

OPERATING INSTRUCTIONS MANUAL

BLUEDENT XPRESS-R cordless

Dental LED curing light

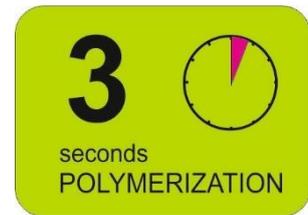
Ref.#200-009R



Thank you for trusting our products!

Carefully read this Operating instructions manual before installing and operating the unit to use and maintain it successfully!

Save this Operations guide for your reference in the future.



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I. UNIT DESCRIPTION AND FUNCTION

Dental LED curing light BLUEDENT XPRESS-R is an accessory to a medical device - specialized light source for intraoral polymerization of dental materials, sensitive to the blue part of the light spectrum.

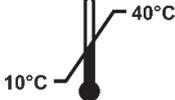
The device is intended for use only by a qualified dental practitioner and in a dental practice.

BLUEDENT XPRESS-R consists of Wireless handpiece with stand and Charging adapter.

BLUEDENT XPRESS-R is manufactured in conformity with the requirements of Regulation on medical devices MDR 2017/745 and standards ISO 13485:2016, ISO 9001:2015.

II. SYMBOLS

	<p>Caution!</p> <p>Indicates the need for the user to consult the instructions for use for important cautionary information such as warnings and precautions that cannot, for a variety of reasons, be presented on the medical device itself.</p>
	<p>Consult instructions for use</p> <p>Indicates the need for the user to consult the instructions for use.</p>
	<p>Dangerous voltage</p> <p>To indicate hazards arising dangerous voltage.</p>
	<p>Hazardous light emission</p> <p>To indicate hazards arising from light radiation.</p>
	<p>Hazardous thermal effects</p> <p>To indicate hazards arising from thermal effects.</p>
	<p>Manufacturer</p> <p>Indicates the medical device manufacturer.</p>
	<p>Date of manufacture</p> <p>Indicates the date when the medical device was manufactured</p>
	<p>Medical Device</p> <p>Indicates the item is a medical device</p>
	<p>Unique Device Identifier</p> <p>Indicates a carrier that contains Unique Device Identifier information</p>
	<p>Catalogue number</p> <p>Indicates the manufacturer's catalogue number so that the medical device can be identified.</p>

	<p>Serial number</p> <p>Indicates the manufacturer's serial number so that a specific medical device can be identified.</p>
	<p>Batch code</p> <p>Indicates the manufacturer's batch code so that the batch or lot can be identified.</p>
	<p>Applied part type B according to electric safety classification</p>
	<p>Temperature limit</p> <p>Indicates the temperature limits to which the medical device can be safely exposed.</p>
	<p>Humidity limitation</p> <p>Indicates the range of humidity to which the medical device can be safely exposed.</p>
	<p>Waste Electrical and Electronic Equipment (WEEE)</p> <p>According to Directive 2012/19/EU, this symbol indicates that the product should not be disposed of as urban waste at the end of its operating life.</p>
	<p>Fragile</p> <p>Indicates a medical device that can be broken or damaged if not handled carefully.</p>
	<p>European Conformity</p> <p>Indicates conformity with local laws and regulations within the European Economic Area</p>

III. SAFETY PRECAUTIONS



GENERAL WARNINGS:

BLUEDENT is a Class I accessory to a medical device and it meets the strict requirements of the Medical Devices Regulation - MDR (EU) 2017/745. In order to be used safely for staff and patients, the following rules must be observed:

- Do not allow unauthorized and untrained personnel to use the device to avoid risks.
- Disconnect the device from the mains after completing the procedures.
- Do not use or store the device in a dusty environment.
- Do not expose the device to direct sunlight.
- Do not spray disinfectant directly into the device - only rubbing with a swab drained of disinfectant is acceptable.
- Do not get wet or drop liquid on the device, cables, adapter to avoid electric shock or damage to the device.
- Store the device in a dry place, moisture can cause electric shock and damage.
- In case of a problem, disconnect the device from the mains, do not to make attempts to repair, take the device to a service center.
- The device must not be used if any of its parameters are not normal (timer, light intensity, heat radiation).
- The bleaching head must not be covered, the cooling openings must not be closed so as not to cause the device to overheat and ignite.
- Strong electromagnetic fields in the building can cause interference and malfunction of the device. If their source cannot be determined, change the location of the device and plug it into another socket or other room, even in another building.
- Opening and repairing the appliance may only be carried out by authorized service technicians from the manufacturer.
- Only original BLUEDENT parts must be used when replacing defective parts. The warranty of the device does not cover the damage caused by the use of non-original spare parts. The device or any of its parts must not be disassembled while it is connected to the mains!



