PhotonUVC Vet™

Mk1.0

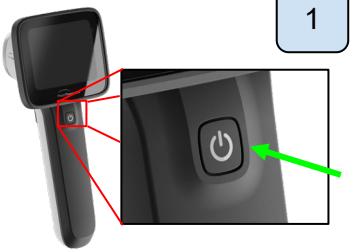
Handheld UVC device for treating corneal infections

INSTRUCTIONS FOR USE

Version 2.0

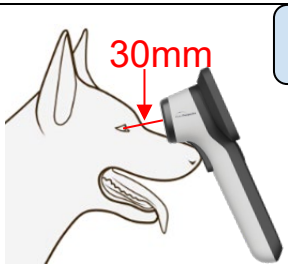
PhotonTherapeutics

For use by trained Veterinary Health Care Professionals only


1

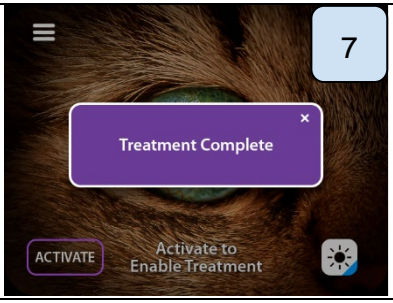
2
ACTIVATE
Activate to
Enable Treatment

5
3
CANCEL
Treatment Ready
Use Trigger to Start


30mm
4

5
HOLD

5
6
UV ACTIVE
Treatment in Progress


7
Treatment Complete
ACTIVATE
Activate to
Enable Treatment

Important Information – Read Before Use

Read the Instructions for Use (IFU) carefully and in its entirety, including warnings and cautions before using the PhotonUVC VET™. These instructions contain important information for the safe use of the product. Please be aware that these instructions do not describe clinical procedures. Prior to use of the PhotonUVC VET™, it is important for operators to have received sufficient training in clinical techniques and to be familiar with the intended use, warnings, cautions, indications and contraindications mentioned in these instructions.

WARNING: A WARNING statement provides important information about a potentially hazardous situation which, if not avoided, could result in death or serious injury

CAUTION: A CAUTION statement provides important information about a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTE: A NOTE statement emphasises information of importance.

Please keep this document for future reference.

Replacement copies of this document can be provided by contacting your sales provider or on the Photon Therapeutics website:

https://photon-therapeutics.com/

Revision history

Document Reference	Issue	Date	Device Software
PHOTON-IFU-VET002	2.0	30 JUN 2025	D2-04-05/VD200

Photon Therapeutics may revise or replace this instruction for use without notice.

Manufacturer

Manufactured by NOTE EMS for Photon Therapeutics

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London EC2A 4NE

www.photon-therapeutics.com

(+44) 0 20 3835 3438

CAUTIONS

- For use by qualified healthcare providers. Operators must familiarise themselves with these instructions for use and the device.
- No modification of this device is permitted.
- The device contains no operator serviceable parts inside.
- Operators should use both direct and indirect (video) visualisation to identify the area of the infection before commencing with treatment.
- All commercially available gloves and glasses block UVC. It is recommended that only the patient look directly into the UVC aperture during use to prevent unwanted and prolonged UV exposure to the operator.
- The light emitted from this instrument is invisible to the human eye and potentially hazardous. Under normal usage conditions user exposure will be negligible.
- During prolonged, consistent use of the device the head can get hot. Please take care when handling the device if using it repeatedly within short periods of time.

Storage and transport Conditions

Temperature: 0°C to 50°C
Relative Humidity: 0% to 80%
Altitude: 0 to 10,000m
Store in a dry place out of direct sunlight

Operating Conditions

Temperature: 5°C to 40°C
Relative Humidity: 10% to 80%
Atmospheric pressure: 0 to 2,000m

Disposal

WEEE Regulations 2013.

The product and all removed electronic parts should not be disposed of with other types of waste at the end of its working life. To prevent uncontrolled waste disposal causing possible harm to the environment or human health, please ensure proper disposal, reuse or the recycling of this product. Please contact your local authority or Photon Therapeutics for more information.

