ELMO

L-12F / TT-12F

VISUAL PRESENTER

INSTRUCTION MANUAL

Please read this instruction manual carefully before using this product and keep it for future reference.

IMPORTANT SAFEGUARDS

- **Read Instructions**

  All the safety and operating instructions should be read before the appliance is operated.

- **Retain Instructions**

  The safety and operating instructions should be retained for future reference.

- **Heed Warnings**

  All warnings on the product and in the operating instructions should be adhered to.

- **Follow Instructions**

  All operating and use instructions should be followed.

- **Cleaning**

  Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

- **Attachments**

  Do not use attachments not recommended by the product manufacturer as they may cause hazards.

- **Water and Moisture**

  Do not use this product near water - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.

- **Placement**

  Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer' s instructions, and should use a mounting accessory recommended by the manufacturer.

- **Ventilation**

  Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer' s instructions have been adhered to.

■ **Power Sources**

This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home consult your appliance dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

■ **Grounding or Polarization**

This product may be equipped with either a polarized 2-wire AC line plug (a plug having one blade wider than the other) or a 3-wire grounding type plug, a plug having a third (grounding) pin. The 2-wire polarized plug will outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. The 3-wire grounding type plug will fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug.

■ **Power-Cord Protection**

Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

■ **Lightning**

For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.

■ **Overloading**

Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.

■ **A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.**

■ **Object and Liquid Entry**

Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

■ **Servicing**

Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

■ **Damage Requiring Service**

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

• When the power-supply cord or plug is damaged.

• If liquid has been spilled, or objects have fallen into the product.

• If the product has been exposed to rain or water.

• If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.

• If the product has been dropped or damaged in any way.

• When the product exhibits a distinct change in performance - this indicates a need for service.

■ **Replacement Parts**

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

■ **Safety Check**

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

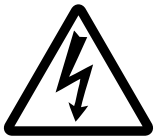
■ **Heat**

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

CAUTION

RISK OF
ELECTRIC SHOCK
DO NOT OPEN

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



SA 1965

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

SA 1966

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

This symbol [crossed-out wheeled bin WEEE Annex IV] indicates separate collection of waste electrical and electronic equipment in the EU countries.
Please do not throw the equipment into the domestic refuse.
Please use the return and collection systems available in your country for the disposal of this product.

WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

The connection of a non-shielded equipment interface cable to this equipment will invalidate the FCC Certification or Declaration of this device and may cause interference levels which exceed the limits established by the FCC for this equipment. It is the responsibility of the user to obtain and use a shielded equipment interface cable with this device. If this equipment has more than one interface connector, do not leave cables connected to unused interfaces. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

FOR UNITED STATES USERS:

INFORMATION

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

FCC CAUTION

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

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

WARNING:

Handling the cord on this product or cords associated with accessories sold with this product, will expose you to lead, a chemical known to the State of California to cause birth defects or other reproductive harm.

Wash hands after handling.

BEFORE YOU USE

- When using this device, be sure to use the supplied power cord and AC adapter.
- The power cord and AC adapter that come with this product are for this product only. Do not use them with another product.
- Be sure to use the power cord applicable to your local power specifications.
- When storing the product, do not leave it under direct sunlight or by heaters. It may become discolored, deformed, or damaged.
- Do not place this product in any humid, dusty, salt bearing wind, or vibrating locations.

  Only use it under the following environmental conditions:

  Temperature: 0°C - 40°C (32°F - 104°F)

  Humidity:30% - 85% (No condensation)
- Use a soft, dry cloth for cleaning.

  Do not use any volatile solvent such as thinner or benzene.
- Do not point the camera lens directly at the sun. It may be damaged and you may not be able to take pictures.
- Luminescent and Black Spots

  There may be some pixels that do not properly operate due to the use of CMOS Area Image Sensors made-up of many pixels.

  Though luminescent or black spots may be found on the screen, it is a phenomenon peculiar to the CMOS Area Image Sensors and is not a malfunction.
- Follow the guidelines below to prevent the unit from dropping or overturning.
  - Use the product on a stable base, desk, or table. Do not place the product on an unstable base or slanted surface.
  - Place or wire the unit to prevent the AC adapter cord or video cable from pulling.
- Carry the product by holding the lower part of the main unit in both hands. Never hold the product by the column or the camera head.
- Pay careful attention when using (including setting-up and storing) or transferring the product to prevent the camera head from receiving any shocks.
- Do not look directly into the LED light. If you look directly into it at point-blank range, your eyes may be injured.
- Some type of SD card/USB flash drive can be used.
- Transfer the data from the SD card onto a device such as a PC to save a backup copy. Malfunction of the product or repairs to it may cause the data saved in the SD card to be deleted.
- If this product is used for longer than the warranty period, its performance and quality may deteriorate due to the lifetime of its parts. To purchase replacement parts, consult the dealer from whom you purchased this product or our branch/office near your location.
- Battery precautions:
  - If this product is not going to be used for a long time, take the batteries out of the remote control.
  - Do not use rechargeable batteries (e.g., Ni-Cd (NiCad batteries)).
  - Do not use new and old batteries or batteries of different types together.
  - Do not try to recharge or short-circuit the batteries.
  - When disposing of used batteries, follow the instructions of your local government.
  - Insert from one side and pay particular attention to the polarity (+/- directions).

■ If any liquid from a battery leaks onto your skin or clothes, flush the area with clean water immediately. If it gets into your eye, flush immediately with clean water and then contact a doctor.

■ Do not keep the batteries in the reach of children because there may be a choking hazard.

If a battery is swallowed, consult a physician immediately as this could result in asphyxiation or the battery may become lodged in the stomach or esophagus.

■ About using microphones

Connecting microphones other than electret condenser microphones (microphones for PCs and so on) could cause a malfunction to occur. If you are concerned about this product's operating noise when using the built-in microphone, we recommend using an external microphone.

■ About the audio input port

Do not connect any audio line-output devices such as a CD/MP3 player to the audio input port when the Audio Selector is set to "Mic-in." Audio input is a dual purpose port (microphone/line-in) which supplies power when "Mic-in" is selected, adding external output devices (CD/MP3) may damage them.

■ Menu

Some functions may not be set or operated depending on the mode or the menu settings being used.

■ Record/Play

- Before recording an important scene, make sure to do a test recording to confirm that the camera is working properly.
- The maximum file size of the continuous recording is 2GB. (The maximum recording length varies depending on other factors such as resolution and recording quality.)
- Movie files that are recorded with this camera or converted by the proprietary software can only be played with this camera.

■ Copyright

Do not commercially use or transfer movies or audio files recorded with the camera without the permission of the copyright holder except for personal use.

Do not use the camera in locations where recording movies or audio files are prohibited.

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BEFORE YOU USE vi

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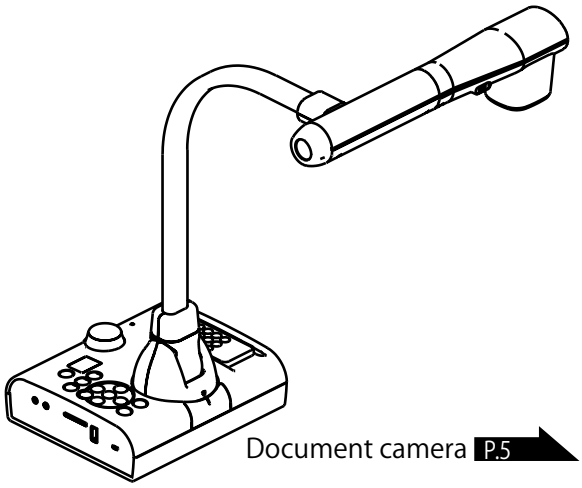
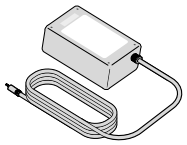
1 BUNDLED ITEMS

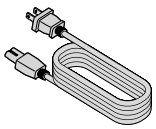
The items below are included with this product. If any item is missing, contact the dealer from whom you purchased this product.



Document camera P.5



AC adapter P.7



AC cord P.14

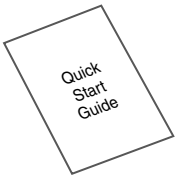
USB3.0 cable

Remote control P.11

Coin battery P.11
(for Remote control)

HDMI cable fixture × 2

Cable tie × 2



Quick Start Guide

IMPORTANT SAFEGUARDS

Warranty Registration Card ※2

3S Service Registration Form ※1

3S Service Registration Statement ※1

3S Assurance Guarantee Label ※1

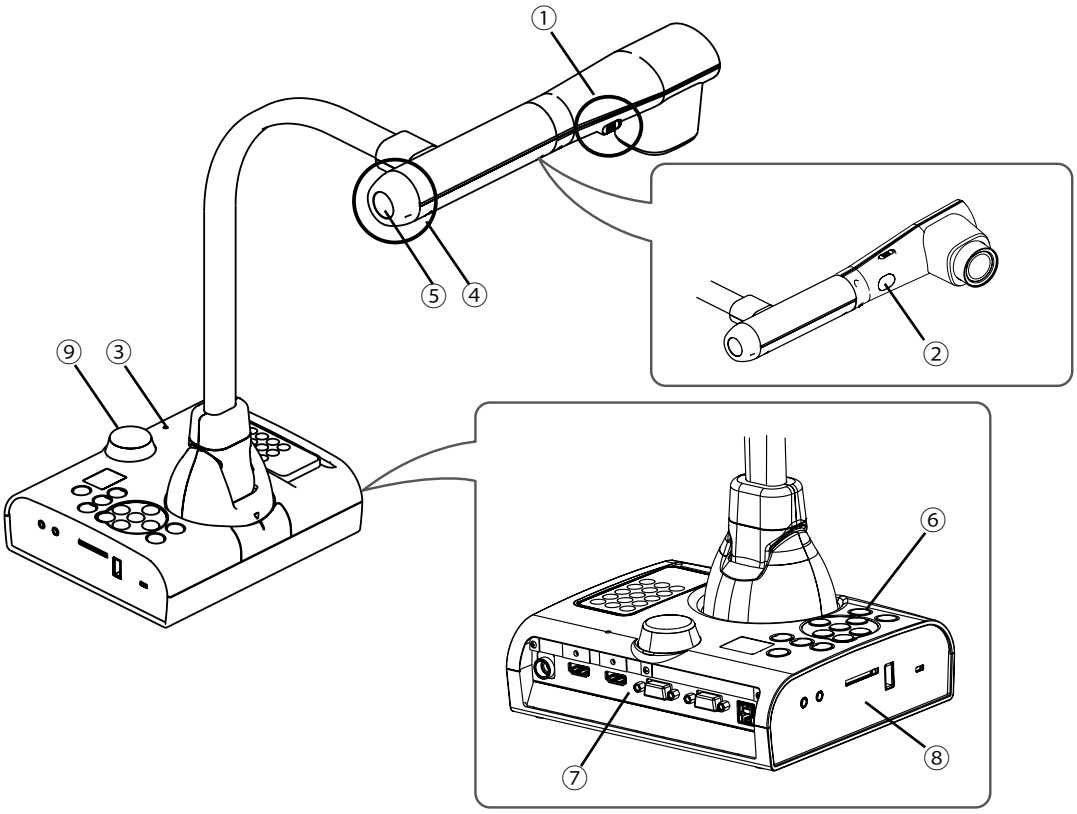
※ 1 Japan only
※ 2 N. America only

2 BASIC OPERATIONS

2-1 Document camera

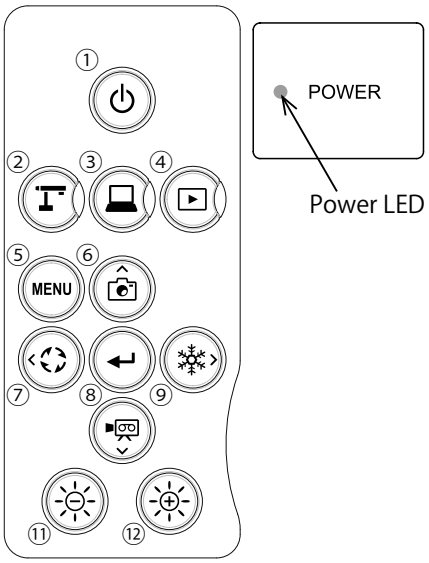
■ Part names

For operations of the main unit, refer to P.14



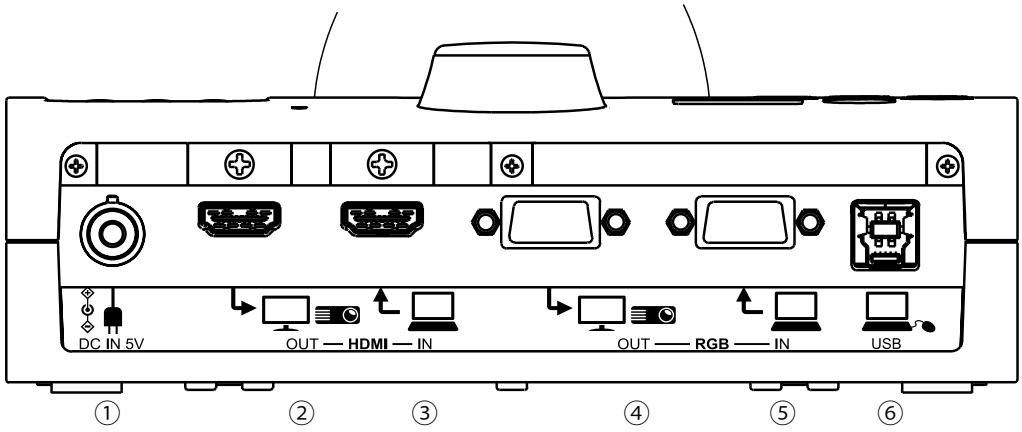
No.	Name	
①	LED lighting switch	P.18
②	LED lighting	P.18
③	Built-in microphone	
④	Zoom dial	P.16
⑤	AF button	
⑥	Operating panel	P.6
⑦	Rear panel	P.7
⑧	Side panel	P.9
⑨	IR receiver	P.11

■ Operating panel



	Mark	Function
①		To turn on / off the power Power ON: Power LED lights up blue Power OFF (standby status): Power LED lights up red **Note** • Press and hold this button for more than 2 seconds
②	mode buttons — LED	To switch to the Camera mode. The camera image will be displayed. P.19
③	mode buttons — LED	To switch to the External input mode. Images being input to the external input ports will be displayed. P.19
④	mode buttons — LED	To switch to the Playback mode. Images stored in an SD card/USB flash drive will be displayed. P.19
⑤	MENU	To show/hide the menu on the screen. P.20
⑥		To save a still image on an SD card/USB flash drive. P.34
⑦		To rotate the image by 90 degrees. P.23
⑧		To confirm the selected OSD menu item. P.20
⑨		To pause the camera image. P.19
⑩		To record the camera image as a video on an SD card/USB flash drive. P.35
⑪		To darken the camera image. P.17
⑫		To brighten the camera image. P.17

■ Rear panel and cable connection



	Mark	Function
①	DC IN 5V	To connect the AC adapter. (AC power cable is supplied with the product.)
②	OUT — HDMI	To output digital images. (HDMI cable is not supplied with the product.)
③	HDMI — IN	To input digital images. (HDMI cable is not supplied with the product.)
④	OUT — RGB	To output analog RGB images. (RGB cable is not supplied with the product.) [miniDSUB 15pin]
⑤	RGB — IN	To input analog RGB images. (RGB cable is not supplied with the product.) [miniDSUB 15pin]
⑥	USB	To connect to a computer. (USB cable is supplied with the product.)

① Connecting the AC adapter

Before inserting the AC adapter in an outlet, connect the DC plug of the supplied AC adapter to the [DC IN 5V] port on the rear panel.

② Connecting to a device with an HDMI input port

Connect a commercially available HDMI cable to the [OUT — HDMI] port on the rear panel.

③ Connecting to a device with an HDMI output port

Connect a commercially available HDMI cable to the [HDMI — IN] port on the rear panel.

Note

- The product does not operate properly with the cable that does not conform to the HDMI standard.The product does not operate properly with the cable that does not conform to the HDMI standard.
- We do not guarantee proper operation for all HDMI-compatible monitors.

④ Connecting to a device with an analog RGB input port

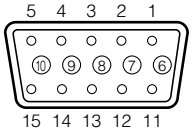
Connect a commercially available RGB cable to the [OUT — RGB] port on the rear panel.

⑤ Connecting to a device with an analog RGB output port

Connect a commercially available RGB cable to the [RGB — IN] port on the rear panel.

■ Specifications of the [RGB — IN] port

Signal allocation



DSUB 15P shrink terminal (Female)

Video signal	Analog 0.7V (p-p) 75Ω terminated
Horizontal synchronized signal	TTL level (Positive/negative polarity)
Vertical synchronized signal	TTL level (Positive/negative polarity)

Pin assignment

Pin No.	Name	Pin No.	Name	Pin No.	Name
1	Video signal (Red)	6	Video signal (Red)	11	GND
2	Video signal (Green)	7	Video signal (Green)	12	N.C
3	Video signal (Blue)	8	Video signal (Blue)	13	Horizontal synchronizing signal
4	N.C	9	N.C	14	Vertical synchronizing signal
5	GND	10	GND	15	N.C

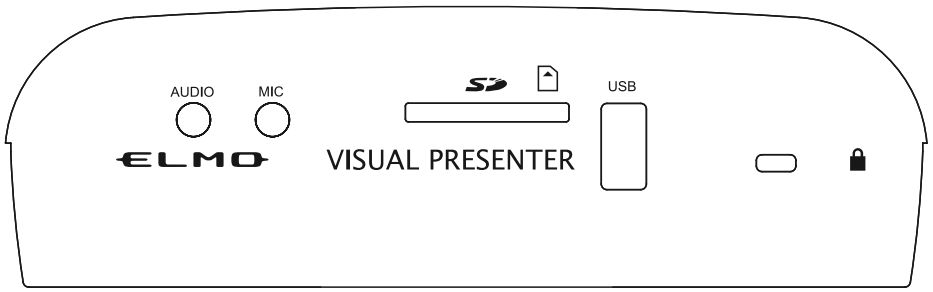
⑥ Connecting to a computer with the USB cable

Connect a commercially available USB cable to the [USB] port on the rear panel.