-  Fragile! Use caution when transporting, using and storing the device!



-  According to Directive 2012/19/EEC, this symbol indicates that the product should not be disposed as a general waste at the end of its lifespan. The product must be taken to a specialized center for the separate collection of electrical and electronic equipment according to local regulations. Proper disposal of equipment that is no longer used prevents negative consequences for the environment and human health!

- In accordance with the requirements of MDR (EU) 2017/745, user and / or the patient must report any serious accident that have occurred during use of the device to the manufacturer and the competent authority of the Member State in which the user/patient is established.
- All packaging materials of the product must be kept away from children to avoid risks of injury / suffocation.

SAFETY MEASURES AND RISKS

The device must be used in strict accordance with the Operating Instructions Manual.



1. Electrical safety

Before starting the appliance, make sure that the voltage and the type of plug correspond to the mains supply in the country. Use only the original adapter type SYS1638-0605-W2E.

Electrical safety is ensured by class II protection against electric shock according to EN 60601-1.

BLUEDENT must only be operated indoors, under the following conditions:

- temperature from + 10 ° to + 40 ° C;
- relative humidity 30 - 75%;
- lack of dust in the room;
- atmospheric pressure 700 - 1060 hPa;
- absence of chemically active and flammable substances;
- no part of the device should be wetted or immersed in water;
- the device or any of its parts must not be disassembled while it is connected to the mains!

Protect the cables of the appliance from insulation damage and breakage from sharp objects, strong pulling, rodents, chemicals. If such damage is noticed on the electrical cables, it is necessary to take the device immediately to the company service. The device must not be used with damaged cables.

In case of thunderstorms, the procedures must be stopped and the plug must be disconnected from the mains.

Risk: Failure to comply with these instructions may result in electric shock to users of the device.



2. Light radiation

BLUEDENT is a source of extremely intense light in the blue range, to which the human eye has a high sensitivity. This results in serious measures to be taken for patients, medical staff and accidentally nearby people, animals and plants.

As such, use protection goggles for the operator.

Irradiation of the eyes and skin with intense light carries a risk of damage from light and heat.

The light should never be directed at the eyes! Irradiation should be limited to the workplace area. The special safety goggles from the set that meet the requirements must be used:

- to cover the eyes and temples tightly, even if the person is wearing optical glasses.
- be made of volumetric colored impact-resistant plastic.
- do not transmit light with a wavelength of 380 - 600 nm.
- reduce the intensity of the blue spectrum by more than 100 times.
- have a stable mechanical structure, no scratches, cracks and damage to its surface.

The device can be used only after a doctor's consultation on or by persons suffering from photo-biological reactions; persons taking photosensitive drugs; persons undergoing cataract surgery, persons with retinal diseases, etc.

The risk of improper irradiation is severe eye irritation, temporary spots in the visual field, severe visual impairment in direct radiation, to loss of vision.



3. Thermal radiation

The thermal effect is due to the absorption of the energy of the blue light in the tissues, during which the energy is converted into heat. The risk is only with prolonged overdose.

Risk of pain, burning of soft tissues.

4. Fire safety

- Keep the device away from solvents, flammable liquids and powerful heat sources.
- Do not expose to direct sunlight.
- Do not allow liquids and detergents to enter the device, as this may cause a short circuit and fire or cause potentially dangerous damage.
- If the product emits an odor or smoke – disconnect from the mains, do not attempt to repair it, take it to a service center.

Risk of fire, explosion and damage.

