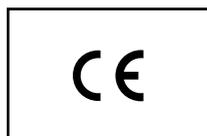




INSTRUCTIONS

Industrial Endoscope
Series C

IV0620C



Industrial Endoscope

OLYMPUS®

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Introduction

Intended use

This instrument is intended for inspecting and observing the interior of machinery, equipment, materials, and other objects, without damaging the object being inspected.

Instruction manual

This manual contains information about instrument operations and handling, which makes it possible for the instrument to be used safely.

Before using the instrument, carefully read the contents of this manual to ensure that you use the instrument correctly. After reading the manual, store it and the warranty agreement in a safe place. If you have any questions about any information in this manual, please contact Olympus.

Product configuration

For information about the configuration of devices required by this product and devices that can be used in combination with it, see "System chart" (P. 45) in the "Appendix".

Note that use of this product in combination with options and separately available items not only creates the risk of abnormal operation, it also can damage the product.

Important Information—Please Read Before Use

Marks used in this manual

The following signal words are used throughout this manual.



DANGER

- Indicates an imminently hazardous situation which, if not avoided, will result in death, serious injury, or damage of the inspected object.



WARNING

- Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury, or damage of the inspected object.



CAUTION

- Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices or potential material damage.

CAUTION

- Indicates a potentially hazardous situation which, if not avoided, may result in the malfunction of this instrument.

NOTE

- Indicates knowledge and information that is useful for using this instrument.

Safety precautions

General safety precautions

Observe the precautions described below when handling the instrument. The information is to be supplemented by the dangers, warnings and cautions given in each chapter. Safety cannot be guaranteed when the instrument is used in ways that are not specifically described.



DANGER

- Never use this instrument for observation inside a human or animal cavity. Otherwise, death of the person or animal may result.
- Never use the instrument in the following types of environments.
 - Where flammable atmospheres are present
 - Where metal dust or other dust is presentOtherwise, an explosion or fire may result.



WARNING

- Do not repair, disassemble, or modify the instrument.
This instrument does not contain any user serviceable parts. Do not disassemble, modify or attempt to repair. User injury and/or equipment damage can result.
Contact Olympus for all repair and servicing. Olympus is not liable for any accident or instrument damage that occurs as a result of repairs attempted by non-Olympus personnel.
- Immediately stop using the instrument at the first sign of smoke, abnormal odor, abnormal noise, or any other abnormality.
Even if operation of the instrument is still possible, turn off power.
- Do not insert the insertion tube into an observation object that is in operation or conducting electricity.
Otherwise the insertion tube may be damaged by being caught inside of the observation object, etc., or the insertion tube may touch the object, resulting in electric shock.
- Before stowing the instrument in its carrying case, be sure to turn off the power and attach the battery cap.
Leaving the battery loaded during storage can cause it to become hot, causing the risk of fire.

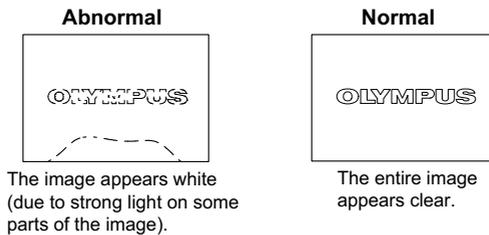


CAUTION

- Do not use this instrument in any environment (including strongly radioactive environments) that does not conform to the specified operating environment.
Otherwise, unexpected accidents that may damage the insertion tube may result.
- Do not insert the insertion tube into an observation object in an environment that is outside the operating temperature range.
Continued use may damage or reduce the performance of the instrument.
- Do not touch the distal end immediately after use in a high-temperature environment.
Doing so may cause burn injuries.
- Do not grip the control unit for a prolonged period of time when using the instrument in a high-temperature environment.
Doing so may result in low-temperature burns. To prevent this, take precautions such as by wearing a pair of gloves.
- Pay attention not to trip over the power cord or cables of the insertion tube.
- Use only a power cord and AC adapter specified by Olympus.
Doing so may result in fuming, fire, or electric shock.

- Do not use the AC adapter outdoors.
Doing so may result in fuming, fire, or electric shock.
The AC adapter is designed for indoor use.
- Do not subject the AC adapter to strong impact cause by striking it against a wall, dropping it, etc. Otherwise, malfunction, damage, or electric shock might occur.
- Do not use commercially-sold electronic transformers for overseas travel use (travel converters).
- If abnormality is found during insertion of the insertion tube, do not push it in forcibly. Pull out the insertion tube carefully.
Pay attention to the following when pulling out the insertion tube.
 - Do not bend it forcibly.
 - Do not pull out the inspected object when the angulation section is bent.
 - If the insertion tube gets caught inside while withdrawing, pull while turning it carefully.
- Pay attention to the following when pulling out the insertion tube.
 - Do not hit or pull the distal end.
 - Do not squeeze or bend the angulation section with force.
 - Do not use the insertion tube if any of the parts are loose.
 - Attach the tip protection hood correctly for use.