Note

- If the displayed image is off-center, adjustment of the horizontal and vertical position should be made from the connected device.
- In some cases, vertical stripes may appear on the display device such as a projector and a monitor. This can be reduced by adjusting the "clock phase" function of the connected device.
- When using a computer with an external output mode, set the computer to the external output mode after pressing the [ ] button on the operating panel.
- We recommend using a standard USB cable.
- If you plug into the USB cable with the power on, the computer may not recognize the product.
- Depending on the computer' s USB environment or the peripheral equipment using the USB 2.0 compliant cable, image transfer may be disrupted.

■ Side panel



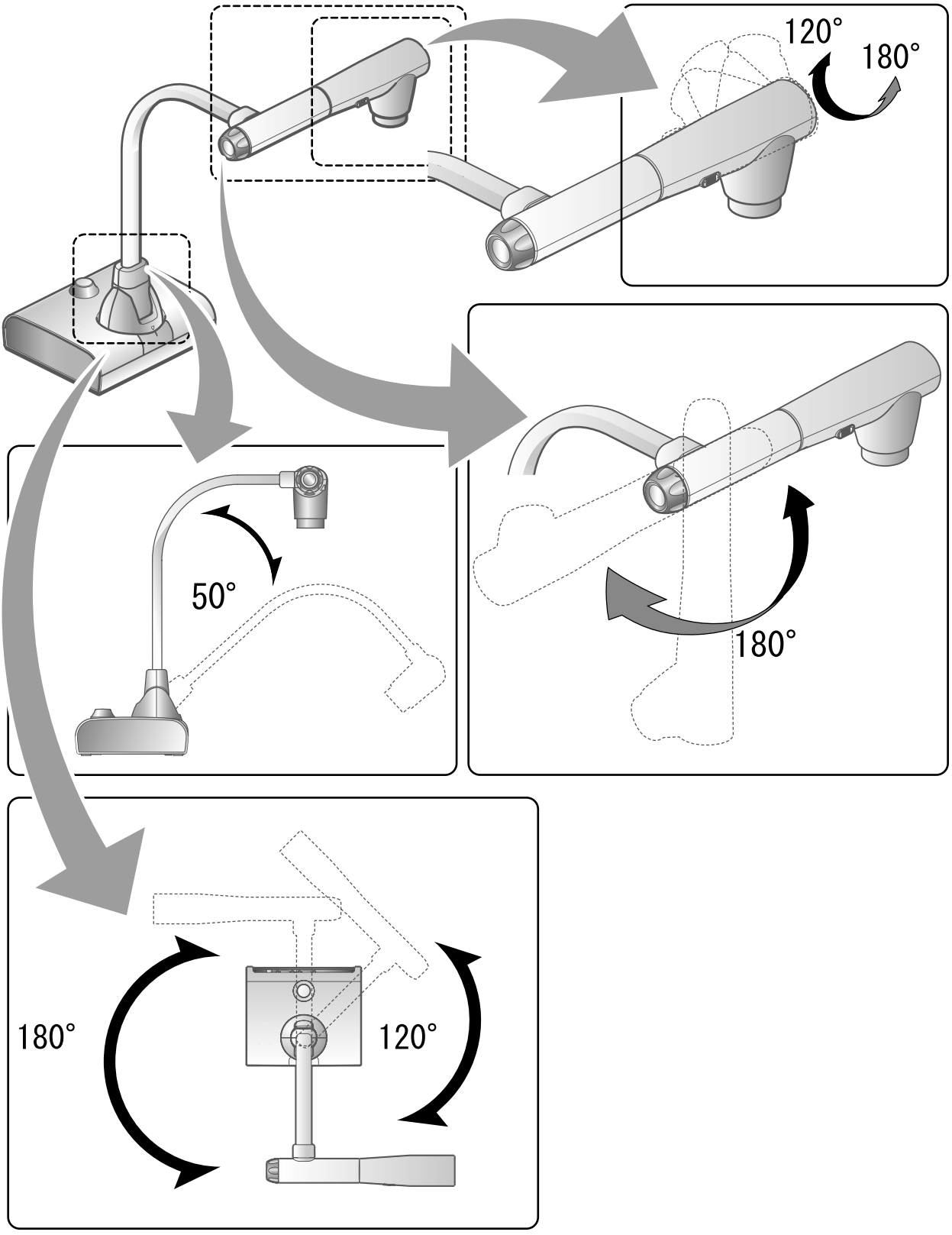
	Mark	Function
①	AUDIO	To output audio. (Audio cable is not supplied with the product.)
②	MIC	To connect a microphone. (Microphone is not supplied with this product.) Use a commercially available electret condenser microphone.
③	SD	To insert an SD card (commercially available). Push the card again to remove the SD card.
④	USB	To connect the wireless pen tablet (sold separately) P.48 or a USB flash drive (commercially available). P.33
⑤		Security slot.

Note

- Connecting microphones other than electret condenser microphones (microphones for computers and so on) may cause a malfunction.

■ Moving parts of the document camera

The product can be moved as shown below.

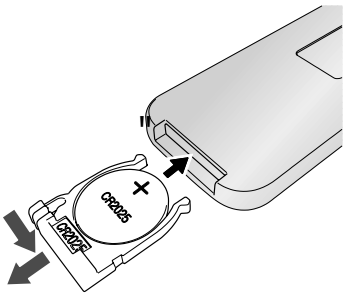


2-2 Supplied accessories

■ Remote control

Preparation of the remote control

Remove the battery case by pressing the release lock inward.
Insert the coin battery into the battery case, so you see the positive (+) side facing up. Then insert the battery case into the remote control.



Note

- Use a commercially available CR2025 coin battery for the remote control.

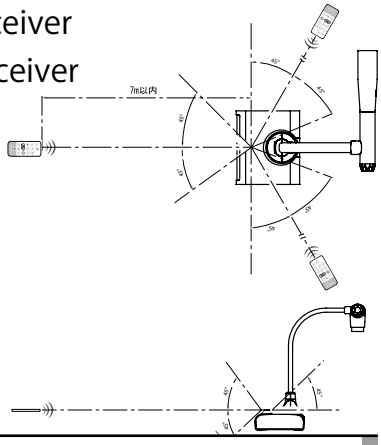
Warning Children may ingest small batteries. Always keep batteries safe and out of reach of children.
If a battery is swallowed, consult a doctor immediately as this could result in asphyxiation or be an obstacle to digestion, etc.

Operation of the remote control

For operations when the camera image is displayed, refer to P.15
For operations when data in the SD card/USB flash drive is displayed, refer to P.33

Receiving IR signal from the remote control

Point the IR transmitter of the remote control to the IR receiver of the product, and press the desired button.
Receivable range:
Distance: Within approx. 7m from the front of the IR receiver
Angle: Within 45° up, down, left, and right of the IR receiver



Note

- The receivable range may be reduced when the product is placed in direct sunlight, near an inverter fluorescent light or in any other unfavorable conditions. Depending on the light source conditions, the sensor may fail to receive any infrared light. In such cases, relocate the product or shield the light source.

■ Fixture

How to use the supplied fixture and cable tie

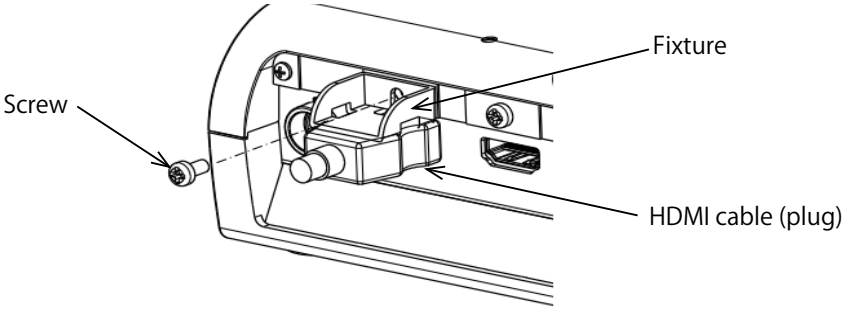
You can fix the HDMI cable to the HDMI port by using the supplied fixture and cable tie.

Items to use (supplied)

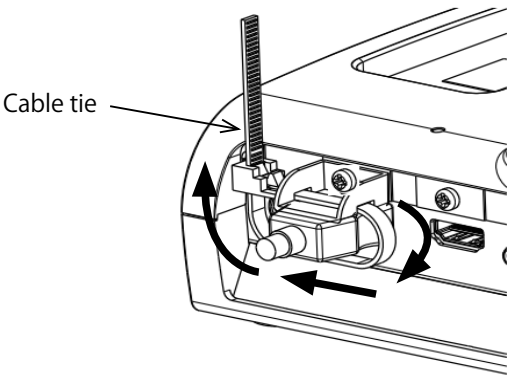
Fixture
(For HDMI cable)

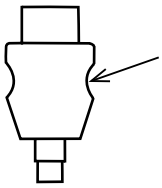
Cable tie x 2

① Before connecting the HDMI cable to the HDMI port, remove the screw above the HDMI port. Attach the fixture and tighten the screw.



② Pass the cable tie through the fixture and tie it around the plug of the HDMI cable.



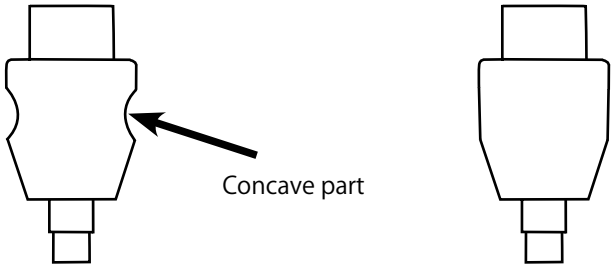


• When the plug has a concave part, tie the cable tie around the concave part to get a firm hold.

Note

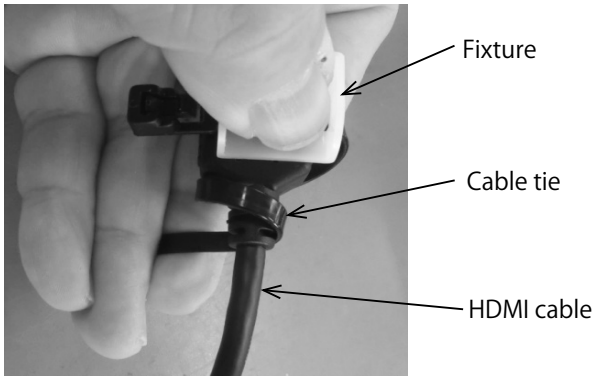
• The supplied cable tie can be used repeatedly.

When the plug does not have a concave part, wrap the cable tie as shown below.



with concave part　　without concave part

① Wrap the cable tie around the root of the cable and pull it tight.

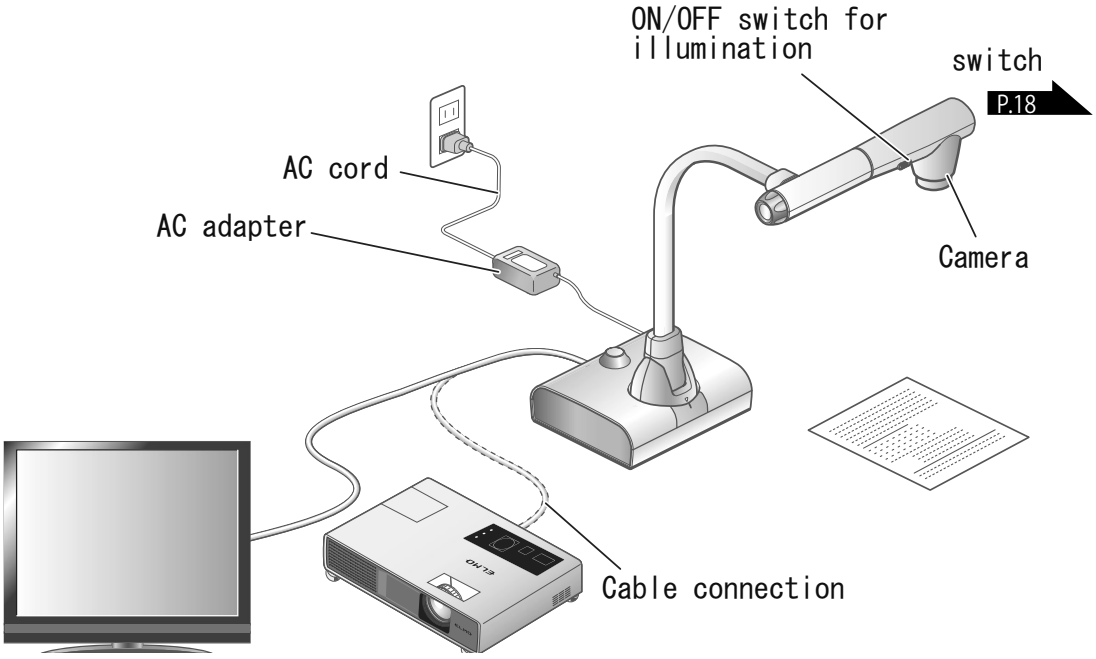


② Remove the screw above the HDMI port and connect the HDMI cable. Attach the fixture and tighten the screw.

Caution

Depending on the shape of the plug, the fixture may not be used.

2-3 Shooting images

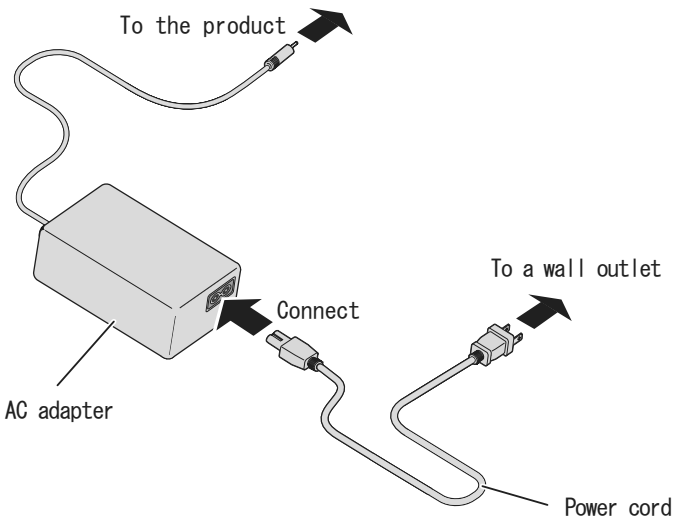


■ Setting up the product

Set up the product as shown in the figure above. Then connect the product to a projector or a monitor, and turn on the power of the product. P.15

Connecting the power cord

Connect the power cord and the AC adapter. Then connect the AC adapter to the [DC IN 5V] port at the rear panel of the product, and insert the power cord into a wall outlet.



Connecting the video cable

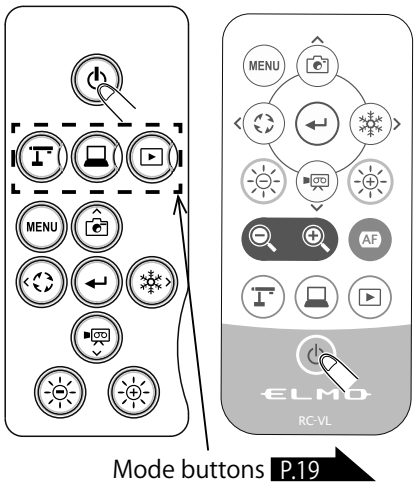
Connect the product to a display device using the cable corresponding to the specification of the display device. P.14

Caution

Before connecting the product to other devices, be sure to turn off the power for all of the devices.

Turn on / off the power

- Press the [⏻] button on the operating panel or the [⏻] button on the remote control to turn on the power.
  (The Power LED [POWER] will flash blue first. Then it will turn blue after several seconds.)
- Press the [⏻] button on the operating panel or the [⏻] button on the remote control to turn off the power. You need to hold down the button for two seconds or more for the button on the operating panel.
  (The Power LED [POWER] will turn red.)



