800512-0A

IMAGE TECHNOLOGY

MEMRECAM GO

User's manual

ST-903 MEMRECAM GO-12

ST-904 MEMRECAM GO-9

February 2023

For safety precautions, refer to the separate "Safety Precautions".

Some equipment may have warning labels or indications in areas that require attention for safety when using the equipment. Be sure to read the warning messages before operating the equipment. In addition, please read the instruction manual or user's manual of the equipment carefully to ensure correct and safe use.
If there are any questions about the equipment, please contact the distributor directly.

Trademarks

MEMRECAM is a trademark of NAC Image Technology. Microsoft Windows is a registered trademark of Microsoft Corporation USA.
Other company names and product names noted here are trademarks or registered trademarks of those companies.

This manual contains instructions for camera firmware Ver. 0.7.3.

The photos and illustrations in this manual may differ from the appearance of the product.

The contents of this document may change without notice. Please check beforehand.

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Features of This Unit

MEMRECAM GO is a digital high-speed camera designed to analyze fast-moving phenomena.

Compact integrated

More compact in size compared to the conventional ACS-3. The integrated system with a built-in recording section enables high-speed phenomenon recording/analysis.

High-speed, high-resolution image sensors

Equipped with a high-sensitivity CMOS sensor-capable of high-speed driving with high resolution.

Effective pixels 1008x896	Maximum 12,000 frames/sec	GO-12
	Maximum 9,000 frames/sec	GO-9
Effective pixels 1008x16	Maximum 220,000 frames/sec	GO-12
	Maximum 165,000 frames/sec	GO-9

High sensitivity

Recording is possible under various conditions.

Sensitivity	Monochrome	ISO 10,000 to 200,000
	Collar	ISO 2,000 to 40,000

Advanced Camera Mode

Always in ARM state from the moment of startup.

Recording is possible as soon as the trigger is activated.

Recording settings can be changed even in the ARM state.

Flexible Image Playback

Slow motion playback of recorded images or repeated playback in a specified range is possible. Detailed image analysis can be conducted with on Tablet PC and PC.

High-speed network transfer

Recorded images, including setting data and trigger time, can be saved to a PC via a network. 1000BASE-T compatible Ethernet allows for high-speed transfer of large video data with high resolution and long duration. The camera can also save data directly to USB-compatible external recording media connected to the camera's USB port.

Various External Interfaces

1000BASE-T compatible Ethernet, USB2.0, USB3.1 (USB Type-C), exposure start signal input, IRIG-B signal input, discrete status signal input/output, exposure pulse signal output, recording trigger signal input/output and many external I/O interfaces. Supports a wide range of recording conditions as a system.

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Preparation before use

Prepare the camera before use.

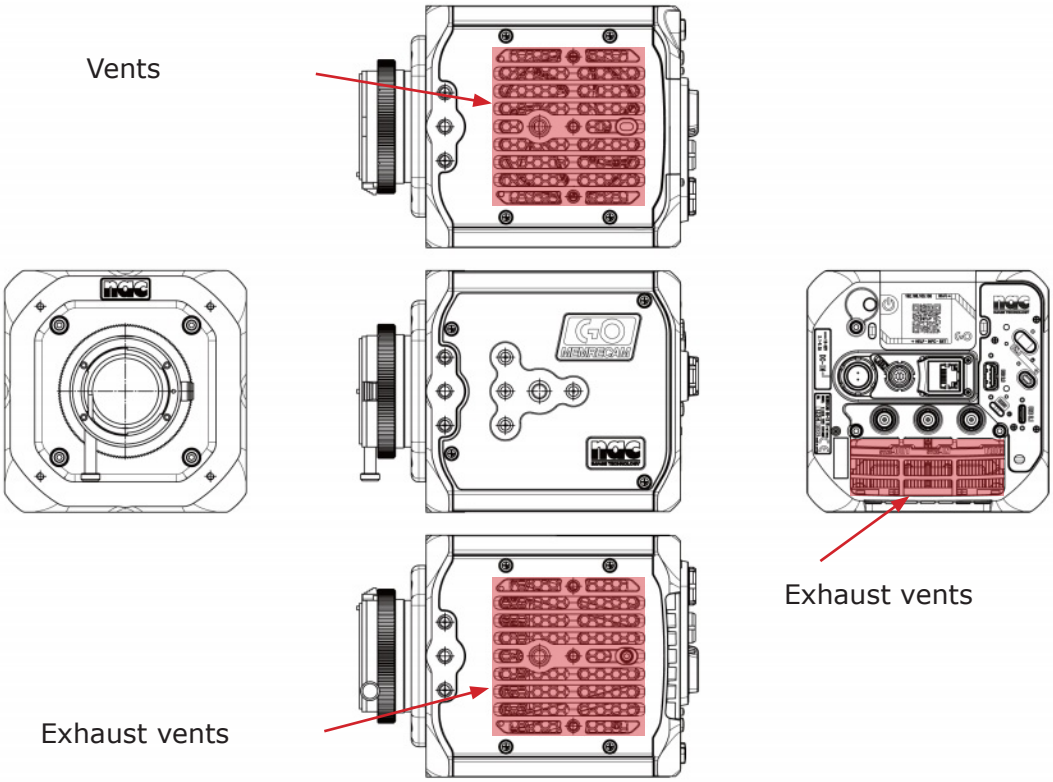
Camera	GO-9/GO-12
Lens	F Mount lenses, C mount lenses
Power supply for cameras	Such as AC adapters and batteries
Operator (PC, tablets)	The camera body does not have a video output connector. Be sure to prepare an operating device such as a PC or tablets.
External storage medium	Data can be downloaded directly from the camera to an external USB storage device.
Equipment required for recording	Lighting, tripod

Be careful when installing the camera

The camera is cooled by a fan.

Do not block any vents.

Do not block both exhaust vents. Be sure to open one point.

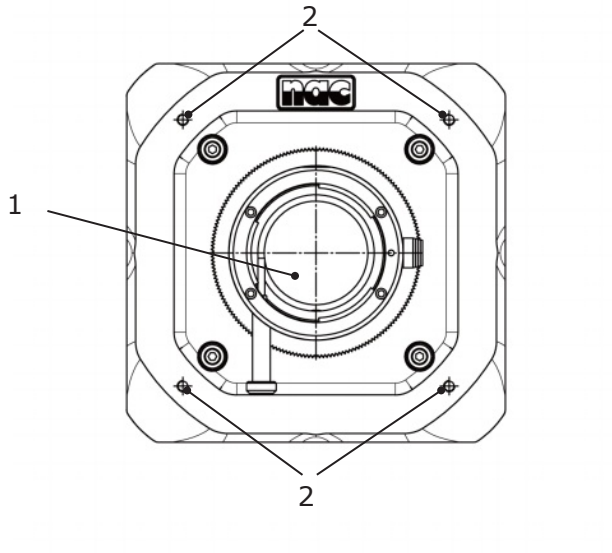


Precautions when using the Wi-Fi adapter

When using a Wi-Fi adapter, only the 2.4 GHz band can be used.

External Appearance and Names of Each Part

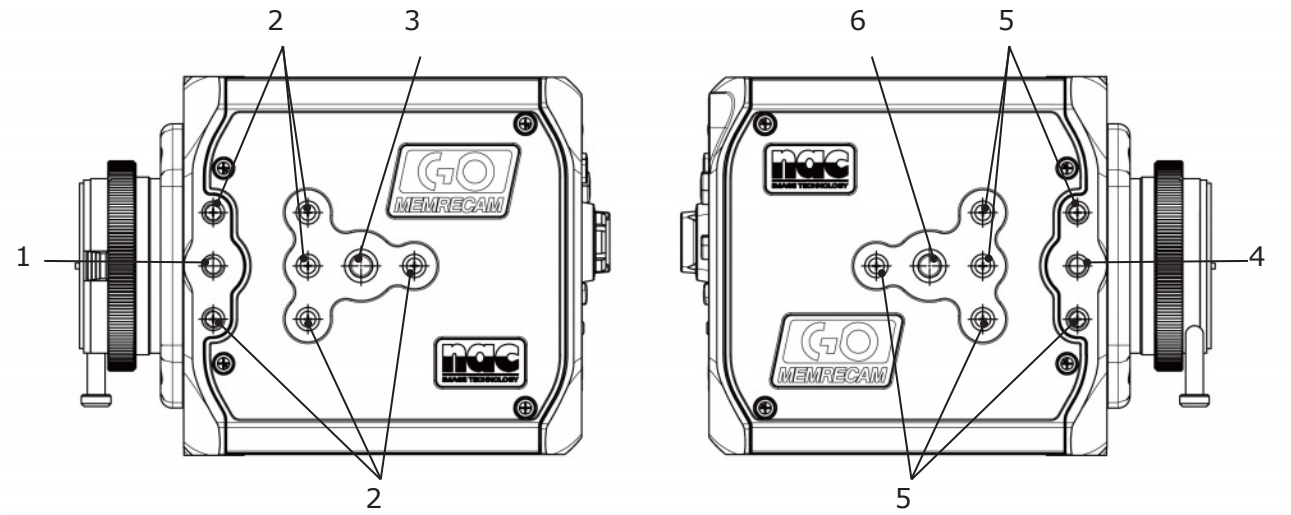
Front panel



1	Lens Mount The illustration shows F mounted.
2	Screw hole (4 holes M4 depth 8mm)

Attention Do not insert screws beyond the depth of the screw holes as this may cause malfunction.

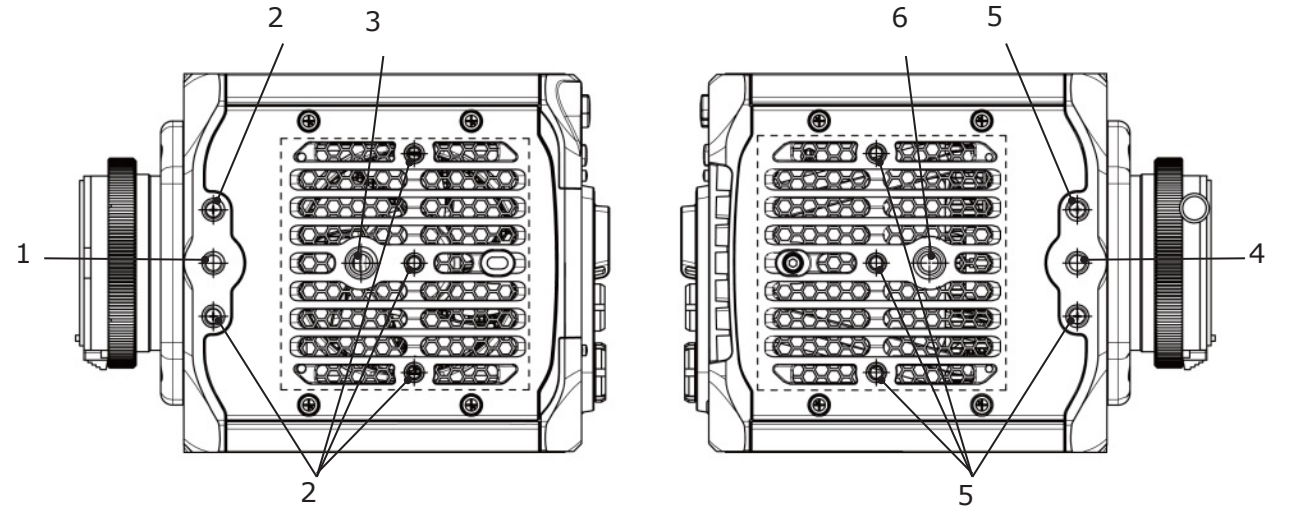
Left and right sides of the camera



1	Screw hole (1 hole 1/4-20UNC depth 9mm)
2	Screw hole (6 holes 1/4-20 depth 5.5mm)
3	Screw hole (1 hole 3/8-16UNC depth 8mm)

4	Screw hole (1 hole 1/4-20UNC depth 9mm)
5	Screw hole (6 holes 1/4-20 depth 5.5mm)
6	Screw hole (1 hole 3/8-16UNC depth 8mm)

Top and bottom of the camera

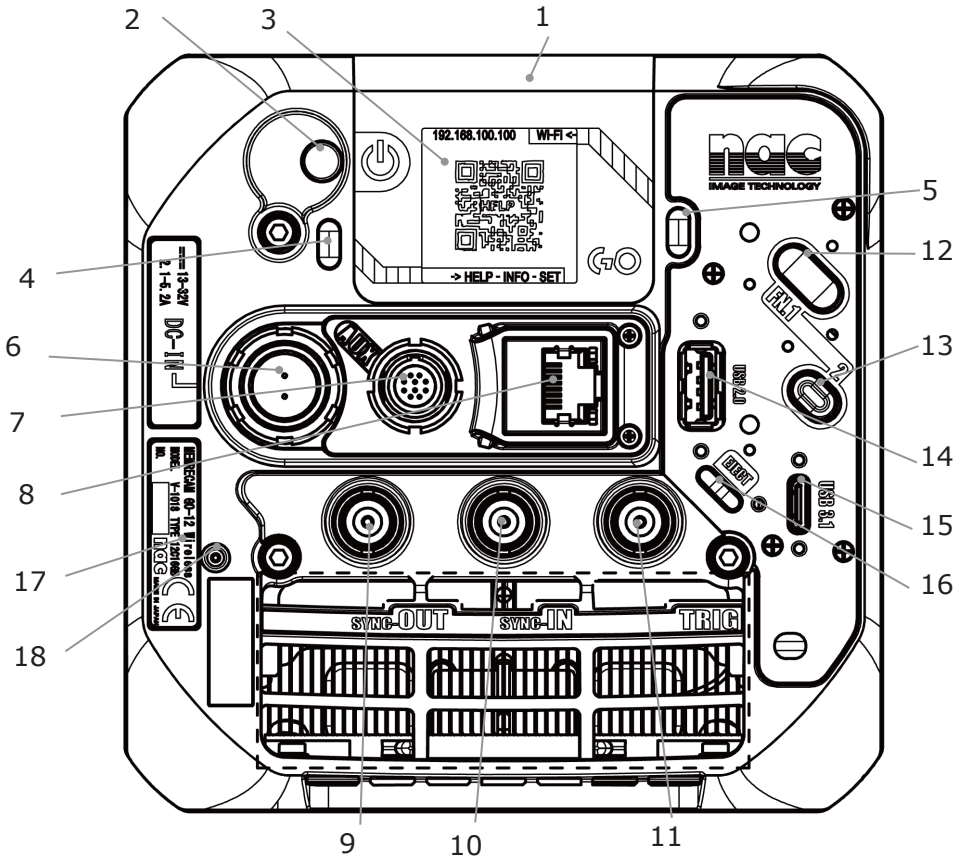


1	Screw hole (1 hole 1/4-20UNC depth 9mm)
2	Screw hole (5 holes 1/4-20 depth 5.5mm)
3	Screw hole (1 hole 3/8-16UNC depth 5.5mm)

4	Screw hole (1 hole 1/4-20UNC depth 9mm)
5	Screw hole (5 holes 1/4-20 depth 5.5mm)
6	Screw hole (1 hole 3/8-16UNC depth 5.5mm)

Attention Do not insert screws beyond the depth of the screw holes as this may cause malfunction.

Rear panel



1	CAMERA MODE LED
2	PWR BTN ☐ POWER LED
3	E-paper
4	EPAPER BTN ☐ LED
5	FUNC BTN 3
6	DC IN connector
7	AUX connector
8	Ethernet connector & LED
9	SYNC-OU Tconnector
10	SYNC-IN connector

11	TRIG connector
12	FUNC BTN 1
13	FUNC BTN 2
14	USB 2.0connector
15	USB 3.1 connector
16	EJECT BTN ☐ LED
17	Product name plate(shows the product number)
18	RESET BTN

Respective LEDs

CAMERA MODE LED

LED Status	Operation
Orange	REC mode. Displays trigger detection status while the camera image is being recorded by memory. Indicates the recording status to the recording memory by changing the brightness of orange due to light and dark. After the trigger input, it changes from light to dark. The less frames remaining, the darker the orange brightness.
Yellow	ARM mode. From the time ARM is started until the time the picture is recorded for the number of frames before the trigger. A change in brightness due to light and dark in yellow indicates the recording status to the recording memory. Dark to Light: Indicates the lapse rate of recording for the number of frames before triggering. It turns white when recording is complete for the number of frames before triggering.
White	ARM mode. Recorded memory is discarded, and the camera image is being recorded to memory. Displays the recording status to the recording memory with the change of white brightness due to light and dark. The ratio of the light/dark changes varies depending on the trigger timing setting. Dark to Light: Indicates the lapse rate of recording for the number of frames before triggering. Light to Dark: Indicates the lapse rate of recording for the number of frames after triggering.
Blue	Recording memory is full and cannot be recorded. The camera is not recording video, but a live video is displayed (VIEW mode).
Not lit	Power OFF or sleep state.
Flashing	Set to EST mode, and EST pulse is input. However, only ARM mode and REC mode. Flashing by alternately turning on and off.
Flashing green	Waiting to save to external USB storage device. Saving to an external USB storage device has started, but is not yet complete because the external USB storage device is not connected. Check the connection status of the external USB storage device.

POWER LED		
LED Status	Camera's power status	Operation
Flashing white	Power on	Camera is activated.
White	Power on	Camera starts up and is in normal status.
Red	Power on	Fail (abnormal) state.
Orange	Power off	External power is being supplied and the camera is turned off with the power switch. The external power supply voltage is within the specification range (13 to 32V) and in normal condition.
Flashing red	Power off	External power is being supplied and the camera is turned off with the power switch. The external power supply voltage is outside the specified range (13 to 32V) and is abnormal.
Flashing orange (1 Second interval)	Power on	From the moment the power is pressed until the power is turned OFF.
Flashing orange (0.5 Second interval)	Power on	Sleep state.
Flashing blue	Power on	The status between the camera's power ON and the camera's startup.
Not lit	Power off	No external power supply.
Red and green alternating lights		Thermal shutdown occurs.

CHECK

• Thermal shutdown automatically shuts down the camera when the internal temperature becomes extremely high.

• If a thermal shutdown occurs, turn off AC adapter or remove the battery, turn off the power to thecamera, and then turn it on again to restart.

• The fail status means that one of failure detection, power supply voltage abnormality detection, sensor temperature rise detection, trigger signal abnormality detection, or setting abnormality detection has occurred during camera activation.

ETHERNET LED	
LED Status	Operation
Yellow-green	Linking in 1000BASE-T.
Orange	Linking in 100BASE-TX.
Not lit	Not connected to network or powered off.

EJECT LED & BTN (LED and button are integrated)	
LED Status	Operation
Flashing Blue	The camera is recognizing the connected device.
Yellow-green	External USB storage connected to USB2.0 connector. Ready for storage. USB3.1 connector with external USB storage device not compatible with USB3. Ready for storage.
White	USB3 capable external USB storage-attached to USB3.1 connector. Storable status.
Flashing green (Low speed)	Data storage to the external USB storage started, but USB storage is not connected and the storage is waiting to be saved. Blinks in synchronization with CAMERA MODE LED.
Flashing green (High speed)	Data-saving to external USB storage. (Common to USB3.1 and USB2.0 Connectors)
Not lit	Removable external USB storage. No external USB storage-connected. Unavailable external USB storage connectivity status (Format USB storage).
Operation	Function
Press the button	Removing external USB storage.

Removing an External USB Storage

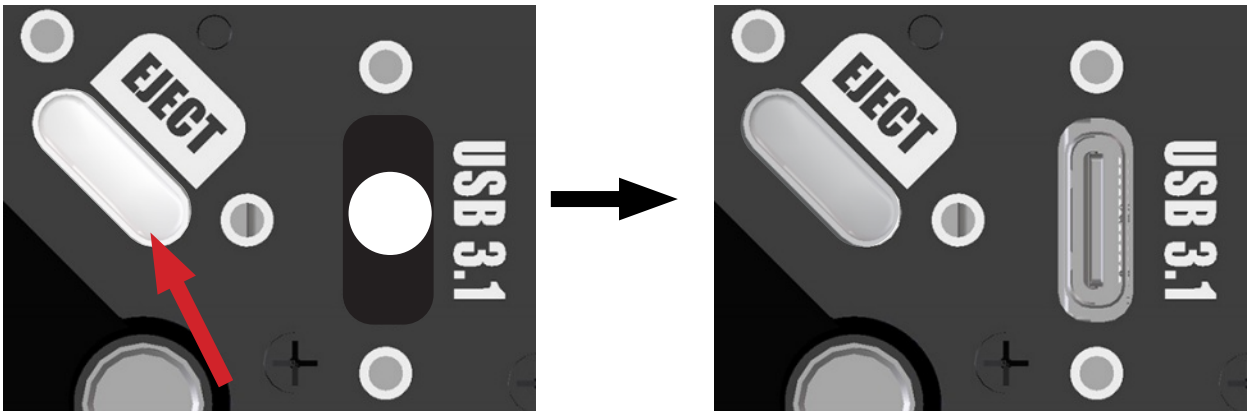
(1) Press the EJECT button that is lit.

(2) When the EJECT button goes off, the external USB storage device can be removed.

Attention

Pressing the EJECT button during external USB storage saving will force the saving process to terminate.

Please press the EJECT button after data saving is finished.



FUNC BTN 3 (LED and button are integrated) When Wi-Fi adapter is connected.	
LED Status	Operation
White light	Wi-Fi adapter enabled state.
White Flashing	The connected Wi-Fi adapter does not work.
Not lit	Wi-Fi adapter disabled.
Operation	Function
Short press	Wireless function ON/OFF

FUNC BTN 1	
Operation	Function
Press the button	Trigger input

FUNC BTN 2	
Operation	Function
Press the button	Delete last recorded video

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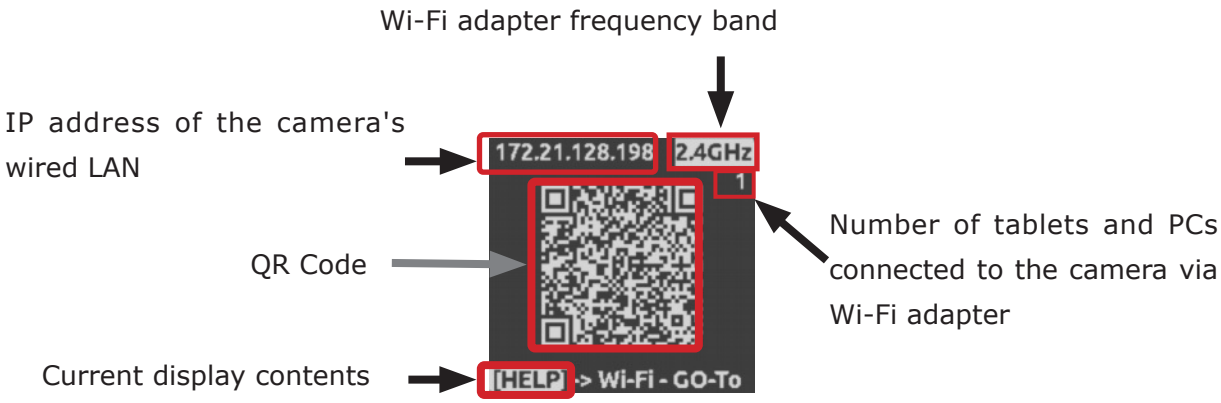
EPAPER BTN & LED (LED and button are integrated)	
LED Status	Operation
White	EPAPER BTN is pressed.
Not lit	EPAPER BTN is not pressed.

Operation	Function
Press the button	Switching e-paper display

e-paper

E-paper on the back displays camera information and a QR code for Wi-Fi connectivity



The content of the e-paper display switches automatically depending on the camera status. Also, each time EPAPER BTN is pressed, the display switches sequentially from HELP → WI-Fi → GO-Touch → HELP ... and so on.

Attention When the camera is turned off, the display does not change even if EPAPER BTN is pressed.

