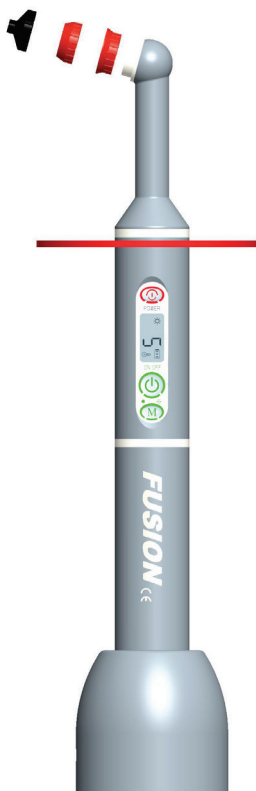


DentLight

Setting New Standards through Innovation



FUSION

INSTRUCTIONS FOR USE

LED Curing Light System (Rev 3)
Powered by Patented Focus Beam Technology



Product Information

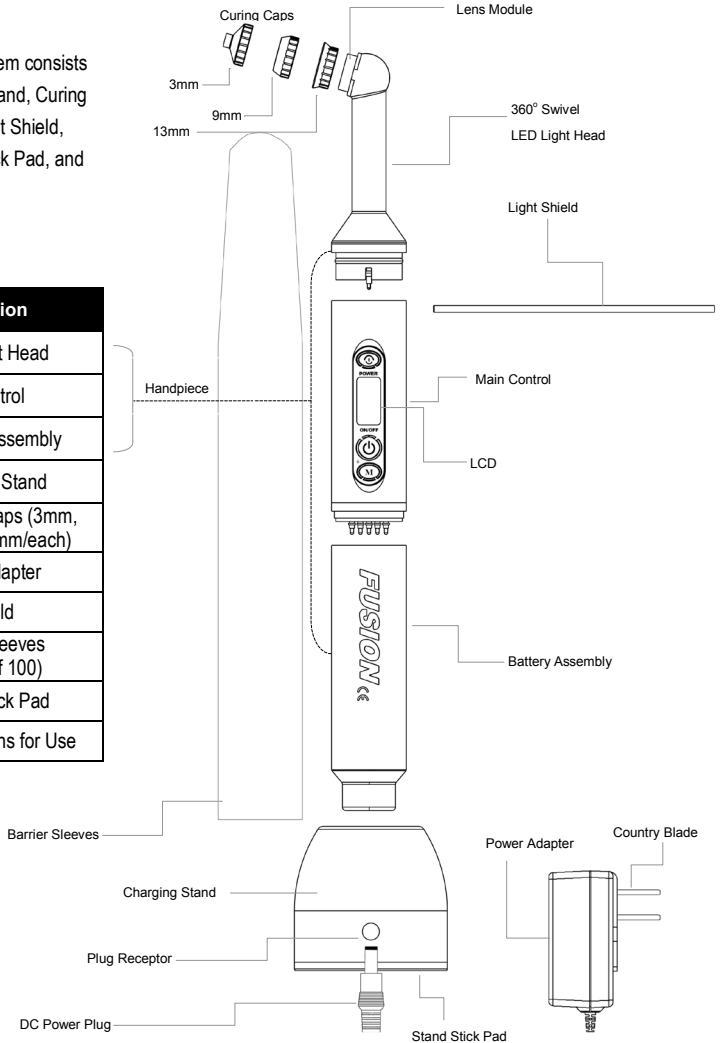
Description and Indications for Use

Fusion Curing light System (Rev 3) is a high power curing light device for polymerization of light-cured materials by dental professionals. It cures the wavelength range of 420 – 490 nm with the option to go down to 390nm. These operating instructions provide recommendations and guidelines for the intended use of the light. Please read carefully.

System Components

FUSION Curing Light System consists of Handpiece, Charging Stand, Curing Caps, Power Adapter, Light Shield, Barrier Sleeves, Stand Stick Pad, and Instructions for Use.