To remove the internal battery at the end of life please contact Photon Therapeutics Support.

No patient or operator information is stored on this device.

Technical Specification

Dimensions	
Size	H: 210mm W: 100mm D: 70mm
Weight	280g
Electrical Rating*	
Output Voltage	5V
Power Rating	15W
Supply Input	110-240V
Supply Frequency	50-60Hz
Battery	
Type	Li-ion
Capacity	3400mAh
Voltage	3.6V
Performance	
Emission Wavelength	UVC (200 to 280 nm)
Emission intensity	< 5mW/cm^2
Essential Performance	Delivery of specified UVC light to the cornea or a fault condition.
Classifications	
IP Classification	IP 43 - Protection against solid objects larger than 1mm. Protection against direct moisture spray at angles up to 60° off vertical
Protection Class, Electrical Hazard	IEC 60601-1 Class II Medical Electrical Equipment
Sterilisation	Do not sterilise
Applied Parts	No applied parts
Mode of operation	Continuous Use

* **NOTE** Using approved power supply

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General

The Photon Therapeutics PhotonUVC Vet™ is a multi-use, handheld ophthalmic device to improve treatment of corneal infections.

Intended use

The PhotonUVC Vet™ is designed to provide a measured dose of UVC light to the eye to treat corneal infections when used by personnel who are suitably trained and experienced in the use of ophthalmic equipment. The Photon UVC provides indirect visualisation of the eye to target the infection and aid alignment during treatment.

Intended User

For use by qualified veterinary ophthalmologists, veterinarians, veterinary nurses, and allied personnel

Operating Principle

The PhotonUVC Vet™ will deliver a dose of UVC light to the eye to reduce microbial load and thereby add to standard of care treatment for corneal infections.

The PhotonUVC Vet™ is intended to run on battery power and can be charged using the USB charging accessory provided. If the battery is depleted it can also be used while charging, ensuring treatment is not precluded by the state of charge.

The PhotonUVC VET™ is non-contact and set to a working distance of 30mm. The operator interface is navigated using the colour touch-screen. A separate power on / off button is located below the touch-screen. UVC light is emitted by depressing and holding the trigger with the operator's finger. UVC light output is paused during treatment if the trigger is released, and continued when pressed again, to allow for patient movement etc.

The treatment duration cannot be adjusted by the operator and emits a specific dose of UVC light. The treatment requires the infected area to be subjected to the dose for a period of 5 seconds. The PhotonUVC Vet™ will display the remaining time on the operator interface during TREATMENT MODE.

The device must be held at a distance of 30mm from the surface of the patient's eye for optimal treatment; this is when the screen image will be in focus. It is recommended the correct operating distance is confirmed by moving inwards and outwards a few times to find the point of *best focus* before depressing the trigger to activate treatment.

The targeted treatment area should be centred within the area bounded by the two curved alignment lines which lie just within the UVC beam coverage. If the infected area targeted lies too close to the edge of the treatment zone there is the chance of recolonisation from microbes that may be present outside the coverage of the UVC beam.

While treating and the UVC is active there will be a purple screen border to notify the user that treatment is active, as the UVC itself is invisible. The UVC beam is circular and lies just outside the alignment curved lines as mentioned above.

To turn off the device, depress the power button until a notification appears on the screen confirming shutdown, or alternatively continue holding the power button until the device turns off.

Operational notes

- For use in a clinical setting
- Recommended for use with Photon Therapeutics accessories only.
- Intended for use with the operator positioned directly in front of the device with the display in full view

CAUTION: Use of a charging accessory other than that provided with the device can cause device damage or reduce the service life of the device. The supplied power supply is specified as part of the medical equipment system. The device can be used while plugged in and charging but requires the high current charger supplied. DO NOT remove or plug in the charger whilst treatment is in progress as this can result in the device entering an error state rendering it unusable.

