**LED Curing Light USER MANUAL**

# Contents

# 1. Symbols

| | |
|---|---|
| ⚠️ **Warning** | If the instructions are not followed properly, operation may lead to hazards for the product or the user/patient. |
| ⚠️ NOTE | Additional information, explanation of operation and performance. |
| 🗑️ | Do not dispose of with normal household waste.(WEEE) |
| **SN** | Serial number |
| **REF** | Catalogue number |
| 🏭 | Manufacturer |
| 〜 | Date of manufacturer |
| 🧍 | Type B applied part |
| ⎓ | Direct current |
| ☐ | Safety class II device |
| ☂️ | Store in a dry place |
| 55℃ / -20℃ | Temperature limitation |
| 80% / 20% | Relative humidity |
| 106kPa / 70kPa | Transport and storage pressure conditions: 70 kPa - 106 kPa |

## 2. Technical Data

| | |
|---|---|
| Model | |
| Dimensions  (C25 Plus) | 217mmX132mmX90mm |
| Weight | 600g ±10% |
| Power supply | Li-18650 battery: 3.7V, 2600mAh, 9.62Wh |
| Charger power supply | AC 100-240 V, ±10% |
| Charger power output | 5.0V 1A |
| Power Frequency | 50/60Hz，±10% |
| Charger nominal power input | 5VA |
| Light intensity | 2500mW/cm² 1200mW/cm² |
| Wavelength | 420nm-515nm |
| Electrical safety class | Class II |
| Applied part | B |
| Operation conditions | Use: in enclosed spaces Ambient temperature: 10° C ~ 40 ° C Relative humidity: 20%~80% Operating altitude < 3000m above sea leve |
| Transport and storage conditions | Ambient temperature: -20　° C ~ +55 ° C Relative humidity: 20% ~ 80 % Atmospheric pressure: 70kPa ~ 106kPa |

## 3. Scope

### 3.1 Parts Identification

1 Light source head
2 Protective light shield
3 handpiece
4 Adapter
5 Disposable sleeve
6 Charging base
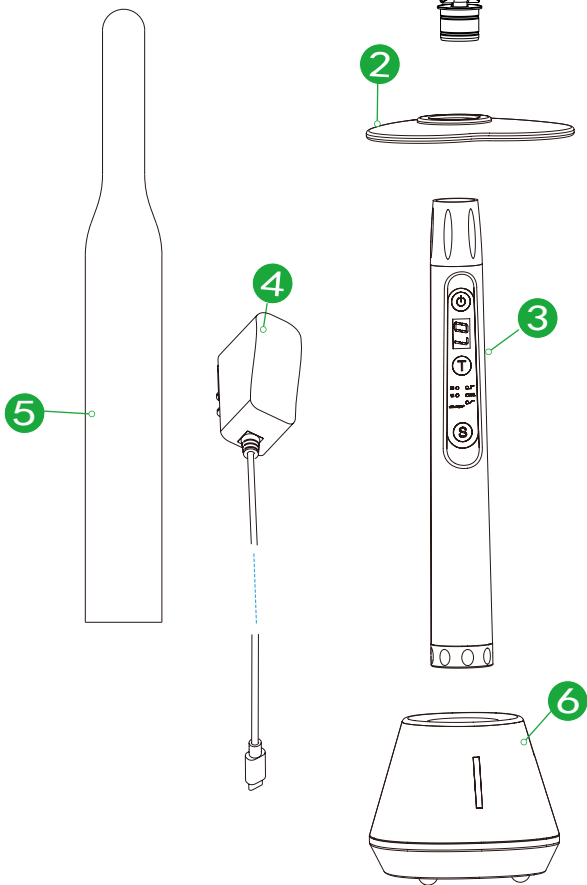
## 3.2  Components and accessories

| Handpiece (1pcs) | Light source head(1pcs) |
|---|---|
|  |  |
| Disposable sleeve  (100pcs) | Adapter (1pcs) |
|  |  |
| Charging base (1pcs) | Protective light shield (1pcs) |
|  |  |

## 4.  Before Use
### 4.1  Scope of application
Suitable for the purpose of curing dental resins and composites or detecting caries.

This device must only be used in hospital environments, clinics or dental offices by qualified dental personnel.

### 4.2  Contraindications
Do not use the device for non-endodontic dental procedures.

Safety and effectiveness have not been established in pregnant women and children.

