1. Product content：

No.	Name of the goods
1	Endoscopic center water purification equipment
2	Stomatology water purification equipment
3	The center supplies pure water equipment

2. General technical requirements

(1) Water source

1) Water source：municipal tap water

(2) Pipeline construction and quality requirements

1) Medical pure water pipelines adopt circular design and construction to eliminate stagnant water, and should meet the following requirements:
2) The inner and outer walls of pipes and fittings should be smooth and flat, and the color should be basically the same.
3) The end face of the pipe should be perpendicular to the axis of the pipe.
4) The pipe fittings should be complete, without defects, without deformation, and the mold seam should be closed.
5) The specification size and deviation of pipe fittings should comply with relevant regulations, and the size of pipe fittings and sockets should comply with relevant regulations.
6) The basic properties of the raw materials used in pipes and fittings should meet the requirements of the specification.

(3) Utilization of concentrated water

The reverse osmosis concentrated water in the pure water system needs to be partially recycled in the system to improve the utilization rate of tap water.

(4) Microbial prevention and control requirements

1) The pure water sterilization method combined with supercurrent ultraviolet sterilization + ozone sterilization is adopted.
2) ★The sterile pure water tank is equipped with a spray device to reduce the disinfection time and the amount of disinfectant water, and provide a copy of the test report issued by a third-party authority or a screenshot of the website.
3) ★The sterile pure water tank is equipped with a disinfection device, which

can disinfect the water tank, and provide a copy of the test report issued by a third-party authority or a screenshot of the website.

4) The flow rate of pure water return water is not less than 1.2m/s to prevent microorganisms from breeding microorganisms if the flow rate is too low.

(5) Water supply safety requirements

1) ★The pure water system has the function of automatic monitoring and alarm of water leakage, with extremely high sensitivity, when water leakage occurs, the system automatically enters the protection state, and provides a copy of the test report issued by a third-party authority or a screenshot of the website

2) The backup water pump is automatically switched at regular intervals and automatically switches when it fails to ensure uninterrupted water supply. The control system has dual control functions of fully automatic and manual, and is designed for redundancy.

3) ★The system has the function of unqualified water discharge to prevent unqualified water from entering the sterile water tank, ensure water safety, and provide a copy of the test report issued by a third-party authority or a screenshot of the website.

(6) Instrumentation

The online monitoring instrument has the functions of on-site monitoring and digital remote transmission, and can read parameters on the touch screen in real time.

(7) Water production and energy saving requirements

1) ★The reverse osmosis system should have the function of stabilizing water production, and the reverse osmosis water yield should not decrease in the low temperature environment in winter, and provide a copy of the test report issued by a third-party authority or a screenshot of the website.

2) ★The reverse osmosis system should adopt energy-saving technology to reduce energy consumption and make effective use of energy, and provide a copy of the test report issued by a third-party authority or a screenshot of the website.

(8) Control system performance requirements

1) Dual control mode, automatic and manual coexistence, one-click switching.

2) It has the functions of automatic fault detection, alarm, and suggestion of

handling measures.

3) Start-up self-test, operation data analysis and automatic adjustment of operating parameters.
4) The functions of online monitoring, storage, display, report, and download of key operating data shall be stored for no less than 1 year.
5) The water tank and pump have the function of liquid level chain control.
6) High and low voltage, water cut-off, power outage, phase loss protection function.
7) Water pump timing automatic switching, fault automatic switching function.
8) Low level transfer pump delay shutdown function.
9) It has remote monitoring function, which can be connected to the central monitoring system of the hospital, and the cloud platform monitoring can understand the system operation status in real time at the manufacturer and user side, and provide preventive services.
10) The recording function of fault information records the operation and alarm records of each component of the system, which is convenient for operators to query, such as low water tank level, pressure protection, motor fault, water quality alarm information, etc.

