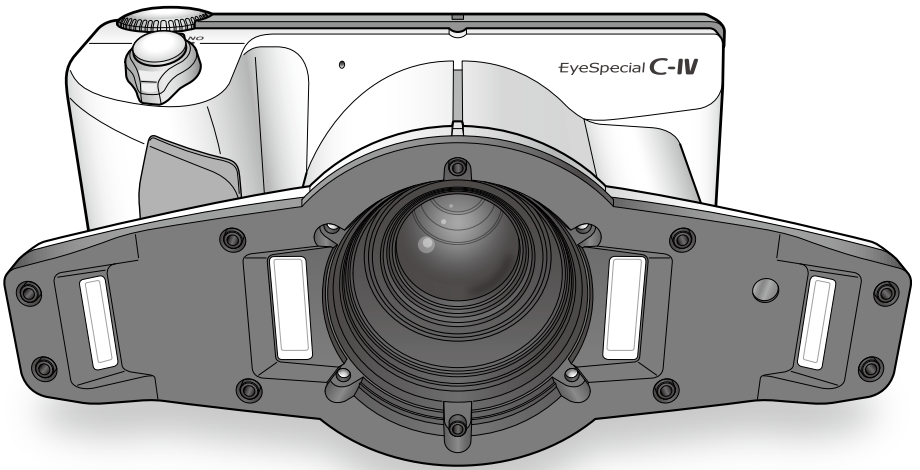
Read through the “Important Safety Instructions” included in the package carefully before using your camera.



Smart digital camera designed exclusively for dentistry

EyeSpecial C-IV

Advanced Manual

SHOFU INC.

Before using your camera

Thank you for purchasing our EyeSpecial C-IV. The instructions mentioned below provide necessary information on successful operation, daily maintenance and safe use of this unit.
Please read this manual carefully before use to attain maximum benefits during function and ensure durability of this unit.
Kindly keep this manual for your future reference.

Intended use

To take intraoral photography for documentation of dental procedures.

Important precautions

For your safety

- Read through the “Important Safety Instructions” included in the package carefully for safe and correct use.

Notice

- No part of this document may be copied or reproduced in any form by any means.
- Some information in this document might become inconsistent with the product due to product software updates.
- The information in this document is subject to change without prior notice.
- All relevant issues have been considered in the preparation of this document. However, should you notice an omission or any questionable item in this document, please feel free to notify your SHOFU dealer.
- In case of missing pages or disorder, please contact our local dealer for replacement.

Test shot

- Be sure to take some test shots before taking actual clinical photos to make sure that the camera is working properly.

Data back-up

- SD memory card or Multi Media Card can be damaged by dropping or strong static electricity and the data may be lost. Always back-up all important data in multiple locations, to your PC, CD-R, removable HDD etc.

Copyright

- Any pictures that you take of existing images may be used for personal use only. Any unauthorized copying, hiring, lending, public performance might violate the copyright of rightful owner.
- Copyright law prohibits the use of pictures without the permissions of the rightful owner.

Privacy policy

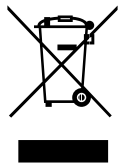
- The information, which can identify the specific individuals, might belong to the “Personal Information” stipulated in the “Act on the protection of the Personal Information”. Handle all images properly in accordance with local laws and regulations.

Indemnity

- In no event shall SHOFU be liable for any infringement of privacy and damages, including, without limitation, direct, indirect, incidental, special, consequential, or punitive damages arising out of the use of the images taken with this camera.
- SHOFU will repair and replace main body and its system in case of defect within the warranty period. However, we do not assume any responsibility for subsequent damages arising from the failure of the unit beyond the warranty period.

Disposal

- This symbol means: Do not dispose of this product together with your household waste!
  Please refer to the information of your local community or contact our dealers regarding the proper handling of end-of-life electric and electronic equipment. Recycling of this product will help to conserve natural resources and prevent potential negative consequences for the environment and human health caused by inappropriate waste handling.



For the latest information of EyeSpecial C-IV, visit our website at http://www.shofu.com. Select the region you purchased the camera.

CAUTION

EyeSpecial C-IV conforms to the following standard for interference from radio frequencies:

· Class B of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI)

· Part 15 Class B of Federal Communications Commission (FCC).
This product may cause radio interference during its use.
In such cases, users may be required to take appropriate steps. VCCI-B

· SD, SDHC, and SDXC Logos are trademarks of SD-3C, LLC.

· HDMI Logo and High-Definition Multimedia Interface are trademarks or registered trademarks of Administrator, Inc.

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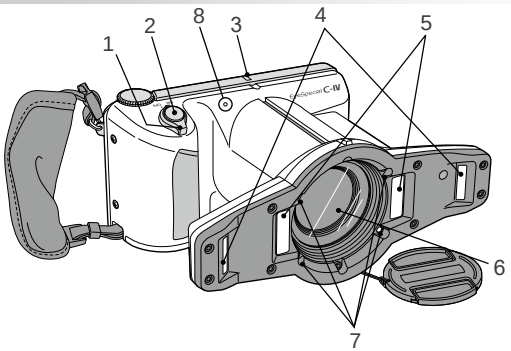
Names of parts

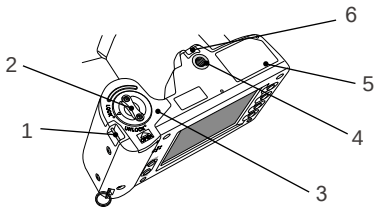
Front view



No.	Part name	Explanations
1	Power switch	To turn the camera on / off
2	Shutter button	When taking photographs, half press to auto-focus. Then, press down completely to capture the image.
3	Pilot lamp	Indicates working state of the camera by the color and flash of the light
4	Outside flash	Flashes in Low-glare, Whitening, Tele-macro and Isolate shade modes. Can select to use right, left or both flashes by changing the flash mode.
5	Inside flash	Flashes in Standard, Surgery, Mirror, Tele-macro, and Face modes. Can select to use right, left or both flashes by changing the flash mode (both flashes work in Surgery and Face modes).
6	Lens	-
7	LED light	Improves focus capabilities on dark areas of the subject. Half press the shutter button. The light remains on for 10 seconds after releasing the button. The flash will then automatically turn off immediately before taking a picture. The lights can be turned on all the time while recording a movie.
8	Microphone	-

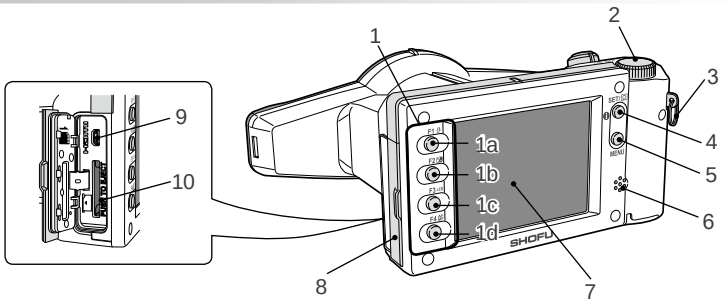
Action of light	Working state of the camera
Green light lit.	The camera is working properly.
Green light blinking.	Power save mode is activated.
Orange light lit.	The camera is connecting to SD memory card. During this time the SD memory card or batteries should not be taken out of the camera in order to avoid losing the data.
Orange light blinking.	Malfunction is detected during activation or operation.
Red light lit.	Lens error is detected.

Bottom view



No.	Part name	Explanations
1	Strap eyelet	Holds the hand strap
2	Lock lever	Locks the battery cover shut
3	Battery cover	Holds batteries in place. Batteries are placed in the battery cells.
4	Tripod socket	To affix to a tripod
5	Name plate	Lot number etc is described on it.
6	Strap hole	Hole to attach the lens cap string

Back and side views



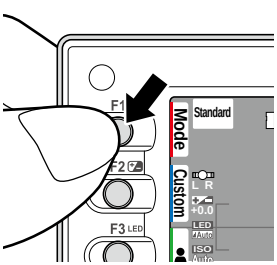
No.	Part name	Explanations
1	Function keys 1a:F1 1b:F2 1c:F3 1d:F4	Function changes depending on the mode you select. Function is displayed on the LCD screen.
2	Dial key	Changes magnification rate, forward or rewind the image taken and scrolls through items in Menu.
3	Strap mount	Holds the hand strap

<table>
<tr><th>No.</th><th>Part name</th><th>Explanations</th></tr>
<tr><td>4</td><td>SET key</td><td>
<table>
<tr><th>Camera mode</th><th>Function</th></tr>
<tr><td>Shooting mode</td><td>Brief press : Change magnification rate of instant playback.
Long press : Picture information turns on and off.</td></tr>
<tr><td>Playback mode (original size)</td><td>Brief press : Display patient information.
Long press : Picture information turns on and off.</td></tr>
<tr><td>Playback mode Thumbnail images</td><td>Brief press : Select image
Long press : -</td></tr>
<tr><td>Menu</td><td>Brief press : Confirm the selected item
Long press : -</td></tr>
</table>
</td></tr>
<tr><td>5</td><td>MENU key</td><td>To display Menus.</td></tr>
<tr><td>6</td><td>Speaker</td><td>To output key sounds and shutter sound</td></tr>
<tr><td>7</td><td>Liquid crystal display monitor (with touch panel function)</td><td>To display images and menu. You can operate the camera by directly touching the keys on the screen.</td></tr>
<tr><td>8</td><td>Card slot / HDMI connector cover</td><td>SD Memory card slot and video out connector are inside.</td></tr>
<tr><td>9</td><td>HDMI connector (Micro HDMI)</td><td>To play images / movies on the liquid crystal projector of electric devices with HDMI terminal.</td></tr>
<tr><td>10</td><td>SD memory card slot</td><td>To insert SD/SDHC/SDXC memory card</td></tr>
</table>

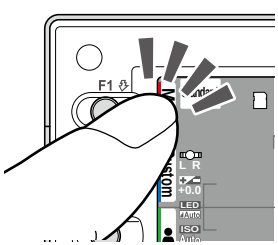
Function keys

F1 – (F4 key)s are function keys which will change depending on the mode you select. They are displayed on the upper left of the display. You can either press the key or directly touch the screen to operate these functions. You can also use the color bars appearing on the right side of the screen. Color bars on the right side correspond to the function keys on the left side of the screen.

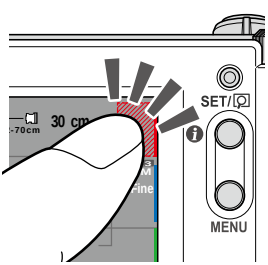
In other words, "Press Mode (F1)", can be achieved by depressing either the physical "F1" key, or the corresponding color bar (or tab) on the digital display on the left (or right) side of the screen.



Press keys



Color tabs

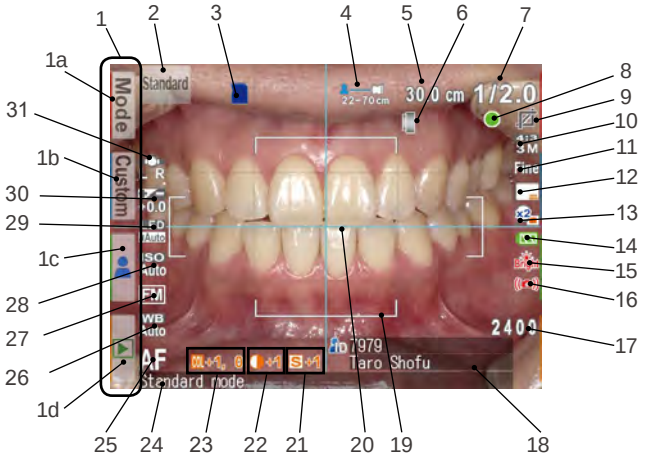


Color bars

LCD screen indicator

Information described on the LCD screen for Shooting mode and Playback mode, respectively, is as follows;

Shooting mode



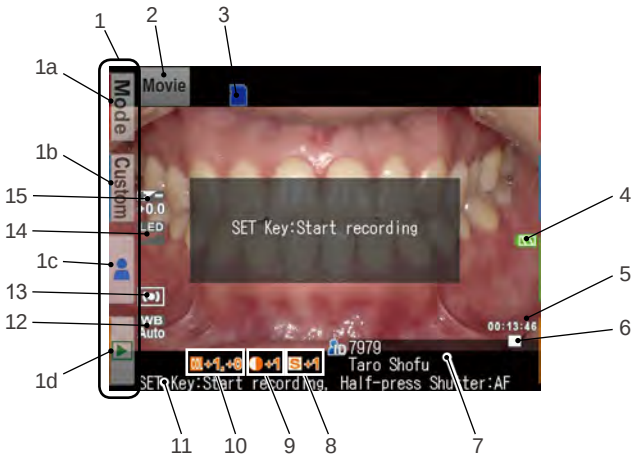
- **Still images**

No.	Items	Explanations	Reference
1	Function tabs	Function changes depending on the mode you select. The functions available are displayed on the LCD monitor.	-
	1a: Preinstalled modes	Preinstalled modes are displayed.	P.22
	1b: Custom modes	Custom modes are displayed.	P.24
	1c: Edit patient information	Menus to edit patient information are displayed.	P.19
	1d: Playback mode	To change to Playback mode	P.59
2	Active shooting mode	Current mode you select is displayed.	P.23
3	Card indicator	Appears when the camera recognizes the SD card.	-
4	Possible distance range	Possible distance range from the target at current magnification rate.	P.30 P.31
5	[before AF] Optimal focus distance [after AF] Actual focus distance	[before AF] Optimal focus distance at the current magnification rate is indicated. [after AF] Actual focus distance from the target after focusing is in green or red. Green : Within possible distance range Red : Outside possible distance range	P.30 P.32
6	Close-up lens mark	Appears when the close-up lens is required.	P.36
7	Current magnification rate	Magnification rate currently selected is indicated.	P.28

No.	Items	Explanations	Reference
8	Focus	Indicate the focus is appropriate or inappropriate when auto-focused. (Green) : Focused properly (Red) : Not focused properly	P.32
9	Auto-cropping	Appears when auto-cropping is available. The sign is in green or red. Green : Auto-cropping in range Red : Auto-cropping out of range	P.32
10	Image size	Horizontal to vertical ratio of the image is indicated.	P.84
11	Image quality	Selected image quality is indicated.	P.84
12	Image information	Indicated only when it's set "ON".	P.85
13	Preview image enlarged	Appears when the preview image is magnified. : Displayed when the center of the image is magnified twice. : Displayed when the center of the image is magnified four times.	P.40
14	Battery indicator	Remaining battery power is indicated.	P.17
15	Brightness warning sign	Appears when the brightness of the object is inappropriate. : The object is too bright. (Whitening mode only) : The object is too dark. (Face and Tele-macro modes only)	-
16	Image instability	Appears when the image is unstable. Hold the camera firmly and stably.	P.48
17	Storage capability	Remaining storage capacity is indicated when current image size and quality are continued to use. When "0000" appears, the memory card is full.	P.14
18	Patient information	Patient information is indicated when it's registered.	P.19 - P.21
19	AF Frame	Auto-focus range.	P.33
20	Focusing screen	Grid to focus properly	P.74
21	Sharpness	Sharpness of the image to be taken is indicated. *	P.77
22	Contrast	Contrast of the image to be taken is indicated. *	P.77
23	Hue	Hue of the image to be taken is indicated. *	P.77
24	Instant message	Operation method, shooting mode or other message is indicated.	-
25	Focus mode	Indicates the focus mode.	P.72
26	White balance	Indicates the current white balance.	P.76
27	AE mode	Indicates the current Auto-Exposure mode	P.75
28	ISO speed	Indicates the current ISO speed.	P.75
29	LED lighting	Indicates that the LED light is on or off as well as its light intensity.	P.72
30	Brightness compensation	Indicates current state of brightness compensation.	P.71
31	Flash mode	Indicates the current flash mode. is indicated while flash is being charged.	P.71

* Symbols of 21-24 are not indicated on the screen in default setting.