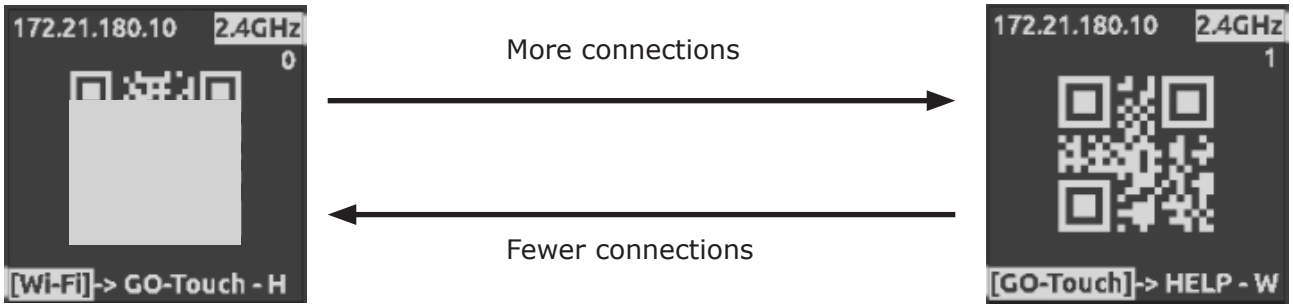
Display order	Display Contents	QR Code	Description.	Display Conditions
1	HELP		A link to the MEMRECAM GO product introduction page on our website will be displayed.	When the camera is turned off.
2	Wi-Fi		This display appears when the Wi-Fi adapter is not recognized.	When the camera has been successfully started up. If the Wi-Fi adapter is not recognized
			A link to connect to the camera via Wi-Fi will appear. Since the SSID and password are embedded in the QR code, simply read the QR code to connect to the camera. The figure on the left is a sample, so part of the code is hidden to prevent connection.	When a Wi-Fi adapter is connected and recognized When automatic transition is made from Display 3
3	GO-Touch		Address for starting GO-Touch. The address for starting GO-Touch is displayed. When the QR code is scanned, a web browser will be launched to access GO-Touch.	When automatically transitioning from Display 2

Automatic display 2 and display 3 transitions

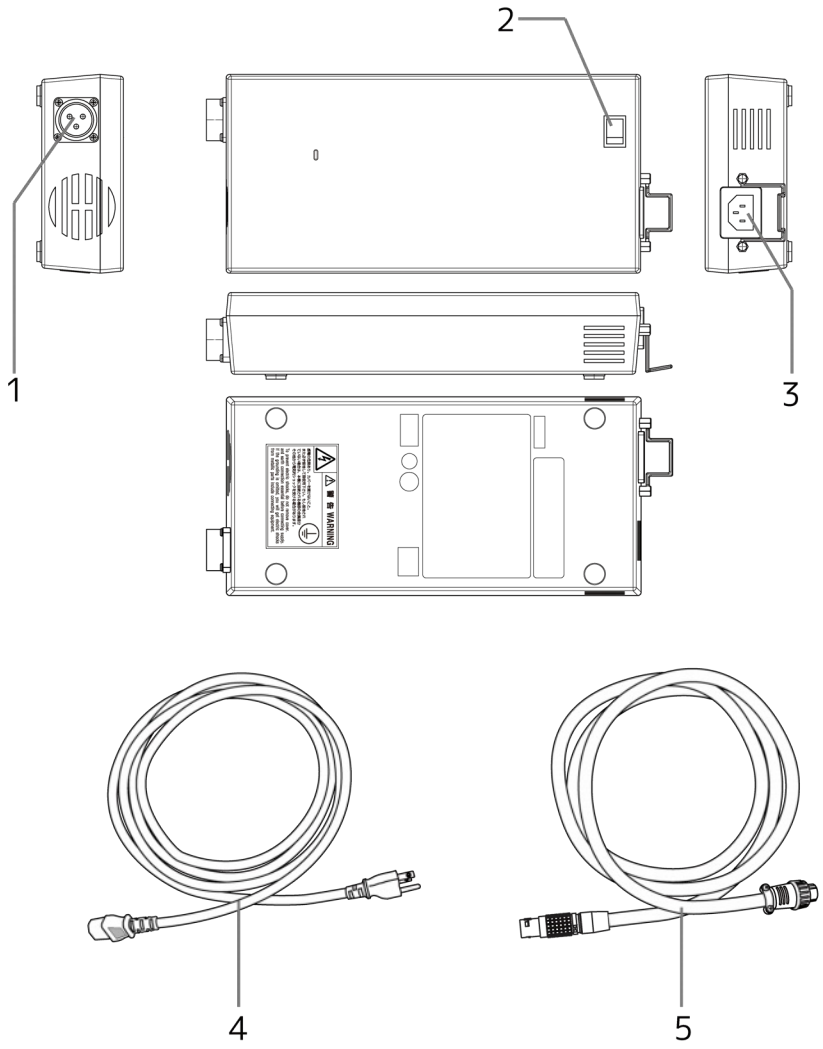
Display 2 and 3 will automatically switch according to changes in the number of terminals connected wirelessly to the camera connected to the Wi-Fi adapter.

When a terminal connects to the camera using the QR code in Display 2, the display switches to Display 3.

When the number of devices connected to the camera via Wi-Fi decreases, the display changes to 2.



AC POWER SYSTEM



1	DC connector
2	Power switch
3	AC connector
4	AC cable
5	DC cable

2

Camera Setup

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Mount the Lens

Four screws secure the mount adapter to the front panel of the camera. F mount on mount adapter
There are two variations of C mounting: This section explains how to mount lens, using F mounting as an illustration.

F The Nikon F mount lens can be attached to the camera on the mount adapter.
Available F Mount Lens Types D Type, G Type

Mount the Lens

(1) Remove the cap.
(2) Attaching a lens to the camera.
(3) Turn MF the lens focus mode. (Only lens with a selector switch)

(1)

Remove the camera mount cap and the back cover of the lens.

(2)

Align and attach the attaching/detaching index of the lens and mount adapter. With a "click" sound in the direction of the arrow.
Turn until it locks.

Attention
- For details on handling the lens, refer to the lens's user's manual.
- F mounting does not support the auto focus function.

Removing the lens from the camera

(1) Removing the lens from the camera.

Holding down the lens release button on the mount adapter in the direction of the arrow
Turn in the direction.

Attention
Be sure to attach the mount cap when no lens is attached to the camera. Inside the mount
Be careful not to get dirt or dirt on them.
With some lenses, vignetting may occur depending on the image resolution. (e.g. Nikon DX Nikkor Lens)

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Adjust the Lens Aperture

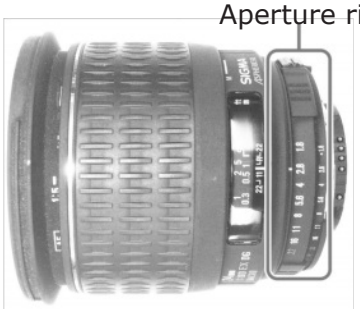
How to adjust the aperture of F-mount lenses is explained. Even if the lens does not have an aperture ring, the aperture can be adjusted with the ring on the camera.

F mount adapter has a mount aperture ring.
Even if you attach a lens without an aperture ring, you can adjust the aperture using the mount aperture ring on the camera body.

Adjust the Aperture

The method for adjusting the aperture differs on lenses without an aperture ring.

If the lens has an aperture ring D Type lens



Example:
SIGMA ASPHERICAL 24mm 1:1.8D
EX DG MACRO

Adjust the aperture with the lens aperture ring

- Turn the mount aperture ring in the direction of CLOSE until it stops.This cancels the mount aperture ring function.
- Next, turn the aperture ring on the lens to adjust the aperture.

Attention

- If using a lens with an aperture ring and the mount aperture ring isn't turned in the CLOSE direction, stopping down will not occur properly even if the aperture is adjusted with the lens aperture ring.
- Make sure that the aperture ring is turned in CLOSE direction-until it stops.

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If the lens does not have an aperture ring G Type lens

Example:
Nikon ED AF-S NIKKOR 70-300mm 1:4.5.6G

Adjust the aperture with the mount aperture ring

•Turn the mount aperture ring to adjust the aperture.

Turn in the direction of CLOSE to stop the aperture.

- •The image will get darker
- •The depth of field will get deeper (the range of focus will be wider)

Turn in the direction of OPEN to open the aperture.

- • image will get brighter
- •The depth of field will get shallower (the range of focus will be narrower)

Since the mount aperture ring indicator mark (●) is a target, adjust while checking the actual

Attention • E type lenses that use an electro-magnetic aperture cannot be used with this camera.

Mount the lens mount adapter

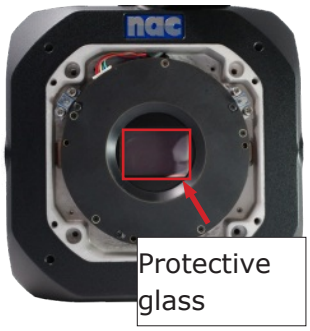
Various lenses can be used by changing the lens mount adapter.

Attention Lens mount adapters are shipped adjusted for each camera in which the adapter will be used. Do not mount it on any other camera.

When mounting the F-mount adapter

1 Turn OFF the camera and the AC adapter.

2 Loosen the lens mount fixing screw attached to the camera.
The C-mount adapter can be removed by loosening four positions.



3 Remove the lens mount attached to the camera.

Attention
- There is protective glass in place when the mount adapter is removed but it's surface should not be touched. If dirt adheres to it, the image quality may be sacrificed
- The protective glass can be easily damaged.
If soiled with oil or such, please take to the retail outlet for cleaning.

4 Mount the F-mount adapter and tighten the four screws.
When installing, make sure that the metal fitting is in the position indicated by the red circle.

When mounting the C-mount adapter

1 Turn OFF the camera and the AC adapter.

2 Loosen the lens mount fixing screw attached to the camera.
The F-mount adapter can be removed by loosening four positions.

3 Remove the lens mount attached to the camera.

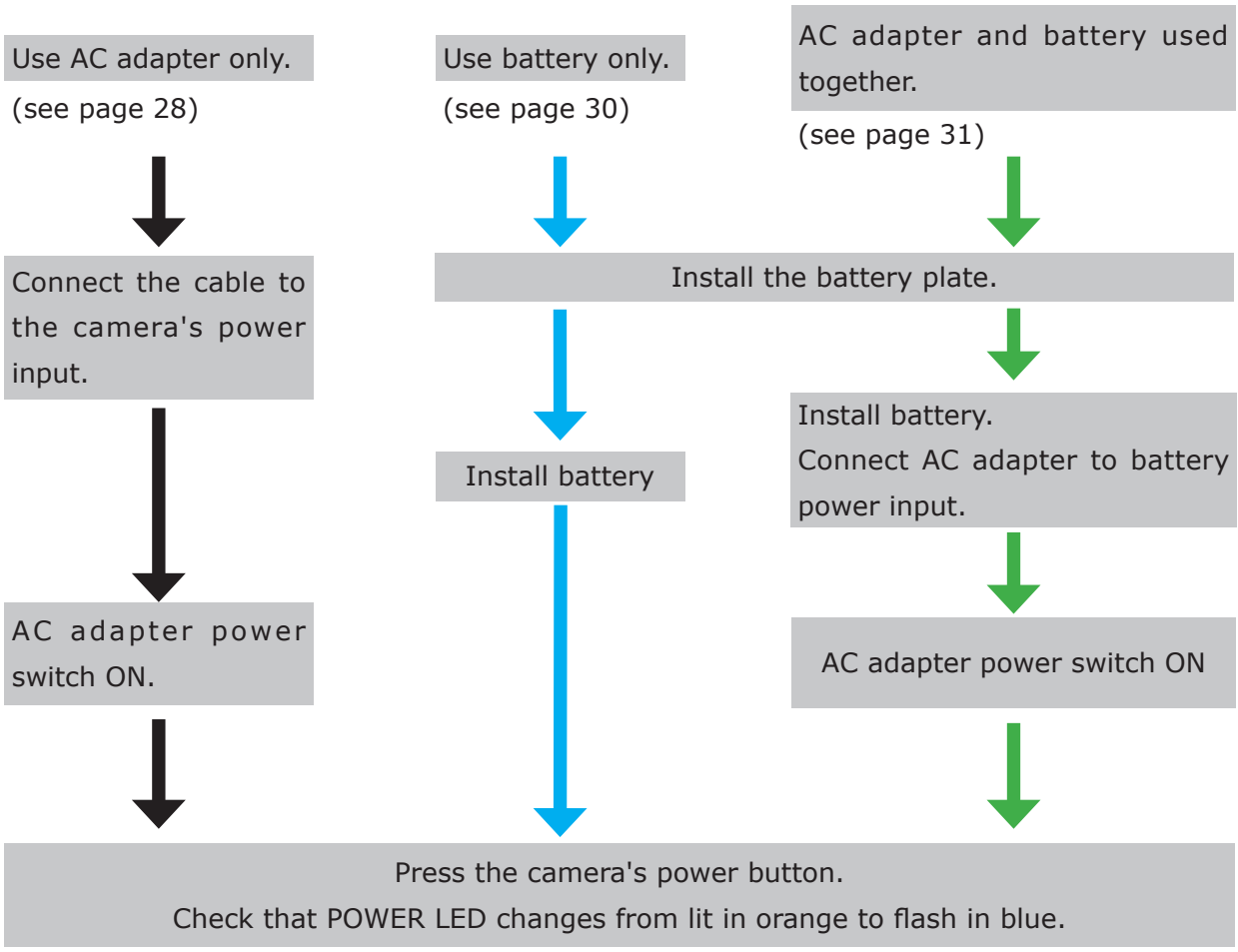
Attention
- There is protective glass in place when the mount adapter is removed but it's surface should not be touched. If dirt adheres to it, the image quality may be sacrificed
- The protective glass can be easily damaged.
If soiled with oil or such, please take to the retail outlet for cleaning.

4 C Attach the mount adapter and tighten the four screws.

Attention
- C Lens mount adapters such as mount adapters are adjusted for each camera. Do not attach to other cameras.
- CS lens and CM lenses cannot be used.
- Be sure to attach the mount cap when no lens is attached to the camera. Also, be careful not to get dust or dirt on the inside of the mount.

Until the power is turned on

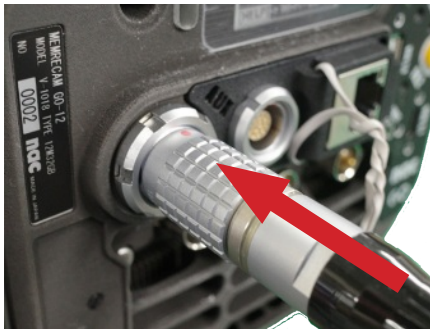
Connect the AC adapter or battery plate to the camera's power connector, depending on the power source to be connected



Use AC adapter only.

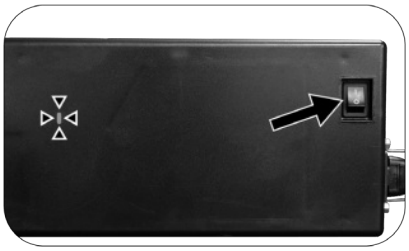
(1) Connect the DC cable of the AC adapter to the camera's power input
(2) Turn on the power switch of the AC adapter
(3) Press the power button on the camera

(1)



Insert the cable all the way until the lock engages.

(2)



The LED on the AC adapter lights up.

(3)

Make sure that POWER LED changes from lit in orange to flash in blue.
The power LED lights in white when startup is complete.

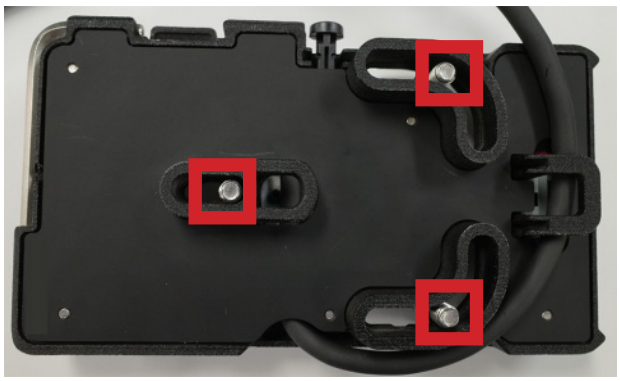
Install the battery plate.

(1) Check the mounting screw holes on the camera.
(2) Check that there are three screws on the battery plate.
(3) Remove the wrench attached to the battery plate.
(4) Screw in the battery plate.

(1)

The position of the screw holes on the left and right sides of the camera.

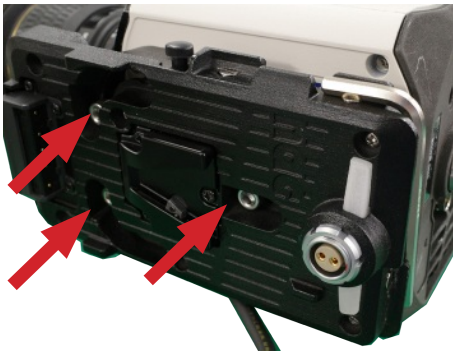
(2)



(3)

Return the wrench to the battery plate.

(4)



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<Check the battery plate before connecting it to the camera.>

Do not connect the power cable to the camera's power input while the LED on the battery plate is lit.

Use battery only.

(1) Install the battery plate. Connect the plate's power cable to the camera.

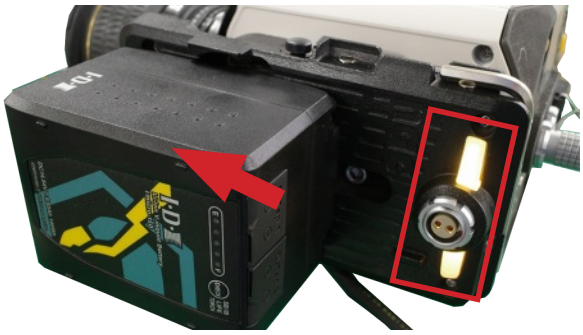
(2) Install the battery.

(3) Press the camera's power button

(1)

Insert the cable all the way until the lock engages.

(2)



The LED on the battery plate lights up.

(3)

Make sure that POWER LED changes from lit in orange to flash in blue.

The power LED lights in white when startup is complete.

Battery plate LED	Battery		Powering the Camera	Battery replacement
	Connecting status	Remaining		
Not lit	Not connected	-	None	-
Yellow	Connecting	Can be used	Battery	Cannot replace
Red	Connecting	Pay attention to the remaining amount	Battery	Cannot replace

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AC adapter and battery used together.

(1) Install the battery plate. Connect the power cable of the plate to the camera.

(2) Install the battery. Connect the DC cable of the AC adapter to the power input of the battery.

(3) Attach the battery to the battery plate.

(4) Turn on the power switch of the AC adapter.

(5) Press the power button on the camera.

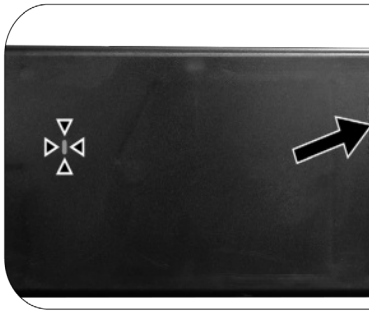
(1)

(2)

(3)

The LED on the battery plate lights up.

(4)



The LED on the AC adapter lights up.

(5)

Make sure that POWER LED changes from lit in orange to flash in blue.

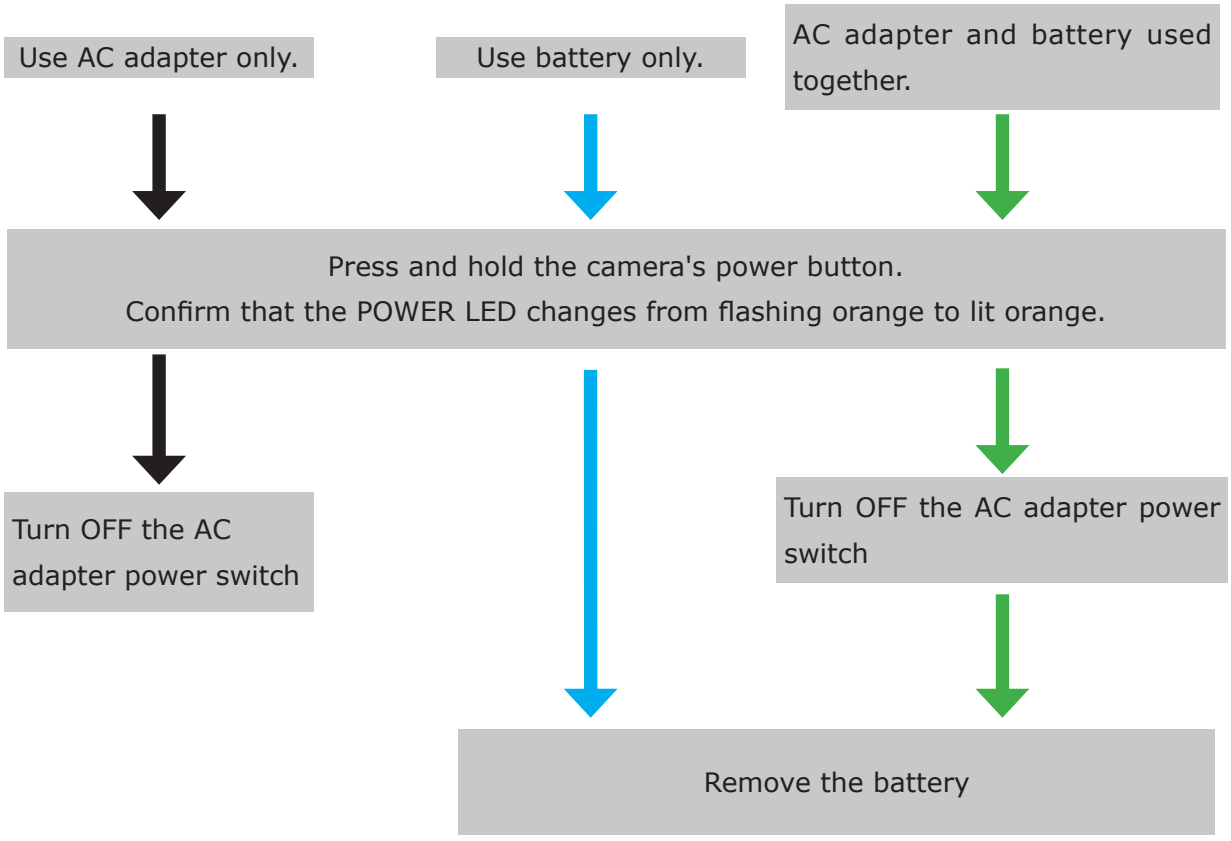
The power LED lights in white when start-up is complete.

Battery plate LED	Battery		AC adapter	Powering the Camera	Battery replacement
	Connecting status	Remaining			
Not lit	Not connected	-	-	None	-
Yellow	Connecting	Can be used	Not connected	Battery	Cannot replace
Red	Connecting	Pay attention to the remaining amount	Not connected	Battery	Cannot replace
Purple	Connecting	Can be used	Connecting	AC adapter	Can be replaced
Blue	Not connected	Can be used	Connecting	AC adapter	Can be replaced
White	Connecting	Can be used	Connecting	AC adapter	Can be replaced

Until the power is turned off

<Check before turning off the power.>

Be sure to download all necessary data to USB media, PC, etc. before disconnecting the AC adapter or battery. The recorded data in the camera will be erased when the camera's power input is completely turned off.



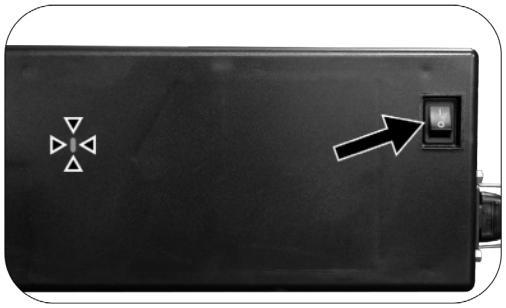
Press and hold the camera's power button.

To shut down the camera, press and hold the power button.

When shutdown is complete, the POWER LED changes from flashing orange to lit orange.

Turn OFF the AC adapter power switch.

Turn off the power switch on the AC adapter.



The LED on the AC adapter turns off.

Remove the battery

Remove the battery while pressing the battery release button on the battery plate.

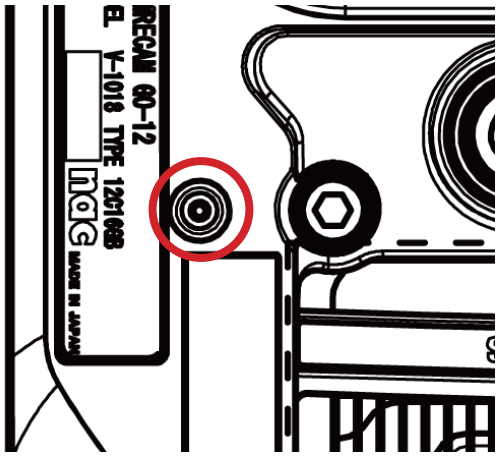
Be sure to shut down the camera before disconnecting the external power supply.

If the external power supply is disconnected before the shutdown is completed, the camera may start up with data recorded the next time the camera is started.
If this happens, press and hold the camera power button to shut down the camera again.

Restore the camera to factory settings

Restore the camera to factory settings

Press and hold the "RESET" button with a thin stick-like object.



Attention

There is a button inside the reset hole.
A thin object like an extended paper clip is best.
The settings you have changed (including LAN settings) and the recording data in the camera will be initialized.
Please reconfirm the camera settings.

Press and hold	Factory Reset Resets all camera settings to factory defaults. Press and hold the "RESET" button until the POWER LED flashes green. Note that changed settings (including LAN settings) and recording data in the camera will also be initialized. Once the camera enters the initialization state, the power will turn off, so turn the power back on.

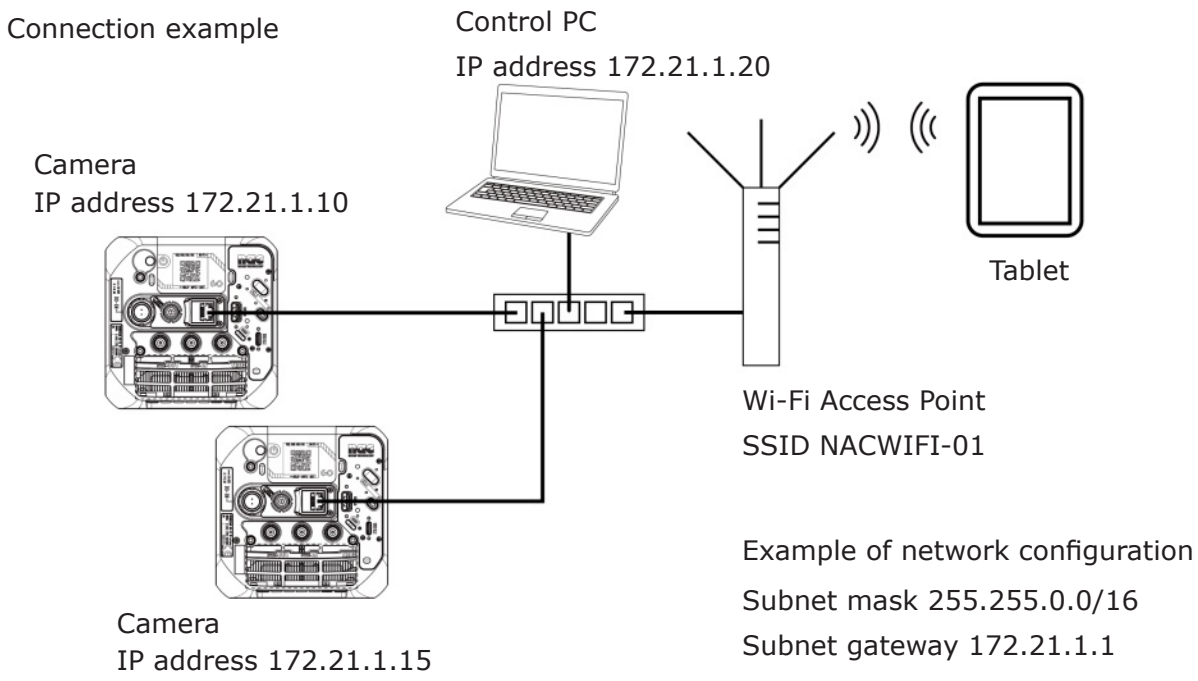
Short press "RESET" button. The camera will restart.	
Short press	Camera restart If the camera stops operating for some reason, it will restart.

