LABORATORY WATER PURIFICATION SYSTEM

BLPS-301

INDEX

1.Preface

Dear customer, in the beginning, we sincerely thanks for you 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 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	BLPS-301	BLPS-302	BLPS-303	BLPS-304
Output -ultrapure water	Up to 2 liters/minute (less output with UF cartridge)			
Pure water outlet	2: deionized water, ultrapure water			
Ultrapure water quality				
Resistivity(25℃)	18.2MΩ.cm			
TOC*	<10ppb	<10ppb	<3ppb	<3ppb
Bacteria	<0.1cfu/ml			
Particle(>0.1μm)	<1/ml			
Endotoxin	N/A	＜ 0.001Eu/ml	N/A	＜ 0.001Eu/ml
RNases	N/A	<1pg/ml	N/A	<1pg/ml
DNases	N/A	<5pg/ml	N/A	<5pg/ml
Deionized water quality				
Resistivity(25℃)	> 16 MΩ.cm			
Feed water requirements	RO water, distilled water, deionized water, 5-45℃,1atm*			
Dimension and weight	Length×Width×Height:545×470×610mm / Weight: 20Kg			
Electrical requirements	AC110-240V, 50/60Hz			
Power	240W			
Standard configuration	Main body (Including 1 set of cartridge)			
Purification System				
Sequence number	Specification		Quantity/set	
LV.1	Mixed bed resin cartridge		1	
LV.2	Double(185&254nm) wavelength UV cartridge		1(V/FV)	
LV.3	Ultrapure polishing resin cartridge		1	

LV.4	5000 Doulton UF cartridge	1(F/FV)
LV.5	(0.45+0.1)μm terminal filer	1

REMARKS

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

3.Water Flow Chart
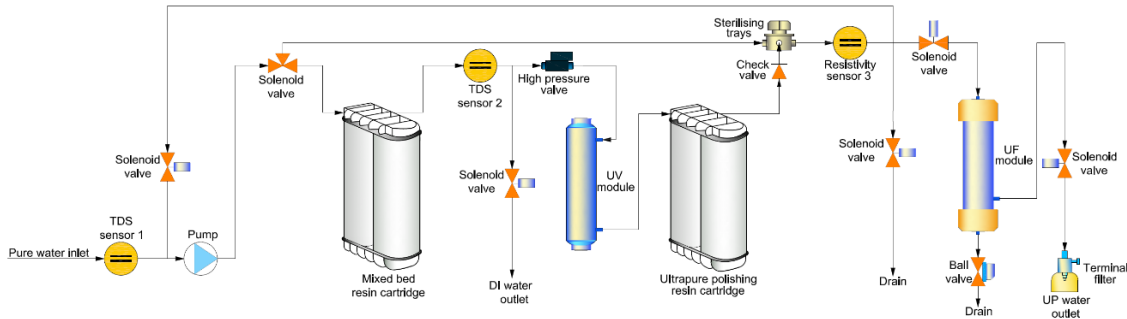
BLPS-301 FV Water Flow Chart

4.Working Environments

- I nlet water: Ro water, distilled water, deionized water.
- Inlet water pressure: 1atm
- Work temperature: 5-40℃
- Power:AC100-240V,50/60Hz,240W

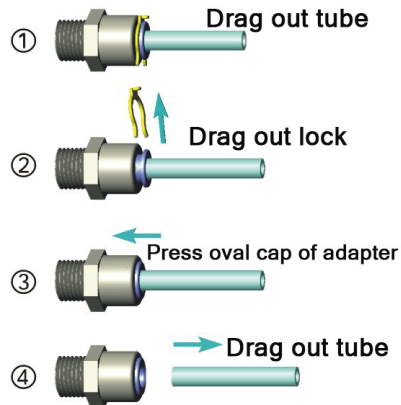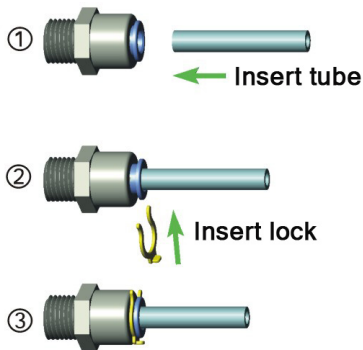Clean, dry working environments would be suggested

5.Installation

5.1 Preparation for installation

The purification system should be installed horizontally and near to source water.

