Kind Reminder:

Please read the user manual carefully before installation and debugging!

Caution:

If the controller is exposed to direct sunlight, its surface temperature may exceed the specified operating range, potentially reducing display visibility.

Recommendation: In environments with strong sunlight, use a sunshade or avoid direct exposure to prevent display degradation and extend the instrument's service life.

Zhejiang Lefoo Sensing Technology Co., Ltd.
Address: No. 118, Changda Road, Donghu Subdistrict, Linping District, Hangzhou, Zhejiang 311100, China
Tel: +86-571-89363666
Fax: +86-571-89363678
Email: cnsale@lefoo.com
Website: www.lefoo.cn

LEFOO

Ultrasonic Level Meter

User Manual

5、Common installation instructions for ultrasonic level gauges

Ⅰ、The distance between the highest liquid level in the pool and the probe face of the meter is greater than the dead zone of the selected meter

It is recommended to use an L-shaped bracket

Installation method

Ⅱ、The distance between the highest liquid level in the pool and the probe surface of the meter is less than the blind area of the selected meter

It is recommended to use a Z-shaped bracket

Installation method

Ⅲ、The correct installation of the ultrasonic level gauge in the tank is shown in **Figure 1**, and the wrong installation is shown in **Figure 2**.

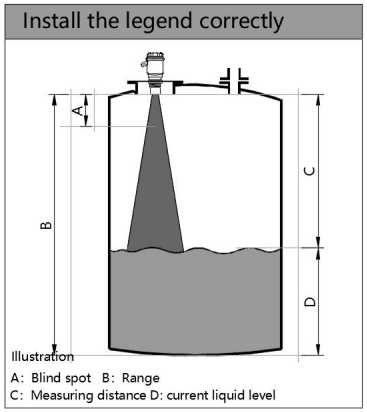


Figure1

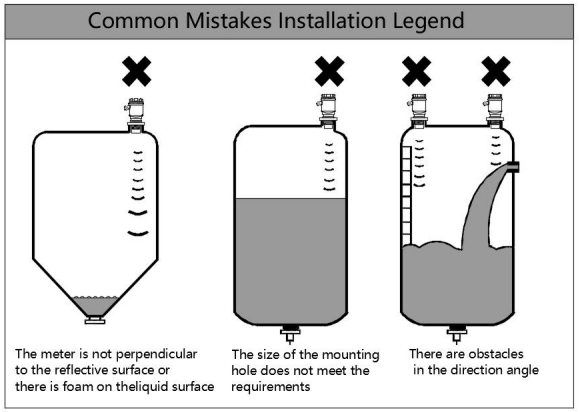


Figure 2

Table of contents

1、Overview

Sincerely thank you for purchasing our company's ultrasonic liquid level gauge!

This instrument contains a number of software patent technologies, which are safe, clean, high precision, long life, stable and reliable, easy to install Easy maintenance and other features, suitable for acid, alkali, salt, anti-corrosion,high temperature and other fields.The instrument can be connected to the display meter orIn various systems, it provides real-time liquid level data for industrial automation.The implementation standard of this instrument: GBT11828.4-2011, verification regulations: JJG971-2002. This instrument has the following characteristics:

- The circuit design selects high-quality power modules from the power supply part, selects high-end brand components, and has high and stable performance reliable, able to resist various interference waves, and can completely replace the same type of imported instruments from abroad.
- onic's intelligent technology software can perform intelligent echo analysis without any debugging and other special steps. It has the functions of dynamic thinking and dynamic analysis.
- This instrument is a non-contact instrument, not in direct contact with liquid, so the failure rate is low. The meter offers a variety of mounting In this way, the user can completely calibrate the instrument through this manual.
- All input and output lines of the instrument have protection functions against lightning and short circuit。

2. Technical indicators

Measuring range: (0 ~ 30) m (selected according to the actual measurement range)

Blind zone: 0.3m-0.8m

Distance measurement accuracy: ±0.5% (full scale under standard conditions)

Ranging resolution: 1mm

Pressure: normal pressure

Instrument Display: Built-in LCD display liquid level (the distance between the bottom of the pool or the bottom of the tank and the surface of water and other media)And the empty height value (the distance between the probe surface of the instrument and the surface of water and other media)

Analog output: (4～20)mA/510Ω

Power supply voltage: DC (18-28) V

Ambient temperature: -20° C ~ +60° C

Protection class: IP65

Meter Power: <1W

Menu 2 communication settings (operation menu for on-site installation and commissioning personnel) (Figure 1）

1. Rs485: The communication address defaults to 01, the communication rate defaults to 9600, and the parity check defaults to no check. It is convenient to receive logs

It is used by on-site engineers during debugging (the function of four-wire instrument).

