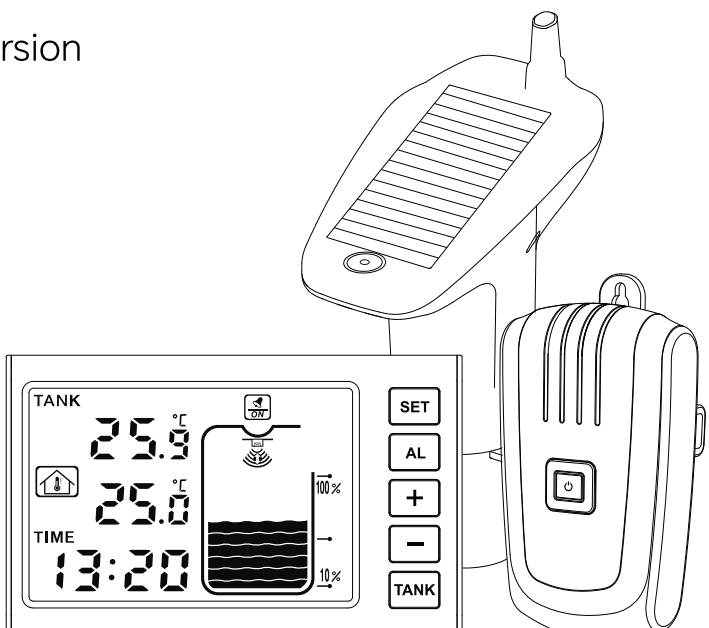
TS-FT001

Ultrasonic Liquid Level Meter

User Manual

English Version



1 Table of Contents

Table of Contents..... 2

Receiver Dimension Diagram/Transmitter Dimension Diagram..... 3

Water Pump Control Box Dimension Diagram/Full Display Diagram..... 4

Product Specifications..... 5

Packaging Contents/Default Settings..... 6

Button Indicator Diagram/Main Features..... 7

Power Supply Methods..... 8

Installation Instruction/Installation Steps..... 10

Backlight Settings..... 15

Time Settings..... 16

Alarm Clock Settings..... 18

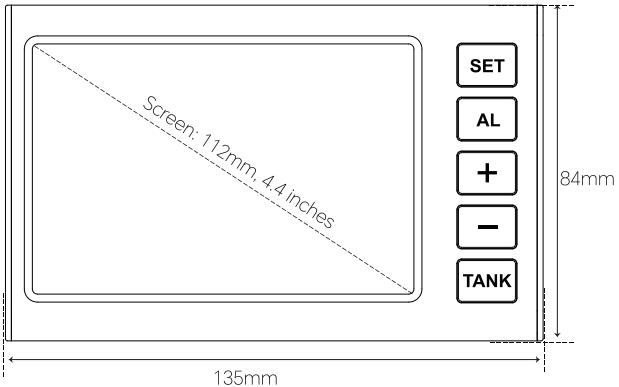
Turn On or Off the Buzzer

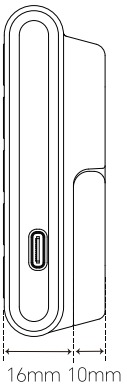
Switching Between Water Tank Level and Water Tank Temperature Display..... 20