Mode buttons P.19

Note

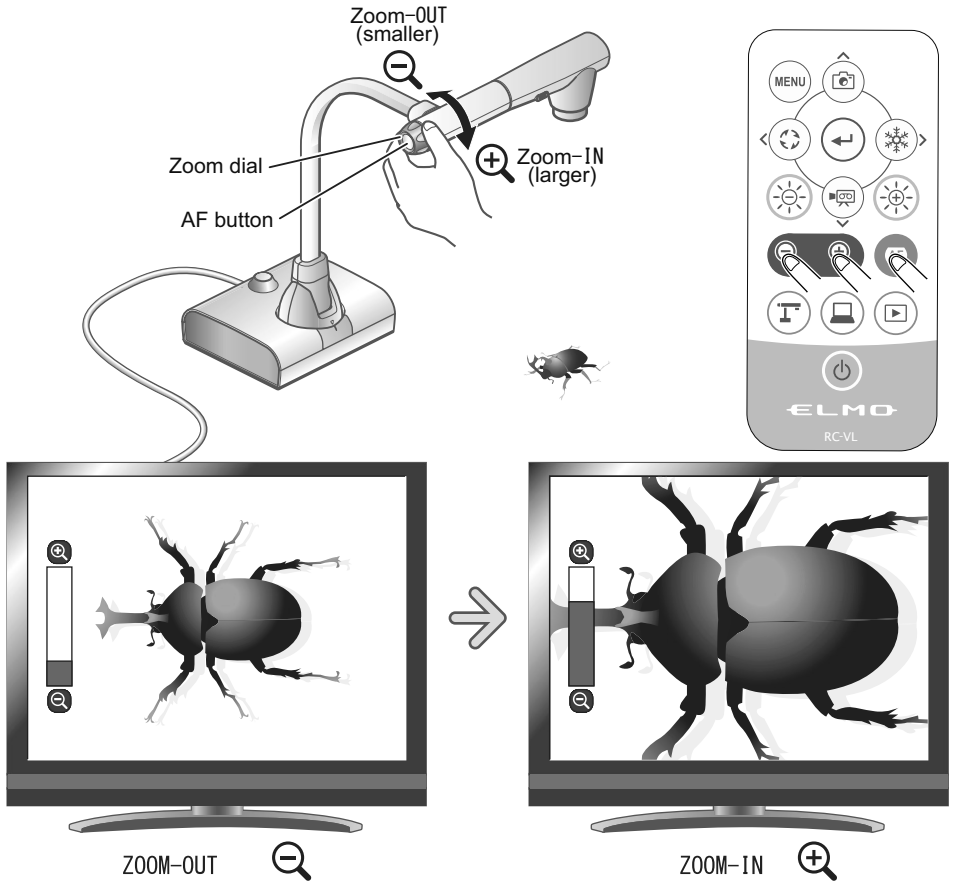
- Do not operate the product until LED of the Mode button turns.
- When the product is turned on for the first time, the region setting screen will be displayed. Select the region and press "OK". Then the image will be displayed.
  The region setting screen does not appear when the product is connected with the USB cable. In that case, set the region through the region setting menu displayed on the monitor connected to the product with the HDMI cable or the RGB cable before connecting the USB cable.

■ Adjusting the size

The display range of the document can be adjusted by rotating the zoom dial on the product or by pressing the [/] buttons on the remote control.

- ZOOM-IN : The object will be shown in large size.
- ZOOM-OUT : The object will be shown in small size.

If you cannot get a focused image, use the AF button on the camera head or the [AF] button on the remote control.

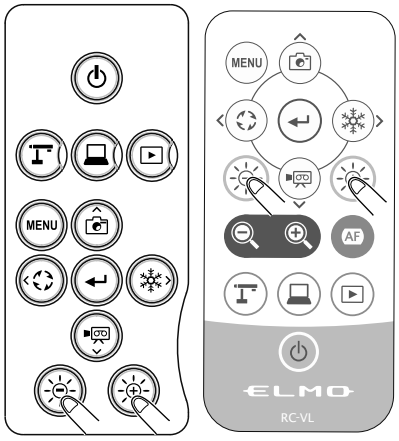


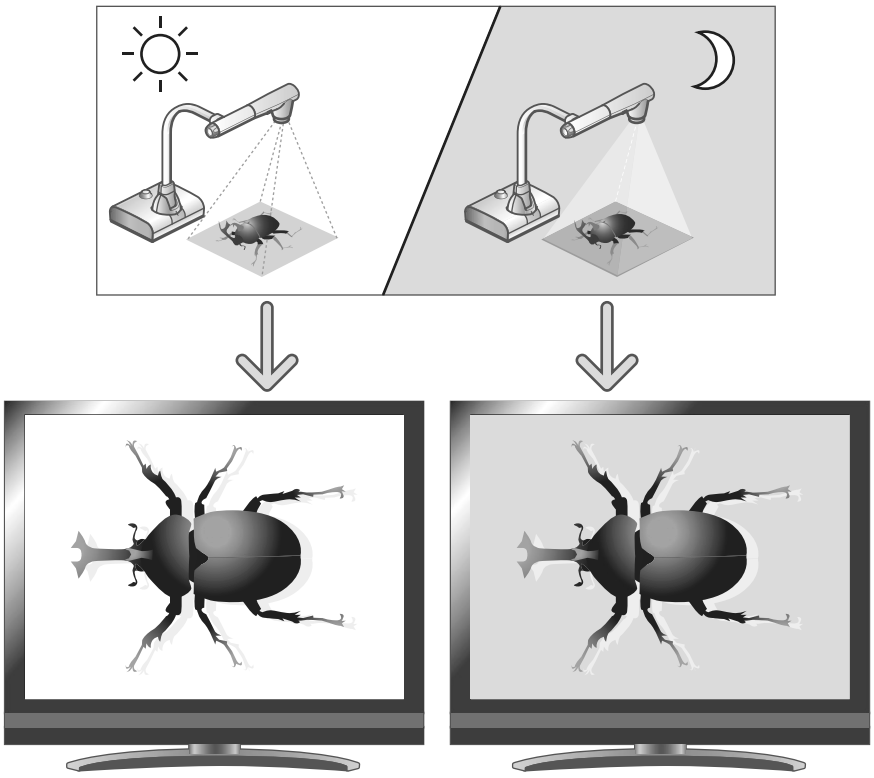
Note

- Zoom ratio: 24x (Optical zoom 12x + Sensor zoom 2x), Digital zoom 12x (Total 288x zoom) (※ The sensor zoom does not work when the output resolution is UHD.)
- When the optical zoom reaches 12x, it will automatically shift to the sensor zoom first, and then to the digital zoom.
- The digital zoom can be switched between ON and OFF from the System Setting menu. (Image Quality Setting: Digital zoom)
- When the digital zoom is set to OFF, only the optical zoom works. (The sensor zoom does not work.)

■ Adjusting the brightness

Use the [/] buttons on the operating panel or the [/] buttons on the remote control to change the level of brightness of the displayed image.
The brightness of the image will not change automatically in response to the brightness of the shooting environment.



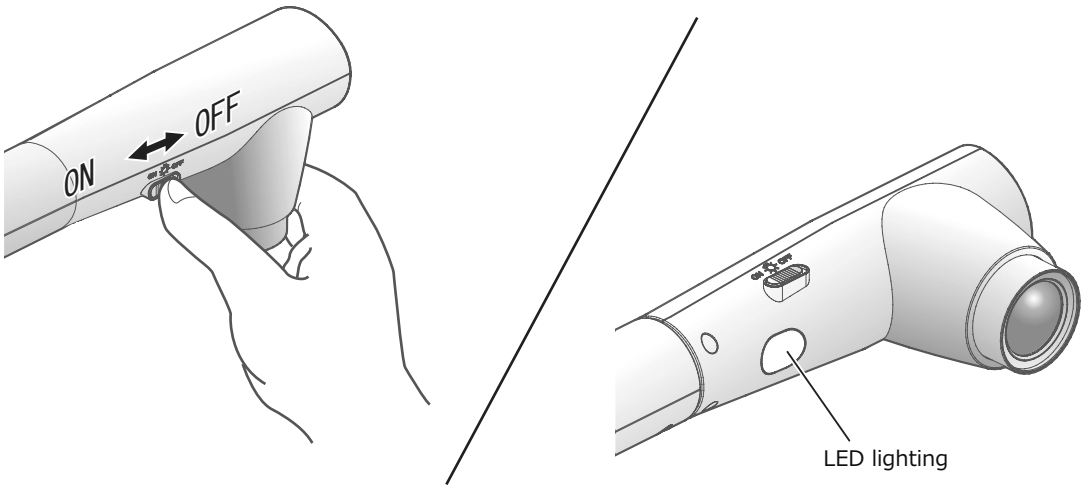


The brightness of the image is different.

Note

- To reset the brightness setting to factory default setting, press the [/] buttons on the operating panel at the same time.
- In places where the object is exposed to bright sunlight (e.g. near a window), or extremely bright light, the brightness of the screen may not dim sufficiently, even if the [ ] button on the operating panel or the [ ] button on the remote control is pressed.In such cases, to adjust the amount of light, close the curtains or move the object away from the light.

■ Turning on / off the LED lighting



The LED lighting can be turned on or off by sliding the LED lighting switch.

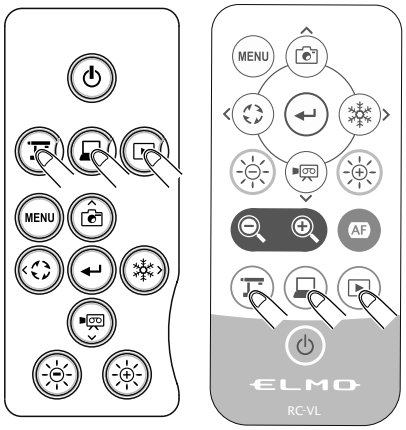
- [ON] : The LED lighting will turn on.
- [OFF] : The LED lighting will turn off.

Caution

- To take shots of people, set the LED lighting switch to off.
- Make sure that the light from the LED lighting does not shine directly into the eyes.
- This product is equipped with a high-brightness LED. You can safely use the LED lighting to light up objects, however its brightness will gradually diminish with long-term use. This is not a malfunction, but a normal characteristic of the LED.
- Do not touch the LED lighting while it is on as it may become very hot.

■ Selecting the image source

You can select the image source as described below.



Camera image：

[ ] button on the operating panel or
[ ] button on the remote control.

Image being input to the [HDMI — IN / RGB — IN] port：

[ ] button on the operating panel or
[ ] button on the remote control.

Image stored in an SD card/USB flash drive:：

[ ] button on the operating panel or
[ ] button on the remote control.

Note

- When using a computer with an external output mode, set the computer to the external output mode after pressing the [ ] button on the operating panel or the [ ] button on the remote control.
- When the [ ] button on the operating panel or the [ ] button on the remote control is pressed, the image being input to the [RGB — IN] port will only be output from the [OUT — RGB] port and the image being input to the [HDMI — IN] port will only be output from the [OUT — HDMI] port.

■ Pausing the image

Press the [ ] button on the operating panel or the [ ] button on the remote control to pause the camera image. Press the button again to cancel the pause.

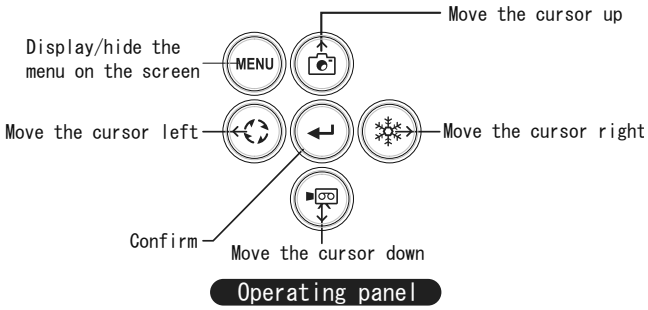
2-4 Configuring the settings

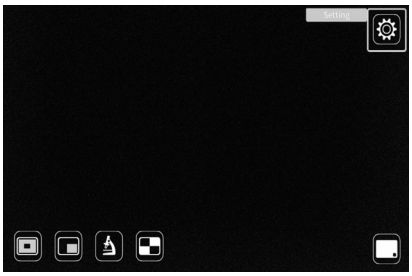
Each setting of the product can be configured from the menu (texts or icons) displayed on the screen.

■ How to configure the settings

① Press the [MENU] button on the operating panel or the remote control to display the menu on the screen. Then use the [ ] buttons to move the cursor to the icon you want to operate or set.

② Press the [↵] button to confirm the setting value.

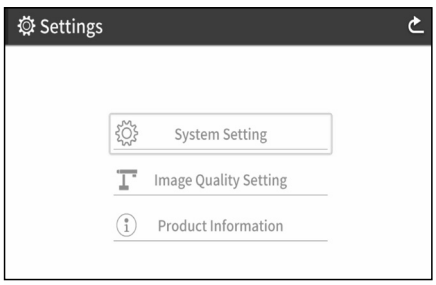




■ About Menus

There are 3 separate menus displayed on the screen.
- Settings menu (System Setting, Image Quality Setting, etc.)
- Support Function menu (Highlight, Mask, etc.) P.27
- Hide / display menu icon

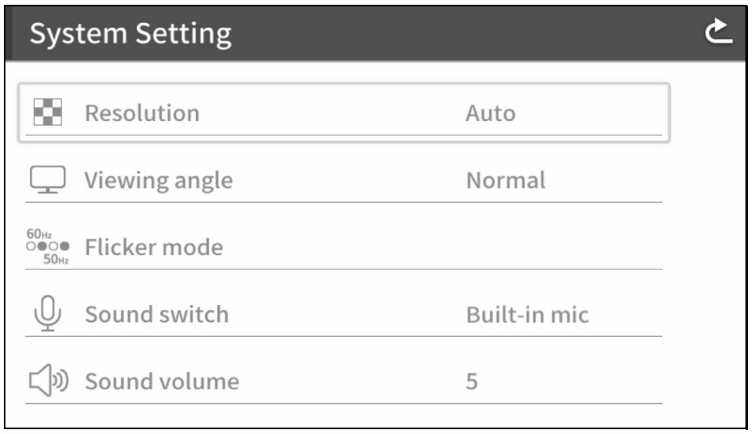
Settings
Move the cursor on the menu screen and select the [↵] button.
The Settings menu will be displayed.
"System Setting", "Image Quality Setting", and "Product Information" can be selected.
[✓ : Default setting (default value)]



※ To move to the previous layer or hide the menu, select the right (freeze) icon [❄], move to [↵] and press the [↵] button.

■ System Setting menu

（1/4 page）



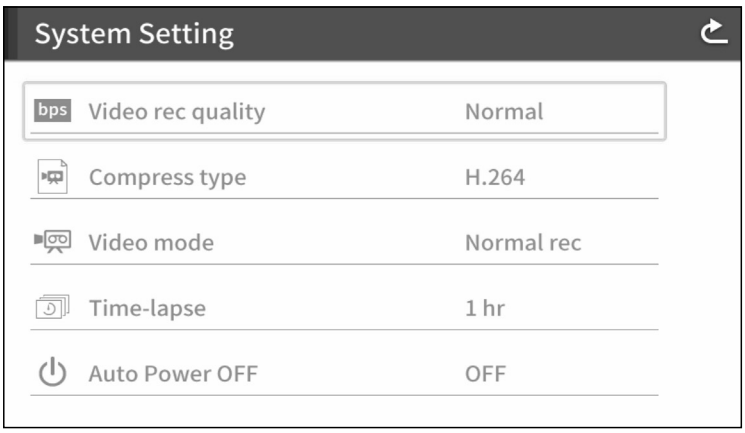
Icon	Name	Selection item		Factory setting	Function
	Resolution	Auto		✓	To set the resolution of the output image. ※
		UHD（3840 x 2160）			
		FHD（1920 x 1080）			
		HD（1280 x 720）			
		XGA（1024 x 768）			
	Viewing angle	Normal（16：9）		✓	To set the viewing angle of the output image.
		Full（4：3）			
60Hz 50Hz	Flicker mode	Frequency setting	60Hz	Japan / U.S.	To reduce fluorescent light flickering due to the power supply frequency. Select the same value as used for the power supply frequency.
			50Hz	Others	
			OFF	-	
		ND Filter	ON	-	Set this item to ON when there is halation due to flickering. (For example, when shooting outside or when the surrounding environment is too bright.) The flickering may be reduced.
			OFF	✓	
	Sound switch	Built-in mic		✓	To set the audio source to the built-in microphone. (monaural)
		External mic			To set the audio source to the external microphone. (monaural)
		Line-in			To set the audio source to line input. (stereo)
		Sound OFF			To mute the audio.
	Sound volume	0 ～ 10		5	To set the HDMI sound volume and the external microphone volume.

※ If the image is not displayed on the connected display device due to the mismatch of resolution between the output image and the display device when the Resolution in the System Setting menu is not set to AUTO, press the Camera button [ ] for over 5 seconds to set the resolution to AUTO.

※ This function is available when the resolution is not set to AUTO.

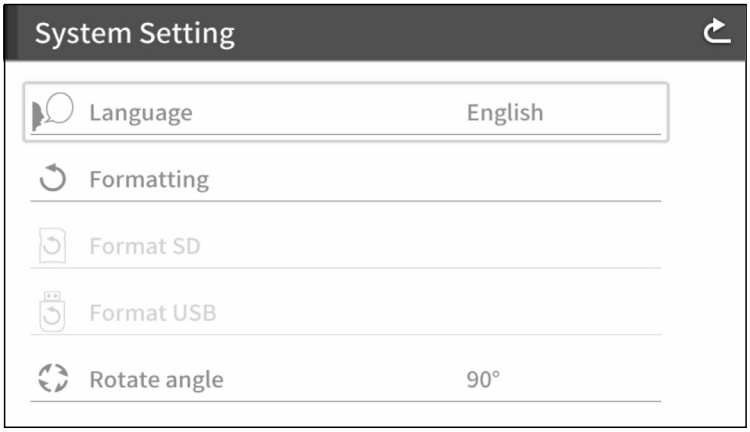
※ The product will enter the Camera mode when the resolution is set to AUTO by this way.

