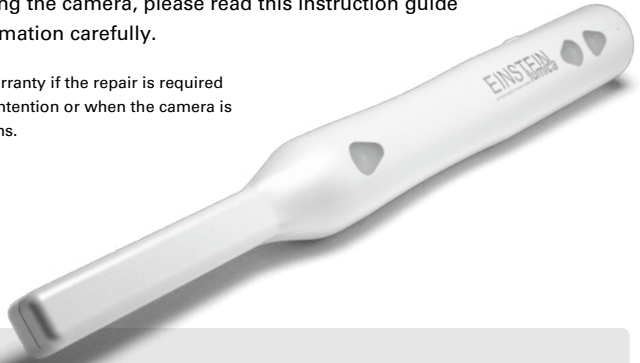


## User Guide

Thank you for purchasing the wireless digital intraoral camera, Einstein Lumica. This document includes the important information to ensure the safe usage of Einstein Lumica. Before using the camera, please read this instruction guide thoroughly and safety information carefully.

It may not be covered under its warranty if the repair is required due to the failure caused by your intention or when the camera is used under the abnormal conditions.



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## PACKAGED ITEMS

Please confirm that all items shown below are included in the package. If you find any part missing, defective, or damaged, please contact us.



EINSTEIN Lumica Unit (x1)



Charging Stand (x1)



Lens Protective Sheets (x5 sheets)



Battery Pack (x1)



Magnet Sheet for Charging Stand (x1)

\*Please place this at the bottom of charging stand to stabilize it.



Disposable Covers (x100 sleeves)

# WARNINGS AND CAUTIONS

## Basic Warnings

---

- Do not dismantle or modify the product.
  - Do not open the main unit case. It is dangerous to touch the internal components, and may cause damages.
  - If the product case is opened, the product warranty is voided regardless of the remaining warranty term.
- Use the enclosed or the designated battery pack, power cable, AC adaptor, charging stand, disposable covers, and lens protective sheets; provided by RF.
  - It may cause a fire, an electric shock, damages or system failure if any other items were used.
- Do not insert any metallic object into the charging hole at the bottom of the product. It may cause a damage or system failure.
- Do not drop or give a strong impact onto the product.

## Environmental Cautions

---

- This product is recommended to be used in the following conditions.
  - Temperature: Between 15°C (59°F) to 35°C (95°F)
  - Humidity: Between 30% to 70%
- This product is a short-run operation unit. Avoid using the product for more than 10 minutes.
- Though a continuous usage will not damage the product, it may cause the product to have a heat (above or higher than 40°C (105°F) ) and may cause a low level of burn when the product is in continuous operation.

## Information on Handling

---

- Please read this instruction and safety information carefully, and start using this product after inspecting its operation.
- Use the attached / designated disposable covers and lens protective sheets when you use this product. Do not use the used covers or sheets.
- Use this product in the place of 1.0m (3 ft.) away from any items that generates a strong electromagnetic waves. It may cause malfunctioning.
- Turn off the power and stop using the product immediately when smoke reeked up from the main unit or it has unusual noise or odor.
- Contact RF (Email: os@rfsystemlab.com) when the product is malfunctioning or its operation is strange even by following this user's guide instruction.

## Precautions for Maintenance and Daily Check

---

- Keep this product clean by cleaning up in the way described in this instructions (Page. 12), and store it in a sanitary environment.
- Do not use any chlorine bleach or a volatile organic solvent, like benzene or thinner, or a chemical fiber duster.
  - It may cause a damage or a scratch on the product.
- Do not use in any sterilizer such as autoclave machine.
- Please dispose the used disposable covers or lens protective sheets, following by regulations or legislations in your area.
- This product is precision mechanical equipment. Avoid installation of this product in the following environment.
  - Nearby any heat generating units (a stove, heater, etc). • Places where water may splash onto it.
  - Places where saliva or blood may cover or adhere to a disposable cover or lens protective sheet.
  - Places with a strong vibration or unstable or sloping ground
- Transport and store this product in the following environment.
  - Temperature: Between -5°C (23°F) to 50°C (122°F)
  - Humidity: Between 20%RH to 80%RH (Avoid condensation or freezing)
  - Atmospheric pressure: Between 750hPa (750mB) and 1060hPa (1060mB)

## Cautions about Charging

---

- Firmly connect a charging stand and its power cable, to avoid a sudden disconnection.
- Do not bend a cable by force or put a heavy staff on a cable, to avoid a break.
- Do not use a damaged cable. It may cause a system failure.
- Do not touch a power plug, DC jack, or power cable with wet hands. It may cause an electric shock.
- Unplug the power cable from the power outlet when lightning strike can be happening.
- Unplug the power cable from the power outlet if this product is not in use for a long time.