Temperature Unit Switching..... 21

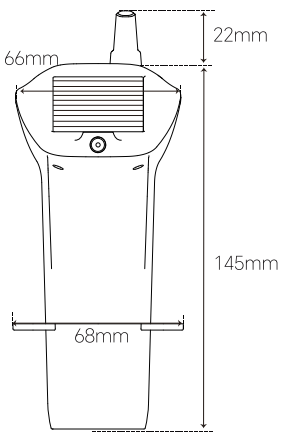
How to Reacquire Signal..... 22

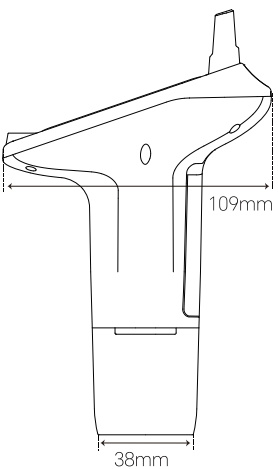
2 Receiver Dimension Diagram

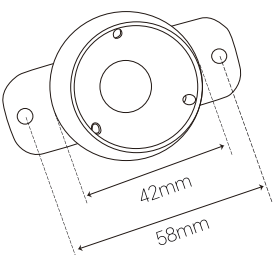




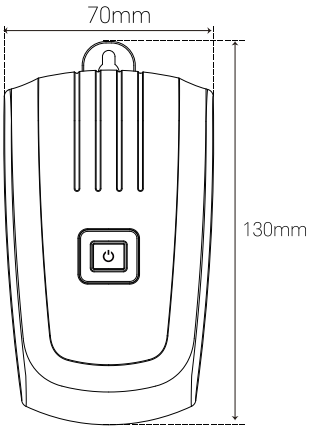
3 Transmitter Dimension Diagram

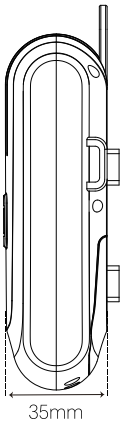




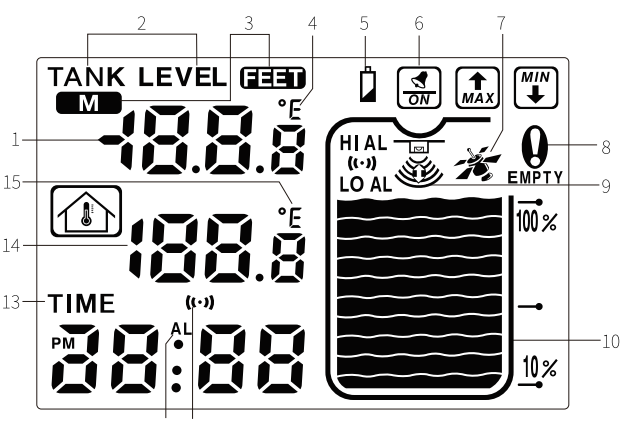


4 Water Pump Control Box Dimension Diagram





5 Full Display Diagram



1. Numeric Display Area
2. Water Tank Temperature & Level Icons
3. Water Level Unit
4. Water Tank Temperature Unit (℃/°F)
5. Transmitter Low Battery Icon
6. Buzzer On
7. Water Pump Control Box Connection Icon
8. Low Water Level Icon
9. Signal Indicator
10. Water Tank Level Indicator
11. Alarm Clock On
12. Alarm Clock Mode
13. Time Display
14. Indoor Temperature Display
15. Indoor Temperature Unit (℃/°F)

6 Product Specifications

Water Pump Control Box:

Operating Voltage: AC 110~230V

Receiver:

Indoor Temperature Range: 0℃~50℃，-32°F~122°F

Resolution: 0.1℃

Accuracy: ±1℃

Water Tank Temperature Measurement Range: -40℃~60℃，-40°F~140°F

Alarm Duration: 120 seconds

Transmitter:

Temperature Resolution: 0.1℃

Water Level Resolution: 0.01m

Accuracy: ±1℃

Accuracy: ±0.05m

Water Level Measurement Range: 1~5m

Battery Usage:

Receiver: 3*AAA 1.5V 900mAh

Receiver battery Life: 12 months (reference time without backlight activation)

Transmitter: 6*AAA 1.2V NiMH 900mAh

Transmitter battery Life: 12 months (reference time without exposure to sunlight)

Note: The Water Pump Control Box, Transmitter, and Receiver communicate wirelessly at 433MHz with a transmission distance of up to 100m in an open area.

7 Packaging Contents

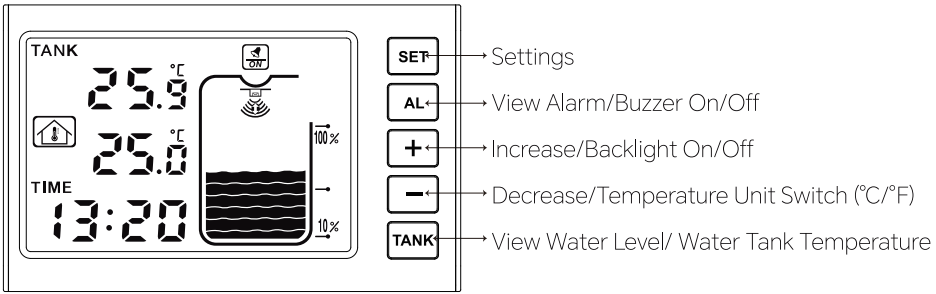
- ▶ Receiver*1
- ▶ Transmitter*1
- ▶ Water Pump Control Box*1
- ▶ Installation Screws*3
- ▶ TYPE-C Power Cable*1
- ▶ User Manual*1

8 Default Settings on Startup

- ▶ Time: 0:00~23:59 (Default: 0:00)
- ▶ 12HR/24HR Format: (Default: 24HR)
- ▶ Water Level Unit:

  TANK LEVEL M (meters) / TANK LEVEL FEET (feet) (Default: TANK LEVEL M)
- ▶ Temperature Unit: °C/°F (Default: °C)
- ▶ Alarm Time: 0:00~23:59 (Default: 0:00, Off)

