

S-MAG **Electromagnetic Flowmeter**

HIGH FREQUENCY - SLURRY TYPE

Operating manual



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FLOWMETER S-MAG - HIGH FREQUENCY SLURRY TYPE

1. The product function introduction

1.1 Basic Function

Low-frequency square-wave exciting and high-frequency selectable, exciting frequency: 3.12Hz, 4.16Hz, 6.25Hz, 12.5Hz;

Exciting current is 125mA (high-frequency must select this) 、 187mA 和 250mA;

No need to add empty pipeline measurement, and can measure continuously, alarm by fixed value;

Current speed range: 0.1 --- 15m/s, current speed resolution: 0.5mm/s;

AC high-frequency switching power, range of voltage: 85VAC --- 250VAC;

DC 24V switching power, range of voltage: 20VDC --- 36VDC;

Network function: MODBUS、GPRS、PROFIBUS 、HART communication interface (choose) ;

English displaying mode, (other languages can be set);

Three integrator gross inside, respective register: Forward gross, reverse gross and minus value gross.

1.2 Especial Function

Flow effective digit selectable function, the flow meter can change the password 1 by high level password, and change the effective digit, the password set by password 1 change into binary number, the last two no. fix the effective digit of flow meter, if the last two no. of binary is 00, then display 3 digit; if it is 01, then display 4 digits; if it is 10 and 11, it display 5 digit. For example, if the password 1 set the password as 00004, the flow meter display 3 digit effective digit; while set as 00005, the flow meter display 4 digit effective digit; while set as 00006, the flow meter display 5 digit effective digit.

1.3 Normal Operating Conditions

Ambient Temperature Ranges: fission $-10\sim+60^{\circ}\text{C}$;

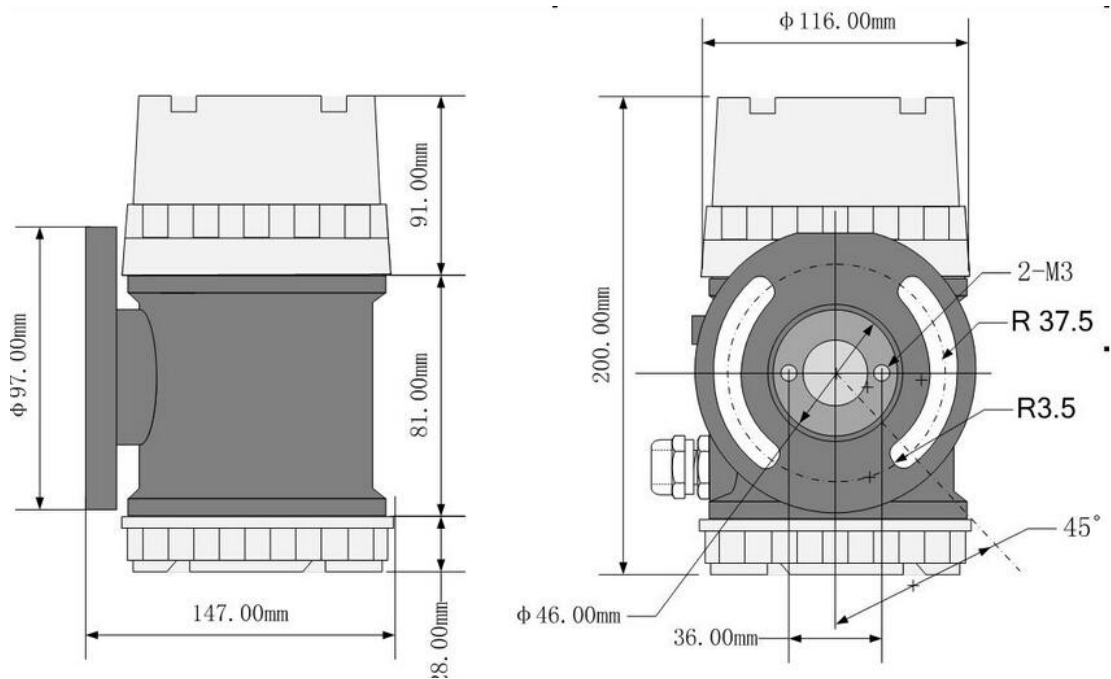
Relative Humidity: $5\%\sim90\%$;

Power Supply: $85\sim250\text{V}$, $45\sim63\text{Hz}$ (single-phase AC).

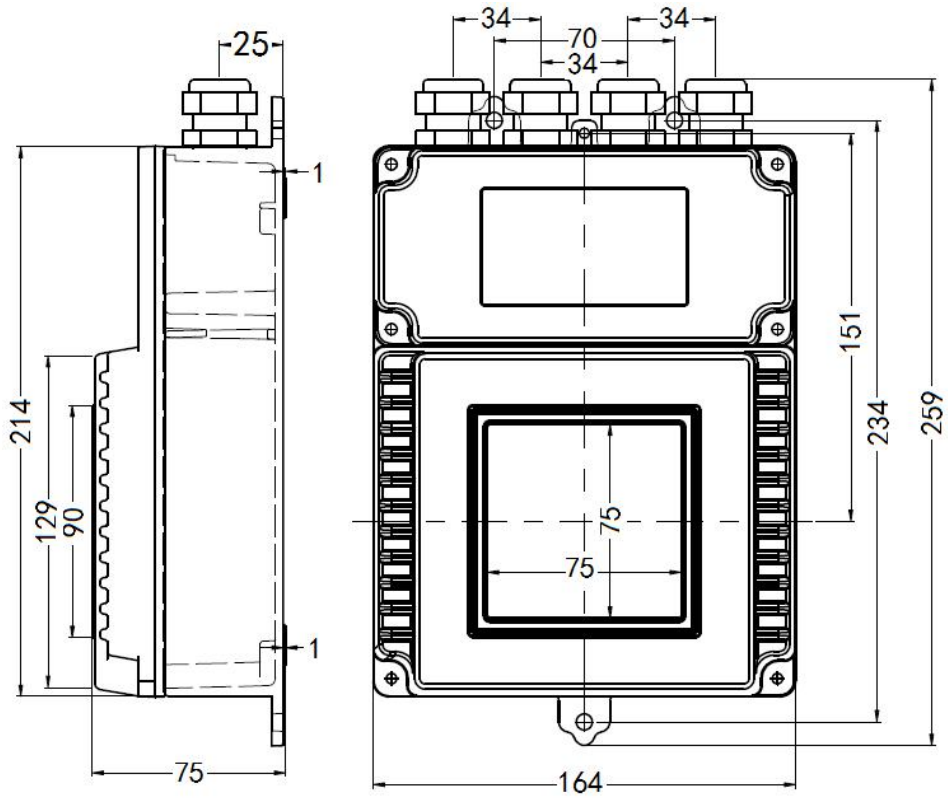
Dissipation Power: $<20\text{W}$ (After connecting sensor) .

