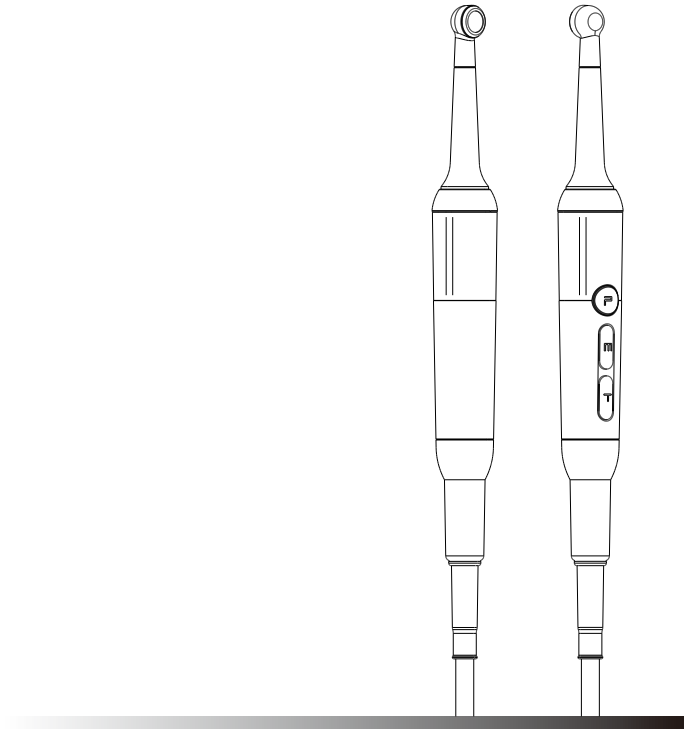
BCL-A

Built-in LED curing light

Instruction Manual

Please read the instruction manual carefully before operating



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成型尺寸：100×155mm　材质:80g双胶纸　黑白印刷　骑钉成本

物料名称	BCL-A英文说明书	设计		日期	20190924
物料编号	PA-BCL.A-M-E-1	审核		日期	
版本	A1	批准		日期	

Contents

1.Symbol instruction

Trademark	Caution
Type B applied part	Follow instructions for use
Use indoor only	IPX0 Ordinary equipment
135℃ Autoclavable	Screw inside/outside
Date of manufacture	Manufacturer

	The light emittel may be harmful to the eyes Do not stare at the light source
	Appliance compliance with WEEE directive
106 kPa 70	Atmospheric pressure for storage 70kPa-106kPa
80% 0%	Humidity limitation for storage 0%~80%
+55℃ -10℃	Temperature limitation for storage -10℃~+55℃

2.Introduction

2.1 Model No：BCL-A

2.2 Built-in design.Connect to dental unit.

2.3 Two kinds of working modes:

Low intensity mode (L) 1000~1300mW/cm² ,

High intensity mode (H) 1600~1800mW/cm².

2.4 Time setting:

Time setting for low intensity mode:10S,15S,20S,25S.

Time setting for high intensity mode:3S,5S,10S,15S.

2.5 Autoclaved lamp cap design

2.6 Principle: Adopts the principle of ray radiation to solidify the light-sensitive resin by shooting at it in a short time.

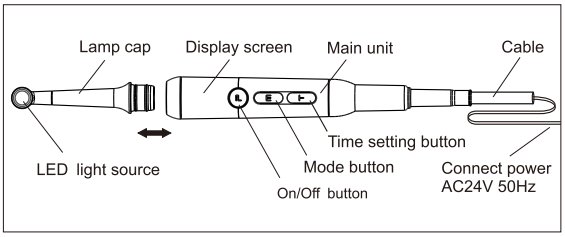
2.7 This product is used to restore teeth and solidify material for whitening teeth.

3.Intended use,structure and contraindication

3.1 Intended use: Solidify the light-sensitive resin to restore teeth by shooting at it.

3.2 Structure and components: It is composed mainly of lamp cap, main unit, buttons and cable.

3.3 Sketch map:



3.4 Contraindication:

The heart disease patients, photosensitization patients, pregnant women and children should be cautious to use this equipment.

