



JHTechnologies.com/optic-clean
213 Hammond Avenue
Fremont, CA 94539
Patent Pending | Made in the USA

Optic-clean

UV Microscope Eyepiece Sanitizer

Technical/ User Manual

Revision 1.0

November 2020

Revision Sheet

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OPTIC-CLEAN USER'S MANUAL

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1 GENERAL INFORMATION

1.1 System Overview

Optic-clean is a non-chemical eyepiece sterilization system that effectively prevents the spread of bacteria, viruses, and other pathogens.

- Hardware based system
- One button control
 - “System Ready” indicator
 - “In-process” indicator
 - “Process end” indicator
- Adapters for most microscope eyepieces
- UVC safety sensors
- Remote battery pack (optional)
- Verify radiometer (optional)

1.2 Manufacturer Information

System is manufactured in the USA by JH Technologies, Inc. All parts, accessories, manuals, and other collateral are exclusively available from JH Technologies or its authorized distributors

1.3 Contact Information

1.3.1 To order additional instruments, accessories, spare parts, or manuals please contact:

JH Technologies, Inc.
213 Hammond Avenue
Fremont, California 94539
USA
Email Orders@JHTechnologies.com
Phone: (408) 436-6336

OR Your Local Authorized Distributor

1.3.2 For technical support, warranty returns and questions, or service please contact:

JH Technologies, Inc.
213 Hammond Avenue
Fremont, California 94539
USA
Email CustomerService@JHTechnologies.com
Phone: (408) 436-6336

2 SYSTEM SUMMARY

2.1 Introduction

Congratulations on purchasing the first non-chemical sterilization system specific to microscope or telescope eyepieces. The system incorporates Ultraviolet C (UVC) radiation to disrupt bacteria, viruses, and other pathogens preventing them from replicating and spreading. UVC is a wavelength of light that disrupts RNA and DNA strands rendering them incapable of reproducing. The effect of UVC has been known and tested for more than 100 years. When applied in the proper dosage, UVC is a very effective sterilization technique.

Optic-clean uses LEDS which output a narrow band with a peak at 270nm In the UVC spectrum. A highly effective spectrum for disinfection and sterilization with enough dosage. UVC can be harmful to skin and eyes if exposed to high doses therefore we have incorporated sensors to turn the system off if not used in a proper fashion.

Please refer to our safety guidelines in section 4.3

The system has been setup with the proper energy dosage to disrupt current known pathogens effectively. Additional information related to setup can be found in section 3.1. **WARNING!** Please read setup procedures completely to get the most effective output from the system.

2.2 System Configuration

When using a microscope, the most common touchpoint are the eyepieces and thus a high transfer point for bacteria, viruses, and other pathogens. Your eyes are also moist and warm making them the perfect environment to culture these pathogens. To protect you from transfer of these diseases Optic-clean was developed to kill these diseases before they contact your eyes.

The Optic-clean system is offered in only one configuration, however, it is available with a wide variety of adapters that allow the system to be used on many microscopes from various manufacturers. Your system will have the adapters for the specific instruments you ordered. *

*Note: If you received adapters that do not fit your instrument please contact us for replacements.

Every Optic-clean instrument also comes complete with cables and a power supply making it ready to use right out of the box.

2.3 Standard Delivery & Optional Accessories

Standard delivery for dual eyepiece system



1. 1ea Case
2. 2ea Optic-cleans
3. 2ea USB-C Interface cables
4. 2ea Eye tube Adapters
5. 1ea Power supply
6. 1ea 2.5mm Allen Wrench
7. 1ea Metal scale (not pictured)

Standard delivery for single eyepiece system



1. 1ea Optic-clean
2. 1ea USB-C Interface cable
3. 2ea Eye tube Adapters
4. 1ea Power Supply
5. 1ea 2.5mm Allen Wrench
6. 1ea Metal scale (not pictured)

Optional Accessories

Verify Radiometer



Power Bank for Remote Operation



Eye Tube Adapter Operation



2.4 Overview of the Instrument

The Optic-clean is a simple instrument designed to disinfect microscope eyepieces. Research shows that viruses and bacteria propagate best in warm and moist environments. The human eye and surrounding area are in this environment, which can be a very high transfer point for these types of pathogens. Optic-Clean was developed to disinfect the touch surfaces of the eyepiece making the instrument safer to use by preventing virus and bacterial transfer.

Optic-clean simply slides over the eyepiece of your microscope. It is held in place by an eye tube adapter and operated with the push of a single button. The system incorporates ultraviolet light in the 200-280nm range to disrupt the DNA of the pathogen, resulting in the pathogen's inability to replicate and thus effectively preventing its transfer.

Operators can use a single unit and move it between eyepieces. A second system can be added to the microscope to increase the throughput.