1.4 Flow Converter Structure Drawing

Round Type



Square Type



1.5 Measure Precision

VS: Setting measurement range (m/s)

Diameter(mm)	Range (m/s)	Accuracy
3~20	≤0.3	±0.25%FS
	0.3~1	±1.0%R
	1~15	±0.5%R
25~600	0.1~0.3	±0.25%FS
	0.3~1	±0.5%R
	1~15	±0.3%R
700~3000	0.3 以下	±0.25%FS
	0.3~1	±1.0%R
	1~15	±0.5%R

%FS : for relative ranges ; %R : for relative value of

1.6 Simulated Current Output

Load resistor: 0~750Ω。

Basic Errors: 0.1%±10μA。

1.7 Digital Frequency Output

Frequency output range: 1~10000Hz;

Output electric isolate: Photoelectric isolate. Isolate voltage: > 1000VDC;

Frequency output drive: output by field-effect transistors, the highest subjected voltage is 36VDC, maximum of output current is 250 mA.

1.8 Digital Pulse Output

Pulse output value: 0.001~59.999 m³ / cp、

0.001~59.999 Ltr / cp、

Pulse output width: 1~500ms adjustable;

Pulse output isolate: photo electricity isolate. Isolate voltage: > 1000VDC;
Pulse output drive: output by field-effect transistors, the highest subjected voltage is 36VDC, maximum of output current is 250 mA.

1.9 Alarm Output

Alarm output junction: DOUT--- the communal output point of upper limit alarm and low limit alarm; it will output VIL if it alarm, then output VCC without alarm.

Output isolate: photo electricity isolate. Isolate voltage: > 1000VDC;
Alarm output drive: output by Darlington pipe, the highest subjected voltage is 36VDC, maximum of output current is 250 mA.

1.10 Digital communication port and protocol

MODBUS interface: format of RTU, physical interference, electrical isolation 1000V;

HART interface: designed by standard of HART, if you choose our hand held unit, it can display the measure value on line, and setting the parameters.

1.11 Electric Isolate

Insulated voltage between simulated input and simulated output should be higher than 500V;

Insulated voltage between simulated input and alarm power supply should be higher than 500V;

Insulated voltage between simulated input and AC power supply should be higher than 500V;

Insulated voltage between simulated output and AC power supply should be higher than 500V;

Insulated voltage between simulated output and earth should be higher than 500V;

Insulated voltage between pulse output and AC power supply should be higher than 500V;

Insulated voltage between pulse output and earth should be higher than 500V;

Insulated voltage between alarm output and AC power supply should be higher than 500V;

Insulated voltage between alarm output and earth should be higher than 500V;

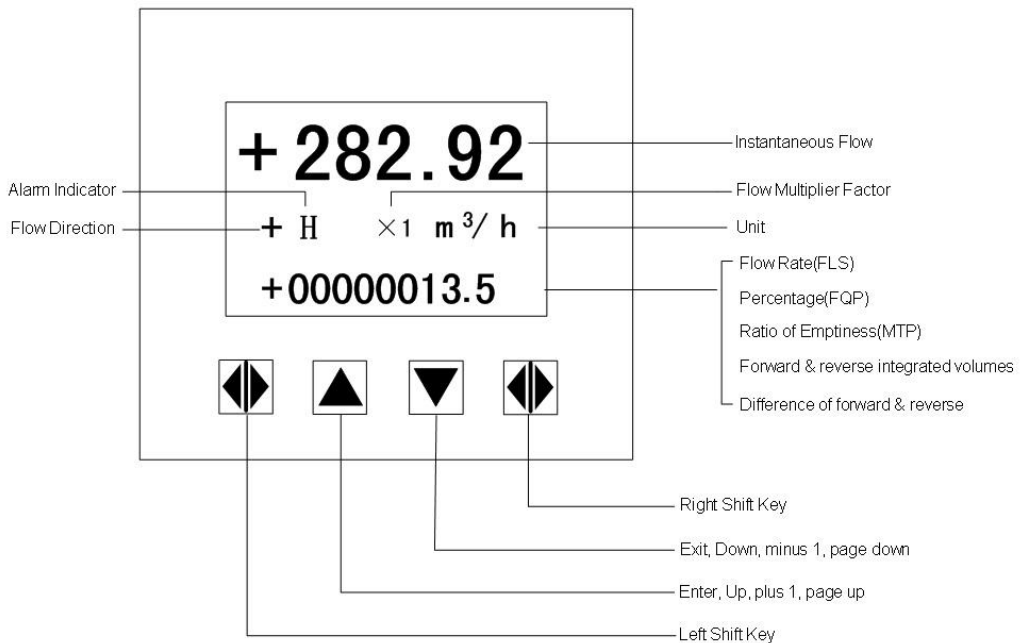
2. Alarm Information

The mag flow meter converter adopt the surface welding technology, for end user, it cant repair, so the end user should not open converter shell.