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

① Insert tube

② Insert lock

③

① Drag out tube

② Drag out lock

③ Press oval cap of adapter

④ Drag out tube

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 water source

Use 3/8" PE tube with a suitable length. One side connects with inlet water source (Ro water, distilled water, deionized water) and the other connects with the interface with blue label marked "To inlet water" at the back of machine.

⚠️ ATTENTION

- Make sure of that the head face of inlet water tube is below liquid level of deionized water.
- Insert inlet water tube into the bottom of water tank of deionized water.
- Make sure of that liquid level of deionized water is not below machine for 20cm.

5. Connect to drain

Use 1/4" PE tube with a suitable length. One side connects with the interface with black label marked "To drain" at the back of machine, and the other side is directed to gutter.

Remarks -

The waste water will flow out from the interface marked "To drain", only when the sanitizing function is on work.

6. Connect to UF drain(F/FV)

Use 1/4" PE tube with a suitable length. Insert one side into the interface with green label marked "To UF drain" at the back of machine, and the other side is directed to drain.
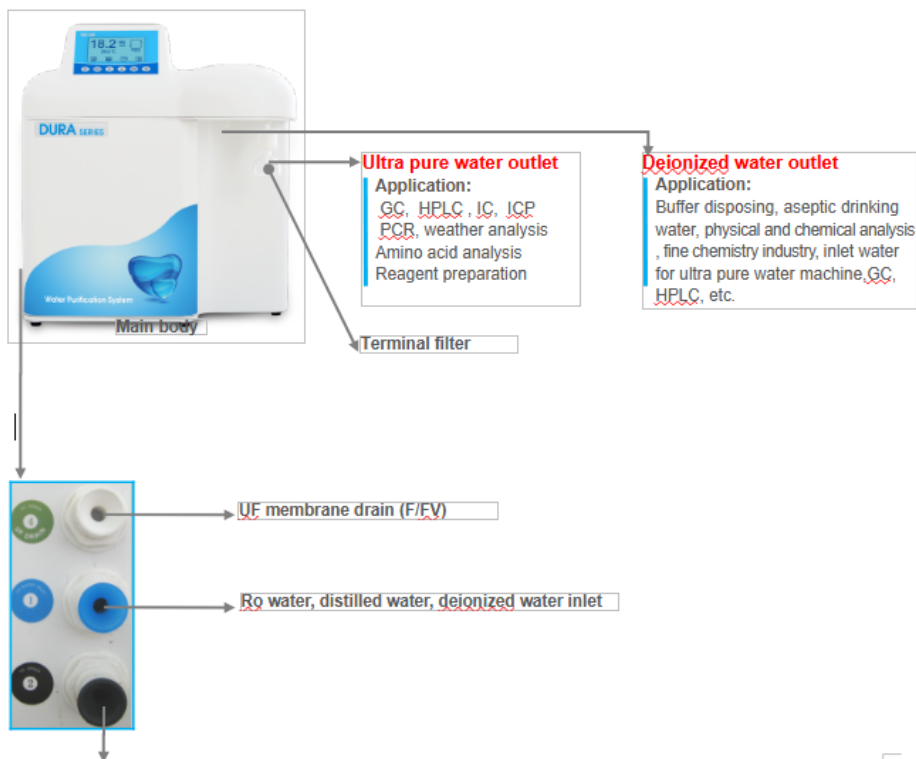
⚠️ ATTENTION:

The UF drain valve is closed all the time except for flushing UF membrane.

Thus the installation is OK .

Installation Guide Chart

Ultra pure water outlet
Application:
GC, HPLC, IC, ICP
PCR, weather analysis
Amino acid analysis
Reagent preparation

Deionized water outlet
Application:
Buffer disposing, aseptic drinking water, physical and chemical analysis, fine chemistry industry, inlet water for ultra pure water machine,GC, HPLC, etc.

Main body

Terminal filter

UF membrane drain (F/FV)

Ro water, distilled water, deionized water inlet

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 at the back of the shell. Specific picture is as follows.