4.Technical specifications

4.1 Power input：AC24V 50Hz.

4.2 Input power：10VA.

4.3 Dimensions：26×221mm.

4.4 Net weight：0.18kg.

4.5 Components: details in packing list.

4.6 LED light performance:

4.6.1 LED power: 5W.

4.6.2 Wave length：440nm~480nm.

4.6.3 Category : I.

4.6.4 Light intensity:

a) Low power:1000mW/cm²~1300mW/cm².

b) High power:1600mW/cm^2~1800mW/cm^2.

4.6.5 Optical active area 56mm^2.

4.7 Working condition:

4.7.1 Environment temperature：+5℃~+30 .

4.7.2 Relative humidity：0~80%.

4.7.3 Atmosphere pressure：70KPa~106KPa.

4.8 Design safety category:

4.8.1 Running mode：Indirect running

4.8.2 Protection type against electrical shock:class I.

4.8.3 Protection against electrical shock:type B.

4.8.4 Protection against harmful ingress of water or particular matter:ordinary equipment (IPX0).

4.8.5 Safety in the presence of flammable anesthetic mixture with air,oxygen or nitrous oxide:Non AP/APG type equipment.

5.Components

5.1 No spare parts, accessories,consumables.

5.2 More details about product and accompanying documents in the packing list.

6.Install and uninstall way

6.1 Install and uninstall main unit: Connect the power supply line of LED curing light with the power (~24V) of dental unit. Tight the nylon thread to the fixation of the dental unit, then it will be available for operation.

Notice: When installing main unit, be sure that the power is cut off. The two power wires should be a little longer than the nylon thread to keep the power wires safe.

6.2 Install and uninstall lamp cap: Insert the lamp cap into the hole slotting at the front end of main unit. LED curing light can be used after installing it well. Pull out of lamp cap to autoclave and replace it.

Notice: After installing lamp cap well, there is no gap between lamp cap and main unit. When the metal clamping ring flicks, there is voice feedback.

7.Cleaning and sterilization

7.1 Cleaning

7.1.1Pull out of the lamp cap from BCL-A curing light, wipe it with medical alcohol or with special dental disinfection towel.

7.2 Sterilization

7.2.1 Pull out of the lamp cap and pack it in sterilization pouch or sterilization box to sterilize it(135℃ 0.22MPa).

7.2.2 Sterilize with autoclave.

7.2.3 Sterilization condition.

Sterilization under one of the following conditions:

a) 121℃/1bar (0.1MPa) ;

b) 135℃/2.2bar (0.22MPa) .

⚠ Sterilization precaution

- Ensure that there is no residual liquid or resin at the front end of lamp cap before sterilization.
- Ensure the lamp cap has been uninstalled when sterilizing.
- Don't mix with other equipments when sterilizing.
- The lamp cap needs natural cooling and then can be installed and used again after sterilizing.

8.Operation

8.1 Open the packing and check if all the parts and accessories are complete according to the packing list.

8.2 Ensure protection measures before use.For example, wear anti-glare glasses.

8.3 Pull out of the lamp cap and pack it in sterilization pouch or sterilization box to sterilize it in autoclave.

8.4 Install the lamp cap on the main unit.

8.5 Press 'M' button and choose high power mode or low power mode.

8.6 Press 'T' button and choose time setting.

8.7 Put the light source alignment resin which needs to be solid, press 'P' button, and then there is a 'Di' voice. The main unit shines blue light and starts countdown.

8.8 It can be stopped working at any time by short pressing 'P' button while operating.

8.9 The next working cyble should be started after a working cycle ends for 15 seconds in order to avoid discomfort or scald to the patient due to the overheated lamp cap.

8.10 The lamp cap gets a little hot when working normally. But if the main unit or the lamp cap gets hot obviously, please turn off the device until the main unit becomes cool.

8.11 If there is resin on the lamp cap after using,please clean it by cotton cloth to make sure the power intensity is good.

8.12 After using curing light every time, pull out of the lamp cap, clean it and then pack it in sterilization pouch or sterilization box to sterilize it in case using it next time.