5. Contraindications:

- The device can be used only after medical consultation on or by: persons with implanted cardiac pacemaker; persons suffering from photobiological reactions; persons taking photosensitive drugs; persons undergoing cataract surgery; persons with retinal diseases; people with allergies; people who have recently undergone cosmetic surgery on the face or lips, including injections of hyaluronic acid or botox; people with very sensitive skin or dermatitis, etc. If you are taking photosensitizers or medicines, check the package leaflet.

IV. TECHNICAL DATA

1. Operating voltage - 3.7V Li Ion battery type LIR 14500 (800mAh capacity)
2. Charge adaptor: SYS1638-0605-W2E
 - 110-240VAC / 50-60Hz input voltage
 - Output: 5V DC / 1.2A micro USB socket
 - 0.5 A max power consumption
3. Dimensions of cordless handpiece:
 - Head of emitting handpiece – 14 x 16 mm
 - Diameter of handpiece – min.18mm / max.25mm
 - Length - 215 mm
4. Weight of cordless handpiece – 156g
5. Polymerization modes – RAMP (R) – with soft start
6. Light source – 2 band LED module with reflector optics.
7. Emitted light – blue, visible spectrum, 410-490 nm
8. Light intensity - up to 2100 mW/sq.cm with gradual increase of intensity
Intensity is constant and not dependent on battery charge level.
9. Emitting time - 10 / 20 / 30 sec. /±10%
With the Start / Stop button it is possible to stop the device at any time.
10. Visual indication - color indication ring and audible signal every 10 sec
11. Working ability after fully charged battery - up to 2100sec (210 cycles x 10 sec)
12. Charge time – 3 hours for full charge and 2 hours to 80% charge.
13. Low battery warning. Fully discharged battery indication.
14. Working mode (1 min. work / 10 min. pause)
15. Degree of protection against electric current - applied part type B.

The manufacturer of this unit declares to provide on request all additional necessary technical documentation / information which will help the user's technical staff to service the parts of the unit which the manufacturer has claimed to be a subject for repair.

V. COMPLETE SET

1. Charge adaptor with micro USB output 5V DC / 1.2A - 1 pc.
2. Cordless handpiece - 1 pc.
3. Battery pack - 1 pc.
4. Barrier sleeves - 50 pc.
5. Holder - 1 pc.
6. Operations guide - 1 pc.



Control and indication:

1. USB charging connector
2. Start / Stop button
3. Illuminated indicator ring
4. Battery pack



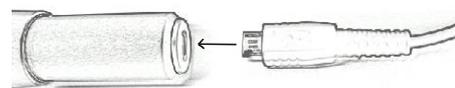
VI. PREPARATION AND SEQUENCE OF OPERATION

BLUEDENT XPRESS-R is designed for use as a battery powered unit.

1. Take the curing light out of the packing and assemble the holder by inserting the upper part into the base part (as shown on picture below). Place the holder on a horizontal surface.



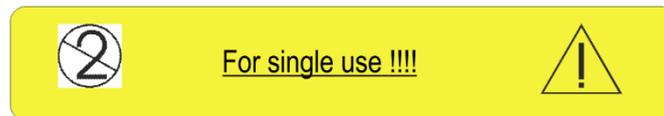
2. Connect the power adapter to charge battery if needed.



The device can be operated during charging.

After fully charging the device or at the end of the day, unplug the charging adapter.

3. A new barrier sleeve is placed on the front of the probe before each patient. It is for single use only and is marked with the appropriate sign.



4. The device wakes up by pressing the Start / Stop button once. Select the desired operating mode by pressing and holding (2 sec.) The Start / Stop button.

The device has a smooth start (slow increase in light intensity) in RAMP mode to reduce the stress of the photocomposite.

5. Indication

5.1. Color indication ring

<p>Deactivated mode - Color indication ring is not lit.</p>	
<p>Work mode – polymerization.</p>	
<p>Battery charge / sound signal.</p>	
<p>Fully charged battery – device can be unplugged from adapter.</p>	
<p>Overheating – Thermal protection activated, wait until device cools down.</p>	
<p>Battery is completely discharged - plug into the charging adapter.</p>	

5.2 LED module

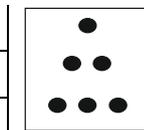
LED module indication:



Blinking means that the battery is discharged - there is only 20% charge left, you have the option of 5-25 starts of 10 seconds to full discharge.