This converter has self-diagnostics function. Except the power and hardware circuit faults, it will provide alarm information correctly if some normal faults, these information will display on the left corner of screen as below:

SYS ---- System excitation alarm;	MTP ---- Fluid Empty pipe Alarm;
CUT ---- Small flow cut alarm;	REV ---- Reverse flow cut alarm;
HIG ---- Flow upper limit alarm;	L OW---- Flow low limit alarm

3. Keys & Display



Drawing 3 Keys on round panel and big LCD display

When power on, the meter comes into measuring function, the meter to measure all other functions and display the data automatically. Under the meter parameters setting mode, parameters can be set by the keys

3.1 Key Function

3.1.1 Keys' function in self- testing way

“Up” key: Selecting displayed data on lower line in turn;

Right shift key: Click the right shift key, the meter enter into the the function choosing displaying panel.

3.1.2 Function keys for parameters setting

“Down” key: Plus 1 ,front page turning;

“Up” key: Subtract 1,back page turning;

Press the right shift key,the cursor clockwise move,press the left key,the cursor anticlockwise move.

Making the cursor under the Up key, enter into the submenu

Making the cursor under the Down key,go back to the previous menu.

3.2 Function keys for setting parameters

Table 3

Code	Functions	Notes
1	Parameters Set	Select this function; It can enter the picture of parameter.
2	Clr Total Rec	Select this function , It can be gross reset operation.
3	Fact Modif Rec	Select this function, It can be check the factor ‘s modif Record

3.2.1 Parameters Set

Press “right shift key”, the meter enter into the password inputing “00000” status.After input the password ,making the cursor under the “Enter key”,press “Enter”key,it appears the “Parameter setting”,then press the shift key to make the cursor under the enter key,press “Enter key”,enter into the main menu to set the parameter.

3.2.2 Clr Total Rec

Press “right shift key”, the meter enter into the password inputing “00000” status.After input the password “10000” ,making the cursor under the “Enter key”,press “Enter”key,it appears the “Parameter setting”,then press the shift

key to make the cursor under the “Clr Total Rec”,input the Clr Total Rec passwords(This password,the user should be set beforehand at 《Clr Total password》), press the shift key and make the cursor under enter key,press the enter key, when the Clr Total Rec password become “00000”,the meter’s totalizer clearance is done.

4. Flow meter parameter introduction

4.1 Flow Parameter Setting

4.1.1 Pipeline Size

L-magE Pipe’s inside diameter of relative sensor (mm):

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、 2500、 2600、 2800、 3000;

4.1.2 Flow Unit

The flow unit can choose form the parameters (L/s、 L/m、 L/h、 m³/s、 m³/m、 m³/h),and the user can choose the proper unit according to the technological requirement and using habit.

4.1.3 Flow Range Set

Flow range means upper limit value, and lower limit value is set “0” automatically.

So, it makes the range, and makes the relation of percent display, frequency output and current output with flow: percent display = (flow measure / measure range) * 100 %;

frequency output = (flow measure / measure range) * frequency full;
current output = (flow measure / measure range) * current full + base point;

pulse output will not affect.

4.1.4 Flow Rspns

It means time of filter measure value. The long one can enhance the stability of flow display and output digital, and fits for gross add up of pulse flow; the short one means fast respond rate, and fits for production control. Flow rspns can be setted as 1S、2S、3S、4S、6S、8S、10S、15S、30S、60S. It is set by select.

4.1.5 Flow Direct

If users think the direct and design are differ, just change the direct parameter is OK, but not change exciting or signal.

4.1.6 Flow Cutoff

Flow cutoff is set in percentage of Upper Limit Range of flow, and users can delete all Negligible Small Signals of flow volume, velocity and percentage out of displaying and outputting them. Sometimes user can delete output of current output signal and frequency (pulse) output signal only to have flow, velocity and percentage being displayed.

4.1.7 Total Unit

Converter display is counter with 9 bits, and the max is 999999999.

Integrator units are L, m³ (liter, stere,).

Flow integrator value: 0.001L、 0.010L、 0.100L、 1.000L
0.001m³、 0.010m³、 0.100m³、 1.000m³ ;

4.1.8 SegmaN Ena

When “SegmaN Ena” is “enable”, if the flow flows, the sensor will export pulse and current. When it is “disable”, the sensor will export pulse as “0” and current as “0”(4mA) for the flow flows reversals.

4.1.9 PlsntLmtV1 (Flow Noise Amplitude)

This coefficient can restrain the variation of cuspidal disturb, and restrain according to percent of flow velocity. When flow velocity is faster than the setting velocity, the flow meter will treat as normal wave and will not be restrain. When flow velocity is slower than setting velocity, the flow meter will treat as abnormal wave and will be cuspidal restrain.

4.1.10 PlsntLmtEn(Plsnt Noise Filter)

For paper pulp, slurry and other serosity, the flow measure will have "cuspidal disturb", because the solid grain friction or concussion the measure electrode. L_MagE converters use variation restrain arithmetic to conquer the disturbing by designing three parameters to select disturb character. Set it "enable", start variation restrain arithmetic; set it "disable", close variation restrain arithmetic.

4.1.11 Flow Multiple

When the flow multiple is setted as less than or more than 1.0000, flow rate and flow velocity will display normally, pulse output and total flow will be multiplied as setted times.

4.2 Output parameter setting

4.2.1 Pulse Output

Two kinds of Pulse Outputs are can be chosen: Frequency Output and Pulse Output.

Frequency Output is continuous square waveform and Pulse output is a serial wave of square wave. Frequency output is mainly used for instant flow and total integrated flow in short time measurement. Frequency output can be chosen in equivalent frequency unit and volume of integrated flow can be displayed. Frequency Output can be used in long time measurement for total integrated flow with volume units.

