

ROS-8600 reverse osmosis control system

(PLC control + multi-channel conductivity acquisition)

Optional: Pressure acquisition front and back of membrane

And data remote transmission interface



user 's manual

Introduction

Thank you for using the ROS-8600 reverse osmosis system monitoring platform manufactured by Jishen Tongchuang!

The monitoring platform of reverse osmosis system is divided into two series: single-stage reverse osmosis and two-stage reverse osmosis.

Please read this manual carefully before installation. Correct sensor installation and parameter setting will maximize the performance and advantages of the product and bring you a good use experience.

ROS-8600 is an integrated system for precise process analysis, measurement and control of reverse osmosis process, which shall be installed, operated and maintained by trained

personnel or personnel who understand and master the professional knowledge.

If ROS-8600 encounters difficulties during installation or use, please contact our after-sales service department in time.

After unpacking, please be sure to check the complete list and the actual products you received. If there is any shortage or damage, please contact our sales personnel in time.

The company solemnly promises:

1. if quality problems occur within one year from the date of purchase, you can get free maintenance or replacement.
2. no matter where you get this product, the manufacturer promises lifelong technical service for the sold products.
3. product damage caused by the following reasons is not included in the warranty:
 - A. Damage caused by mistakenly connecting high-voltage power supply or flooding;
 - B. Damage caused by unauthorized modification and misuse;
 - C. Incidental losses caused by improper model selection;
 - D. Damage caused by exceeding the specified service conditions of the product;
 - E. All physical damage caused by improper stress;
 - F. Failure to store and transport in accordance with the specified storage or transport conditions (reference standard sj/t10463-93);
 - G. Consumable materials need to be purchased separately.

1、Overview

ROS-8600 series reverse osmosis reverse osmosis control system (2020 version) is the third generation upgraded product of this series;

The system takes 7 inch /10 inch /15 inch color touch screen as the main operating platform, combines PLC process control, and highly integrates water quality measurement parameter collection and RO single-stage / double-stage process control process.

The system integrates various detection functions such as RO system operation program, DI/DO control, water quality and flow detection.

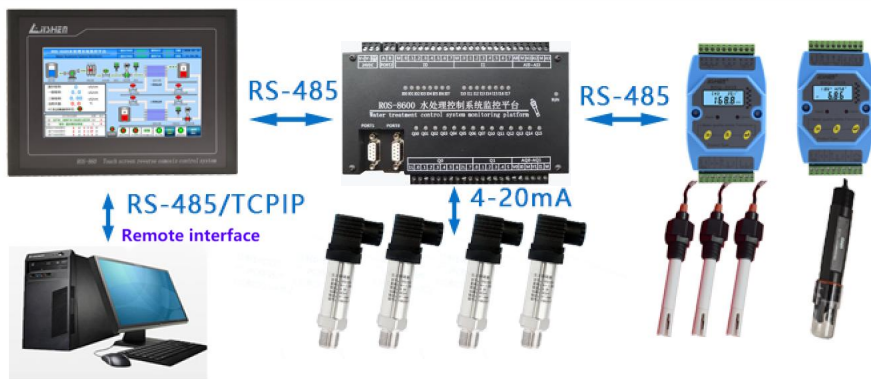
In order to meet different process flow choices of users. It can be randomly selected according to the number of channels of single-stage, two-stage, conductivity /PH transmitter.

Function	Single stage	Two stage
Conductivity	Source water conductivity; Primary permeate conductivity	Source water conductivity; Primary permeate conductivity; Secondary effluent conductivity
Desalination	Primary desalination rate	Primary desalination rate;

rate		Secondary desalination rate
PH (optional)	Source water pH measurement	Primary effluent pH measurement
Pressure (optional)	Primary membrane front pressure; Pressure behind primary membrane	Primary membrane front pressure; Pressure behind primary membrane; Pressure before secondary membrane; Pressure behind secondary membrane
DI input check point	Low liquid level of source water tank; Low pressure detection at the inlet of primary booster pump; High pressure at the outlet of primary booster pump; High liquid level of primary effluent tank; Low liquid level of primary effluent tank; Preprocessing signal Enter 2 spare repair ports	Low raw water pressure; Low pressure at the inlet of primary booster pump; High pressure at the outlet of primary booster pump; High liquid level of primary effluent tank; Low liquid level of primary effluent tank; Secondary booster pump outlet high pressure; Low liquid level of secondary effluent tank; High liquid level of secondary effluent tank; Preprocessing signal; Enter 2 spare repair ports
DO output control point	Inlet valve; Source water pump; Primary high pressure pump; Primary flushing valve; Primary dosing pump; Discharge valve for excess conductivity of primary produced water; Alarm output node; Manual standby pump Output 2 spare repair ports	Inlet valve; Source water pump; Primary high pressure pump; Primary flushing valve; Primary dosing pump; Discharge valve for excess conductivity of primary produced water; Secondary booster pump; Secondary flushing valve; Secondary dosing pump Secondary effluent conductivity exceeding standard discharge valve; Alarm output node; Manual standby pump Output 2 spare repair ports
RS-485 remote interface	(MOBSU RTU)	(MOBSU RTU)
Data recording function	Current system operating mode, conductivity, temperature and pressure	Current system operating mode, conductivity, temperature and pressure

Single / dual level configuration table

2、System features



Schematic diagram of complete machine system composition

1. human machine interface, optional 7 inch /10 inch /15 inch touch screen, free switching of dynamic process display and real-time multi parameter monitoring display;
2. conductivity detection, raw water, primary and secondary conductivity detection, with over limit alarm and discharge drive
3. desalination rate monitoring, primary desalination rate and secondary desalination rate monitoring, with over limit alarm and real-time monitoring;
4. human computer interaction, pop-up soft keyboard, can set or modify operation parameters, rich functions and simple operation;
5. automatic control. The control system has built-in measurement analysis and di/do, and embedded process operation software to achieve high integration;
6. consumables management, pre-processing capacity and residual processing capacity prediction of consumables, so that users can timely understand the operation of consumables;
7. flushing mode: system startup flushing, shutdown flushing, free setting of flushing time, free selection of high-pressure flushing and low-pressure flushing;
8. the anti scaling metering pump control is set and interlocked with the high-pressure pump control;
9. data storage: operation data is recalled in the form of historical curve and data queue, which is convenient for users to compare and record,
10. it also has U disk export function for data backup;
11. remote communication, RS485 communication port can be realized through gprs/wifi or zigebee and other wireless modules
12. remote transmission, or access to the Internet to realize remote real-time monitoring, fault diagnosis and other functions;
13. expand redundancy. The manufacturer can expand on the basis of ros-8600 series according to user needs;
14. panel type installation, all detection modules are built-in, so that there are few external power distribution lines of the controller, and the installation is simple and beautiful;
15. good electromagnetic compatibility (EMC) design, calmly dealing with the complex electromagnetic environment of industrial site;

❖Communication interface description:

Touch screen communication interface: ① connect with PLC controller; ② Remote data transmission through RS-485 (Modbus RTU) or network interface (tcp/ip);

PLC controller communication interface: ① communicate with conductivity or pH transmitter through RS-485; ② Communicate with pressure transmitter through 4-20mA interface;

❖Areas of adaptation:

It is applicable to various small and medium-sized single-stage and two-stage reverse

osmosis application control integrated systems. Simple operation, complete measurement configuration and highly integrated system.