Turn on the power
Turn off the power
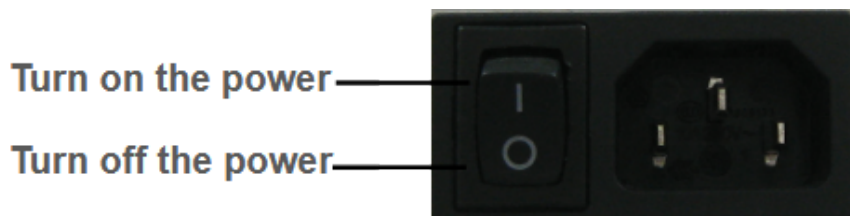
6.1 Starting up

At first, make sure of that the source water is connected to the main body's inlet. Then 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 deionized water or ultrapure water (higher quality water than deionized water).

6.3 Standby

When deionized water and ultrapure water is not for use, the system will be in standby state.
The system will begin to produce pure water again when any pure water is used.

6.4 Shutdown

Turn off the power switch. Then it is ok.

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.
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.

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

6.6 Flushing UF membrane

Method of flushing UF membrane -
Turn on the UF drain valve, and press "UP" button, which are on the panel, to turn on ultrapure water's valve

UF drain ball valve, Located in the left door, specific picture at right.
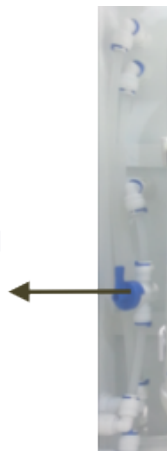
⚠️ ATTENTION

The "UF drain valve" is shut on normal condition, except for flushing UF membrane.
Frequency of flushing UF membrane:
At least one times every week, and at least lasting 30 seconds every times.

⚠️ ATTENTION

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

6.7 The usage to keep high quality pure water

1. The Ultrapure water is easily polluted by surrounding environment. So getting fresh pure water is suggested.
2. Keep source 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 filter cartridge when the machine does not work for long time. So the machine's work every 7-10days is necessary.

7. Microcomputer Controller

There are 6 buttons on the panel as shown below

Dispense	Menu	Shift	Figure	Confirm	Dispense
DP¹	⊞	⇢	▲	OK	DP²

Specification of the buttons-

DP¹	Control the solenoid valve of deionized water
DP²	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
OK	Confirm the adjusted data and execute corresponding function.

7.1 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 "OK" 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, 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 "OK" button to confirm.

3. Return to upper menu or main interface Press "MENU" button, and move the cursor to return icon
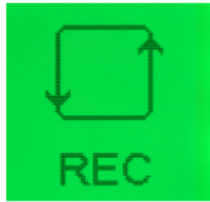
⏎ , then press "OK" button.

7.2 Specification of the main interface
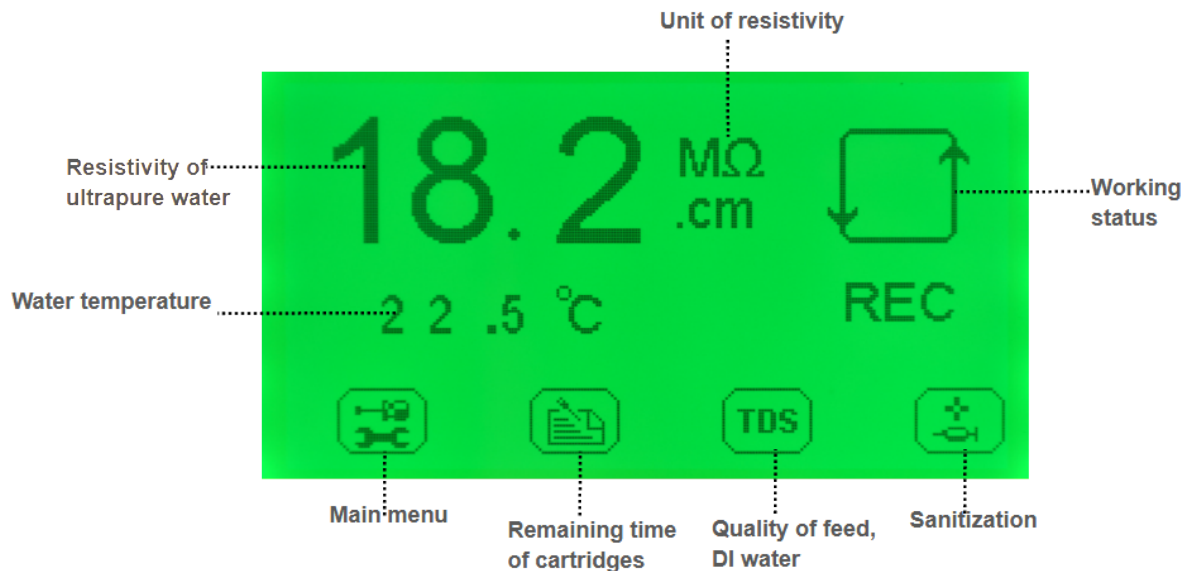
1. Specification of system's working status icon

