



PIKTEC

User Manual

Electromagnetic flowmeter

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1. Product features and scope of application

Converter purpose overview: Electromagnetic flow converter and different types of electromagnetic flow sensors form electromagnetic flow meter system. It is used to measure the volume flow of conductive fluid in the closed pipeline. It is widely used in the flow measurement and control of production process in petrochemical industry, iron and steel metallurgy, water supply and drainage, water irrigation, water treatment, total amount control of environmental sewage, papermaking,

medicine, food and other industrial and agricultural departments, and total amount measurement of conductive liquid.

Converter features:

- ① Programmable frequency low frequency rectangular wave excitation improves the stability of flow measurement and low power loss;
- ② It adopts 32-bit embedded microprocessor, which is fast in operation. High precision;
- ③ Full digital processing, strong anti-interference ability, reliable measurement, high accuracy, flow measurement range up to 1000: 1;
- ④ Ultra low EMI switching power supply is suitable for a wide range of power supply voltage changes. Good EMC resistance;
- ⑤ All Chinese menu operation, easy to use, simple operation, easy to learn and understand;
- ⑥ High definition backlit LCD display;
- ⑦ It has two-way flow measurement, two-way total amount accumulation function, current and frequency output function.
- ⑧ There are three integrators in the interior, which can respectively display the forward accumulated quantity, the reverse accumulated quantity and the difference accumulated quantity.
- ⑨ RS485 digital communication signal interface;
- ⑩ With conductivity measurement function, it can judge whether the sensor is empty or not;
- ⑪ Constant current excitation current has a wide range, which can be used with different companies and different types of electromagnetic flow sensors;
- ⑫ Self check and self diagnosis function;
- ⑬ With SMD device and SMT technology, the circuit has high reliability;

2. Working principle

The working principle of electromagnetic flow meter is based on Faraday's law of electromagnetic induction. When a conductor moves in a magnetic field, there will be induced electromotive force at both ends of the conductor perpendicular to the magnetic field direction and the moving direction. The magnitude of EMF is directly proportional to the moving speed of conductor and the magnitude of magnetic induction intensity.

In Figure 1-1, when the conductive fluid flows at an average velocity V through an insulated tube with an inner diameter D equipped with a pair of measuring electrodes, and the tube is in a magnetic field with a uniform magnetic induction intensity B (T). Then, the electromotive force (E) perpendicular to

the magnetic field and flow direction will be induced on a pair of electrodes. According to the law of electromagnetic induction, formula (1) can be written:

$$E = B \cdot D \cdot V \quad (V) \dots\dots\dots (1)$$

In general, volume flow can be written

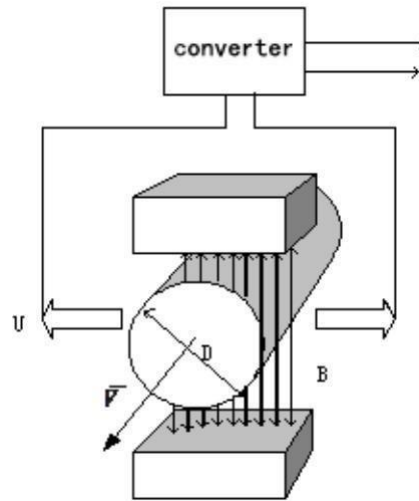
$$q_v = \frac{\pi D^2}{4} V \quad (m^3/s) \dots\dots\dots (2)$$

From formulas (1) and (2), we can get:

$$q_v = \frac{\pi D}{4} \frac{E}{B} (m^3/s) \dots\dots\dots (3)$$

So the EMF can be expressed as:

$$E = \frac{4B}{\pi D} q_v (V) \dots\dots\dots (4)$$

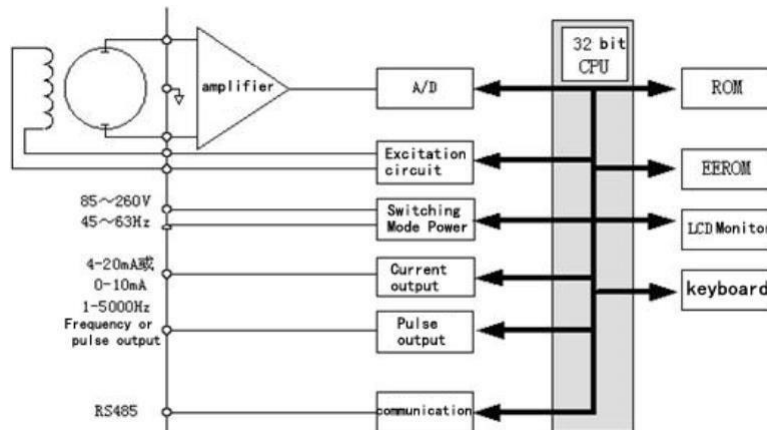


Schematic diagram of working principle

When B is a constant, in formula (3),

Formula (3) is rewritten as:

It can be seen that the flow rate is directly proportional to the electromotive force E.



Converter circuit structure

On the one hand, the electromagnetic flow converter provides a stable excitation current to the excitation coil of the electromagnetic flow sensor, so that B is a constant; at the same time, the EMF induced by the sensor is amplified and converted into a standard current signal or frequency signal, so

As to facilitate the display, control and regulation of the flow. figure 1.2 shows the converter circuit structure

3. Functional and technical performance indexes

3.1 Executive Standards

JB / T 9248-1999 electromagnetic flow meter.

basic parameters and performance indexes

nominal diameter of matched sensor:

3、6、10、15、20、25、32、40、50、65、80、100、125、150、200、250、300、350、400、

450、500、600、700、800、900、1000、1200、1400、1600、1800、2000、2200、2400、2600、

2800、3000;

flow measurement range

The flow velocity of the upper limit value of flow measurement range can be selected in the range of 0.3m/s ~ 10m / s, and the flow velocity of the lower limit value can be 1% of the upper limit value.

the accuracy of flow meter under reference conditions is shown in the table below.

Path mm	Range m/s	Accuracy
3~20	0.3Following	+ 0.25%FS
	0.3~1	+ 1.0R
	1~10	+ 0.5%R
25~600	0.1~0.3	+ 0.25%FS
	0.3~1	+ 0.5%R
	1~10	+ 0.3%R
700~3000	0.3Following	+ 0.25%FS
	0.3~1	+ 1.0%R
	1~10	+ 0.5%R
%FS: relative range;% R: relative measurement value.		

repeatability error

± 0.15% of the measured value.

4. Hardware interface

Product wiring identification definition (all product definitions are consistent)

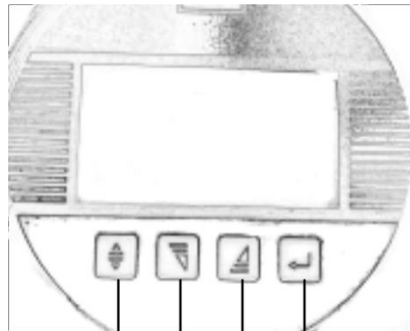
Terminal identification	function	Explain
L:	220V AC power input	Can be connected to ac36v ~ ac260v power supply
N:	220V AC power input	
+24V:	DC 24V input positive pole	The input error of 24V power supply shall not be greater than 5%, otherwise the dose error may be increased
GND	DC 24V input negative pole	
EX1 Y:	Excitation coil	Some products are led out with red and black double stranded wires
EX2 X:		
IOUT+:	4-20mA current output positive (active isolation)	The output load is not more than 600 Ω , otherwise the analog output accuracy will be reduced
IOUT-:	4-20mA current output negative (active isolation)	
POUT+:	Frequency (pulse) output	Frequency mode setting frequency range is no more than 5KHz
COMM:	Frequency (pulse) output ground	
485A:	RS485 communication A	
485B:	RS485 communication B	
GND C:	Signal ground	Some products are led out with gray 2 red and white two core wires and shielded wires, the shielding layer is GND, red is sig1, white is sig2
SIG1 B:	Connected to electrode signal 1	
SIG2 A:	Connected to electrode signal 2	
GND PT1000 GND:	Connected to supply and return water temperature sensor PT1000	Support the change of terminal block on the heat meter
+FQH-	Upper and lower limit alarm output (passive)	