3、Main technical indicators

Conductivity Measurement	Electrode type	0.1 cm-1	1.0 cm-1	10.0 cm-1
	Source water's EC	----	(0~2000) μ S/cm	(0~20.00) mS/cm
	Primary water's EC	(0~200) μ S/cm	(0~2000) μ S/cm	----
	Secondary water's EC	(0~200) μ S/cm	(0~2000) μ S/cm	----
	Temperature Compensation	Automatic compensation based on 25 °C, range (normal temperature electrode 0 ~ 50 °C, high temperature electrode 0 ~ 120 °C)		
	Accuracy	Matching accuracy:≤ level .5		
Desalination rate	Measuring range	(0-100) %		
PH Measurement	Measuring range	0-14 .00 pH		
	Accuracy	Accuracy ±0.1pH		
	Temperature Compensation	Automatic compensation based on 25 °C, range (normal temperature electrode 0 ~ 60 °C, high temperature electrode 0 ~ 100 °C)		
Pressure Measurement	Measuring range	Settable (Such as 0~2.00 MPa)		
	Accuracy	±0.01mA		
DI Signal input	Single stage	Low liquid level of source water tank;Low pressure detection at the inlet of primary booster pump;High pressure at the outlet of primary booster pump High liquid level of primary production water tank;Low liquid level of primary production water tank;Preprocessing signal Enter 2 spare repair ports		
	Double stage	Raw water pressure low pressure;Low pressure at the inlet of primary booster pump;High pressure at the outlet of primary booster pump;High liquid level of primary production water tank;Low liquid level of primary production water tank;High pressure at the outlet of secondary booster pump; Low liquid level of secondary production water tank;High liquid level of secondary production water tank Preprocessing signal;Enter 2 spare repair ports		
DO Relay control output	Single stage	Inlet valve;Water source pump;Primary high pressure pump;Primary flushing valve;Primary dosing pump;Discharge valve with excessive conductivity of primary produced water;Alarm output node;Manual standby pump;Output 2 spare repair ports		
	Double stage	Inlet valve; Water source pump; Primary high pressure pump; Primary flushing valve;Primary dosing pump; Discharge valve with excessive conductivity of primary produced water; Secondary booster pump;Secondary flushing valve;Secondary dosing pump Discharge valve with excessive conductivity of secondary produced water; Alarm output node;Manual standby pump;Output 2 spare repair ports		
	Load capacity	3A (AC 250V) 或 3A (DC 30V)		
Touch screen size	7 inches/10 inches/15 inches			

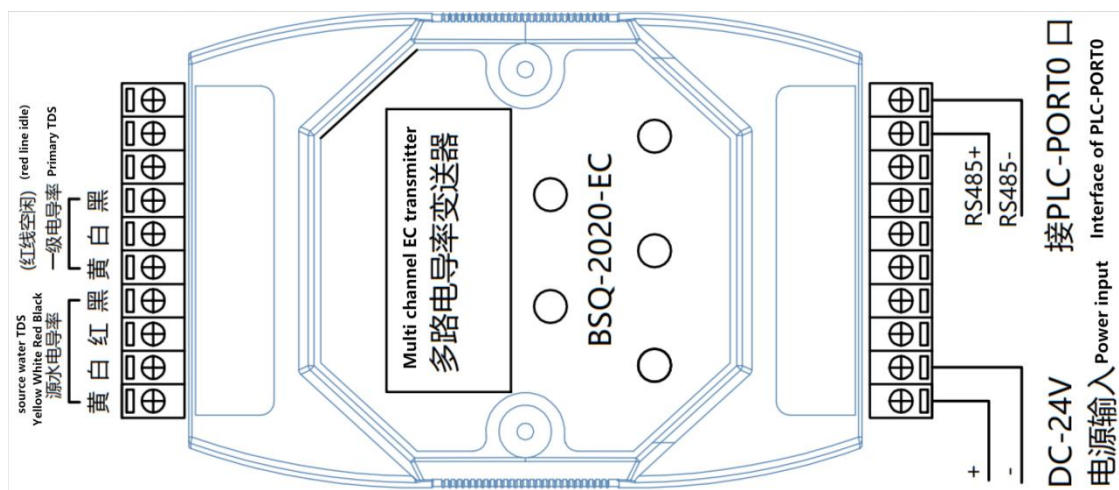
Supply Voltage (VCC)		DC24V ($\pm 2V$) Including: touch screen / PLC controller / conductivity, pH, pressure transmitter
Work environment		Temperature: (0 ~ 50) °C ; Relative humidity: $\leq 85\%$ (non condensing);
Storage environment		Temperature: (-20~60) °C; Relative humidity: $\leq 85\%$ (non condensing)
Installation mode	Touch screen	Panel type opening installation, Overall dimension: 226 * 163 * 80mm (length * width * depth) Opening size: 215 * 152mm (length * width)
	PLC controller	Guide rail installation Fixed size: 180 * 99 (length * width)
	Conductivity/pH, transmitter	92*125mm (length * width)

Note: if AC-220v switching power supply is required, it can be selected separately.

Pressure transmitter and pH transmitter are optional devices;

