

Modify recording: (See as the blue section)

Overview Interconnection between the controller and the adapter board (asynchronous communication).

1. Communication Rules

Communication: asynchronous serial communication

Baud rate: 600BPS

Data bits: 8BIT

Parity Check: Even parity

End bit: 2BIT (high level)

Start bit: 1BIT (low level)

2. Communication data structure

The communication data consists of the following 18 bytes:

0th byte. Communication start identification code 03ah (fixed to 00111010B)

1st byte.

2nd byte.

3rd byte.

4th byte.

5th byte.

6th byte.

7th byte.

8th byte.

9th byte.

10th byte.

11th byte.

12 byte.

13th byte.

14th byte.

15th byte.

16th byte. Check sum-up

17th byte. Communication end identification code 95h (fixed to 10010101B)

Check sum-up = $\{[\sum (1\text{st byte} + 3\text{rd byte} + 5\text{th byte} + \dots + 15\text{th byte})] \& 0x0f\} \mid \{[\sum (2\text{nd byte} + 4\text{th word Section} + \text{sixth byte} + \dots + 14\text{th byte})] \ll 4 \& 0x0f\}$

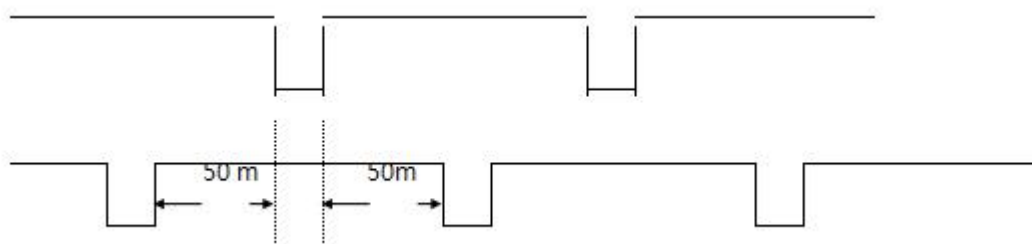
Note: The lower 4 bits of the odd-numbered bytes are stored in the lower 4 bits of the check sum-up and the lower 4 bits of the odd-numbered bytes are stored in the check sum-up high 4 bits.

3. Communication content

The remote control is the host, the adapter board is the slave, the initial connecting with power to establish communication when the host start sending information to the slave

3.1 remote control, adapter board communication basic agreement

After power-on reset, the signal is sent from the host to the slave. After the host receives the slave status signal processing for 50ms, the slave sends the same message to the host after sending the signal. After 50ms, the message is sent to the host. After the end of the reception, such as 500 milliseconds has not yet received the slave signal and then send the current information, if 120 seconds did not receive the other side of the response (or response error), the error alarm, and continue to send information every 500ms Command to the slave, until the communication reconnect; the slave does not receive the signal from the host machine, it waits until no signal is sent.



(A) wire control communication content

The remote controller sends commands to the adapter board, which reads as follows:

1. The remote control is sent to the slave command table

Command position	The parameters transferred to the module	Note
0th byte	Identifier Code	Fixed stable as 0x3a
1st byte	Mode	
2nd byte	Model	1~7
3rd byte	P14	Electric heating start cycle temperature setting value($^{\circ}\text{C} \times 2 + 60$)
4th byte	P1	Water tank temperature setting
5th byte	Room floor or heat sink mode	Delete, fix as 0
6th byte	P2	Room floor set temperature
7th byte	Water tank heating electric heating start temperature	Delete, fix as 0
8th byte	P3	Cooling mode temperature setting
9th byte	P4	Water tank heating start hysteresis
10th byte	P5	The room starts hysterical
11th byte	Room heating water maximum temperature	Delete, fix as 60
12th byte	Room heating heat sink mode set temperature	Delete, fix at 30
13th byte	P11	the start time that Electric heating does not increase the water temperature
14th byte	Room electric heating on and off set	Delete, fix at 0
15th byte	Wire code	0x81
16th byte	Check Sum-up	
17th byte	Ending identifier	Fix at 0x95

