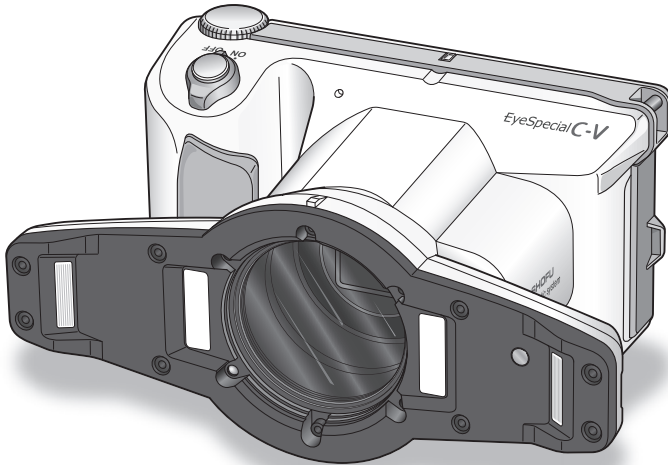




Read carefully through the "Important Safety Instructions" (included in the package) before using this camera.



Smart digital camera designed exclusively for dentistry

EyeSpecial C-V

Advanced Manual

SHOFU INC.

For the latest information on the
EyeSpecial C-V, visit our website at
www.shofu.com

Before using your camera

Thank you for purchasing our EyeSpecial C-V. 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 manual may be copied or reproduced in any form by any means.
- Some information in this manual might become inconsistent with the product due to product software updates.
- The information in this manual is subject to change without prior notice.
- All relevant issues have been considered in the preparation of this manual. However, should you notice an omission or any questionable item in this manual, please feel free to notify your SHOFU dealer.
- In case of missing pages or disorder, please contact your 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

- The 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 media.

Copyright

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



CAUTION

The EyeSpecial C-V 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.

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

Wi-Fi and WPS are registered trademarks of Wi-Fi Alliance.

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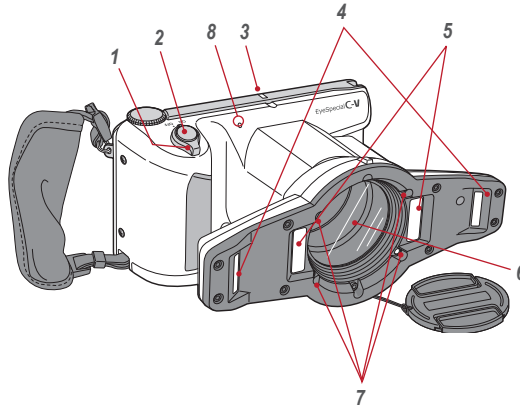
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1 Getting to know your camera

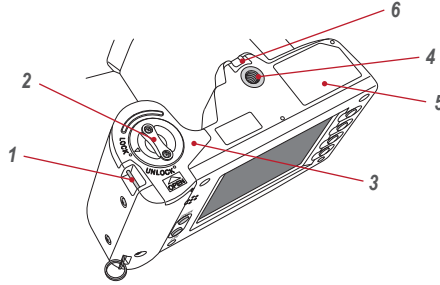
Names of parts

Front view



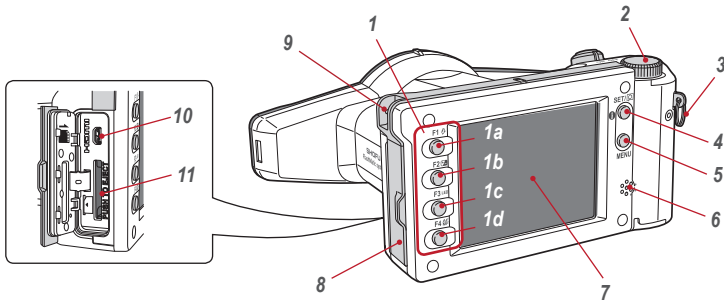
No.	Part name	Explanations	
1	Power switch	To turn the camera on or off	
2	Shutter button	When taking photos, half-press to autofocus. Then, press down completely to take the photo.	
3	Pilot lamp	Indicates the working state of the camera by colour and status of blinking	
		Status	Working state of the camera
		Green light	The camera is working properly.
		Green light blinking	Power save mode is activated.
		Orange light	The camera is connecting to the SD memory card. During this 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	Lens error is detected.
4	Outside flashes	Used in Low glare, Whitening, Tele macro and Isolate shade mode. It can be selected to use the right, left or both flashes by changing the flash mode.	
5	Inside flashes	Used in Standard, Surgery, Mirror, Tele macro, and Face mode. It can be selected to use the right, left or both flashes by changing the flash mode (in Surgery and Face mode both flashes are always used).	
6	Lens	–	
7	LED lights	Improve 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 LED lights 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	–	

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
4	Tripod socket	To affix to a tripod
5	Name plate	The serial number of the camera can be found here
6	Strap hole	To attach the lens cap strap

Back and side views



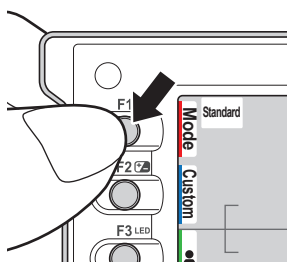
No.	Part name	Explanations
1	Function keys 1a: F1 1b: F2 1c: F3 1d: F4	Function changes depending on the mode you select. The function available is displayed on the LCD screen.
2	Dial key	Changes the magnification rate, scrolls through images taken and through items in menus
3	Strap mount	Holds the hand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

No.	Part name	Explanations	
		Camera mode	Function
4	SET key	Shooting mode	Brief press: Change magnification rate of instant playback. Long press: Picture information turns on and off.
		Playback mode (original size)	Brief press: Display patient information. Long press: Picture information turns on and off.
		Playback mode (thumbnail images)	Brief press: Select image Long press: –
		Menu	Brief press: Confirm the selected item Long press: –
5	MENU key	To display the menus	
6	Speaker	Output key sounds and shutter sound	
7	LCD (Liquid crystal display) screen	To display images and menus. You can operate the camera by directly touching the keys on the screen (touch panel function)	
8	Card slot / HDMI connector cover	Covers the SD memory card slot and HDMI connector	
9	Strap attachment point	Hold the neck strap	
10	HDMI connector (Micro HDMI)	To display movies / photos on a TV or other device connected with the HDMI cable	
11	SD card slot	To insert a SD / SDHC / SDXC memory card	

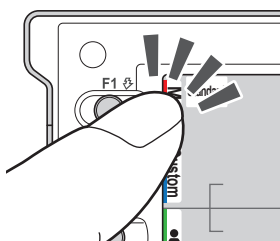
Function keys

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

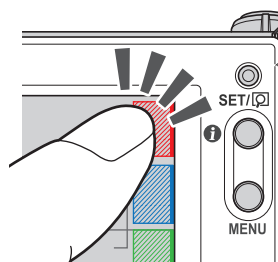
In other words, “Press **Mode** (F1)” can be achieved by pressing either the physical F1 key, the corresponding function tab on the left side or the colour bar on the right side of the screen.



Function keys



Function tabs

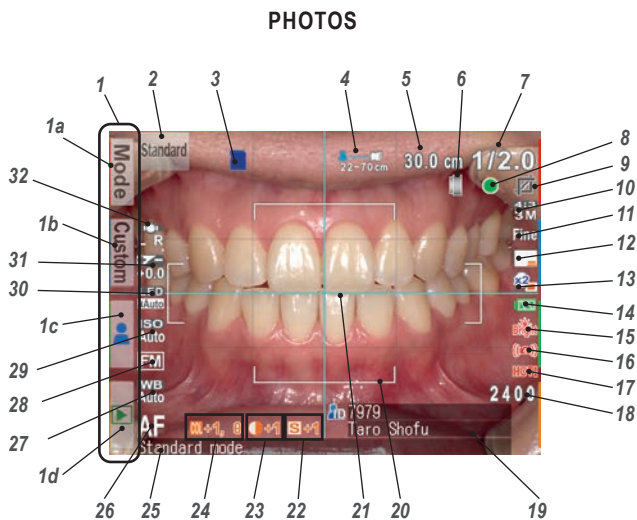


Colour bars








LCD screen indicator

Information displayed on the LCD screen for shooting mode and playback mode, respectively, is as follows.

Shooting mode

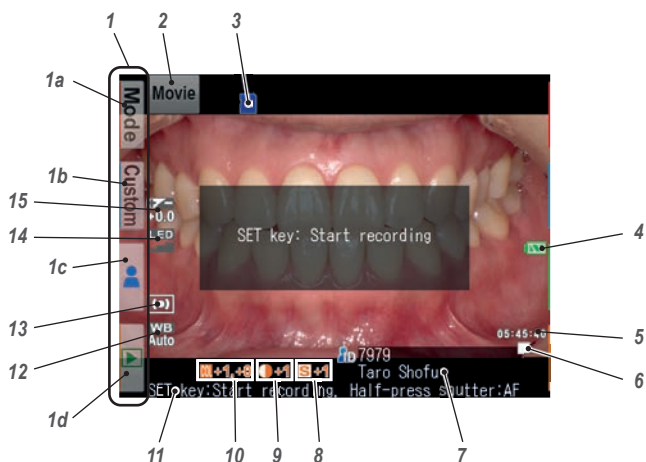


No.	Name	Explanations	Reference
1	Function tabs	Function changes depending on the mode you select. The functions available are displayed on the LCD monitor.	-
	1a: Preinstalled modes	Preinstalled modes are displayed	p. 23
	1b: Custom modes	Custom modes are displayed	p. 25
	1c: Edit patient information	Menus to edit the patient information are displayed	p. 20
	1d: Playback mode	Change to playback mode	p. 60
2	Active shooting mode	Currently selected shooting mode	p. 24
3	Card indicator	Appears when the camera recognises the inserted SD memory card	-
4	Possible distance range	Possible distance range to the subject at current magnification rate	p. 31-32
5	[before AF] Optimal focus distance [after AF] Actual focus distance	[before AF] Optimal focus distance at the current magnification rate is displayed [after AF] Actual focus distance to the object after focusing is displayed in green or red Green: Within possible distance range Red: Outside possible distance range	p. 31, 33
6	Close-up lens icon	Appears when the close-up lens is required	p. 37
7	Current magnification rate	Magnification rate currently selected	p. 29

No.	Name	Explanations	Reference
8	Focus	Indicates if the focus is appropriate or inappropriate when autofocused  (green): in focus  (red): out of focus	p. 33
9	Auto cropping	Appears when auto cropping is available. The icon is in green or red. Green: Auto cropping in range Red: Auto cropping out of range	p. 33
10	Image size	Horizontal to vertical aspect ratio of the image	p. 106
11	Image quality	Selected image quality	p. 106
12	Image information	Indicated only when it's set "ON".	p. 107
13	Preview image magnified	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. 41
14	Battery indicator	Remaining battery power	p. 18
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 mode and Tele macro mode only)	-
16	Image instability	Appears when the image is unstable. Hold the camera firmly and stably.	p. 49
17	Temperature warning indicator	Appears when your camera's internal temperature is too high. If you continue to use the camera, it will automatically turn off.	p. 15
18	Storage capability	Remaining storage capacity of the inserted SD memory card is indicated, if the current image size and quality remains unchanged. When "0000" appears, the memory card is full.	p. 15
19	Patient information	Patient information is indicated if registered	p. 20-22
20	AF Frame	Autofocus range	p. 34
21	Focusing screen	Grid to focus properly	p. 96
22	Sharpness	Sharpness of the image to be taken is indicated *	p. 99
23	Contrast	Contrast of the image to be taken is indicated *	p. 99
24	Hue	Hue of the image to be taken is indicated *	p. 99
25	Instant message	Operation method, shooting mode or other message are displayed	-
26	Focus mode	Selected focus mode	p.94
27	White balance	Selected white balance	p.98
28	AE mode	Selected Auto Exposure mode	p.97
29	ISO speed	Selected ISO speed	p.97
30	LED lighting	Indicates if the LED lights are on or off as well as the light intensity	p.94
31	Brightness compensation	Indicates current state of brightness compensation	p.93
32	Flash mode	Indicates the current flash mode.  is indicated while flash is being charged.	p. 93

* Not indicated in default setting

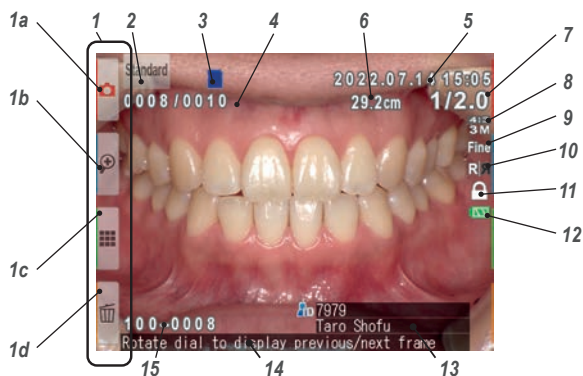
MOVIES





No.	Name	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. 23
	1b: Custom modes	Custom modes are displayed	p. 25
	1c: Edit patient information	Menus to edit the patient information are displayed	p. 20
	1d: Playback mode	Change to playback mode	p. 60
2	Active shooting mode	Currently selected shooting mode	p. 24
3	Card indicator	Appears when the camera recognises the inserted SD memory card	–
4	Battery indicator	Remaining battery power	p. 18
5	Remaining recording time / Recording duration	Remaining recording time of the SD memory card / Duration of a movie being recorded	–
6	Working state	<ul style="list-style-type: none"> ● REC is indicated while recording a movie ■ is indicated when the recording is stopped 	–
7	Patient information	Patient information is indicated if registered	p. 20-22
8	Sharpness	Sharpness of the image to be taken is indicated *	p. 99
9	Contrast	Contrast of the image to be taken is indicated *	p. 99
10	Hue	Hue of the image to be taken is indicated *	p. 99
11	Instant message	Operation method, shooting mode or other message are displayed	–
12	White balance	Selected white balance	p. 98
13	AE mode	Selected Auto Exposure mode	p. 97
14	LED lighting	Indicates if the LED lights are on or off as well as the light intensity	p. 94
15	Brightness compensation	Indicates current state of brightness compensation	p. 93

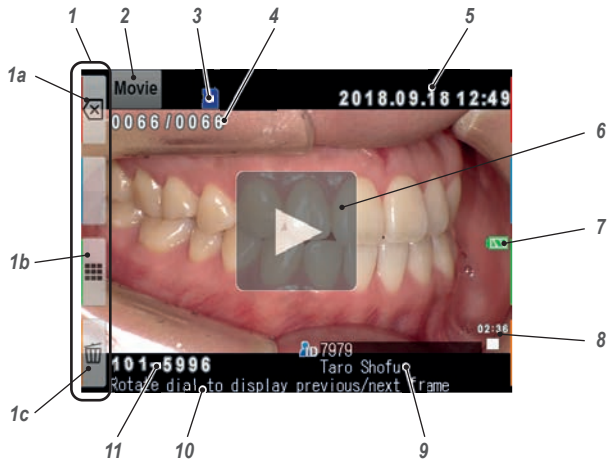
* 8-10 are not indicated in default setting

PHOTOS



No.	Name	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	Change to shooting mode	p. 19
	1b: Magnify image	To magnify the displayed image	p. 67
	1c: Thumbnail index	Thumbnail index is displayed	p. 62
	1d: Erase image	To select images you wish to erase	p. 63
2	Selected mode	Shooting mode used to take the displayed image	p. 24
3	Card indicator	Appears when the camera recognises the inserted SD memory card	-
4	Image No. / Total number of images taken	No. of the currently displayed image / total number of the images stored on the SD memory card	-
5	Date and time	Recording date and time of the displayed image	-
6	Actual shooting distance	Selected magnification rate	-
7	Magnification rate	Magnification rate of the image	p. 29
8	Image size	Horizontal to vertical aspect ratio of the image	p. 106
9	Image quality	Selected image quality	p. 106
10	Flip indicator	Shows if the image taken was flipped or not:  : Original image  : Flipped image	p. 109
11	Protect	Padlock icon marks a locked image (to avoid accidental erasing or editing)	p.63
12	Battery indicator	Remaining battery power	p. 18
13	Patient information	Patient information is indicated when entered prior to taking a photo	p. 20-22
14	Instant message	Operation method, shooting mode or other message are displayed	-
15	Folder No. - File No.	Folder No. in which the recorded movie is stored - File No. of the recorded movie	p. 113

MOVIES



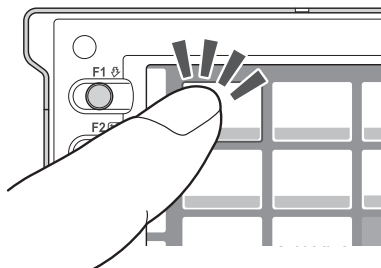
No.	Name	Explanations	Reference
1	Function tabs	Function changes depending on the mode you select. The functions available are displayed on the LCD monitor.	–
	1a: Shooting mode	Change to shooting mode	p. 19
	1b: Thumbnail index	Thumbnail index is displayed	p. 62
	1c: Erase a movie	To erase the movie currently displayed	p. 63
2	Selected mode	"Movie" is indicated	p. 24
3	Card indicator	Appears when the camera recognises the inserted SD memory card	–
4	Image No. / Total number of images taken	No. of the currently displayed image / total number of the images stored on the SD memory card	–
5	Date and time	Recording date and time of the displayed movie	–
6	Play	Press to play the movie	p. 70
7	Battery indicator	Remaining battery power	p. 18
8	Duration of a movie	Duration of the movie is indicated	–
9	Patient information	Patient information is indicated when entered prior to recording the movie	p. 20-22
10	Instant message	Operation method, shooting mode or other message are displayed	–
11	Folder No. - File No.	Folder No. in which the recorded movie is stored - File No. of the recorded movie	p. 113

Operation methods

There are two ways to operate this camera.

Direct screen touch

Touch a function tab you want to select.



Tips

Touch panel function of EyeSpecial C-V

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 multitouch or swipe motions.

Press keys

Press the ▲ F2 or ▼ F3 key or rotate the  dial key to select the function you would like to perform.

Then, press the  SET key to determine.

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

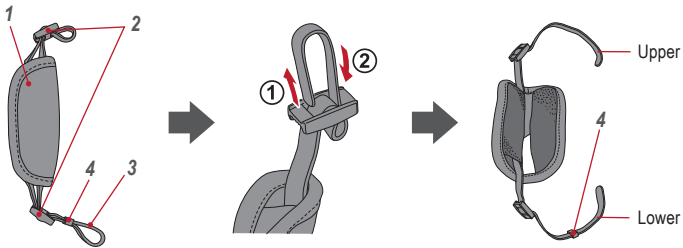
Getting started

Perform the following preparation before you start taking pictures.

Attaching the hand strap

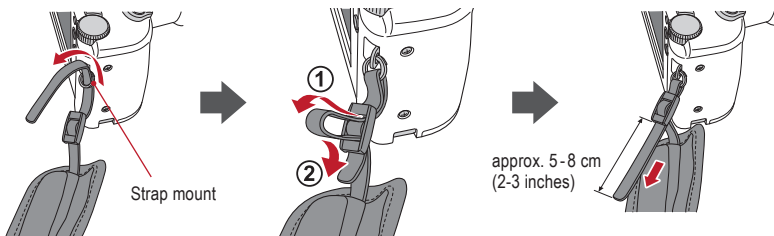
Attach one end of the hand strap to the strap mount on the lateral side of the camera and another to the eyelet on the bottom of the camera.

