EDI Touch-S10
Laboratory Water Purification System
User Manual

DRAWELL
Artist of Science

Please read operating manual before installation and operation.

Drawell International Technology Limited

Chongqing Drawell Instrument Co., Ltd.

Shanghai Drawell Scientific Instrument Co.,Ltd.

Address : Suite 2204,Building No.11,Shiyou Road No.1, Yuzhong District, Chongqing China.

Homepage : www.drawell.com.cn

Tel : 0086-023-63268643

Email : sales05@drawell.com.cn

CATALOGUE

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.

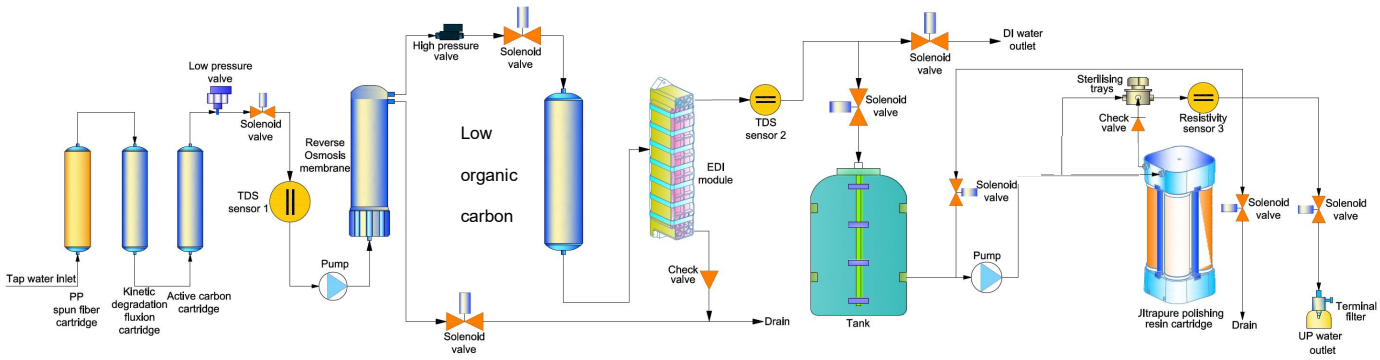
2. Specification

Model	EDI Touch-S10	
Output	10 liters/hour	
Pure water outlet	2: deionized water, ultrapure water	
Ultrapure water quality		
Resistivity(25℃)	18.2MΩ.cm	
TOC*	<10ppb	
Bacteria	<0.01cfu/ml	
Particle(>0.1μm)	<1/ml	
Endotoxin	N/A	
RNases	N/A	
DNases	N/A	
Deionized water quality		
Resistivity	>5MΩ.cm	
TOC*	<30ppb	
Silicone rejection rate	>99.9%	
Feed water requirements	Tap water, temperature:5-35℃,pressure:1.0-4.0bar	
Dimension and weight	Length×Width×Height:500×360×540mm / Weight: about 20Kg	
Electrical requirements	AC100-240V, 50/60Hz	
Power	120W	
Standard configuration	Main body (Including 1 set of cartridge)+20 liters PE 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	150GPD RO membrane	**1**
LV.5	Low organic carbon cartridge	**1**
LV.6	EDI module	**1**
LV.7	Ultrapure polishing resin cartridge (4pcs in one)	**1**
LV.8	(0.45+0.1)μm terminal filter	**1**
LV.9	Air 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℃
- **Pressure:** 1.0-4.0bar
- **Power:** AC100-240,50/60Hz,120W

【Clean, dry working environments would be suggested!】

5. Installation

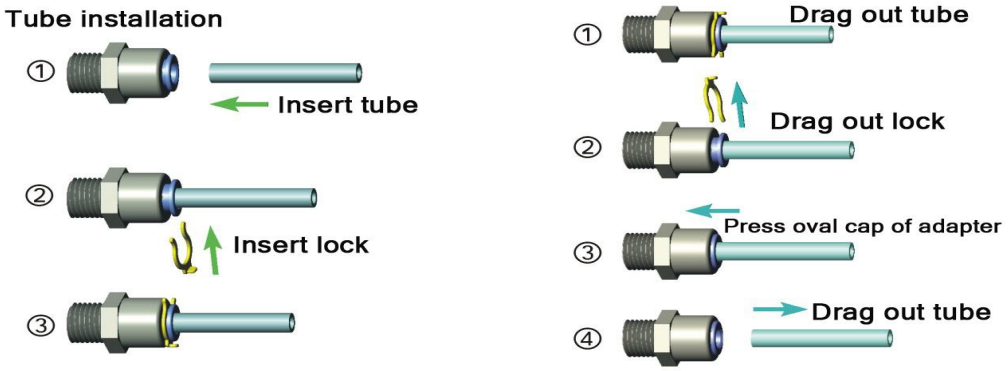
5.1 Preparation for installation

- 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.