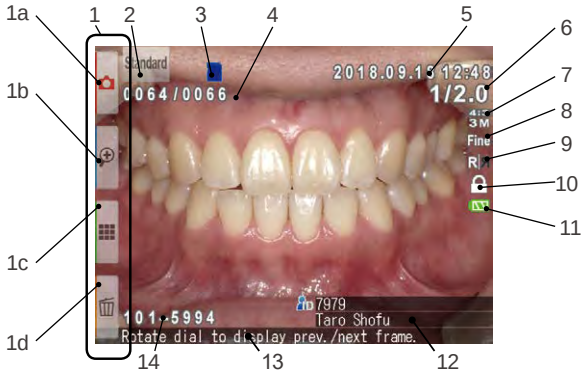
● Movies



No.	Items	Explanations	Reference
1	Function tabs	Function changes depending on the mode you select. The functions available are displayed on the LCD monitor.	-
	1a: Preinstalled modes	Preinstalled modes are displayed.	P.22
	1b: Custom modes	Custom modes are displayed.	P.24
	1c: Edit patient information	Menus to edit patient information are displayed.	P.19
	1d: Playback mode	To change to Playback mode	P.59
2	Active shooting mode	Current mode you select is displayed.	P.23
3	Card indicator	Appears when the camera recognizes the SD card.	-
4	Battery indicator	Remaining battery power is indicated.	P.17
5	Recordable time for a movie Recording time	Remaining recordable time is indicated. Duration of a movie being recorded is indicated.	-
6	Working state	●REC is indicated while recording a movie. ■ is indicated when stop recording a movie.	-
7	Patient information	Patient information is indicated when it's registered.	P.19 - P.21
8	Sharpness	Sharpness of the image to be recorded is indicated.*	P.77
9	Contrast	Color contrast of the image to be recorded is indicated.*	P.77
10	Hue	Hue of the image to be recorded is indicated.*	P.77
11	Instant message	Operation method, shooting mode or other message is indicated.	-
12	White balance	Indicates the current white balance.	P.76
13	AE mode	Indicates the current Auto-Exposure mode	P.75
14	LED lighting	Indicates that the LED light is on or off as well as its light intensity.	P.72
15	Brightness compensation	Indicates current state of brightness compensation.	P.71

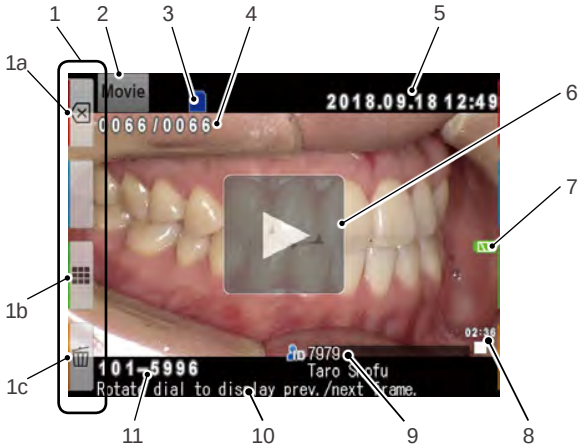
Playback mode

● Still images



No.	Items	Explanations	Reference
1	Function tabs	Function changes depending on the mode you select. The functions available are displayed on the LCD monitor.	-
	1a: Shooting mode	To change to Shooting mode.	P.18
	1b: Enlarge image	Image taken is enlarged.	P.65
	1c: Thumbnail index	Thumbnail index is displayed.	P.60
	1d: Erase image	To select images you wish to erase.	P.61
2	Selected mode	Shooting mode used to take the photo is indicated.	P.23
3	Card indicator	Appears when the camera recognizes the SD card.	-
4	Image No./Total number of images taken	The No. of image currently displayed and the total number of the images taken are indicated.	-
5	Date & time of the image	The date and time of the picture are displayed.	-
6	Magnification rate	Magnification rate is indicated.	P.28
7	Image size	Horizontal to vertical ratio of the image is indicated.	P.84
8	Image quality	Selected image quality is indicated.	P.84
9	Flip indicator	Shows if the image taken is flipped or not. : Original image before flip : Flipped image * In order to store both images before and after flip, set “Store original image before flip” in the Setup menu.	P.87
10	Protect	The image(s) having this icon is (are) locked to avoid accidental erasing or editing.	P.62
11	Battery indicator	Remaining battery power is displayed.	P.17
12	Patient information	Patient information is indicated when entered prior to taking a photo.	P.19 - P.21
13	Instant message	Operation method, shooting mode or other message is indicated.	-
14	Register No. - File No.	Folder No., in which captured image is stored, and the File No. of the image captured are indicated.	P.90

● Movies



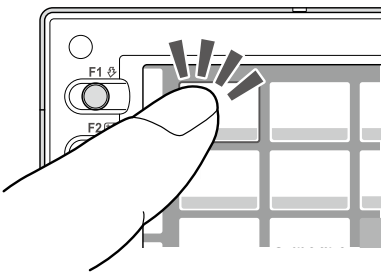
No.	Items	Explanations	Reference
1	Function tabs	Function changes depending on the mode you select. The functions available are displayed on the LCD monitor.	-
	1a: Shooting mode	To change to Shooting mode.	P.18
	1b: Thumbnail index	Thumbnail index is displayed.	P.60
	1c: Delete a movie	Press this to delete a movie currently displayed.	P.61
2	Selected mode	"Movie" is indicated.	P.23
3	Card indicator	Appears when the camera recognizes the SD memory card.	-
4	Image No./Total number of images taken	The No. of image currently displayed and the total number of the images taken are indicated.	-
5	Date & time of the image	The date and time of the movie are displayed.	-
6	Play	Press to play the movie.	P.68
7	Battery indicator	Remaining battery power is displayed.	P.17
8	Duration of a movie	Duration of the movie is indicated.	-
9	Patient information	Patient information is indicated when entered prior to recording a movie.	P.19 - P.21
10	Instant message	Operation method, shooting mode or other message is indicated.	-
11	Folder No. - File No.	Folder No., in which recorded movie is stored, and the File No. of the movie recorded are indicated.	P.90

Operation methods

There are two ways to operate this camera.

● Direct screen touch

Touch one function tab you want to select.



Tips

● Touch panel function of EyeSpecial C-IV

Screen keys can be operated with or without gloves on, or by using a tip of a stylus. However, securely pressing with finger is recommended. Note that the screen does not respond to multi-touch or swipe motions.

● Key operation

Press ▲ (F2 key) or ▼ (F3 key) or rotate the (Dial key) to select the function you would like to perform. Then, press SET (SET key) to determine.

For the details of the function keys (F1-F4), refer to page 3.

Getting started

Perform the following preparation before you start taking images.

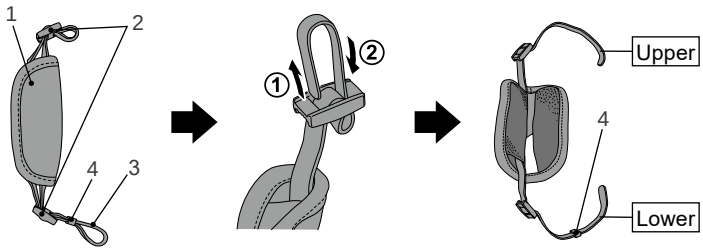
Attaching the hand strap

Attach one end of the strap to the strap mount on the lateral side of the camera and another to the eyelet on the bottom of the camera.

⚠Caution

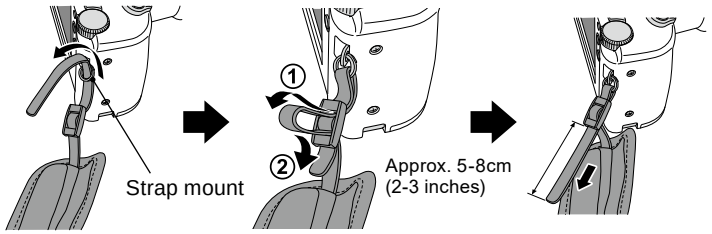
- Always use the strap to avoid accidental dropping of the camera. This might cause injuries.

1 **Open the flap and pull the belt out of the 2 adjusters.**

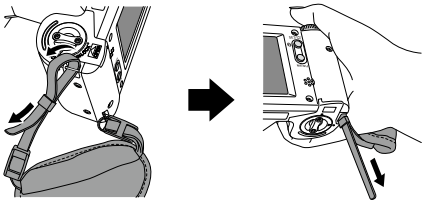


No.	Name	No.	Name
1	Flap	3	Belt
2	Slide adjuster	4	Retainer clip

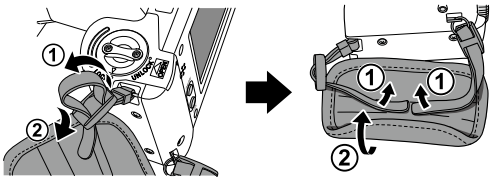
2 **Attach one end of the strap to the strap mount on the upper lateral side of the camera and adjust the belt length.**



3 **Put the other end of the strap through the strap eyelet. Adjust the strap while holding the camera until the optimal fit is obtained.**

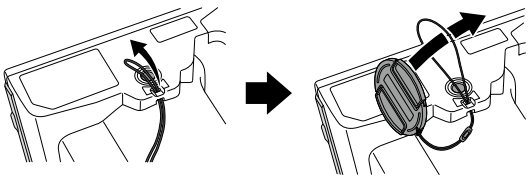


4 **Feed the strap end through the slide adjuster to fix.**
· Insert the strap into the buckle as pictured below.



Attaching the lens cap strap (optional)

1 **Loop the lens cap strap to the strap hole. Take the lens cap itself and push it through the loop that is sticking out.**

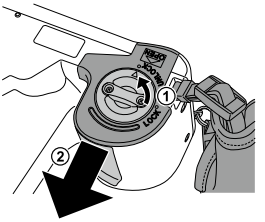


Reference If you do not need the lens cap strap, cut it out with scissors etc.

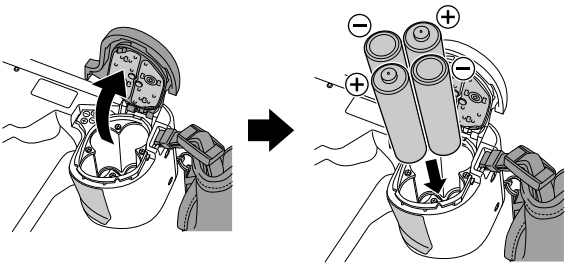
Installing batteries

The battery slot is on the bottom side of the camera. Gently turn the camera upside down to install the batteries.

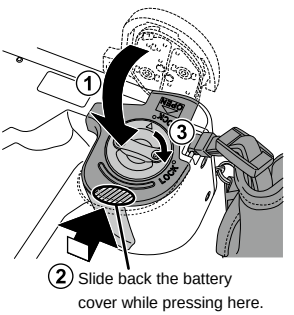
1 **Turn the Lock lever to the position of "UNLOCK". Then, slide the Battery cover to the front side of the camera.**



2 **Flip up the Battery cover and insert 4 rechargeable AA nickel metal hydride (NiMH) batteries or alkaline batteries.**



3 **Close and slide back the Battery cover to the original position. Then, rotate the Lock lever to the "LOCK" position.**



Note

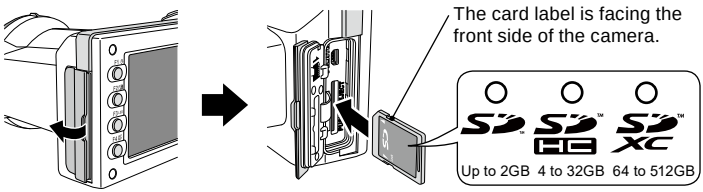
- **Make sure to rotate the Lock lever to the "LOCK" position to avoid dropping the batteries.**
- **Use only nickel-hydride batteries or alkaline batteries. Never use manganese batteries or nickel cadmium batteries.**
- **Never use batteries of different types or different manufactures together or mix old and new batteries.**

Reference

- Rechargeable nickel hydride batteries may be inert and consequently it might not supply power immediately after it is purchased or left unused for a long period of time. Recharge & discharge the battery fully about 2-3 times to restore the full function of the batteries.
- Performance time of alkaline batteries might become shorter if they have been left unused for a long period of time since their manufacturing date.
- Avoid using batteries in extremely cold environment as low temperatures dramatically reduce the number of pictures you can take.

Inserting SD memory card

1 **Open the Card slot/HDMI connector cover and insert the SD memory card.**



Note **Make sure the card is facing the right direction. Forcing the card may damage the camera or card.**

2 **Close the cover securely.**

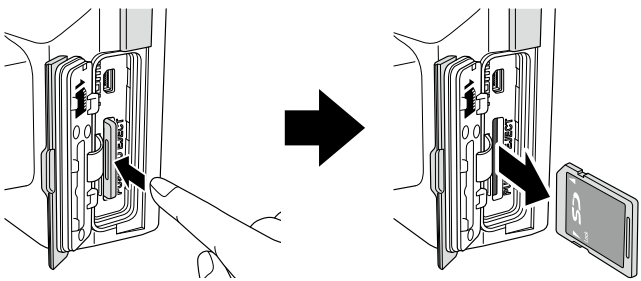
Tips

If you want to use SureFile, your SD memory card must first be formatted by the Eye-Special C-IV camera.

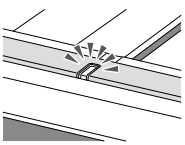
P.69 “Transferring images to your computer”

Removing SD memory card

1 **Open the card cover. Press lightly on the edge of the memory card until you hear a click sound and it will eject.**



Note · **Do not insert or remove the memory card when the pilot lamp is blinking in orange. Doing so may damage your pictures, card or camera.**



Tips

● Storage capacities (number of pictures)

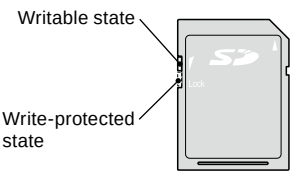
Approximately 350 shots can be taken on a fully charged rechargeable nickel metal hydride (NiMH) batteries (capacity 1,900mAh).
Approximately 250 shots can be taken when using new alkaline batteries (based on in-house test results). The numbers above are just rough estimates and your results may vary. Extensive operation of the camera setting or reviewing photographs may cause the number of shots to be reduced.

● Note for Wi-Fi SD memory cards

Use rechargeable nickel metal hydride (NiMH) batteries for the camera when using a Wi-Fi SD memory cards. Alkaline batteries might not be able to supply enough energy to operate the camera properly. Also, Wi-Fi SD memory cards consume more energy to operate than regular memory cards. The number of pictures that can be taken and stored are less than the above mentioned number.

● Write-protection tab

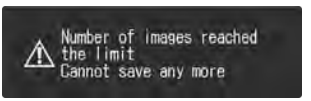
The SD Memory card has write-protected tab. Slide down the tab to prevent valuable data from being accidentally erased from the memory card. To save, edit or erase data on an SD memory card, unlock the card.



● Storage capacity of a memory card

This camera can manage approx. 9,999 images per memory card. After exceeding 5,000 shots, the message “Too many images in memory card. Please erase some images” appears on the screen when switching on the camera. When reaching 9,999 shots, the message “Number of images reached the limit. Cannot save any more” appears and you can no longer take photos with the memory card with no remaining capacity. Thus, when you find the first message above, transfer and backup the stored data to other storage media and erase the data stored in the SD memory card in use.

Message after exceeding 5,000 shots



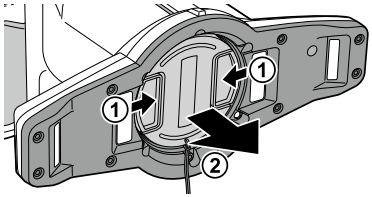
Message when reaching 9,999 shots

The number of photos you can store in the provided 16GB SDHC memory card with a variety of conditions are shown below for your reference.
Still image (Image mode : Fine Pixels : 3M) : 9,680 shots
Movie : 340 min *Maximum time duration to record one movie is 10 minutes.

Note · **The number of pictures you can take with one memory card varies depending on the image size and quality you selected. The numbers provided above are for your reference.**

Removing the lens cap

1 **Pinch the notches on the lens cap and pull it off.**

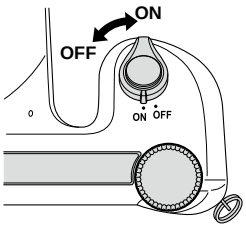


- Reattach the lens cap by pinching the notches.
- Always attach the cap when the camera is not in use.

Tuning the camera on

1 **Rotate the power switch to turn the camera on.**

- To turn the camera off, rotate the power switch with the dial notch to the OFF position.
- This camera has power-saving function and auto-power off function. When the camera is left unused for a certain period of time, the camera automatically shifts into the power save mode. When the camera is left unused further, it will shut off automatically to conserve battery power.



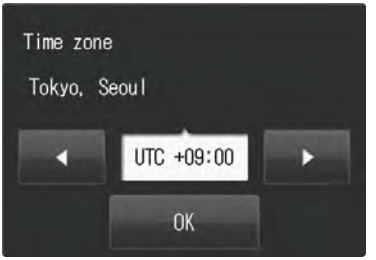
Initial activation and setup

When you first turn the camera on, you may need to set the language, time zone, date, time and unit.

1 **Language selection**
Select one language from Japanese, English German and French.

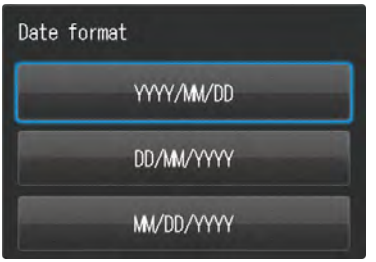
2 Setting the time zone

Select one time zone.



3 Choosing the date display style

Select one date format.



4 Setting the date and time

Rotate the (Dial key) or touch the screen to move to the next item field. Press ▲ (F2 key) or ▼ (F3 key) to increase or decrease the value for each option.

5 Setting the unit display

You can choose from metric and imperial unit display.

Reference These items can be changed later in the Setup mode.

Tips

● What's power save mode?

If no key operation is performed for the set period of time (the initial setting is 1 minute), the display on the LCD screen will turn off. The pilot lamp blinks when the power save mode is on. Press any button or touch the LCD screen to turn the display back on.
The stand-by time for the power save mode can be changed in the setup menu.
(P.92)

● Energy supply to SD memory card slot during power save mode

Energy is supplied to SD memory card slot while power save mode is on. When using a Wi-Fi SD memory card, data transfer continues even if the camera shifts to power save mode.

● What's Auto-power off?

This camera automatically turns off if no operation is performed for 30 minutes (default setting) after the power save mode starts working. To continue using the camera after auto-power off, switch off the camera and reactivate it by turning the power on.
When the camera turns off with Auto-power off, the patient information entered is erased.

● How do you confirm the battery level?

When the camera is turned on, the battery indicator will appear on the display.

Indicator	Remaining battery level
(Green) (appears only for 3 sec)	There is ample battery charge.
(Orange)	The battery is almost half charged.
(Red)	The battery will soon run out. Have new or charged batteries ready.
Battery exhausted (error message)	The batteries are depleted. The display will go blank shortly after this message appears and the camera will stop working. Replace or recharge the batteries.

● Slow response of the camera

EyeSpecial C-IV sometimes does not respond to your command immediately when other operations are in progress; for example, immediately after you rotate the dial to change the magnification rate and then press the shutter half-way to focus or just after you take a picture etc. For optimum performance wait until ongoing processes have concluded before operating.

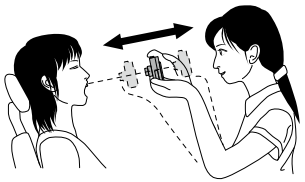
2 Basic technique

● Follow the safety information indicated in the attached “Important Safety Instructions”.

Before you start taking pictures / movies

EyeSpecial C-IV is designed exclusively for dentistry, which is different from general digital cameras that allow pictures at any distance from the subject. In order to take intraoral photos under optimal conditions, the distance from the subject has to be within a certain range.

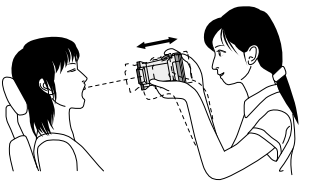
● General digital camera



[Advantages]
- Can take photos at any distance.
  * Cannot take clear pictures from close distances.

[Disadvantages]
- The subject doesn’t always come in the same size in the photos.
- Light distribution is uneven.

● EyeSpecial C-IV



[Advantages]
- Subjects always appear in the same size in the photos.
- Light distribution is even.

[Disadvantages]
- Distance has to be within the limited range.

Procedures

STEP1	Input patient information or photograph patient record (optional)	· Enter number · Scan QR code · Photograph patient record	P.19 P.20 P.21
STEP2	Select shooting mode	· Preinstalled modes · Custom modes	P.22, 23 P.24

Still images

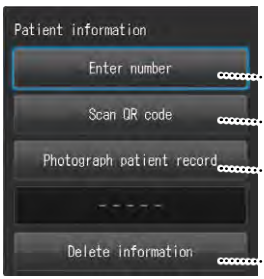
STEP3	Select magnification rate	P.28
STEP4	Set focus distance	P.30, 31
STEP5	Take picture	P.32, 33

Movies

STEP3	Record movie	P.37

STEP 1 Input patient information or photograph patient record (optional)

You can choose one image management method from the following 2 methods;
· Give patient information to each image.
· Photograph patient record.
This procedure is optional and can be skipped.
Press (F3 key) in the shooting mode, the following message appears on the screen. You can enter a new patient number or edit and erase stored information.



