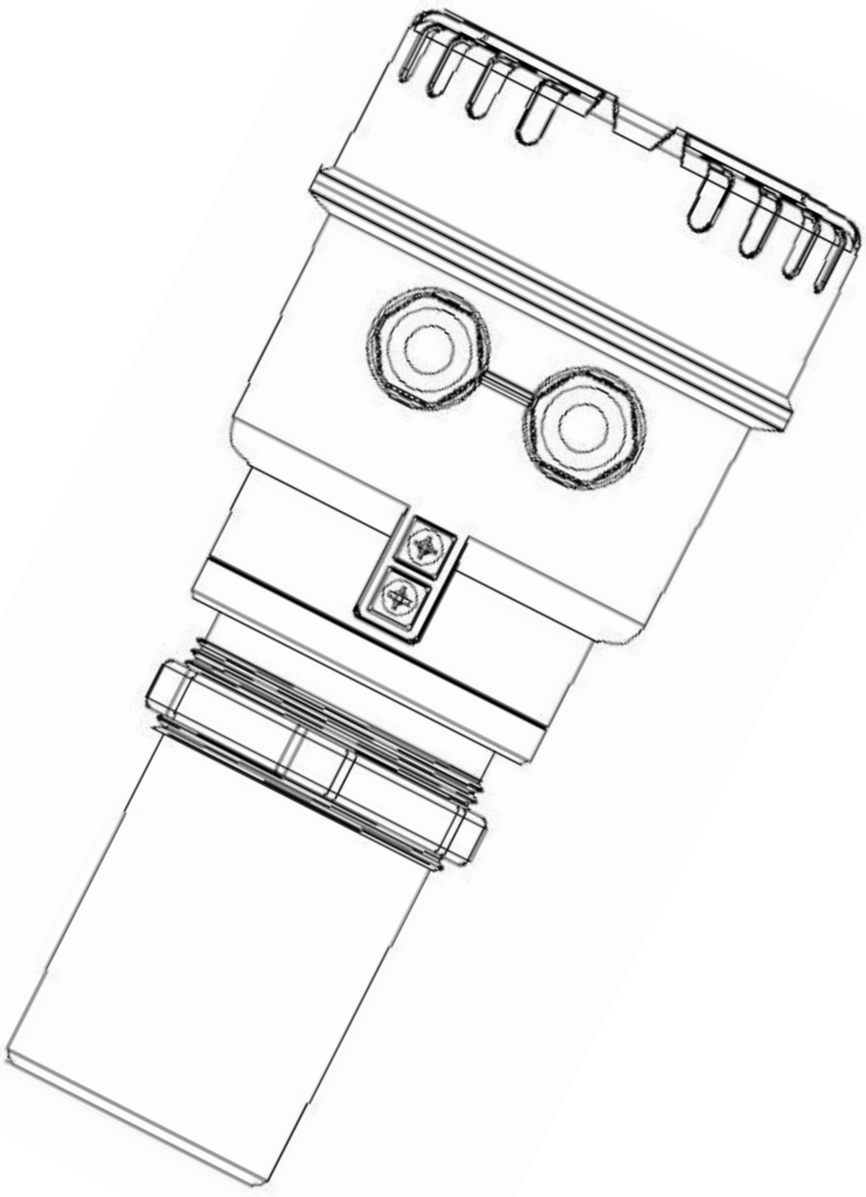
sisco

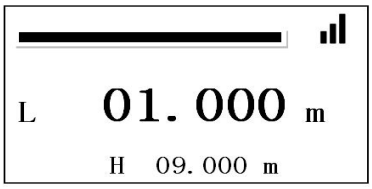
Ultrasonic Water Level Meter
User Manual



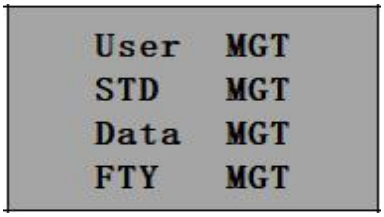
Dear customers, when commissioning this instrument, you only need to follow the steps below:

Instrument Quick Calibration Steps

1) Power on the instrument. The instrument enters the measurement state, and the liquid level value is displayed on the LCD. As shown in the figure on the right, it indicates that the measured liquid level L is 1.000m and the distance H is 9.000m. The calibration method is introduced as follows:

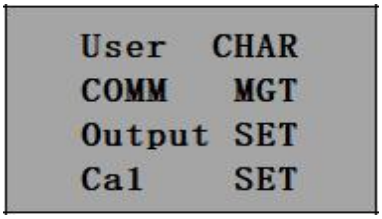


2) Press and hold the "↵" key for two seconds, and the instrument will enter the parameter setting menu. Then press the "↵" key to enter the menu. At this time, the cursor will be located at "User Management", as shown in the figure on the right.



