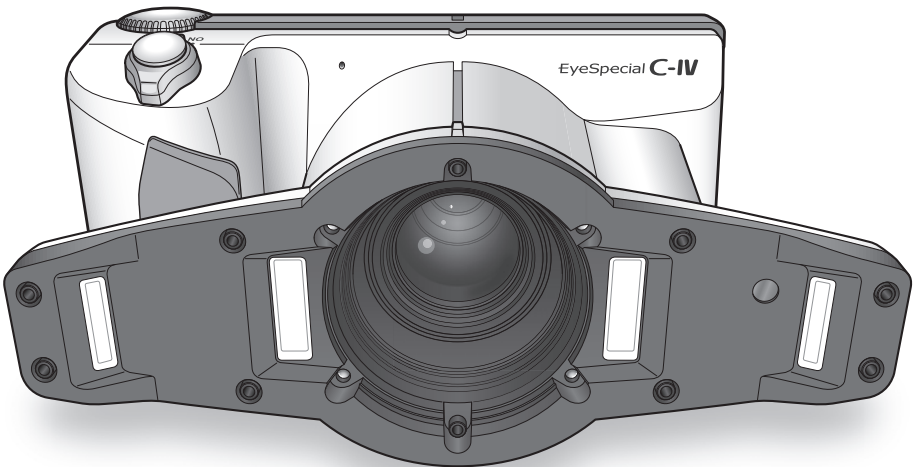
Read through the attached “Important Safety Instructions” before using this camera.



Smart digital camera designed exclusively for dentistry

EyeSpecial C-IV

User’s Manual

For the Advanced Manual of EyeSpecial C-IV, visit our website at http://www.shofu.com.
Select the region you purchased the camera.
Advanced mark indicates that the detailed explanation is given in the “Advanced Manual”. Please refer to the indicated section if necessary.

SHOFU INC.

Before using your camera

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

Intended use

To take intraoral photos and movies for documentation of dental procedures.

Important precautions

For your safety

- Read through the "Important Safety Instructions" 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 shooting

- 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 Multimedia 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, e.g. to your PC, removable HDD or other back-up medias.

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 the rightful owner.
- Copyright law prohibits the use of pictures without the permissions of the rightful owner.

Privacy policy

- The information, which can identify specific individuals, might belong to the “Personal Information” stipulated in the “Act on the Protection of 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. We do not assume any responsibility for subsequent damages arising from the failure of the unit beyond the warranty period.

Disposal

- 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.

· 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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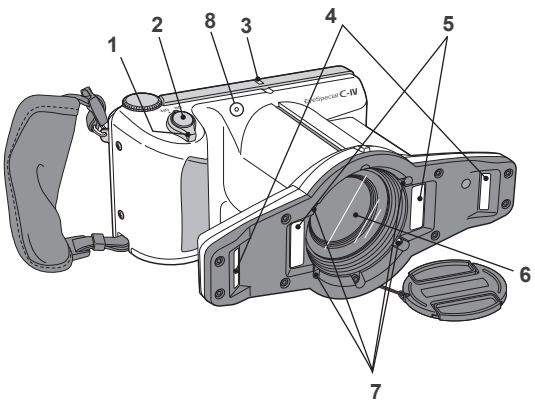
1 Getting to know your camera

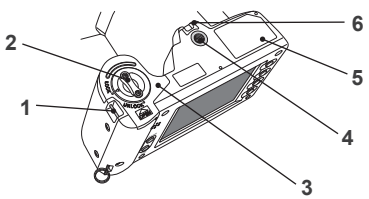
Names of parts

Front view



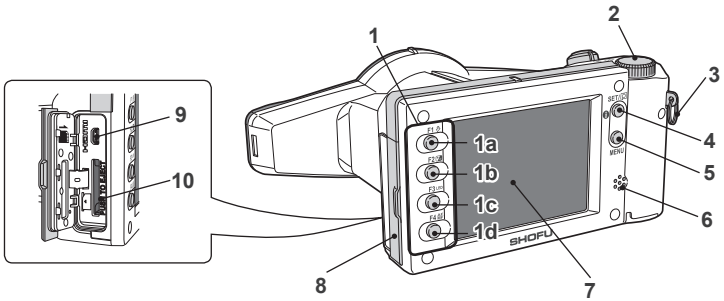
No.	Part name	No.	Part name
1	Power switch	5	Inside flash
2	Shutter button	6	Lens
3	Pilot lamp	7	LED light
4	Outside flash	8	Microphone

Bottom view



No.	Part name	No.	Part name
1	Strap eyelet	4	Tripod socket
2	Lock lever	5	Name plate
3	Battery cover	6	Strap hole

Back and side views

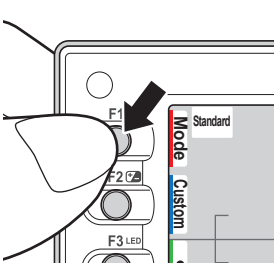


No.	Part name	No.	Part name
1	Function keys 1a:F1 1b:F2 1c:F3 1d:F4	4	SET Key
		5	MENU Key
		6	Speaker
		7	Liquid crystal display screen (touch panel)
		8	Card slot/HDMI connector cover
2	Dial key	9	HDMI connector (Micro HDMI)
3	Strap mount	10	SD card slot

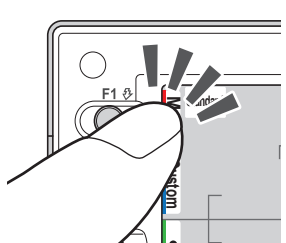
Function keys

F1 – F4 keys are function keys which will change depending on the mode you select. They are displayed on the 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.

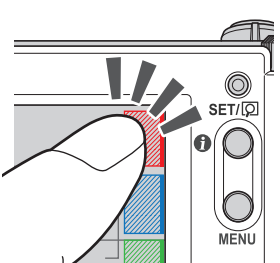
In other words, “Press [Mode] (F1)”, can be achieved by depressing either the physical “F1” key, or the corresponding color bar (or tab) on the digital display on the left (or right) side of the screen.



