



**Automatic Biological Reader
User Manual**

Model: BIOPT4

LISTER BIOMEDICAL CO.,LTD.

www.listerbiomed.com

LISTER Auto-Reader

Please read and understand all safety information before using this
product

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Preface

Content Disclaimer

Image Disclaimer

Sample printouts, graphics, displays, and screens are for reference and illustration only. They should not be used for clinical or maintenance evaluation. Data shown on sample printouts or screens does not reflect actual patient names or test results.

Hardware Disclaimer

Hardware specifications for the LISTER Automatic Biological Reader may change at any time. System images, hardware components, and specifications in this manual may differ from the installed system. Any changes or modifications to authorized systems have been verified and conform to the functions described in this document.

Intended Use

The LISTER Rapid Biological Indicator System provides fast and reliable monitoring for STEAM, VH₂O₂, FORM, and EO sterilization processes used in healthcare institutions. The system consists of biological indicators, process challenge devices, and automatic biological readers.

The following biological indicators are compatible with the BIOPT series automatic biological readers:

Table 1

Product Name	Model	Reading Time
LISTER STEAM ULTRA-SUPER RAPID READOUT	LBS020	20 min
LISTER STEAM ULTRA-SUPER RAPID READOUT	LBS030	30 min
LISTER STEAM SUPER RAPID READOUT	LBS060	1 hr
LISTER STEAM RAPID READOUT	LBS180	3 hrs
LISTER VH ₂ O ₂ ULTRA-SUPER RAPID READOUT	LBH020	20 min
LISTER VH ₂ O ₂ ULTRA-SUPER RAPID READOUT	LBH030	30 min
LISTER VH ₂ O ₂ SUPER RAPID READOUT	LBH060	1 hr
LISTER VH ₂ O ₂ RAPID READOUT	LBH180	3 hrs
LISTER FORM ULTRA-SUPER RAPID	LBF020	20 min

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READOUT		
LISTER FORM SUPER RAPID READOUT	LBF060	1 hr
LISTER EO RAPID READOUT	LBE180	3 hrs
LISTER EO RAPID READOUT	LBE240	4 hrs

The indicators listed in Table 1 can be further cultured for a final visual PH color change result at 24 or 48 hours. Users may choose whether or not to conduct further cultivation. Other indicators are not compatible with this reader and cannot be used.

Scope of Application

The LISTER Auto-Reader is designed to incubate and automatically interpret LISTER biological indicators (refer to Table 1) at 56–60°C or 35-39°C, to rapidly obtain final fluorescence results.

Warranty

In China, the LISTER Automatic Biological Reader (BIOPT series) comes with a one-year warranty.

Serial Number

Each LISTER Auto-Reader has a unique serial number printed on a label at the bottom of the unit for identification purposes.

Safety and Precautions

The LISTER Auto-Reader (BIOPT series) and related accessories are designed to be safe and reliable when used as directed. Please read, understand, and follow all safety information included in this manual and in the instructions for LISTER biological indicators listed in Table 1. Use this device only for the purposes described in this manual.

- For indoor use only.
- Do not use the device if it is malfunctioning or damaged.
- Use only the specified power supply certified in the country of use.
- Do not spill liquid on or into the instrument. Do not immerse the instrument in liquid.
- Always unplug and allow the device to cool before cleaning.

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- Clean only the outer surface using the manufacturer's instructions.
- Do not open the housing—no user-serviceable parts inside. Return to the manufacturer for repairs.
- Only trained personnel familiar with the device and manual should operate the reader.
- Avoid direct sunlight or strong incandescent light.
- Keep away from sources of strong electromagnetic fields.
- Do not use on vibrating surfaces.
- Activate and incubate biological indicators within 1 hour of completing the sterilization cycle.
- Do not incubate indicators if the ampoule is damaged before activation. Use a new indicator.
- Do not remove or reposition indicators after insertion into the reader.
- Do not re-incubate an indicator after the result has been determined.
- Prevent contact with chemical indicators or tapes to avoid fluorescence contamination.

