

L-magW801  
Battery Powered Converter  
Manual

# 1 Overview

L-magW801 It is a series of battery-powered electromagnetic converters developed by our company. The series converts The device can be matched with ordinary electromagnetic flowmeter sensors, and reach 0.5 level and 0.2 level flow measurement accuracy. In other words, simply replace the original ordinary electromagnetic flowmeter with L-magW801 converter, the user Developed a new product - battery-powered series.

L-magW801 Battery-powered converters come standard with a regular lithium battery pack for continuous operation 3--6 year. If equipped with a high-capacity lithium battery pack, the continuous working time will be longer.

L-magW801 The battery-powered converter can use the base station wireless communication network system, in the district A communication base station is established in the domain center, and the coverage radius is 1000 rice. Each electromagnetic converter is close to the base station communication (SRD mode) use 928MHZ Open Band (US Standard), base station through GPRS or CDMA The mobile phone communication network completes the data communication with the management computer. In addition, L-magW801 Battery powered converters can also be directly GPRS or CDMA Completion of the same management of the mobile communication network Computer data communication ( GPRS Please refer to the communication manual for details).

## 2 Performance

- Working ambient temperature :  $-20^{\circ}\text{C}$ — $50^{\circ}\text{C}$
- Working environment humidity:  $\leq 95\%$
- Enclosure rating: **IP65**—**IP67**
- Flow rate measurement range : 0 --- 15 m / s
- Dielectric conductivity: clean water  $> 20 \mu\text{s}/\text{cm}$
- Applicable measuring diameter : DN3—DN800
- Matching accuracy class : Level 0.5,
- Measurement: Instantaneous flow, Instantaneous velocity
- record: cumulative total of flow, 32 groups of event records

- Detection alarm parameters: fluid
  - empty pipe
  - detection alarm
  - Excitation current
  - detection alarm
  - Battery capacity
  - detection alarm
- Calibration output signal: flow pulse per unit volume
- Wireless communication : SRD , GPRS , CDMA
- battery working time

The cycle measurement time corresponds to the battery life table (excitation method 1)

Interval measurement time	50mAExcitation usage time	20mAExcitation usage time
15S	50moon	70moon
14S	46moon	65moon
13S	43moon	60moon
12S	40moon	56moon
11S	36moon	51moon
10S	32moon	46moon
9S	29moon	42moon
8S	25moon	37moon
7S	twenty onemoon	32moon
6S	18moon	28moon
5S	14moon	twenty three moon
4S	11moon	18moon
3S	10moon	14moon

Excitation mode corresponds to battery life factor

Excitation Way	Way1	Way2	Way3	Way4	Way5	Way6	Way7	Way8
Battery coefficient	1.0	0.85	0.75	0.60	0.50	0.42	0.37	0.30

### 3 Sensor matching requirements

▲ for 20 mA excitation, Sensor Excitation Coil Resistance: 90 ~ 110 ohm (two lines circle in series) (recommended)

▲ for 50 mA excitation, sensor excitation coil resistance: 40 ~ 50 ohm (two coils in series)

▲ Sensor flow signal strength : 50~ 100 microvolts (1 m / s velocity)

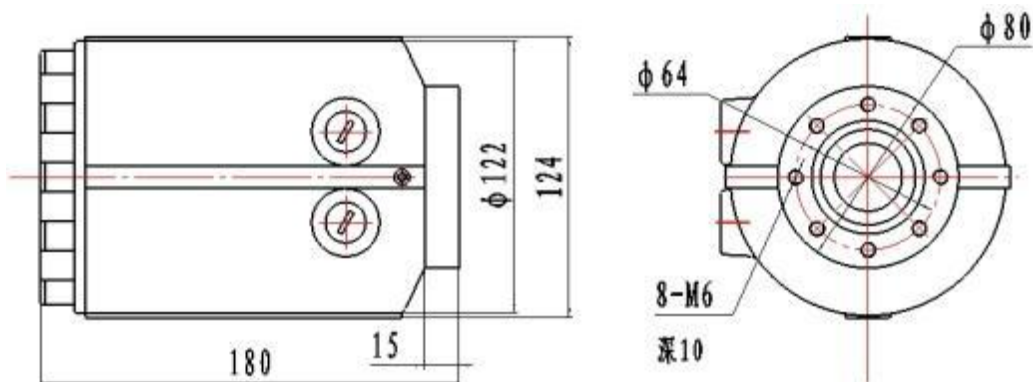
**Remarks: The excitation coil resistance needs special instructions when ordering!**

**Instruction:** When the flow is calibrated, the marked sensor coefficient is 1.0000 or so, indicating that the sensor The traffic signal strength meets the requirements. The sensor factor is greater than 1.0000, indicating the sensor flow Low sensitivity, sensor coefficient is less than 1.0000, indicating that the sensor has high flow sensitivity. pass The flow sensitivity of the sensor is higher, which is beneficial to the improvement of the measurement stability and accuracy of the flow meter.

