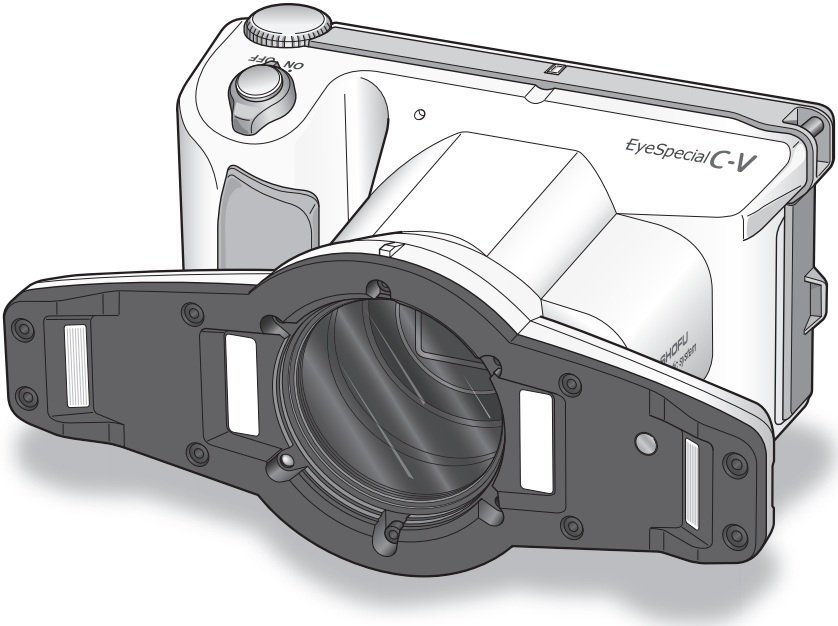
Read through the attached “Important Safety Instructions” before using this camera.



Smart digital camera designed exclusively for dentistry

EyeSpecial C-V

User’s Manual

SHOFU INC.

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 Allience.

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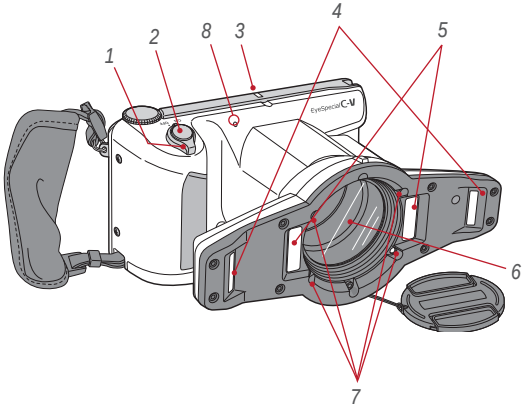
1 Getting to know your camera

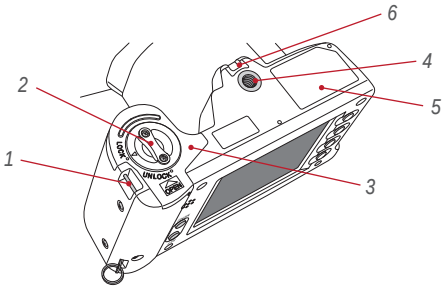
Names of parts

Front view



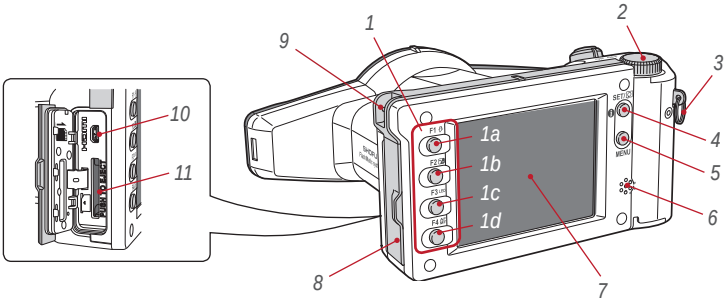
No.	Part name	No.	Part name
1	Power switch	5	Inside flashes
2	Shutter button	6	Lens
3	Pilot lamp	7	LED light
4	Outside flashes	8	Microphone

Bottom view



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

Back and side views

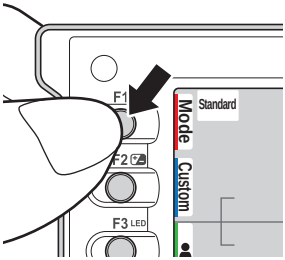


No.	Part name	No.	Part name
1	Function keys	4	SET key
	1a: F1	5	MENU key
	1b: F2	6	Speaker
	1c: F3	7	Liquid crystal display screen (touch panel)
	1d: F4	8	Card slot / HDMI connector cover
2	Dial key	9	Strap attachment point
3	Strap mount	10	HDMI connector (Micro HDMI)
		11	SD Card slot

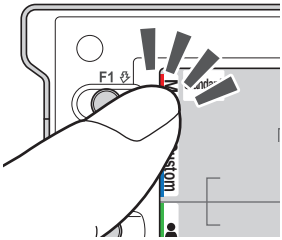
Function keys

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.

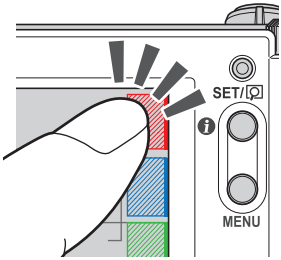
In other words, “Press **Mode** (F1)” can be achieved by pressing either the physical F1 key, the corresponding function tab on the left side or the colour bar on the right side of the screen.



Function keys



Function tabs

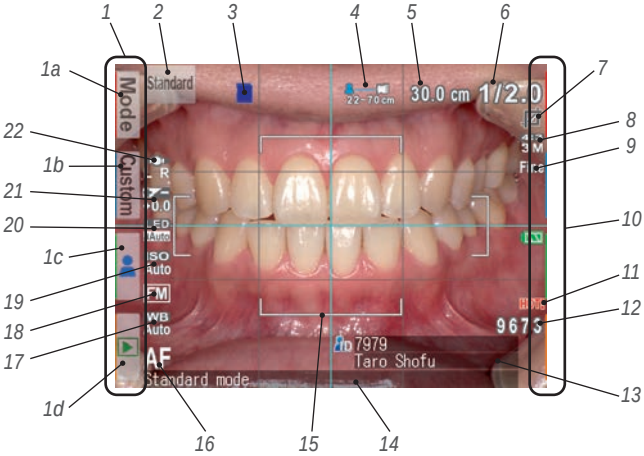


Colour bars

LCD screen indicator

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

Shooting mode

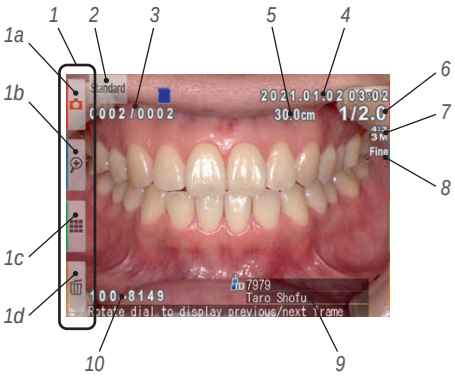


No.	Name	Reference	No.	Name	Reference
1	Function tabs		10	Colour bars	p. 2
	1a: Preinstalled modes	p. 18	11	Temperature warning indicator	p. 11
	1b: Custom modes	p. 20	12	Storage capacity	p. 11
	1c: Edit patient information	p. 16	13	Patient information	p. 16-18
	1d: Playback	p. 29	14	Instant message	–
2	Active shooting mode	p. 18-19	15	AF frame	p. 24-25
3	Card indicator	–	16	Focus mode	p. 25
4	Possible distance range	p. 23	17	White balance	p. 59
5	Optimal distance (before focusing) / Actual distance (after focusing)	p. 22-24	18	Auto Exposure (AE) mode	p. 59
			19	ISO speed	p. 59
6	Current magnification rate	p. 21	20	LED lighting	p. 59
7	Auto cropping	p. 26	21	Brightness compensation	p. 59
8	Image size	p. 60-61	22	Flash mode	p. 59
9	Image quality	p. 60-61			

Other information might appear on the screen.

☞ *Refer to the "Advanced Manual" ("LCD screen indicator").*

Playback mode



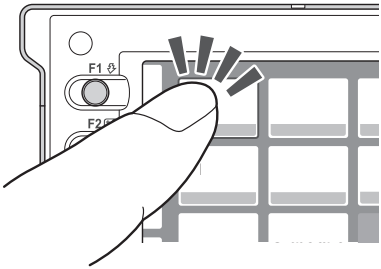
No.	Name	Reference
1	Function tabs	
	1a: Shooting mode	p. 18 - 19
	1b: Magnify image	p. 34
	1c: Thumbnail index	p. 30
	1d: Erase image	p. 31
2	Selected shooting mode	p. 19
3	Picture No. / Total number of pictures taken	–
4	Date & time of the picture	–
5	Actual shooting distance	–
6	Selected magnification rate	p. 21
7	Image size	p. 60 - 61
8	Image quality	p. 60 - 61
9	Patient information	p. 16 - 18
10	Folder No. - File No.	–

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/ SET key to determine.
For the details of the function keys (F1 - F4), refer to page 2.

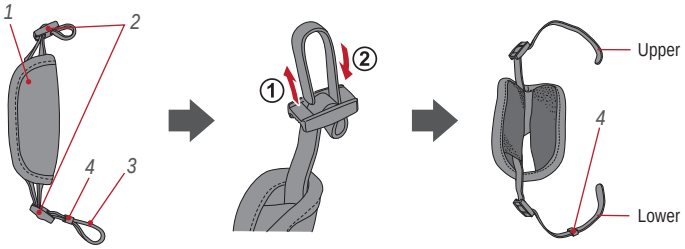
Getting started

Perform the following preparation before you start taking pictures.