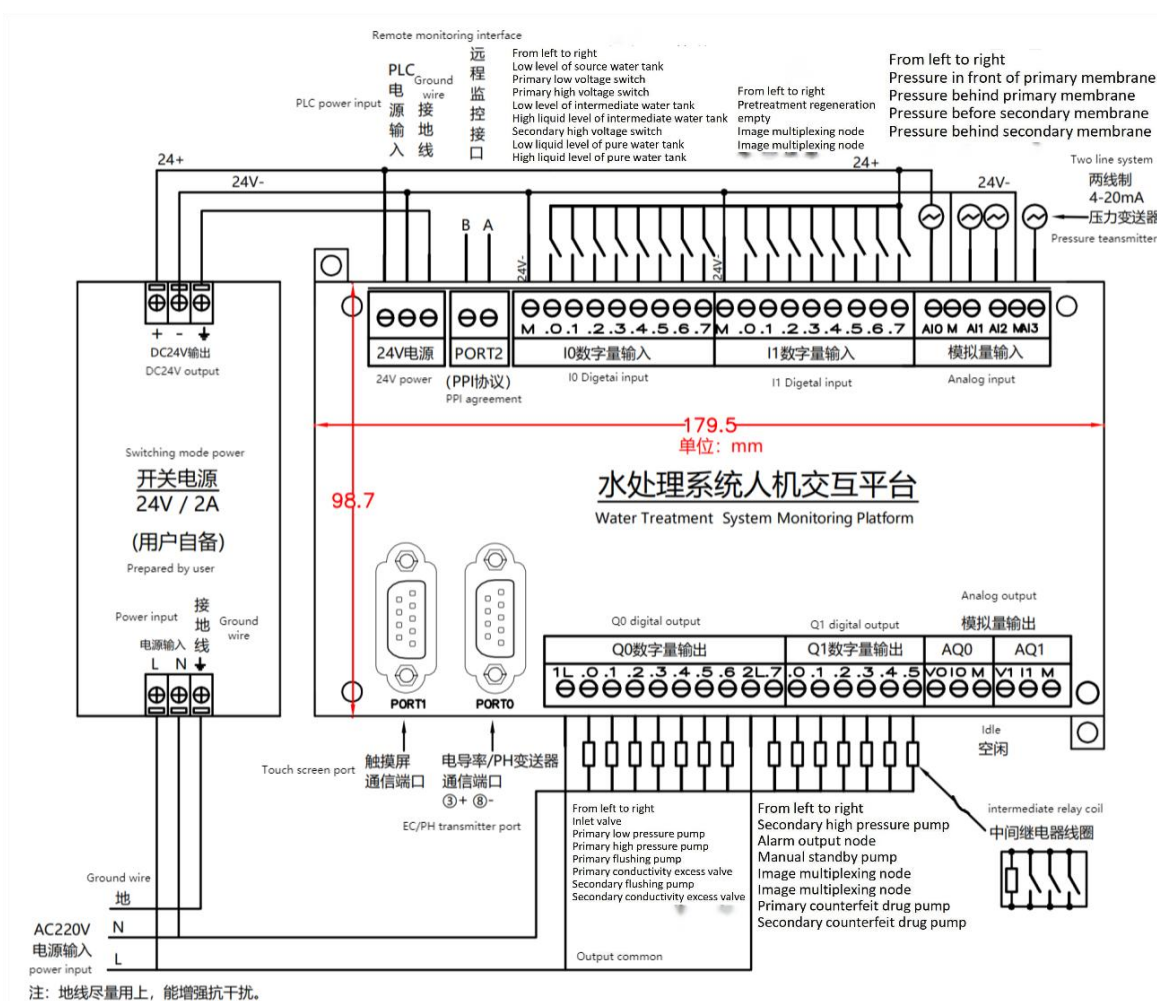
Single stage standard configuration: 7-inch touch screen + PLC controller + Dual conductivity transmitter + 20 conductivity electrode

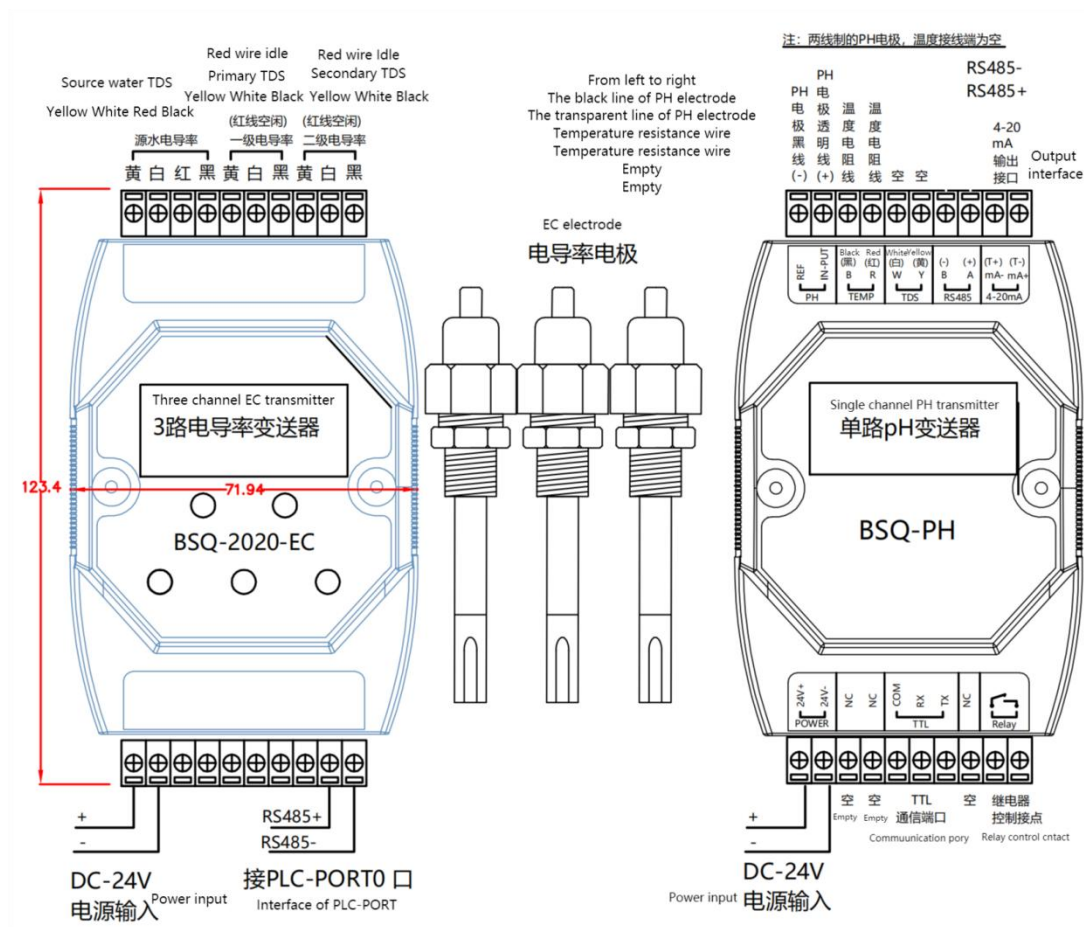
Relay output node: when driving large contactors, it is recommended to expand through intermediate relays or contactors in order to obtain more permanent electrical reliability.



Wiring diagram of conductivity transmitter

Electrical wiring diagram (double level)





4、Display interface description

(Note: since the system will be upgraded irregularly, there are some discrepancies between the display interface and the description. Please consult the technical personnel of the company for any unsolved problems)

Operation status description: displays the running status of the current system;
For example: startup, Starting washing Etc;

Parameter setting: setting time in current mode

Execution parameter: the running time of the current mode; When the running time $\geq$ set time, the mode ends and the next working mode is executed;

Standby pump button: manually control the startup and shutdown of standby pump;

High pressure indicator: indicates that the current flushing mode is high-pressure flushing or low-pressure flushing;

Manual mode indicator: displays whether the current manual debugging mode is enabled; If the manual mode is enabled, the system cannot be started and can only **work in the manual state**. You need to turn off the manual mode in the manual commissioning interface before starting the machine;

On/off button: RO system on / off button;