Function keys



Color tabs

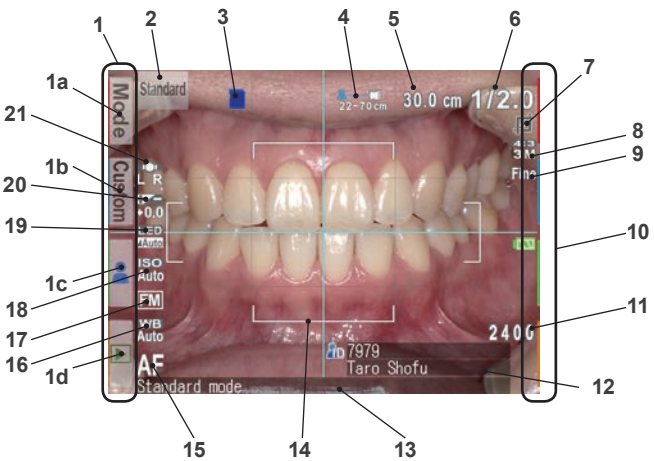


Color bars

LCD screen indicator

Information described on the LCD screen for shooting mode and playback mode, respectively, is as follows;

Shooting mode

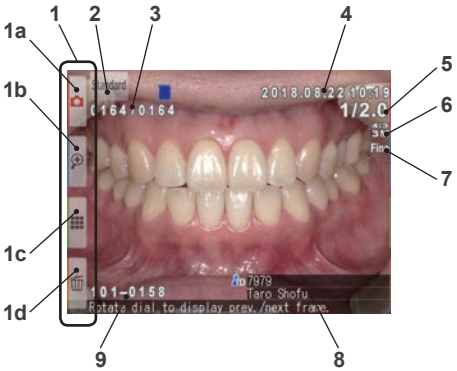


No.	Part name	Reference	No.	Part name	Reference
1	Function tabs 1a: Preinstalled modes 1b: Custom modes 1c: Edit patient ID information 1d: Playback mode	 P.16 P.18 P.14 P.27	9 10 11 12 13	Image quality Color bars Storage capability Patient information Instant message	P.38,39 P.2 9 P.14 to 16 -
2	Active shooting mode	P.16	14	AF Frame	P.22,23
3	Card indicator	-	15	Focus mode	P.23
4	Possible distance range	P.20	16	White balance	P.37
5	Optimal distance (before focusing) Actual distance (after focusing)	P.20,22 -	17 18	Auto Exposure (AE) Mode ISO speed	P.37 P.37
6	Current magnification rate	P.19	19	LED light mode	P.37
7	Auto-cropping	P.24	20	Brightness compensation	P.37
8	Image size	P.38,39	21	Flash mode	P.37

* Other information might appear on the screen.

Advanced P.4 “LCD screen indicator”

Playback mode



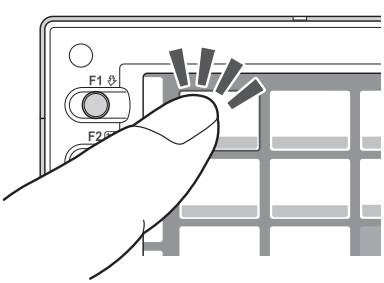
No.	Part name	Reference
1	Function tabs 1a: Shooting mode 1b: Enlarge image 1c: Thumbnail index 1d: Erase image	 P.13 P.32 P.28 P.29
2	Selected shooting mode	P.17
3	Picture No./Total number of pictures taken	-
4	Date & time of the picture	-
5	Selected magnification rate	P.19
6	Image size	P.38,39
7	Image quality	P.38,39
8	Patient information	P.14 to 16
9	Folder No.-File No.	-

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, or by using the tip of a stylus. However, securely pressing with finger is recommended. Note that the screen does not respond to multi-touch or swipe motions.

● Press keys

Press ▲ F2 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 P.2 “Function keys” in this User’s Manual.

Getting started

Perform the following preparation before you start taking pictures.

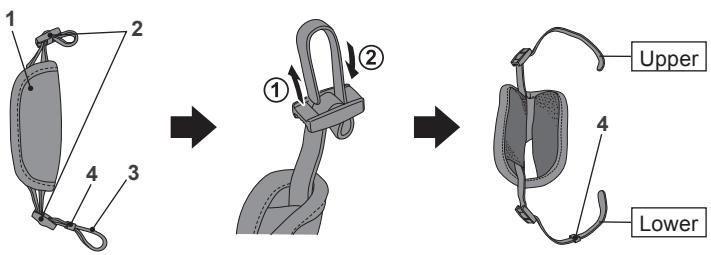
Attaching the hand strap

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.

⚠Attention

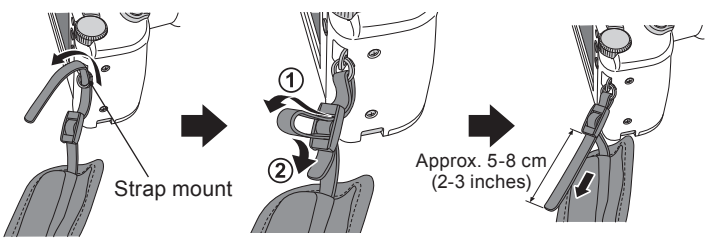
- Always use the strap to avoid dropping the camera accidentally. This might cause injuries.

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

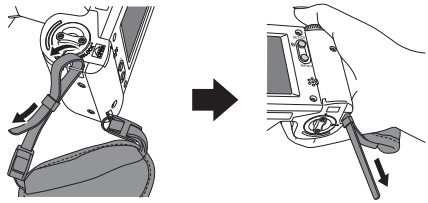


No.	Name	No.	Name
1	Flap	3	Belt
2	Slide adjuster	4	Retainer clip

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

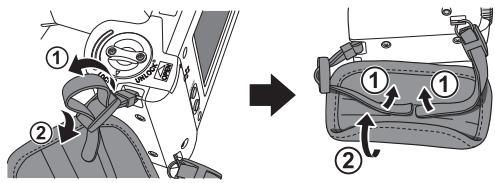


3 **Put the other end of the strap through the strap eyelet. Adjust the strap while holding the camera until the optimal fit is obtained.**



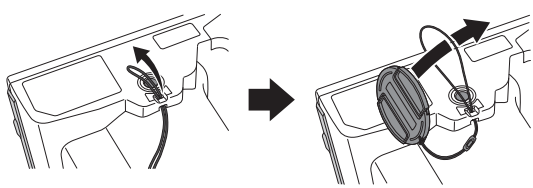
4 **Feed the strap end through the slide adjuster to fix.**

· 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.**

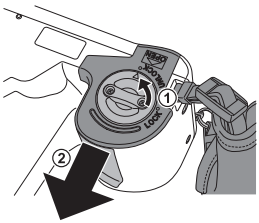


Info If you do not need the lens strap, cut it off with scissors etc.