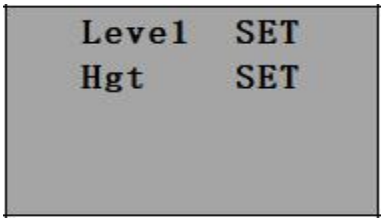
3) Press the "↵" key to enter the password interface, as shown in the figure on the right.

4) Press the "◆" key again to change the password to "1***". Then press the "↵" key to enter the user management menu, as shown in the figure on the right.

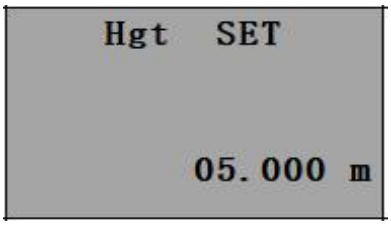


5) Use the "◆" key to move the cursor down to "Calibration Settings".
Then press the "↵" key to enter the calibration settings menu, as shown in the figure on the right.

6) Use the "◆" key to move the cursor down to "Height Settings".
Then press the "↵" key to enter the height settings menu.
This calibration value refers to the vertical distance from the probe surface of the ultrasonic level sensor to the bottom of the tank or pool,
which is the entire installation height. As shown in the figure on the right, if the vertical distance from the sensor probe surface to the bottom of the tank or pool is 10m, you can change the height setting value to 10.000m.



7) Finally, press the combined "↩" key to exit the settings and return to the measurement interface.



Note: The "Height Settings" and "Liquid Level Settings" functions are the same and related. Both are used for on - site liquid level calibration. You only need to select one of the two menus. (Generally, "Height Settings" is used.)
"Height Settings" is used to set the height from the transducer (probe emission surface) to the bottom of the measured tank or pool, which is also known as the installation height setting. "Liquid Level Settings" is used to set the actual liquid level height value in the current tank or pool. It is generally used when the installation height cannot be measured but the actual liquid level value can be obtained.

I. Overview

Thank you for purchasing our company's ultrasonic level gauge! This instrument is equipped with brand - new signal - processing technology. It features safety, cleanliness, high accuracy, long service life, stability, reliability, easy installation and maintenance, and simple reading. It is widely used in industries such as petroleum, chemical engineering, water treatment, water conservancy, steel, coal mining, power generation, and food processing, and is applicable to various fields including acid, alkali, salt, anti - corrosion, high - temperature, and explosion - proof environments. It can be connected to PLC systems of various brands or secondary control systems via 4 - 20mA or RS485 (Modbus protocol) to provide real - time liquid - level data for the automated operation of industries.

Features

Stable and Reliable**: In the circuit design, we select high - quality modules starting from the power supply part, and choose highly stable and reliable devices for the procurement of key components. The product undergoes multiple aging tests before leaving the factory.

Advanced Software Technology**: The acoustic wave intelligent technology software can perform intelligent echo analysis without any debugging or other special steps. It has the functions of dynamic thinking and dynamic analysis.

High Accuracy**: Our company's acoustic wave intelligent technology significantly improves the accuracy of the ultrasonic level gauge. The liquid - level accuracy reaches ±0.3%, and it has a strong anti - interference function on - site.

Low Failure Rate, Easy Installation, and Easy Maintenance**: This instrument is a non - contact type. Since it does not come into direct contact with the liquid, the failure rate is low. The instrument provides multiple installation methods and can be calibrated completely in accordance with this manual.

Multiple Protections**: The protection level of the instrument reaches IP65. The circuit part has isolation protection functions to prevent the entire instrument from being damaged by short - circuits, lightning strikes, etc.

Legal Disclaimer

This product has a one - year warranty period starting from the date of delivery of the initial purchase. However, this warranty applies only if there are defects in raw materials and manufacturing processes, and the product is operated under normal storage, use, and maintenance conditions in accordance with the instructions.

All products included in the products sold to the original purchaser that are not from our company are only covered by the warranties provided by specific suppliers (if any). Our company assumes no responsibility for such products.

This warranty is only provided to the original purchaser and is non - transferable. It does not apply to any products damaged due to misuse, negligence, accidents, or abnormal operating conditions. Consumables are not covered by this warranty.

