Infrared Thermometer Communication Protocol Modbus RTU

1.Instrument communication method

The instrument adopts RS-485 master-slave half-duplex communication, the host calls the slave address, and the slave answers the communication.

Support baud rate: 600-115200bps

a) Data bits: 8

b) Calibration mode: odd parity, even parity, no parity (default)

c) Stop bit: 1

Red line is V+, blue line is V-, green line is A, white line is B

1.1Function code 03H: Read register value

Host sending:

1	2	3	4	5	6	7	8
ADR	03H	Start register high byte	Start register low byte	Register number high byte	Register number low byte	CRC low byte	CRC high byte

1st byte ADR: slave address code (1 to 250)

2nd byte 03H: Read register instruction

Byte 3, 4: the start address of the register to be read

Byte 5, 6: the number of registers to be read

Byte 7, 8: CRC16 checksum from byte 1 to 6

Return from aircraft:

1	2	3	4 5	6 7		M-1 M	M+1	M+2
ADR	03H	Total number of bytes	Register data 1	Register data 2	…	Register data M	CRC low byte	CRC high byte

1st byte ADR: slave address code (=1 to 250)

2nd byte 03H: Read register instruction

3rd byte: total number of bytes from 4 to M (including 4 and M)

Byte 4 to M: register data

M + 1, M + 2 bytes: CRC16 checksum from byte 1 to M

1.2 Function code 10H: Write multiple register values in succession

1	2	3	4	5	6	7	8 9	10 11	N N+1	N+2	N+3
ADR	10H	Start register high byte	Start register low byte	Register number high byte	Register number low byte	Total number of data bytes	Register data 1	Register data 2	Register data N	CRC low byte	CRC high byte

When the slave receives correctly, the slave sends back:

1	2	3	4	5	6	7	8
ADR	10H	Register high byte	Register low byte	Register number high byte	Register number low byte	CRC low byte	CRC high byte

2.Register definition table (Note: register addresses are encoded in hexadecimal)

Register address	Data name	Data type	Read only	Instructions
0000 0001	Measuring temperature	Floating point type	√	
0004 0005	Host number	Floating point type		Range: 1-250
0006 0007	Baud rate	Floating point type		Range: 600-38400
0008 0009	Calibration method	Floating point type		0 No checksum 1 Odd calibration 2 Even calibration

3.Examples

3.1Read data

Read measurement temperature	Tx: 01 03 00 00 00 02 C4 0B
	Rx: 01 03 04 42 C8 00 00 6F B5 (100.0℃)
Read ambient temperature	Tx: 01 03 00 02 00 02 65 CB
	Rx: 01 03 04 41 C8 00 00 6F 21 (25.0℃)

3.2Modify parameters

Set the host number to 2

Tx: 011000040002044000000E79C
Rx: 0110000400020009

Set the baud rate to 9600

Tx: 011000060002044616000008709
Rx: 011000060002A1C9

Set the baud rate to 19200

Tx: 011000060002044696000086E1
Rx: 011000060002A1C9

Set no parity

Tx: 011000080002040000000F209
Rx: 011000080002C00A

Set no odd parity

Tx: 011000080002040000803FD3D9
Rx: 011000080002C00A

Set no even parity

Tx: 011000080002040000040F3F9
Rx: 011000080002C00A