

F Type Wall Controller Communication Protocol (RS485)

This agreement based on the **MODBUS-RTU** protocol ("Remote Terminal Unit" mode), that the device itself can be controlled remotely.

In the following description, the master refers to the F type wall controller and the slave refers to the PCB of cooler

1. RS485 communication interface

The communication line we use a 4-core flat PVC signal cable, and the end of the cable is connected with a 4P4C crystal plug. The crystal plug registered jack is defined as follows:

Yellow → GND

Green → B

Red → A

Black → +12V

12V power supply output current $\leq 50\text{mA}$

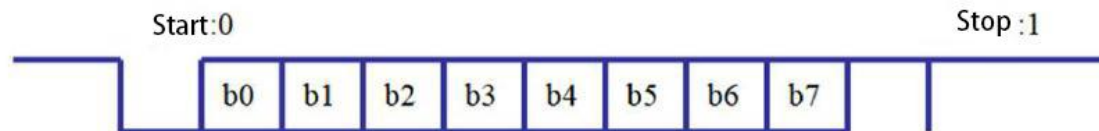


2. UART configuration

The default address of the cooler (Slave address) is 0x0A;

2.1 Communication setting

Baud rate : 2400bps, Start bit:1; data bit: 8; Stop bit : 1; Check bit : NONE.



3. Communication Protocol

3.1 After receiving the master command, the slave starts replying within at least 30ms.

3.2 After the master sends a frame command, if no response is received within 100ms, it is considered that the communication has timed out.

3.3 If the master can not receive a valid response for 5 seconds, it will be considered a communication failure.

4. Register list

4.1 Coil Register - The command supports at least 01H (read), 0FH (Write multiple bits)

| Address | Access Type R: Read only WR: Write and Read | Bit | Parameter | Range Value | Parameter Type |
|---------|---|-------|--|-------------|----------------|
| BYTE 0 | R | Bit0 | over-current: fault 1, default 0 | 0-1 | |
| | R | Bit1 | over-voltage: fault 1, default 0 | 0-1 | |
| | R | Bit2 | under-voltage: fault 1, default 0 | 0-1 | |
| | R | Bit3 | over temperature: fault 1, default 0 | 0-1 | |
| | R | Bit4 | Reserve | 0-1 | |
| | R | Bit5 | capacitor charging failure: fault 1, default 0 | 0-1 | |
| | R | Bit6 | low capacitor capacity: fault 1, default 0 | 0-1 | |
| | R | Bit7 | Reserve | 0-1 | |
| BYTE 1 | R | Bit8 | Failed to read Outdoor temperature: fault 1, default 0 | 0-1 | |
| | R | Bit9 | Low water level is running out of water: fault 1, default 0 | 0-1 | |
| | R | Bit10 | High water level is running out of water: fault 1, default 0 | 0-1 | |
| | R | Bit11 | Cooler is offline | 0-1 | |
| | WR | Bit12 | Reserve | | |
| | WR | Bit13 | Reserve | | |
| | WR | Bit14 | Reserve | | |
| | WR | Bit15 | Reserve | | |

| | | | | | |
|--------|----|-------|--|-----|--|
| BYTE 2 | WR | Bit16 | Reserve | | |
| | WR | Bit17 | Reserve | | |
| | WR | Bit18 | Reserve | | |
| | WR | Bit19 | Reserve | | |
| | WR | Bit20 | Reserve | | |
| | WR | Bit21 | Reserve | | |
| | WR | Bit22 | Reserve | | |
| | WR | Bit23 | Reserve | | |
| BYTE 3 | WR | Bit24 | Drain: fault 1, default 0 | 0-1 | |
| | WR | Bit25 | Swing: fault 1, default 0 | 0-1 | |
| | WR | Bit26 | Cool: fault 1, default 0 | 0-1 | |
| | WR | Bit27 | Exhaust: fault 1, default 0 (Effective when FAN = 0) | 0-1 | |
| | WR | Bit28 | Fan: fault 1, default 0 | 0-1 | |
| | WR | Bit29 | Adding water: fault 1, default 0 | 0-1 | |
| | WR | Bit30 | Shutdown: fault 1, default 0 | 0-1 | |
| | WR | Bit31 | Reserve | | |
| BYTE 4 | WR | Bit32 | Reserve | | |
| | WR | Bit33 | Reserve | | |
| | WR | Bit34 | Reserve | | |
| | WR | Bit35 | Reserve | | |
| | WR | Bit36 | Reserve | | |
| | WR | Bit37 | Reserve | | |
| | WR | Bit38 | Reserve | | |
| | WR | Bit39 | Reserve | | |
| BYTE 5 | WR | Bit40 | Reserve | | |
| | WR | Bit41 | Reserve | | |
| | WR | Bit42 | Reserve | | |
| | WR | Bit43 | Reserve | | |
| | WR | Bit44 | Reserve | | |

| | | | | | |
|--|----|-------|---------|--|--|
| | WR | Bit45 | Reserve | | |
| | WR | Bit46 | Reserve | | |
| | WR | Bit47 | Reserve | | |

4.2 Holding register - The command supports at least 03H (read). 10H (Write multiple bytes)

| Address | Access Type R: Read only WR: Write and Read | Parameter Description | Range Value | Unit | Actual Value |
|---------|---|--|-------------|------|--------------|
| WORD 0 | R | Outdoor temperature | 0-60 | °C | |
| WORD 1 | R | Cooler Communication protocol type | 4 | | |
| WORD 2 | WR | Setting fan speeds: 0 ~ 15 represents fan speed 1 to 16, such as 0 represents fan speed 1 and 15 represents fan speed 16 | 0-15 | | |
| WORD 3 | WR | Reserve | | | |
| WORD 4 | WR | Reserve | | | |
| WORD 5 | WR | Reserve | | | |