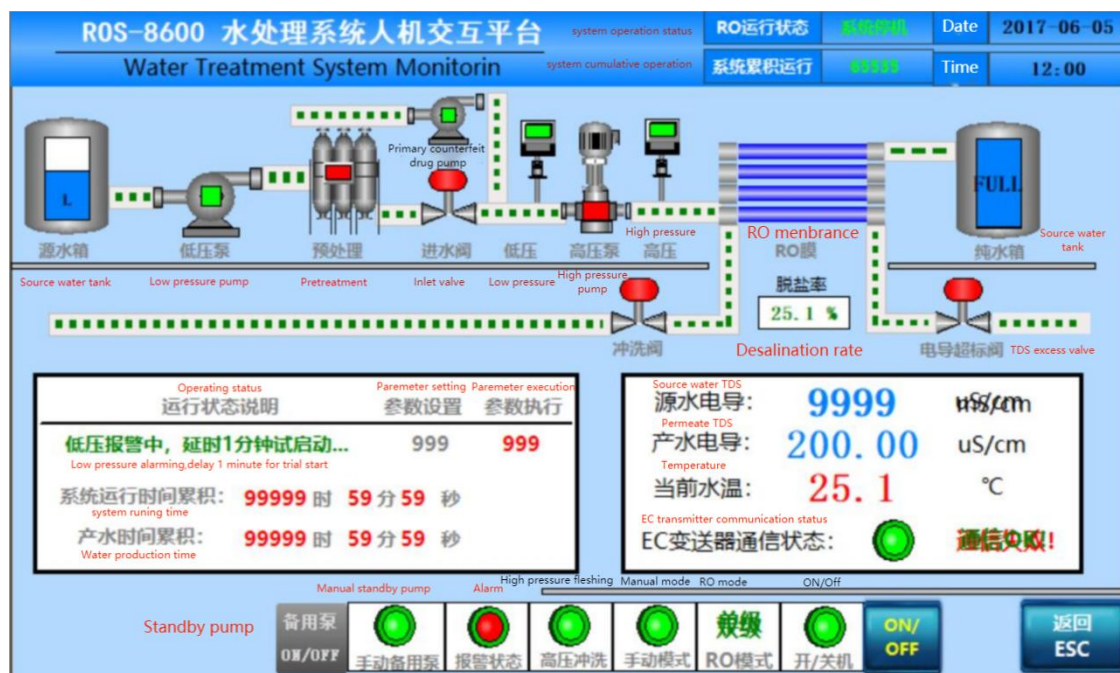
Alarm status indicator: it shows that there is an alarm prompt in the current

system, and the corresponding alarm relay is closed; Alarms include: low pressure, high pressure, no water in source water, excessive conductivity, etc;

EC communication /ph communication indicator: display the current communication status between PLC controller and ec/ph transmitter, display err after communication failure, and display OK if communication is normal

System operation time accumulation: indicates the accumulation of power on time of the system

Time accumulation of primary water production and secondary water production: time accumulation is only carried out in the state of primary / secondary water production;



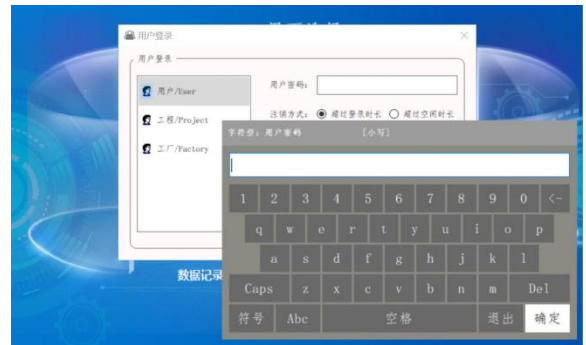
Interface selection



Instrument display interface (conductivity / pressure)

ROS-8600水处理系统监控平台						RO运行状态	2020-02-19
Water Treatment System Monitorin						系统累积运行	11:29:29
序号	时间	进水电导率值	产水电导率值	温度值	原水压力	膜后压力	
1	0-01-13 11:11:37	332 uS/cm	49.9 uS/cm	25.0 °C	0.00 bar	0.00 bar	
2	0-01-13 11:11:37	332 uS/cm	49.9 uS/cm	25.0 °C	13.61 bar	0.00 bar	
3	0-01-13 11:01:21	332 uS/cm	49.9 uS/cm	25.0 °C	13.62 bar	0.00 bar	
4	0-01-13 10:51:49	332 uS/cm	49.9 uS/cm	25.0 °C	13.62 bar	0.00 bar	
5	0-01-13 10:51:49	332 uS/cm	49.9 uS/cm	25.0 °C	11.16 bar	0.00 bar	
6	0-01-13 10:51:47	332 uS/cm	49.9 uS/cm	25.0 °C	5.56 bar	0.00 bar	
7	0-01-13 10:51:46	332 uS/cm	49.9 uS/cm	25.0 °C	3.76 bar	0.00 bar	
8	0-01-13 10:51:45	332 uS/cm	49.9 uS/cm	25.0 °C	5.00 bar	0.00 bar	
9	0-01-13 10:51:43	332 uS/cm	49.9 uS/cm	25.0 °C	6.36 bar	0.00 bar	
10	0-01-13 10:51:20	332 uS/cm	49.9 uS/cm	25.0 °C	9.93 bar	0.00 bar	
11	0-01-13 10:51:19	332 uS/cm	49.9 uS/cm	25.0 °C	9.94 bar	0.00 bar	
12	0-01-13 10:50:49	332 uS/cm	49.9 uS/cm	25.0 °C	20.00 bar	0.00 bar	
13	0-01-13 10:50:43	332 uS/cm	49.9 uS/cm	25.0 °C	0.00 bar	0.00 bar	
14	0-01-13 10:50:40	332 uS/cm	49.9 uS/cm	25.0 °C	10.00 bar	0.00 bar	

Data record



password login

Data record: record and display the current conductivity value, temperature value and pressure value; Store when data changes; (Note: the length of the record is related to the system capacity, which is not clear yet)

Export CSV: export the current data record table to excel. Use the USB flash disk to export.

Delete record: deletes all current data records;

Password login interface: user default password: 111, user password can be modified; Please remember the password after modification.



Conductivity alarm setting / 4-20ma input calibration



flushing time setting

Conductivity alarm setting: pull in value -- when the current conductivity is > pull in value, the conductivity limit alarm will be given; After the alarm, stop the alarm when the current conductivity is less than the off value;

Pressure ad_50: 4mA input AD acquisition value to correct 4mA acquisition error; Default value: 6400. When the standard 4mA current is input in the corresponding channel, the current acquisition value will display the corresponding ad value, and this value will be written into ad_L is enough; 20mA calibration is the same;

Pressure ad_50: 20mA input AD acquisition value to correct 20mA acquisition error; Default: 32000

Range: the maximum value of pressure range corresponding to 4-20mA. By default, 4mA corresponds to 0. The range corresponding to 20mA can be set. The default value is 20.00;

**** Bar:** display the current pressure value;

Preparation time for startup flushing: after the power on system is started, it

cannot be flushed immediately because there is no water in the pipeline (the larger the equipment, the longer the pipeline, and the longer the setting time). The default value is 12 seconds

Power on flushing: each time when the power is on, it is the power on flushing. Default time: 30 seconds

Operation flushing: flush once after continuous water production for X minutes. Default time: 30 seconds

Flushing with continuous water production for X minutes: after continuous water production for X minutes, conduct operation flushing. Default time: 180 minutes

Standby flushing: after standby with full water and continuous standby for X minutes, flush once. Default time: 30 seconds

Continuous standby for X minutes for flushing: after standby with full water, standby flushing shall be carried out after continuous standby for X minutes. Default time: 180 minutes

Flush with full water: flush when the primary water tank is full or the secondary water tank is full. Default time: 30 seconds;