If the protection hood is not firmly attached to the distal end of the insertion tube, the entire observation image or a part of it may appear whitish due to the illumination, or a part of the angle of view may not be visible. Also, the protection hood may fall off into the inspected object.



- Do not look directly into the light emitted from the distal end.
Doing so may hurt your eyes.
- Do not use components other than the insertion tube in the rain or in water, and do not wash them with running water or a wet object.
This instrument is not waterproof. Exposure to water may result in electric shock. It must not be used or stored in water.
- Do not hit the LCD monitor with an object, press it with force, or rub it with hard or sharp objects. Doing so may break or scratch the LCD monitor, or cause injuries as a result of the damaged monitor.
- Do not insert metallic and other foreign objects into the main unit from the connectors or other openings.
Otherwise, a malfunction or electric shock may result.
- Check to make sure that the SD card is correctly loaded before using it.
The SD card might come out if it is not inserted into the slot as far as it will go, if the instrument is subjected to impact during transport, etc.
- Do not remove the battery or AC adapter while the system is running.
Otherwise, recorded data may be damaged.
- Connect the AC adapter, do not insert or remove an SD card, and do not connect or disconnect the USB cable while image data is being exchanged with a PC.
Otherwise, the data recorded in the SD card may be destroyed.

-
- When you have the instrument hung from your neck, take care to avoid getting tangled with other nearby items.
Take care to avoid entanglement and possible strangulation.

CAUTION

- Do not continue to use the instrument when it is wet with condensation.
Sudden temperatures changes such as those that occur when entering a warm room from the outside cold can cause condensation to form inside the instrument. Using the instrument while it is wet with condensation can cause malfunction. If condensation forms, leave the instrument in the environment where it is to be used and allow the condensation to dry before using it.
 - Do not cover the main unit with a plastic bag or other objects during use.
The interior of the instrument may not be sufficiently cooled, resulting in damage of the instrument.
 - Do not expose the insertion tube to liquids other than water, saline solution, machine oil, and light oil.
Doing so may damage the insertion tube.
 - Pay attention to the following when handling the battery door, SD card slot cover, terminal cover, and AC adapter terminal cover.
 - Do not open or close the covers with wet hands.
 - Do not open or close the covers in a humid or dusty environment.
 - Keep the covers closed when storing the instrument or when the terminals are not in use.
 - Pay attention to the following when taking the instrument out of the carrying case.
 - Do not apply undue force when pulling the insertion tube from the slot in the cushion.
 - When removing the main unit, do not lift it up by the insertion tube.
Otherwise, the instrument may be damaged.
 - Note the following precautions whenever stowing the instrument in its carrying case.
 - Make sure that the insertion tube is not twisted before storing it.
 - Make sure the distal end has cooled before storing it.
 - Restore the joystick to the neutral position when storing the instrument.
 - Do not store the instrument in the following locations.
 - Environments subjected to high temperature, high humidity, and large amounts of dust or particulate
 - Locations exposed to direct sunlight or radiation
 - Locations subject to gas that includes halide^{*1}Doing so could damage the equipment.
- ^{*1} The performance of some kind of electric parts will be deteriorated by the gas including the halide contained in the insecticide, the herbicide, and the gas extinguishant, etc.
- When disposing of this product, be sure to do so in accordance with all local laws, rules, and regulations.
Before disposing of this product, check your local laws, rules, and regulations and follow them accordingly.

Battery precautions

Should you experience any problems when using the instrument with batteries, contact Olympus. Observe the precautions described below when handling the battery. Otherwise, battery fluid leak, excessive heat generation, smoke, battery burst, electric shock and/or burns may result.



DANGER

- Use only the specified BN-VF815UWIE battery.
- Do not allow connectors to become shorted.
- Do not attempt to apply solder directly to a terminal.
- Do not interconnect the electrodes of the battery with metal, or carry or store the battery together with metal objects.
- Do not connect the battery directly to a power outlet or the cigar lighter of an automobile.
- Do not immerse the battery in fresh or sea water, or allow the battery to get wet.
- Do not throw the battery into fire or subject it to heat.
- Do not attempt to open or modify the battery.
- Do not pierce the battery, hit it with a hammer, or step on it.
- Do not subject the battery to strong impact.
- Do not use or leave the battery where it is exposed to direct sunlight, in a closed automobile in the sun, near a heater, etc.
- Fluid leaking from the battery can cause loss of sight if it gets into your eyes. Flush your eyes with tap water or other clean water without rubbing. Contact a physician immediately.



