Appendix: Communication Protocol RS485-MODBUS

Physical layer: RS485/232 optional (depending on order selection)

Communication protocol: MODBUS protocol

Transmission format: 8-bit data, 1 stop bit, no parity , RTU mode.

Baud rate : 9600 bps

Note: All floating point numbers in this protocol are single precision floating point numbers that comply with IEEE standards. The low bit is used as the high bit, and the byte order is 3412 (CDAB)

The following takes device address 1 as an example to explain the format of each function command:

1. Read instantaneous flow: (the value is a floating point number starting from device register address 16)

PC sends command: TX:01 03 00 10 00 02 C5 CE

Device Address	Read Command	Starting address		Read register quantity		CRC	
		high	Low	high	Low	Low	high
01	03	00	10	00	02	C5	CE

PC receives the response: RX:01 03 04 XX XX XX XX XX XX (Note: XX is the value that changes according to the actual value read)

Device Address	Read Command	Upload Bytes	The actual value read				CRC	
			Low		high		Low	high
01	03	04	XX	XX	XX	XX	XX	XX

2. a floating point number starting from the device register address 2 8 , and the measurement unit is the default unit)

(1) **Read the accumulated flow**

PC sends command: TX:01 03 00 1C 00 02 05 CD

Device Address	Read Command	Starting address		Read register quantity		CRC	
		high	Low	high	Low	Low	high
01	03	00	1C	00	02	05	CD

PC receives the response: RX:01 03 04 XX XX XX XX XX XX (Note: XX is the value that changes according to the actual value read)

Device Address	Read Command	Upload Bytes	The actual value read				CRC	
			Low		high		Low	high
01	03	04	XX	XX	XX	XX	XX	XX

(2) **Clear the accumulated flow (write a floating point number 0 to clear it)**

PC sends command: TX:01 10 00 1C 00 02 04 00 00 00 00 F2 F6 (Write floating point number 0, that is, the accumulated flow is cleared)

Device Address	Write Command	Starting address		Read register quantity		Number of bytes written	Setting Value				CRC	
		high	Low	high	Low		Low		high		Low	high
01	10	00	1C	00	02	04	00	00	00	00	F2	F6

3. Set the control mode: A floating point number starting from address 116 represents the control mode (27 analog mode, 28 digital mode, default 27) . **Note: When writing a value, writing 25 is analog mode and writing 26 is digital mode, the system will automatically add 2;**

（1）Set the control mode to digital control mode

PC sends command: TX:01 10 00 74 00 02 04 00 00 41 D0 C4 B4

Device Address	Write Command	Starting address		Read register quantity		Number of bytes written	Floating point number 26				CRC	
		high	Low	high	Low		Low		high		Low	high
01	10	00	74	00	02	04	00	00	41	D0	C4	B4

(2) **Set the control mode to analog control mode**

PC sends command: TX:01 10 00 74 00 02 04 00 00 41 C8 C4 BE

Device Address	Write Command	Starting address		Read register quantity		Number of bytes written	Floating point number 25				CRC	
		high	Low	high	Low		Low		high		Low	high
01	10	00	74	00	02	04	00	00	41	C8	C4	BE

4. Set the flow rate (valid in digital control mode, the value is a floating point number starting from device register address 106, and the measurement unit is the default unit)

PC sends command: TX:01 10 00 6A 00 02 04 XX XX XX XX XX XX (Note: XX is the value that changes according to the actual value read)

Device	Write	Starting	Read register	Number	Setting Value	CRC

Address	Command	address		quantity		of bytes written						
		high	Low	high	Low		Low		high		Low	high
01	10	00	6A	00	02	04	XX	XX	XX	XX	XX	XX

5、Zero point setting (the value is a floating point number starting from the device register address 118. Writing 0 means setting the zero point, and writing 1 means canceling the zero point)

（1）Set zero point (Note: This command can be used to set the zero point when the instantaneous flow zero point is offset. When using this command to reset to zero, make sure that there is no flow passing through the flowmeter.)

PC sends command: TX:01 10 00 76 00 02 04 00 00 00 00 74 A1

Device Address	Write Command	Starting address		Read register quantity		Number of bytes written	Setting Value				CRC	
		high	Low	high	Low		Low		high		Low	high
01	10	00	76	00	02	04	00	00	00	00	74	A1

(2) Cancel zero point (If you make a mistake in setting the zero point, you can use this operation to cancel it and then set the zero point again in the correct state)

PC sends command: TX:01 10 00 76 00 02 04 3F 80 00 00 79 5D

Device Address	Write Command	Starting address		Read register quantity		Number of bytes written	Setting Value				CRC	
		high	Low	high	Low		Low		high		Low	high
01	10	00	76	00	02	04	3F	80	00	00	79	5D

6. Set the gas coefficient (valid in digital control mode, the value is a floating point number starting from device register address 114, and the measurement unit is the default unit)

PC sends command: TX :01 10 00 72 00 02 04 XX XX XX XX XX

(Note: XX is the value that changes according to the actual value read)

Device Address	Write Command	Starting address		Read register quantity		Number of bytes written	Setting Value				CRC	
		high	Low	high	Low		Low		high		Low	high
01	10	00	72	00	02	04	XX	XX	XX	XX	XX	XX

7. Set the batch function (valid in digital control mode, the value is a floating point number starting from the device register address 122, and the measurement unit is the default unit)

Note: This function is limited to devices equipped with batch function (quantity control function)

PC sends command: TX:01 10 00 80 00 02 04 (XX XX XX XX) XX XX

Device Address	Write Command	Starting address		Read register quantity		Number of bytes written	Setting Value				CRC	
		high	Low	high	Low		Low		high		Low	high
01	10	00	80	00	02	04	XX	XX	XX	XX	XX	XX