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

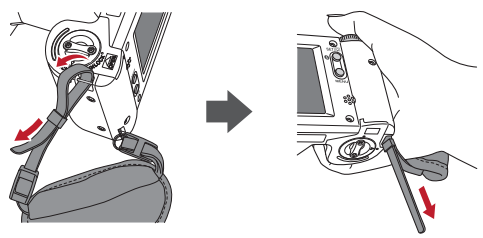


No.	Name	No.	Name
1	Flap	3	Belt
2	Slide adjuster	4	Retainer clip

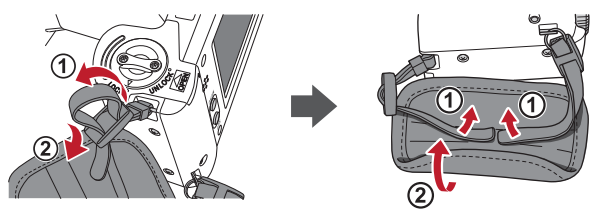
- 2** Attach one end of the strap to the strap mount on the upper lateral side of the camera and adjust the belt length.



- 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.

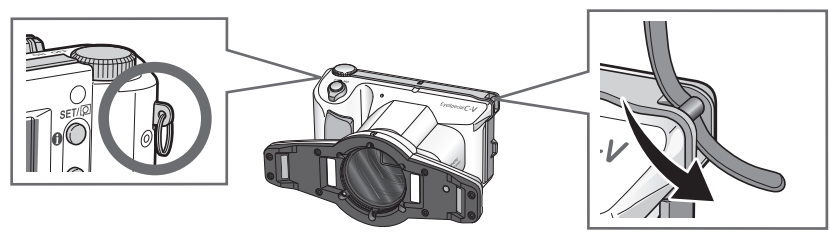


- 4** Feed the strap end through the slide adjuster to fix. Insert the strap into the buckle as pictured below.



Attaching a neck strap

In addition to the hand strap, a neck strap can be attached. Please use a commercially available neck strap and follow its instruction manual when attaching it.

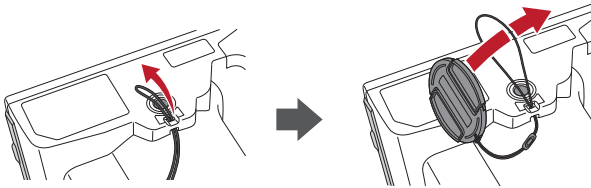


ATTENTION

Always use the hand strap or a neck strap to avoid dropping the camera accidentally. This might cause injuries.

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.

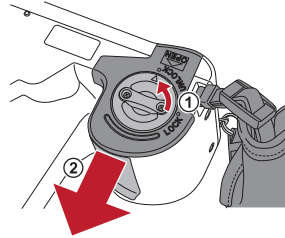


If you do not need the lens cap strap, cut it off with scissors etc.

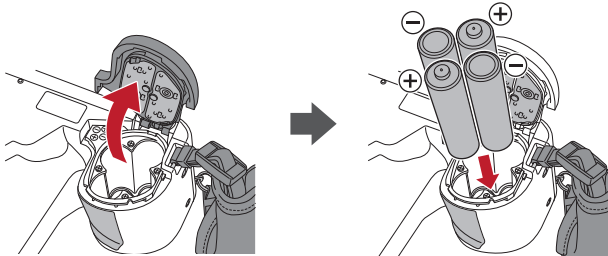
Installing batteries

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

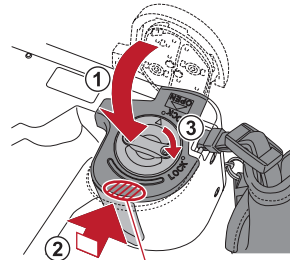
- 1 Turn the lock lever to the position "UNLOCK".
Then, **slide the battery cover to the front side** of the camera.



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



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



Slide back the battery cover while pressing here.



Note

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

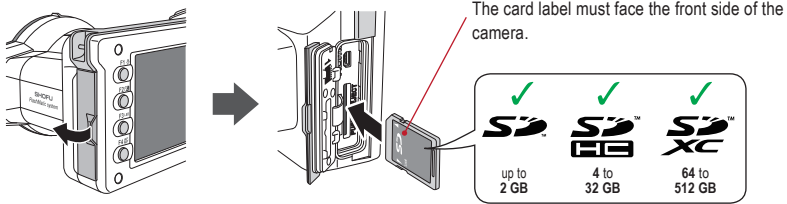


Info

- Rechargeable nickel metal hydride batteries (NiMH) may be inert and consequently they might not supply power immediately after purchase or if they are left unused for a longer 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 longer 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.
- SD cards with built-in wireless LAN function cannot be used with this camera. Please use the wireless LAN function of this camera instead. For details on how to set up the wireless LAN function, see chapter 7 "Wireless LAN function".
- Newly purchased SD cards or SD cards initialised with another camera or computer must be formatted by the EyeSpecial C-V camera.

- 2 Close the cover securely.

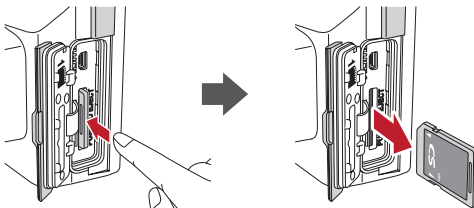
Tips

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

 see page 71 ("Transferring images to your computer")

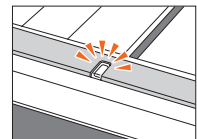
Removing SD memory card

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



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

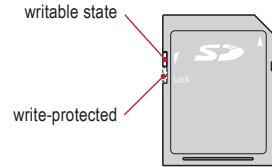
● Storage capacities (number of pictures)

Approximately 350 shots can be taken with a fully charged rechargeable nickel metal hydride battery (NiMH; cell capacity 1,900 mAh).

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 reduce the number of shots.

● 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 an SD memory card, unlock the card.



● Storage capacity of memory card

The maximum number of photos you can store on the provided 16 GB SDHC memory card is approximately 9,999. After exceeding 5,000 shots, the left message appears on the screen when switching on the camera. When reaching 9,999 shots, the right message appears and you can no longer take photos with this memory card with no remaining capacity. Thus, when the first message appears you should transfer and back-up the stored data to other storage media and erase the data stored on the SD memory card in use.



Too many images in memory card
Please erase some images

Message after exceeding 5,000 shots



Number of images has reached the limit -
Cannot save any more

Message when reaching 9,999 shots

The number of photos you can store on the provided 16 GB SDHC memory card varies depending on the image size and quality you selected. The following numbers are just an example for your reference.

Photo: 9,680 shots (image quality: Fine, image size: 3M)

Movie: 280 min (maximum time duration for one movie is 10 min)

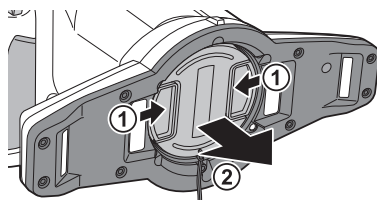
● Camera overheated

When your camera's internal temperature becomes too high, the "HOT!" icon will appear (temperature warning display). In that case, stop shooting and wait until the camera has cooled down.



Removing the lens cap

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

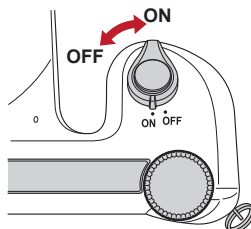


- Reattach the lens cap by pinching the notches.
- Always attach the cap when the camera is not in use.

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 on the camera for the first time, you may need to set the language, time zone, date, time, summer time and units.

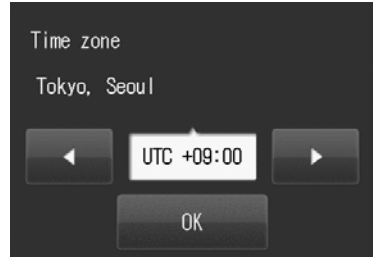
- 1 **Language selection**

Select one of the following languages: Japanese, English, German, French or Chinese.



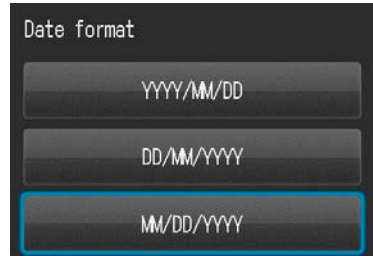
2 Setting the time zone

Select a time zone.




3 Choosing the display style

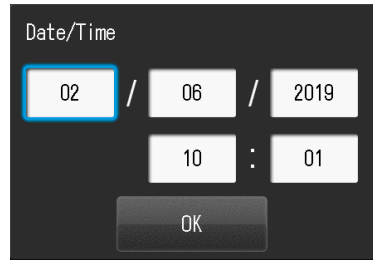
Select a date format.



4 Setting the date and time

Rotate the  dial key or touch the screen to move to the next field.

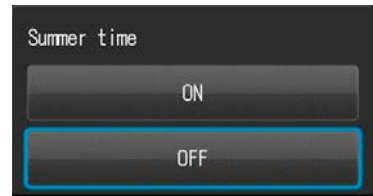
Press ▲ (F2 key) or ▼ (F3 key) to increase or decrease the value for each option.



5 Setting the summer time

Select ON or OFF.

When summer time is turned on, the clock advances one hour.



6 Selecting unit display

You can choose either metric or imperial unit display.



These items can also 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 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.

 see page 115 "Setup menu"

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




Energy is still supplied to the SD memory card slot while power save mode is on.

• 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, patient information, which have not been saved yet, are erased.

• How do you confirm the battery level?

When the camera is turned on, the battery level 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.
"Batteries depleted" (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

The EyeSpecial C-V sometimes does not respond to your command immediately when other operations are in progress; for example, immediately after you rotate the dial key to change the magnification rate and then press the shutter button half-way to focus or just after you've taken a picture etc.

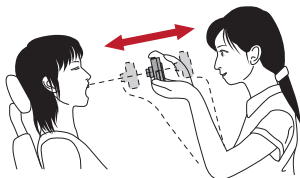
For optimum performance wait until ongoing processes have concluded before operating.

2 Taking pictures / movies

Follow the safety information indicated in the attached "Important Safety Instructions".

Before you start taking pictures / movies

The EyeSpecial C-V 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.



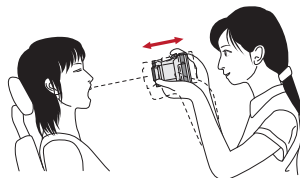
General digital camera

ADVANTAGES

- Can take photos at any distance.

DISADVANTAGES

- Cannot take clear pictures from close distances.
- The subject doesn't always appear in the same size in the photos.
- Light distribution is uneven.



EyeSpecial C-V

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

- 1 Input patient information or photograph patient record (optional)
 - Enter number *see p. 20*
 - Scan QR code *see p. 21*
 - Photograph patient record *see p. 22*



- 2 Select shooting mode
 - Preinstalled modes *see p. 23, 24*
 - Custom modes *see p. 25*



- 3 Select magnification rate *see p. 29*

Photos

- 4 Set focus distance *see p. 31, 32*



- 5 Take picture *see p. 33, 34*

Movies


- 4 Record movie *see p. 38*

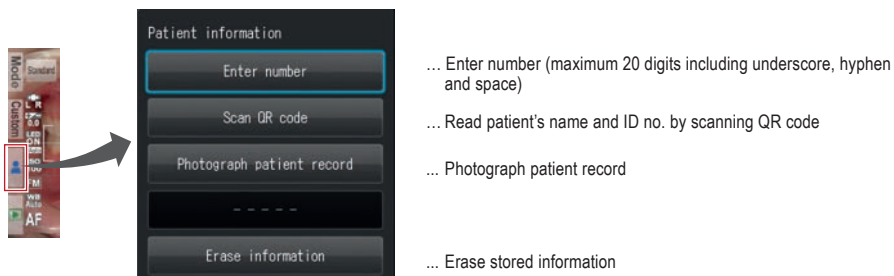
1 Input patient information or photograph patient record (optional)

You can choose one of the following image management methods:

- Give patient information to each image.
- Photograph patient record.

This procedure is optional and can be skipped.

Press  or the 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.



Tips

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

Enter patient information

 See page 120 ("QR codes to make recording patient information mandatory").

Enter number

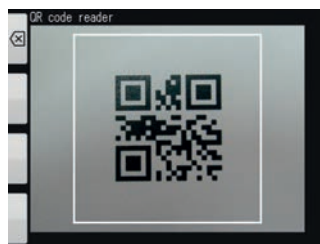
When you select "Enter number", number keys appear on the display. You can enter a maximum of 20 digits (including underscore, hyphen and space when used).



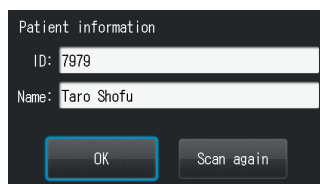
Scan QR code (feature only available in conjunction with special patient ID software)

The 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. QR code recognition starts automatically.



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

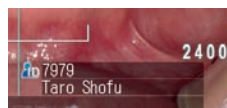


Tips

The patient information scanned by the QR code will be displayed on the screen and stored as follows:

1. In the shooting mode

Patient information is displayed on the lower right of the screen and recorded on the image taken.



2. In the playback mode

Patient information is displayed on the lower right of the screen.

3. Patient information image

When the patient information is recorded, an image as shown below is created.

*The patient's name does not appear.

**If the ID contains characters other than the numbers, "-", and "_", the patient information ID will be displayed blank.



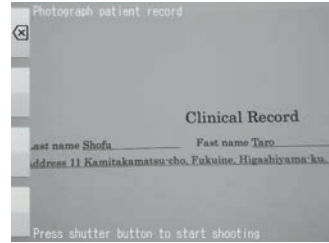
2022.07.14 — Date
13:48 — Time
ID: 7979 — ID

Photograph patient record

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

When you select "Photograph patient record", the display on the right appears on the screen.

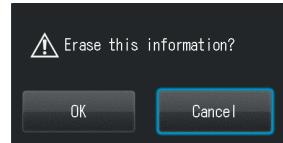
Position the camera to photograph the patient name and press the shutter button halfway to focus properly. After focusing press the shutter button completely down.



- When selecting "Photograph patient record", the camera settings are automatically optimised for taking a picture of paper or electronic medical records.
- This function does not read information from the medical record but just takes a photo. Therefore the patient ID and name are not recognised and stored as digital information.
- This function is not available, when the function that makes recording patient information mandatory, is activated.

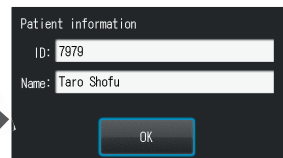
Erase patient information

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



Confirm patient information

Press the patient information on the lower right of the screen to display the patient's ID number along with his/her name. The patient's name is displayed only when a QR code is scanned to register the patient's information. It can't be entered manually.





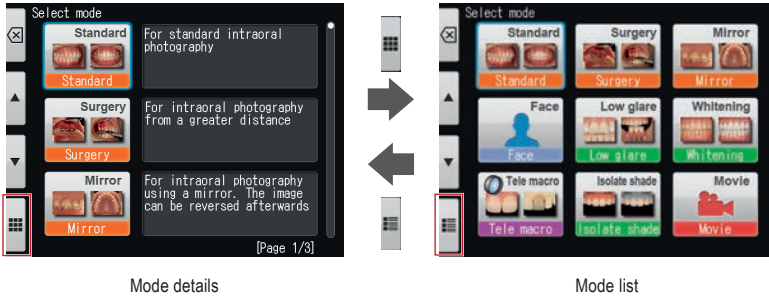
Shooting modes

Mode	Intended use	Explanation
Standard	For standard intraoral photography	Basic mode for dentistry.
Surgery	For intraoral photography from a greater 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	Afterwards the image can be reversed along the vertical or horizontal axis.
Face	For shooting facial views, half-body or full-body portraits	Hold the camera vertically as indicated by the “▲ 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, the inner shade of the teeth can be emphasised.
Whitening	Optimal for shade comparison before and after whitening / bleaching	Similar conditions to the Low glare mode but with lower light intensity, which reduces glare and emphasises 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 a higher magnification rate than in Low glare mode. The 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 colour is natural while deemphasising the background, in order to minimise the deception of visual shade evaluation.
Movie	For recording movies	–

Tips

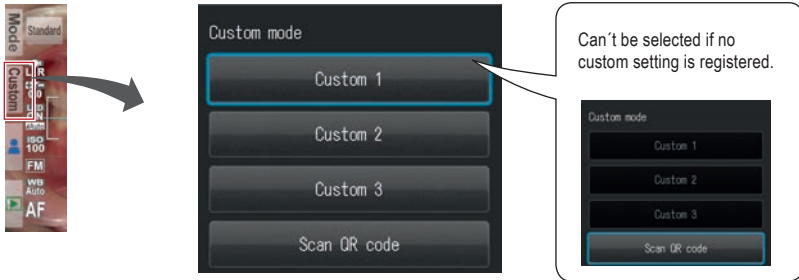
Change mode display


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



Custom modes

Preinstalled camera settings can be changed and registered as custom modes for future use. When pressing **Custom** or the F2 key in the shooting mode, three custom settings appear on the screen.



 **Note** Movie mode cannot be registered as a custom mode.

 see page 101 ("Save settings")

Tips

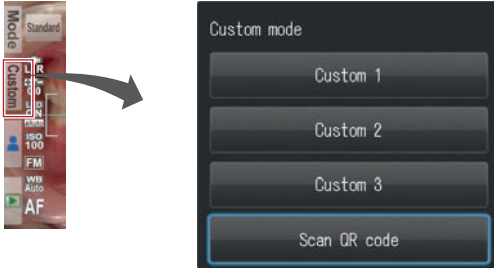
When selecting custom mode by pressing a custom button, an indicator is displayed on the upper left of the screen.



Scan QR code

Camera settings can be changed all at once by scanning a QR code (exclusive for this camera). Thereby make sure the camera is in a shooting mode (one of the 9 preinstalled modes), since QR codes cannot be scanned in the custom mode.

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

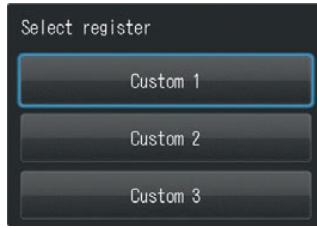


- 2 When the display below appears on the screen, align the QR code within the white frame. Then, press the shutter button to start scanning.



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 25 of this Advanced Manual.

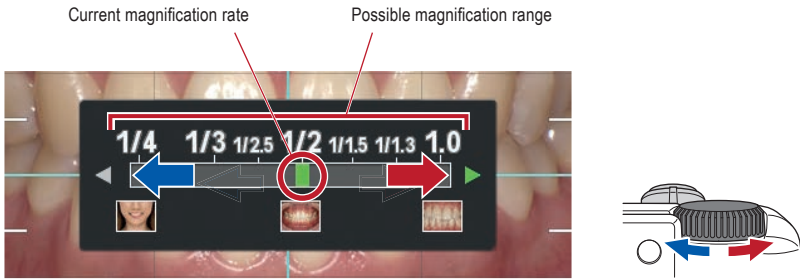
QR codes for custom settings

Following are the QR codes for custom settings. Select the appropriate setting for the desired purpose.

QR code	Mode	Intended use	Explanation
	Stone model (large)	For photographing large stone models such as study models.	Brightness compensation is -0.7 Ev with other settings based on the Standard mode.
	Stone model (small)	For photographing small stone models such as abutment models.	Brightness compensation is -0.7 Ev with other settings based on the Low glare mode.
	Surgery mode using a mirror	When using a mirror in Surgery mode.	Brightness compensation is +0.7 Ev with other settings based on the Surgery mode. Afterwards the image can be reversed along the vertical or horizontal axis.
	X-ray capture	When photographing X-ray photos on a X-ray film viewer.	Basic settings are the same as Face mode but the focus is set manually and the flash and LED lights are turned off.

