

# OPERATIONS GUIDE

## BLUEDENT LED – cable powered LED curing light



☐ PRO



☐ POWER PEN



### POWER SUPPLY:

☐ 100-240VAC

☐ 24VAC

☐ 12VAC

Mains plug

☐ EU

☐ USA

☐ UK

### OPERATIONS GUIDE

#### ATTENTION!

Before installation and starting work with the unit, carefully read this guide!



#### CONTENTS:

- I. UNIT DESCRIPTION AND FUNCTION
- II. TECHNICAL DATA
- III. ACCESSORIES AND SPARES
- IV. SAFETY PRECAUTIONS
- V. PREPARATION AND SEQUENCE OF OPERATION
- VI. ROUTINE CARE AND MAINTENANCE
- VII. WARRANTY CONDITIONS
- VIII. BLUEDENT LED DATA
- IX. SYMBOLS
- X. SERVICE DATA

#### I. UNIT DESCRIPTION AND FUNCTION

LED curing light BLUEDENT LED is a light source for intraoral polymerization of dental materials. The unit uses LED (Light Emitting Diode) module as the light source.

The emitted light is in the wavelength range 430-490 nm (the relevant range for camphor quinone - containing products).

BLUEDENT LED consists of Emitting handpiece.

BLUEDENT LED is produced in conformity with MDD 93/42/EEC and 2007/47/EC.

#### II. TECHNICAL DATA

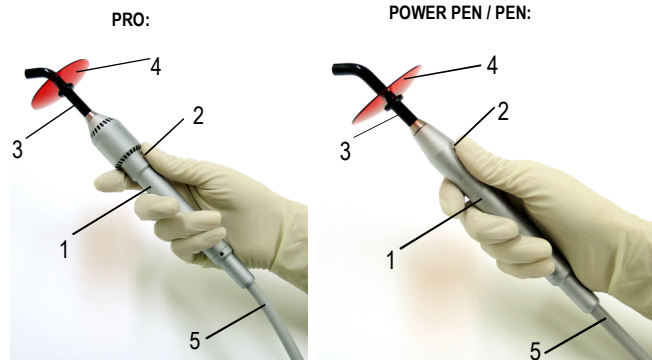
1. Operating voltage - on front page: 110-240VAC, 50-60Hz or 24VAC(±10%) or 12VAC (±10%)
2. Power consumption - 0,115-0,055 A for 220VAC, 0.35A for 24VAC and 0.7A for 12VAC
3. Dimensions:
  - Emitting handpiece
  - diameter - 19 mm
  - length - 220 mm / 260 mm (without/with silicone tube)
4. Weight of Emitting handpiece
  - PRO - 120 g
  - POWER PEN - 90 g
5. Light intensity:
  - PRO - 1000-1600 mW/sq.cm
  - POWER PEN - 800-1600 mW/sq.cm
6. Emitting time:
  - PRO - 10 - 20 - 30 sec. /±5% /; 30 min. (LONG mode)
  - POWER PEN - 10 - 20 - 30 sec. /±5% /;
7. Emitted light - blue, 430 - 490 nm
8. Light source - LED module
9. Soft start:
  - 3 sec. after unit's activation

10. Microfan cooling (PRO only).
11. Audible signal:
  - PRO / POWER PEN - every 10 sec. (standard mode)
  - PRO - 1 min. (LONG mode)
12. Possibility for start and stop of Emitting handpiece at any moment.
13. Working mode:
  - PRO - (10 min. / 10 min.)
  - POWER PEN - (1 min. / 10 min.)

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.

### III. ACCESSORIES AND SPARES

- Emitting handpiece - 1 pce.
- Adapter - 1 pce.
- Lightguide - 1 pce.
- Handpiece holder - 1 pce.
- Protection shield - 1 pce.
- Protection cap - 1 pce.
- Operations guide - 1 pce.



1. Emitting handpiece 2. Start/Stop button 3. Lightguide 4. Protection shield 5. Cable

### IV. SAFETY PRECAUTIONS

As with all technical devices, the proper function and safe operation of this unit depend on the user's compliance with the standard safety procedures as well as the specific safety recommendations described in this Operations guide.