6. Choosing timer mode:

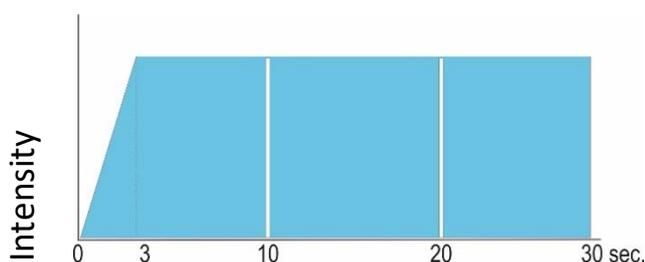
- SINGLE Press the Start / Stop button - 10 sec.
- DOUBLE Press the Start / Stop button - 20 sec.
- TRIPLE Press the Start / Stop button - 30 sec.



After the set time has elapsed, the unit will turn off the output light. If desired, the dentist can interrupt the cycle by pressing the Start / Stop button again.

7. During operation, the handpiece tip must be at a distance of at least 2 mm from the obturation.

Diagram of curing mode – RAMP



8. Stop the curing light at any time by pressing the Start / Stop button again. If device is not stopped preliminary, it will stop after preselcted 10/20/30 seconds.

9. The curing light is switched off at the end of the day after the adapter is disconnected from the mains (if it is charging).

10. Overheating protection

The unit is equipped with overheating protection, which is activated if the temperature of the LED module rises up to 50°C. When overheating protection is activated the color ring will blink in yellow next 60sec, then is deactivated until the temperature of the handpiece reaches 35°C. It is necessary to wait for device's cooling down.

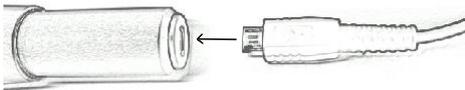
11. Battery – maintenance, charging and replacement

The device uses Li-Ion battery type LIR 14500 / 3,7V / 800 mAh.

Charging the battery - by connecting the charging adapter to the mains.

Attention! Connect properly to the socket!

Unplug the adapter after charging.



Charge adaptor is SYS1638-0605-W2E - 100-240VAC input and 5VDC output - micro USB type. It is not allowed to use another type power supply.

Low Battery indication:

- rare flashes of the output light from the lightguide - when 5-10% of the charge remains of the battery. Only a few cycles (5-10) remain until complete discharge. It can be used for polymerization as the intensity is stabilized.
- With a fully discharged battery, the color ring will flash blue only a few times.

When charging - the light ring flashes slowly in blue, and when the battery is 100% charged - it lights up continuously. Even if it remains switched on for charging for a longer period of time, there is no danger of overcharging or battery damage. After a full charge, the battery provides up to 2100 seconds work.

It is possible to work with the device during charging.

Monitor the battery charge and recharge if a low level is indicated.

Unplug the charger after charging the device or at the end of the day.

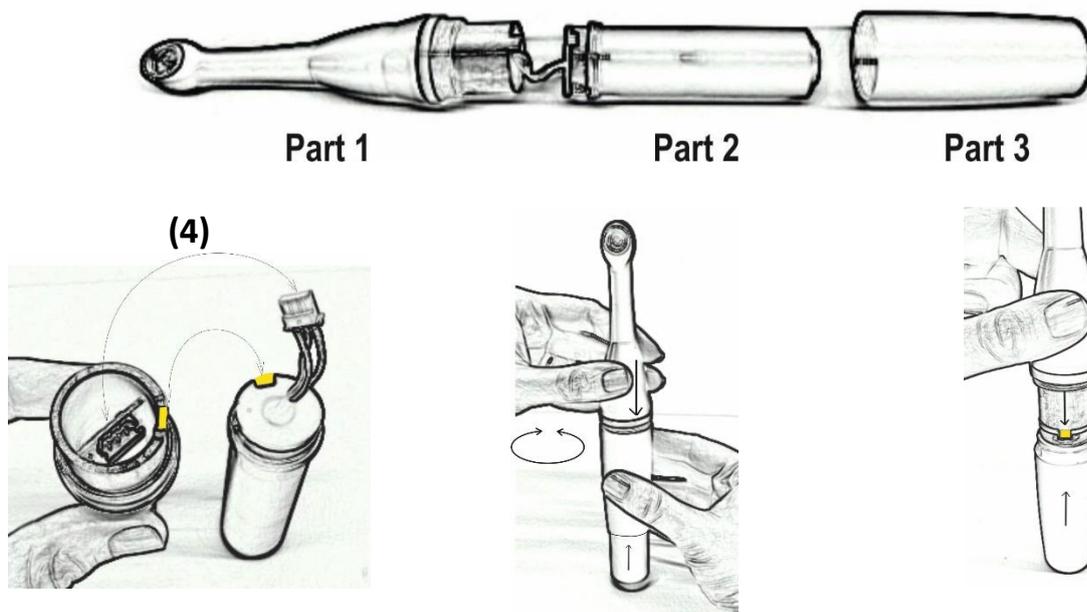
When to replace the battery:

- at reduced capacity - frequent charging is required;
- in case of battery failure.

To replace a Li-Ion battery:

- Disconnect the adapter from the socket and the USB socket.
 - Place the handpiece on a non-slip surface and unscrew Part 3. Release Part 2. Carefully remove the connector (4).
 - The installation of a new battery is done in the reverse order.
 - When assembling the handpiece - place Part 2 (containing the battery) on a non-slip surface and press Part 1 to Part 2 at the same time. At the same time, screw the cylindrical Part 3 back to the front conical Part 1.
- Note: The parts of the assembly between 1 and 2 must fit!
Do not twist the battery cables!

Use only original Li-Ion batteries by the device manufacturer (LIR 14500 / 3,7V / 800 mAh)!



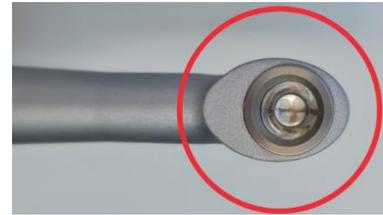
The battery must not be short circuited, mechanically damaged, immersed in water or to be heated or thrown into a fire.

- Non-functioning batteries can be taken to battery collection points or returned to the device manufacturer.
- When disposing of the battery, observe the environmental protection regulations!

VI. ROUTINE CARE AND MAINTENANCE

1. Cleaning the emitting tip

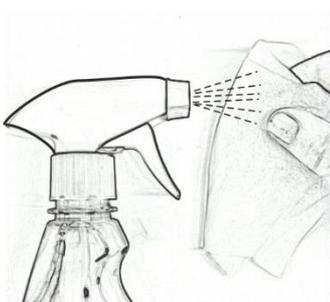
Clean the emitter glass daily with an alcohol swab dipped in alcohol. Adhesive photocomposite is not allowed - if there is one, it should be carefully removed with a blunt, non-metallic object.



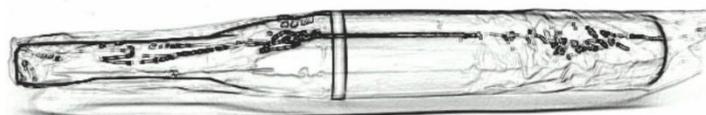
2. Cleaning of the unit.

For disinfection of the unit, spray the disinfection agent onto a piece of soft cloth / cotton and clean the handpiece and power adapter. Do not use abrasives or solvents as these may damage the plastic parts of the unit!

Do not spray directly onto handpiece or in button / USB charge connector!



To avoid cross-contamination, it is mandatory to use disposable barrier sleeve on the handpiece, new one for each patient.