Clinical Benefits

The PhotonUVC Vet™ provides visualisation and illumination of the cornea for precisely targeted delivery of UVC light at the site of potential infection. When used in conjunction with fluorescein, the PhotonUVC Vet™ can illuminate an area of ulceration by activating the built-in blue LED to aid diagnosis and alignment. Cross-contamination is prevented as this is a contactless treatment. The handheld unit can be disinfected and cleaned between uses if necessary.

Contraindications

- None

Potential Adverse Events

There are no documented complications associated with the use of this device. If, during the use of the PhotonUVC Vet™ or as a result of its use a serious incident has occurred please report it to the manufacturer and to your national authority. The exposure of 5 seconds of UVC with this device is equivalent to 1 min in sunlight for cumulative lifetime exposure to UV. The potential for transient photokeratitis exists with improper use for example multiple exposures or holding the device too close during treatment. Any concerns about a suspected adverse event can be reported via www.photon-therapeutics.com

Support Documentation

Photon Therapeutics may provide a service manual for this product which contains information that will assist service personnel to repair parts of the device that have been designated as repairable. Please contact your sales provider for more information.

Accessories

PhotonUVC VET™ Charging Cable with Adaptors
Provides recharging capabilities for the device.

Input 110-240V AC
Input Frequency 50-60Hz
Output 5V DC
Power Rating 5W

IEC 60601-1:2005 + A1:2012 + A2:2020
Class II

Reorder
Reorder from Photon-Therapeutics.com

(UK Photon Line No. 2-2001-001)

(US Photon Line No. 2-2002-001)

(EU Photon Line No. 2-2003-001)

Assembly

Charging Port
3.5” Touch
Screen
Power ON/OFF

UVC Aperture
UV
Illumination LEDs
Mechanical
Trigger

PhotonUVC Vet™ Set-up

NOTE: Charge before first use using the charging unit provided**.**

NOTE: Before using the device for the first time a smartphone with a working camera and an internet connection is required to activate the device.

Photon Web-Portal Access

When the device is first received it must be activated and linked with the Photon Therapeutics database and web portal. The web portal provides an operator interface to manage your accounts and registered devices for any product support that may be required. To access the web portal please go to:

https://portal.photon-therapeutics.com/

Alternatively please scan the QR code below on your smartphone and log into the web portal using the credentials you provided during registration. Once logged in please proceed to the device activation page and continue to follow the instructions below and as indicated on the web portal/device.

Guide

- Inspect the device carefully and contact Photon Therapeutics support if the device looks abnormal or deformed.
- Turn on the device by depressing the power button and check the display powers up, showing the Photon Therapeutics logo, this is then followed by the presentation of the graphical user interface (GUI) and the initial activation screen after a few seconds.
- Follow the instructions on the web portal and device screen to activate the device.
- Once the device is activated you will be presented with a magnified view from the camera
- Familiarise yourself with the illumination LEDs by pressing the icon in the lower right of the screen to switch between the white (illumination) and Blue (fluorescein) LEDS.
- The device is now ready to use and fully operational.

Using the PhotonUVC Vet™

Reference images can be found in the Quick Start Guide on page 2 of this IFU.

NOTE: Prior to using the device inspect the device and ensure that the UVC Lens is clean and free from scratches and that the device is not damaged in any way. If the PhotonUVC VET™ malfunctions, do not use it. Contact Photon Therapeutics for further assistance.