You can enter a new patient number or edit and erase stored information. (maximum20 digits including underscore, hyphen and space)

Read patient's name and ID No. by scanning QR code

Photograph patient record

Erase stored information

Enter number

When you select "Enter number", number keys appear on the display. You can enter maximum of 20 digits number (including underscore, hyphen and space when used).

Tips

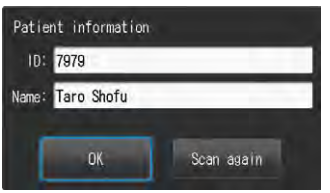
EyeSpecial C-IV has a function that makes recording patient information mandatory. When this function is activated, you cannot take photos unless you record patient information.

P.96 "QR codes to make recording patient information mandatory"

Scanning QR code (feature only available in conjunction with special patient ID software)

Patient's name and ID number can be stored by scanning a QR code exclusive to this camera. When you select "Scan QR code", the following display appears on the screen. Hold the camera over the code in such a way that the white square on the screen is centered over the QR code. Half press the shutter button to start scanning.

When scanned successfully, the message shown in the right photo will appear on the screen. Press OK to store the information.

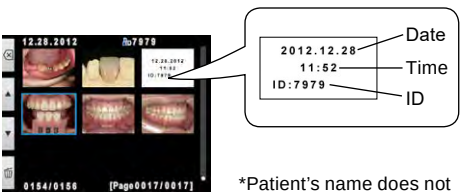


* Patient name can be registered only with the QR code.
* QR code can be created with the image management software by other companies. For more details about the image management software, visit our website at www.shofu.co.jp/eyespecialc4/

Tips

Patient information scanned through the QR code will be displayed on the screen and stored as follows;

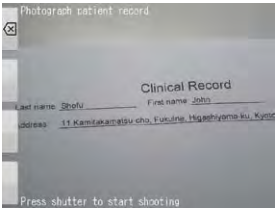
- In the shooting mode
  Registered patient information is displayed on the lower right of the screen and recorded on the image taken.
- In the playback mode
  Patient information appears on the lower right of the screen.
- Patient information image
  When patient information is recorded, an image shown on the right is created.



*Patient's name does not appear.

Photograph patient record

Patient's name can be recorded by taking a picture of his (her) medical record.
When you select "Photograph patient record", the display pictured on the right appears on the screen.
Position the camera to photograph the patient name and press the shutter button halfway to focus properly. After focusing press the shutter button completely down.

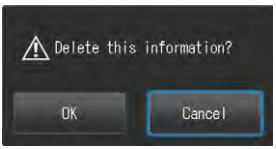


Reference

- Camera setting is automatically changed to photograph written or electric patient record.
- Patient ID and name in the photo are not recognized digitally to display on the photo.
- This function is not available when activating the function that makes recording patient information mandatory.

Erase patient information

When you select "Erase information", the message pictured in the right photo appears. Press OK to erase the data.

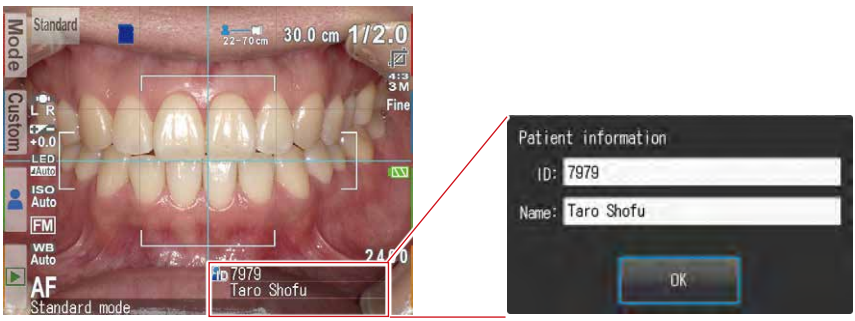


Reference

Patient information can also be erased when the camera is turned off.

Confirm patient information

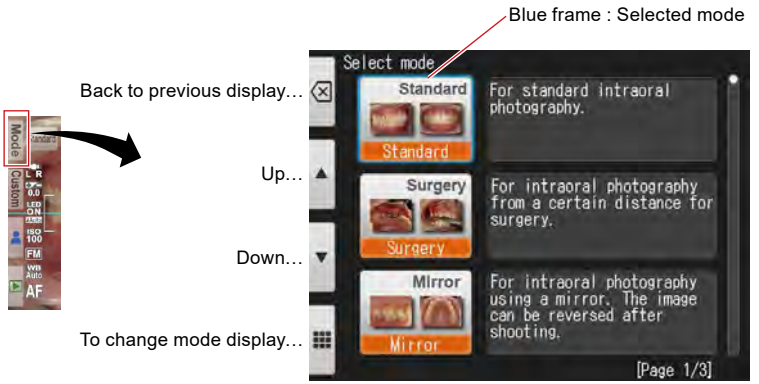
Touch patient information on the lower right of the screen to display the patient's ID number along with his/her name registered.



STEP 2 Select shooting mode

Preinstalled modes

Press **Mode** (F1 key) to display all the modes preinstalled.
Nine different modes are preinstalled. Select one optimal mode for each purpose.



● Shooting modes

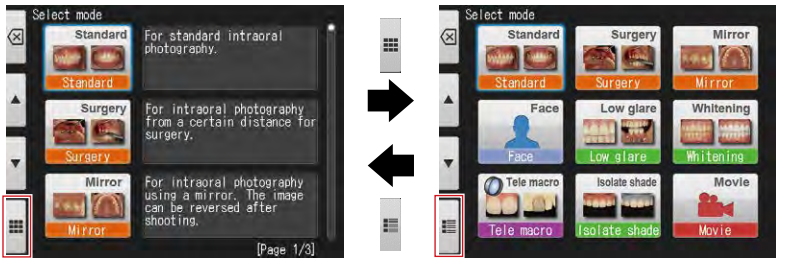
Mode	Intended use	Explanations
Standard Mode	For standard intraoral photography	Basic mode for dentistry.
Surgery Mode	For intraoral photography from a distance	You can take photos from a greater distance than in standard mode. This mode is optimal for surgery, when you do not wish to put the camera close to the subject.
Mirror Mode	For intraoral photography using a mirror	The image taken can be reversed.
Face Mode	For shooting facial views or half-, full- body portrait	Hold the camera vertically as indicated by " ▲ UP" mark. (*Auto-cropping is not available in this mode.)
Low-glare Mode	For taking details of anterior teeth, working models and indirect restorations	The outside flash illuminates obliquely to reduce the glare on the teeth. With intense flash lights, inner shade of the teeth can be emphasized.
Whitening Mode	Optimal for shade comparison between before and after whitening	Similar conditions with Low-glare mode but with lower light intensity and slightly less contrast, which reduces glare and emphasizes the surface texture and shade of the teeth.
Tele-macro Mode	For taking anterior teeth, indirect restorations and working models	The outside flash lights enable to take photography with higher magnification rate. Close-up lens must be placed.
Isolate shade Mode	Optimal for shade taking	Two images are automatically created in this mode; an image taken in low-glare mode + another image in which the tooth color is natural while deemphasizing the background to minimize the deception of visual shade evaluation.
Movie	For recording movies	For recording movies

Note **Isolate shade mode**
The camera might fail to differentiate between the teeth and surrounding structure in the cases where the teeth or gingiva are severely stained or discolored.

Tips

- **Change mode display**

There are two different ways of displaying the modes ; mode list and mode details.
Press / (F4 key) to alternate between mode list and mode details.

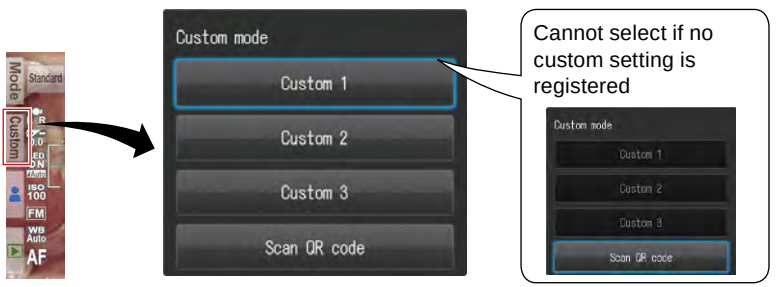


Mode details　　Mode list

Custom modes

Preinstalled camera settings can be changed and registered as custom modes for future use.

When pressing Custom (F2 key) in the shooting mode, three custom settings appear on the screen.



Tips

When selecting custom mode by pressing custom button, an indicator is displayed on the upper left of the screen.

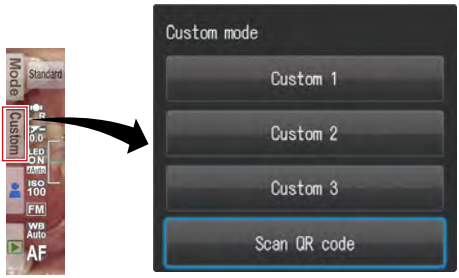
Note **Movie mode cannot be registered in custom mode.**

P.79 “Save settings”

Scanning QR code

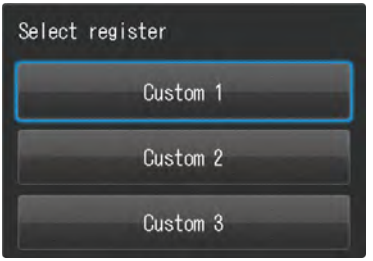
Camera settings can be changed in one step by simply scanning a QR code (exclusive for this camera).

1 **When pressing Custom (F2 key) in the shooting mode, custom mode appears. Select the bottom key “Scan QR code”.**



2 **When the photo below appears on the screen, align the QR code within the white frame. Then, press the shutter button.**

3 Select from Custom 1 to Custom 3 to register the setting.



When taking photos using the registered custom mode, follow the procedures of “Custom modes” on page 24 of this Advanced Manual.

Note **In custom mode, new settings cannot be scanned with QR code**

● QR codes for custom presets

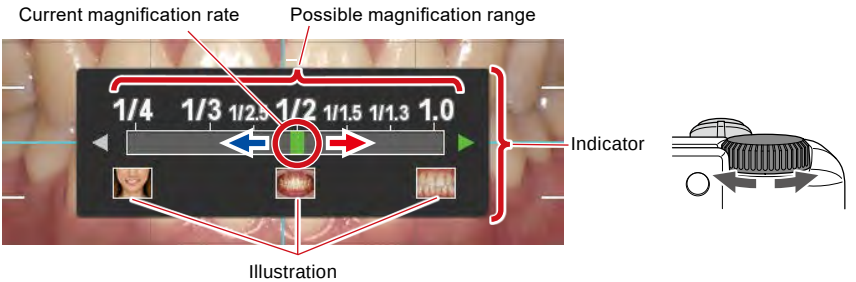
Following is the QR codes for custom settings. Select the appropriate setting for each purpose.

QR code	Mode	Intended use	Explanations
	Stone model (large)	For photographing large stone models such as study model	Brightness compensation is -0.7Ev with other settings same with the standard mode.
	Stone model (small)	For photographing small stone models such as abutment model	Brightness compensation is -0.7Ev with other settings same with the low-glare mode.
	Surgery mode using a mirror	When using a mirror in surgery mode	Brightness compensation is +0.7Ev with other settings same with surgery mode. The photo taken can be flipped.
	X-ray capture	When photographing X-ray photo on the X-ray film illuminator.	Basic settings are the same with the face mode but focus distance can be set manually and flash and LED lights are turned off.

Following procedures will be different for taking still images or recording movies.
Refer to ☛P.37 to record movies in this Advanced Manual.

STEP 3 Select magnification rate (still images)

Rotate the (Dial key) to display magnification indicator on the center of the screen. Then, rotate the (Dial key) again to determine the magnification rate. The indicator will disappear approximately 3 seconds after setting the magnification rate.



Tips

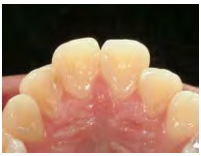
When half-pressing the shutter button after selecting the magnification rate, magnification indicator disappears and you can take the photos immediately.

- **Selection of optimal magnification rate**

1 Standard/Surgery mode

Front view	Lateral view	Smile line	Stone model (large)
1/1.5 - 1/2	1/2 - 1/2.5	1/3 - 1/4	1/2 - 1/2.5

2 Mirror mode

Occlusal view	Upper jaw palatal view	Anterior lingual view
		
1/2 - 1/2.5	1/1.3 - 1/1.5	1.0 - 1/1.3

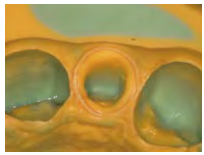
3 Face mode

Mouth	Face	Half-body	Full-body

4 Low-glare / Whitening / Isolate shade mode

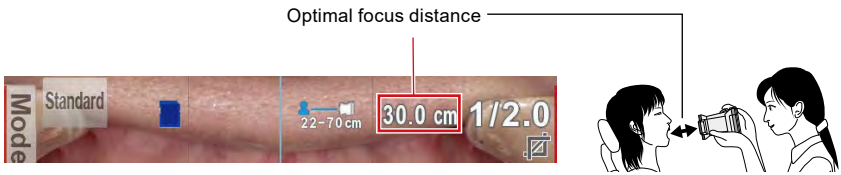
Shade taking	Anterior close-up	Prosthesis	Stone model
1/1.3 - 1/1.5	1.4 - 1.0	1.4 - 1/1.3	1.4 - 1/2

5 Tele-macro mode

Outside flash	**Anterior close-up**	**Prosthesis**	
	2.0 - 1/1.8	2.0 - 1/1.8	
Inside flash	**Prosthesis**	**Impression**	**Stone model**
			
	2.0 - 1/1.8	2.0 - 1/1.8	2.0 - 1/1.8

STEP 4 Set focus distance (still images)

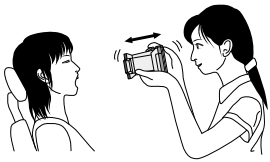
1 **Based on the optimal focus distance displayed on the upper area of the screen, set the distance between the camera and the subject.**



* Optimal focus distance varies depending on the magnification selected.

2 Change the camera position until the subject appears on the screen sharply.

Too close ⟷ Too far



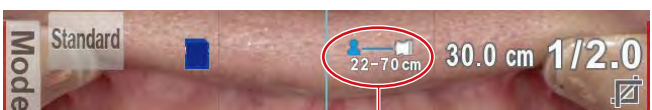
Blur Sharp Blur

Note **Do not press the shutter button until the distance is determined.**

Tips

● Focus distance

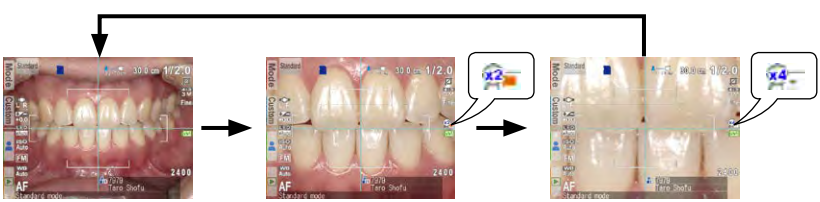
Even if the actual focus distance becomes outside the optimal focus distance, you can take a picture as long as it's within the possible distance range.



Possible distance range

● Magnification of the taken image

When you press the SET/ (SET key), it will magnify ×2 and when you push it again, it will magnify ×4. When pressing it again, it will return to normal. Using this zoom function, you can easily ensure the image taken is properly focused.



Original ×2 ×4

STEP 5 Take pictures (still images)

Focus and take pictures

Tips

When flash mode icon is indicating , flash is being charged. You cannot take photos until it's fully charged.

* Battery charge takes longer time after not being used for a long period of time.

1 **Half-press the shutter to focus**

When the focus is properly determined, the following four types of information appear or change:

1) Actual distance from the subject when focused properly

29.5 cm (Green) : Within the possible distance range

62.8 cm (Red) : Out of the possible distance range (Check the distance)

2) Magnification rate

1/2.0 (Green) : Magnification in range

1/2.3 (Red) : Magnification out of range (Check the distance to the target)

3) Auto-cropping indicator

(Green) : Auto-cropping in range

(Red) : Auto-cropping out of range (Check the distance to the target)

4) Focus indicator

(Green) : In focus

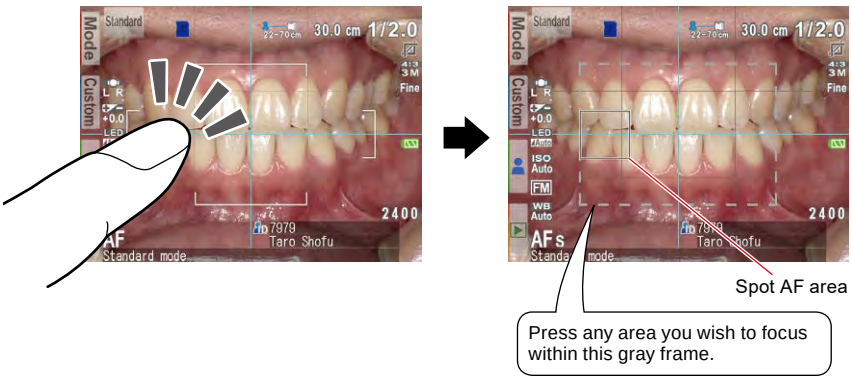
(Red) : Out of focus (Check the focus distance or if the subject can be focused appropriately.)

When all indicators are green, you can take photos with all settings being valid. However, you can still take photos even if all indicators other than focus are red.

Tips

● SPOT Auto-focus

When touching the center of the LCD screen in the shooting mode, the focus mode can be changed to SPOT AF mode with the touched area being the center of the focus. For returning to standard AF mode, keep pressing the spot focused area for a few seconds.



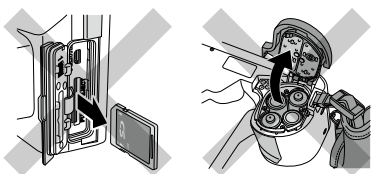
For more details about changing the focus mode, refer to the information below.

P.72 “Focus mode”
P.81 “Shortcut function in Shooting mode”

2 **After focusing, press the shutter button completely down to take the picture.**

- After you take a picture, the image will automatically display on the LCD screen for around 2 seconds, letting you instantly preview the photo. (instant preview function)
- When you wish to cancel instant preview and move onto further photo taking, half-press the shutter button or press SET (SET key). Then, you can continue to take pictures instantly.

