

KDF1100 Wall-mounted Ultrasonic Doppler Flow Meter



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1.Introduction

The ultrasonic Doppler flowmeter is a host that collects the flow velocity, water level and temperature of the ultrasonic Doppler flowmeter through RS485, and inputs various channel parameters according to the actual situation on site. The water flow area S (m^2) is calculated using the channel parameters and the collected water level H (m), and the instantaneous flow rate ($Q = V * S$) is calculated by multiplying the water flow area and the flow velocity V (m/s), and the cumulative flow rate is calculated by multiplying the flow rate by the cumulative time.

From this we can know: $Q = V * S$

Instantaneous flow rate * time difference = cumulative flow rate

2.Technical Specifications

Power supply	Power supply range: 10.8VDC~26.4VDC; RS485 12V power consumption: 62.5mA±1mA (about 0.75W) RS485 24V power consumption: 35.5mA±1mA (about 0.85W) RS485+4~20mA 12V power consumption: 65mA±1mA (about 0.78W) RS485+4~20mA 24V power consumption: 38mA±1mA (about 0.91W)
Output characteristics	RS485/ModBus standard protocol; 4~20mA (not included by factory default) LCD backlight display: 128*64
Measurement performance	Flow range: 1L/s~99999.99m3/h; Water depth range: 0.02~3m, 0.02~10m (please confirm the maximum water depth before ordering); Display interface 1: water level, instantaneous flow, cumulative flow; Display interface 2: water level, flow rate, cross-sectional area, temperature; Flow resolution: 0.0001L/s.
Physical properties	Split shell material: ABS+PC, sensor material: POM; Sensor protection level: IP68; Transmitter protection level: IP65; Cable between sensor: 4-core shielded cable with air duct, factory default length 10 meters, wire diameter 8mm (other wire lengths need to be customized).
Working environment	Working temperature: -5 ~ 60℃ (non-freezing state); Storage temperature: -25 ~ 80℃;

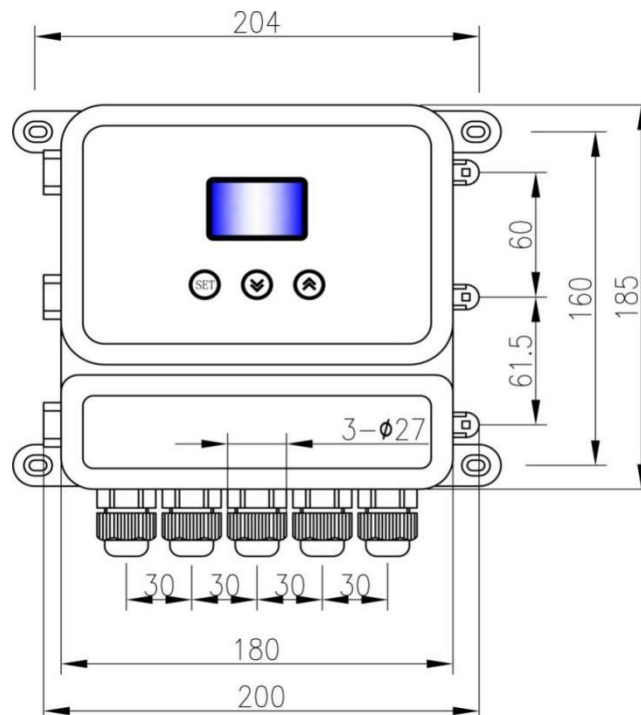
3.Dimensions

3.1 Product picture



3.2 structure size

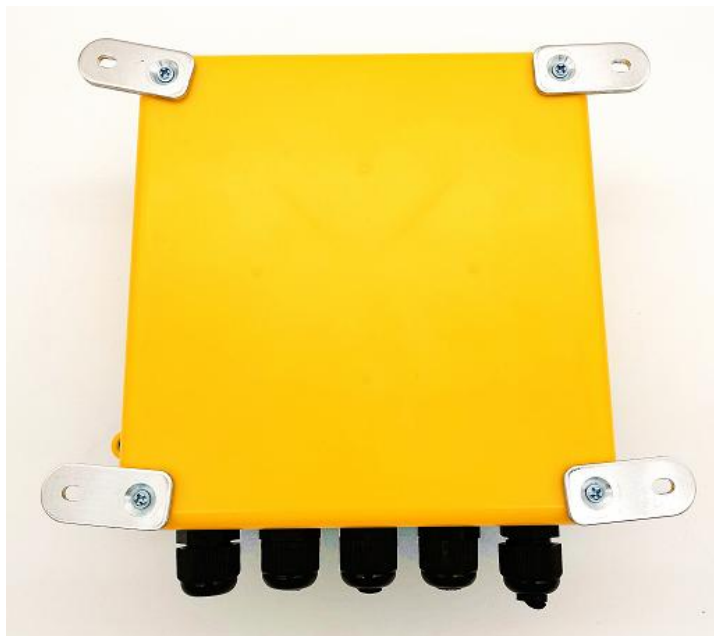
The dimensions without installation accessories are width × height × thickness = 200 × 215 × 90m.



4. Installation Instructions

4.1 Assembly diagram

There are four fixing plates in the factory accessories. Please see the figure. After fixing, it can be installed on the instrument box or wooden board.



Ultrasonic Doppler flowmeter factory accessories list			
NO.	Name	Model/Specification	amount
1	Ultrasonic Doppler flowmeter host		1
2	Ultrasonic Doppler flowmeter sensor		1
3	(Including sensor factory accessories)		1
4	Mounting base plate	M6*16	4
5	Flat head machine screws		2
6	Clamps		4
7	Mounting gaskets	M4*12	4
8	Cross round head self-tapping screws	M4*25	4

4.2 Wiring

● Ultrasonic Doppler flowmeter host wiring identification diagram

T/AO	【T/AO】 Connect to external acquisition host computer 485A
R/BO	【R/BO】 Connect to external acquisition host computer 485B
GND	【GND】 Sensor spare grounding terminal
NC	【NC】 Spare
DOPA	【DOPA】 Connect to flow meter 485A
DOPB	【DOPB】 Connect to flow meter 485B
DOPV-	【DOPV-】 Connect to the negative pole of the flow meter power supply
DOPV+	【DOPV+】 Connect to the positive pole of the flow meter power supply
NC	【NC】 Spare
A1	【A1】 Connect to external water level meter 485A
B1	【B1】 Connect to external water level meter 485B
12V-	【12V-】 Supply the negative pole of the external water level meter power supply
12V+	【12V+】 Supply the positive pole of the external water level meter power supply
NC	【NC】 Spare
mAIn-	【mAIn-】 Connect to the four-wire water level meter mA-
mAIn+	【mAIn+】 Connect to the four-wire water level meter mA+
NC	【NC】 Spare
24V-	【24V-】 Negative power supply for external water level meter
24V+	【24V+】 Positive power supply for external water level meter
NC1	【NC1】 Relay 1 Normally Closed Terminal
COM1	【COM1】 Relay 1 Common Terminal
NO1	【NO1】 Relay 1 Normally Open Terminal
NC2	【NC2】 Relay 2 Normally Closed Terminal
COM2	【COM2】 Relay 2 Common Terminal
NO2	【NO2】 Relay 2 Normally Open Terminal
mA+	【mA+】 4-20mA Output Positive Terminal
mA-	【mA-】 4-20mA Output Negative Terminal
GND	【GND】 Instrument Grounding Terminal
12V-	【12V-】 Connect to External Power Supply Negative Terminal
12V+	【12V+】 Connect to External Power Supply Positive Terminal