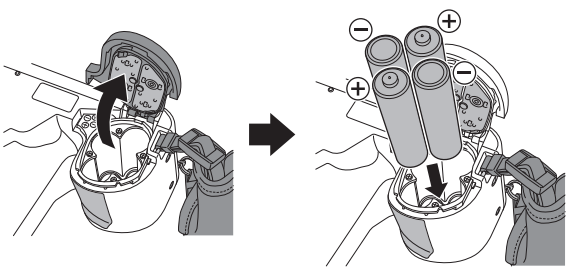
Installing batteries

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

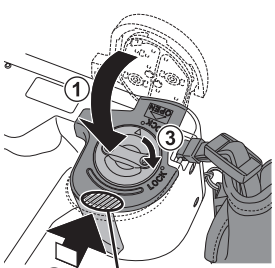
1 **Turn the lock lever to the position of "UN-LOCK". Then, slide the battery cover to the front side of the camera.**



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



3 **Close and slide back the battery cover to the original position and rotate the lock lever to the "LOCK" position.**



Note

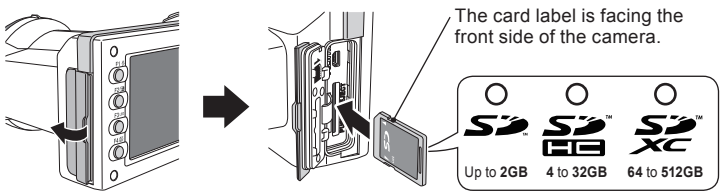
- **Make sure to rotate the lock lever to the "LOCK" position to avoid dropping the batteries.**
- **Use only nickel metal hydride (NiMH) batteries or alkaline batteries. Never use manganese batteries or nickel cadmium batteries.**
- **Never use batteries of different types or different manufactures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

Info

- Rechargeable nickel metal hydride (NiMH) batteries may be inert and consequently they might not supply power immediately after purchase or if they are left unused for a long period of time. Recharge and discharge the batteries 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 card slot/HDMI connector cover securely.**

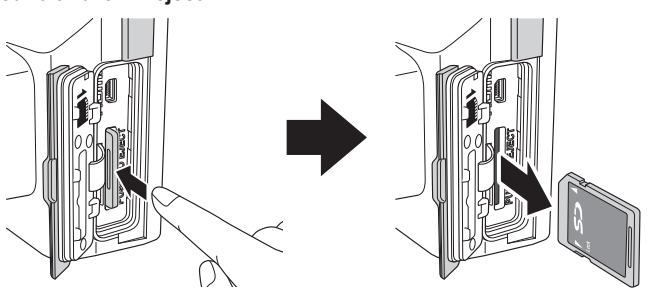
Tips

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

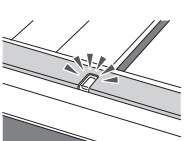
P.36 “Transferring images to your computer”

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)

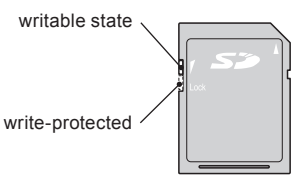
Approximately 350 shots can be taken on a fully charged rechargeable nickel metal hydride battery (NiMH; cell capacity 1,900mAh). Approximately 250 shots can be taken when using new alkaline batteries. (based on in-house test results)
The numbers above are just rough estimates and your results may vary. Extensive operation of the camera settings 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 card. 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 a write-protection tab. Slide down the tab to prevent valuable data from being accidentally erased from the memory card. To save, edit or erase data on a SD memory card, unlock the card.



● Storage capacity of a memory card

The number of photos you can store in the provided memory card is approximately 9,999. 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 back-up 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

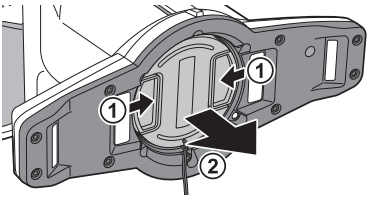
Message when reaching 9,999 shots

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

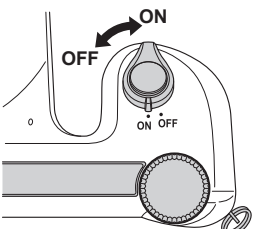
1 **Pinch the notches on the lens cap and pull it off.**



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

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

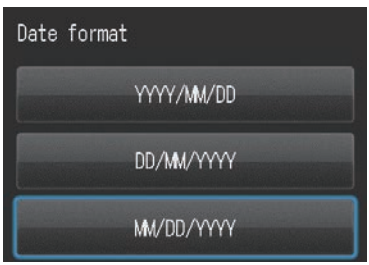
1 **Language selection**
Select one from the following languages: Japanese, English, German or French.

2 Setting the time zone

Select one time zone.

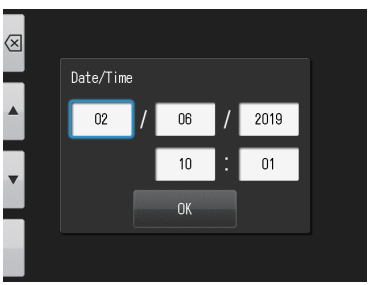
3 Choosing the date display style

Select one date format.



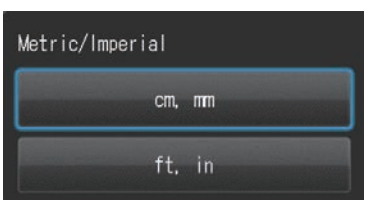
4 Setting the date and time

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



5 Selecting unit display

You can choose from metric and imperial unit display.



Info 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.38)

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

Energy is supplied to the 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 the 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 entered non stored patient ID number and information are 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 have taken a picture etc. For optimum performance wait until ongoing processes have concluded before operating.

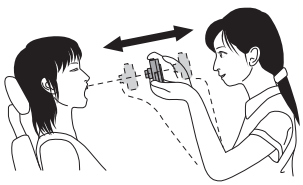
2 Taking pictures / movies

● 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.

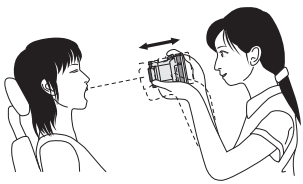
● General digital camera



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

[Disadvantages]
- · The subject doesn’t always appear 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.14 P.15 P.16
STEP2	Select shooting mode	· Preinstalled modes · Custom modes	P.16,17 P.18

Still images

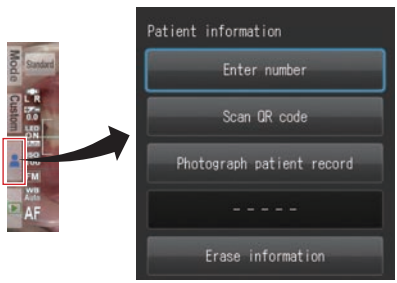
STEP3	Select magnification rate	P.19
STEP4	Set focus distance	P.20,21
STEP5	Take picture	P.22,23

Movies

STEP3	Record movie	P.26

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.