Frequency output and pulse output are usually from OC gates so that DC power supplies and load resistors have to be required

4.2.2 Pulse Unit

Two pulse unit:m³ and L

4.2.3 Pulse Fact

Equivalent pulse Unit is referred to one pulse for value of flow. Pulse fact need to set two parameters setting: “Pulse Fact Unit” And “Pulse Fact”. Range is between 00.001 L~ 59.999 m³

Under the same flow, the smaller pulse, the higher frequency output, and the smaller error will be.

4.2.4 Pulse Width

Pulse output is active low. Pulse width:01---500ms

Pulse Width—Max Output Pulse Number (Chart 2)

No.	Pulse Width (ms)	Max Output Pulse Number/hour (p/h)
1	1	1800000
2	5	360000
3	10	180000
4	50	36000
5	100	18000
6	200	9000
7	500	3600

4.2.5 Digital frequency output

Frequency output range corresponding to upper limit flow:percent flow 100%. Frequency output upper limit can be set between 1~10000Hz.

4.2.6 Current Output

Current Output type: 4~20mA.

4.3 Alarm Parameter Setting

4.3.1 Mtsnsr Ena

The state of empty pipe can be detected with the function of converter and do not need additional electrode. If user select System alarm enable, then when the fluid is lower than electrode, the flow meter can detect as empty pipe state. If the pipe is empty, the signals of analog output and digital output would be zero and displayed flow would be zero. The terminal DOUT will bring low electrical level.

4.3.2 Mtsnsr Trip

When the pipe is full of liquid (whether flowing or not), the parameter displayed upper line is real MTP, and the parameter displayed below is the “Mtsnsr trip” that should be set. When setting “Mtsnsr trip”, you could be according to the real MTP, the value that should be set is usually three to five times of real MTP.

4.3.3 Alm Hi Ena

Users can choose “Enable” or “Disable”

4.3.4 Alm Hi Val

The parameter of upper limit alarm is percentage of flow range and can be set in

the way of setting one numerical value. When the value of flow percentage is larger than the value of setting value, the converter outputs the alarm signal.

4.3.5 Alm Lo Val

The same as upper limit alarm.

4.3.6 Sys Alm Ena

Selecting Enable will have the function, and selecting Disable will cancel the function.

4.4 Converter parameter

4.4.1 Field Type

L_MagE affords four exciting frequency types (default setting is 12.5Hz): 3.125Hz, 4.167Hz, 6.25Hz, 12.5Hz. The small size sensor should use 6.25 Hz, and large size sensor should use 3.12Hz or 4.16Hz. When using, please select low exciting frequency first, if the zero of velocity is too high, select other lower exciting lower frequency in turn. Attention: the converter need to be used in the same field type as calibrated type. When the converter will work with high frequency, please choose 12.5Hz.

4.4.2 Sensor Fact

Sensor Coefficient” is printed on the Label of the sensor when it is made in factory. The “sensor coefficient” has to be set into Sensor Coefficient Parameter when it runs with converter.

4.4.3 Snsr Code

It is referred to the produced date of sensor and the serial number of product that can keep the sensors coefficient right and accurate.

4.4.4 Exciting Current

In this manu, there are three exciting current to choose 125 mA、187 mA、 250 mA, this setting ought to be the same as actual exciting current of flow meter.

4.5 Communication Parameter Setting

4.5.1 Comm Mode

L-magE converter can accomplish three communication mode: MODBUS,HART,PROFIBUS; This is according to user's choice.

4.5.2 Comm Address

When communicate,this instrument's address can be selectable from range:01~250, holding the 0.

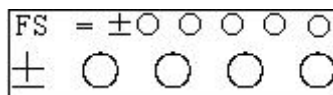
4.5.3 Baud Rate

Baud Rate range: 300、600、1200、2400、4800、9600、19200、38400

4.6 Calibration Parameter

4.6.1 Flow zero

Make sure the sensor is full of flow, and the flow is stillness. Flow zero is shown as velocity of flow, mm/s.



Converter's zero-flow correction displays like this:

Upper small words: FS means measure value of zero;

Lower large words: correction value of zero.

When FS is not “0”, make FS = 0. Note: if change the value on next line and FS increases, please change the “+, -” to correct FS to zero.

Flow zero is the compound value of the sensor, and should be recorded in sensor list and band. The unit will be mm/s, and the sign will be opposite with correction value.

4.6.2 Meter Fact

This factor is professional for the manufacturer of this converter. Manufacturer will keep all of L-magD electromagnetic converter’s measuring electric circuit into normalization, and ensure that all of this type converter could reach 0.1% ratio on interchangeability.

4.6.3 Analog Zero

Adjust analog output zero point, to accurate at 4mA.

4.6.4 Anlg Range

When the converters is made in the factory, output current have been calibrated to full scale, that is, accurate 20mA output.

4.6.5 Mtsnsr Zero

When the pipe is full of liquid (whether flowing or not), the parameter of “Mtsnsr” could be modified more easily. The parameter displayed upper line is real MTP, and the parameter displayed bellow is the “Mtsnsr trip” that should be set. When setting “Mtsnsr trip”, you could be according to the real MTP, the value that should be set is usually three to five times of real MTP.

When the pipe is full of liquid, user can adjust empty pipe zero point. When doing this, please make sure the sensor is full of liquid, and it will display as below:

$$\begin{array}{r} \text{MZ} = 0 \ 0 \ 0 \ 1 \ 5 \\ 0 \ 0 \ 0 \ 0 \ 0 \end{array}$$

Upper Line: MZ means the measure value of empty pipe zero point

Below Line: Modified value of empty pipe zero point

Firstly, according to the actual MT value, adjust the modified value to make MZ=5~10 around (Noted: If add below line modified value, MZ value will be smaller).