Specifications

Power Specifications

Parameter	Value	Unit
Voltage Range	100—240	V
Frequency	50/60	Hz
Current	1.5	A

Environmental Operating Conditions

Parameter	Operating Condition	Unit
Altitude	≤3000	m
Operating Temperature	5—40	°C
Storage Temperature	-10—50	°C
Relative Humidity	20—80 (non-condensing)	%
Voltage Range	12	V DC
Current	1.5	A
Overvoltage Category	II	-
Pollution Degree	2	-

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Instructions – Initial Installation

Choose a Location

Place the BIOPT Automatic Biological Reader on a stable, level surface away from sunlight and incandescent lamps.

Powering the Device

Connect the power cable to the reader and then plug it into an AC grounded outlet.

Warning:

- Do not place the device in direct sunlight or under strong incandescent lighting.
- Keep away from equipment emitting strong electromagnetic fields.
- Do not place on vibrating surfaces.

Wait 30 Minutes Before Use

Allow 30 minutes for warm-up after plugging in the reader before inserting biological indicators.

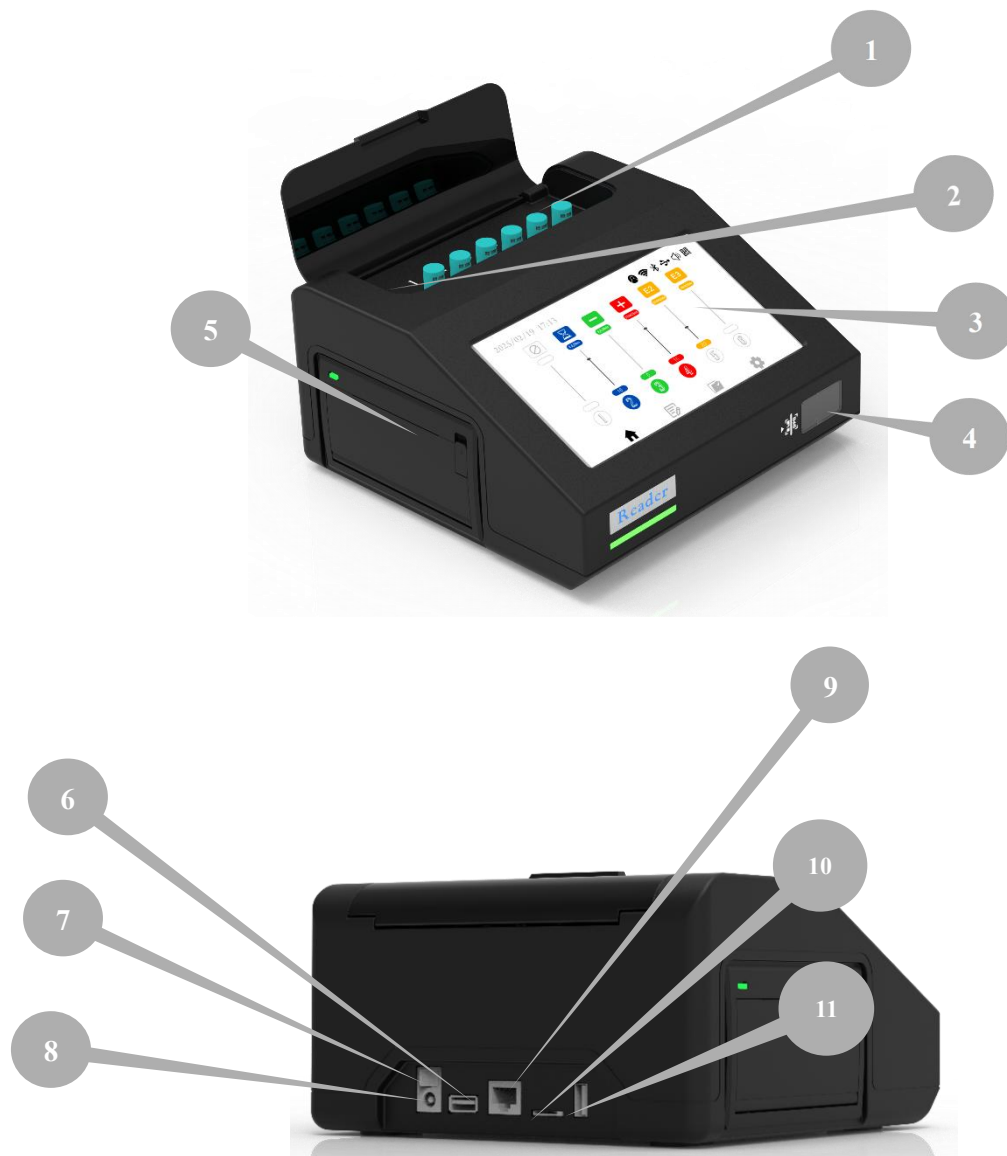
It is recommended to keep the reader powered on to avoid warm-up delays. Power off only if not in use for an extended time.