● Ultrasonic Doppler velocity meter and flow meter connection diagram



4.2.1 Ultrasonic Doppler flow meter & velocity meter wiring method

After the ultrasonic Doppler velocity meter and the flow meter are properly wired, you need to set the channel parameters in menu item 5 "Channel type" and the offset (the height of the velocity meter from the bottom of the water) in menu item 6 "Other parameters". If you need to specify the communication address, you can enter the communication address in menu item 4 "Communication settings" and only need to modify it.



4.2.2 Ultrasonic Doppler flowmeter & velocity meter & external 485 water level meter

When an external water level meter is needed on site, please connect according to the following figure. You need to set the channel parameters in menu item 5 "Channel type" and the external water level meter in menu item 6 "Other parameters". (For example, if the communication address of the velocity meter is 01, the communication address of the external water level meter needs to be set to 02).

The types of external water level meters include ultrasonic water level meters, radar water level meters, and immersion water level meters. If the water level sensor of the velocity meter is damaged or the contact water level meter cannot be used on site, it is recommended to use a non-contact water level meter (metal shell water level meters need to consider lightning strikes, electric fishing, etc.).



4.2.3 Ultrasonic Doppler flowmeter & velocity meter & external two-wire water level meter

When an external two-wire water level meter is required on site, please connect according to the following figure. You need to set the channel parameters in menu item 5 "Channel type" and the external water level meter in menu item 6 "Other parameters".

The types of external water level meters include ultrasonic water level meter, radar water level meter, immersion water level meter, etc. If the water level sensor of the velocity meter is damaged or the contact water level meter cannot be used on site, it is recommended to use a non-contact water level meter (metal shell water level meter needs to consider lightning strikes, electric fishing, etc.).



4.2.4 Ultrasonic Doppler flowmeter & velocity meter & external four-wire water level meter

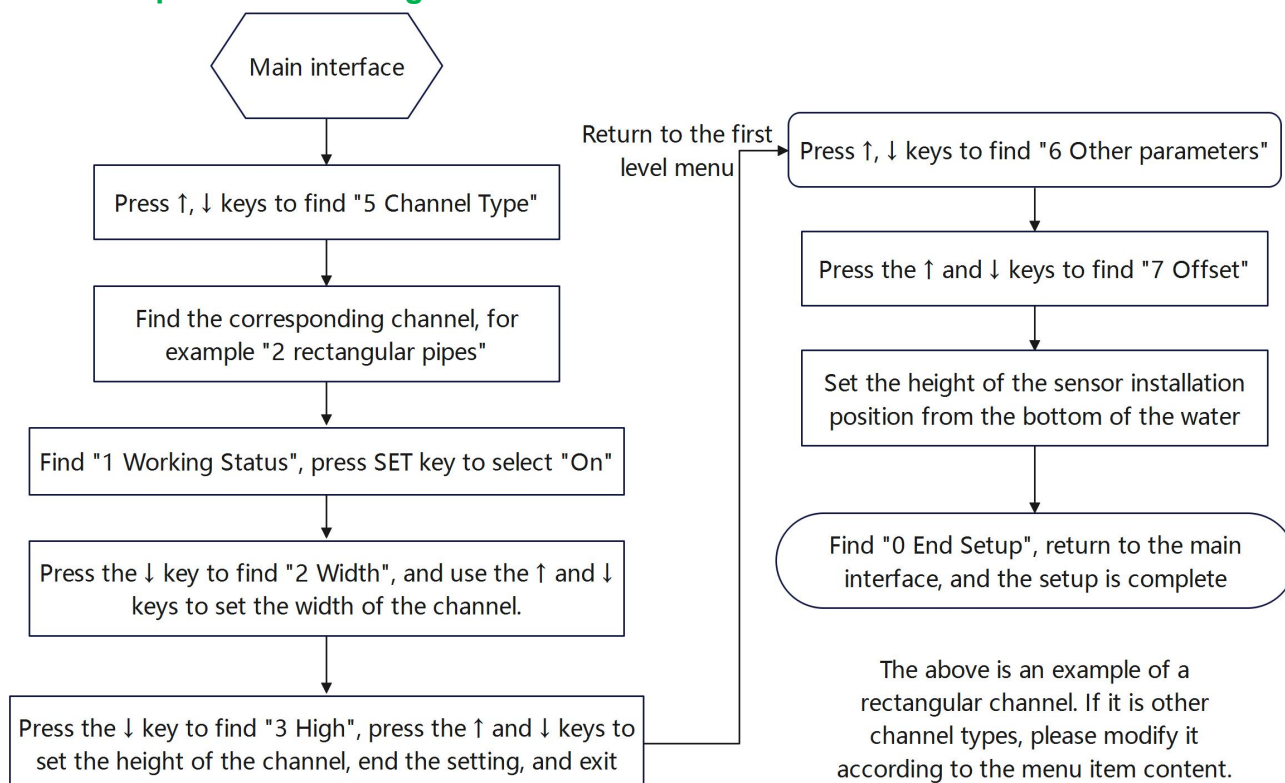
When an external four-wire water level meter is required on site, please connect according to the following figure. You need to set the channel parameters in menu item 5 "Channel type" and the external water level meter in menu item 6 "Other parameters".

The types of external water level meters include ultrasonic water level meter, radar water level meter, immersion water level meter, etc. If the water level sensor of the velocity meter is damaged or the contact water level meter cannot be used on site, it is recommended to use a non-contact water level meter (metal shell water level meter needs to consider lightning strikes, electric fishing, etc.).