1. The unit must be used in strict accordance with the Operations guide. The manufacturer accepts no liability for any damage resulting from the use of this unit for any other purposes.

**NOTE: Lightguide and protection cap must be sterilized before every use !!!**  
**The lightguide is provided in a non-sterile condition and must be sterilized prior to patient contact.**

2. Before start-up of the unit make sure that the operating voltage indicated on the unit label corresponds to the mains voltage. Operation of the unit at a different voltage may damage the unit.

Electrical safety is ensured by Protection class II against electrical current damages according to EN 60601-1. Use of "Shuko" plug or unit's grounding is not necessary.

BLUEDENT LED should be operated in indoor premises, in the following conditions:

- temperature +10° - +40° C;
- relative air humidity - 30 - 75%;
- atm. pressure 700 - 1060 hPa;
- absence of chemically active or flammable substances.

3. Irradiation of the eyes bears certain risk for their damage. Therefore the light must not be directed toward the eyes! Exposure must be restricted to the working area. Use of protection glasses and/or protection shield that blocks effectively the blue spectral range is highly recommended!



**ATTENTION!** The emitted light is in the wavelength range 430-490 nanometers.  
 During work use protection goggles and/or protection shield!

4. The unit can be used only doctor's advice by or in persons with heart pacemakers implant; persons with photobiological reactions; persons currently taking photosensitive medication; persons with cataract surgery; persons with retinal diseases, etc.

This curing unit produces high-output curing energy! A significant increase in curing energy is possible compared with equipment previously used. It is important to observe the following precautions and procedures:

- Do not place light directly on or towards unprotected gingiva or skin.
- Adjust curing techniques in accordance with the increase in curing energy.


5. Solvents, flammable liquids and powerful heat sources must not be kept near the unit as exposure to one of these factors may damage the plastic parts of the unit.


6. Cleaning agents should not enter the unit as this may short-circuit the unit or cause potentially dangerous malfunction.

7. Only factory-authorized technicians are authorized to open and repair the unit.

8. Only original BLUEDENT LED spare parts should be used to replace defective parts. The unit warranty does not cover any damage resulting from the use on non-original replacement parts. The unit or any of its parts should not be disassembled while it is connected to the mains!

9. Before each patient the lightguide should be cleaned by disinfecting agent (for example desident CaviCide or other approved by Health authorities) and sterilized by autoclave at 134° C for 5 min.

10.  **FRAGILE!** Be extremely careful during transportation, storage and handling of the unit!

11.  Pursuant to Directive 2002/96/EC, this symbol shows that the product must not be disposed of as urban waste at the end of its operating life. The product must be taken to centers specialized in separate collection of electric and electronic equipment. Correct disposal of the equipment, which is no longer used, prevents negative consequences for the environment and human health!

## V. PREPARATION AND SEQUENCE OF OPERATION

BLUEDENT LED is designed for use as a wall-mounted unit (after fixing the handpiece holder on a vertical surface).

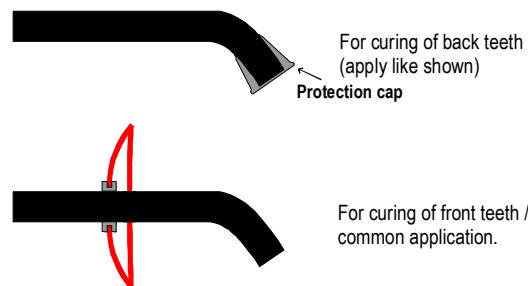
1. Take the curing light BLUEDENT LED out from the packing. Fix the handpiece holder on a vertical surface - wall, dental chair arm, etc.

**NOTE: Lightguide and protection cap must be sterilized before every use !!!**

2. Mount lightguide and protection shield or protection cap.

See VI. ROUTINE CARE AND MAINTENANCE for instructions of initial cleaning and mounting.

*Attention! The unit should be placed at least 1 meter away from any heat source.*



5

3. Connect the power adapter to the mains outlet.

The device has soft start (gradual increase in LED module intensity) in standard curing mode, which helps prolong LED module's life and at the same time avoid stress and shrinking in photocomposite.

4. The unit is activated by pressing the Start/Stop button of the handpiece.

Timer selection:

### - PRO / POWER PEN

- press once (1x) for 10 sec;
- press twice (2x) for 20 sec;
- press thrice (3x) for 30 sec;

Blue light appears in the end of lightguide.