## Cautions for Combination Usage

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- Avoid using this product along with the following devices:
  - A self-contained device such as pacemaker and self-contained defibrillator.
  - A wearable medical device such as electrocardiograph.

This product is a device to display or capture an intraoral condition taken by a CCD, in order to provide better understandings on your treatment from patients or to provide better informed consent for patients.

# PRECAUTIONS FOR SAFE USAGE

Be sure to read and understand the Precautions for Safe Use section thoroughly for proper and safe use. It includes important contents for safe use and to avoid any injury or damage to your property.

**PROHIBITION** Do not stare at the white LED light of this product. It may cause a trouble for your optic health when staring at it for a long time.

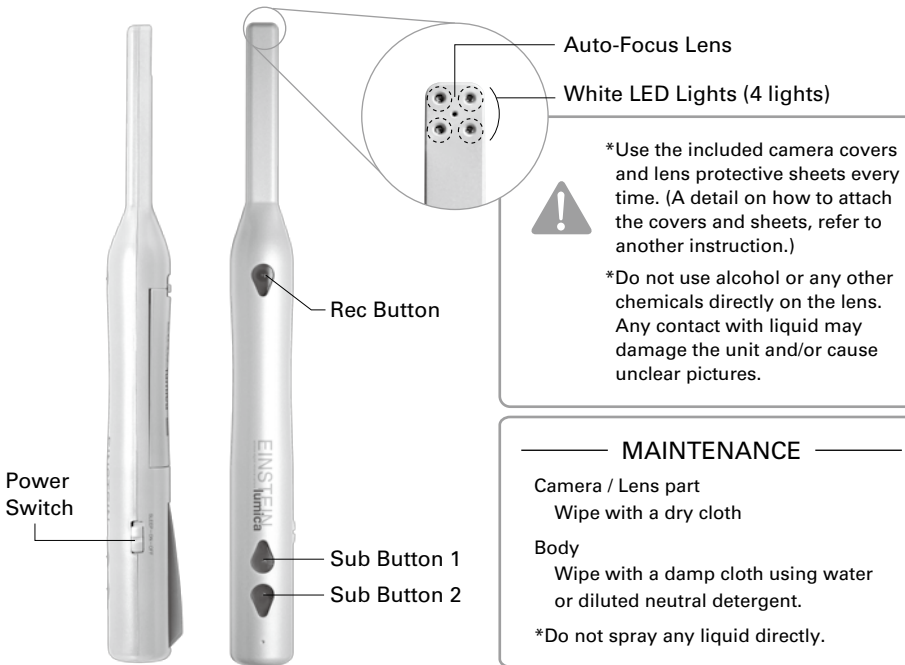


**CAUTIONS** The camera product is not waterproof. Do not wipe the lens part with alcohol or any organic solvent for cleaning. It may cause a blurry image or malfunction. (See below.) Please use the product by covering with a designated disposable covers and lens protective sheets for a sanitary purpose.



Charge the camera in the way described in this instruction on Page 10.

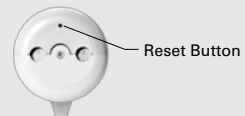
# FEATURES



## Reset Switch

Einstein Lumica contains the onboard CPU, and all operations are controlled by it. Therefore, there may be an occasion that it freezes (stops working) similar to a computer. If it freezes or stops working, turn off the camera by pressing the reset button located on the bottom of the camera with a fine-tipped object; wire, paper clip, etc. The reset button deletes all stored images.

[Bottom view]



# BASIC OPERATION

## Attaching Lens Protection Sheet

Make sure to attach a lens protective sheet prior to use (refer to another instruction to see how to attach the sheet). This sheet is to avoid any dust to contact the lens.