4.6.6 Mtsnsr Range

When actual MT value is too small, user can adjust the empty pipe range. While doing this, please make sure no liquid in the pipe.

It will display as below:

$$\begin{array}{r} \text{MR} = 0 \ 0 \ 1 \ 0 \ 7 \\ 0 \ 1. \ 0 \ 0 \ 0 \end{array}$$

Upper Line: MR stand for the measure value of the empty pipe range.

Below Line: stand for modified value of empty pipe range

If increase modified value on the below line, MR will increase; If decrease modified value on the below line, MR will decrease. User can adjust MR to a suitable value (suggest to adjust to around MR=500), then actual MTP near to actual modified MR.

4.7 Auxiliary parameter

4.7.1 Clr Sum Key

User use more than 3 byte code to enter , Then set this password in Clr Total Rec.

4.7.2 Password 1~4

User can use 5 grade password to enter into then can change password 1~4.

4.7.3 FwdTotal

Positive total volume high byte and low byte can change forthcoming and reverse total value, and be used to maintenance and instead.

User use 5 byte code to enter, and can modify the positive accumulating volume ($\Sigma+$). Usually, it is unsuitable to exceed the maximum the counter set (999999999).

4.7.4 RevTotal

User use 5 byte code to enter, and can modify the negative accumulating volume ($\Sigma-$). Usually, it is unsuitable to exceed the minimum the counter set (999999999).

5. Troubleshooting

5.1 No Display

- a) Check the power supply connection;
- b) Check the power fuse to see for OK;
- c) Check the contrast of LCD and regulate it to working state;

5.2 Exciting Alarm

- a) Check if the exciting cables EX1 and EX2 did not connected;
- b) Check if the total resistance of sensor's exciting coil resistances less than 150 Ω ;
- c) If a) and b) are OK, the converter is failed.

5.3 Empty Pipe Alarm

- * If measured fluid full of testing pipe of sensor;
- * When shorting circuit three connectors SIG +, SIG -, SGND of converter, and no "Empty Alarm" displayed then the converter works OK. In this case, it is

possible that conductivity of measured fluid may be small or empty threshold of empty pipe and range of empty pipe are set wrongly.

- * Check if the signal cable is OK;
- * Check if the electrode-poles are OK or not.

Let the flow is zero, then the displayed conductivity should be less than 100%. Resistances of SIG1 to SGND and SIG2 to SGND are all less than 50k Ω (conductivity of water) during measurement operation. (It is better to test the resistances by means of multimeter with pointer to see the charging process well.)

- * The DC voltage should be less than 1V between DRS+ and DRS- testing the voltage by means of multimeter. If DC voltage is larger than 1V, the electrode poles of sensor were polluted that have to be cleaned.

5.4 Flow measurement inaccuracies

- *Measuring fluid sensor tubes are filled;
- *Signal cable is connected properly;
- *Check the sensor coefficient, whether the sensor zero calibration sensor plate or single factory settings

Appendix One: Selection of exciting frequency(re.)

S-MAG afford three exciting frequency types: 3.12Hz , 4.16Hz,5Hz , 6.25Hz,12.5Hz , (default setting: 6.25 Hz) The small-bore one should use 6.25Hz, and large-bore one should use 3.12Hz and 4.16Hz. When using, please select low exciting frequency first, if the zero of velocity is too high, select other lower exciting lower frequency in turn. Attention: the converter need to be used in the same field type as calibrated type. When the converter will work with high frequency, please choose 12.5Hz.

In the user's sensor that **S-MAG** gives, often the sensor is not fit for the **S-MAG** converters, at this time can do like this:

- (1) Small exciting loop resist

If the exciting loop resist is smaller than the sensor's request, can series resist to get the total value. The series resist's power should be more than one time of fact, for example, series 10Ω on 250mA current, the power will be 3W.

(2) Large exciting loop resist (change exciting current)

If the exciting loop resist is larger than the sensor's request, can change the exciting current, for example, if exciting loop resist is 70Ω, for 250mA this is larger, so can change the current to 187mA.

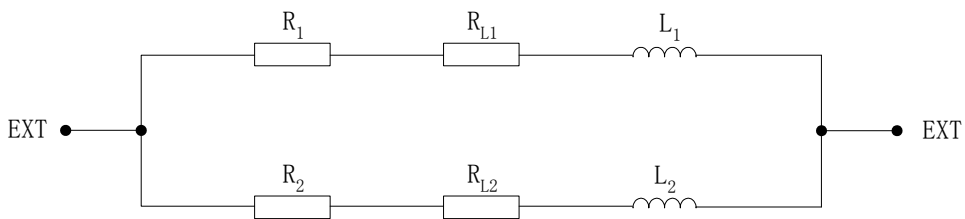
(3) Large exciting loop resist (change loop connect)

If the exciting loop resist is larger than the sensor's request, can change the connect of loop, for example, if exciting loop resist is 200Ω, every exciting loop resist is 100Ω, parallel connection the upper and lower loop is OK.

According the analysis, change the connect of exciting loop, measure from either head of exciting loop,

$$\text{Total resist} = (R_1 + R_{L1}) \text{ parallel connection } (R_2 + R_{L2}) \leq 120\Omega;$$

(As the Fig. R1, R2----addition resists; RL1, RL2----exciting resists)



$$\text{Total resist} = (R_1 + R_{L1}) \text{ parallel connection } (R_2 + R_{L2}) \leq 120\Omega;$$

(as the Fig. R1, R2----addition resists; RL1, RL2----exciting resists)

(4) Sensor exciting current steady time so long (inductance is too large)

For this question, firstly changing exciting type, select 1/16 or 1/25 frequency.