9.Safety precaution

9.1 The lamp cap is an electrical product. Wipe it by cotton cloth or medical alcohol. Dipping in liquid is forbidden.

9.2 There is high nonopaque quartz glass at the front end of lamp cap. Knocking,striking or dropping it is forbidden.

9.3 During operation the light should be aimed straightly on the resin, to ensure solidification effectively.

9.4 Please wear anti-glare glasses to avoid blue light hurts eyes. Strictly prohibit aiming light at eyes directly.

9.5 Dedicated ~24V connector of dental unit supplies electricity to BCL-A built-in curing light. Power supply source of dental unit should conform to requirement of GB9706.1 standards.

9.6 Using product must conform to the related operation rules issued by health sector and the related laws requirements. It can be used by trained doctors or technicians only.

9.7 Suggest inspect light intensity of BCL-A curing light with light meter every month. If light intensity is not in the scope of setting, please send it back to us for repair.

9.8 Please use BCL-A curing light in the scope of cable length. Don't drag it please. Put it back to the hanger of dental unit after use.

9.9 Be sure to replace the original lamp cap made by us. If not original or not unmatched one, maybe it will damage or cause insufficient light intensity.

9.10 If necessary,circuit diagram,components and parts list, drawing statement, correction detailed rules and regulations can be offered to help technicians to repair product.

10.Maintenance

10.1 This product doesn't include repair parts. Machine maintenance and repair shall be made by the designated professional or repaired at a repair shop.

10.2 Users can replace lamp cap by themselves, but ensure to use original accessories.

10.3 Wipe surface of the lamp cap by purified water or disinfectant.

11.Trouble shooting

Fault	Possible cause	Solution
No indication Non-act.	BCL-A curing light without electric power.	Check if BCL-A curing light connects dental unit correctly or not.
	Curing light works for a long time and automatic protection starts.	Curing light stops working for several minutes,and it will return to normal.
	BCL-A curing light damages.	Contact the local dealer or us.
Light intensity insufficient	LED ageing.	Replace lamp cap.
	There is residual foreign matter at the front end of lamp cap.	Remove foreign matter.

If the problem still can't be solved,please contact the local dealer or us.

12 Storage and transportation

12.1 Environmental conditions of storage and transportation:

a) Relative humidity:0% to 80%.

b) Atmospheric pressure:70kPa to 106kPa.

c) Environmental temperature:-10℃ to +50℃.

12.2 Prevent excessive shock and vibration in transportation, be sure to handle with care and avoid inversion.

12.3 Don’t mix with dangerous goods during transportation.

12.4 Avoid the sun,rain or snow during transportation.

12.5 The equipment should be handled carefully and lightly.Be sure that it’s far from the vibration,and install or store in a cool,dry and ventilated place.

12.6 Don’t store the machine with the articles that are combustible,poisonous,caustic and explosive.

13.After-sale service

From the date of this equipment sold,if the equipment can't work normally because of the quality problems,our company will be responsible for the maintenance base on the warranty card. Please refer the warranty scope and period from warranty card.

14.Environmental protection

The equipment has no any harmful ingredient. Please dispose according to the local laws.

15.Manufacturer's right

We reserve the rights to change the design of the equipment, the technique,fittings,the instruction manual and the content of the original packing list at any time without notice.If there are some differences between blueprint and real equipment, take the real equipment as the norm.

16.EMC-Declaration of conformity

Notes:

1) Maybe it will cause electromagnetic compatibility problem for this equipment or other equipments if change this equipment without our authorization.

2) Design and testing of this equipment conforms to the related operating instruction of electromagnetic compatibility.

3) This equipment should not be used near other equipments or stacked up with other equipments.If needed to use the equipment under situations mentioned above, the user should verify that the equipment can work normally.

16. 1 Electric cable information

No	Description	Electric cable length (m)	Shielding (Yes/No)	Remarks
1	Power line (input end)	2. 0m	No	None

16. 2 Basic performance

Performance	Description	Response time of achieving normal performance
Light output	The main unit is turned on. Press "P" button,then strong light shines from the front end of lamp cap. Pressing "P" button again can cancel operation when there is light. Set time by 'T' button and choose high intensity or low intensity by 'M' button when there is no light.	＜1s

16.3 The key parts of electromagnetic compatibility

The key parts of electromagnetic compatibility of this equipment are power inductor and capacitance.If use or change non-matching design of accessories,power inductor and capacitance,that will significantly decrease electromagnetic emissions and immunity performance.Please not change equipment parts arbitrarily.