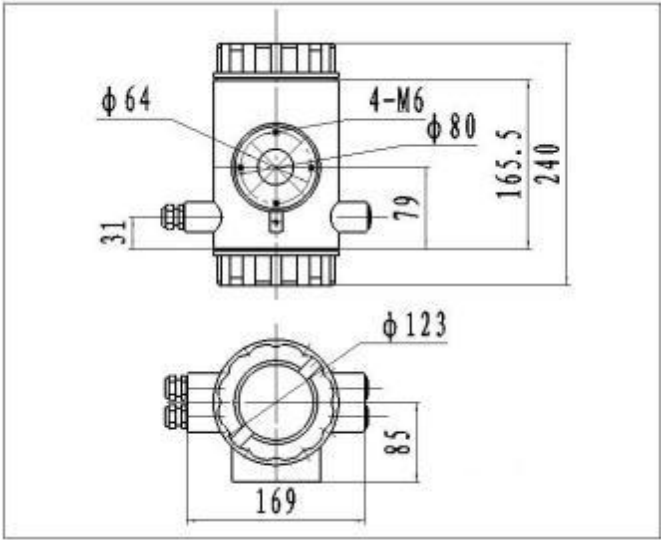
In principle, Use our company 250mA Ordinary sensors for excitation converters, as long as they are marked with The coefficient of determination is 1. below 0000, L-magW801 Converters can achieve a good match.

### 4 Installation dimension drawing

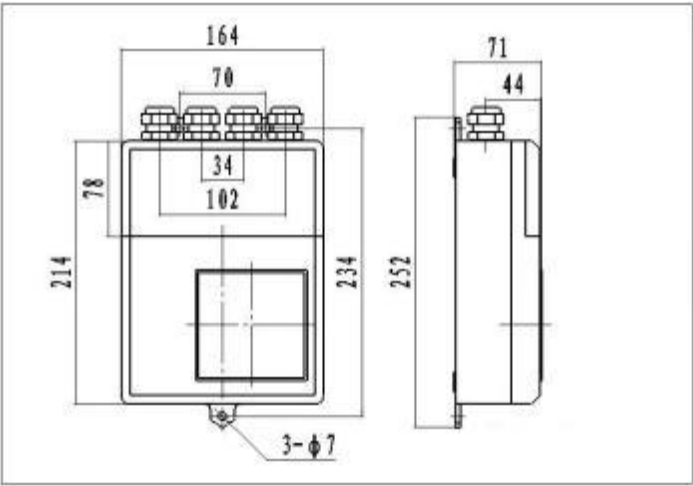
#### 4.1 Round one-piece vertical



**4.2 Round one-piece horizontal**



**4.3 Square split**



**5 Converter picture**



Square split



Round one-piece vertical



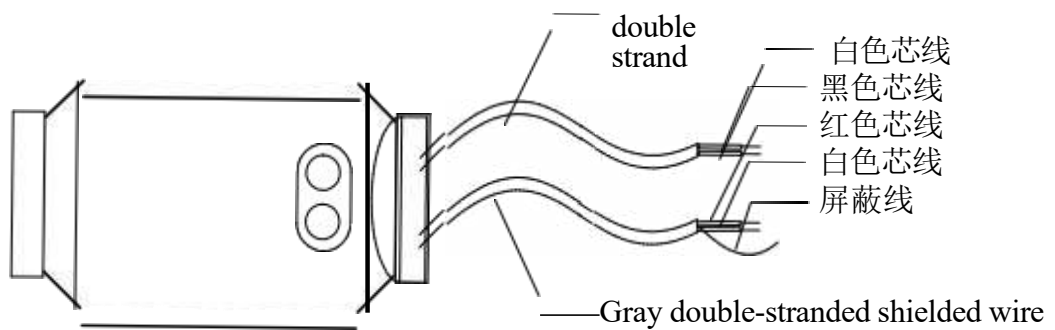
round horizontal

(GPRS communication)

## 6 Converter signal line definition

### 6.1 Round watch integrated terminal wiring and marking

L-magW801 The compact converter has two sets of wiring: Signal line group, excitation line group. respectively with The sensors are connected to the corresponding line groups. When wiring, it should be connected correctly and checked carefully to avoid damage due to wrong wiring. Bad meter.