Attaching the hand strap

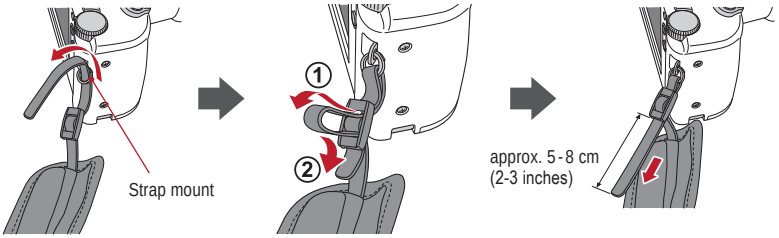
Attach one end of the hand strap to the strap mount on the lateral side of the camera and another to the eyelet on the bottom of the camera.

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

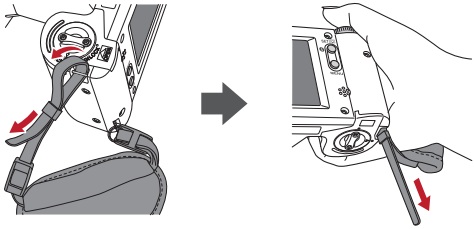


No.	Name	No.	Name
1	Flap	3	Belt
2	Slide adjuster	4	Retainer clip

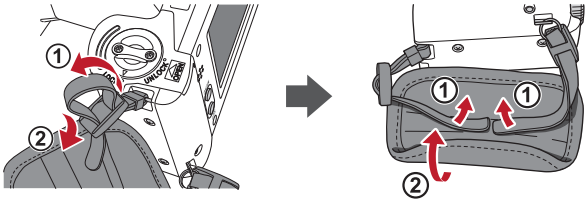
2 **Attach one end of the strap to the strap mount on the upper lateral side of the camera and adjust** the belt length.



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.**

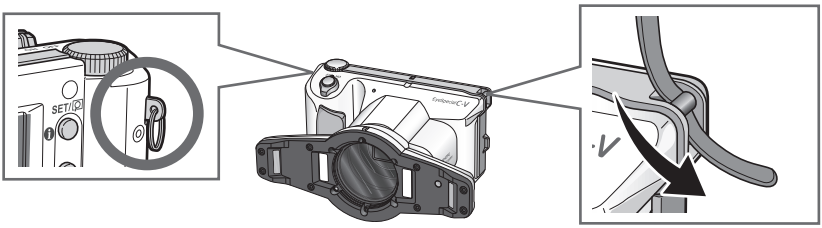


4 **Feed the strap end through the slide adjuster to fix.**
Insert the strap into the buckle as pictured below.



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.

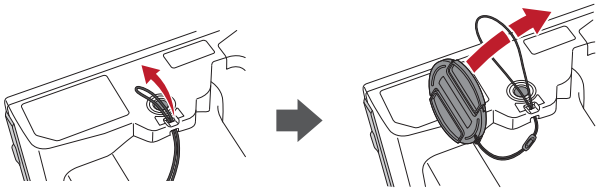


⚠ ATTENTION

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.



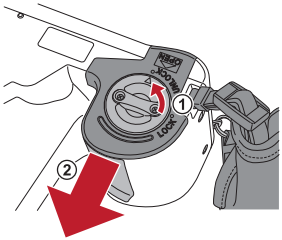
Info

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

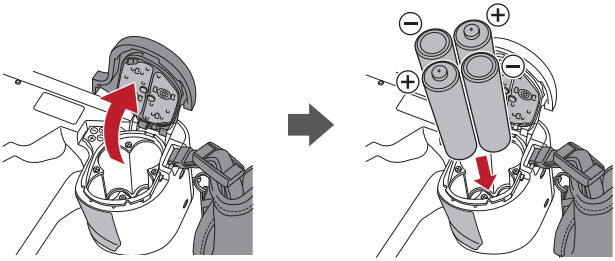
Installing batteries

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

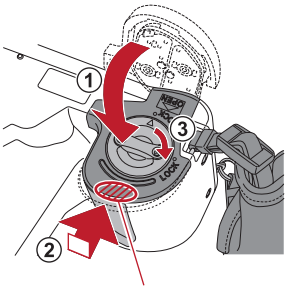
1 Turn the lock lever to the position “UNLOCK”.
Then, slide the battery cover to the front side of the camera.



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

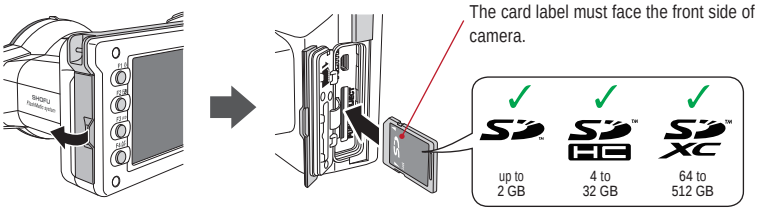
- Make sure to rotate the lock lever to the “LOCK” position to avoid dropping the batteries.
- Use only nickel metal hydride batteries (NiMH) or alkaline batteries. Never use manganese batteries or nickel cadmium batteries.
- Never use batteries of different types or different **manufacturers together 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 5 “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.

Note

If card slot/HDMI connector cover is not closed securely, shooting and/or some functions cannot be operated normally.

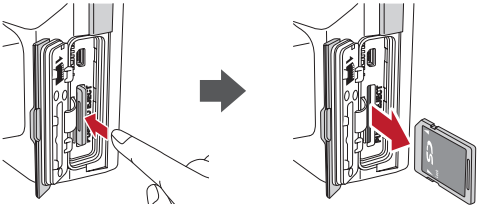
Tips

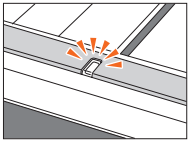
If you want to use the “SureFile” Software, your SD memory card must first be formatted by the EyeSpecial C-V camera.

see page 38 (“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.

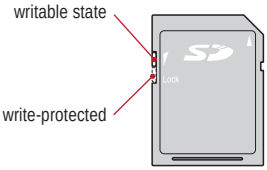
Tips

● 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.

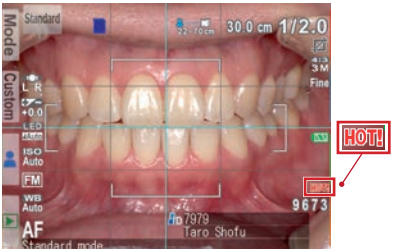
Message after exceeding 5,000 shots

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)

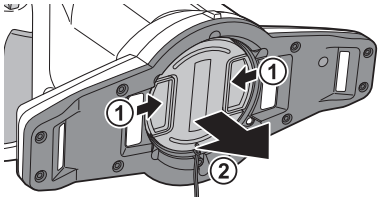
● Camera overheated

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.



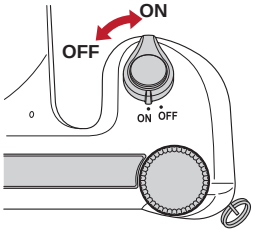
- Reattach the lens cap by pinching the notches.
- Always attach the cap when the camera is not in use.

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

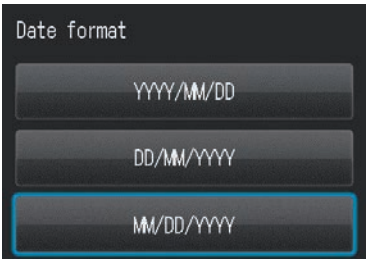
Select one of the following languages:
Japanese, English, German, French or Chinese.

2 Setting the time zone

Select a time zone.

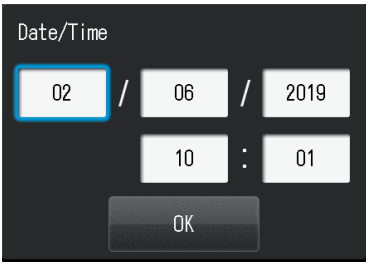
3 Choosing the display style

Select a date format.



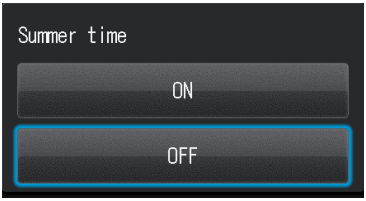
4 Setting the date and time

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.



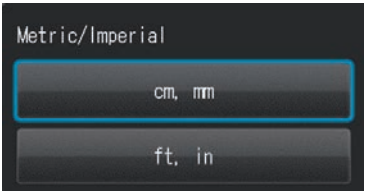
5 Setting the summer time

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.



Info

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 60 "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**

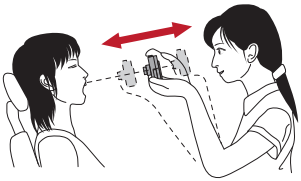
The EyeSpecial C-V sometimes does not respond to your command immediately when other operations are in progress; for example, immediately after you rotate the dial key to change the magnification rate and then press the shutter button half-way to focus or just after you´ve taken a picture etc.
For optimum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



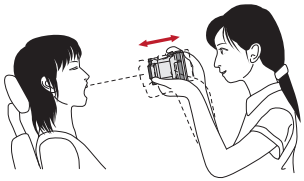
General digital camera

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 • Scan QR code • Photograph patient record	*see p. 15* *see p. 16* *see p. 17*
2	Select shooting mode	• Preinstalled modes • Custom modes	*see p. 17, 18* *see p. 19*
3	Select magnification rate		*see p. 20*

Photos

4	Set focus distance	*see p. 21, 22*
5	Take picture	*see p. 23*

Movies

4	Record movie	*see p. 27*

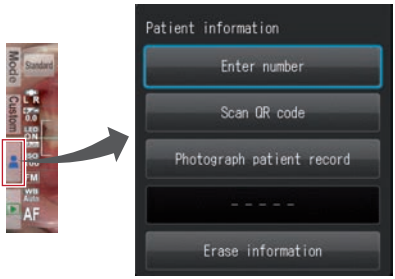
1 Input patient information or photograph patient record (optional)

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.



... Enter number (maximum 20 digits including underscore, hyphen and space)

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

... Photograph patient record

... Erase stored information

Tips

Enter patient information

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.

☞ *Refer to the "Advanced Manual" ("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).

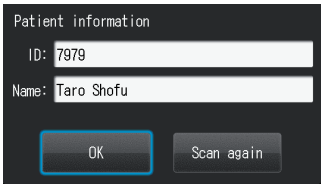
Erase last character

Finish the input

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.