WARNING

- Do not cover the battery charger with clothing, bedding, or other material while charging.
- After charging is complete, always be sure to unplug the AC power cord of the charger from the electrical outlet.
- At the first sign of heat generation, abnormal odor, abnormal noise, smoke, or any other abnormality during charging, immediately unplug the battery charger and stop using it. Contact Olympus.
- If the battery charger cannot complete battery charging in the specified recharging time, stop trying to recharge the battery.
- Do not use a battery if it shows any irregularity such as fluid leak, discoloration, deformation or other abnormality. Immediately request servicing.
- Should the battery fluid get onto your skin or clothing, immediately rinse with tap water or other clean water. Otherwise, a skin injury may result. Contact a physician for treatment if necessary.
- Do not allow the battery compartment to become deformed and never put any foreign object into it.
- Do not allow metal or water, or any other fluid to get into the battery compartment or onto the battery terminals. Should any foreign object enter the main unit, remove the battery and disconnect the AC adapter, and immediately contact Olympus.
- Do not remove the battery as soon as possible after using the instrument for a long time. Heat generated by the battery creates the risk of burn injury.
- Do not leave the battery in a location subject to moisture, water leak or extremely high or low temperatures.
- Do not touch the battery terminals while your hands are wet.

-
- If the instrument is not to be used for a prolonged period of time, remove the battery from the main unit, attach the battery cap, and store it in a place with a low level of humidity. Otherwise, battery fluid leak and heat build-up may result in a fire or injury.
 - Keep the battery out of the reach of small children.



CAUTION

- If you are experiencing problems loading the battery, do not try to force it in. Check the orientation of the battery and check the terminals for abnormalities. Trying to force the battery into the compartment may cause malfunction.
- If you are having problems removing the battery from the instrument, do not apply undue force. Contact Olympus.
- When carrying the battery onto an airplane, please contact the airline beforehand.
- When changing the battery, do not remove and insert the battery rapidly and repeatedly. You might not be able to turn on the power.
- When disposing of a battery, be sure to do so in accordance with all local laws, rules, and regulations.

NOTE

- Be sure to recharge the battery before using it for the first time after purchase or after it has not been used for a long period.
- In general, the battery performance drops as the ambient temperature drops. Note that the battery performance degraded due to low temperatures recovers when the temperature rises to a normal level.
- Contamination of battery electrodes with sweat or oil will cause contact failures. When the battery is dirty, wipe it clean with a dry cloth before use.
- When the battery is fully charged, you can use this instrument continuously up to 120 minutes or more (reference value when using a new battery). Actual operating time depends on the charging method, the operating environment, and the instrument's settings. Preparation of multiple spare batteries is recommended when long hours of battery-powered operation are expected. The estimated charging time is approximately 130 minutes.
- Recommended temperature range for Li-ion battery operation.
 - Discharging (using main unit) : -10°C to 40°C
 - Charging : 0°C to 40°C
 - Storage : -20°C to 40°C

Using the battery under a temperature outside the above temperature ranges will result in degradation of its performance and service life. When storing the battery, be sure to remove it from the main unit.

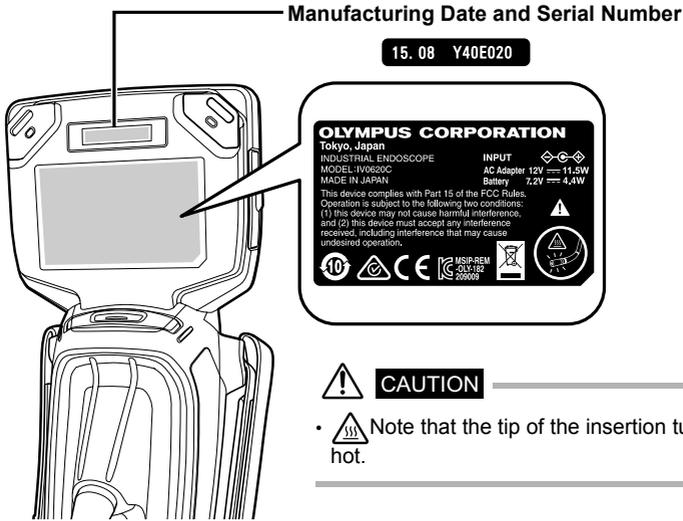
- The battery is a consumable item.
-

Main unit rating plate/caution plate

The cautions, safety ratings, and serial number are indicated on the label attached to the rear of the LCD monitor.

If labels are missing or if their contents are illegible, contact Olympus.

■ Rating and caution plate



1 Unpacking

1.1 Unpacking the instrument

When unpacking the instrument, check to make sure that all of the items listed below are included. Should anything be missing or damaged, contact your original vendor or Olympus.

