

FM350-RS485**Gas flowmeter communication protocol (MODBUS-RTU)****1. Description of RTU data format****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

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

The encoding system is: 8-bit binary

Bits per byte: 1 start bit, 8 data bits (least significant bit sent first), None Parity bit, 1 stop bit

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

Five baud rates are available: 2400, 4800, 9600, 19200, 115200

initiation	address	Function code	data	CRC check	finish
≥3.5 character	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

In the protocol, the address of the instrument is "0-255", and the "0" address is used for broadcasting. The protocol does not support broadcasting, and the other addresses are reserved.

2. Command description**2.1 This instrument uses two instructions in the MODBUS protocol:**

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

The format of command 03 is as follows: (Read register command)

Note: MODBUS request

Instrument address	1 BYTE	01-255
Function code	1 BYTE	0x03
Origin address	2 BYTE	00-03
Read quantity	2 BYTE	1-4
CRC low	1 BYTE	
High CRC	1 BYTE	

MODBUS respond

Instrument address	1 BYTE	01-255
Function code	1 BYTE	0x03
Byte count	1 BYTE	02-08
Input state	N*2 BYTE	
CRC low	1 BYTE	
High CRC	1 BYTE	

The format of command 06 is as follows (write register command) :

Clear accumulated traffic: Write register value 2 to register address 1

Metter address (default)	Function code	Register address	Write data	CRC verify
01	06	00 01	00 02	

MODBUS request

MODBUS respond

Metter address (default)	Function code	Register address	Write data	CRC verify
01	06	00 01	00 02	

Communication note:

Configuration description

Instructions	value
Address (default is 1, can be modified)	example: 0001
9600 (modifiable)	2400-115200

Baud=0 r485_baud= 2400

Baud=1 r485_baud=4800

Baud=2 r485_baud=9600

Baud=3 r485_baud=19200

Baud=4 r485_baud=115200

3. Data item definition

03H order

Modbus address	Register length	Instructions
00	16 bit unsigned integer	Instantaneous flow rate (read value *1L/min)
01	32-bit unsigned integer	Cumulative flow
03	16 bit unsigned integer	Read value decimal number (for 5L, 10L, 50L, and 100L)