Quantity	Description
1	LED Light Head
1	Main Control
1	Battery Assembly
1	Charging Stand
3	Curing Caps (3mm, 9mm, 13mm/each)
1	Power Adapter
1	Light shield
1	Barrier Sleeves (1 pack of 100)
1	Stand Stick Pad
1	Instructions for Use



Product Safety Warnings and Cautions















Prior to installation and activation of the light, please read these instructions carefully and follow safety procedures as well as the specific safety comments and recommendations presented throughout the instructions for use. The manufacturer accepts no liability for any damage resulting from the improper use of this unit and/or any purpose other than those covered by these instructions.

1. CAUTION! FUSION produces high intensity light. Prolonged exposure to the skin, oral mucosa, or pulp can result in irritation or injury.
 - Do not place light in direct contact with unprotected gingival, oral mucous membrane or skin.
 - Do not place light directly on the same tooth segment for more than 10 seconds in High Power Mode.
 - If long exposure cannot be avoided, direct a stream of air over the tooth surface from an air syringe or high-speed vacuum tip, adjust to Half Power Mode or adjust curing distance.
2. CAUTION! Do not look directly at light emitted from the device. Do not use FUSION without suitable eye protection for the operator, assistant and patient. Use Light Shield, Protective Goggle, and/or Curing Cap. Exposure must be restricted to the area of the oral cavity in which the clinical treatment is intended.
3. CAUTION! FUSION must be used with "Single Use" barrier sleeves to avoid cross contamination. Replace barrier sleeve after each patient treatment is completed. This sleeve also prevents composite material from adhering to the surface of the lens and degrading the curing performance.
4. Products marked "Single Use" on the labeling are intended for single use only. Discard properly after each use.
5. DO NOT operate the unit in the proximity of flammable mixtures; FUSION is not suitable for uses in the presence of a flammable anesthetic mixture with air or nitrous oxide. Use in well-ventilated area.
6. Keep solvents, flammable liquids, and sources of intense heat away from FUSION as they may damage internal and external parts, the seals or the buttons on the control panel.
7. DO NOT autoclave or immerse unit in any kind of ultrasonic bath, disinfectant, cleaning solution or any kind of liquid. Do not spray liquids directly onto the light and prevent liquids from entering FUSION open area such like Keypad, Charging Stand and its connectors as this may damage or short-circuit the device and can cause potential hazard for operator and/or patient.

Glossary of Symbols

A number of symbols are used on the device, accessories and throughout this manual, it is important that the user/operator of FUSION understand the meaning of each symbol to avoid possible injury to the operator or/and patient.

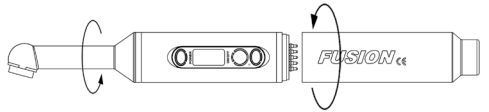
	Please read before using this device. Symbol is used to alert you to potential personal injuries and hazard. Understand all safety messages that follow this symbol to avoid injury to the operator and/or patient.
	Type BF Applied Medical Equipment
	Waste Electrical and Electronics Equipment (WEEE)
	Manufacturer
	European Authorized Representative
	Date of Manufacturing

	Single Use Only
	Temperature Limitation
	Atmospheric Pressure Limitation
	Humidity Limitation
	Keep Dry
	For Licensed Dental Professional Use Only!

Operations

Assemble Handpiece

Upon receiving your FUSION, remove all components from the package and examine them. If damage is apparent, please contact your authorized DentLight distributor from whom your light was purchased.



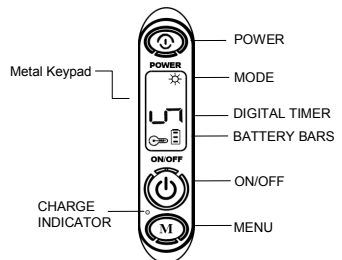
Attach the Battery Assembly to the Main Control by screwing the Battery Assembly clockwise into the Main Control. A short beep upon connection indicates that the light is battery powered and the LCD display should automatically power on. Adjust the 360° swivel LED Light Head to a comfortable curing position and ensure good connection with the Main Control. Light is now ready for use.

