

1. Overview

1.1 Introduction

Communication protocol is described in detail in this machine communication to read, write and format definition information and data commands to third-party developers to use.

1.2 Electrical Characteristics and Compliance

- 1) Connect the PC's main communication interface, using standard serial communication port, use the terminals.
- 2) information transmission mode is asynchronous, byte format is one start bit, 8 data bits, 1 stop bit, no parity.
- 3) data transfer rate 1200b / s, 2400b / s, 4800b / s, 9600b / s, 19200b / s optional, by default 9600b / s.
- 4) comply with MODBUS RTU protocol standards.

2. MODBUS RTU Communication Protocol Specifications

2.1 protocol basic rules

The following rules determine the device communication rules in the loop controller and other serial communication loop.

- 1) All communications circuits should comply with the master / slave mode. In this manner, data can be a master (eg: PC) and a plurality of sub-stations to pass between. Any time communications are not starting from the sub-station.
- 2) Master will initialize and all information transmitted in the communication loop control.
- 3) transfer all loop are divided into two ways:
 - A) master / slave transfer
 - B) transfer from / master
- 4) All communications are back on the road to "information frame" mode transfer.

If the master or slave station receives a frame containing information unknown command, not responds

"Information frame" is a constituted by the byte string (up to 255 bytes), constitute the standard asynchronous serial data from the message header and encoded data transmitted, the communication is also compatible with RTU communication protocol.

2.2 Information frame structure description

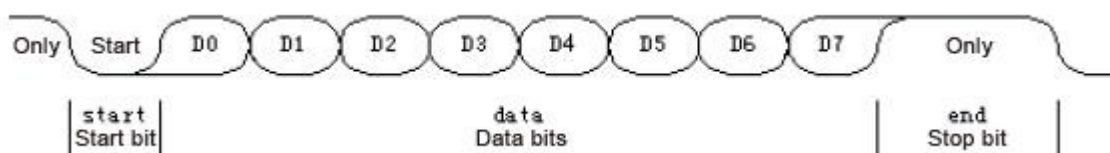
Each frame consists of the following information:

Address	Function code	Data address	Data 1	Data...	Data n	CRC16
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3. byte format

Asynchronous communications transmission mode, and bytes. Each byte frames between the master station and sub-station transfer is 10 (no parity bit) serial data stream.

Byte frame format:



4. the command packet format

4.1 Read data:

Master sends

Address	Function code	Data Starting Address High	Data start address low	High number of data	Low number of data	CRC16 high	CRC 16 low
	04						

Returns:

Address	Function code	Byte length	Data 1 high	Data 1 Low	Data 2 High	Data 2 low	...	CRC16 high	CRC16 low
	04								

5. HT11S internal message information

Function code	Data start address	The number of data	Description
04H	0000H	1	Temperature values
	0001H	1	Humidity

NOTE: Each two-byte integer data representation, high front and low in the post

Such as: unsigned integer range -32768 --- 32767

Upload data required in addition to ten, the scope of a positive number is 16 hexadecimal 0X0000-0X7FFF, negative complement transmitted using a positive number in the range of hexadecimal 0X8000-0XFFFF,

Such as:

Upload humidity hexadecimal 0X0311, corresponding to the decimal 785, it represents 78.5%

Upload temperature hexadecimal 0X00FF, corresponding to 255 decimal, represents 25.5 °C

Upload temperature hexadecimal 0XFF9B, corresponding to decimal 100 (0XFFFF-0XFF9B = 0X64), represents -10.0 °C

6. network sampling timing

Temperature and humidity sensors, the PC reads data each time interval of not less than 500ms, the recommended value 1s.

7. the command, for example:

Read the temperature and humidity data:

Host sends: 01 04 00 00 00 02 71 CB (temperature and humidity address is 1, the register start address is 0, read 2 bytes)

Lower machine returns: 010,404, temperature H, temperature L, humidity H, humidity L, CRCL, CRCH.

Read-only temperature data:

Host sends: 01 04 00 00 0 001 31 CA (temperature and humidity address is 1, the register start address is 0, read a byte)

Lower machine returns: 010,402, temperature H, temperature L, CRCH, CRCL.

Read Only Humidity Data:

Host sends: 01 04 00 01 0 001 60 0A (temperature and humidity address is 1, the register start address is 1, read a byte)

Lower machine returns: 010,402, humidity H, humidity L, CRCH, CRCL.

Set the address:

Host sends: 01 06 00 64 00 02 49 D4 (temperature and humidity original address 1 to 2)

Lower machine returns: 01060064, address H, address L, CRCL, CRCH.