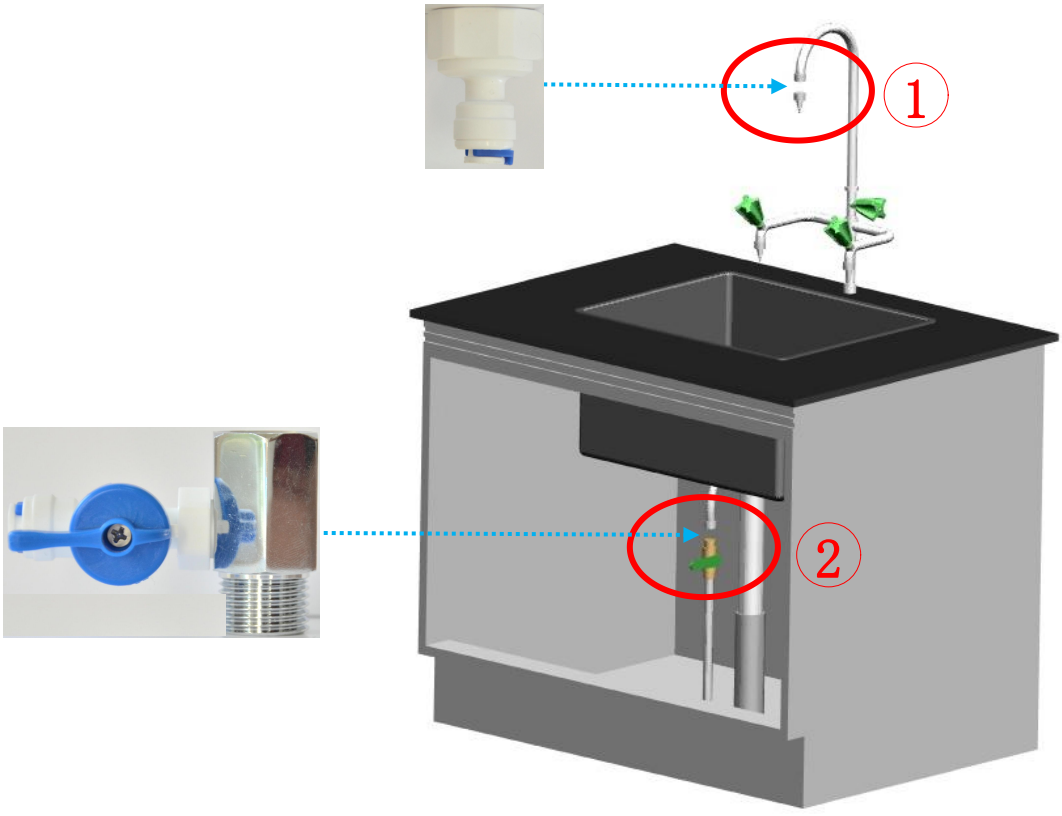
■ **ATTENTION:**

- 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 3/8'' 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 3/8″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!!)**

(6). Connect to external water tank:

Use 2 tubes (1/4" PE) with a suitable length.

With the first tube, connect 2 interface (one interface is on the back of machine with yellow label marked "To water tank", the other is on the side of external tank with the label "IN").

With the second tube, connect 2 interface (one interface is on the back of machine with yellow

label marked “To water tank”, the other is on the side of external tank with the label “OUT”).

■ **ATTENTION:**

➘ Make sure of that the external water tank is not below machine for 20cm.

(7). Connect to liquid level interface and cable:

Connect the liquid level interface on the back of body to liquid level interface on the top of water tank with black cable.

Thus the installation is OK.

Installation Guide Chart

Ultrapure water outlet

Application:

GC, HPLC, IC, ICP
PCR, weather analysis
Amino acid analysis
Reagent preparation

Deionized water outlet

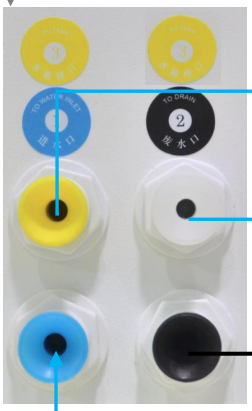
Application:

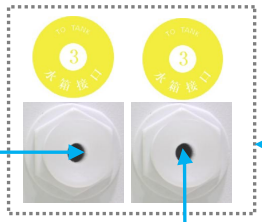
Buffer disposing, aseptic drinking water, physical and chemical analysis , fine chemistry industry, inlet water for ultrapure water machine, GC, HPLC, etc.