(2/4 page)



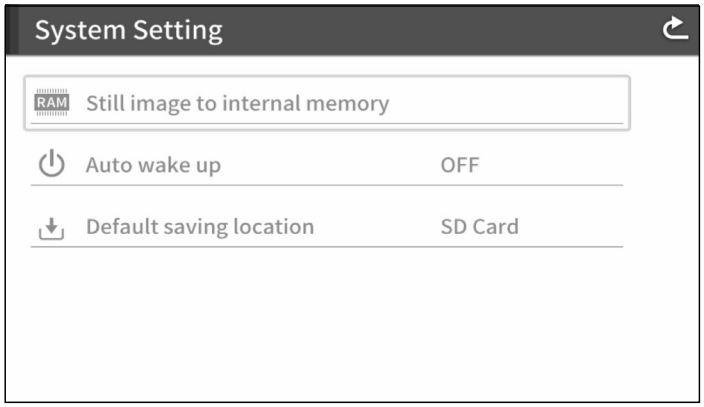
Icon	Name	Selection item	Factory setting	Function
bps	Video rec quality	Excellent Quality		To configure the recording bitrate. ※ When Excellent Quality or High Quality is selected, the recording time becomes shorter.
		High Quality		
		Normal	✓	
		Economy		
		Fast Economy		
	Compress type	H.264	✓	To set the video compression type to H.264.
		HEVC		To set the video compression type to H.265.
	Video mode	NORMAL rec	✓	To continuously record the video.
		Time-lapse rec		To create a video by combining multiple photos taken at certain intervals. The recording interval can be configured from "Time-lapse interval" .
	Time-lapse	1 min		To create a 1 second video by combining 30 photos taken at set intervals.
		10 min		
		30 min		
		1 hr	✓	
		3 hr		
		6 hr		
	Auto Power OFF	OFF	✓	To automatically turn off the power after no operation for a specific period of time.
		30 min		
		1 hr		
		2 hr		
		3 hr		

(3/4 page)



Icon	Name	Selection item	Factory setting	Function
	Language	Japanese	✓	To select the language for the on screen display.
		English		
		German		
		French		
		Chinese		
	Formatting	YES	-	To reset to factory default settings. If "YES" is selected, a confirmation window will be displayed, asking if you want to restart the product.
		NO		
	Format SD	YES	-	To perform a quick format of an SD card. If "Yes" is selected, a confirmation window will be displayed, asking if you want to format the SD card.
		NO		
	Format USB	YES	-	To perform a quick format of the USB flash drive. If "YES" is selected, a confirmation window will be displayed, asking if you want to format the USB flash drive.
		NO		
	Rotate angle	90°	✓	To set the angle of the image rotation.
		180°		

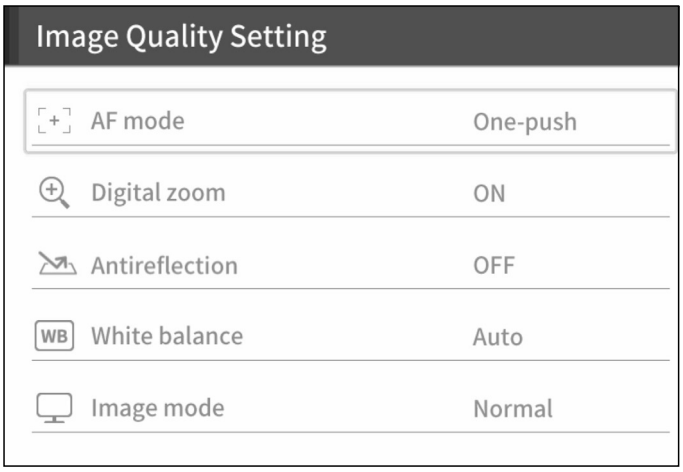
(4/4 page)



Icon	Name	Selection item	Factory setting	Function
RAM	Still image to internal memory	Save	-	To record a still image on the internal memory. Tap "Save" to record.
		Play		
	Auto wake up	ON		When this setting is set to ON, the product automatically starts up after the AC power is supplied.
		OFF	✓	
	Default saving location	SD card	✓	To set the default destination for saving still images or videos.
		USB flash drive		

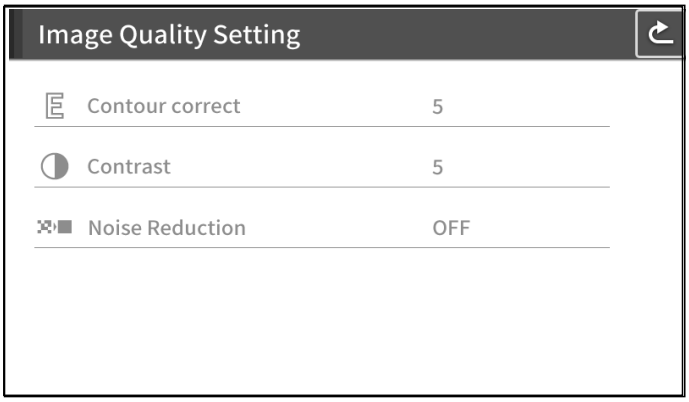
■ Image Quality Setting menu

（1/2 page)



Icon	Name	Selection item	Factory setting	Function
	AF mode	Zoom sync		To perform auto focus only once after zooming.
		One-push	✓	To perform auto focus only once when the AF button on the camera head or the AF button [AF] on the remote control is pressed.
	Digital zoom	ON	✓	To enable or disable the digital zoom.
		OFF		
	Antireflection	ON		To enable or disable the antireflection function.
		OFF	✓	
WB	White balance	Auto	✓	To always adjust the white balance automatically. The white balance is adjusted automatically to ensure a more natural color according to the characteristics of the object.
		One-push		To automatically adjust the white balance only once when this setting is selected.
		Fluorescent		To adjust the white balance according to the environment under the fluorescent light.
		Indoor		To adjust the white balance according to indoor environment.
		Outdoor		To adjust the white balance according to outdoor environment.
	Image mode	Normal	✓	Suitable for displaying documents.
		Emphasis		To emphasize the image.
		Color emphasis		Suitable for displaying colorful objects.
		Black/white		To display black and white images.
		DLP projector		Suitable for projecting images with a projector.

(2/2 page)

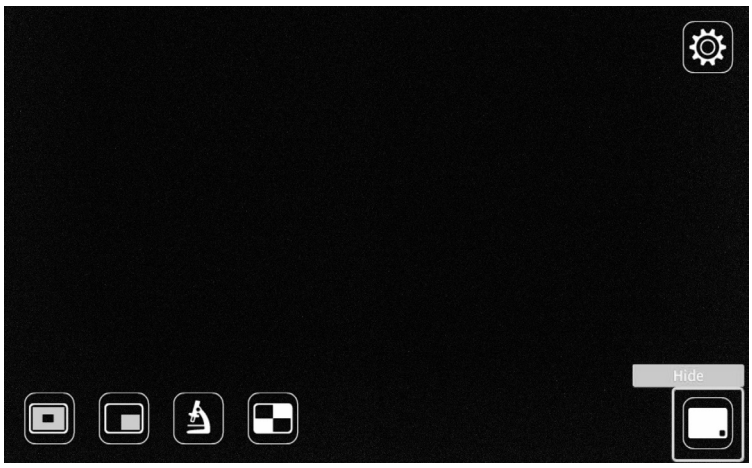


Icon	Name	Selection item	Factory setting	Function
	Contour correct	0~10	5	To adjust the level of edge enhancement.
	Contrast	0~10	5	To adjust the contrast of the image.
	Noise Reduction	ON		To reduce the image noise when outputing to xSyncBoard.
		OFF	✓	

■ Product Information menu

Icon	Name	Selection item	Function
	Camera Information	Product Name	To display the product name.
		Serial Number	To display the serial number of the product.
		Procuct Version	To display the version of the firmware.
		CMOS FPGA	To display the version of CMOS FPGA.
		MAIN FPGA	To display the version of FPGA which controls RGB output.
		Production Date	To display the production date.
	License	To display the license information used for the product.	

■ Support Function menu



Icon	Name	Function
	Highlight	To enhance the contrast for the specific area of the image to draw attention of the audience.
	Mask	To hide the specific area of the image with the mask.
	Microscope	Set this mode when you use the product with a microscope.
	Compare Picture	To display a still image and live image together in one screen. A still image saved in an SD card or USB flash drive is displayed on the left side of the screen, and the camera image on the right.
	Hide menu	To hide the menu. Press the MENU button to display the menu again.
	Settings	To display the Settings menu.

■ Configuring the Support Function settings

Highlight

Icon	Name	Function
	Expansion	To expand the highlighted area.
	Shrink	To shrink the highlighted area.
	Hide menu	To hide menu icons. (Press the MENU button to display menu icons again.)
	Return	To finish the highlight function.

Mask

Icon	Name	Function
	Left	To move the mask left.
	Right	To move the mask right.
	Up	To move the mask up.
	Down	To move the mask down.
	Display switching	To switch the display position of the mask. (Up or down / Left or right)
	Hide menu	To hide menu icons. (Press the MENU button to display menu icons again.)
	Return	To finish the mask function.

Microscope mode

Icon	Name	Function
	Hide menu	To hide the menu icons. (Press the MENU button to display menu icons again.)
	Return	To finish the microscope mode.

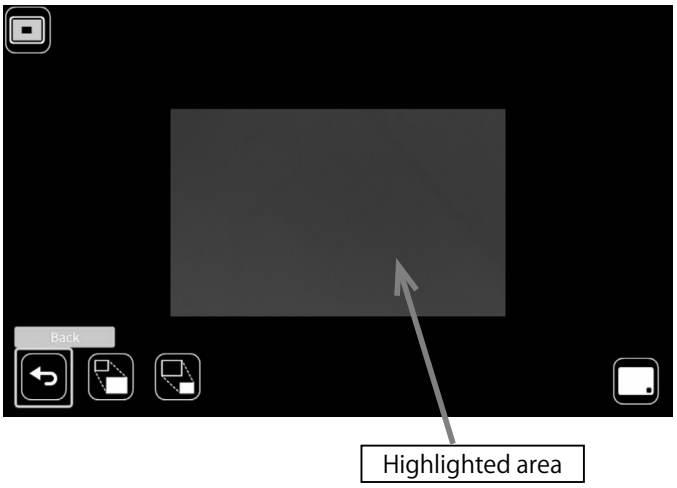
Compare Picture

Icon	Name	Function
	Hide menu	To hide menu icons. (Press the MENU button to display menu icons again.)
	Return	To finish the Compare Picture function.

Highlight function

Highlight operations

When the [ ] icon at the bottom left of the menu screen is selected while the camera image or the playback mode is displayed, the highlight function works. The highlight function can be cancelled by selecting the [ ] button.

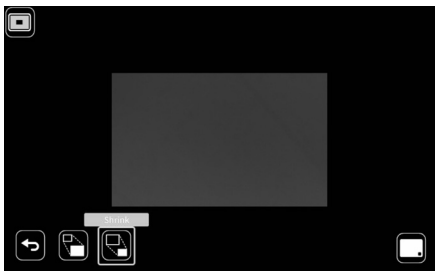


Note

- The highlight function cannot be used when the External input mode [ ] is selected.
- Highlighted image cannot be saved.

Setting operations

By using Expansion [ ] and Shrink [ ] in the menu, you can change the size of the highlighted area.

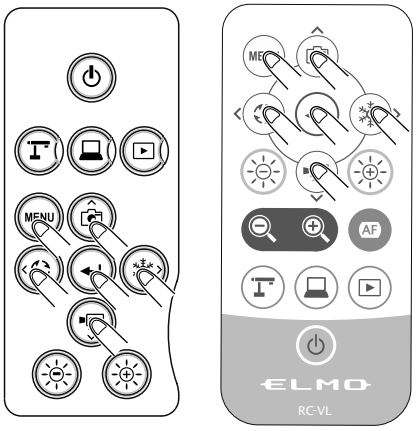


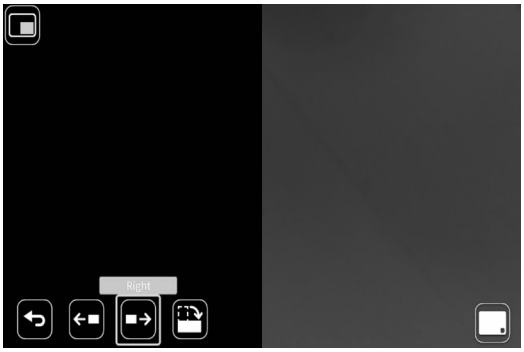
Mask function

This is a function to hide a part of the image.

Mask operations

When Mask [ ] in the menu displayed by pressing the MENU button [MENU] either on the remote control or the operating panel is selected while the camera image or the playback mode is displayed, the mask effect is applied.
You can move the masked area by pressing the Enter button [ ] on the operating panel or [ ] button on the remote control after moving the cursor to the left [ ] or to the right [ ].
With the Display switching[ ] button, the icon can be changed to [ ] up or [ ] down.
The mask function can be cancelled by pressing Return [ ] inthe menu.





Note

- The mask function cannot be used when the External input mode [ ] is selected.
- Masked image cannot be saved.

Microscope mode

This is a function to set the product to a mode suitable for use with a microscope. For information on how to use or connect the microscope to the product, refer to "3-4 Displaying enlarged images using a microscope". P.62

Compare Picture function

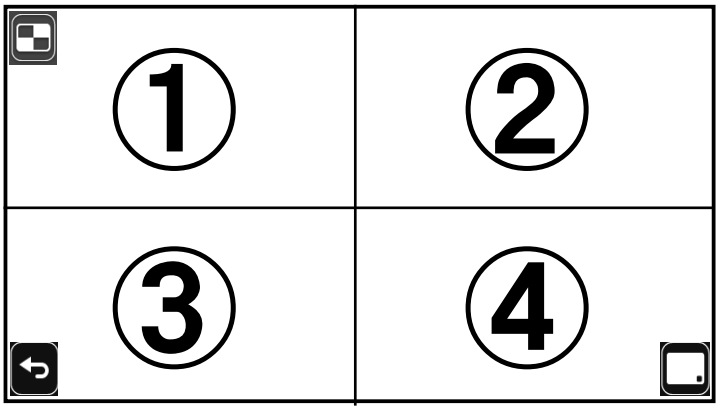
To display the live camera image and a still image stored in an SD card/USB flash drive together in one screen.
(Max. 4 images can be displayed in one screen. It is not possible to display multiple live camera images.)

Compare Picture operations

When Compare Picture [ ] in the menu displayed by pressing the MENU button [MENU] either on the remote control or the operating panel is pressed while the camera image or the playback mode is displayed, the USB/SD screen is displayed.

A list of still images is displayed when the saving destination of the still image [SD still image compare/USB still image compare] is selected. Select the image to be displayed in split screen. (Max. 4 images can be selected.)
※ Press the Camera icon[ ] at the top left of the screen to display the live camera image in the split screen.

The split screen is displayed when the Execute Split button [ ] is selected.



※ Hide or display the menu can be switched by selecting the MENU button [MENU]. The compare picture function can be cancelled by selecting Return [ ] in the menu and the list of still images is displayed again.

Note

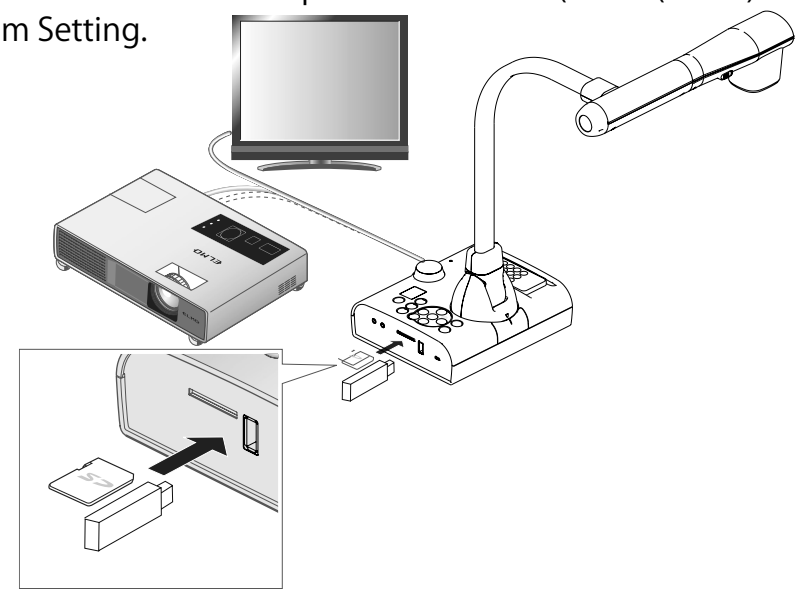
- The compare picture function cannot be used when the External input mode [ ] is selected.

3 ADVANCED OPERATIONS

3-1 Using an SD card/USB flash drive

With the product, you can record the camera image as a still image to an SD card, USB flash drive, or internal memory. Also, you can record the camera image as a video to an SD card.
The image data recorded in an SD card, USB flash drive, or internal memory can be displayed on the monitor.
Insert the SD card (SD/SDHC/SDXC, commercially available) or USB flash drive (commercially available) into the slot on the side panel before starting the operation. P.9
※ Recording is not possible if either an SD card or USB flash drive is inserted.

- Video recording (HEVC (H.265) / H.264): SD
- Still image recording (JPEG): SD / USB flash drive / internal memory
  ※ For video recording, an SD card with class10 speed or above is required.
  ※ You can select the video compression method (HEVC (H.265) / H.264) from the System Setting.



Note

- About SD card
  - The SDXC card cannot be used.
  - We recommend that you format an SD card with this product before you use it.
  - Video recording is only possible to an SD card (SD / SDHC) with class10 speed or above.
  - We recommend that you use an SD card with class 10 speed or above.
- About USB flash drive
  - Use a USB flash drive up to 32GB.
  - We recommend that you format a USB flash drive with this product before you use it.
- It may take some time to recognize the memory card (SD card or USB flash drive) after inserting it or to save images on the memory card.
- Do not remove the memory card (SD card or USB flash drive) while the product is accessing it (during recording, playing or using the support function).

Note

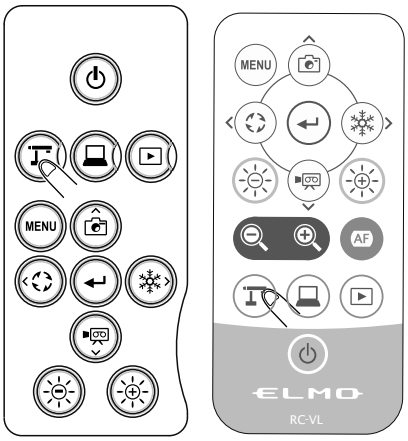
- Formatting an SD card/USB flash drive.
  When you need to format an SD card/USB flash drive, insert it into the product and execute formatting.
  ① Press the [MENU] button on the operating panel to display the menu.
  ② Select “Format SD” or “Format USB” from the “System Setting” menu.
  ③ A confirmation window will be displayed. Select "Yes" to execute formatting.
  ④ Select "No" if you do not want to execute formatting.