(00512)

Connect Camera and tablet PC

Wi-Fi control of the camera with a tablet

The camera can be connected as shown in the connection example, and the tablet can be operated wirelessly.
In the example, the cameras connected to the network are connected through an access point.

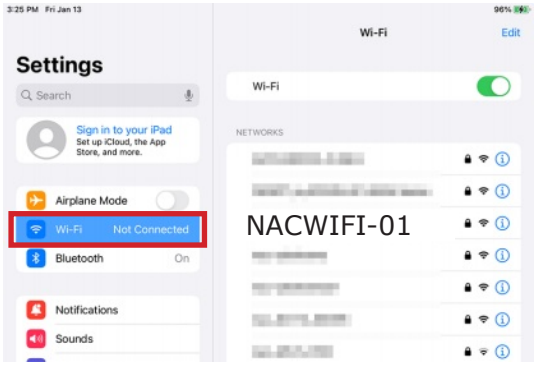


Attention

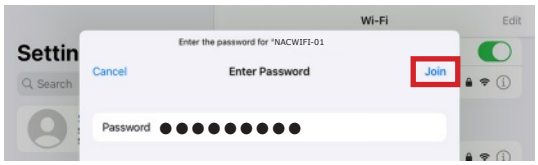
This section lists the fictitious SSID and other information. Set according to the actual usage environment.
SSID may not be displayed on tablets depending on the access point settings.
Please refer to the instruction manual of the device for the access point settings, etc.

Connecting to an Access Point.

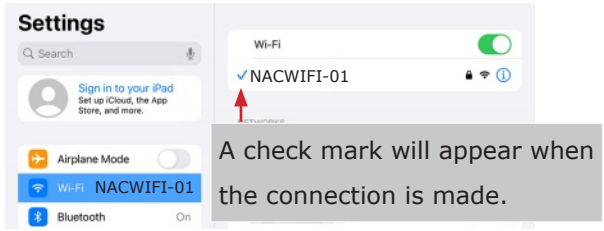
Setting example) For Apple iPad(iPad OS)



1) Select "Wi-Fi" from the "Settings" menu. Tap the Wi-Fi access point "NACWIFI-01".



2) Enter the access point password and tap "Join".



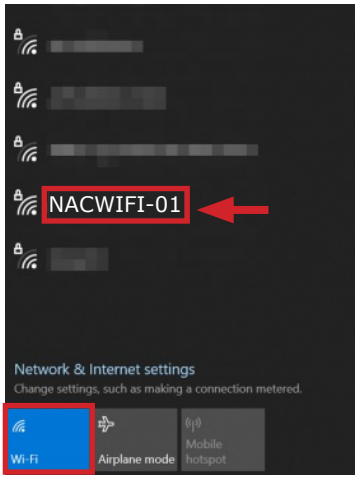
3) Make sure connection to the access point is established.

4) Enter the IP address of the camera to be connected to the browser.

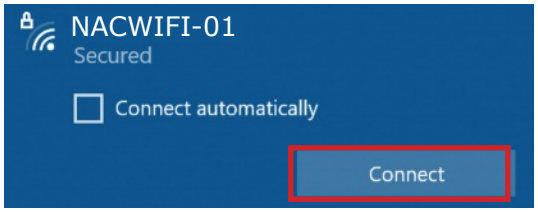
(00512)

Setting example) For Windows

1)Select the Network icon in the notification area.

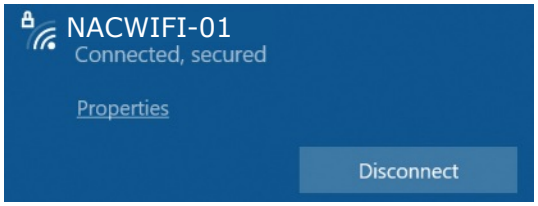


2) Make sure the Wi-Fi button is ON (colored) and select the SSID to be connected.



3) Confirm the SSID and select "Connect". Check "Connect automatically" and select "Connect" to automatically connect to the access point in the future.

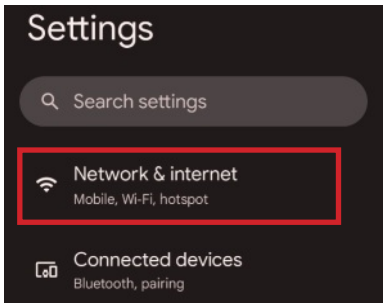
4) Enter the password for the access point in "Enter the network security key" and click "Next".



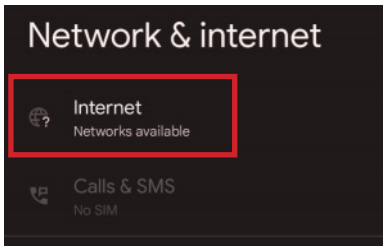
5) When the connection is completed, the message "Connected, Secured" is displayed and the connection is completed.

6) Enter the IP address of the camera to be connected to the browser.

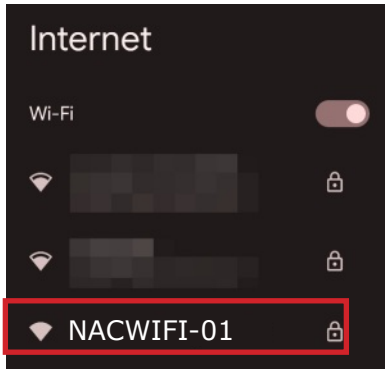
Setting example) For Android



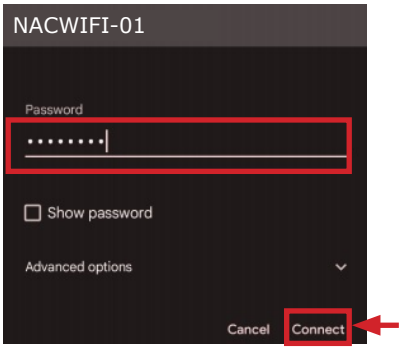
1) Select "Network & internet" from the "Settings" menu.



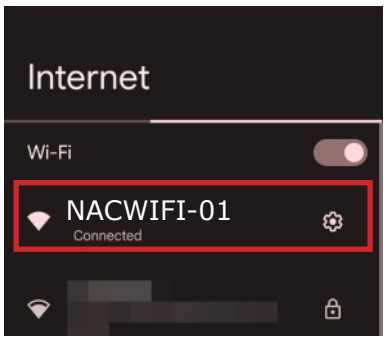
2) Select "Internet."



3) Select the SSID to connect to.



4) Enter the password for the access point in the "Password" field and select "Connect."



5) When the connection is complete, "Connected" is displayed.

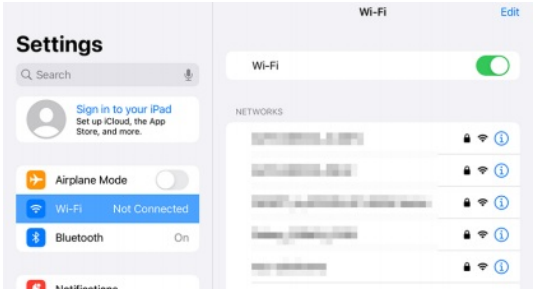
6) Enter the IP address of the camera to connect to the browser.

(00512)

To manually change the tablet's IP address.

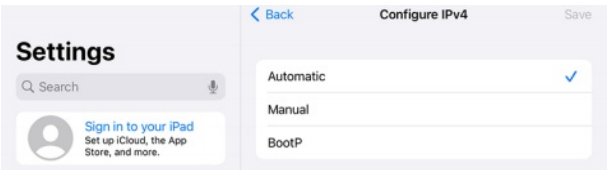
DHCP (automatic IP address assignment function) may not be available in some network environments. Change the tablet's IP address setting manually.
In the example, the IP address is set to "172.21.1.50".

Setting example) For Apple iPad(iPad OS)

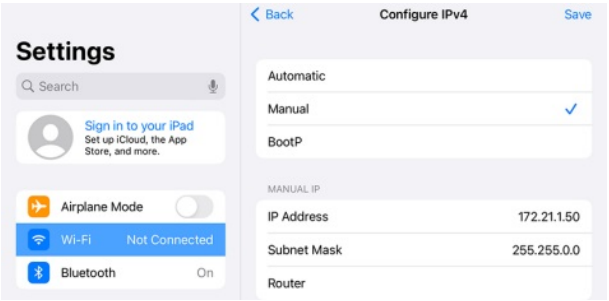


1) Tap the symbol next to the name of the network SSID connecting under "Wi-Fi" in the "Settings" menu.

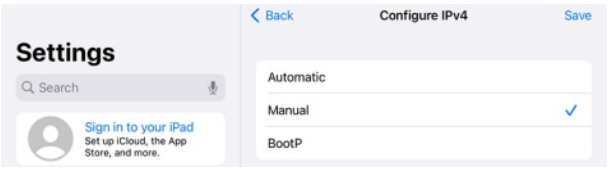
2) Tap "Configure IP".



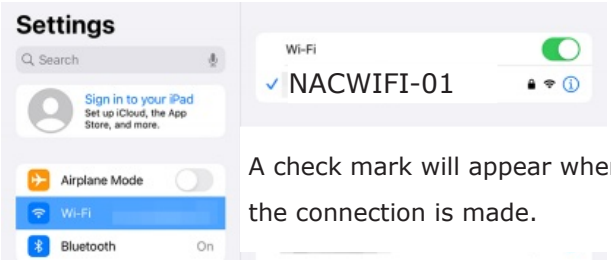
3) Tap "Manual.



4) Enter the information in the "MANUAL IP" field.
In the example, each item is entered as follows
IP address 172.21.1.50
Subnet mask 255.255.0.0



5) Tap "Save" in the upper right corner.

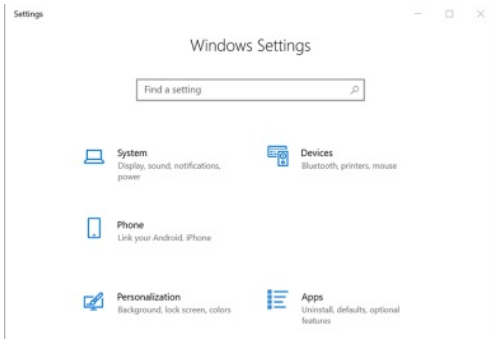


A check mark will appear when the connection is made.

6) Make sure connection to the access point is established.

(00512)

Setting example) For Windows



1) Select "Network and Internet" from the "Windows Settings" menu.

2) Select the SSID to be connected and select "Properties".

3) Select "Edit" for IP settings.

4) IP setting edition
Change to "Manual".
Set IPv4 to on.
The following contents are entered in each item. IP address 172.21.1.50
Subnet prefix length 16
Gateway 172.21.1.1
After completing the setting, select "Save".

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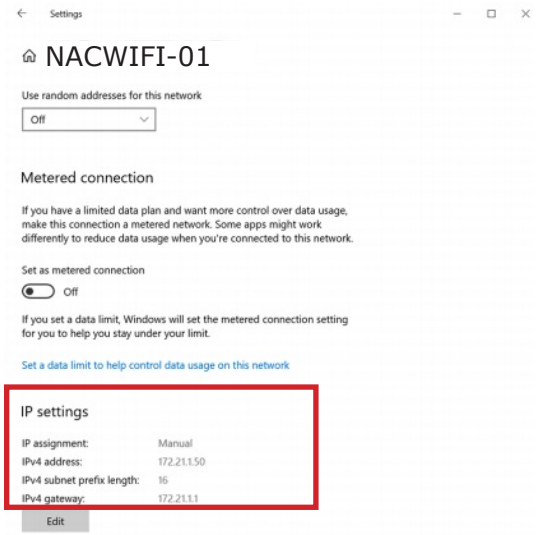
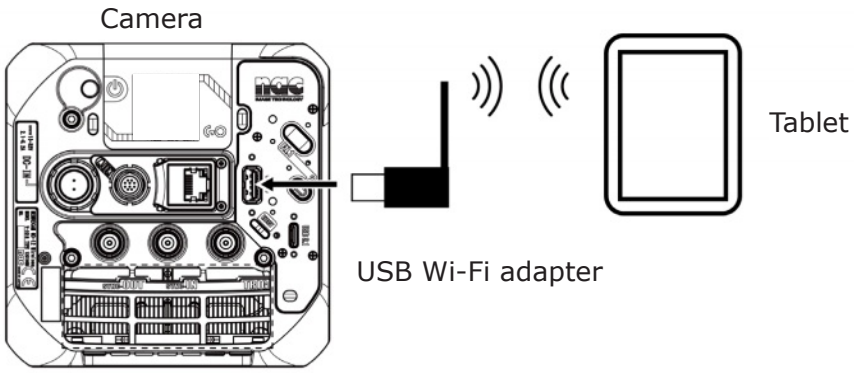


5) Verify the settings.

Connect the tablet using a USB Wi-Fi adapter

By connecting a USB Wi-Fi adapter, a Wi-Fi connection can be established without the need for a wireless router.

Connection example



Restrictions

- The USB Wi-Fi adapter must support access point mode.
- Only the 2.4 GHz frequency band of the USB Wi-Fi adapter can be used.

Attention For Wi-Fi adapters, please contact us or our distributors.

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GO-Touch

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GO-Touch Part Descriptions 47

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About GO-Touch

GO-Touch, a web application that can be used on PCs and various tablets, is included with the camera. The camera's angle of view, focus, brightness, etc. can be adjusted right near the camera.

■GO-Touch Features

Use with tablet devices

Control and live display of the camera is possible with a tablet device.

Browser Control

Operates on the tablet's standard web browser.

No application installation is required.

■GO-Touch operating environment

nac checks the operation with the following tablet. (as of February 2023)

Type	Manufacturer and product name	OS	Web browser
Windows tablet	Microsoft Surface Pro 4	Windows 10 Pro (Version 21H2)	Microsoft Edge
Android tablet	Google Pixel 5	Android 11	Chrome
iOS tablet	Apple iPad Pro	iPadOS (Version 16.2)	Safari

Attention

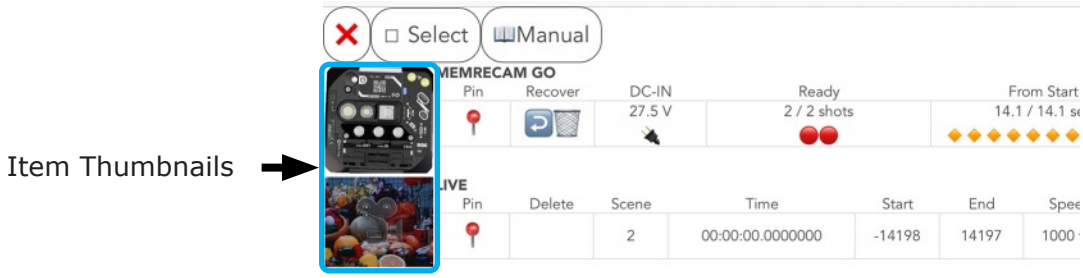
• Even if it is described OS · browser, etc., it may not operate properly due to upgrading in the future etc. Please note.

• GO-Touch cannot be used even if the camera is directly connected to an Android tablet or iOS tablet via wired LAN using a conversion adapter, etc.
Use a Windows tablet for direct wired LAN connection between the camera and the tablet.

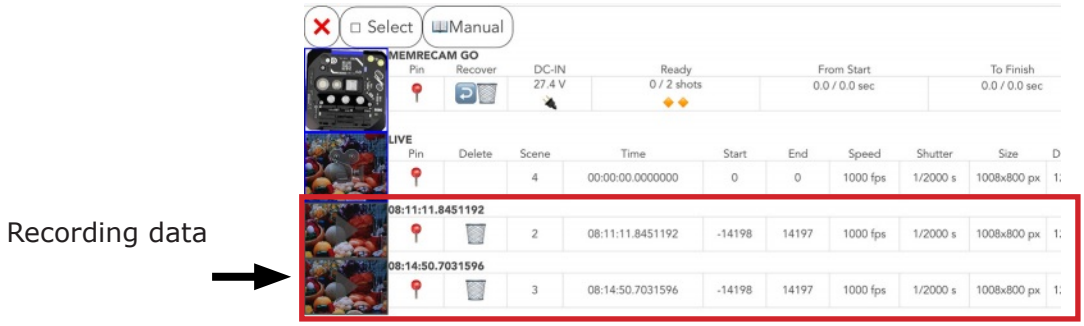
GO-Touch Part Descriptions

This section describes each part of GO-Touch.

GO-Touch Part Names



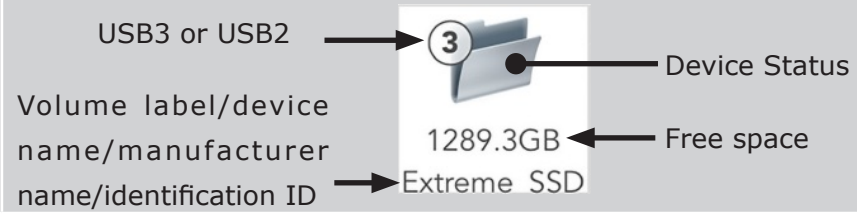
MENU screen. When there is no recording data in the camera.



MENU screen. When there is recording data in the camera.

MENU screen.

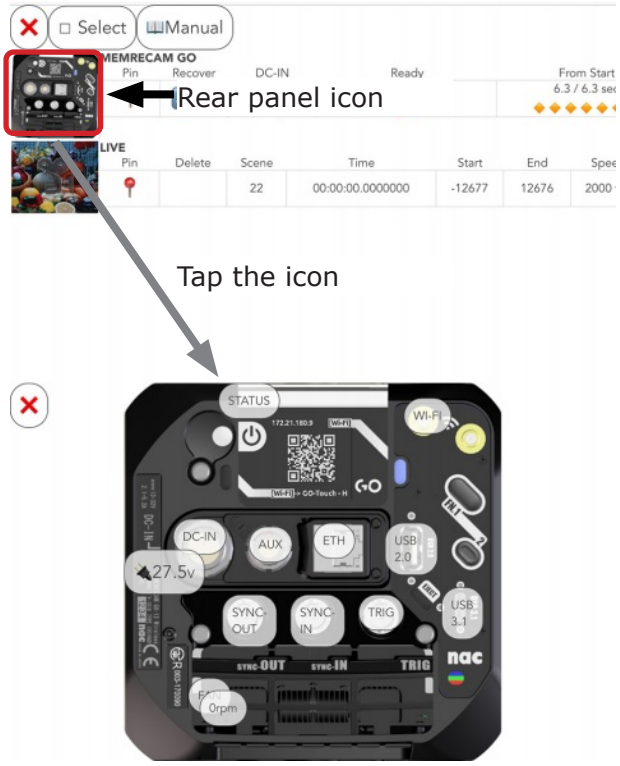
Recording data in the camera and a USB storage device connected to the camera for storage

USB storage for storage	
Icon Description	

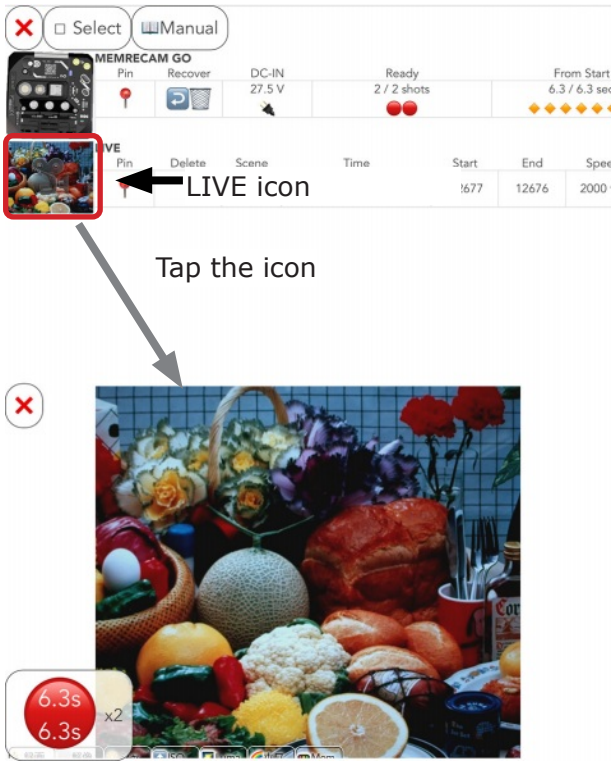
Icon				
Operation	Operates as a USB 3.	Operates as a USB 2.	Operates as a USB 3.	Operates as a USB 3.
Can save data	OK	OK	NG	NG
Press EJECT to remove	Required	Required	Not required	Not required
Device Status	Can be used.	Can be used.	The device needs to be re-connected.	Initialization is required for PC, etc.

Attention Depending on the USB external recording device, writing speed may vary, affecting recording time.
Please check the specifications and performance of the USB device before connecting it to the camera.

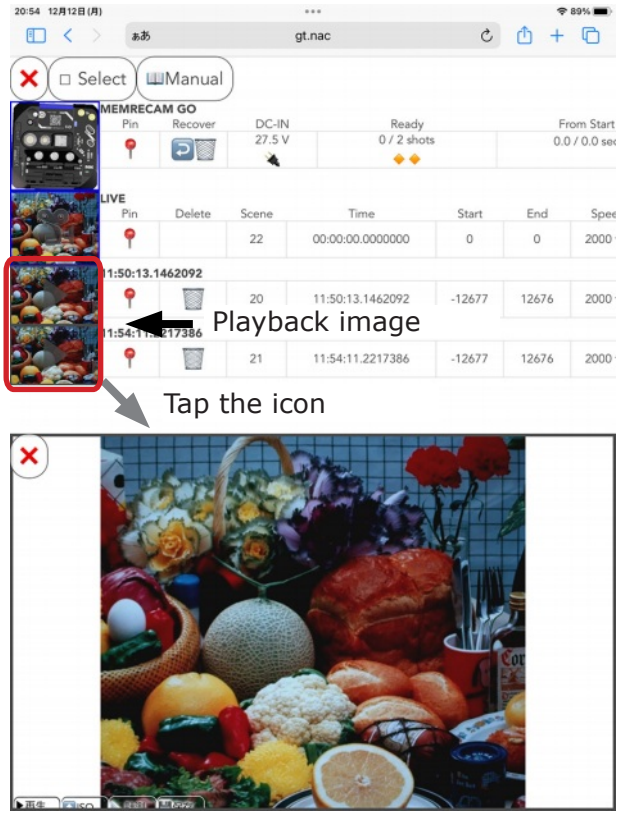
Tap the item thumbnail to display.



The rear panel is displayed.



LIVE screen is displayed.



Playback screen is displayed.

Multiple simultaneous displays are also possible.

Attention When multiple playback images are displayed, playback speed and other factors depend on the specifications of the PC or tablet and the communication speed.

Tap the thumbnail once more with the item displayed once more to close the corresponding screen. Tap the "(X)" button to close the corresponding screen.
Tap "(trash)" next to the thumbnail of the playback image to delete the corresponding image.
The border of the LIVE screen displays the same color as the camera's MODE_LED.

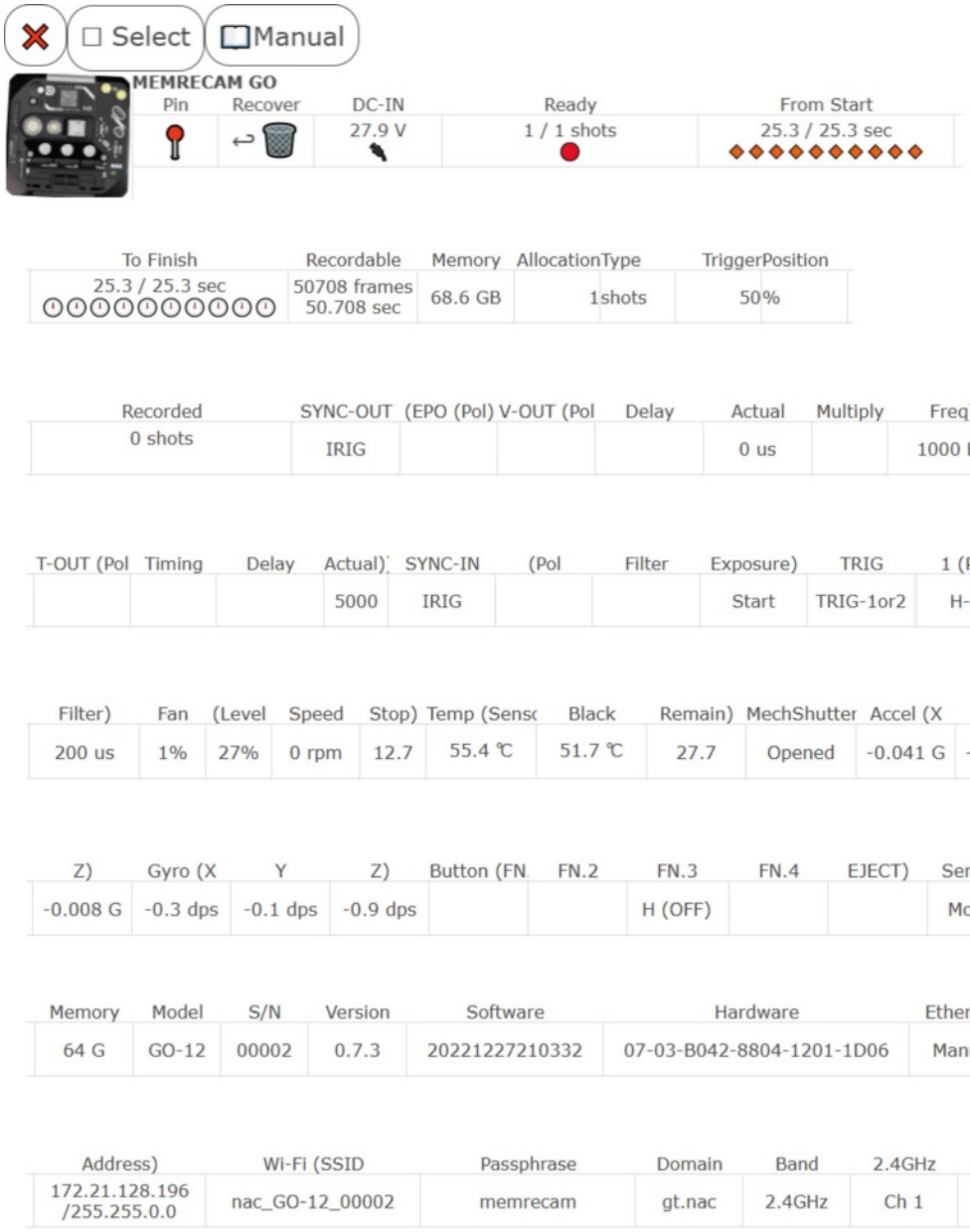
Rear panel

The same connectors and buttons are displayed on the rear panel of the camera.

