Reactive Plasma Sterilizer
TT-PS50
User Manual



For Veterinary Use Only.

Foreword

This manual provides descriptions of product functions, operating methods, safety information, and technical data. Before using the product, please read the manual thoroughly with care.

Revision

V04

Audience

- Users of the product.
- Training and customer service engineer.
- Authorized distributors

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1 Introduction

1.1 About the manual

To ensure safe and effective operation of this product, users must possess the requisite professional knowledge and familiarize themselves with the contents of this manual.

Before operating the product, carefully read this manual, paying particular attention to the safety information provided in the **" Safety Statements"** section.

To operate the product, the user must have sufficient knowledge on product safety.

Primary Personnel Addressed in This Manual:

- **User**: Refers to individuals authorized to operate the product.
- **Customer Service Engineer**: Refers to personnel authorized by company for installation, maintenance, and repair.

1.2 Text conventions

Text	Convention
Items in a list	“■” symbol
Sub-items or list items in a table	“♦” symbol
Steps within operating sequences	Numbers

1.3 About TT-PS50

The Reactive Plasma Sterilizer System consists by sterilization gas generation system, air compression system, vacuum system and exhaust decomposition system. The Sterilization Gas Generation System produces highly oxidizing gases. Strongly oxidizing gases inactivate viruses by directly destroying their ribonucleic acid (RNA) or deoxyribonucleic acid (DNA). For microorganisms such as bacteria and molds, these gases first act on the cell membrane, damaging its structure to disrupt metabolic processes and inhibit growth. They then penetrate further to destroy intracellular components, ultimately leading to microbial death.

Upon completion of sterilization, only oxygen and small amounts of water vapor are discharged, which are environmentally friendly and do not require ventilation or air exchange equipment.

1.4 Disclaimer

This manual provides comprehensive descriptions of the device's features, including functionalities, options, and accessories. These descriptions are for reference only and may be updated in future editions without prior notice.

Key Disclaimers:

- Product configurations are subject to actual sales specifications.
- Photographs, graphics, screenshots, and videos in this manual are illustrative. Refer to the physical device and software interface for accurate representations.
- The use of third-party accessories or components not approved may compromise performance or safety.

2 Safety Statements

2.1 Overview

To ensure safe and proper use of the product, carefully review this section.

Mandatory compliance

Strictly adhere to all safety information marked with "**DANGER"**, "**WARNING"**, "**CAUTION"**, or **"NOTICE"** to implement preventive measures and avoid hazards.

2.2 Security level definition

"DANGER": Failure to follow these instructions will cause personal death or serious injury.

"WARNING": Failure to follow these instructions could cause personal injury or serious damage to the equipment or other property.

"CAUTION": Failure to follow these instructions may cause slight personal injury or potential damage to the equipment or other property.

"NOTICE": Provides additional information to notify users of the potential risk for personal safety or property protection directly or indirectly.

Format of the safety information:

⚠ DANGER

Safety Information - Risk Factors and Consequences.

- Safety Information - Precautions.

⚠ WARNING

Safety Information - Risk Factors and Consequences.

- Safety Information - Precautions.

⚠ CAUTION

Safety Information - Risk Factors and Consequences.

- Safety Information - Precautions.

NOTICE

Safety precautions that need to be followed.

2.3 Safety precautions

⚠ WARNING

Do not modify this equipment without authorization of the manufacturer.

⚠ WARNING

Do not open the main unit casing without permission to avoid damaging the device or causing safety issues such as electric shock.

⚠ WARNING

Do not place the host close to or stacked with other equipment during use. If you must place it close to or stacked, please monitor host and other devices to ensure normal operation.

⚠ WARNING

medical personnel who have received professional training. Improper use may result in personal injury.

⚠ WARNING

Do not remove the device casing when cleaning the device.

⚠ WARNING

The mains plug is the part that disconnects the device from the mains. Do not plug it in a hard-to-reach place.

⚠ WARNING

To avoid the risk of electric shock, this device must be connected to a power supply network with protective earth.