Terminal filter

Liquid level interface

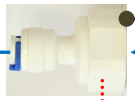
Cable with adapters





External water tank

Wastewater drain **(Do not jam)**



Tap water adapter 1

OR

Tap water

Tap water adapter 2

3-direction-links

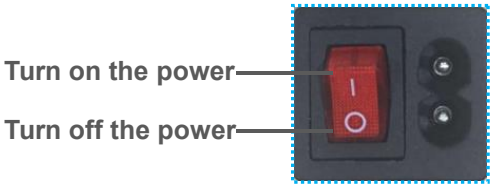
3/8" ball valve

Water tap

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:



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.

■ **ATTENTION:**

➘ If the touch screen does not lighten after power on, please reverse the power plug and inset it again.

6.2 Producing water

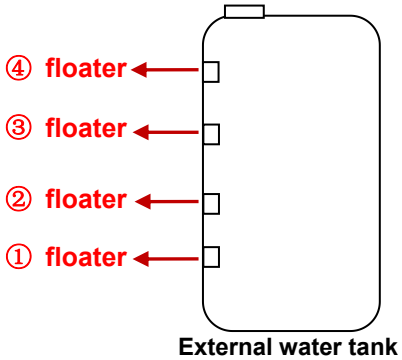
First starting up, system will flush RO membrane about 20’s. After that, it will produce EDI water to store in external water tank.

■ When liquid level is lower than ① floater, recirculation pump stops working.

■ When liquid level is higher than ② floater, recirculation pump starts to produce ultrapure water. This process needs around 1 hour (From starting up to producing ultrapure water).

■ When liquid level is higher than ④floater, the system will be in standby state. At this time, RO boost pump stops, inlet water valve closed.

■ When liquid level is lower than ③ floater, RO booster pump starts to work again, to produce EDI water to tank.



■ **ATTENTION:**

➘ It is near to 1 hour from starting up to produce ultrapure water. If ultrapure water is in urgent use, when liquid level of tank is higher than ①floater, restart the system, then system will produce ultrapure water immediately.

- If liquid level of tank is always under ② floater, but system still works, and EDI water cannot goes out, please turn off the power and close the tap water immediately. Check whether RO membrane or EDI module goes wrong.

6.3 Getting Corresponding Pure Water

Press “DP1” or “DP2” buttons, which are on the panel, to get corresponding DI water or ultrapure water (higher quality water than RO water).

6.4 Standby

When power on, if not getting pure water, the system still produces EDI water to store in water tank. Until the liquid level is higher than ④floater, system will automatically stop. At this time, system is in standby state.

In standby state, press any pour buttons on panel or pouring from the bottom of water tank till water level under ③floater, system will start and produce pure water automatically.

■ **ATTENTION:**

When system starts, if liquid level is between ③ and ④floater, it will stop producing water to tank. Only when press pour buttons on panel or pouring from the bottom of water tank till water level under ③ floater, system will start and produce pure water to tank.

6.5 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).

6.6 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.

6.7 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 Specification at the beginning of working process

Picture 1

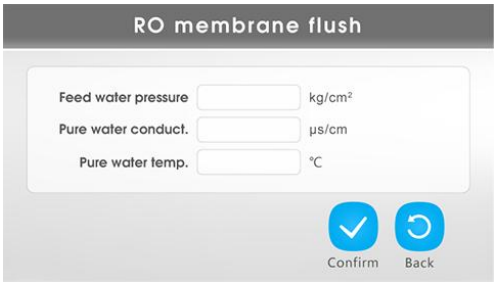
When system is powered on, the boot screen (Picture 1) will appear for about 5 seconds.

Picture 2

Touch anywhere of the display, system will detect the status of feed water automatically. No feed water or low pressure of feed water, the system will alarm instantly (Picture 2). If the status of feed water is normal, system will implement the following program.

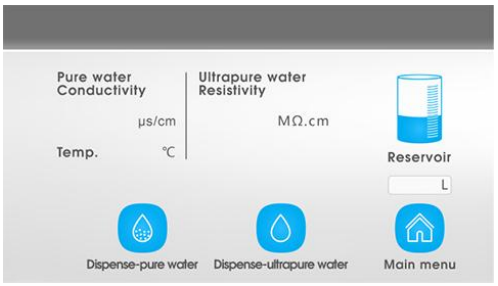
Picture 3

Detect the usage amount and cartridges' life, judge whether any value is overrange. If so, system will alarm instantly to remind cartridges' replacement (Picture 3). Touch the icon "Stop alarm" to ignore the alarm. If not, system will switch to the status of flushing RO membrane directly.