Note **When image data is being written on the SD Memory card, the pilot lamp will blink in orange. During this time the SD Memory card or batteries should not be removed from the camera to avoid losing the data.**



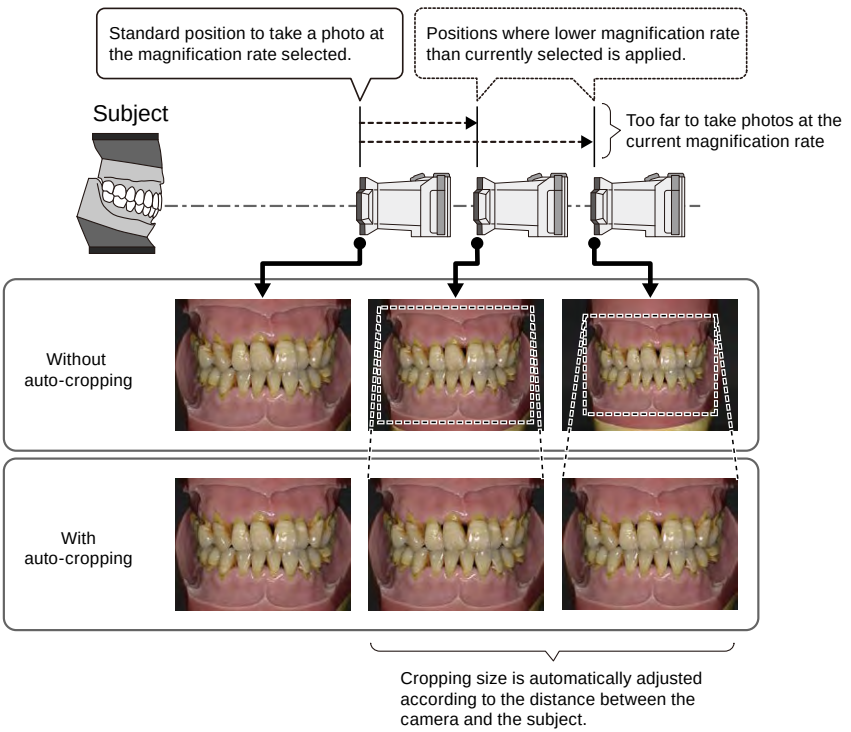
Tips

● Auto-cropping

Auto-cropping function crops the image automatically based on the selected magnification rate. Even if the subject is out of the optimal focus range, the picture can still be taken at the magnification rate you selected due to this function.

* This function is not available for Face mode and Tele-macro mode. It can be deactivated in other modes from the menu.

P.38 “Auto-cropping”



Even if the subject is within the possible focus distance, auto-cropping might not work if the camera is positioned too far from the subject. Pay attention to the distance and auto-cropping signs.

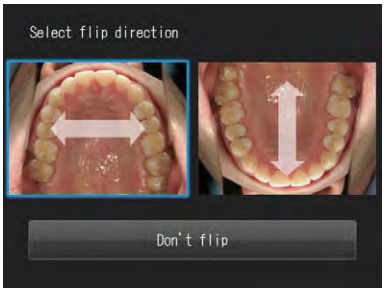
For optimal photo quality and the image size you desire, it is always recommended to maintain the optimal distance indicated.

Accuracy of magnification by auto-cropping is about ±10%, which is influenced by subtle difference in focus distance.

Special functions of shooting modes

Mirror mode

When you have taken a picture in Mirror mode, the image can be flipped vertically or horizontally afterwards as shown in the message display.



Reference

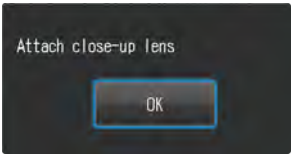
- This message does not appear when you set the flip direction in advance in the Setup menu to always flip the image to the same direction. (P.78)
- You can also flip the image in Surgery mode and Tele macro mode.

Face mode

When the "▲UP" icon appears on the screen, hold the camera as indicated by the ▲icon.

Tele-macro mode

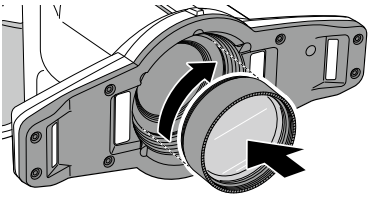
When selecting Tele-macro mode, “Attach close-up lens” appears on the LCD screen.



Note **Use close-up lens only for Tele-macro mode.**

Remove the lens cap first. Then, the close-up lens should be screwed onto the front of the lens.

1 **Mount the close-up lens onto the camera lens and rotate it clockwise until it is attached securely.**



STEP 3 Record movies

Focus and record movies

1 Half-press the shutter to focus.

Blur

Focused

2 After focusing properly, press SET (SET key) to record a movie.

When the distance has changed and the target is not focused properly, press the shutter button to readjust the focus.

Note **When the distance from the target has suddenly changed significantly, it might take for a while to refocus on the target properly. It is recommended to maintain a similar distance while recording a movie.**

3 Finish recording.

Press SET (SET key) to finish recording a movie.

Note **Maximum recording duration is ten minutes per movie. Current recording time is displayed on the lower right of the screen.**
Recording time might be shortened depending on the remaining capacity of SD memory card or battery power.

Tips

● LED lighting while recording a video

You can put the LED lights on all the time while recording a video by setting in the shooting mode menu in advance.

P.72 “LED lighting”

3 Advanced technique (still images)

● Follow the safety information indicated in the “Important Safety Instructions” included in the package.

In this section, advanced techniques for taking more sophisticated images are introduced.

Taking photos without auto-cropping function

Basic procedures are described in Chapter 2 “Basic technique”. Magnification rate changes when the camera is positioned farther from the optimal focus distance.

●Advantage and disadvantage when using auto-cropping function

Advantage	The size of the subject (magnification rate) is always the same even if the camera is positioned outside of the optimal focus distance.
Disadvantage	Image quality can be degraded when the camera is positioned outside of the optimal focus distance. Magnification rate should be within certain range.

●Advantage and disadvantage when not using auto-cropping function

Advantage	Image quality can be maintained even if the image is cropped. Magnification rate does not have to be within the limited range.
Disadvantage	The camera must be positioned at the optimal distance to take a photo at the selected magnification rate.

●How to deactivate auto-cropping function

Shooting mode→ MENU (Menu key)→Tab 2→Auto-cropping→Select “Off”

P.34 “What’s auto-cropping?”

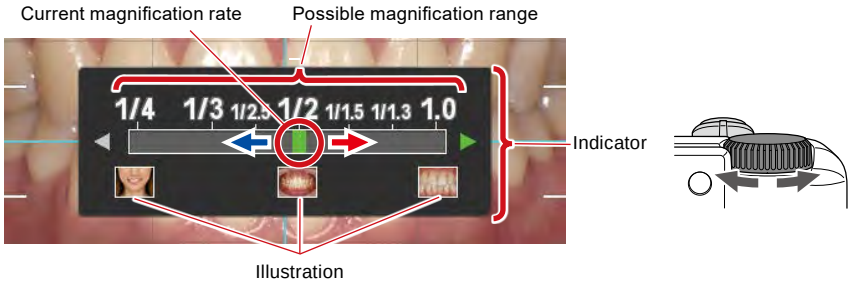
Reference

When you do not wish to use “Auto-cropping” all the time, rewrite the setting in the shooting mode.
(P.73 “Auto-cropping”, P.79 “Save settings”)

How to take photos without auto-cropping function

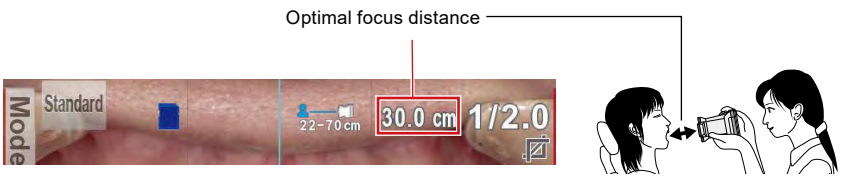
● Select magnification

Rotate the (Dial key) to display the magnification rate indicator on the center of the screen.
Then, rotate the (Dial key) again to select the magnification rate you desire.



● Set focus distance

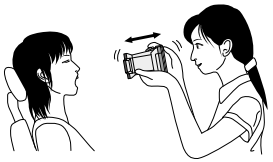
1 **Referring to the optimal focus distance displayed on the upper right of the screen, set the distance between the camera and the subject.**



*Optimal focus distance varies depending on the magnification selected.

2 Change the camera position until the subject appears on the screen sharply.

Too close ⟷ Too far

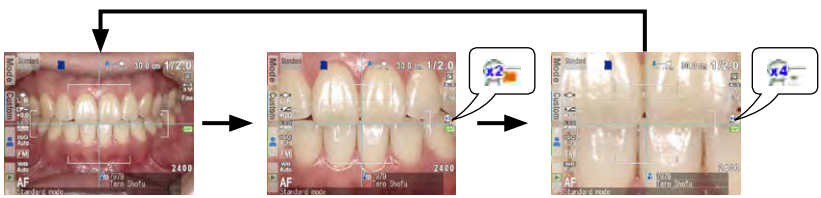


Blur Sharp Blur

Note **Do not press the shutter button until the distance is determined.**

Tips

When you press the SET/Q (SET key), it will magnify ×2 and when you push it again, it will magnify ×4. When pressing it again, it will return to normal. Using this zoom function, you can easily ensure the image taken is properly focused.



Original ×2 ×4

● Taking pictures

Tips

When flash mode icon is indicating , flash is being charged. You cannot take photos until it's fully charged.

* Battery charge takes longer time after not being used for a long period of time.

1 Half-press the shutter to focus

Set the focus within the Auto Focus (AF) frame. When the focus is properly determined, the following three types of information appear or change.

1) Actual distance from the subject when focused properly

29.5 cm (Green) : Within the possible distance range

62.8 cm (Red) : Out of the possible distance range (Check the distance to the target)

2) Magnification rate

1/2.0 (Green) : Magnification in range

1/2.3 (Red) : Magnification out of range (Check the distance to the target)

3) Focus indicator

(Green) : In focus

(Red) : Out of focus (Check the focus distance or if the subject can be focused appropriately.)

When all indicators are green, you can take photos with all settings being valid. However, you can still take photos even if all indicators other than focus are red.

2 **Confirm the proper focus, actual focus distance and magnification rate, and press the shutter button completely down.**

· In cases where the focus distance needs to be adjusted, release the shutter button and reposition the camera.

Taking photos with manual focus

You can select manual focus to optimize the conditions of your photo. Method to take photos is the same with conventional dental digital cameras based on the single-lens reflex camera.

● **Advantage and disadvantage of photographing with manual focus**

Advantage	Basic handling is the same with conventional single-lens reflex camera. No waiting time to auto-focus
Disadvantage	Move the camera to focus properly while looking at the camera screen. Need some experience to handle properly.

How to set manual focus

● **With Dial key (shortcut)**

Selected shooting mode → + (Dial key) → select “MF”

● **With Menu key**

Selected shooting mode → (Menu key) → Tab 1 → Focus mode → select “MF”

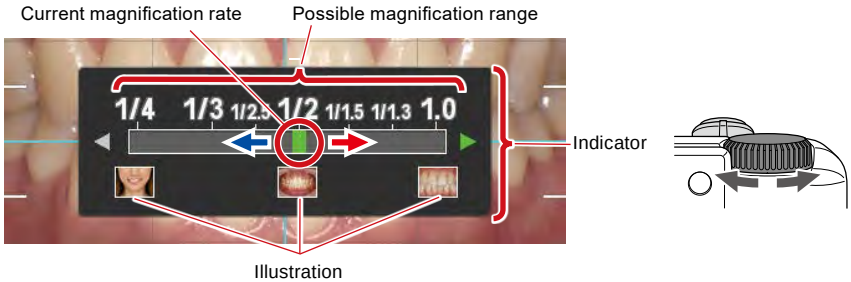
P.72 “Focus mode”

When using “manual focus” all the time, rewrite the setting of the shooting mode. (P.79 “Save settings”)

How to take photos with manual focus

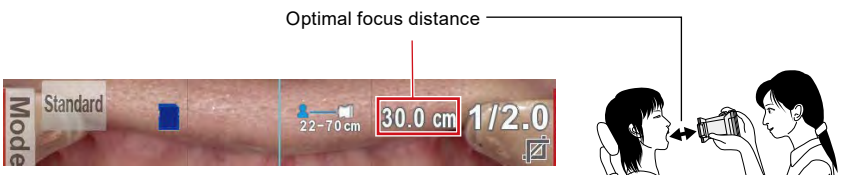
● Select magnification

Rotate the (Dial key) to display the magnification rate indicator on the center of the screen.
Then, rotate the (Dial key) again to select the magnification rate you desire.



● Set focus distance

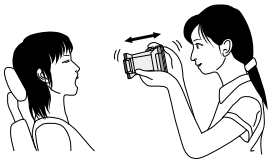
1 **Based on the optimal focus distance displayed on the upper right of the screen, set the distance between the camera and the subject.**

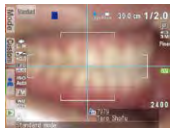


*Optimal focus distance varies depending on the magnification selected.

2 Change the camera position until the subject appears on the screen sharply.

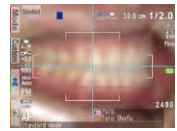
Too close ⟷ Too far





Blur

Sharp



Blur

Note **Do not press the shutter button until the distance is determined.**

Reference When you press the SET/ (SET key), it will magnify ×2 and when you push it again, it will magnify ×4.

P.40 “Tips”

● Taking pictures

Press the shutter button completely down to take the picture.

· In cases where the focus distance needs to be adjusted, release the shutter button and reposition the camera.

Taking photos by adjusting focal length manually like general digital cameras

You can change the focal length by changing the dial function to “Focal length”. Magnification rate can be disregarded when using this function.

●Advantage and disadvantage of setting the focal length manually

Advantage	Can take pictures without regard to magnification rate
Disadvantage	The images taken aren’t standardized.

●How to change the dial key function

Selected shooting mode → MENU (Menu key) → Tab 2 → Rotate Dial key → Select “Focal length”
+
→ Tab 1 → Reset focus position → Select “OFF”

P.73 “Dial function”
P.72 ”Reset focus position”

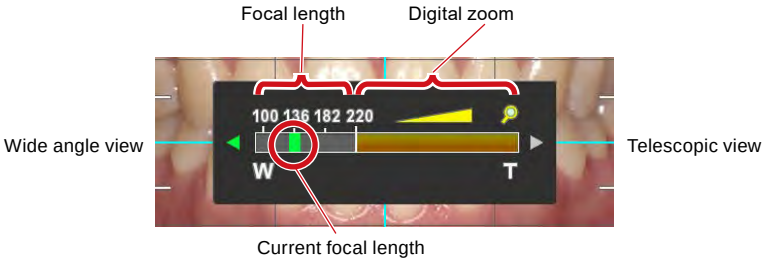
Note **When determining the focal length manually, manual focus cannot be selected.**

Reference When using the same “Focal length” all the time, rewrite the setting of the shooting mode.
(P.79 “Save settings”)

How to take photos with focal length set manually

● Adjust focal length

Rotate the (Dial key) to display the focal length indicator on the center of the screen.
Determine the focal length by rotating the Dial key.
Rotate the (Dial key) to change the focal length.
The mark indicates the digital zoom range. Rotate the dial to right to zoom in the image.

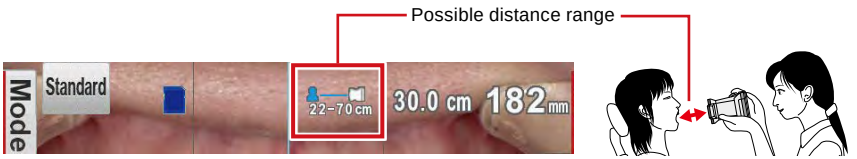


Reference

The image above is an example of standard mode. Range of focal length is different by each mode.

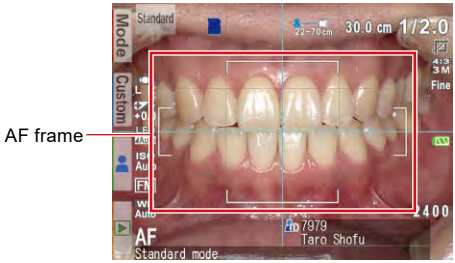
● Set focus distance

Position the camera within the possible distance range between the camera and the subject.



● Focus and take pictures

1 **Half-press the shutter to focus**
Set the focus within the Auto Focus (AF) frame.



2 **After focusing, press the shutter button completely down to take the picture.**

4 Tips for taking photos

● Follow the safety information indicated in the “Important Safety Instructions” included in the package.

In this chapter, further advanced techniques and useful information to help you take more sophisticated intraoral images are introduced.

Note **Information given is just for your reference and does not guarantee optimal images will be achieved by changing the settings.It also does not guarantee that you can take optimal photos by using the techniques in this chapter.**

Tips to hold the camera

To hold the camera securely

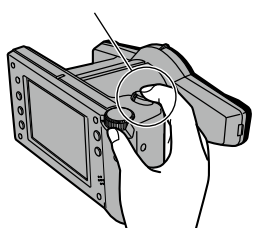
- Take one step forward to stabilize your upper body.
- Lean on the wall or other thing that doesn’t move.
- Put your elbows on the desk etc.

For taking horizontal photos

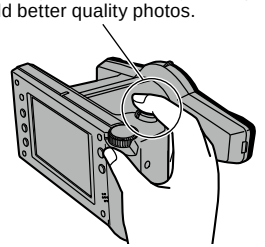
For taking vertical photos

Tips for pressing the shutter button

Pressing with your fingertip may cause images to blur.

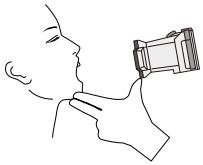


Pressing with the ball of your finger may yield better quality photos.

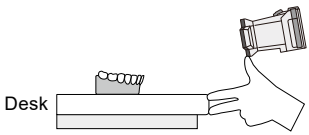


As indicated above, when pressing the shutter button with your fingertip, the camera might be shaken, causing image blurring. When pressing the shutter button with the ball of your finger gently, the camera can be hardly shaken, minimizing image blurring.

Tips to avoid image blurring



For intraoral photography



For photographing models

When taking magnified image of natural teeth with Low-glare mode or Tele-macro mode, even slight agitation of the camera affects the composition of the image. Use you left hand to fix the camera and subject as illustrated above.

Tips for operations

Cause of inappropriate focus and countermeasures

- **Cause 1 Contrast is insufficient for the area to be focused.**

Countermeasure → Focus on the area with high contrast.