⚠ WARNING

Sterilizing gas mainly consists of ozone, small amounts of hydroxyl radicals and nitrogen dioxide.Inhalation of high concentration may cause severe irritation to lungs, nasal cavity and throat.If inhaled, move the patient to fresh air immediately.If breathing is difficult, seek medical advice at once.

⚠ WARNING

If an ozone leak is detected, abort the sterilization process immediately and evacuate all personnel from the affected area. Do not re-enter the area for at least 30 minutes.

PS:OSHA ozone limits: 0.1 ppm (8-hour TWA/PEL), 0.3 ppm (15-minute STEL).

⚠ CAUTION

When the host touch screen cannot display normally, stop using it .

⚠ CAUTION

Instruments are for surface sterilization or disinfection only,Ensure instruments are dry and thoroughly clean.Areas containing grease or liquids will not be sterilized.

NOTICE
This device may cause electromagnetic interference to other electronic devices, please pay attention before use.

NOTICE
Wear gloves when operating this equipment.

NOTICE
Unauthorized copying or installation of unauthorized software is prohibited.

NOTICE
Inserting unknown USB devices may create network security risks and should be done with caution.

NOTICE
■ Do not re-sterilization disposable items intended for single use only. ■ Do not use items containing cellulose materials, including cotton, paper, cardboard, linens, buck towels, gauze sponges, and products with wood pulp. ■ Do not place paper instrument count sheets or batch labels inside the sterilizer. ■ Do not use instruments and devices labeled for gravity sterilization only, as they cannot withstand vacuum processes.

2.4 Symbols and Labels

Warning safety symbols or labels must be permanently affixed to the equipment or other appropriate areas.

Table 2-1 Safety labels

Label	Description	Label	Description
	Refer to instruction manual/ booklet (Mandatory requirement)		Equipotentiality
	Date of manufacture		Consult instructions for use or consult electronic instructions for use
	Stand-by		Product Number

3 Product Overview



TT-PS50 Main unit



Power cable



Tray



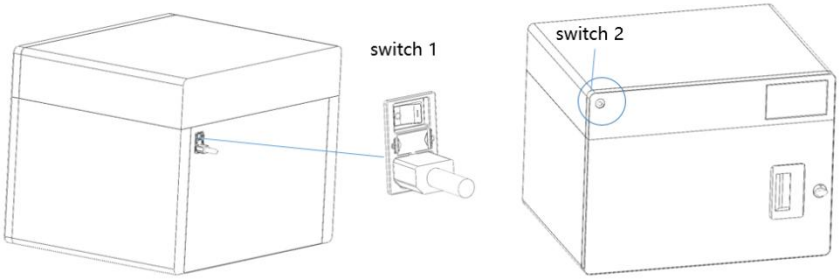
Indicator strips



Catalyst canister

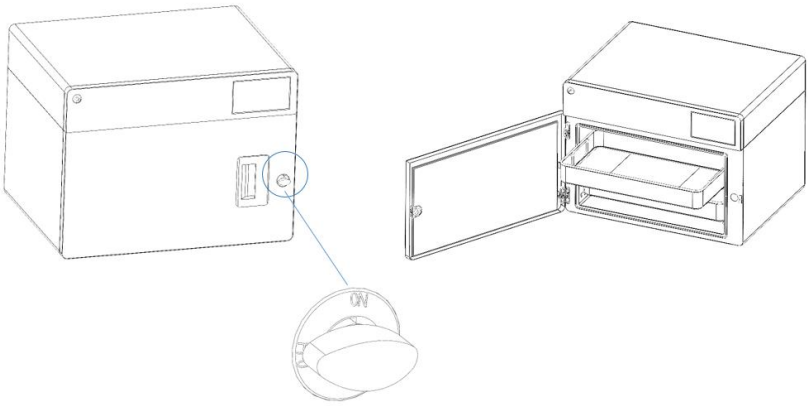
4 Instructions

STEP1:Power on



- ○ Turn on the power switch1 and switch2 .
- ✓ Ensure the power button is on.
- ✓ Ensure the power line is plugged in.