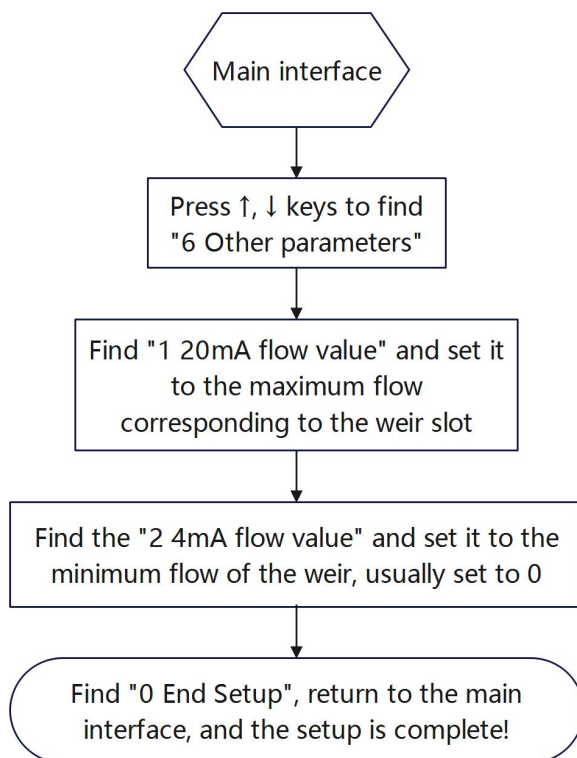


5.Simple Setting Instructions

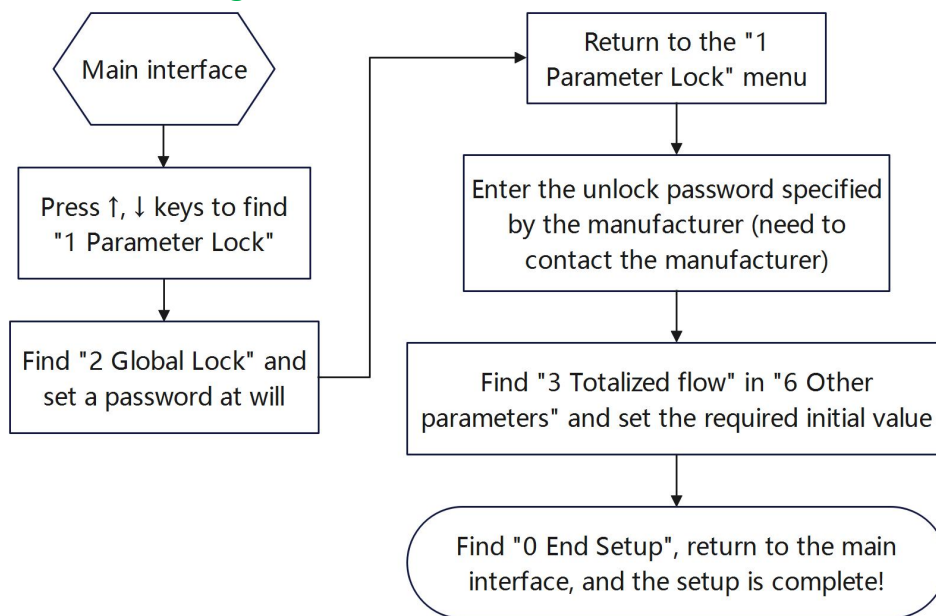
5.1 Basic parameter settings



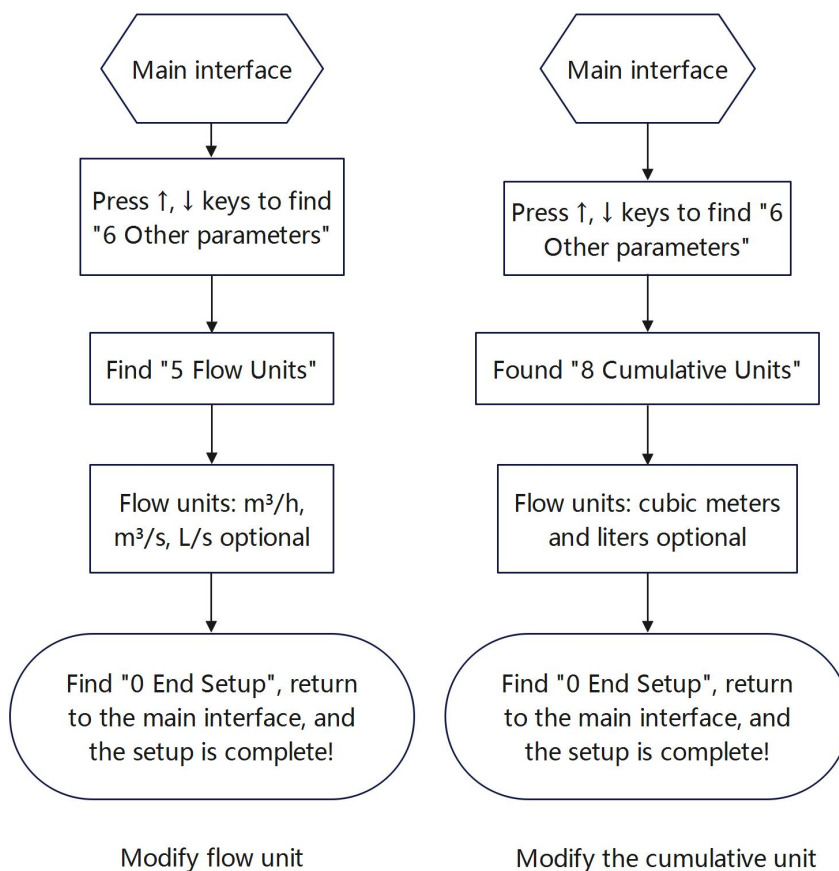
5.2 4 ~ 20mA setting



5.3 Cumulative flow setting



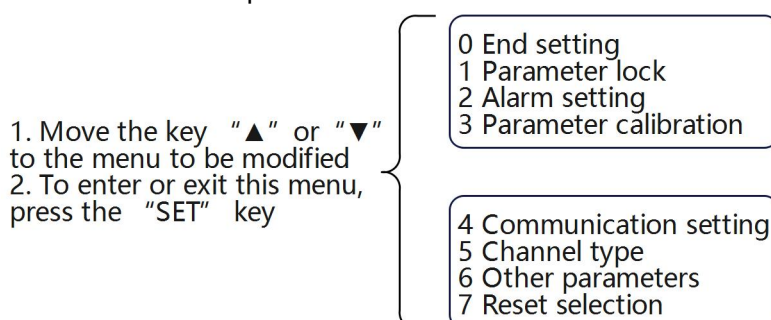
5.4 Flow unit modification



6.Menu Description

Press the Set key for 3 seconds in the operation mode interface to enter the first-level menu interface:

The first-level menu interface where the parameters are not locked:

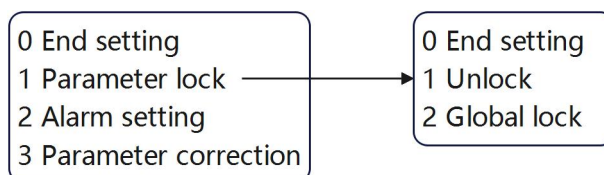


6.1 Parameter lock

1. "0 End setting": When this option is selected, press the Set key to return to the operation mode interface.

2. "1 Unlock": The menu is not locked, allowing others to change it.