At the top-right corner of the main interface, system will show 4 kinds of working status-REC, Produce, FULL, No water. It respectively means: Recirculation of ultrapure water, Producing pure water, tank is full of water, no feed water or low pressure of feed water.
Definite icons are as follows

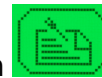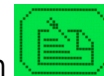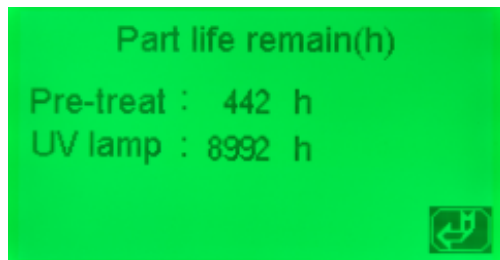| REC	Produce	FULL	⚠
Re circulation of ultra pure water	Producing water	Tank is full of water	No feed water or low pressure of feed water

2. Specification of cartridges' remaining time icon

Under the main interface, press "MENU" button, move the cursor to icon , then press "OK" button to switch to interface of cartridges' remaining time (Picture 8).

Picture8

Specification of the interface
"Pre-treat: 442h": It means that the active carbon filter's remaining time is 442 hours (Initial value is 450 hours

UV lamp: 8992h It means that the UV lamp's remaining time is 8892 hours Initial value is 9000 hours

REMARKS - UV lamp is optional. If there is no UV cartridge in the system, "UV lamp: 8992h" will not show.

Specification of feed water and DI water's quality icon.

Under the main interface, press "MENU" button, move the cursor to icon , then press "OK" button to switch to interface of feed water and RO water's quality (Picture 9).
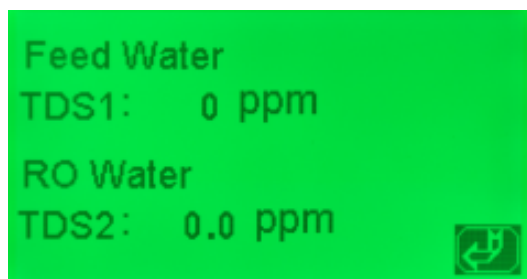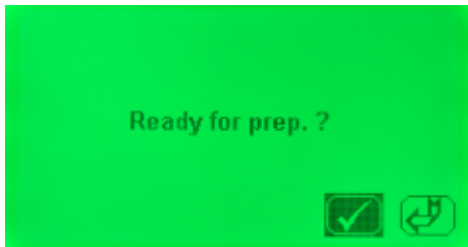

Picture 9

- Specification of the interface
- Feed water - It represents the source water or tap water;
- TDS1: 0ppm - It means that the value of feed water's TDS is 0, the unit is ppm (mg/l);
- DI water - It represents reverse osmosis water;
- TDS2: 0.0ppm - It means that the value of DI water's TDS is 0.0, the unit is ppm (mg/l).

4. Specification of sanitization icon

Under the main interface, press "MENU" button, move the cursor to icon , then press "OK" button to switch to interface of sanitization(Picture 23).(Under the main interface, interface of sanitization also can be switched to, through pressing "OK" button 3 times continuously)
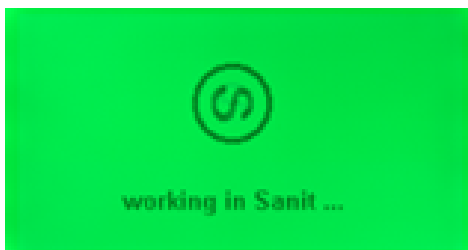

Picture 23

At this time, machine would stop working, and prepares for sanitization.