Tap FN.1/2 button. The corresponding function (trigger issuance/recording redo) will operate.
Tap the e-paper area to switch the e-paper screen.

GO-Touch setting screen

Scroll horizontally to display the setting screen. The following figure shows a list of setting items.



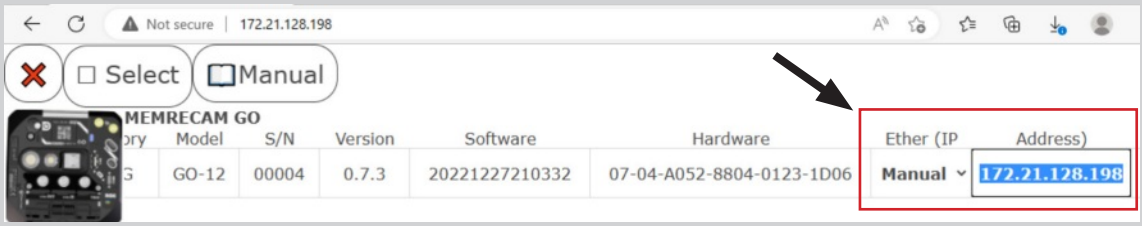
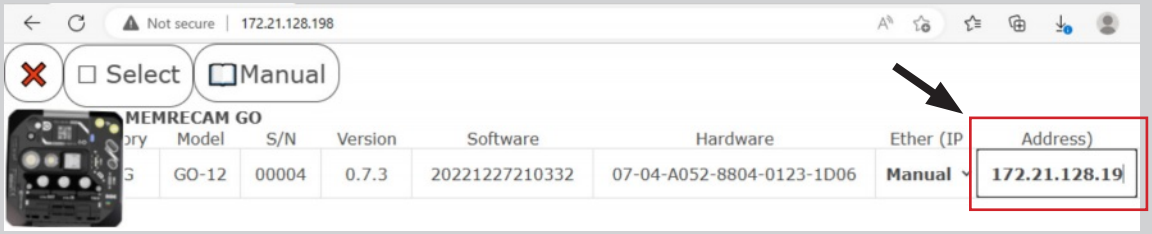
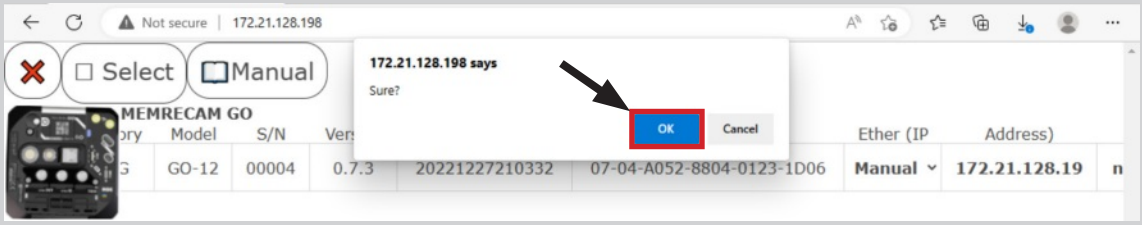
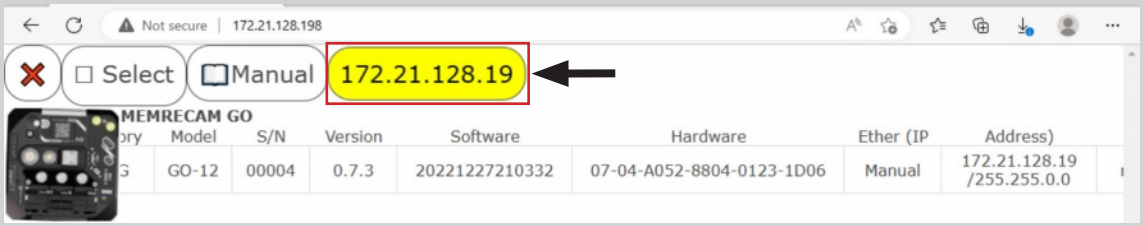
Pin	Always be visible in the screen.
Recover	Attempts to restore the images of deleted files. Images whose memory has been overwritten cannot be restored.
Clean	Not used.
DC-IN	Displays input voltage.
Ready	Remaining number of recordable triggers. "  " indicates the number of recordings that can be continuously recorded, "  " indicates the number of recordings that can be recorded after a short delay. A total of up to 10 items are displayed.
From Start	This is the number of seconds recorded as the video before the trigger input. No video will be recorded before this time. Each "  " icon indicates one second, up to a maximum of 10 seconds.
To Finish	The number of seconds recorded after the trigger input. No video will be recorded before this time after the trigger input. Each "  " icon is one second, and up to 10 seconds can be displayed.
Recordable	Number of frames that can be recorded, time.
Memory	Maximum memory capacity for recording.
Allocation Type	Number of divisions of the recording memory.
Trigger Position	Trigger position.
Recorded	Number of shots recorded.
SYNC-OUT	SYNC-OUT Connector Setting (IRIG).
EPO(Pol)	Not used.
V-OUT(Pol)	Not used.
Delay	Not used.
Actual	Not used.
Multiply	Not used.
Freq	Not used.
T-OUT (Pol)	Not used.
Timing	Not used.
Delay	Not used.
Actual	Not used.
SYNC-IN	SYNC-IN connector settings (IRIG)
Pol	Not used.
Filter	Not used.
Exposure	Exposure position relative to the reference signal of the recording frame (start of exposure).

TRIG	Trigger setting (TRIG1 enabled)
Pol	Polarity setting (negative polarity fixed: contact input)
Filter	Filter Settings (200us)
Fan	Fan setting (1%: Silent)
Level	Fan rotation status (varies according to internal temperature)
Speed	Fan speed
Stop	Indicates a temperature grace that can be operated with silence.
Clock	Not used.
Temp Sensor	Sensor temperature
Black	Sensor temperature at black balance
Remain	Not used.
MechShutter	Mechanical shutter status by black balance (close start → close end → open start → open end)
Accel X	X Axis Acceleration [G] Positive number when accelerating to the right of the rear panel (approx. "-1" when the rear panel is installed at 90 degrees clockwise)
Y	Y Axis acceleration [G] Positive number when accelerated to the lower surface direction (approx. "-1" when installed horizontally)
Z	Z Axis Acceleration [G] Positive number when accelerating towards the front panel (approx. "-1" when pointing directly upward)
Gyro X	X Axis Angular Velocity [deg/sec] Positive when main unit is facing up (Tilt up)
Y	Y Axis Angular Velocity [deg/sec] Positive when main unit is pointing to the right (right pan)
Z	Z Axis Angular Velocity [deg/sec] Tilting the main unit to the right is a positive number (Right Roll)
Button FN.1	Not used.
FN.2	Not used.
FN.3	FN.3 (Wi-Fi) The pressing status is expressed as H (not pressed)/L (pressed) and ON (enabled)/OFF (disabled).
FN.4	Not used.
EJECT	Not used.

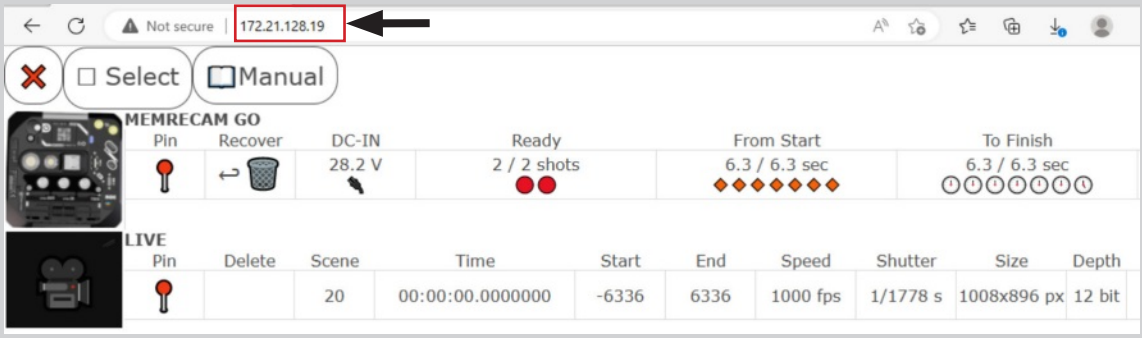
Sensor	Sensor type (color/monochrome)
Memory	Built-in memory
S/N	Serial number
Version	Camera firmware version
Software	Firmware Information
Hardware	Camera Hardware Information
Ether IP	MANUAL: Manually configure network settings. AUTO: Automatic network configuration is obtained (DHCP).
Address	IP address and subnet mask of the camera's wired LAN. Only IP address can be changed
Wi-Fi SSID	SSID of the Wi-Fi adapter. (Default setting: nac_GO-Camera type_CID) Only one-byte alphanumeric characters can be set. How do I change it? (see page 58)
Passphrase	Change the password for connecting to the Wi-Fi (Default: memrecam). Only one-byte alphanumeric characters can be set. • 8 Set more than one character. How do I change it ? (see page 58)
Domain	Connected network domain (usually gt.nac)
Band	Setting the frequency band of Wi-Fi adapter. Only 2.4GHz can be used.
2.4GHz	2.4 GHz channel. Changing channels may improve Wi-Fi connectivity in environments with radio interference or poor wireless conditions. Can be set from Ch 1 to Ch 11. How do I change it ? (see page 59)
5GHz	Not used.
Stealth	Turn ON/OFF the function to notify the SSID of the Wi-Fi to tablets and other devices. How do I change it ? (see page 59)
Clients)	When using Wi-Fi, set the number of simultaneous connections for tablets and other devices that can be connected (default 20)

IP address setting for wired LAN

Please change the wired LAN settings when necessary depending on usage environment.

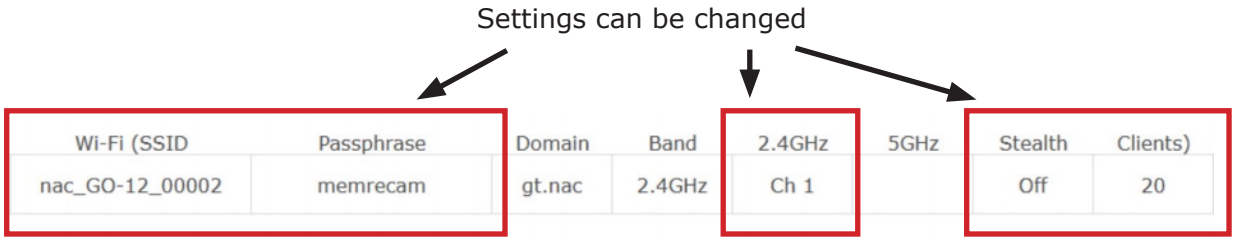
How to set up	
1)	Make sure Ether IP is set to "Manual". Tap Address to enter. 
2)	Enter the IP address. In the example, "172.21.128.19" is entered. 
3)	To activate the setting, tap on a blank spot on the screen. A confirmation message will appear. Tap "OK" to change the setting. 
4)	After changing the settings, the IP address of the camera will be changed and it cannot be controlled from the connected browser. Please tap the IP address displayed in yellow. 

5) The IP address of the browser is changed and the camera can be controlled



Wi-Fi Settings

Change the Wi-Fi settings when necessary depending on usage environment.



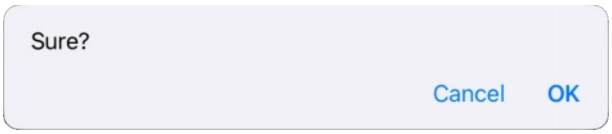
Setting point	Description.
Wi-Fi SSID	SSID of the Wi-Fi adapter. (Default setting: nac_GO-Camera type_CID) Only one-byte alphanumeric characters can be set. How do I change it? (see page 58)
Passphrase	Change the password for connecting to the Wi-Fi (Default: memrecam). Only one-byte alphanumeric characters can be set. 8 Set more than one character.
2.4GHz	2.4 GHz channel. Changing channels may improve Wi-Fi connectivity in environments with radio interference or poor wireless conditions. Can be set from Ch 1 to Ch 11.
Stealth	Turn ON/OFF the function to notify the SSID of the Wi-Fi to tablets and other devices.
Clients	When using Wi-Fi, set the number of simultaneous connections for tablets and other devices that can be connected (default 20)

If the changed settings are to be initialized

Reset the camera to factory default settings. (see page 35)

Common Items　Enable changed settings?

To activate the setting, tap on a blank spot on the screen.



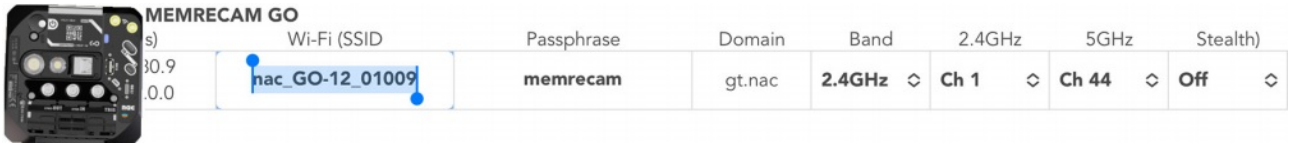
A confirmation message will appear.
Tap "OK" to change the setting.

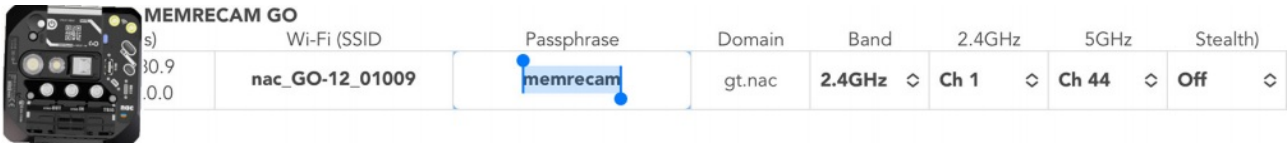
How to change Wi-Fi SSID and Passphrase

Tap each item to enter text.
Enter the item to be changed.
To activate the settings after changes have been made, please follow the instructions in "Common Items Enable changed settings?" to make the settings effective after changes are made.

Configuration Items	Input Restrictions
Wi-Fi SSID	Only one-byte alphanumeric characters can be used. Spaces (blanks) cannot be used.
Passphrase	Only one-byte alphanumeric characters can be used. Space (blank) cannot be used. Please set at least 8 characters.

Attention The expected operation will not be achieved with settings that do not meet the above restrictions.
In this case, it is recommended to restore the factory default settings.
(see page 35)





Attention The Wi-Fi SSID and Passphrase will need to be changed again to change the connection to the tablet or PC after the change.
Change the Wi-Fi SSID or Passphrase of the camera registered on your tablet or PC.
It is recommended to reconnect with the QR code on the camera's e-paper.

(00512)

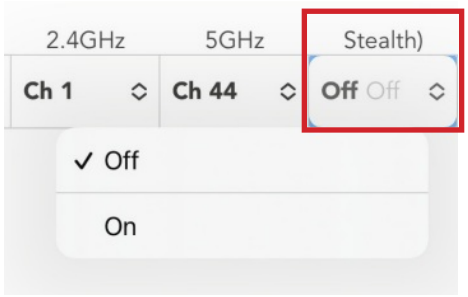
How to set 2.4GHz channels

Tap the 2.4GHz item to display a pull-down menu. Tap the item to be set from the menu.
To make the setting effective after the change, please follow the instructions in "Common Items Enable changed settings? to make the setting effective after the change.

2.4GHz

How to set up Stealth

When the Stealth feature is turned on, the SSID cannot be found by tablets and PCs.
Tap an item to display a pull-down menu. Tap the item you want to set from the menu.
To make the setting effective after the change, see "Common Items Enable changed settings? " to make the setting effective after the change.



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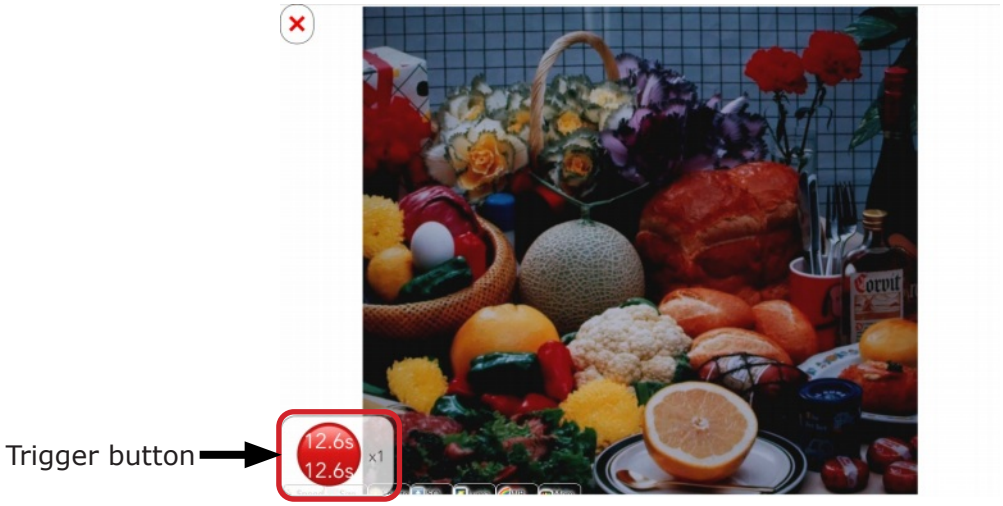
LIVE

View the current camera image and set the recording settings.
Tap the image to hide the menu and buttons and display only the image.
Tap again to display the menu and buttons.



Displaying the Settings Menu
Display of the current camera image and recording settings can be made.

(1) Slide up the LIVE screen range

(2) The setting menu slides.

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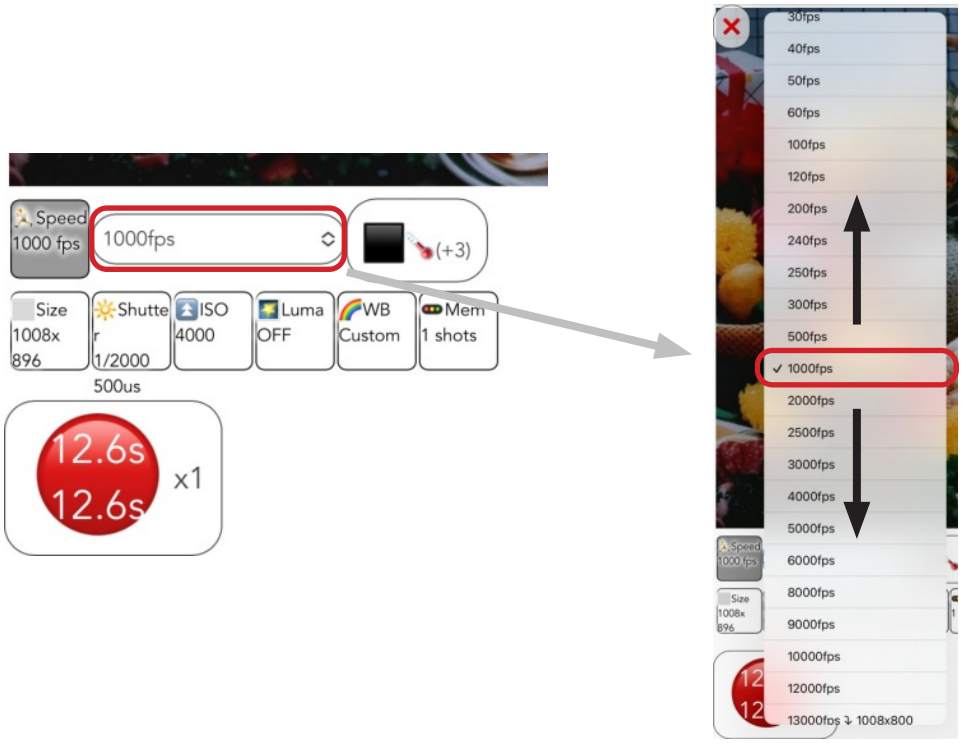
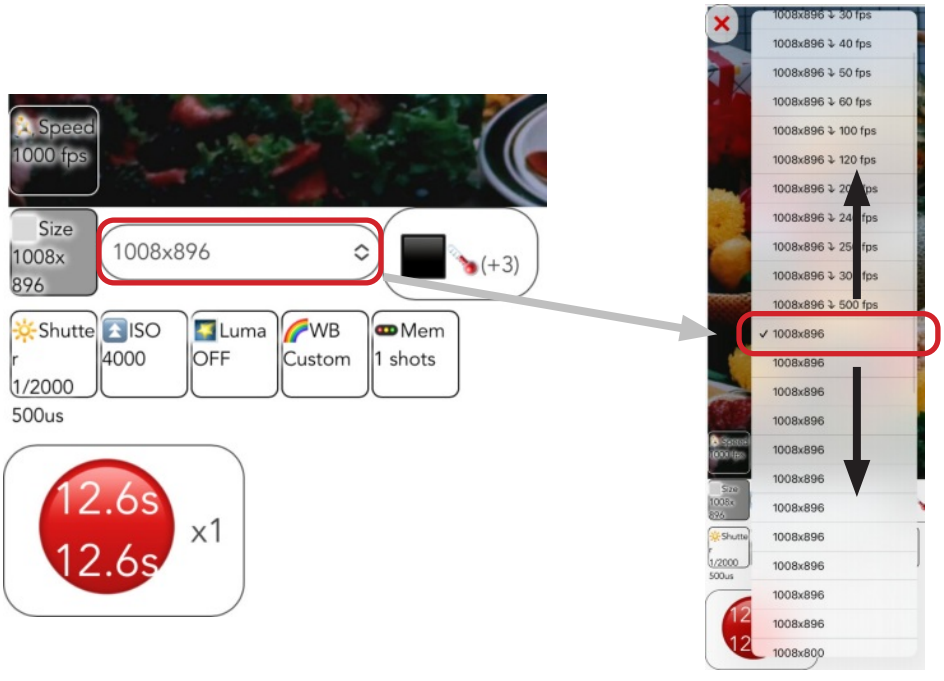
Setting item	Setting details
Speed	Set the recording speed.
Resolution	Set the resolution.
Shutter	Sets the shutter speed.
ISO	Set ISO sensitivity.
Luma	Display the brightness graph and set the metering area.
WB	Set the white balance.
Mem	Set the memory segment and trigger position.

Speed



Size



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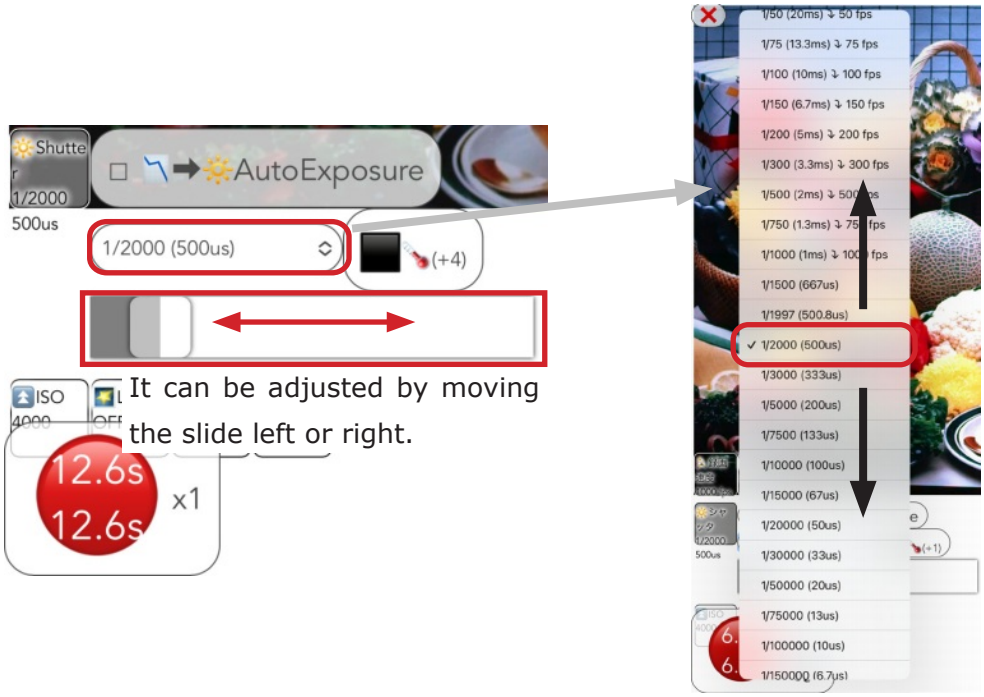
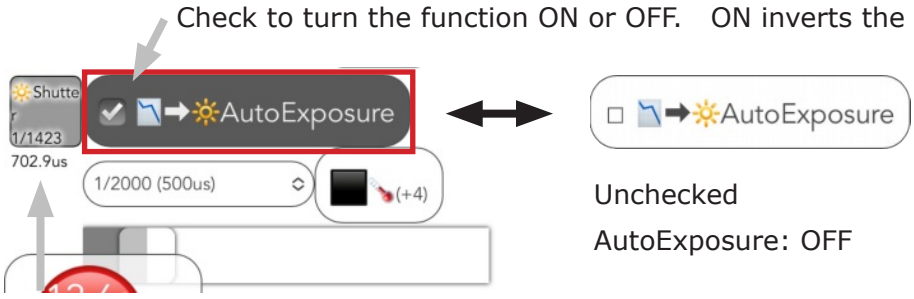
Shutter



AutoExposure

When this check box is selected, the camera determines the brightness of the subject and automatically adjusts the shutter speed. The brightness of the subject to be judged for automatic exposure is within the specified area that can be set in Luma.

