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DTE®

LUX E CURING LIGHT
INSTRUCTION MANUAL

Please read this manual before operating



Industrial design patent No.: CN 200930321063.7

FDA CE

GUILIN WOODPECKER MEDICAL INSTRUMENT CO., LTD.
www.glwoodpecker.com

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1. Introduction

Guilin Woodpecker Medical Instrument Co., Ltd. is a high-tech enterprise in researching, developing, and producing dental equipment, and has a perfect quality assurance system, main products including ultrasonic scaler, curing light, micro motor, apex locator and ultrasurgery etc.

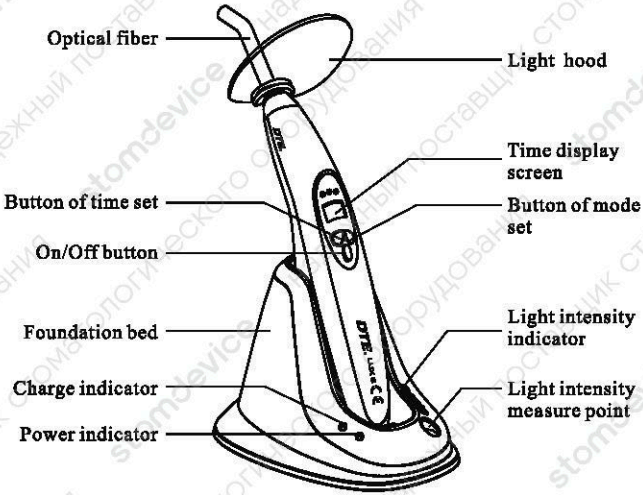
2. Principle and Application

2.1 LUX E adopts the principle of ray radiation to solidify the light-sensitive resin by shooting at it in a short time.
2.2 This product is used for dentistry. It has the function of accelerating dental restoration and solidifying the material of dental whitening.

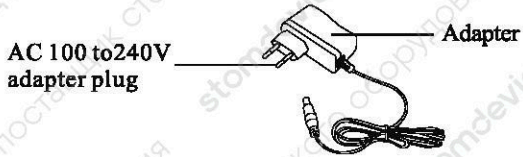
3. Product Performance Structure and Components

LUX E curing light (dentistry) is mainly composed by high power LED, optical fiber, main unit and charge device.

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Picture 1



Picture 2

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4. Basic Technical Specifications

4.1 Adapter:
a) Rechargeable Lithium battery:
Battery voltage and capacity: 3.7V, 1400mAh
Battery model: ICR18490
b) Adapter input: AC100~240V 50Hz/60Hz
Output: DC5V 1A
4.2 Applied part: Optical fiber
4.3 Light source:
a) 5W high power blue light LED
b) Wave length: 420nm~480nm
c) Light intensity: 1000mW/cm2~1200mW/cm2
4.4 Work condition:
Environment temperature: +5℃ to +40℃
Relative humidity: ≤80%
Atmosphere pressure: 70kPa to106kPa
4.5 Size: 40×50×260mm
4.6 Net weight: 147g
4.7 Power consume: ≤8W
4.8 Protection type against electrical shock: Class II
4.9 Protection degree against electrical shock: Type B
4.10 Protection against harmful ingress of water or particular matter: ordinary equipment (IPX0)
4.11 Safety in the presence of flammable anesthetic mixture with air, oxygen or nitrous oxide: not suitable under this condition.

5. Installation and Demounting

5.1 Take off the red cap from the optical fiber, then insert the metal part into the front of main unit (make sure to screw when installing, oblique insert should be prevented).

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5.2 Fix the light hood on the bottom of the optical fiber.

5.3 Uninstall the LED, just reverse the procedure above.

5.4 Battery replacement method: open the battery cover of the main unit, take the battery out, than disconnect the plug slightly. Connect the plug of the new battery correctly, put the new battery in, and then fix the battery cover.

5.5 After using the machine or it is in need of charging, make the main unit headon inserted in the pedestal and compress it to make sure the main unit and pedestal chucking. When there is no need of charging, please pull out the pedestal Adapter or put main unit into the pedestal inversely.

6. Operation

6.1 Press the mode button to set the working mode, the corresponding indicator will on when a mode set.

6.1.1 Full-power: the blue light radiates in full power.

6.1.2 Ramping: the blue light power increases stronger continually, after 5 seconds reaches to the highest power.

6.1.3 Pulse: the blue light works on the pulse condition.

6.2 Press the time button to set the solidifying time, 4 working time is available: 5, 10, 15, 20seconds.

6.3 When operating, aim the optical fiber at the correct position, press the power button to start or stop to emit of the blue light.

6.4 During operation, the blue light can be stopped by press the power button at any time.

6.5 A battery detect circuit is fixed inside the main unit, when low power is detected, the indicator of the main unit will wink, please charge in time.