Method of sanitization

At first, open top cap of disinfection box, then put 1 piece of disinfecting tablet inside, tighten the cap again. Lastly press "MENU" button, move the cursor to icon , press "OK" button to start sanitization procedure (Picture 24).

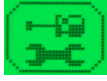Picture 24

Sanitization process will persist for 3-4 hours. During this time, the solenoid valve of pure water outlet will be closed and all the buttons in panel will not be operated.

 ATTENTION

Shutting off the power and restart are prohibited in sanitization process. Otherwise disinfecting tablet water will enter into pure water cartridge, the service life of cartridge will reduce greatly.

5. Specification of main menu icon.

Under the main interface, press "MENU" button, move the cursor to icon , t hen press "OK" button to switch to interface of password entry (Picture 10)
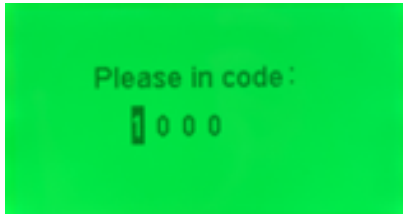
Picture10

The initial code is "1000".
Inputting initial code"1000" through shift button and figure button, then press "OK" 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 11).
Under the main menu, press "MENU" button, move the cursor to corresponding icon, then press "OK" button to switch to the corresponding menu item.
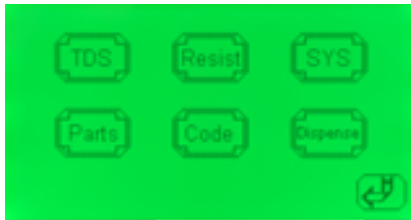
Picture11

7.3 Specification of main menu

1. Specification of icon- alarm of feed and DI water's TDS

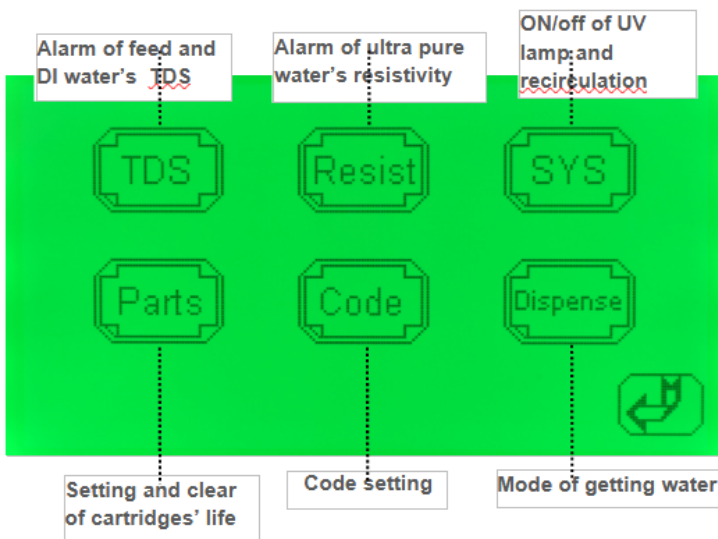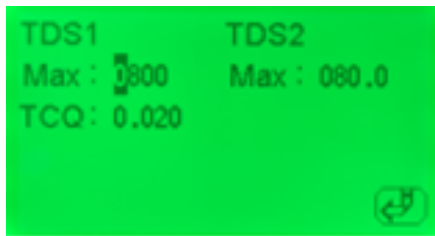Under the main menu, press "MENU" button, move the cursor to icon ![TDS icon], then press "OK" button to switch to interface of feed and DI water quality's standard-exceeding alarm setting (Picture 12).

Picture 12

- Specification of the interface
- TDS1 It represents TDS of source water.
- Max: 0800 It means when the TDS value of TDS1 exceeds 800 ppm (initial setting value), the system will warn and display the interface of feed water quality's standard-exceeding alarm (Picture 13).
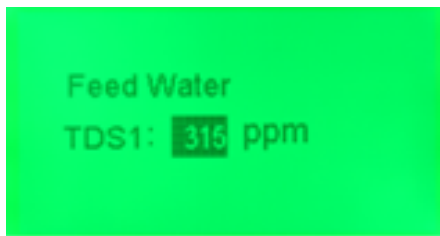
Picture 13

TDS2 - It represents TDS of DI water.
Max: 080.0 - It means when the TDS value of TDS2 exceeds 80 ppm(initial setting value), the system will warn and display the interface of DI water quality's standard-exceeding alarm (Picture 14)

Picture 14

T CQ: 0.020 - It represents that temperature compensation coefficient is 0.020 initial setting value, any modification is prohibited .