■ Recording

Still image

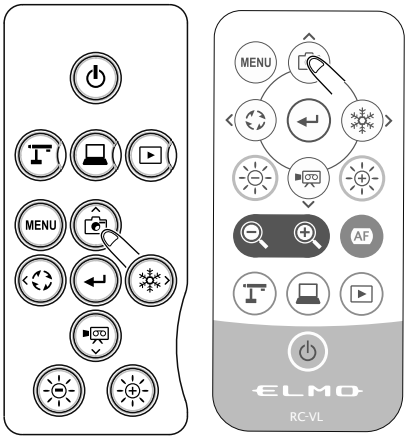
Basic operations

① Press the [ ] button on the operating panel or the [ ] button on the remote control.



② Make sure that the menu is not displayed on the screen and press the [ ] button on the operating panel or the [ ] button on the remote control.

If the menu is displayed on the screen, do the above operation after hiding the menu by pressing the [MENU] button either on the operating panel or the remote control.

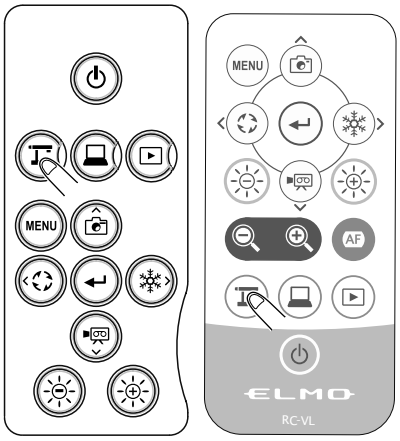


③ Still image recording will be executed when [ ] is displayed on the screen.

Video

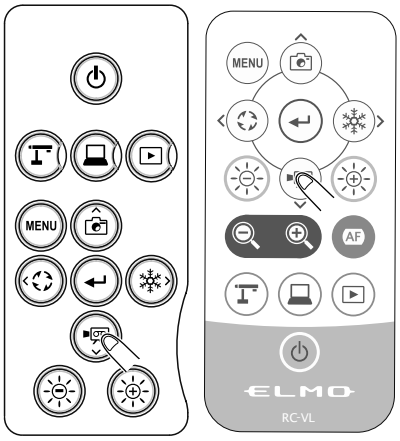
Basic operations

① Press the [ ] button on the operating panel or the [ ] button on the remote control.



② Make sure that the menu is not displayed on the screen and press the [ ] button on the operating panel or the [ ] button on the remote control.

If the menu is displayed on the screen, do the above operation after hiding the menu by pressing the [MENU] button either on the operating panel or the remote control.



③ Video recording begins when [ ] appears at the top left of the screen. When you press the [ ] button on the operating panel or the [ ] button on the remote control again, video recording will stop and [ ] will disappear.

Recording

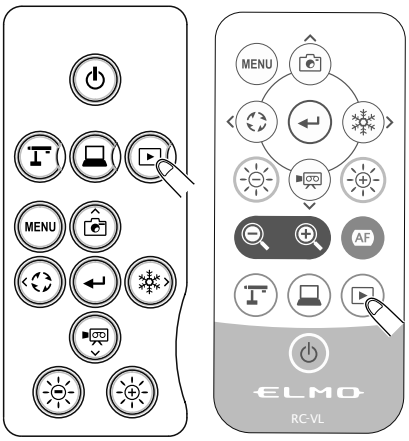
Note

- The video recording will be performed with the currently displayed resolution. Change the resolution from the System Setting menu if necessary.
  When recording a video, use a memory card (SD card or USB flash drive) with a faster read/write speeds (in case of SD card: Class 10 or above), or the image quality may deteriorate.
- How to select the saving location when both SD card and USB flash drive are inserted into the product (Still image recording)
  While the camera image is displayed on the screen, press the [MENU] button on the operating panel to display the menu. Then select [SD Card] or [USB Flash Drive] in the [Default saving location] from the System Setting menu. P.24

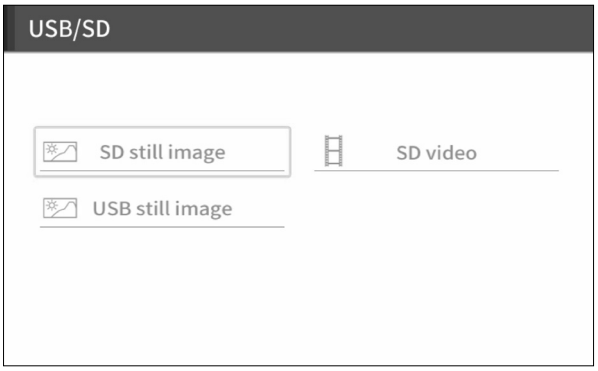
■ Displaying the stored data

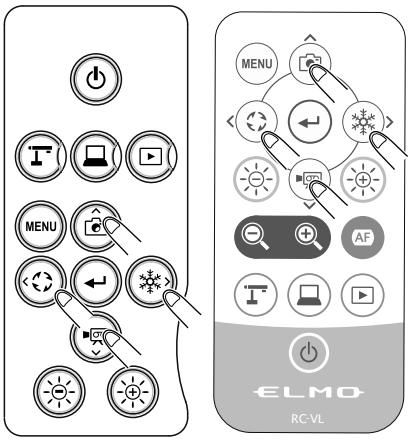
Thumbnail display (list of still images/videos)

Basic operations



① Press the [ ] button on the operating panel or the [ ] button on the remote control to display a menu to select the media and file type (SD still image / SD video / USB still image). Select the desired media and file type to display the thumbnails (list of still images/videos).





② How to move the cursor

(1) You can move the cursor using the [ ] button on the operating panel or the [ ] button on the remote control.

(2) Press the [ ] button on the operating panel or the [ ] button on the remote control to execute the selected item.

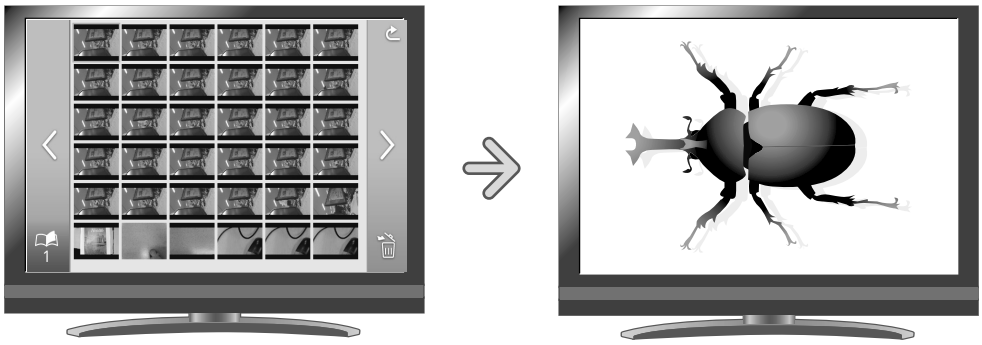
Menu descriptions

Thumbnail display menu

Icon	Name	Function
	Prev Page	To move to the previous thumbnail page.
	Next Page	To move to the next thumbnail page.
	Delete	To delete all the files selected. Tap the Prev Menu icon to exit the File delete mode. (※ It is possible to select files across multiple pages.)
	Thumbnail page number	To display the page number.
	Prev Menu	To move to the previous menu page.

Displaying a still image full-screen

You can display a still image you selected from the thumbnails (SD still image / USB still image) full-screen.



< Thumbnails >　　< Full-screen image >

Basic operations

① Display the list of thumbnails in the Thumbnail menu.
From the USB/SD menu, select SD still image or USB still image to display the list of thumbnails. Each menu will also be displayed.

② Select a still image you want to display full-screen. Press the [ ] button on the operating panel or the [ ] button on the remote control to move the cursor.

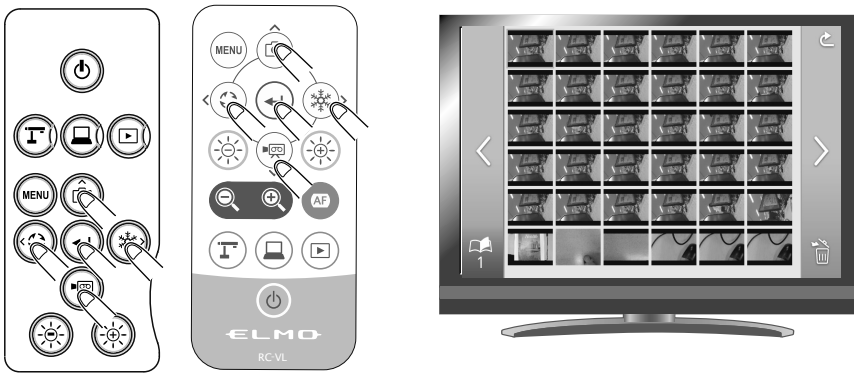
③ Confirm the still image you want to display full-screen.
Press the [ ] button on the operating panel or the [ ] button on the remote control.

The menu will be displayed.

If you want to hide the menu, press the MENU [ ] button on the remote control or the operating panel.

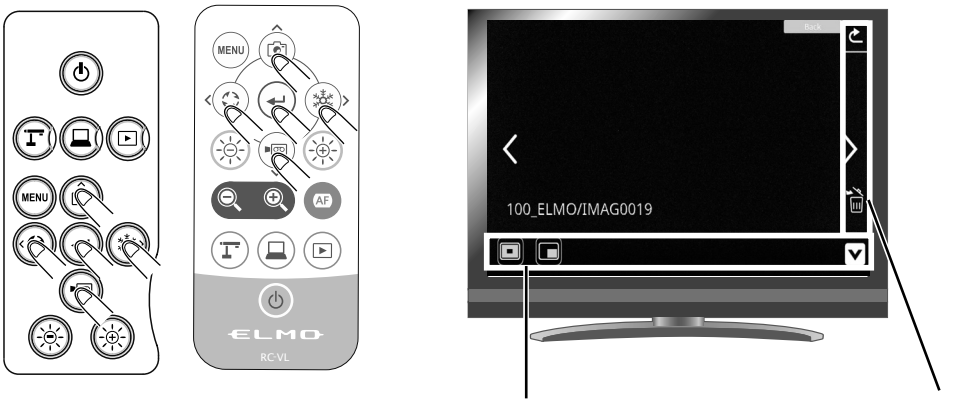
The image to be displayed can be switched by pressing the [ ] button after selecting the image by using the Previous [ ] or Next [ ] in the menu.

④ To return to the thumbnail display, press the [ ] button on the operating panel or the [ ] button on the remote control to display the [ ] button. Then press the [ ] button.



Configuring the settings

While a still image is displayed full-screen, the Still image menu and the Support Function menu will be displayed. Select the Hide menu icon [▼] to hide the menus.



Move the cursor with the [ ] button on the operating panel or the [ ] button on the remote control and confirm with the [↵] button.

Descriptions of each menu

Still image display menu

Icon	Name	Function
	Previous	To display the previous still image.
	Next	To display the next still image.
	Delete	If this icon is selected, a confirmation window will be displayed, asking if you want to delete the still image. Select "Yes" to delete the image. If "No" is selected, the screen will move to the list of thumbnails. The previous image will be displayed after the image is deleted.
	Hide menu	To hide the menu Press the MENU button to display the menu.
	Return	To return to the previous level of menu.

Support Function menu

Icon	Name	Function
	Highlight	To enhance the contrast for the specific area of the image to draw attention of the audience.
	Mask	To hide the specific area of the image with the mask.

Highlight

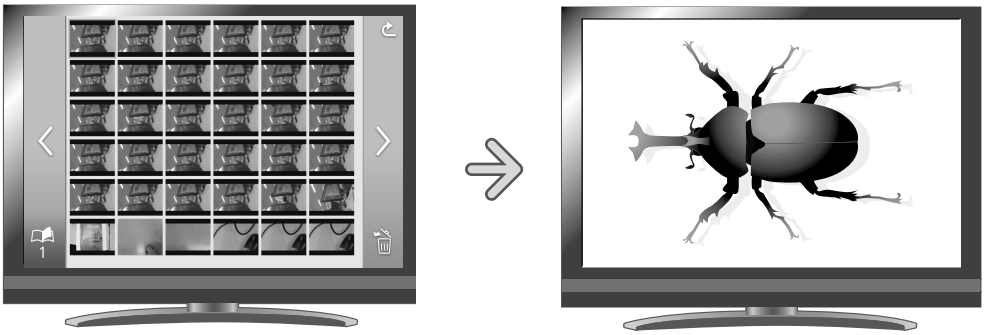
Icon	Name	Function
	Expansion	To expand the highlighted area. (5 levels)
	Shrink	To shrink the highlighted area. (4 levels)
	Hide menu	To hide the menu. Press the MENU button to display the menu.
	Return	

Mask

Icon	Name	Function
	Left	To move the mask left. This icon will be displayed when the mask is in horizontal position.
	Right	To move the mask right. This icon will be displayed when the mask is in horizontal position.
	Up	To move the mask up. This icon will be displayed when the mask is in vertical position.
	Down	To move the mask down. This icon will be displayed when the mask is in vertical position.
	Display switching	To switch the display position of the mask. (Left → Up → Right → Down)
	Hide menu	To hide the menu. Press the MENU button to display the menu.
	Exit	

Playing a video full-screen

You can play a video you selected from the thumbnails (list of SD video files) full-screen.



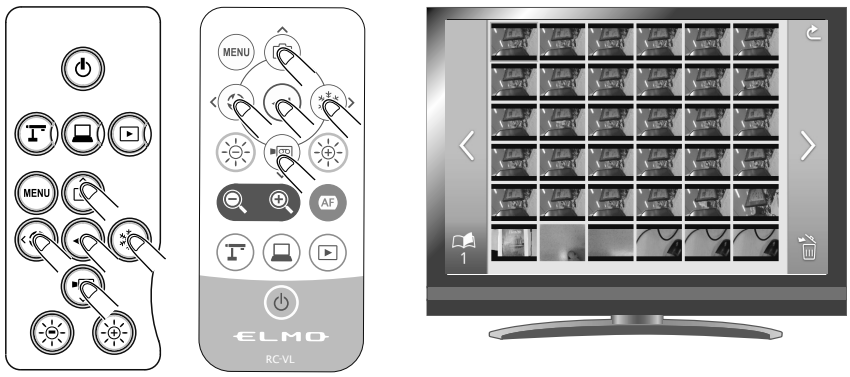
< Thumbnails >

< Full-screen image >

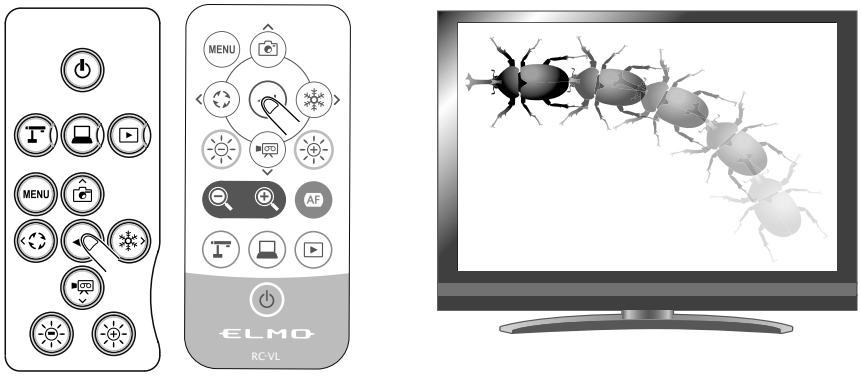
Basic operations

① Display the list of thumbnails in the Thumbnail menu.
From the USB/SD menu, select SD video to display the list of thumbnails. The Thumbnail menu will also be displayed.

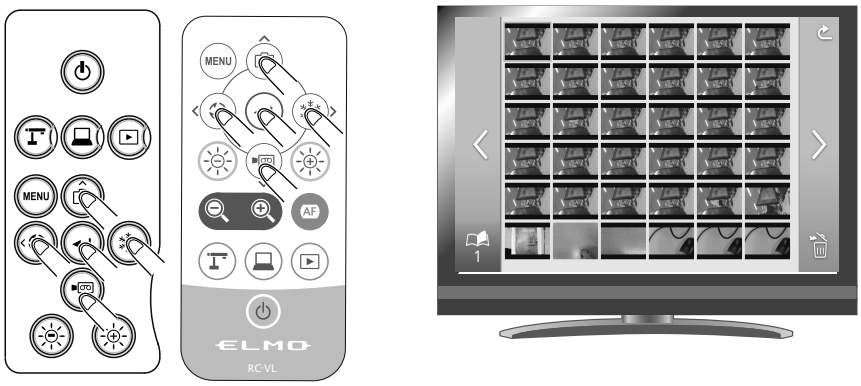
② Select a video you want to display full-screen.
Press the [⊙] buttons on the operating panel or the [✳] button on the remote control to move the cursor.



③ Confirm the video you want to display full-screen.
Press the [↵] button on the operating panel or the [↵] button on the remote control.
The product will start to play the selected video automatically.

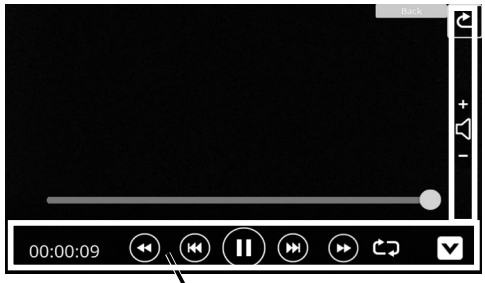


④ To return to the thumbnail display, press the [/] button with the [ ] button. Then press the [↵] button to confirm.