STEP2 ：Load instruments for sterilization



- ✓ Ensure the instruments have been cleaned.
- ✓ Ensure that the instruments are dry.
- ✓ Ensure that the sterilization indicator strip(RCIS01) has been placed.

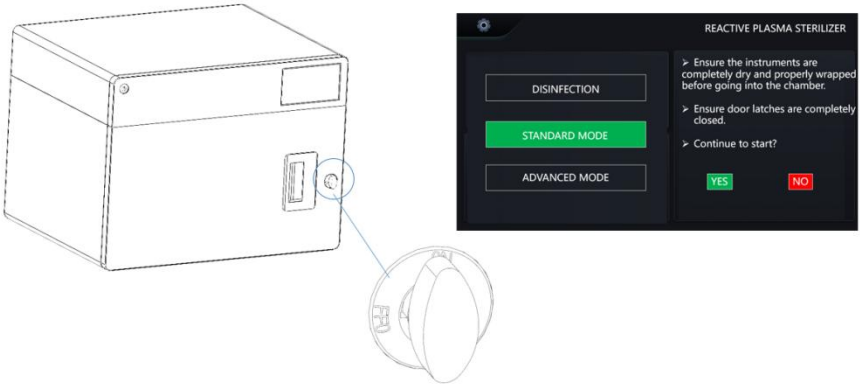
Scope of sterilized

Category	Metals	Plastics	Elastomers	Other
Compatible materials	Stainless steel, Titanium, Anodized, aluminum, Gold plating	PEEK, PE, ABS, PTFE, PVDF, PVC, PP, PC, PU, PSU, PPSU	Silicone, Fluorosilicone, Vito, Santoprene, Tygon, EPDM	Glass, Ceramic
Incompatible materials	Mild steel, Galvanized steel, Brass, Zinc, Tin, Nickel, Bronze, Copper	PA, Delrin	Natural rubber, Nitrile	Cellulosic material (paper, cardboard, textiles)

NOTICE
■ Place sterilized instruments at no more than 80% capacity. ■ Do not stack instruments on top of each other. ■ For sterilization of clean and dry veterinary instruments only. ■ Package sterilized instruments using SMS wrap or Tyvek pouches. ■ Use chemical indicator strips inside all pouches and wraps to verify sufficient sterilant gas concentration for effective sterilization. ■ Do not process dead-end lumens.

NOTICE
■ The sterilizing gas possesses strong oxidizing properties. Slight discoloration or yellowing may occur on some dyed elastomers and plastics.

STEP3 : Sterilization



■ Select the desired mode

✓ Ensure that the sterilizer door is locked.

MODE	Intended Use Environment	Cycle Time
DISINFECTION	Non-surgical instruments and items requiring only disinfection in veterinary hospitals.such as feeders.	About 1 hour
STANDARD MODE	Instruments requiring sterilization during surgical procedures.Examples: electrosurgical pencils, bipolar electrodes; catheters: PTFE catheters (ID 1 mm, length 2000 mm), silicone rubber tubes, gastric tubes, esophageal tubes; laryngoscopes; trocar ; surgical power tools and batteries; endoscopic instruments; metal instruments; rigid endoscopes; ultrasound probes; cameras hant and connectors etc.	about 1.5 hours
ADVANCED MODE	Excessive loading: when exceeding 80% of the sterilization chamber volume.	about 3 hours

NOTICE
■ ADVANCED MODE extends the exposure time of instruments to the sterilizing gas, which may increase the risk of surface oxidation.This mode is recommended for cautious use unless necessary.

STEP4 : Sterilizer completed



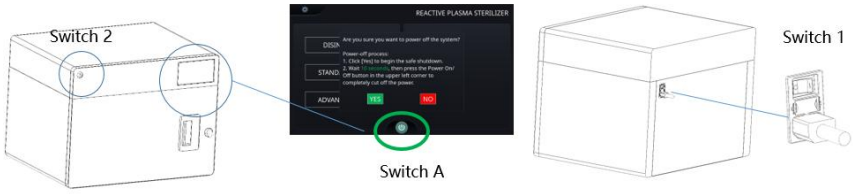
■ When the sterilization process is finished and the "CYCLE COMPLETE" screen is displayed, open the door.

