

User Manual



Please read the manual before installation and operation.

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Laboratory Water Purification System



Instruction Manual

Model: Eco-S15

Eco-S30

The instruction manual should be read before installation

CATALOGUE

1.	Preface	1
2.	Specification	1
3.	Water Flow Chart	2
4.	Working Environments	2
5.	Installation	2
	5.1 Preparation for installation	2
	5.2 Tube and adapter's connection	2
	5.3 Installation steps	3
6.	Usage Guide	6
	6.1 Starting Up	6
	6.2 Getting Corresponding Pure Water	6
	6.3 Standby	6
	6.4 Shutdown	7
	6.5 Releasing internal air of terminal filter	7
	6.6 The Usage to Keep High Quality Pure Water	7
7.	Microcomputer Controller	8
	7.1 Panel	8
	7.2 The Specific operation method	8
	7.3 Specification at the beginning of working process	9
	7.4 Specification of the main interface	9
	7.5 Specification of the main menu	12
8.	Water Quality Test	19
9.	Consumables	19
10.	Normal Trouble Diagnosis	20
11.	Warranty & Repair Regulation	20

1. Preface

Dear customer, in the beginning, we sincerely thanks for your choosing our water purification system. This water purification system has incorporated new cutting-edge technology. It is installed and used easily, and can provide you with RO water and ultrapure water for science research. So, it will benefit your work.

For the water purification system's maximum efficiency, it is suggested that the user manual should be read before installation. Any question in the installation process, please contact our technology engineers or dealers.

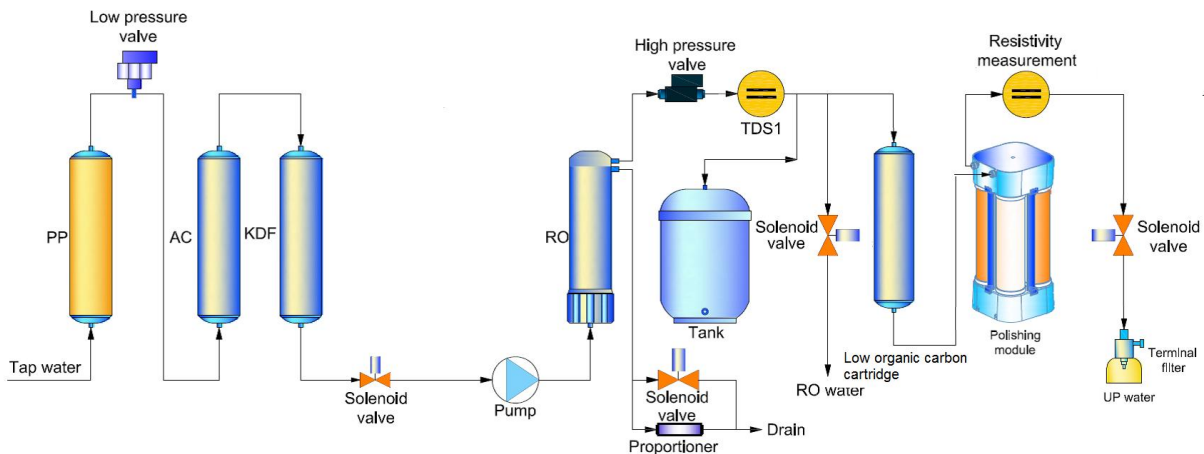
2. Specification

Model	ECO-S15	ECO-S30
Output(25℃)*	15Liters/hour*	30Liters/hour*
Flow rate	Up to 2 liters/minute (with pressure tank)	
Pure water outlet	2: reverse osmosis water, ultrapure water	
Ultrapure water quality		
Resistivity(25℃)	18.2MΩ.cm	
TOC*	<10ppb	
Bacteria	<0.1cfu/ml	
Particle(>0.1μm)	<1/ml	
Endotoxin	N/A	
RNases	N/A	
DNases	N/A	
RO water quality		
Ion rejection rate	96-99%(with new RO membrane)	
Organics rejection rate	>99% (when MW>200 Dalton)	
Particles and bacteria rejection rate	>99%	
Feed water requirements	Tap water, temperature:5-45℃ ,pressure:1.0-4.0Kgf/cm2	
Dimension and weight	Length×Width×Height:340×500×560mm / Weight: about 18Kg	
Electrical requirements	AC100-240V, 50/60Hz	
Power	72W	
Standard configuration	Main body (Including 1 set of cartridge)+built-in 12 liters pressure tank	
Purification System		
Sequence number	Specification	Quantity/set
LV.1	5μm spun PP cartridge	1
LV.2	Kinetic degradation fluxion cartridge	1
LV.3	Granular active carbon cartridge	1
LV.4	15series-100GPD RO membrane	1
	30series-200GPD RO membrane	1
LV.5	Low organic carbon cartridge	1
LV.6	Ultrapure polishing resin cartridge	4
LV.7	(0.45÷0.1)μm terminal filter	1

REMARKS:

* The value will be influenced by temperature and feed water's quality.