… Enter number (maximum 20 digits including underscore, hyphen and space)
… Read patient's name and ID No. by scanning QR Code
... Photograph patient record

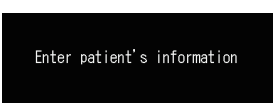
... Erase stored information

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.

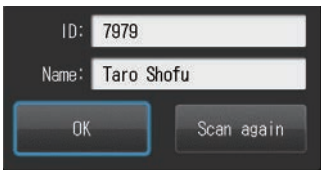


Advanced P.96 "QR codes to make recording patient information mandatory"

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.

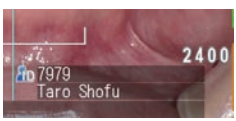
When scanned successfully, the message shown on the right will appear on the screen. Press OK to store the information.

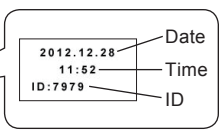


Tips

Patient ID number will be displayed on the screen and stored as follows;

1. In the shooting mode
   Patient ID number is displayed on the lower right of the screen and recorded on the image taken.
2. In the playback mode
   Patient ID number is displayed on the lower right of the screen.
3. Patient information image
   When patient information is recorded, an image shown below is created.





*Patient's name does not appear.

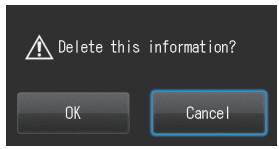
Photograph patient record

Patient's name can be recorded by taking a picture of his/her medical record.

Advanced P.21 "Photograph patient's record"

Erase patient information

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



Info

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

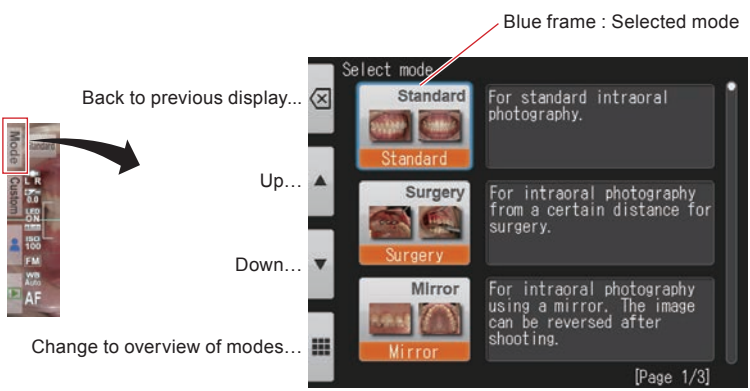
Confirm patient information

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

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

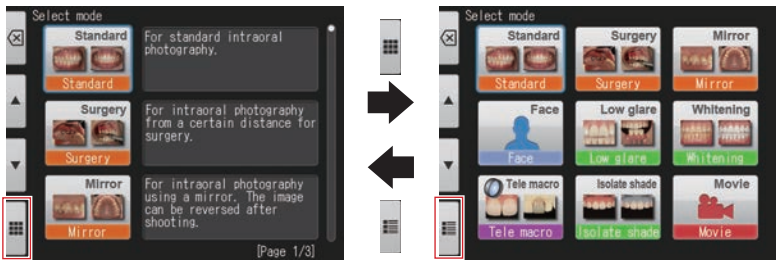
Mode	Intended use	Explanation
Standard	For standard intraoral photography	Basic mode for dentistry.
Surgery	For intraoral photography from a distance	You can take photos from a greater distance than in standard mode. This mode is optimal for surgery, when you do not wish to put the camera close to the subject.
Mirror	For intraoral photography using a mirror	The image taken can be reversed along the vertical or horizontal axis.
Face	For shooting facial views or half-body or full-body portraits	Hold the camera vertically as indicated by "▲ UP" mark. (*Auto-cropping is not available in this mode.)
Low-glare	For taking detailed pictures 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	Optimal for shade comparison between before and after whitening/bleaching	Similar conditions with Low-glare mode but with lower light intensity, which reduces glare and emphasizes the surface texture and shade of the teeth.
Tele-macro	For taking photos of anterior teeth, indirect restorations and working models	You can take photos with higher magnification rate than Low-glare mode. Close-up lens must be mounted.
Isolate shade	You can isolate the shade of the gingiva for optimal 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, in order to minimize the deception of visual shade evaluation.
Movie	For recording movies	

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 them.



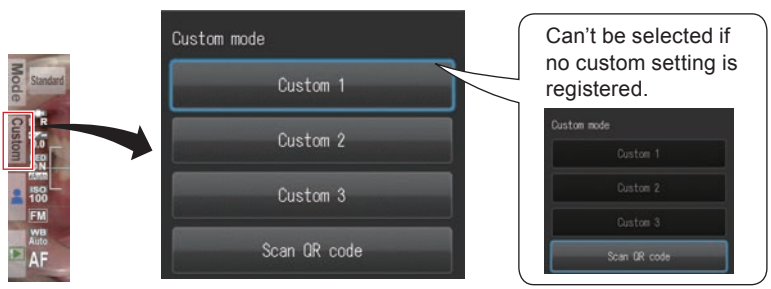
Mode details　　Mode list

Custom modes

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

Advanced P.22 “Select from custom mode”

When pressing Custom or the 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.

Scanning QR code

Camera settings can be changed all at once by scanning a QR code (exclusive for this camera).

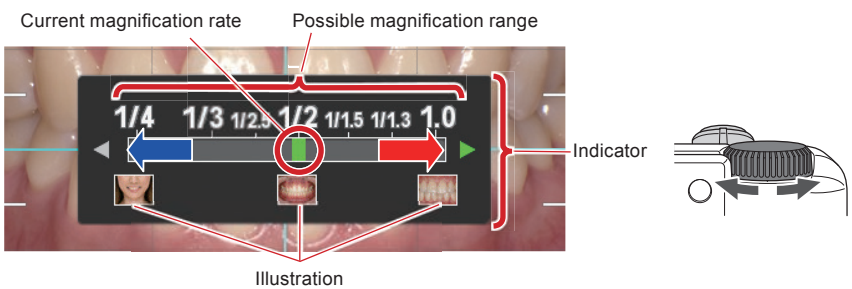
Advanced P.25 “Scan QR code”

Note **New settings cannot be read with the QR code in the custom mode.**

Following procedures will be different for taking still images or recording movies.
Refer to P.26 to record movies in this User’s 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.



Refer to the following on how to select optimal magnification rate.