2. Current output setting (4-20)mA:

(4-20)mA setting: 4mA generally corresponds to the zero position of the liquid (material) level, and 20mA corresponds to the highest position of the liquid (material) level.

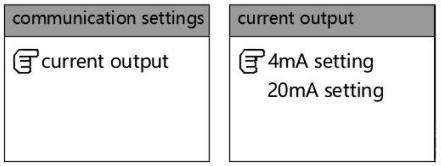


Figure 1

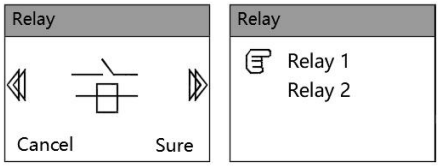


Figure 2

Menu 3 Relay settings: the default is off! (The on-site installation and commissioning personnel operate the menu, the function of the four-wire instrument)

The function of relay 1 and relay 2 is that when the water level (liquid level) in the on-site pool rises or falls to a certain level, the instrument can control the water pump in the pool to start or stop by pulling in or disconnecting the relay. Ⅰ. If the depth of the pool is 6 meters, drain water when the water level reaches 4 meters, and stop when the water level reaches 1 meter! The settings are as follows: Upper limit (represents high liquid level)

Set it to 4 meters, set the lower limit (representing low liquid level) to 1 meter, action logic: open → close, control mode: double limit alarm; Ⅱ. Water enters when the water level reaches 1 meter, and stops when the water level reaches 4 meters! The settings are as follows: Upper limit (represents high liquid level)

Set it to 4 meters, set the lower limit (representing low liquid level) to 1 meter, action logic: close→open, control mode: double limit alarm;

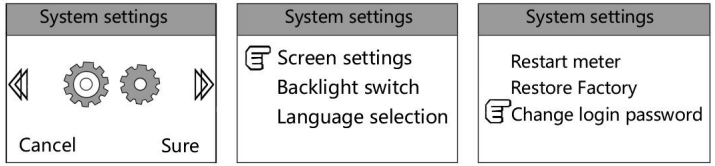
Menu 4 record query function is to record the power-on time of the meter

Men5 system settings

1. Set the brightness and contrast of the screen; 2. Set the backlight time of the screen

3. Choose Chinese or English; 4 and 5. Restart the instrument and restore factory settings

6. You can set the login password to enter the menu by yourself (modification is risky! If you must modify it, please remember the password!)



Menu six advanced functions (dedicated menu for engineer debugging, do not enter!)

4、Instrument debugging

4.1 keyboard description (Figure 1)

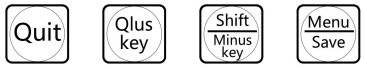


Figure 1

Menu\Save key: When the instrument needs to be set, press this key to enter the menu, after changing the instrument parameters, press the save key.

Plus key: scroll up the menu key or the plus key to change the size of the number.

Shift\minus key: When changing the data of different digits, press this key to shift, or scroll down to use the menu key.Escape key: After completing the required menu settings, press the Escape key to return to the main interface of the instrument.

