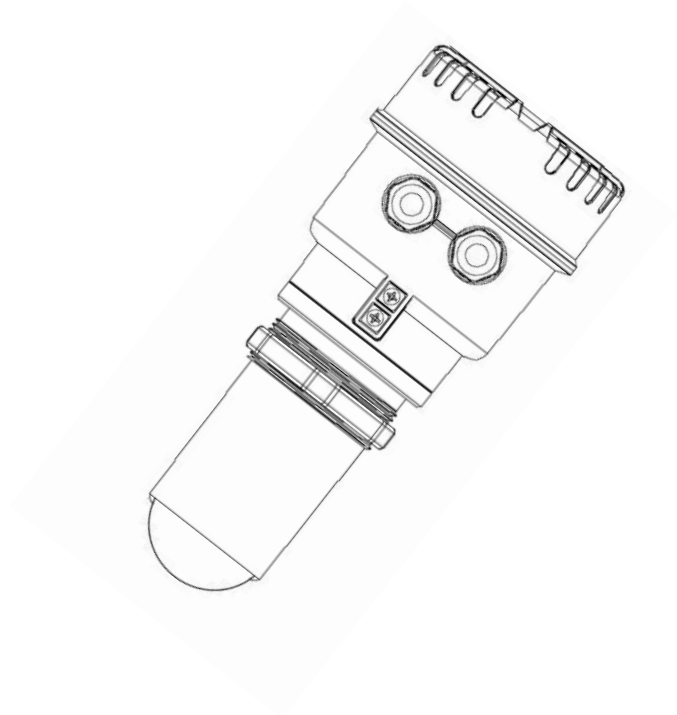


Four-wire radar level meter

Mandatory Manual



Directory

Gauge Rapid Calibration Procedure/P01

I. Overview/P02

Features/P02

Legal Disclaimer/P02

II. Technical Indicators/P03

III. Meter Installation/P03

1. Instrument dimensions/P03

2. Instrument installation principle/P03

3. Installation precautions/P03

IV. Instrument wiring/P04

V. Instrument Operating Instructions/P04

1. Instrument button/P04

2. Button description/P04

VI. Menu/P05

1. Menu Frame/P05

2. Menu Description/P05

VII. Other Notes/P06

1. Equipment and accessories provided by the manufacturer / P06

2. On-site installation requires conditions/P06

3. Radar Level Gauge Warranty Card Receipt /P07

4. Radar level gauge warranty card description/P07

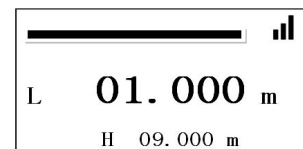
Notes/P07

Copyright/P07

Dear customers, when you debug this instrument, you only need the following steps:

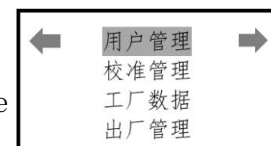
Quick calibration steps for gauges

1) The instrument is powered on, the instrument enters the measurement state, and the liquid level value is displayed by the liquid crystal.



As shown in the figure on the right, it means that the measured liquid level L is 1.000m, and the distance H is 9.000m, the following describes the calibration method:

2) Press the [OK] button for two seconds, and the meter can enter the parameter setting menu press [OK] to enter the menu, and the cursor is located in "User Management". As shown in the picture on the right:



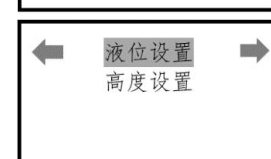
3) Press the [OK] button to enter the password interface. As shown in the picture on the right:



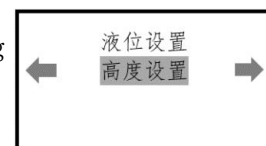
4) Then press the [▲] button to change the password to "1***", and press the [OK] key to enter after entering the user management menu, as shown in the figure on the right:



5) Press the ▼ key to move the cursor down to Calibration Settings press the [OK] button to enter the calibration setting menu, as shown in the figure on the right



6) Move the cursor down to "Height Setting" by pressing the [▼] key press the [OK] button to enter the altitude setting menu, and this calibration value is ultrasound



The wave level sensor probes the surface to the bottom of the tank or the bottom of the pool

The vertical distance value, i.e. the entire installation height value. As shown in the image on the right: namely

is the vertical distance from the sensor probe face to the bottom of the tank or the bottom of the pool

If the distance is 10m, you can change the height setting value to 10.000m.

7) Finally, press the combined [SET] button to exit the setting and return to the measurement interface.

Note: The "Height Setting" and "Level Setting" functions are the same and related, both are used for on-site calibration of the liquid level, and only one of the two menus needs

to be selected. (Usually the "height setting").
"Height Setting" is used to set the height of the transducer (probe emitting surface) to the bottom of the tank or pool being measured, also known as the installation height setting; Level Settings sets the actual level height value in the current tank or basin. It is generally used when the installation height cannot be measured, but the actual liquid level value can be obtained.

— . overview

Thank you for purchasing our radar level gauge!