Name	Count
Main unit*	1
SDHC card (4 GB, inserted into the SD card slot of the main unit)	1
Tip protection hood (attached to the distal end)	1
AC adapter	1
AC power cord	1
USB cable	1
HDMI cable	1
INSTRUCTIONS (this document)	1
Carrying case	1

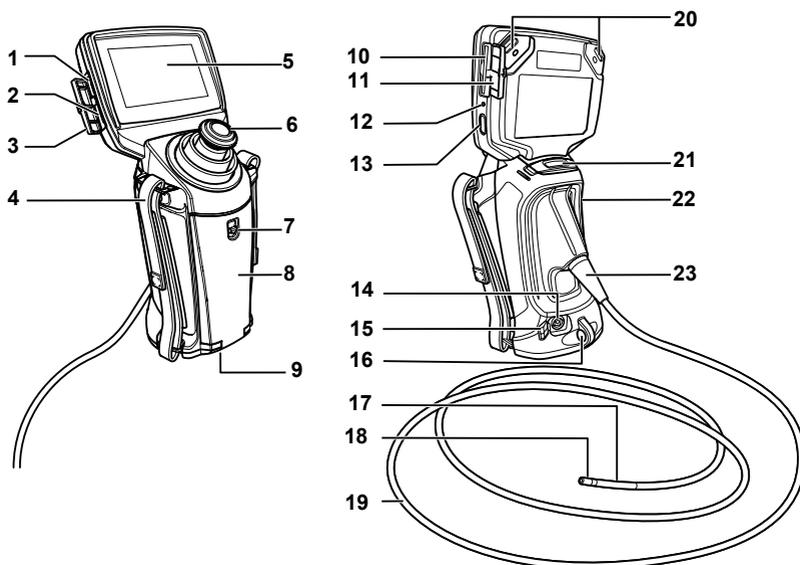
* Refer to the label with packing instructions on the inside of the top lid of the carrying case for instructions on how to pack the instrument in the carrying case.

About options

Refer to "System chart" (P. 45) for information on options.

2 Nomenclature

2.1 Main unit/insertion tube nomenclature

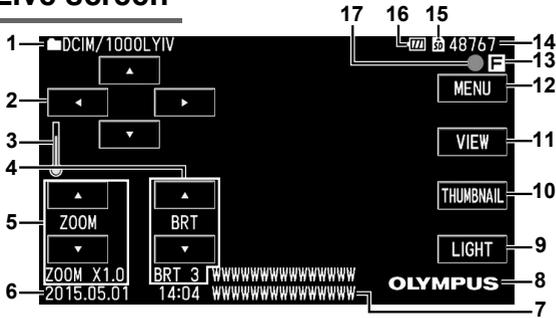


No.	Name	No.	Name
1	USB terminal	13	POWER button ()
2	HDMI Mini terminal	14	AC adapter connector
3	Terminal cover	15	AC adapter connector cover
4	Hand strap (left and right)	16	Insertion tube holder
5	LCD monitor	17	Angulation section
6	Joystick	18	Tip protection hood
7	Battery door lock	19	Insertion tube
8	Battery door	20	Strap holder
9	Tripod mounting hole	21	FRZ/REC button*
10	SD card slot	22	Main unit
11	SD card cover	23	Bend stopper
12	Power indicator		

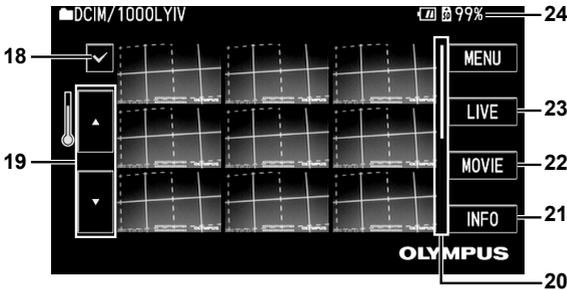
* The operation of the button changes when it is long-pressed. In this manual, the term "short-press" is used to indicate pressing a button for a short duration, while "long-press" means holding down a button for at least one second.

2.2 LCD monitor nomenclature

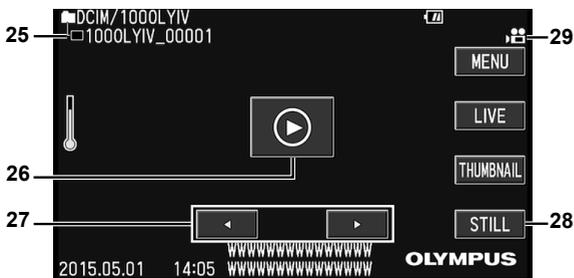
Live screen



Thumbnail screen



View screen



No.	Name
1	Folder name
2	Folder Jump Button
3	Temperature indicator
4	Brightness setting button, brightness level
5	Zoom setting button, zoom level
6	Date/Time
7	Title
8	Logo
9	LIGHT button
10	THUMBNAIL button
11	VIEW button
12	MENU button
13	Freeze indicator
14	Number of images that can be recorded
15	SD card icon
16	Battery indicator
17	Movie recording indicator
18	Check Mark button
19	Page Jump button
20	Slide indicator
21	INFO button
22	MOVIE button
23	LIVE button
24	Remaining media capacity
25	File name
26	Play button (for movies only)*
27	Next/Previous File button
28	STILL button
29	Movie image indicator

* Displayed when file playback has ended.