L-magW801 Schematic diagram of signal line

The signal lines are

marked as follows:

Black double-strand  
plastic wire:

Gray two-strand  
shielded wire:

white core wire

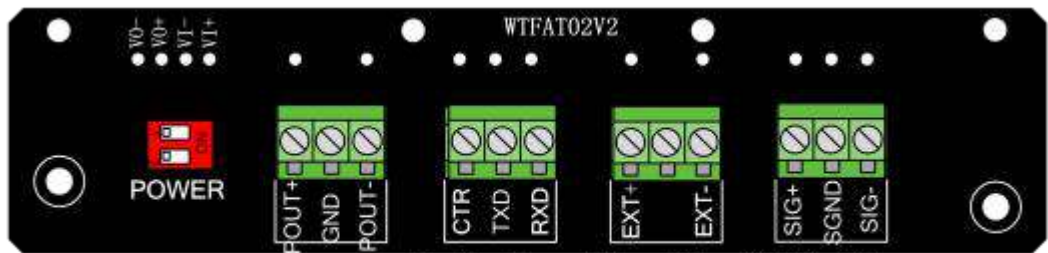
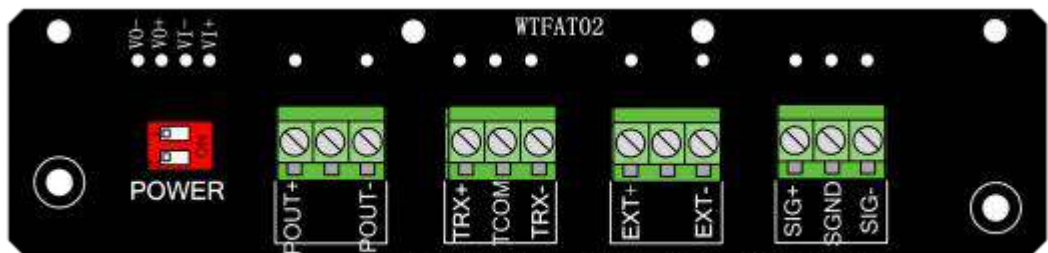
black core wire

} Excitation  
current

The red core wire is  
connected to the "  
signal "1" The white  
core wire is  
connected to the "  
signal "2"

shielded wire is connected to " signal ground "

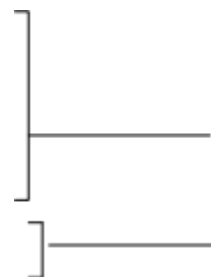
## 6.2 Square meter split terminal wiring and marking



SIG+  
SGND  
SIG-  
EXT+  
EXT-  
POUT+  
POUT-

Signal 1  
signal ground  
Signal 2  
Excitation  
current +  
Excitation  
current-  
Pulse  
output pulse

