



H2O2 Low Temperature Plasma Sterilizer

PS-100X/XP/200X/XP

Technical Description and Configuration

Shinva Medical Instrument Co., Ltd

I . Product introduction

Plasma refers to a highly ionized gas cloud, which is generated by the ionization of gases under the action of heating or strong electromagnetic force, mainly including electrons, ions, atoms, molecules, active free radicals and rays. Among them, active free radicals and rays, such as ultraviolet, have a strong killing effect on microorganisms. Plasma is the fourth form in nature in addition to solid, gas and liquid. Because the total number of positive and negative charges is always numerically equal, it is called plasma.

SHINVA Plasma sterilizer takes H₂O₂ as sterilizing agent and form plasmatic state of H₂O₂ by electromagnetic field under low temperature. It combines both gaseous and plasmatic H₂O₂ to make sterilization for the items in chamber and decomposes the residual H₂O₂ after sterilization.

II . Product structure

The equipment is composed of the following parts:

1. Square sterilization chamber, including sterilization outer chamber, mesh electrode, container and heater, etc.
2. Vacuum-pumping system, including vacuum pump, pressure transmitter, vacuum valve and controller, etc.
3. Hydrogen peroxide injection system, including cassette feeding mechanism, cassette piercing mechanism, purifier, solenoid valve, etc.
4. Plasma power supply, including power supply and connection cable.
5. Automatic control part, including electric control box, touch screen and other components.

III . Product features

1. Exclusive use of the top rod driven electric lift door, easy to operate, no noise, improve the airtight sterilization chamber, improve the automation of the

whole machine. A security system is installed on the door to ensure equipment and personal safety.

2. The sterilization chamber is made of aluminum alloy material, which has excellent thermal conductivity and more balanced temperature to ensure that hydrogen peroxide remains 100% gaseous, so that the sterilization performance is more stable. The sterilization chamber adopts rectangular structure, and the effective volume is larger.
3. With hydrogen peroxide purification function, ensure that the hydrogen peroxide injected into the sterilization room diffuses more evenly, and will not occupy the surface of items due to moisture, affecting the sterilization effect.
4. Hydrogen peroxide is encapsulated in an independent sealed capsule case, which is accurate in filling and has a long validity period, safe and reliable, no leakage hazard, safe and convenient in operation and transportation.
5. Passed multiple authoritative test reports.

Certificate	Testing institutions
CE	TUV

6. PS-100X/100XP: Each cassette contains 12 capsules, which can run 6 full cycles or 12 flash cycles. Each capsule stores 5ml hydrogen peroxide.
7. PS-200X/200XP: Each cassette contains 12 capsules, which can run 3 full cycles or 6 flash cycles. Each capsule stores 4ml hydrogen peroxide.
8. Full automatic loading and puncturing of H₂O₂ cassette to ensure that workers do not contact hydrogen peroxide.
9. The size of the equipment is smaller, easy to install; Touch screen and sterilized basket are more suitable for female nurses.
10. With hydrogen peroxide filter, so that the hydrogen peroxide gas is fully absorbed and decomposed in the process of evacuation, to ensure that there is no hydrogen peroxide pollution indoors.
11. Integrated electric constant temperature incubator is optional. The electric

temperature incubator is integrated with the equipment, which can realize the rapid and convenient cultivation of biological indicators after sterilization. With independent control system, it can operate independently when the equipment is shut down, saving energy and improving the life of the equipment. Its culture temperature is constant, special for this equipment, and can be cultured in multiple groups at the same time, with timing display, easy to operate.

12. With kick type quick door opening. Only by gently kicking the foot switch of the equipment, the sealed door can be opened or closed, freeing the hands of the operator.
13. Module with vacuum drying function (optional). The vacuum drying module can perfectly combine the plasma sterilizer with the vacuum drying cabinet to thoroughly dry the lumen instruments and ensure the sterilization quality. Completely replace the vacuum drying cabinet. After cleaning, the pre-blown or pre-dried instruments are put into the sterilization room. At a low temperature of 50~60°C, the boiling point of water decreases with the decrease of air pressure. After vacuum drying for 10~60min, the moisture inside the lumen instruments will be thoroughly dried.
14. Real-time monitoring function of plasma power supply. Real-time detection display plasma power supply and record the critical value of the printing stage. The system will automatically judge the abnormal fault of the power supply, give an alarm and automatically cut off the output.
15. With STANDARD, FLEXIBLE, RAPID and CASSETTE RELAY sterilization programs, can meet the requirements of different items, different sterilization time. RAPID cycle sterilization time can be as short as 26 minutes..