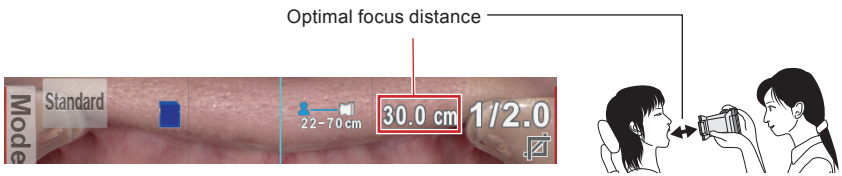
Advanced P.25 “Selection of optimal magnification rate”

Tips

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

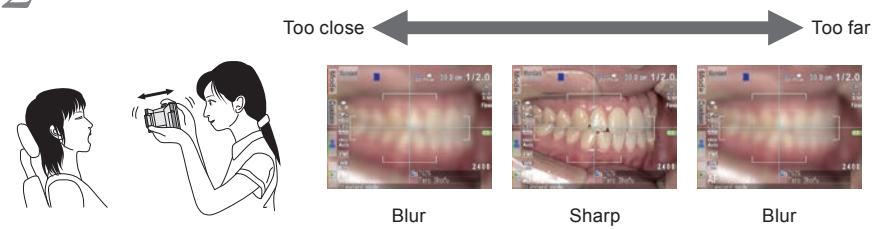
STEP 4 Set focus distance (still images)

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.**



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

Tips

● Focus distance

Even if the actual focus distance is 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

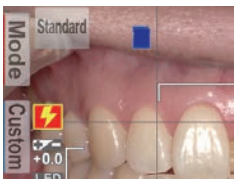
When you press the SET SET key it will magnify ×2 and when you push it again, it will magnify ×4. When pressing it again, it will return to normal. Using this zoom function, you can easily ensure the image taken is properly focused.

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.

* Flash charging takes longer, if the batteries have not been used for a long period of time.

1 **Half-press the shutter to focus**
Set the focus within the AF frame.
When the focus is properly determined, the following four types of information are displayed:

1) Actual distance from the subject when focused properly

29.5 cm (Green) : Within the possible distance range

62.8 cm (Red) : Out of 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)

4) Focus indicator

(Green) : In focus

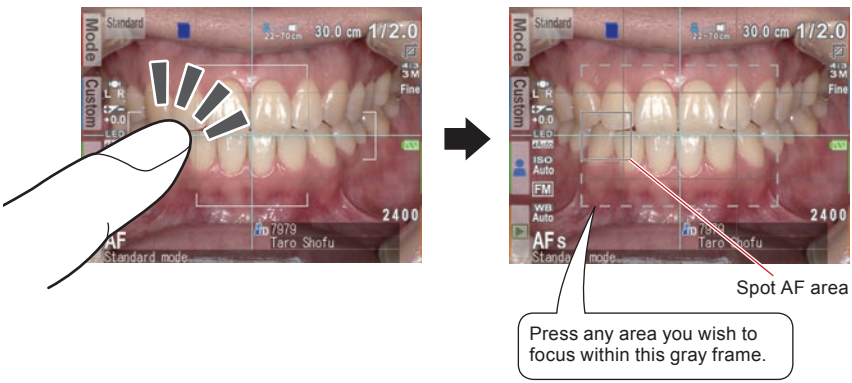
(Red) : Out of focus (Check the focus distance or if the subject can be focused appropriately.)

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 (while 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.



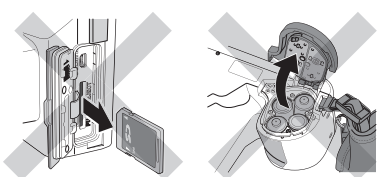
For more details, refer to Advanced Manual.

Advanced P.62 “Focus mode”
P.71 “Shortcut function in shooting mode”

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

- After taking a picture, the image will automatically display on the LCD screen for about 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.

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



Tips

● Auto-cropping

Auto-cropping function crops the image automatically based on the selected magnification rate. Due to this function, the picture can still be taken at the magnification rate you selected, even if the subject is out of the optimal focus distance.
* Auto cropping function is not available for Face mode and Tele-macro mode.

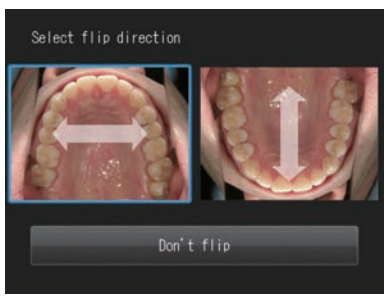
Even if the subject is within the focus distance, auto-cropping might not work if the camera is positioned too far from the subject. Pay attention to the distance and auto-cropping signs. For optimal photo quality and the image size you desire, it is always recommended to maintain the optimal distance indicated. Accuracy of magnification by auto-cropping is about ±10%, which is influenced by subtle difference in focus distance.

Advanced P.30 “Auto-cropping”

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.



Info

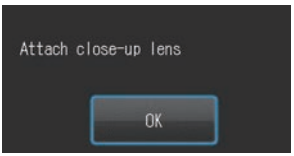
· This message does not appear when you set the flip direction in the setup menu in advance. (Advanced P.68)
· You can also flip the image in Surgery mode and Tele-macro mode.

Face mode

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

Tele-macro mode

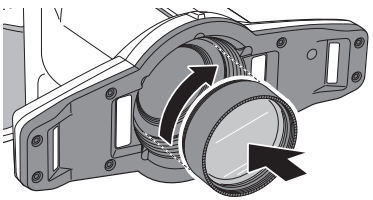
When selecting Tele-macro mode, “Attach close-up lens” appears on the LCD screen.



Note **Use the 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.**



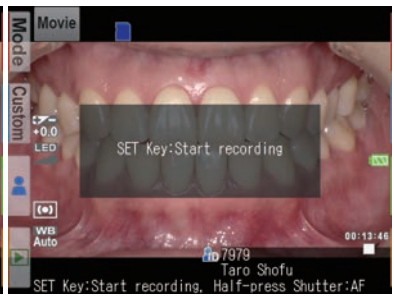
STEP 3 Record movies

Focus and record movies

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

Blur

In focus



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 adjust 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.**
Recording time might be shortened depending on the remaining capacity of SD memory card or battery power.

Tips

● LED lighting while recording video

You can put the LED lights on all the time while recoding video by setting in the shooting mode menu in advance. Refer to the following.

Advanced P.72 “LED lights”

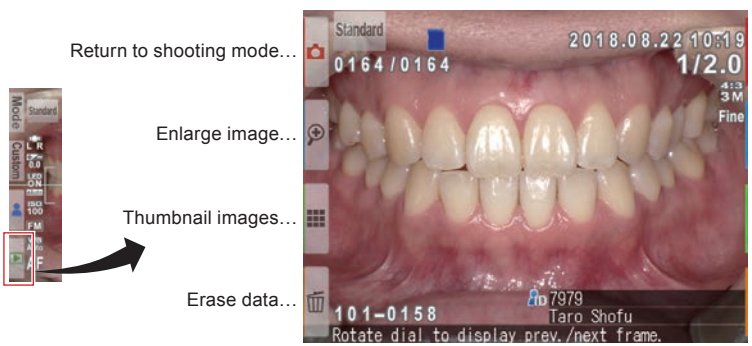
3 Playback

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

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.