\*It does not require to be replaced every time. Replace the sheet when the image becomes blurry. (Recommended term: Once a month)

## Attaching Disposable Covers

Make sure to attach a disposable cover prior to use (refer to another instruction to see how to attach the cover).

\*Use a new cover each time.



- It may cause a blurry image due to a dust or fogged lens when used without attaching a lens protective sheet and/or a disposable cover.
- Do not reuse the used disposable cover. Make sure to use a new cover each time.
- Dispose the used disposable covers or lens protective sheets, following by regulations or legislations in your area.

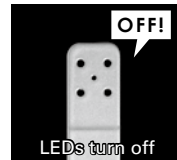
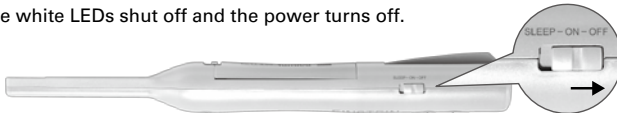
## Turning On

Slide the power switch to the left (up). The LEDs flash and the power is on.



## Turning Off

Slide the power switch to the right (down). The white LEDs shut off and the power turns off.



The captured images saved on its on-board memory are deleted in 10 sec. after turning off the power. The images remain on its on-board memory when turning on the power within the 10 sec.

## Operating Time

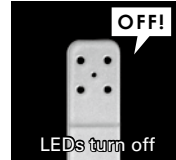
Avoid to use the product more than 10 minutes. The product will not be damaged, but it may cause the product to have a heat (about or higher than 40°C(105°F)) and may cause a low level of burn injury when the product is continuously in operation.

## Sleep Mode

The sleep mode is to save the consumption power of the unit by turning off the camera function on the unit while keeping the captured images on its on-board memory.

The camera goes into the sleep mode when:

- 1) Sliding the power switch to "SLEEP".



To return to the live mode, slide the power switch back to "ON".

- 2) Placing the camera unit in the charging stand while the power is on.

To return to the live mode, taking the camera out of the charging stand.

- 3) Leaving the camera without operating it for 3 minutes.

(It does not go into the sleep mode while the camera unit is up standing.)

To return to the live mode, bring or move the camera unit.



Make sure not to leave the camera in the sleep mode without placing it into the charging stand for a long time. When the battery goes out, the images on memory will be deleted. It is recommended to have the camera unit placed into the charging stand while it is in the sleep mode.

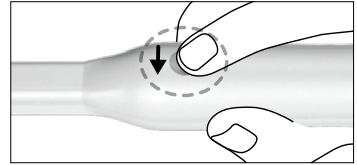
## Capturing Images



1. Turn on the power and confirm the white LEDs are on. Bring the tip of the camera closer to the object.
2. Push the Rec button.

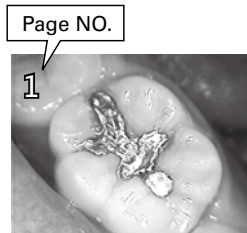
\* You may want to change the display mode to display the image in the preferable way. The display mode changes from normal, mirror, reflection (vertical), and 180 degree rotation.

(Refer to Changing Display Setting on page 8.)

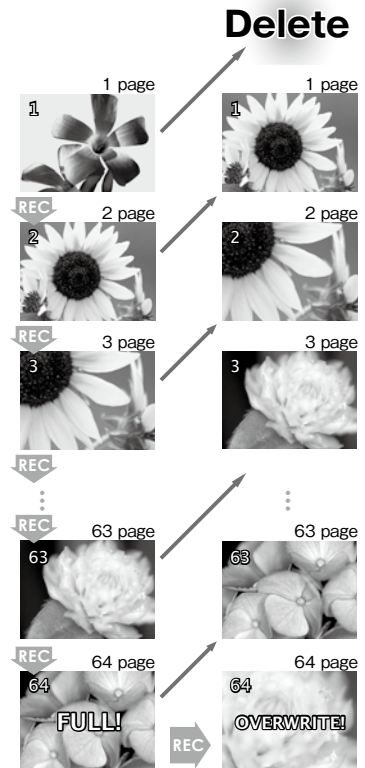


The image will be captured to its on-board memory. The unit can hold up to 64 images on its on-board memory.