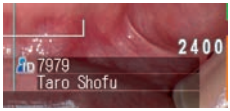
When scanned successfully, the message shown on the right will appear on the screen. Press "OK" to store the information.



Tips

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

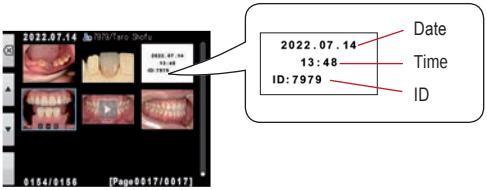
1. In the shooting mode
   Patient information is displayed on the lower right of the screen and recorded on the image taken.



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.



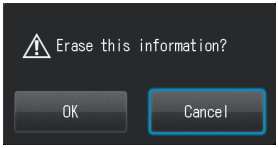
Photograph patient record

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

☞ *Refer to the "Advanced Manual" ("Photograph patient record").*

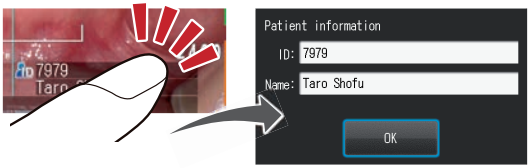
Erase patient information

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



Confirm patient information

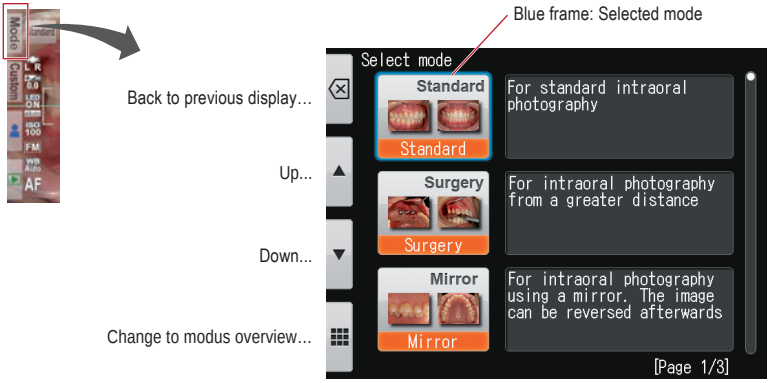
Press the patient information on the lower right of the screen to display the patient's ID number along with his/her name. The patient's name is displayed only when a QR code is scanned to register the patient's information. It can´t be entered manually.



2 Select shooting mode

Preinstalled modes

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



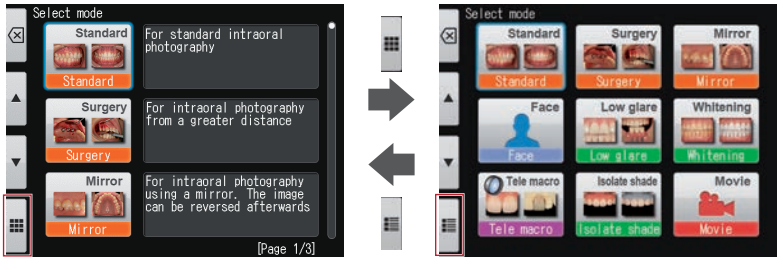
Shooting modes

Mode	Intended use	Explanation
Standard	For standard intraoral photography	Basic mode for dentistry.
Surgery	For intraoral photography from a 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.	Three images are automatically created in this mode; an image taken in Low glare mode, an image in which the tooth colour is natural while deemphasising the background, and a black-and-white image, 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.

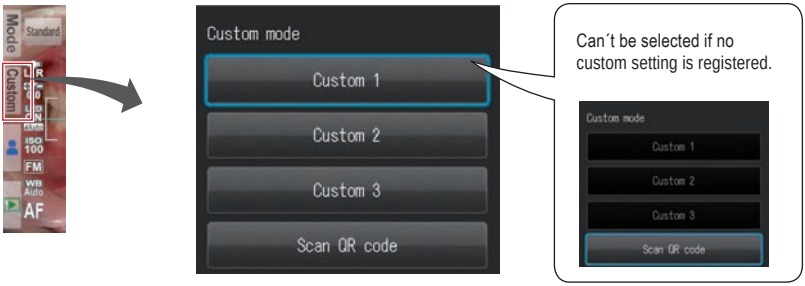


Mode details

Mode list

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.



Tips

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

Scan QR code

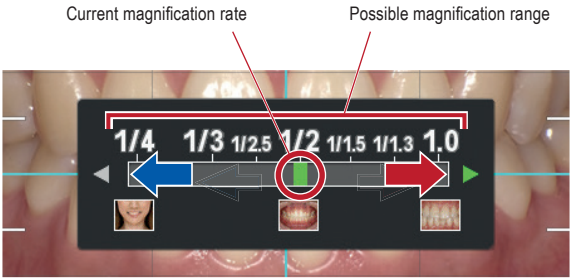
Camera settings can be changed all at once by scanning a QR code (exclusive for this camera). Thereby make sure the camera is in a shooting mode (one of the 9 preinstalled modes), since new settings cannot be read from the QR code while in custom mode.

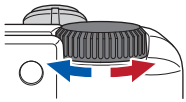
☞ *Refer to the "Advanced Manual" ("Scanning QR Code").*

3 Select magnification rate

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.

For video, select a focal length





☞ *Refer to the "Advanced Manual" ("Selection of optimal magnification rate").*

Tips

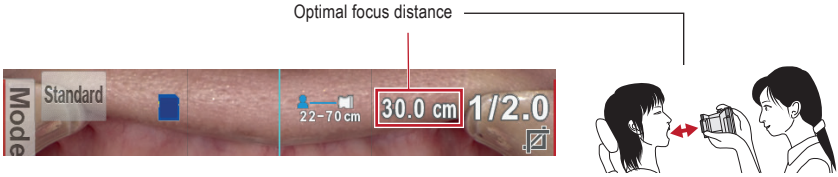
When half-pressing the shutter button after selecting the magnification rate, the magnification indicator disappears and you can take photos immediately.

The following procedures are different for taking photos or recording movies.

☞ see page 27 "Record movie"

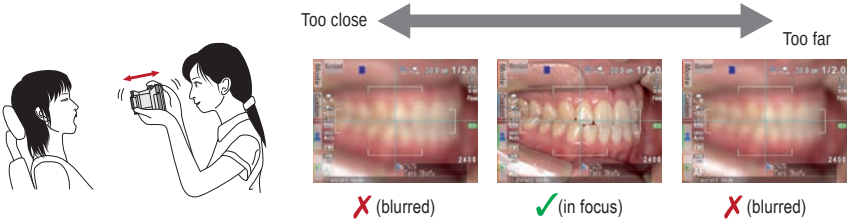
4 Set focus distance (photo)

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 SET/ 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.

Original x2 x4

5 Take picture

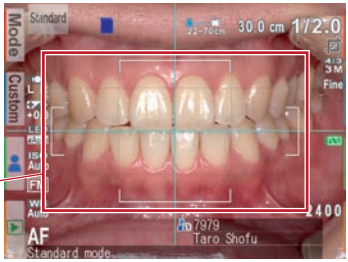
Focus and take picture

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:



1 **Actual distance from the subject when** focused properly

29.5 cm (Green): Within the possible distance range

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

2 **Magnification rate**

1/2.0 (Green): Magnification in range

1/2.3 (Red): Magnification out of range (check the distance)

3 Auto cropping indicator

(Green): Auto cropping in range

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

4 Focus indicator

(Green): In focus

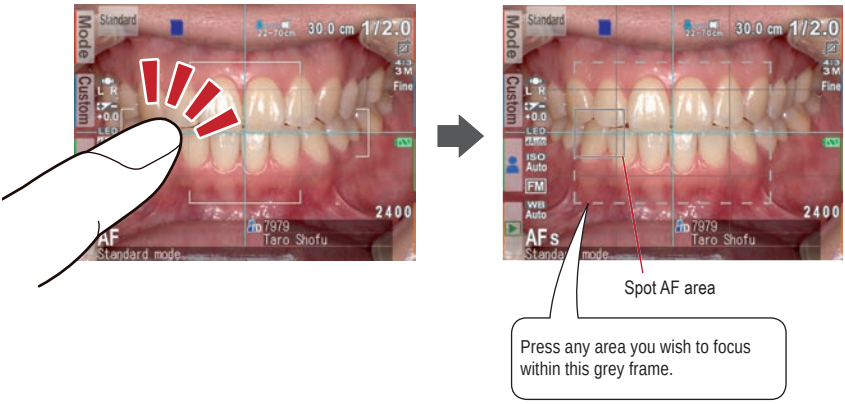
(Red): Out of focus (check the distance or if the subject can be focused appropriately)

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

Spot Auto focus

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



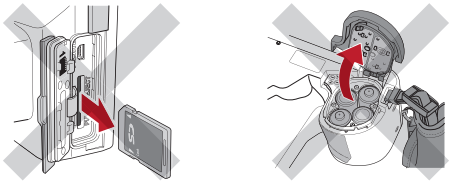
☞ *Refer to the "Advanced Manual" ("Focus mode" and "Shortcut function in shooting mode").*

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/ 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.

(Auto cropping function is not available for Face mode and Tele macro mode.)