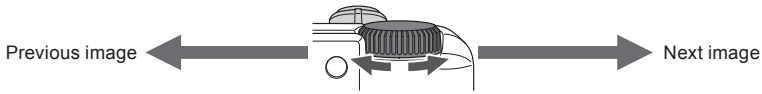


Playback mode (still images)

Playback mode (movies)

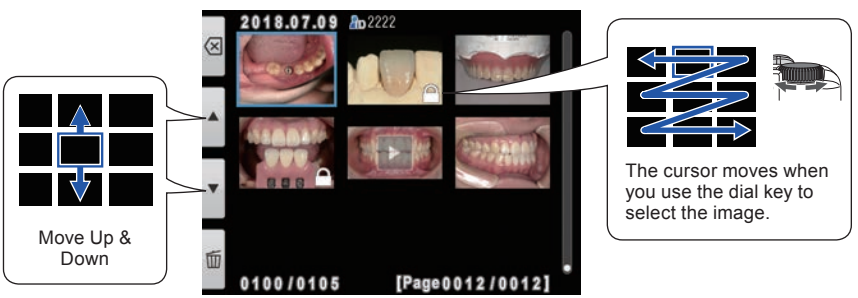
Reviewing other images

Rotate the dial key to scroll backward or forward through the pictures.



Thumbnail images

Press F3 key to view thumbnail images. Nine images are displayed simultaneously. In order to display a single view, select one image by moving the cursor with the dial key or using ▲ or ▼ keys and then press the SET SET key. You can also select the image by touching it directly on the screen.

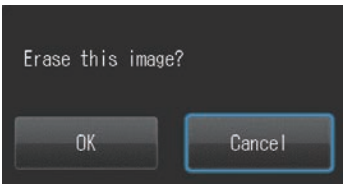


Note **Movies cannot be replayed from the thumbnail image view. To replay, go to the single frame view, and press play.**

Erasing images

Erase the displayed image

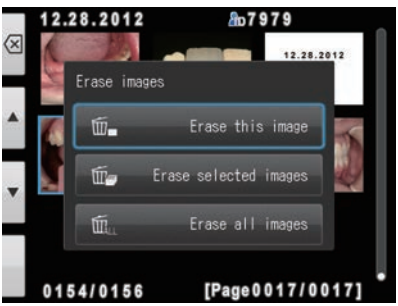
Select playback mode and press the F4 key to erase the displayed picture. The message, “Erase this image?”, appears on the display. Press “OK” to erase it.



Erase selected multiple images simultaneously

You can erase multiple images simultaneously by selecting them from the thumbnail display.

Press F4 key and this message appears.

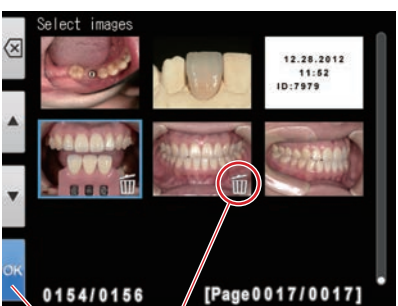


- **Erase this image**

One image in the blue cursor will be erased.

- **Erase selected images**

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



Finish selecting

The selected images are marked with a trash ion.

● **Erase all images**

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

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

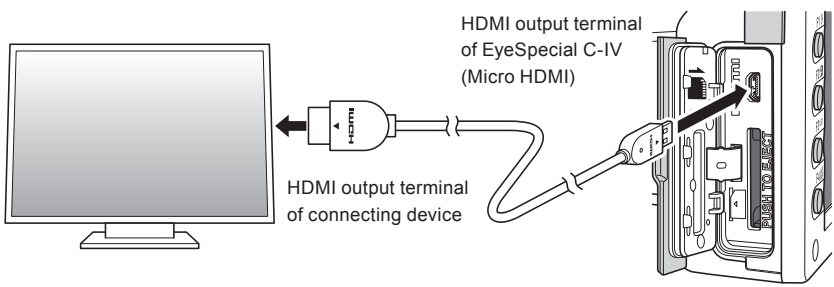
Protect images

Protect the image to avoid accidental deletion or unintended editing.

Advanced P.62 “Protect images”

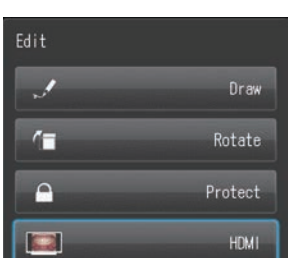
Playing movies with HDMI cable

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



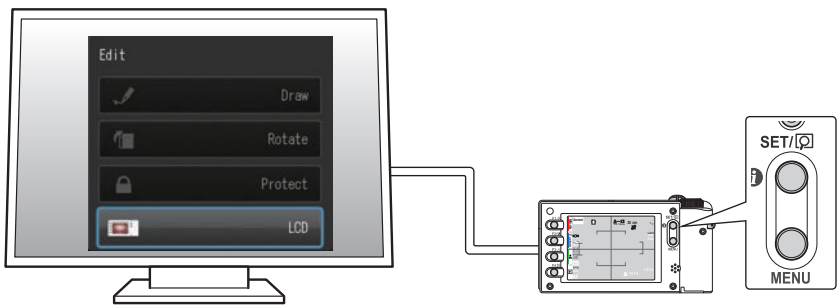
Note **Insert the HDMI cable into the terminal securely.**

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 movie is played on the TV or other device connected with HDMI cable. To select the movie or any operation while playing the movie, use the buttons on the camera.**

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



Note

- **When playing a movie with HDMI cable, some functions such as painting or rotating the image cannot be used.**
- **Volume can be adjusted on the TV or other device connected. Volume cannot be adjusted on the camera itself when using an HDMI cable.**
- **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.**

Tips

● HDMI cable

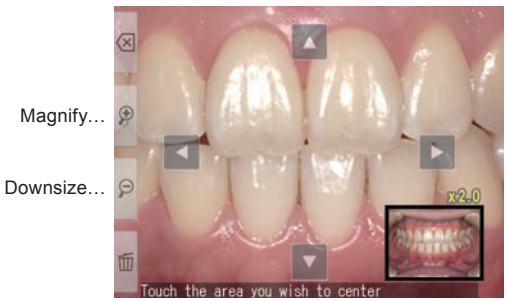
HDMI (Type A to Type D) cables generally available on the market are compatible with EyeSpecial C-IV.