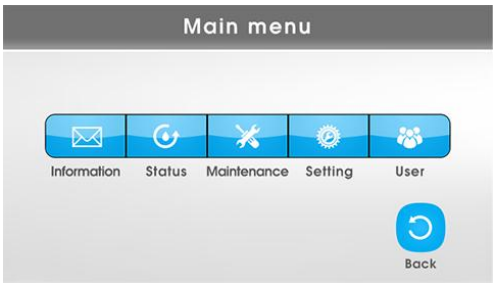
Picture 4

System starts to flush RO membrane automatically. Flushing duration time: 1 minute. (Picture 4)



Picture 5

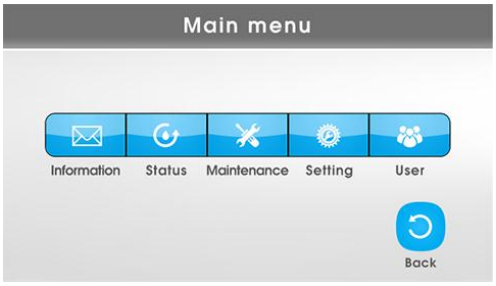
After finishing RO membrane's flushing, system will switch to main interface (Also, touch the icon "Back" to switch to main interface). (Picture 5)



Picture 6

In the main interface, touch the icon “Main menu” to switch to the interface of Main menu. (Picture 6)

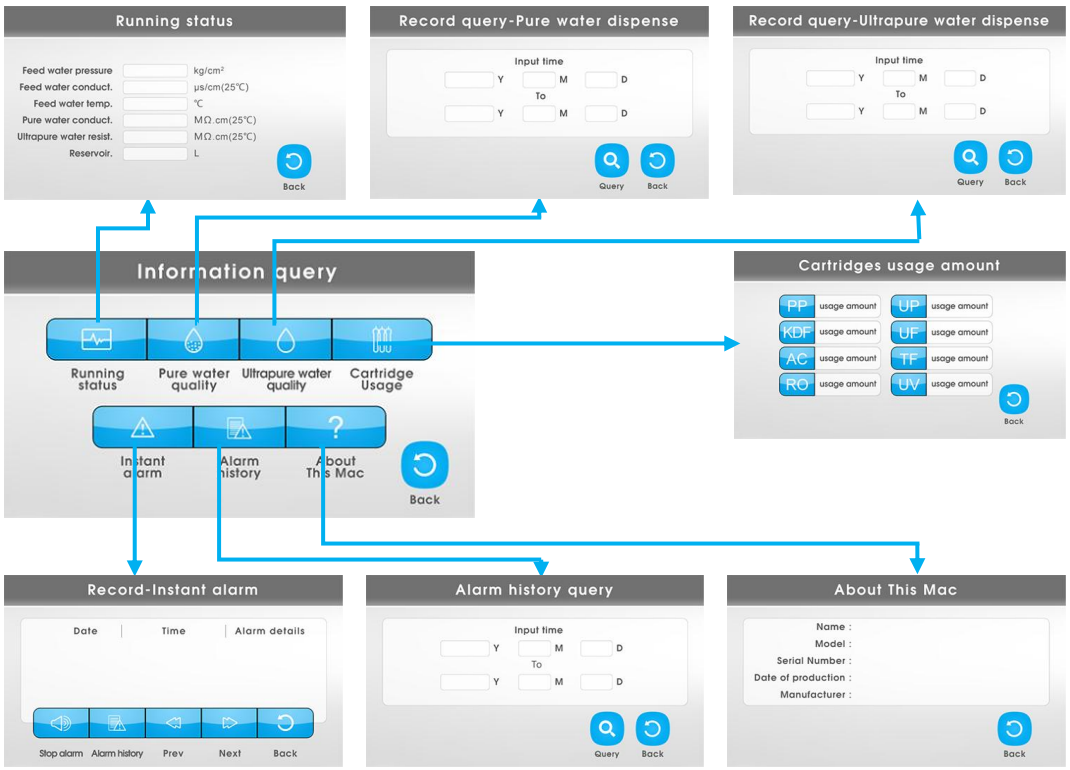
7.2 Specification of the main menu interface



Touch menu item to switch to corresponding interface of different menu item.

(1). Information

Touch the icon of sub-menu item of “Information query” to switch to the corresponding interface of sub-menu item. (Details in picture 7)



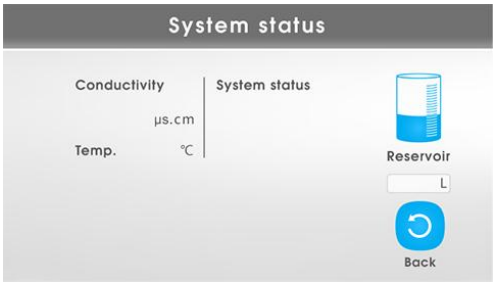
Picture 7

"Information query" includes the following sub-menu items:

- **Running status:** Feed/pure/ultrapure water's temperature, water quality etc.
- **Pure water quality:** Record query of pure water dispense
- **Ultrapure water quality:** Record query of ultrapure water dispense
- **Cartridge usage:** Record query of each cartridge usage amount
- **Instant alarm:** Record query of every instant alarm
- **Alarm history:** Record query of every alarm history
- **About this mac:** Information of this mac