Operation and Setting

FUSION uses advanced Metal Keypad and LCD interface. ON/OFF Key starts and stops the light. MENU (M) Key sets the operation Time. POWER Key sets the Power Mode. FUSION defaults in High Power Mode. Press M Key to select a Digital Timer. Press POWER Key during countdown to change power to Half Power Mode and vice versa. Press and hold Power Key to go to sleep mode.

High Power Mode allows the fastest curing with plasma-like energy dosage. Half Power Mode maintains the peak power and generates the minimum heat by lowering the average power in half with a 50/50 on and off duty cycle. Built-in settings are shown in the table below. After starting, Digital Timer counts down and the light makes an audible beep every 5 seconds. Press ON/OFF Key anytime to stop.

MODE	High Power			Half Power		
	Digital Timer (seconds)	5	10	20	5	10
To Change Power Mode	Press POWER Key during count down					

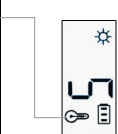
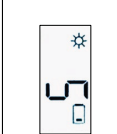


Built-in Self-Protection

FUSION has built-in self-protection on overheats and low battery.

Low battery is indicated with low Battery Bars (one or no bars). Low battery triggers one beep warning before self-protection shutdown. Light then goes to sleep mode.

Overheating is indicated with a flashing Thermometer Symbol and an audible warning beep. Light shuts off when Overheat is triggered.

Temperature Overheat	Battery Protection
Allow cool down	Check connection Replace battery
	

Curing Recommendation

For specific resin, sealants and bonding materials perform a timed curing test outside the mouth using a 3mm washer or hardness disk. Cure from the top for the recommended time, and reverse the disk. Using a sharp instrument, compare the hardness of the disk to the hardness of the composite - it should feel exactly the same if well cured. For general guidance, use recommended curing times below. For reduced heat or shrinkage, use Half Power Mode while doubling the recommended curing times below.

Recommended Cure Times (seconds) - High Power Mode

Manufacturer		3M		Ivoclar		Dentsply		Kerr	
Resin Brand		Filtek Supreme Plus		Heliomolar Tetric EvoCeram		TPH3		XRV Herculite	
Color/Shade		A3E	C6D	A3	A2	A3	DY	A3	YB
Cure Times	Per layer	5	15	5	5	5	5	5	5
	Final layer	10	Two 10	10	10	10	10	10	10

Battery Care

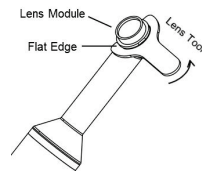
Keep FUSION charged at all times when not in use. Connect DC Power Plug to Plug Receptor on the Charging Base. Place Handpiece onto Charging Stand. Secure Charging Stand on a table counter with Stand Stick Pad for ease of operation. Alternatively connect DC Power Plug directly to the back end of Handpiece to charge and power on the unit.



Charge Indicator lights green while charging and turns off when fully charged. Battery Bar displays three full bars when the battery is fully charged. In normal operation, Battery Bar drops from three to two bars while running and returns to full bar upon completion of a cycle.

Techniques

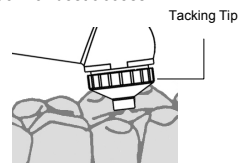
Lens Module: Use disposable barrier sleeves and curing caps to protect lenses from liquid and composite damages. Replace lens module immediately if it: a) has cured resin; b) is scratched or cloudy. Align and lock flat edge of Lens Tool (optional accessory) to flat edge of Lens Module. Turn Lens Tool counter-clockwise and unscrew Lens Module. Clean mounting thread. Replace damaged lens with a new Lens Module by reversing the step.



Barrier Sleeves: Slide sleeve into Handpiece. Twist body relative to sleeve for tight fit.

Light Shield: Slide in Light Shield from the LED Light Head to the Handpiece in a proper position for best access.