3. Water Flow Chart



4. Working Environments

- **Inlet water:** Tap water (TDS<200ppm will be suggested).
If inlet water TDS>200ppm, pretreatment is recommended. Water with higher TDS will affect the quality of outlet water and life of purification cartridge.
 - **Work temperature:** 5-45 °C
 - **Pressure:** 1.0-4.0Kgf/cm²
 - **Power:** AC100-240,50/60Hz,72W
- 【Clean, dry working environments would be suggested!】

5. Installation

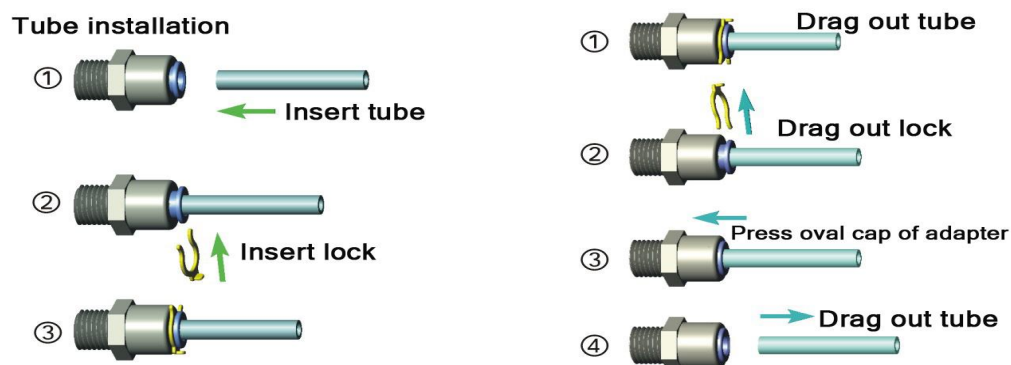
5.1 Preparation for installation

- The purification system should be installed horizontally and near to tap.

5.2 Tube and adapter's connection

The adapter of the machine is high quality easy-put adapter. And material of tube is high quality's PE.

Tube installation and drag diagram



**ATTENTION:**

- The tube should be cut with special tube cutter for rounded cut section. And rounded cut section should be guaranteed as much as possible with other cut tools.
- Connect the tube-press the oval cap of the interface strongly, then insert the tube to the bottom of adapter.
- Take off the tube-press the oval cap of the interface strongly, then drag out the tube. Do not drag when the tube can't be dragged out any more.
- The fore-end of the tube, which has been inserted to adapter, should be cut, when it will be used again.
- Sufficient PTFE thread seal tape should be used in all the threaded joints for water leakage inhibitor or preventing.

5.3 Installation steps

- (1). Open the packing-case, take out main body, accessory box, water tank (optional).
- (2). Take out adapters and tube from accessory box, and read the Instruction Manual carefully.
- (3). External interface are on the back of machine, and it is labeled with different color's label. Moreover, its adapters are inserted with different color's stop plug.

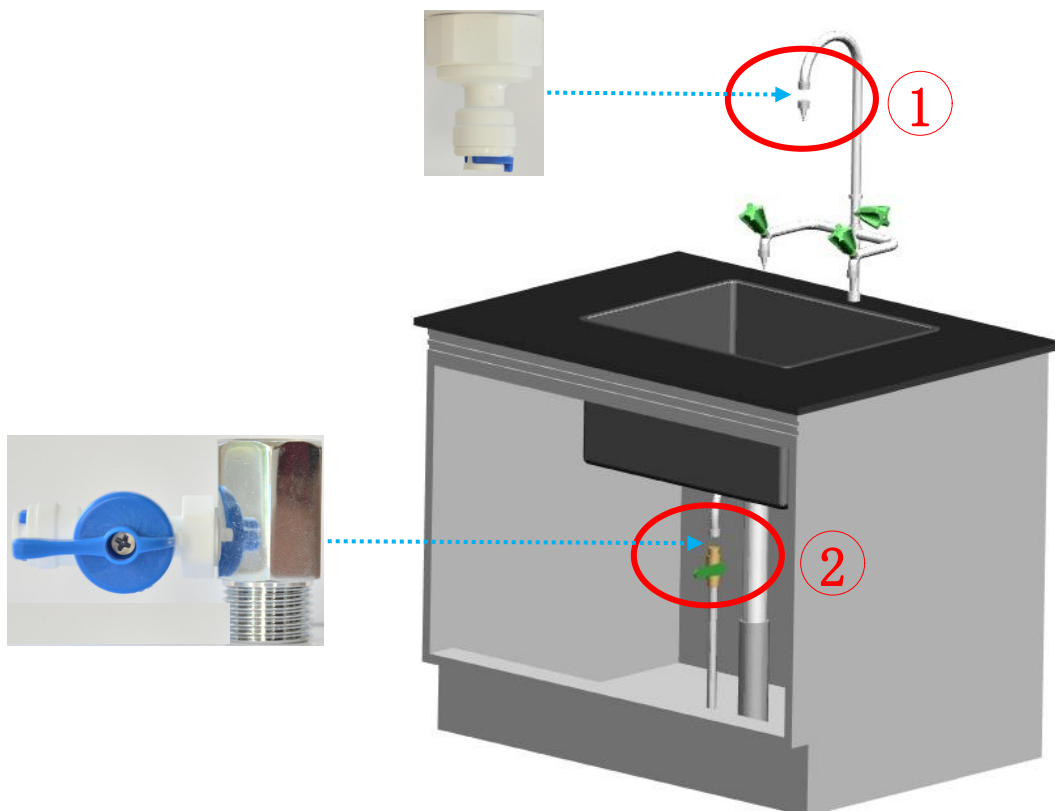
**ATTENTION:**

- Stop plug should be pulled out before the following steps.

(4). Connect To Tap Water

There are two ways to connect to the tap.

Guide Chart of 2 Ways to Connect To The Tap



①, ② is the place where the interface of machine's inlet water should be connected.

➤ **1st way-with tap water adapter 1** (1/2" internal thread to 3/8" fast-plug) to connect to tap water.

