FM312-RS485 Gas flowmeter communication protocol (MODBUS-RTU)

1.RTU Data format specification

1.1 Communication mode

The instrument adopts MODBUS RTU format. The protocol is used for data communication in master-slave query mode.

1.2 Data format

RTU The format of each byte (11 bits) in the pattern is:

The encoding system is: 8-bit binary

Bits of each byte: 1 start bit, 8 data bits (least significant bit sent first), no parity bit, and 1 stop bit

Note: When no check is used, you can select 1 stop bit or 2 stop bits.

start	Address	Function code	Data	CRC check	End
≥3.5 字符	8 bit	8 bit	n*8 bit	16 bit	≥3.5 character

Note:

(1) In RTU mode, an idle interval of at least 3.5 characters separates the packet frames.

(2) The entire message frame must be sent in a continuous stream of characters.

(3) The idle interval between two characters should not exceed 1.5 character time.

1.3 address

The address of the instrument specified in the agreement is "0-255" and the "0" address is used for broadcasting. Broadcasting is not supported in this agreement and the remaining addresses are reserved.

2. Command instructions

2.1 This instrument uses 2 instructions from the MODBUS protocol:

Command 03	Read the single hold register
Command 06	Write a single hold register

Command 03 format (read register command):

Note:

MODBUS request

Instrument address	1 BYTE	01-255
Function code	1 BYTE	0x03
Origin address	2 BYTE	0-FFFF
Read quantity	2 BYTE	1-12
CRC low	1 BYTE	
CRC High	1 BYTE	

MODBUS respond

Instrument address	1 BYTE	01-255
Function code	1 BYTE	0x03
Origin address	1 BYTE	
Read quantity	N*2 BYTE	
CRC low	1 BYTE	
CRC High	1 BYTE	

Command 06 format (write register command):

Clear the value of the total cumulative flow rate

MODBUS request

Instrument address	1 BYTE	01-255	
Function code	06	0x06	
Byte count	1 BYTE		

MODBUS respond

Instrument address	1 BYTE	01-255	
Function code	06	0x06	
Byte count	1 BYTE		

3. Data item definition

03H command

Modbus address	Register length	Instructions
00	16 bit unsigned integer	Instantaneous flow rate (one decimal, display value *0.1L/min)
01	32-bit unsigned integer	Cumulative flow (m^3) integer part
03	32-bit unsigned integer	Cumulative flow (m^3) Fractional (read value *0.00001)
05	16 bit unsigned integer	Display the current value in units (0: L/min, 1: m^3/h)
06	16 bit unsigned integer	Displays the decimal point of the current value

06H command

Clear cumulative flow: Write register value 1 to register address 1