5. Operation and setting

When the instrument is powered on, it will enter the measurement state automatically. In the automatic measurement state, the instrument automatically completes each measurement function and displays

the corresponding measurement data. In the parameter setting state, the user uses four panel keys to complete the instrument parameter setting.

key operation instructions



Function key
Down key
Build up key
Determination key

Key name

Function key:

The key is used in combination with the key, and is not used alone,

Use 1: in the measurement interface, press and hold the function key, press the OK key and enter the parameter setting,

Use 2: press and hold the function key in the interface where you need to input the value, press the build up (the third key) to move the modify cursor to the right, or press and hold the function key, press the build up (the second key) to move the modify cursor to the left

Down key:

Use 1: the measurement interface uses the switch screen to display the content and view the corresponding data,

Use 2: in the parameter selection interface, you can switch to the corresponding setting item

Use 3: in the corresponding setting item, if the parameter is a preset fixed value, you can select the corresponding preset value;

Use 4: in the specific item setting of parameter setting, or in the parameter password input interface or the reset password input interface, if you need to set a custom value, you can make the position selected by the cursor between 0 and 9 minus 1 to switch;

Use 5: set the insider parameter password input interface and reset password input interface in the specific project of parameter setting. If you need to set a custom value, you can modify the cursor position with the function key (refer to function key use 2 for details)

Up key:

Use 1: the measurement interface uses the switch screen to display the content and view the response data,

Use 2: in the parameter selection interface, you can switch to the corresponding setting item

Use 3: in the corresponding setting item, if the parameter is a preset fixed value, you can select the corresponding preset value;

Use 4: set the insider parameter password input interface and reset password input interface in the specific project of parameter setting. If you need to set a custom value, you can switch the cursor selection between 0 and 9 plus 1;

Use 5: set the insider parameter password input interface and reset password input interface in the specific project of parameter setting. If you need to set a custom value, you can modify the cursor position with the function key (refer to function key use 2 for details)

Use 6: in the parameter setting interface, press this key to switch to the total amount reset interface;

Confirm key:

Use 1: enter parameter setting with function key (refer to function key use 1)

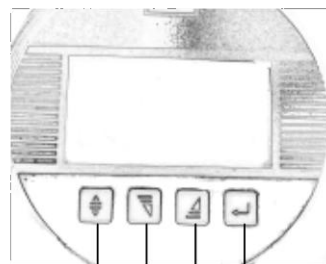
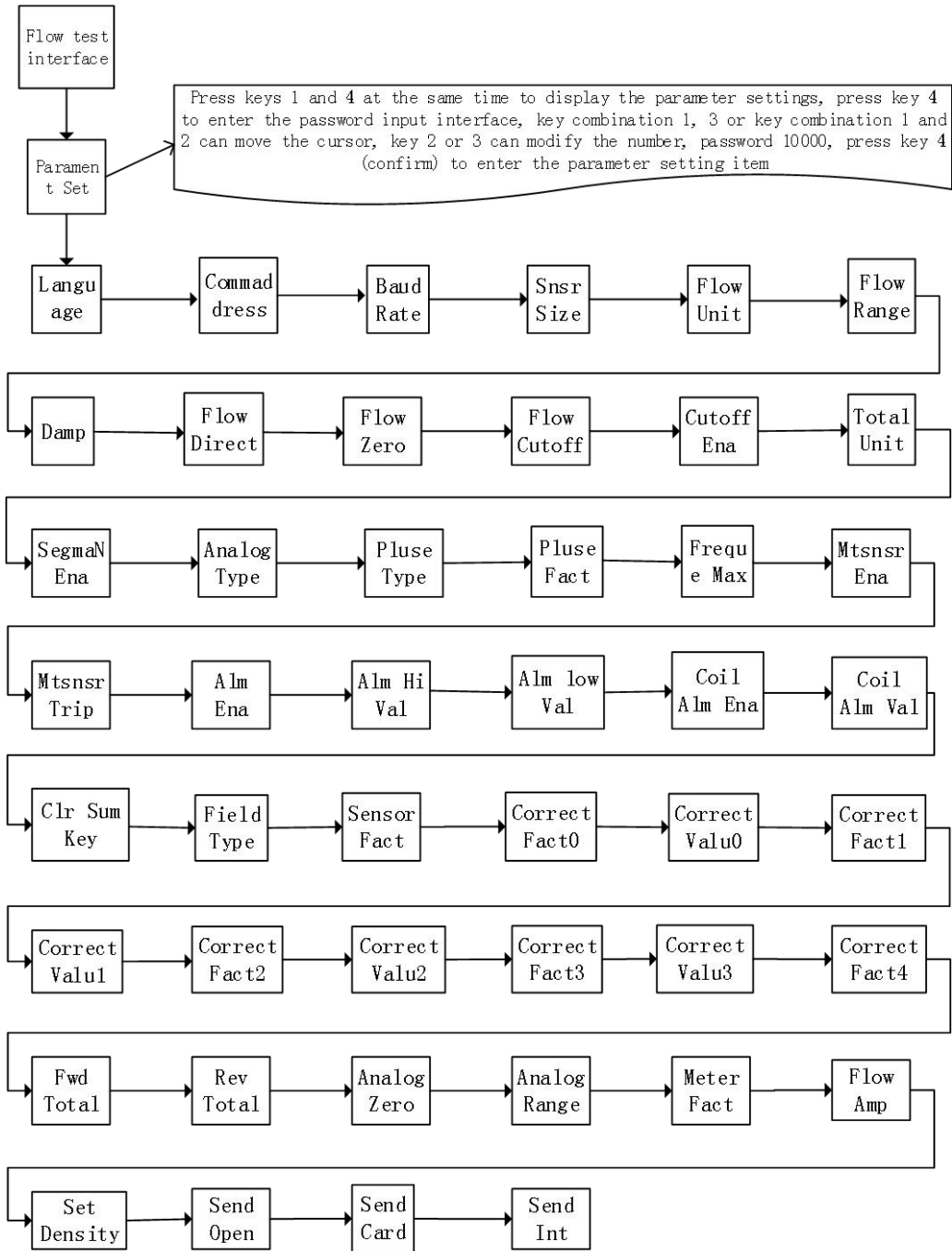
Use 2: in the parameter password input interface, press the OK key to enter the corresponding setting interface (correct password input). After completing the parameter selection