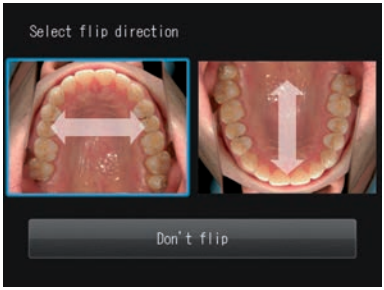
Even if the subject is within the focus distance, auto cropping might not work if the camera is positioned too far from the subject. Pay attention to the distance and auto cropping indicators. For optimal photo quality and the image size you desire, it is always recommended to maintain the optimal distance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

☞ *Refer to the "Advanced Manual" ("Auto cropping").*

Special functions of shooting modes

● Mirror mode

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



Info

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

☞ *Refer to the "Advanced Manual" ("Flip direction").*

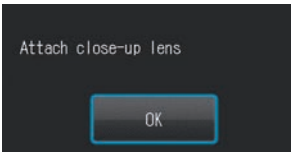
- **Face mode**

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

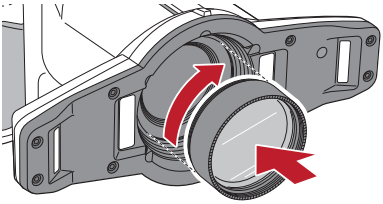
- **Tele macro mode**

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

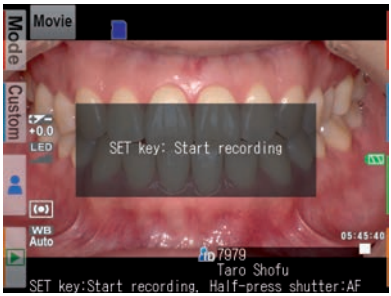
Isolate shade mode
The camera might fail to differentiate between the teeth and surrounding structure in the cases where the teeth or gingiva are severely stained or discoloured.

4 Record movie

Focus and record movie

1 Press the shutter button to focus.

blurred



in focus

2 After focusing properly, press the SET/ SET key to record a movie.

The focus is automatically adjusted as the distance and the focus changes.

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 SET/ SET key to finish recording a movie.

Note

The maximum recording duration is ten minutes per movie. 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.

Refer to the "Advanced Manual" ("LED lighting").

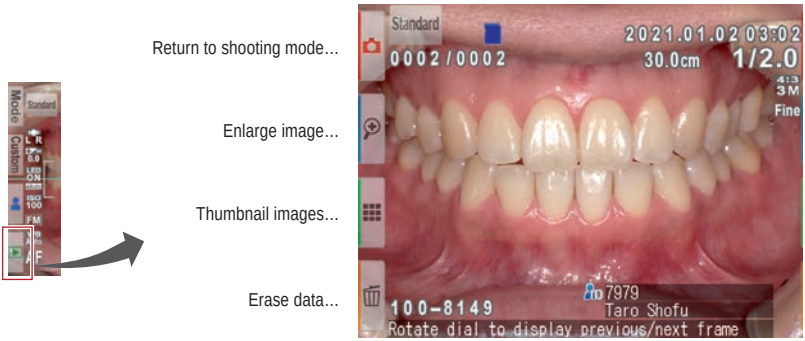
3 Playback

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

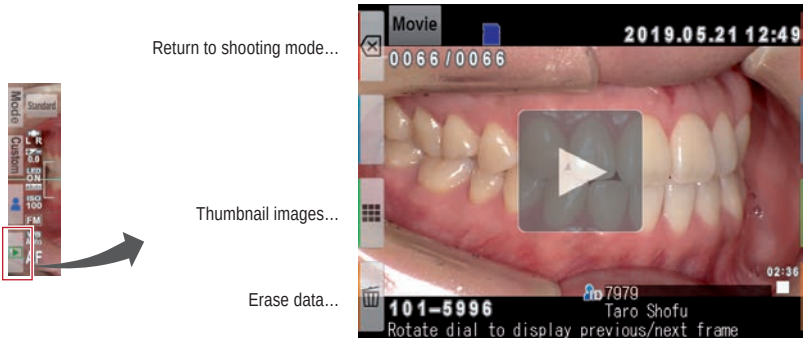
Viewing your image (photo / movie)

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.



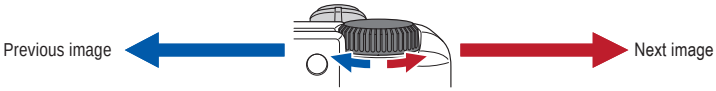
Playback mode (photo)



Playback mode (movie)

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/ SET key. You can also select the image by touching it directly on the screen.

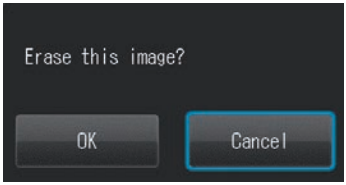
Note

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

Erasing images

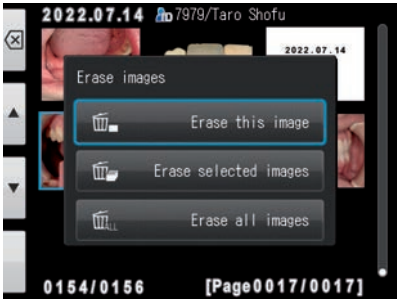
Erase the displayed image

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**

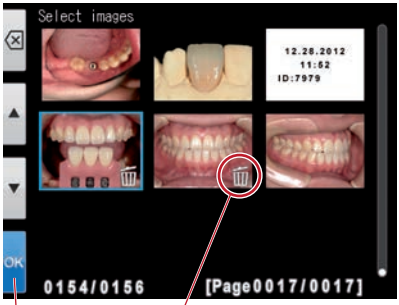
  The blue framed image will be erased.

- **Erase selected images**

  Select the images you wish to erase by directly touching the images on the screen or pressing SET/OK SET. After you´ve finished selecting the images, press the OK 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.

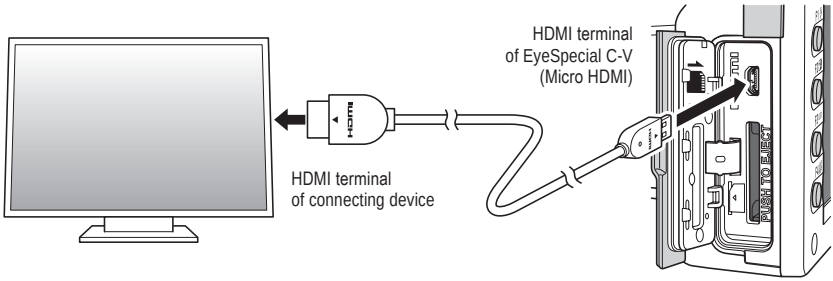
Protecting images

Protect the image to avoid accidental deletion or unintended editing.

☞ *Refer to the "Advanced Manual" ("Protect images").*

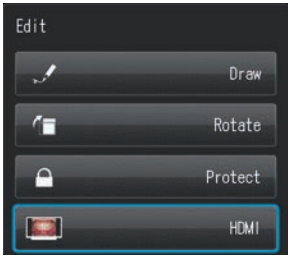
Playing movies / viewing photos with HDMI cable

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



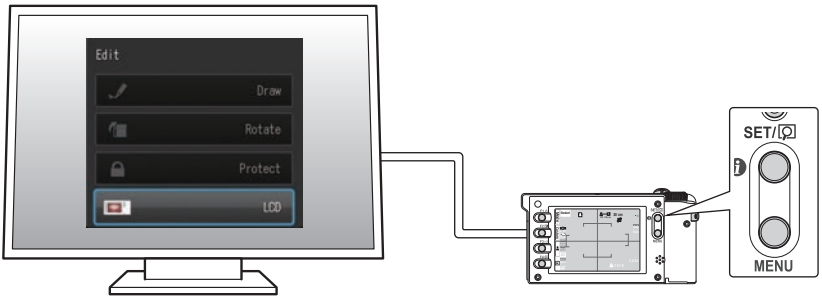
Note Insert the HDMI cable into the terminal securely.

2 Select the playback mode and press the MENU 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. To select the movie/ photo or any operation while replaying, use the buttons on the camera.

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



Note

- When playing movies / viewing photos with an HDMI cable, some functions such as drawing 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.
- The camera is not guaranteed to operate with all HDMI enabled devices.

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 reviewing photos

Magnify / downsize images

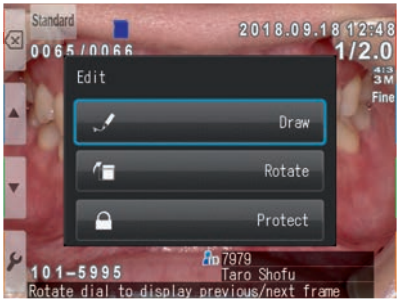
- To magnify the image, press the F2 key in playback mode. Maximum magnification is at 6x. Press the F3 key to reduce the size of the picture. Press F1 to redisplay the picture at the 1x (original) size.
- To magnify different parts of the picture, directly touch the area you wish to see on the screen or press ▲▼◀▶.

Magnify…

Downsize…

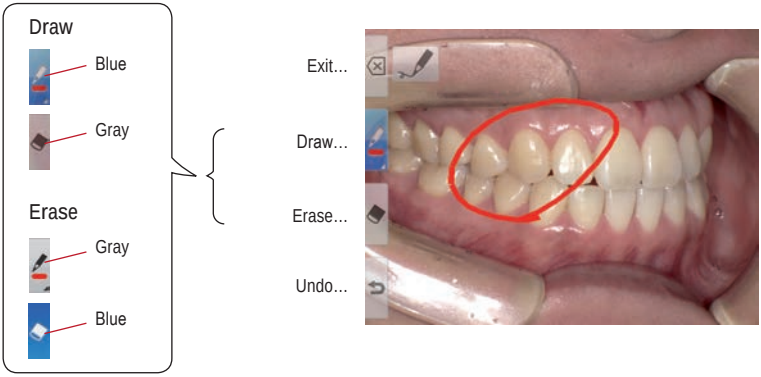
Edit images

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

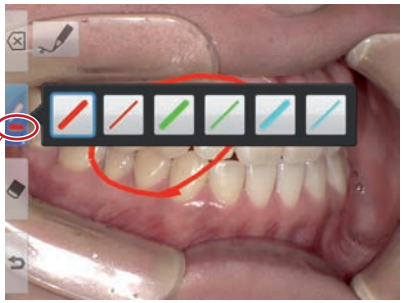


● Draw on images (drawing function)

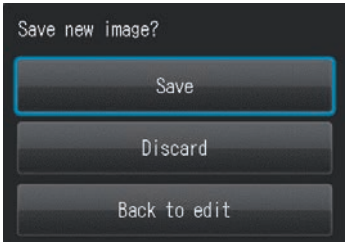
When “Draw” is selected, you can draw lines on the recorded images. Press F2 to draw lines and F3 to erase them.