- Turn on the device by pressing the on/off button (fig 1) for at least 2 seconds. The device will default to EXAMINATION MODE.
- Press the "activate" button (fig 3) to enter TREATMENT MODE. This enables activation of the UVC beam
- Aim the device as follows:
    - Line up the central reticule (cross hairs) with the centre of the treatment area and adjust distance about 3cm from the patient until the treatment area is in focus. Viewing from the side can be helpful to align initially and fine-tune with the device screen.
    - It is useful to move in and out to ascertain the point of *best focus*
    - Correct aim and distance (30mm from the target) is now set.
    - Aim to keep the area to be treated within the curved beam markers, the actual UVC beam is slightly larger to account for any movement so that undertreatment is avoided.
- Apply the treatment as follows
    - Press and hold the trigger (fig 5) on the device to emit UVC light to the target area.
    - The device will indicate that UVC is being emitted by displaying a UVC caution symbol, a purple border and text indicating "treatment in progress" (fig 6).
    - The device will cease emitting UVC when the trigger is released or when the 5 second treatment duration is reached.
    - Continue holding the trigger until the timer reaches zero, at which point the UVC beam will cease emitting UVC to the target area and the operator will be presented with a notification indicating that the treatment is complete (fig 7).
    - Ensure the treatment area remains within the boundary of the beam (indicated by the 2 curved lines) and the correct distance maintained during the entire treatment time by keeping the target in focus. If there is patient or operator movement the trigger can be released to pause treatment and depressed again to restart treatment to achieve the full treatment time.
    - If fluorescein has been used to aid diagnosis by staining an epithelial defect (viewed with the blue illumination) this will fluoresce under UVC light. The

illumination can be switched between white and blue using the icon in the lower right corner of the screen at any time.

Cleaning the PhotonUVC Vet™

WARNING: As a general safety precaution, the PhotonUVC Vet™ should be turned off and removed from the mains charging unit before performing any cleaning procedures.

NOTE: During cleaning special care should be taken around the UVC Aperture. The performance of the PhotonUVC Vet™ requires that the lens is scratch-free. Please use a micro-fibre cloth and alcohol-free lens spray if there is any dirt present.

Using a cloth clean the Photon UVC Vet™ with any of the following products which have been recommended for use with the device as data has shown no adverse effects on the plastics or metals used in construction:

- Chlor-Clean™ / Biohazard wipes (eg. Guest Medical Ltd.)
- 70% Isopropyl alcohol
- Benzalkonium chloride wipes (eg. Clinell®, Klenzeen®)

Disinfection

Disinfect as per clinic control guidelines. If required the PhotonUVC VET™ can be disinfected using commercially available disinfectant wipes approved for use with medical equipment.

WARNING: DO NOT IMMERSE, AUTOCLAVE or STERILISE the device.

Maintenance

NOTE: Maintenance of this device may only be performed by personnel suitably qualified to perform maintenance and service on medical devices. Please refer to the service manual for more information.

Periodic Maintenance

Weekly

Visual checks for damage, specifically the UVC Lens

Electromagnetic Compatibility

The device complies with the electromagnetic compatibility requirements of IEC 60601-1-2. Essential performance may be lost in the event of power failure or where the intensity of electromagnetic disturbance is high.

CAUTION: The following tests were not performed due to compliance documentation provided by the manufacturer of the PhotonUVC Vet™ Power Supply. Using another power supply other than the one provided by Photon Therapeutics may result in non-conformance to EMC and could negatively impact the performance of Photon UVC Vet™ as well as other devices operating in close proximity:

Surge immunity IEC 61000-4-5
Electrical Fast Transient IEC 61000-4-4
Voltage Dips and Short Interruptions IEC 61000-4-11
Conducted Immunity IEC 61000-4-6

Test	Test Level/Limits
Radiated Disturbance Below 1GHz EN 55011	30MHz - 1GHz Class B
Radiated Disturbance Above 1GHz EN 55011	1 Ghz - 18 Ghz Class B
Radiated Electromagnetic Field Immunity EM 61000-4-3	380 - 390 Mhz 27V/m 18 Hz PM 430 - 470 MHz 28V/m 18 Hz PM 704 - 787 MHz 9 V/m 217 Hz PM 800 - 906 MHz 28 V/m 18 Hz PM 1700 - 1990 MHz 28 V/m 217 Hz PM 2400 - 2570 MHz 28V/m 217 Hz PM 5100 - 5800 MHz 9 V/m 217 Hz PM 80 - 1000 MHz 3V/m 1000 - 2700 MHz 3V/m
Conducted Disturbance - Power Ports EN 55011	0.15 - 30MHz Class B 230 V AC 50 Hz 0.15 - 30MHz Class B 100 V AC 60 Hz
Harmonic Current Emissions and Flicker	Class A 11.7 W