The captured image shows the page number at the right top corner of the display. Once the on-board memory becomes full, the warning message "FULL" appears on the display.



The image captured after the 64th image will be stored as the 64th image. ("OVERWRITE!" will be displayed)  
The image 1 will be deleted the image 2 will be displayed as the image 1.



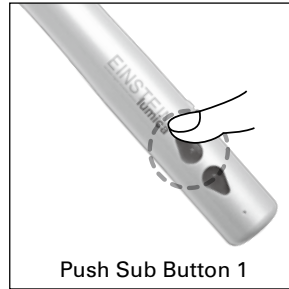
This on-board memory is to review the captured images for instant review. Make sure to save the important images to a computer or other hardware.

## Reviewing Captured Images

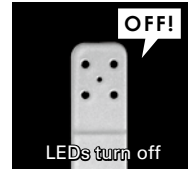


Pushing Sub Buttons turns the captured images forward or backward forward or back captured image.

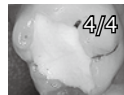
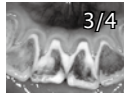
\*The LEDs turn off while reviewing the captured images.



Push Sub Button 1

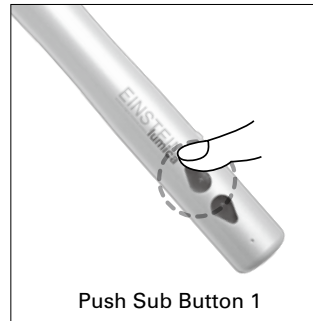
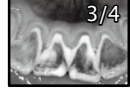
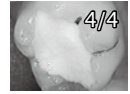


Push Sub Button 2,  
to view the stored images  
in forward order.



Push Sub Button 2

Push Sub Button 1,  
to view the stored images  
in back order.



Push Sub Button 1



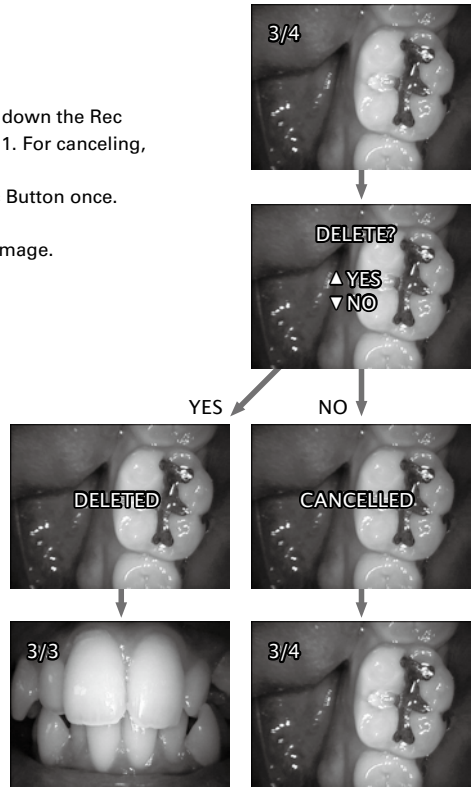
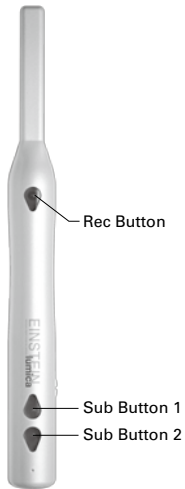
Store and delete photos for every new patient (refer to page 11), and do not use the previous patient's images for the new patient.

## Deleting Captured Images

The message "Delete?" will appear when you hold down the Rec Button for a second. For deleting, push Sub Button 1. For canceling, push Sub Button 2.

\*For going back to the Capture Mode, push the Rec Button once.

The next image will appear in place of the deleted image.