interface and **parameter modification** interface, press the function key to return to the **item name** interface and save the **parameters**;

Use 3. After **completing the parameter setting**, in the display **parameter setting item name** interface, long press the OK key to return to the **measurement** interface

Use 4, press and hold the OK key for **more than 6 seconds** in the **measurement** interface to enter the fast **automatic zero calibration** interfaces;

the setting items of the converter are shown in the figure below



Function key
Up key
Und Detection key
Deter min con str uct ion

detailed description of setting items

Parameter number	Parameter literal	Setting mode	Parameter range	Password level
1	Language	Choice	English	1
2	Instrument mailing address	Set number	001	1
3	Instrument communication speed	Choice	300~ 38400	1
4	Measuring pipe diameter	Choice	3~ 3000	1
5	Flow unit	Choice	L/h、 L/m、 L/s、 m ³ /h、 m ³ /m、 m ³ /s	1
6	Instrument range setting	Set number	0~ 99999	1
7	Measure damping time	Choice	1~ 64	1
8	Flow direction option	Choice	Forward, reverse	1
9	Flow zero correction	Set number	0To + 9999	1
10	Small signal cut-off point	Set number	0~ 599.99%	1
11	Cut off Ena	Choice	Enable, Disable	1
12	Total Unit	Choice	0.001m ³ ~1m ³ 、 0.001L~1L、	1
13	Singman Ena	Choice	Enable/Disable	1
14	Analog Type	Choice	0~10mA /4~20mA	1
15	Pulse Type	Choice	Frequency / pulse	1
16	Pulse Fact	Choice	0.001m ³ ~1m ³ 、 0.001L~1L、	1
17	Frequency output range	Choice	1~ 5999 Hz	1
18	Mtsnsr Ena	Choice	Enable/Disable	1
19	Mtsnsr trip	Set number	59999	1
20	Alarm mode selection	Choice	Pulse output, upper limit alarm, lower limit alarm	1
21	Alarm Hi Value	Choice	1- 599.00%	1