EN 61000-3-2	
Power Frequency Magnetic Field Immunity EN 6100-4-8	30 A/m
Electrostatic Discharge Immunity EN 61000-4-2	Contact Discharge: 8 kV Air Discharge: 2kV, 4kV, 8kV and 15kV

CAUTIONS

- The device is intended to be used in a professional healthcare facility environment e.g. hospitals/clinics, except for areas where there are strong magnetic fields such as MRI environments.
- Use of accessories, transducers, cables and spare parts other than those specified by Photon Therapeutics could cause increased electromagnetic emissions or decreased electromagnetic immunity of the device or system resulting in improper operation.
- Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.
- Portable radio frequency equipment communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm to any part of the PhotonUVC VET™ or accessories specified.
- The PhotonUVC Vet™ has passed regulatory requirements related to EMC however it is not advised to use this equipment in close proximity to highly sensitive or life-critical equipment.

NOTE: The emissions characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A)

Product Standards

- Directive 2014/30/EU
- Directive 2006/66/EC
- Directive 94/62/EC
- EN 60601-1:2006+A1+A12+A2:2021 -Medical electrical equipment – Part 1: General requirements for basic safety and essential performance.
- EN 60601-1-2:2015 - Medical electrical equipment – Part 1-2: General requirements for basic safety and essential performance – Collateral standard: Electromagnetic disturbances - Requirements and tests.
- ISO 15004-1:2020 - Ophthalmic instruments — Fundamental requirements and test methods - Part 1: General requirements applicable to all ophthalmic instruments
- ISO 15004-2:2007 - Ophthalmic instruments — Fundamental requirements and test methods - Part 2: Light hazard protection

User Interface Guide

The following section details the various interfaces that the user will interact with, with information relating to each interface element.

Splash screen

This is the screen that is presented once the device has completed its power up routine. The screen can be tapped to proceed or it will proceed automatically after a few seconds.

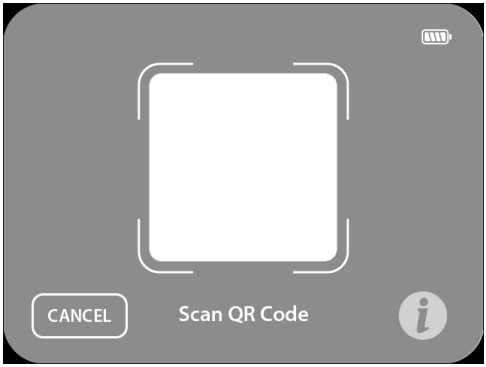
If the device has been activated then the next screen displayed is EXAMINATION MODE - Device Unlocked, else it will display Device Activation.

Device Activation

This is the screen that is displayed when the device is first received by the user. The QR code must be scanned by a smartphone or computer webcam whilst logged into the Photon Therapeutics Portal.

- To proceed to QR code scanning from the device press A
- To display device information press B

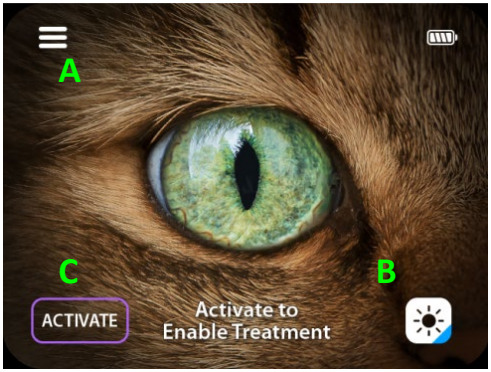
QR Code Scanning



This is the screen that is displayed any time the device is able to scan a QR code. This will be required to scan the QR code that is provided by the Photon Therapeutics Portal upon first device activation.