3. Technical parameter requirements

No.	Device name	Technical parameter requirements
1	Endoscopic center water purification equipment	Endoscopic center water purification system 1.★System water yield: pure aquatic water yield ≥ 500L/H. 2.★Pure water quality: the total number of bacteria (CFU/100ml) ≤10, and a copy of the water quality test report issued by a third-party authoritative organization is provided. 3.★Operation mode: fully automatic operation, unattended. 4.★Pure water preparation process requirements: tap water→ mechanical filter→ activated carbon filter→ water softener→ security filter→ first-stage high-pressure pump→ first-class RO reverse osmosis →second-stage high-pressure pump→ second-stage RO reverse osmosis

		→pure water tank→ water supply unit→ overcurrent UV lamp→ microporous filter→ water point.
2	Stomatology water purification equipment	Stomatology Pure Water System 1.★System water yield: pure water yield ≥ 1000L/H. 2.★Pure water quality: the total number of bacteria ≤ 10CFU/ml, and the total coliform flora and heat-resistant coliform bacteria shall not be detected, and a copy of the water quality test report issued by a third-party authoritative agency shall be provided. 3.★Operation mode: fully automatic operation, unattended. 4.★Pure water preparation process requirements: tap water→ raw water pump→ mechanical filter→ activated carbon filter→ water softener→ security filter→ first-class high-pressure pump→ first-class RO reverse osmosis→pure water tank→ water supply unit→ overcurrent UV lamp→ microporous filter→ water point.
3	The center supplies pure water equipment	Pure water supply system 1. ★ System water yield: the water yield of primary pure water ≥ 2000L/H, and the water yield of primary pure aquatic water ≥ 1000L/H. 2. ★ Pure water quality: Primary pure water quality: total number of bacteria (CFU/100ml) ≤10, provide a copy of the water quality test report issued by a third-party authority. Secondary pure water quality: evaporation residue ≤ 1mg/L, iron ≤ 0.05mg/L, cadmium ≤ 1μg/L, lead ≤ 3μg/L, chloride ≤0.5mg/L, phosphate ≤0.3mg/L, conductivity (25°C) ≤3μs/cm, PH value 5.0-7.5, hardness ≤2mg/L, provide a copy of the water quality test report issued by a third-party authoritative institution. 3. ★ Operation mode: fully automatic operation, unattended. 4. ★ Pure water preparation process requirements: tap water→ raw water tank→ raw water pump→ mechanical filter→ activated carbon

		filter→ water softener→ security filter→ first-class high-pressure pump→first-class RO reverse osmosis→ first-class pure water tank→ second-level high-pressure pump→second-level RO reverse osmosis →second-level pure water tank→ water supply unit→ overcurrent UV lamp→ microporous filter→ water point. The water supply unit of the first-class pure water tank → overcurrent UV lamp→ microporous filter→ water point.

4. Functional requirements for various components

1．Raw water tank

There is a cleaning manhole on the top of the original water tank, a sewage outlet in the middle of the bottom, a supporting valve and a level gauge, automatic water replenishment, and the height of high, medium and low liquid level can be set.

2．Mechanical filter

It has the functions of automatic operation, forward flush and backflush, and the filter is filled with refined quartz sand and anthracite filter material, and when it is working normally, the effluent SDI≤5.

3．Activated carbon filter

It has the functions of automatic operation, forward flush and recoil, and the filter is filled with high-quality shell carbon filter material, which has sufficient mechanical strength to ensure that it is basically not broken during the backflushing process, and the residual chlorine in the effluent ≤ 0.1PPM when working normally.

4．Fully automatic softener

It has the functions of automatic operation, forward flushing, recoil and regeneration, and the filter is filled with softening special resin, which has sufficient mechanical strength to ensure that it is basically not broken during the backflushing process, and the hardness of the effluent is ≤ 0.03mmol/L when working normally.

5．Precision filters

The tank material is SS304, and the filter element is a PP meltblown filter element with a skeleton.

6．High pressure pump

The first and second stage high-pressure pumps are uniformly designed with one backup, and the inlet and outlet of the high-pressure pump are equipped with pressure protection devices.