9 Button Indicator Diagram



10 Main Features

▶Display Backlight On/Off Function

▶Time Function in 12H/24H format

(Default display on startup: 0:00 24 hours)

▶Alarm Function (Default on startup: Off)

▶Indoor Temperature ℃/°F (Default: °C)

▶Water Tank Temperature ℃/°F (Default: °C)

▶Water Pump Control Box Power Output Indicator " "

▶Water Tank Level Display in meters/feet (Default on startup: meters)

▶Water Level Depth simulated on a 10-element LCD bar graph " "

▶Alarm On Indicator " "

▶Transmitter Low Battery Reminder " "

▶Buzzer On/Off " "

▶Data Signal Indicator " "

▶Low Water Level Icon " EMPTY "

11 Power Supply Methods

When installing batteries, please pay attention to the polarity. Incorrect installation of batteries, reversing the positive and negative terminals, may result in permanent damage to the product. Battery malfunction or poor performance can adversely affect data communication between products.

Power Supply:

Receiver: 3*AAA (3*1.5V) batteries/ TYPE-C Power Cable (as shown in Figure ①)

Note: Please replace the batteries promptly when the backlight on the receiver dims or if there is flickering in the display.

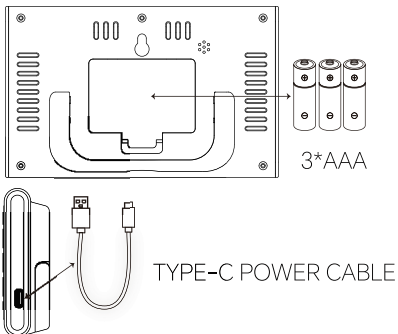


Figure ①

Transmitter: 6*AAA NiMH (6*1.2V) rechargeable batteries (as shown in Figure ②)

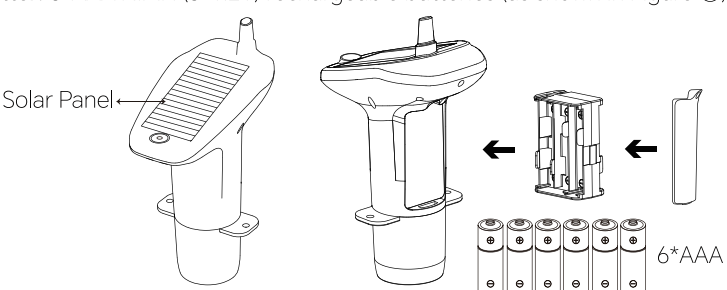


Figure ②

Note: The solar panel provides auxiliary power and has a charging function for rechargeable batteries. Please use NiMH rechargeable batteries (which can reduce the frequency of battery replacement and save on battery usage costs to some extent). When installing, place the solar panel facing the sun so that it can provide power and charge the rechargeable batteries during sunlight exposure.

If you are using it in an area with no sunlight lighting, it can be powered by Alkaline batteries.
Note: Alkaline batteries are disposable and are not rechargeable.

Water Pump Control Box: The AC voltage input range is AC 110~230V. When connecting the power supply, pay attention to the L (Live) and N (Neutral) polarity. The output voltage is the same as the input voltage, and the output load current should not exceed 10A (as shown in Figure ③).

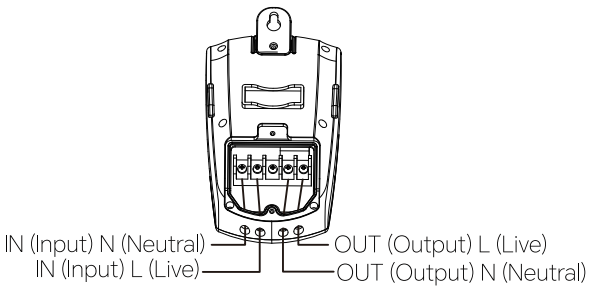
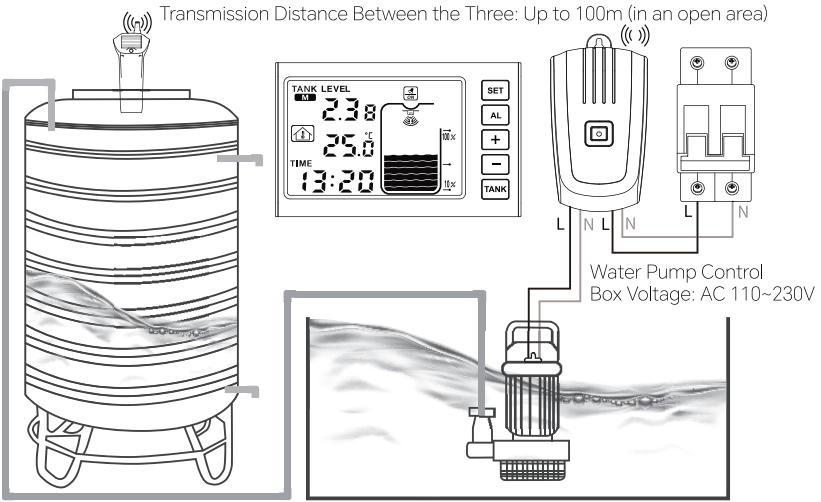