- To go back to the previous screen press A
- To display device information press B

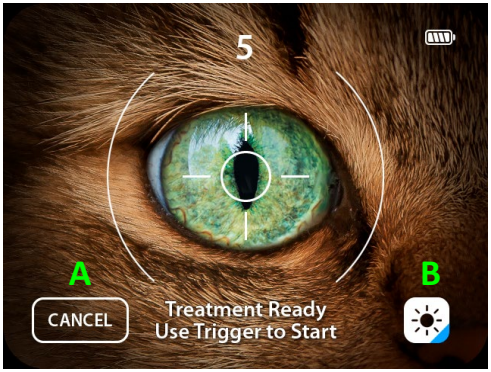
EXAMINATION MODE – Device unlocked



This is the screen that is presented each time the device is turned on. It is possible for the operator to access the menu as well as enter TREATMENT MODE.

- To enter the menu press A
- To change the source of illumination press B
- To activate TREATMENT MODE press C

TREATMENT MODE – Initial Screen



This is the screen that is presented once the device first enters treatment mode. The device is now capable of administering UVC light whilst the trigger is depressed by the operator. The duration of treatment time remaining is indicated by the timer at the top of the screen. The small centre reticule is the target for the centre of the area of infection and the outer 2 curved lines indicate the UVC beam coverage.

- To cancel the treatment press A
- To change the source of illumination press B

It is recommended the correct operating distance of 30mm is confirmed by moving inwards and outwards a few times to find the point of *best focus* before depressing the trigger to activate treatment

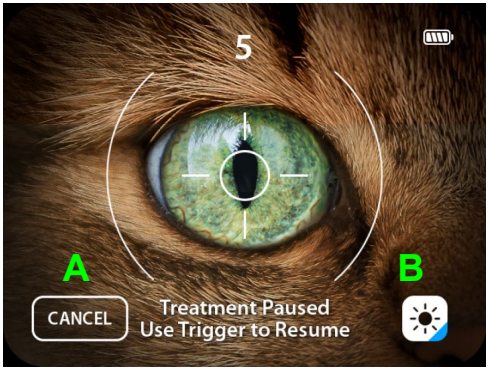
TREATMENT MODE – In progress

CAUTION The device is now administering UVC light. Please ensure that the device is aimed at the correct location and release the trigger on the device if the target infection is outside the 2 curved lines that outline the UVC beam coverage, or if the image is blurry (incorrect distance).

This is the screen that is presented whilst the device is emitting UVC in TREATMENT MODE. The device will pause emitting UVC when the trigger is released. The amount of treatment time in seconds remaining is indicated by the timer at the top of the screen. The 2 curved lines indicate the area in which the UVC beam will treat. The small centre reticule is the target for the centre of the area of infection.

The purple border and symbol indicate that UVC light is being emitted by the device. UVC is invisible to the human eye but may be visualised in the presence of fluorescein.

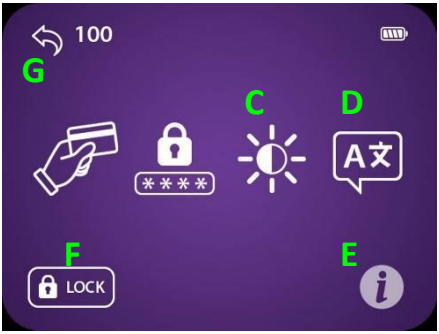
TREATMENT MODE – Treatment Paused



This is the screen that is presented whilst the device is in TREATMENT MODE if the device has initiated treatment, but the operator has released the trigger. The device will begin emitting UVC again when the trigger is depressed. The amount of treatment time remaining is indicated in seconds by the timer at the top of the screen. The reticule indicates the area in which the UVC beam will treat. The centre circle is the target for the centre of the area of infection and the outer curved lines indicate the UVC beam coverage.

- To cancel the treatment press A
- To change the source of illumination press B

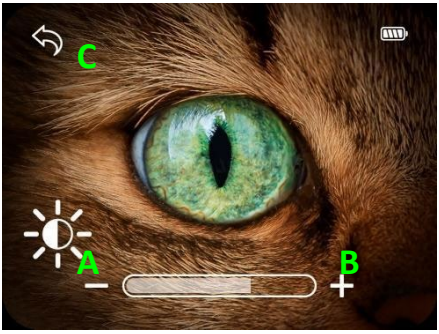
Menu screen



This is the screen that is presented when the menu button is pressed from the EXAMINATION MODE – Device Unlocked.