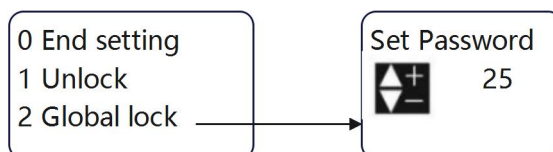
3. "2 Global lock": The menu is locked. When your parameters are set and you do not want others to change them at will, lock the menu. In this way, you must enter the password to unlock and operate the menu. The initial password of this flow meter is 25. The user can modify the initial password and set his own password at will (special reminder to remember the password you set, if you forget, you should contact the manufacturer).



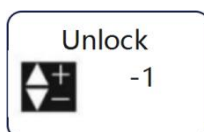
★When the parameter is not locked, press the Set key to enter the parameter lock setting interface:

Unlock: Unlock, then all menus can be modified at will.

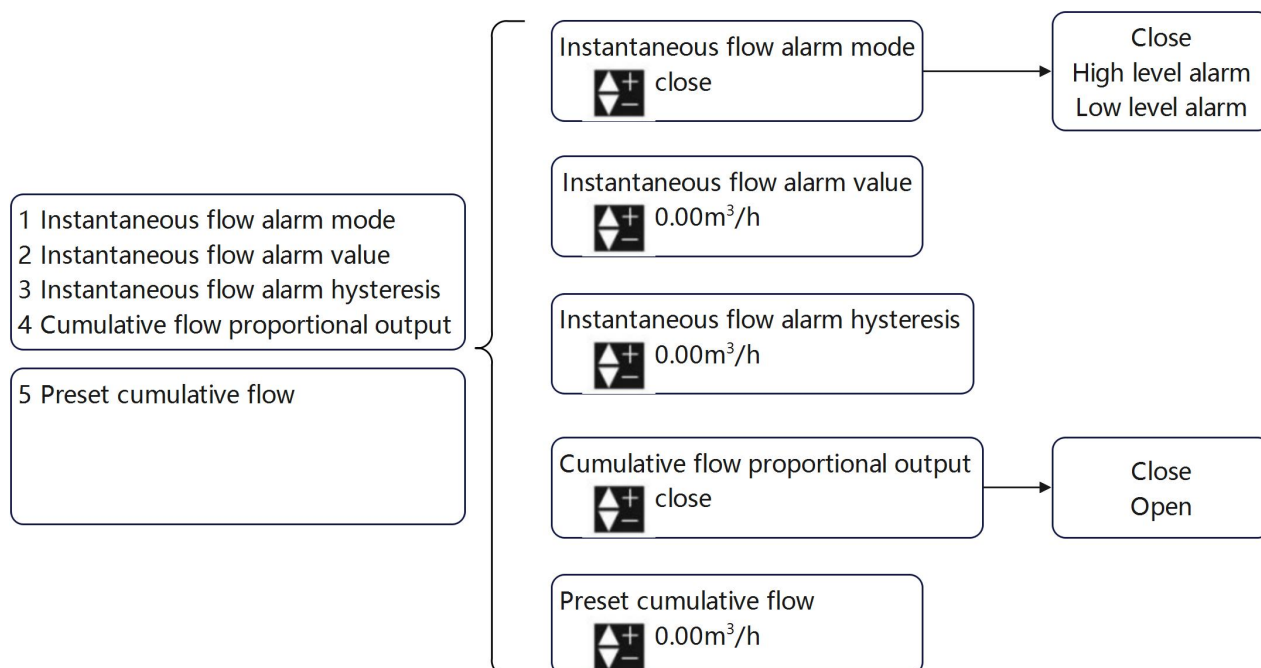
Global lock: After global lock, you must enter the password to modify.



★When the parameters are locked, press the Set key to enter the unlocking interface of the parameter lock:



6.2 Alarm settings



1. Instantaneous flow alarm mode: Set whether to set an alarm value for instantaneous flow, divided into three states:

"Off": No alarm is set.

"High level alarm": If the alarm value is set to 100 cubic meters/hour, the alarm will start when the instantaneous flow exceeds 100 cubic meters/hour.

"Low level alarm": If the alarm value is set to 100 cubic meters/hour, the alarm will start when the instantaneous flow is lower than 100 cubic meters/hour.

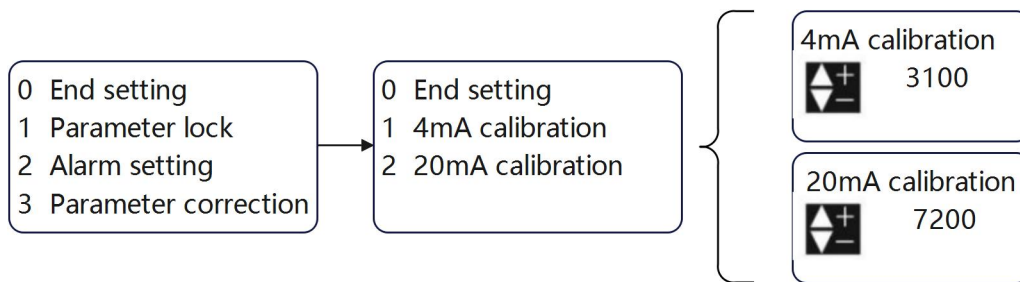
2. Instantaneous flow alarm value: Set the instantaneous flow to a certain cubic meter/hour to start the alarm.

3. Instantaneous flow alarm hysteresis: In order to avoid frequent start and stop of the relay caused by instantaneous flow fluctuations, a fluctuation range needs to be set to avoid this situation.

4. Accumulated flow proportional output

5. Pre-set accumulated flow: If the accumulated flow is set to 2500 cubic meters, the relay will start to work when the accumulated flow slowly adds up to 2500 cubic meters. The relay will automatically disconnect after 5 seconds of closing, and will close once every 2,500 cubic meters accumulated.

6.3 Parameter correction



The parameter correction menu needs to be modified only when the output current value is different from the calculated current value. First, turn off the power of the instrument, then set the multimeter to the 20mA position, connect the positive pole of the multimeter to the "mA1+" terminal of the flowmeter, and the negative pole to the "GND" terminal on the right of "mA1+", and then power on the instrument. Measure the current after 1 minute of power on.

1. 4mA correction:

Tip: Because ordinary multimeters have deviations, when measuring, if there is a difference of $\pm 0.01-0.02\text{mA}$, it can be ignored.

Enter the 4mA correction menu, there will be a factory-set number, assuming it is "3100". At this time, press the increase key to increase a number (such as 3101), and the multimeter will display the current value of the current output.

If the multimeter shows that the current is lower than 4mA, you can increase the output current by increasing the value until the multimeter displays 4mA. At this time, you can exit the 4mA correction and enter the 20mA correction menu.

If the multimeter shows that the current is higher than 4mA, you can reduce the output current by reducing the value until the multimeter shows 4mA. At this time, you can exit the 4mA calibration and enter the 20mA calibration menu.