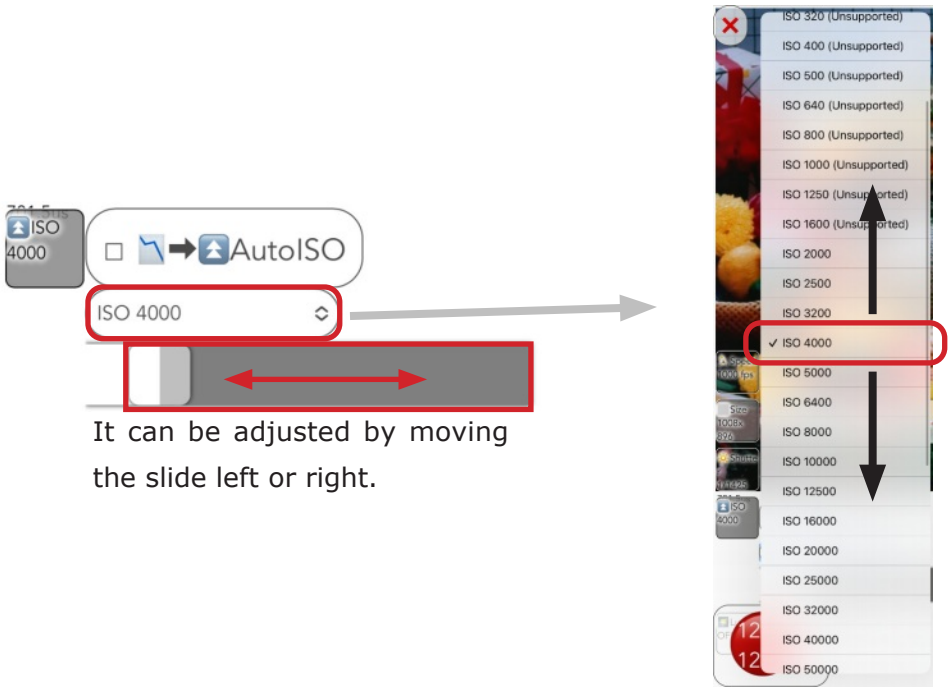
(see page 65)



The shutter speed adjusted by the camera is displayed in real time.

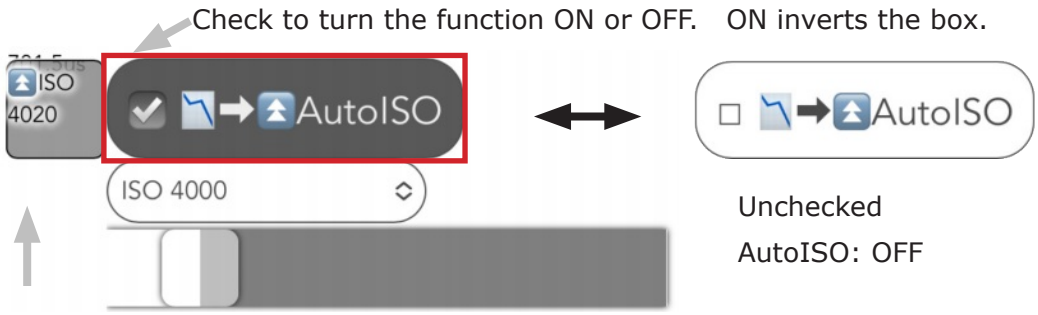
AutoExposure use instructions	
1)	Check the box; AutoExposure is turned on.
2)	The camera adjusts the shutter speed. Adjust the brightness of the subject and the aperture of the lens. At this stage, the shutter speed is updated as needed and is reflected in the recorded video.
3)	If unchecked, shutter speed is fixed to the adjusted value

ISO



AutoISO

When this checkbox is selected, the camera determines the subject brightness and adjusts ISO speed



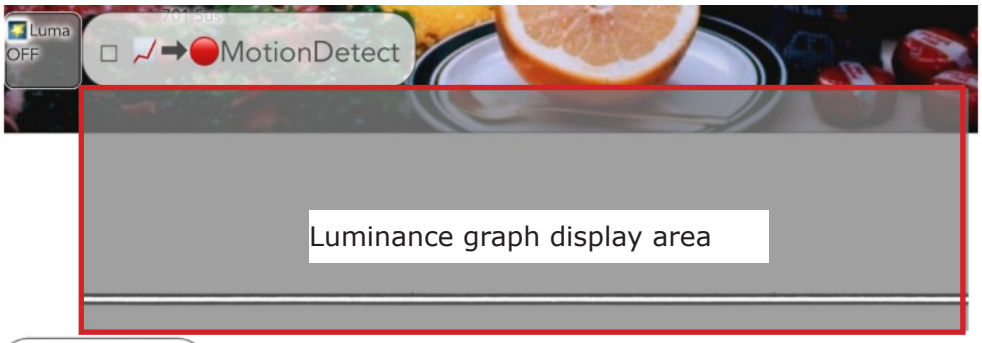
The ISO sensitivity adjusted by the camera is displayed in real time.

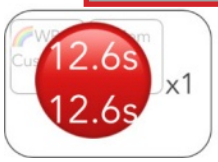
AutoISO use instructions	
1)	Check the box; AutoISO is turned on.
2)	The camera adjusts the ISO sensitivity. Adjust the brightness of the subject and the aperture of the lens. The ISO sensitivity is not set at this stage and is not reflected in the recorded video.
3)	Unchecking the box sets the ISO sensitivity.

Luma

Luminance graphs can be displayed, areas can be specified, and MotionDetect can be set.MotionDetect sets can be checked for ON/OFF.

CHECK "MotionDetect" is the same function as "Image Trigger" of our conventional model.





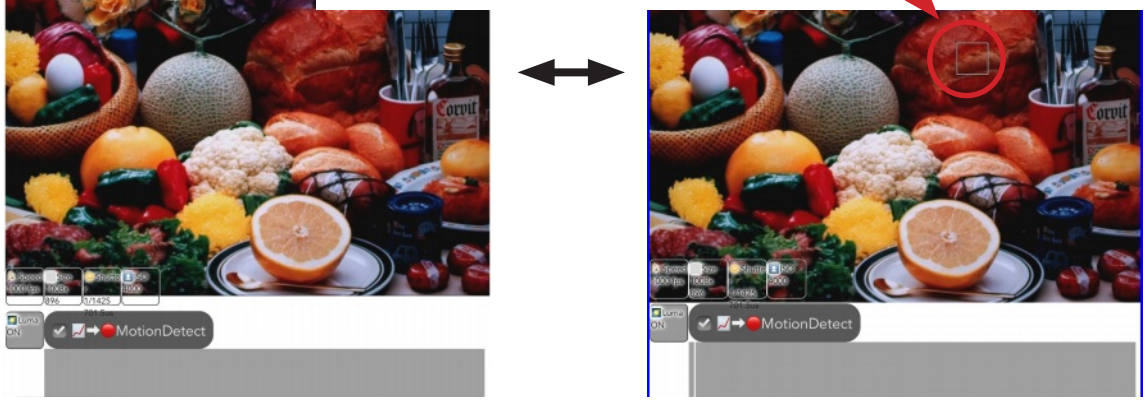
The vertical axis represents the luminance average.
The horizontal axis is the time axis. The right end is the latest.

Check to turn the function ON or OFF. ON inverts the box.

Unchecked
MotionDetect: OFF

The luminance graph can be displayed and the designated area for MotionDetect can be set by tapping on the screen.Two types of area designation are available: "entire screen" or "63 pixels x 64 pixels".

Tap the desired area to display a white frame.
Tap inside the white frame to switch the area specification to the entire screen.



When the entire screen is set When area range is set

Attention The luminance graph display may temporarily change when switching area designations.

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MotionDetect (luminance detection automatic trigger input function)

This function automatically inputs a trigger when there is a sudden change in luminance within the metering area set by Luma. It responds quickly to changes in luminance, with a delay of approximately one frame before the trigger is input.

Specify the area.
The example specifies the strobe's flash part.

The trigger input for recording is triggered by the strobe light.

Combined use of MotionDetect + AutoExposure

Using this function together with Luma is effective for reducing overexposure to the subject when the luminance changes suddenly within the metering area set by the camera.

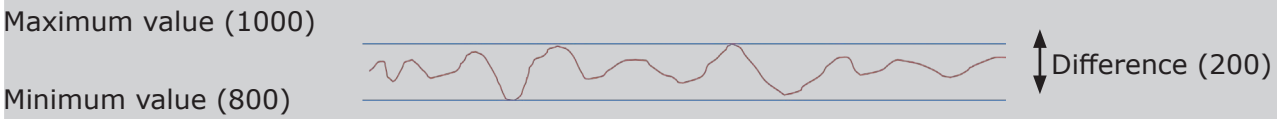
AutoExposure may not be effective for some luminance changes.

Image trigger threshold calculation

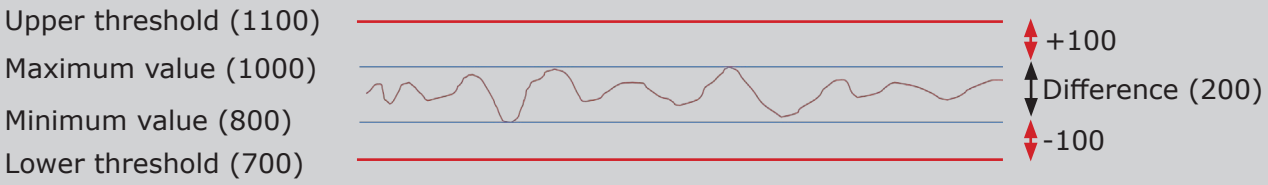
The image trigger threshold calculation is performed by the following internal process, taking into account both cases of large and small flicker due to illumination.

(This is a schematic diagram and differs from the actual scale.)

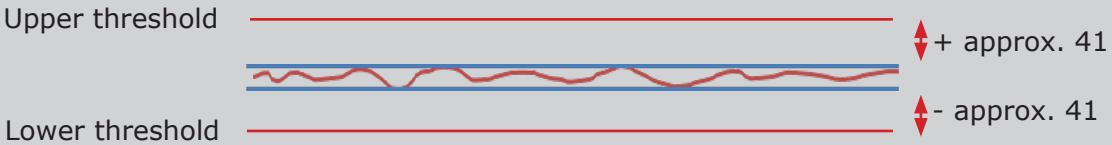
1) Calculates the maximum and minimum values of the sum of luminance in a specified area and the difference between them.



2) Add 50% of the difference between the maximum and minimum to the maximum and minimum values



3) Add 1% of the Luminance Sum Range to each threshold calculated in step 2.
If the maximum value that the luminance average can take is 4095, it will be about +41 and -41.

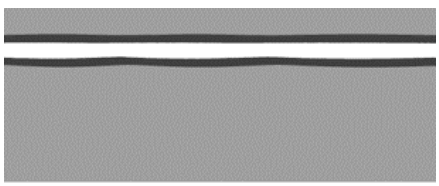


About the luminance graph

The values are displayed within the range of possible luminance averages (e.g., 0 to 4095).

The upper and lower black lines indicate the upper and lower image trigger thresholds.

Example of a case with flicker



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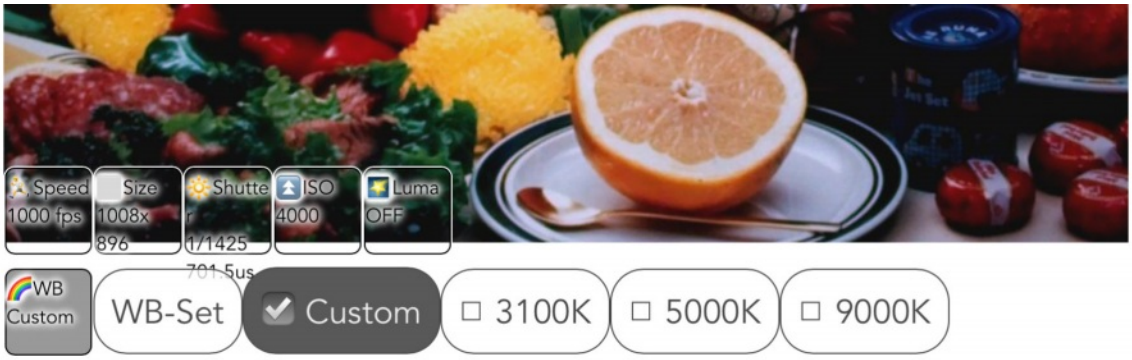
WB

White balance can be set.



Button	Function
WB-Set	Before recording, take a picture of a white object (e.g., paper) and precisely adjust the white balance value.
Custom	Factory setting.
3100K	Used when the color temperature of the light source is known. The color temperature of the light source can be set to 3100K, 5000K, or 9000K.
5000K	
9000K	

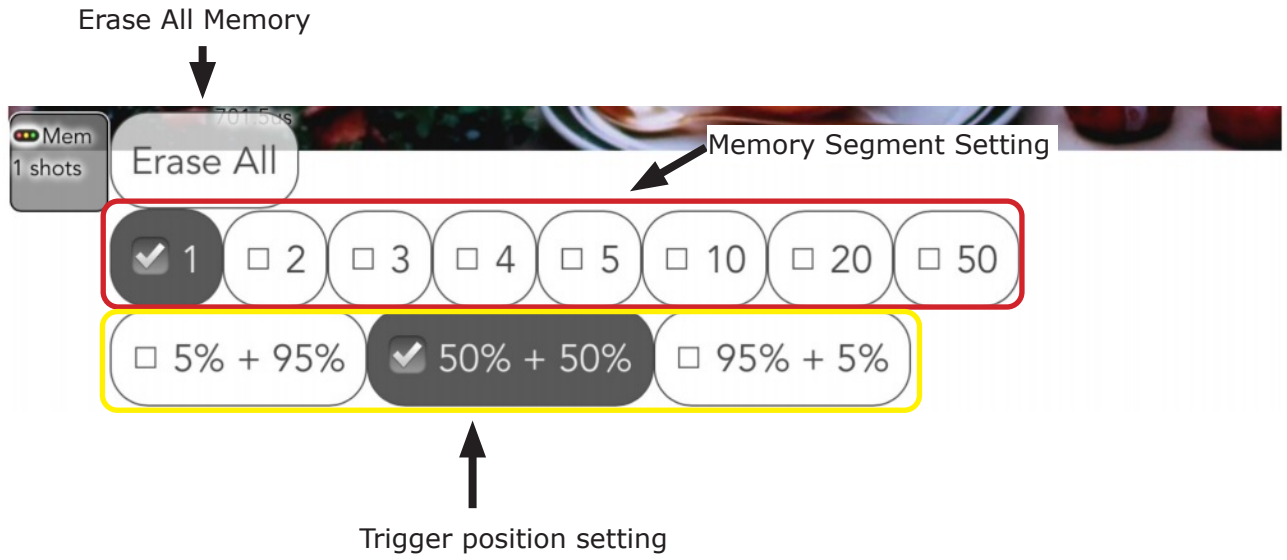
Manual white balance setting

Manual white balance settings can be made to obtain more accurate subject tints, for example, when multiple light sources are present.

How to manually set the white balance	
1)	Extremely bright or dark whites will not produce normal white balance. Adjust the aperture and light source to achieve the appropriate brightness.
2)	With the white object projected, tap "WB-Set" in the white balance settings. The camera processes and reflects the white balance data in the LIVE image.

Mem

Memory segment settings and trigger position settings can be made.

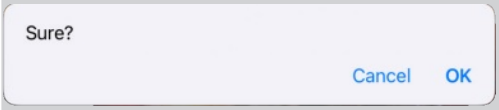


Button	Function
Erase All	Erase all images in memory.
1 to 50	Sets the memory segment partitioning.
5% +95%	This setting is used when recording phenomena that occur immediately after the trigger is input. It is a conventional start trigger.
50% +50%	This setting is used when recording phenomena that occur before and after the trigger input. It is a conventional center trigger.
95% +5%	This setting is used when recording a phenomenon that occurs just before the trigger input (and is finished at the time of trigger input). It is a conventional end trigger.

Erase All

Erase all images in memory.

Attention Be sure to save the necessary images before implementing Erase All.

Erase All Steps	
1)	Tap "Erase All" and a confirmation message window will appear.  Tap "OK" to execute. Tap "Cancel" to interrupt

Memory Segment

MEMRECAM GO uses memory in a much different way than previous products.

Segment changes can be made even with recorded data.

Recorded data will not be lost due to segmentation.

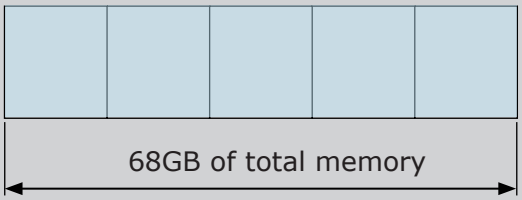
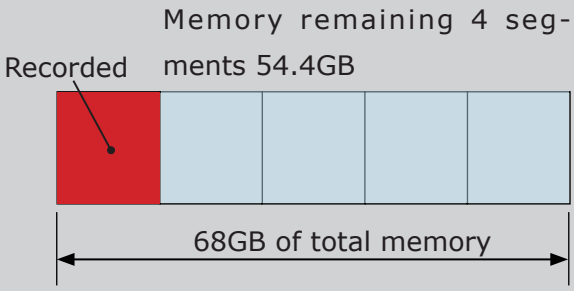
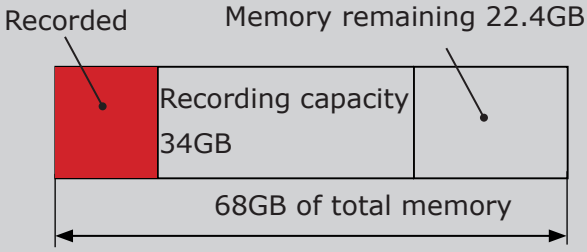
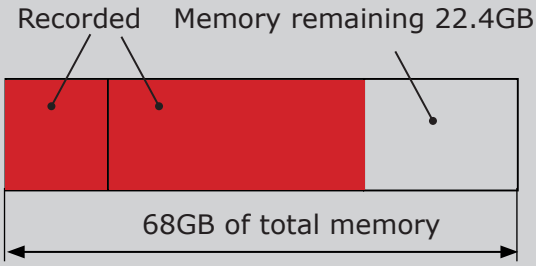
Memory size of one segment (GB)

		Camera memory size		
		17.00	34.00	68.00
Number of segments	1	17.00	34.00	68.00
	2	8.50	17.00	34.00
	3	5.67	11.33	22.67
	4	4.25	8.50	17.00
	5	3.40	6.80	13.60
	10	1.70	3.40	6.80
	20	0.85	1.70	3.40
	50	0.34	0.68	1.36

Attention The memory size for segment partitioning is the value that would be obtained if the entire camera memory were partitioned. The actual memory size is different from the values in the table. This is because there is data to be recorded in addition to the recorded data.

About memory segments in MEMRECAM GO

Example A camera with 68GB memory divided into 5 segments

	1 The segment is divided into 5 segments and then triggered to record.
	2 One segment was recorded. If the recording time is longer than the current setting, re-set the segmentation. For example, the maximum segment that can be set from the remaining memory is "34 GB" in "2 segments". (see table page 70)
	3 After dividing into two segments, only one can be recorded at a time. There is enough memory remaining, but not 34 GB free, so it cannot record. When recording is not possible, the trigger button will be as shown in the figure. 
	4 Set the number of divisions (4 or more) to continue recording while data remains in the memory. (see table page 70)

Black balance button

Tap the button and the camera will automatically acquire the black balance. Shading of the lens or camera mount is not necessary.

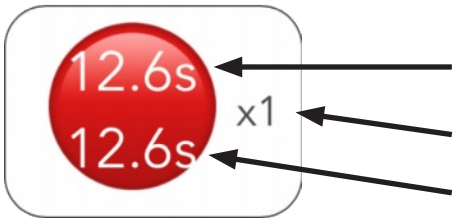
(+1) indicates the temperature difference between the current sensor temperature and the sensor temperature at black balance acquisition. Use this as a reference when acquiring black balance.

About Black Balance

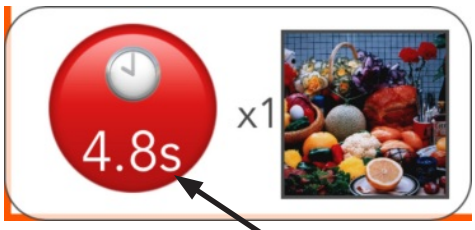
The image sensor used in the camera produces noise and black levels that vary depending on the temperature of the sensor and the recording settings. This noise is called fixed pattern noise and has a different pattern for each solid state of the image sensor.
The camera reads the temperature of the image sensor and automatically reduces noise using individually registered image correction data, but for higher quality images, it is recommended that black balancing be performed immediately before recording.

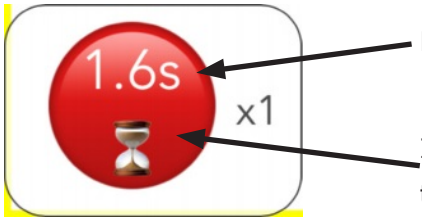
Trigger button

The camera is already ready to record at startup. Tap the trigger button to start recording.



The example in the figure shows that the camera can record 12.6 seconds each before and after the moment the trigger button is tapped.
It is the state of "center trigger" in our conventional product.





If the trigger is made before the hourglass mark disappears, the recording will be shorter than the available recording time before the trigger.

The memory space available for recording has run out.
To start recording, the recorded video must be deleted.

(00512)

Playback image

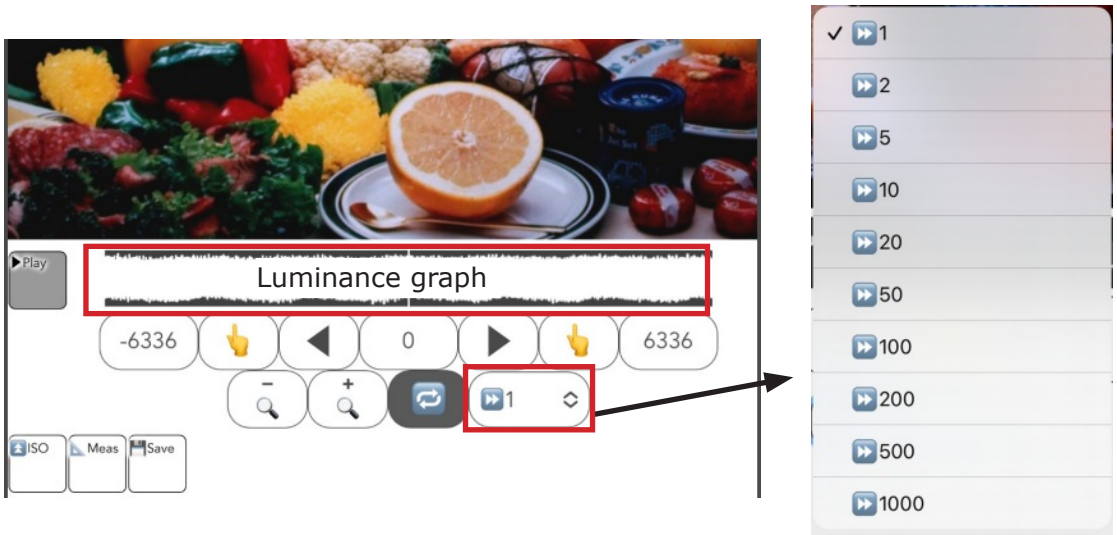
Menu display

(1) Slide the screen range up

(2) The setting menu slides.

Play

Play back video.



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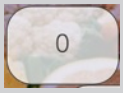
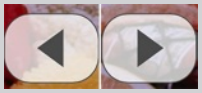
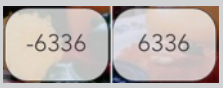
Luminance graph	A graph of the total luminance values of the displayed frames. It makes it easier to look for phenomena with changes in luminance.

Button		Function
	Display frame number	Displays the frame number of the displayed image. Tap to enter a numerical value and directly specify the frame.
	Play	Playback. The direction of playback changes with the direction of the button.
	Playback range setting	Set the playback range. Tap to specify the start and end of playback, respectively.
	Playback range	Displays the playback range. Tap to enter a numerical value to specify the range.
	Luminance graph scaling	The display range of the luminance graph can be zoomed in and out.
	Loop	Repeats playback of the specified range.
	playback speed	Playback speed can be changed. Set the speed using the pull-down menu.