Warning: Use only the power supply specified for this product.

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Instructions – Hardware and Interface Overview

Hardware Overview of BIOPT Reader

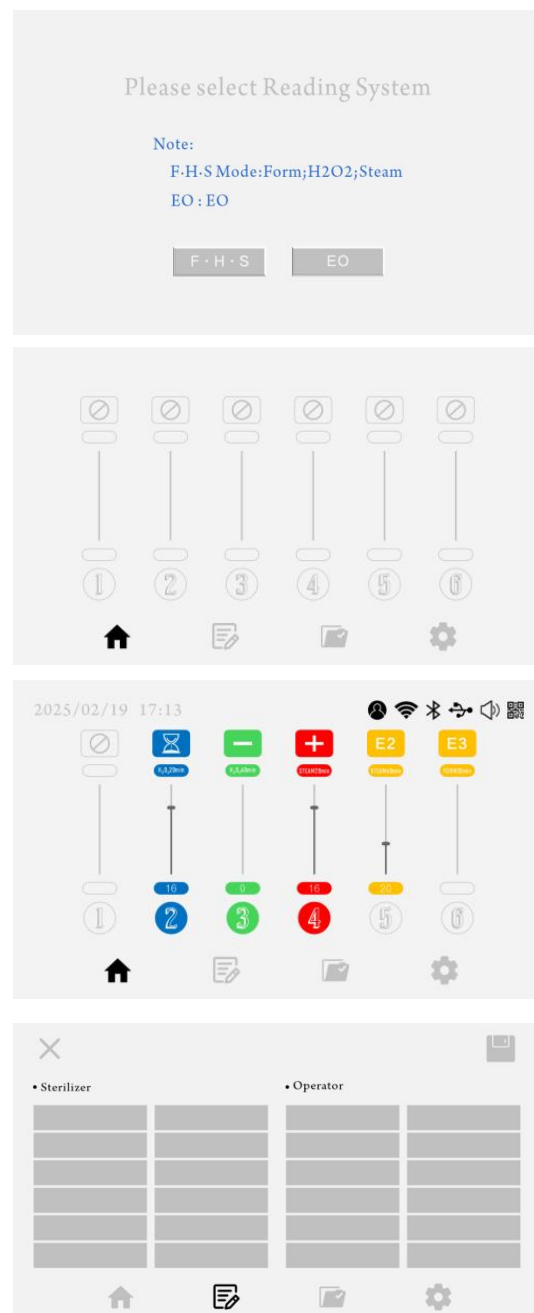


- 1– Incubation/Reading Holes – Insert activated indicators here.
- 2– Cracking Holes – Used to break the glass ampoule inside the indicator for activation.
- 3– Display Screen – Interface for inputting sterilizer/operator info, viewing BI status, print settings, etc.
- 4– QR Code Scanner – Scans the QR code on the indicator label.
- 5– Printer – Prints BI reading results.

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- 6– USB Port 1 – For firmware upgrades and software updates.
- 7– Power Button – Turns the reader on/off.
- 8– DC Power Socket.
- 9– RJ45 Ethernet Port – For high-speed, reliable data transmission.
- 10– SD Card Slot – Stores up to 50,000 records, exports data (Excel format supported).
- 11– USB Port 2 – For firmware upgrades and software updates.

Interface Overview of BIOPT Reader



Startup Screen – Select reading program:
F•H•S: For LBS/LBH/LBF series
EO: For LBE series

Main Page

Displays hole/channel info and BI reading status.

See detailed instructions in “Reading Procedure.”

Main Page

Blue: Reading in progress

Green: Negative result

Red: Positive result

Yellow: Error (see Troubleshooting Guide)

Info Input Page

Input sterilizer and operator info.

See detailed instructions in “Reading Procedure.”

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History Page

Displays historical BI results and info.

See detailed instructions in “Reading Procedure.”

Settings Page

Language, sound, printer, Bluetooth, QR code toggle, network, time, brightness, factory reset, engineer mode.