Configuring the settings

Press the [MENU] button either on the operating panel or the remote control to hide the Video menu. The Video menu can also be hidden by selecting the Hide icon [ ].



Movies menu

Move the cursor with the [ ] button on the operating panel or the [ ] button on the remote control and confirm with the [↵] button.

Menu descriptions

Video playback menu

Icon	Name	Function
	Play	To play/pause the video.
	Pause	
	Up	To set the output audio volume.
	Down	
	Repeat On	To play the video on loop.
	Repeat Off	
	Return	To return to the thumbnail display.
	Hide menu	To hide the menu.
	Fast forward	To fast forward the video.
	Next	To play the next video

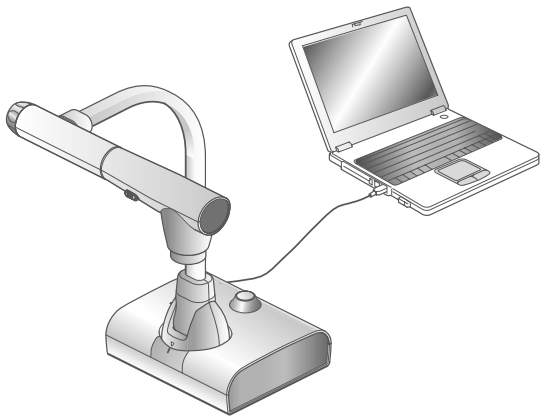
Icon	Name	Function
	Next	To play the next video.
	Previous	To play the previous video.

Note

- You cannot display still images other than DCF system compliant files and file structures.
- Video files that have the file name other than "MOV_****.MP4" cannot be displayed. (* should be numbers.)
- Many, but not all images taken by other digital cameras can be displayed (viewed) on this product.
  (For example, images larger than 4000 x 3000 pixels in size can not be displayed.)

3-2 Using by connecting to a computer with the USB cable

Set the region through the region setting menu displayed on the monitor connected to the product with the HDMI cable or the RGB cable before connecting the USB cable.
Otherwise, the video streaming through USB cannot be started.



This product is compliant with UVC (USB video class) and troublesome installing of a driver is not required.
You can use the product with a video conference system or other various application software by simply connecting the USB cable to the USB port of a computer. (Operation is not guaranteed on all application software.)

Caution

- Do not connect/disconnect the USB cable while operating the product using the operating panel or remote control. Doing so may cause a malfunction.
- We recommend using a USB 3.0-compliant USB cable.
- When you display the UVC video stream, it may take a while before the image is displayed. Be sure not to turn off the power of the product or disconnect the USB cable until the image is displayed.
- When you change the resolution of the UVC video stream, it may take a while before the image is displayed. Be sure not to turn off the power of the product or disconnect the USB cable until the image is displayed.
- The format of the USB video stream is MJPEG/ YUV. Depending on the software you are using, you may not be able to display the image.
- You cannot record the camera image, display thumbnails, display still images or play videos, when the USB video streaming is active.

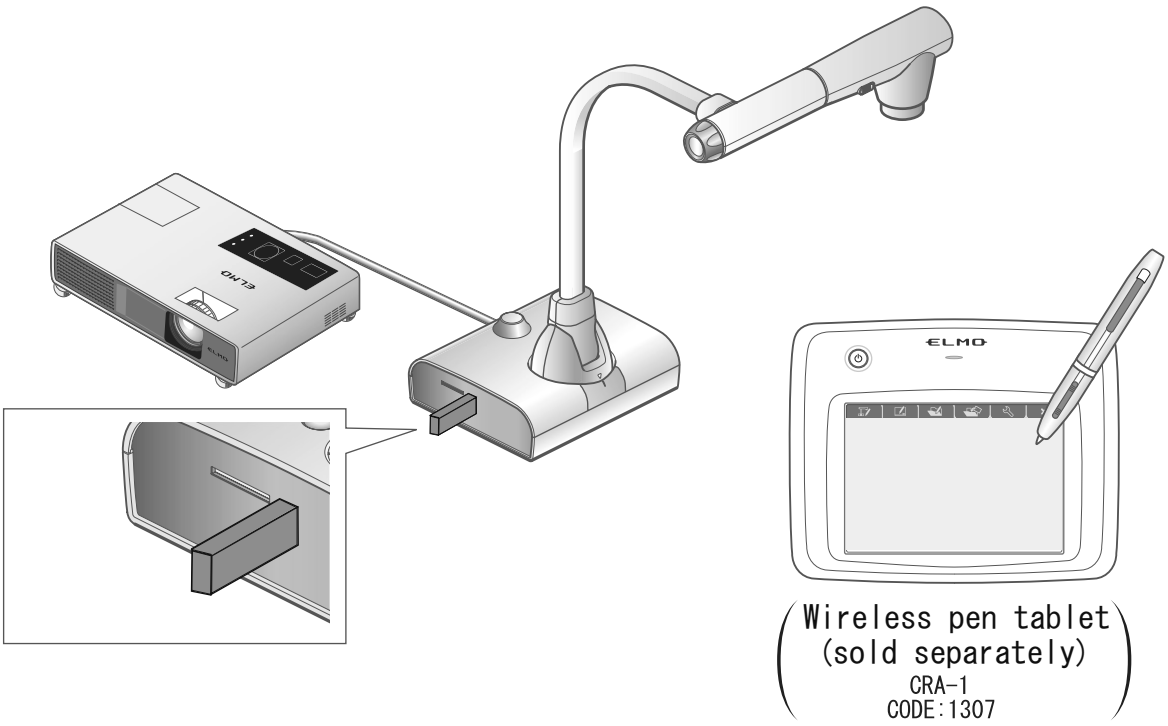
Note

- Image transfer may be affected by the USB environment used by the computer or the effects of peripheral devices.
- Operation is not guaranteed in all environments.

3-3 Using with a wireless pen tablet or a portable IWB (both sold separately)

By using a separately sold wireless pen tablet or a portable IWB with the product, you can draw on camera images directly.
You can also directly perform such operations as zooming in/out with the product.

■ Connection with the wireless pen tablet

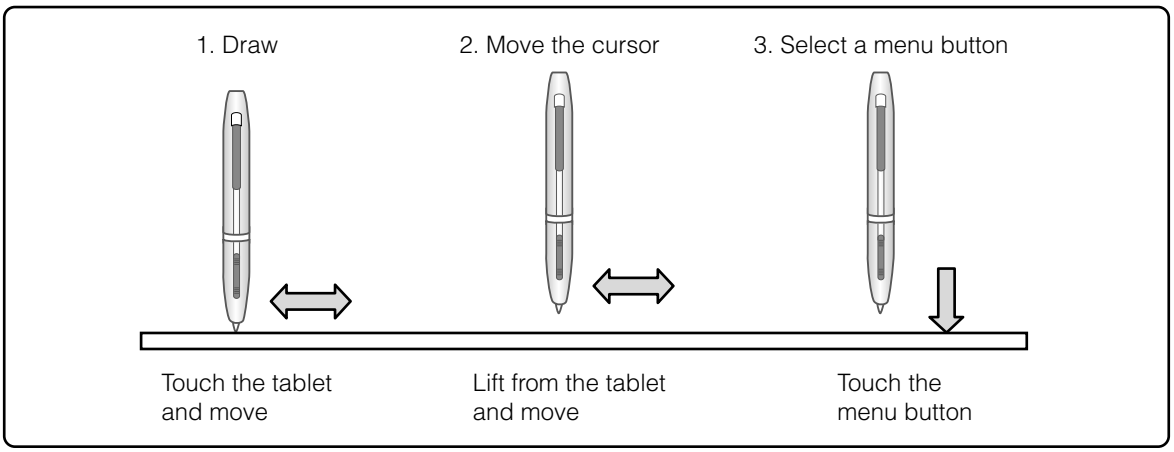


① Set up the product as shown in the figure above and connect to a projector, and then turn on the power.

② Connect the special wireless adapter (supplied with the pen tablet) to the product.

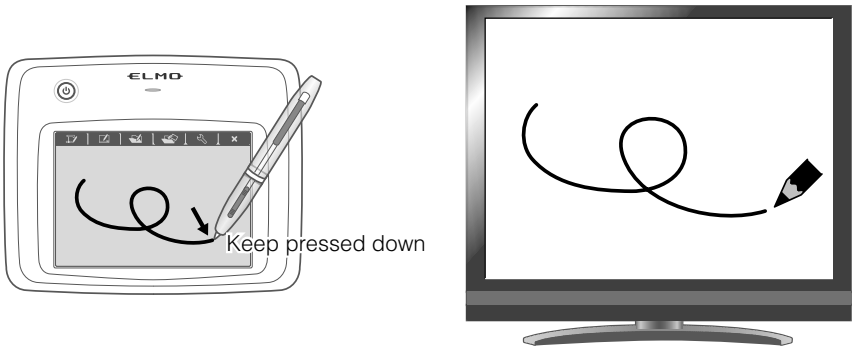
③ Turn on the power of the pen tablet.

■ Basic operations of the pen tablet



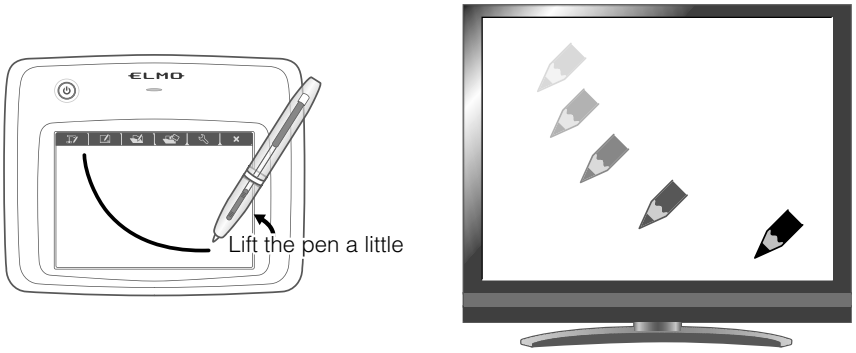
● Drawing

If [ ] or [ ] is selected, the pen will draw a line. Use this function to draw or erase lines.



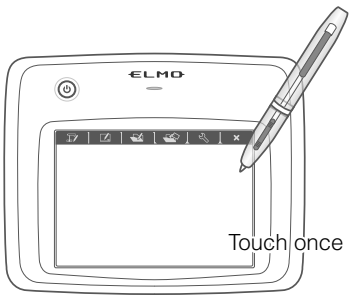
● Moving the cursor

Move the pen slightly above the surface of the tablet.
The cursor on the screen moves as the pen moves.
Use this function to move the cursor.



● Selecting an icon in the menu

Move the pen slightly above the surface of the tablet to move the cursor and then touch the pen within the working area on the tablet.



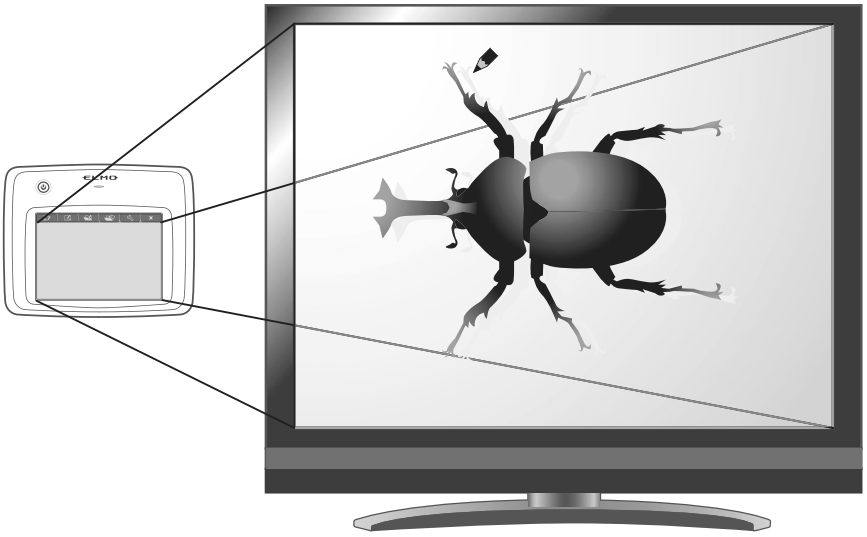
Caution

Press the tablet lightly with the pen; do not press hard.

Note

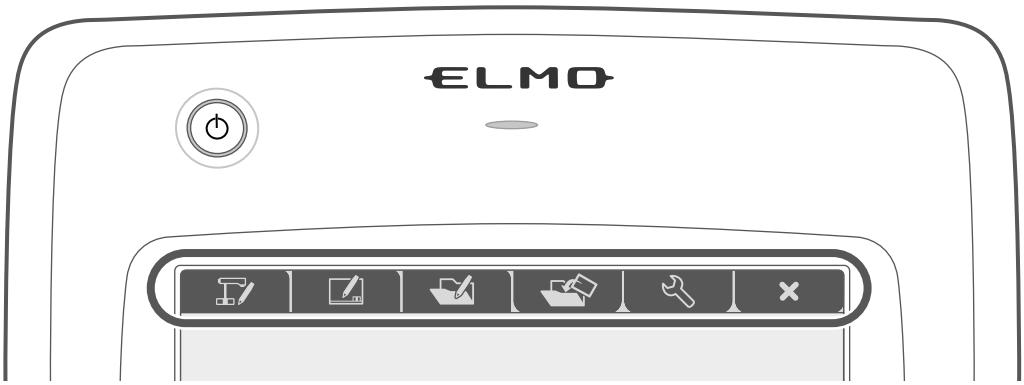
- Hold the pen as upright as possible; holding the pen at an angle may result in a failure of the tablet to recognize the pen.
- If the pen is not used for a while, the power saving mode is activated. Touch the tip to reactivate the pen before you use it again.

The working area on the tablet corresponds to the entire screen.



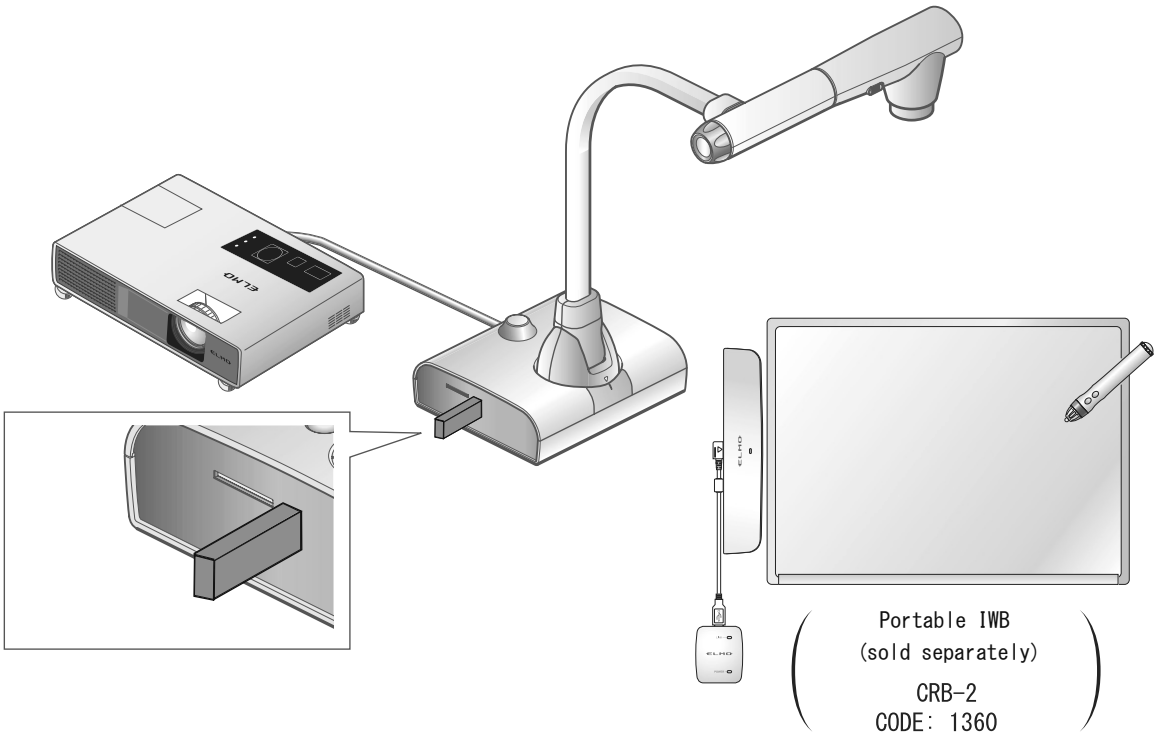
■ Selecting how to use the pen tablet from the tablet menu

To use the pen tablet, touch a function key at the top of the tablet and select a mode according to the situation described in the table below:



Icon	Name	Function
	Write to/work with camera images (Camera mode)	To display the document camera image as a background, and draw on it with the pen tablet. P.56
	Write on a white screen (Whiteboard mode)	To display a white image as a background, and draw on it with the pen tablet. P.60
	Setting	To configure settings for the pen tablet. (The setting items are common to all modes).
	Hide / Display OSD menu	To switch between "Hide" and "Display" the OSD menu

■ Connection with the portable IWB

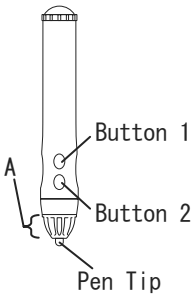


① Set up the product as shown in the figure above and connect to the projector, and then turn on the power.

② Connect the special wireless adapter (supplied with the portable IWB) to the product.For information on how to install the portable IWB, refer to the portable IWB’ s instruction manual.