If any defects are found in products within the scope of this warranty, they should not be used continuously to avoid further damage. The purchaser must immediately report any defects to our company; otherwise, this warranty will not be applicable.

If our company proves after inspection that the product has defects in materials or manufacturing, we reserve the right to decide to repair or replace any such defective products free of charge, provided that the product is returned to our company within the above - mentioned one - year period.

Our company has no obligation or liability for any defects other than those specified above.

This product is exempt from other express or implied warranties. Our company hereby waives the implied warranties of merchantability and fitness for a particular purpose.

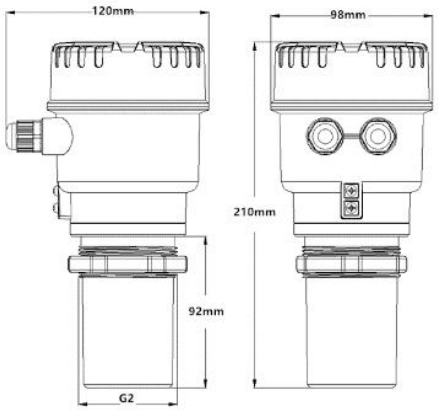
Our company is not liable for any direct, indirect, special, accidental, or consequential losses or damages based on contract, civil law, or any other legal theory.

II. Technical Specifications

Range: 0 - 15m (large ranges can be customized, blind zone: 0.35m - 0.5m); Distance Measurement Accuracy: 0.5%;
Power Supply Voltage: DC12V, DC24V/AC220V with built - in lightning protection device; Host Display: LCD display (resolution 1mm);
Analog Output: 4 - 20mA (optional 1 - 2 - way relay output); Sensor Pressure Resistance: <0.1MPa; IP65;
Digital Output: RS485 (Modbus) protocol; Ambient Temperature: - 40℃ - 80℃.

III. Instrument Installation

1. Instrument Dimensions (as shown in the figure)

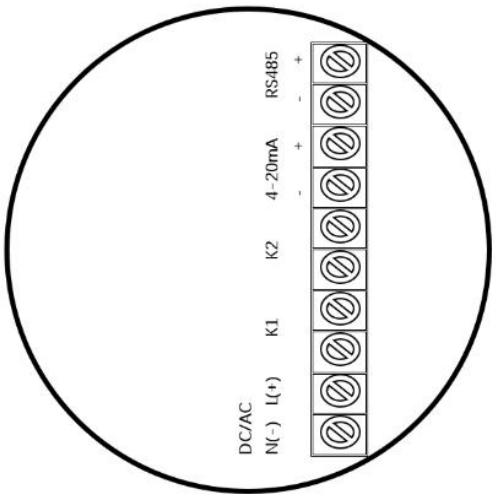


(Overall - type Outline Dimension Diagram)

3. Instrument installation principles:
A. The distance from the emitting surface of the transducer to the lowest liquid level should be less than the range of the selected instrument.
B. The distance from the emitting surface of the transducer to the highest liquid level should be greater than the blind zone of the selected instrument.
C. The emitting surface of the transducer should be parallel to the liquid surface.
D. The installation position of the transducer should avoid positions directly below the liquid inlet and outlet where the liquid surface fluctuates violently as much as possible.
E. If the pool wall or tank wall is not smooth, the instrument should be placed more than 0.5 m away from the pool wall or tank wall.
F. If the distance from the emitting surface of the transducer to the highest liquid level is less than the blind zone of the selected instrument, an extension tube needs to be installed. The extension tube should be perpendicular to the liquid surface, and its inner wall should be kept smooth.
4. Installation precautions:
A. The instrument housing should be reliably connected to the ground.
B. Attention should be paid to prevent excessive water accumulation in the wire and cable protection tubes.
C. Although the instrument itself is equipped with lightning - protection devices, in areas with frequent thunderstorms, special lightning - protection devices should be additionally installed at the incoming and outgoing wire ends of the instrument.
D. When the instrument is used in extremely hot or cold places, that is, when the ambient temperature may exceed or be lower than the normal operating temperature range of the instrument, high - and low - temperature protection devices should be installed on the instrument to prevent premature aging and ensure normal operation.