High / low pressure flushing mode (level I): start the high-pressure pump during flushing, which is the high-pressure flushing mode; Otherwise, it is the low-pressure flushing mode;

Alarm switch: if the alarm switch is set to "on", when there is an alarm, the alarm output relay will be closed, otherwise the relay will not act;

工作模式设置		日期	2020-02-19
		时间	11:37:29
系统运行时间清零:	确认 Enter	0 时 11 分 21 秒	
一级产水时间清零:	确认 Enter	0 时 8 分 27 秒	
二级产水时间清零:	确认 Enter	0 时 1 分 33 秒	
中间水箱模式(双级):	切换 Shfit	有	预处理结束后: 切换 Shfit 待机
中英文切换:	切换 Shfit	中国国旗	
上电后自动开机:	切换 Shfit	红色圆灯	电导率变送器通信地址: 6
恢复出厂默认值:	恢复 Reset	用户密码修改:	密码 Password
			ESC

Clear system operation time: clear the accumulation of system power on operation time;

Clear the primary / secondary water production time: clear the accumulated water production time of the system;

Intermediate water tank mode: in the two-stage system, set whether there is an intermediate water tank between the first stage and the second stage. If there is no intermediate water tank, there is a low-level detection point of the intermediate water tank, which is replaced by a low-pressure detection switch (used to detect whether there is water in the pipeline);

After pretreatment: after pretreatment and regeneration, set system shutdown or startup;

Automatic startup after power on: set the system to run or stop automatically after power on and wait for manual startup;

Communication address of conductivity transmitter: set the communication address between PLC controller and conductivity transmitter: 6 by default

PH transmitter communication address: set the communication address between PLC controller and pH transmitter: 7 by default;

User password modification: the factory default password is: 111. Please remember this password after modification;



Input/output port replacement repair function



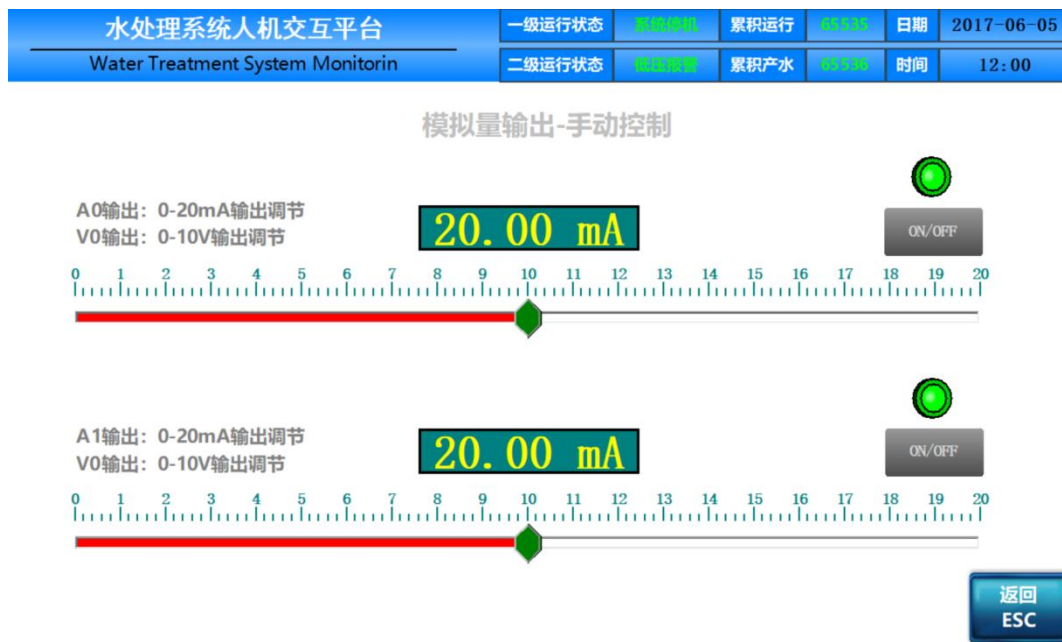
Customer information setting function

Port mapping: I1.2=I(); I1.3=I(): When a certain input point is damaged, I1.2 or I1.3 can be set to replace the damaged input port;

I1.2=I () ; I1.3=I(): When a certain output point is damaged, Q1.2 or Q1.3 can be set to replace the damaged output port;



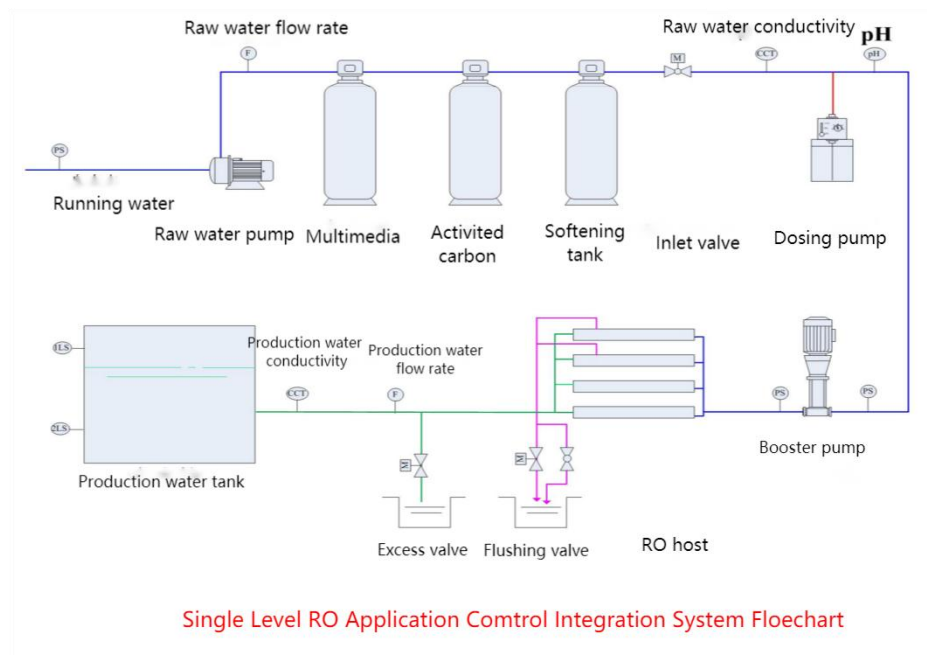
Manual debugging: The system is equipped with manual control operations for user maintenance convenience. This function is used when a specific valve or water pump needs to be opened in case of equipment malfunction and inability to start automatically or in other special circumstances. It can only be operated when the system is in a stopped state and the manual mode switch is turned on;