output  
ground



Connected to the  
split type sensor

Pulse output



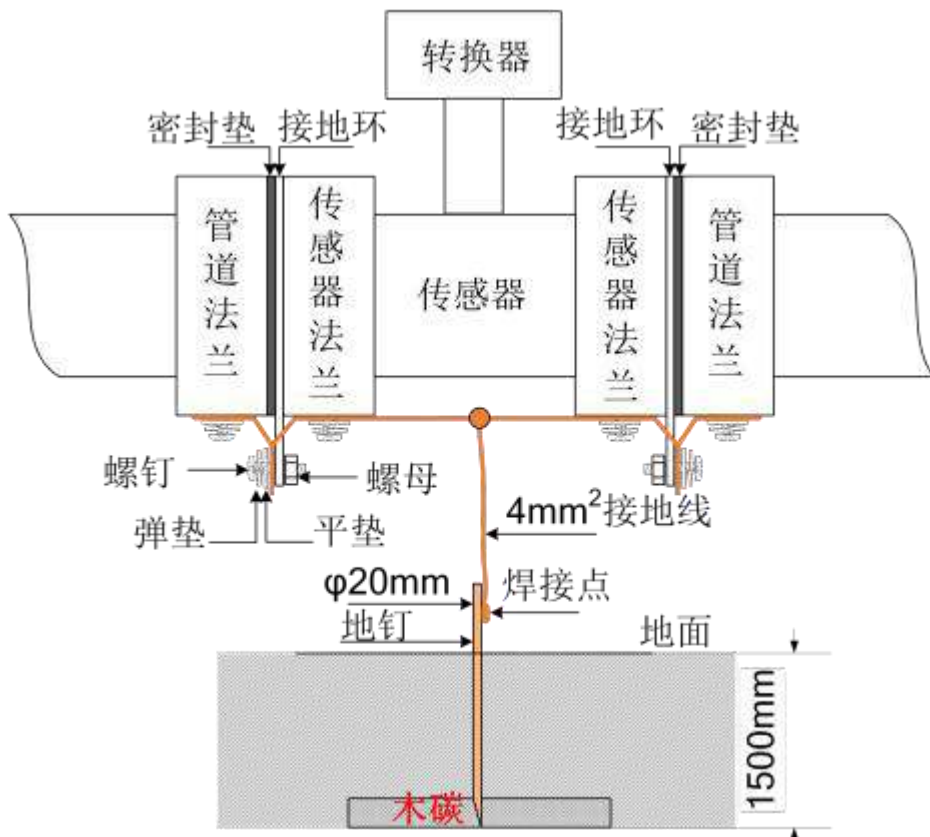
Split type battery powered converter suitable for submersible electromagnetic converter, electromagnetic converter sensor Downhole, while battery powered converters are installed uphole, thanks to a special design, sensors and The connecting cable between the converters can reach 10 meters, and the flow measurement accuracy is not affected.

### 6.3 Converter installation grounding requirements

First, put the  $\Phi 20$  copper tube, Cut to 1700mm long (can be lengthened as needed) Make ground nails buried 1500mm (note meaning: When burying nails, Sprinkle a layer of crushed charcoal on the tip of the ground nail, water again);

Next, solder the  $4\text{mm}^2$  red copper wire to the ground nail, and finally connect the ground wire to the sensor flange, grounding ring, pipe flange superior, See Figure 6.3.

Notice: Stainless steel materials are required for fixing ground screws, spring washers, and flat washers.