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

Functions while reviewing still images

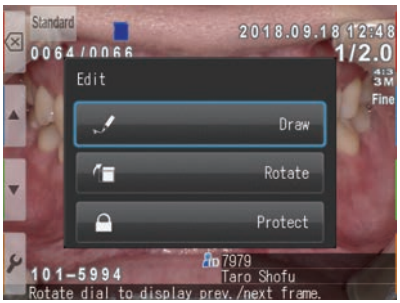
Magnify / reduce images

- To magnify the image, press F2 key in 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 1X (original) size.
- To magnify different parts of the picture, directly touch the area you wish to see on the screen or press ▲▼◀▶.



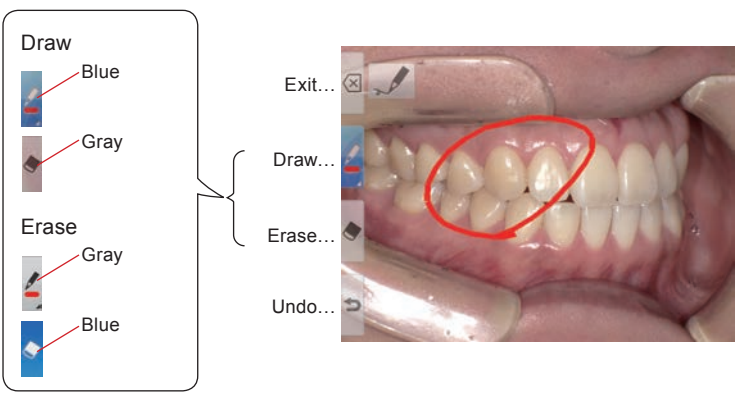
Edit images

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

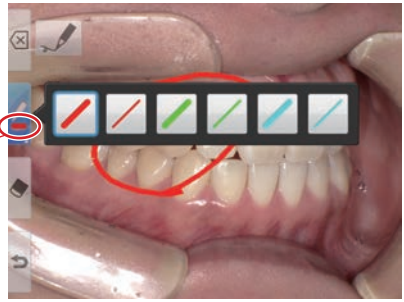


● Draw on images (paint function)

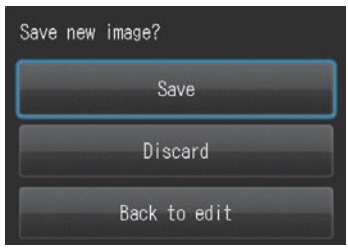
When “Draw” is selected, you can draw lines on the recorded images. Press F2 key to draw lines and F3 key to erase them.



· Press F4 key to undo the previous actions. (maximum 5 previous actions)
· Press F2 key again to change the line color and boldness (three colors, two boldness)



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



● Rotate images

The images can be rotated by 90 degrees.
· Press F2 key to rotate the image clockwise or F3 key to counter-clockwise.
· Press F1 key to finish rotation. Select “Save rotated image” to record the image.

Rotate 90 degrees clockwise.

Rotate 90 degrees counterclockwise.

Info

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 the 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 key.

Pause

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

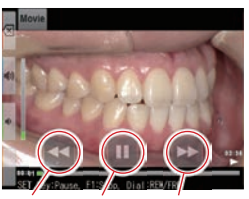
Rewind/ fast forward

- **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

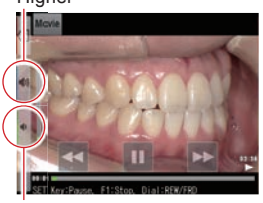
- **Higher**

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.

4 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 information entered prior to capturing images. To download this free software or for more information please visit http://www.shofu.co.jp/surefile/indexe.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 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. To transfer data via Wi-Fi, the card doesn’t need to be formatted by this camera.**

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).

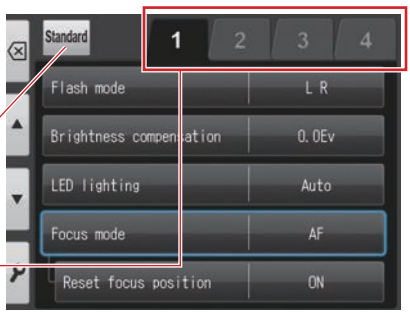
Advanced P.97 “Patient information file (.MIF)”

5 Menus

EyeSpecial C-IV has a total of three menus; shooting mode menu, playback mode menu and setup menu.
This chapter gives you an outline of these menus.
Advanced P.60 “Menus”

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	Explanation
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 intensity of LED lights
Focus mode	To change the focus mode
Reset focus position	To turn the function “Reset focus position” on or off
Tab 2	
Dial function	To change the dial function from “magnification” to “focal length”
Auto-cropping	To turn the auto-cropping function on and off
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 a normal position
Flip direction	To select the flip direction of the image taken
Save settings	Save or reset the current custom settings

Playback mode menu

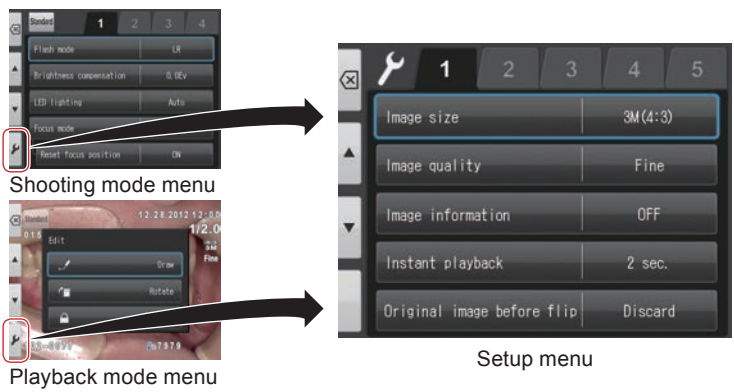
You can edit the stored images (draw lines and rotate). Press MENU MENU key in the playback mode.

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

*These functions are available for still images only.
For more details, refer to P.33 “Edit images” and P.30 “Protect images” in this User’s Manual.

Setup menu

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



Items	Explanation
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 screen
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 measurement unit for 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 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

For the detailed information about flash calibration, refer to the “Flash calibration” in the Advanced Manual.

● Protect the settings selected in the set up mode.

You can use special QR codes to avoid accidentally changing the settings selected in the set up mode.