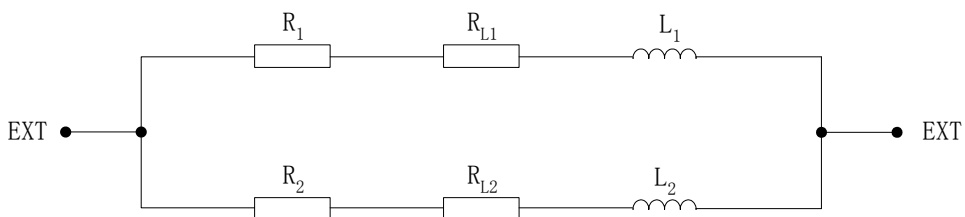
If cannot content, change connect of exciting loop.

$$\text{Exciting current transition time } \tau = L / R$$

L ---- Exciting loop inductance; R ---- exciting loop resist.

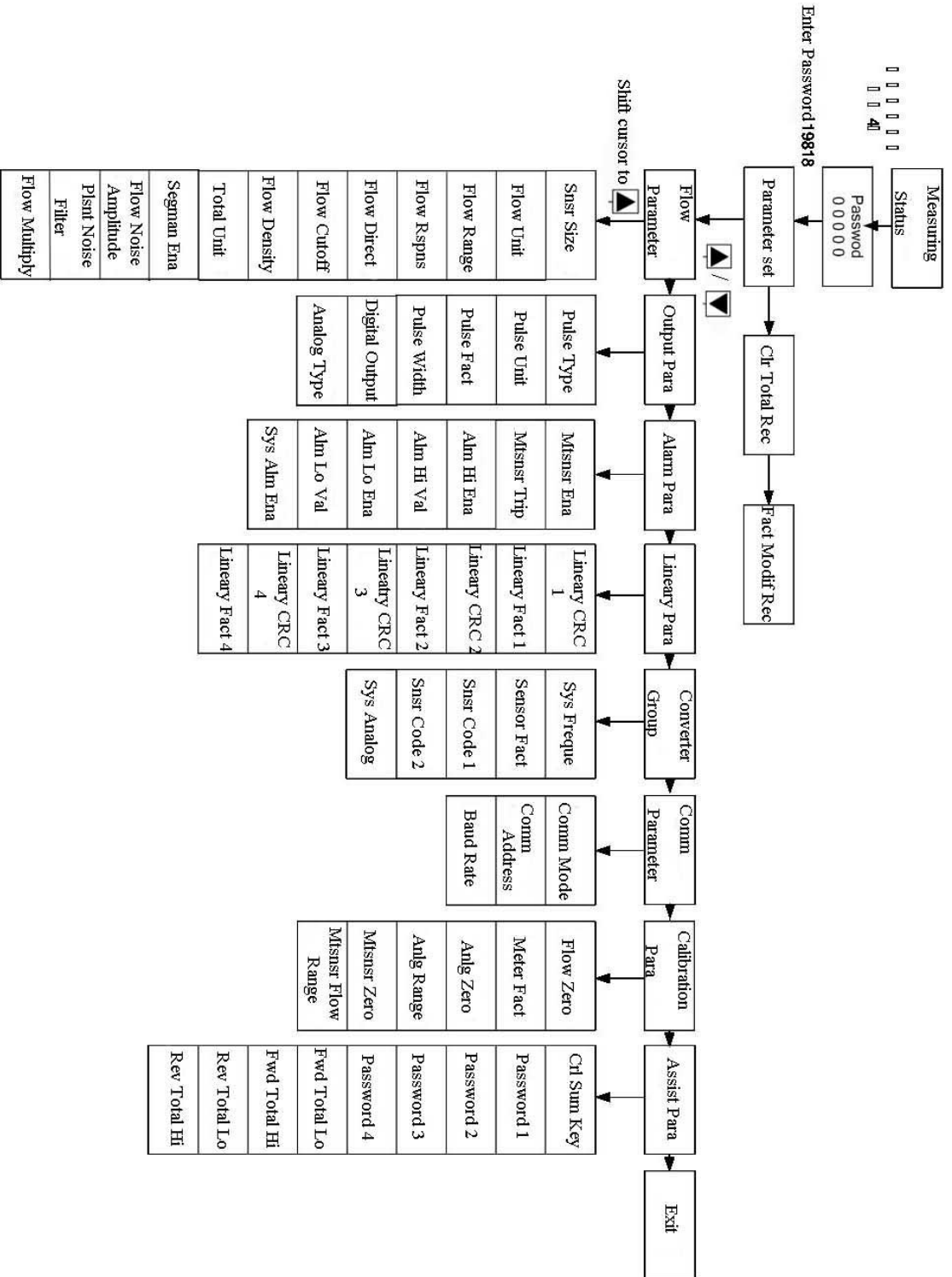
So decrease L and increase R both can decrease τ .

According the analysis, change the connect of exciting loop, measure from either head of exciting loop,



R_1 、 R_2 ——addition resists; R_{L1} 、 R_{L2} ——exciting resists。
Serial connect resistor R_1 , R_2 , make the total resistor (R_1+R_{L1}) parallel connection $(R_2+R_{L2}) \leq 120\Omega$