Program Name	Sterilization Range	Running Time
STANDARD	For sterilization of luminal and non-luminal instruments	55min
FLEXIBLE	For 2 PCS of flexible endoscope	45min

RAPID	For surface sterilization of small quantities of articles	26min
VACUUM DRY (optional)	For drying lumen apparatus	15min

Lumen Dimension			
PS-100X/100XP			
Material	Inner Diameter	Length	Loading capacity
Stainless steel lumen	≥1mm	≤500mm	10 pcs
Teflon or polyethylene lumen	≥1mm	≤2000mm	10 pcs
PS-200X/200XP			
Material	Inner Diameter	Length	Loading capacity
Stainless steel lumen	≥0.8mm	≤3000mm	10 pcs
Teflon or polyethylene lumen	≥1mm	≤1000mm	10 pcs

16. With system automatic detection function, real-time monitoring of the sterilization process, if there is any abnormality, the system will automatically alarm, and display the cause of the fault;
17. With the function of humidity detection of sterilized articles, if the articles are dried unqualified, it will alarm to remind users of the sterilization after the articles are dried again;
18. With multiple sterilization information viewing function. In the process of sterilization, the color touch screen can display the sterilization stage, sterilization time, sterilization pressure, sterilization temperature and other sterilization information in real time. Thermal printer can automatically print sterilization records which can be stored for more than 3 years; Computer monitoring system is optional to realize real-time monitoring of sterilization

data and permanent storage of historical operation records.

19. Optional application of traceability system; It can realize the traceability of the whole work flow, such as the recovery, washing, sterilization and distribution of instruments.
20. With key components maintenance intelligent reminder function, such as vacuum pump oil change, which can effectively guarantee the service life of components; Comprehensive training materials are available to ensure that operators are skilled in operating the equipment.
21. Optional double door with separation wall construction. Double door structure, front and back door interlock, with isolation wall, can effectively realize sterile area isolation, avoid the re-contamination of sterilized goods.
22. The manufacturer can provide: 56%-60% hydrogen peroxide cassette, chemical indicator card, indicator label, multi-specification non-woven fabric, multi-specification packaging pouch, multi-specification instrument container, self-contained biological indicator, vacuum pump oil, long-acting printer paper, etc..

IV. Technical Parameter

Model	PS-100X/ PS-100XP	PS-200X/200XP
Technical parameter		
Chamber dimension (LxWxH) mm	750x450x400	1250x450x400
Volume(L)	135	225
Overall dimension (LxWxH) mm	1030x760x1760	1510x760x1760
Weight (Kg)	400	500
STANDARD cycle time (Mins)	55	60
Sterilization Temperature (°C)	50±5	
Sterilizing agent	56%-60%H ₂ O ₂	
Power supply	380V 50Hz	
Total power (KW)	3.8	4.7

Installation ambient temperature	10~40°C	
Distance between the operating end and obstacles (mm)	>1000	>1500
Distance between non-operating end and obstacle (mm)	>100	
Minimum maintenance distance	1 meter on each side	

V. Auxiliary Device

a) Electric constant temperature incubator

Temperature: 56°C Incubation time: 48 hours

b) Biological indicator (self-contained)

Strain: *Adipobacter thermophilus* Quantity: 1~5×10⁶

c) Chemical indicator card:

Put in the pouch and indicate whether the hydrogen peroxide is evenly diffused.

d) Chemical indication label:

After packaging, attach the chemical indicating label to the transparent side and non-woven material of the sealing pouch. Chemical indicator band discolors after exposure to hydrogen peroxide. The function of the label is to encapsulate the non-woven fabric package, record the relevant information of the package, and indicate whether the package has been sterilized.

e) Packaging pouch (sealed sterilized articles)

Material: the front layer is polypropylene, the back layer is high-density polyethylene synthetic transparent paper;

Packaging temperature: 120°C ~ 125°C is recommended.