✓ Ensure that the strip have changed color.

Before  After 

NOTICE
■ Chemical Indicator ♦ The chemical indicators confirm exposure to the sterilization process. Place the designated chemical indicators inside SMS wrap or Tyvek pouches. After sterilization, check for the correct color change.a failed indicator renders the entire load non-sterile. ■ Biological Indicator ♦Biological indicators verify sterilization process effectiveness. The only recommended biological indicator for this system is the Steritailin® GP6-9372* from Tailin, Inc. ♦The system has been validated to completely inactivate Bacillus atrophaeus ATCC 9372 with a population of 10^6 CFU.IF you want to verify the sterilization efficacy, contact your service representative to purchase the corresponding biological indicator.

STEP5 : Power off



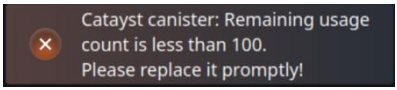
- ○ Turn off the power switch A、 switch 1 and switch 2 .
- ✓ Before full power disconnection, execute the system shutdown program via the operation touch screen（switch A） and wait for normal software exit.
- ✓ After the software shutdown process completes,turn off switch 2 and switch 1.

NOTICE
Directly turning off hardware switches without prior screen software shutdown may cause program errors, data loss or damage to equipment components.

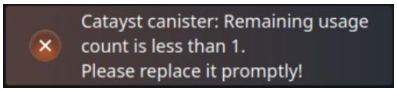
5 Troubleshooting

When a Warn appears on the host touch screen.

▪ When the catalyst canister has less 100 times left, the console will Warn. Please prepare to replace the catalyst canister.

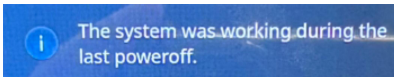


▪When the catalyst canister has less 1 times left, the console will stop working. Please replace the catalyst canister.



▪ During use, if the pressure fails to reach the set vacuum state beyond the preset time, the console will Warn. Please check that the door is closed properly and Please check that the door seal is intact.

▪If power cut or forced shutdown happens during operation, this prompt will appear after restart. Do not open the door during automatic system repair until the prompt vanishes.



6 Maintenance

6.1 Overview

To ensure safe and effective operation, the console requires regular maintenance.

Maintenance must be performed by trained and authorized users or customer service engineers.

Maintenance or service items beyond those permitted in this manual may only be performed by customer service engineers.

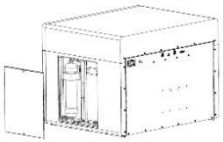
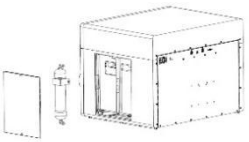
⚠ WARNING
Do not modify this equipment without authorization of the manufacturer.

⚠ WARNING
Never perform maintenance or repairs while the console is in use .

6.2 Maintenance items

Project	Personnel	Frequency

Dust Removal	Customer Service Engineer	At least annually
Electrical safety inspection	Customer Service Engineer	At least annually
Cleaning	User	As needed by user
Catalyst canister Replacement	User or Customer Service Engineer	End of life

NOTICE
Catalyst canister Replacement    step1:Remove the side panel. Unload the Catalyst canister from its fixed position. Step2: Replace a new Catalyst canister and secure. Step3:Reset the life of new Catalyst canister in the “system” option of operation interface.

NOTICE
Catalyst canisters are not subject to special disposal restrictions and may be disposed of with regular waste.

6.2.1 Clean the main unit

Prerequisites:

Before cleaning, inspect the device for any damage, cracks, or abnormal mechanical function. If any of these issues are present, do not use the device. Contact Customer Service or perform repairs as needed.