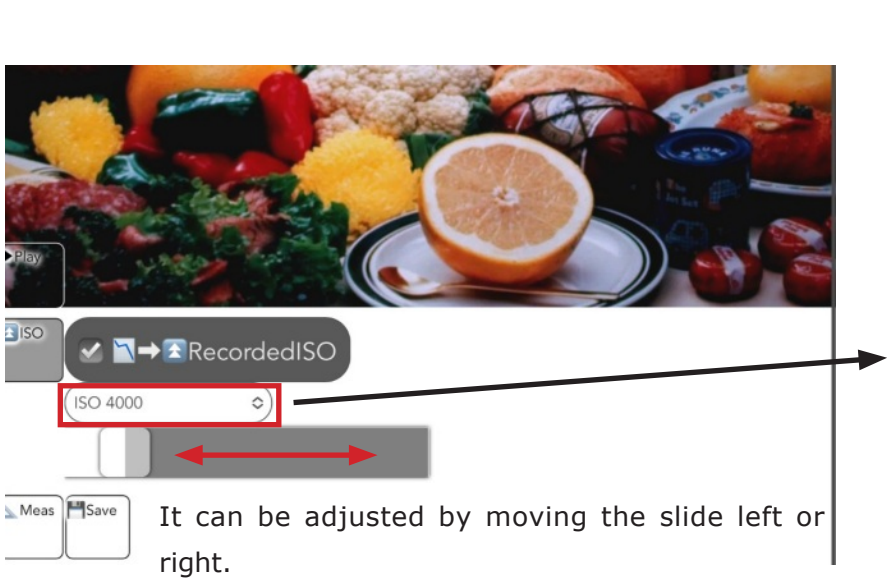
Zoom in on the luminance graph

The frame can be moved by sliding the luminance graph to the left or right. Expanding the luminance graph allows fine frame manipulation (frame feed).

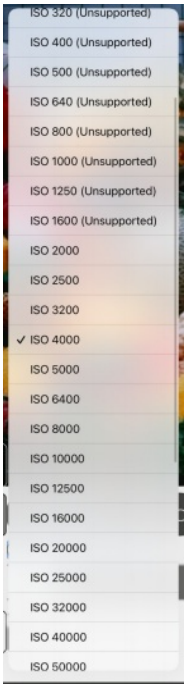
	
Display state immediately after recording. Frame shift in slide large.	Zoomed in state of luminance graph. Frame shift in slide small.

ISO

Changes the ISO sensitivity during playback. It is effective only during playback and does not affect recorded data.



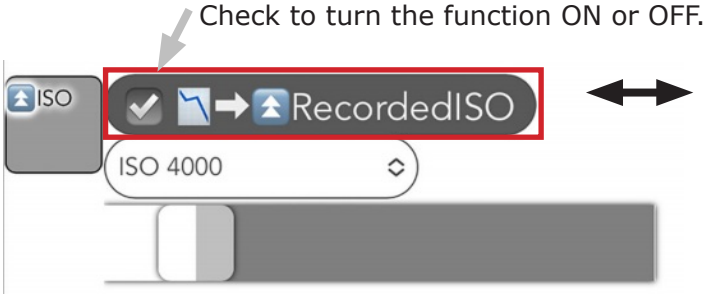
It can be adjusted by moving the slide left or right.



RecordedISO

Uncheck the box to change the ISO sensitivity of the playback image.
The default setting is checked.

Check to turn the function ON or OFF.



ON inverts the box.

Unchecked
RecordedISO: OFF
The ISO sensitivity of the playback image can be changed.

(00512)

Meas

Simple measurement can be performed on WebPanel.

- Actual size setting
- 2 points distance
- 3 point angle
- 2 line (4 points) angle

Attention
- The setting result is initialized by reloading the screen (web page).
- There is no function to output the result of this function. Use the screen save function of tablet etc.
- Each numerical value display is to the first decimal place.

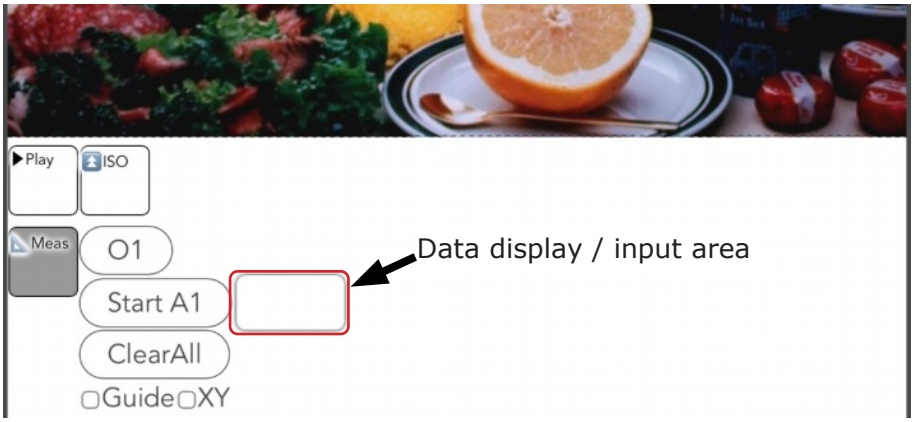
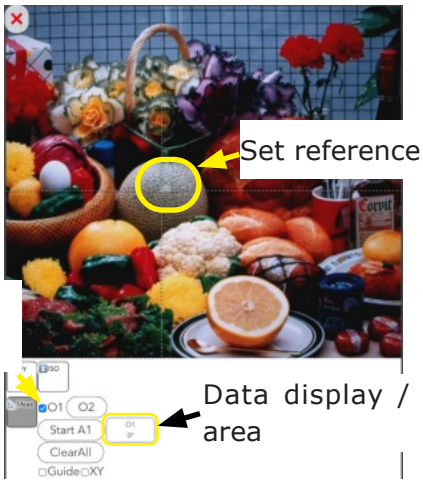


Image analysis settings: Analyze and superimpose on the displayed image.	
O1	Reference point: Display the reference point and crosshairs in the image display area. Multiple settings are possible.
Start A1	Measurement point: Sets the measurement point. Start from A1. It becomes the setting of the continuous line from A1. After setting A point, you can set another independent line segment with "Start B1".
Data display / input area	The values etc. displayed in this area can be changed.
Clear All	Erases all set reference points and measurement points.
Guide	Displays a guide perpendicular to the line between the two points.
XY	Displays the display numerical value separately for X and Y coordinates.

Set reference point

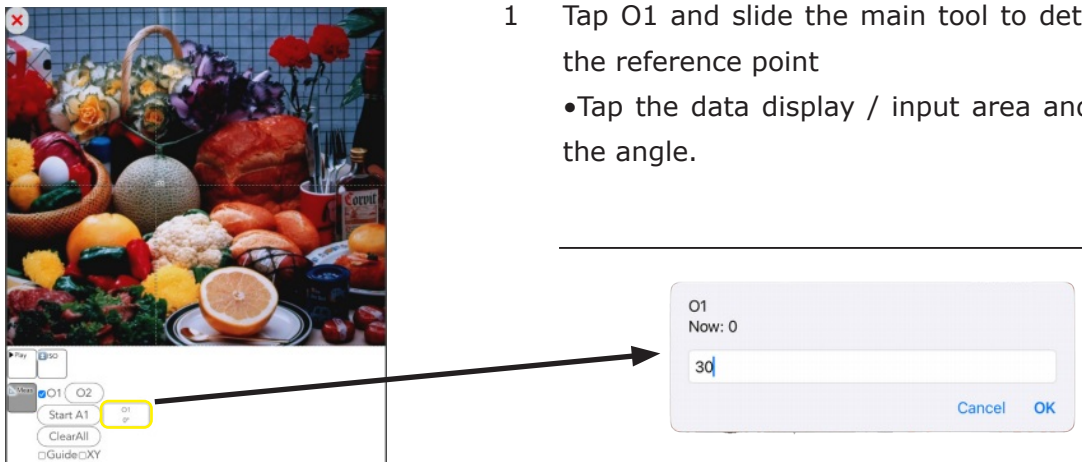


1 Tap O1 to set the reference point.

•Even after the decision is made, the reference point can be moved by selecting the check box.

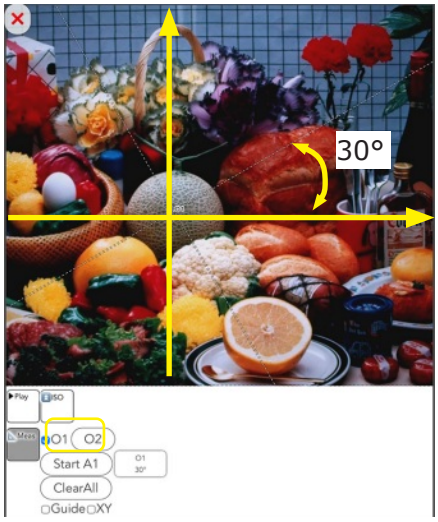
•When O1 is selected, the angle displayed in the data display / input area is the angle based on the horizontal and vertical of the display screen (the angle is 0 °).

Rotate the reference point



1 Tap O1 and slide the main tool to determine the reference point

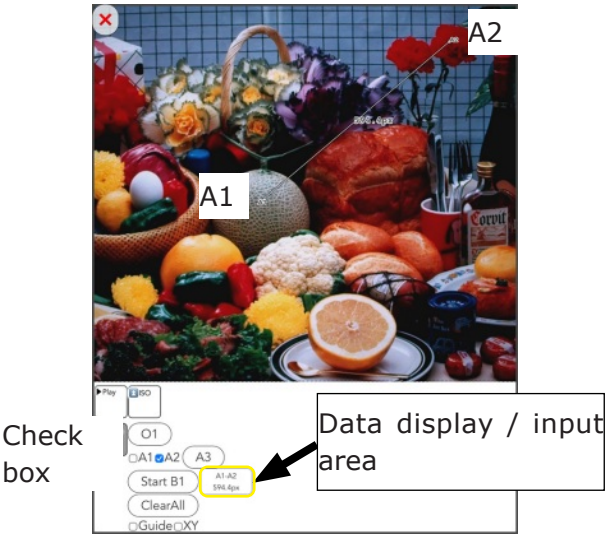
•Tap the data display / input area and enter the angle.



2 Crosshair rotates counterclockwise with respect to hoarizontal and vertical of image

Attention The entered angle is retained even if all points are cleared. To perform a new measurement, select O1 again and enter "0°" in the data display/input area.

Draw a line at 2 points

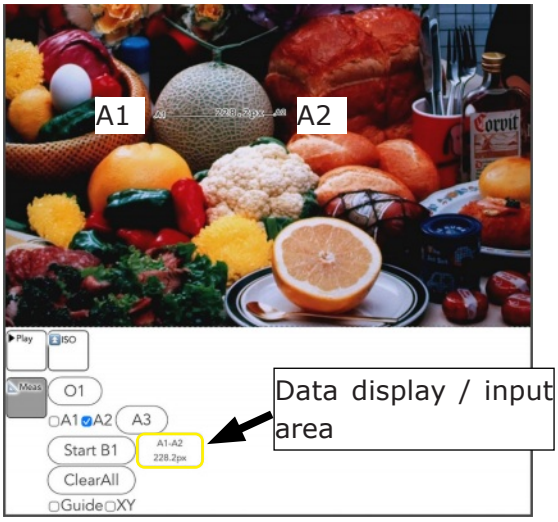


1 Tap A1 to determine the position, and then set A2 to draw a line connecting the two points.

•After the position is determined, you can move the point by selecting the check box.

•The px value displayed in the Data Display/ Input Area indicates the length of the line in pixels. This value and the unit of length can be changed by tapping in the Data Display/ Input Area.

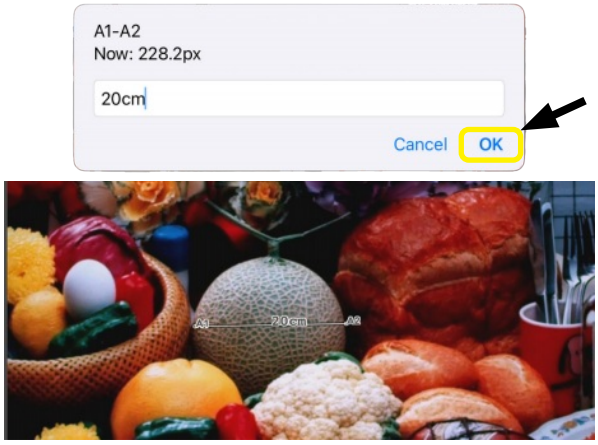
Enter numbers and units



1 Set the reference when the length of the object to be measured is determined.

•An example draws the straight line of A1-A2 according to the diameter of the melon of a picture.

•Tap the data display / input area.



2 Enter numbers and units

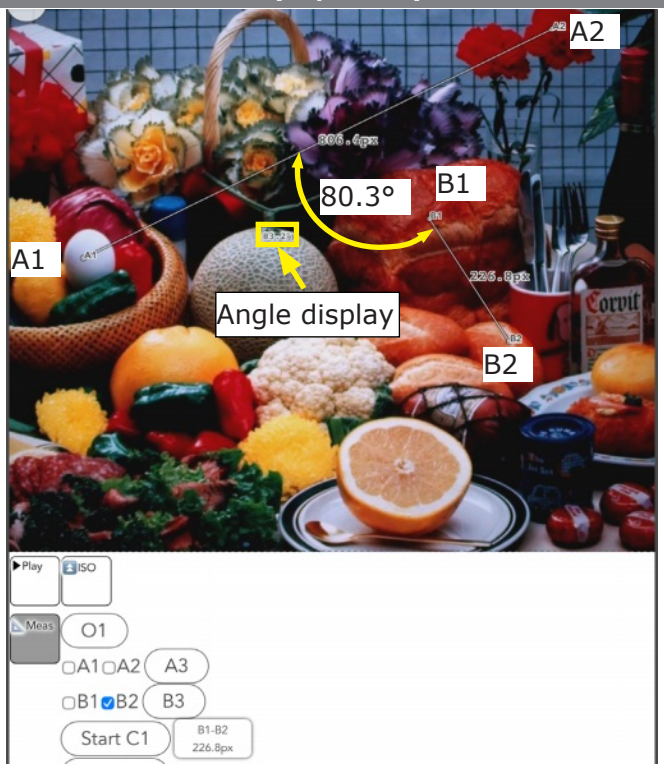
• In the example, enter the number as the diameter of the melon is 20 cm and tap "OK".

• The values and units entered in the image are reflected. This also allows you to measure the size of objects in other images (but only for objects of the same depth).

Draw 2 lines with 3 points and measure the inside angle

1 Following A2, when A3 is set, a line connecting the two points is drawn.
The interior angles of the two lines A1-A2 and A2-A3 are displayed.

Measure the angle between 2 lines (4 points)



1 If A1-A2 is followed by B1-B2, two lines and their inner corners are drawn

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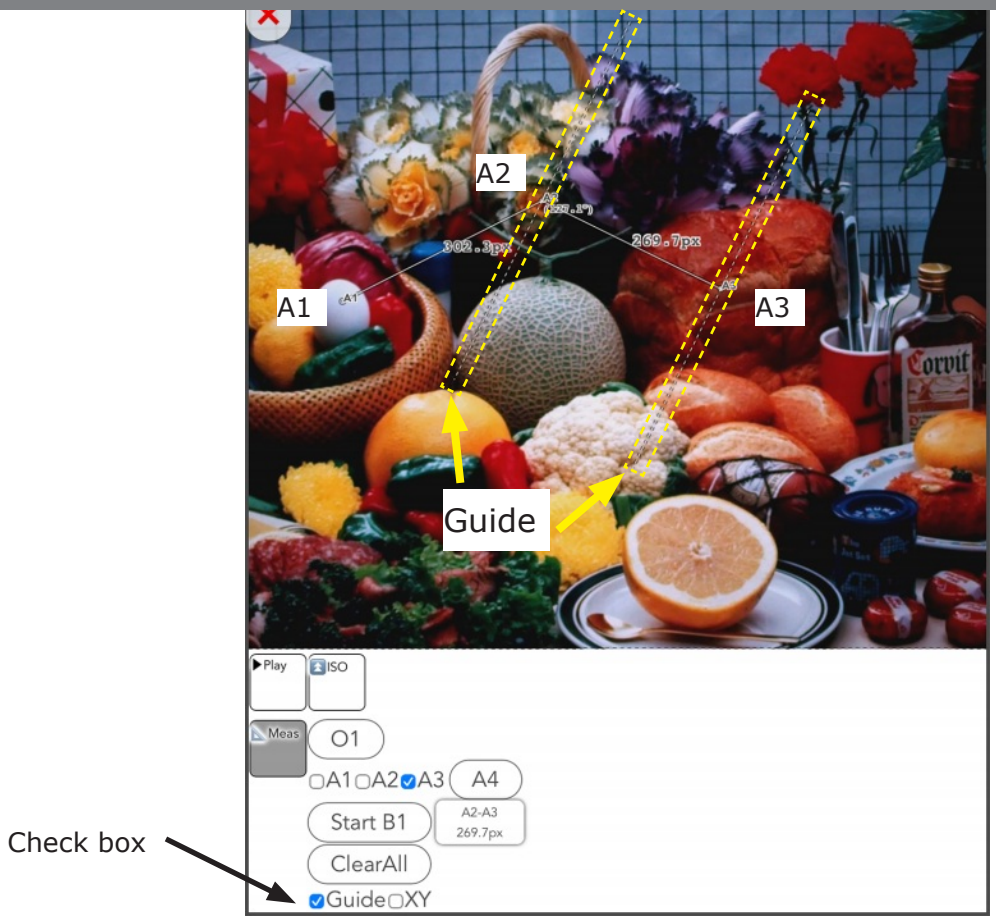
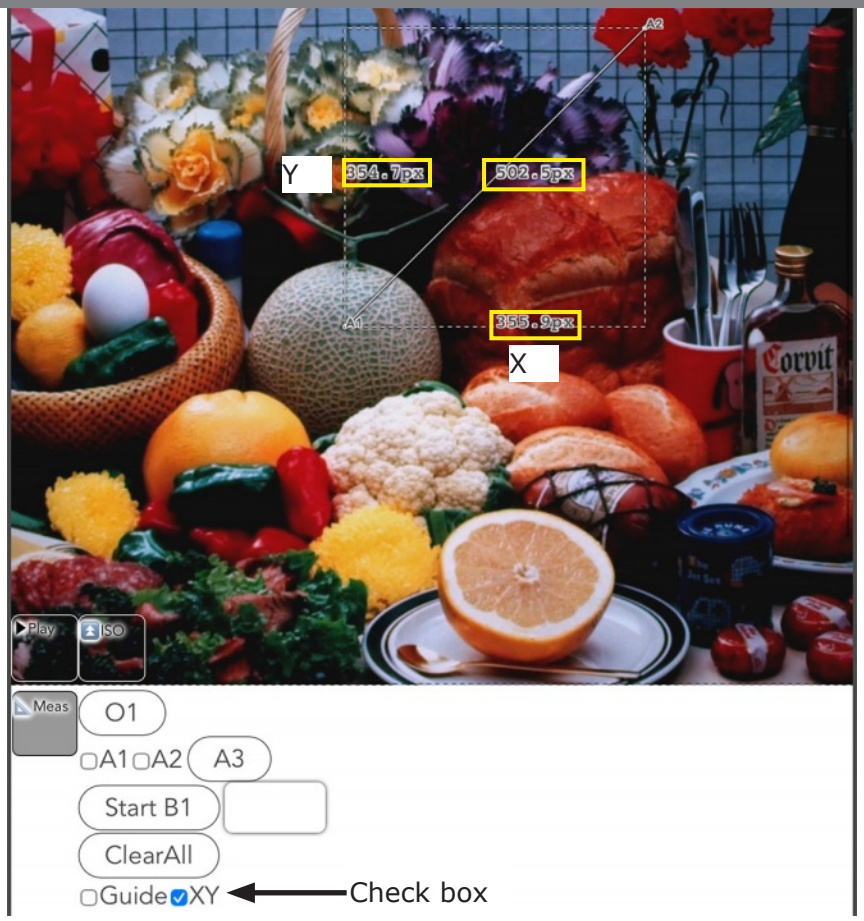
Guide



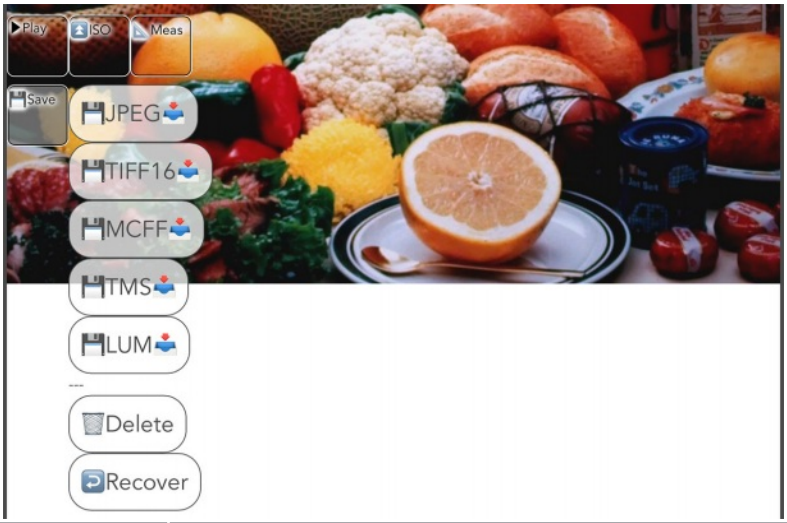
1	By selecting the "Guide" checkbox, a guide will appear perpendicular to the line segment at the two drawn points. When drawing a line segment with three or more points, a guide is displayed on the line segment connecting the selected point and the previous point. In the example, A3 is selected, so the guide is displayed on the A2-A3 line segment. Line segments can be drawn on the diameter of a circle and used as tangents to the circle to support measurement.

XY



1	By selecting the "XY" checkbox, the length of the drawn line segment is separated into the horizontal and vertical components of the screen. •The values in the X direction (screen horizontal direction) and Y direction (screen vertical direction) are the lengths corresponding to the values set in "Setting the Reference Length". •In the example, the standard length is not set. *The value is 100% of the width degree of the entire screen (web page).

Save



Button	Function
JPEG	Save JPEG sequentially numbered images together in ZIP format
TIFF16	Save a batch of non-quality adjusted 16-bit TIFF sequentially numbered images in ZIP format.
MCFF	Outputs a MCFF file in the video file format dedicated for MEMRECAM.
TMS	Output frame data to CSV file.
LUM	Outputs luminance summation data to a CSV file.
Delete	Delete the video image. Check and save data before tapping.
Recover	Restore deleted images in memory. Restore is effective when images are still in the camera's memory

The image data can be saved to "external USB storage connected to the camera" or to "the tablet or PC on which the camera is operating".

Save to an external USB storage device connected to the camera.

Save to the tablet or PC on which the GO-Touch is operated.

Attention

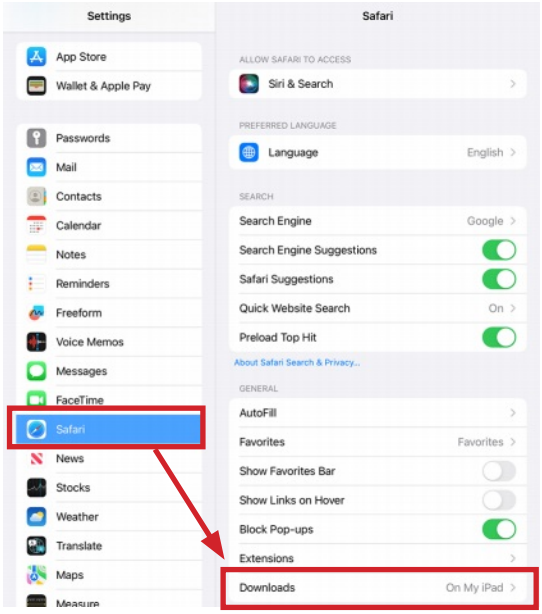
- When downloading images and videos to tablets and other devices, please be careful to have enough free space on external USB storage devices.
- Recovery may result in loss of data, etc.
- To play MCFF files, use our application MLink.
- TIFF16 files cannot be opened in MLink.
  TIFF16 files can be displayed using image editing software such as Adobe Photoshop.

Note the download destination setting in the browser.

The PC or tablet may be set to save downloaded data to cloud service storage.
Examples: Apple's iCloud, Google's Google Drive, Microsoft's OneDrive, etc.

If downloading is not possible due to a space problem or internal environment, change the data storage

Setting example) Apple iPad (iPad OS)



(1) Select "Safari" from the "Settings" menu.

(2) "Downloads" allows you to set the download destination.
"On My iPad" is downloaded to the iPad itself.

Attention The actual setting screen may differ from the description depending on the OS version of the tablet or other device.
For details, please refer to the user's manual of the tablet or other device.

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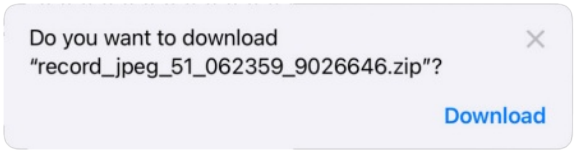
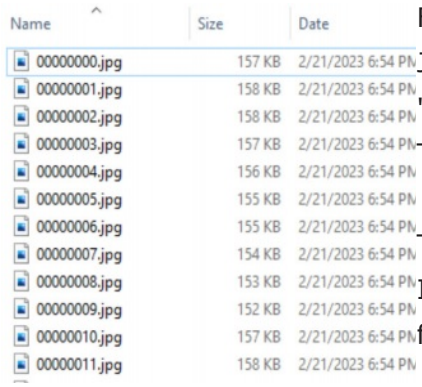
About the output file

JPEG/TIFF16

Outputs all image files in the specified range as a single ZIP file.
The image files are available when the ZIP file is extracted on a tablet or PC.