22	Alarm Low Value	Set number	000.0~ 599.99 %	1
23	Coil Alarm Ena	Choice	Enable/Disable	1
24	Coil Alarm Value	Set number	000.0~599.99 %	1
25	Clr Sum Key	Choice	00000	1
26	Field Type	Set number	Model, 1, 2, 3	1
27	Ex Correct	Set number	Ex Correct, Ex no Correct	1
28	Sensor_Fact	User settings	Factory year, month (0-99999)	1
29	Correct_Fact0	User settings	Product No. (0-99999)	1
30	Correct_value0	Choice	10.0 m/s	1
31	Correct_Fact1	Set number	0.0000~ 5.9999	1
32	Correct_Valu1	Set number	01.0 m/s	1
33	Correct_Fact2	Set number	00.0 ~ 10.0 (flow rate)	1
34	Correct_Valu2	Set number	02.0 m/s	1
35	Correct_Fact3	Set number	00.0 ~ 10.0 (flow rate)	1
36	Correct_Valu3	Set number	05.0 m/s	1
37	Correct_Fact3	Set number	00.0 ~ 10.0 (flow rate)	1
38	Fwd Total	Set number	000000001m3	1
39	Rev Total	Set number	000000000m3	1
40	Analog Zero	Set number	0.8757	1
41	Analog Range	Set number	1.0112	1
42	Meter_Fact	Set number	0.9914	1

43	Flow_Amp	Set number	0.0000~1.9999	1
44	Measuring_mode	Set number	Real , stable mode	1
45	Set density	Set number	01000	1
46	Send Open	Set number	Enable/Disable	1
47	Send Card	Set number	IP:118.031.019.119 PORT:08090	1
48	Send Int	Set number	00120S	1

Detailed description of parameters

Instrument communication address

It refers to the communication address of this table in case of multi machine communication. The optional range is No. 01 ~ 254 address, and No. 0 address is reserved.

Instrument communication speed

Baud rate selection range of instrument communication: 2400, 4800, 9600, 19200.

Measuring pipe diameter

The diameter range of the sensor matched with the electromagnetic flow meter converter is 3-3000mm (the parameter is preset standard value, direct selection).

Flow unit

Select the flow display unit in the parameters and the instrument flow display units are: L / s, L / m, L / h, m³ / s, m³ / m, m³ / h. users can select a suitable flow display unit according to the process requirements and usage habits.

Instrument range setting

The instrument range setting refers to the determination of the upper limit flow value, and the lower limit flow value of the instrument is automatically set to "0".

Therefore, the instrument range setting determines the instrument range, and also determines the corresponding relationship between the instrument percentage display, instrument frequency output, instrument current output and flow

Instrument percentage display value = (flow value measurement value / instrument range) * 100%;

Instrument frequency output value = (flow value measurement value / instrument range) * frequency full range value;

Instrument current output value = (flow value measurement value / instrument range) * current full range value + base point;

The instrument pulse output value is not affected by the instrument range setting;

Measuring damping time

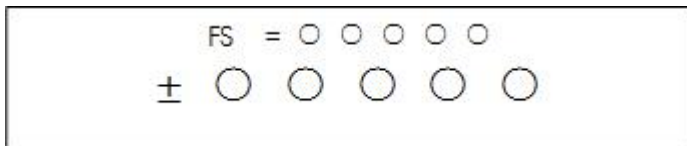
The long time of measurement and filtering can improve the stability of instrument flow display and output signal, which is suitable for the measurement of total cumulative pulsating flow. The short time of measurement and filtering is characterized by fast measurement response speed, which is suitable for production process control. The measurement filter time is set in the selection mode, generally in 8 or 16.

flow direction selection

If the user thinks that the flow direction is inconsistent with the design during commissioning, the user does not need to change the connection method of excitation line or signal line, but can change the setting parameters of flow direction.

flow zero correction

The zero point correction shall be such that the sensor tube is filled with fluid and the fluid is at rest. The flow zero point is expressed by the flow rate, and the unit is mm / s.



The flow zero correction of the converter is shown as follows:

Up display: FS represents the zero point measurement value of the instrument; down display: flow zero point setting value;

When FS display is not "0", set value should be adjusted to FS = 0. Note: if you change the downlink setting, the FS value will change accordingly. The default zero setting is 1000

The set value of flow zero point is the matching constant value of the sensor, which shall be recorded in the sensor record sheet and the sensor label.