Tip Size: Tip and beam size can be adjusted by selecting the proper size Curing Caps. For small cavity treatment, snap on 9mm Curing Cap and anchor light on occlusal or bonding surface. For temporary bonding, snap on 3mm Curing Cap (Tacking Tip) at the end of the Lens Module and apply pressure at the center of crown/veneer for best contact. Tack for 1 to 2 seconds then remove excess adhesives before final bonding. For veneer bonding and molar cavity treatment, snap on 13mm curing cap and place light in direct contact.



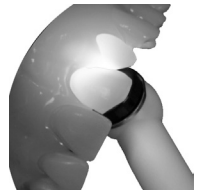
Cleaning and Disinfecting

- Clean and disinfect Handpiece and Charging Stand with a soft cloth or tissue dampened with cleaning solution including: Cavicide, Lysol, Isopropyl or Ethyl alcohol and equivalent. ⚠ Do not spray, soak, or autoclave.
- Use Q-tips to clean lens and electrical contacts by slightly dampening the tip (do not soak) with Isopropyl alcohol.
- Safeguard Handpiece opening area, metal keypad, charging Plug, and lens against liquid and sharp objects as this may cause electrical short-circuit, permanent optical damage or malfunction.

Optional Add-ons

FUSION is the most versatile LED light system that allows users to implement multiple functionalities from its advanced modular base kit. In addition to Standard LED Light Head that comes with the kit (wavelengths from 420-490nm), optional add-on functions can be achieved with:


Violet Light Head - providing violet light (390 – 430 nm) for (a) oral lesion/cancer screening; (b) curing of lower wavelength initiator adhesives (e.g. TPO) and (c) composite visualization/removal. Oral screening enables early cancer detection using fluorescence generated from tissue and viewed through Fluorescence Viewer that comes with FUSION-to-DOE starter kit. ⚠ Make sure to position the light 1-3 inch distance away from tissue in exam.



White Light Head - offering an exam probe light that outputs super high power transillumination (best used with Tacking/Exam tip) for detection of dental caries, cracks and location of root canal.

Product Specification

Type of information		Specifications
Wavelength	LED Light Head	420-490nm
	Violet Light Head	390-430nm
	White Light Head	5000- 6500K
Light Intensity (±20%; mW/cm ² or lux)*	LED Light Head	High Power Mode: 2700; Half Power Mode: 2700 (peak);1300 (average)
	Violet Light Head	1000 (at light tip)
	White Light Head	High Power Mode: 110,000 lux (with Exam Tip)
Power Adapter		Input: 100-240V - 50/60Hz; Output: 5V (DC)
Battery performance		Total light exposure time 35-45 minutes (High Power); 90 minutes full recharging time.
Operation		Continuous operation patient application, curing: duty cycle 10 sec (High Power Mode) 20sec (Half Power Mode) ON/1minute OFF; exam (place 1inch away from soft tissue): 60sec (Pulse Power Mode) ON/1 minute OFF.

Shutoff	Timer auto shutoff; User shut off anytime by pressing ON/OFF Key; Low battery auto shutoff; Overheat auto shutoff. Self-protection shutoff is accompanied by warning backlight and audible beep as well as flashing THERMOMETER or BATTERY BAR symbols.
Overcurrent Protection	Auto
Light Dimension (mm)	Length: 200; Width: 22; Height: 22
Charging Dock Dimensions (mm)	Height: 45; Diameter:44
Weight (grams):	Handpiece: 111; Charging Stand: 89
Safety	IEC 60601-1
EMC Compliance	IEC 60601-1-2
Protection from Electric shock	Type BF 
Protection from ingress of liquids	IPX0
Operating environment	Ambient temperature: 50F to 86F (10°C to 30°C) Relative humidity: 10%-80%, non-condensing, Atmospheric pressure:0.5-atm to 1.0-atm(500hPa-1060hPa)
Storage environment	Ambient temperature: 14F to 104F (-10°C to 40°C) Relative humidity: 10%-80%, non-condensing, Atmospheric pressure:0.5-atm to 1.0-atm(500hPa-1060hPa)

* Measured absolute irradiance using calibrated optical spectrometer.