3 Select magnification rate (photo)

Rotate the  dial key to display the 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, the magnification indicator disappears and you can take 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

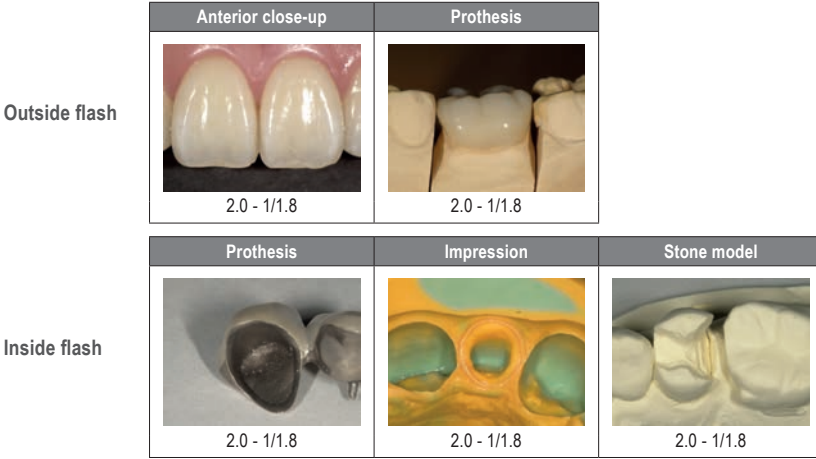
3 Face mode

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

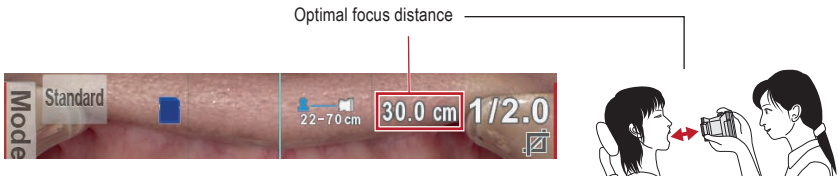
5 Tele macro mode



The following procedures are different for taking photos or recording movies.
 see page 38 "Record movie"

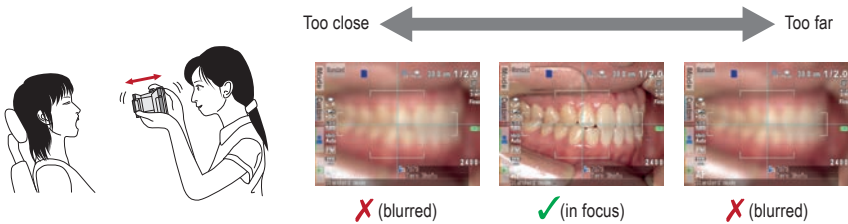
4 Set focus distance (photo)

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



The optimal focus distance varies depending on the magnification selected.

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



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

Tips

● Focus distance

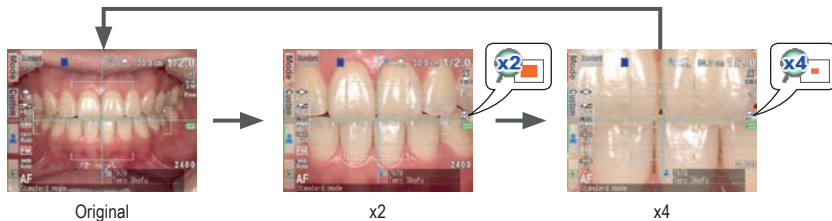
Even if the actual focus distance is outside the optimal focus distance, you can take a picture as long as it's within the possible distance range.



Possible distance range

● Magnification of the image to be recorded

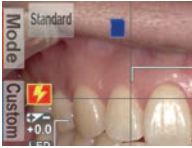
When you press the $\text{SET}(\text{Q})$ key, it will magnify x2 and when you push it again, it will magnify x4. When pressing it again, it will return to normal. Using this zoom function, you can easily ensure the image to be recorded is properly focused.




5 Take picture

Focus and take picture

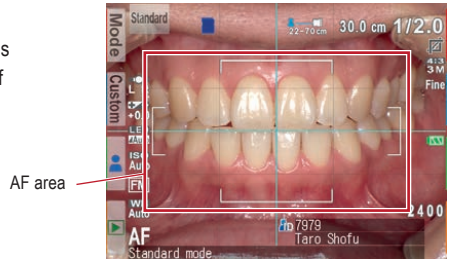
Tips



When the flash mode icon  is displayed, the flash is being charged. You cannot take photos until it is fully charged. (Flash charging takes longer, if the batteries haven't been used for a longer period of time.)



1 Half-press the shutter button to focus.

Set the focus within the AF frame. When the focus is properly determined, the following four types of information are displayed:





AF area

1 Actual distance from the subject when focused properly



-  (Green): Within the possible distance range
-  (Red): Out of the possible distance range (check the distance)





2 Magnification rate

-  (Green): Magnification in range
-  (Red): Magnification out of range (check the distance)

3 Auto cropping indicator

-  (Green): Auto cropping in range
-  (Red): Auto cropping out of range (check the distance)

4 Focus indicator

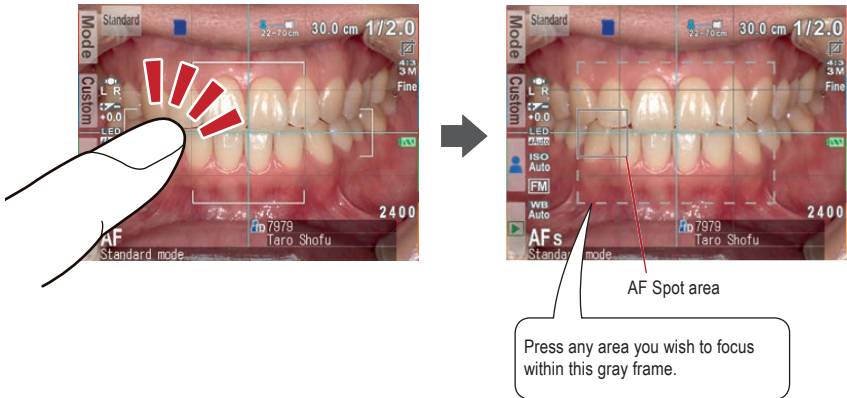
-  (Green): In focus
-  (Red): Out of focus (check the distance or if the subject can be focused appropriately)

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

Tips


Autofocus Spot

When touching the center of the LCD screen (in the shooting mode), the focus mode can be changed to AF Spot 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.



👉 see page 94 ("Focus mode") and page 103 ("Shortcut function in shooting mode")

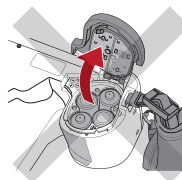
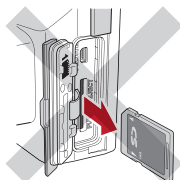
2 After focusing, press the shutter button completely down to take the picture.

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



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 to avoid losing data.



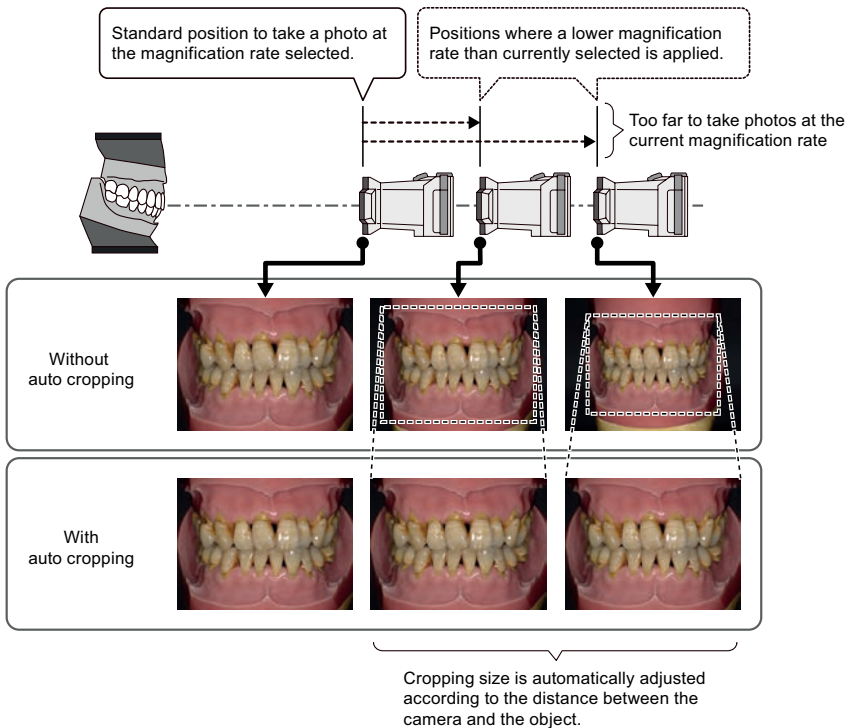
Tips

Auto cropping

The auto cropping function crops the images 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.

The auto cropping function is not available for Face mode and Tele macro mode. It can also be deactivated for other modes in the shooting mode menu.

 see page 40 ("Taking photos without auto cropping function")

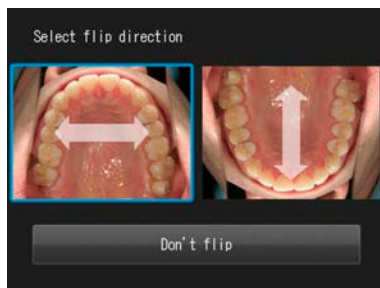


Even if the subject is within the focus distance, auto cropping might not work if the camera is positioned too far from the subject. Pay attention to the distance and auto cropping indicators. For an optimal photo quality and the image size you desire, it is always recommended to maintain the optimal distance indicated. The accuracy of magnification by auto cropping is about $\pm 10\%$, which is influenced by subtle differences 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.



- This message does not appear when you set the flip direction in the setup menu in advance.
- You can also flip the image in Surgery mode and Tele macro mode, depending on your settings in the setup menu.

 see page 100 ("Flip direction")

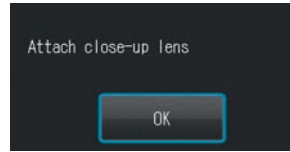
• Face mode

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



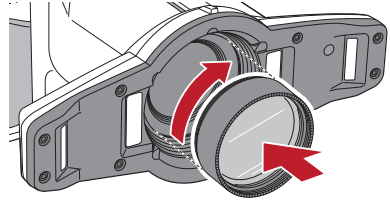
• Tele macro mode

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



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 securely attached.**



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

• Isolate shade mode

When shooting in Isolate shade mode, the following 3 types of images are generated.

1 Same image as taken in Low glare mode



2 Image with natural tooth colour, while deemphasising the background



3 Black-and-white image



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 discoloured.

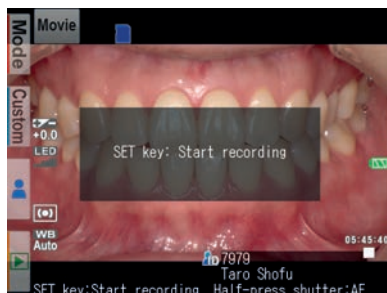
3 Record movie

Focus and record movie

- 1 Press the shutter button to focus.



blurred



in focus

- 2 After focusing properly, press the $\text{SET}(\text{Q})$ SET key to record a movie.

When the distance changes and the target is no longer focused properly, press the shutter button again to adjust the focus.



Note

In case the distance to the target suddenly changes significantly, it might take a while to refocus on the target properly. Therefore it is recommended to maintain a constant distance while recording a movie.

- 3 Finish recording.

Press the $\text{SET}(\text{Q})$ SET key to finish recording a movie.



Note

The maximum recording duration is ten minutes per movie. The current recording time is displayed on the lower right of the screen. It might be shortened depending on the remaining capacity of the SD memory card or battery power.

Tips

LED lighting while recording a movie

In order to use the LED lights while recording a movie you need to turn them on in the shooting mode menu in advance.

see pages 94 ("LED lighting")

3 Advanced technique (photo)

Follow the safety information indicated in the "Important Safety Instructions".

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

Taking photos without auto cropping function

Basic procedures are described in chapter 2 "Basic technique". The magnification rate changes when the camera is positioned farther from the optimal focus distance.

• Using the 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 The image quality can be degraded when the camera is positioned outside of the optimal focus distance. The magnification rate should be within a certain range.


• Not using the auto cropping function

Advantage The image quality can be maintained even if the image is cropped. The 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 the auto cropping function

Shooting mode →  MENU key → Tab 2 → Auto cropping → select "Off"

 see page 35 ("Auto cropping")




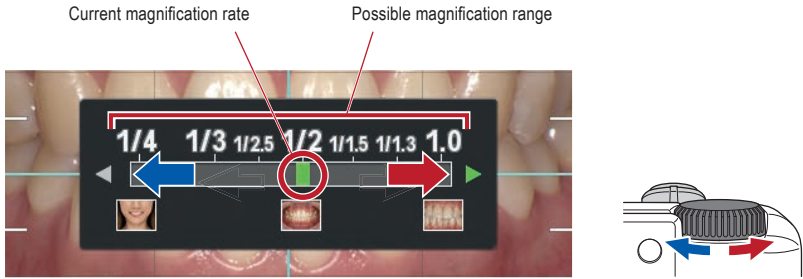
When you do not wish to use "Auto cropping" all the time, change the setting of the shooting mode.

 see page 95 ("Auto cropping") and page 101 ("Save settings")

How to take photos without auto cropping function

- **Select magnification**

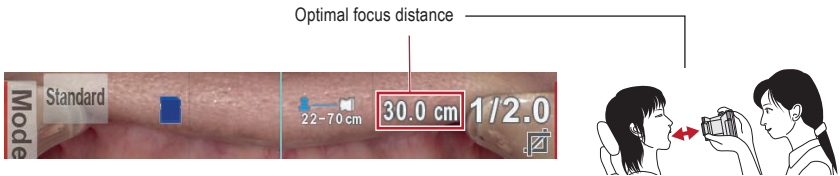
Rotate the  dial key to display the magnification rate indicator on the center of the screen. Then, rotate the dial key again to select the magnification rate you desire.



- **Set focus distance**

1

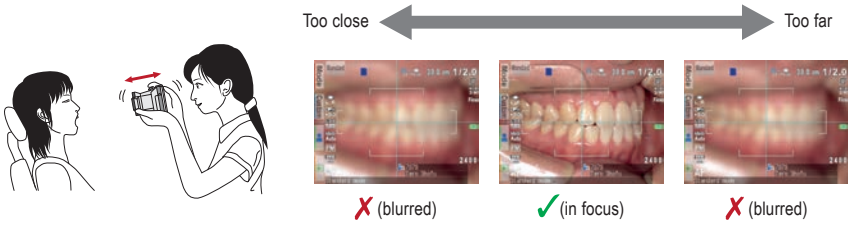
Referring to the optimal focus distance displayed on the upper right of the screen, set the distance between the camera and the subject.



The optimal focus distance varies depending on the magnification selected.

2

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

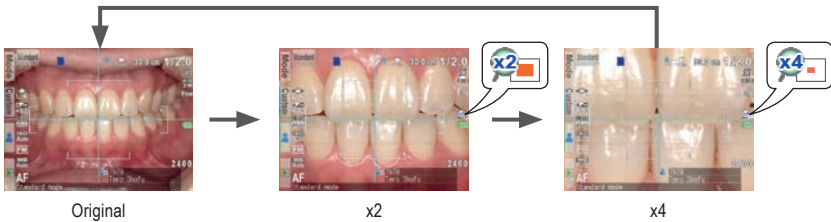


Note

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

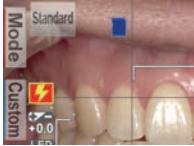
Tips


When you press the **SET** key, it will magnify x2 and when you push it again, it will magnify x4. When pressing it again, it will return to normal. Using this zoom function, you can easily ensure the image to be recorded is properly focused.



- Take picture

Tips

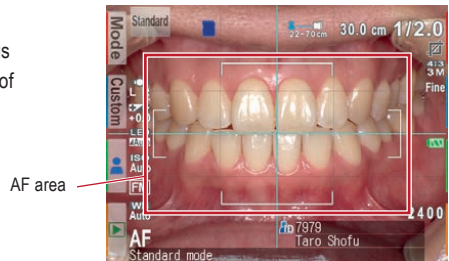


When the flash mode icon  is displayed, the flash is being charged. You cannot take photos until it is fully charged. (Flash charging takes longer, if the batteries haven't been used for a longer period of time.)

1

Half-press the shutter button to focus.


Set the focus within the AF frame. When the focus is properly determined, the following three types of information are displayed:



AF area

1 Actual distance from the subject when focused properly

 (Green): Within the possible distance range

 (Red): Out of the possible distance range (check the distance)




2 Magnification rate

 (Green): Magnification in range

 (Red): Magnification out of range (check the distance)

3 Focus indicator

 (Green): In focus

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

When all indicators are green, you can take photos with all settings 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 to take the picture.

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 optimise the conditions of your photo. The method to take photos is the same as for conventional dental digital cameras based on a single-lens reflex camera.

● Photographing with manual focus

- | | |
|--------------|--|
| Advantage | Basic handling is the same as with conventional single-lens reflex camera.
No waiting time to autofocus. |
| Disadvantage | While looking at the display the camera has to be moved to focus. This needs some experience to be handled properly. |

● How to set manual focus

With  dial key (shortcut)

Shooting mode →  +  dial key → select "MF"

With  MENU key

Shooting mode →  MENU key → Tab 1 → Focus mode → select "Manual focus"

 see page 94 ("Focus mode")




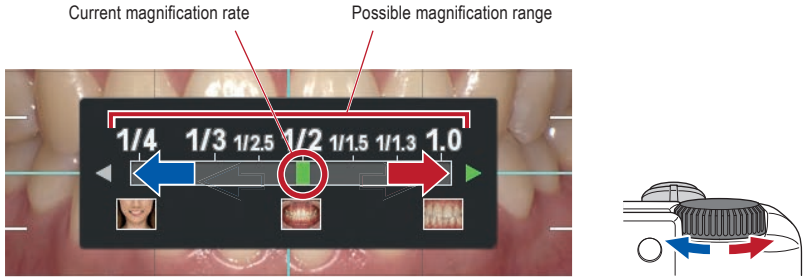
When using "Manual focus" all the time, change the setting of the shooting mode.

 see page 101 ("Save settings")

How to take photos with manual focus

- **Select magnification**

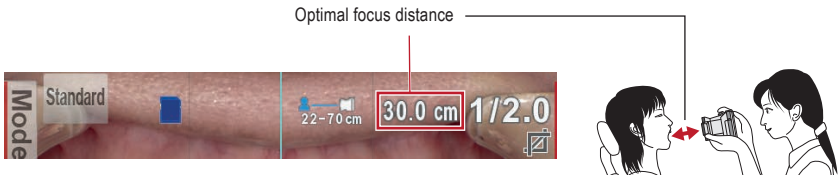
Rotate the  dial key to display the magnification rate indicator on the center of the screen. Then, rotate the dial key again to select the magnification rate you desire.



- **Set focus distance**

1

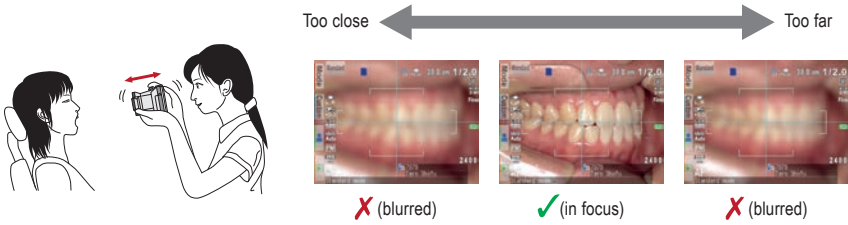
Referring to the optimal focus distance displayed on the upper right of the screen, set the distance between the camera and the subject.