Appendix II Menu Table



Setting Parameters in Menu

Code	Parameter Words	Setting way	Range	Grade s
—	Flow Parameter			
1	Snsr Size	Select	3~3000	2
2	Flow Unit	Select	L/h、L/m、L/s、m ³ /h、m ³ /m、m ³ /s	2
3	Flow Range	Set count	0~99999	2
4	Flow Rspns	Select	1~60S	2
5	Flow Direct	select	Plus/Reverse	2
6	Flow cutoff	Set count	Set according to flow	2
7	Flow Density	Set count	0~19.999T/m3	2
8	Total Unit	Select	0.001m ³ ~1m ³ 、0.001L~1L、	2
9	SegmaN Ena	Select	Enable/Disable	2
10	Flow Noise Amplitude	Set count	0~19.999m/s	3
11	Plsnt Noise Fliter	Select	Enable/Disable	3
12	Flow Multiply	Set count	0~3.999	4
≡	Output Parameter			
1	Pulse Type	Select	Freque/Pulse	2
2	Pulse Unit	Select	m ³ 、L	2
3	Pulse Fact	Set count	00.001~59.999	2
4	Pulse Width	Select	1~500ms	2
5	Digital Output	Set count	1~10000 Hz	2
6	Analog Type	Select	4-20mA/4-12 mA,12-20 mA	5
二	Alam Parameter			
1	Mtsnsr Ena	Select	Enable/Disable	2
2	Mtsnsr Trip	Set count	0~59999	2
3	Alm Hi Ena	Select	Enable/Disable	2
4	Alm Hi Val	Set count	Set according to flow	2
5	Alm Lo Ena	Select	Enable/Disable	2
6	Alm Lo Val	Set count	Set according to flow	2
7	Sys Alm Ena	Select	Enable/Disable	2
四	Lineary Parameter			

1	Lineary CRC1	User set	Set Velocity	4
2	Lineary Fact 1	User set	0.0000~1.9999	4
3	Lineary CRC2	User set	Set Velocity	4
4	Lineary Fact 2	User set	0.0000~1.9999	4
5	Lineary CRC3	User set	Set Velocity	4
6	Lineary Fact 3	User set	0.0000~1.9999	4
7	Lineary CRC4	User set	Set Velocity	4
8	Lineary Fac t4	User set	0.0000~1.9999	4
五	Converter Group			
1	Sys Freque	Select	3.125Hz~12.5Hz	4
2	Sensor Fact	Set count	0.0000~5.9999	4
3	Snsr Code 1	User set	Finished Y M	4
4	Snsr Code 2	User set	Product number	4
5	Sys Analog	Factory set	125 mA、187 mA、250 mA	5
六	Comm Parameter			
1	Comm Mode	Select	MODBUS、HART、PROFIBUS	2
2	Comm Address	Set count	0~250	2
3	Baut Rate	Select	300~38400	2
七	Calibration Parameter			
1	Flow Zero	Set count	0~±9999	2
2	Meter Fact	Set count	0.0000~5.9999	5
3	Anlg Zero	Set count	0.0000~1.9999	5
4	Anlg Range	Set count	0.0000~3.9999	5
5	Mtsnsr Zero	Set count	0~59999	5
6	Mtsnsr Flow Range	Set count	0~5.9999	5
八	Assis Para			
1	CrI Sum Key	User correct	0~99999	2
2	Pass Word 1	User correct	0~59999	5

3	Pass Word 2	User correct	0~59999	5
4	Pass Word 3	User correct	0~59999	5
5	Pass Word 4	User correct	0~59999	5
6	FwdTotal Lo	User correct	0~99999	5
7	FwdTotal Hi	User correct	0~9999	5
8	RevTotal Lo	User correct	0~99999	5
9	RevTotal Hi	User correct	0~9999	5

Parameters of converters can decide the running status, process and output ways as well as state of output. Correct option and setting of parameters can keep the converters running optimally and get higher accuracies of output both in display and in measurement.

There are 5 grades of passwords for setting parameters function. Grades 1 to grade 4 of passwords are for users and grade 5 of password is for manufacturer. Users can reset their passwords of grades 1~4 in grade 5.

Users can check converters parameters in any grade of password. However, if users want to change parameters of converters, different grade of parameters have to be used by the users.

Grade 1 of password (set by manufacturer as 00522): users can only read parameter.

Grade 2 of password (set by manufacturer as 03210)

Grade 3 of password (set by manufacturer as 06108)

Grade 4 of password (set by manufacturer as 07206)

Grade 5 of password (Fixed): users can change with reference above parameters.

Password Grade 5 can be set by skilled users. Grade 4 is mainly used for resetting total volume in password. Grades 1~3 can be set by any one who can be chosen by users.

Electromagnetic Flowmeter Installation

1. The installation site selection

In order to make the sensor reliable and steady work, please pay attention to the following requirements when choose the installation location:

- (1) try to avoid magnetic objects and has strong phenolic water factory equipment (such as big motor, big transformer, etc), in order to

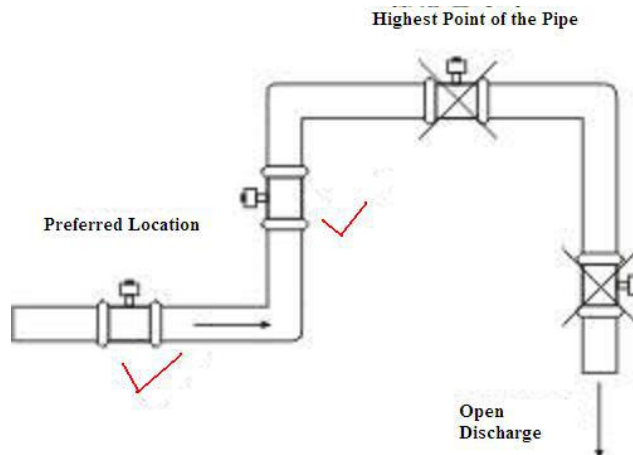
lest affect the work magnetic field of sensors and flow signal.

(2) it should be possible installed in dry and ventilated place, not installed in damp, easy seep place.

(3)it should try to avoid exposed to the sun and rain, avoid the environment temperature more than 60 °C and relative humidity is more than 95%

(4)it choose to easy to maintenance, and activity convenient place

(5) the flowmeter should be installed in the water pump back end, not installation the suction side; The valve should be installed in downstream side of the flow.



2.Installation Requirements

In order to let you can correct measuring, please be pay attention to the following requirements when choosing the line position.

the sensor not only installed in the straight pipe, but also can be installation the in level or tilted pipe, but the required of the center of two electrode attachment on the horizontal state

the medium in the installation position should be full pipe flow, avoid not full pipe and gas attached to the electrode.