4.2 Menu Settings

Ⅰ、Enter the menu steps:

After pressing the menu key, **** will appear on the left , The first * is flashing, press the plus key to change to 1***,

Press the menu key again to enter the menu .**(Figure 2）**

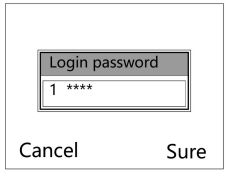


Figure 2

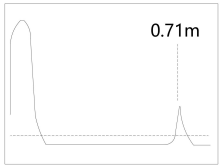


Figure 3

Ⅱ. Echo mode:

When the meter is in the mode of displaying liquid level and empty height, press the shift key, and the current measurement status will appear

The following echo curve is shown in Figure 2. Press the plus key to return to the liquid level and empty height mode. **(Figure 3）**

Menu 1: Installation settings (operation menu for on-site installation and commissioning personnel) **(Figure 4）**

1. Installation height: the position when the on-site water level and other media are zero (generally
2. refers to the bottom of the pool or the bottom of the tank, etc.) to the probe surface of the instrument the vertical distance between;
2. Distance unit: m (meter), cm (centimeter), mm (millimeter) and in (inch), which can be set by users according to their needs;
3. Damping setting: automatic filtering and damping time (generally automatic filtering is enough, it is not recommended to turn off automatic filtering);
4. Transmission period: 100ms-999ms, the default is 500ms, the shorter the time, the faster the transmission speed;
5. Blind zone adjustment: the default is 45cm. If you need to modify it, it is recommended to operate it under the guidance of an engineer.

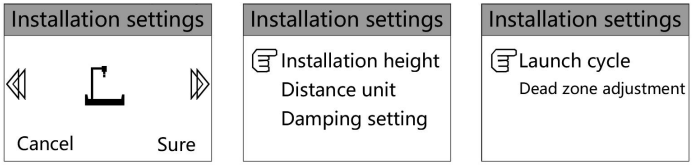
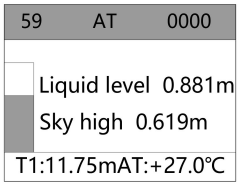
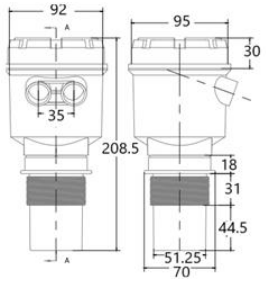


Figure 4

3、Instrument installation

3.1LCD display and dimensions of the meter





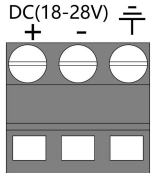
Unit：mm

Liquid level: the distance from the bottom of the pool or tank to the water surface

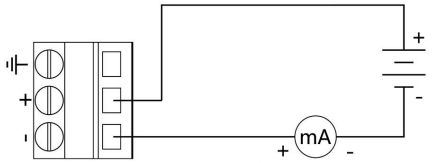
Empty height: the distance between the probe surface of the meter and the water surface

Installation method: In an open environment, the bracket installation method is generally used (the bracket should be installed horizontally), and a round hole with a diameter of 60mm is opened on the bracket, and the instrument probe is put in, and then the instrument comes with a nut, from bottom to top Tighten; the tank body at normal temperature and pressure is generally installed with a flange, and a round hole with a diameter of 60mm or a G2 thread is opened in the middle of the blind plate (keep the horizontal state when installing the blind plate) to fix the ultrasonic liquid level gauge.

3.2 The instrument terminal is as shown in the figure below



Instrument terminal



Ammeter, digital display or PLC

Wiring Diagrams for Field Devices and Instruments

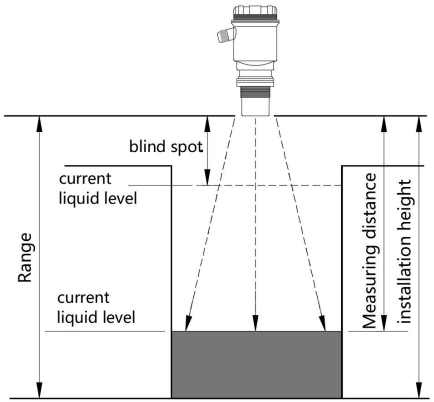
The wiring of the two-wire ultrasonic liquid level gauge is as follows：

a. The working voltage range of the instrument: DC (18-28) V;

b. The grounding mark on the terminal of the instrument needs to be well connected to the ground on site;

c. The output is loop (4-20) mA;

3.3 Meaning of installation parameters



As shown in the figure, the measurement method of the instrument: start timing from the sending sound wave pulse of the instrument to the reflection of the receiving medium surface Until the return pulse, multiply the half of this time by the speed of sound, which is the measured distance, (installation height - measured distance= current level);