The optimal focus distance varies depending on the magnification selected.

2

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

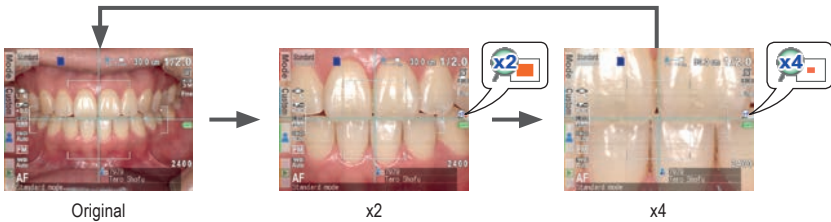


Note

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

Tips

When you press the **SET** key, it will magnify x2 and when you push it again, it will magnify x4. When pressing it again, it will return to normal. Using this zoom function, you can easily ensure the image to be recorded is properly focused.



• Take picture

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". The magnification rate can be disregarded when using this function.

● Setting the focal length manually

Advantage Pictures can be taken without regard to magnification rate.

Disadvantage The images taken aren't standardised.

● How to change the dial key function

Shooting mode →  MENU key → Tab 2 → Dial function → select "Focal length"
+
→ Tab 1 → Reset focus position → select "OFF"

 see page 94 ("Reset focus position") and page 95 ("Dial function")



Note

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




Info

When using the same focal length all the time, change the setting of the shooting mode.


 see page 101 ("Save settings")

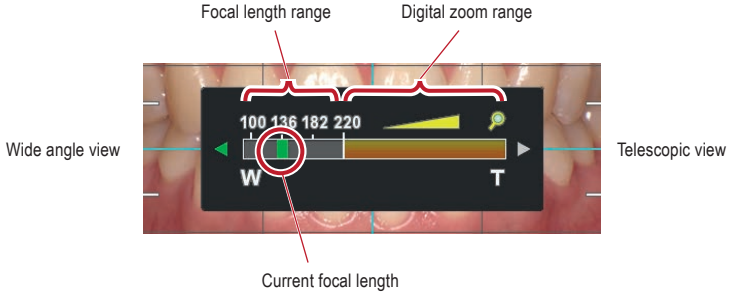
How to take photos with focal length set manually

• 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.

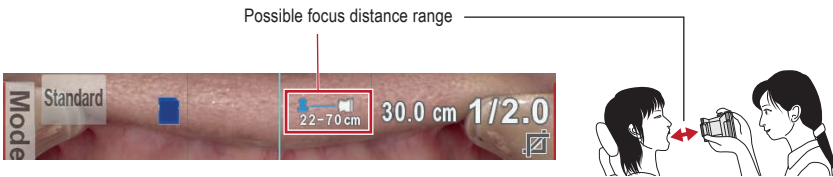
The  mark indicates the digital zoom range. Rotate the dial key to right to zoom in the image.



The image above is an example of Standard mode.
The range of the focal length is depending on the shooting mode.

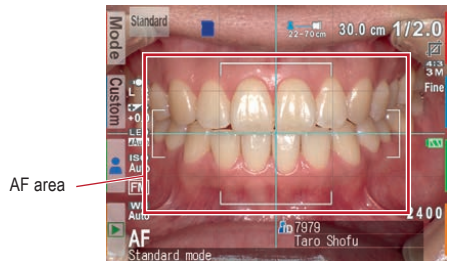
• Set focus distance

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



- Focus and take picture

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



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

4 Tips for taking pictures

Follow the safety information indicated in the "Important Safety Instructions".

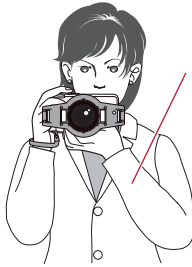
In this chapter, further advanced techniques and useful information to help you take more sophisticated intraoral images are introduced..



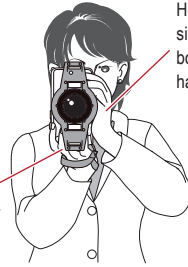
Note The information given is just for your reference and does not guarantee, that optimal photos will be achieved by changing the settings or by using the techniques described in this chapter.

Tips for holding the camera securely

- Take one step forward to stabilise your upper body.
- Lean on the wall or an other thing that doesn't move.
- Put your elbows on a table or desk.



Uphold the bottom of the lens with your left hand while keeping the upper arms to your body.



Hold the bottom or side of the camera body with your left hand securely.

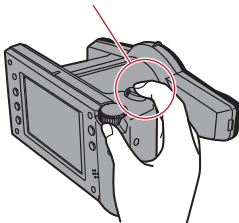
Uphold the camera with your right hand while keeping the upper arms to your body.

For taking horizontal photos

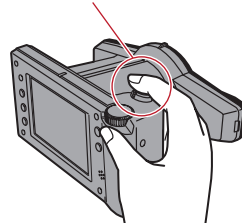
For taking vertical photos

Tips for pressing the shutter button

Pressing with your fingertip may cause images to blur.

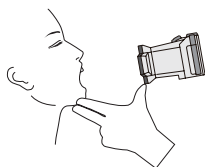


Pressing with the ball of your finger may yield better quality photos.

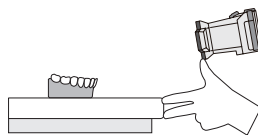


As indicated above, when pressing the shutter button with your fingertip, the camera might be shaken, causing image blurring. When pressing the shutter button with the ball of your finger gently, the camera is hardly shaken, minimising image blurring.

Tips to avoid image blurring



For intraoral photography



For photographing models

When taking magnified images of natural teeth in the Low glare mode or Tele macro mode, even slight agitation of the camera affects the quality of the image. Use your left hand to fix the camera and subject as illustrated above.

Tips for operations

Causes of inappropriate focus and countermeasures

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

Countermeasure → Focus on an area with high contrast.

Explanation

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

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

Countermeasure → Hold the camera firmly

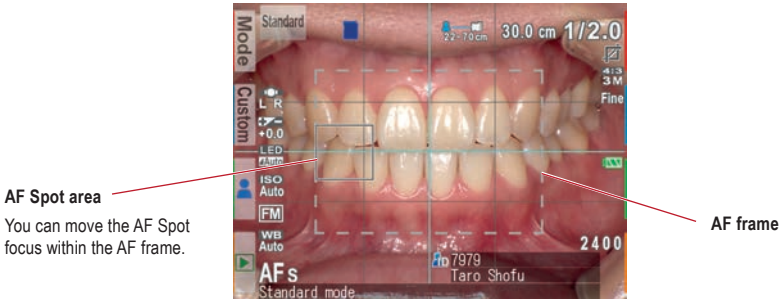
Explanation

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

Focusing using Autofocus Spot

A specific area can be focused by using Autofocus Spot.

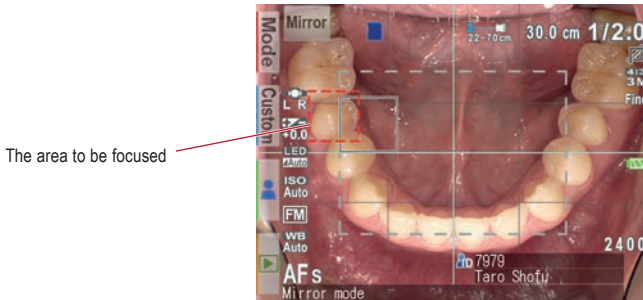
- 1 Hold the camera toward the subject and touch the area you wish to focus.



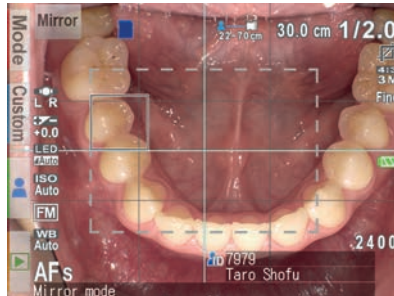
- 2 Half-press the shutter button to focus. Then, after focusing press the shutter button completely down to take the picture.

Take pictures with focus lock

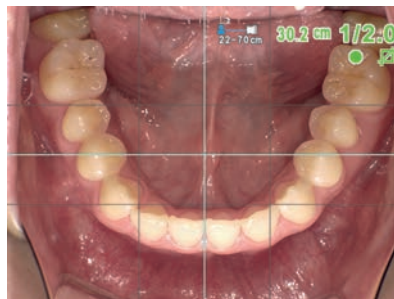
When you wish to focus on an area outside of the AF frame as indicated by the red frame below, take pictures with focus lock as follows.



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



- 2 Move the camera back to the original position while still 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 depending on the reflection factor of the mirror. When photographing something that scatters light intensely such as a stone model, the image might be too bright. In these cases, brightness needs to be fine-tuned.

• How to adjust brightness

Shooting mode →  +  dial key (rotate the dial key while pressing the F2 key.)

 see page 93 ("Brightness compensation") and page 103 ("Shortcut function in shooting mode")



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

 see page 28 ("QR codes for custom settings")

Taking pictures with turning only one side of the flashes on

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



Both flashes on



Right flash on





Left flash on



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

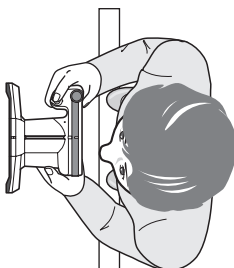
- **How to select the flash mode**

Shooting mode →  +  dial key (rotate the dial key while pressing the F1 key.)

 see page 93 ("Flash mode") and page 103 ("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.



Shadows appearing in the Face mode

Shadows might appear along the patient body or the background might be darker when photographing with the flash 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 shadows. However, the place has to be bright enough to take photos. Hold the camera securely to avoid image blurring.





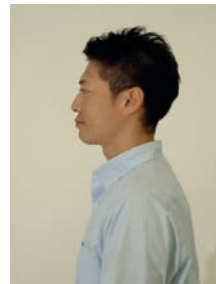
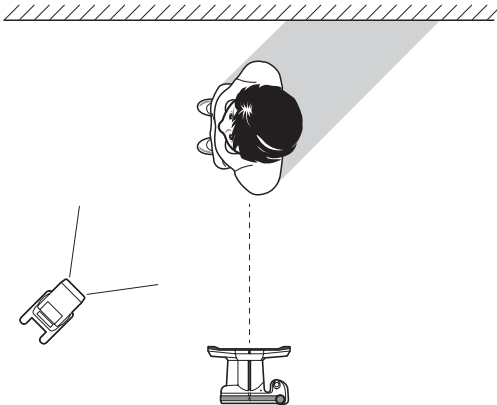
Flash is turned off



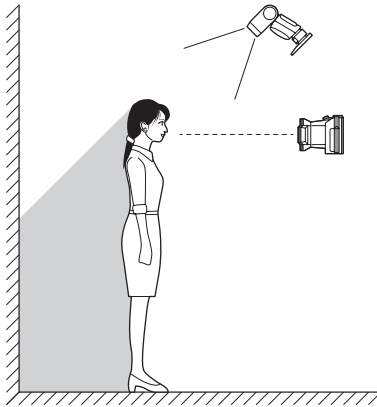
Flash is turned on

• Using a slave strobe

Shooting mode →  +  dial key (rotate the dial key while pressing the F1 key) → select "Trig" ("Trigger")
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 the light intensity. To achieve the best possible image quality, these factors must be optimally adjusted.



Note

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

● How to turn the flash on and off

Shooting mode →  +  dial key (rotate the dial key while pressing the F1 key)

 see page 93 ("Flash mode") and page 103 ("Shortcut function in shooting mode")

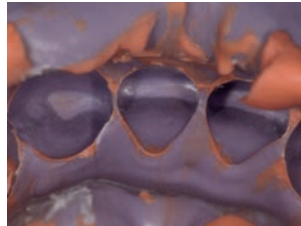
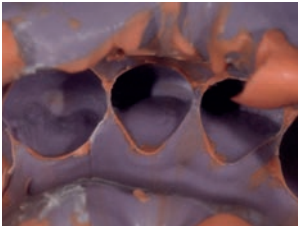
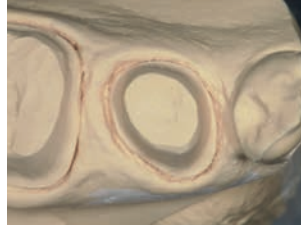
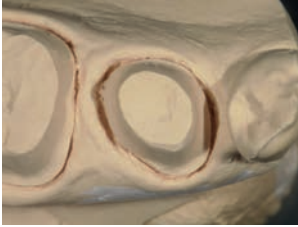
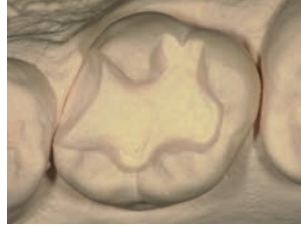
Inside and outside flashes for Tele macro mode

In the Tele macro mode, you can choose to use either both inside or both outside flashes. Outside flashes should be used to minimise reflection and glare on the subject, while inside flashes should be used for photographing inside cavity walls etc.

Outside flashes



Inside flashes



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

Tips to minimise shadows when photographing stone models and prostheses

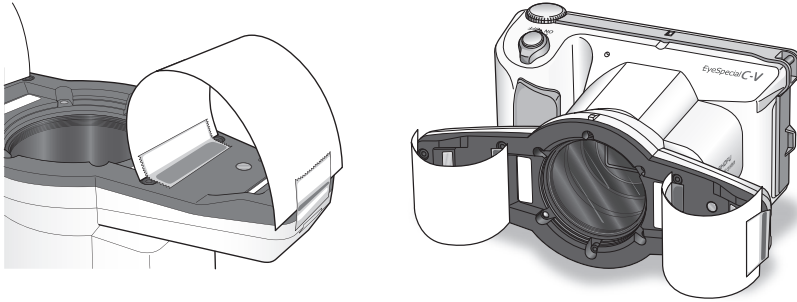
To minimise shadows created by using the flash, the use of a diffuser is recommended.

• Preparation


Tracing paper approx. 4 x 10 cm: 2 pieces

Using colourless tracing paper designed for photography is recommended.

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



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

 see page 93 ("Brightness compensation") and page 103 ("Shortcut function in shooting mode")



Note

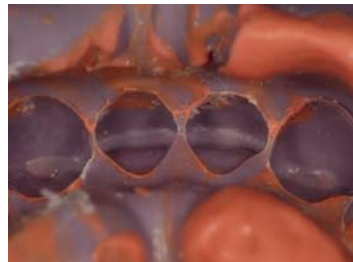
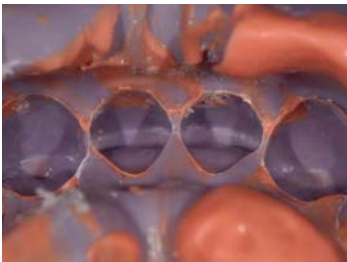
Select the outside flashes for the Tele macro mode.

Use a light diffuser to minimise shadows.

Without diffuser



With diffuser




5 Playback

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

Viewing your image (photo / movie)

Single image playback

Press the  F4 key in shooting mode to change to playback mode. The last image taken is displayed.

If the  Play button appears in the center of the screen, the file is a movie.



Return to shooting mode...

Magnify image...

Thumbnail images...

Erase data...



Playback mode (photo)



Return to shooting mode...

Thumbnail images...

Erase data...




Playback mode (movie)

Tips

- **If you playback the image while it is being transmitted using a wireless LAN**

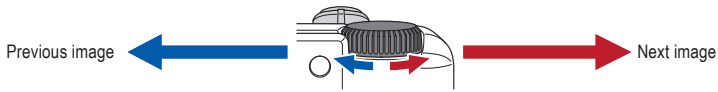
The message on the right appears when you try to play back an image that is being transmitted using a wireless LAN.

If this message appears, please switch to another image and try to play back the image after a while.





 Please wait...

Reviewing other images

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



Thumbnail images

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




Note

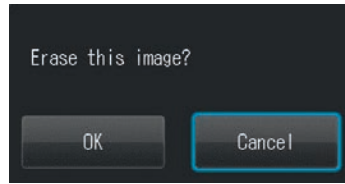
Movies cannot be played from the thumbnail image view. Instead, go to the single image view and press play.

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.

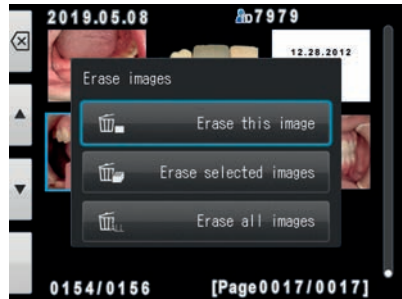


Erase selected multiple images simultaneously



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

- **Erase this image**

The blue framed image will be erased.

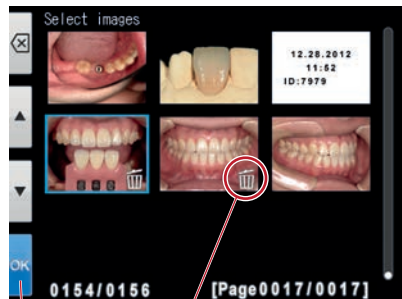


- **Erase selected images**

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

- **Erase all images**

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



Finish selecting

The selected images are marked with a trash icon.




Note

Once erased, the data can not be retrieved.

Protecting images

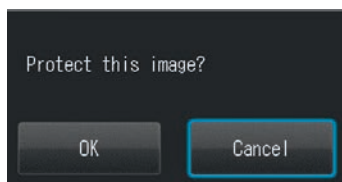
Protect the image to avoid accidental deletion or unintended editing.

Protect image


Press the  MENU key in the playback mode and select "Protect". By pressing "OK" you can protect the image currently displayed.



To release the protection, press the MENU key, select "Unprotect" and press "OK".





Protect selected multiple images simultaneously

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

- **Protect this image**

The blue framed image will be protected.

- **Protect / unprotect selected images**

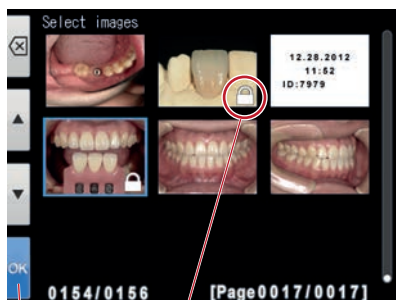
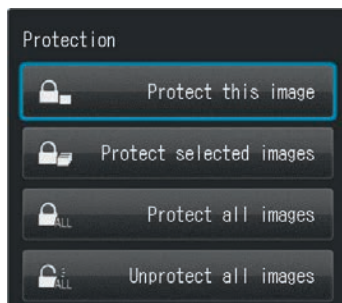
Protect selected images or release the protection. Select the images you wish to protect by directly touching them on the screen or pressing  SET. When touching the protected image again, the protection will be released. After you've finished selecting the images, press the  OK/F4 key. Press "OK" confirm the selected images to be protected.

- **Protect all images**

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

- **Unprotect all images**

All protected images stored on the SD memory card will be unprotect.

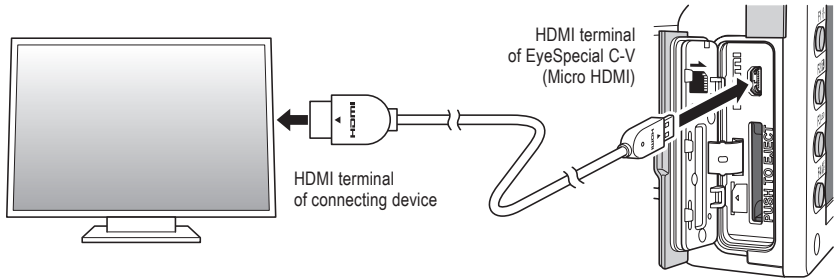


Finish selecting

The selected images are marked with a padlock icon.