Note: long press the confirmation key for more than 6 seconds in the measurement interface to enter the one key zero calibration interface, and select "yes" to automatically calibrate the system zero point (to ensure the accuracy of zero calibration, please ensure that the sensor is in full tube without flow rate)

small signal removal point

The small signal cut-off point setting is indicated by the percentage flow of the range. When the flow rate is less than the range * small signal cut-off point, the flow rate is cut off and zero is displayed directly.

Cut Off Ena

Set whether the small signal removal is effective. Only when it is set to "allow", the setting value of the small signal removal point will take effect. When it is set to "prohibit", the setting of the small signal removal point will not take effect,

Total Unit

The unit of calculation is l, m³ (L, m³).

Flow calculation equivalent: 0.001l, 0.010l, 0.100l, 1.000l

0.001m³、 0.010m³、 0.100m³、 1.000m³ ;

Note: when the cumulative unit of flow changes from cubic meter (M3) to liter (L), the pulse equivalent will automatically follow the change of the cumulative unit

Singman Ena

When the reverse output allowed parameter is set to "allowed" state, the measurement interface can measure the forward flow and reverse flow of flow, and when it is "prohibited", only the forward flow of flow can be tested.

Analog Type

The user can select 0-10mA or 4-20mA current output in current output type.

pulse Type

There are two pulse output modes: frequency output and pulse output

- Frequency output mode: the frequency output is continuous square wave, and the frequency value corresponds to the flow percentage.

Frequency output value = (flow value measurement value / instrument range) * frequency full range value;

- Pulse output mode: the pulse output is a rectangular wave pulse string. Each pulse represents a flow equivalent of the pipeline. The pulse equivalent is selected by the following "pulse equivalent unit" parameter. The pulse output mode is mostly used for total amount accumulation, and is generally connected with the accumulation meter.

Frequency output and pulse output are divided into active 24V and passive output, and users can choose through the skip cap beside the terminal. See section 4.2.5 for details.

pulse Fact

Pulse unit equivalent refers to the flow value represented by a pulse. The selection range of instrument pulse equivalent is:

Pulse equivalent	Flow value	Pulse equivalent	Flow value
------------------	------------	------------------	------------

1	0.001L/cp	5	0.001m ³ /cp
2	0.01L/cp	6	0.01m ³ /cp
3	0.1L/cp	7	0.1m ³ /cp
4	1.0L/cp	8	1.0m ³ /cp

The pulse equivalent unit shall be the same as the cumulative flow unit (L or m³). Under the same flow, if the pulse equivalent is small, the frequency of the output pulse is high, but in order to reliably detect the pulse, it shall not exceed 500 pulses per second.

frequency output range

The frequency output range of the instrument corresponds to the upper limit of flow measurement, i.e. 100% of the percentage flow. The upper limit value of frequency output can be set arbitrarily in the range of 1-5000hz.

Mtsnsr Ena

The converter has the function of empty tube detection without additional electrodes. If the user chooses to allow the empty pipe alarm, the instrument can detect an empty pipe state when the fluid in the pipe is lower than the measuring electrode. After detecting the empty pipe status, the analog output and digital output of the instrument are set to signal zero, and the instrument flow is displayed as zero.

mtsnsr trip

Generally, the air pipe alarm threshold value has been set when the instrument leaves the factory, but if the field air pipe alarm is abnormal, the user can also adjust the air pipe alarm threshold value to make the flowmeter alarm normally. The adjustment method is: record the MTP value under the condition of ensuring that the fluid is full (with or without flow rate), record the MTP value under the condition of ensuring the air pipe in the pipeline, and calculate the average of the two MTP values. The value obtained is the threshold value of ATC alarm to be set.

alarm mode selection

There are three options: upper limit alarm, lower limit alarm and pulse output. Setting upper limit alarm or lower limit alarm shall be used in combination with upper alarm value (5.4.21) and lower limit

alarm value (5.4.22). All three settings are output through "+ FQH -" terminal. Factory default pulse output.

alarm Hi value

The upper limit alarm value is calculated as a percentage of the range. The parameter is set in a numerical way. The user sets a value between 0% and 199.9%. When the instrument meets the alarm conditions during operation, the instrument will output the alarm signal (FQH terminal electronic switch is on). The factory default is 0.1%.