Instructions – Biological Indicator Reading Procedure

Pre-entry of Information

1. Go to the Info Input page;
2. Enter sterilizer info in the left columns (e.g., STEAM P001);
3. Enter operator info in the right columns (e.g., Zhang San)
4. Click the save button in the upper right corner.

Automatic Scanning Mode

1. Insert a biological indicator into one cracking hole, press its cap horizontally toward another hole to break the internal ampoule.
2. Shake gently to ensure full contact between the culture medium and spore strip.
3. On the main page, click the hole number: ③, 15-second countdown begins (insert countdown, timeout not inserted, reading program canceled), the scanner lights up.
4. Align the QR code on the indicator cap with the scanner. After scanning, insert into the corresponding reading hole. The channel frame turns blue and begins reading. Countdown and BI type will display.;
5. Click the channel again: ③, to enter traceability info: sterilizer ID, load number, sterilizer type, positive control channel, operator info. Click save.

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- Once complete, the reader displays the result, red: positive, green: negative, The printer automatically prints the result:

Incubation Record	
Reader SN	202401001
Incubation End Time	2024-09-08 12:00
Incubation Record No.	202409080001
Incubation Channel	1
Control Channel	2
Incubation Time	4Min
Incubation Result	+
BI Type	STEAM30min
BI NO.	LST2024080900001
Sterilizer Type	STEAM
Sterilizer NO.	002
Sterilization Batch NO.	001
Operator	David
Signature:	
Date:	
NOTA:	

Annotations:

- Device serial number (points to Reader SN)
- Device-generated code (points to Incubation Record No.)
- Positive control channel used that day (points to Control Channel)
- ”+”for positive,”-”for negative (points to Incubation Result)
- Manufacturer-defined details (points to BI NO.)

- Remove the BI and dispose per hospital policy. Positive BIs must be sterilized before disposal.

Manual Mode

- Go to Settings → QR code toggle → enter password “1119” to disable scanner. Return to main page.

- Break and shake the indicator as in Auto Mode.
- Shake gently to ensure full contact between the culture medium and spore strip.
- Select a hole to insert the BI, the reader automatically jumps to the selection page, first select the indicator type at the bottom of the page (H₂O₂-VH₂O₂;

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STEAM-STEAM; FORM-FORM; EO-EO); then in the middle of the page select Bioindicator Reading Time (Choose BI type and reading time based on Table 1).

5. Follow steps 5–7 of Auto Mode to complete the process.

Instructions – Additional Information

Positive Control

When using the reader to incubate and interpret sterilized LISTER biological indicators each day, activate and incubate at least one unsterilized LISTER biological indicator as a **positive control**. Mark “C” (for Control) and the date on its label. The positive control can be placed in any incubation hole.

It is recommended to use a positive control with each batch of sterilized LISTER biological indicators. This helps confirm:

- The incubation temperature is correct (heater module reads $58^{\circ}\text{C} \pm 2^{\circ}\text{C}$);
- The viability of the spores has not been compromised by improper storage temperature, humidity, or proximity to chemicals;
- The culture medium supports rapid growth, and the BIOPT reader components are functioning properly.

Optional Visual PH Color Change Result

The LISTER biological indicators listed in Table 1 can undergo further cultivation to obtain a visual PH color change result. This step is optional and not part of routine use, but may be used for special studies. For positive control indicators: the growth medium will turn yellow within 48 hours. If yellow is observed, the result is positive. For sterilized indicators: if the medium changes from purple or blue-green to yellow, the sterilization process failed. Record the PH color result and discard the BI after observation.

For sterilized BIs cultivated for over 48 hours, a humidified incubator is recommended to prevent medium from drying out. If visual H results are required, transfer the processed BI to a humidified incubator after fluorescence reading in the BIOPT reader. Medium color change from purple to yellow indicates a sterilization failure. PH color results may be assessed up to 7 days.◦

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Audible Alarm

When a positive result is detected:

- An audible alarm sounds.
- The LCD backlight flashes.
- The corresponding channel on screen turns red with a “+” sign.

If a BI is removed before final result detection, an alarm also sounds. If the BI is not reinserted within 30 seconds, the data is lost.◦

Alarm ON/OFF

You may **disable the alarm** via the Settings page by toggling the **sound switch**.

Temperature Monitoring

A dedicated **temperature calibration channel** is located at the center of the reader’s incubation area. Use a high-precision **probe thermometer** to externally monitor the temperature. If temperature readings are abnormal, contact the **manufacturer for calibration**.