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or

Command position	The parameters transferred to the module board	Note
0th byte	Identifier Code	Fix as 0x3a
1st byte	P16	Defrost into the temperature (°C*2 + 60)
2nd byte	Electronic expansion valve manual opening	
3rd byte	Reserved	
4th byte	Defrost mode selection	Always made 1
5th byte	P17	Defrost exit temperature (°C*2 + 60)
6th byte	P19	Defrost time
7th byte	P18	Defrosting into the interval
8th byte	P22	Compressor manual frequency
9th byte	Time of Water pump off cycle	minute
10th byte	P6	Constant temperature difference
11th byte	Water tank temperature correction	Delete, fixed sending 60
12th byte	Water supply temperature correction	Delete, fixed sending 60
13th byte	Function flag	
14th byte	Reserved	The default is 00h
15th byte	Line controller Code	0x82
16th byte	Check Sum-up	
17th byte	Ending identifier	Fixed as 0x95

or

Command position	The parameters transferred to the module board	Note
0th byte	Identifier Code	Fixed as 0x3a
1st byte	Set the heating into the defrost ambient temperature	
2nd byte	Start the defrosting ambient temperature and coil temperature difference	
3rd byte	Air conditioning mode water pump running mode	
4th byte	The ambient temperature corresponding to the outdoor fan	
5th byte	Frequency converter compressor maximum operating frequency	
6th byte	Electronic expansion valve maximum opening degree	
7th byte	Electronic expansion valve minimum opening degree	
8th byte	The actual water temperature is greater than 26 parameters, each additional 1 degree, measured in the measured water temperature correction and then increase 0.5 degrees	
9th byte	The ambient temperature is greater than 30 degrees, the measured water temperature correction value	
10th byte	The ambient temperature is greater than 23, less than 30 degrees, the measured water temperature correction value	

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11th byte	The ambient temperature is less than 23 degrees, the measured water temperature correction value	
12th byte	Reserved	
13th byte	Reserved	
14th byte	Reserved	The default is 00h
15th byte	Line controller Code	0x83
16th byte	Check Sum-up	
17th byte	Ending identifier	Fixed as 0x95

2. Command contents (first byte to fifteenth byte) are as follows:

2.1 When the code is 0x81:

1st byte Mode

Data	Meaning
0000 0000	Powe Off
0000 0001	Water tank plus room heating automatic mode
0000 0010	Room heating mode
0000 0100	Water tank heating mode
0000 1000	Recycling refridgerant
0001 0000	Room Cooling mode
0010 0000	Water tank plus room cooling automatic mode
0100 0000	Test mode
1000 0000	

2nd byte model P20

00000111	Water tank plus room heating and cooling models
00000001	Single tank model
00000010	Single room heating model
00000100	Single room cooling model
00000110	Room heating and cooling models
00000011	Water tank plus room heating model
00000101	Water tank plus room cooling model
00001111	Water tank plus room cooling model with solar energy

3rd byte P14

Outdoor ambient temperature is too low, the shutdown protection temperature setting, transmission value = $^{\circ}\text{C} * 2 + 60$;

4th byte P1

Water tank temperature setting, transmission value = $^{\circ}\text{C}$

5th byte P7

Room heating type, 0 on behalf of the floor heating, 1 on behalf of the heat sink;

6th byte P2

Room floor set temperature, transmission value = °C

7th byte P10

Electric heating water tank starting temperature, transmission value = °C

8th byte P3

Cooling mode Water temperature setting, transmission value = °C

9th byte P4

Water tank heating start hysteresis, transmission value = °C;

10th byte P5

Room heating start hysteresis, transmission value = °C;

11th byte P12

Room heating floor heating water maximum temperature, transmission value = °C;

12th byte P8

Room heating heat sink mode set temperature, transmission value = °C;

13th byte P11

Electric heating does not increase the temperature of the start-up time, transmission value = min (minutes)

14th byte room mode electric heating setting

0: automatic control of electric heating in room mode; 1: electric heating in room mode

15th byte sends a communication definition

Transmission value = 0x81;

16th byte check sum-up

2.2 When the code is 0x82:

1st byte defrost enters the temperature

Automatic defrost: defrost into the set temperature, transmission value = $^{\circ}\text{C} * 2 + 60$;

2nd byte reserved

The following are the same as the "