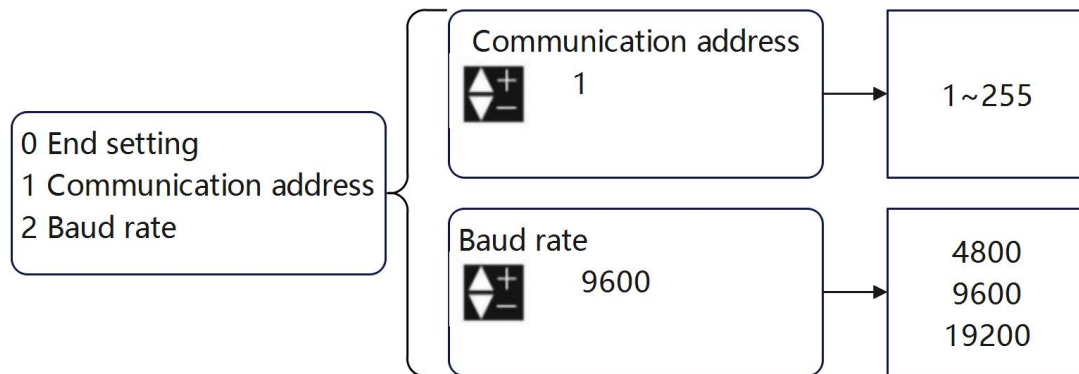
2. 20mA calibration:

Enter the 20A calibration menu, there will be a factory-set number, assuming it is "7200". At this time, press the increase key to increase a number (such as 7201), and the multimeter will display the current output value.

If the multimeter shows that the current is lower than 20mA, you can increase the output current by increasing the value until the multimeter shows 20mA. At this time, you can exit the 20mA calibration and enter the 20mA calibration menu.

If the multimeter shows that the current is higher than 20mA, you can reduce the output current by reducing the value until the multimeter shows 20mA. At this time, you can exit the 20mA calibration menu.

6.4 Communication settings

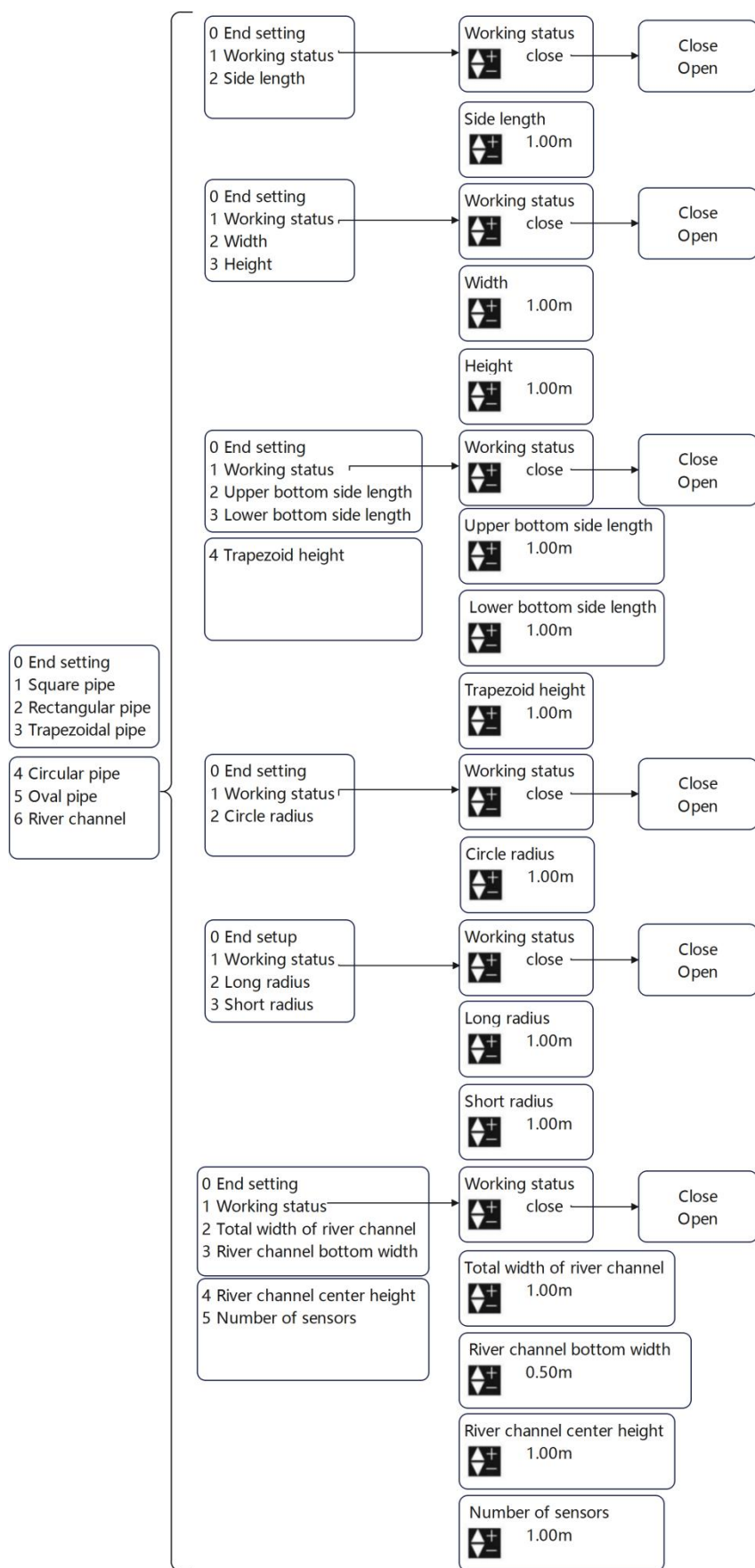


1. Communication address: The default is 1, which can be set to any number between 1 and 255.
2. Baud rate: The default is 9600, and there are three options: 4800, 9600, and 19200.