(2). Status

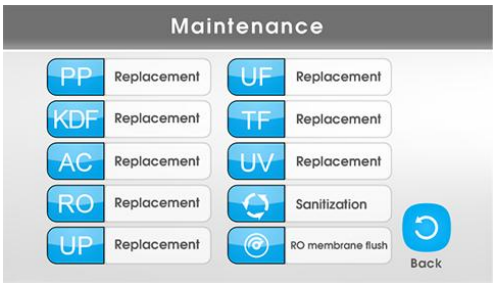
System status (details in picture 8)



Picture 8

(3). Maintenance

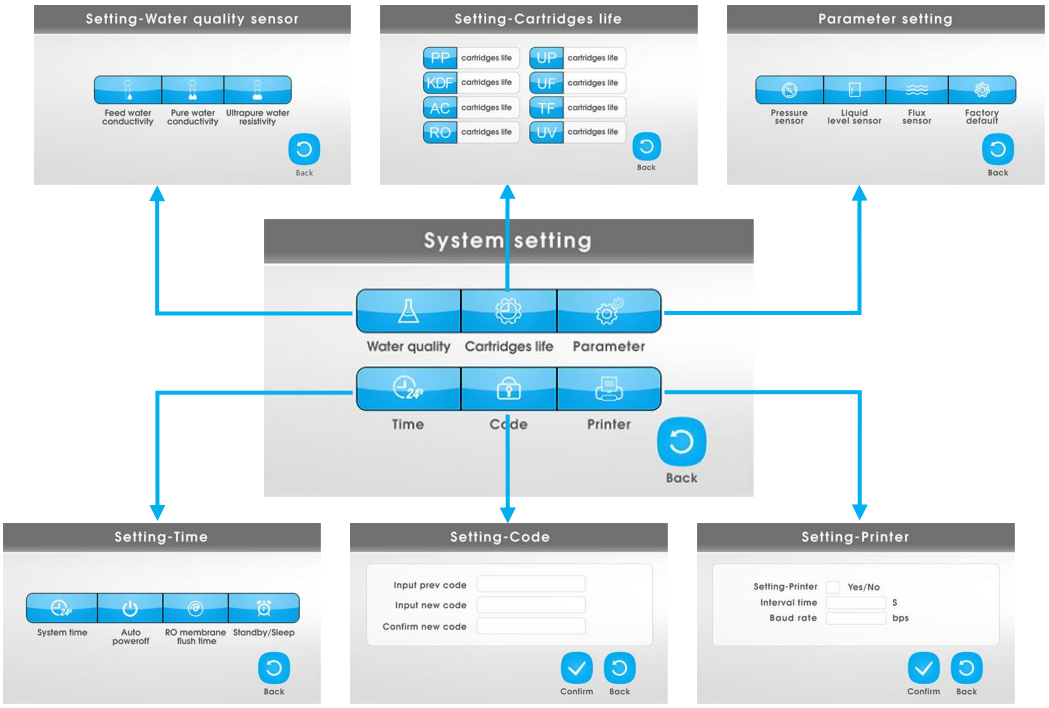
Cartridges' replacement, system sanitization, RO membrane flushing. (Details in picture 9)



Picture 9

(4). Setting

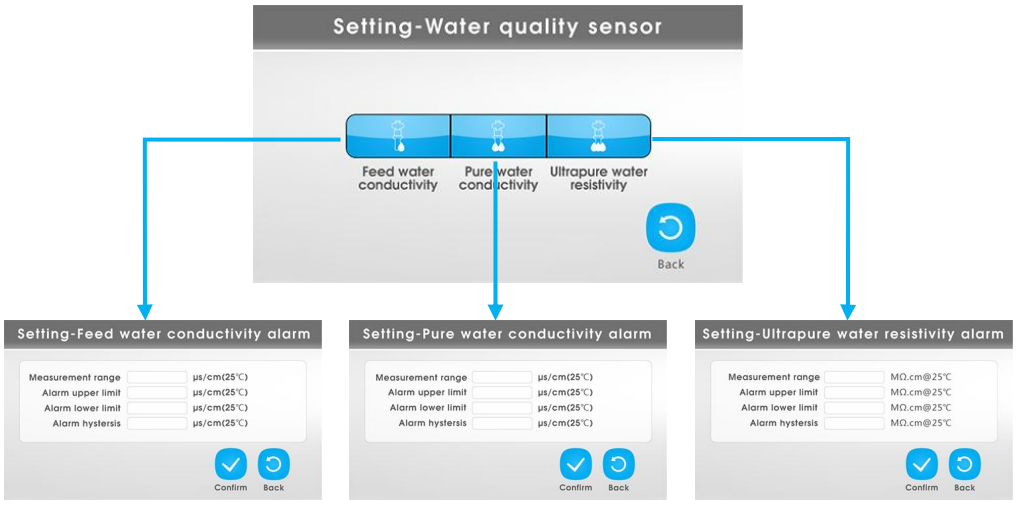
Touch the icon of sub-menu item of “System setting” to switch to the corresponding interface of sub-menu item. (Details in picture 10)