16.4 Guidance and manufacturer’s declaration-electromagnetic emissions

Guidance and manufacturer’s declaration-electromagnetic emissions		
The model BCL-A is intended for use in the electromagnetic environment specified below.The customer or the user of the model BCL-A should assure that it is used in such an environment.		
Emissions test	**Compliance**	**Electromagnetic environment - guidance**
RF emissions CISPR 11	Group 1	The model BCL-A uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The model BCL-A is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supplt network that supplies buildinge used for donestic purposes.
Harmonic emissions IEO 61000-3-2	Not applicable	
Voltage f luctuations /flicker emissions IEC 61000-3-3	Not applicable	

16.5 Guidance & Declaration — electromagnetic immunity

Guidance & Declaration — electromagnetic immunity			
The model BCL-A is intended for use in the electromagnetic environment specified beliw. The customer or the user of the model BCL-A shouid assure that It is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrical fast transient/burst IEC 61000-4-4	±2kV for power supply lines ±1 kV for Input/output lines	±2kV for power supply lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line to line ±2 kV line to earth	Not applicable	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11.	<5 % U_T (>95% dip in U_T.) for 0.5 cycle <5 % U_T (>95% dip in U_T.) for 1 cycle 40 % U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95 % dip in U_T) for 5 sec	Not applicable	Not use mains power.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m ,3 A/m	3 A/m ,3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE U_T is the a.c. mains voltage prior to application of the test level.			

16.6 **Guidance & Declaration - Electromagnetic immunity**

Guidance & Declaration - Electromagnetic immunity			
The model BCL-A is intended for use in the electromagnetic environment specified below. The customer or the user of the model BCL-A should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80MHz 6 Vrms in ISM and amateur radio bands	3 Vrms 150 kHz to 80MHz 6 Vrms in ISM and amateur radio bands	Portable and mobile RF communications equipment should be used no closer to any part of the model BCL-A including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance** $d=[3,5/V1]\times P^{1/2}$ $d=1.2\times P^{1/2}$ 80 MHz to 800 MHz $d=2.3\times P^{1/2}$ 800 MHz to 2.7 GHz where *P* is the maximum output power rating of the transmitter In watts (W) according to the transmitter manufacturer and *d* Is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,[a] should be less than the compliance level in each frequency range.[b] Interference may occur In the vicinity of equipment marked with the following symbol: 
Radiated RF IEC 61000-4-3	3 V/m 80 MHZ to 2.5 GHz 10 V/m 80 MHZ to 2.7 GHz 385MHz-5785MHz Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communication equipment (Refer to table 9 of IEC 60601-1-2:2014)	3 V/m 80 MHZ to 2.5 GHz 10 V/m 80 MHZ to 2.7 GHz 385MHz-5785MHz Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communication equipment (Refer to table 9 of IEC 60601-1-2:2014)	

NOTE I At 80 MHz end 800 MHz. the higher frequency range applies.
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

[a] Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the model BCL-A is used exceeds the applicable RF compliance level above, the models BCL-A should be observ ed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the model BCL-A.

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.

16.7 Recommended separation distances between portable and mobile RF communications equipment and the model

Recommended separation distances between portable and mobile RF communications equipment and the model BCL-A			
The model BCL-A is intended for use in electromagnetic environment in which radiated RF disturbances is controlled. The customer or the user of the model BCL-A can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the model BCL-A as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	**Separation distance according to frequency of transmitter/m**		
	150kHz to 80MHz $d=1.2\times P^{1/2}$	**80MHz to 800MHz** $d=1.2\times P^{1/2}$	**800MHz to 2,5GHz** $d=2.3\times P^{1/2}$
0,01	0.12	0.12	0.23
0,1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) accordable to the transmitter manufacturer. NOTE I At 80 MHz and 800 MHz. the separation distance for the higher frequency range applies. NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

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