1st. Step: connect tap water adapter 1 to water source

Close the valve of the gooseneck. Dismantle the faucet of gooseneck. Screw tap water adapter 1 into the external thread of gooseneck.

2nd. Step: connect tap water adapter 1 to interface of machine's inlet water

Use 3/8" PE tube with a suitable length. Insert one side into the interface of tap water adapter 1, and insert the other into the interface with blue label marked "To inlet water" at the back of machine.

➤ **2nd way-with tap water adapter 2** (tee joint and 3/8" ball valve) to connect to tap water.

1st. Step: connect tap water adapter 2 to water source

Close the chief valve of tap water. Dismantle the tap.

Screw the 3/8" ball valve with external thread into the side thread with internal thread of tee joint.

Screw the tap into the internal thread at one end of the tee joint, and at last, screw the other end with external thread of the tee joint (with 1/4" ball valve and the tap at this time) into the internal thread of the tube, where the tap has been connected.



■ **ATTENTION:**

➤ Sufficient PTFE thread seal tape should be used in all the threaded joints for water leakage inhibitor or preventing

2nd. Step: connect tap water adapter 2 (3/8" ball valve) to interface of machine's inlet water

Use 3/8" PE tube with a suitable length. Insert one side into the interface of 1/4" ball valve, and insert the other into the interface with blue label marked "To inlet water" at the back of machine.



■ **ATTENTION:**

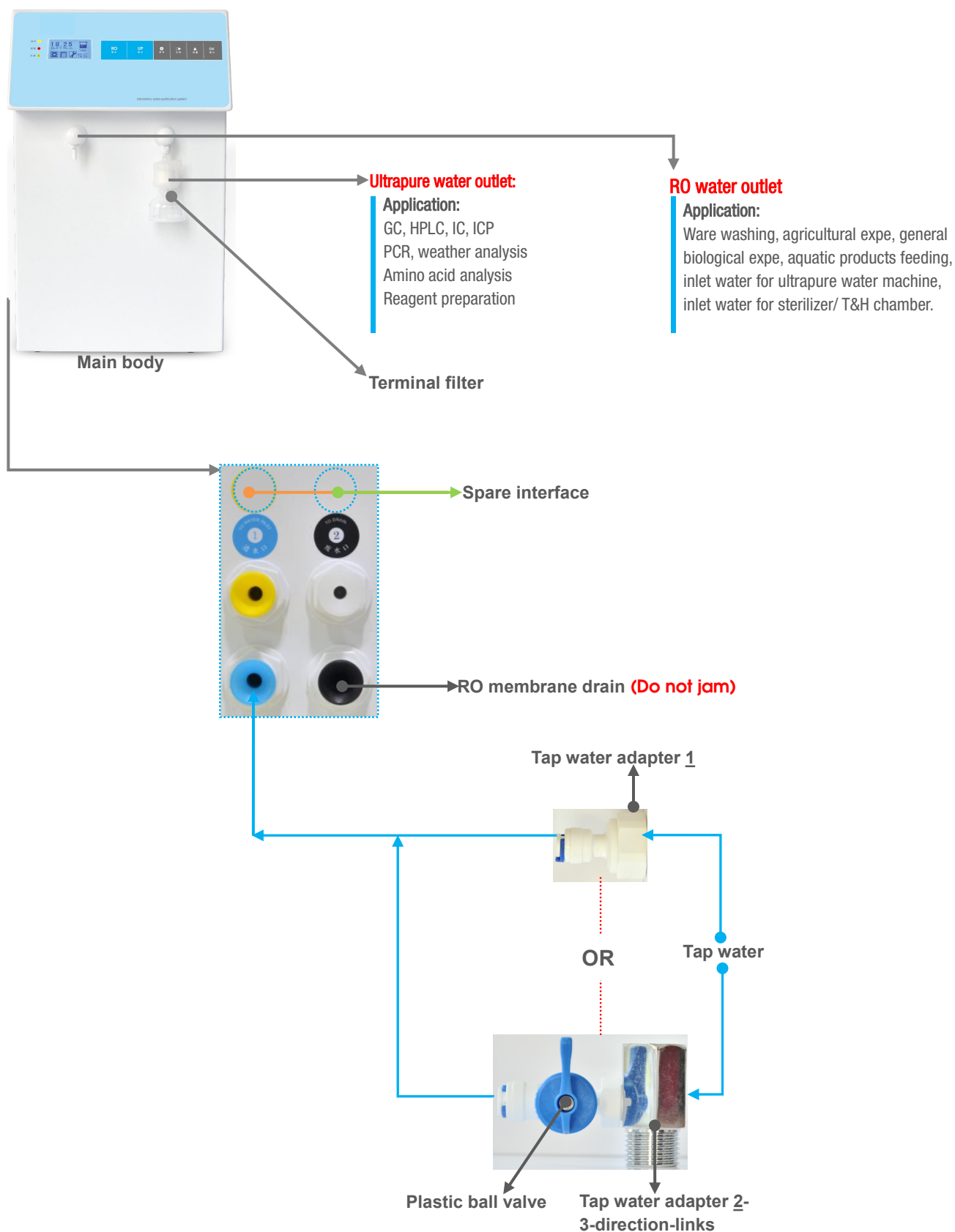
➤ Extra pretreatment filters (optional) should be connected between the water source and main body.

(5). Connect To RO Wastewater

Use 1/4" PE tube with a suitable length. Insert one side into the interface with black label marked "To drain" at the back of machine, and the other side is directed to drain. **(DO NOT JAM!!)**

Thus the installation is OK.