Explanation

Auto-focus of EyeSpecial C-IV is based on the contrast of the subject. Thus, when the subject is in a single color completely, has low contrast, or it's placed in very dark place, it might not be focused properly.
When taking intraoral photography, high contrast area such as interdental area or cervical area should be included in the AF area.

- **Cause 2 Camera was moved after focusing.**

Countermeasure → Hold the camera firmly.

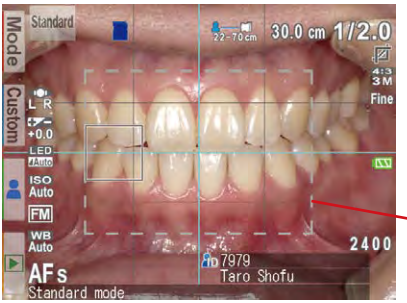
Explanation

The camera or the subject was moved after focusing. Hold the camera firmly while stabilizing the upper half of the body.

Focusing the area outside of the AF frame

Specific area can be focused by using Spot AF.

1 **Hold the camera toward the subject and touch the area you wish to focus.**

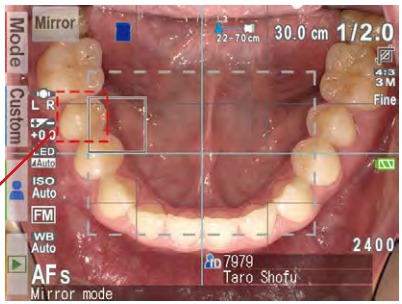


Spot AF area
You can move the focus area within the Spot AF area.

2 **Half-press the shutter to focus. Then, after focusing press the shutter button completely down to take a picture.**

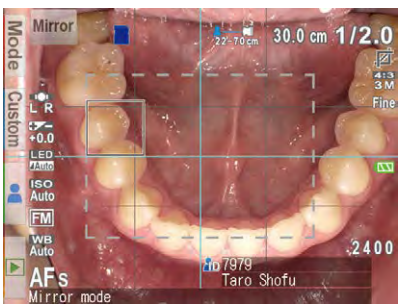
Take pictures with focus lock

When focusing on the area outside of Spot AF area, you can select “Focus lock” as indicated with the red frame in the photo.



The area to be focused

1 **Move the camera in such a way that the red frame is overlapped by the Spot AF area. Press the shutter button half way to focus.**



2 **Move the camera back to the original position while half-pressing the shutter button. Use caution to avoid changing the distance between the subject and the camera.**

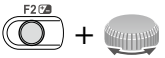
3 **Press the shutter button completely down to take the picture.**

Fine-tuning brightness

When photographing with a mirror in Mirror mode, the image might be too bright or too dark due to the reflection rate of the mirror. When photographing something that scatters light intensely such as stone model, the image might be too bright. In cases such as these, brightness needs to be fine-tuned.

●How to adjust brightness

● Key operation



+ Rotate the dial key while pressing F2 key.

P.71 “Brightness compensation”
P.81 “Shortcut function in shooting mode”

Reference

You can create custom mode for photographing stone models by scanning a QR code exclusive for this camera. (P.27)

Taking pictures with turning one side of the flash light on

Stone models are basically monochromatic, which often reduces the three dimensional appearance when photographed with turning both flashes on. This can be resolved by turning one side of the flash off.

(a) Both flashes on

(b) Right flash on

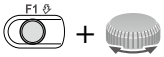
(c) Left flash on

Reference

- Flash mode can be selected in Standard mode, Mirror mode, Low-glare mode, Whitening mode, Tele-macro mode and Isolate shade mode.
- Light amount is automatically adjusted even with one flash, allowing you to take photos with the optimal exposure.

●**How to select flash mode**

● **Key operation**

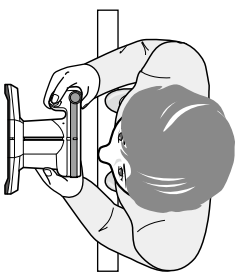


Rotate the dial key while pressing F1 key.

P.71 “Flash mode”
P.81 “Shortcut function in shooting mode”

Focus distance in Face mode

Marking the floor with plastic tape is recommended to keep the optimal distance between the patient and the camera.



Shadow appearing in the Face mode

Shadow might appear along the patient body or the background might be darker when photographing with flash lights on. In order to overcome this problem, you can turn off the flash or use a slave strobe.

● Turning off the flash

When turning off the flash, bright images can be taken without creating shadow. However, the place has to be bright enough to take photos. Hold the camera securely to avoid image blurring.

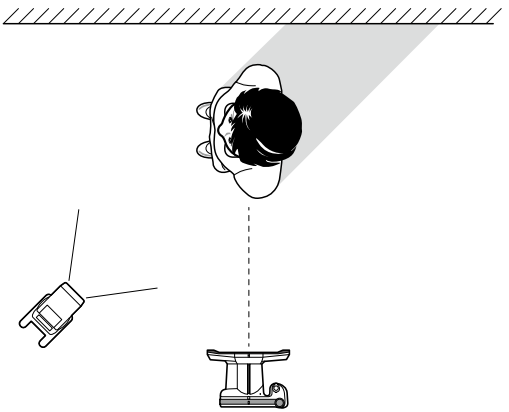
Flash is turned off

Flash is turned on

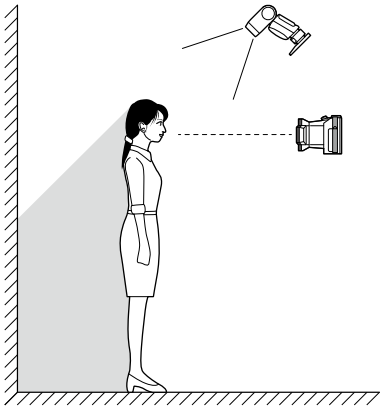
● Using a slave strobe

Select “Trigger” in the flash mode in the menu. Set a slave strobe and take photos.

· Face photo (from the side)



· Face photo (from the front)



When using a slave strobe, brightness of the image varies depending on the position and angle of the slave flash and light intensity. Position the flash after optimizing these factors that affect the image quality.

Note **There are two types of slave strobes; those responding to pre-flash and others to single flash. Use the strobe compatible with the single flash.**

●How to turn the flash on and off

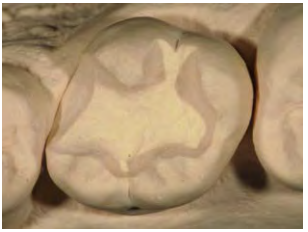
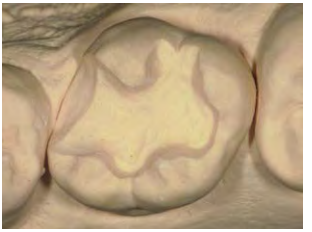
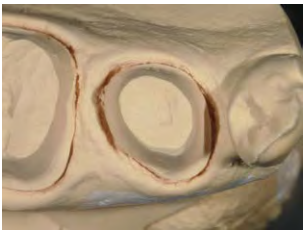
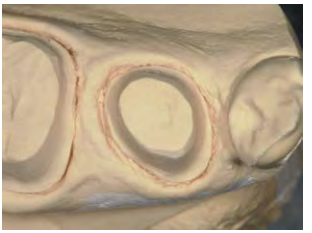
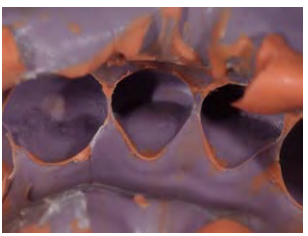
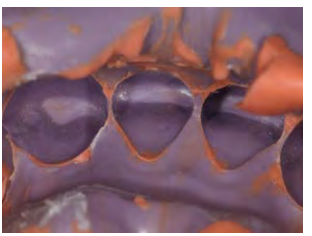
● Key operation

F1 + Rotate the dial key while pressing F1 key.

P.71 “Flash modes”
P.81 “Shortcut function in Shooting mode”

Inside and outside flashes for Tele-macro mode

In Tele-macro mode, you can choose the flash to use from both inside and outside flashes. Outside flashes should be used to minimize reflection and glare on the subject, while inside flashes should be used for photographing inside cavity wall etc.

Outside flash	Inside flash
	
	
	

Note **Reflection varies depending on the condition and configuration of the subject. Select optimal flash setting depending on the subject.**

Tips to minimize shadow when photographing stone models and prostheses

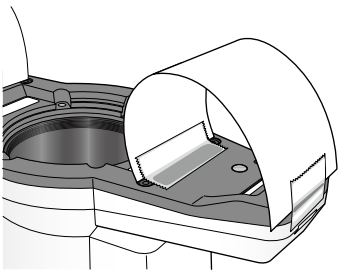
When trying to minimize shadow created by using the flash, using a diffuser is recommended.

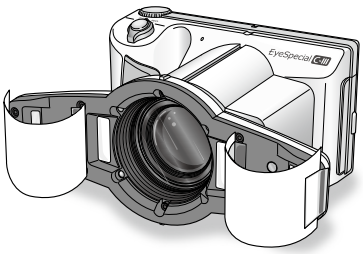
●Preparation

Tracing paper approx. 4×10cm : 2 pieces

* Using colorless tracing paper designed for photography is recommended.

Cover both outside flashes with the tracing paper and tape them in place as indicated figures below.





Tracing paper reduces light intensity. So, the brightness of the subject needs to be adjusted by using brightness compensation.

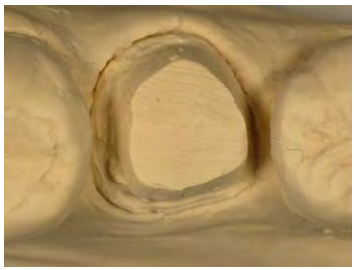
P.71 “Brightness compensation”
P.81 “Shortcut function in Shooting mode”

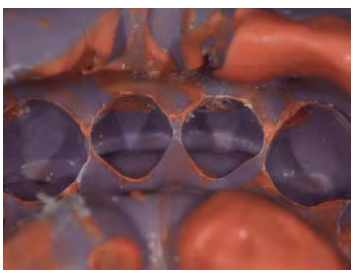
Note **Select outside flashes for Tele-macro mode.**

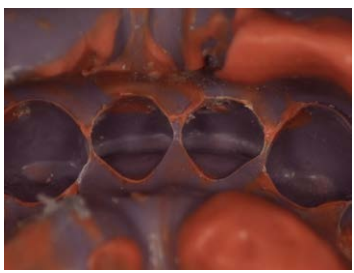
Use a light diffuser to minimize shadow.

Without diffuser

With diffuser





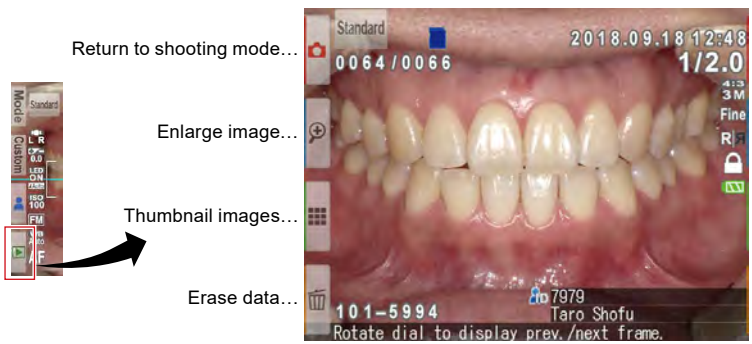


- Follow the safety information indicated in the “Important Safety Instructions” included in the package.

Viewing your images (still images / movies)

Single frame playback

Press ▶ (F4 key) in shooting mode to change to playback mode. The last image taken is displayed. When the ▶ Play button appears on the center of the screen, the frame is a movie.

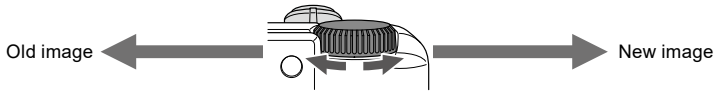


Playback mode (still images)

Playback mode (movies)

Reviewing other images

Rotate the (Dial key) to scroll backward or forward through pictures.



Thumbnail images

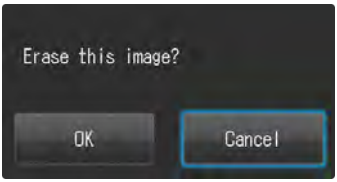
Press (F3 key) to view thumbnail images. A maximum of nine images are displayed simultaneously. In order to display a single view, select one image by moving the cursor to select the image and press (SET key) or directly touching it on the screen.

Note **Movies cannot be played by selecting from the thumbnail index. Return to single frame playback to play a video.**

Erasing images

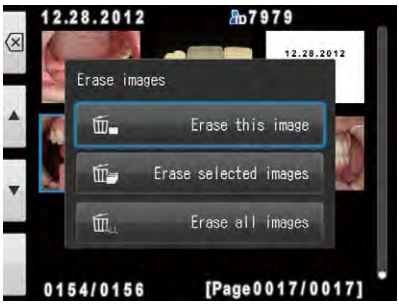
Erase the displayed image

Select Playback mode and press (F4 key) to erase the displayed picture/movie. The message, “Erase this image?”, appears on the image. Press “OK” to erase it.



Erase selected multiple images simultaneously

You can erase multiple images simultaneously by selecting them from the thumbnail display. Press (F4 key) and the message pictured right appears.



● Erase this image

One image in the blue cursor will be erased.

● Erase multiple images simultaneously

Select the images you wish to erase by directly touching the images on the screen or pressing (SET key). After you have finished selecting the images, press (F4 key).
Press OK to erase the selected images.

Finish selecting

Trash mark(s)
Appear(s) on the selected images

● Erase all images

All images stored in the SD memory card will be erased.

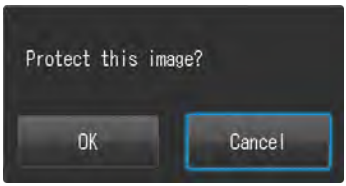
Note **Once erased, the data cannot be retrieved.**

Protecting images

Protect the image to avoid accidental deletion or unintended editing.

Protect images

Press MENU (MENU key) in the Playback mode and select “Protect”. You can protect the image currently displayed . Press “OK” to protect it.



Reference

To release protection, press MENU key, then select “Cancel”.

Protect selected multiple images simultaneously

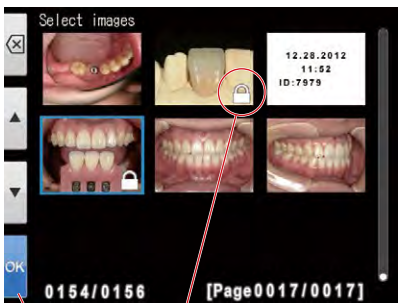
You can protect multiple images simultaneously by selecting them from the thumbnail display. Press MENU key in the thumbnail display. Then, select “Protect” and the message pictured right appears.

● Protect this image

The image selected from the thumbnail display is protected.

● Protect selected images

Protect selected images or release protection. Touch the image you wish to protect on the screen or press SET/OK (SET key), protect mark appears on the selected images. When touching the protected image again, the protection will be released. Press F4 (F4 key) to confirm the images to be protected. Press OK to confirm.



● Protect all images

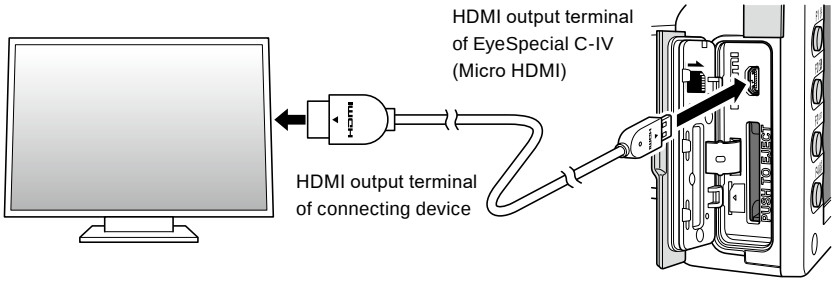
All images stored in the SD memory card will be protected.

● Unprotect all images

All protected images stored in the SD memory card will be unprotected.

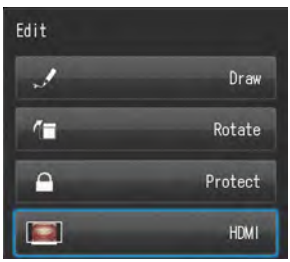
Playing images/movies with HDMI cable

1 **Connect the camera with TV or other device with a HDMI cable.**



Note **Insert the HDMI cable into the terminal securely.**

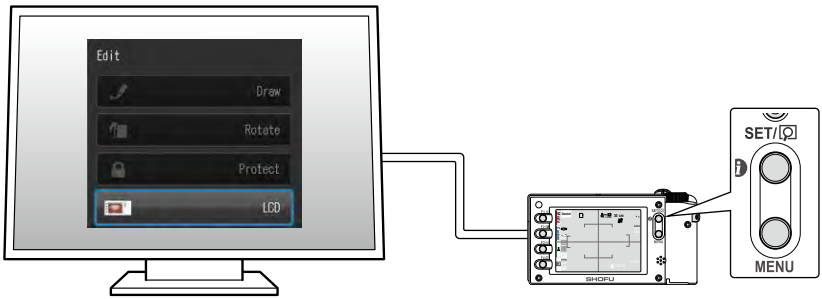
2 **Select the playback mode and press the MENU (MENU key). The message below appears, then select HDMI button.**



3 **Camera display is blacked out and the image/movie is played on the TV or other device connected with HDMI cable. To select the image/movie or to play a movie, use the buttons on the camera.**

P.68 Functions while replaying movies

4 **To finish using HDMI output, press the MENU (MENU key). The message below appears on the screen of the connecting device. Press the SET/ (SET key) on the camera and select LCD. When the camera screen reappears, unplug the HDMI cable.**



Note

- **When playing a still image with HDMI cable, some functions such as painting or rotating the image cannot be used.**
- **Volume cannot be adjusted on the camera itself when using an HDMI cable, Adjust it on the TV or other device connected.**
- **The sound might not come out properly via HDMI depending on the device in use.**
- **Some devices are incompatible with HDMI cable. In that case, use conversion adapter.**
- **It's not guaranteed that EyeSpecial C-IV is compatible with any HDMI devices.**

Tips

● HDMI cable

HDMI (Type A to Type D) cables generally available on the market are compatible with EyeSpecial C-IV.