This instrument has a new signal processing technology, with safety, clean, high precision, long life, stable and reliable, easy installation and maintenance, simple reading and other characteristics, widely used in petroleum, chemical, water treatment, water conservancy, steel, coal mine, electric power and food processing and other industries, suitable for acid, alkali, salt, anti-corrosion, high temperature, explosion-proof and other fields. It can be connected with various brands of PLC systems or secondary control systems through 4~20mA or RS485 (Modbus protocol) to provide real-time liquid level data for industrial automation operation.

peculiarity

Stable and reliable: In the circuit design, we select high-quality modules and key components from the power supply part, and select highly stable and reliable devices, which can directly replace foreign imported instruments.

Software technology: Sonic intelligent technology software can carry out intelligent echo analysis, without any debugging and other special steps, with the function of dynamic thinking and dynamic analysis.

High precision: The acoustic intelligent technology owned by our company greatly improves the accuracy of the radar level gauge, and the liquid level accuracy reaches $\pm 0.3\%$, with strong on-site anti-interference function.

Low failure rate, easy to install and easy to maintain: This instrument is a non-contact instrument, which is not in direct contact with liquid, so the failure rate is low. The meter is available in a variety of mounting options and can be calibrated entirely via this manual.

A variety of protection: the protection level of the instrument reaches IP65; The circuit part has isolation protection function to prevent short circuit, lightning strike, etc. from damaging the whole set of instruments.

Legal Disclaimer

This product is warranted for one year from the date of delivery of the original purchase against defects in raw materials and production workmanship, provided that such products are operated under normal conditions of storage, use and repair and in accordance with the instructions.

All products not included in the products sold to the original purchaser that are not included in the Company include only the warranty, if any, provided by the specific supplier, and the Company shall not be liable for such products.

This warranty is provided only to the original purchaser and is not transferable. This warranty does not apply to any product that has been damaged due to misuse, neglect, accident, or abnormal operating conditions. Consumables are not covered by this warranty.

Any defects in the products covered by this warranty will not be allowed to continue to be used to prevent further damage. The purchaser must report any defect to the Company immediately or this warranty will not apply. If, after inspection, the Product is proved to be defective in material or manufacturing, the Company may, at its sole discretion, repair or replace any such defective Product free of charge, provided that the Product is returned to the Company within the period of one year as set out above.

The Company shall have no obligation or liability for any defects other than those listed above.

This product is exempt from all other warranties, express or implied. The Company hereby waives certain conditions

Implied warranties of merchantability and fitness for purpose.

The Company shall not be liable for any direct, indirect, special, incidental or consequential loss or damage based on contract, civil or any other legal theory.

Two. Technical Indicators

Range: 0-15m (large range can be customized, blind area: 0.35m~0.5m);
Ranging accuracy: 0.5%;

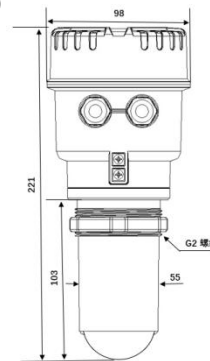
Power supply voltage: DC12V, DC24V/AC220V lightning protection device built-in; Host display: LCD display (resolution 1mm);

Analog output: 4~20mA (optional 1-2 relay output); Sensor withstand voltage: <0.1MPa; IP65;

Digital output: RS485 (Modbus) protocol; Ambient temperature: -40° C ~ 80° C;

III Meter installation

1. Instrument dimensions (as shown in the figure)



(One-piece exterior dimension)

3. Instrument installation principle:

A. The distance from the transmitting surface of the transducer to the lowest liquid level should be less than the range of the optional instrument.

B. The distance from the transmitting surface of the transducer to the highest liquid level should be greater than the blind area of the optional instrument.

C. The emitting surface of the transducer should be parallel to the surface of the liquid.

D. The installation position of the transducer should be avoided as far as possible from the position where the liquid level fluctuates violently, such as the inlet and outlet ports directly below.

E. If the pool wall or tank wall is not smooth, the instrument needs to be more than 0.5m away from the pool wall or tank wall.

F. If the distance from the emission surface of the transducer to the highest liquid level is less than the blind area of the optional instrument, an extension tube needs to be installed, and the extension tube should be perpendicular to the liquid level, and the inner wall should be kept smooth.

4. Precautions for installation

A. The instrument housing needs to be reliably connected to the ground.

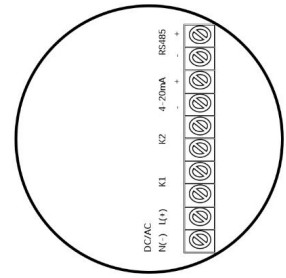
B. Wire and cable protection pipes, pay attention to prevent excessive water accumulation.

C. Although the instrument itself is equipped with lightning protection devices, when used in multi-lightning areas, a special lightning protection device is installed at the inlet and outlet ends of the instrument.

D. When the instrument is used in a particularly hot and cold place, that is, when the ambient temperature may exceed or be lower than the ambient temperature of the normal use of the instrument, it is necessary to add anti-high and low temperature devices to the instrument to prevent the instrument from aging in advance and affecting the normal use.