IV. Instrument Wiring

Unscrew the LCD display housing, and you can see the instrument's wiring board, as shown in the figure below:



(Integrated Wiring Panel)

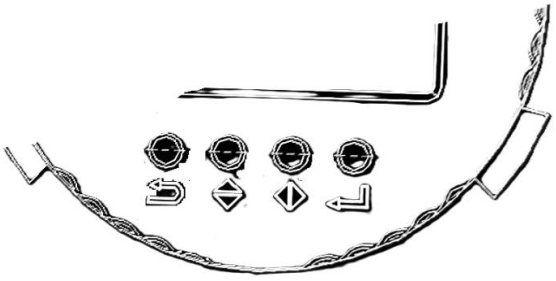
Explanation of terminal blocks:

Instructions	Terminal	Instructions	Terminal
Power	L（+）,N（-）DC/AC	Relay Output	K1,K2
RS485	RS485(+,-)	Analog Output	4-20mA(+,-)

Remarks: a. The instrument power supply can be either AC220V or DC24V, which is selected according to the user's requirements. For the DC24V power supply, please pay attention to the positive and negative poles.b. For the 4 - 20mA current output, the maximum load should be less than 500 ohms.c. The relay output is configured according to the user's requirements. (Not a standard configuration)e. For the RS485 protocol output, pay attention to the positive and negative poles when wiring.

V. Instrument Operation Instructions

1. Operation Panel (as shown in the right figure)



(Integrated Button Panel)

2. Instructions for the Instrument Setting Buttons:

Return/Exit Button. When setting the instrument, this button can be used to exit the current menu level and return to the previous menu level, or return to the main interface.

Digital Modification Button. When setting the instrument, this button can be used to modify the digital values of the instrument. (Note: The modification sequence cycles through the numbers from 0 to 9.)

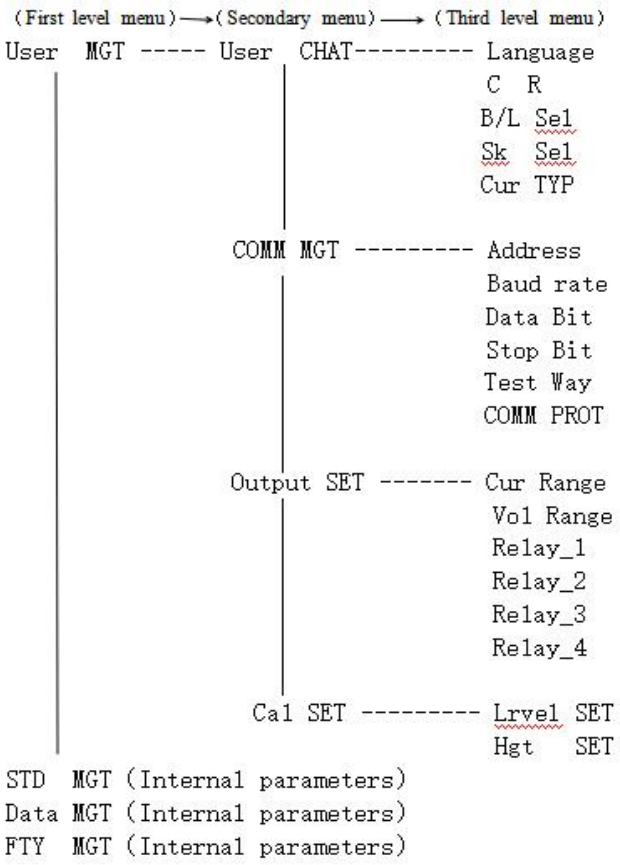
Cursor Movement Button. When setting the instrument, this button can be used to move the cursor in a cyclic manner.

Confirmation Button. When it is necessary to set the instrument, long press this button for 2 seconds to enter the instrument setting state. When entering the menu setting, press this button to confirm after modifying the menu parameters.

VI. Menu

1. Menu Framework

The instrument is divided into three levels of menus in total.Press the "◆" key to enter the next-level menu, and press the "↩" key to return to the previous-level menu. The structure is as shown in the right figure:



2. Menu Description

The "User Management" menu is used by users for instrument debugging and calibration. When entering the second-level menu, you need to enter the password "1***". The second-level menus are "User Preferences", "Communication Management", "Output Management", and "Calibration Settings". When entering the third-level menu, users can make changes according to the actual on-site working conditions and functional requirements:

Language: The instrument offers two language options: Chinese and English.

Contrast: The display contrast of the instrument can be adjusted, usually according to the on-site ambient brightness.

Backlight Selection: The instrument's backlight can be set to be always on or to light up when a button is pressed.

Skin Selection: The instrument has two display modes. You can choose to display the empty height (i.e., distance) or the elevation (i.e., the actual measured values of objects or liquid levels). The default setting at the factory is the elevation.