NOTE

- The title that appears is “the title entered on the live screen” or “the title selected during recording”.
 - Should you notice any dirt, stains, or other abnormalities on the LCD monitor, see “6 Storage and maintenance” (P. 34).
-

■ Touch Panel

The LCD monitor of this instrument comes with a touch-sensitive panel.

- Two operations are available on the touch panel, “touch” and “drag”.
- Touch the button on the touch panel to make a selection.
- You can manually create a pattern on the touch panel by dragging.
“To create a hand-drawn pattern” (P. 31)

CAUTION

- Make sure to touch the button on the touch panel accurately. The system may not respond properly if you touch an incorrect spot.
- Do not press with excessive force or rub against the surface.
- Do not operate the touch panel using the sharp tip of an object.
- Pressing two spots at the same time may result in erroneous operation.

NOTE

- If the point of response is out of alignment when you touch the screen, perform “TOUCH SCREEN ADJUST” (P. 28)
-

3 Pre-observation/pre-operation preparation and inspection

Be sure to finish the preparation and inspection work described in this chapter before using the instrument. At the first sign of any abnormality, immediately stop using the instrument and perform the required actions as described in "7 Troubleshooting" (P. 37). Inspections are not only required before use, but should be conducted periodically.

CAUTION

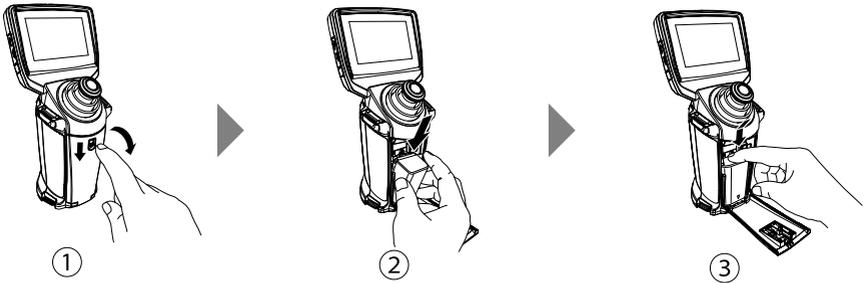
- Make sure the instrument is turned off before performing pre-observation and pre-operation preparation and inspection.

3.1 Pre-observation preparation

- 1 Remove the instrument from its carrying case.
- 2 Preparing the power supply.
When using the battery (See P.12)
When using the AC adapter (See P.13)

Preparing the power supply

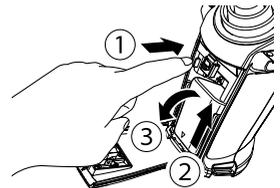
■ Using the battery



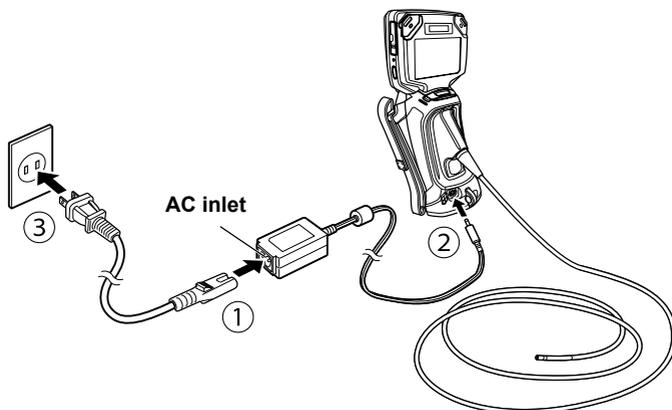
- ① Push down the battery door lock to open the battery door.
- ② Load the battery according to the direction indicated on the battery terminal while paying attention to the orientation of the battery.
- ③ Press the battery from above until a "click" sound is heard. After the battery is correctly loaded, close the battery door.

● Removing the battery

- ① Press the stopper on the left.
- ② With the stopper pressed and held down, lift the battery, and release your hand from the stopper.
- ③ Unload the battery.



■ Using the AC adapter



After connecting the AC power cord to the AC inlet of the AC adapter, connect the plug of the AC power cord to the AC adapter terminal on the main unit.

Next, connect the plug of the AC power cord securely to the power outlet.

■ Charging the battery

- When the AC adapter is connected, turning off the power starts charging of the battery. (Charging is not performed when the power is on.)
- The light of the power indicator appears blinking when charging is in progress.
- If you want to stop charging halfway, disconnect the AC adapter.
- The light of the power indicator goes off when charging is complete.
- Disconnect the AC adapter when the battery is fully charged.