### - PRO

The micro cooling fan is activated together with the lamp.

An audible beeper on every 10 sec. Is heard:

- single sound after 10, 30 and 50 sec.
- double sound after 20, 40 and 60 sec.

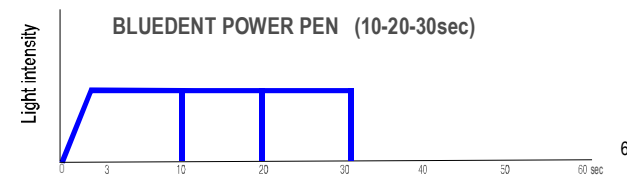
### 5. - PRO / POWER PEN

**BLUEDENT LED has RAMP and CONSTANT mode of light curing that guarantee full and fast hardening of the restorative material. Polymerization stages:**

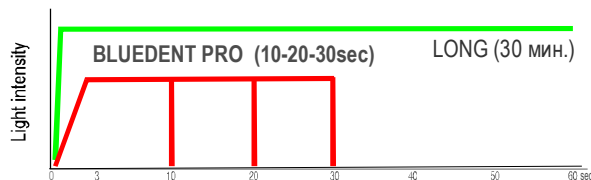
RAMP mode (0 - 3 sec.) - During the first 3 sec. light intensity slowly increases to 100% of the light intensity (soft start) to avoid stress in the restorative material.

CONSTANT mode (3 - 30 sec.) - In the remaining 27 sec. the light intensity is reduced to a constant stable level - 80% of the light intensity that ensures completing of the curing process.

Diagram of curing cycle



6



#### • PRO

Due to the built-in micro fan BLUEDED LED has also LONG mode to ensure long-time work - for up to 30 min. - without overheating. LONG mode is activated by pressing the Start/Stop button continuously for 2 sec. or more. After that a single beep is heard. After the button is released a triple beep is heard and polymerization begins. There is audible signal every 1 min. The curing light works continuously for 30 min. or until the Start/Stop button is pressed again. In this curing mode light intensity is at maximum level.

6. Direct the emitting light of handpiece to the curing spot at the closest distance (4-7 mm) and make sure the lightguide does not touch the photocomposite during the first several seconds and after that, when surface layer is hardened enough, the lightguide can touch the photocomposite.

7. After second pressing of the Start/Stop button or after the selected 10, 20 or 30 sec. / 30 min. exposure the unit is deactivated.

8. Switching off of curing light in the end of the day shall be done by unplugging of adapter from the wall socket.

#### Overheating protection

The unit is equipped with overheating protection, which is activated if the temperature of the handpiece rises up to 40°-45°C.

When overheating protection is activated the unit flashes 4 times with audible signal, then is deactivated until the temperature of the metal handpiece reaches 35°C.

(\*PRO has built-in micro fan cooling and overheating protection should be activated only in emergency situations - if the fan stops working, if the vents of the fan become obstructed, etc.)

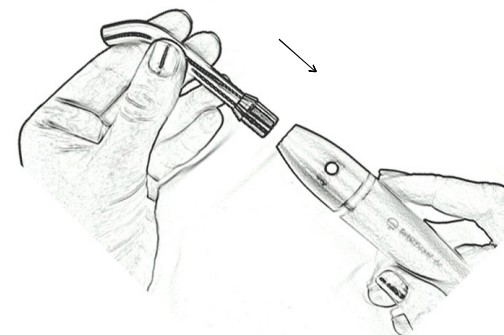
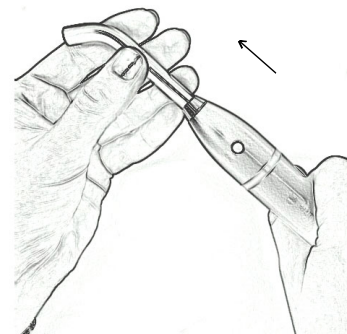
## VI. ROUTINE CARE AND MAINTENANCE

### 1. Examining of lightguide / protection cap.

Lightguide is mounted / dismantled by pulling (can be rotated).