6.6 Connect the Adapter and the charge device correctly, put the main

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unit into the charge device, the yellow indicator will enlightened, when charge finish, the green indicator will enlightened and the yellow one will off. The green light is the power indicator of the charging finish. If a battery error is detected, the indicator of the charge device will wink.

6.7 When operating finish, please clean the optical fiber with calico to avoid infecting the light intensity.

6.8 This equipment will turn off automatically if don't any action within 2 minutes, turn it on by press any button.

6.9 The effective light intensity of this equipment is much more higher than Halogen Lamp, The solidified depth of the curing light composites resin for 10 seconds will not less than 4mm.

6.10 This equipment has the function of light intensity measuring. Connect the Adapter of the light intensity measure device correctly, aim the top of optical fiber at the sensor, turn on the main unit to emit blue light, the green indicator of the light intensity measure device will indicate the value of the light intensity.

6.11 The optical fiber can be autoclaved under the high temperature of 135℃ and pressure 0.22 Mpa. (Refer to EN13060 standard)

6.12 The curing light is equipped with over-heat protection system. It can continuously work 200s, For example, continuously operate the curing light for 10 times under 20s working mode (even the curing light works less than 20s, it is counted as a full operation), then it will come into over-heat protection status. And only after 2-minute sleep, it can restart working 200s continuously.

7. Light intensity measurement

7.1 Connect the output plug of power adapter to the plug of DC5.0V in the pedestal.

7.2 Choose general mode and aim the optical fiber at the measurement point, press on / off button, the present light intensity is displayed on the indicator of pedestal.

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8. Precaution

8.1 Please recharge the battery at least 4 hours before first time usage.
8.2 During operation, the light should be aimed straightly at the resin to ensure the effect of solidification.
8.3 Avoid aiming the blue light at eyes directly.
8.4 Only the original pedestal charger, adapter and Lithium battery could be used, because other brand pedestal charger, adapter and Lithium battery are likely to damage the circuit.
8.5 It is forbidden to touch the charging connector with metal or other conductor, to avoiding damage the circuit of charge or the battery.
8.6 Charging the battery in the condition of cool and ventilated. Please make sure of pressing out the buckle between the main unit and the pedestal, otherwise the battery charging might be failed because of the poor contact.
8.7 Do not disassemble the Lithium battery, it will lead to the circuit short or the electrolyte leakage.
8.8 Do not squeeze, shake and short the battery, do not store the battery with metal material.

① WARNING: If the curing light works for 40s continously, the temperature of the top of optical fiber may reach 56℃."

② WARNING: Do not modify this equipment without authorization of the manufacturer.

9. Contraindication

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

10. Maintenance

10.1 Only the optical fiber of this equipment can be autoclaved under

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high temperature and high pressure, other parts should be cleaned by clean water or neutral sterilized liquid, but do not soak the equipment in the water. Do not clean by volatile or soluble liquid, otherwise the marks of the control panel will fade.

10.2 Please clean the optical fiber to avoid the remaining resin on the surface and infect the life-span and the effectiveness of solidification.

11. Troubleshooting

Faults	Possible causes	Solutions
No indication No response.	1. Battery is out of power. 2. Faulty of battery. 3. Battery is protected.	1.Change a new battery. 2. Change a new battery. 3. Charge.
The screen shows "Er".	Faulty of main unit.	Repair.
The screen shows "E1".	Low battery.	Charge.
Light intensity is weak.	1. The optical fiber is not installed correctly. 2. There is crevice on the optical fiber. 3. There is resin on the top of the optical fiber.	1. Reinstall the optical fiber. 2. Change a new optical fiber. 3. Clean the resin.
The equipment doesn't charge when the adapter is connected.	1. The adapter is not connected well 2. Faulty of adapter or incompatible. 3. The charging point is impurity.	1. Reconnect. 2. Change the adapter. 3. Clean by the alcohol.

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Faults	Possible causes	Solutions
Effective duration of the battery become short.	The capacity of the battery decreased.	Change a new battery.
The mode indicator twinkles when charging.	1. low voltage. 2. Short-circuit of the battery.	1. Back to normal after 15 minuets charging. 2. Change a new battery.

If all the above solutions have been completed, the machine still can not work normally. Please contact our special repair shop or us.

12. Packing list

The components of the machine are listed in the packing list.

13. Transportation

13.1 Excessive impact and shake should be prevented in transportation. Lay it carefully and lightly and don't invert it.
13.2 Don't put it together with dangerous goods during transportation.
13.3 Avoid solarization and getting wet in rain or snow during transportation.