■ Power indicator during charging

Status	Description
Blinking (Light turns on and goes off every other second)	Battery charging is in progress.
Charging is in progress. Light blinks and turns off alternately at a high speed (approx. 1 to 2 seconds)	Unable to charge battery as the surrounding temperature is too low or too high. Charge the battery in an environment with a temperature between 0 to 40°C.
Light blinks at a high speed (continuous)	Unable to charge due to communication error with the battery. → Check whether the battery terminal is dirty. → Check whether a battery other than the specified item is used. If the problem persists, it could be due to deterioration of the battery. Replace the battery with a new item.

3.2 Pre-operation preparation

- 1 Checking the state of the tip protection hood. (See P.14)
- 2 Turn on power. (See P.14)
- 3 Check the remaining battery level. (See P.15)
- 4 Select the display language (initial settings). (See P.28)
- 5 Configure date and time settings (initial settings). (See P.27)
- 6 Check the illumination of the distal end. (See P.15)
- 7 Adjust white balance. (See P.26)
- 8 Check the angulation operation of the insertion tube. (See P.15)
- 9 Secure the insertion tube to move the instrument to another location. (See P.16)
- 10 Conduct a pre-operation inspection. (See P.17)

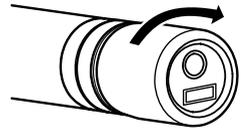
Checking the state of the tip protection hood

Replace the protection hood when it is worn out or deformed.

Before using, make sure to tighten the tip protection hood by turning it in the clockwise direction.

If the tip protection hood is found to be loose, mount it correctly following the steps in "6.2 Replacing the Tip Protection Hood" (P. 34).

The tip protection hood is an expendable item. Replace accordingly when it is worn out or deformed.



Turning on power

Press the POWER button (⏻) on the main unit for 2 seconds or longer.

After pressing for 2 seconds or longer, the power indicator lights up and the power turns on.

Once the power is turned on, the light automatically lights up.

■ Turning off power

Press and hold the POWER button (⏻) on the main unit for more than 2 seconds.

The light of the power indicator goes off.

Checking the remaining battery level

When operating the instrument under battery power, an indicator in the upper right corner of the screen shows remaining battery power. The table below shows general guidelines for remaining battery power.

Indicator	Battery condition
	Battery power is sufficient (100% to 50%).
	Battery power is low (50% to 25%).
 *1	Battery power is almost depleted (25% to 5%).
 *2	Battery power is depleted. Charge the battery or replace it with a charged battery (5% to 1%).

CAUTION

- *1 Do not record or delete images, or format the SD card. If power runs out during these operations data could be corrupted.
- *2 If the battery indicator starts to blink, quickly turn off the power or connect the AC adapter. If you continue to use the instrument without connecting the AC adapter, the power will shut down and may cause damage to the recorded data.

Checking the illumination of the distal end

Touch the [LIGHT] button on the live screen to turn on or turn off the light.

CAUTION

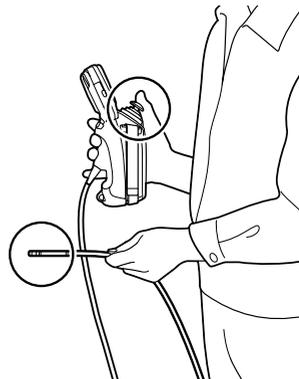
- When you need to stop using the instrument temporarily, such as to replace the tip protection hood, touch the [LIGHT] button to turn off the light.

Checking the angulation operation of the insertion tube

Extend the insertion tube straight out and operate the joystick to check for smooth angulation section operation. Angulation movement matches the angle and direction of joystick movement.

NOTE

- There will be some sound when operating the joystick; this is not a malfunction.



Attaching the tripod

To use a tripod during observation, attach it to the tripod mounting hole on the main unit.

CAUTION

- To prevent the instrument from falling and causing injury and damage, attach the instrument securely on the tripod.
-

Adjusting the hand strap

Pull off the tape portion to adjust the length of the hand strap.

CAUTION

- After adjusting, attach the tape portion securely such that the hand strap does not come off.
-

Securing the insertion tube to move the instrument to another location

When moving the instrument to a different location for observation, pass the insertion tube through the hand strap, wind it, and insert the tip into the holder of the insertion tube. Carry the instrument by holding the insertion tube at the strap.



Holding the main unit

Stow the instrument in its carrying case when moving or transporting it over long distances.

CAUTION

- Never dangle the instrument from the insertion tube to moving it.
-

3.3 Pre-operation/post-operation inspections

CAUTION

- When inspecting the insertion tube, be sure to hold it at a point behind the angulation section. Otherwise, the angulation section may be damaged.
- Also be sure to check the inspection items after using the instrument.