Installation Guide Chart



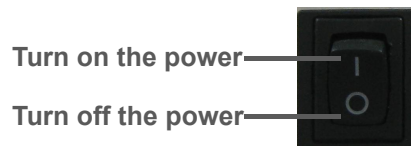
6. Usage Guide

All data have been set in the factory.

The machine will operate smoothly without any data-setting and debugging.

All work state will display on the LCD. If there is abnormal state, the system will alarm automatically. If data modification is necessary, specific step is in “Microcomputer Controller”.

- The power switch is on the side of the shell. Specific picture is as follows



6.1 Starting Up

Turn on the tap water valve, insert the power line into the power source and turn on the power switch, then the system begins to produce pure water.

6.2 Getting Corresponding Pure Water

Press “ DP1 ” or “ DP2 ” buttons which are on the panel to get corresponding RO water or ultrapure water. When getting pure water finished, press the buttons again to close the pure water outlet.

- **ATTENTION:**

- The first times to press “ DP1 ” or “ DP2 ” buttons, system will show the corresponding water quality.

- The second times to press above buttons, in other words, press the buttons again to open corresponding outlet for pure water.

6.3 Standby

When RO water and UP water is not for use, system still produces RO water to store in the internal water tank.

Until tank is full, the system will automatically stop and switch to standby state.

In the standby state, when any pure water's usage leads to system internal pressure's drop, system will begin to produce pure water again.

6.4 Shutdown

Turn off the tap water valve and turn off the power switch. Then it is ok.



■ **ATTENTION:**

- Make sure that the source water and power source is not connected, when the system is not in the use state for long time (for example, off duty).

6.5 Releasing internal air of terminal filter

Unscrew the rounded bolt, which is on the side of terminal filter, open the valve of ultrapure water. When ultrapure water goes out, internal air of terminal filter will be released. Until terminal filter is nearly full of pure water, then tighten rounded bolt.



■ **ATTENTION:**

- If the internal air of terminal filter is not released, pure water can't go through the terminal filter for air's resistance, then the system will stop working for high pressure.

6.6 The Usage to Keep High Quality Pure Water

- (1). The pure water is easily polluted by surrounding environment. So getting fresh pure water is suggested.
- (2). Keep water tank from sunlight for microbe's reproducing.
- (3). When get high pure water, initial high pure water is suggested to drain to get steady pure water.
- (4). Avoid air bubble when get pure water to reduce air pollution.



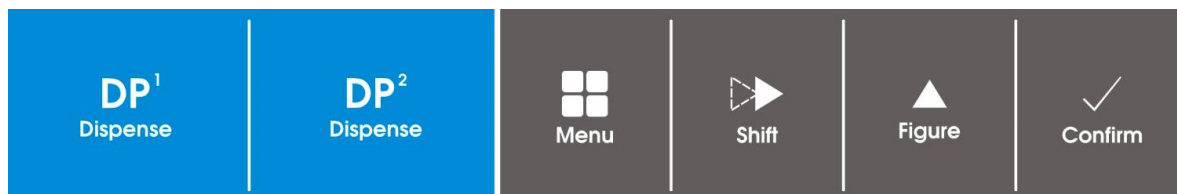
■ **ATTENTION:**

- The microbe's reproducing will reduce the life of cartridge, when the machine does not work for long time. So the machine's work every 7-10days is necessary.

7. Microcomputer Controller

7.1 Panel

There are 6 buttons on the panel (as shown below).



Specification of the buttons:



Control the solenoid valve of reverse osmosis water. (It is back button in the menu)



Control the solenoid valve of ultrapure water



Main menu, modify all the function and data of the system.



Shift the cursor to corresponding position



Adjust the data of chosen position(0-9 circle), or turn on/off different function



Confirm the adjusted data and execute corresponding function.

7.2 The Specific operation method

(1). **Choose the menu item, which will be researched or modified.**

Press “Menu” button to move the cursor to the menu item. The chosen item will be allochroic state. Then press “Confirm” button to enter corresponding item.

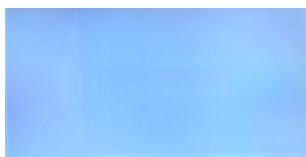
(2). **Modify the parameters of menu item or turn on/off the function of menu item.**

Press “Menu” button to choose item, move “Shift” button to choose the digit, “Figure” button to modify the digital of digit or the turn on/off the function of menu item. When modification is ok, press “Confirm” button to confirm.

(3). **Return to upper menu or main interface**

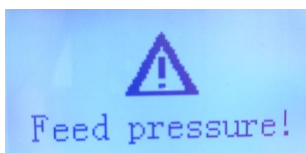
Press “Dispense” button to return to upper menu.

7.3 Specification at the beginning of working process



Picture 1

- (1). When system is powered on, the boot screen (picture 1) will appear for about 3 seconds.



Picture 2

- (2). 3 seconds later, the system will detect the status of feed water. No feed water or low pressure of feed water, the system will warn (picture 2). If the status of feed water is normal, system will implement the following program.