⚠ REMARKS:

1. TDS1 -feed water quality's standard-exceeding alarm is effective only when the machine just start. The value of TDS1 which system display is definite feed water's quality (Picture 13).
When the TDS value of actual feed water's quality < Max(setting value),system will cancel the alarm.

2. The purpose of feed and DI water quality's standard-exceeding alarm
The purpose of TDS1's alarm(feed water quality's standard-exceeding alarm):Remind that the feed water's quality is bad, and the extra pretreatment is necessary to protect the cartridges of main body.
The purpose of TDS2's alarm(DI water quality's standard-exceeding alarm):Remind that DI water's quality is bad, and mixed bed resin cartridge should be replaced to protect the post cartridges.

3. Setting method of feed and DI water quality's standard-exceeding value
The TDS value of feed and DI water quality's standard-exceeding alarm can be modified according to the local feed water's quality in the course of machine.

4. General principles of alarm value setting
TDS1 's Max value: 20 ppm
TDS2's Max value: 2 ppm

5. The method of alarm value setting
In the interface of feed and DI water quality's standard-exceeding alarm setting (Picture 12),press MENU button, move the cursor to corresponding item, reset it through shift and figure button, at last press "OK" button to confirm.

2. Specification of icon- alarm of ultrapure water's resistivity

Under the main menu, press MENU button, move the cursor to icon , then press OK button to switch to interface of ultrapure water resistivity's standard-exceeding alarm setting (Picture 15).
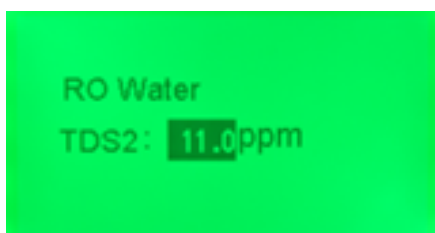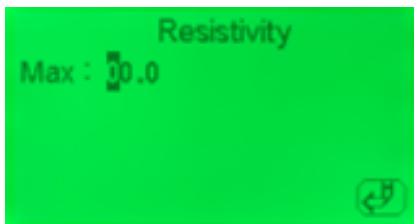

Picture 15

- Specification of the interface
Max: 00.0":When the actual resistivity of ultrapure water is less than 0 MΩ.cm initial setting value, the machine will warn to remind ultrapure water resistivity's standard-exceeding. And system will display interface of ultrapure polishing resin cartridge replacement's reminding (Picture 16).
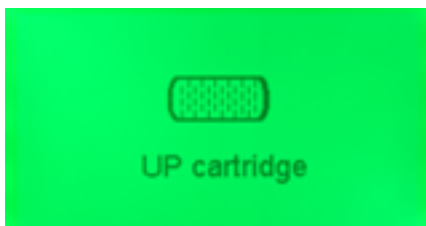
Picture 16

⚠ REMARKS

When the resistivity of ultrapure water exceeds the standard setting value, the system will warn 1 times every 10 seconds. During this time, the solenoid valve of pure water outlet will be closed. If opening solenoid is necessary, the value of ultrapure water resistivity's standard-exceeding must be reset.

- The purpose of ultrapure water resistivity's standard-exceeding alarm
Remind that the actual value of resistivity is lower than the setting value. Maybe the quality of ultrapure is not suitable for the experiment. Replacing the ultrapure polishing resin cartridge is necessary.
- Setting method of ultrapure water resistivity's standard-exceeding value
The resistivity's value of ultrapure water resistivity's standard-exceeding can be reset according to actual requirement for ultrapure water.

- General principles of alarm value setting
According to actual requirement for ultrapure water.

- The method of alarm value setting
In the interface of ultrapure water resistivity's standard-exceeding alarm setting (Picture 15), press MENU button, move the cursor to corresponding item, reset it through shift and figure button, at last press OK button to confirm.