- To change the brightness of the screen press C
- To change the language of the device press D
- To show the device information press E
- To lock the device press F
- To return to Examination Mode press G

Brightness adjustment

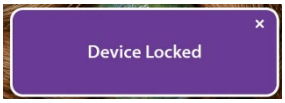


This is the screen that is presented when the brightness adjustment button is pressed on the menu screen. The screen brightness can be adjusted by pressing the “+” or “-” buttons on the screen.

- To decrease brightness press A
- To increase brightness press B
- To go back to the menu screen press C

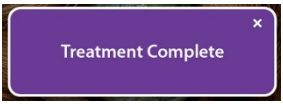
Notification windows

A list of notification windows that can appear on the device and their explanation. The operator can clear these windows by pressing anywhere on the touchscreen

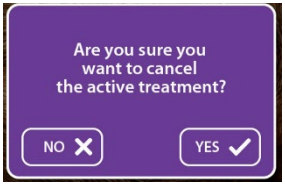


Confirmation window to show device has been locked

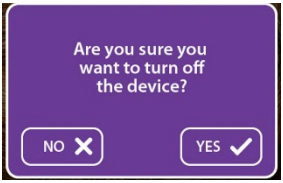
User has cancelled the treatment during the treatment phase



Treatment has been successfully completed



Confirmation window to cancel treatment



Confirmation window to turn off the device

Troubleshooting

The following table is provided to assist with the possible causes and required actions against issues that may occur during use of the Photon UVC™. Please contact Photon Therapeutics for further information if the actions below do not resolve the issue.

Issue	Possible Cause	Action
Unable to access Treatment Mode	Device battery may be too low	Place device on charge or plug in during use.
	Device has run out of subscription time	Contact Photon Therapeutics
Device does not power up	Device has run out of battery. Indicated by a red LED.	Plug device in and leave to charge . If the problem persists contact Photon Therapeutics.
	Device is between charging cycles. Indicated by a red LED	Plug device in and leave to charge. If the problem persists contact Photon Therapeutics.
Critical Error screen displayed	Device has encountered a critical error during use	Contact Photon Therapeutics and quote the error code.

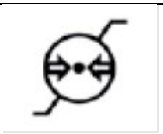
Error Codes

The following table is provided to assist with the possible errors that may occur during use of the device.

Error Code	Cause	Action
N/a	UVC LED has overheated	Turn off device and check ambient temperature - ensure the device is not operating outside specified environmental conditions. Allow device to cool. Can occur if multiple treatments are completed in a very short period of time
00234	UVC LED is out of specification	The device is operating out of specification.. Contact Photon Support with this error code.

Symbols

Follow Instructions for use	CAUTION: Electrical Shock	WARNING: Risk of harm	Manufacturer	Date of Manufacture

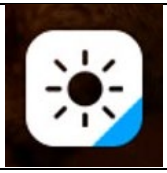
				
This way up during transport and storage	Humidity Limitations during Transport and Storage	Atmospheric pressure limitations during transport and storage	Temperature limitations during transport and storage	Do not Discard

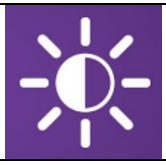
REF	**SN**	**LOT**	**SW**	
Device reference	Serial number	Lot number	Software revision	

IPN1N2				
Ingress Protection Rating	Keep dry	UVC emitting aperture	UKCA Marking of Conformity	CE Marking of Conformity

Direct Current	Electronic Waste	Refer to manual	ON/OFF

Symbols used on the device display

				
Menu	Back	Change Illumination colour	Change Language	Information

Adjust Brightness	UVC Emission taking place	Battery Level	Critical Error	Device Overheated

Charging Required	Device Charging	Device fully charged		

APPENDIX

Additional technical information can be requested by contacting support@photon-therapeutics.com

www.photon-therapeutics.com

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