Four. Meter wiring

Unscrew the LCD shell to see the terminal block of the instrument, as shown in the following figure:



(Integrated terminal panel)

Binding Post Description:

illustrate	Terminal	illustrate	Terminal
Meter power supply	L (+) ,N (-) DC/AC	Relay output	K1,K2
RS485	RS485(+,-)	Analog output	4-20mA(+,-)

Remarks:
a. Instrument power supply:

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

五. Meter operating instructions

1. Instrument button: the main structure is as shown in the figure on the right:



2. Key description: During the use of the instrument, all operations are mainly operated by buttons. This includes the setting, debugging, calibration, etc. of the machine. The keyboard consists of 4 keys, and the keyboard is introduced as follows:

Meter setting button description:

Meter setting button description:

[SET] returns the exit button. When setting the meter, this key can exit the current level menu, return to the previous level menu, or return to the main interface.

【▲】 Numeric modifier key. When setting the meter, this key can modify the meter number. (Note: The modification order is 0~9 number cycle).

【▼】 Cursor move key. When setting up the gauge, the key cycles through the cursor.

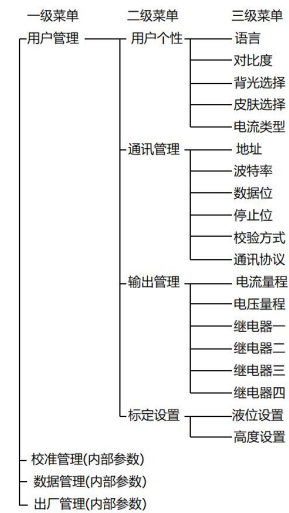
【OK】 Confirm key. When the meter needs to be set, press and hold the button for 2 seconds to enter the instrument setting state; When entering the menu settings, press this key to confirm after modifying the menu parameters.

Six. menu

1. Menu frame

The instrument is divided into three menus, Press the [▼] key to enter the subordinate menu, press **【SET】**

Return to the parent menu. Structures such as:
Right:



2. Menu description

The menu "User Management" is used by users when debugging and calibrating the instrument. When entering the secondary menu, you need to enter the password "1***", and the secondary menus are "User Personality", "Communication Management", "Output Management", and "Calibration Settings". Enter the three-level menu, and the user can change it according to the actual working conditions and functional requirements of the site

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

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

Backlight selection: The instrument backlight can be continuously lit or lit when there is a button operation.

Skin Selection: The meter has two display modes, which can choose to display the air height (i.e., distance) or elevation (i.e., actual objects, liquid level measurements), which is the default elevation when leaving the factory.

Current type: The meter provides two current output types, 0-10mA, 4-20 mA.

Address: The ID number used as the instrument communication.

Baud rate: The instrument provides a variety of baud rates, 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 38400, and data bits: the instrument data bits have 5 bits, 6 bits, 7 bits, and 8 bits.

Stop position: The stop position of the instrument has 1 digit, 1.5 digits, and 2 digits.

Calibration mode: The instrument provides calibration methods: no calibration, odd calibration, even calibration, flag bit, and blank bit.

Communication protocol: MODBUS-RTU protocol is used by default.

Current range: The setting of the output range of the meter when the meter provides current output. For example, when the current output of the instrument is 4-20mA, 4mA corresponds to the water level of 0 meters, and 20mA corresponds to the upper limit of the output range of the instrument.

Voltage range: The setting of the output range of the meter when the meter provides voltage output.

Relay 1 ~ Relay 4: The instrument can provide four relay outputs, and the specific settings are as follows:

Symbol meaning: <: less than symbol; >: greater than sign; &: and, indicating that both conditions need to be met; |: or, it means that one of the two conditions is satisfied; N: Only the previous condition is displayed, and the latter is not displayed; ^: The former condition is the relay suction condition (generally used to open the pump), and the latter condition is the relay opening condition (generally used to stop the pump), which is mainly used for drainage well and inlet well control.

For example: if the liquid level is required to be closed when the liquid level is less than 1m: <01.00, if the "<" symbol is changed to the ">" symbol, it means that the relay is closed when the liquid level is greater than 1m;

b. If the liquid level is less than 1m or more than 8m, it is closed: <01.00|>08.00;

c, such as drainage well, when the water level rises to 8m, the pump needs to be opened to drain the water, and the pump is stopped when the water is discharged to 2m, and the setting is as follows: >08.00 ^<02.00.

dIf the water level drops to 1m, the pump needs to be turned on to enter the water, and the pump is stopped when the water level reaches 8m, and the setting is as follows: <01.00^>08.00.

The menu "Calibration Management" is the internal parameters of the factory, which is used as the instrument for testing, and the internal parameters of the general instrument have been all set when leaving the factory, and there is no need to modify the special working conditions.

The menu "Data Management" is an internal parameter of the plant and does not need to be used in the field.

The menu "Factory Management" is an internal parameter of the factory, and on-site changes are invalid.