14. Storage and transportation

14.1 The equipment should be handled carefully and lightly, kept away from the shaking source, installed or stored at shadowy, dry, cool and ventilated places.
14.2 Don't store the equipment together with articles that are combustible, poisonous, caustic, and explosive.
14.3 This equipment should be stored in the environment where the humidity is ≤80%, the atmosphere pressure is 70kPa~106kPa and the temperature is -10℃~55℃.

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14.4 Excess impact or shake should be prevented during transportation. Handle with care. Do not place upside down.
14.5 Don't put it together with dangerous articles during transportation.
14.6 Keep it away form the sun, rain or snow during transportation.

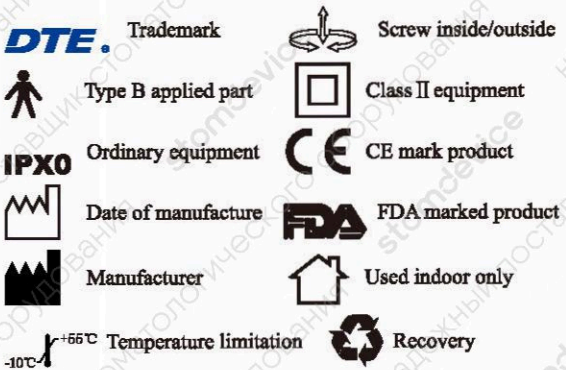
15. After service

From the date this equipment has been sold, base on the warranty card, we will repair this equipment free of charge if it has quality problems, please refer to the warranty card for the warranty period.

16. For technical data, please contact

EC REP Wellkang Ltd (www.CE-Marking.eu)
29 Harley St.,LONDON,W1G 9QR,UK

17. Symbol instruction



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Humidity limitation



Keep dry



Atmospheric pressure for storage



Handle with care



Appliance compliance WEEE directive



Consult the accompanying documents

EC REP Authorised Representative in the EUROPEAN COMMUNITY

18. Environmental protection

There are no harmful factors in our product. You can deal with it based on the local law.

19. Declaration of conformity

19.1 Product conforms to the following standards

EN 60601-1:2006	EN 60601-1-2:2007
EN 60601-1-6:2010	EN 62366:2008
EN 60825-1:2007	EN 980:2008
ISO 9687:1993	EN 1041:2008
ISO 15223-1-2012	EN ISO 14971:2012
EN ISO 17664:2004	EN ISO 17665-1:2006
EN ISO 7405:2008 +A1:2003	EN ISO 10993-1:2009
EN ISO 10993-5:2009	EN ISO 10993-10:2010

19.2 EMC - Declaration of conformity

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Guidance and manufacturer's declaration - electromagnetic emissions		
The model LUX E is intended for use in the electromagnetic environment specified below. The customer or the user of the model LUX E should assure that it is used in such an environment.		
Emissions test	**Compliance**	**Electromagnetic environment - guidance**
RF emissions CISPR 11	Group 1	The model LUX E 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 CISPR11	Class B	The model LUX E is suitable for used in domestic establishment and in establishment directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Not applicable	

Guidance & Declaration — electromagnetic immunity			
The model LUX E is intended for use in the electromagnetic environment specified below. The customer or the user of the model LUX E should 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	±2 kV line to earth	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 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	<5 % U_T (>95% dip in U_T) for 0.5 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	Mains power quality should be that of a typical commercial or hospital environment. If the user of the model LUX E requires continued operation during power mains interruptions, it is recommended that the model LUX E be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	Not applicable	Not applicable
NOTE U_T is the a.c. mains voltage prior to application of the test level.			

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Guidance & Declaration - Electromagnetic immunity

The model LUX E is intended for use in the electromagnetic environment specified below. The customer or the user of the model LUX E should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
			Portable and mobile RF communications equipment should be used no closer to any part of the model LUX E, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3V	3V
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	$d=1.2\times P^{1/2}$ 80 MHz to 800 MHz $d=2.3\times P^{1/2}$ 800 MHz to 2.5 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:



NOTE 1 At 80 MHz and 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 LUX E is used exceeds the applicable RF compliance level above, the model LUX E should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the model LUX E.

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

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Recommended separation distances between portable and mobile RF communications equipment and the model LUX E			
The model LUX E is intended for use in electromagnetic environment in which radiated RF disturbances is controlled. The customer or the user of the model LUX E can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the model LUX E 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.			
NOTE1 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.			

The device has been tested and homologated in accordance with EN 60601-1-2 for EMC. This does not guarantee in any way that this device will not be effected by electromagnetic interference Avoid using the device in high electromagnetic environment.

20. Statement

All rights of modifying the product are reserved to the manufacturer without further notice. The pictures are only for reference. The final interpretation rights belong to GUILIN WOODPECKER MEDICAL INSTRUMENT CO., LTD. The industrial design, inner structure, etc, have claimed for several patents by WOODPECKER, any copy or fake product must take legal responsibilities.

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