Recommendation (when the connecting device has HDMI (Type A) connector):
CAC-HD14EU15BK by ELECOM

Functions while reviewing still images

Magnify / reduce images

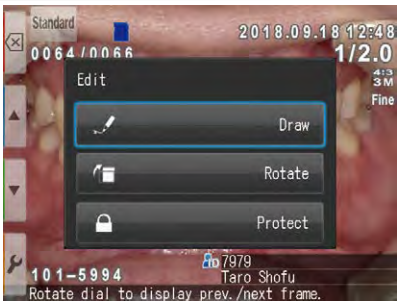
- To magnify the image, press (F2 key) in the Playback mode. Maximum magnification is at x6. Press (F3 key) to reduce the size of the picture. Press (F1 key) to redisplay the picture at the x1 (original) size.
- To scroll the enlarged image, directly touch the area you wish to see on the screen or press ▲▼◀▶.

Magnify…

Reduce…

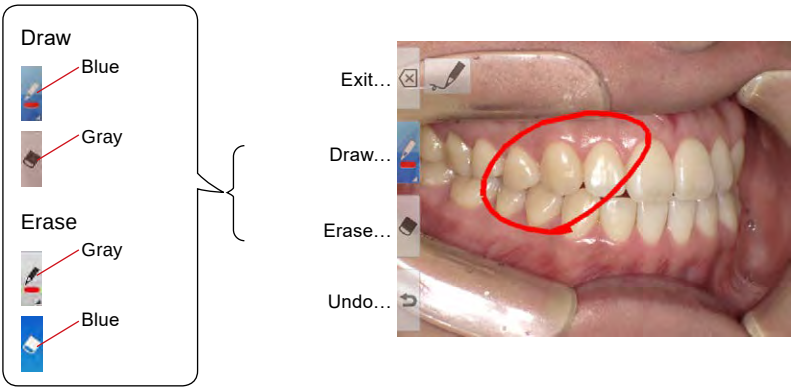
Edit images

You can draw on or rotate the recorded images. Press MENU (MENU key) and the message appears on the display.

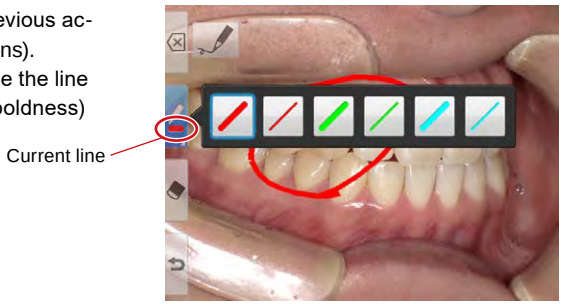


● Draw on images (paint function)

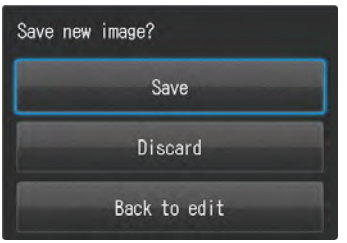
When “Draw” is selected, you can draw lines on the recorded images. Press (F2 key) to draw lines and (F3 key) to erase them.



- Press (F4 key) to undo the previous actions (maximum 5 previous actions).
- Press (F2 key) again to change the line color and boldness (3 colors, 2 boldness)



When finished editing, press (F1 key). Select “Save” to save the edited image (the original image is also stored separately).



Reference Edited image is saved in the size of 640×480 pixels.

● Rotate images

The images can be rotated by 90°.

- Press (F2 key) to rotate the image clockwise or (F3 key) to counter-clockwise.
- Press (F1 key) to finish rotation. Select “Store rotated image” to record the image.

Reference

Some computer softwares including Windows Picture and Fax Viewer installed in WindowsXP cannot display the rotated images due to failure of reading Exif information correctly. This is caused by the compatibility issues with their software, not by any defects of the camera.

Functions while replaying movies

Select one movie frame.

Play

Press the ▶ play button on the center of the screen or press SET/ (SET key).

Pause

Press the ⏸ pause button or SET/ (SET key) to stop the movie temporarily.

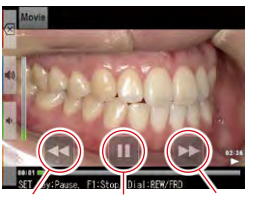
Rewind/ fast forward

- **Rewind**

Press the ◀◀ rewind button or rotate the (Dial key) clockwise.

- **Fast forward**

Press the ▶▶ fast forward button or rotate the (Dial key) anti-clockwise.



Rewind Pause Fast forward

Volume

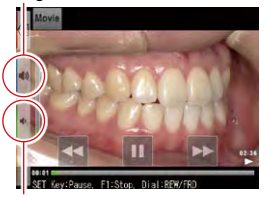
- **Higher**

Press volume (+) key or press F2 key.

- **Lower**

Press volume (-) key or press F3 key.

Higher



Lower

Stop

Press cancel or F1 key to return to the state before playing the movie.

6 Transferring images to your computer

For simplified image management, Shofu has created proprietary file management software called “SureFile”.

The easy to use and convenient SureFile software quickly sorts and files all images taken by EyeSpecial C-IV according to the patient ID entered prior to capturing images.
To download this free software or for more information please visit http://www.shofu.co.jp/eyespecial/en/surefile.html.

To use SureFile, your SD memory card must first be formatted by the EyeSpecial C-IV camera.

●How to format SD memory cards

1 Insert your SD memory card into the card slot
2 Press the MENU key
3 Press the F4 key
4 Select Tab 5
5 Select “Format SD card”

Note

- **Once formatting your SD memory card, all images including the protected ones are erased. Back up the date you wish to keep before formatting.**
- **Wi-Fi memory cards should not be formatted by this camera to avoid damaging the card. When transferring data via Wi-Fi, formatting by this camera is not necessary.**

When using a standard PC function to transfer the data, refer to the instructions of your PC or other specialized book.

Tips

● Patient information file (.MIF)

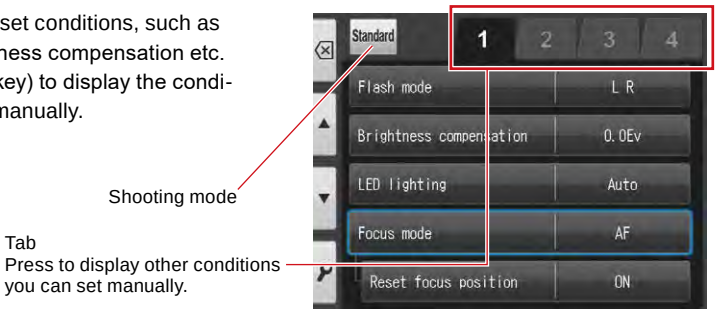
Every movie file (.MOV) comes with its corresponding patient information file (.MIF).
P.97 “Patient information file (.MIF)”

7 Menus

EyeSpecial C-IV has a total of three menus; shooting menu, playback menu and setup menu.

Shooting mode menu

You can manually set conditions, such as flash mode, brightness compensation etc. Press MENU (MENU key) to display the conditions you can set manually.

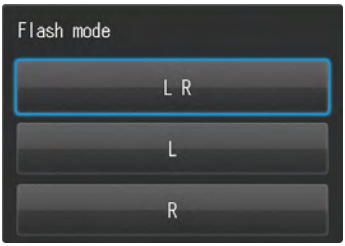


Items	Explanations
Tab 1	
Flash mode	To select flash mode (right & left / right / left).
Brightness compensation	To adjust brightness of the image.
LED lighting	To turn the LED lights on and off. To adjust the intensity of LED lights.
Focus mode	To change the focus mode.
Reset focus position	To select on or off the function to reset the focus position.
Tab 2	
Dial function	To change the dial function from “magnification” to “focal length”.
Auto-cropping	To change on or off the auto cropping function.
Focusing screen	To change the grid type.
ISO	To adjust the ISO speed.
AE mode	To change the AE mode.
Tab 3	
White balance	To adjust the white balance.
Hue adjustment	To adjust the hue.
Contrast	To adjust the color contrast.
Sharpness	To adjust the image sharpness.
Tab 4	
Camera position	To change the image direction while holding the camera in normal (horizontal) position.
Flip direction	To select on or off image flip as well as flip direction.
Save settings	To save or reset the current custom settings.

Tab 1

● Flash mode

To select the flash mode (right & left / right / left)



Items	Explanations
LR*2	Both flashes are on.
L*2	Only left flash is on (seen from the LCD).
R*2	Only right flash is on (seen from the LCD).
ON	Flash is turned on.
Trigger	For activate slave strobe (available on the market).
Auto	Flash is automatically turned on or off for different situation.
OFF	Flash is turned off.

* In some shooting modes, certain flash mode cannot be selected.

*2 You can select to activate either inside or outside flashes only in Tele-macro mode.

● Brightness compensation

To adjust brightness of the image

Touch “+” and “-” keys or rotate the (Dial key) to adjust the brightness. Press OK or SET (SET key) to determine.

Adjust by 1/3 step between -1.0Ev and +1.0Ev.
(Mirror mode : between -0.3Ev and + 1.7Ev)

● LED lighting

To turn the LED lights on or off and to adjust the intensity of LED lights

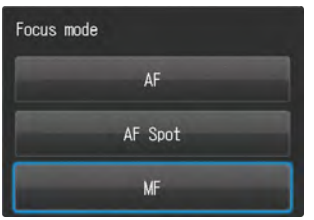
Touch “+” and “-” keys or rotate the (Dial key) to adjust the light intensity. Press OK or (SET key) to determine.

When taking still images
Auto ..... Light intensity is automatically adjusted for different situation.
Select between 0 and 3 ..... 0 (off) - 3 (highest light intensity)

When recording a movie
Auto ..... cannot be selected
Select between 0 and 3 ..... 0 (off) - 3 (highest light intensity)

● Focus mode

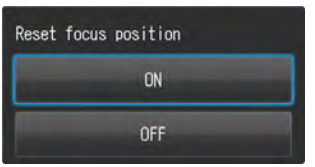
To change the focus mode.
Three focus modes are available, AF Standard, AF SPOT and Manual Focus.



Items	Explanations
AF	Standard focus mode. Focus is automatically set within the focus area.
AF SPOT	The spot you specified is focused. Touch the area you wish to focus within the AF frame.
MF	Photos are focused manually.

● Reset focus position

To select on or off the function to reset the focus position after taking a picture.

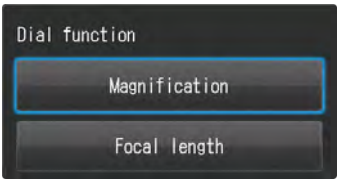


Items	Explanations
ON	The focus returns to the original position after photographing.
OFF	The focus does not return to the original position after photographing.

Tab 2

●Dial function

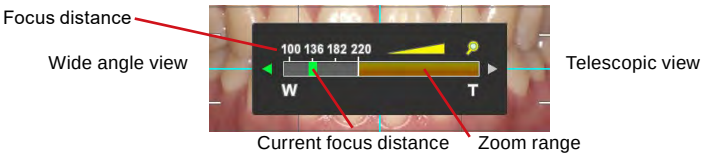
To change items adjusted with the (Dial key).



Items	Explanations
Magnification	To change the magnification rate.
Focal length	To change the focal length.

* When focal length is selected, auto-cropping function is not available.

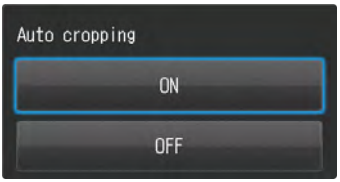
When “Focal length” is selected, the indicator shown below appears on the upper right of the screen instead of the magnification indicator.



* Optimal focal length varies depending on the magnification selected.

● Auto-cropping

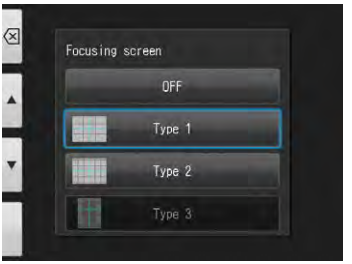
To turn on or off the auto-cropping function

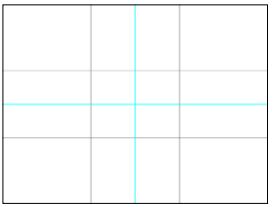
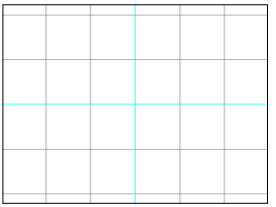
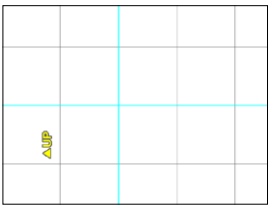


Items	Explanations
ON	The image is automatically cropped based on the magnification rate you select.
OFF	The image is stored at the actual magnification rate without cropping.

● Focusing screen

To change the grid type



Items	Explanations
OFF	—
Type1	
Type2	
Type3 (*)	

* Type 3 is for Face mode only. Optimal grid is automatically selected.

● ISO speed

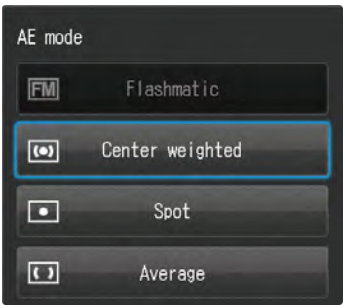
To adjust the ISO speed

Items	Explanations
Auto	ISO speed is automatically adjusted for different situation.
100 - 3200	When ISO speed is raised, bright image can be taken even in a dark place. However, image noise increases.

ISO speed can be adjusted only in Face mode and Tele-macro mode, in which TTL light adjustment is used. It's set at 100 for the mode using FlashMatic light control.

● Auto Exposure (AE) mode

To change the AE mode



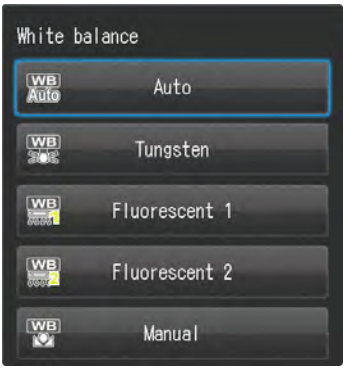
Items	Explanations
FlashMatic	The camera automatically measures the distance from the subject and adjust the light intensity to control exposure.
Center weighted metering	Evaluates the lighting conditions of the subject centered in the viewfinder.
Spot metering	Evaluates the necessary exposure of only the center of the subject.
Average metering	Evaluates light conditions of the entire image to set an optimum picture exposure.

* AE mode can be adjusted only in Face mode and Tele-macro mode, in which TTL light adjustment is used.

Tab 3

● White balance

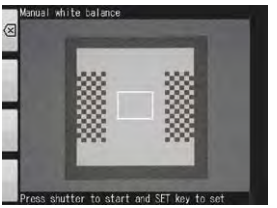
To change the white balance



Items	Explanations
Auto	White Balance is automatically corrected.
Tungsten	Optimal for taking pictures under Tungsten lamp.
Fluorescent lamp 1	Optimal for taking pictures under daylight color (6500k) fluorescent lamp.
Fluorescent lamp 2	Optimal for taking pictures under neutral (natural white) color (5000k) fluorescent lamp
Manual	Photograph white or gray subject as the standard to adjust white balance.

* White balance can be adjusted only in Face mode and Tele-macro mode, in which TTL light adjustment is used.
  When using FlashMatic light control, white balance is automatically adjusted.

When you select “Manual”, the image shown right appears on the screen. Set SHOFU Gray card or the subject you wish to use as the standard of white balance in the square appearing on the center of the screen, and press shutter button. Press OK or SET/[O] (SET key) to determine or ⌫ (F1 key) to cancel.



● Hue

To adjust the hue

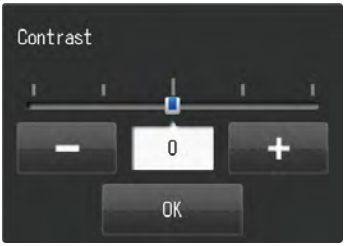
Touch “+” and “-” keys or rotate the (Dial key) to move the indicator. Press OK or (SET key) to determine.

Press “+” and “-” keys on the screen or rotate the (Dial key) to adjust the hue. To move between the indicators, press ▲ (F2 key) of ▼ (F3 key). Press OK or (SET key) to determine.

● Color contrast

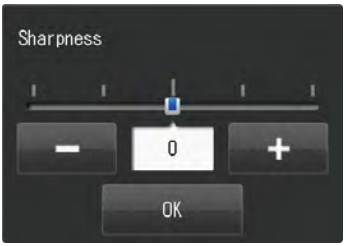
To adjust the color contrast.

Touch “+” and “-” keys or rotate the (Dial key) to move the indicator. Press OK or (SET key) to determine.



● Sharpness

To adjust the sharpness of the image.



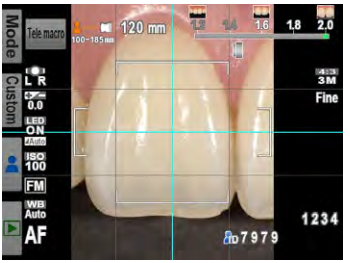
Tab 4

● Camera position

To change the image direction while holding the camera in normal (horizontal) position.

Items	Explanations
Horizontal image	The aspect ratio is 4 (width) : 3 (height).
Vertical image	The aspect ratio is 3 (width) : 4 (height).

When vertical image is selected, right and left margins are blacked out as shown in the photo below.



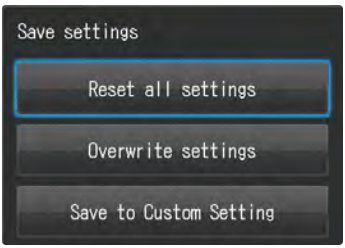
● Flip direction

To select on or off image flip as well as flip direction

Items	Explanations
Every time	You can select if you flip the image or not after each shot.
Vertical	The image taken is automatically flipped vertically and stored.
Horizontal	The image taken is automatically flipped horizontally and stored.
Don't flip	The image taken is stored without being flipped.

● Save settings

To save or reset the current custom settings



Items	Explanations
Reset all settings	Current custom settings are all reset and return to default setting.
Overwrite settings	Current custom settings overwrite the previous one.
Save to Custom setting	Current custom settings are stored as new custom setting.

When selecting "Save to custom setting", select from Custom 1 to Custom 3 to register the setting.

Press F2 key to select saved Custom Setting 1-3 to take photos.

P.24 "Custom mode"

Note **Movie mode cannot be registered in the custom mode.**

Tips

● Erasing custom settings

Custom settings cannot be erased one by one.
When you wish to erase a custom setting, select “Reset all settings” (☛P.93).
Please note that when you select “Reset all settings”, you will erase not just the custom settings but all other startup settings.

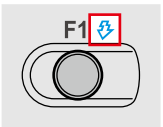
● Overwriting custom settings

Please select the custom setting you wish to overwrite.