# ⚠ Warning

Read the following warnings before use:

1. The device must not be placed in humid surroundings or anywhere where it can come into contact with any type of liquids.

2. Do not expose the device to direct or indirect heat sources. The device must be operated and stored in a safe environment.

3. The device requires special precautions with regard to electromagnetic compatibility (EMC) and must be installed and operated in strict compliance with the EMC information. In particular, do not use the device in the vicinity of fluorescent lamps, radio transmitters, remote controls, portable or mobile RF communication devices and do not use this system near the active HF Surgical Equipment in the hospital .Do not charge, operate or store at high temperatures. Comply with the specified operating and storage conditions.

4. Protective light shield and a disposable sleeve are compulsory during treatment.

5. If irregularities occur in the device during treatment, switch it off. Contact the agency.

6. Never open or repair the device yourself, otherwise, void the warranty

## 5. Setting up

### 5.1 Install the light source head

Make sure the light source head alignment the slots of handpiece, plug them together until it "click" securely into place.

The light source head can be 360 degrees rotated without take off, make it easy to watch the LED in treatment

### ⚠ Warning

1.After connecting the light source head and the handpiece, pull it gently to make sure the connection is good.
2.Make sure the assembly is connected properly, otherwise might cause unexpected fault, even hurt the patients

### 5.2 Install the disposable sleeve

Take a disposable sleeve and gently insert it into the handpiece from the light source head.

### 5.3 Install the protective light shield

Make sure the light source head alignment the slots of the protective light shield, plug them together.
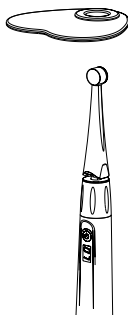
### ⚠ Warning

1.Disposable sleeve must be discarded after use
2.The light source head, protective light shield and handpiece should be cleaned and disinfected after each treatment.

Avoid direct exposure of the lamp to the eyes during working.

The lamp head can be adjusted in angle to deal with different positions
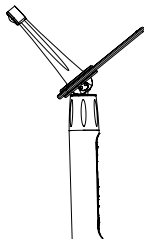
Put the handpiece all the way into the charge base, the charge state will show on the screen and plug the USB of adapter into the charge base, and plug the other end into a power outlet, the Power LED on charge base will light up (green).
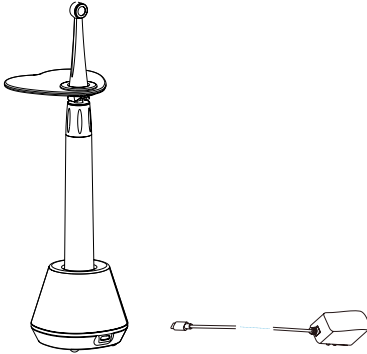


# ⚠Warning
Only the original adapter could be used.

Charging indication shows "CH" on the LED screen, and LED flashes slowly , when battery is fully charged or in a state near full charge, the flash will stop and show "FH"

Charging:                        Fully charged:

## 6. Use Interface
### 6.1 Panel key



❶ main switch
❷ "T"  Timing key
❸ "S"  Selecting key

**Turn Power On**
Press more than 0.5 seconds to turn on the device

**Time Change**
Press Timing key during standby state

**Mode Change**
Press Selecting key during standby state

**Power Change**
Long press Selecting key during standby state

**Turn Power Off**
Press Selecting key and main switch to turn power off.

❶ Curing time
❷ Curing power
❸ Working mode

## 7. Setting
### 7.1 Modify setting
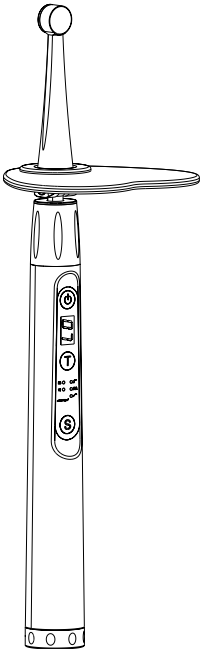
| | |
|---|---|
| **Curing Mode** | There are 3 built-in memory programs, namely NORMAL, RAMP, PULSE. Press selecting key to change the working mode during standby state. |
| **Curing Power** | **Light intensity setting**<br>The RAMP and PULSE mode are setting on 1200mW/cm² , and NORMAL mode cand be changed to 1200mW/cm² or 2500 mW/cm², Long Press "S" to change the light intensity.<br><br>⚠️ **Warning**<br>The light intensity of RAMP, PULSE are built-in, and the user cannot modify. |
| **Curing Time** | **Curing Time setting**<br>During standby state, press "T" to select different times. The time selection is different under different light intensity:<br><br><table><tr><td>Mode</td><td>2500mW/cm²</td><td>1200mW/cm²</td></tr><tr><td>NORMAL</td><td>1s,2s,3s</td><td>3s,5s,10s,15s</td></tr><tr><td>PULSE</td><td>N/A</td><td>3s,5s,10s</td></tr><tr><td>RAMP</td><td>N/A</td><td>5s,10s,15s,20s</td></tr></table> |