Picture 3

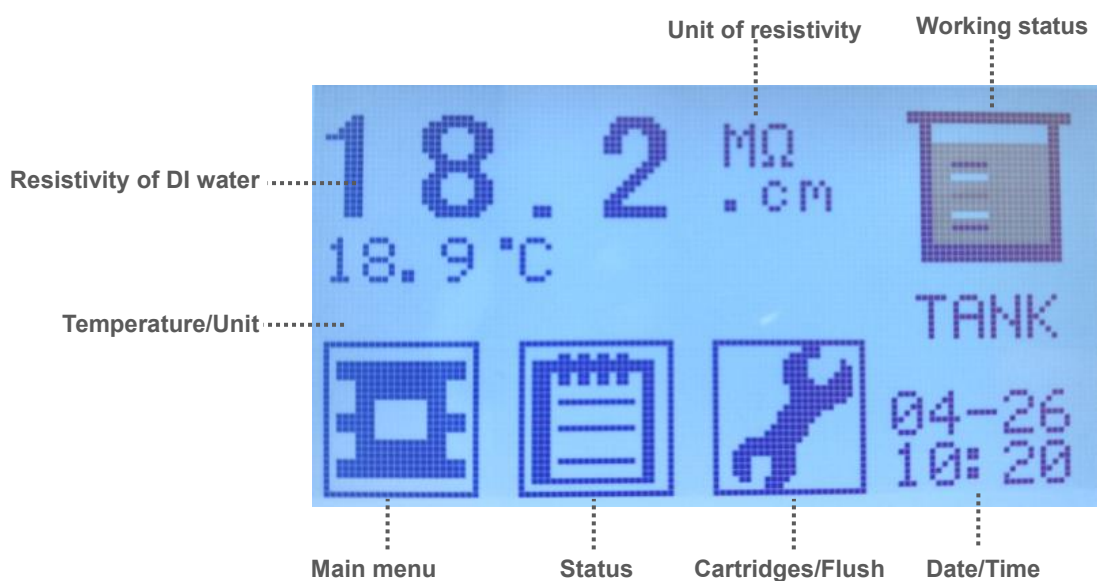
- (3). If the status of feed water is normal, system will flush RO membrane for 60 seconds (picture 3). At the same time, system will detect the status of feed water, No feed water or low pressure of feed water, the system will warn again (picture 2). When the status of feed water recovers, system will flush the RO membrane again.



Picture 4

- (4). After finishing RO membrane's flushing, system will switch to main interface (picture 4), and produce pure water. If pure water is not for use, it will be stored in the internal water tank. Until tank is full, system will warn. And at right side of main interface, "FULL" icon will appear.

7.4 Specification of the main interface



(1). Specification of “Working status” icon

At the top-right corner of the main interface, system will show 3 kinds of working status-Producing water, reverse osmosis water pouring and ultrapure water pouring.

It respectively means:

- System is producing pure water.
- Reverse osmosis water is pouring.
- Ultrapure water is pouring.

Definite icons are as follows:



Producing water



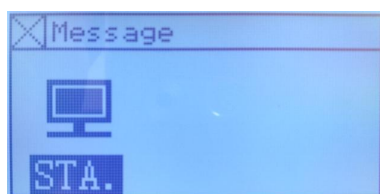
Reverse osmosis water pouring



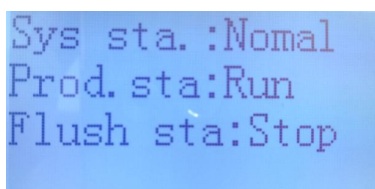
Ultrapure water pouring

(2). Specification of “Status” icon

In the main interface, move the cursor to icon , press the “Confirm” button to switch to interface of “Status” (picture 5), then press “Menu” button to select this icon, at last press “Confirm” button to switch to sub-interface of “Status” (picture 6).



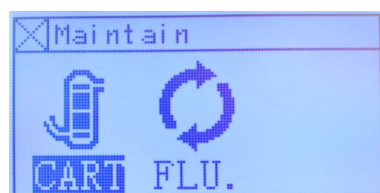
Picture 5



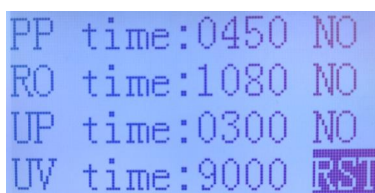
Picture 6

(3). Specification of “Cartridges/Flush” icon

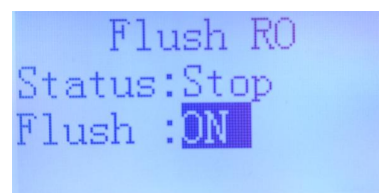
In the main interface, press “Menu” button to move the cursor to icon , press the “Confirm” button to switch to interface of “Cartridges/Flush” (picture 7), then press “Menu” button to select “Cart” or “Flu” icon, at last press “Confirm” button to switch to interface of “Cart” (picture 8).or “Flu” (picture 9).



Picture 7



Picture 8



Picture 9

■ Specification of “Cart” interface (picture 8)

PART 1: specification of cartridge life

➤ “PP time: 0450 NO”:

➤ It means that the PP spun fiber filter’s remaining life is 450 hours (Initial value is 450 hours);

➤ “RO time: 1080 NO”

It means that the reverse osmosis membrane’s remaining life is 1080 hours (Initial value is 1080 hours);

➤ “UP time: 0300 NO”:

It means that the mixed bed resin cartridge’s remaining life is 300 hours (Initial value is 300 hours);

➤ “UV time: 9000 NO”:

It means that the UV lamp’s remaining life is 9000 hours (Initial value is 9000 hours)

REMARKS:

UV Cartridge/lamp is optional. If there is no UV cartridge in the system, “UV time: 9000 NO” will not show.

PART 2: method of cartridge life’s reset

In the interface of “Cart”, firstly press “Menu” button to select corresponding “NO” icon (shown as picture 8), secondly press “Figure” button, at this time, “NO” icon becomes “RST” icon, lastly, press “Confirm” button to reset cartridge life. Then cartridge life restarts.