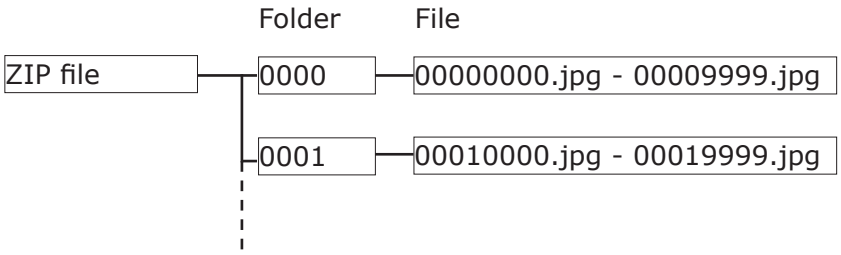


Example.)
Display for saving a JPEG to the tablet that is operating the camera.



File Name
JPEG will be a sequentially numbered file starting from "00000000.jpg".
TIFF16 files are sequentially numbered from "00000000.tif".

The maximum number of files in the same folder is 10,000.
If there are more files than that, they are saved in a separate folder.



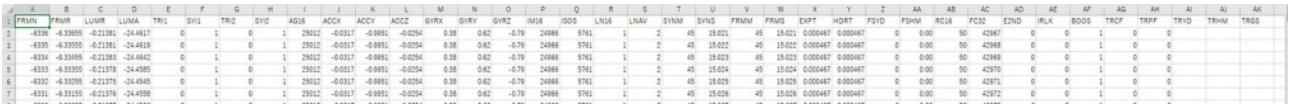
Example of folder structure of a file

MCFF

This is a video format file exclusively for the MEMRECAM series. It can be saved without image processing and can be used for analyzing phenomena.
To playback the file, use a dedicated application such as MLink.

TMS

Frame information data is output as a CSV file; please use an application that can display CSV format files.



Parameters	Description
FRMN	Frame number
FRMR	Frame relative time (trigger detection time = 0)
LUMR	Average of the luminance levels of pixels in the specified area (0.0 is black, 1.0 is white, and out of range corresponds to blocked up shadows or blown out highlights)
LUMA	Average of absolute luminance of pixels in the specified area (luminance value not affected by shutter speed, etc.)
TRI1	Trigger signal level (0: no signal, 1: with signal)
SYI1	External sync signal level (0: no signal, 1: with signal)
TRI2	Not used
SYI2	Not used
AG16	Number of accelerometer/gyro sensor value updates (repeated within 16-bit range)
ACCX	X Axis Acceleration [G] Positive number when accelerating to the right of the rear panel (approx. "-1" when the rear panel is installed at 90 degrees clock-wise)
ACCY	Y Axis acceleration [G] Positive number when accelerated to the lower surface direction (approx. "-1" when installed horizontally)
ACCZ	Z Axis Acceleration [G] Positive number when accelerating towards the front panel (Approx. "-1" when pointing directly upward)
GYRX	Angular velocity of X axis [degree/sec] Positive number when the unit is point-ed up (tilt up)
GYRY	Angular velocity of Y-axis [degree/sec] Positive number when the unit is turned to the right (right pan)
GYRZ	Angular velocity of Z-axis [degree/sec] Positive number when the unit is tilted to the right (right roll)
IM16	Number of times the image processing value is updated (repeated within a 16-bit range)
ISOS	ISO sensitivity
LN16	Not used
LNAV	Not used

Parameters	Description
SYNM	Synchronization signal time [min].
SYNS	Synchronization signal time [sec].
FRMM	Exposure start time [min].
FRMS	Exposure start time [sec].
EXPT	Exposure time [sec]
HDRT	Not used
FSYD	Not used
FSHM	Not used
RC16	Number of recordings (repeated within 16-bit range)
FC32	Frame counter (repeats in 32-bit range)
E2ND	Not used
IRLK	Synchronized with IRIG signal. (0: not synchronized, 1: synchronized)
BOOS	Not used
TRCF	Trigger signal detection (0: No signal, 1: With signal)
TRPF	0: This frame trigger frame 1: Trigger frame is one previous frame
TRYD	Trigger time [day].
TRHM	Trigger time [hour:minute].
TRGS	Trigger time [sec].

LUM

The brightness sum of the frame is outputted as a CSV file. Use an application that can display CSV format files.

	A	B	C
1	FRMN	LUMR	LUMA
2	-6336	-0.21381	-24.4617
3	-6335	-0.21381	-24.4619
4	-6334	-0.21383	-24.4642
5	-6333	-0.21378	-24.4585
6	-6332	-0.21375	-24.4545
7	-6331	-0.21376	-24.4558

Parameters	Description
FRMN	Frame number
LUMR	Average of the luminance levels of pixels in the specified area (0.0 is black, 1.0 is white, and out of range corresponds to blocked up shadows or blown out highlights)
LUMA	Average of absolute luminance of pixels in the specified area (luminance value not affected by shutter speed, etc.)

4

Specification

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Image sensor

Image sensor (common specs)	
Format	About 2.15 inch CMOS sensor (monochome,color)
Pixel size	22μm x 22μm
Valid Pixels	1008 × 896 pixels (900,000 pixels)
Maximum Area	22.176 × 19.712 mm
Optical Axis Center Accuracy	±0.5 mm

Frame Rates and Valid Pixels GO-12 (1/2)

Maximum Frame Rate (fps)	Valid Pixels		Valid Image Area (mm)		Horizontal-Vertical Ratio (Size)
	Horizontal	Vertical	Horizontal	Vertical	
12,000 or less	1008	896	22.176	19.712	Split
	1008	720	22.176	15.84	Split
	672	512	14.784	11.264	Split
	512	512	11.264	11.264	Split
	640	480	14.08	10.56	VGA (4:3)
	336	256	7.392	5.632	Split
13,000	1008	800	22.176	17.6	Split
	1008	720	22.176	15.84	Split
	672	512	14.784	11.264	Split
	512	512	11.264	11.264	Split
	640	480	14.08	10.56	VGA (4:3)
	336	256	7.392	5.632	Split
15,000	1008	704	22.176	15.488	Split
	672	512	14.784	11.264	Split
	512	512	11.264	11.264	Split
	640	480	14.08	10.56	VGA (4:3)
	336	256	7.392	5.632	Split
16,000	1008	656	22.176	14.432	Split
	672	512	14.784	11.264	Split
	640	480	14.08	10.56	VGA (4:3)
	336	256	7.392	5.632	Split
18,000	1008	576	22.176	12.672	Split
	672	512	14.784	11.264	Split
	640	480	14.08	10.56	VGA (4:3)
	336	256	7.392	5.632	Split
20,000	1008	512	22.176	11.264	Split
	672	512	14.784	11.264	Split
	640	480	14.08	10.56	VGA (4:3)
	336	256	7.392	5.632	Split
25,000	1008	400	22.176	8.8	Split
	672	400	14.784	8.8	Split
	336	256	7.392	5.632	Split

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Frame Rates and Valid Pixels GO-12 (1/2)

Maximum Frame Rate (fps)	Valid Pixels		Valid Image Area (mm)		Horizontal-Vertical Ratio (Size)
	Horizontal	Vertical	Horizontal	Vertical	
40,000	1008	208	22.176	4.576	Split
	672	208	14.784	4.576	Split
	336	208	7.392	4.576	Split
60,000	1008	128	22.176	2.816	Split
	672	128	14.784	2.816	Split
	336	128	7.392	2.816	Split
100,000	1008	48	22.176	1.056	Split
	336	48	7.392	1.056	Split
150,000	1008	16	22.176	0.352	Split
	336	16	7.392	0.352	Split
200,000	1008	16	22.176	0.352	Split
	336	16	7.392	0.352	Split
220,000	1008	16	22.176	0.352	Split
	336	16	7.392	0.352	Split

CHECK Fps (frame per second) is the unit of recording speed = frame / second.
12,000 or less includes 50, 60, 100, 500, 1,000, 2,000, 5,000, 6,000, 8,000, 9,000, and 10,000 fps.

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Frame Rates and Valid Pixels GO-9 (1/2)

Maximum Frame Rate (fps)	Valid Pixels		Valid Image Area (mm)		Horizontal-Vertical Ratio (Size)
	Horizontal	Vertical	Horizontal	Vertical	
9,000 or less	1008	896	22.176	19.712	Split
	1008	720	22.176	15.84	Split
	672	512	14.784	11.264	Split
	512	512	11.264	11.264	Split
	640	480	14.08	10.56	VGA (4:3)
	336	256	7.392	5.632	Split
10,000	1008	800	22.176	17.6	Split
	1008	720	22.176	15.84	Split
	672	512	14.784	11.264	Split
	512	512	11.264	11.264	Split
	640	480	14.08	10.56	VGA (4:3)
	336	256	7.392	5.632	Split
12,000	1008	656	22.176	14.432	Split
	672	512	14.784	11.264	Split
	512	512	11.264	11.264	Split
	640	480	14.08	10.56	VGA (4:3)
	336	256	7.392	5.632	Split
13,000	1008	608	22.176	13.376	Split
	672	512	14.784	11.264	Split
	512	512	11.264	11.264	Split
	640	480	14.08	10.56	VGA (4:3)
	336	256	7.392	5.632	Split
15,000	1008	512	22.176	11.264	Split
	672	512	14.784	11.264	Split
	640	480	14.08	10.56	VGA (4:3)
	336	256	7.392	5.632	Split
16,000	1008	480	22.176	10.56	Split
	672	480	14.784	10.56	Split
	640	480	14.08	10.56	VGA (4:3)
	336	256	7.392	5.632	Split
18,000	1008	432	22.176	9.504	Split
	672	432	14.784	9.504	Split
	336	256	7.392	5.632	Split
20,000	1008	384	22.176	8.448	Split
	672	384	14.784	8.448	Split
	336	256	7.392	5.632	Split

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Frame Rates and Valid Pixels GO-9 (1/2)

Maximum Frame Rate (fps)	Valid Pixels		Valid Image Area (mm)		Horizontal-Vertical Ratio (Size)
	Horizontal	Vertical	Horizontal	Vertical	
25,000	1008	288	22.176	6.336	Split
	672	288	14.784	6.336	Split
	336	256	7.392	5.632	Split
40,000	1008	160	22.176	3.52	Split
	672	160	14.784	3.52	Split
	336	160	7.392	3.52	Split
60,000	1008	96	22.176	2.112	Split
	336	96	7.392	2.112	Split
100,000	1008	32	22.176	0.704	Split
	336	32	7.392	0.704	Split
150,000	1008	16	22.176	0.352	Split
	336	16	7.392	0.352	Split
165,000	1008	16	22.176	0.352	Split
	336	16	7.392	0.352	Split

CHECK Fps (frame per second) is the unit of recording speed = frame / second.
9,000 or less includes 50, 60, 100, 500, 1,000, 2,000, 5,000, 6,000 and 8,000 fps.

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Sensitivity

Mono	ISO 10,000 to 200,000
Color	ISO 2,000 to 40,000

Shutter

Shutter Format	Global electronic shutter
Method for setting the shutter Time	Select from presets / set custom
Presets	OPEN,1/100, 1/500, 1/1,000, 1/2,000, 1/5,000, 1/10,000, 1/20,000, 1/50,000, 1/100,000, 1/200,000, 1/333,333, 1/500,000
Custom Settings	1.1 to 10000μs (= 10ms = 1/100s) Exposure times longer than 1/frame rate cannot be set
Automatic Exposure	Setting: ON/OFF Function: Automatically adjusts the exposure time between 10μs and the shutter speed

Lens Mount

Mount Type	F Mount, C Mount (Select at purchase)
F Mount	NIKON F Mount, compatible with lenses without an aperture ring. S type, D type, and G type cannot be used with the Nikon F mount. The E type cannot be used.
C Mount	Vignetting due to the image resolution

Recorder

Recording Memory		
Installed Memory	16GB / 32GB / 64GB	
Memory Segment Partitions	16GB Model	17GBx1, 8.5GBx2, 4.2GBx4, 2.1GBx8 1.0GBx16, 535MBx32, 267MBx64
	32GB Model	34GBx1, 17GBx2, 8.5GBx4, 4.2GBx8 2.1GBx16, 1.0GBx32, 536MBx64
	64GB Model	68GBx1, 34GBx2, 17GBx4, 8.5GBx8 4.2GBx16, 2.1GBx32, 1.0GBx64

Pixel Bit Length	
Image Sensor Output	12 bit

Simultaneous Recording Data

Recording Trigger Mode Setting	Closed caption method
Frame Rate	Closed caption method
Frame Size	Closed caption method
Shutter Speed	Closed caption method
Recording Image Quality Settings	Closed caption method
Recording Comments	Closed caption method
Trigger Time	Closed caption method
Internal Standard Time (or IRIG-B Time)	Simultaneous Recording Method
Exposure Start Time	Simultaneous recording method, time stamp, minutes and seconds, 0.1μsec units
Exposure End Time	Simultaneous recording method, time stamp, minutes and seconds, 0.1μsec units
Frame Count	Simultaneous recording method, time stamp, memory address information
Trigger Time	Simultaneous recording method, time stamp, day/hour/min/sec, 0.1μsec units
Sequence Count	Simultaneous recording method, time stamp, recording sequence information
Signal Status	Simultaneous recording method, time stamp, Trigger, EST, Event, IRIG Lock, Sensor Flag bit identification
Recording Time	Simultaneous recording method, time stamp, date and time

Note) Closed caption method : Image and information recorded separately, synthesis display method, recorded in the system controller at the point of trigger input

Note) Simultaneous Recording Method: Method recording image and information together, recorded in image memory

Note) Time Stamp: Simultaneous recording data for each frame

Of the data recorded at the same time for each frame, the information that can be known by GO-Touch and MLink is as follows.

Exposure center time of the frame (date, hour, minute, second, in 0.1 μ sec)

Trigger Time (date, hour, minute, second, in 0.1 μ sec)

EVENT

IRIG lock

System Control

CAMERA MODE LED (1/2)	
LED Status	Operation
Orange	REC mode. Displays trigger detection status while the camera image is being recorded by memory. Indicates the recording status to the recording memory by changing the brightness of orange due to light and dark. After the trigger input, it changes from light to dark. The less frames remaining, the darker the orange brightness.
Yellow	ARM mode. From the time ARM is started until the time the picture is recorded for the number of frames before the trigger. A change in brightness due to light and dark in yellow indicates the recording status to the recording memory. Dark to Light: Indicates the lapse rate of recording for the number of frames before triggering. It turns white when recording is complete for the number of frames before triggering.
White	ARM mode. Recorded memory is discarded, and the camera image is being recorded to memory. Displays the recording status to the recording memory with the change of white brightness due to light and dark. The ratio of the light/dark changes varies depending on the trigger timing setting. Dark to Light: Indicates the lapse rate of recording for the number of frames before triggering. Light to Dark: Indicates the lapse rate of recording for the number of frames after triggering.
Blue	Recording memory is full and cannot be recorded. The camera is not recording video, but a live video is displayed (VIEW mode).
Not lit	Power OFF or sleep state.
Flashing	Set to EST mode, and EST pulse is input. However, only ARM mode and REC mode. Flashing by alternately turning on and off.

CAMERA MODE LED (2/2)

LED Status	Operation
Flashing green	Waiting to save to external USB storage device. Saving to an external USB storage device has started, but is not yet complete because the external USB storage device is not connected. Check the connection status of the external USB storage device.

POWER LED

LED Status	Camera's power status	Operation
Flashing white	Power on	Camera is activated.
White	Power on	Camera starts up and is in normal status.
Red	Power on	Fail (abnormal) state.
Orange	Power off	External power is being supplied and the camera is turned off with the power switch. The external power supply voltage is within the specification range (13 to 32V) and in normal condition.
Flashing red	Power off	External power is being supplied and the camera is turned off with the power switch. The external power supply voltage is outside the specified range (13 to 32V) and is abnormal.
Flashing orange (1 Second interval)	Power on	From the moment the power is pressed until the power is turned OFF.
Flashing orange (0.5 Second interval)	Power on	Sleep state.
Flashing blue	Power on	The status between the camera's power ON and the camera's startup.
Not lit	Power off	No external power supply.
Red and green alternating lights		Thermal shutdown occurs.

ETHERNET LED

LED Status	Operation
Yellow-green	Linking in 1000BASE-T.
Orange	Linking in 100BASE-TX.
Not lit	Not connected to network or powered off.

EJECT LED & BTN (LED and button are integrated)

LED Status	Operation
Flashing Blue	The camera is recognizing the connected device.
Yellow-green	External USB storage connected to USB2.0 connector. Ready for storage. USB3.1 connector with external USB storage device not compatible with USB3. Ready for storage.
White	USB3 capable external USB storage-attached to USB3.1 connector. Storable status.
Flashing green (Low speed)	Data storage to the external USB storage started, but USB storage is not connected and the storage is waiting to be saved. Blinks in synchronization with CAMERA MODE LED.
Flashing green (High speed)	Data-saving to external USB storage. (Common to USB3.1 and USB2.0 Connectors)
Not lit	Removable external USB storage. No external USB storage-connected. Unavailable external USB storage connectivity status (Format USB storage).

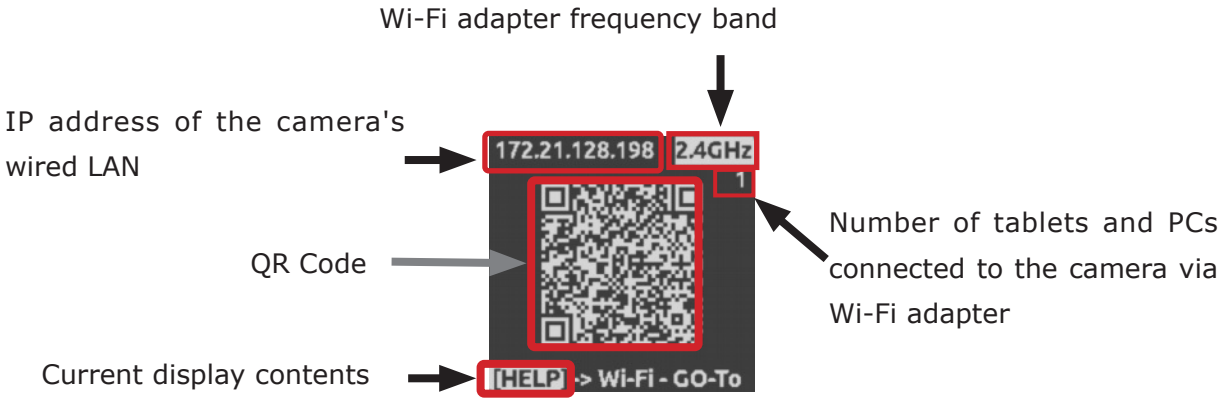
Operation	Function
Press the button	Removing external USB storage.

EPAPER LED

LED Status	Operation
White	EPAPER BTN is pressed.
Not lit	EPAPER BTN is not pressed.

e-paper

E-paper on the back displays camera information and a QR code for Wi-Fi connectivity



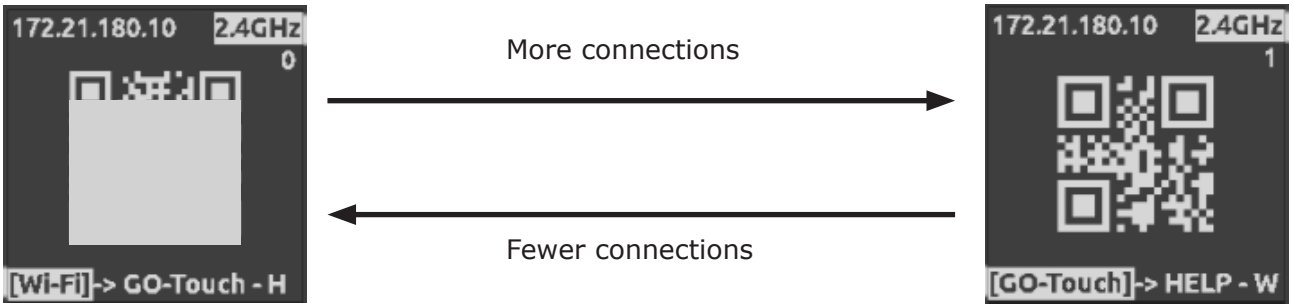
The content of the e-paper display switches automatically depending on the camera status.
Also, each time EPAPER BTN is pressed, the display switches sequentially from HELP → WI-Fi → GO-Touch → HELP ... and so on.

Attention When the camera is turned off, the display does not change even if EPAPER BTN is pressed.

Display order	Display Contents	QR Code	Description.	Display Conditions
1	HELP		A link to the MEMRECAM GO product introduction page on our website will be displayed.	When the camera is turned off.
2	Wi-Fi		This display appears when the Wi-Fi adapter is not recognized.	When the camera has been successfully started up. If the Wi-Fi adapter is not recognized
			A link to connect to the camera via Wi-Fi will appear. Since the SSID and password are embedded in the QR code, simply read the QR code to connect to the camera. The figure on the left is a sample, so part of the code is hidden to prevent connection.	When a Wi-Fi adapter is connected and recognized When automatic transition is made from Display 3
3	GO-Touch		Address for starting GO-Touch. The address for starting GO-Touch is displayed. When the QR code is scanned, a web browser will be launched to access GO-Touch.	When automatically transitioning from Display 2

Automatic display 2 and display 3 transitions

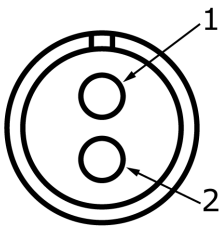
Display 2 and 3 will automatically switch according to changes in the number of terminals connected wirelessly to the camera connected to the Wi-Fi adapter.
When a terminal connects to the camera using the QR code in Display 2, the display switches to Display 3.
When the number of devices connected to the camera via Wi-Fi decreases, the display changes to 2.



Connector

DC-IN Connector		
Application	DC IN	
Model	LEMO EEG.2B.302	
Compatible Plug	LEMO FGG.2B.302	
Power Voltag	DC 13 to 32V	
Input power	DC power (e.g. AC adapter or battery)	
Power Consumed	About 66.7W 12000pps, ARM mode, full resolution, 24 VDC, peripheral devices not connected)	
Power Protection	Reverse polarity:	Built-in protection IC
	Overvoltage:	Shutdown at 34.5 VDC with built-in protection IC

Pin Configuration				
Pin No.	Name	Direction	Function • Input/Output Level	Notes
1	DC24V IN	IN	DC input	
2	DC24V RTN	IN	DC return	
shell	FRAME GND	-	Frame ground	



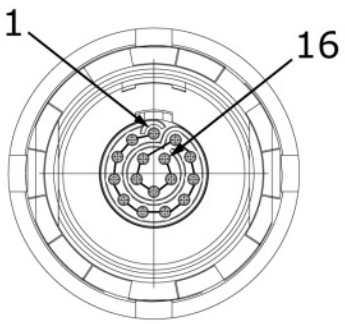
Pin Configuration Figure (from the side of the engaged connector)

(00512)

AUX Connector

Application	Discrete control signal input/output	
Model	LEMO EEG.1B.316	
Compatible Plug	LEMO FGG.1B.316	
Power Control (PWRCNT) Input	Signal Level	TTL level, 5V pull-up, isolator L level: -0.5VDC (minimum applied voltage) to 0.8VDC H level: 2VDC to 5.5VDC (maximum applied voltage)
	Function	H: Power ON L: Power OFF Contact input possible, no polarity inverting function
AUX input/output input	Signal Level	TTL level, 5V pull-up resistor 4700 Ω, non-isolated, L level: -0.5VDC (min. applied voltage) to 0.8VDC H level: 3.25VDC to 5.5VDC (max. applied voltage)
	Function	Selectable from ARM IN
AUX input/output output	Signal Level	5V CMOS out, not isolated
	Function	Selectable from TRIG OUT, VD OUT, ARM status output and FAULT status output

Pin Configuration				
Pin No.	Name	Direction	Function • Input/Output Level	Notes
1	DC12V	OUT	Output 12V for IO-BOX	
2	DC12V RTN	OUT	IO-BOX power 12V returns	
3	PWRCNT IN	IN	TTL, contact point	Isolation
4	PWRCNT IN RTN	-	TTL, contact point	Ground insulator
5	AUX1	I/O	Above references	Isolation
6	AUX1 RTN	-	Above references	Ground insulator
7	AUX2	I/O	Above references	Isolation
8	AUX2 RTN	-	Above references	Ground insulator
9	AUX3	I/O	Above references	Isolation
10	AUX3 RTN	-	Above references	Ground insulator
11	AUX4	I/O	Above references	Isolation
12	AUX4 RTN	-	Above references	Ground insulator
13	AUX_TYPE0	-	Above references	Isolation
14	AUX_TYPE0 RTN	-	Above references	Ground insulator
15	AUX_TYPE1	-	Above references	Isolation
16	AUX_TYPE1 RTN	-	Above references	Ground insulator
shell	FRAME GND		Frame ground	



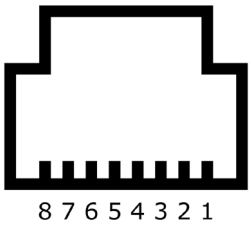
Pin Configuration Figure (from the side of the engaged connector)

Ethernet (RJ-45) connector

Application	For network connection
Model	RJ-45 jacking TE 2301995-4
Compatible Plug	RJ-45 Plug
Standard	1000BASE-T (IEEE802.3ab), 100BASE-TX (IEEE802.3u), DHCP compatible, insulated
Recommended cable	CAT5e or higher Ethernet cable is recommended.