## 8. Operation
### 8.1 Charge

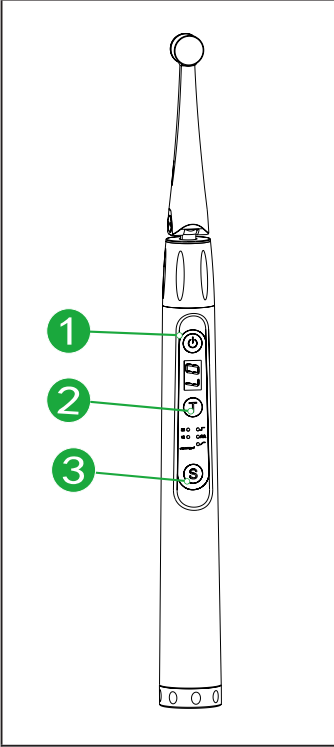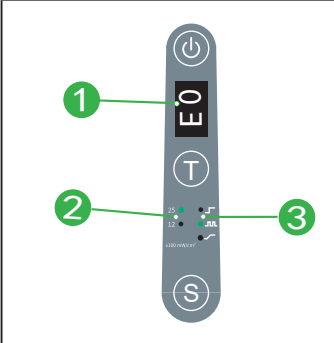| | |
|---|---|
|  | It means the battery is too low, less than 15% remains, please charge.<br><br>⚠️ **NOTE**<br>If the power if less than 15%, must be recharged within 30 days, otherwise the battery will be damaged. |
|  | Charging indicator appears on the screen, and flashes slowly , when battery is fully charged or in a state near full charge, the flash will stop and show as picture.<br>Fully charged will take about 4 hours, depending on residual battery power and battery state.<br>It can be recharged 300-500 times, depending on the operating conditions of the device.<br><br>⚠️ **NOTE**<br>When changing, other function will forcibly stop, take from charge base, press main switch, the last function will recall. |

## ⚠️ Warning

Do not change the battery, only trained technician or distributor can change the battery, the electronic parts will be damaged if use a wrong battery or install with a wrong way.

## 8.2   Handpiece operation

| | |
|---|---|
|  | After the handpiece main unit is turned on, press   to start the light intensity output, and the time will start counting down. Press any key to interrupt the output during the light intensity output. There is a beep every 5s while working, and the output is automatically turned off after the countdown ends. <br><br> ## ⚠ Warning <br> 1. When the device is working, do not directly illuminate the eyes, otherwise it will cause injury. <br> 2.Do not directly illuminate the skin, otherwise high temperature burns may occur. <br><br> ## ⚠ NOTE <br> 1.  After the device is used continuously for 10 times at 2500mW/cm2, it will be prohibited to use the highest light intensity output within 1 minute, Used to prevent the lamp from overheating <br> 2. When using, the light should be directly irradiated onto the curing dental resins and composites to avoid improper exposure. <br> 3. The disposable protective cover and protective light shield are highly recommended. |
| **Auto Shut Down** | When the device is in standby mode, it will automatically shut down after 8 minutes. |

# ⚠️Warning

1. Before using, please try it outside the oral cavity to ensure that there is no problem with the function of the device.
2. Do not disassemble the lamp during treatment .

# ⚠️ NOTE

1. If there is any abnormal functioning, stop using the device and report to company
2. Gloves are compulsory during treatment
3 .Always clean the handpiece and light source head after each treatment.