Side and Rear View of Optic-clean



Single Unit Setup



High Throughput Dual Setup



3 GETTING STARTED

3.1 Setup

3.1.1 Mounting Eye-tube Adapter

1. Mounting adapter to microscope eye-tube
 - a. The system comes with 2 each eye-tube adapters, 2ea 2.5mm Allen head screws, and 4ea O-rings.
 - b. Place 2 O-rings on to one eye tube. You can stretch these as need to place them in the proper position approximately 2.2" (55mm) below the top of the eyepiece



- c. Place each half of the adapter on to eye-tube making sure the O-rings fit into the grooved slot of each half



- d. Squeeze the two halves together and insert screw into the available screw hole.



NOTE: The Allen screw goes in only one way, be sure it easily drops into place otherwise insert it from the opposite side.

- e. Tighten a screw a few turns and then slide the adapter up or down to make sure the Lip of the adapter is approximately 55 mm (2.2") from the top of the eyepiece. Completely tighten adapter once the distance is correct.



- f. Add second adapter to the other eyepiece. To simplify installation simply match the adapter position to the other eyepiece.

3.1.2 Mounting Optic-clean

1. To mount the Optic-clean device simply slide over the eyepiece and until it clicks into the slot provided on the adapter.



Adapter Slot

3.1.3 Operating Optic-clean

1. Once Optic-clean is in position:
 - a. Connect your USB-C power cable into the bottom of the device.



- b. Connect the USB end to your wall plug power supply or to the optional power bank.

- c. Turn the power on by pressing the activate button on the front of the device. This will light up the display on top showing 60 (seconds)



- d. To activate a cleaning cycle, press the activate button again and the process will start. The activate button will flash purple indicating that the system is in process and the timer will start counting down from 60.



- e. Once the timer reaches 00 the process is complete, and the activation button will turn green.



- 2. **Note:** You can stop the cleaning cycle anytime by pressing the activation button or disconnecting the power cable.

3.2 Important Functions

- 3.2.1 The system is equipped with a time-of-flight sensor which turns the unit “OFF” automatically if it is removed during the processing cycle. THIS IS NORMAL and a safety function of the system. UVC radiation can be harmful in large doses.

The low output of Optic-Clean allows short exposures without harm to the user. Long exposures can be harmful. The time-of-flight sensor prevents the user from getting any exposure.

4 CONSIDERATIONS WHEN USING UVC TECHNOLOGY

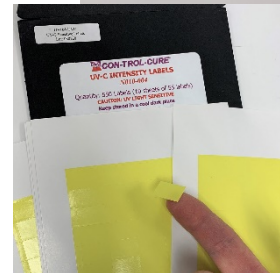
4.1 Safety Concerns

UVC radiation can be harmful if exposed for long periods of time. The Optic-clean system use a low level of UVC at 270nanometers. This wavelength is particularly harmful to viruses and bacteria but only if the exposure is significant enough to create damage to the DNA pathogen. Because the intensity of Optic-clean is relatively low it will take some time for the radiation to have effect. The optic-clean system is preset to expose in 60 second increments which is sufficient to render viruses and bacteria harmless. That same exposure time could also have harmful effects on your skin and eyes while very short exposures (5-10secs) will have no harmful impact. The Optic-clean system utilizes a time-of-flight sensor technology which turns the system off if it is removed from the eyepiece. The safety system also prevents user from turn activating the device without an object (eyepiece) in the chamber. This safety feature prevents the user from getting any UVC exposure.

4.2 How to Monitor Output

Monitoring your system output is critical to ensure your sanitization process is consistent and effective. There are two ways to monitor output:

- 4.2.1 The most accurate way is to check the UVC intensity coming from the unit with a calibrated radiometer. Radiometers are available and traceable to NIST standards. You order these radiometers from JH Technologies or a variety of other sources. Pictured here is our “Verify” radiometer calibrated to a NIST traceable standard
- 4.2.2 Another method that will give you an indicator the system is outputting UVC radiation is to use UVC intensity labels. These labels are adhesive backed and react to UVC radiation by changing color. They will tell you approximately how much energy the disinfected surface is seeing in general but will not provide an exact reading of dosage. These labels are pictured here.



Please contact JH Technologies or ordering information.

4.3 What Output is Appropriate?

The Optic-clean system is optimized to disrupt current known viruses and bacteria in one cycle. Additional data relating to the effectiveness of UVC on various viruses and bacteria are available

online and from JH Technologies.

4.4 How Long will the LED output be maintained?

The system uses LED technology to generate the UVC output. The LED's in the system are guaranteed at near 100% output over 25000 hours which equates to 10 years of normal operation over an 8-hour shift.