Figure ③

Note: The water pump control box has auxiliary indicator lights on the side. The red indicator light indicates power input, and the green indicator light indicates power output.
Please note that the indicator lights are only used for checking power input and output during installation and do not have other functions.

Warning: The power supply voltage range for the water pump control box is AC 110~230V.
It is recommended to operate under the guidance of a professional electrician to avoid the risk of electric shock!

12 Installation Instruction Diagram



13 Installation Steps

(1). Power on the receiver. After the full display on the screen for 3 seconds, a "BI" sound will be emitted, and "1.00" with a flashing empty tank will be displayed (as shown in Figure ④).

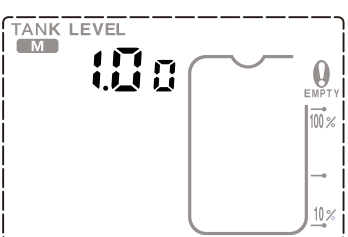


Figure ④

Enter the water tank depth setting mode (setting range 0.5~5m/1.64ft~16.4ft). During the setting, short press the "+" key to increase by one, long press the "+" key for continuous increase, short press the "−" key to decrease by one, and long press the "−" key for continuous decrease.

Press the "**SET**" key again to set the air gap value, initially displaying "0.50" (as shown in Figure ⑤), with a setting range of 0.5~5m/1.64ft~16.4ft. It is recommended to set the air gap value to be ≥0.5m for optimal monitoring status.

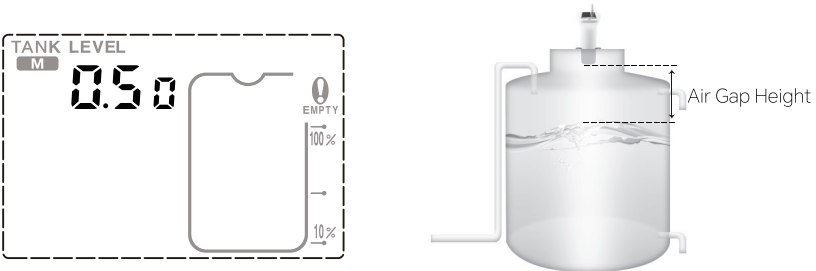


Figure ⑤

During settings, a short press of the "**+**" key increases the value by one, while a long press of the "**+**" key results in continuous increase. Similarly, a short press of the "**–**" key decreases the value by one, and a long press of the "**–**" key leads to continuous decrease.

Note: The air gap value is the monitoring distance from the bottom sensor of the transmitter to the highest water surface in the tank, with a minimum of 0.5m.

Press the "**SET**" key again to set the automatic water filling level (Default Setting: It automatically starts filling water when the water level goes below 20%). To change the automatic water filling level, short press the "**+**" key to increase by 10%, long press the "**+**" key for continuous increase (up to 50%). Short press the "**–**" key to decrease by 10%, long press the "**–**" key for continuous decrease (down to 10%). The pump control box starts when the water level is below the automatic water filling level and stops automatically when it reaches 100% (as shown in Figure ⑥)

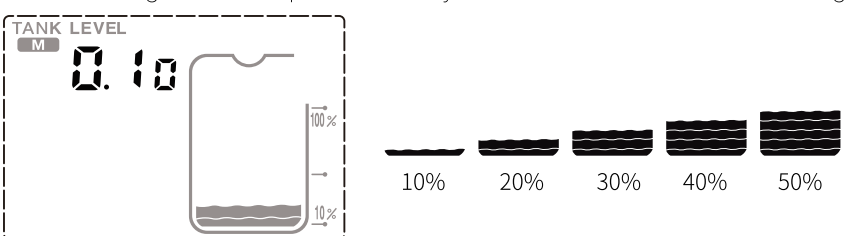


Figure ⑥

Press the "**SET**" key again to put the receiver in signal reception mode. The screen icon " " will flash (signal reception time lasts for 7 minutes, and after receiving the signal, the icon " " stops flashing).

Note: If there is no operation in the depth setting mode for more than 15 seconds, it will automatically switch to normal display mode.