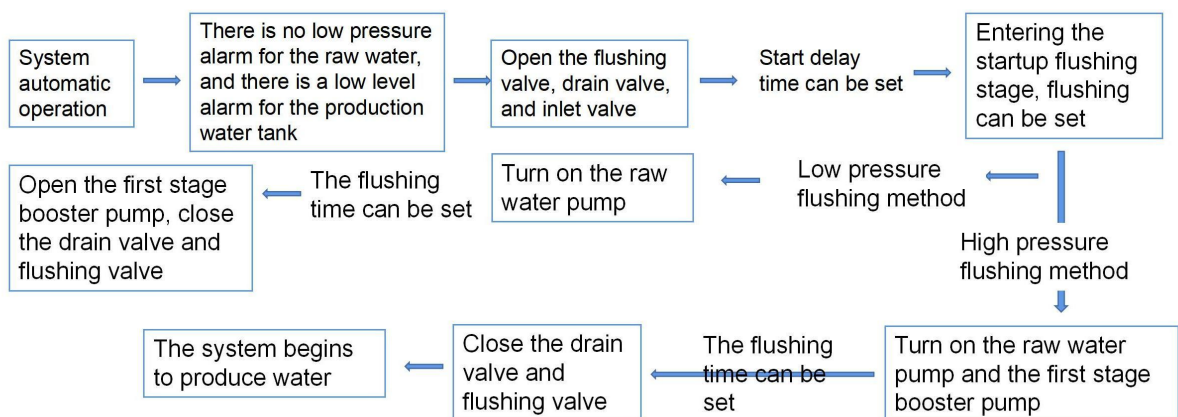
Dual channel 4-20mA output (manual control)

Analog output port, which can manually control equipment controlled by 4-20mA, such as a dosing metering pump. The 4-20mA output value can be set and can be turned on or off; After being turned off, the set value is saved internally by the system, and then turned on to directly output the set 4-20mA output value;

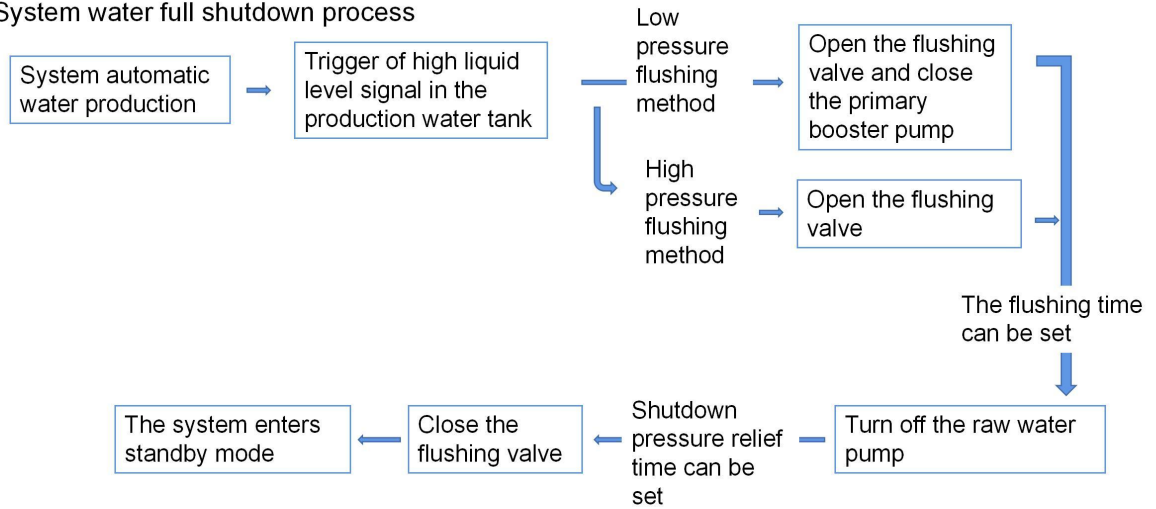
6. Control process (conductivity exceeding valve, also known as discharge valve)



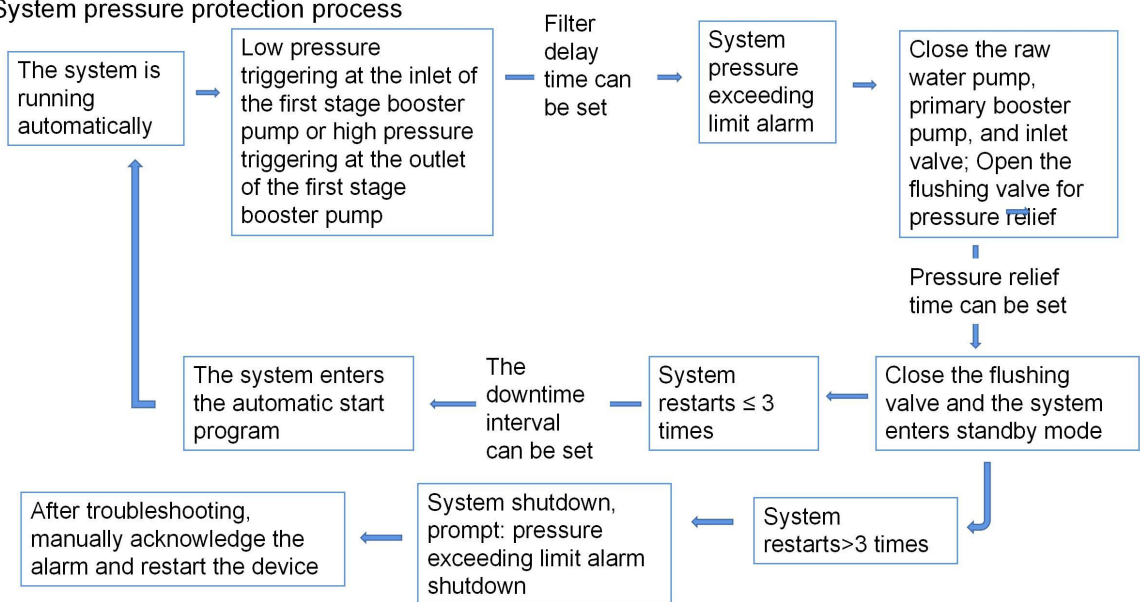
System automatic water production process