Pin Configuration

Pin No.	Name	Direction	Function • Input/Output Level	Notes
1	MDI 0+	I/O	10/100/1000BASE-T Interface	
2	MDI 0-	I/O	10/100/1000BASE-T Interface	
3	MDI 1+	I/O	10/100/1000BASE-T Interface	
4	MDI 2+	I/O	10/100/1000BASE-T Interface	
5	MDI 2-	I/O	10/100/1000BASE-T Interface	
6	MDI 1-	I/O	10/100/1000BASE-T Interface	
7	MDI 3+	I/O	10/100/1000BASE-T Interface	
8	MDI 3-	I/O	10/100/1000BASE-T Interface	
shell	FRAME GND	-	Frame ground	



Pin Configuration Figure (from the side of the engaged connector)

(00512)

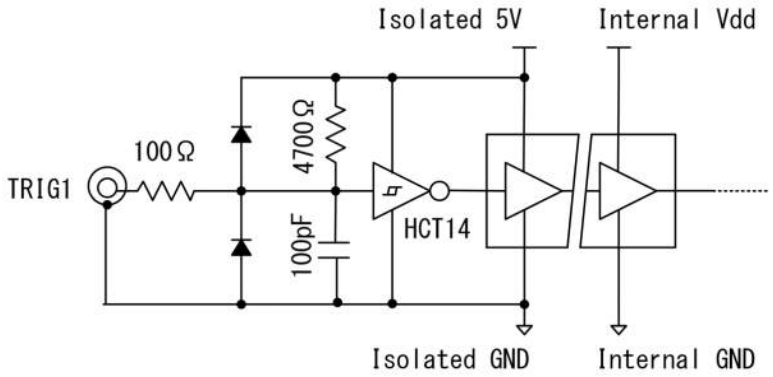
TRIG connector

Application	TRIG1 trigger signal input	
Model	BNC receptacle R132-002612000	
Compatible Plug	BNC plug	
TRIG1 Input	Signal Level	TTL level, 5V pull-up resistor 4700 Ω, isolation L level:-0.5V (min. applied voltage) to 0.5V H Level: 2V to 5.5V (max. applied voltage)
	Function	Trigger valid in H ☐ L. Contact input possible. With polarity inversion function

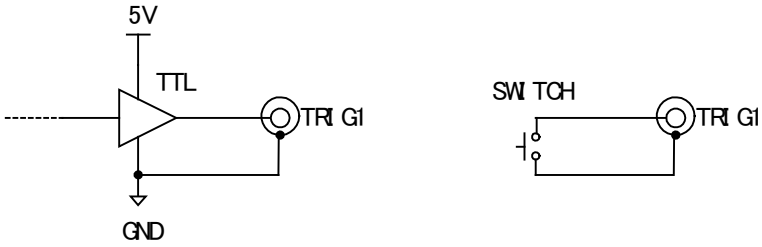
Pin Configuration

Pin No.	Name	Direction	Function • Input/Output Level	Notes
1	TRIG1 IN	IN	TTL, contact point	Isolation
shell	TRIG1 IN RTN	IN	TTL, contact point	Ground insulator

Camera side interface circuit



Recommended trigger interface circuit



(00512)

SYNC-IN connector

Application	EST/IRIG-DCLS input (select one)
Model	BNC receptacle R132-002612000
Compatible Plug	BNC plug
Signal Level	TTL level, 5V pull-up resistor 4700 Ω, isolation L level:-0.5V (min. applied voltage) to 0.5V H Level: 2V to 5.5V (max. applied voltage)
EST function	Set the camera to EST mode and start exposure at H ☐ L of this input to record a single image. Contact input possible. With polarity inversion function Synchronous precision of 40nS or less When inputting EVENT, the signal-level is recorded together with the image.
IRIG function	The time is synchronized as a IRIG-B DCLS.

Pin Configuration

Pin No.	Name	Direction	Function • Input/Output Level	Notes
1	SYNC-IN	IN	TTL, contact point	Isolation
shell	SYNC-IN RTN	IN	TTL, contact point	Ground insulator

(00512)

SYNC-OUT connector

Application	EPO/IRIG-DCLS/TRIG OUT output (select one)
Model	BNC receptacle R132-002612000
Compatible Plug	BNC plug
Signal Level	CMOS level, isolated.
EPO function	Outputs exposure signal. With polarity inversion function
IRIG function	The time is synchronized as a IRIG-B DCLS. IRIG generated internally is outputted.
TRIG OUT function	Outputs a trigger signal.

Pin Configuration

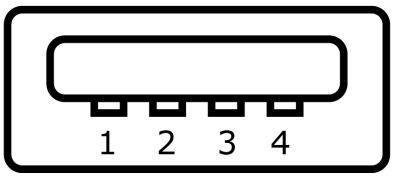
Pin No.	Name	Direction	Function • Input/Output Level	Notes
1	SYNC-OUT	OUT	CMOS	Isolation
shell	SYNC-OUT RTN	OUT	CMOS	Ground insulator

USB2.0 connector

Application	USB device connection (for firmware and internal updates)
Model	Standard-A Receptacle
Compatible Plug	Standard-A Plug
Number of Connectors	1
Standard	Compatible with USB2.0 standards and USB HOST, exFAT/NTFS

Pin Configuration

Pin No.	Name	Direction	Function • Input/Output Level	Notes
1	VBUS	OUT	USB power output, 5V/1.0A	
2	D-	I/O	USB2.0 HS signal	
3	D+	I/O	USB2.0 HS signal	
4	GND	OUT	USB power output return	
shell	FRAME GND	-		



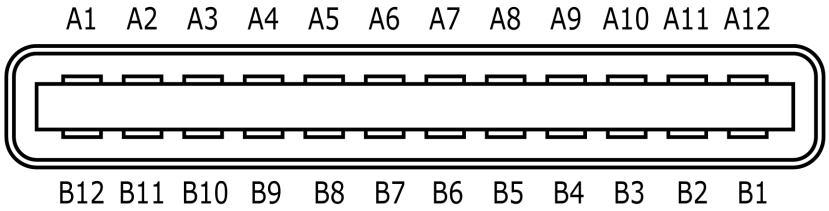
Pin Configuration Figure (from the side of the engaged connector)

USB3.1connector

Application	USB device connection
Model	USB Type-C Receptacle(JAE DX07S024JAAR1100)
Compatible Plug	USB Type-C Plug
Number of Connectors	1
Standard	Compatible with USB3.1 standards and USB HOST, exFAT/NTFS

USB3.1connector

Pin Configuration				
Pin No.	Name	Direction	Function • Input/Output Level	Notes
A1	GND_1	-	USB power output return	
A2	SSTX_P1	OUT	USB3.1 SS output signal 1 positive	
A3	SSTX_N1	OUT	USB3.1 SS output signal 1 negative	
A4	VBUS_1	OUT	USB power output, 5 V, 3 A (for all four)	
A5	CC1	I/O	Config process signal 1	
A6	D_P1	I/O	USB2.0 HS signal 1 positive	
A7	D_N1	I/O	USB2.0 HS signal 1 negative	
A8	SBU1	I/O	Sideband Use 1	
A9	VBUS_2	OUT	USB power output, 5 V, 3 A (for all four)	
A10	SSRX_N2	IN	USB3.1 SS input signal 2 negative	
A11	SSRX_P2	IN	USB3.1 SS input signal 2 positive	
A12	GND_2	-	USB power output return	
B1	GND_3	-	USB power output return	
B2	SSTX_P2	OUT	USB3.1 SS output signal 2 positive	
B3	SSTX_N2	OUT	USB3.1 SS output signal 2 negative	
B4	VBUS_3	OUT	USB power output, 5 V, 3 A (for all four)	
B5	CC2	I/O	Config process signal 2	
B6	D_P2	I/O	USB2.0 HS signal 2 positive	
B7	D_N2	I/O	USB2.0 HS signal 2 negative	
B8	SBU2	I/O	Sideband Use 2	
B9	VBUS_4	OUT	USB power output, 5 V, 3 A (for all four)	
B10	SSRX_N1	IN	USB3.1 SS input signal 1 negative	
B11	SSRX_P1	IN	USB3.1 SS input signal 1 positive	
B12	GND_4	-	USB power output return	



Pin Configuration Figure (from the side of the engaged connector)

(00512)

Shape, environment, precision, standards, disposables, dimensional drawings

Shape

External dimensions (W x H x D)	W128 x H128 x D134.6 mm (excluding connectors, protruding parts, and mounts)
Main unit weight	About 2.9kg (excluding cables and options)

Environment

Operating Temperature and Humidity	0 to 40 °C, 30 to 80%RH (no condensation)
Storage temperature and humidity	-10 to 60 °C, 20 to 80%RH (no condensation)

Precision

Precision of recording time	±0.01% or less Apply the value of the inverse of the Frame Rate (frequency for (1 sec or more) during a given time period as the time precision.
Method of Inspecting the Recording Time Precision	By measuring the frequency with a frequency counter, EPO signal-output from SYNC-OUT connector-is recorded within a specified period of time (1 second or longer).

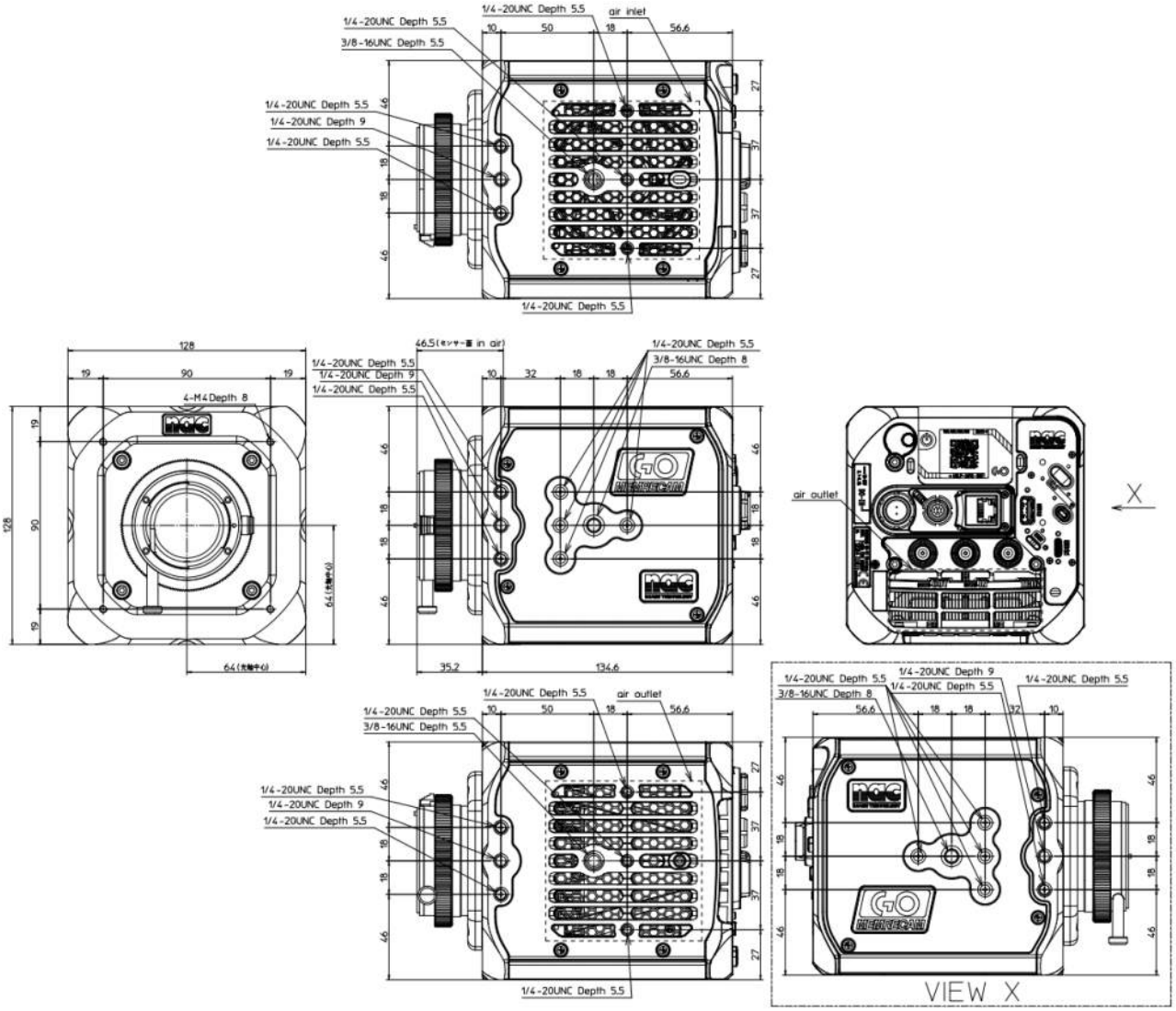
Standards

Safety standard	EN62368-1
Electromagnetic Compatibility	EN55032 EN61000 EN5035 FCC Part15 subpart B Class A

Disposables

Clock Batteries	Consumption period: About 15 years (8 hours/day, 240 days/year) Replacement method: Replacement by ourselves

Wired model Dimensions



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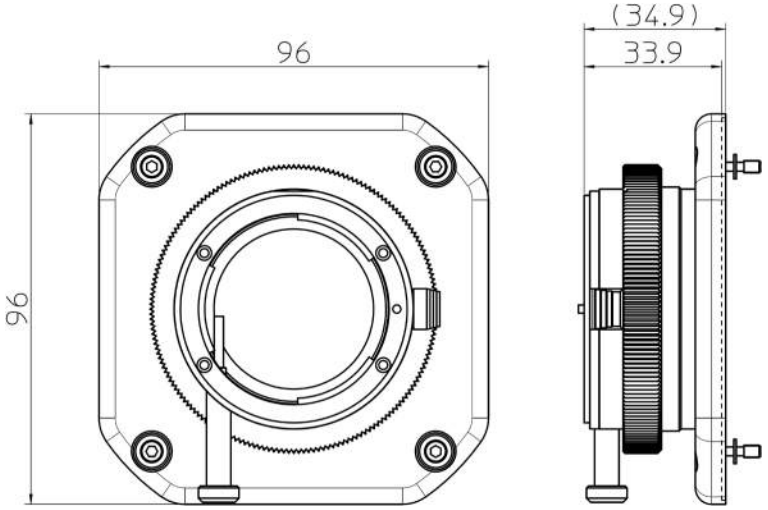
Main Accessories, Options

F Mount Adapter	
External dimensions (W × H × D)	About W96 x H96 x D34.9mm (excluding protruding parts)
Weight	About 0.22 kg
Lens	F Mount lens (Vignetting may occur with some F Mount lens, depending on the image resolution)
Dimensions	



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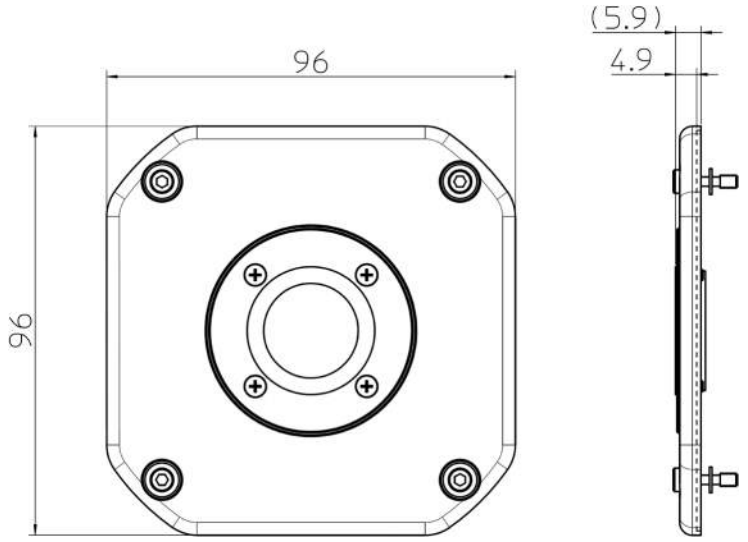
C Mount Adapter (Option)

External dimensions (W × H × D)	About W96 x H96 x D5.9mm (excluding protruding parts)
Weight	About 0.08 kg
Lens	C Mount lens (Vignetting may occur within a depth of 8mm of the mounting screws, depending on the image resolution)
Dimensions	



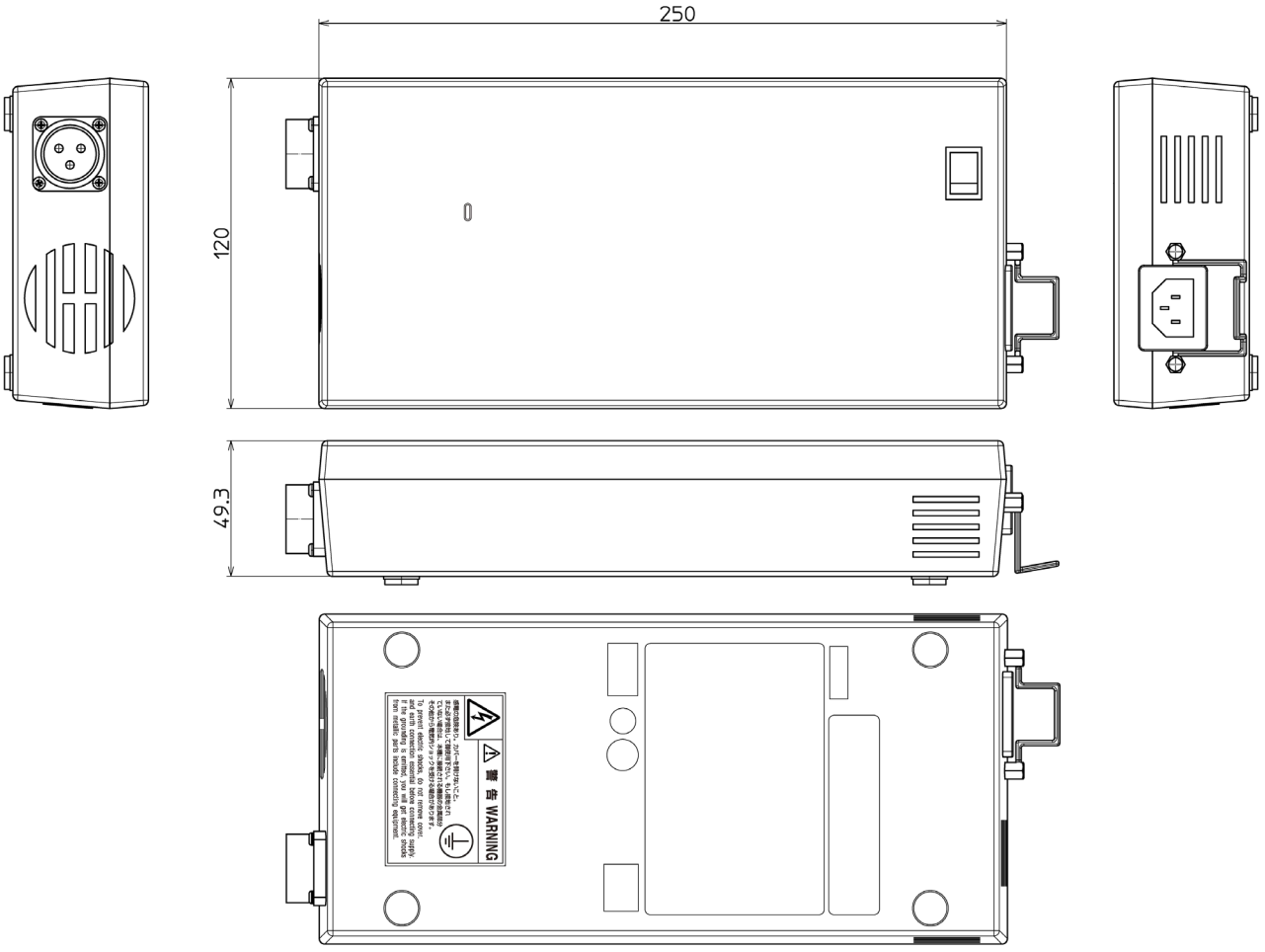
Control Software MLink

PC	Windows PC
OS	Requires Microsoft Windows 7 Ultimate / Professional (32/64bit) Windows 8 Pro (32/64bit) / Windows 8.1 Pro (32/64bit) Windows 10 (32/64bit) .NET Framework 4.6.2 or after
Memory	4GB or more (recommend 8GB or more)
Monitor	Full color 1024 x 768 or higher (1920x1080 or higher recommend-ed)
HDD	2 GB or more (not including video data storage area)
Network	1000BASE-T (LAN cable is Category 5e or higher)
Optical Drive	DVD-ROM drive

AC Adapter

External dimensions (W × H × D)	About 120 × 49.3 × 250 mm (not including connectors)
Weight	About 1.4 Kg
Precision of recording time	0 to 70 °C, 5 to 95%RH (no condensation)
Method of Inspecting the Recording Time Precision	-40 to 85 °C, 10 to 95%RH (no condensation)
Connector	Camera side: NANABOSHI NTE-243-RF AC side: AC 3pin connector
Input	AC100 to 240V, 47 to 63Hz
Output	DC28V, maximum of 14.29A

Dimensions

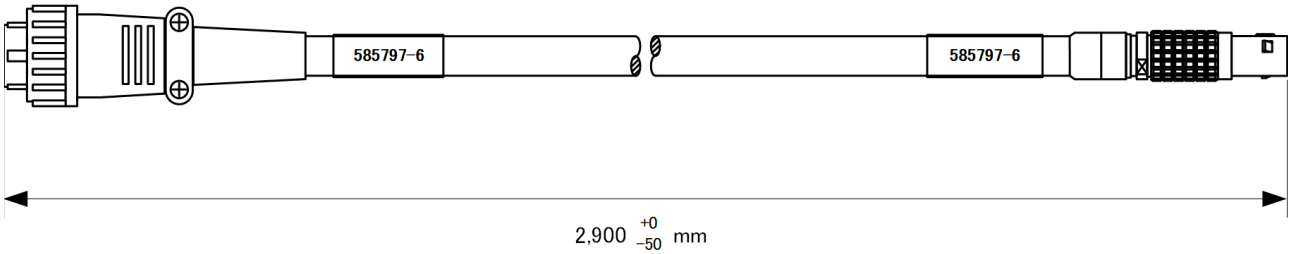


(00512)

DC Cable between AC Adapter -Camera

Length	2.9 m
Plug	AC Adapter side: NANABOSHI NET-243-PM Camera side: LEMO FGG.3B.307.CLAD10Z
Connector to the camera	DC INconnector

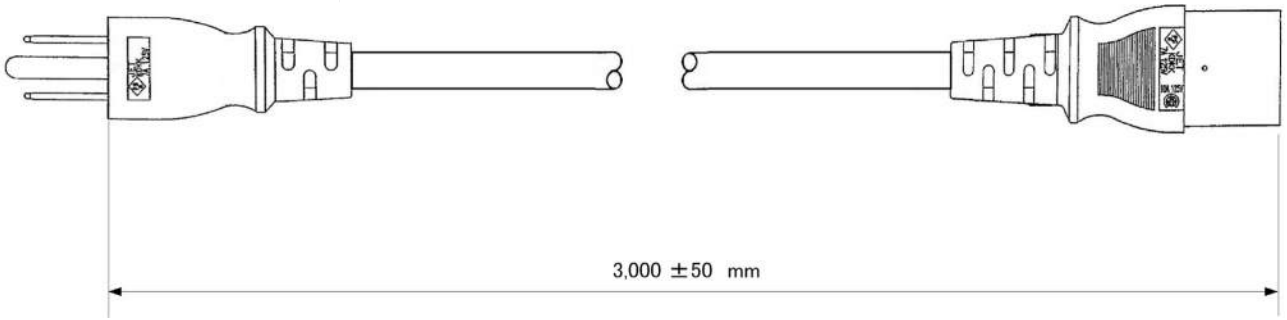
Dimensions



AC adapter AC cable

Length	3 m

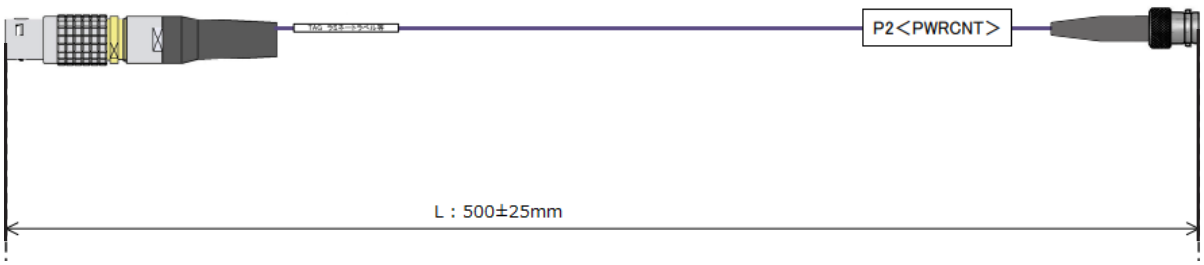
Dimensions



GO PWRCNT Cable

Length	0.5m
Plug	Power control input : BNC plug Camera side: LEMO FGG.1B.316
Connector to the camera	AUX Connector

Dimensions



(00512)

Battery	
Product name	V Mount-type Li-ion battery Imicro-150
Manufacturer	IDX
Capacity	145Wh (14.54V 9.93Ah)
External dimensions (W × H × D)	About 72mm(W) × 97(H) × 67.5(D) mm
Weight	About 750g
Appearance	

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Battery Charger

Product name	V-mount type Lithium-ion Battery Charger VL-2000S
Manufacturer	IDX
Number of rechargeable batteries	2
External dimensions (W × H × D)	About 231mm(W) x 82(H) x 182(D) mm
Weight	About 1240g
Appearance	

Battery Charger

Product name	D-Tap Advanced Battery Charger VL-DT1
Manufacturer	IDX
Compatible Battery	IDX battery with D-Tap Advanced terminal
Number of rechargeable batteries	1
External dimensions (W × H × D)	About 110 mm (W) × 33.5 (H) × 62 (D) mm
Weight	About 230 g
Appearance	

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Revision History

-	Date of issue	Changes
A	February 2023	First edition (Camera firmware Ver. 0.7.3.)

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