Modbus protocol

1.Communication using RS485 Bus, asynchronous serial signal 1 starting bit, 8 data bits, an end bit, no parity.

2.Comply with the standard Modbus RTU protocol, 16-bit data structure, 16-bit CRC checksum low bytes in the back of the previous high

byte.

3.Unit Address #1

4.PC host computer is the call host, the controller is from the machine.

5.The master and slave machine communicates using three commands:

Command 03H (query 1 or more registers)

Send command: [device address]+[command number 03H] + [Starting register address high 8 bits] + [low 8 bits] + [Read register number high 8 bits] + [low 8

bits] + [CRC checksum low 8 bits] + [CRC checksum high 8 bits]

Device response: [device address] + [command number 03H] + [number of bytes returned] + [data 1] + [data 2] +...+ [data n] + [CRC checksum low 8 bits] + [CRC

checksum high 8 bits]

Command 06H (Modify a single register)

Send command: [device address] + [command number 06H] + [Required register address high 8 bits] + [low 8 bits] + [lower data height 8 bits] + [low 8 bits] +

[CRC checksum low 8 bits] + [CRC checksum high 8 bits]

Device response: If the command sent by the computer is successfully returned as is, it does not respond

Command 10H (modify multiple registers)

Send command: [device address] + [command number 10H] + [Starting register address high 8 bits] + [low 8 bits] + [register number high 8 bits] + [low 8 bits] +
[Register bytes] + [data 1 high 8 bits] + [low 8 bits] + ... + [data n high 8 bits] + [low 8 bits] + [CRC checksum low 8-bit] + [CRC checksum High 8-bit]
Device response: [device address] + [command number 10H] + [Starting register address high 8 bits] + [low 8 bits] + [register number high 8 bits] + [low 8 bits] +
[CRC checksum low 8 bits] + [CRC checksum high 8 bits]

Parameter address (R indicates that the parameter is read-only and RW indicates that the parameter is readable and writable)

Data addresses	Data description	Setting Range	Note
R 0x0000	Protocol Coding L	fixed value 0x2020	
R 0x0001	Protocol Coding H	fixed value 0x0404	
R 0x0002	Switch port detection		Bit0：-- Bit1：Water flow switch Bit2：High pressure switch Bit3：Low pressure switch Bit4：-- Bit5：-- Bit6：-- Bit7：-- 0 close/1 open
R 0x0003	reserved		

R 0x0004	output sign1		Bit0：Compressor Bit1：- Bit2：- Bit3：- Bit4：-- Bit5：Fan motor Bit6：4-way valve Bit7：-- 0 disconnect/1 connect
R 0x0005	output sign2		Bit0：Chassis electric heater Bit1：- Bit2：- Bit3：- Bit4：-- Bit5：Auxiliary electric heater Bit6：- Bit7：-- 0 disconnect/1 connect
R 0x0006	output sign3		Bit0：-- Bit1：Crankshaft electric heater Bit2：Water pump Bit3：- Bit4：-- Bit5：- Bit6：- Bit7：--

			0 disconnect/1 connect
R 0x0007	Fault sign 1		Bit0：Water tank temp. sensor failure Bit1：Ambient temp. sensor failure Bit2：Coil temp. sensor failure Bit3：-- Bit4：Water outlet temp. sensor failure Bit5：High pressure switch fault Bit6：Low pressure switch fault Bit7：--
R 0x0008	Fault sign 2		Bit0：Water flow protection Bit1：-- Bit2：High outlet water temp. protection Bit3：-- Bit4：-- Bit5：-- Bit6：-- Bit7：--
R 0x0009	Fault sign 3		Bit0：-- Bit1：-- Bit2：-- Bit3：-- Bit4：-- Bit5：DC fan 2 fault Bit6：Exhaust temp. sensor failure Bit7：--
R 0x000A	Fault sign 4		Bit0：Water inlet temp. sensor failure

			Bit1：Exhaust overheat protection **Bit2：--** **Bit3：--** **Bit4：--** **Bit5：Low outlet water temp. protection** **Bit6：Suction temp. sensor failure** **Bit7：--**
R 0x000B	**Fault sign 5**		**Bit0：--** **Bit1：--** **Bit2：High coil temp. protection** **Bit3：cooling coil temp. sensor failure** **Bit4：--** **Bit5：--** **Bit6：--** **Bit7：--**
R 0x000C	**Fault sign 6**		**Bit0：--** **Bit1：--** **Bit2：--** **Bit3：--** **Bit4：Level 2 of antifreeze** **Bit5：Level 1 of antifreeze** **Bit6：--** **Bit7：--**
R 0x000D	**Fault sign 7**		**Bit0：--** **Bit1：--** **Bit2：--**

			Bit3：-- **Bit4：Communication failure of frequency module** **Bit5：--** **Bit6：--** **Bit7：DC fan motor fault 1**
R 0x000E	**Water tank temp.**		**Actual temperature = Receive data/2**
R 0x000F	**Inlet water temp.**		**Actual temperature = Receive data/10**
R 0x0010	**Outlet water temp.**		**Actual temperature = Receive data/2**
R 0x0011	**Ambient temp.**		**Actual temperature = Receive data/2**
R 0x0012	**Coil temp.**		**Actual temperature = Receive data/2**
R 0x0013	**Suction temp.**		**Actual temperature = Receive data/2**
R 0x0014	**Coil temp for cooling**		**Actual temperature = Receive data/2**
R 0x0015	**Exhaust temp.**		**Actual temperature = Receive data/2**
R 0x0016	**-**		**Actual temperature = Receive data/2**
R 0x0017	**-**		**Actual temperature = Receive data/2**
R 0x0018	**EEV oping**		
R 0x0019	**Reserved**		
R 0x001a	Target frequency		
R 0x001b	**Actual frequency**		
R 0x001c	**Driver board fault1**		
R 0x001d	**Driver board fault2**		
R 0x001e	**DC bus voltage**		
R 0x001f	Heat sink temperature		**Actual temperature = Receive data/2**
R 0x0020	**Compressor current**		

R 0x0021	High pressure		
R 0x0022	Low pressure		
R 0x0023	-		Actual temperature = Receive data/10
R 0x0024	DC fan speed 1		
R 0x0025	DC fan speed 2		
R 0x0026~ R 0x0039	Reserved		
R 0x003A	AC current		
R 0x003B~ R 0x003E	Reserved		
Rw 0x003f	Control sign		Bit0：0-Off/1-On Bit1：0-Manual control of EEV/1-Automatic control of EEV Bit2：0-Frequency automatic control/1-Manual frequency control Bit3：0-Temperature control for EEV when cooling/1-Superheat control for EEV when cooling Bit4：0-Fahrenheit/1-Centigrade Bit5：-- Bit6：--

			Bit7：--
Rw 0x0040	Mode		1:Heating/2:Cooling
Rw 0x0041	Setting temp. when Heating		Actual temperature = Receive data/2
Rw 0x0042	Setting temp. when cooling		Actual temperature = Receive data/2
Rw 0x0043	Manual frequency		
Rw 0x0044	Manual opening of EEV		
Rw 0x0045	Reserved		
Rw 0x0046	Reserved		
Rw 0x0047	Reserved		
Rw 0x0048	Reserved		
Rw 0x0049	Reserved		