Picture 10

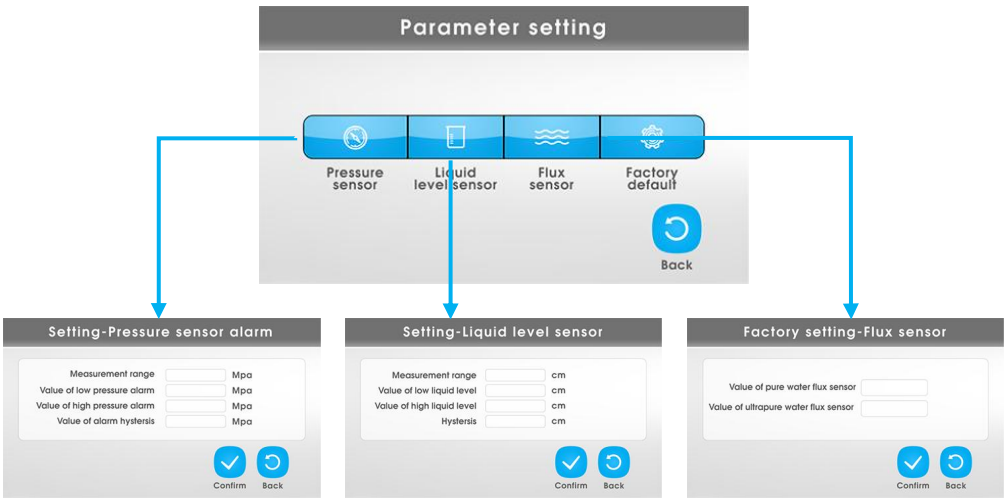
“Setting” includes the following sub-menu items:

- **Setting-water quality sensor:** Setting of feed/pure/ultrapure water’s measurement range and alarm parameter.(Details in picture 11)



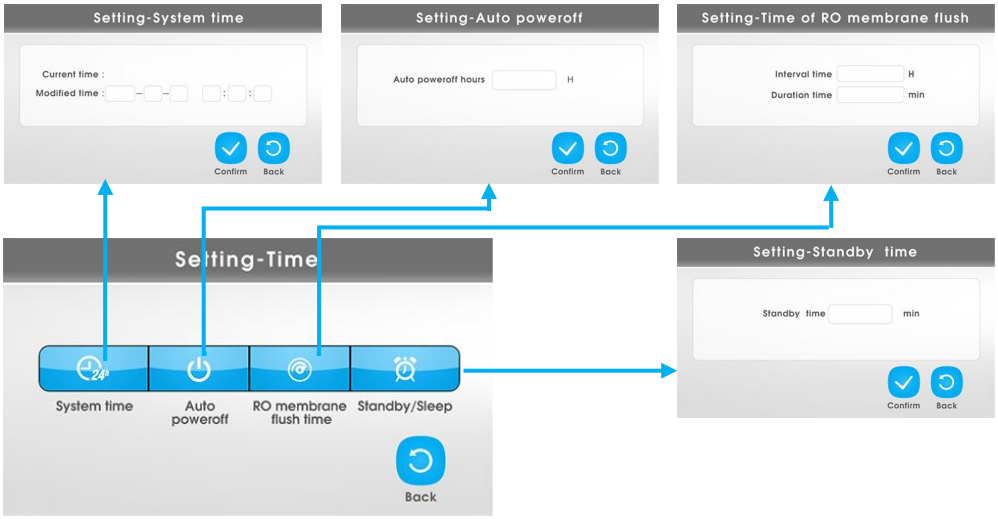
Picture 11

- **Setting-cartridges life:** Setting of each cartridge’s service life
- **Parameter setting:** Setting of pressure, liquid level, flux and factory default. (Details in picture 12)



Picture 12

- **Setting-Time:** Setting of system time, auto power-off, RO membrane flush time, standby/sleep time. (Details in picture 13)
  - **System time:**
    Setting of system time
  - **Auto power-off:**
    Setting of auto power-off time (Time range:0-24 hours, "0" hour means that auto power-off is unavailable)
  - **Time of RO membrane flush:**
    Setting of RO membrane flushing's interval and duration time. (Interval time range:1-10 hours， duration time range: 1-60 minutes)
  - **Standby time：**
    Setting of standby or sleep time.(Time range:0-60 minutes. "0" minutes means that standby is unavailable