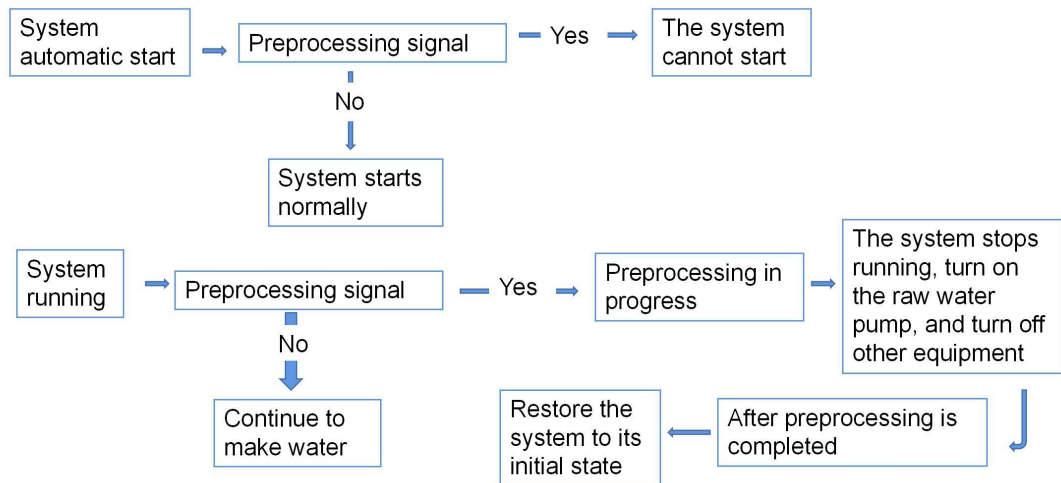
System water full shutdown process



System pressure protection process



Pre processing process



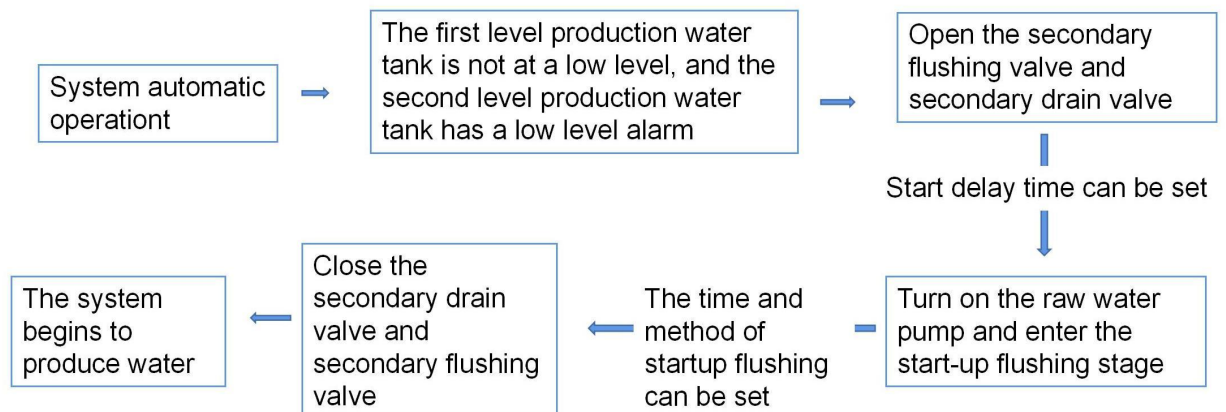
Consumable Management:

For the operation time setting of RO reverse osmosis membrane, when the time is up, an alarm will be prompted. Time is only recorded when the system is producing water. (The same applies to the secondary reverse osmosis process)

[Note] If an alarm for excessive conductivity occurs during the water production process, the system will open the excess valve to discharge this part of the produced water and prevent it from polluting the pure water tank (the same applies to the secondary reverse osmosis process)

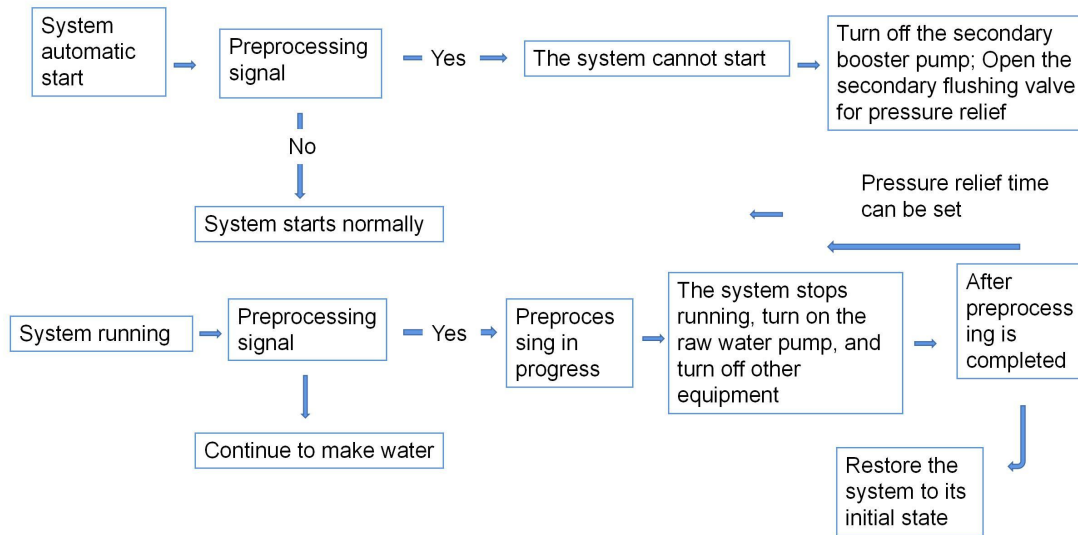
Secondary RO control process

The secondary RO system starts the water production process



For a two-stage RO system, the primary RO part and the secondary RO part are independent of each other, and their respective shutdowns, operations, and alarms do not directly affect each other, increasing the overall system's operational stability.

Pre processing process



Process for handling excess conductivity/TDS of produced water:

When the system is running normally, the conductivity/TDS of the produced water exceeds the limit alarm, and the exceeding valve opens to discharge the exceeding water to prevent it from entering Production water tank.

7. System operation

Inspection before power on

Before powering on, check whether the instrument power supply is normal. The default power supply is DC24V. Check whether the wiring terminals of each instrument and the communication cables with the transmitter are connected correctly and firmly. After checking for no errors, power on the controller. After powering on, check if the controller displays normally.

Automatic operation

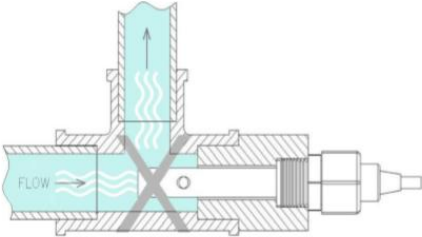
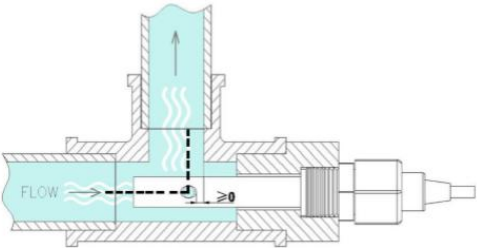
The default automatic/stop state for system startup. After logging in as an ordinary user, check if the operating parameters are normal, Is the data of each instrument correct. If used for the first time, after logging in as an engineering user (default password: 111), check whether the internal parameters of each instrument are configured correctly. After checking the parameters correctly, click the "ON/OFF" system shutdown button on the RO process interface to switch the system to automatic operation. At this point, the system will automatically open the valve or water

pump based on the liquid level and alarm point detection of the production water tank, without human intervention.