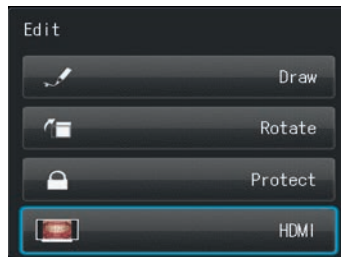
Playing movies / viewing photos with HDMI cable

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



Note Insert the HDMI cable into the terminal securely.

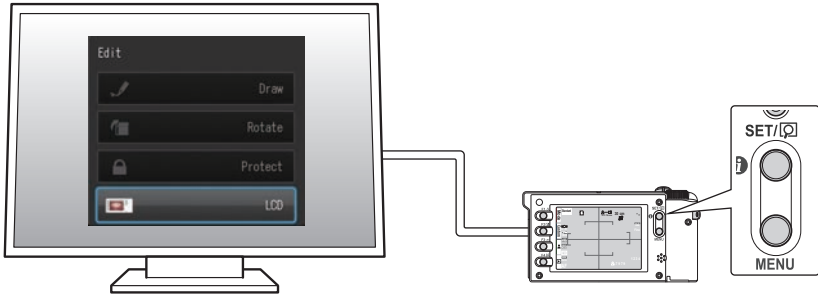
- 2 Select the playback mode and press the  MENU key. The message below appears; then select the HDMI button.



- 3 The camera display is blacked out and the movie / photo is displayed on the TV or other device connected with the HDMI cable. Rotate the  dial key to scroll backward or forward through the pictures.

 see page 70 ("Functions while playing movies")

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



Note

- When viewing a photo with an HDMI cable, functions such as painting or rotating the image can not be used.
- The volume can be adjusted on the TV or other device connected. It can not be adjusted on the camera itself when using an HDMI cable.
- The quality of the sound depends on the device in use.
- Some devices are incompatible with HDMI connectors. In that case, use a conversion adapter.
- It can't be guaranteed that the EyeSpecial C-V is compatible with every HDMI devices.
- Playback is possible on TVs or other devices using NTSC or PAL format.

Tips

HDMI cable








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

Recommendation (when the connecting device has an HDMI connector Type A):

CAC-HD14EU15BK by ELECOM.

Functions while viewing photos

Magnify / downsize images

- To magnify the image, press the  F2 key in playback mode. Maximum magnification is at 6x. Press the  F3 key to reduce the size of the picture. Press  F1 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    .

Magnify...

Downsize...




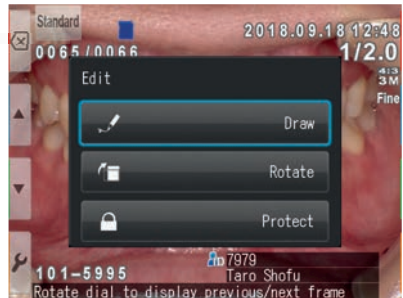
5

Playback



Edit images

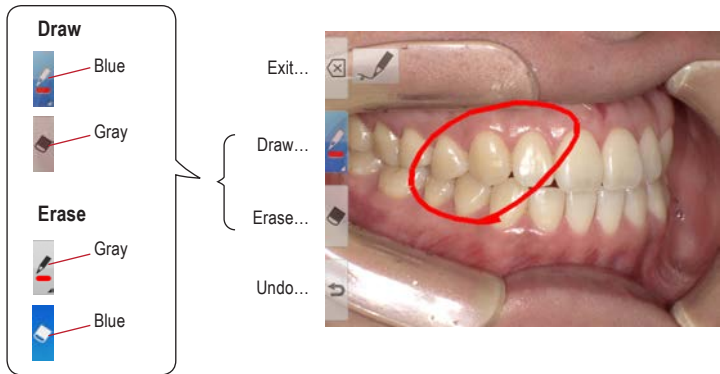
You can draw on or rotate the recorded images.



Press the  MENU key and this message appears on the display.

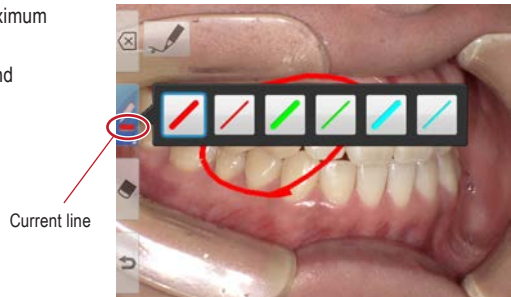



- **Draw on images (paint function)**

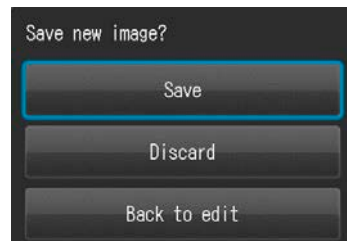
When “Draw” is selected, you can draw lines on the recorded images. Press  F2 to draw lines and  F3 to erase them.



- Press  F4 to undo the previous actions (maximum 5 previous actions).
- Press  F2 again to change the line colour and boldness (three colours, two boldnesses).






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



Edited images are saved in the size of 640×480 pixels.

● Rotate images

The images can be rotated by 90 degrees.

- Press  F2 to rotate the image clockwise or  F3 to rotate counter-clockwise.
- Press  F1 to finish rotation. Select "Save rotated image" to save the image.

Rotate 90 degrees clockwise

Rotate 90 degrees counter-clockwise





Some computer software including Windows Picture and Fax Viewer installed in WindowsXP can not 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 playing movies



Select a movie frame.

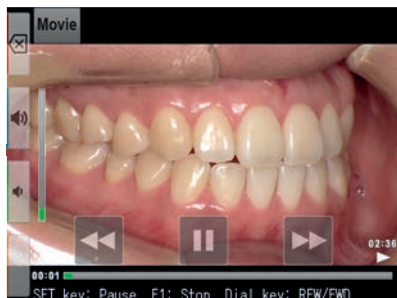
Play

Press the  Play button on the center of the screen or press the  SET key.




Pause

Press the  Pause button or the  SET key to stop the movie temporarily.





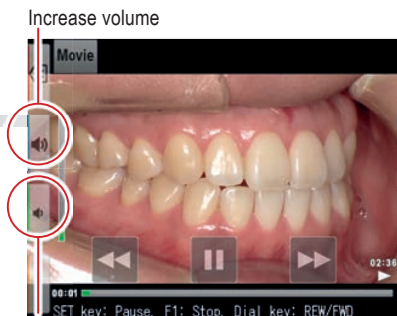
Rewind / Fast Forward

Rewind

Press the  Rewind button or rotate the  dial key clockwise.

Fast Forward

Press the  Fast Forward button or rotate the  dial key counter-clockwise.




Increase volume


Decrease volume

Volume

Higher

Press the  volume (+) button or the F2 key.

Lower

Press the  volume (-) button or the F3 key.

Stop

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

6 Transferring images to your computer



For simplified image management, SHOFU has created a proprietary file management software called "SureFile".

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

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

When using a computer to transfer the data, refer to the instructions of your device / software.

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

- When formatting your SD memory card, all images including the protected ones are erased. Back-up the data you wish to keep before formatting.

Tips

Patient information file (.MIF)

Each movie file (.MOV) comes with its corresponding patient information file (.MIF).

 see page 121 ("Patient information file (.MIF)").

7 Wireless LAN function

This camera can send recorded images to your PC via wireless LAN. This chapter describes what you can do with the camera's wireless LAN function and how to set it up.



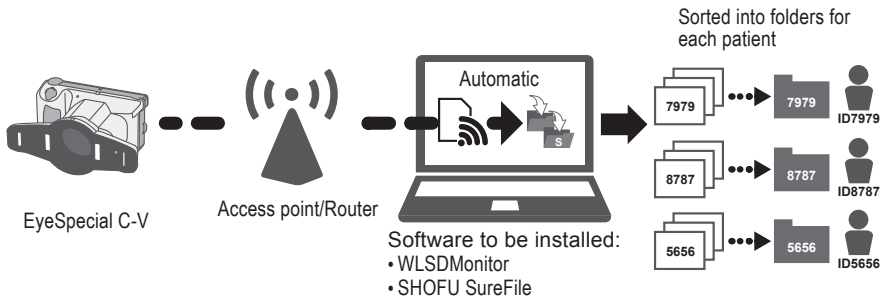
Note

The wireless LAN function may not work properly if the SD card contains files other than images taken by this camera. Please be sure to format the SD card with this camera before using the wireless LAN function.

Please use an SD card dedicated to this camera.

Overview

With the wireless LAN function of this camera and our software, the images saved on the SD card can be automatically transferred to your PC. All images are automatically sorted into folders for each patient.



Note

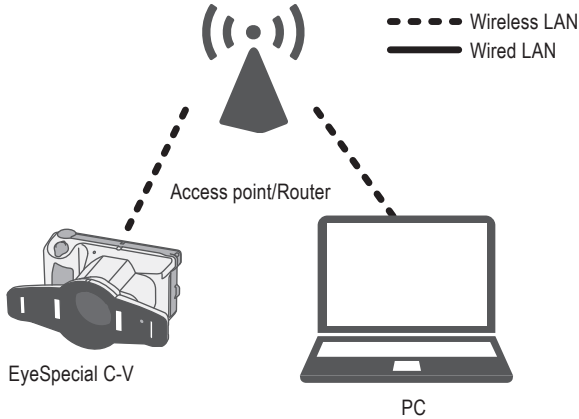
To use the wireless LAN, the receiving software “WLSMonitor” and the image sorting software “SHOFU SureFile” are required.

Network connection

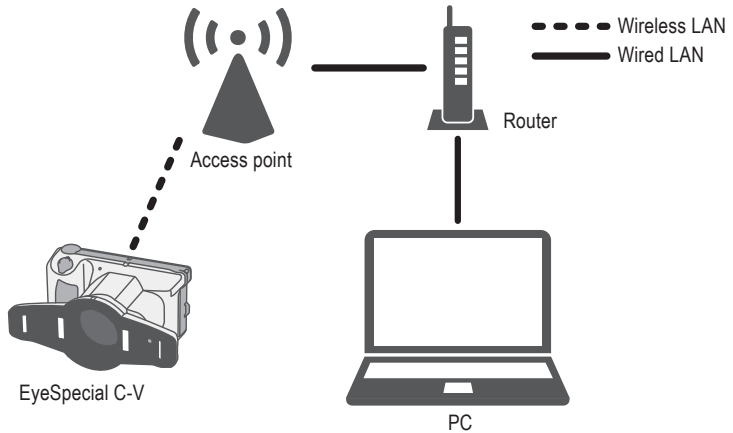
The functional and non-functional network connections are shown below. Please check your network environment and prepare a suitable network.

Functional network connections

- The EyeSpecial C-V and the computer are both connected to the same network via wireless LAN.



- The EyeSpecial C-V and the computer are connected to the same network via both wireless LAN and wired LAN.

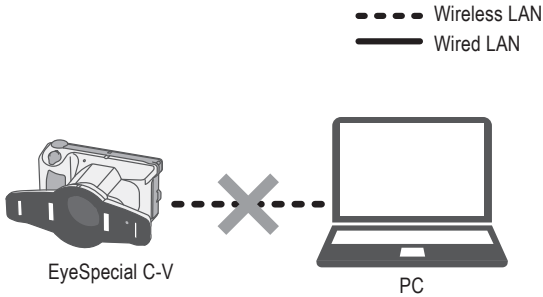


To use the wireless LAN (Wi-Fi) function of the camera, the DHCP function of the wireless LAN router must be turned on. Please refer to the router's instruction manual or consult your network administrator for the DHCP function settings.

Non-functional network connections

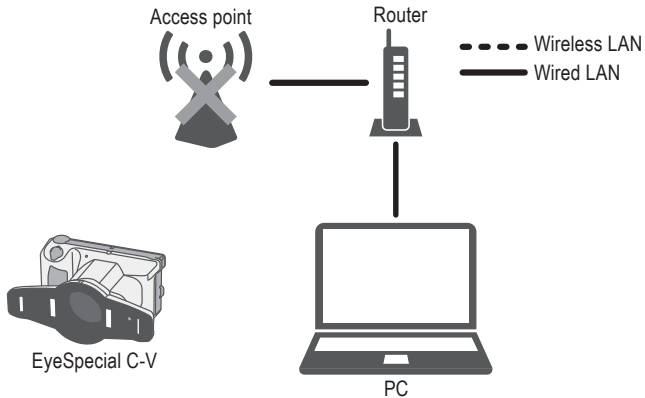
- **The EyeSpecial C-V is connected directly to the computer.**

The EyeSpecial C-V supports connection via a wireless LAN access point only and cannot be connected to a computer directly.



- **A wireless LAN access point does not exist.**

The EyeSpecial C-V cannot be used without a wireless LAN access point. If only a wired LAN is available, please install a separate wireless LAN access point.



Difference between 2.4 GHz and 5 GHz WLAN bands

The frequency bands used by wireless LAN are roughly divided into 2.4 GHz and the 5 GHz band, which have the following differences.

Please understand the characteristics and select the appropriate band.

Characteristics of 2.4 GHz band

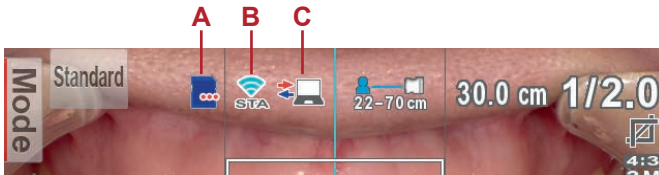
- Pros: Greater range.
Cons: Can be easily interfered with by other devices and slows down.

Characteristics of 5 GHz band

- Pros: Less susceptible to interference with other devices and provides stable communication.
Cons: Vulnerable to obstacles and limited range.

Icons displayed on LCD screen

The icons displayed on the LCD screen change according to the status of the SD card and the signal strength. Types and meanings of each icon are described below.



A The icon changes according to the status of the inserted SD card

Icon	Description
	Displayed when the wireless LAN function is OFF
	Displayed when there is an error on the SD card
	Displayed when all images on the SD card have been transferred to your computer
	Displayed when there are untransferred images on the SD card
	Displayed when the wireless LAN connection is started and communication is not completed

B The icon changes according to the signal condition of the wireless LAN

Icon	Description
	Displayed when the wireless LAN function is OFF
	Displayed when the wireless LAN function is ON and not connected to the access point
	Displayed when the signal strength is weak
	Displayed when the signal strength is moderate
	Displayed when the signal strength is strong

C The icon changes according to the communication status between the camera and the receiving software

Icon	Description
	This icon is displayed when communication between the camera and WLSMonitor (receiving software) is taking place. Do not remove the SD card or turn the camera off while this icon is displayed.

Tips

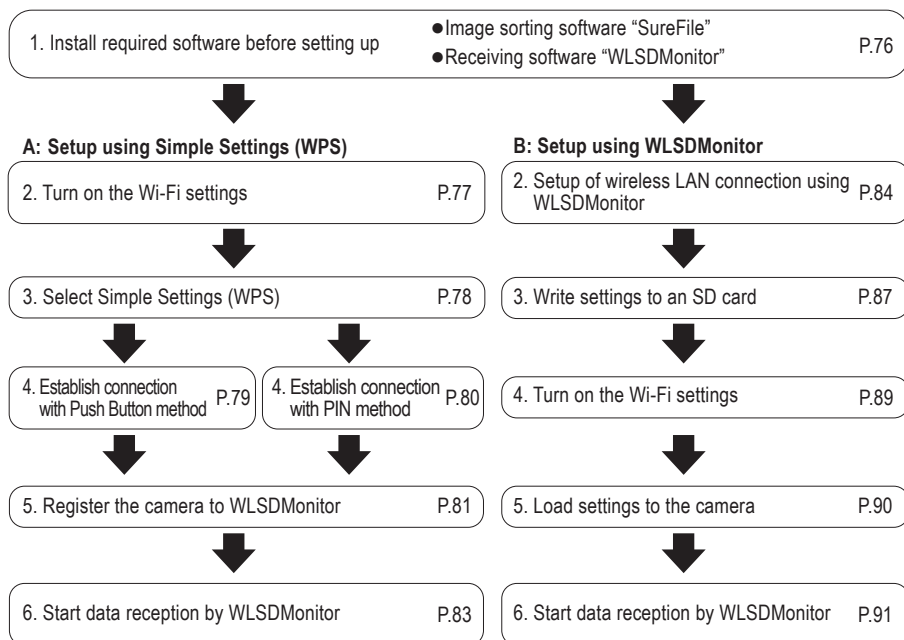
Automatic ON/OFF of the Wi-Fi function

If there is no communication with the computer for a certain period of time (1 minute), the Wi-Fi function of the camera turns off automatically to save power. The Wi-Fi function is automatically turned on again by the following operations:

- The camera is turned on.
- An SD card is inserted into the camera and the card slot/HDMI connector cover is closed.
- Data is written to the SD card, such as when taking a picture or editing an image etc.

Procedure for setting up a wireless LAN connection

You can set up the wireless LAN connection using the following two methods. If you choose Simple Settings (WPS), prepare an access point that supports WPS.



1 Install required software before setting up

To transfer images using the Wi-Fi function of this camera, please prepare an access point and a computer.

The software for receiving images (WLSDDMonitor) and the software for file management and image sorting (SHOFU SureFile, Ver. 3.0 or later) need to be installed on your computer. They can be downloaded from our website.

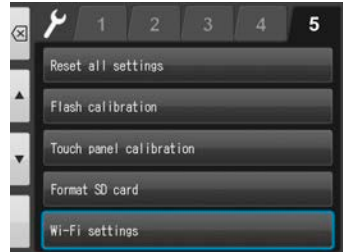
Please note the system requirements (supported operating systems).

After step 1, the procedure differs depending on which method you choose: Simple Settings (WPS) or using WLSMonitor. For information on the latter method, see “Setup of wireless LAN connection using WLSMonitor” (P.84).

A: Setup of wireless LAN connection using Simple Settings (WPS)

2 Turn on the Wi-Fi settings

- 1 Select “Wi-Fi settings” in the setup menu.
To open the “Wi-Fi settings”:
Press the MENU key > F4 > tab 5 > Wi-Fi settings.



- 2 Select “Wi-Fi”.

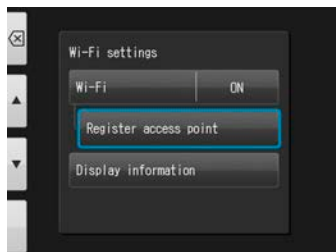


- 3 Select “ON”.

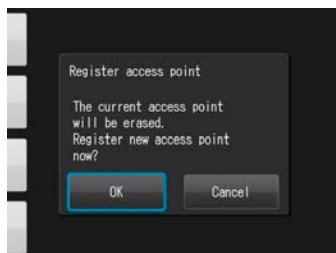


3 Select Simple Settings (WPS)

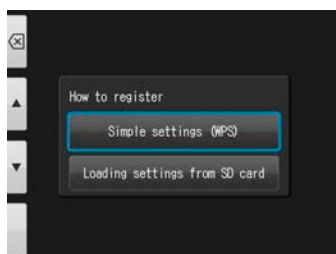
- 1 Select "Register access point".



- 2 Select "OK".



- 3 Select "Simple Settings (WPS)".



- 4 Select either "WPS (PBC method)" or "WPS (PIN method)".

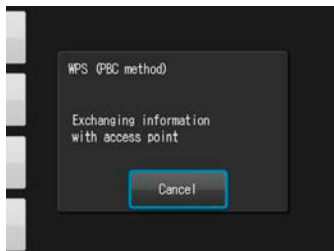


4 Establish connection with Push Button method

- 1 Press the WPS button on the router and press "OK" within 2 minutes.