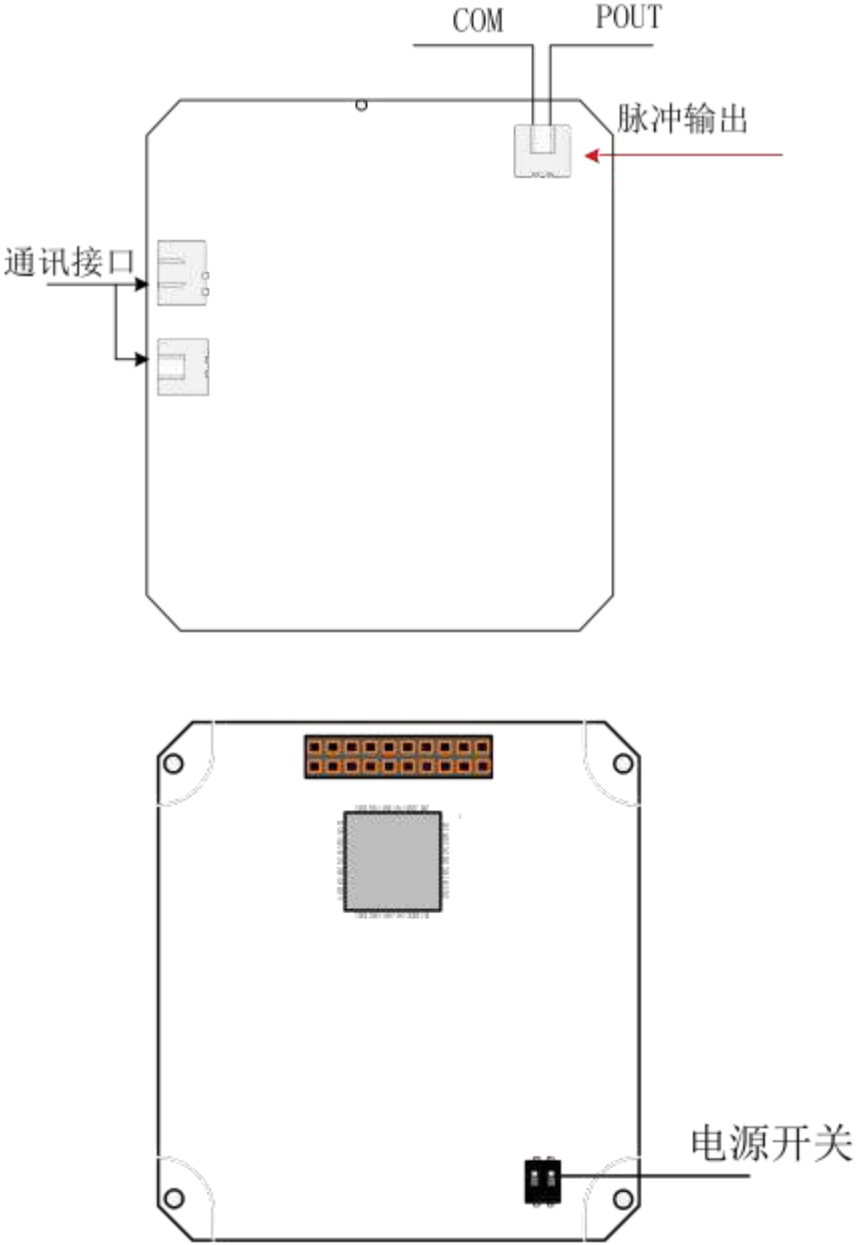
picture6.3 Converter Grounding Diagram

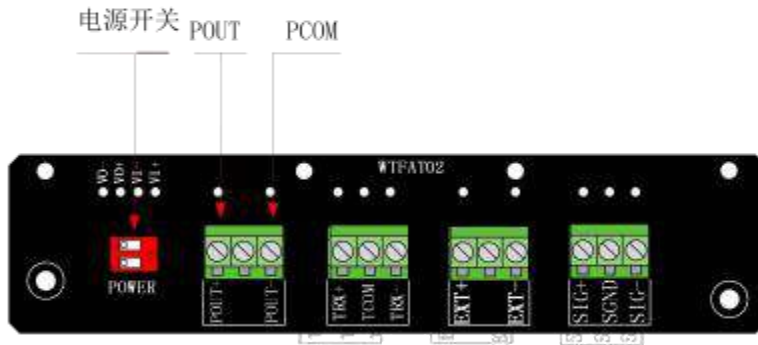
## 7 Flow verification

### 7.1 Pulse output signal line

For flow verification needs, L-magW801 It is designed with a pulse output signal, which outputs a unit volume pulse. The pulse interface is open-collector output (OC gate)

The measurement circuit of the meter is not electrically isolated, the maximum withstand voltage is 30V, and the withstand current is 20mA . The pulse output signal only works in the flow verification mode, and the pulse output signal in the measurement mode is closed. The wiring diagram of the instrument is as follows:





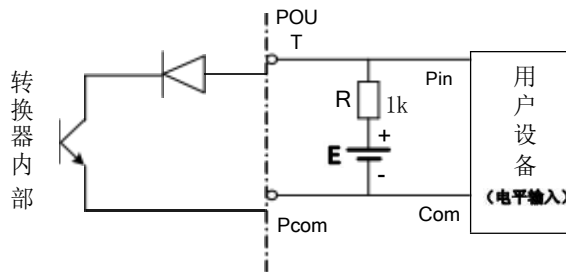
picture Square wiring diagram

POUT--- output

COM---- ground wire

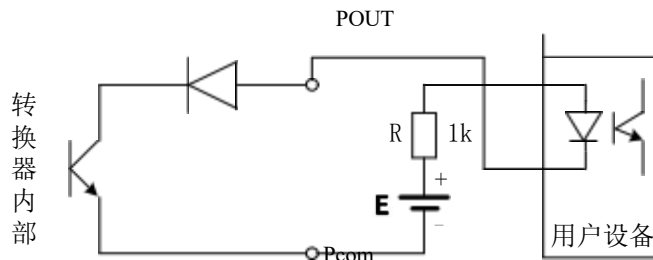
## 7.2 The connection between pulse output and calibration system