⚠ WARNING
Do not disassemble the console housing during cleaning

Follow these steps to clean:

1. Clean all surfaces with a lint-free cloth or soft towel moistened with 75% ethanol disinfectant, ensuring surfaces are dampened with 75% ethanol disinfectant.For visible stains, repeat wiping multiple times.

NOTICE
When cleaning the console, do not use too much detergent and do not allow the detergent to seep into or enter the gaps and openings of the device . Otherwise, liquid may enter, causing damage to the device or even electric shock.

2. After 3 minutes, wipe surfaces with a clean, lint-free cloth or soft towel.

7 Technical data

7.1 Working, transportation and storage conditions

Project	Parameter
Power supply conditions	♦ Rated voltage: ~ 220 V or ~ 110 V ♦ Power frequency: 50/60 Hz ♦ Rated Power: 600 VA
Working conditions	♦ Temperature range: 5°C-40°C ♦ Relative humidity: 10% – 80% (RH) ♦ Air pressure range: 700 hPa – 1060 hPa ♦ Maximum altitude: 3000 m
Transportation and storage conditions	♦ Temperature range: -40°C – 55°C ♦ Relative humidity: 10% – 90% (RH) ♦ Air pressure range: 700 hPa – 1060 hPa

7.2 Equipment classification

Classification	Safety features
Protection against electric shock	Class I equipment
Application part protection against electric shock	Type BF applied part
Permanently installed equipment or non-permanently installed equipment	Non-permanently installed equipment

7.3 Technical Specifications

Project	Parameter
Outer Size (W×H×D)	630×472×500 mm
Chamber Size(W×H×D)	516×282×310 mm
Tray(RT01) Dimensions (W×H×D)	500×70×300 mm
Diagonal Length(chamber)	about 588 mm
Chamber Volume	45L
Weight	about 50 kg
Installation space	Back ≥ 100mm
	Right Side ≥ 300mm
	Left Side ≥ 50mm
Installation Environment Requirement	Equipped with ventilation facilities

7.4 Software Description

Compatibility

The use of this software depends on the hardware and operating system of this product.

Ease of use

The user interface of this software adopts a graphical operation interface. Users can complete the operation by clicking on the touch screen. This software can be used by people with no dyslexia and who have English language skills .

⚠ WARNING
medical personnel who have received professional training.

Information security

Integrity: This software verifies data before transmission and storage to ensure data integrity.

Non-repudiation: This product achieves non-repudiation through an event log that cannot be modified. The log storage content includes event Occurrence time, alarm priority, event description, etc. The log records are not cleared when the power is off.

Verifiability: Log storage content includes the time and content of the event, and can be uniquely traced back to the entity.

Maintainability

Users can view system information in the settings interface. Service engineers can view event logs in the settings interface.

- System information: You can view information such as software version, Catalyst canister remaining usage count, etc.
- Event log: You can view alarm logs, operation logs and other information .

Reliability

When the software malfunctions, it can be restored to normal operation by restarting the system.

When an error occurs in the user interface, it will not affect the continued operation of this software.

For irregular interactions, users are reminded by Warning or by software not responding.

7.5 Electromagnetic compatibility performance

- EMC test method used : EN 55011:2016+A1:2017

*EN55011:2016/A2:2021
(CISPR11:2015+A1:2016+A2:2019)
EN60601-1-2:2015+A1:2021(IEC60601-1-2:2014+A1:2020)

⚠ WARNING

This system may still be interfered by other devices even if they comply with the emission requirements of the corresponding national standards .

⚠ WARNING

This system should not be used close to or stacked with other equipment. If it must be used close to or stacked with other equipment , the inspection Verify that it can run properly in the configuration it is using.

⚠ WARNING

The use of accessories or cables other than those specified with the equipment and system may result in an increase in the emission of the equipment or system. or reduction in noise immunity.

⚠ WARNING

This system has been tested for RF radiation immunity at selected frequencies only.

NOTICE

Portable and mobile RF communications equipment may affect the normal use of the device. Please operate it in the recommended electromagnetic environment. Use the device below.