## 9. Operation mode

| | |
|---|---|
| **Normal** | **Normal mode**<br><br>In this modes, the light intensity can be set to **2500mW/cm² or 1200mW/cm²**<br>**Wavelength: 420nm-515nm**<br>When  pressed, the setting light intensity is output immediately, and the sound is prompted every 5 seconds. |
| **PULSE** | **PULSE Mode**<br><br>**Light intensity : 1500mW/cm²**<br>**Wavelength: 420nm-515nm**<br>When  pressed, the output light intensity is 1200mW/cm² and flashes once every 1 second, prompting the sound every 5 seconds. |
| **RAMP** | **Ramp Mode**<br><br>**Light intensity : 1200mW/cm²。**<br>**Wavelength:420nm-515nm**<br>When  pressed, the light intensity gradually increases to 1200mW/cm² in the first 5 seconds, and then continues to output 1200mW/cm², prompting the sound every 5 seconds. |

## 10. Maintenance

| Disinfection components | | |
|---|---|---|
| handpiece  | Light source head  | Adapter  |
| Charging base  | Protective light shield  | |

Wipe all the surfaces with a cloth lightly moistened with Ethanol for Disinfection (Ethanol 70 to 80vol%) at least 2min, repeat for 5 times.

## ⚠ Warning

1. Do not use anything except Ethanol for Disinfection (Ethanol 70 to 80 vol%).
2. Do not use too much ethanol as it's going into machine and damage the components inside.

| Disposable components |
|---|
| Disposable sleeve (100pcs)  |

## ⚠ Warning

1. Please discard it after use and do not use it again.
2. The product has been disinfected with ethylene oxide, so there is no need to disinfect it before use.

## 11. Error Warning

|  | The battery is too low. Charge it immediately |
|---|---|
|  | The temperature of the light source head is higher than expectation, turn the power off or waiting more than 1 minutes to let it cold down. |

## 12. Troubleshooting

When trouble is found, check the following points before contacting your distributor. If none of these are applicable or the trouble is not remedied even after action has been taken, the product may have failed. Contact your distributor.

| Problem | Cause | Solution | Ref. chap |
|---|---|---|---|
| The power is not turned on. | The battery is run down. | Charge the battery. | 8.1 |
|  | The time to press the main switch is too short. | Press the main switch more than 0.5 seconds. | 6.1 |
| The Power LED does not light up when charging. | Use a wrong adapter. | Use the original adapter. | / |
|  | There is no electricity in the outlet. | Check the connection. | / |
|  | The adapter is not connected. | Check the connection. | / |
|  | The charge base broken. | contact your distributor. | / |
|  | Charging pin of charge base unable to rebound. | Remove debris which between move part and base of the charge pin. | / |
| No output | Handpiece broken | Contact your distributor | / |
| No sound | Handpiece broken | Contact your distributor | |
| Insufficient light intensity | There are resin or other contaminants on the surface of the lamp lens | Cleaning the lamp head residue | |

## 13. EMC Tables

| Guidance and manufacturer's declaration – electromagnetic emissions | | |
|---|---|---|
| The C25 Plus is intended for use in the electromagnetic environment specified below. The customer or the user of the C25 Plus should assure that it is used in such an environment. | | |
| Emissions test | Compliance | Electromagnetic environment-guidance |
| RF emissions CISPR 11 | Group 1 | The C25 Plus 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 C25 Plus is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. |
| Harmonic emissions IEC61000-3-2 | Class A | |
| Voltage fluctuations/ flicker emissions IEC 61000-3-3 | Complies | |

| Guidance and manufacturer's declaration – electromagnetic immunity | | | |
|---|---|---|---|
| The C25 Plus is intended for use in the electromagnetic environment specified below.  The customer or the user of the C25 Plus 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 | +/- 8 kV contact<br><br>+/- 2 kV, +/- 4 kV, +/- 8 kV, +/- 15 kV air | +/- 8 kV contact<br><br>+/- 2 kV, +/- 4 kV, +/- 8 kV, +/- 15 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 Transients /bursts IEC 61000-4-4 | ±2kV 100kHz repetition frequency | ±2kV 100kHz repetition frequency | Mains power quality should be that of a typical commercial or hospital environment. |
| Surge IEC 61000-4-5 | Line to line: ±0.5kV, ±1kV Line to earth: ±0.5kV, ±1kV, ±2kV | Line to line: ±0.5kV, ±1kV Line to earth: ±0.5kV, ±1kV, ±2kV | Mains power quality should be that of a typical commercial or hospital environment. |
| Voltage dips, short interruptions and voltage variations on power supply lines IEC 61000-4-11 | 0% UT; 0.5 cycle at 0°, 45°, 90°, 135°, 180°, 225°, 270°, and 315° 0% UT; 1 cycle and 70% UT; 25/30 cycles sine phase at 0° 0% UT; 250/300 cycle | 0% UT; 0.5 cycle at 0°, 45°, 90°, 135°, 180°, 225°, 270°, and 315° 0% UT; 1 cycle and 70% UT; 25/30 cycles sine phase at 0° 0% UT; 250/300 cycle | Mains power quality should be that of a typical commercial or hospital environment. If the user of devices require continued operation during power mains interruptions, it is recommended that devices be powered form an uninterruptible power supply or a battery |
| Power frequency magnetic field IEC 61000-4-8 | 30 A/m 50Hz or 60Hz | 30 A/m 50Hz or 60Hz | Power frequency magnetic field should be at levels characteristic of a typical location in a typical commercial or hospital environment. |
| Note: UT: rated voltage(s); E.g. 25/30 cycles means 25 cycles at 50Hz or 30 cycles at 60Hz. | | | |