Network Configuration

In the **Settings** page, click the **network switch** to enter the network configuration page, where parameters can be set.

The image displays two side-by-side screenshots of a device's network configuration interface. The left screenshot, titled 'Network', features a Wi-Fi icon and a right-pointing arrow. It contains four input fields: 'Wi-Fi name', 'Wi-Fi password', 'Server address' (with three asterisks as a placeholder), and 'Port number'. The right screenshot, titled 'Lan', features a globe icon and a left-pointing arrow. It contains six input fields: 'IP address', 'Subnet mask', 'Gateway address', 'Server address' (each with three asterisks as a placeholder), 'Server port', and 'MAC address' (with five dashes as a placeholder).

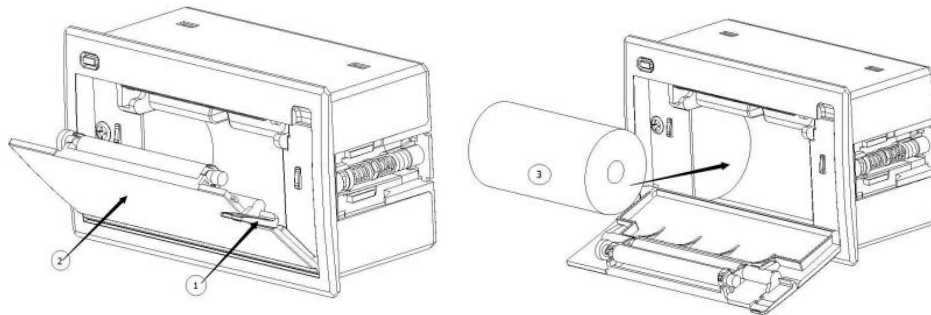
Restore to Factory Settings

In the Settings page, click Restore Factory Settings. Enter the password: 0913.

Printer Paper Replacement Instructions

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1) Press the **door release button** ①, the paper compartment cover②will open automatically; Insert the **thermal paper roll** ③into the compartment, Push the cover②back to the closed position.



Additional Functions of the BIOPT Series Auto-Reader

Optional LISTER Mobile App

If needed, the BIOPT Automatic Biological Reader can connect to the **mobile app** via wireless network to enable the following additional features:

- Remotely view the current status of BIs in the reader.
- Take photos and attach chemical indicator monitoring results from the same sterilization batch and store them.
- Remotely view history (including chemical indicator data added via app) and **export PDF reports**.

Optional LISTER PC Web Application

If needed, connect the reader to a **PC via Ethernet** to enable:

- Remote viewing of current BI status in the reader.
- Remote viewing and exporting of reading history.
- Use local or network printers to print or save documents as electronic files.

Printer

The BIOPT series includes a **built-in printer**.

You can turn the printer on/off via the Settings page.

When enabled, it **prints results in real-time** or allows re-printing from the **History**

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page.

Maintenance and Cleaning

Caution: Always unplug the device and allow it to cool before cleaning.

- Do not spill liquid on or into the device.
- Do not immerse the device in any liquid.
- Clean only the outer surface using instructions provided by the manufacturer.
- Do not attempt to open the housing—no user-serviceable components inside.
- All repairs must be performed by the manufacturer.

Use a cloth dampened with mild detergent to clean the exterior. Do not attempt to clean internal components. For further cleaning of the holes, contact for maintenance or replacement.

Note: The LISTER BIOPT series reader contains no user-serviceable parts. All faults are displayed via error codes. Refer to the troubleshooting section for code descriptions.

Troubleshooting Guide

If an error code appears, unplug the reader and plug it back in to initiate self-diagnosis. If the error persists, contact the manufacturer for service or replacement. See below:

Code	Fault Mode	Solution
	Display not lit / abnormal	Restart device Change AC outlet Replace power adapter
C2	Heating error – does not reach set temp within 30 minutes after startup	Power off Check power adapter Replace adapter if needed
C3	Incubation temp deviation during operation	Contact manufacturer
E1	Startup environment check – light intensity outside acceptable range	Move device indoors Avoid strong lighting
E2	Indicator removed during incubation	Reinsert same BI within 30 seconds
E3	Invalid BI inserted	Check for foreign objects in slot Verify BI model Ensure culture medium contacts spore pad fully



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