7．Reverse osmosis systems

1) All membrane shells are made of SS304 sanitary membrane shell, no dead cavity, stainless steel end caps, and all water inlets and outlets are connected by sanitary plug-in installation, eliminating the use of threaded connections.
2) It adopts SS304 integrated stainless steel frame, which is strong and durable.
3) Desalination rate: >99.3%.
4) The reverse osmosis system is equipped with local instruments that directly display important parameters such as pressure, flow, and water quality of the operating conditions of the device.
5) The unqualified water produced by reverse osmosis is discharged through this valve and does not enter the next process.
6) Reverse osmosis Each pressure membrane tube is equipped with a sampling port on the water production side, which is convenient for sampling.
7) The design flux of reverse osmosis membrane elements should not be greater than the maximum flux value specified in the "Guidelines" of each membrane element manufacturer, and a reasonable arrangement and combination should be selected to ensure the normal operation of membrane elements and a reasonable cleaning cycle.
8) Each section of the reverse osmosis device is equipped with sufficient interfaces and valves on the main pipe of water supply and concentrated water inlet and outlet, so that it can be connected to the inlet and outlet pipes of the cleaning solution during cleaning.
9) Reverse osmosis concentrated water drainage is equipped with flow

control valves to control the recovery rate of water.

10) The reverse osmosis membrane assembly is mounted on a one-piece rack with all pipes and joints, including all brackets, fasteners, clamps and other accessories.

11) The design of the reverse osmosis combination frame meets the requirements of seismic intensity and the expansion requirements of components.

12) The measurement and configuration points and number of reverse osmosis systems meet the needs of safe, stable and reliable operation of the system. The instrument is arranged centrally on the dashboard.

8．Pure water tank

There is a cleaning manhole on the top of the original water tank, a sewage outlet in the middle of the bottom, a supporting valve and a level gauge, automatic water replenishment, and the height of high, medium and low liquid level can be set.

9．EDI device

1) ★The EDI device has the function of stabilizing the quality of the produced water, and provides a copy of the test report issued by a third-party authoritative organization or a screenshot of the website.

2) Modular integrated design, with water shortage protection, power failure protection, high and low voltage protection, online monitoring and alarm functions of produced water quality.

3) Supporting equipment: pressure, flow, water quality online monitoring instrumentation, EDI special power supply with digital display current, voltage, with alarm function.

10．Water supply unit

1) The water supply unit adopts an integrated design with overcurrent ultraviolet lamp and terminal microfiltration to reduce the footprint and facilitate maintenance and management.

11．Overcurrent UV lamp

The wavelength is stable at 254nm, the material is SS304, and it has the

functions of time accumulation and failure alarm.

12．Microporous filter

The filter material is SS304, and the absolute pore size of the filter element is 1μm.

13．Control system

1) The whole system realizes open data standard communication interfaces: provide communication interfaces such as remote monitoring, the data communication interface at least supports OPC specifications, the remote monitoring interface must provide support for TCP/IP protocol, support browser-based access, the provided protocol must be free and open, can be connected with the central monitoring system of the hospital and can display various monitoring parameters and dynamic processes of the whole process on a special large screen, and can be remotely monitored through the network and manufacturers.

2) The control system has three or more levels of access:

The first level is the operator permission, under which the system can operate normally, manually control to view and reset the processed alarm information by entering the password, but the alarm parameters cannot be set;

the second level is the equipment maintenance authority, under which the operator's actions can be reviewed, reports and counters can be viewed and reset by entering the password;

the third level is the administrator permission, under which you can view and reset all system operation parameters and alarm parameters by entering the password; The high-privilege access level can perform all operations at the low-privilege access level, and all access levels can perform manual operation on automatically running valves and pumps.

3) Disinfection devices can be manually operated in the order of the process flow, and can be switched according to the touch screen menu for emergency water supply; All alarm information is displayed in a separate menu, and listed one by one by date, time, alarm information, suggested

solutions, etc., and the alarm information storage time is not less than 1 year.