Note: If the receiver displays "EEr" (as shown in Figure ⑦), it indicates a data setting error, and you need to reset. In the normal mode, simultaneously press and hold the "**SET**" and "**AL**" keys for 3 seconds to restart the setup process; the setup steps are the same as described above.

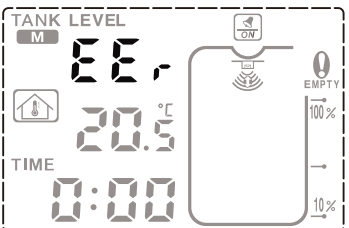


Figure ⑦

(2). After completing the aforementioned steps for the receiver, power on the transmitter. Upon powering on, the transmitter will send the first signal, and subsequent signal transmissions will occur every 30 seconds or 180 seconds.

Transmitter Installation Diagram

1. Antenna
2. Level
3. Installation Screws
4. Sensor
5. Water Tank
6. Solar Panel

NO	R (m)	H1(m)
1	⩾0.15	⩽1
2	⩾0.3	⩽2
3	⩾0.5	⩽3
4	⩾0.65	⩽4
5	⩾0.8	⩽5

Figure ⑧

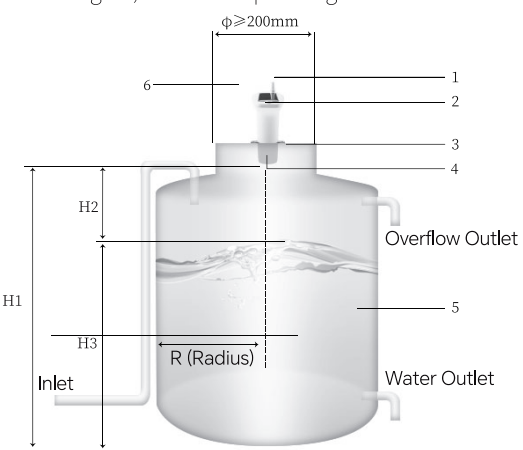


Figure ⑨

H3: Maximum depth measurable by the transmitter.

R: Radius of the tank.

Note: The radius R of the water tank will affect depth measurement. Regarding R and H1, refer to Figures ⑧ and ⑨, and pay attention to the following during installation:

1. The distance H2 between the bottom of the transmitter and the highest water surface must be at least 0.5m (1.64ft).
2. The maximum container depth H1 that the device can measure is 5m (16.4ft).
3. Observe the level on the transmitter to ensure it is installed in a horizontal position with the bubble centered (as shown in Figure ⑩).

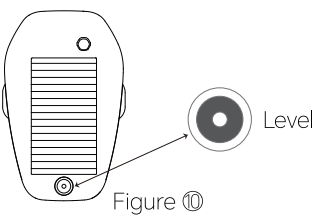


Figure ⑩

Examples of Incorrect Installation

a b c d

a. The transmitter is not installed in a horizontal position.

b. The transmitter is too close to the walls of the water tank.

c. There are solid objects in the water tank.

d. The bottom of the transmitter is submerged in water (or another liquid).

Note: Under normal operating conditions, the transmitter is designed to effectively protect against splashing rainwater from any direction.

(3). Connect the power to the Water Pump Control Box. After the control box is powered on, it will continuously be in signal reception mode. When the Water Pump Control Box is successfully matched with the receiver, the receiver's screen will display the icon " " (as shown in Figure ⑪). If not matched, the icon will not be displayed.

Note: The signal is sent to connect with the Water Pump Control Box only after the receiver and transmitter are matched.

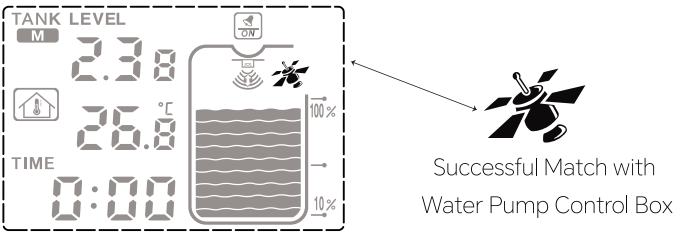


Figure ⑪

The Water Pump Control Box is in the open state, and the water tank is filling. The receiver's screen icon " / " will flashing (Fan blades will rotating).

When the water level falls below the set value for automatic water filling, the water pump control box will automatically turn on the power, and the pump will start working until it reaches the preset maximum water level, at which point it will stop working. If the water level falls below the automatic water filling value again, it will restart.

In the event that the water pump stops working within 20 minutes despite no change in water level, consider the following troubleshooting steps:

1. Ensure normal water supply and that the pump has an adequate water source.

2. Check the connections of the water pump control box's output wires, including power and motor lines, to ensure they are secure.