- 2 Wait for a moment while information is exchanged.

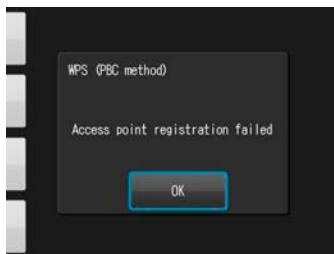


- 3 One of the following messages will be displayed.

Confirm the content and press "OK".

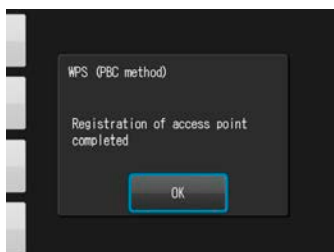
- Access point registration failed

Please check the router settings and WPS connection method, and try again.



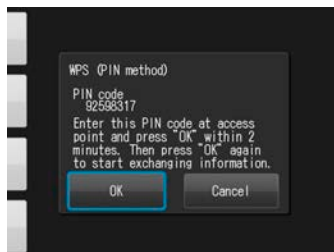
- Registration of access point completed

Press "OK".

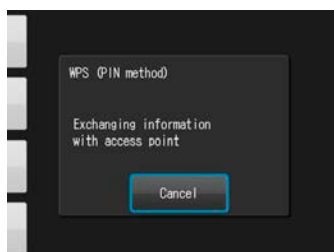


4 Establish connection with PIN method

- 1 Enter the displayed PIN code into the router and press "OK" within 2 minutes.

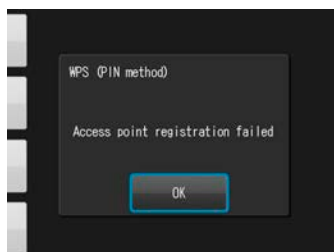


- 2 Wait for a moment while information is exchanged.



- 3 One of the following messages will be displayed.

Confirm the content and press "OK".

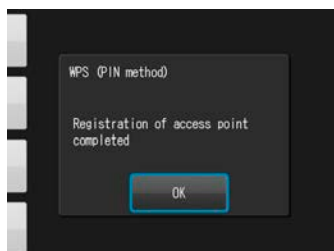


- Access point registration failed

Please check the router settings and WPS connection method, and try again.

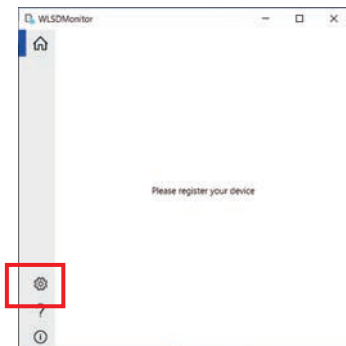
- Registration of access point completed

Press "OK".

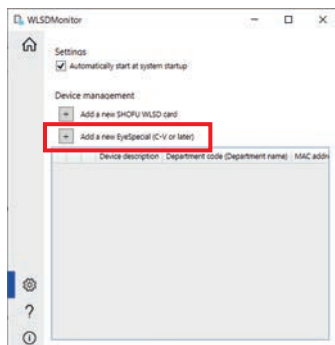


5 Register the camera to WLSMonitor

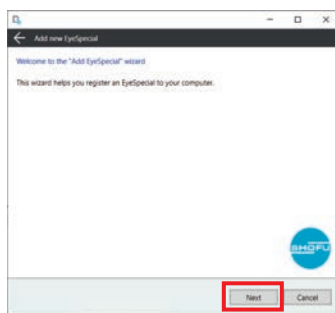
- 1 Start the WLSMonitor and press the settings icon [⚙️].



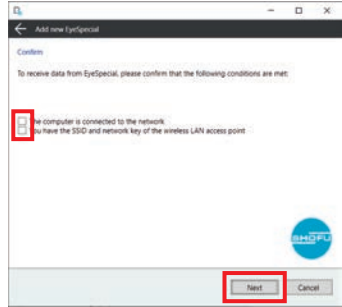
- 2 Select "Add a new EyeSpecial (C-V or later)" .



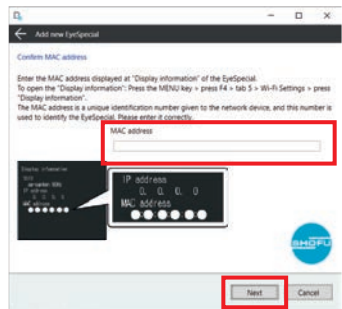
- 3 The wizard to add a new camera is displayed. Press "Next".



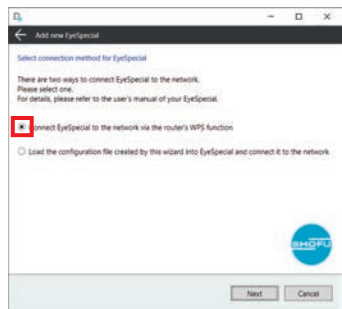
- 4 Check the displayed conditions, tick if they are met and press "Next".



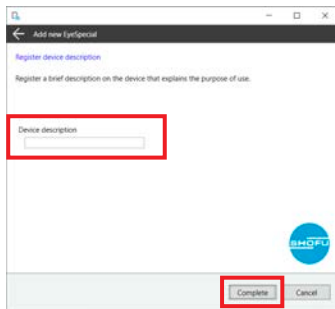
- 5 Enter the MAC address displayed on the EyeSpecial C-V at "Display information" and then press "Next".
To open the "Display information":
Press the MENU key > F4 > tab 5 > Wi-Fi settings > Display information.



- 6 Check "Connect EyeSpecial to the network via the router's WPS function" and press "Next".



7 Enter a description for your device and press “Complete”.



6 Start data reception by WLSMonitor

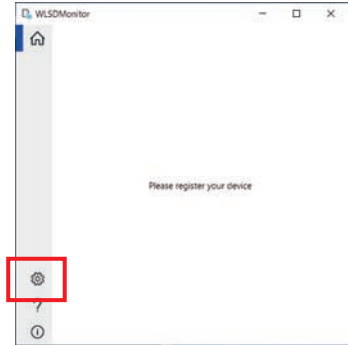
1 On the home screen of WLSMonitor, set the receiving switch of the device you want to connect to “ON”.



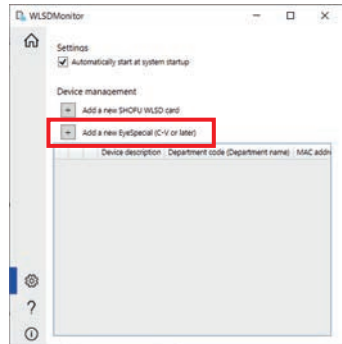
B: Setup of wireless LAN connection using WLSMonitor

2 Establish connection with WLSMonitor

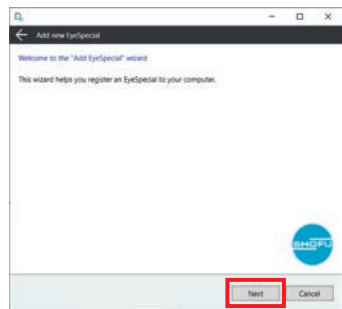
- 1 Start WLSMonitor and press the settings icon [⚙️].



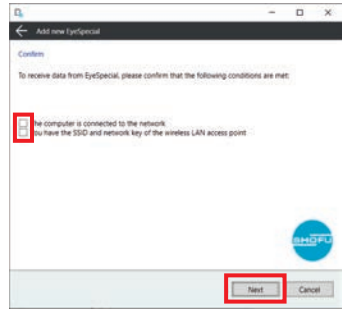
- 2 Select "Add a new EyeSpecial (C-V or later)".



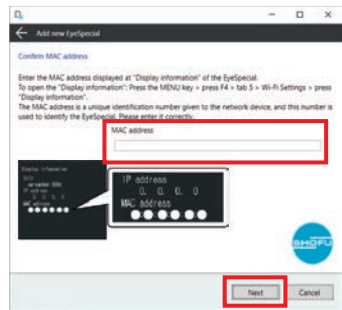
- 3 The wizard to add a new camera is displayed. Press "Next".



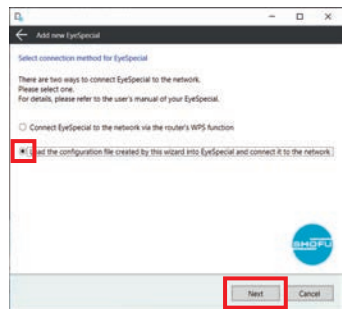
- 4 Check the displayed conditions, tick if they are met and press "Next".



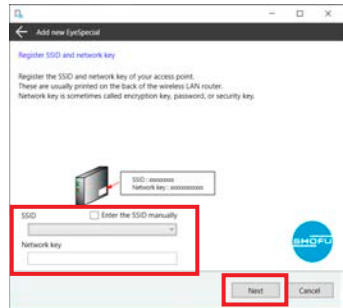
- 5 Enter the MAC address displayed at "Display information" of the camera and then press "Next".
To open the "Display information":
Press the MENU key > F4 > tab 5 > Wi-Fi settings > Display information.



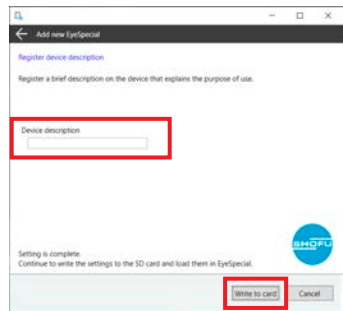
- 6 Check "Load the configuration file created by this wizard into EyeSpecial and connect it to the network" and press "Next".



- 7 Select or enter the SSID and the network key of the router. Then press "Next".



- 8 Enter a description for your device and press "Write to card". The writing wizard that you will use in the next step is displayed.



3 Write settings to an SD card

- 1 Confirm that the MAC address displayed at "Display information" of the camera matches the MAC address displayed at the writing wizard. Then press "Next".

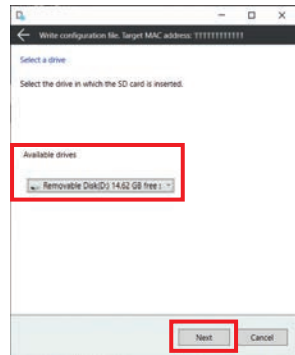
To open the "Display information": Press the MENU key > F4 > tab 5 > Wi-Fi settings > Display information



- 2 Insert an SD card into the SD card slot of your computer and press "Next".



- 3 Select the drive in which the SD card is inserted and click "Next".



4 Press “next” to start writing the configuration file.



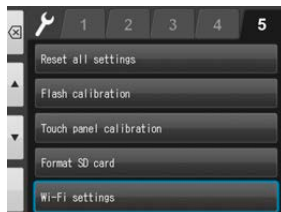
5 Please wait until the writing of the configuration file is completed. Subsequently the message “Writing of configuration file is completed and the SD card is unmounted” is displayed. Press “Finish” and remove the SD card from your computer.



4 Turn on the Wi-Fi settings

1 Insert the SD card with the settings written in step 3 into the camera.

2 Select "Wi-Fi settings" in the setup menu.
To open the "Wi-Fi settings":
Press the MENU key > F4 > tab 5 > Wi-Fi settings.



3 Select "Wi-Fi".



4 Select "ON".

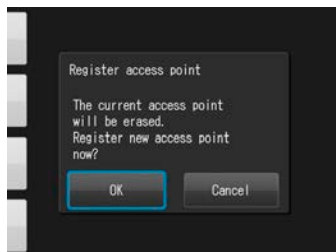


5 Load settings to the camera

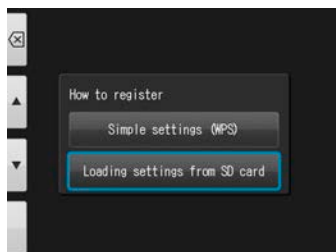
- 1 Select "Register access point".



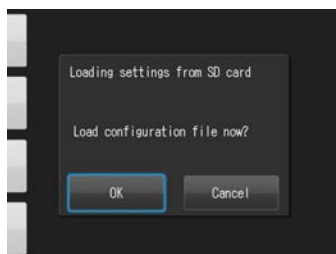
- 2 Press "OK".



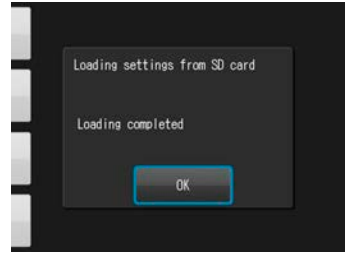
- 3 Select "Loading settings from SD card".



- 4 Press "OK".

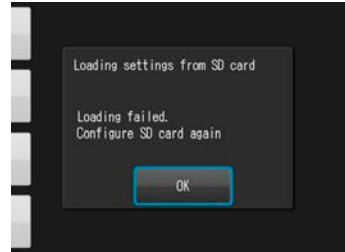


- 5 If the configuration file is successfully loaded, press "OK".



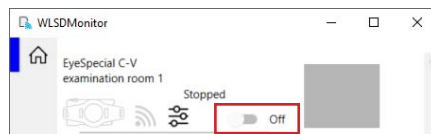
If this message appears, the loading failed.

Press "OK" and reconfirm the MAC address of the EyeSpecial registered in WLSMonitor and write the configuration file to the SD card again. Then, repeat step 5 "Load settings to the camera".



6 Start data reception by WLSMonitor

- 1 On the home screen of the receiving software, set the receiving switch of the device you want to connect to "ON".




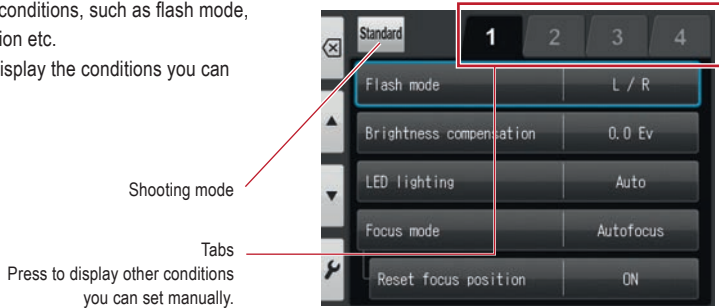
8 Menus

The EyeSpecial C-V has a total of three menus: shooting mode menu, playback mode menu and setup menu. This chapter gives you an outline of these menus.

Shooting mode menu

You can manually set conditions, such as flash mode, brightness compensation etc.

Press  MENU to display the conditions you can set manually.

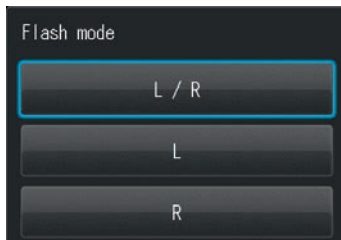


Item	Explanation
Tab 1	
Flash mode	To select the flash mode (left & right / left / right)
Brightness compensation	To adjust the brightness of the image
LED lighting	To turn the LED lights on and off To adjust intensity of LED lights
Focus mode	To change the focus mode
Reset focus position	To turn the function "Reset focus position" on or off
Tab 2	
Dial function	To choose the dial function ("magnification" or "focal length")
Auto cropping	To turn the auto cropping function on or 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
Color mode	To adjust the hue
Contrast	To adjust the colour 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

Tab 1

● Flash mode

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





Flash mode	Explanation
L / R *	Both flashes are on.
L *	Only the left flash is on (seen from the LCD)
R *	Only right flash is on (seen from the LCD)
ON	Flash is turned on
Trigger	When using a slave strobe (must be purchased separately)
Auto	Flash automatically turns on or off depending on the shooting situation
OFF	Flash is turned off

* In the Tele macro mode you can select various settings for the inside and outside flashes.

● Brightness compensation

To adjust the brightness of the image.



Press "+" and "-" or rotate the  dial key to adjust the brightness. Press "OK" or  SET to save the selected value.

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



• LED lighting

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

Press “+” and “-” or rotate the  dial key to adjust the light intensity. Press “OK” or  SET to save the selected value.



When taking photos:

- Auto Light intensity is automatically adjusted depending on the shooting situation.
- 0 - 3 0 (off) - 3 (highest light intensity)

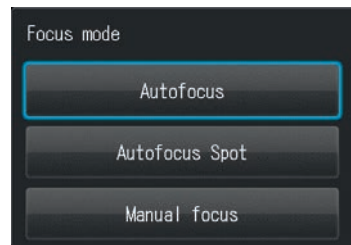
When recording a movie:

- Auto cannot be selected
- 0 - 3 0 (off) - 3 (highest light intensity)

• Focus mode

To change the focus mode.

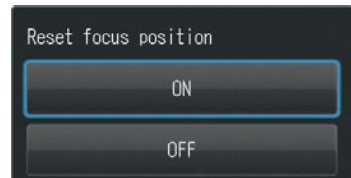
Three focus modes are available: Autofocus Standard, Autofocus Spot and Manual focus.



Focus mode	Explanation
Autofocus	Standard focus mode: Focus is automatically set within the focus area
Autofocus Spot	The spot you specified is focused. Touch the area you wish to focus within the AF frame.
Manual focus	Photos need to be focused manually

• Reset focus position


To turn the function “Reset focus position” (after taking a picture) on or off.

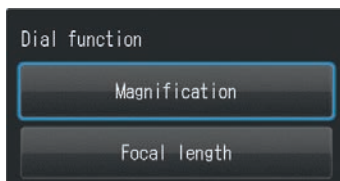


Reset focus position	Explanation
ON	The focus returns to the original position after photographing.
OFF	The focus does not return to the original position after photographing.

Tab 2

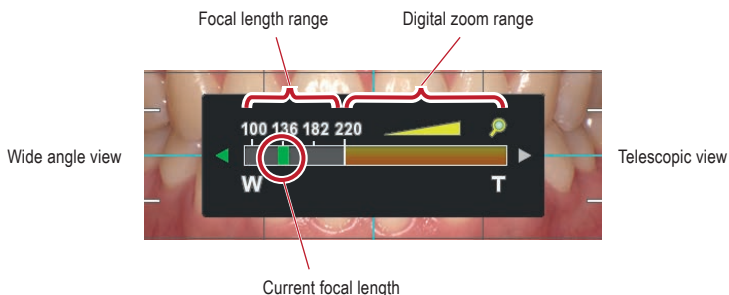
● Dial function

Determines, which function is executed when rotating the  dial key.



Dial function	Explanation
Magnification	To change the magnification rate
Focal length	To change the focal length (the auto cropping function is not available)

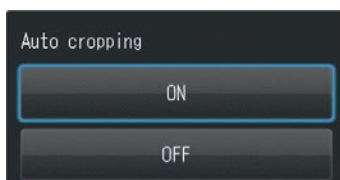
When "Focal length" is selected, the indicator shown below appears on the center of the display instead of the magnification indicator.



The image above is an example of Standard mode. The range of the focal length is depending on the shooting mode. The optimal focal length varies depending on the magnification rate selected.

● Auto cropping

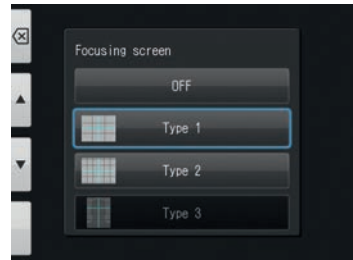
To turn the auto cropping function on or off.