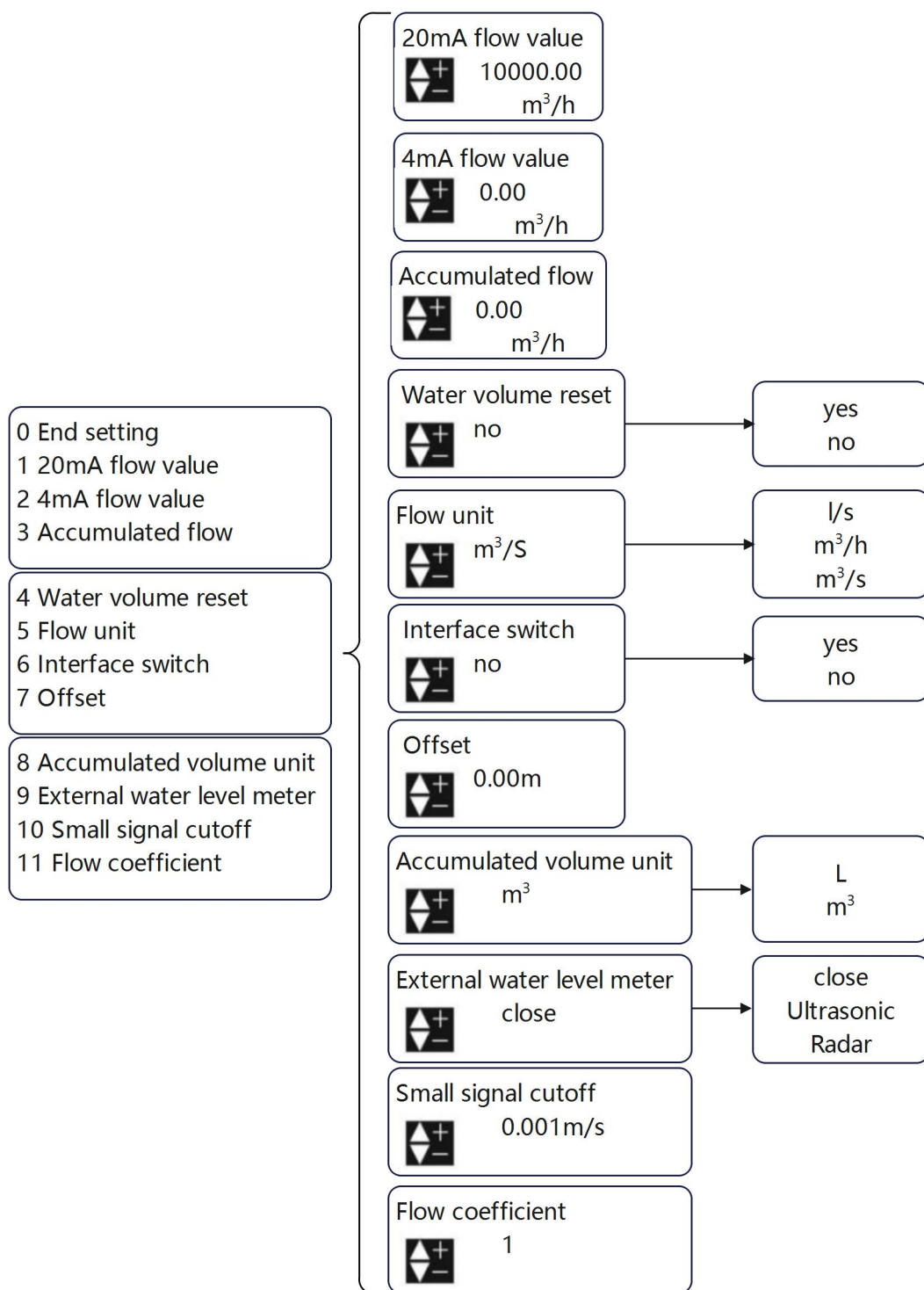
6.5 Channel type

The following channel types must be set to "Start" in "Working Status" to enable the corresponding type of channel to calculate flow. All units below are meters.

1. Square pipe: You need to enter the channel side length.
2. Rectangular pipe: You need to enter the channel width and height.
3. Trapezoidal pipe: You need to enter the upper bottom side length, lower bottom side length, and height of the trapezoidal channel.
4. Circular pipe: You need to enter the diameter.
5. Elliptical pipe: You need to enter the long radius and short radius.
6. River channel: You need to enter the total width of the river channel, the bottom width of the river channel, the center height of the river channel, and the number of sensors. The total width of the river channel is the maximum water surface width of the river channel when the water level is the highest; the bottom width of the river channel is the width of the river bottom when the water level is the lowest; the center height of the river channel is the water depth at the deepest position of the center point of the river channel; the number of sensors is the number of ultrasonic flow meter sensors matched with the main unit.



6.6 Other parameters



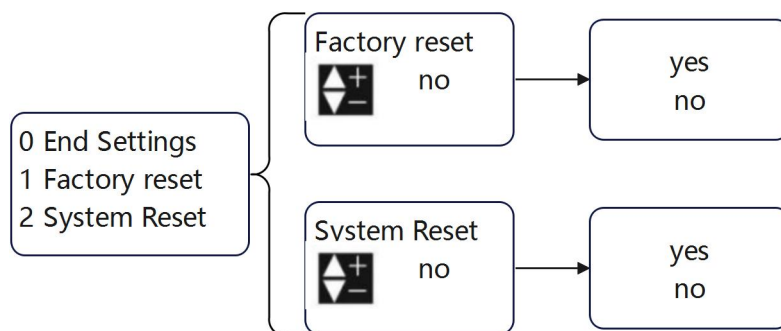
1.20mA flow value: is the output of 4-20mA, 20mA corresponding to how many cubic meters per hour.

2.4 mA flow value: 4-20 mA output, the 4 mA corresponds to how many cubic meters per hour, the default is 0.00 m³ / h.

3. Accumulated water volume: it is the cumulative water amount calculated from 0t/h, or from a specified value, such as: set to 100t/h, is the accumulation from 100t/h.

4. Water clearance: the default is "no". If you choose "yes", it is to clear the current cumulative flow and accumulate from 0.
5. Flow unit: m³/h, m³/s and l/s.
6. Interface switch: If you choose "yes", switch to the next interface. Select "no" to not switch. The interface is divided into two types, the first is to display "water level, flow, accumulated water", and the second is to display "flow velocity, cross-sectional area".
Shortcut: On the start screen, press the up and down keys simultaneously to switch between the two displays.
7. The offset: if the water level is higher than the actual measured 10 centimeters, here will be changed to 0.10 m. If the measured water level is 3 cm lower than the actual level, this is changed to 0.03m. If the offset is set to 10 cm, the system will automatically add this offset only if the actual measured water level is 1 cm or more.
8. Accumulation unit: is the cumulative amount of water is in cubic meters or in liters.
9. External level gauge: ultrasonic water level gauge or radar water level gauge can be connected to measure the level of water.
10. Small signal excision: in order to avoid the influence of small flow rate on the measurement, a minimum flow rate can be set, such as 0.05m/ SEC. Then, the flow rate is not calculated when the flow rate is 0.05m/ SEC and below. This problem is often encountered when measuring upstream of the gate, or where there is backflow.
11. Flow coefficient: in order to compensate the errors caused by the field working conditions, the flow coefficient can be set in the system. Factory default: 1. For example: the actual flow rate of 120 in the field, the meter test flow rate of 100, then the coefficient can be corrected to 1.2.

6.7 Reset selection



Before using this option, please record the previously set parameters. After resetting, all the previously set parameters are invalid and need to be reset.

Factory reset: Yes: Restore to the factory settings. No: Exit. The factory default is No.

System reset: Yes: Restore system settings. No: Exit. The factory default is No. (Please do not modify this item, it is set by the manufacturer)

7.Communication Description

7.1 Serial port parameters

(1) The hardware adopts RS485, master-slave half-duplex communication, the host calls the slave address, and the slave replies the communication.