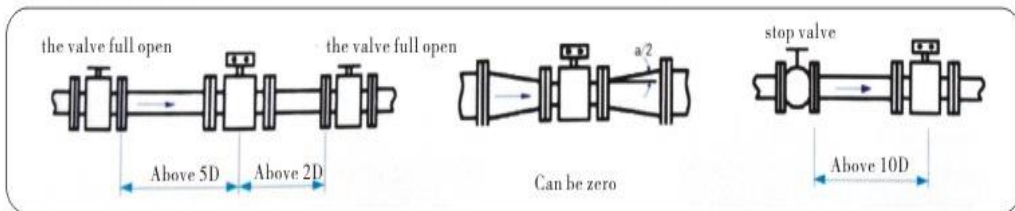
For liquid-solid two-phase flow, it better choose the perpendicular installation, it make the liner material of the sensor attrition uniform, and prolong working life.

when the flow meter installation position with not full medium, it can raise the end pipeline of the flowmeter, and make its full tube, forbidden in peak and

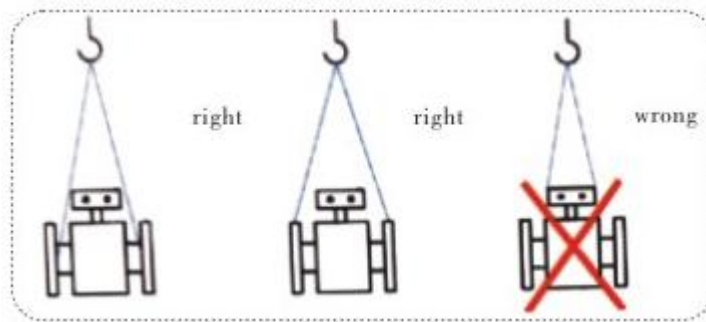
outlet pipe installation flowmeter

Modify piping installation method: when the medium velocity out of requires, it should choose a small caliber flow meter, and should use different caliber taper pipe or modify the sections of pipe, make its same caliber with sensor, but before and after straight pipe section at least requirement the before straight pipe section ≥ 10 DN, after straight pipe section ≥ 5 DN (DN for pipe diameter)

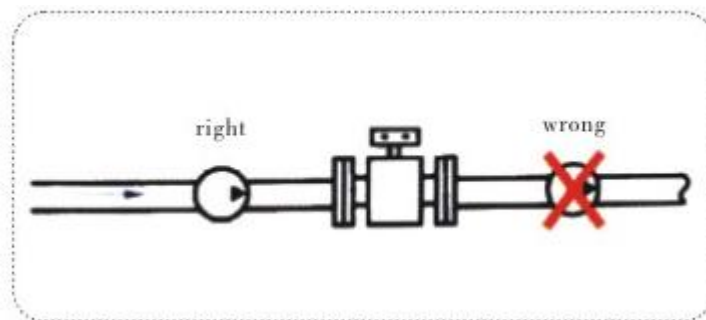
Before and after straight pipe section for the flowmeter ,before pipe section ≥ 10 DN, after pipe section ≥ 5 DN



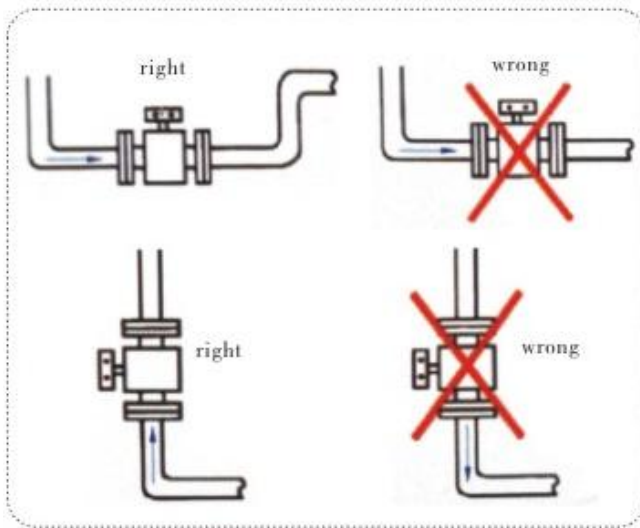
Straight Pipe Requirement



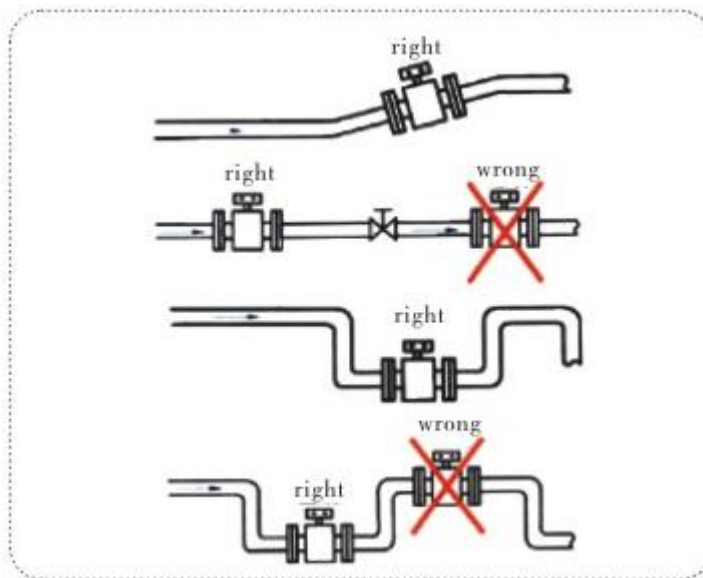
Right Suspending



Can't be installed at the pump side



Pipe must be full of Medium



Avoid air bladder

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