3. Inspect the motor for damage or blockages.

Note: These are general troubleshooting steps. Electrical operations should be performed by a qualified electrician to ensure safety.

4. If the pump's extraction rate matches the water usage rate, you can manually press and hold the power button " ⏻ " on the water pump control box to start the pump. Alternatively, the pump will automatically restart after 40 minutes.

Long-press the Water Pump Control Box power button " ⏻ " for 3 seconds to manually turn on/off the pump power output (as shown in Figure ⑫).

Note: The wiring port of the Water Pump Control Box is not a sealed port and should be installed in a rain-sheltered location. The control box has auxiliary indicator lights.
Observing the wiring port, the red indicator light is lit when there is power input, and the green indicator light is lit when there is power output. The indicator lights visible at the outlet are only used to check for power input and output during installation.

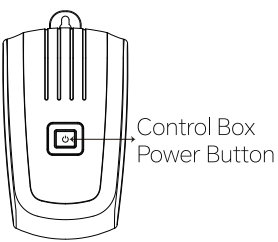


Figure ⑫

Backlight Setting

When the receiver is powered by batteries, a short press on any key will turn on the backlight for 15 seconds. If there is no other key operation, the backlight will automatically turn off.
In normal mode, to keep the backlight constantly on, long-press the "+" key for 3 seconds. After hearing a "Bl" sound, the backlight will stay on continuously..

In normal mode, to turn off the backlight, long-press the "+" key for 3 seconds. After hearing a "BI" sound, the constant backlight will turn off (as shown in Figure ⑬)

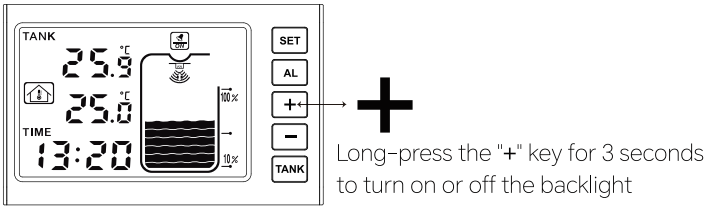


Figure ⑬

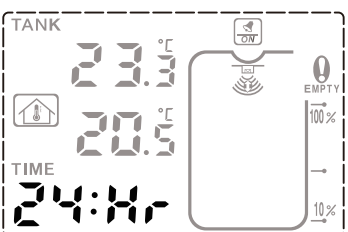
Notes: when powered by the TYPE-C power cord, the backlight defaults to constant-on, while it defaults to off when powered by batteries.

Using the constant backlight mode under battery power will consume more battery. If you want to extend the battery life of the receiver, it is recommended to turn off the backlight when not needed.

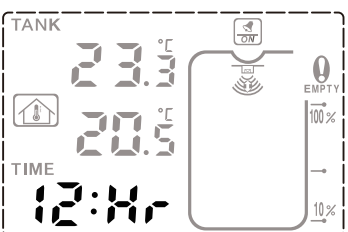
15 Time Setting

In normal mode, long-press the "**SET**" key to set the time. The corresponding setting item will blink during the setting process. The setting sequence is as follows: 24/12-hour format setting → hours → minutes → water tank liquid level unit selection → exit.

When setting the 24/12-hour format, press the "**+**" or "**-**" key to choose between 24 hours or 12 hours (as shown in Figure ⑭).



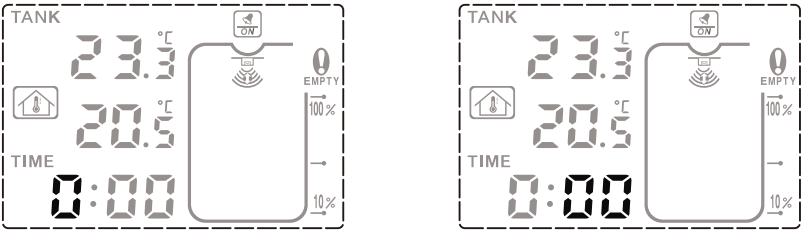
24-Hour Format Setting



12-Hour Format Setting

Figure ⑭

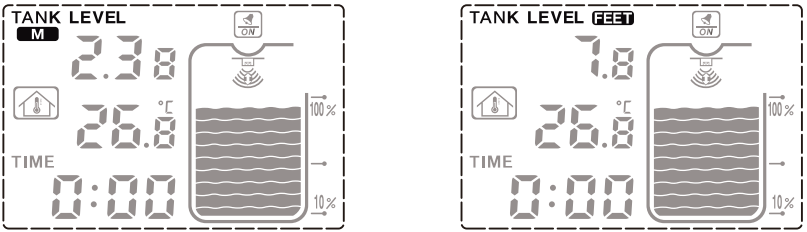
When setting the hour or minute, press the "+" or "-" key to increase or decrease the value. Long-pressing the "+" or "-" key allows for a rapid increase or decrease in the value (as shown in Figure ⑮).