3. Specification of icon- ON/OFF of UV lamp and recirculation

Under the main menu, press "MENU" button, move the cursor to icon , then press "OK" button to switch to interface of UV lamp and recirculation ON/OFF (Picture 17).

Picture 17

Specification of the interface
UV Mode: ON - It means that the monitoring function of UV lamp is turned on. (OFF means turning off)
REC Mode: ON - It means that the recirculation function is turned on. (OFF means turning off)

⚠ REMARKS

- UV lamp is optional. Some models have no UV lamp cartridge, if so, UV Mode's initial setting is OFF. Otherwise, it is ON.
- Recirculation function is optional. Some models have no this function, if so, REC Mode's initial setting is OFF. Otherwise, it is ON.

- The purpose of UV lamp and recirculation ON/OFF

- UV lamp alarm: means that life of UV lamp is over, replacement of UV lamp is necessary.

- Recirculation ON/OFF: system can restrain bacteria's increase and keep high quality's ultrapure water.

- Setting method of UV lamp and recirculation ON/OFF:

- In the interface of UV lamp and recirculation ON/OFF (Picture 17), press "MENU" button, move the cursor to corresponding item, reset it through shift and figure button, at last press "OK" button to confirm.

Picture 17

4. Specification of icon- setting and clear of cartridges' life

Under the main menu, press MENU button, move the cursor to icon , then press OK button to switch to interface of setting and clear of cartridges' life (Picture 18).
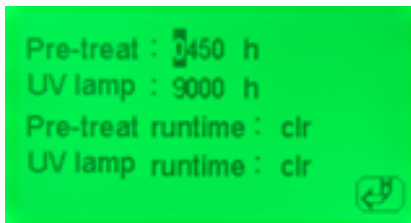
Picture 18

Specification of the interface
Pre-treat: 0450h - It means that the active carbon filter's initial setting time is 450 hours. When its runtime exceeds 450 hours, the system will warn and display the interface of pretreatment cartridge replacement's reminding Picture 19
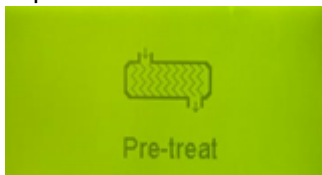
Picture 19

UV lamp: 9000h - It means that the UV lamp's initial setting time is 9000 hours. When its runtime exceeds 9000 hours, the system will warn and display the interface of UV lamp replacement's reminding (Picture 20).

UV lamp
Picture 20

Pre-treat runtime: clr - clear the runtime of pretreatment cartridges to zero, system will reset timer.
V lamp runtime: clr - clear the runtime of UV lamp to zero, system will reset timer

⚠️ REMARKS -

- The above 2 operation are implemented generally on the condition of replacing cartridges.
- UV lamp is optional. If there is no this part, "UV lamp: 9000h", "UV lamp runtime: clr" and "Picture 20" will not display.
- The basis for pretreatment cartridge's life-450 hours is the runtime of system-5 hours every day,30 days every month,3 months.
- The basis for UV lamp's life-9000 hours is the runtime of system-24 hours every day with Uninterruptible power supply. If the lamp is turned on and off frequently, its life will reduce strikingly.
- Setting method of setting and clear of cartridges' life
- The principle of setting of cartridges' life: according to the actual replacement term.
- Method of setting cartridges' life: In the interface (Picture 18), press "MENU" button, move the cursor to corresponding item, reset it through shift and figure button, at last press "OK" button to confirm.
- Method of clear of cartridges' life: In the interface (Picture 18), press "MENU" button, move the cursor to "clr" item, then press "OK" button to confirm.

⚠️ ATTENTION:

Clearing cartridges' life must be implemented once replacing new cartridge is ok.
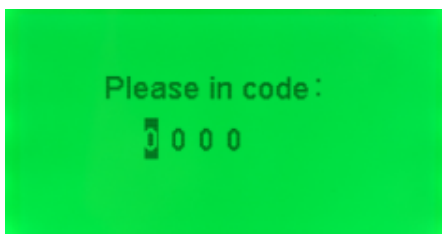
5. Specification of icon- code setting

Under the main menu, press "MENU" button, move the cursor to icon
then press "OK" button to switch to interface of code setting (Picture 21).