■ ATTENTION:

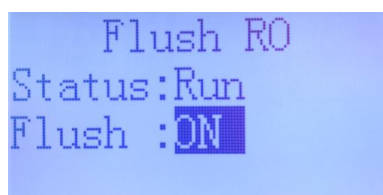
➤ Please reset cartridge life after replacing new cartridges.

■ Specification of “Flu” interface (picture 9)

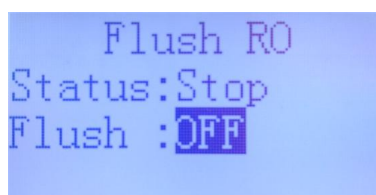
“Status: Stop”: It means that system does not flush RO membrane at this time.

➤ In the interface of “picture 9”, press “Menu” button to select “ON” icon, then press “Confirm” button to switch to interface of “picture 10”, at this time system begins to flush RO membrane, and the flush status is “Run”.

➤ If stopping flushing RO membrane is necessary, in the interface of picture 10, firstly press “Menu” button to select “ON”, secondly press “Figure” button to change the icon into “OFF”, lastly press “Confirm” button. And at this time, system stop flushing, and the status is “Stop” (shown as picture 11) .



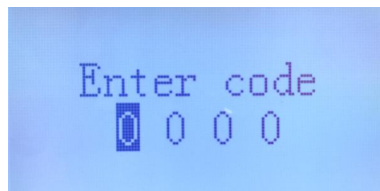
Picture 10



Picture 11

(4). Specification of “*Main menu*” icon

In the main interface, press “Menu” button to move the cursor to icon , then press the “Confirm” button to switch to interface of “code input” (picture 12).



Picture 12

The initial code is “0000”.

Input initial code “0000” through “Shift” button and “Figure” button, then press “Confirm” button to confirm.

- If code is wrong, system will warn and return to main interface.
- If code is right, system will switch to interface of main menu (picture 13/14). In the main menu, press “Menu” button to move the cursor to corresponding icon, then press “Confirm” button to switch to the corresponding menu item.

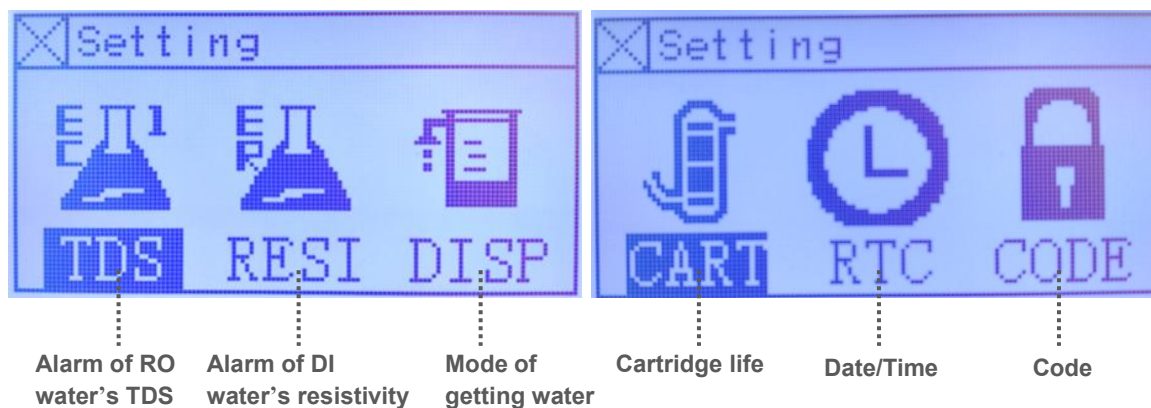


Picture 13



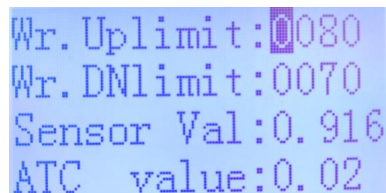
Picture 14

7.5 Specification of the main menu



(1). Specification of “*Alarm of RO water's TDS*” icon

In the main menu (shown as above picture), press “Menu” button to move the cursor to icon , then press the “Confirm” button to switch to interface of RO water quality's standard-exceeding alarm setting (picture 15).



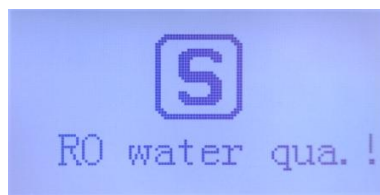
```
Wr. Uplimit:0080
Wr. DNlimit:0070
Sensor Val:0.916
ATC value:0.02
```

Picture 15

■ Specification of interface (picture 15)

➤ “Wr. Uplimit”:

It means that, when the TDS value of RO water exceeds 80 ppm(initial setting value), system will warn and display the interface of RO water qua standard-exceeding alarm (picture 16)



Picture 16

➤ “Wr. DNlimit”:

It means that, when the TDS value of RO water is under the value (initial setting value is “70”), system will cancel the alarm.

➤ “Sensor Val”: Sensor value.



■ **ATTENTION:**

Initial setting value. Do not modify without permission.

➤ “ATC value”: Temperature coefficient compensation value-0.020/°C



■ **ATTENTION:**

Initial setting value. Do not modify without permission.

■ Purpose of RO water quality’s standard-exceeding alarm

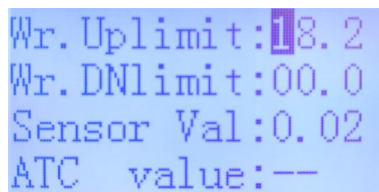
Remind that RO water’s quality is bad, and RO membrane should be replaced to protect the post cartridges.