Alarm Low value

Same as upper limit alarm. Factory default is 100%.

Coil alarm Ena

Select allowed, with excitation alarm function, select prohibited, and cancel excitation alarm function.

Coil alarm Value

Set value: when the coil value of the measurement interface is less than the set value, the system will prompt "excitation alarm", which is greater than the set value, indicating that the excitation is normal. The factory default is 1300.

Clr Sum Key

The user can set the password with the password above the third level, and then set the password within the total amount clearing.

Field Type

Sensor coefficient: the whole calibration coefficient of electromagnetic flowmeter. The coefficient is obtained from the real scale and stamped on the sensor label. You must place this factor in the converter parameter table.

Ex Correct

Electromagnetic converter provides three excitation frequency options: 1 / 16 power frequency (mode 1), 1 / 20 power frequency (mode 2), 1 / 25 power frequency (mode 3). The inductance of excitation system of small-diameter sensor is small, and 1 / 16 power frequency should be selected. Large diameter sensor excitation system has large inductance, so the user can only choose 1 / 20 power frequency or 1 / 25 power frequency. In use, select excitation mode 1 first, and then select mode 2 or mode 3 in sequence if the zero point of the instrument flow rate is too high. Note: in which excitation mode to calibrate, we must work in which excitation mode.

Description of non-linear correction function (use of correction point and Correction coefficient) Sensor_Fact

In principle, the non-linear correction function is used for linear adjustment under small flow (0.5m / s). The function is designed with 5 sections of correction, which are divided into 4 flow points and 5 correction factors. The flow corresponding to the correction point must meet the following requirements: 0 correction point 0 (0.0m / s) correction point 1 (1.0m / s) correction point 2 (2.0m / s) correction point 3 (5.0m / s). (the default flow rate point is in brackets), and the default correction factor is 1.0000.

The correction calculation is carried out on the flow coefficient curve of the original sensor, so the sensor coefficient should be marked first. According to the marked non-linearity of the sensor, the correction coefficient is set and corrected in sections. If the coefficient is set properly, recalibration is not necessary. Note: correction points When 0 is set to 0 m / s, the correction function will be turned off, and otherwise it will be turned on.

Where, the original flow is the real standard flow, and the corrected flow is called the corrected flow.

The corrected calculation formula is as follows:

In the range of $0 < \text{original flow} < \text{correction point } 0$;

Correction flow = correction coefficient 0 \times original flow;

In the range of correction point 0 < original flow < correction point 1;

Correction flow = correction factor 1 × original flow;

In the range of correction point 1 < original flow < correction point 2;

Correction flow = correction factor 2 × original flow;

In the range of correction point 2 < original flow ≥ correction point 3;

Correction flow = correction factor 3 × original flow;

At the correction point 3 < the original flow range;

Correction flow = correction factor 4 × original flow;

Note: when setting the correction point, the following relationship should be maintained:

$0 < \text{Correction Factor 0} < \text{Correction Factor 1} < \text{Correction Factor 2} < \text{Correction Factor 3}$

The middle value of the correction coefficient is 1.0000. If the coefficient is greater than 1, the flow will be corrected high; if the coefficient is less than 1, the flow will be corrected low.

Positive accumulation setting

The positive accumulation setting can change the value of the total positive accumulation ($\Sigma +$), which is mainly used for instrument maintenance and instrument replacement.

Reverse accumulation setting

Modifiable reverse cu

mulant ($\Sigma -$),

Current zero correction

The current output zero point of the converter is adjusted to make the current output accurate to 0mA or 4mA.

current full correction

The current output of the converter is adjusted at full scale, so that the current output is accurate to 10mA or 20mA.

factory calibration coefficient

The coefficient is the special coefficient of the converter manufacturer, which is used by the converter manufacturer to normalize the measurement circuit system of the electromagnetic converter, so as to ensure the interchangeability of all electromagnetic converters to reach 0.1%.