Manual maintenance

The system is equipped with manual control operation for the convenience of user maintenance. This function is used when a specific valve or water pump needs to be opened in case of equipment malfunction and inability to start automatically or in other special circumstances. When the system is stopped, enter the manual debugging interface and turn on the manual debugging mode switch;

8. Dimensions and installation of sensors

错误方式： 过长的电导池安装座，导致电导池伸入部分过短，电导池内不能形成活动的流体更新，造成测量误差。	
正确方式： 管路中部分流体流经电导池并不断更新，所以测量准确，传感器的开口必须迎向 FLOW。	

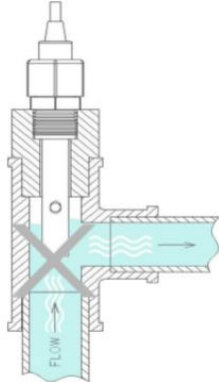
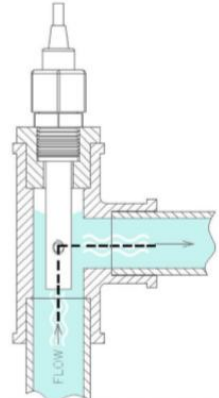
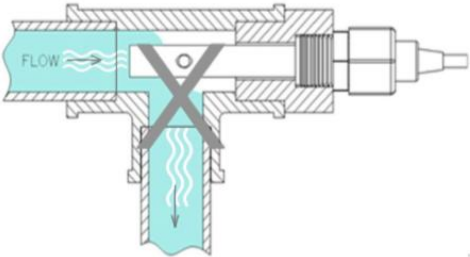
Error mode:

The installation seat of the conductivity pool is too long, resulting in the extended part of the conductivity pool being too short, and the activity inside the conductivity pool cannot be formed

Fluid updates caused measurement errors.

Correct mode:

Part of the fluid in the pipeline flows through the conductivity cell and is constantly updated, so the measurement is accurate and the opening of the sensor must face the FLOW.

错误方式： 管路上部形成空气死腔，尽管电导池的开口影响 FLOW 依旧没有流体流经电导池，测量数据没有价值和 unstable。	
正确方式： 电导池的腰孔位于流体中，部分流体流经电导池得以不断的更新，测量准确。	
错误方式： 管路中水流不能保证满管，下泄的水流会形成高处积气，电导池常数是一个未知数，数据无效也不稳定。	

Error mode:

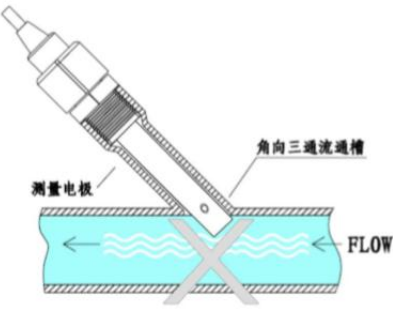
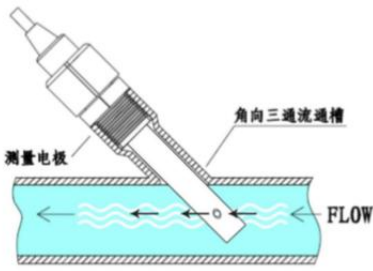
The upper part of the pipeline forms an air dead cavity, and although the opening of the conductivity cell affects the flow, there is still no fluid flowing through the conductivity cell, and the measurement data is worthless and unstable.

Correct mode:

The waist hole of the conductivity cell is located in the fluid, and some of the fluid flows through the conductivity cell to continuously update and measure accurately.

Error mode:

The water flow in the pipeline cannot be guaranteed to be full, and the discharged water will form high altitude gas accumulation. The conductivity cell constant is an unknown number, and the data is invalid and unstable.

错误方式： 角向安装的电导池水流不能流经测量腰孔，电导池内部积气造成测量值无效并很不稳定。	
正确方式： 部分 FLOW 流经电导池腰孔并不断更新，测量数据正确并且是稳定的、真实的。	

Error mode:

The water flow in the angled installation of the conductivity cell cannot flow through the measurement waist hole, and the accumulation of air inside the conductivity cell causes the measurement value to be invalid and very unstable.

Correct mode:

Part of the FLOW flows through the waist hole of the conductivity cell and is constantly updated, and the measurement data is correct, stable, and real.

【 Precautions 】

- (1) The conductivity cell should be installed in a circulating closed pipeline where the flow rate is stable and bubbles are not easily generated to avoid affecting the measurement;
- (2) Concentric tubular conductivity tanks should be installed horizontally, diagonally, or vertically with their front end facing the FLOW direction and penetrating into flowing water bodies;
- (3) The same applies to conductivity pools of other structural shapes;
- (4) The measurement signal is a conductive weak electrical signal. Its acquisition cable is not allowed to connect with the power line and control line. In the same group of linker or terminals, it is not allowed to go through pipes and bind with the power and control lines to avoid interference with the measurement or breakdown of the instrument measurement unit in case of damage;
- (5) The cables of the conductivity pool before leaving the factory are standard fixed length and dedicated cables, and it is not allowed to lengthen or replace the cables arbitrarily;

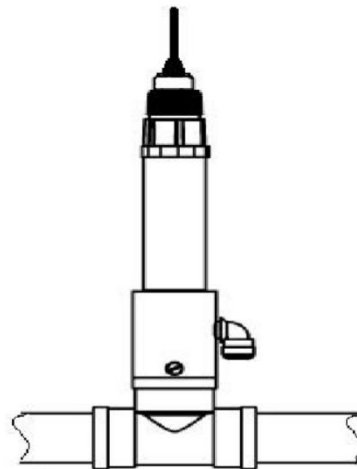
(6) Please keep the measuring part of the conductivity cell clean during installation, and do not touch the inner surface with hands or unclean objects. Contact with oil stains or adhesive objects may result in inaccurate measurement for a long time;

(7) The conductivity cell is a precision measurement component, and its constant is determined by the geometric shape and fit. The shape and size of the conductivity cell cannot be changed. It is prohibited to use strong acid or alkali to clean, soak, or mechanically scratch. These operations can cause changes in the conductivity cell constant, affecting the measurement accuracy of the system;

[Warning]

It is not recommended to choose plastic conductivity cells coated with platinum black when applied in the fields of food, beverage, and hygiene, as they do not meet hygiene standards.

PH electrode installation method



正确方式 直立安装或斜向安装（不大于 30 度倾角）	
错误方式 倒向安装	
错误方式 水平安装	

Correct mode:

Vertical or oblique installation (with an inclination angle of no more than 30 degrees)

Error mode: Reverse installation

Error mode: Horizontal installation

Installation precautions

- ◇ When installing in the pipeline, the flow must be cut off to complete the disassembly and assembly of the sensor;
- ◇ Turbulence and bubbles in the pipeline can cause unstable sensor readings;
- ◇ Excessive pipeline pressure directly threatens the working characteristics of the sensor;
- ◇ There is a significant error in sensor indication in pure or high-purity water measurement;
- ◇ The sensor for measuring pure water quality has a fast failure rate;
- ◇ The electrolyte inside the sensor diffuses into the water through the liquid interface, leading to an increase in conductivity;
- ◇ The water hammer effect and negative pressure in the pipeline can cause permanent damage to the sensor;
- ◇ The collision sensitive film and fiber entanglement of particles in water can easily cause permanent scrapping.

9、 Safety precautions

During the operation of the equipment, it is strictly prohibited to conduct maintenance on valves or pumps that are not currently in operation. It is necessary

to disconnect the main power supply before checking, troubleshooting, and repairing the equipment.

If you want to switch between manual/automatic mode, you should stop the current running mode and prohibit other operations during the program stop process until the system completely stops. Otherwise, it will cause misoperation and equipment damage. After the complete shutdown, you can proceed with manual/automatic switching.

The time and other parameters in the parameter setting page must be changed before the system runs, and it is prohibited to change them during equipment operation. Be sure to cut off the main power supply of the equipment during maintenance.