■ Basic operations of the portable IWB

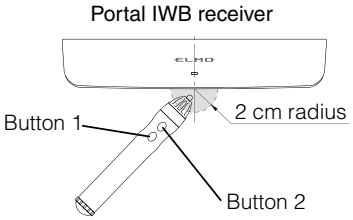
◆About the Pen
- Do not cover A with your hand when holding the pen.
  Doing so will hinder detection of information about the pen's position.
- Write with the pen perpendicular to the screen
  Problems occur when the pen is tilted too much.
- If "Pen Tip", "Pen Button 1" or "Pen Button 2" are pressed for 2 minutes and 30 seconds, the power to the pen will automatically turn off.
  You cannot write continuously for more than 2 minutes and 30 seconds.
- Do not use rechargeable batteries in the pen.



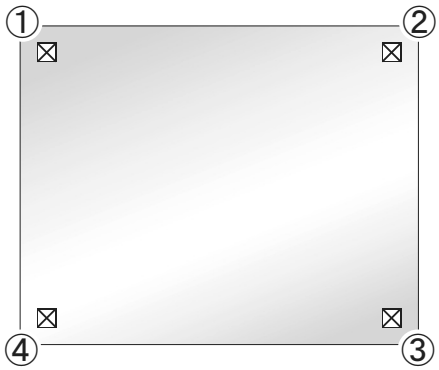
Pen Tip: Left mouse button
Button 1: Right mouse button
Button 2: Cancel during calibrationel

● Recognition of the write range (calibration)

Hold down Button 1 on the pen (for three seconds or more) near the portable IWB receiver (within a 2 cm radius from the receiver).
The tablet enters the Calibration mode with a long beep.



A symbol appears at the top left of the screen (① in the figure below) when the tablet enters the Calibration mode.
You will hear a short beep when you touch the symbol with the tip of the pen. The symbol appears at the corner of ① , ② , ③ , and ④ in this order. There will be three short beeps when you touch the last symbol,
which means the calibration is completed.

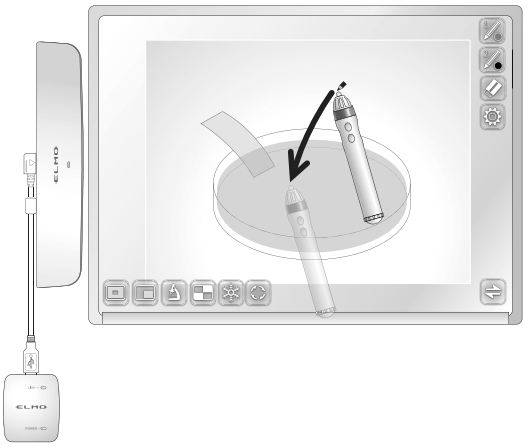


Note

- Be sure the pen is perpendicular to the screen when clicking.
- If you click the wrong place in relation to the cursor, hold down Button 2 on the pen (for two seconds or more), and then calibrate again.
- The Calibration mode will be canceled automatically with two short beeps if there is no pen operation for more than 30 seconds during the calibration.

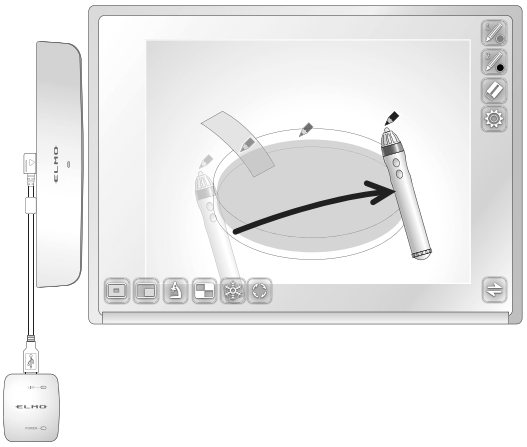
● Drawing

Touch the pen to the portable IWB-installed whiteboard and move it. When [ ]/[ ] is selected, a line is drawn along with the movement of the pen.
Use this function to draw or erase lines.



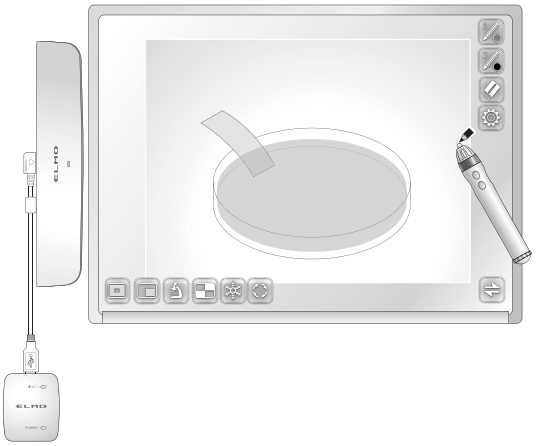
● Moving the cursor

Hold the pen slightly away from the portable IWB-installed whiteboard, and move the pen while the sound is coming out. The cursor moves on the screen along with the movement of the pen.
Use this function to move the cursor.



● Selecting an icon in the menu

Move the cursor and touch an icon in the menu that you want to select.
Use this function to select an icon in the menu.



Caution

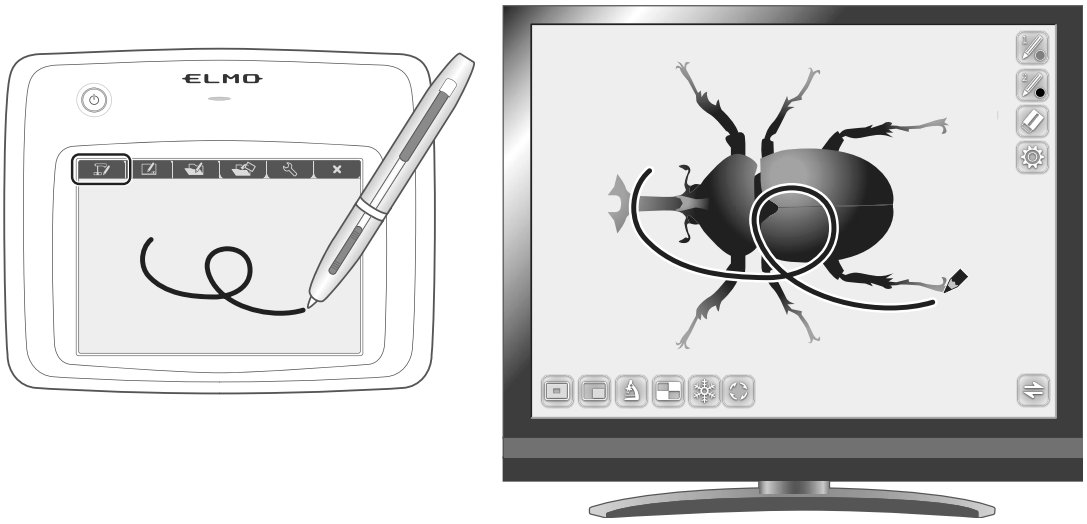
Touch the whiteboard lightly with the pen. Do not press hard on the whiteboard.

Note

- Holding the pen at an extreme angle may result in a failure of the whiteboard to recognize the position of the pen.
  Hold the pen perpendicular to the whiteboard.
- When using the portable IWB, you can select the mode to be used from the Main menu 2.

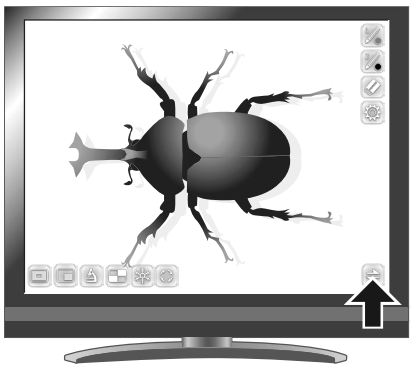
■ Using the pen tablet or portable IWB to draw on the camera image

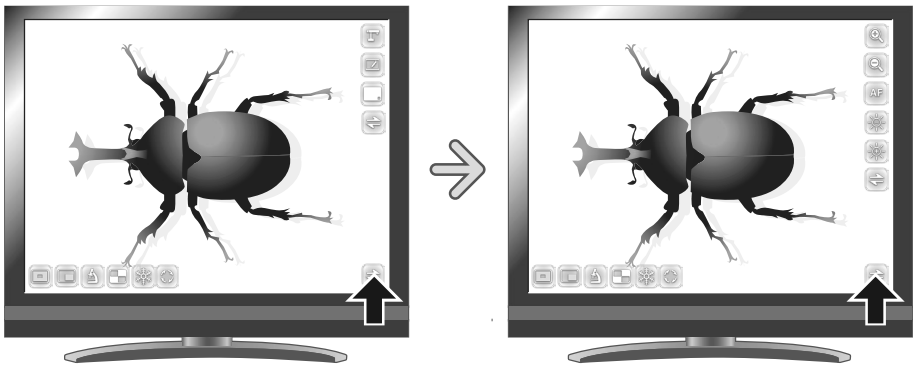
You can draw on camera images.



Menu descriptions

The menu changes each time [ ] is pressed.
If you want to hide the menu, press the MENU button [(MENU)] on the remote control or the operating panel.





・Main menu1

Icon	Name	Function
	Pen1	To select Pen1. The initial color setting is Red. You can change the settings for the pen from the Setting menu.
	Pen2	To select Pen2. The initial color setting is Black. You can change the settings for the pen from the Setting menu.
	Clear Screen	To erase anything drawn on the screen. If you need to erase a part of a drawing, move the cursor to the section to be erased, and touch the section with the pen while pressing the Erase button of the pen.
	Setting	To configure the settings for Pen and Eraser.
	Next	To go to Main menu2.

・Main menu2

Icon	Name	Function
	Camera mode	To display the document camera image as a background, and draw on it with the pen tablet or the portable IWB.
	Whiteboard Mode	To display a white image as a background, and draw on it with the pen tablet or the portable IWB.
	Hide	To hide the menu.
	Next	To go to Main menu3.

・Main menu3 (available only in Camera mode)

Icon	Name	Function
	Zoom in	To enlarge the camera image.
	Zoom Out	To shrink the camera image.
	AF	To perform auto focus.
	Brighten	To brighten the camera image.
	Darken	To darken the camera image.
	Next	To go to Main menu1.

• Setting menu

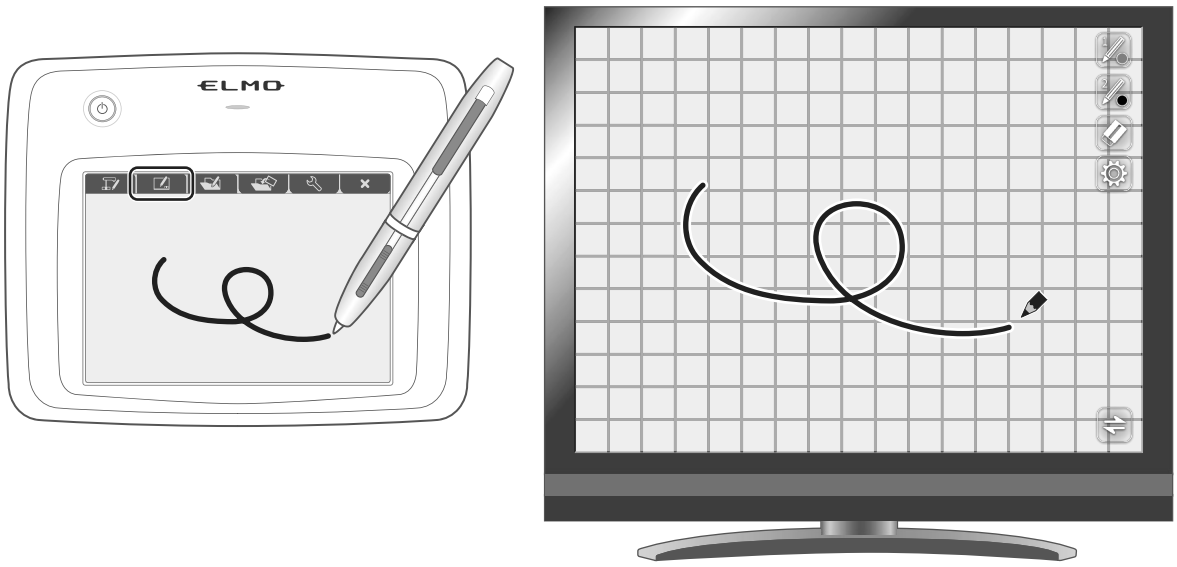
Icon	Name	Selection Item	Default	Function
	Pen1 Color	Red	✓	To set the pen color to red.
		Blue		To set the pen color to blue.
		Black		To set the pen color to black.
	Pen1 Thickness	Thin		To decrease the pen thickness.
		Medium	✓	To set the pen thickness to medium width.
		Thick		To increase the pen thickness.
	Pen2 Color	Red		To set the pen color to red.
		Blue		To set the pen color to blue.
		Black	✓	To set the pen color to black.
	Pen2 Thickness	Thin		To decrease the pen thickness.
		Medium	✓	To set the pen thickness to medium width.
		Thick		To increase the pen thickness.
	Erace Area	Narrow		To decrease the area of partial erasure.
		Medium	✓	To set the area of partial erasure to the medium range.
		Wide		To increase the area of partial erasure.
	Exit			To return to the previous level of menu.

Support Function menu

Icon	Name	Function
	Highlight	To highlight part of the image you want to emphasize. P.29
	Mask	To mask part of the image. P.30
	Microscope	You can use this function to view images using a microscope. P.31
	Compare Picture	To display the selected images together in one screen. (Max. 4 images can be selected.) The USB/SD screen is displayed. Select the images to be displayed in split screen. P.31
	Freeze	To pause the camera image. Press this icon again to restart.
	Image Rotation	To rotate the camera image in Camera mode. The rotation angle can be set between 90° and 180° from the "Rotate angle" in the System Setting menu. P.23

■ Using the pen tablet or portable IWB as a whiteboard

You can draw on a white background.



Menu descriptions

・Main menu1

Icon	Name	Function
	Pen1	To select Pen1. The initial color setting is Red. You can change the settings for the pen from the Setting menu.
	Pen2	To select Pen2. The initial color setting is Black. You can change the settings for the pen from the Setting menu.
	Clear Screen	To erase anything drawn on the screen. If you need to erase a part of a drawing, move the cursor to the section to be erased, and touch the section with the pen while pressing the Erase button of the pen.
	Setting	To configure the settings for Pen and Eraser.
	Next	To go to Main menu2.

・Main menu2

Icon	Name	Function
	Camera Mode	To display the document camera image as a background, and allow the user to draw on it with the pen tablet or the portable IWB.
	Whiteboard Mode	To display a blank white image as a background, and allow the user to draw on it with the pen tablet or the portable IWB.

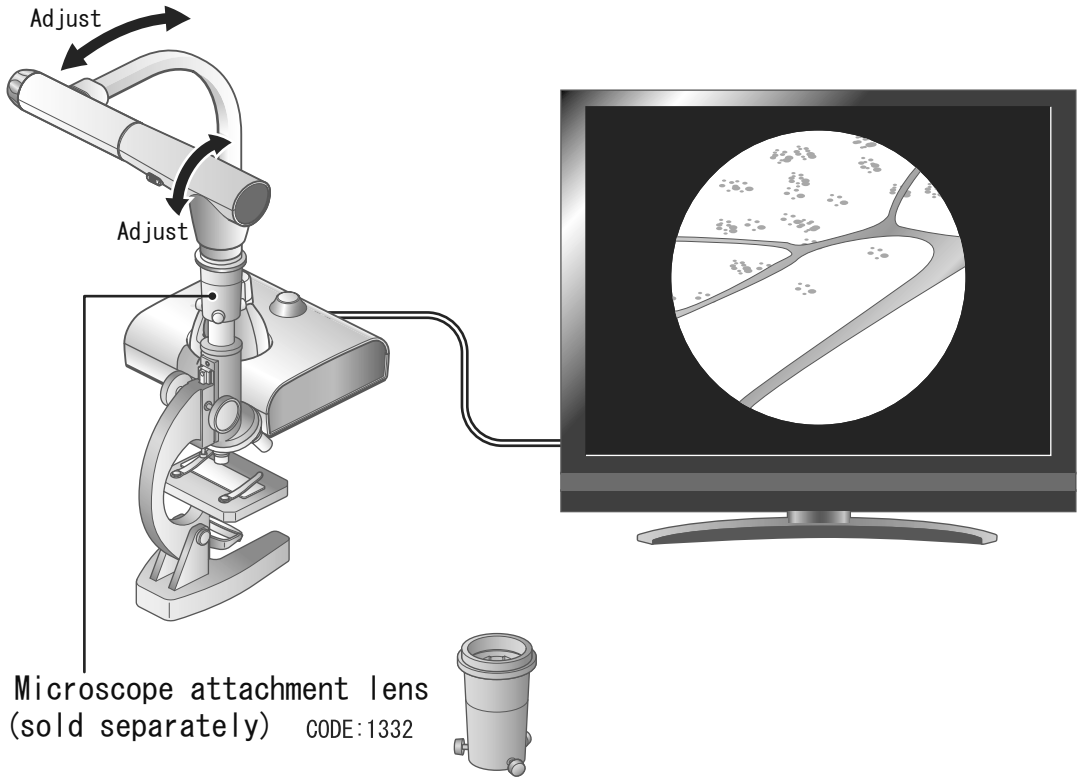
Icon	Name	Function
	Hide menu	To hide the menu.
	Next	To go to Main menu1.