Picture 21

Specification of the interface
0000 - It means that the password is "0000"

⚠️ ATTENTION - Initial setting password is 1000

- Method of code setting
For enhancing management of the machine, If needed, password can be reset to protect system's parameter from modification.
- Specific method: In the interface (Picture 21), move the cursor to corresponding item, through shift button to choosing the digit and figure button to modifying the digital of digit, at last press "OK" button to confirm. From now on, the initial setting password "1000" is invalid.

⚠️ ATTENTION

- Once new code setting is ok, please make sure to input new password in interface of password entry (Picture 10).
- If new password is forgotten, please no hesitate to contact with our company.

6.Specification of icon- Mode of getting water

Under the main menu, press MENU button, move the cursor to icon [Dispense] , then press OKbutton to switch to interface of getting water's mode (Picture 22).
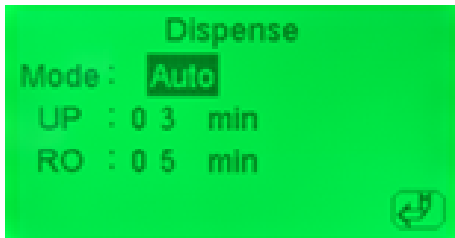
Picture 22

- Specification of the interface:
- Mode: Manual - It means that the current mode of getting water is manual.
Specification of manual mode -
Under this mode, press the dispense button first times, then the solenoid valve of pure water is opened. Press the dispense button again, then the valve is closed.)
- Mode: Auto - It means that the current mode of getting water is automatically.

Specification of auto mode .
Under this mode, press the dispense button, then the solenoid valve of pure water is opened. And the valve will be automatically closed after the setting time.

⚠️ ATTENTION
Time setting is effective only under auto mode;

Time frame: 1 minute to 99 minutes.

- Setting method of getting water's mode

In the interface (Picture 22), press MENU button, move the cursor to corresponding item, through shift button to choosing the digit and figure button to modifying the digital of digit, at last press "OK" button to confirm.

7.4 Specification of alarm

1. Alarm of cartridges' life
Including: pretreatment cartridge replacement's reminding (picture 19), UV lamp replacement's reminding (picture 20), ultrapure polishing resin cartridge replacement's reminding (picture 16).
- Alarm of pretreatment cartridge replacement's reminding (picture 19), and UV lamp replacement's reminding (picture 20).
When the runtime is above the initial setting value of cartridges' life, system will warn, and display warning picture 2, accompanied by buzzer alarm. Warning time will sustain 3 seconds, and system will monitor the pressure again every 1 hour. It means that system will warn 1 times every hour until the initial setting value is modified or the runtime is cleared to zero.
- Alarm of ultrapure polishing resin cartridge replacement's reminding (picture 16).
When system's real time resistivity is less than the initial setting value, system will warn, and display warning picture 16, accompanied by buzzer alarm. Warning will occur every 10 seconds. The solenoid valve of pure water's outlet will not be opened when system is warning. If opening is necessary, please modify the initial setting value of resistivity's alarm.

8. Water Quality Test

The system has 3 monitor sensors of water quality measuring.
- The first, TDS1, monitors feed water's quality Ro water, distilled water, deionized water
Measure unit: TDS total dissolved solid, ppm

- The second, TDS2, monitors deionized water's quality high pure water
Measure unit: TDS(total dissolved solid, ppm

- The third, Resist, monitors ultrapure water's quality Ultrapure water
Measure unit: Resistivity MΩ.cm
REMARKS

- 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.	Commodity	Suggested replacement term
D-Decart1	Mixed bed resin cartridge	About 5000 liters pure water
D-Uvlamp	D-Uvlamp (254&185) nm wavelength uv lamp	About 9000 hours
D-Pocart4	Ultrapure polishing resin cartridge	About 5000 liters pure water
D-Ufcart	D-Ufcart eliminating endotoxin uf cartridge	-
D-Tefit	(0.45+0.1) μm terminal filter	-

REMARKS -
- Worse inlet feed water quality or big dosage will reduce the life of above cartridges.

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 -Cartridges or filters' life ends -No or little source water drawing	-Replace new valve -Replace new cartridges or filters -Air in Inlet tube or pump, please exhaust
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.