Air conditioner thermostat universal interface protocols

（MODBUS)

Protocol based on MODBUS and derived;it is exclusively used in connection between air conditioner thermostat and room controller.

1、MODBUS Instructions

Number	Parameter Name	Regulations
1	Working Mode	RS485 half-duplex;master-slave inspection way;thermostat is slave
2	Physical Interface	A(+),B(-),2-wire system
3	Baud Rate	(Standard Rate is 2400bps)
4	Byte Format	9 format:8 bits + 1 stop bit
5	Modbus	RTU mode
6	Transmission Mode	RTU(Remote Terminal Unit) mode (Please refer to the MOBUSinstructions)
7	Thermostat Address	1－247;(0 is the broadcast address,can not be use)
8	Command Code	3, 6(3: read thermostat;6:setting thermostat)
9	CRC Checksum	CRC－16　(Please refer to the MOBUS instructions)
10	Calibration Mode	CRC－16　(Please refer to the MOBUS instructions)

2、read the thermostat operation frame format

＊command frame(given out by PC controller)read the thermostat state;

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Thermostat Address	03	Read the register high starting address byte	Read the register low starting address byte	Read the high byte register number	Read the low byte register number	CRC HIGH	CRC LOW

＊ Response frame (Given out by thermostat)

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	……				
Thermostat Address	03	Returns data and byte numbers	Returns the first high byte register data	Returns the first low byte register data	……	Returns the N high byte register data	Returns the N low byte register data	CRC HIGH	CRC LOW

3、Set the thermostat frame format

＊ Command frame 1 (given out by PC controller)

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Thermostat Address	06	Set the register high starting address byte	Set the register low starting address byte	Set high value	Set low value	CRC HIGH	CRC LOW

＊ Response frame (Given out by　thermostat)

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Thermostat Address	06	Set the register high starting address byte	Set the register low starting address byte	Set high value(Writable)/Return state(read only)	Set low value(Writable)/Return state(read only)	CRC HIGH	CRC LOW

Air conditioner thermostat status value format specification table

Byte	Value	Specification	Corresponding Register Address
Byte 5	00	Set temperature high byte:usually be 0	10030
Byte 6	5-35	Set temperature low byte:5-35 (Corresponding mode,cooling setting temperature,heating setting temperature,ventilation is no)	
Byte 5	00	Mode set high byte:usually be 0	10031
Byte 6	00-10	Mode set low byte:00 cooling 01 heating 10 ventilation	
Byte 5	00	Thermostat read temperature high byte from sensor(read only)	10032
Byte 6	00	Thermostat read temperature low byte from sensor(read only)	
Byte 5	00-59	High byte:Second value,the data is HEX code	10033
Byte 6	00-59	Low byte:Minute value,the data is HEX code	
Byte 5	00-23	High byte:Hour value,the data is HEX code	10034
Byte 6	00-07	Low byte:Week value,the data is HEX code	
Byte 5	00	Compensation temperature high byte:0	10035
Byte 6	F7-09	Compensation temperature low byte:-9-9(F7-09)	
Byte 5	00	Fan speed set high byte:usually be 0	10036
Byte 6	00-11	Fan speed set low byte:00Auto 01 low 10 medium 11 high	
Byte 5	00	On-Off switch mark high byte:0	10037
Byte 6	00-01	On-Off switch mark low byte:0 turn off thermostat; 1 turn on thermostat	
Byte 5	00	Lock mark high byte:0	10038
Byte 6	00-01	Lock mark low byte: 0 unlock thermostat ; 1 lock thermostat	
Byte 5	00	Full lock and half lock mark high byte:0	10039
Byte 6	00-01	Full lock and half lock mark low byte: 00 half lock(you can turn on/off the power and adjust the temperature); 01 full lock(lock thermostat,all keys be locked)	
Byte 5	00	Upper limiting value high byte:0	10040
Byte 6	20-50	Upper limiting value low byte:20-50	
Byte 5	00	Lower limiting value high byte:0	10041
Byte 6	1-10	Lower limiting value low byte:1-10	
Byte 5	00-01	High byte:sensor state mark(read only):0 sensor is normal 1 sensor is fault	10042
Byte 6	00-01	Low byte:load state mark(read only):0 load off 1 load on	
Byte5	00	High Byte: obligate	10043
Byte6	00-off	Low Byte: Bit0 card status (read only) :0-card pulling status 1-card insert status Bit1~bit7:obligate	

Remarks：thermostat native unlock operation:long press “up” and “down” for 5 seconds to lock and unlock thermostat.