• Setting menu

Icon	Name	Selection Item	Default	Function
	Pen1 Color	Red	✓	To set the pen color to red.
		Blue		To set the pen color to blue.
		Black		To set the pen color to black.
	Pen1 Thickness	Thin		To decrease the pen thickness.
		Medium	✓	To set the pen thickness to medium width.
		Thick		To increase the pen thickness.
	Pen2 Color	Red		To set the pen color to red.
		Blue		To set the pen color to blue.
		Black	✓	To set the pen color to black.
	Pen2 Thickness	Thin		To decrease the pen thickness.
		Medium	✓	To set the pen thickness to medium width.
		Thick		To increase the pen thickness.
	Erace Area	Narrow		To decrease the area of partial erasure.
		Medium	✓	To set the area of partial erasure to the medium range.
		Wide		To increase the area of partial erasure.
	Exit			To return to the previous level of menu.

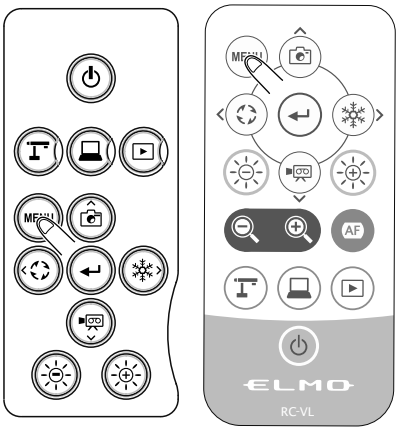
3-4 Displaying enlarged images using a microscope

By attaching the separately sold microscope attachment lens to a microscope, you can display the enlarged image through the document camera lens.



Microscope mode operations

When the Microscope icon [ ] in the menu displayed by pressing the MENU button [MENU] on the remote control or the operating panel is selected while the camera image or the playback mode is displayed, the product automatically adjusts the focus position and zoom position.
Select the Microscope icon [ ] again to exit the Microscope mode.



■ Procedure

① Change the setting of the product for using a microscope.

Press the [MENU] button.

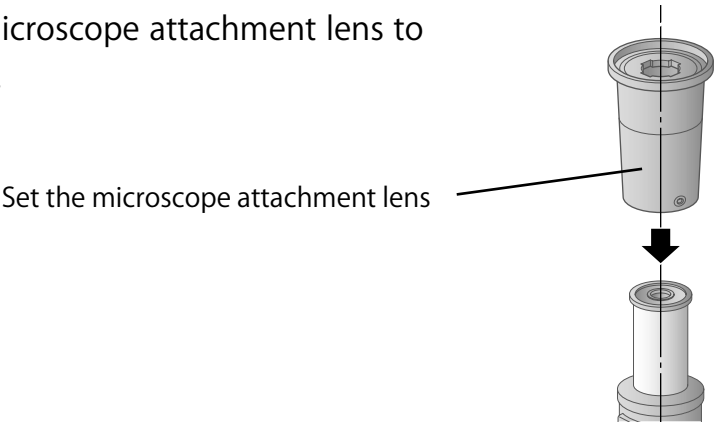
Press [ ].

② Set the microscope.

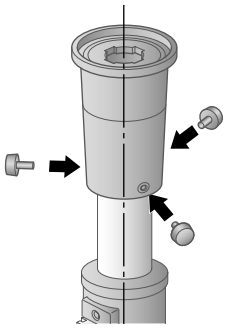
Place an object you want to view, such as a prepared slide, on the microscope and then look into the microscope to adjust the focus and brightness.

③ Attach the microscope attachment lens.

- Attach the microscope attachment lens to the eyepiece.



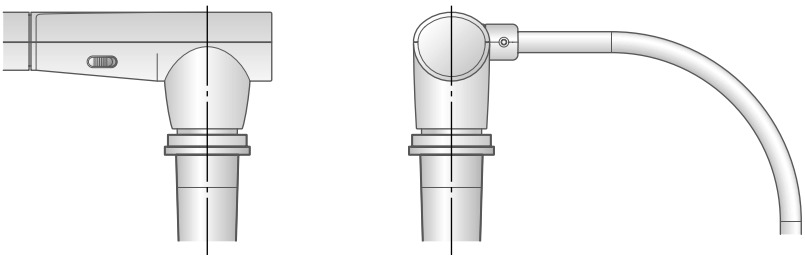
- Match the centers of the microscope attachment lens and eyepiece, and use the three screws to evenly tighten the lenses against each other.



Caution

If the screws are screwed too tightly, the eyepiece or tube may be damaged.
The screws may leave scratches where they come in
contact with the microscope.

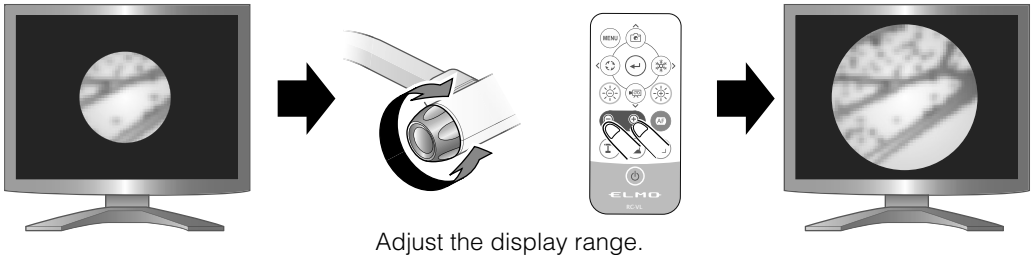
④ Adjust the angle of the microscope and the product to fit each other.



⑤ Adjust the brightness.

Adjust the brightness with the mirror or the light on the microscope.

⑥ Adjust the display range.



Adjust the display range.

⑦ Adjust the focus.

Focus a camera.

■ Exiting the Microscope mode

Change the setting of the product.

Press the [(MENU)] button.

Press [ ].

Note

- Depending on the type of eyepiece, you may not be able to view the object clearly even after adjusting the zoom.
- We recommend using a WF type eyepiece. If you do not use a WF type, we recommend using an eyepiece of 10x or less.
- You can use the microscope attachment lens when the external diameter of the eyepiece is 20 to 28mm.
- Use the thinner guide ring for Microscope lens attachment. There are two types of rings included in the package; the thicker one is not used here.

4 TROUBLE SHOOTING

4-1 Symptoms and Confirmation

Check the following items. If any abnormality is found, consult the dealer from whom you purchased this product or our nearest branch/office.

Symptom	Possible cause/remedy
No image is displayed.	• The cable is not correctly connected. • The AC adapter is disconnected from the wall outlet. • The AC adapter is disconnected from the power supply socket of the product. • The power is not ON. (Blue light) • Zoom is set at the TELE side, displaying only the white/ black part of the document. • The output resolution setting of the connected monitor or projector does not match that of the product because the resolution of the product is set to AUTO. Press the Camera button [ ] for over five seconds to change the resolution setting to AUTO. ※ This works when the resolution setting is set to AUTO. • If you turn the power ON immediately after turning it OFF, the product may not start. Wait for several seconds after turning the power OFF, and then turn it back ON. • Reconnect the AC adapter.
The output image (resolution) changes automatically.	• When the HDMI monitor is connected, the output image (resolution) is automatically changed based on information from the connected monitor.
No image is displayed from the USB.	• The video streaming through USB cannot be started before the completion of the region setting. Set the region through the region setting menu displayed on the monitor connected to the product with the HDMI cable or the RGB cable before connecting the USB cable. • No image is output from USB when the product is in Play mode or in Recording mode or when using the Compare Picture function. Check whether the product is in Play mode. If the product is in Play mode, change the output image to the camera image.
The image is out of focus.	• The document (object) is too close to the lens. Move the document (object) slightly away from the lens.
The image is too dark.	• The intensity of the lighting is insufficient. Adjust the brightness by turning on the LED lighting on the camera head.

Symptom	Possible cause/remedy
The image is striped.	• This may be interference fringes between dots of printed matter and TV scanning lines or CMOS pixels. Changing the shooting range may improve the problem. • Vertical stripes may appear on an LCD projector image. Manually adjusting the dot clock at the projector side may improve the problem.
Images on the SD card/USB flash drive are not displayed.	• Remove the SD card/USB flash drive, wait a few seconds and reinsert.
The image does not move.	• Camera image is set to [Pause]. Press the Pause button on the operating panel again to restart.
The remote control does not work.	• Battery power is low. Replace the coin batteries with new ones. • The incorrect remote control is being used. Use the supplied remote control.
After inserting the SD card/ USB flash drive, operations cannot be performed.	• The SD card/USB flash drive is not being read correctly. Use the SD card/USB flash drive after formatting it twice as described below. First, format the card using a computer. Second, format the card using the product.
Drawing speed of the tablet is too slow.	• Drawing speed may become slow depending on the resolution setting of the unit. This is not a malfunction.
UVC image is upside down	• Check that the graphics driver and other device drivers on your computer are updated. The latest device drivers are available from the computer manufacturer.
The displayed UVC image contains images other than the camera image	• The software and OS you are using or the connection status may be causing images other than the camera image to break through while displaying the camera image. This problem can be solved by reconnecting the device or restarting the software.
A software error message appears and the UVC image is not displayed	• If it is taking too much time for the preparation of the image output, the software may determine this to be an error. Restart the product, reconnect it to the computer, and then start the software.
The UVC image/ audio fails to be output	• Disconnect the USB cable, restart the software, and then connect the USB cable again. • If UVC image/audio still fails to be output after restarting, contact the software vendor and ask if the software you are using supports MJPEG. • When you stop the USB camera app during USB streaming, wait at least 5 seconds before restarting the app. • When you disconnect the USB cable during USB streaming, wait at least 5 seconds before reconnecting the cable.

Symptom	Possible cause/remedy
Some buttons on the remote control and operation panel cannot be used in the USB mode (UVC)	• You cannot record the camera image, display a thumbnail, display a still image of play the video while displaying a UVC image.
Operation is disabled during calibration	• The image switches to the camera image when you disconnect the wireless adapter. Start the calibration again after the image switches to the camera image.

About the light (LED lighting)

・The brightness of the light will diminish with long-term use. If its brightness has significantly diminished, consult the dealer from whom you purchased this product or our nearest branch/office for replacement.

About long-term usage of this product

・Due to the lifetime of its parts, if the product is used for longer than the warranty period, its performance and quality may deteriorate. In this case, we will replace the parts for a charge. Consult the dealer from whom you purchased the product or our nearest branch/office.

About USB connection with xSyncBoard

・Use the USB 2.0 terminal of xSyncBoard when connecting this unit and xSyncBoard via USB.
UVC distribution cannot be used when connected to the USB3.0 terminal of xSyncBoard.
The model numbers of xSyncBoard that support UVC of this unit are as follows.
  ・S55E1
  ・T65EC
  ・S65E1P
  ・S70E1
  ・S70E1P
  ・T75EB

Electronic zooming during USB streaming

・Electronic zoom is not available when streaming VGA video (640x480 resolution) through USB.

USB streaming with xSyncBoard

・If USB streaming does not begin after the USB camera app of xSyncBoard is started, disconnect the USB cable and then reconnect it.

4-2 When you have a problem

- This unit does not support all connected devices such as a mouse, pen tablet, and touch panel.
  Contact your dealer for recommended equipment.
- Depending on the USB memory / SD card you are using, writing or reading may fail.
- After starting up the camera, the lens may move automatically. This operation is an adjustment that makes it easier to focus.
- When you connect a microphone / speaker for the first time, the default setting may be muted.
- Using the product near a device which uses infrared signals may adversely affect the IR receiver function of the remote control. Check the performance in advance.
- Depending on the type and length of the cable used, there may be distortion of the image. Check the performance in advance.
- We do not guarantee that the still images and videos recorded by the product will be compatible with all playback devices or software.
- We do not guarantee that the product can playback all still images and videos recorded by third-party devices.
- Using some functions together (such as UVC function and recording function) may adversely affect the performance of the product. Check the performance in advance.
- We do not guarantee proper operation with all possible combinations of other products and PC software (including ELMO' s products). Check the performance in advance.

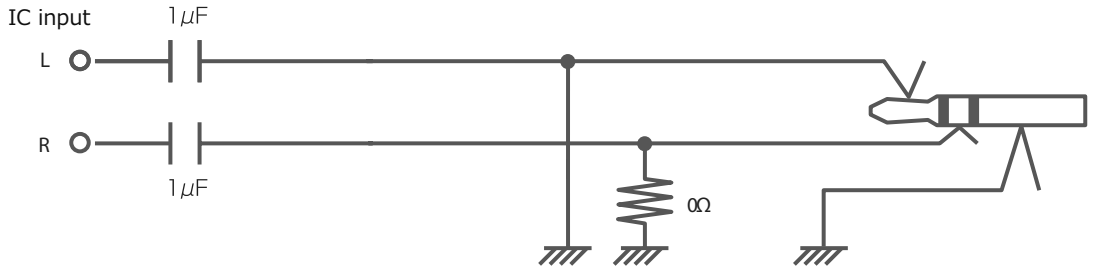
5 SPECIFICATIONS

5-1 General

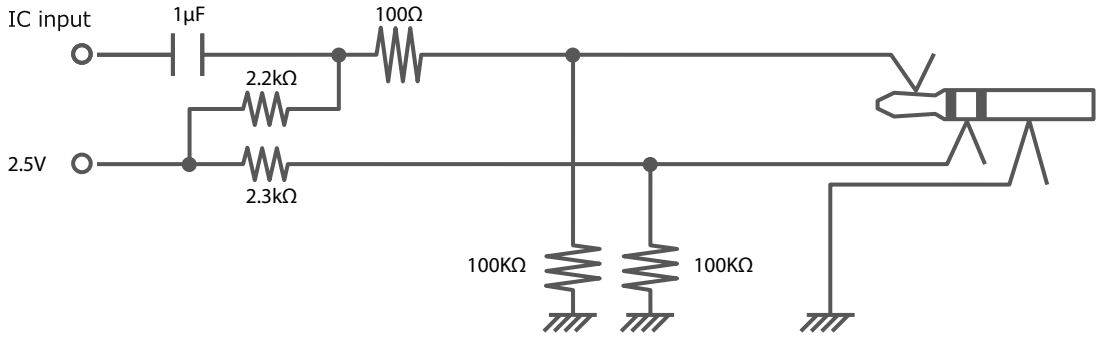
Item	Specifications
Power source	12VDC (AC adapter AC100 - 240V)
Power consumption	21W
Outside dimensions	W349 x D377 x H432mm (When setup)
	W195 x D294 x H475mm (When folded)
Weight	Approx. 3kg (Main body only)
Input selection	Main/External (x2)
Output terminal	RGB output Mini Dsub 15P connector, female x 1
	HDMI output terminal x 1
	Line-out terminal φ 3.5mm stereo minijack x 1
Input terminal	RGB input Mini Dsub 15P connector, female x 1
	HDMI input terminal x 1
	Mic-in / Line-in terminal φ 3.5mm stereo minijack x 1
Ext. control terminal	USB device (3.0 compliant) Type B receptacle x 1
Memory Interface	SD card slot x 1
	USB host (2.0 compliant) Type A receptacle x 1

※ Use pin plug for RCA pin in accordance with EIAJ RC-6703.

・When setting to Line input



・When setting to External microphone input



5-2 Main Camera

Item	Specifications
Lens	f=4.0mm ～ 48.0mm（12x zoom lens） F3.2 ～ F3.6
Frame rate	30fps
Limit of focus adjustment	From lens surface 50mm ～∞（f=4.0mm - 23.4mm） 200mm ～∞（f=23.4mm and higher）
Zoom	24x (Optical zoom 12x + Sensor zoom 2x)
Digital zoom	12x
Focus	Auto/Zoom Sync
Image pick-up element	1/2.3" CMOS
Effective pixels	Horizontal 3840, Vertical 2160 / 60fps Horizontal 3520, Vertical 2640 / 30fps
Resolution	HDMI : 3840 × 2160 / 1920 × 1080 / 1280 × 720 RGB : 1920 × 1080 / 1280 × 720 / 1024 × 768 USB : 3840x2160 / 1920 × 1080 / 1280 × 720 / 3200 × 2400 / 1600 × 1200 / 1024 × 768 / 640 × 480
White balance	Auto / One-push / Fluorescent / Indoor / Outdoor
Brightness adjustment	Manual
Color/B&W selection	Provided
Image rotation	90° ／ 180°
Image mode	Normal / Emphasis / Color emphasis / Black/white / DLP projector
Contour correct	Provided
Pause	Provided
Still image recording	Provided
Video recording	Provided
Flicker correction	60Hz ／ 50Hz

5-3 Illumination Device

Item	Specifications
Illumination	White LED

5-4 TRADEMARKS AND LICENSES

ELMO is registered trademarks of Elmo Co., Ltd.

SD、SDXC、SDHC、SD logo are trademarks of SD-3C,LLC.

HDMI、HDMI™ logo and High-Definition Multimedia interface are trademarks or registered trademarks of HDMI Licensing LLC

This product is based on the work of the Independent JPEG Group.

All other company/product names described in this manual are trademarks or registered trademarks of their respective companies.

This product is licensed under the AVC Visual Patent Portfolio License (AVC Video) for the personal and non-commercial use of a consumer to

(i) Play AVC Video that was recorded by a consumer engaged in a personal and a non-commercial activity and/or,

(ii) Play AVC Video that was obtained from a video provider licensed from MPEG-LA, LLC.

Additional information including that relating to promotional and commercial uses may be obtained from MPEG-LA, LLC

ATTENTION

- Unless used for personal use, it is prohibited by copyright law to record slides, books and photos without the prior consent of copyright holder.
- This product is designed to be used in industrial environment. If it is used in a residential area or in an adjacent area thereto, harmful interference to radio or television reception may occur.
- Repair parts
  Repair parts are the items which are needed to maintain product functionality. The holding period of such repair parts is 8 years after the product discontinuation, which is equal to the repair period we will accept.
- Any image, which is obtained by this product, and which can be identified, is considered to be private information. Be forewarned that the person who makes use of such images shall be liable for disclosing of such images.

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品川グランドセントラルタワー17 階
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京都朝日ビル 10 階
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