### 7.2.1 Digital level output connection



picture Digital level output connection

### 7.2.2 The digital output is connected to a photocoupler (such as PLC Wait)



PLC Wait) picture The digital output is connected to a photocoupler (such as

### 7.3 Pulse output parameter setting

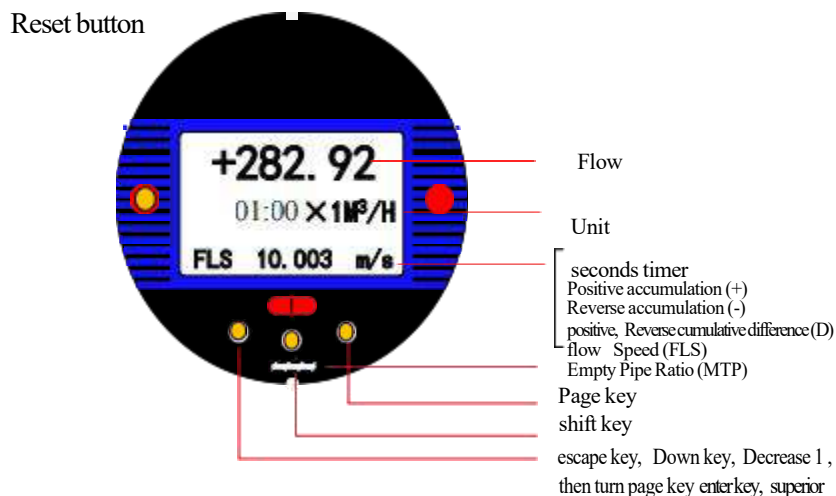
▲ The maximum test pulse output rate is 400HZ , the pulse width is not adjustable, when the instrument is checked, use the pulse Pulse output equivalent to set the pulse output rate (please refer to the appendix for the setting of pulse equivalent3 ).

For example: DN200 flowmeter, in 10m/s At the flow rate, the flow rate is 314.16L/S , pulse can be set Equivalent to 1L , the output per second 314.16 pulse.

▲ The pulse output speed should not be selected too high to avoid approaching the upper limit of the output speed, causing the output pulse Loss of punch will affect the calibration accuracy of the instrument.

▲ In order to avoid the counting synchronization error between the calibration system and the instrument under test, L-magW801 Battery Powered converters require **more than 4 minutes for each calibration count** .

### 7.4 Enter meter verification mode



## Keyboard Definition and LCD Display

Refer to the diagram of the instrument display board, keep pressing the left enter button and then press the reset button, the instrument will enter the verification mode, the pulse output of the instrument is enabled, if you want to enter the measurement mode in the verification mode, press a Press the system reset button.

After entering the meter verification mode, it can maintain 3 hours, then the meter automatically exits the verification mode, Go to measurement mode.

instruction: Press the right shift key, the meter enters the version number display screen, then press the shift key

bit key, The instrument enters into the function selection screen " parameter setting " , and then press the shift key to move the cursor to " Enter ". "Enter key " , press the " Enter key " to enter the state of entering the password "00000" , enter the password, and then press Position key to move the cursor to the " enter key " , press the " enter key " to enter the selection operation menu to parameterize set up. If you want to return to running state, move the cursor to Under " Escape Key " , Press the " escape button " That's it.

**Note: After the meter is powered on normally, to enter measurement mode, this second timer 15 Seconds are incremented once. Measurement volume mode 15 It is checked once every second. If you need to enter the verification mode , keep pressing the left enter key (not release) and then press the reset button, The meter enters the verification mode.**

## 8 Instrument parameter setting

L-magW801 Battery powered converters are designed with 39 parameters, divided into: flow measurement, flow Volume correction, status alarm, total accumulation, network communication, instrument adjustment and verification six categories, converter parameters The numbers are defined as follows:

### 8.1 parameter menu

## W801 Parameter setting menu list

parameter Numbering	parameter literal	How to set	parameter range	password level
1	language	choose	Chinese English	1
2	Instrument communication address	choose	0 to 99	1
3	Communication time interval	set number	0 to 59999S	1
4	Measuring pipe diameter	choose	3 to 800	1
5	flow quantity one bit	choose	m <sup>3</sup> /h, m <sup>3</sup> /m, m <sup>3</sup> /s	1
6	Meter range setting	set number	0 to 59999	1