Shortcut function in Shooting mode

EyeSpecial C-IV has shortcut functions. Following 4 settings can be changed in Shooting mode without accessing the menu.

Shortcut can be performed by pressing a function key (not function tab), while rotating the (Dial key). The item you can adjust with each function key in its shortcut function is described in blue above each key.



When pressing and holding a function key for a few seconds, the icon of the setting to be adjusted is underlined in red.

Then, rotate the (Dial key) to adjust.

Operation	Items	Icon
F1 + *	Change flash mode	
F2 +	Adjust brightness compensation	
F3 LED +	Turn LED lights on or off	
F4 AF + *	Change focus mode	

* Shortcut functions are available only for still images

Note **Shortcut can be performed by pressing the Function key, not Function tab, while rotating the Dial key.**

Playback mode menu

You can edit the stored images (draw lines and rotate) or protect them from accidental deletion or edit. Press MENU (MENU key) on the playback mode.

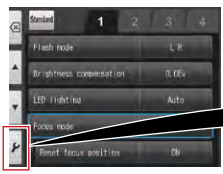
Items	Explanations
Draw *	To draw lines on the images.
Rotate *	To rotate the image by 90°.
Protect	To protect the images to avoid accidental deletion or unintended editing

Refer to “Edit images” on (P.65)

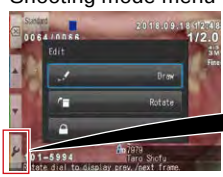
* These functions are available for still images only.

Setup menu

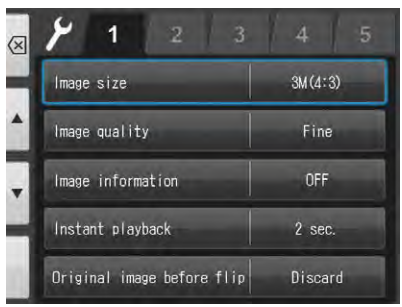
Basic settings including the image size and on/off the key sound etc. can be changed.
Press (F4 key) to display setup menu on shooting mode or playback mode.



Shooting mode menu



Playback mode menu



Setup menu

Items	Explanations
Tab 1	
Image size	To select the image size.
Image quality	To select the image quality.
Image information	To select on or off the image information (date and settings).
Instant playback	To select the time to display the last image taken.
Original image before flip	To select save or discard the original image before flip.
Tab 2	
LCD brightness	To adjust the brightness of the LCD monitor.
Date format	To store current date and time. To select display type of date and time. To select time zone.
Language	To change the language to display menus and screen messages.
Metric / Imperial	To change the display style of length.
Tab 3	
Preview zoom reset	To select the timing to reset the preview zoom.
File number memory	To turn the file number memory function on or off.
Reset	To reset the file number from the next image taken.
Folder name	To change the folder name.
Tab 4	
Volume	To adjust the volume.
Key sound	To turn the key sound on or off.
Power save ON	To select the standby time before power saving starts.
Auto-power off	To select the standby time before auto power off starts.
Tab 5	
Reset all settings	To reset the camera settings to default.
Flash calibration	To calibrate the light intensity and white balance of the flash lights.
Touch panel calibration	To adjust the response range of the touch panel.
Format SD card	To format the SD memory card.

Tips

● Protect the settings selected in the set up mode.

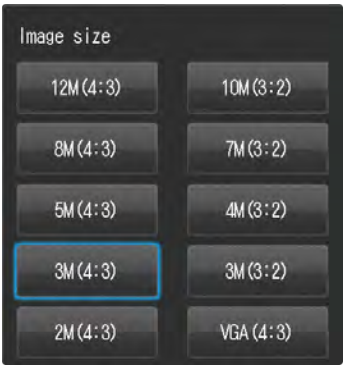
You can use special QR codes to avoid accidental change of the settings selected in the set up mode.

P.96 “QR codes for optional functions”

Tab 1

● Image size

To select the image size.
Vertical and horizontal ratio can be either 4:3 of general digital camera or 3:2 of general single-lens reflex camera.



Reference When selecting 3:2 size, the area outside of photo range is blacked-out.

● Image quality

To select the image quality.

Image quality	Compressive rate	Intended use
Extra-fine	Extremely small	Photo process and enlarge print.
Fine	Small	Normal print (L-2L size) and for viewing photos on the computer screen.
Standard	Middle	Use on the Internet.

Tips

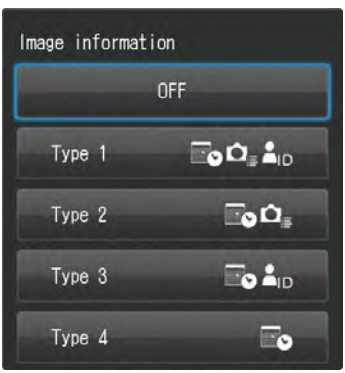
● Compressive rate

The quality of JPEG images vary depending on the compressive rate you select when you save the images. The bigger the compression rate you select, the lower the image quality becomes. Once the image quality is lowered, you can't return it back to the original quality.

When you view the photos on a computer, "Fine" is sufficient for quality viewing. However, when you process them with photo-retouching software etc, please select "Extra fine". In the case you wish to downsize the image, regardless of the quality, selecting "Standard" is recommended.

● Image information

Turning the image information on or off (date and settings used to take the photo).

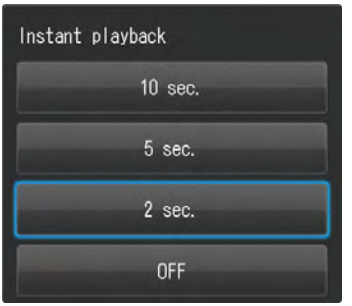


Note **When taking an image with setting image information "OFF", the information cannot be imprinted after taking the image.**

Items	Explanations
OFF	No information is imprinted on the image.
Type1	"Patient ID" + "Date of the photo" + "Conditions of photography (magnification rate, Shooting mode, Flash mode)"
Type2	"Date and time of the photo" + "Conditions of photography"
Type3	"Date and time of the photo" + "Patient ID"
Type4	"Date and time of the photo"

● Instant playback

To select the time to display the last image taken.



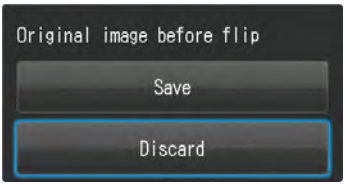
Items	Explanations
2sec. / 5sec. / 10sec.	The last image taken is displayed for the selected seconds.
OFF	Instant playback is off.

Reference

· Even if you select “Off”, the last image taken appears briefly.
· When you wish to return to take photos during instant playback, half-press the shutter button or press SET/ (SET key).

● Original image before flip

To select save or discard the original image before flip.



Items	Explanations
Save	Two images, before and after flip, are stored.
Discard	Only flipped image will be saved.

Reference

The images can be distinguished between before and after flip with the icon appearing on the image during playback mode.

Original image

Flipped image

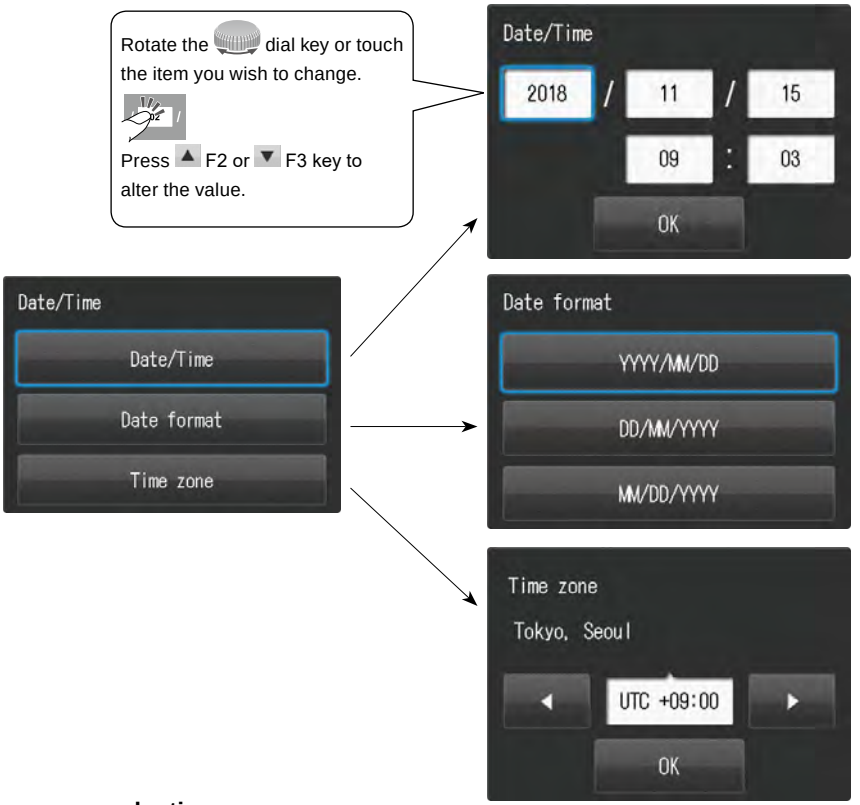
Tab 2

● LCD brightness

To adjust the brightness of the LCD monitor

● Date format

To store current date and time as well as to set the date format and time zone.

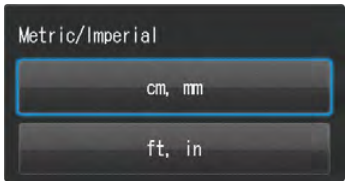


● Language selection

To change the language to display menus and screen messages.

● Metric/Imperial

To change the measurement unit for length.



Reference Focal length is displayed in metric system only.

Tab 3

● Preview zoom reset

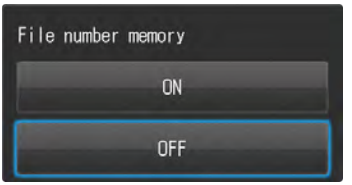
To select the timing to reset the preview zoom

Items	Explanations
Every shot	Preview zoom is reset after each shot.
Every magnific	Preview zoom is reset when you change the magnification rate. When you continue using the same magnification rate for taking next photo, preview zoom remains unchanged.
OFF	Preview zoom returns to the magnification rate you selected after every shot. Unless preview zoom is changed by pressing SET/⊡ (SET key), it does not return to the original size.

Reference When you turn the camera off or change the shooting mode, the image is displayed in original size.

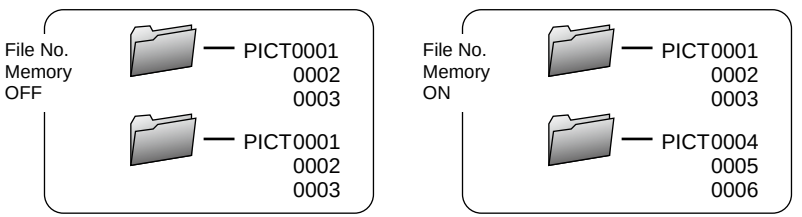
● File number memory

To turn the file number memory function on or off. In default setting, file number starts with “PICT0001.JPG” when you change or format SD card or when you erase all images stored in the SD card. When the date of the dated folder is changed, file number also starts with “PIC0001.JPG”, which can be used sequentially.



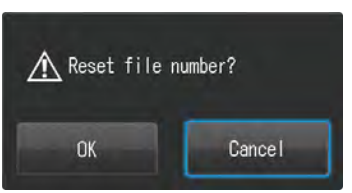
Items	Explanations
ON	File number is stored. In default setting, file number starts with “PICT0001.JPG” when you change or format SD card or when you erase all images stored in the SD card.
OFF	File number is not stored. File number restarts with “PICT0001.JPG” when you change or format SD card or when you erase all images stored in the SD card. When the date of the dated folder is changed, file number also restarts with “PICT0001.JPG”. However, when you store some images in one folder, their file numbers will be in sequence.

Image figure



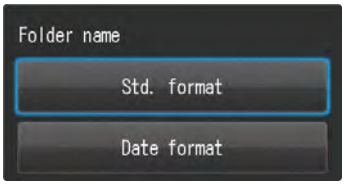
● Reset file number

When the “Reset file number” is selected, the next image taken will reset the counter.

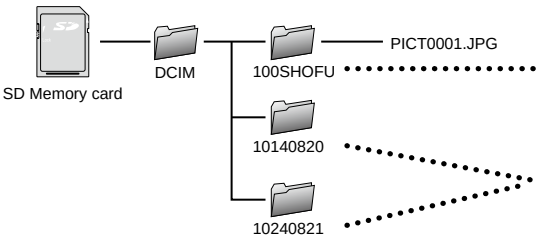


● Folder name

To change the folder name.



Std. format	A folder named with “Folder No. (3 digits) SHOFU” is created. Folder numbers are 3-digit numbers starting from 100. A maximum of 9999 images can be stored in one folder.
Date format	A folder named with “Folder No. (3 digits) year, month, date (5 digits)” is created and its image is stored. Folder numbers are 3-digit numbers starting from 100. Date format is “year (single digit) + Month (double digits) + day (double digits)”.



Standard folders together with their stored images remain unchanged.

When date folder is selected, one folder is automatically created for each day when you take pictures.

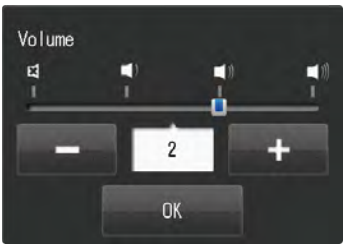
Reference

In the default setting, file number restarts with PICT0001 when a new folder is created. When you wish to use sequential number even if you change the holder, set the file number memory “ON”. (P.90)

Tab 4

● Volume

To adjust the volume

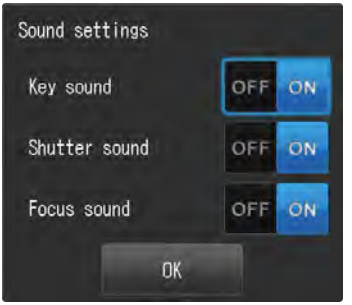


● Sounds

To turn on or off the key sound, shutter sound and auto-focus sound.

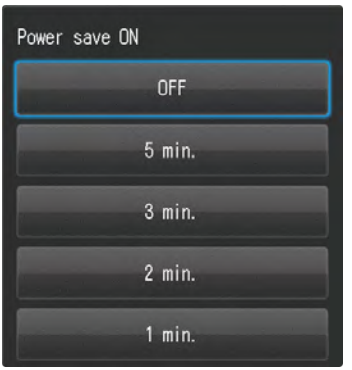
Note

Press OK to determine.
When returning to the previous display by pressing the F1 key, sound setting has not been changed.



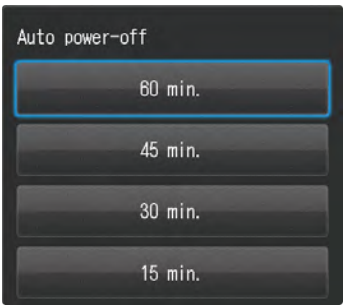
● Power save ON

To select the standby time before power saving starts. If no key operation is performed for the set period of time (the default setting is 1 minute), the display on the LCD screen will turn off. Stand-by time for the Power save mode can be changed.



● Auto-power off

To select the standby time before auto power off starts. If no key operation is performed for the set period of time (the default setting is 30 minute), the display on the LCD screen will turn off. Stand-by time for the auto-power off mode can be changed.



Tab 5

● Reset settings

To reset the camera settings to default.

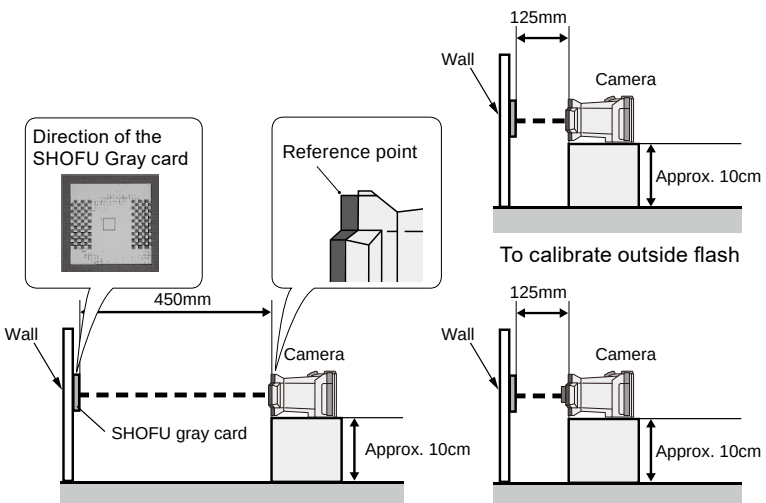
● Flash calibration

To calibrate the light intensity and white balance of the flash lights.
When you take many photos, light intensity might decrease or color temperature might slightly change. Please adjust the light intensity and white balance with SHOFU Gray card provided. It takes about 10 minutes for the calibration to complete.

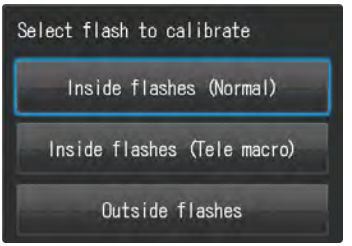
● How to perform calibration (Please prepare the following items)

- SHOFU Gray card (provided)
- Close-up lens
- Scale (50cm)
- Small table (10cm) to place the camera

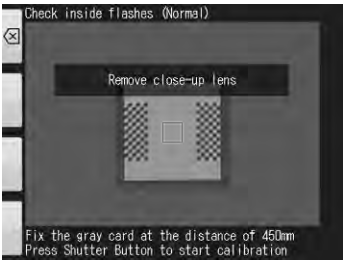
Please place the camera and SHOFU Gray card as shown in the figure below.



1 **When you select "Flash calibration", the message pictured right appears on the screen.**
Select the calibration you wish to perform.
* Always mount the close-up lens when performing calibration for inside flash for taking photos in Tele-macro mode.