Picture 13

- **Setting-Code:** Setting of code modification
- **Setting-Printer:** Not available at present

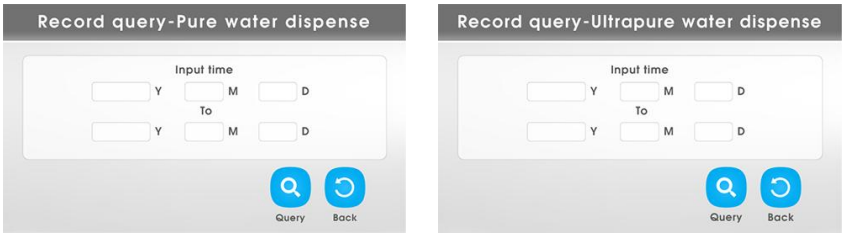
7.3 Record query and data export of water dispense and alarm history

System can query record of pure/ultrapure water dispense and alarm history. And all the data can be exported into USB flash cards through the Interface of USB. Operation details are as follows:

(1). Record query and data export of pure/ultrapure water dispense

- ***Record query*** **of pure/ultrapure water dispense**

As shown in Picture 7, in the interface of "Record query-Pure/Ultrapure water dispense"(Pictures as shown below), input starting and ending time's value of year, month and day.(No time's inputting will show all the records)



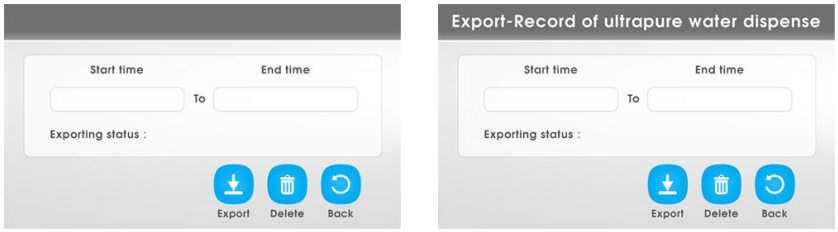
Then touch the icon "query" to switch to the interface of picture14 (as shown below).

Picture 14

In the above interface of "Record-Pure/Ultrapure water dispense", the water dispense information, such as date, time, conductivity/resistivity, amount (liters) and temperature, will be shown.

- ***Data export*** **of pure/ultrapure water dispense**

If date exporting is necessary, just input starting and ending time's value in the interface of picture15 (as shown below), and touch the icon "Export", then the data can be exported into external USB flash cards through the Interface of USB.



Picture 15

ATTENTION:

- Make sure that USB interface has been connected with external USB flash cards before exporting.

(2). Record query and data export of alarm history

- ***Record query*** **of alarm history**

  As shown in Picture 7, in the interface of “Alarm history query”(Pictures as shown below), input starting and ending time’s value of year, month and day.(No time’s inputting will show all the records)

  Then touch the icon “query” to switch to the interface of picture16 (as shown below).

Picture 16

  In the above interface of “Record-Alarm history”, the alarm details will be shown.

- ***Data export*** **of alarm history**

  If date exporting is necessary, just input starting and ending time’s value in the interface of picture17 (as shown below), and touch the icon “Export”, then the alarm data can be exported into external USB flash cards through the Interface of USB.

Picture 17

■ **ATTENTION:**

➘ Make sure that USB interface has been connected with external USB flash cards before exporting.

7.4 Sanitization and cartridges replacement

(1). Sanitization

System has optional manual sanitization function.

In the main menu interface, touch the icon “Maintenance” to switch to maintenance interface (As shown in Picture 9), then touch the icon “sanitization” to switch to the sanitization interface of picture18 (as shown below).

Picture 18

There are 2 kinds of disinfection model: Circulating disinfection and Pure water outlet disinfection, 2 kinds of auxiliary function, and 1 stop button.

■ **ATTENTION:**

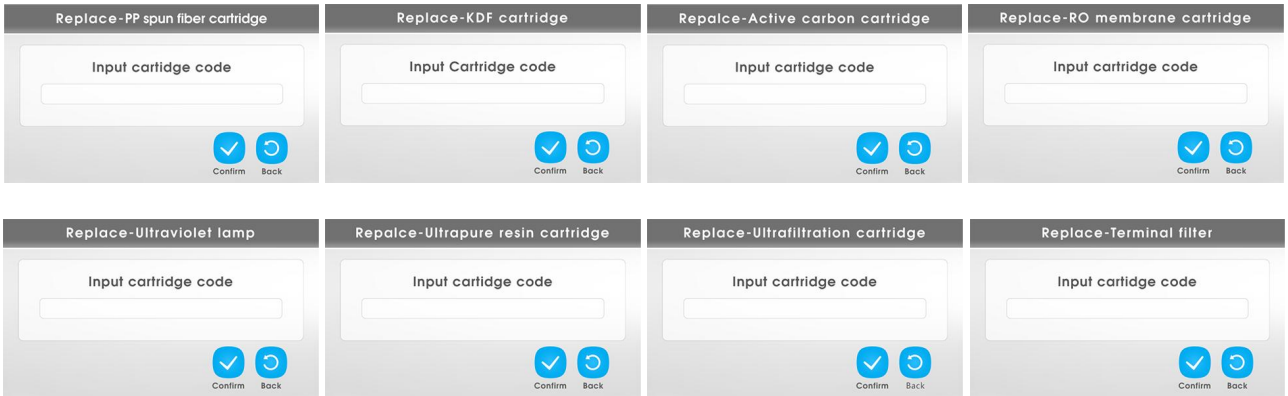
- During the whole sanitization process, RO membrane flushing and water dispensing function is unavailable;
- Touching the icon “Stop” can end all the sanitization process;
- For more information about sanitization, please contact our support engineer.