■ Setting method of RO water quality’s standard-exceeding alarm

In the interface (picture 15), press “Menu” button to move the cursor to corresponding position, through “Shift” and “Figure” button, modify the value of digit, then press the “Confirm” button.

(2). Specification of “*Alarm of DI water’s resistivity*” icon

In the main menu (shown as above picture), press “Menu” button to move the cursor to icon , then press the “Confirm” button to switch to interface of DI water quality’s standard-exceeding alarm setting (picture 17).



Picture 17

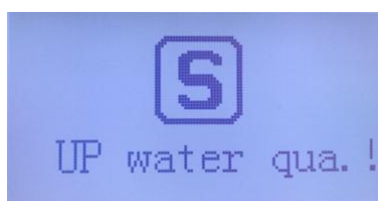
■ Specification of interface (picture 17)

➤ “Wr. Uplimit”:

It means that, when the resistivity value of DI water exceeds setting value, system will cancel the alarm.

➤ “Wr. DNlimit”:

It means that, when the resistivity value of DI water is under “00.0” (initial setting value), system will warn and display the interface of UP water qua standard-exceeding alarm (picture 18)



Picture 18



■ ATTENTION:

- When the DI water’s resistivity exceeds the setting value, system will warn every 10 seconds. At this time, valve of pure water outlet can’t be opened, until the setting value is modified to cancel alarm.

➤ “Sensor Val”: Sensor value.



■ ATTENTION:

- Initial setting value. Do not modify without permission.

➤ “ATC value”: Temperature coefficient compensation value-0.020/°C



■ ATTENTION:

- Initial setting value. Do not modify without permission.

■ Purpose of ultrapure water quality’s standard-exceeding alarm

Remind that UP water’s quality is bad, and it is not suitable for the experiment. Replacing the mixed bed resin cartridge is necessary.

■ Setting method of UP water quality's standard-exceeding alarm

The value of UP water resistivity's standard-exceeding can be reset according to actual requirement for UP water.

➤ General principles of alarm value setting

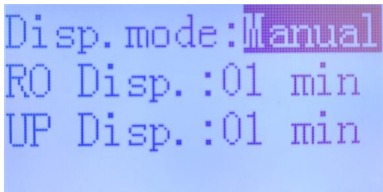
According to actual requirement for ultrapure water.

➤ The method of alarm value setting

In the interface (picture 17), press “Menu” button to move the cursor to corresponding position, through “Shift” and “Figure” button, modify the value of digit, then press the “Confirm” button.

(3). Specification of “*Mode of getting water*”

In the main menu (shown as above picture), press “Menu” button to move the cursor to icon , then press the “Confirm” button to switch to interface of getting water mode (picture 19).



Disp. mode: Manual
RO Disp.: 01 min
UP Disp.: 01 min

Picture 19

■ Specification of interface (picture 19)

➤ “Disp. mode: Manual”:

It means that the current mode of getting water is manual. Also, there is the other automatic mode of getting water- “Disp. mode: Manual”.

Specification of “Manual” and “Auto” mode:

■ Manual mode:

In this mode, the first times to press the dispense button, the solenoid valve of pure water outlet is opened, and the second times to press the dispense button, the valve will be closed.

■ Auto mode:

In this mode, the first times to press the dispense button, the solenoid valve of pure water outlet is opened, and the valve will be automatically closed after the setting time of auto mode, press the dispense button again is unnecessary.



■ ATTENTION:

➤ Getting water mode of Initial setting is manual-“Manual”.

➤ “RO Disp.: 01min”:

It means that, in “Auto” mode, continuous time of RO (reverse osmosis) water dispensing is 1 minute.

➤ “UP Disp.: 01min”:

It means that, in “Auto” mode, continuous time of UP (ultrapure) water dispensing is 1 minute.

**■ ATTENTION:**

- Time setting of getting water is just suitable for “Auto” mode.
- Range of time: 1-99 minutes.

(4). Specification of “Cartridge life”

In the main menu (shown as above picture), press “Menu” button to move the cursor to icon



“Confirm” button to switch to interface of cartridge life (picture 20).

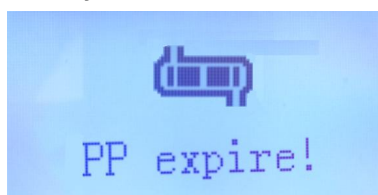
```
PP cartr.: 0450 H
RO cartr.: 1080 H
UP cartr.: 0300 H
UV lamp  : 9000 H
```

Picture 20

■ Specification of interface (picture 20)

- “PP cartr. : 0450 H”:

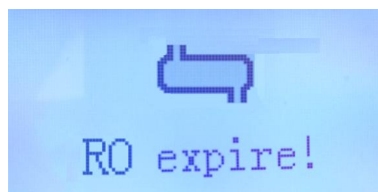
It means that, initial setting value of “5µm spun PP cartridge” life is 450 hours. When its life ends, system will warn to replace it in time. And the system will show the interface of cartridge alarm (shown as picture 21).



Picture 21

- “RO cartr.: 1080 H”:

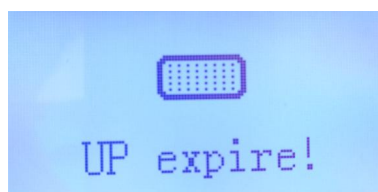
It means that, initial setting value of “RO membrane” life is 1080 hours. When its life ends, system will warn to replace it in time. And the system will show the interface of cartridge alarm (shown as picture 22).