## Going Back to the Capture Mode

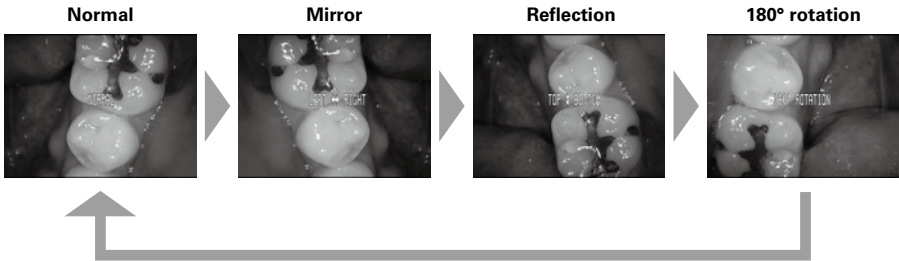
Push Rec Button to go back to the Capture Mode.



## CHANGING DISPLAY SETTING

The live display in Captured Mode can be switched to mirror image by pushing Sub Button 2. The display mode changes from normal, mirror, reflection (vertical), and 180 degree rotation as you push Sub Button 2.

By pushing Rec Button, it captures the image in a direction that the image is displayed.

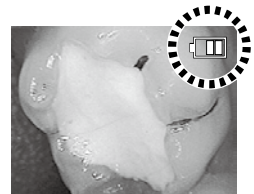


\*Indication on the display will disappear in a few seconds.

## CONFIRMING BATTERY LEVEL



The battery level indicator appears when the power is turned on. The indicator icon disappears after a few seconds.



■ The battery level indicator is only for your reference. The actual time length varies depending on the environment and frequency.

■ When the indication bar becomes one, the camera goes into Auto-Off mode within 10 minutes\*. Charge the battery before it goes into the Auto-Off mode.

\*This is the guideline at the time of purchase.

■ Once the power is turned off, all stored images will be deleted.

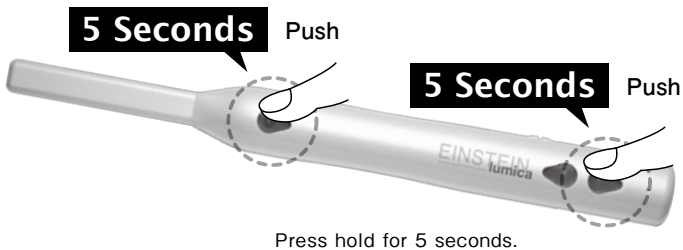
## Image Color Adjustment

Depending on your preferences, the most suitable hue can be selected from 5 patterns.



For the changing the color, please make sure to save images in the camera memory to computers as the adjustment involves the camera to delete the images on its memory onboard.

1. Change the operation mode from “Capture” to “Sleep”.  
\*Switching the operation mode from “Review” to “Sleep”, it does not allow you to select the adjustment patterns.
2. Reboot the camera from the “Sleep” mode.
3. Press Rec and Sub Buttons simultaneously before the message “WAKE UP” appears.  
Press hold for 5 seconds.

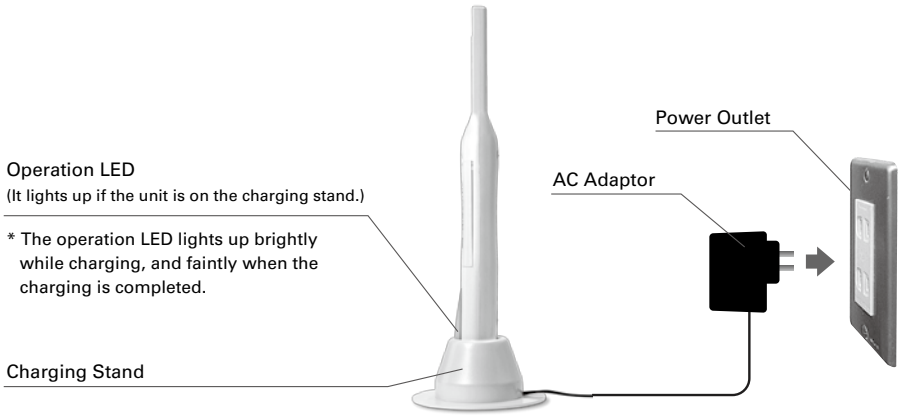


4. Choose the optimum coloration by pressing Sub Button 1 or 2.



5. Turn off the power by sliding the switch on the side of the camera. When rebooting the camera, images are displayed with the selected hue.