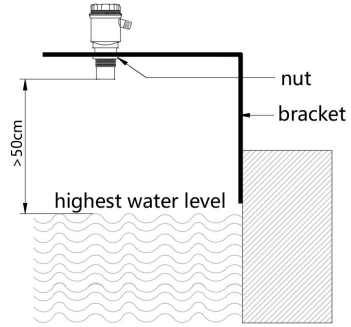
Ⅰ. The installation height should be less than the measuring range;

Ⅱ. The blind area of the instrument refers to the area where the instrument cannot measure near the probe. The distance between the highest liquid level on site and the probe should be greater than the dead zone;

Ⅲ. The wave sent by the probe is trumpet-shaped, that is, it has a direction angle. When installing, try to choose an open space. The lower part of the instrument is empty. There should be no other obstacles in between, and the lower part of the meter should avoid places where the liquid level fluctuates violently, such as the inlet and outlet.

3.4 Precautions for instrument installation

1) The distance from the probe emitting surface to the highest liquid level should be greater than the blind area of the purchased instrumen



2）If the liquid level in the pool or tank fluctuates violently and it is inconvenient to install a seeding tube, please purchase a range that is the pool height or an ultrasonic liquid level gauge that is 2.5 times the height of the filling.

3) If the distance from the probe emitting surface to the highest liquid level is smaller than the blind area of the purchased instrument, an extension tube is required, and the diameter of the extension tube is ≧150mm, length 0.2m-0.5m, vertical installation, smooth inner wall, the hole on the tank body should be larger than the inner diameter of the extension pipe. (**Figure 1)**

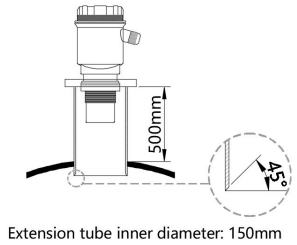


Figure 1

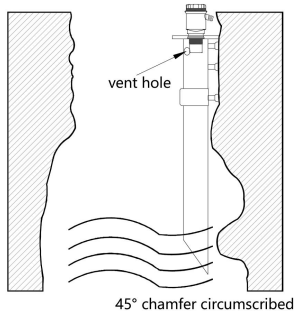


Figure2

4) If the wall of the pool or tank is uneven, there are other obstacles, the water surface fluctuates violently, and there are foams or other impurities on the water surface, the meter needs to follow the guide pipe, or connect the pipe to the bottom of the pool or tank, with a pipe diameter ≧ 110mm, Leave a gap at the bottom of the pipe so that the liquid level in the extension pipe is equal to the liquid level in the pool or tank. On the extension pipe, near the probe, open a few small holes so that the air in the pipe can communicate with the outside of the pipe! (**Figure 2)**

5) For flange installation on tanks at normal temperature and pressure, the probe surface of the instrument is best exposed in the tank, as shown in **Figure3**; if it is not possible in the field environment, the diameter of the pipe fixing the flange is shown in **Figure 4** and **Figure 5**, and the length h is between 100mm-300mm The larger the h value, the larger the corresponding d value.

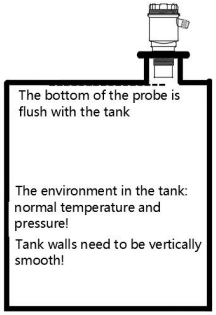


Figure 3

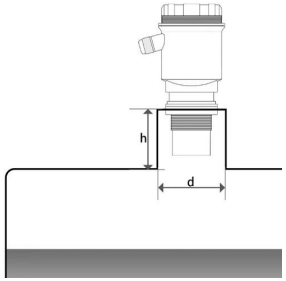
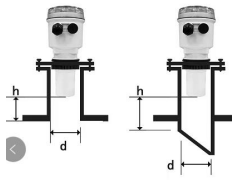


Figure 4



d	h
80mm	100mm
100mm	150mm
150mm	200mm
200mm	250mm
250mm	300mm

Figure 5

6) When the instrument is used in a particularly hot or cold place, that is, when the ambient temperature may exceed the working requirements of the instrument, it is recommended to Add anti-high and low temperature devices around the liquid level gauge.