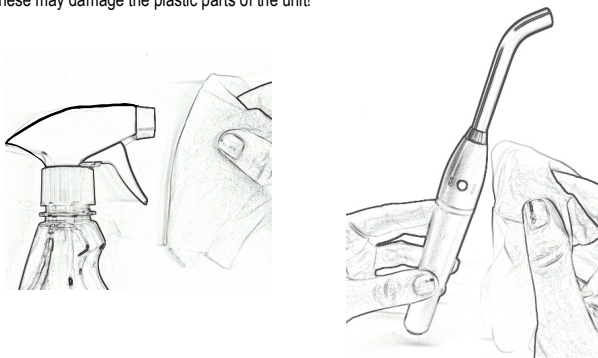
Every day the lightguide tip should be examined for:

- stuck restorative material (it should be removed very carefully with blunt non-metal object);
- mechanical damages on the lightguide. It should be sterilized by autoclave at 134° C for 5 min. The same must be done for protection cap.

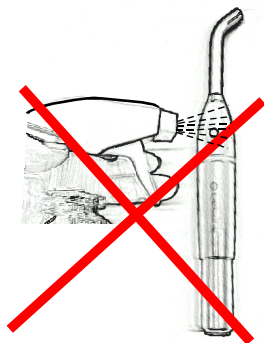


## 2. Cleaning of the unit.

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 / charge connector!



## 3. Infection control

To prevent cross-contamination, it is recommendable to use a disposable barrier sleeve over the handpiece for each patient.



## **VII. WARRANTY CONDITIONS**

1. Warranty period of the BLUEDENT LED 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 (except for lightguide; LED module - 6 months warranty) is done free of charge by manufacturer's service.

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.

If liquids, such as water and solvents, aggressive or flammable substances and their vapors, also pouring or wiping the device with the same, insects or rodents have entered the device, it must be brought immediately to manufacturer's service. In such cases warranty is lost.

Damages and claims are not accepted due to electric shocks, thunder storms, non-following of measures for electric safety or insufficient protection of patients, personnel or outer persons toward light irradiation.

The manufacturer does not owe compensation for lost benefits in cases of defects or imperfect functioning of the device regardless of the cause.

No claims and damages are accepted due to incorrect security and attention for protection during transportation, unpacking, moving, work and preservation of device. Warranty becomes null and void if any of the above mentioned happens.

If a dispute arises on the application and interpretation of this Operations guide, it shall be solved according to the applicable laws in Republic Bulgaria, and the court of Plovdiv shall be the court of jurisdiction.

4. This warranty becomes null and void if any repair to or servicing of the product is performed by any unauthorized party or if other than original BLUEDENT LED spare parts are used therefore.

5. The manufacturer recommends that the users check once a year (or if there is an incident immediately) in the manufacturer's service if the parameters: output light intensity and heat radiation of their units are in the admissible range. This check-up is done free of charge in the manufacturer's service.

6. The warranty servicing is performed at the manufacturer's service at the following address:



155, Vasil Aprilov Blvd  
4027 Plovdiv  
Bulgaria  
tel./fax:: +359 32 641913 , +359 32 644089  
e-mail: office@bglight.com  
http://www.bglight.com

#### VIII. BLUEIDENT LED DATA

SN:

LOT:

DATE OF PRODUCTION:

QC :

DATE OF PURCHASE:

DEALER:



#### IX. SYMBOLS



Manufacturer  
BG LIGHT LTD, 155, Vasil Aprilov Blvd., 4027 Plovdiv, Bulgaria



Pursuant to Directive 2002/96/EC, this symbol shows that the product must not be disposed of as urban waste at the end of its operating life.



Pay attention to the instructions accompanied by this symbol.



Fragile!



Product with CE mark.



Applied part type BF



The device is equipped with double electric insulation (Class II)

$\Omega$	Ohm (electric resistance unit)
s	Second (time unit)
W	Watt (power unit)
Hz	Hertz (frequency unit)
mm	Millimeter (length unit)
A	Amper (electric current unit)
V	Volt (electric voltage unit)
Pa	Pascal (atmosphere pressure unit)
$^{\circ}\text{C}$	Degrees Centigrade (temperature unit)
g	Gram (weight unit)

SN

Serial number

LOT

Lot

**X. SERVICE DATA**

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