Advanced P.72 “QR codes for optional settings ”

6 Notes on use

Operating temperatures

- Recommended temperature to use and store this camera is between 0°C and 40°C.
- Do not expose 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 that you 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 recorded data will be 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 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 or immediately after switching on the camera, the screen may appear darker compared to a normal temperature 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 has been in normal use for a few years. However, if you try to take photos of the sun and image sensor is exposed to intense light or if too many photos are taken, the image quality might be degraded. Please contact your SHOFU dealer for maintenance and repair.

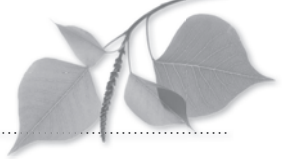
Water and chemical resistance

- EyeSpecial C-IV is IPX4 water resistant. This means that it can withstand 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 cards 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.

7 Maintenance and storage



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

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 your 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 it 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.

8 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. Switch on the camera again.	P.12
Cannot focus even if the shutter is half-pressed.	Manual focus is selected.	Change the focus mode to Auto-focus standard or Auto-focus spot.	Advanced P.72
	Focus distance is outside the recommendation.	Take a photo within the limit of focus distance.	P.21
"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 this 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.22
Color fidelity and brightness of the photos are poor (when viewed on the PC or printed out)	Flash lamps have been aging over time, resulting in decrease in light intensity and color temperature.	Perform flash calibration.	Advanced 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 lighting 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) battery when using Wi-Fi SD memory cards.	P.9

Trouble	Cause	Measure	Reference
Batteries drain 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 drain.	Use the camera in a warmer 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.	SureFile recognizes and transfers the images only when the SD memory card was formatted 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.36
"Memory card full" appears even though you haven't stored that many images on the SD memory card.	SD memory card is occupied with 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 files other than JPEG format.	-
	A folder numbered "999", which was created by 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.)	-
No photo is taken after pressing the shutter button.	Flash has not been fully charged yet.	Flash charging takes longer, if the camera has not been used for a long period of time. Wait until the flash mode icon disappears.	P.22
When inserting a Wi-Fi SD memory card, "Incompatible memory card" appears on the screen.	When inserting a Wi-Fi SD memory card after the camera has been switched on, sometimes initialization might fail and this message appears.	Remove the card from the camera and insert it again. If the error appears again, switch off the camera. Reinsert the Wi-Fi SD memory card and then switch on the camera.	-

Error messages

Message	Cause	Measure	Reference
Battery depleted	Batteries are dead.	Replace the old batteries with new ones.	P.7
No memory card	There is no card in the camera.	Insert a SD memory card.	P.8
Invalid image size	The image is too big to be displayed.	Check the maximum image size that can be displayed on the screen.	-
Invalid image format	The image is not a JPEG file.	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 a computer or taken with a digital camera other than EyeSpecial C-IV.	-
Memory card full	The card storage is full.	Reduce the image size and image quality.	Advanced P.84
		Erase some images.	P.29
		Replace the full memory card with another memory card with sufficient storage capacity remaining.	P.8

Message	Cause	Measure	Reference
Too many images in memory card. Please erase some images.	The number of the photos stored in the SD card has exceeded 5,000.	Erase some images.	P.29
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 on your computer.	-
		Replace the full memory card with another memory card with sufficient storage capacity remaining.	P.8
Memory card locked	SD memory card is protected.	Slide up the write-protection tab.	P.9
No image	No image is recorded on the SD card.	Replace the empty card with the recorded one, or take new photos to record.	P.8
Cannot read file	The image file is damaged.	Format the SD memory card. (Back up the data you wish to store before formatting the SD memory card.)	P.40
File structure has been broken. Format the SD card.	Either the movie file (.MOV) or the patient information file (.MIF) has been broken or removed.		
Incompatible memory card	Following factors are considered · File system was changed by formatting the SD memory card using a computer. · Formatted in different camera or other devices Format the SD card. All recorded images are erased when formatting the SD card. Backup the necessary files by transferring pictures to your computer. It might also be considered that SD card is defective. Please try another card if you have one.		P.36,40
File system error	SD 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 possible that SD card is defective. Please try another card if you have one.	P.36,40
WB unadjusted	Something other than the provided SHOFU gray card was photographed when white balance is manually set.	Use provided SHOFU gray card.	Advanced P.76

Frequently asked questions

Question	Answer
How long is the battery life?	Refer to “Tips: Storage capacities (number of pictures)” (P.9)
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 or the picture takes up space to decrease 2 or more at once. 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 to 40°C (Humidity : 10 to 80%)

9 Specifications

Items		Specifications
Sensor	Type	Primary color filter, CMOS sensor
	Size	1/1.7 inch
	Total pixels	Approx. 12 million pixels (4,163 × 3,026)
	Number of effective pixels	Approx. 12 million pixels (4,000 × 3,000)
	Camera sensitivity	ISO 100-3200
Lens	Focal length (35mm equivalent)	28-300mm
	Maximum aperture	WIDE: 2.83 - 7.99
		TELE: 2.85 - 11.44
	Zooming method	Optical zoom + digital zoom
	Optical filter	UV / IR cut filter
Autofocus	Method	Contrast autofocus
	AF area	Center-weighted/SPOT
	Focus mode	Single shot auto focus and manual focus by adjusting the distance
	AF assist light	4 white LED lights
Automatic Exposure	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 - 1/1,000 sec., automatic change
Image storage	Storage media	SD/SDHC /SDXC Card (Max 512GB)
	File format	JPEG/MOV (With patient information file (.MIF))
	SD card record format	DCF (standard /date)
	Image size – Aspect ratio (4:3)	12M (4000×3000)/8M(3264×2448)/5M(2560×1920)/ 3.2M(2080×1560)/2M(1600×1200)/VGA(640×480)
	Image size – Aspect ratio (3:2)	10M (4000×2672)/8M(3264×2176)/4M(2560×1712)/ 3M(2080×1392)
	Number of pixel to record movies	HD (1280×720) 59.94fps
	Image quality	Extra fine/Fine/Standard
	Digital zoom	10 steps from ×1.05 to ×2
	Exif Tag information	In accordance with E×if2.21+DCF standard
	Information imprinting	· Date + shooting conditions + patient information · Date + shooting conditions · Date + patient information · Date
Camera	Power supply	4 Alkaline AA batteries / 4 nickel metal hydride batteries (NiMH)
	Battery for built-in clock	SR44 (cannot be replaced by users)
	External power supply	-
	Power save function	off / 1 / 2 / 3 / 5min
	Auto-power off	15 / 30 / 45 / 60min
	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 resistance	Complying with IPX4
	Chemical resistance	Ethanol disinfection

For more details, refer to the Advanced Manual.

Advanced P.105 “Specifications”

10 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	-
User's Manual (this document)	1	-
Quick reference	1	-
Warranty	1	-

11 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 (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 memory 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