- 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).



● 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.

Info

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 replaying movies

Select a movie frame.

Play

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

Pause

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

Rewind Pause Fast forward

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.

Volume

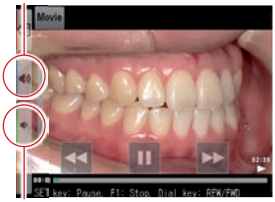
Higher

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

Lower

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

Increase volume



Decrease volume

Stop

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

4 Transferring images to your computer

For a simplified file management and image sorting, SHOFU has created a proprietary 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 SHOFU 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 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) also contains its corresponding patient information file (.MIF).

Refer to the “Advanced Manual” (“Patient information file (.MIF)”).

5 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.

☞ *Refer to the "Advanced manual" ("Wireless LAN function").*

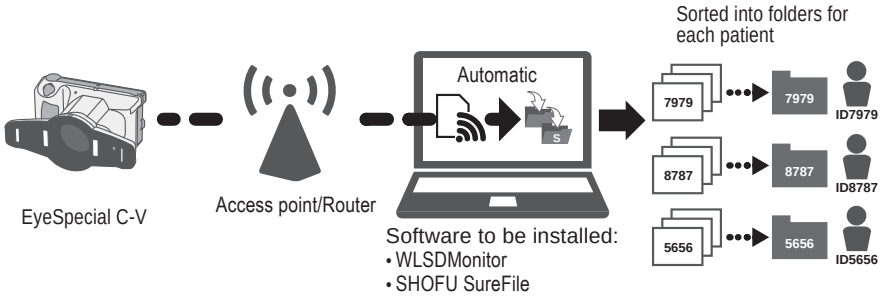
Note

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

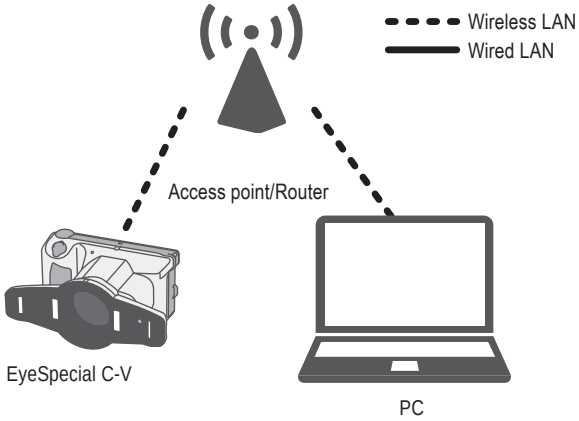
To use the wireless LAN, the receiving software “WSLD Mchitor” and the image sorting software “SHOFU SureFile” are required.

Network connection

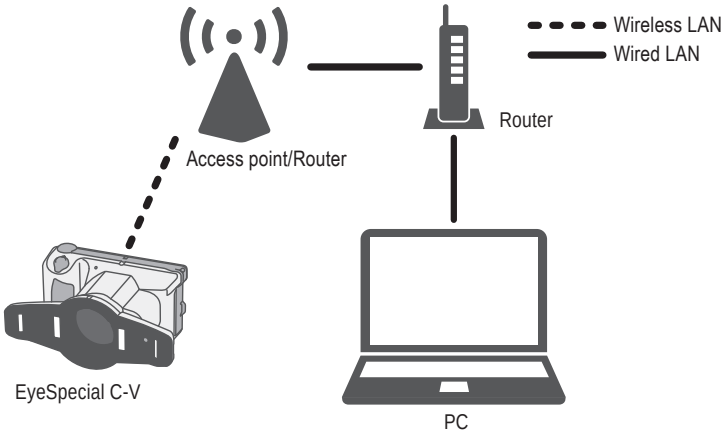
The functional and non-functional network connections are shown below. Please check your network environment and prepare a suitable network.

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.

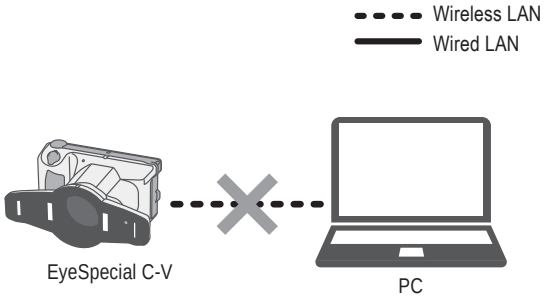


To use the wireless LAN (Wi-Fi) function of the camera, the DHCP function of the wireless LAN router must be turned on. Please refer to the router's instruction manual or consult your network administrator for the DHCP function settings.

Non-functional network connections

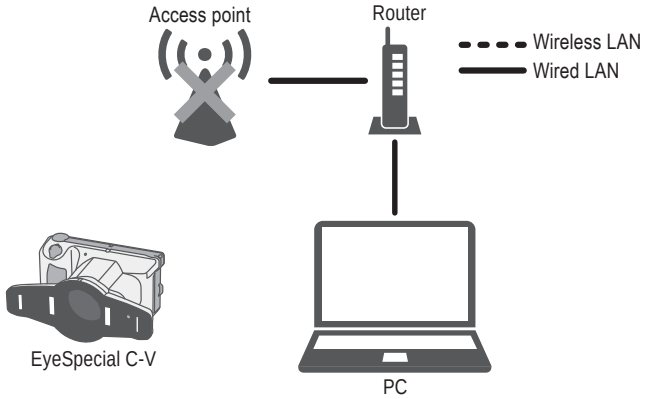
● The EyeSpecial C-V is connected directly to the computer.

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 folliwing 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.

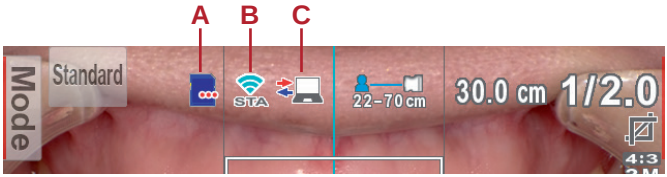
Characteristics of 5 GHz band

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**
STA	Displayed when the wireless LAN function is OFF
STA	Displayed when the wireless LAN function is ON and not connected to the access point
STA	Displayed when the signal strength is weak
STA	Displayed when the signal strength is moderate
STA	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 WLSDMonitor (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

YYou 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
   - Image sorting software “SureFile”
   - Receiving software “WLSDMonitor”
   P.43

A: Setup using Simple Settings (WPS)

2. Turn on the Wi-Fi settings P.44
3. Select Simple Settings (WPS) P.45
4. Establish connection with Push Button method P.46
   / 4. Establish connection with PIN method P.47
5. Register the camera to WLSDMonitor P.48
6. Start data reception by WLSDMonitor P.50

B: Setup using WLSDMonitor

2. Setup of wireless LAN connection using WLSDMonitor P.51
3. Write settings to an SD card P.54
4. Turn on the Wi-Fi settings P.56
5. Load settings to the camera P.57
6. Start data reception by WLSDMonitor P.47

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 (WLSDMonitor) 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 WLSDMonitor. For information on the latter method, see “Setup of wireless LAN connection using WLSDMonitor” (P.51).

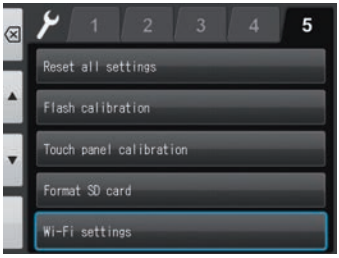
A: Setup of wireless LAN connection using Simple Settings (WPS)

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.



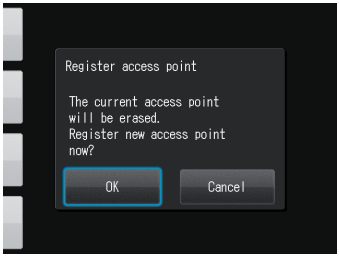
2 Select “Wi-Fi”.

3 Select “ON”.

3 Select Simple Settings (WPS)

1 Select “Register access point”.

2 Select “OK”.

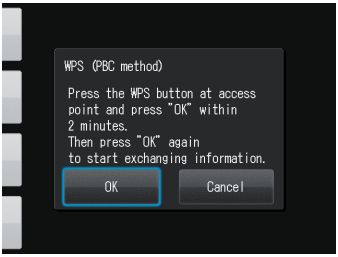


3 Select “Simple Settings (WPS)”.

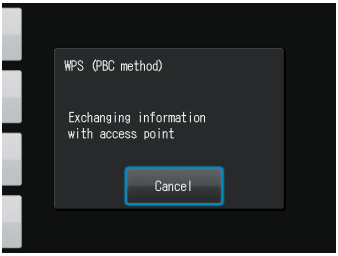
4 Select either “WPS (PBC method)” or “WPS (PIN method)”.

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.

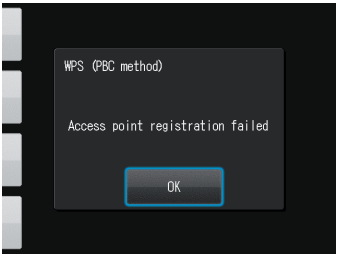


3 One of the following messages will be displayed.

Confirm the content and press “OK”.

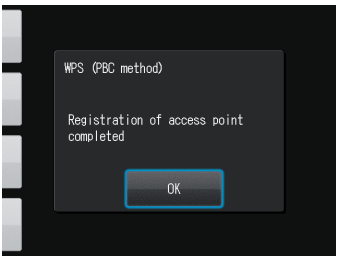
- Access point registration failed

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



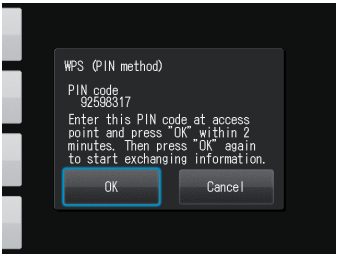
- Registration of access point completed

Press “OK”.