7	flow direction option	choose	Forward Reverse	1
8	Flow Zero Correction	set number	0 to ±9999	1
9	small signal cutoff point	set number	rate Cut off settings by flow	1
10	Measuring damping time	choose	4 to 30S	1
11	Flow Accumulation Unit	choose	0.001 to 1 m <sup>3</sup> , 0.001 to 1 L	1
12	Reverse flow measurement	choose	allow, prohibit	1
13	Pulse unit equivalent	choose	0 L ~ 59.999 m <sup>3</sup>	1
14	Pulse Width	choose	0 to 98ms	1
15	Empty pipe alarm threshold	set number	0 to 59999	1
16	Sensor coefficient value	set number	0.0000 to 2.9999	1
17	Excitation mode selection	choose	TYPE1 to TYPE8	1
18	Sensor code value	set number	00000 ~ 59999	1
19	Traffic correction allowed	choose	allow, prohibit	1
20	Flow correction point 1	set number	Set by flow	1
twenty one	Flow correction number 1	set number	0.0000 to 1.9999	1
twenty two	Flow correction point2	set number	Set by flow	1
twenty three	Flow correction number2	set number	0.0000 to 1.9999	1
twenty four	Flow correction point3	set number	Set by flow	1
25	Flow correction number3	set number	0.0000 to 1.9999	1
26	Flow correction point4	set number	Set by flow	1
27	Flow correction number4	set number	0.0000 to 1.9999	1
28	Positive total low	set number	00000 ~ 99999	1
29	Positive total high	set number	0000 ~ 9999	1
30	Reverse total low	set number	00000 ~ 99999	1
31	Reverse total high	set number	0000 ~ 9999	1
32	Interval measurement mode	choose	TYPE1/TYPE2	1





33	Interval measurement time	choose	3 to 30S	1
34	Traffic frequency measurement threshold	set number	Set by flow rate	1
35	Factory calibration factor	set number	0.0000 to 1.9999	1
36	Factory Correction Factor	set number	0.0000 to 1.9999	1
37	Meter sleep password	set number	0000 ~ 59999	1
38	Parameter setting password	set number	0000 ~ 59999	2
39	Total reset password	set number	0000 ~ 59999	2

## 8.2 Detailed parameter description of the instrument

### 8.2.1 language

L-magW801 The electromagnetic converter has two languages, Chinese and English, and the user can choose the operation by himself.

### 8.2.2 Instrument communication address

Refers to the communication address of this watch during multi-machine communication. The optional range is: 01 ~ 99 address, 0 address Reserve

### 8. 2.3 Communication time interval

When the instrument communicates, it will send data to the communication terminal according to this time . The range **that** can be set: 01 ~ 59999S .

### 8. 2.4 Measuring pipe diameter

Type electromagnetic flowmeter converter supporting sensor diameter range: 3 ~ 800 mm.

### 8. 2.5 flow unit

The meter flow display unit is  $m^3/h$ . Users cannot select other flow display units.

### 8.2.6 Meter range setting

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

### 8. 2.7 flow direction option

If the fluid direction indication is inconsistent with the actual, the user does not need to change the excitation line or signal line connection, And use the flow direction to set the parameters to adjust.

### 8. 2.8 small signal cutoff point

The small signal cutoff point setting is expressed in terms of flow rate. When the small signal is removed, At the same time cut off the flow, Accumulator, pulse output.

### 8.2.9 Measuring damping time

Long measurement filter time can improve the stability of flow display and output signal of the instrument, suitable for Pulse flow measurement accumulated on the total. Short measurement filter time is manifested as fast measurement response speed, Suitable for production process control. The setting of the measurement filter time adopts the selection method ( the filter time is only fixed mode works ).

### 8. 2.10 Flow Accumulation Unit

L-magW801 for 9 Bit total counter, the maximum allowed count value is 999999999 Flow accumulation unit:

0.001L ,	0.010L ,	0.100L ,	1.000L
0.001m <sup>3</sup> ,	0.010m <sup>3</sup> ,	0.100m <sup>3</sup> ,	1.000m <sup>3</sup>

### 8.2.11 Pulse unit

equivalent Output  
pulse unit:

0.001L~59.999L

0.001m<sup>3</sup>~59.999m<sup>3</sup>

Under the same flow rate, the pulse equivalent is small, the frequency of the output pulse is high, and the accumulated flow error is small. pulse The unit of the equivalent of the flushing unit is the same as the unit of flow accumulation, and the instrument is automatically set.

### 8.2.12 Pulse Width

Pulse output is active low, pulse width: 1mS

In the measurement state, the pulse equivalent (unit) with cumulative flow (units) consistent, pulse width for 1S , the maximum rate of pulse output is per unit measurement time (interval measurement time) output a pulse rush. For example: The interval measurement time in measurement mode is 3S , the maximum rate of pulse output is 1200P/h . When the pulse width is set to 00ms When the instrument is measuring, the pulse output function is closed.

### 8.2.13 Empty pipe alarm threshold

L-magW801 Measure the resistance between the two electrodes of the sensor to determine whether the tube is empty, in measurement state

When the fluid is full, observe the measured resistance value ( MTP ) of full and then take the 1.5 to 2 times to set the empty pipe alarm threshold. When the fluid is empty, The resistance between the electrodes increases and exceeds the threshold, touching the Empty pipe alarm.