Limited Two-Year WARRANTY

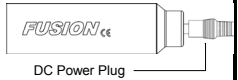
Register your FUSION curing light at <http://www.dentlight.com/>. DentLight Inc. extends a two-year warranty against defects in material and workmanship to the original purchaser of this product from an Authorized dealer, except the Battery Assembly and Charging Stand (one-year warranty). This warranty is valid providing factory inspection indicates that any such defect was developed during normal and proper use. DentLight shall under no circumstances be liable for incidental, special, consequential damages and damage from misuse including the following expressed or implied:

- Improper operation, accident or neglect, misuse or abuse, such as physical damage (dents, scratches, etc.);
- Liquid, water, rain, extreme humidity, ultrasonic, autoclaving;
- Tampering, improper repairs or modifications that have not been carried out by a certified Service Center;
- Use of other spare parts and accessories than from the manufacturer such as incorrect power adapter;
- Other acts which are not the faults of DentLight.

For service, call 1-800-763-6901 (in US) to obtain RMA number. Fill out [RMA form](#) online, carriage paid, and return as instructed in the RMA form to DentLight. In case of a warranty claim, the complete apparatus must be returned. Alternatively, contact your dealer for service handling and return.

Troubleshooting Guide

Problem	Error Indication	Possible Solutions
Light will not turn on	1. LCD is blank. 2. Buzzing noise when charging.	1) Press and hold Power Key. 2) Charge Battery Assembly directly alone (disconnect from Main Control and bypass Charging Stand) overnight.
	Handpiece is overheated. LED Light Head gets hot.	Direct an air stream from an air syringe or high-speed vacuum tip to the light tip, or wait for cool down.
	1. Key is not working. 2. Timer counts down but no light.	Contact manufacturer or your local dealer for service.
Light does not stay on for desired time	1. One or no Battery Bars. 2. Bad connection or contacts.	1) Charge Handpiece directly (bypass Charging Stand) for 1 hour. 2) Check connection pins to make sure that they are not damaged. If problems persist, contact your dealer or Manufacturer for Service.
Light generates too much heat	Patient feeling discomfort	1) Cure ≤10 seconds per layer. 2) Direct an air stream from an air syringe or high-speed vacuum tip. 3) Adjust to Half Power Mode; 4) Adjust curing distance.
Battery will not charge	1. Broken pins in Charging Stand. 2. Electronic defect in Battery.	1. Bypass, replace or service Charging Stand. 2. Replace or service Battery Assembly.



Reorder and Optional Item Codes

PN	Description	PN	Description
7500080-08X	FUSION Curing Light Kit (X: color code)*	7500060X	LED Light Head (X: color code)*
7500082	Barrier Sleeves (100/pack)	7500060U	Violet Light Head
7500081	Curing Caps – 9mm (50/pack)	7500060W	White Light Head
7500081B	Curing Caps – 13mm (50/pack)	7500093	Lens Module (Focus)
7500081C	Curing Caps – 3mm (20/pack)	7500095	Lens Tool
7500083X	Charging Stand (X: color code)*	7500071	Dental Unit Charge Holder Kit
7600084-08X	Battery Assembly (X: color code)*	7511010	Full-arch Bleaching Attachment
7500085Y	Power Adapter (Y: country code)**	7511011	FUSION Bleaching Starter Kit
7500050X	Main Control (X: color code)*	7500102	FUSION-DOE Starter Kit
7500092	Light Shield	7700012	FUSION-DOE Kit

* X: blank (Silver), B (Blue), P (Pink), G (Gold); ** Y: US, EU, AU (Australia)

DentLight Inc. 

1825 Summit Ave. #210
Plano, TX 75074, US
Tel: (800) 763 6901
Outside US: 1-972-889-8857
www.dentlight.com

Emergo Group



Molenstraat 15
2513 BH The Hague
Netherlands
Tel: +31(0)70 345 8570
Fax: +31(0)70 346 7299