# RECHARGING



- ① Plug the AC adaptor into the power outlet.
  - ② Place the Einstein Lumica onto the charging stand. (The operation LED lights up to indicate it is charging\*.)
  - ③ It takes approximately 2 hours to complete the charge. (The operation LED lights up faintly.)
- \*If the battery has enough charge, the operation LED does not light up.



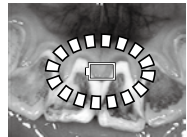
- Do not bend a cable by force or put a heavy staff on a cable, to avoid a break.
- Do not use a damaged cable. It may cause a system failure.
- Do not touch a power plug, DC jack, or power cable with wet hands. It may cause an electric shock.



## Remaining Battery Level

The unit may not be fully charged when it is shipped. Please charge the unit completely prior to use.

When the battery is running low, the low battery icon appears on the display and the operation LED on the unit starts flashing. In this case, the camera will shut off within 1 minute, so place the camera into the charging stand immediately.



If the camera is charged for a long period of time, make sure to shut off the camera before placing it into the charging stand.

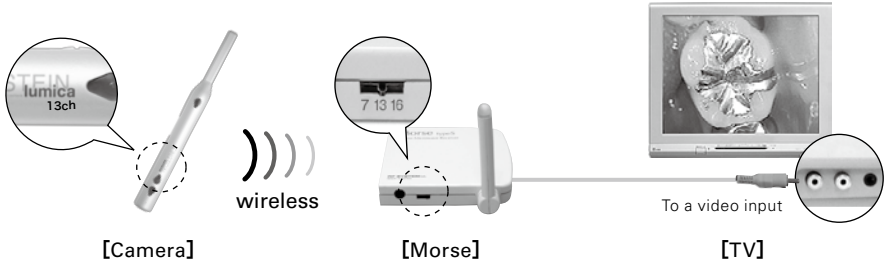
When the camera is in the sleep mode, it repeats discharge and recharge of the power on the battery. If the camera resumes from the sleep mode while it is discharging, the battery level indicator may not be displayed in full, but it is not a failure of the unit. Turn off the camera and charge the battery completely to avoid the low charge.

# TRANSFERRING IMAGES WIRELESSLY

To use with hard disc recorders or computers, it is recommended to use RF receivers.

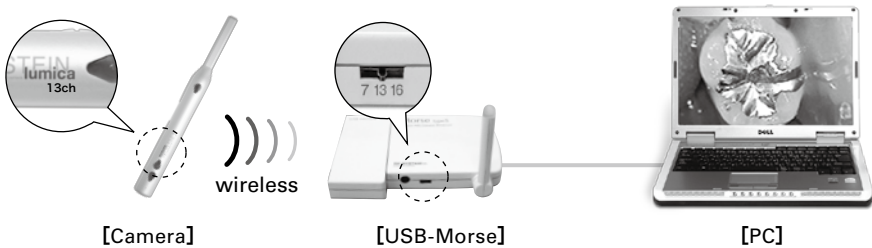
## Viewing on a TV

Connect our wireless video microwave receiver Morse typeS into any device equipped with a video input; TV, video printer, etc., to view images.



## Importing into a Computer

Connect our wireless USB interface Morse typeS into the USB port on your computer to view images.



## Viewing on a Charside Monitor

The images can be transmitted onto our TFT monitor (Doctor's Station, etc.) wirelessly.



## AFTER USAGE

**Do not reuse the same disposable cover each time.**

**Keep this product clean by cleaning up in the following way:**

### ■ Maintenance and Cleaning

- Do not use any chlorine bleach or a volatile organic solvent, like benzene or thinner, or a chemical fiber duster. It may cause a damage or a scratch on the product.
- Do not use in any sterilizer such as a autoclave machine.



Be careful when cleaning up the tip of the camera (near the lens part) to avoid a contact to the lens. It may cause a blurry image or malfunction if any contact has been made to the lens.

### ■ Storage and Transport

- Store this product in a box when not using for a long time. Or store it in a charging stand and keep it where water may not splash and no dust may not be generated.
- Store this product in a box when not using for a long time. Or store it in a charging stand and keep it where water may not splash and no dust may not be generated

Transport or store this product in a following condition.