Current Type: The instrument provides two types of current output: 0 - 10mA and 4 - 20mA.

Address: It serves as the ID number for instrument communication.

Baud Rate: The instrument offers multiple baud rates for communication: 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 38400.

Data Bits: The instrument has data bit options of 5, 6, 7, and 8 bits.

Stop Bits: The instrument has stop bit options of 1, 1.5, and 2 bits.

Verification Method: The instrument provides verification methods including no verification, odd verification, even verification, flag bit, and blank bit.

Communication Protocol: The default protocol is MODBUS-RTU.

Current Range: It refers to the setting of the instrument's output range when the instrument provides current output. For example, when the instrument selects a 4 - 20mA current output, 4mA corresponds to a water level of 0 meters, and 20mA corresponds to the upper limit value of the instrument's output range.
Voltage Range: It is the setting of the instrument's output range when the instrument provides voltage output.
Relay 1 - Relay 4: The instrument can provide four - way relay output. The specific setting instructions are as follows:
Symbol Meanings: <: less - than symbol; >: greater - than symbol; &: and, indicating that both conditions need to be met; |: or, indicating that either of the two conditions is satisfied; N: only the previous condition, and the latter is not displayed; ∧: the previous condition is the relay - closing condition (generally used for starting the pump), and the latter condition is the relay - opening condition (generally used for stopping the pump), mainly used for the control of drainage wells and intake wells.
Examples:
a. If it is required that the relay closes when the liquid level is less than 1m: <01.00; if the "<" symbol is changed to the ">" symbol, it means the relay closes when the liquid level is greater than 1m.
b. If it is required that the relay closes when the liquid level is less than 1m or greater than 8m: <01.00|>08.00.
c. For a drainage well, when the water level rises to 8m, the pump needs to be started for drainage, and when the water is drained to 2m, the pump stops. The setting is as follows: >08.00∧<02.00.
d. When the water level drops to 1m, the pump needs to be started for water intake, and when the water level reaches 8m, the pump stops. The setting is as follows: <01.00∧>08.00.
The "Calibration Management" menu contains factory - internal parameters and is used for instrument detection. Generally, all internal parameters are set before the instrument leaves the factory, and there is no need to modify them without special working conditions.
The "Data Management" menu contains factory - internal parameters and is not required for on - site use.
The "Factory Management" menu contains factory - internal parameters, and on - site changes are invalid.

VII. Other Instructions

Equipment and Accessories Provided by the Manufacturer

Serial Number	Name of Equipment or Accessory	Unit	Quantity	Remarks
1	Converter and Sensor	set	1	
2	User Manual and Certificate of Conformity	copy	1	
5	Accessories	piece	Purchase	Flange or bracket (not standard)

Receipt of the Warranty Card for the Ultrasonic Level Meter

User Name			
Contact Address			
Contact Person		Contact Telephone Number	
Product Model		Product Serial Number	
Acceptance Date		Installation Person in Charge	

5. Warranty Policy:
Users are requested to present the warranty card during maintenance. In case of malfunctions that occur due to normal use within the warranty period, users can enjoy the specified free warranty services with the warranty card. Warranty Period: The warranty period for the products of our company is twelve months starting from the date of factory shipment, and lifelong maintenance is provided.
6. Situations Where the Product Manufacturer is Exempt from Liability:
The product or its components have exceeded the free warranty period.
Hardware malfunctions are caused by the use environment not meeting the requirements for product use.
Malfunctions or damages are caused by an improper power supply environment or foreign objects entering the equipment.
Malfunctions and losses are caused by failure to operate in accordance with the usage methods and precautions described in the operation manual.
Malfunctions and losses are caused by irresistible forces such as natural factors like lightning, floods, and fires.
Malfunctions or losses are caused by unauthorized disassembly for repair, modification beyond the authorized scope, or abuse.
7. Limitation Instructions:
Users are kindly requested to keep the warranty card properly as a warranty voucher. There will be no replacement in case of loss.
The right to interpret this warranty card belongs to our company. Our company reserves the right to modify the content of this card without prior notice.
Precautions
Do not shake or collide the equipment violently during use and transportation. Avoid oil stains and various chemical substances from contaminating and damaging the surface of the probe. During the transportation and storage of the instrument, the ambient temperature is not allowed to be lower than -40 °C or higher than +80 °C, the relative humidity should not exceed 85%, and there should be no corrosive gases or strong electromagnetic fields in the surrounding environment. The original packaging box must be used during transportation.