Picture 22

- “UP cartr.: 0300 H”:

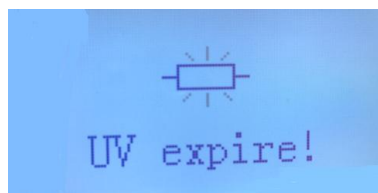
It means that, initial setting value of “Mixed bed resin cartridge” life is 300 hours. When its life ends, system will warn to replace it in time. And the system will show the interface of cartridge alarm (shown as picture 23).



Picture 23

➤ “UV cartr.: 9000 H”:

It means that, initial setting value of “ultraviolet lamp” life is 9000 hours. When its life ends, system will warn to replace it in time. And the system will show the interface of cartridge alarm (shown as picture 24).



Picture 24



■ **ATTENTION:**

- UV cartridge is optional. If not added, system will not show.

■ **Setting method of cartridge life**

- Cartridge life can be reset according to actual replacement term.
- In the interface (picture 20), press “Menu” button to move the cursor to corresponding position, through “Shift” and “Figure” button, modify the value of digit, then press the “Confirm” button.



■ **ATTENTION:**

- Please reset cartridge life after replacing new one.

(5). Specification of “Date/Time”

In the main menu (shown as above picture), press “Menu” button to move the cursor to icon , then press the “Confirm” button to switch to interface of date & time setting.

And in the interface of date & time setting, press “Menu” button to move the cursor to corresponding position, through “Shift” and “Figure” button, modify the value of digit, then press the “Confirm” button.

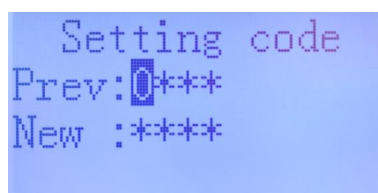


■ **ATTENTION:**

- Date & time has been calibrated in the factory.

(6). Specification of “Code”

In the main menu (shown as above picture), press “Menu” button to move the cursor to icon , then press the “Confirm” button to switch to interface of resetting code (picture 25).



Picture 25

■ Specification of interface (picture 25)

➤ “Setting code”:

It means resetting code.

➤ “Prev”:

It means previous code which has been set.

➤ “New”:

It means new code which will be reset.



■ **ATTENTION:**

- Initial code is “0000”.

■ Setting method of code

- New code is suggested to reset for avoiding unauthorized modification.

- In the interface (picture 25), press “Shift” and “Figure” button to reset the code, then press the “Confirm” button to return to main menu.



■ **ATTENTION:**

- Initial code “0000” will be invalid once reset. And new code is right to switch to main menu from main interface.
- If new code is forgotten, please contact us.

8. Water Quality Test

The system has 2 monitor sensors of water quality measuring.

- **The first, TDS:** monitors reverse osmosis water's quality (RO water).
Measure unit: TDS (total dissolved solid, ppm)
- **The second, Resist:** monitors ultrapure water's quality (ultrapure water).
Measure unit: Resistivity (MΩ.cm)

REMARKS:

- Under normal conditions, new RO membrane's desalination rate is above 95%. It means that TDS of RO water should be less than TDS of inlet tap water×5%.
- If TDS of RO water > TDS of inlet tap water×10%, it means that RO membrane's desalination can't meet the minimum requirements. RO membrane should be replaced at once.
- Conversion relations between TDS and conductivity rate(μs/cm):
If TDS<50ppm, conductivity rate (μs/cm) ≈TDS×2
If TDS>200ppm, conductivity rate (μs/cm) ≈TDS×(1.5~1.7).

9. Consumables

Item No.	Specification	Suggested replacement term
PC-M-PP	5μm spun PP cartridge	About 2-6 months
PC-M-KDF	Kinetic degradation fluxion cartridge	About 12 months
PC-M-AC-G	Granular active carbon cartridge	About 6 months
RO-100GPD	100GPD RO membrane	About 12-24 months
RO-200GPD	200GPD RO membrane	About 12-24 months
PTC-AC-HZB1	Low organic carbon cartridge	About 9000 liters pure water
LAMP-(185nm&254nm)-10W-M	Double wavelength(185&254)nm UV lamp	About 9000 hours
PTC-UPPR-M	Ultrapure polishing resin cartridge	About 1000 liters pure water/pc
TF-(0.45+0.1)μm-S	(0.45+0.1)μm terminal filter	-

REMARKS:

- Worse inlet feed water quality or big dosage will reduce cartridge life.

10. Normal Trouble Diagnosis

Normal trouble	Cause	Diagnosis
No power	-No plug in -Power adapter broken	-Check the power connecting -Replace new adapter
No pure water goes out or a little amount of pure water	-Valve of pure water outlet broken -Pump broken -Cartridges or filters' life ends	-Replace new valve -Replace new pump -Replace new cartridges or filters
Cartridges' life warns	-Cartridges' life ends	-Replace new cartridges
Water leakage	-Adapter or something broken	-Check, insert and drag out again, replace
Water quality deteriorate	-Cartridges or filters' life ends -Water quality sensor broken	-Replace new cartridges or filters -Replace new water quality sensor

■ All other matters not mentioned herein, please contact us directly.

11. Warranty & Repair Regulation

The products enjoy repair service since the day of purchase. In one year from the purchasing day, we are obliged to replace components for customers free of charge, due to non-human-behavior factors, except for:

- (1). All the consumables;
- (2). Damage caused by maloperation or use in abnormal situations;
- (3). Disassembly any part of the machine or human-behavior damage;
- (4). Not repaired by our serviceman.

Specification can be changed without any prior notice for development.

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