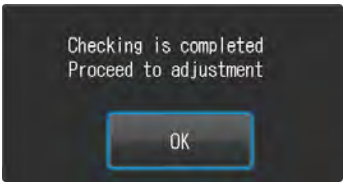
2 **Distance between the camera and the gray card is different depending on the calibration you perform. Check if calibration is necessary following the instructions pictured right.**



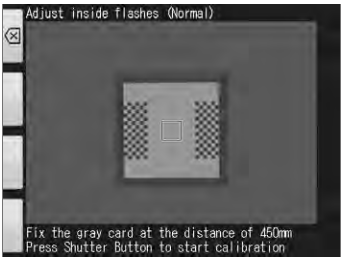
3 **When the checking is completed properly, either of the messages pictured right appears. When calibration is necessary, proceed to the next procedure.**

● **When adjustment is unnecessary**

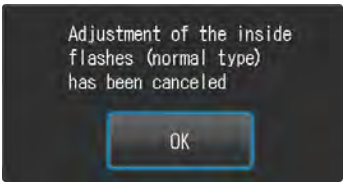
● **When adjustment is necessary**



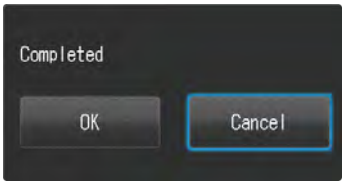
4 **Distance between the camera and the gray card is different depending on the calibration you perform. Perform calibration following the instructions pictured right.**



5 **When the message shown in the right photo appears, check the distance between the camera and the gray card and reperform calibration from the beginning.**



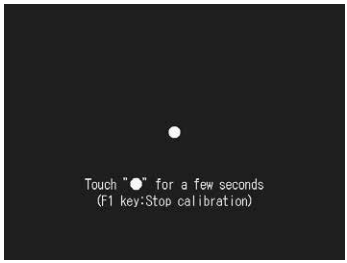
6 **When calibration is completed properly, the message shown in the photo right appears. Press "OK" to store calibration result. Or press “Cancel” to discard it.**



Note
- **Do not move the camera during calibration.**
- **Calibration is recommended every six months.**

● Touch panel calibration

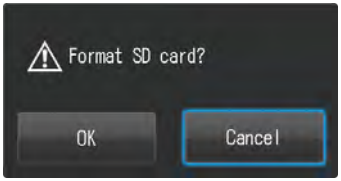
To adjust the response range of the touch panel. When you find the difference between the position you touch and response position, calibrate the touch panel. A white spot appears on the screen on 5 different positions, press it for a few seconds each.



Reference Use stylus etc to perform calibration. Do not use a tool with a very sharp point to avoid damaging the screen.

● Format SD card

To format the SD memory card.



Note **When formatting the SD memory card, all images including the protected images are deleted.**

QR codes for optional functions

EyeSpecial C-IV provides some optional functions by scanning special QR codes. Select “scanning QR code” from the custom mode.
Refer to P.25 “Scanning QR Code”

QR code	Activate	Deactivate	Explanations
To make registering patient information mandatory			To make registering patient information mandatory. When this function is activated, you cannot take photos unless you record patient information. With this function, you can avoid skipping saving patient information accidentally.
Function lock			Setup menu is locked to always take the images in the same size and quality.
Reset settings			All settings are cleared to default.

Patient information file (.MIF)

Every movie file (.MOV) comes with its thumbnail and corresponding patient information file (.MIF).
When handling, such as moving, deleting or copying etc, movie files (.MOV) on the computer, always handle them together with the corresponding patient information files (.MIF).

When using a SD card with either the movie file or patient file remaining on it, an error message “File structure is corrupted” might appear on the screen.

When the error message “File structure is corrupted” appears, backup the necessary data and format the SD memory card.

MEMO

8 Note on Use

Operating temperatures

- Recommended temperature to use and store this camera is between 0°C and 40°C.
- Do not subject the camera or batteries to any extreme temperatures or high humidity.
- Avoid exposing to extreme temperature changes to prevent condensation from forming inside the camera. Before taking the camera from a cold to warm environment, place the camera into a plastic bag and completely remove the air inside of the bag. After bringing the camera inside, wait until the camera reaches room temperature before removing it from the plastic bag.

Recording media

- The recorded data might be lost in the following cases. SHOFU will not be responsible in any way for the loss of recorded data or the consequences of such loss. It is recommended to always maintain backup data on another media (hard disc etc).
  1. If the card is misused by the user or any third person.
  2. If the card is affected by strong static electricity or electrical noise.
  3. If the card is removed or the camera is tuned off while recording data to or formatting the card.
  4. If the card has reached its write cycle limit.
- When the card is formatted, all the recorded data has been erased. Make sure to backup important data.
- Once the memory card has reached its limit of read/writes, you will not be able to use it any more. Please replace the damaged card with a new one.
- Avoid using the camera in areas where strong static electricity or electric noise is generated.
- Do not bend, apply excess force or expose to extreme temperatures.
- Strong static electricity or shock might damage the memory card resulting in failure to record or playback images. Please replace the damaged card with a new one.
- Do not touch the electrical contacts with fingers or metals.
- Keep away from heat, moisture and direct sunlight.

LCD screen (with touch panel function)

- The LCD monitor has been developed using high-precision engineering. Although the percentage of active pixel is more than 99.99%, There may be white, black or red pixel at 0.01%. This is not a sign of defect and does not affect the recorded images.
- Do not scratch or press the screen with any sharp instruments.
- When using this camera in a cold location the screen may appear darker immediately after start using compared to a normal environment. The screen will return to normal brightness as the internal temperature of the camera rises.
- If the LCD monitor becomes dirty with fingerprints or dust, wipe with a soft, dry cloth.

Degradation of image quality

- The image quality is not degraded even if the camera becomes old naturally through normal use. However, if you try to take photos of the sun and intense light comes into image sensor, or if too many photos are taken, it might degrade the image quality. Please contact your SHOFU dealer for maintenance and repair.

Water proof and chemical resistance

- EyeSpecial C-IV is IPX4 water proof. This means that it can withstand against water jets from all directions and can be cleaned with a disinfectant-moistened gauze (ethanol for disinfection). However, never immerse it into any liquid.
- Do not handle batteries and SD memory card with wet hands.

Others

- Do not apply unnecessary strong forces to this camera.
- Turn the camera off while carrying it in the bag.
- Do not expose the lens to direct sunlight to avoid damaging internal components.

9 Maintenance & Storage

Follow the safety information indicated in the “Important Safety Instructions” included in the package.

Maintenance

- Wipe the outside of the camera with a soft, clean and dry cloth. For disinfection, gently wipe with a disinfectant-moistened gauze etc. Should this camera come into contact with sand, avoid dusting it off with hands, instead, use compressed air to clean.
- Use compressed air to remove dust and dirt from the lens. When the lens becomes very dirty, wipe it in a circular motion with a soft cloth or lens tissue moistened with lens cleaner. Never pour lens cleaner directly onto the lens.
- Do not use thinner, benzene or any organic solvent to clean the lens.
- Do not touch the lens directly with fingers.

Storage

- Store this camera in a cool, dry and well-ventilated area away from dust and chemicals. Before storing the camera when not in use for a long period of time, store in a hermetic container. Placing some desiccant in the container is recommended.
- Before storing the camera when not in use for a long period of time, remove the batteries and SD memory card.
- Even while the camera is in storage, press the shutter button a few times once in a while to check that the camera is working properly.

10 Troubleshooting

Camera problems

Trouble	Cause	Measure	Reference
Cannot take pictures or cannot playback the images.	Batteries are exhausted.	Replace the old batteries with new ones.	P.12
	Auto-power off is working.	Power is automatically turned off when the camera is not used for 30 minutes after power save mode is on. Switch on the camera again.	P.17
Cannot focus even if the shutter is half-pressed.	Manual focus is selected.	Change to Auto-focus or Spot Auto-focus.	P.72
	Focus distance is outside the recommendation.	Take a photo within the limit of focus distance.	P.31
"No memory card" appears even if the memory card is in place.	When inserting the SD card too quickly, the camera sometimes fails to format the card and displays the error message.	Remove the card and reinsert it slowly into the camera.	-
	The memory card is damaged.	Replace the defective card with a new one.	
Photographs appear too bright, too dark or blurred.	The camera was moved after focusing.	Do not move the camera once it's focused. If it's moved, refocus before taking pictures.	P.32
Color fidelity and brightness are poor. (when viewed on the PC or printed out)	Flash lamps have been aging and light intensity and color temperature are decreasing.	Perform flash calibration.	P.93
	Monitor setting is not optimal. The images taken with this camera are designed to present optimal color fidelity when they are viewed on sRGB whose color temperature is 6,500k with 2.2 gamma.	For more details, refer to a specialized book in color matching.	-
When the camera is turned on, nothing appears on the screen while red pilot lamp blinking and eventually the camera freezes.	This may occur only occasionally when the batteries are exhausted.	Replace old batteries with new ones.	-
The camera does not work properly.	Turn off the camera and remove all the batteries. Replace the batteries and turn on the camera again. If the camera still does not work, it might have some defect. Contact your SHOFU dealer.		-
Even after installing new batteries, the message "Battery depleted" appears.	Wi-Fi SD memory card is inserted into the camera while powering with alkaline batteries.	Since Wi-Fi SD memory cards consume more energy to operate than regular memory cards, energy insufficiency causes this error. Use rechargeable nickel metal hydride (NiMH) batteries when using Wi-Fi SD memory cards.	P.14

Trouble	Cause	Measure	Reference
Batteries consume too quickly.	The camera is used in a cold area. Or batteries are too cold. Generally, the lower the temperature becomes, the quicker the batteries consume.	Use the camera in warm area.	-
	When using rechargeable batteries, they might have outlived their usefulness.	Replace the old batteries with new ones.	-
Even though you inserted a SD memory card into your computer, images cannot be transferred via SureFile.	The SD memory card is not formatted with EyeSpecial C-IV. SureFile recognizes and transfers the images taken only with EyeSpecial C-IV.	Format SD memory cards with EyeSpecial C-IV before using SureFile. *Back up the date you wish to store before formatting the SD memory card.	P.69
"Memory card full" appears even though the SD memory card does not store so many images.	SD memory card is occupied with the files other than JPEG format such as document files or back up files, and does not have sufficient room to store new images.	Erase all the files other than JPEG format stored in SD memory card.	-
	A folder numbered "999", which was taken with a camera other than EyeSpecial C-IV, exists.	Format the SD memory card. *Back up the date you wish to store before formatting the SD memory card.	-
Cannot take photos even if pressing the shutter button.	Flash has not been charged fully yet.	Battery charge takes longer time after not being used for a long period of time. Wait until the flash mode icon disappears.	P.41
When inserting a Wi-Fi SD memory card, "Incompatible memory card" appears on the screen.	When inserting a Wi-Fi SD memory card after switching on the camera, sometimes start-up might be failed and this message appears.	Remove the card from the camera and insert it again.If error appears again after reinserting the Wi-Fi SD memory card, switch off the camera. Then, reinsert the Wi-Fi SD memory card and switch on the camera again.	-

Error messages

Message	Cause	Measure	Reference
Battery depleted	Batteries are dead.	Replace the old batteries with new ones.	P.12
No memory card	There is no card in the camera.	Insert a SD memory card.	P.13
Invalid image size	The image is too big to display.	Check the maximum image size that can be displayed on the screen.	-
Invalid image format	The image is not JPEG.	Only JPEG images can be displayed. Even if taken in JPEG format, some images might not be able to be displayed if they were edited on the computer or taken with a digital camera other than EyeSpecial C-IV.	-
Memory card full	The storage is full.	Reduce the image size and image quality.	P.84
		Erase some images.	P.61
		Replace the full memory card with another memory card with sufficient storage capacity remaining.	P.13

Message	Cause	Measure	Reference
Too many files. Erase some images.	The number of the photos stored in the SD card has exceeded 5,000.	Erase some images.	P.61
Number of images reached the limit. Cannot save any more.	The number of the photos stored in the SD card has exceeded 9,999. This camera can manage approx. 9,999 images per memory card.	Erase some images stored in the SD card on your PC.	-
		Replace the full memory card with another memory card with sufficient storage capacity remaining.	P.13
Memory card locked	SD memory card is protected.	Slide up the write-protected tab.	P.14
No image	No image is recorded in the SD card.	Replace the empty card with the recorded one, or take new photos to record.	P.13
Cannot read file	The image file is damaged.	Format the SD memory card. *Back up the date you wish to store before formatting the SD memory card.	P.99
File structure is corrupted. Format the SD memory card.	Either the movie file (.MOV) or the patient information file (.MIF) has been lost.		
Incompatible memory card	Following factors are considered File system was changed by formatting the SD card using a computer. Formatted in different camera or other devices Format the SD card following the instructions displayed on the LCD screen of the camera. All recorded images are erased after formatting the SD card. Backup the necessary files by transferring pictures to the computer. It might also be considered that SD card is defective. Please try another card if you have one.		P.69, P.99
File system error	SD memory card system error has been found.	Format the SD card following the instructions displayed on the LCD screen of the camera. It might also be considered that SD card is defective. Please try another card if you have one.	P.69, P.99
WB unadjusted	Something other than the provided SHOFU gray card was photographed when white balance is manually set.	Use provided SHOFU gray card.	P.76

Frequently asked questions

Question	Answer
How long is the battery life?	Refer to "Tips: Storage capacities (number of pictures (P.14))"
Why don't the number of pictures remaining decrease after taking pictures or why does it sometimes decrease two at once?	The picture does not take up enough space to decrease the number. The camera is operating normally and you can continue taking pictures.
Cannot see a picture taken on the camera screen. Why?	Possible causes are as follows; · If the file name is changed or its location is changed to another folder, the image cannot be displayed on the camera screen. Get it back to the original name and position. · If the image is edited or rotated on the computer and then overwritten, the new image might not be able to be displayed on the camera. In this case, it cannot be restored to display on the camera.
What's the temperature range for camera use?	It's between 0°C and 40°C (Humidity : 10 to 80%)

11 Specifications

Items		Specification
Sensor	Type	Primary Color Filter, CMOS sensor
	Size	1/1.7inch
	Total pixels	Approx. 12 million pixels (4,163 × 3,062)
	Number of effective pixels	Approx. 12 million pixels (4,000 × 3,000)
	Camera sensitivity	ISO100 - 3200
Lens	Focal length (35mm equivalent)	28 - 300mm, A total of 25 levels
	Maximum aperture	WIDE : 2.83 - 7.99
		TELE : 2.85 - 11.44
	Zooming method	Optical zoom + digital zoom
	Optical filter	UV / IR cut filter
	Image stabilization	None
AF	Method	Contrast autofocus
	AF area	Center-weighted/SPOT
	Focus mode	One (single) shot auto focus and manual focus by adjusting the distance
	AF assist light	4 White LED lights
AE	Method	TTL(through the lens) metering/ FlashMatic (patented) light control
	AE area	Center-weighted/SPOT/Standard
	Shutter release	Electronic & Mechanical shutter release
	Shutter speed	1/15 - 1/1000 sec., automatic change
WB	Modes	Auto/Dental/ Fluorescent lamp 1/Fluorescent lamp 2/Flash/Custom
Shooting mode	Kinds	Standard/ Surgery/Face/Mirror/Low-glare/Whitening/Tele-macro/ Isolate shade/Movie
Flash	Method	Total 4 lights (2 built-in and external lights, respectively)
	Sync speed	1/1000 speed of using flashmatic light control, 1/60 speed of using Face mode
	Light control	Flashmatic light control or automatic light control by sensor
	Calibration function	Can be implemented in Setup mode
LED	Method	4 white LED lights for illumination
	Light mode	0 (OFF) / 1 / 2 / 3 / AUTO
Finder	Finder style	No viewfinder 3.5inch VGA(640*480) Liquid crystal display Movie plays on NTSC/PAL
	Electronic magnifier	Full-screen/Full-screen ×2/Full-screen ×4
	Focusing screen	Type1 / Type2 / Type3 / OFF
	LCD Frame rate	60fps

Items			Specification
Image storage	Storage media		SD / SDHC / SDXC card (MAX 512GB)
	File format		JPEG / MOV (in combination with (.MIF))
	Still images Image size (JPEG)	12M	4,000×3,000
		8M	3,264×2,448
		5M	2,560×1,920
		3M	2,080×1,560
		2M	1,600×1,200
		VGA	640×480
		10.6M	4,000×2,672
		7.1M	3,264×2,176
		4.3M	2,560×1,712
		2.8M	2,080×1,392
	Movie size (MOV)		HD (1280×720) 59.94fps
	Image quality		Extra fine/Fine/Standard
	Digital zoom		10 steps from ×1.05 to ×2
	SD card record format		DCF (standard / date)
	Exif Tag information		Complying with Exif2.21+DCF standard
	Information imprinting		· Date and time + shooting conditions + patient information · Date and time + shooting conditions · Date and time + patient information · Date and time
Display/ Playback Mode	Display format / magnification		9-image index, ×1 - ×6
	Instant playback		OFF/2sec./5sec./10sec.
	Language		Japanese, English, German, French
	Date format		yy/mm/dd, mm/dd/yy, dd/mm/yy
	Metric / Imperial		cm, mm / in, ft
	Rotate/flip function		Rotate 90° based on Exif information
	Data erase function		1 image/Selected image/All images
Camera	Power supply		4 Alkaline AA batteries / 4 nickel metal-hydride (NiMH) batteries
	Battery for built-in clock		SR44 (cannot be replaced by users)
	External power supply		None
	Power save function		OFF / 1 / 2 / 3 / 5 min
	Auto-power off		15 / 30 / 45 / 60 min
	Dimensions		W176×D125×H80 (mm) (accessories not included)
	Weight		590g (accessories not included)
	Operating temperature / Humidity		0 to 40°C / 10 to 80% (without condensation)
	Storage temperature / Humidity		0 to 60°C / 10 to 90%
	Water proof		Complying with IPX4
	Chemical resistance		Ethanol for disinfection
External I/O	Tripod socket		○
	Hot shoe		None
	Remote release terminal		None
	SD Memory card slot		SD / SDHC / SDXC memory card
	PC connecting slot		None
	HDMI output terminal		○
	Sound input		Built-in microphone
	Sound output		Built-in speaker

12 Accessories

Name	Quantity	Note
EyeSpecial C-IV camera	1	-
Lens cap	1	Mounted on the camera body
Hand strap	1	-
Alkaline AA battery	4	-
SDHC memory card	1	16GB
SHOFU gray card	1	-
Close-up lens	1	AC close-up No. 5, Diameter : 49mm
Important safety instructions	1	-
Users' manual	1	-
Quick reference	1	-
Warranty	1	-

13 Warranty

This product has undergone strict quality control and inspection. In the unlikely event that a defect or other problem is discovered under normal usage within the warranty period (for 1 year after you purchase the product), SHOFU will replace or repair this product free of charge. Refer to the Warranty attached to this camera.
Alkaline AA batteries, lens cap, hand strap, SDHC card and SHOFU gray card are consumables and will not be covered by the Warranty.

Manufacturer
SHOFU INC. Kyoto 605-0983, Japan

SHOFU DENTAL CORPORATION San Marcos, CA, USA
EC REP SHOFU DENTAL GmbH Ratingen, Germany
SHOFU DENTAL ASIA-PACIFIC Singapore
SHOFU DENTAL TRADING (SHANGHAI) China