(2). Cartridges replacement

When service life of cartridges are over, system will show the reminder interface of cartridges replacement.

After replacing new cartridges, please switch to the interface of maintenance (as shown in Picture 9) through main menu interface. Touch the corresponding icon (such as: PP) to switch to the interface of replace, at last input the cartridge’s code.

All the interface of cartridges are as follows:



Picture 19

8. EDI module

8.1 Function

- Natural polysulfone material with low extraction
- Continuous operation without leaking
- Verified world's leading electrical deionization technology
- Efficient 4-channels flow design

8.2 Working environment

- Installed indoor without direct sunlight and ambient temperature is below 45° C

8.3 Material

- Membrane module: natural polysulfone, ion exchange membrane, ion exchange resin, and thermoplastic synthetic rubber

8.4 Quality assurance standard

- Each module has been rigorously tested before delivery to meet the stringent requirements and industry standards of IONPURE, and manufactured in facilities who approved by ISO9001: 2000.

8.5 EDI inlet and technical indicators

EDI module inlet water requirement (Minimum)	
Feed water:	RO revers osmosis water
Conductivity of feed water:	<60μs/cm
CO_2	<30ppm as CO_2
Temperature	5-35ºC
Total chlorine	<0.02ppm as Cl_2
Feed water pressure	0.5-1.5bar
TOC	500ppb as C
EDI module technical indicator	
Recovery rate	60%
Flow rate	10l/h
Output water resistivity	>5MΩ.cm(10-15 MΩ typical)
TOC (with RO pretreatment system)	<30ppb
Silicon (SiO2) rejection rate	>99.9%

8.6 Notes of EDI module

- EDI module is a precision instruments, do not knock or shock
- When system alarmed “No water”, please shut down immediately and check pretreatment cartridges & inlet water pressure, replace the cartridges in time, or else will damage the EDI module.
- When EDI water output is decreased significantly, please check RO membrane and EDI module to see if clogged, or call our Customers Service Hot-line.

- When EDI water quality is bad, please stop using it immediately and replace a new EDI module to avoid water quality decreased.
- Please pay attention to the connectors of EDI module when replacing to prevent EDI failure as wrong connection.
- When replacing EDI module, dismount the screws on EDI, then lift EDI lightly and remove them. Do not hard pull the line group of EDI module.
- When replacing EDI module, please make sure there is no residual debris or other particles in water pipe (inlet and outlet) of EDI module, otherwise, it may lead irreparable damage to EDI module.
- If there is any abnormal of EDI module, please call us at first time and our professional engineer will guide you to solve the problem.

9. Water Quality Test

The system has 3 monitor sensors of water quality measuring.

- **The first, TDS1,** monitors feed water's quality (tap water, inlet water).
  Measure unit: TDS (total dissolved solid, ppm)
- **The second, TDS2,** monitors DI water's quality (DI water).
  Measure unit: TDS (total dissolved solid, ppm)
- **The third, 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).

10. Consumables

Item No.	Commodity	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-150GPD	150GPD RO membrane	About 12-24months
PTC-AC-HZB1	Low organic carbon cartridge	About 9000 liters pure water
PTC-EDI10-IP	EDI module	--
PTC-UPPR-M4	Ultrapure polishing resin cartridge (4pcs in one)	About 4000 liters pure water/set
TF-(0.45+0.1)μm-S	(0.45+0.1)μm terminal filter	-
AIR FILTER-H10	Air filter	-

REMARKS:

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

11. 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.**

12. 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 mal-operation 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.

Drawell International Technology Limited

Shanghai Drawell Scientific Instrument Co.,Ltd.

Chongqing Drawell Instrument Co.,Ltd.

Add:Suite 2204,Building No.11,Shiyou Road No.1,Yuzhong District, Chongqing,China

Tel: 0086-023-63268643

Web : www.drawell.com.cn

Email : sales05@drawell.com.cn