Density setting

Used to set the density of the sensor flowing through the fluid;

Remote transmission function on

It is used to support "enable" and "prohibit" of remote transmission function. The function needs to be realized by adding NB IOT module or GPRS module, and power on again after setting.

The use of GPRS and Nb modules requires the support of corresponding programs. After GPRS is turned on, there will be "network signal" and networking status indication on the host.

The communication protocol of the remote transmission function of the equipment is Modbus protocol. For the specific protocol analysis, please refer to the communication protocol document

GPRS / Nb IOT

In the GPRS function program, you can set the IP address and port number of the server. The factory default is the server address of our company. Users can modify it to their own service address and port according to their own needs.

The ib-iot function program is only convenient for recording the card number of the remote Transmission module, which is set by the manufacturer and does not need to be modified by the user.

IP:
118.031.019.119
PORT:
09090

Port and IP address modification interface 1

setting of transmission time interval

If the instrument is transmitted by wireless NB IOT or GPRS, the upload time can be set in minutes (NB IOT) or seconds (GPRS). If the instrument is transmitted by NB IOT, the minimum interval time is set to 5min, and it is recommended to be set to more than 30min. If the data update frequency is high, it is recommended to use GPRS for remote transmission, and the minimum allowable interval is 2S.(in the case of 1 minute interval, the theoretical annual data flow is less than 100MB)

Note: our company has wireless platform, which can assign account password, provide website, users can log in to view instrument data, etc.

6. Common troubleshooting

phenomenon	processing method
Flow instability	<ol style="list-style-type: none"> 1. Confirm whether the installation position of the sensor meets the requirements to ensure the full pipe state 2. Check whether the excitation line and signal line of the converter are connected correctly 3. Under the condition of full pipe and no flow, check whether there is zero point change. If there is zero point, refer to 5.4.9 for zero point calibration 4. There is no problem with the above three items. Please contact the after-sales personnel
4-20 current no output, or the output is wrong	<ol style="list-style-type: none"> 1. Confirm whether there is a problem in the lower connecting line and whether the positive and negative connections are reversed 2. Confirm the power supply mode of the converter. If the power supply is DC24V, make sure that the dial switch near the terminal is in the on position 3. If 24V power supply, current output, but unstable, please use AC220V power supply (DIP switch off) to test whether it is normal 4. The current output is not correct, and the flow is not correct. Please check whether the set range (refer to 5.4.6) is consistent with that of the receiving device 5. After confirming the above items, please contact the after-sales personnel
Communication unsuccessful	<ol style="list-style-type: none"> 1. Confirm whether the lower wiring and ab are connected reversely 2. Enter the parameter setting to check the communication address and baud rate, and confirm that they are consistent with the communication target 3. Confirm the power supply mode of the converter. If the power supply is DC24V, make sure that the dial switch near the terminal is in the on position 4. The communication is in disorder. Try to connect the converter with the GND of the communication target device

	<ol style="list-style-type: none"> 5. After confirming the above items, please contact the after-sales personnel
Do not turn on (black screen)	<ol style="list-style-type: none"> 1. Confirm whether the power supply is normal 2. Confirm whether the operation indicator flashes normally. It is separated at the top left of the terminal and integrated near the single-chip microcomputer at the bottom of the LCD screen. If the indicator flashes normally, check the connection of the LCD screen (some products are wired, some products are pin connected) 3. Cut off the power supply and confirm whether the fuse is burnt out. If it is burnt out, please check the power supply first, then replace the fuse and power on again 4. The equipment supports dual power supply of DC24V and AC220. One power supply mode does not start, try to replace another power supply; 5. After confirming the above items, please contact the after-sales personnel
Screen flickers and does not turn on	<ol style="list-style-type: none"> 1. The equipment supports dual power supply of DC24V and AC220, and tries to replace another power supply; 2. Check whether the excitation line is short circuited to the enclosure 3. There are still problems after confirming the above items. Please contact the after-sales personnel
No pulse	<ol style="list-style-type: none"> 1. Check whether the pulse wiring is correct, 2. Confirm that the receiving equipment can receive the active pulse 3. If the pulse measurement is not accurate, please refer to 5.4.16 check and set the pulse equivalent 4. After confirming the above items, please contact the after-sales personnel