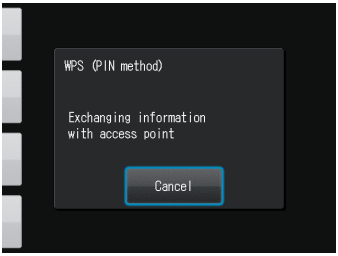


4 Establish connection with PIN method

1 Enter the displayed PIN code into the router and press “OK” within 2 minutes.

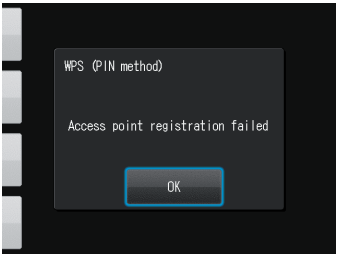


2 Wait for a moment while information is exchanged.



3 One of the following messages will be displayed.

Confirm the content and press “OK”.

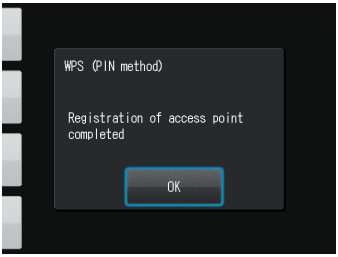


- Access point registration failed

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

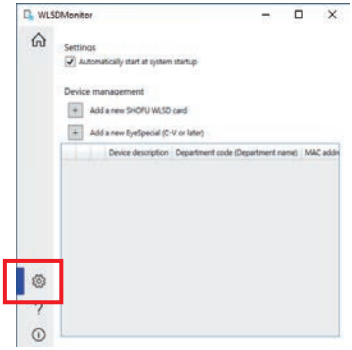
- Registration of access point completed

Press “OK”.

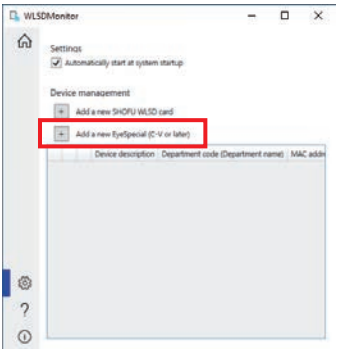


5 Register the camera to WLSDMonitor

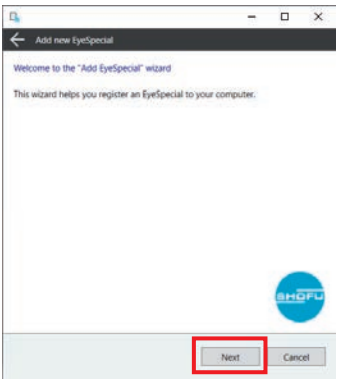
1 Start the WLSDMonitor and press the settings icon [⚙].



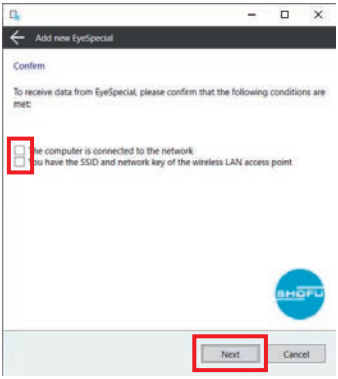
2 Select “Add a new EyeSpecial (C-V or later)”



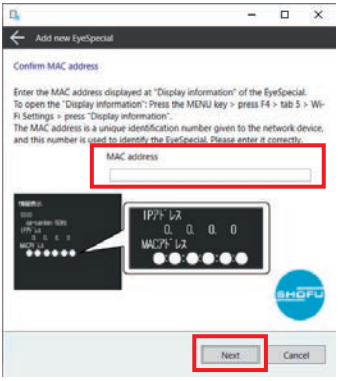
3 The wizard to add a new camera is displayed. Press “Next”.



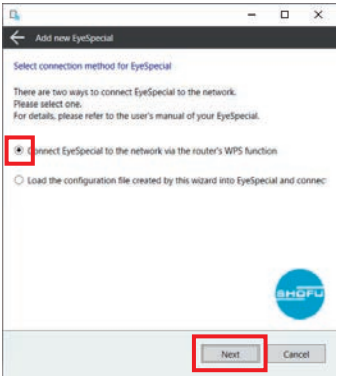
4 Check the displayed conditions, tick if they are met and press “Next”.



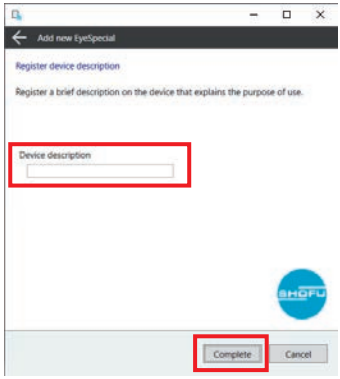
5 Enter the MAC address displayed on the EyeSpecial C-V at “Display information” and then press “Next”.
To open the “Display information”:
Press the MENU key > F4 > tab 5 > Wi-Fi settings > Display information.



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”.



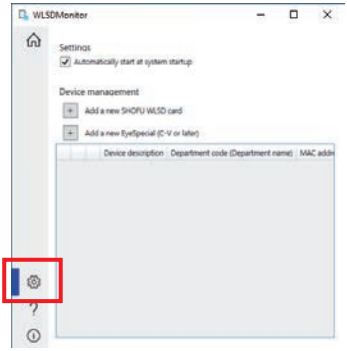
6 Start data reception by WLSDMonitor

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

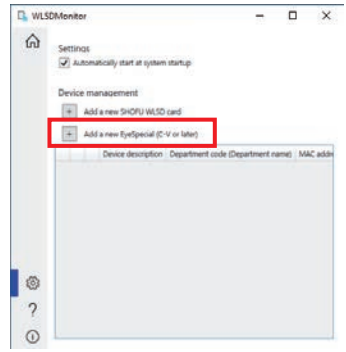
B: Setup of wireless LAN connection using WLSDMonitor

2 Establish connection with WLSDMonitor

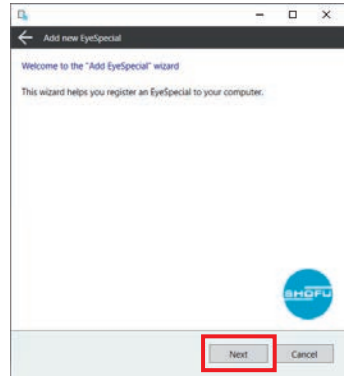
1 Start WLSDMonitor and press the settings icon [⚙].



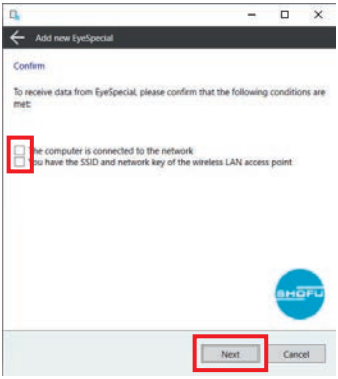
2 Select “Add a new EyeSpecial (C-V or later)”.



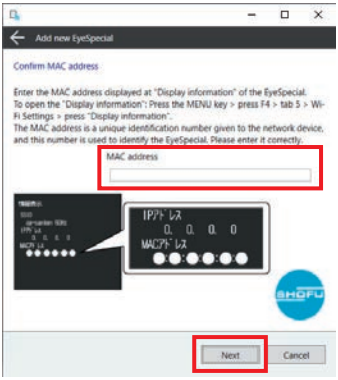
3 The wizard to add a new camera is displayed. Press “Next”.



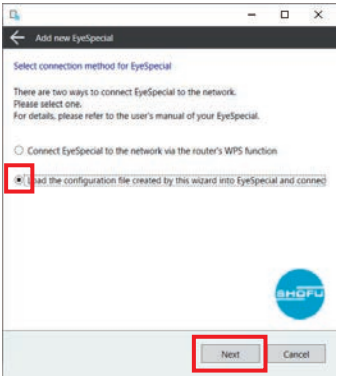
4 Check the displayed conditions, tick if they are met and press “Next”.



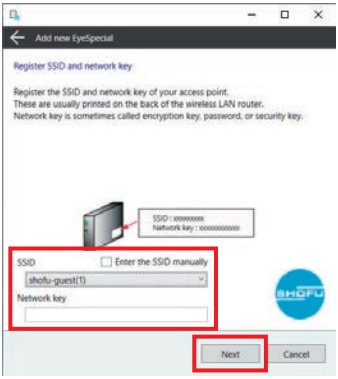
5 Enter the MAC address displayed at “Display information” of the camera and then press “Next”.
To open the “Display information”:
Press the MENU key > F4 > tab 5 > Wi-Fi settings > Display information.



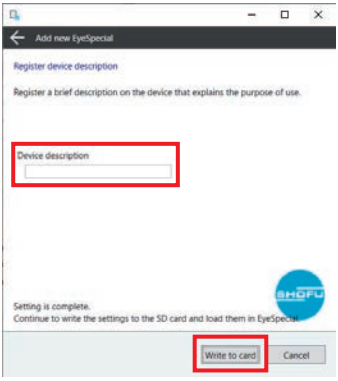
6 Check “Load the configuration file created by this wizard into EyeSpecial and connect it to the network” and press “Next”.



7 Select or enter the SSID and the network key of the router. Then press “Next”.

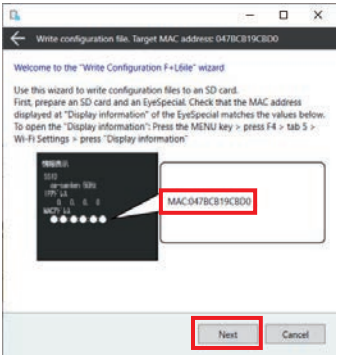


8 Enter a description for your device and press “Write to card”. The writing wizard that you will use in the next step is displayed.