Hours Minutes

Figure ⑮

When selecting the water tank liquid level unit, press the "+" or "–" key to choose between meters (M) or feet (FEET) as the unit for the water tank liquid level (as shown in Figure ⑯).



Unit (Meters) Display Unit (Feet) Display

Figure ⑯

16 Alarm Clock Setting

In normal mode, press the "**AL**" key once to switch to the alarm clock display screen. The alarm clock defaults to displaying "0 : 00" (as shown in Figure ⑰).

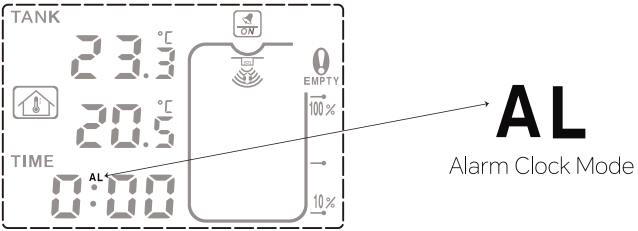
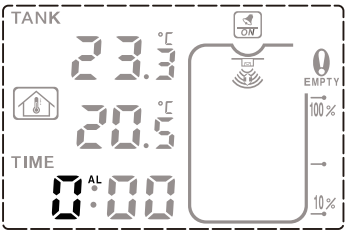


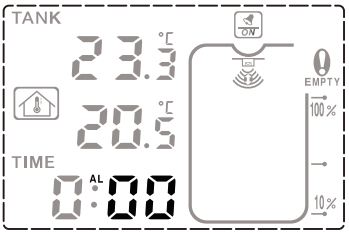
Figure ⑰

In the alarm clock display screen, long-press the "**SET**" key to enter the alarm clock setting mode. The corresponding setting item will blink during the setting process. The setting sequence is as follows: Alarm clock hours → Alarm clock minutes → Alarm clock on or off → exit.

When setting the alarm clock hour or minute, press the "**+**" or "**-**" key to increase or decrease the value. Long-pressing the "**+**" or "**-**" key allows for a rapid increase or decrease in the value (as shown in Figure ⑱).



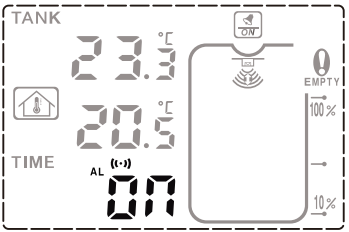
Alarm Clock Minute Setting



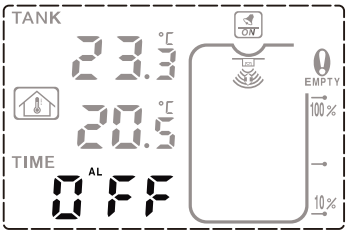
Alarm Clock Hour Settin

Figure ⑱

When setting the alarm clock to be on or off, press the "+" or "–" key once to choose between alarm clock on (ON) or off (OFF) (as shown in Figure ⑲).



Choose Alarm Clock Off



Choose Alarm Clock On

Figure ⑲

The alarm clock will ring for 2 minutes. During the alarm, press any key to stop the alarm, or it will automatically stop after 2 minutes. When the alarm is on (((•)) visible icon), and off (((•)) invisible icon) when the alarm is off (as shown in Figure ⑳).

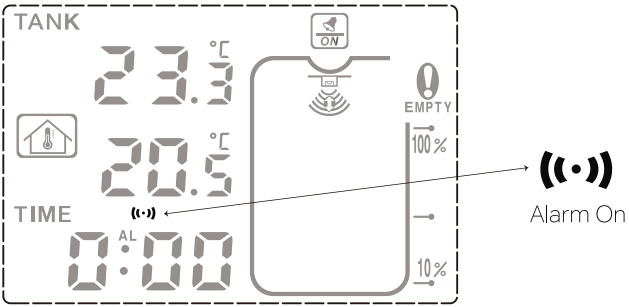


Figure ⑳

17 Turn On/Off the Buzzer

By default, when the receiver is powered on, the buzzer is turned on, and the icon " " is displayed. In normal mode, long-press the "**AL**" key for 3 seconds to turn on or off the buzzer. In the off state, the buzzer icon " " is not displayed (as shown in Figure㉑).

Note: Enabling or disabling the buzzer only affects button sounds; it does not affect the alarm clock ringing.