(2) Data frame 10 bits, 1 start bit, 8 data bits, 1 stop bit, no check.

(3)Baud rate: 4800, 9600, 19200 (the default is 9600).

7.2 Read a single register

Function code: 03H

Host sending							
1	2	3	4	5	6	7	8
ADDR	03H	The start register is high bytes	The start register is low bytes	The register number is high in bytes	The number of registers is low	CRC code low bytes	CRC code high bytes

Byte 1 ADDR: slave machine address code (0x01 ~ 0xFE);

Byte 2 03H: function code;

Bytes 3 and 4: address of the register to read;

Bytes 5 and 6: the number of registers to read, read a single register is 0x0001;

Bytes 7 and 8: CRC16 check code from byte 1 to byte 6.

Slave returns						
1	2	3	4	5	6	7
ADDR	03H	Number of bytes	Data high byte	Data low bytes	CRC code low bytes	CRC code high bytes

Byte 1 ADDR: slave machine address code (0x01 ~ 0xFE);

Byte 2 03H: function code;

Byte 3: the total number of bytes received. If a single register is read, the total number of bytes is 02;

Bytes 4 and 5 bytes: register data, each data of 2 bytes;

Bytes 6 and 7: CRC16 check code from byte 1 to byte 5.

7.3 Read multiple registers

Function code: 03H

Host sending							
1	2	3	4	5	6	7	8
ADDR	03H	The start register is high bytes	The start register is low bytes	The register number is high in bytes	The number of registers is low	CRC code low bytes	CRC code high bytes

Referring to the way of reading a single register, when distance and temperature are read at the same time, the number of registers is 0x0002;

Slave returns									
1	2	3	4、5		...	N-1、N		N+1	N+2
ADDR	03H	Number of bytes	Data 1 high bytes	Data 1 low bytes	...	Data N high bytes	Data N low bytes	CRC code low bytes	CRC code high bytes

Referring to the way of reading a single register, data 1 is the starting register value of reading, each data occupies 2 bytes, and how many data are returned according to the number of registers read by the user.

7.4 Write a single register

Function code: 06H

Host sending							
1	2	3	4	5	6	7	8
ADDR	06H	Register address high bytes	Register address low bytes	Data high byte	Data low bytes	CRC code low bytes	CRC code high bytes

Byte 1 ADDR: slave machine address code (0x01 ~ 0xFE);

Byte 2 06H: function code;

Bytes 3 and 4: the address of the written register;

Bytes 5 and 6: register address of the register data;

Bytes 7 and 8: CRC16 check code from byte 1 to byte 6.

Slave returns							
1	2	3	4	5	6	7	8
ADDR	06H	Register high bytes	Register low bytes	Data high byte	Data low bytes	CRC code low bytes	CRC code high bytes

Byte 1 ADDR: slave machine address code (0x01 ~ 0xFE);

Byte 2 06H: function code;

Bytes 3 and 4: the address of the written register;

Bytes 5 and 6: register address of the register data;

Bytes 7 and 8: CRC16 check code from byte 1 to byte 6.

7.5 Write several registers

Function code: 10H

1	2	3	4	5	6	7	8、9	10、11	N、N+1	N+2	N+3
ADDR	10H	The start register address is high bytes	The start register address is low bytes	The amount of data is high in bytes	The amount of data is low in bytes	Data bytes total	Register data 1	Register data 2	Register data M	CRC code low bytes	CRC code high bytes

Byte 1 ADDR: slave machine address code (0x01 ~ 0xFE);

Byte 2 10H: function code;

Bytes 3 and 4: the address of the written register;

Bytes 5 and 6: register data corresponding to the register address;

Byte 7: the total number of bytes of the amount of register data written;

Bytes 8 and 9: register data 1;

Bytes 10 and 11: register data 2;

Bytes N and N+1: register data M;

Bytes N+2 and N+3: CRC16 check code from byte 1 to byte N+1.

Slave returns							
1	2	3	4	5	6	7	8
ADDR	10H	The start register address is high bytes	The start register address is low bytes	The amount of data is high in bytes	The amount of data is low in bytes	CRC code low bytes	CRC code high bytes

Byte 1 ADDR: slave machine address code (0x01 ~ 0xFE);

Byte 2 10H: function code;

Bytes 3 and 4: the address of the written register;

Bytes 5 and 6: the number of registers corresponding to the register address;

Bytes 7 and 8: CRC16 check code from byte 1 to byte 6.

7.6 Error code

1	2	3	4	5
ADDR	Function code	Error message code	CRC code low bytes	CRC code high bytes

Byte 1 ADDR: slave machine address code (0x01 ~ 0xFE);

Byte 2 83H or 86H or 90H: function code (83H means read instruction error, 86H means write instruction error, 90H means write multiple register instruction error);

Byte 3: refer to the error message code table;

Bytes 4 and 5: CRC16 check code from byte 1 to byte 3.

Error message code table	
Information code	Remarks
01H	Illegal function code
02H	Illegal data address
03H	Illegal data values
04H	CRC16 verification error
05H	Correct reception
06H	Receive error
07H	Error in parameters

7.7 Register definition Table

Address of the register	Description of Content	Read only	Address of the register	Description of Content	Read only
0000	Water depth instantaneous value (4 bytes floating point number high 2 bytes)	√	0001	Water depth instantaneous value (4 bytes floating point number 2 bytes lower)	√
0002	Instantaneous traffic value (4 bytes floating point high 2 bytes)	√	0003	Instantaneous flow value (4 bytes floating point number lower than 2 bytes)	√
0004	Cumulative traffic value integer part (4 bytes long integer high 2 bytes)	√	0005	Cumulative traffic value integer part (4 bytes long integer low 2 bytes)	√
0006	Cumulative traffic value fractional part (4 bytes floating point high 2 bytes)	√	0007	The fractional part of the cumulative traffic value (4 bytes lower than 2 bytes of floating point)	√
0008	Analog output instantaneous value (4 bytes floating point high 2 bytes)	√	0009	Analog output instantaneous value (4 bytes floating point number low 2 bytes)	√
000A	Temperature instantaneous value (4 bytes floating point high 2 bytes)	√	000B	Temperature instantaneous value (4 bytes floating point number 2 bytes lower)	√
000C	Flow rate instantaneous value (4 bytes floating point number high 2 bytes)	√	000D	Flow rate instantaneous value (4 bytes floating point low 2 bytes)	√
000E	Supply voltage (4 bytes floating point high 2 bytes)	√	000F	Supply voltage (4 bytes floating point number 2 bytes lower)	√
0012	Reserved		0013	Reserved	
0014	Reserved		0015	Reserved	
0016	Reserved		0017	Reserved	
0018	Reserved		0019	Reserved	
001A	Reserved		001B	Reserved	
001C	Reserved		001D	Reserved	
001E	Reserved		001F	Reserved	
0020	Reserved		0021	Reserved	
0022	Instantaneous traffic alarm value (4 bytes floating point high 2 bytes)		0023	Instantaneous traffic alarm value (4 bytes floating point low 2 bytes)	
0024	Instantaneous traffic alarm value back difference value (4 bytes floating point number high 2 bytes)		0025	Instantaneous traffic alarm value back difference value (4 bytes floating point number 2 bytes lower)	
0026	Preset cumulative traffic (4 bytes floating point high 2 bytes)		0027	Preset cumulative traffic (4 bytes floating point low 2 bytes)	