5 PROGRAMMING OPTIC-CLEAN

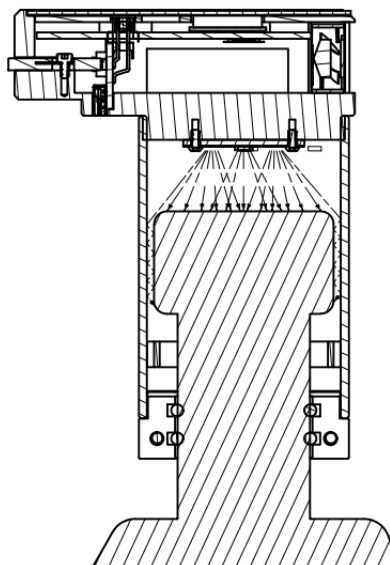
5.1 Programming controls

Software that allows you to modify the system parameters is currently being developed and should be available by the end of 2020. Please contact JH technologies for further information.

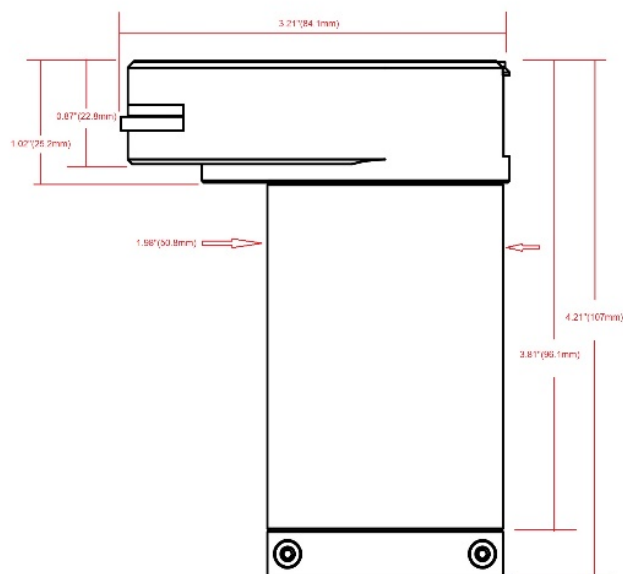
6 SYSTEM SPECIFICATIONS

6.1 Cross-section and Dimensional Drawings

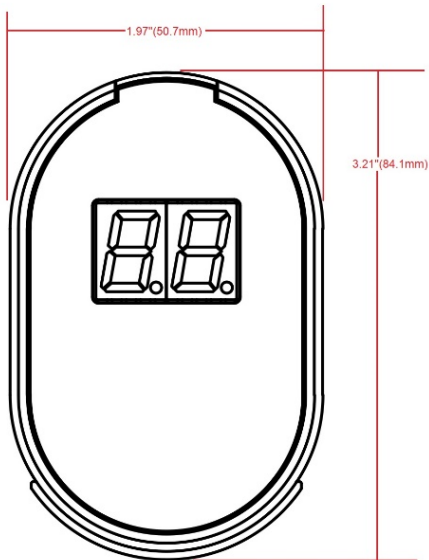
Optic-clean Cross-section View



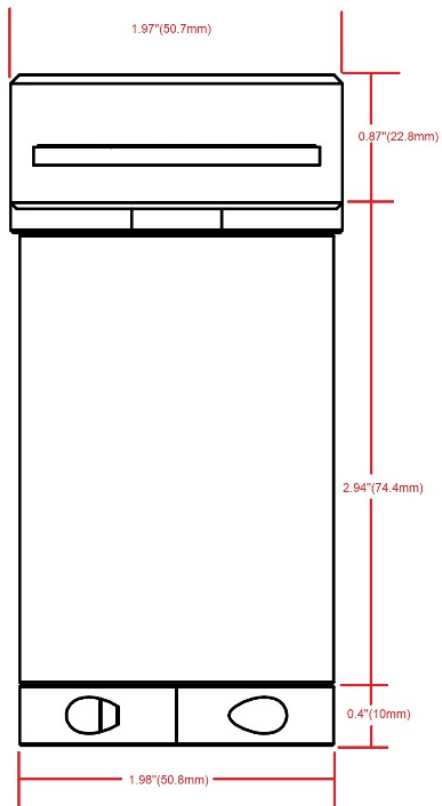
Optic-clean Side View



Optic-clean Top View



Optic-clean Front View



7 WARRANTY & GUARANTEES

7.1 Warranty

Opti-clean Is offered with a one-year warranty and will conform to JH Technologies' published specifications and be free from manufacturing defects in material and workmanship. The warranty period begins from date of shipment. JH Technologies will pass through transferable manufacturer's warranties for any equipment not manufactured by JH Technologies.

Our warranty policy requires return of the defective equipment directly to JH Technologies. Upon Inspection and confirmation of the defect a replacement system will be sent to the original purchaser. Warranties cannot be transferred.

Extended warranties can be purchased at the time of the original purchase or any time within 30 days of original purchase.

7.2 Guarantees

The system Is guaranteed to output enough UVC to disrupt many viruses and bacteria. Due to the nature of pathogen mutations and variations we cannot guarantee that any future pathogens will be disrupted.