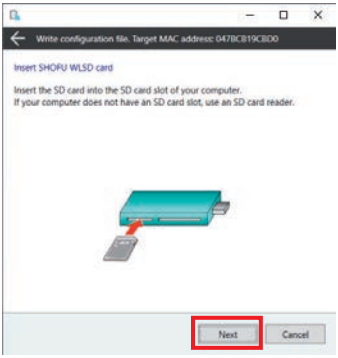


3 Write settings to an SD card

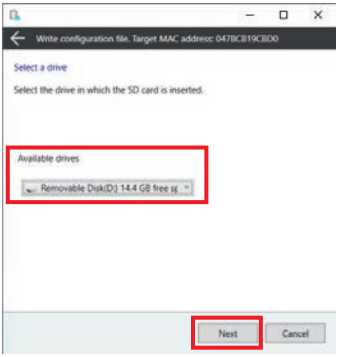
1 Confirm that the MAC address displayed at “Display information” of the camera matches the MAC address displayed at the writing wizard. Then press “Next”.
To open the “Display information”: Press the MENU key
> F4 > tab 5 > Wi-Fi settings > Display information



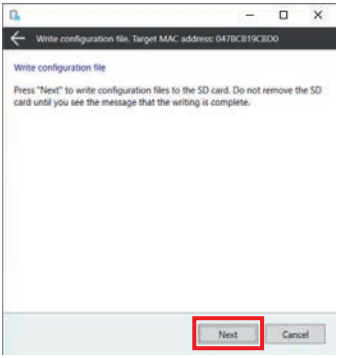
2 Insert an SD card into the SD card slot of your computer and press “Next”.



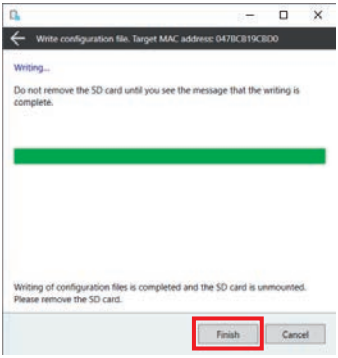
3 Select the drive in which the SD card is inserted and click “Next”.



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



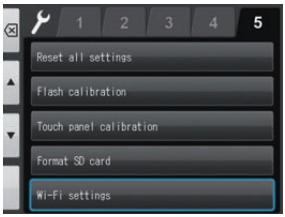
5 Please wait until the writing of the configuration file is completed. Subsequently the message “Writing of configuration file is completed and the SD card is unmounted” is displayed.
Press “Finish” and remove the SD card from your computer.



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.



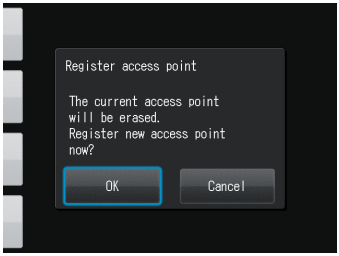
3 Select “Wi-Fi”.

4 Select “ON”.

5 Load settings to the camera

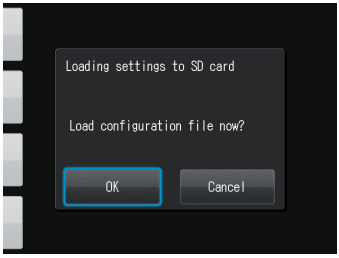
1 Select “Register access point”.

2 Press “OK”.

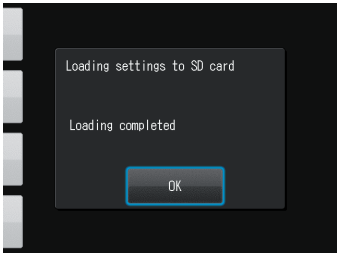


3 Select “Loading settings to SD card”.

4 Press “OK”.

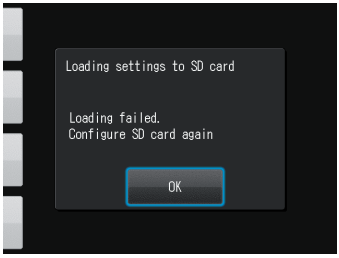


5 If the configuration file is successfully loaded, press “OK”.



If this message appears, the loading failed.

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



6 Start data reception by WLSDMonitor

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

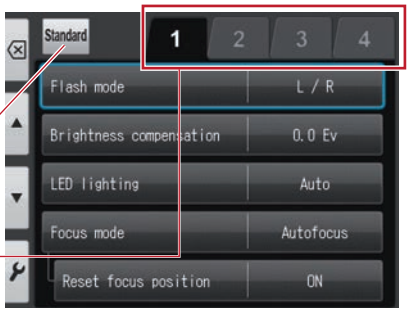
6 Menus

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.

☞ *Refer to the "Advanced Manual" ("Menus").*

Shooting mode menu

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



Shooting mode

Tabs
Press to display other conditions you can set manually.

Item	Explanation
Tab 1	
Flash mode	To select the flash mode (right & left / right / left)
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 change the dial function from "magnification" to "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

Playback mode menu

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

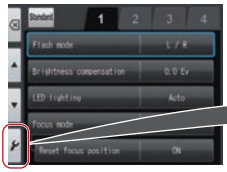
Item	Explanation
Draw*	To draw lines on the images
Rotate*	To rotate the image by 90 degrees
Protect	To protect the images to avoid accidental deletion or unintended editing

These functions are available for photos only.

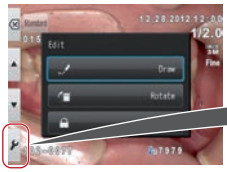
For more details, refer to page 38/39 and to the "Advanced Manual" ("Protect images").

Setup menu

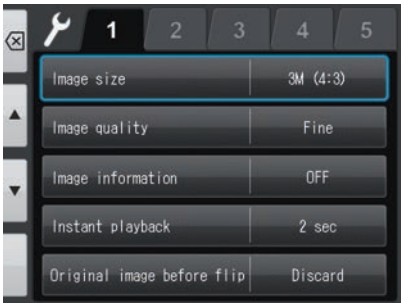
Basic settings including the image size and turning on / off the key sound etc. can be changed.
In shooting mode and playback mode press MENU and then the F4 key.



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

☞ ** For detailed information on the flash calibration, refer to the "Advanced Manual" ("Flash calibration").*

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.

☞ *Refer to the "Advanced Manual" ("QR codes for optional functions").*

7 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 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.
- The searching might not be successful if there are multiple wireless LAN access points near to the product or the same channel is being used.
- 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 specification 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 temperated 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.

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.

Useful life

- The useful life of the camera is 5 years after delivery, provided that the camera is used, maintained and stored properly.

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.

8 Maintenance and storage

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

Maintenance

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

Storage

- Store this camera in a cool, dry and well-ventilated area away from dust and chemicals. Before storing the camera when not in use for a 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.
- Do not store in chests or drawers with mothballs.
- 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.

9 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. 8
	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. 14
Cannot focus even if the shutter button is half-pressed.	Manual focus is selected.	Change the focus mode to Auto focus Standard or Auto focus Spot.	Advanced Manual
	Focus distance is outside the recommendation.	Take a photo within the limit of focus distance.	p. 23
"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 has focused. If it's moved, refocus before taking pictures.	p. 24
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.	Advanced Manual
	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 the red pilot lamp is on, and eventually the camera freezes.	This may occur only occasionally when the batteries are exhausted.	Replace old batteries with new ones.	–
The camera does not work properly.	Turn off the camera and remove all the batteries. Replace the batteries and turn on the camera again. If the camera still does not work, it might have some defect. Contact your SHOFU dealer.		–
Even after installing new batteries, the message "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. 11

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.	–
Even though you inserted an 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. 38
“Memory card full” appears even though you haven´t stored that many images on the SD memory card.	The SD memory card is occupied by files in a format other than JPEG (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. 24
Unable to connect to wireless LAN access point	SSID or network key entered in WLSDMonitor 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.	

Trouble	Cause	Measure	Ref.
Wireless LAN disconnected even though the camera is turned on.	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.	Please try to switch on the wireless LAN.	
Wireless LAN communication is slow and cuts off frequently	Too many devices are connected to the router. Routers have a fixed upper limit for the number of devices that can be connected and if more devices than the upper limit are onnected, communication may not work properly.	Check the maximum number of router connections and how many devices are connected.	
	The distance between the camera and the router is too far. There may be an obstacle between the router and the camera.	Please take into account the location of the router and the place where you want to take pictures.	
	Wi-Fi interference is occurring. Wireless LAN can be affected by radio waves from other devices. Communication may be interrupted if there are devices transmitting strong radio waves, such as microwave ovens.	Do not use this camera near devices transmitting strong radio waves.	
	The router is not working properly. It is always turned on and may occasionally fail or malfunction.	Try rebooting the router.	

Error messages

Message	Cause	Measure	Ref.
Batteries depleted	Batteries are dead.	Replace the old batteries with new ones.	p. 8
No SD card	There is no memory card in the camera.	Insert an SD memory card.	p. 9
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.	Advanced Manual
		Erase some images.	p. 31
		Replace the full memory card with another memory card with sufficient storage capacity remaining.	p. 9
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. 31
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. 31
		Replace the full memory card with another memory card with sufficient storage capacity remaining.	p. 9
Memory card locked	SD memory card is protected.	Slide up the write-protection tab.	p. 11
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. 9
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. 62
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. 38, 62
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. 38, 62
WB unadjusted	Something other than the provided SHOFU gray card was photographed when white balance was manually set.	Use the provided SHOFU gray card.	Advanced Manual

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. 10)
Why does the number of remaining pictures not decrease after taking a picture? Or why is the number sometimes reduced by two images at a time?	The picture does not take up enough space to decrease the number or the picture takes up space to decrease 2 or more at once. The camera is operating normally and you can continue taking pictures.
Cannot see a picture taken on the camera screen. Why?	Possible causes are as follows: • If the file name is changed or its location is changed to another folder, the image cannot be displayed on the camera screen. Get it back to the original name and position. • If the image is edited or rotated on the computer and then overwritten, the new image might not be able to be displayed on the camera 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%).

