside
0x2050	Cabinet internal unit
0x4010	Underfloor heating
0x5010	Fresh air intake unit
0x6010	Grain warehouse air conditioner indoor unit

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INSTALLER STAMP

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