

Product Agreements

Table 1 Modbus RTU communication settings

| | | |
|---|--|-------------|
| Serial communication interface settings | Baud rate | 9600bps |
| | Data bit | 8 |
| | Stop bit | 1 |
| | Check bit | No checksum |
| Transmission mode | Modbus RTU | |
| Device address | 01H (FFH is the broadcast address) | |
| Feature code | Read input register 04H Write holding register 06H, reading hold register 03H | |
| The valid address range of the register | Table 2 holding register address and Table 3 input register address | |

Table 2 holding register allocation list

| Register address (decimal) | Data content | Number of registers | data type | unit | Value range | Default value |
|----------------------------|---|---------------------|-----------|------|--|---------------|
| 9 | layer scanning cycle | 1 | UINT16 | ms | 1-1000 | 20 |
| 10 | machine measure cycle | 1 | UINT16 | ms | 1-60000 | 1000 |
| 11 | single layer measure times | 1 | UINT16 | | 1-100 | 1 |
| 13 | The baud rate of the device communication | 1 | UINT16 | - | 0: 9600 1: 19200 2: 38400 3: 57600 4: 115200 | 0 |
| 14 | device address | 1 | UINT16 | - | 1-254 | 1 |
| 169 | device reboot | 1 | UINT16 | | Reboot the device 0x1234 write | 0 |
| 170 | restore factory settings | 1 | UINT16 | | Write 0x01 factory reset | 0 |
| 427 | clear cumulative flow volume | 1 | UINT16 | | Writes 0x01 purges | |
| 484 | reverse flow velocity direction | 1 | UINT16 | | 0: Not reversed 1: Reverse | 0 |

Table 3 Input register allocation list

| Register address (decimal) | Data content | | Number of registers | data type | unit |
|-------------------------------|-------------------------------------|--|------------------------|-----------|-------------------|
| 0-1 | average velocity | | 2 | Float | m/s |
| 2-3 | water height | | 2 | Float | m |
| 4-5 | instant flow rate | | 2 | Float | m ³ /s |
| 6-9 | cumulative flow volume | | 4 | Double | m ³ |
| 12-13 | cross section area of liquid level | | 2 | Float | m ² |
| 14-15 | liquid level width | | 2 | Float | m |
| 16 | water temperature | | 1 | INT16 | 0.1°C |
| 243-244 | cumulative flow volume-integer part | | 2 | UINT32 | |
| 245-246 | cumulative flow volume-decimal part | | 2 | Float | |

(For the cumulative traffic, due to the high accuracy, high calculation and consumption of the DOUBLE type, some RTUs may not support this type, and the combination mode of UINT32+Float can be used instead.)

Example of register operation:

1. Read the average velocity of device 1, that is, the register start address is 0000H, and the command is as follows:

01 04 00 00 00 02 71 CB
 Device number—Function code—Register address—Number of registers—Verification result

Gauge return data:

01 04 04 F3 B6 3F 9D F9 7F
 Device ID—Function Code—Number of Data Bytes—FLOAT Data Type—Verification Result

2. Read the cumulative flow volume of device 1, that is, the register start address is 0006H, and the command is as follows:

01 04 00 06 00 04 11 C8
 Device number—Function code—Register address—Number of registers—Verification result

Gauge return data:

01 04 08 C8 B4 39 58 3F F3 BE 76 F5 35
 Device ID—Function Code—Number of Data Bytes—FLOAT Data Type—Verification Result

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3. Read the water temperature of device 1, that is, the register address is 0010H, and the command is as follows:

01 04 00 10 00 01 30 0F
 Device ID—Function Code—Number of Data Bytes—FLOAT Data Type—Verification Result

Gauge return data:

01 04 02 00 FA 39 73
 Device ID—Function Code—Number of Data Bytes—FLOAT Data Type—Verification Result

Data Analysis:

1.1 Read the direction of the flow rate

| Device address | Start address | Number of registers |
|----------------|---------------|---------------------|
| 128 | 279 | 1 |

Send: 80 04 01 17 00 01 9E 23

Receiving: 80 04 02 00 02 04 EF

Data part: 00 02

Result: 2 represents countercurrent

2. Example of UINT32 type parsing

2.1 Read the cumulative flow volume-integer part

| Device address | Start address | Number of registers |
|----------------|---------------|---------------------|
| 128 | 302 | 2 |

Send: 80 04 01 2E 00 02 0E 2F

Receiving: 80 04 04 4B AA 06 0C 5E ED

Data part: 4B AA 06 0C

Swap order: 06 0C 4B AA

Analytical result: 101469098 m³

101,469,098

| | |
|-----|------------------------------------|
| HEX | 60C 4BAA |
| DEC | 101,469,098 |
| OCT | 603 045 652 |
| BIN | 0110 0000 1100 0100 1011 1010 1010 |

3. Example of FLOAT type parsing

3.1 Read flow rate

| Device address | Start address | Number of registers |
|----------------|---------------|---------------------|
| 128 | 200 | 2 |

Send: 80 04 00 C8 00 02 EE 24

Receiving: 80 04 04 02 EE 3E 8E 9B 05

Data section: 02 EE 3E 8E

Swap order: 3E 8E 02 EE

Analytical result : 0.277366 m/s

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Floating Point to Hex Converter

Show details
 Swap to use big-endian
 Uppercase letters in hex

Hex value:

Float value:

Hex value:

Double value:

4. Example of DOUBLE type parsing

4.1 Read the cumulative flow volume

| Device address | Start address | Number of registers |
|----------------|---------------|---------------------|
| 128 | 208 | 4 |

Send: 80 04 00 D0 00 04 EE 21

Receiving: 80 04 08 00 00 68 E0 02 E1 41 03 21 D2

Data part: 00 00 68 E0 02 E1 41 03

Exchange order: 41 03 02 E1 68 E0 00 00

Analytical result: 155740.1762084961 m³

Floating Point to Hex Converter

Show details Swap to use big-endian Uppercase letters in hex

Hex value:

Float value:

Hex value:

Double value:

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