10 Specifications

Sensor	Type		Primary colour filter, CMOS sensor
	Size		1/2.3 inch
	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 - 217 mm / Total 8 focal lengths
	Maximum aperture		Wide: 4.6 - 5.3 / Tele: 6.5 - 7.5
	Zooming method		Optical zoom + digital zoom
	Optical filter		IR cut filter
AF	Method		Contrast autofocus
	AF area		Center-weighted / Spot
	Focus mode		Photo: Single shot autofocus and manual focus by adjusting the distance Movie: Continuous autofocus
	AF assist light		4 white LED lights
AE	Method		TTL (through the lens) metering / FlashMatic (patented) light control
	AE area		Center-weighted / Spot / Standard
	Shutter release		Electronic & mechanical shutter release
	Shutter speed		1/15 to 1/1,000 sec automatic change
Image storage	Storage media		SD / SDHC / SDXC card (max. 512 GB)
	File format		JPEG / MOV (with patient information file (.MIF))
	SD card record format		DCF (standard / date)
	Image size	Aspect ratio 4:3	12M (4,000 x 3,000) / 8M (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)
		Aspect ratio 3:2	10M (4,000 x 2,672) / 8M (3,264 x 2,176) / 4M (2,560 x 1,712) / 3M (2,080 x 1,392)
	Number of pixels to record movies		HD (1,280 x 720), 59.94 fps
	Image quality		Extra fine / fine / standard
	Digital zoom		10 steps from x1.05 to x2
	ExifTag information		In accordance with Exif 2.21 and DCF standard
	Information imprinting		• Date + shooting conditions + patient information • Date + shooting conditions • Date + patient information • Date

Camera	Power supply	4 Alkaline AA batteries / 4 nickel metal hydride batteries (NiMH)	
	Battery for built-in clock	SR44 (cannot be replaced by user)	
	External power supply	None	
	Power save function	off / 1 / 2 / 3 / 5 min	
	Dimensions	W 176 x H 80 x D 115 mm (accessories not included)	
	Weight	Approx. 540 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	Complying with 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)

☞ *Refer to the "Advanced Manual" ("Specifications").*

11 Accessories

Name	Quantity	Note
EyeSpecial C-V camera	1	–
Lens cap	1	Mounted on the camera
Hand strap	1	–
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 (this document)	1	–
Quick Reference (taking pictures)	1	–
Warranty	1	–

12 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 purchase of 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.

13 Regulatory compliance statement

For customers in USA

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC CAUTION
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Compliance with FCC requirement 15.407(c)
Data transmission is always initiated by software, which is passed down through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted. In other words, this device automatically discontinues transmission in case of either absence of information to transmit or operational failure.

Frequency Tolerance: ±20 ppm

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

The available scientific evidence does not show that any health problems are associated with using low power wireless devices.
There is no proof, however, that these low power wireless devices are absolutely safe. Low power wireless devices emit low levels of radio frequency energy (RF) in the microwave range while being used. Whereas high levels of RF can produce health effects (by heating tissue), exposure of low-level RF that does not produce heating effects causes no known adverse health effects.

Many studies of low-level RF exposures have not found any biological effects. Some studies have suggested that some biological effects might occur, but such findings have not been confirmed by additional research.
EyeSpecial C-V has been tested and found to comply with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines.

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11 Kamitakamatsu-cho, Fukuine, Higashiyama-ku, Kyoto 605-0983, Japan

Operating frequency band 2.4 GHz: 2412-2472 MHz
Maximum radio-frequency power 2.4 GHz band: 14 dBm
Operating frequency band 5 GHz: 5180-5240 MHz
Maximum radio-frequency power 5 GHz band: 12 dBm

The 5 GHz band is prohibited for outdoor

[EN] English	Hereby, SHOFU INC. declares that the radio equipment type EyeSpecial C-V is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[BG] Bulgarian	С настоящото SHOFU INC. декларира, че този тип радиосъоръжение EyeSpecial C-V е в съответствие с Директива 2014/53/ЕС. Цялостният текст на ЕС декларацията за съответствие може да се намери на следния интернет адрес: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[CS] Czech	Tímto SHOFU INC. prohlašuje, že typ rádiového zařízení EyeSpecial C-V je v souladu se směrnicí 2014/53/EU. Úplné znění EU prohlášení o shodě je k dispozici na této internetové adrese: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[DA] Danish	Hermed erklærer SHOFU INC., at radioudstyrstypen EyeSpecial C-V er i overensstemmelse med direktiv 2014/53/EU. EU-overensstemmelseserklæringens fulde tekst kan findes på følgende internetadresse: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[DE] German	Hiermit erklärt SHOFU INC., dass der Funkanlagentyp EyeSpecial C-V der Richtlinie 2014/53/EU entspricht. Der vollständige Text der EU-Konformitätserklärung ist unter der folgenden Internetadresse verfügbar: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[ET] Estonian	Käesolevaga deklareerib SHOFU INC., et käesolev raadioseadme tüüp EyeSpecial C-V vastab direktiivi 2014/53/EL nõuetele. ELi vastavusdeklaratsiooni täielik tekst on kättesaadav järgmisel internetiaadressil: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf

[EL] Greek	Με την παρούσα ο/ηSHOFU INC., δηλώνει ότι ο ραδιοεξοπλισμός EyeSpecial C-V πληροί την οδηγία 2014/53/ΕΕ. Το πλήρες κείμενο της δήλωσης συμμόρφωσης ΕΕ διατίθεται στην ακόλουθη ιστοσελίδα στο διαδίκτυο: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[ES] Spanish	Por la presente, SHOFU INC. declara que el tipo de equipo radioeléctrico EyeSpecial C-V es conforme con la Directiva 2014/53/UE. El texto completo de la declaración UE de conformidad está disponible en la dirección Internet siguiente: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[FR] French	Le soussigné, SHOFU INC., déclare que l'équipement radioélectrique du type EyeSpecial C-V est conforme à la directive 2014/53/UE. Le texte complet de la déclaration UE de conformité est disponible à l'adresse internet suivante: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[IT] Italian	Il fabbricante, SHOFU INC., dichiara che il tipo di apparecchiatura radio EyeSpecial C-V è conforme alla direttiva 2014/53/UE. Il testo completo della dichiarazione di conformità UE è disponibile al seguente indirizzo Internet: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[LV] Latvian	Ar šo SHOFU INC. deklarē, ka radioiekārta EyeSpecial C-V atbilst Direktīvai 2014/53/ES. Pilns ES atbilstības deklarācijas teksts ir pieejams šādā interneta vietnē: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdfl
[LT] Lithuanian	Aš, SHOFU INC., patvirtinu, kad radijo įrenginių tipas EyeSpecial C-V atitinka Direktyvą 2014/53/ES. Visas ES atitikties deklaracijos tekstas prieinamas šiuo interneto adresu: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[HR] Croatian	SHOFU INC. ovime izjavljuje da je radijska oprema tipa EyeSpecial C-V u skladu s Direktivom 2014/53/EU. Cjeloviti tekst EU izjave o sukladnosti dostupan je na sljedećoj internetskoj adresi: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[HU] Hungarian	SHOFU INC. igazolja, hogy a EyeSpecial C-V típusú rádióberendezés megfelel a 2014/53/EU irányelvnek. Az EU-megfelelőségi nyilatkozat teljes szövege elérhető a következő internetes címen: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[MT] Maltese	B'dan, SHOFU INC., niddikjara li dan it-tip ta' tagħmir tar-radju EyeSpecial C-V huwa konformi mad-Direttiva 2014/53/UE. It-test kollu tad-dikjarazzjoni ta' konformità tal-UE huwa disponibbli f'dan l-indirizz tal-Internet li ġej: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf

[NL] Dutch	Hierbij verklaar ik, SHOFU INC., dat het type radioapparatuur EyeSpecial C-V conform is met Richtlijn 2014/53/EU. De volledige tekst van de EU-conformiteitsverklaring kan worden geraadpleegd op het volgende internetadres: https://www.shofu.co.jp/eye-specialc5/pdf/ESPC5_ce_DoC.pdf
[PL] Polish	SHOFU INC. niniejszym oświadcza, że typ urządzenia radiowego EyeSpecial C-V jest zgodny z dyrektywą 2014/53/UE. Pełny tekst deklaracji zgodności UE jest dostępny pod następującym adresem internetowym: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[PT] Portuguese	O(a) abaixo assinado(a) SHOFU INC. declara que o presente tipo de equipamento de radio EyeSpecial C-V está em conformidade com a Diretiva 2014/53/UE. O texto integral da declaração de conformidade está disponível no seguinte endereço de Internet: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[RO] Romanian	Prin prezenta, SHOFU INC. declară că tipul de echipamente radio EyeSpecial C-V este în conformitate cu Directiva 2014/53/UE. Textul integral al declarației UE de conformitate este disponibil la următoarea adresă internet: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[SK] Slovak	SHOFU INC. týmto vyhlasuje, že rádiové zariadenie typu EyeSpecial C-V je v súlade so smernicou 2014/53/EÚ. Úplné EÚ vyhlásenie o zhode je k dispozícii na tejto internetovej adrese: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[SL] Slovenian	SHOFU INC. potrjuje, da je tip radijske opreme EyeSpecial C-V skladen z Direktivo 2014/53/EU. Celotno besedilo izjave EU o skladnosti je na voljo na naslednjem spletnem naslovu: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[FI] Finnish	SHOFU INC. vakuuttaa, että radiolaitetyyppi EyeSpecial C-V on direktiivin 2014/53/EU mukainen. EU-vaatimustenmukaisuusvakuutuksen täysimittainen teksti on saatavilla seuraavassa internetosoitteessa: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf
[SV] Swedish	Härmed försäkrar SHOFU INC. att denna typ av radioutrustning EyeSpecial C-V överensstämmer med direktiv 2014/53/EU. Den fullständiga texten till EU-försäkran om överensstämmelse finns på följande webbadress: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ce_DoC.pdf

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Operating frequency band 2.4 GHz: 2412-2472 MHz
Maximum radio-frequency power 2.4 GHz band: 14 dBm
Operating frequency band 5 GHz: 5180-5240 MHz
Maximum radio-frequency power 5 GHz band: 12 dBm

The 5 GHz band is prohibited for outdoor

[EN] English	Hereby, SHOFU INC. declares that the radio equipment type EyeSpecial C-V is in compliance with Radio Equipment Regulations 2017 and related amendments. The full text of the UK declaration of conformity is available at the following internet address: https://www.shofu.co.jp/eyespecialc5/pdf/ESPC5_ukca_DoC.pdf

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