VIII. WARRANTY CONDITIONS

1. Warranty period of BLUEDENT dental curing light is 24 (twenty four) months from the date of purchase. If date of purchase is not written, warranty starts at date of production.
2. During the warranty period the replacement of the defective parts is done free of charge by manufacturer's service. Lightguide is not covered by warranty. LED module and battery have 6 months warranty.
3. If during the guarantee period the unit is damaged, due to incorrect operation (mechanical, chemical, thermal or electrical damages), damage caused by improper use, storage or any other reasons in user's fault, the repair is paid by the user. If any damage is noticed on electric cables, the device must be brought immediately to manufacturer's service. The device must not be used if cables are damaged.
 - 3.1 If liquids, aggressive and flammable substances and their vapors have entered the device, the battery must be removed immediately and sent to the manufacturer's service where the damages are established. In case of such damage, the warranty is lost.
 - 3.2 No damages or complaints are accepted as a result of electric shocks, thunderstorms, non-compliance with electrical safety measures or insufficient protection of patients, personnel and other persons from light radiation.
 - 3.3 Claims due to improper or insufficient security and care, protection and security during transport, unpacking, relocation, operation and storage of the device are not accepted. The warranty is void for the above events.
 - 3.4 The device must only be transported to manufacturer's service only in original packaging in order to avoid unwanted damage. The light guide must be packed separately from the cordless handpiece. The warranty card must be presented (this Guide, with completed Chapter XII BLUEDENT data) or a copy of the sales invoice showing the serial number of the device.
 - 3.5 When carrying out repairs by unauthorized persons outside the company service or if non-original elements / parts are used, the user loses the right to free service.

4. The manufacturer provides its customers once a year (and in case of a situation - immediately) to check in the company service whether the performance of the devices is within the acceptable limits.
5. The manufacturer does not owe compensation for lost profits in case of damage or incompleteness operation of the device, whatever the cause.
6. In case of disputes in connection with the application and interpretation of this Operating instruction manual, they will be decided by the court in Plovdiv, by virtue of the current Bulgarian legislation.
7. The warranty service is performed in the company service at the address:



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4027 Plovdiv

Bulgaria

tel: +359 32 644089, +359 888 809256

email: office@bglight.com

www.bglight.com

IX. SERVICE DATA

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X. FAQ

Problem	Solution
No response by button starting	Fully discharged battery. Need to connect to charger to begin charge. Use only the original adapter type SYS1638-0605-W2E. If button continues not to respond - send the device to service.
The button does not respond properly	When working without barrier sleeves, the problem with the button may be the entry of composite, adhesive or disinfectant liquid when the device is used without protective nylons. You need to clean with a cotton swab soaked in alcohol. If the button still does not respond correctly - send the device to service.
Meaning of INDICATION ring colors:	<u>green</u> - RAMP mode - 1500mW/cm ² <u>red</u> – HYPER mode 3500mW/sq.cm <u>red blinking</u> – protection pause <u>blue continuously</u> - 100% charged battery <u>slow blinking blue</u> - in charging mode <u>quick blinking blue 2sec</u> - fully discharged battery <u>yellow</u> - LED module overheating
Slow blinking of blue light of main LED	This is indicator that battery will allow only 5-10 cycles before full discharge. Need urgent charge.
Weak curing effect	It is necessary to clean the emitting tip with a non-metallic object and to clean the adhered composite or other with alcohol. If the result is poor - send the device to the service.
The patient feels discomfort during curing process especially during long curing time 20-30sec	Need to cure at short cycles 10sec or less with short pauses 1-3sec. Sensibility is

	higher if light is near dental pulp and is decreased by every layer. Use RAMP mode.
Power cord or mains adaptor is damaged	Send to service.
Entering some liquid into device	Send to service.
After drop on the floor device is not working properly	Send to service.

XI. DECLARATION OF CONFORMITY

 BG LIGHT LTD TECHNICAL FILE BLUEDENT LED curing light	EU Declaration of conformity <i>Developed in conformity with MDR (EU) 2017/745</i>	TD 7.2
		<i>Revision 02</i>

Manufacturer: **BG LIGHT LTD**
 SRN: BG-MF-000019812
 Address: 155, Vasil Aprilov blvd., 4027 Plovdiv, Bulgaria
 Tel.: +359 32 644089, +359 888 809256, email: office@bglight.com
 BULSTAT UIC 115841960, VAT N: BG115841960



Product:	Product code:	Name:
Dental LED curing light	200-009R	BLUEDENT XPRESS-R – cordless

Basic UDI: 3800501374200000VX
 EMDN code: Q0190

Classification: Active invasive device (accessory for medical device) of **Class I** of the Regulation on medical devices - MDR (EU) 2017/745

Intended purpose: BLUEDENT is designed for photopolymerization of composites and materials used in dental practice (irradiation of blue light 410-490 nm). BLUEDENT is accessory for a medical device as described in Article 2, p.(2) as it performs its intended purpose together with dental composite (material).