Temperature: Between  $-5^{\circ}\text{C}$  ( $23^{\circ}\text{F}$ ) to  $50^{\circ}\text{C}$  ( $122^{\circ}\text{F}$ )

Humidity: Between 20%RH to 80%RH (Avoid condensation or freezing)

Atmospheric pressure: Between 750hPa (750mB) and 1060hPa (1060mB)

### ■ When Transport

Pack this product carefully with a buffer or cushioning material, and put them into a proper-sized box (cardboard or crate). Make sure the product stays still with cushioning materials in the box. While transportation, avoid water or dust to contact the inside and avoid a strong shock to the box.

**■ Please dispose the used disposable covers or lens protective sheets, following by regulations or legislations in your area.**

### ■ Safety Check (Recommended to be done monthly)

- Whether the functions listed on the user guide operate normally.
- Whether camera is used normally after charging.
- Whether there are no loose screws on the camera body.
- Whether there are no cracks on the body.
- Whether the AC Adaptor is connected properly.

## Q & A (Troubleshooting)

<p>The white LEDs (4 lights) of the camera are on, but there is no picture on the display.</p>	<p><b>[With RF receivers]</b> Is the channel setting correct? Set the channel on the receiver to the corresponding camera channel. The camera channel is indicated on the hand piece (refer to Page 11).</p> <p><b>[On Doctor's Station Monitor]</b> Is the channel setting correct? Set the channel on the Doctor's Station monitor to the corresponding camera channel (refer to the user guide of Doctor's Station for more details).</p> <p><u>⟨After checking the channel setting, confirm the followings:⟩</u></p> <p><b>TV... Confirm your TV is set on the "input" channel.</b></p> <p><b>PC (with USB Morse):</b> Confirm the selected device is correct under Digital Video Input Setting on the software (refer to the user guide of USB Morse for more details).</p> <p><b>PC (with Morse with a video capture card and other dental imaging software):</b> Confirm the selected video source is correct for your video capture card on the software (consult how to import the images from the video capture card with your software manufacturer, as each software has different setting procedures).</p>
<p>There are lines/noises on the displayed image.</p>	<p><b>1) Is your camera fully charged?</b> Charge the camera (refer to Page 10).</p> <p><b>2) It may be caused by "Multi Path Interference".</b> Please change the location of the receiver and the camera.</p> <p><b>3) Is there any airport, military base or radio station within 3 km / 2 miles radius?</b> If so, please contact RF technical support (E-mail: os@rfsystemlab.com).</p> <p><b>4) Is there any equipment that might generate electromagnetic noise (i.e., PC, monitor, TV, printer, or a video player)?</b> Please change the location to 30cm (a foot) away from such equipment.</p> <p><b>5) Is the power switch "ON"?</b> Make sure to slide the power switch to "ON". If it is on "SLEEP", it goes to the sleep mode.</p>
<p>The power does not turn on/off by sliding the power button.</p>	<p>The camera has the on-board CPU and the CPU is controlling all operation. Therefore, there may be an occasion that it freezes (stops working) similar to a computer. For such case, press the reset button with fine-tipped object to reset the unit. Be aware that pressing the reset button will erase all stored images in Einstein Lumica. (Refer to Page 2 for more details.)</p>

The charge does not hold even for 5 minutes.

■ **The battery may be worn out (the estimated life expectancy is 1 year).**

There is a life span for any rechargeable battery. If the run time drastically decreases even with the full charge, the battery may be worn out. For purchasing a replacement battery, please contact RF (E-mail: os@rfsystemlab.com).

## SPECIFICATIONS Short-Time Operating Device (10 min.)

### Camera:

- Power On-Board Device
- BF Applied Part
- 1/4-inch Color CCD
- White LED x4
- Image Memory SDRAM 64Mbit
- Battery: Lithium Polymer Battery 3.7V 450mAh
- Dimensions:  $\varnothing$ 25mm x 25mm
- Weight: 64.5g

### Charging Stand:

- Power Input: AC 100V 50-60Hz
- Power Output: DC 6V 0.85A

## TECHNICAL SUPPORT

**TEL:1-866-535-7519 FAX:1-800-799-9895**

**Email:os@rfsystemlab.com**

[www.rfsystemlab.com/en/](http://www.rfsystemlab.com/en/)

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