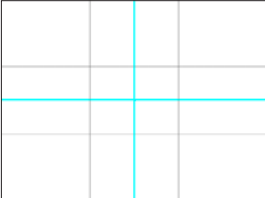
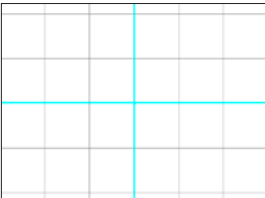
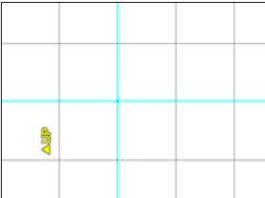


Auto cropping	Explanation
ON	The image is automatically cropped based on the magnification rate you select.
OFF	The image is stored at the actual magnification rate without cropping.

- **Focusing screen**

To change the grid type.



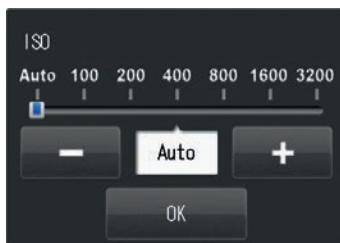
Grid type	Explanation
OFF	-
Type 1	
Type 2	
Type 3*	

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

● **ISO speed**

To adjust the ISO speed.

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

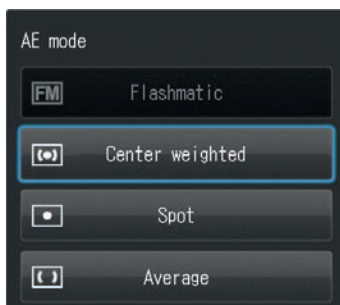


ISO speed	Explanation
Auto	ISO speed is automatically adjusted depending on the shooting situation
100 - 3200	When the ISO speed is raised, bright images can be taken even in a dark place. However, image noise increases.

● **AE (Auto Exposure) mode**

To change the AE mode.

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



AE mode	Explanation
FlashMatic (FM)*1	The camera automatically measures the distance to the subject and adjusts the light intensity to control exposure.
Center weighted metering	The camera evaluates the lighting conditions of the subject centered in the viewfinder.
Spot metering	The camera evaluates the necessary exposure only of the center of the subject.
Average metering	The camera evaluates the light conditions of the entire image to set an optimum picture exposure.

*1. Only FlashMatic can be selected in all modes except Face and Tele macro mode.

Tab 3

• White balance

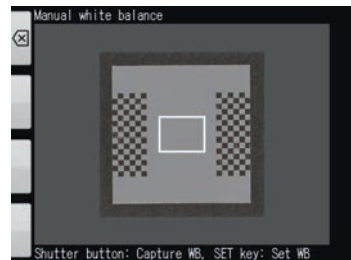
To adjust the white balance.

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



White balance	Explanation
Auto	White balance is automatically corrected
Tungsten	Optimal for taking pictures under Tungsten light
Fluorescent lamp 1	Optimal for taking pictures under daylight colored fluorescent lamp (6,500 K)
Fluorescent lamp 2	Optimal for taking pictures under neutral (natural white) colored fluorescent lamp (5,000 K)
Manual	Photograph white or gray subject as the standard to adjust the white balance

When you select "Manual", the image shown right appears on the screen. Use the SHOFU gray card or any subject you wish to use as the standard for the white balance, and align it in the square appearing on the center of the screen. Then, press the shutter button to capture the white balance, press SET to save it or the F1 key to cancel.







Note

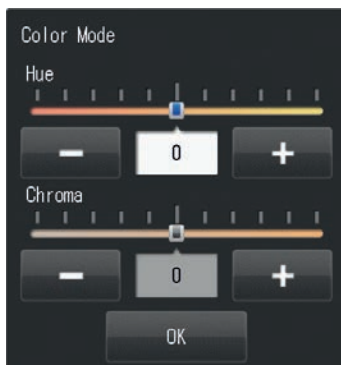
The color of the subject may not be displayed correctly on the LCD monitor due to the difference in color temperature between the flash and the ambient light.

• Color mode

To adjust the hue and chroma.

Press "+" and "-" or rotate the  dial key to move the indicator. To switch between the indicators, press  (F2 key) or  (F3 key).

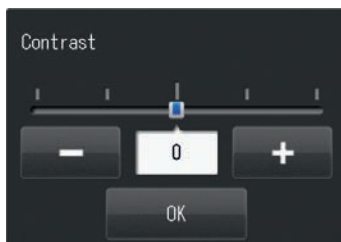
Press "OK" or  SET to save the selected values.



• Contrast

To adjust the colour contrast.

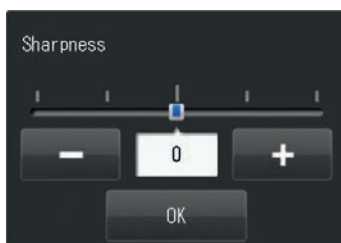
Press "+" and "-" or rotate the  dial key to move the indicator. Press "OK" or  SET to save the selected value.



• Sharpness

To adjust the sharpness of the image.

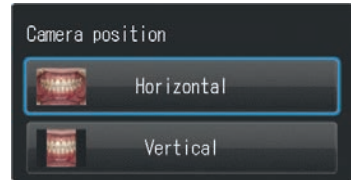
Press "+" and "-" or rotate the  dial key to move the indicator. Press "OK" or  SET to save the selected value.



Tab 4

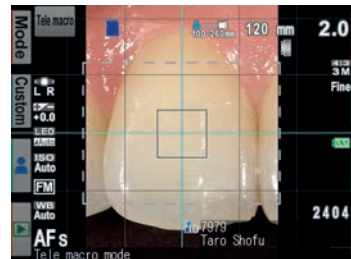
- **Camera position**

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



Camera position	Explanation
Horizontal	The aspect ratio of the image is 4:3 (width:height).
Vertical	The aspect ratio of the image is 3:4 (width:height).

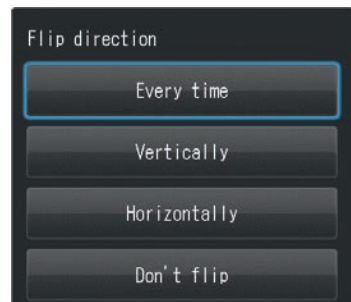
When "Vertical" is selected, the margins on the right and left of the image are blacked out as shown.



- **Flip direction**

To select if the taken image is being flipped as well as the flip direction.

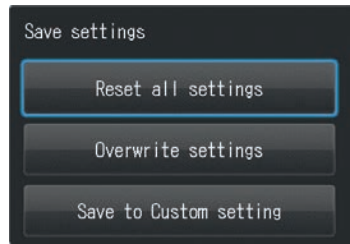
You can only flip the image in the Mirror mode, Surgery mode and Tele macro mode.



Flip	Explanation
Every time	After each shot you can select if you want to flip the image or not.
Vertically	The image taken is automatically flipped vertically and saved.
Horizontally	The image taken is automatically flipped horizontally and saved.
Don't flip	The image taken is saved without being flipped.

● Save settings

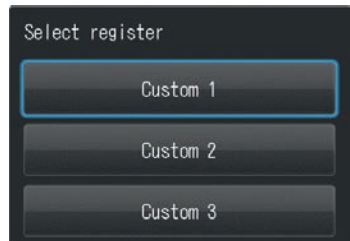
To save or reset the current custom settings.




Settings	Explanation
Reset all settings	Current custom settings are all reset and returned to the default setting.
Overwrite settings	Current custom settings overwrite the previous one.
Save to Custom setting	Current custom settings are stored as a new custom setting.

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

In the shooting mode, press **Custom** or the F2 key to select one of the three registered custom modes to take photos.



 see page 25 ("Custom modes")



Note

- Movie mode cannot be registered as a custom mode.
- New settings cannot be loaded using QR codes while custom mode is selected.

Tips



- **Erasing custom settings**

Custom settings cannot be erased individually.

When you wish to erase a custom setting, select "Reset all settings".

 see page 116 ("Save settings" -> "Reset all settings")


Important: Please note that when you select "Reset all settings", you will erase not just the custom settings but all other startup settings.

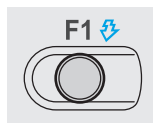
- **Overwriting custom settings**

Please select the custom setting you wish to overwrite.

Shortcut functions in shooting mode

The EyeSpecial C-V has shortcut functions. The following 4 settings can be changed in shooting mode without the need of accessing the menu.













A shortcut can be performed by pressing a function key (not a function tab), while rotating the  dial key. Above each function key a blue icon shows which setting can be adjusted with this function key as a shortcut function.



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



Then, rotate the  dial key to adjust the setting.

Operation	Explanation	Operation
 + 	Change flash mode	
 + 	Adjust brightness compensation	
 + 	Turn LED lights on or off	
 + 	Change focus mode	



Note

Shortcut functions are not available only in the Movie mode.

Playback mode menu

You can edit the stored images (draw lines and rotate) or protect them from accidental deletion.

Press  MENU in the playback mode.



Function	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

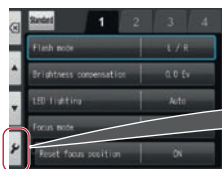
*These functions are available for photos only.

 see page 64 ("Protecting images") and page 67-69 ("Edit images").

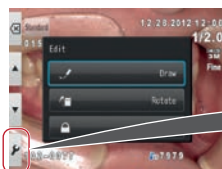
Setup menu

Basic settings including the image size and sound settings etc. can be changed.

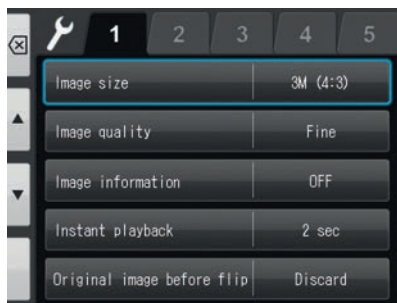
In shooting mode and playback mode press  MENU and then the  F4 key.



Shooting mode menu



Playback mode menu



Setup menu

Item	Explanation
Tab 1	
Image size	To select the image size
Image quality	To select the image quality
Image information	To turn on or off the image information (date and settings)
Instant playback	To select the time the last image taken is displayed
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/Time	To store the current date and time To select the display type of date and time To select the time zone
Summer time	To turn the summer time setting on or off
Language/Sprache/Langue	To change the language of the 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 counter from the next image taken
Folder name	To change the folder name
Tab 4	
Volume	To adjust the volume
Sound settings	To turn the key sound, shutter sound and focus sound on or off
Power save ON	To select the stand-by time before power saving starts
Auto power-off	To select the stand-by 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
Wi-Fi settings	Configure Wi-Fi settings and display information

Tips

Protect the settings selected in the setup mode

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

 See page 120 ("QR codes for optional functions").

Tab 1

● Image size

To select the image size.

The vertical and horizontal ratio can be either 4:3 like general digital cameras or 3:2 like conventional single-lens reflex cameras.



When selecting a 3:2 ratio, the area outside of the photo range is blacked out.



● Image quality

To select the image quality.



Image quality	Compressive rate	Intended use
Extra fine	Extremely small	Photo editing and enlarged printing
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 varies 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 editing software etc, please select "Extra fine". In case you wish to downsize the image regardless of the quality, selecting "Standard" is recommended.

• Image information

To turn on or off the image information
(date and settings)



Note

When taking a photo with with the setting „Image information - OFF“, the information cannot be imprinted after taking the photo.

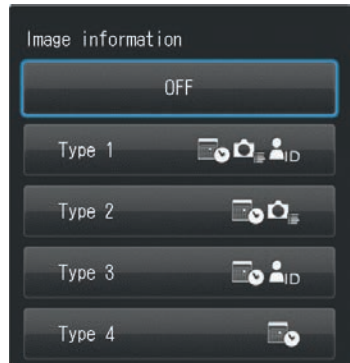
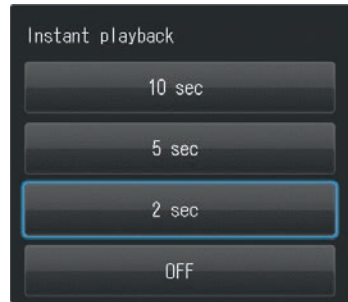


Image information	Explanation
OFF	No information is imprinted on the image.
Type 1	Patient ID + date and time of the photo + conditions of photography (magnification rate, shooting mode, flash mode)
Type 2	Date and time of the photo + conditions of photography
Type 3	Date and time of the photo + Patient ID
Type 4	Date and time of the photo


• Instant playback

To select the time the last image taken is displayed.



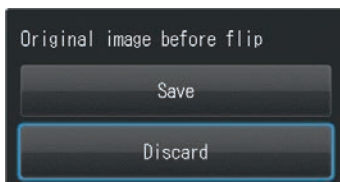
Instant playback	Explanation
2 sec. / 5 sec. / 10 sec.	The last image taken is displayed for the selected seconds.
OFF	Instant playback is off.



- Even if you select "OFF", the last image taken appears briefly.
- When you wish to return to taking photos during the instant playback, half-press the shutter button or press the  SET key.

- **Original image before flip**

To select save or discard the original image before flip.



Original image before flip	Explanation
Save	Two images, before and after flip, are saved.
Discard	Only the flipped image will be saved.



In the playback mode flipped or non-flipped images can be distinguished by the icon appearing on the image.



Original image

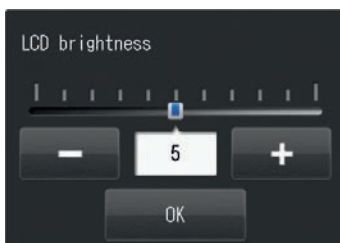


Flipped image

Tab 2




- **LCD brightness**

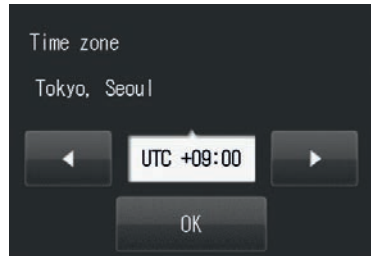
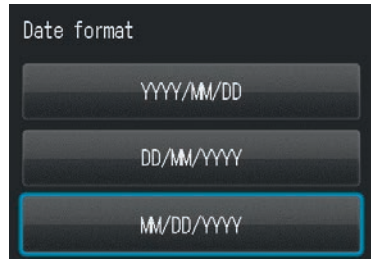
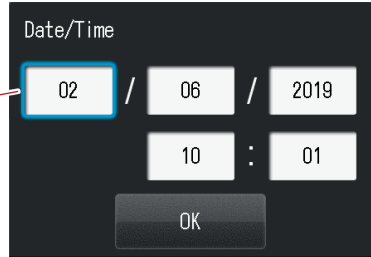
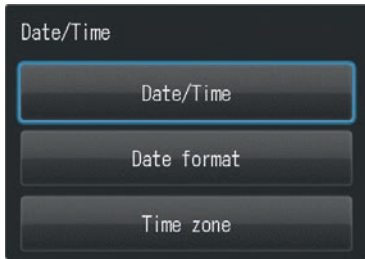
To adjust the brightness of the LCD screen.



• Date format

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

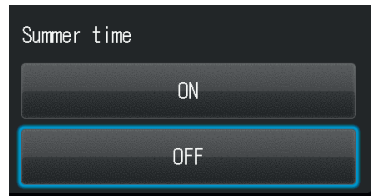
Rotate the  dial key or touch the screen to move to the next field. Press  F2 or  F3 to increase or decrease the value for each option.



• Setting the summer time

Select ON or OFF.

When summer time is turned on, the clock advances one hour.



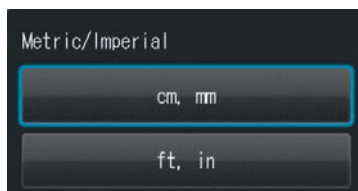
- **Language selection**

To select the language for menus and screen messages.
Available are: Japanese, English, German, French, or Chinese.



- **Metric /Imperial**

To change the measurement unit for length.

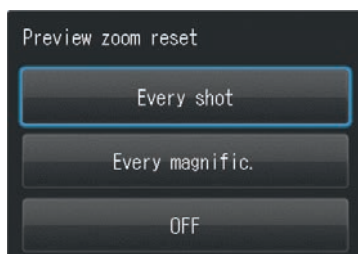



The focal length is displayed in the metric system only.

Tab 3

- **Preview zoom reset**

To select the timing to reset the preview zoom.



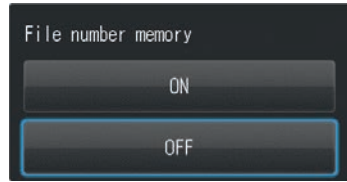
Preview zoom reset	Explanation
Every shot	Preview zoom is reset after each shot.
Every magnific.	Preview zoom is reset when you change the magnification rate. When you continue using the same magnification rate for taking the next photo, the preview zoom remains unchanged.
OFF	Preview zoom returns to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



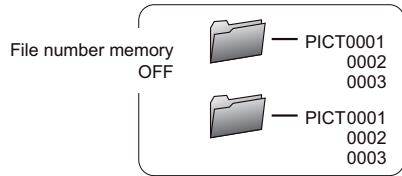
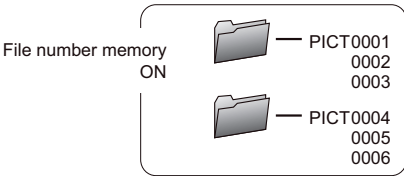
When you turn the camera off or change the shooting mode, the image is displayed in original size.

● **File number memory**

To turn the file number memory function on or off.

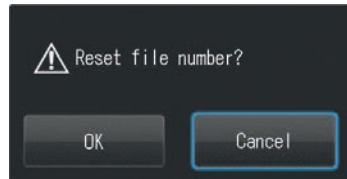


File number memory	Explanation
ON	The file number is stored. File numbers start with "PICT0001.JPG" when you change or format the SD card, or when you erase all images stored on the SD card (default setting).
OFF	The file number is not stored. The file numbers restart with "PICT0001.JPG" when: <ul style="list-style-type: none"> • you change or format the SD card • you erase all images stored on the SD card • the date of a dated folder is changed. However, when you store images in one folder, the files will be numbered in sequence.



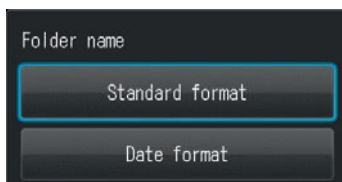
● **Reset**

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

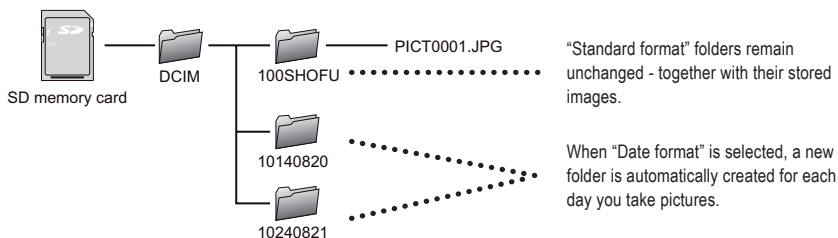


- **Folder name**

To change the folder name.



Folder name	Explanation
Standard format	A folder named with "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 "No. (3 digits) year, month, date (5 digits)" is created. Folder numbers are 3-digit numbers starting from 100. Date format is "year (single digit) + month (double digits) + day (double digits)".

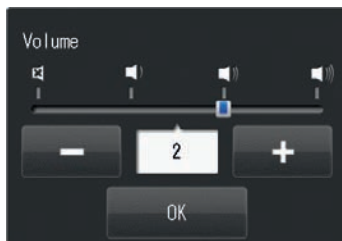


In the default setting, file numbers restart with "PICT0001.JPG" when a new folder is created. When you wish to use sequential numbers even if you change the folder, set the file number memory to "ON".

Tab 4

- **Volume**

To adjust the volume.