Inspection location	Item	If abnormality is discovered
Overall	<input type="checkbox"/> Are foreign objects, such as dust or sand, attached to the insertion tube, battery door, SD card slot cover, or terminal cover?	See "6 Storage and maintenance" (P. 34).
	<input type="checkbox"/> Any cracks or scratches in the insertion tube, battery door, SD card slot cover, or terminal cover?	Replacement required. Contact Olympus.
	<input type="checkbox"/> Any abnormality, such as cracks or deformation, on the exterior of the instrument, buttons or the joystick?	
Insertion tube, angulation section, distal end	<input type="checkbox"/> Are the mesh components on the exterior, except the angulation section, loose?	See "6 Storage and maintenance" (P. 34).
	<input type="checkbox"/> Any water droplets or dirt on the distal end? Continuing to use the instrument in this state may damage the distal end.	
	<input type="checkbox"/> Is the distal end deformed or loose? Never use the instrument while there is any looseness on the distal end. Doing so creates the risk of loose parts falling into the inspection object.	
Tip protection hood	<input type="checkbox"/> Any abnormal wearing or deformation in the protection hood?	
	<input type="checkbox"/> Is the protection hood loose? Never use the optical adapter if any components are loose. Otherwise, a loose part might fall into the inspection object.	
LCD monitor	<input type="checkbox"/> Any surface cracks or other abnormalities? NOTE The LCD monitor is manufactured based on precision technologies. The LCD monitor may contain pixels that do not light (visible as black dots) or light permanently (visible as bright dots). This does not indicate a defect or malfunction of the product.	Replacement required. Contact Olympus.
	<input type="checkbox"/> Any fingerprints on the screen or other soiling?	See "6 Storage and maintenance" (P. 34).
Battery	<input type="checkbox"/> Is the battery deformed, cracked or leaking?	Replacement required. Contact Olympus.

4 Basic operation

4.1 Viewing an observation object

- 1 Turn on the light.**
Touch the [LIGHT] button on the live screen.
- 2 While watching the display screen, insert the insertion tube into the observation object.**
Insert carefully while checking the insertion direction.
- 3 Use the joystick to perform angulation operations and observe the applicable locations on the display.**
The angle of the angulation section stays in place after you have released your finger from the joystick.
- 4 While watching the display screen, carefully withdraw the insertion tube.**
Make sure to restore the joystick to the neutral position before pulling out the insertion tube.

CAUTION

- Should any of the following messages appear during observation, immediately stop observation, carefully withdraw the insertion tube, and perform the required actions as instructed in "Error messages" (P. 37).
 - HIGH TEMPERATURE (DISTAL END). PLEASE IMMEDIATELY PULL OUT THE INSERTION TUBE.
- Do not bend the insertion tube to a radius that is less than its minimum bend radius (30 mm).
- The battery indicator flashes yellow if the battery overheats. Note that this indicates that the upper limit of the operating temperature is being approached.

NOTE

- To hide the buttons displayed on the screen, touch any area on the screen other than the buttons. To display the buttons, touch the screen again. (The buttons appear for approximately 3 seconds.)
 - Increasing the insertion tube looping amount (bending amount) decreases the maximum angulation angle limit of the angulation section. Keep the insertion tube as straight as possible to get the best operations from the instrument.
 - Angulation tends to be difficult to achieve under low temperatures.
 - The LCD monitor may not display data normally when the instrument is used in an environment where temperatures are below 0°C. Use a heater to warm the area before operation.
 - The amount of screen noise may increase under high ambient temperatures.
 - When the operating temperature of the distal end reaches about 70°C, a yellow-colored temperature indicator is displayed. Take precautions as this indicates that the temperature is close to the maximum operating limit.
-

4.2 Adjusting the image display

Still image display (Freeze)

- 1 While a live image is displayed, short-press the [FRZ/REC] button on the main unit.**

This will freeze the observation screen image and display the freeze indicator (**F**) in the upper right corner of the LCD monitor. Do not insert or withdraw the insertion tube while an image is frozen.

- 2 Short-press the [FRZ/REC] button on the main unit to unfreeze the image.**

NOTE

- Freezing an image that contains high-speed action may result in a blurred image.
-

Enlarging an image (Zoom)

The display image can be zoomed for an enlarged view of the observation object.

Touching the [ZOOM] \triangle button allows you to magnify the image up to 3 times.

To restore the image to the original size, press the [ZOOM] ∇ button.

During a zoom operation, [ZOOM] will appear on the screen along with a value indicating the zoom level (for about three seconds).

NOTE

- Images are zoomed using "digital zoom". As a result, the image may become slightly coarse at higher zoom factors.
-

Adjusting image brightness

■ Automatic Light Adjustment Using [BRT].

The [BRT] can be used to adjust brightness by changing the overall brightness of a live image during observation (Adjustable from levels 1 to 8).

Touching the [BRT] \triangle button each times brightens the overall image. To reduce the brightness, touch the ∇ button.