3rd byte is reserved

4th byte defrost mode

0: automatic mode; 1: manual mode;

5th byte defrosts exit the temperature

Defrost Exit the set temperature, transfer value = $^{\circ}\text{C} * 2 + 60$;

6th byte defrost time

Defrost maximum time, transfer value = min (minutes)

7th byte defrost enters the cycle

Defrost entry cycle set time, transfer value = min (minutes)

8th byte solar water pump open temperature difference,

Transmission value = $^{\circ}\text{C}$;

9th byte off pump cycle transmission value = min (minutes)

10th byte constant temperature difference

Transmission value = $^{\circ}\text{C}$;

8th byte of the tank temperature is corrected

Water tank temperature correction: $-5^{\circ}\text{C} \sim 5^{\circ}\text{C}$, transmission value = $^{\circ}\text{C} + 60$.

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12th byte for return water temperature correction

For the return water temperature correction: $-5^{\circ}\text{C} \sim 5^{\circ}\text{C}$, transmission value = $^{\circ}\text{C} + 60$.

13th byte function flag

Date	Meaning
0000 0001B	The linkage switch is selected, 0 is invalid, 1 is valid
0000 0010B	Electronic expansion valve adjustment mode, 0 automatic; 1 manually
0000 0100B	Compressor frequency adjustment mode, 0 automatic; 1 manually
0000 1000B	Manual defrost flag, 0 invalid; 1 active
0001 0000B	Antifreeze switch, 0 invalid; 1 valid
0010 0000B	
0100 0000B	
1000 0000B	

15th byte sends a communication definition

Transmission value: 0x82;

(B) the transfer board communication content

The transfer board sends commands to the controller, which reads as follows:

1: The transfer board is sent to the remote control command table

Command position	Transmission to the third party control board parameters	Note
0th byte	Identifier Code	Fixed as 0x3a
1st byte	Mode	
2nd byte	Compressor Actual Frequency(Hz)	The actual frequency is 0 for downtime
3rd byte	Error code 1	A value of 0 indicates no fault
4th byte	Error code 2	A value of 0 indicates no fault
5th byte	Machine current value	
6th byte	Return water temperature	$^{\circ}\text{C}$
7th byte	Status flag	0 means no
8th byte	Electric heating mark	
9th byte	Water tank temperature	$^{\circ}\text{C}$
10th byte	reserved	
11th byte	Water supply pipe temperature	$^{\circ}\text{C}$
12th byte	Solar collector temperature	$^{\circ}\text{C}$
13th byte	Error code 3	A value of 0 indicates no fault
14th byte	Outdoor ambient temperature	$^{\circ}\text{C} * 2 + 60$
15th byte	Adapter board code	0x01

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16th byte	Check Sum-up	
17th byte	Ending identifier	Fixed as 0x95

or

Command position	Transmission to the third party control board parameters	Note
0th byte	Identifier Code	Fixed as 0x3a
1st byte	Electronic expansion valve opening degree	Actual number of steps/2
2nd byte	Outdoor coil temperature	°C*2+60
3rd byte	Exhaust gas temperature	°C
4th byte	reserved	
5th byte	reserved	
6th byte	Return air temperature	°C*2+30
7th byte	Throttling temperature	°C*2+30
8th byte	Fault code 4	A value of 0 indicates no fault
9th byte	Status flag bit 2	
10th byte	Reserved	
11th byte	Reserved	
12th byte	Reserved	
13th byte	Reserved	
14th byte	Version code	0x03
15th byte	Adapter board code	0x02
16th byte	Check sum-up	
17th byte	Ending identifier	Fixed as 0x95

2. Command contents (first byte to fourth byte) are as follows:

2.1 fifteenth byte = 0x01

1st byte Mode

data	meaning
0000 0000B	Power off
0000 0001B	Automatic mode 1
0000 0010B	Room heating mode
0000 0100B	Water tank heating mode
0000 1000B	Recycling reffridgerant mode
0001 0000B	Room cooling mode
0010 0000B	
0100 0000B	
1000 0000B	