0028	Square pipe side length (4 bytes floating point number 2 bytes high)		0029	Square pipe side length (4 bytes floating point number 2 bytes lower)	
002A	Rectangular pipe width (4 bytes floating-point number 2 bytes high)		002B	Rectangular pipe width (4 bytes low 2 bytes floating point)	
002C	Rectangle pipe high (4 bytes floating point high 2 bytes)		002D	Rectangle pipe high (4 bytes floating point low 2 bytes)	
002E	Trapezoidal pipe upper and bottom side length (4 bytes floating point number high 2 bytes)		002F	Trapezoidal pipe upper and bottom side length (4 bytes floating point number 2 bytes lower)	
0030	Trapezoidal pipe bottom side length (4 bytes floating point number high 2 bytes)		0031	Trapezoidal pipe bottom side length (4 bytes floating point number 2 bytes lower)	
0032	Trapezoidal pipeline Trapezoidal height (4 bytes floating point number 2 bytes high)		0033	Trapezoidal pipeline Trapezoidal high (4 bytes floating point low 2 bytes)	
0034	Circular pipe radius (4 bytes floating point high 2 bytes)		0035	Circular pipe radius (4 bytes floating point low 2 bytes)	
0036	Long radius of oval pipe (4 bytes floating point number 2 bytes high)		0037	Oval pipe long radius (4 bytes floating point low 2 bytes)	
0038	Oval pipe short radius (4 bytes floating point high 2 bytes)		0039	Oval pipe short radius (4 bytes floating point low 2 bytes)	
003A	Total channel width (4 bytes floating point high 2 bytes)		003B	Total channel width (4 bytes floating point low 2 bytes)	
003C	Channel bottom width (4 bytes floating-point number 2 bytes high)		003D	Channel bottom width (4 bytes floating point number 2 bytes lower)	
003E	Channel center high (4 bytes floating point number high 2 bytes)		003F	Channel center high (4 bytes floating point low 2 bytes)	
0040	20mA instantaneous flow value (4 bytes floating point high 2 bytes)		0041	20mA instantaneous flow value (4 bytes floating point low 2 bytes)	
0042	4mA instantaneous traffic value (4 bytes floating point high 2 bytes)		0043	4mA instantaneous traffic value (4 bytes floating point number 2 bytes lower)	
0044	Water accumulation integer part (4 bytes long integer type 2 bytes high)		0045	Integer part of accumulated water (4 bytes long integer type 2 bytes low)	
0046	Water accumulation fractional part (4 bytes floating point number high 2 bytes)		0047	Water accumulation fractional part (4 bytes floating point number 2 bytes lower)	
0048	Offset (4 bytes floating point high 2 bytes)		0049	Offset (4 bytes floating point low 2 bytes)	
004A	Small signal excision (4 bytes floating point high 2 bytes)		004B	Small signal excision (4 bytes floating point number low 2 bytes)	
004C			004D		
004E			004F		
0050	Reserved		0051	Reserved	
0052	Reserved		0053	Reserved	
0054	Reserved		0055	Reserved	
0056	Reserved		0057	Reserved	
0058	Reserved		0059	Reserved	
005A	Reserved		005B	Reserved	
005C	Instantaneous traffic alarm mode Cumulative flow proportional output		005D	Type of channel Baud rate	
005E	Water clearance Unit of flow		005F	External level gauge Number of sensors	
0060	Interface switching The unit of accumulation		0061	The factory reset Reset of system	
0062			0063		
0064			0065		
0066			0067	Reserved	
0068	Reserved		0069	Reserved	
006A	Reserved		006B	Reserved Instrument address	

7.8 Example

Ultrasonic Doppler flow meter			
instruction	send	receive	Notes
Instruction to read	01 03 00 00 00 02 C4 0B	01 03 04 3F 33 33 33 52 CD	The reading water depth value was 0.70 m
	01 03 00 02 00 02 65 CB	01 03 04 43 B4 05 C2 2D 50	The instantaneous flow rate was read at 360.4 m³/h
	01 03 00 0C 00 02 04 08	01 03 04 3F 00 00 00 F6 27	Read the flow rate value: 0.5 m/s
	01 03 00 5C 00 01 44 18	01 03 02 00 00 B8 44	Two registers 5C and 5D are read Instantaneous traffic alarm mode: off Cumulative flow proportional output: off
	01 03 00 6B 00 01 F5 D6	01 03 02 00 01 79 84	Read the meter address: 01
Write instruction	01 06 00 5E 01 02 68 49	01 06 00 5E 01 02 68 49	Water clearance: Yes Flow unit: m³/s
	01 10 00 34 00 02 04 3F 4C CC CD A8 1E	01 10 00 34 00 02 00 06	Write circle radius: 0.8m
	01 06 00 6B 00 05 38 15	01 06 00 6B 00 05 38 15	Write the meter address: 05
Error instruction	01 06 00 18 00 00 09 CD	01 86 02 C3 A1	02 indicates error message code: illegal data address

Integrated instruction: 01 03 00 00 00 0E C4 0E

Return instruction: 01 03 1C 3E 4C D3 5A 00 00 00 00 00 01 40 3D 9F 50 80 40 80 00 00 41 EE 66 66 00 00 00 00 0B D2

01 Address

03 Function code read

1C total number of bytes

3E 4C D3 5A Water depth value Unit :m

00 00 00 00 Instantaneous flow instantaneous value

00 00 01 40 Accumulate the integer part of the flow

3D 9F 50 80 Fractional portion of cumulative flow

40 80 00 00 The analog outputs the instantaneous value

41 EE 66 66 Instantaneous temperature Unit :°C

00 00 00 00 Instantaneous value of flow velocity Unit: m/s

0B D2 Check check code

7.9 Register Description

Register of registers	00	01	02	03	04	05	06	07	08
Instantaneous traffic alarm mode	Shut down	Low alarm	High alarm						
Cumulative flow proportional output	Shut down	Turn on							
Type of channel	The square pipe	Rectangular pipe	Trapezoidal duct	Round pipe	The oval pipe	River course			
Baud rate	4800	9600	19200						
Water clearance	NO	YES							
Unit of flow	m ³ /h	l/s	m ³ /s						
External level gauge	Shut down	Ultrasonic wave	Radar system						
Number of sensors	1	2	3	4	5	6	7	8	9
Interface switching	NO	YES							
Unit of cumulant	M ³	L							
Out of factory reset	NO	YES							
Reset of system	NO	YES							