Size (100m per roll) : width 75mm, 100mm, 150mm, 250mm, 300mm

e) Sterilization agent

Name: Hydrogen peroxide (H₂O₂)

Concentration: 56%-60% ;

Specification: 12x5ml/capsule (PS-100X/100XP)

12x4ml/capsule (PS-200X/200XP)

Storage: Keep out of light at room temperature

f) Non-woven cloth (used for wrapping instruments such as plates)

Size: 500mm×500mm; 800mm×800mm; 1200mm×1200mm

g) Metal sterilization container

See sample instrument loading basket for details

h) Lumen instrument dryer

Used to dry lumen instruments before packing

The equipment has free installation position, independent control system, LED temperature display, temperature adjustable range of 40-80°C, can heat compressed gas in real time, provide dry hot air source, effectively dry lumen instruments and complex instruments.

Order Code	Power Supply	Power	Overall Dimension (LxWxH) mm	Optional Air Compressor
DRYING-1	220V50Hz	230W	180x60x380	120L/min

VI. Scope of Application

1. Material s suitable for sterilization :

Aluminum, copper, acetal resin (polyacetal), and ethylene/vinyl acetate copolymer, glass, liquid crystal copolymer, polycarbonate, titanium, polyurethane, PVC, stainless steel, polyether ether ketone, polyethylene, polystyrene sulfone, Ellen dragon, ultem, polystyrene sulfone, polystyrene, polypropylene, poly (methyl methacrylate, siloxane elastomer and so on.

2. Instruments suitable for sterilization:

Stereotaxic device, patients with esophageal dilator, end connection cable, laryngoscope, piercing sheath, she had cold therapy, surgical power equipment and

batteries, fiber optic cable, defibrillation electrode plates, cranial pressure sensor cable, endoscopic instrument, laser head, fiber and accessories, eye lens (diagnosis, enlarge), dyeing machine head, doppler, electric bright equipment , metal instruments, rigid endoscopes, radiotherapy equipment, ultrasound probe, camera and connector, prostatectomy/work unit, razor head, etc



VII. Main Component Configuration

No.	Component Name	Manufacturer	Technical description
1	Chamber	SHINVA	The chamber and mesh electrode are aluminum alloy, welded on both sides, and the service life of the chamber can reach more than 10 years.
2	Vacuum pump	Chinese Brand	Low noise, low exhaust, fast pumping, high stability, low maintenance cost
3	Control system	SHINVA	Siemens S7-1200 system PLC as the main controller, fully realize the control accuracy, standardization, safety, reliability; Touch screen as HMI, easy to operate.
4	PLC	Germany SIEMENS	Siemens S7-1200 system has stable, reliable performance and powerful functions.
5	Color Touch Screen	SHINVA	Control and display working process parameters, easy to operate Size 5*7 inch – standard configuration Size 7 inch – optional configuration
6	Program software	SHINVA	A variety of working programs, programs modular management.
7	Micro printer	Chinese Brand	Multi-channel record, record sterilization related parameters, record clear, long service life.
8	Pressure transmitter	Germany WIKA	Good precision, high reliability, stable output.
9	Pressure transmitter	Japan SMC	Good precision, high reliability, stable output.

10	Temperature sensor	Chinese Brand	Good stability, small measurement error.
11	Sterile filter	Chinese Brand	Ultrafine sterile filter, sterilization rate reaches 100%.
12	Plasma power supply	SHINVA	Frequency 50KHz
13	Solenoid valve	Japan, SMC	Corrosion resistant material, reliable operation, long life.
14	Integrated electric thermostatic incubator (Optional)	SHINVA	The electric temperature incubator is integrated with the equipment and has an independent control system, which can run independently when the equipment is shut down, and can be cultured in multiple groups at the same time, which is easy to operate.
15	Vacuum drying module (Optional)	SHINVA	The vacuum drying module can perfectly combine the sterilizer and the vacuum drying cabinet to thoroughly dry the lumen instruments and ensure the quality of sterilization. Completely replace the vacuum drying cabinet.