2nd byte compressor actual frequency

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3rd byte fault code

data	meaning
0000 0001B	Module board failure
0000 0010B	Switchboard and outdoor main control board communication protection Low protection
0000 0100B	Outdoor main control board and drive chip communication protection
0000 1000B	Ambient temperature sensor is open or shorted
0001 0000B	Voltage is too high / too low protection
0010 0000B	EEPROM error indication (conversion board)
0100 0000B	Self-test when the emergency switch open
1000 0000B	The exhaust temperature sensor is open or shorted

4th byte fault code

data	meaning
0000 0001B	The return water temperature sensor is open or shorted
0000 0010B	The tank temperature sensor is open or shorted
0000 0100B	The water temperature sensor is open or shorted
0000 1000B	Water protection
0001 0000B	Pressure relief protection
0010 0000B	The condenser temperature sensor is open or shorted
0100 0000B	System pressure low protection
1000 0000B	System pressure high protection

5th byte machine current value

6th byte return water temperature

7th byte status flag

data	meaning
0000 0001B	Defrost flag, 1 for defrost
0000 0010B	
0000 0100B	
0000 1000B	

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0001 0000B	Self-check mark, 1 for self-test
0010 0000B	
0100 0000B	
1000 0000B	

8th byte electric heating flag (1 for on, 0 for off)

Date	Meaning
0000 0001B	Electrical heating 1
0000 0010B	Electrical heating 2
0000 0100B	Electrical heating 3
0000 1000B	Solar Energy Heat Pump
0001 0000B	Water Pump
0010 0000B	Outdoor fan high wind
0100 0000B	Outdoor fan middle wind
1000 0000B	Outdoor fan low wind

9th byte water tank temperature

10th byte reserved

11th byte water supply pipe temperature

12th byte solar collector temperature

13th byte fault code

data	meaning
0000 0001B	Solar collector (room) temperature sensor failure
0000 0010B	Excessive exhaust temperature protection
0000 0100B	The temperature of the cooling condenser is too high
0000 1000B	Return air temperature sensor failure
0001 0000B	Temperature sensor failure after throttling
0010 0000B	High Current protect
0100 0000B	
1000 0000B	High Water supply protection

14th byte outdoor ambient temperature

Transmission value = $^{\circ}\text{C} * 2 + 60$

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15th byte

Transfer board code = 0x01, transfer the first frame data

2.1 fifteenth byte = 0x02

1st byte of the electronic expansion valve opening

Transmission value = number of steps / 2

2nd byte of the outdoor coil is warm

Transmission value = $^{\circ}\text{C} * 2 + 30$

3rd byte exhaust temperature

Transmission value = $^{\circ}\text{C}$

8th byte fault code 4

data	meaning
0000 0001B	Too low Refrigeration effluent temperature protection
0000 0010B	Out of the water temperature difference protection
0000 0100B	
0000 1000B	Anti-freeze protection
0001 0000B	
0010 0000B	
0100 0000B	
1000 0000B	

9th byte status flag bit 2

data	meaning
0000 0001B	Make cooling to temperature mark
0000 0010B	Making heating to temperature mark
0000 0100B	
0000 1000B	
0001 0000B	
0010 0000B	
0100 0000B	
1000 0000B	

15th byte of the transfer board code = 0x02, transmits the second frame data

(2) transfer board to the outdoor communication content

The transfer board sends an order to the outside, which reads as follows:

1: Transfer board is sent to the outdoor command table

Command position	The parameters transmitted to the outdoor panel	note
0th byte	Identifier Code	Fixed as 0x3a
0-14th byte	Outdoor transfer communication parameter	
15th byte	Command code	0x21
16th byte	Check Sum-up	
17th byte	Ending identifier	Fixed as 0x95

(2) to the outside of the adapter board communication content

Outbound to the adapter board to send commands, the contents are as follows:

1: The outdoor board is sent to the transfer command table

Command position	The parameters transmitted to the outdoor panel	note
0th byte	Identifier Code	固定为 0x3a
1th byte	Outdoor transfer communication parameter	
2th byte	Outdoor fifteenth byte parameter	
3-14th byte	Outdoor corresponding byte parameter	
15th byte	Command code	0x11
16th byte	Check Sum-up	
17th byte	Ending identifier	Fixed as 0x95