### 8.2.14 Flow Zero Correction

During zero point correction, make sure that the sensor tube is filled with fluid and the fluid is in a static state. zero flow Points are expressed in terms of flow velocity in mm/s.

The converter flow zero correction is displayed as follows:

FS = ○ ○ ○ ○ ○
± ○ ○ ○ ○ ○

The upper small print shows: FS Represents the zero measurement value of the instrument;

The lower large characters display: the zero point correction value of the flow rate;

when FS When the display is not "0" , the correction value should be adjusted to make FS = 0 . Notice: If the downward correction value is changed, FS If the value increases, it is necessary to change the positive and negative signs of the descending value, so that FS can be corrected to zero.

The correction value of the flow zero point is the matching constant value of the sensor, which should be recorded in the record sheet and transmission of the sensor. Sensor sign. When recorded, the sensor zero value is the flow velocity value in mm/s , and its symbol is the same as the correction value. Positive values have the opposite sign.

#### **8.2.15 Total reset password**

The user can set the total reset password by using the advanced password. Then enter the function selection menu, Press the page key to enter the total reset menu and enter the password to complete the total reset.

#### **8.2.16 Sensor coefficient value**

Sensor factor: That is, the calibration coefficient of the electromagnetic flowmeter. The coefficient is obtained from the real standard and is stamped onto the sensor plate. The user must place this factor in the type converter parameter table.

#### **8. 2.17 Positive and negative total high and low**

This parameter is used to set the cumulative total, which is mainly used for electromagnetic converter maintenance and replacement.

#### **8. 2.18 Factory calibration factor.**

This coefficient is a special coefficient of the converter manufacturer, which is used to measure the circuit system of the electromagnetic converter. normalized to ensure that all L-magW801 Interchangeability between converters 0.1% .

#### **8.2.19 Excitation mode selection**

L-magW801 The electromagnetic converter offers eight excitation frequency options: which is 1/6 Power frequency (mode 1 ) , 1/7 Power frequency (mode2 ) , 1/8

Power frequency (mode3 ), 1/10 Power frequency (mode4 ), 1/12 Power frequency (square Mode5 ), 1/14 Power frequency (mode6 ), 1/16 Power frequency (mode7 ), 1/20 Power frequency (mode8 ) Small mouth The inductance of the sensor excitation system of the diameter is small, it should be selected 1/6 power frequency. Large diameter sensor excitation system The inductance is large, the user can only choose 1/7 power frequency or 1/20 between power frequencies. In use, first select the excitation method 1 , if the zero point of the instrument flow rate is too high or the display SYS, and then select the method in turn2 to the way8 . Note: where To calibrate under one excitation mode, it must work under which excitation mode.

### **8.2.20 Interval measurement mode**

The meter provides two measurement modes, mode 1 When the meter is in the measurement mode, the user-set The Interval Measurement Time value makes intermittent measurements. model2 When the meter is in measurement mode, if the flow rate If it is stable, the intermittent measurement will be performed according to the "interval measurement time" value set by the user. If the flow rate is detected After the fluctuation value is higher than the value set by the "flow frequency measurement threshold" parameter, press2S a test until Only after the flow rate fluctuation is less than the "flow frequency measurement threshold" can intermittent measurement be performed according to the "interval measurement time" value. **8.2.21 Interval measurement time**

Detection cycle in meter measurement mode.

### **8.2.22 Traffic frequency measurement threshold**

Meter measurement mode2 The amount of flow velocity fluctuation at the time (see the interval measurement mode item for details).

In the interval measurement mode, in order to quickly track and measure the rapidly changing flow, the meter judges the flow rate change. When the speed change is greater than the flow frequency measurement threshold, the meter starts the fast tracking measurement, which is measured every two seconds.

Measurement8 After that, return to normal interval measurement mode.

## **9 Instrument alarm display**

The meter has four warning displays, **SYS** for system alerts, **MTP** For empty traffic warning, **CUT** for small signal cut off warning, **BAK** Indicates a low battery pack warning.

Appear **SYS** There are two possibilities for warning, Converter excitation disconnection or converter excitation frequency mode selection Choose inappropriate. Low battery pack warning appears **BAK** After the battery pack can still maintain operation 100 hours, but the measurement accuracy drops. The user should replace the battery in time.