| Guidance and manufacturer's declaration – electromagnetic immunity | | | |
|---|---|---|---|
| The C25 Plus is intended for use in the electromagnetic environment specified below. The customer or the user of the C25 Plus should assure that it is used in such an environment. | | | |
| Immunity test | IEC 60601 test level | Compliance level | Electro magnetic environment - guidance |
| Conducted dis-turbances in-duced by RF fields IEC 61000-4-6<br><br>Radiated RF EM fields IEC 61000-4-3 | 3 V<br>0.15 MHz – 80 MHz, 6 V in ISM bands be-tween 0.15 MHz and 80 MHz, 80 % AM at 1 kHz<br><br><br><br>3 V/m, 80 MHz – 2,7 GHz, 80 % AM at 1 kHz | 3 V<br><br><br><br><br><br>3V/m | Portable and mobile RF communications equipment should be usedno closer to any part of the C25 Plus, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. |
| Proximity fields from RF wireless communication equipment IEC 61000-4-3 | See the RF wireless communication equipment table in " Recommended minimum separation distances" | Complies | Recommended minimum separation distances See the RF wireless communication equipment table in " Recommended minimum separation distances" |

| Recommended minimum separation distances |
|---|

Nowadays, many RF wireless equipments have being used in various healthcare locations where medical equipment and/or systems are used. When they are used in close proximity to medical equipment and/or systems, the medical equipment and/or systems' basic safety and essential performance may be affected. The C25 Plus has been tested with the immunity test level in the below table and meet the related requirements of IEC 60601-1-2:2014. The customer and/or user should help keep a minimum distance between RF wireless communications equipments and the C25 Plus as recommended below.

| Test frequency (MHz) | Band (MHz) | Service | Modulation | Maximum power (W) | Distance (m) | Immunity test level (V/m) |
|---|---|---|---|---|---|---|
| 385 | 380-390 | TETRA 400 | Pulse modulation 18Hz | 1.8 | 0.3 | 27 |
| 450 | 430-470 | GMRS 460 FRS 460 | FM ± 5 kHz deviation 1 kHz sine | 2 | 0.3 | 28 |
| 710 | 704-787 | LTE Band 13, 17 | Pulse modulation 217Hz | 0.2 | 0.3 | 9 |
| 745 | | | | | | |
| 780 | | | | | | |
| 810 | 800-960 | GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5 | Pulse modulation 18Hz | 2 | 0.3 | 28 |
| 870 | | | | | | |
| 930 | | | | | | |
| 1720 | 1700-1990 | GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS | Pulse modulation 217Hz | 2 | 0.3 | 28 |
| 1845 | | | | | | |
| 1970 | | | | | | |
| 2450 | 2400-2570 | Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7 | Pulse modulation 217Hz | 2 | 0.3 | 28 |
| 5240 | 5100-5800 | WLAN 802.11 a/n | Pulse modulation 217Hz | 0.2 | 0.3 | 9 |
| 5500 | | | | | | |
| 5785 | | | | | | |

## 14. Statement

**Service Life**

The service life of **products is 5 years.**

**Disposal**

The package should be recycled. Metal parts of the device are disposed as scrap metal. Synthetic materials, electrical components, and printed circuit boards are disposed as electrical scrap. The lithium batteries are disposed as special refuse. Please deal with them according to the local environmental protection laws and regulation.

## 15. Warranty

1. The main unit enjoys a 12-month warranty period, which starts on our delivery date.
2. The host and other parts of the Curing Light are repaired by authorized repair service partners.
3. If it is proved that the damage is caused by improper daily maintenance by the user, it is not covered by the warranty.