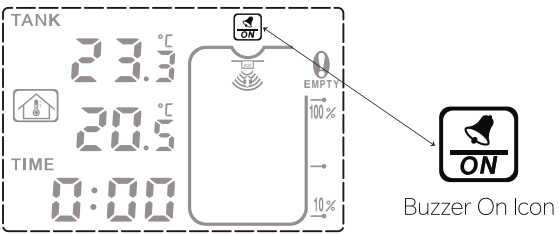
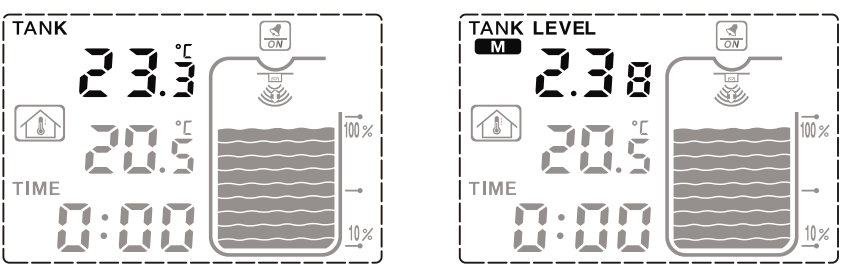


Figure ㉑

18 Switching Between Water Tank Level and Water Tank Temperature Display

In normal mode, press the "**TANK**" key once to switch between water tank level display and water tank temperature display (as shown in Figure ㉒).

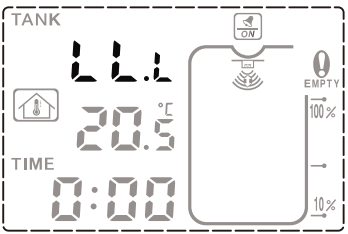


Water Tank Temperature Display

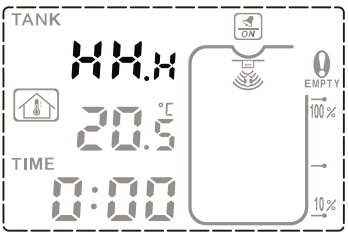
Water Tank Level Display

Figure ㉒

Note: Receiver temperature measurement range: 0℃~50℃ , -32°F~122°F
Transmitter temperature measurement range: -40℃~60℃ , -40°F~140°F.
When the temperature is below the minimum value, it will display "LL.L"; when it exceeds the maximum temperature value, it will display "HH.H" (as shown in Figure ㉓).
High or low temperatures may affect battery performance, and the battery may not provide stable power output, potentially impacting the circuit's operation.



Low Temperature Value Display

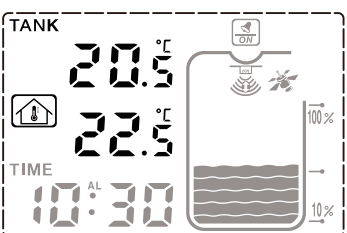


High Temperature Value Displa

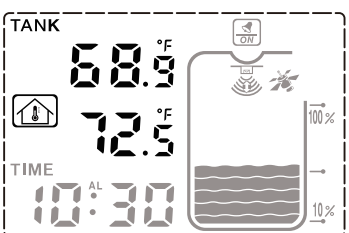
Figure ㉓

19 Temperature Unit Switch

In normal mode, press the "-" key once to switch between Celsius (℃) and Fahrenheit (°F) temperature units (as shown in Figure ㉔).



Celsius (℃)



Fahrenheit (°F)

Figure ㉔

20 How to Reconnect the Signal

When the transmission signal is lost, the corresponding icon " " disappears. The water level and temperature will maintain the values from the last measurement. If there's no automatic reconnection within 1 hour, the water level value will start to flash. To manually reconnect near the transmitter, press and hold the "**TANK**" key for 3 seconds in normal mode.

Note: If multiple attempts at close-range connection fail, check if the transmitter is functioning properly. You can try replacing the batteries in the transmitter. If the transmitter restarts after being powered on, the pump control box also needs to be powered off and on to reconnect with the transmitter.

For the quickest connection, power on the receiver first, then the transmitter, and finally the pump control box within close proximity. This ensures that all three devices connect and operate in the shortest time possible.

RoHS

MADE IN CHINA

FCC Warnning:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection againstharmful interference in a residential installation. This equipment generates, uses and can radiateradio frequency energy and, if not installed and used in accordance with the instructions, maycause harmful interference to radio communications. However, there is no guarantee thatinterference will not occur in a particular installation. If this equipment does cause harmfulinterference to radio or television reception, which can be determined by turning the equipmentoff and on, the user is encouraged to try to correct the interference by one or more of thefollowing measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1)This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.