The manufacturer declares under its own responsibility that the specified medical device complies with the applicable GENERAL SAFETY AND PERFORMANCE REQUIREMENTS, defined in Annex I of the normative act described below and normative technical documents, when used for its intended purpose and in accordance with the safety requirements.

Document	Title	Edition / date of issue
Regulation (EU) 2017/745	REGULATION (EU) 2017/745 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL <i>of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC</i>	05.05.2017 <i>(last change 24.04.2020)</i>

To achieve compliance, the requirements of the following standards are met:

EN ISO 13485:2016 +/AC:2017/ /AC:2018/ A11:2022 +/AC:2017/ /AC:2018/ A11:2022	Medical devices - Quality management systems - Requirements for regulatory purposes
EN ISO 9001:2015	Quality management systems - Requirements
EN ISO 60601-1:2006 /A1:2013/AC:2014/A2:2022	Medical electrical equipment - Part 1: General requirements for basic safety and essential performance.
EN 60601-1-2:2015/A1:2021	Medical electrical equipment - Part 1-2: General requirements for basic safety and essential performance - Collateral Standard: Electromagnetic disturbances - Requirements and tests
EN 60601-1-6:2010+ /A1:2015 / /A2:2021	Medical electrical equipment - Part 1-6: General requirements for basic safety and essential performance - Collateral standard: Usability
EN 60601-1-8:2007+ /A1:2013 /A11:2017 /A2:2021	Medical electrical equipment — Part 1-8: General requirements for basic safety and essential performance — Collateral standard: General requirements, tests and guidance for alarm systems in medical electrical equipment and medical electrical systems
EN ISO 10650:2018	Dentistry - Powered polymerization activators
EN 62304:2006/A1:2015	Medical device software. Software life cycle processes.
EN 62353:2014	Medical electrical equipment. Recurrent test and test after repair of medical electrical equipment

EN 62366-1:2015+ AC:2016/A1:2020	Medical devices. Application of usability engineering to medical devices.
EN ISO 14155:2020	Clinical investigation of medical devices for human subjects - Good clinical practice
EN ISO 10993-1:2018	Biological evaluation of medical devices - Part 1: Evaluation and testing within a risk management process
EN ISO 14971:2019+/A11:2022	Medical devices – Application of risk management to medical devices.
CEN ISO/TR 24971:2020	Medical devices - Guidance on the application of ISO 14971 (ISO/TR 24971:2020)
EN ISO 15223-1:2021	Medical devices - Symbols to be used with information to be supplied by the manufacturer – Part 1: General requirements
EN ISO 20417:2021	Medical devices - Information to be supplied by the manufacturer
Directive 2012/19/EC	Directive on waste electrical and electronic equipment (WEEE)

Classification is done by the manufacturer according to Regulation on medical devices - MDR (EU) 2017/745, Annex VIII, Rule 13. Conformity assessment procedure according to article 52, paragraph 7 of MDR (EU) 2017/745.

The declaration of conformity is issued in implementation of Annex IV "EU Declaration of conformity" of EU Regulation 2017/745, based on the results of tests carried out and assessment of compliance with the General safety and performance requirements defined in Annex I, implemented and certified Quality Management System - certificates No: AC090 100/1971/4047/2020, AC090 MD/1971/4047/2020 from TUV NORD Polska Sp. z o.o. (NB 2274).

BG LIGHT LTD maintains data on the provision, evaluation and maintenance of compliance of the medical device, according to the requirements of Annex II "Technical documentation" of MDR (EU) 2017/745.

Plovdiv, Bulgaria
 01.01.2023

Dipl. Eng. Plamen Karaivanov
 Manager
 BG LIGHT LTD



XII. BLUEDENT DATA

SN:	
LOT:	
DATE OF PRODUCTION:	
QC:	
DATE OF PURCHASE:	

Last revision: 01.01.2023

Follow www.bglight.com for updated revision of this Operating instructions manual.