● Sound settings

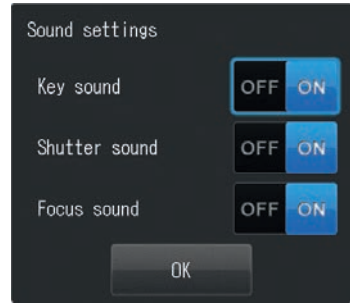
To turn the key sound, shutter sound and focus sound on or off.



Note

You need to press “OK” to determine your selection.

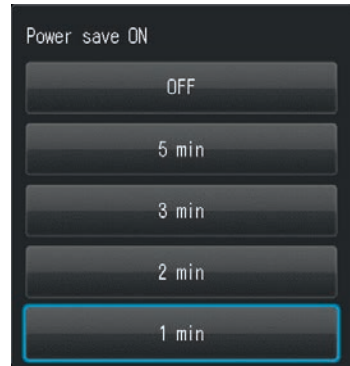
When you return to the previous display by pressing the F1 key, the sound settings will not be changed.



● Power save ON

To select the stand-by time before power saving starts.

If no key operation is performed for the set period of time (the default setting is 1 minute), the camera display will turn black. The stand-by time for the power save mode can be changed.

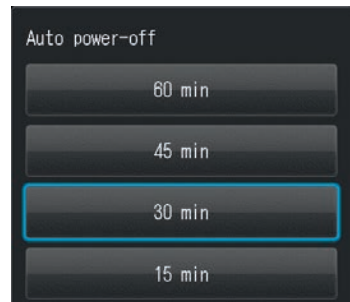


● Auto power-off

To select the stand-by time before auto power-off starts.

If no key operation is performed for the set period of time (the default setting is 30 minutes), the camera will turn off.

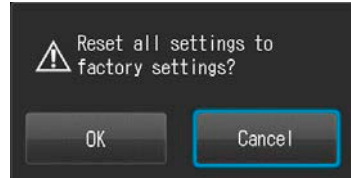
The stand-by time for the auto power-off mode can be changed.



Tab 5

● Reset all settings

To reset the camera settings to default (factory settings).



● Flash calibration

To calibrate the light intensity and white balance of the flash lights.

When you take many photos, the light intensity might decrease or the colour temperature might slightly change. Please adjust the light intensity and white balance using the SHOFU gray card provided. It takes about 10 minutes for the calibration to complete.

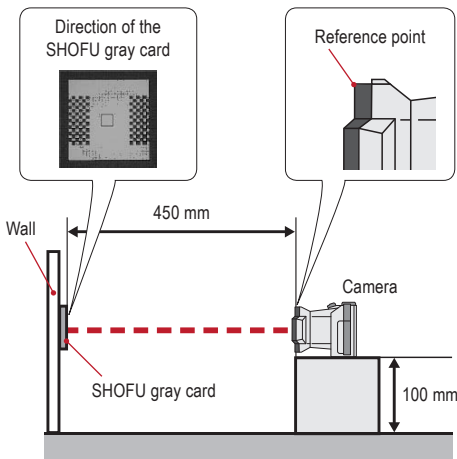
How to perform the flash calibration

Please prepare the following items:

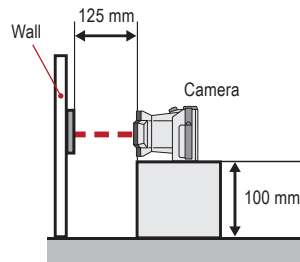
- SHOFU gray card (provided)
- Close-up lens (for Tele macro mode)
- Ruler or measuring tape (50 cm)
- Small table (height 10 cm) to place the camera

Place the camera and the SHOFU gray card as shown below.

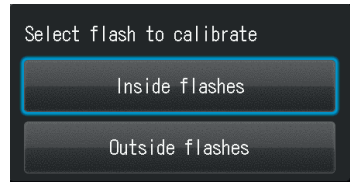
To calibrate the inside flashes



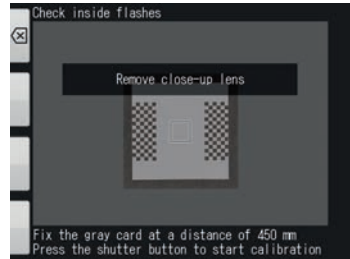
To calibrate the inside flashes for taking photos in the Tele macro mode & To calibrate the outside flashes



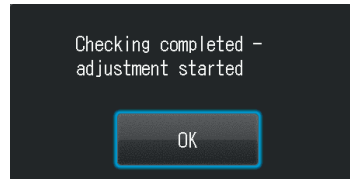
- 1** When you select „Flash calibration“, the message pictured right appears on the screen. Select the calibration you wish to perform.



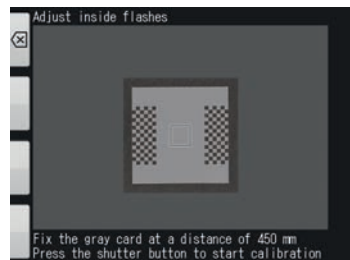
- 2** The distance between the camera and the gray card varies depending on the calibration you perform. Follow the instructions of the camera as shown on the right.



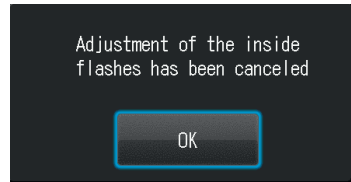
- 3** When the checking is completed properly, the message on the right appears.



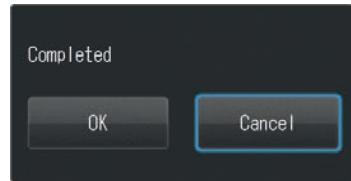
- 4** The distance between the camera and the gray card varies depending on the calibration you perform. Perform the calibration following the instructions.



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



- 6** When the calibration is completed properly, the message on the right appears. Press "OK" to store the calibration result. Or press "Cancel" to discard it.



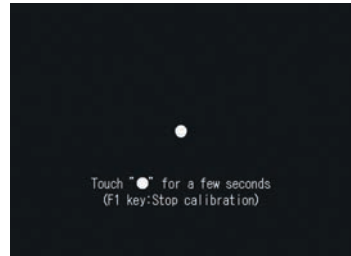
Note

- 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.



Info

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

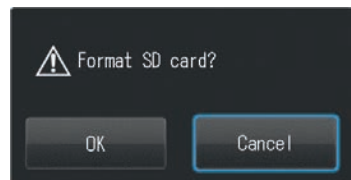
• Format SD card

To format the SD memory card.



Note

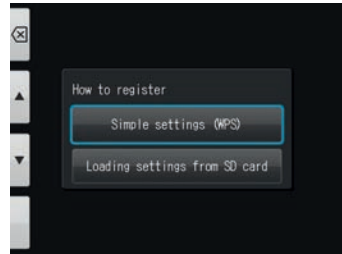
When formatting the SD memory card, all images including the protected images are deleted.



● Wi-Fi Settings


To set and display Wi-Fi settings and information.






Turn Wi-Fi on and off, register an access point, and view Wi-Fi information.



QR codes for optional functions

The EyeSpecial C-V provides some optional functions by scanning special QR codes. Thereby make sure the camera is in a shooting mode (one of the 9 preinstalled modes), since QR codes cannot be scanned in the custom mode. Press **Custom** or the F2 key, then select the bottom key "Scan QR code".

 see page 26 ("Scan QR Code")

QR code	Activate	Deactivate	Explanation
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 all settings		—	All settings are cleared to default.

Patient information file (.MIF)

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



Note

When using a SD memory card with either the movie file or patient file remaining on it, an error message “File structure corrupted” might appear on the screen. If this happens, backup the necessary data and reformat the SD memory card.

9

Notes on use

Operating temperature

- Recommended temperature to use and store this camera is between 0 °C and 40 °C.
- Do not expose the camera or batteries to 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 a 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 back-up data on another volume (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 turned off while recording data 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 back-up important data before.
- Once the memory card has reached its limit of read / writes, you will not be able to use it anymore. Please replace the card by 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 by a new one.
- Do not touch the electrical contacts with fingers or metals.
- Keep away from heat, moisture and direct sunlight.

Wireless LAN Function

- The camera is equipped with wireless LAN (Wi-Fi). In some countries or regions, the use of wireless LAN (Wi-Fi) may be punishable by law. Please use the camera only in the country where you purchased it.
- The channels used by this camera in the 5 GHz band are 36ch to 48ch (W52).
- The 5 GHz band is prohibited for outdoor use by the radio law.
- This camera uses wireless LAN and it may affect or be affected by the surroundings.
- Do not use the product in places where electromagnetic waves are generated or near electric products, audio-video and associated equipment, or other magnetised devices.
- If the camera is exposed to magnetic influences, communication may be disturbed.
- Using the product near a TV, radio or similar appliance may cause reception interference and disrupt TV images.
- If there are multiple wireless LAN access points near the camera and the same channel is used, search operation may not be executed correctly.
- The communication speed and the range of the connection vary depending on the distance between communication devices, obstacles and the devices used.
- To check the precautions and certification information regarding the wireless LAN function of this camera, follow the steps below.
 1. Press the F4 key in the shooting mode menu or playback mode menu to display the setup menu.
 2. Select "Wi-Fi settings" on tab 5.
 3. Select "Display information".

Security

- This product uses wireless LAN which exchanges information between a computer and an access point using radio waves instead of a LAN cable. It has the advantage that it can be freely connected anywhere within the radio wave range. The radio waves can reach all locations beyond obstacles within a certain range, so there is a risk of a malicious third party gaining unauthorised access and stealing communication contents (images, etc.) if the security settings have not been configured accordingly. Since wireless LAN products are equipped with a security mechanism, you can reduce the above risks by setting them up before use. You are recommended to take appropriate security measures such as installing security software and updating this and your operating system to the latest version. Please use the wireless LAN with the understanding that the wireless LAN settings can be breached via special methods despite the security settings.

LCD screen (with touch panel function)

- The LCD monitor has been developed using high-precision engineering. Although the percentage of active pixels is more than 99.99%, there may be white, black or red pixels 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, immediately after switching on the camera the screen may appear darker compared to a normal temperature environment. The screen will return to normal brightness when the internal temperature of the camera rises.
- If the LCD monitor becomes dirty with fingerprints or dust, wipe it with a soft, dry cloth.

LCD screen (with touch panel function)

- The LCD monitor has been developed using high-precision engineering. Although the percentage of active pixels is more than 99.99%, there may be white, black or red pixels 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, immediately after switching on the camera the screen may appear darker compared to a normal tempered 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 it 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 the 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

- The EyeSpecial C-V 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 unnecessarily 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.

10 Maintenance and storage

Follow the safety information indicated in the “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 longer 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 longer period of time, remove the batteries and SD memory card.
- Even while the camera is in storage, press the shutter release a few times once in a while to check that the camera is working properly.

11 Troubleshooting

Camera problems

Trouble	Cause	Measure	Ref.
Cannot take pictures or cannot playback the images	Batteries are exhausted.	Replace the old batteries with new ones.	p. 13
	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. 18
Cannot focus even if the shutter button is half-pressed.	Manual focus is selected.	Change the focus mode to Autofocus Standard or Autofocus Spot.	p. 94
	Focus distance is outside the recommendation.	Take a photo within the limit of focus distance.	p. 34
"No SD 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. 35
Colour 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 a decrease in light intensity and colour temperature.	Perform flash calibration.	p. 116
	Monitor setting is not optimal. The images taken with this camera are designed to present optimal colour fidelity when they are viewed on sRGB, whose colour temperature is 6,500k with 2.2 gamma.	For more details, refer to a specialised book in colour 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.	p. 13
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 "Batteries 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 batteries (NiMH) batteries when using Wi-Fi SD memory cards.	p. 15

Trouble	Cause	Measure	Ref.
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.	p. 13
Even though you inserted a SD memory card into your computer, images can't be transferred via SureFile.	SureFile recognises and transfers images only when the SD memory card was formatted with the EyeSpecial C-V.	Format SD memory cards with the EyeSpecial C-V before using SureFile. (Back-up the data you wish to store before formatting the SD memory card.)	p. 71
"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 space to store new images.	Erase all files other than JPEG format.	-
	A folder numbered "999" exists, which was created by a camera other than the EyeSpecial C-V.	Format the SD memory card. (Back-up the data 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 hasn't been used for a longer period of time. Wait until the flash mode icon disappears.	p. 42
Unable to connect to wireless LAN access point	SSID or network key entered in WLSMonitor is incorrect.	Check if SSID and network key are entered correctly.	-
	Double-byte characters are used for SSID.	Please enter the SSID in single-byte characters. SSID containing double-byte characters cannot be used with this camera.	-
	DHCP function of the router is turned off.	Turn on the DHCP function of your router. Please refer to your router's user manual for details.	-
	The camera and the receiving computer are connected to different networks. Thus communication is impossible.	Connect the camera and your computer to the same network. If communication is still not possible even though both are connected to the same network, the wireless LAN router or firewall settings may not allow communication. Please check your router or firewall settings.	p. 73

Error messages

Message	Cause	Measure	Ref.
Batteries depleted	Batteries are dead.	Replace the old batteries with new ones.	p. 13
No SD card	There is no memory card in the camera.	Insert a SD memory card.	p. 14
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 the EyeSpecial C-V.	-
Memory card full	The card storage is full.	Reduce the image size and image quality.	p. 106
		Erase some images.	p. 63
		Replace the full memory card with another memory card with sufficient storage capacity remaining.	p. 14
Too many images in memory card Please erase some images	The number of the photos stored on the SD card has exceeded 5,000.	Erase some images.	p. 63
Number of images has reached the limit - Cannot save any more	The number of the photos stored on the SD card has exceeded 9,999. This camera can manage approx. 9,999 images per memory card.	Erase some images. However, once reaching the limit, images on the SD card can no longer be erased with the camera. The SD card must be inserted in a computer in order to erase files.	p. 63
		Replace the full memory card with another memory card with sufficient storage capacity remaining.	p. 14
Memory card locked	SD memory card is protected.	Slide up the write-protection tab.	p. 15
No image	No image is stored on the SD memory card.	Replace the empty card with a recorded one, or take new photos to record.	p. 14
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. 123
File structure corrupted - Format the SD card	Either the movie file (.MOV) or the patient information file (.MIF) is damaged or has been 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 memory card. All recorded images are erased when formatting the SD card. Back up the necessary files by transferring pictures to your computer. It might also be considered that the SD memory card is defective. Please try another card if you have one.		p. 71, 123
File system error	SD card system error has been found.	Format the SD memory card following the instructions displayed on the LCD screen of the camera. It might also be possible that the SD card is defective. Please try another card if you have one.	p. 71, 123
WB unadjusted	Something other than the provided SHOFU gray card was photographed when white balance was manually set.	Use the provided SHOFU gray card.	p. 98

Message	Cause	Measure	Ref.
The camera is turning off due to overheating. Allow it to cool.	The internal temperature of the camera has become too hot.	Stop shooting for a while and allow the camera to cool down.	-

Frequently asked questions

Question	Answer
How long is the battery life?	Refer to "Tips: Storage capacities (number of pictures)" (p. 15)
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?	<p>Possible causes are as follows:</p> <ul style="list-style-type: none"> • 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 screen. In this case, it can't 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%).

12 Specifications

Sensor	Type	Primary colour filter, CMOS sensor
	Size	1/2.3inch
	Total pixels	Approx. 12 million (4,163 x 3,062)
	Effective pixels	Approx. 12 million (4,000 x 3,000)
	Sensitivity	ISO 100 to 3,200
Lens	Focal length (35 mm equivalent)	50-217mm / Total 8 focal lngths
	Maximum aperture	Wide: 4.6-5.3 / Tele: 6.5-7.5
	Zooming method	Optical zoom + digital zoom
	Digital zoom	10 steps from x1.05 to x2
	Optical filter	IR cut filter
Autofocus	Image stabilisation	None
	Method	Contrast autofocus
	AF area	Center-weighted / Spot
	Focus mode	Photo: Single shot autofocus and manual focus by adjusting the distance Movie: Continuous autofocus
Automatic Exposure	AF assist light	4 white LED lights
	Method	TTL (through the lens) metering / FlashMatic (patented) light control
	AE area	Center-weighted / Spot / Standard
	Shutter release	Electronic & mechanical shutter release
White balance	Shutter speed	1/15 to 1/1,000 sec, automatic change
	Modes	Auto / Tungsten / Fluorescent lamp 1 / Fluorescent lamp 2 / Manual
Shooting mode	Modes	Standard / Surgery / Mirror / Face / Low glare / Whitening / Tele macro / Isolate shade / Movie
Flash	Method	4 lights (2 inside and 2 outside flashes)
	Sync speed	1/1,000 sec when using FlashMatic light control, 1/125 sec when using Face mode
	Light control	FlashMatic light control or automatic light control by sensor
	Calibration function	Can be done in setup mode
LED	Method	4 white LED lights for illumination
	Light mode	0 (Off) / 1 / 2 / 3 / Auto
Finder	Type	No viewfinder 3.5 inch VGA (640 x 480) liquid crystal display
	Electronic magnifier	Full-screen / Full-screen x2 / Full-screen x4
	Focusing screen (grid type)	OFF / Type 1 / Type 2 / Type 3
	LCD frame rate	60 fps

Image storage	Storage media	SD / SDHC / SDXC card (max. 512 GB)	
	File format	JPEG / MOV (with patient information file (.MIF))	
	Photo size (JPEG)	12M	4,000 x 3,000
		6M	3,264 x 2,448
		5M	2,560 x 1,920
		3M	2,080 x 1,560
		2M	1,600 x 1,200
		VGA	640 x 480
		10.6M	4,000 x 2,672
		8M	3,264 x 2,176
	Movie size (MOV)	4M	2,560 x 1,712
		3M	2,080 x 1,392
	Image quality	HD (1,280 x 720), 59.94 fps	
SD card record format	Extra fine / fine / standard		
ExifTag information	DCF (standard / date)		
Information imprinting	In accordance with Exif 2.21 and DCF standard		
	<ul style="list-style-type: none"> • 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, x1 - x6	
	Instant playback	OFF / 2 sec / 5 sec / 10 sec	
	Language	Japanese, English, German, French, Chinese	
	Date format	YYYY/MM/DD, DD/MM/YYYY, MM/DD/YYYY	
	Metric / Imperial	cm, mm / in, ft	
	Rotate / flip function	Rotate 90° based on Exif information	
	Data erase function	1 image / selected images / all images	
Camera	Power supply	4 Alkaline AA batteries / 4 nickel metal hydride batteries (NiMH)	
	External power supply	None	
	Power save function	OFF / 1 / 2 / 3 / 5 min	
	Auto power-off	15 / 30 / 45 / 60 min	
	Dimensions	W176×D115×H80(mm) (accessories not included)	
	Weight	Approx. 590 g (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	IPX4	
	Chemical resistance	Ethanol disinfection	
	Specification of wireless LAN	Standards compliance	IEEE802.11 b/g/n/a/ac
		Security	WEP, TKIP, AES
		Connection method	Infrastructure mode (A method in which the camera and a PC communicate through a wireless LAN access point existing in the network)

External I/O	Tripod socket	Yes
	Hot shoe	None
	Remote release terminal	None
	SD memory card slot	for SD / SDHC / SDXC memory cards
	PC connecting slot	None
	HDMI output terminal	Yes
	Sound input	Built-in microphone
	Sound output	Built-in speaker

13 Accessories

Name	Quantity	Note
EyeSpecial C-V camera	1	–
Lens cap	1	Mounted on the camera
Hand strap	1	–
Alkaline AA battery	4	–
SDHC memory card	1	16 GB
SHOFU gray card	1	–
Close-up lens	1	AC close-up lens No.5, diameter: 49 mm
Important safety instructions	1	–
User's manual	1	–
Quick reference (taking pictures)	1	–
Warranty	1	–

14 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 purchases 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.



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