Performing a brightness adjustment operation will cause a value indicating the current brightness level to appear on the screen for about three seconds.

Switching between folders on the Live screen

You can switch between folders for recording or playing back the images on the Live screen using the $\triangle\nabla\triangleleft\triangleright$ buttons.

Use \triangleleft to move to the first level in the hierarchy (DCIM, etc.) and \triangleright to move to the second (DCIM/100OLYIV, etc.). Use \triangle and ∇ to move between folders on the same hierarchical level.

4.3 Recording images

Still images and movie images can be recorded during observation. Data can be stored on the provided SD card.

Make use of the supplied SD card, or an SDHC card (4 to 32 GB) that is Class 6 or higher. SD cards smaller than a capacity of 2 GB and the SDXC format (larger than 48 GB) cannot be used.

Loading an SD card

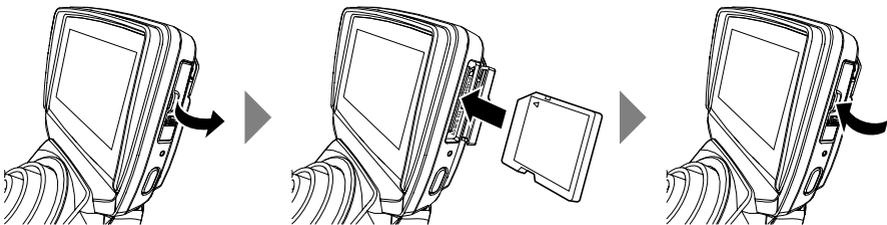
Format the SD card for recording images on the instrument before using it. For details about formatting, refer to "SD card formatting (initialization)" (P. 27).

The following table shows the size of a single image and the approximate numbers of images that can be recorded on an SD card.

Image Capacity & Recording Time	Approximate Single Image Size	Approximate Image Capacity & Recording Time (1 GB)
Still images	160 KB	6,500 images
Movies (per sec.)	300 KB	55 minutes

Image recording settings must be configured using menu operations. See "5.1 Performing menu operations" (P. 25) and "5.2 Using the live screen/freeze screen" (P. 26).

■ Loading an SD card



Use your finger to pull the SD card cover lock and open the cover.

Noting the orientation of the SD card, insert it into the slot until you hear it click into place. Next, close the SD card cover.

(An SD Card icon and the number of recordable images will be displayed for about 3 seconds.)

CAUTION

- If the SD card does not slide smoothly into the slot, it could mean that it is not aligned correctly. Do not try to force the card into the slot. Check its orientation.

■ Specifying the image recording format

To record the date, time, title, logo, and other on-screen information onto the image being recorded, touch the [MENU] button on the live screen. On the menu that appears, select "SETUP", and set "PRINT SCREEN ON/OFF" to "ON". (See P.26.)

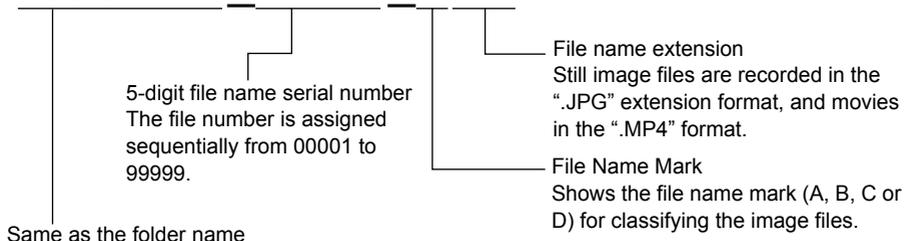
NOTE

- When playing back a still image that has the date/time, title, logo and other information recorded on it, the text may be overlapped when displayed. This is not a malfunction.

■ File names

File names are generated and assigned automatically as images are stored on an SD card. You can change a file if you want (up to 30 alphanumeric characters and symbols).

100OLYIV_?????_A.***



NOTE

- When the "FILE NAME MARK" menu is set to "OFF", or when the file name mark selection is set to "X" during still image recording, file name marks will not be appended to the name of the image file.

Recording a still image

- 1 Short-press the [FRZ/REC] button on the main unit while the live image is displayed.**
This freezes the image.
- 2 Long-press the [FRZ/REC] button on the main unit again while the displayed image is frozen.**
This records the still image.
At this time the screen will momentarily go black, and then the freeze screen will reappear.

Recording a movie image

1 Long-press the [FRZ/REC] button on the main unit again while the live image is displayed.

After a still image is recorded, a movie confirmation screen appears.

2 Touch [YES].

This starts movie image recording. A movie recording indicator flashes on the LCD monitor while movie recording is in progress. If you select [NO] in movie confirmation screen, only the still image is recorded but the moving image is not recorded.

3 To stop movie recording, short-press the [FRZ/REC] button on the main unit.

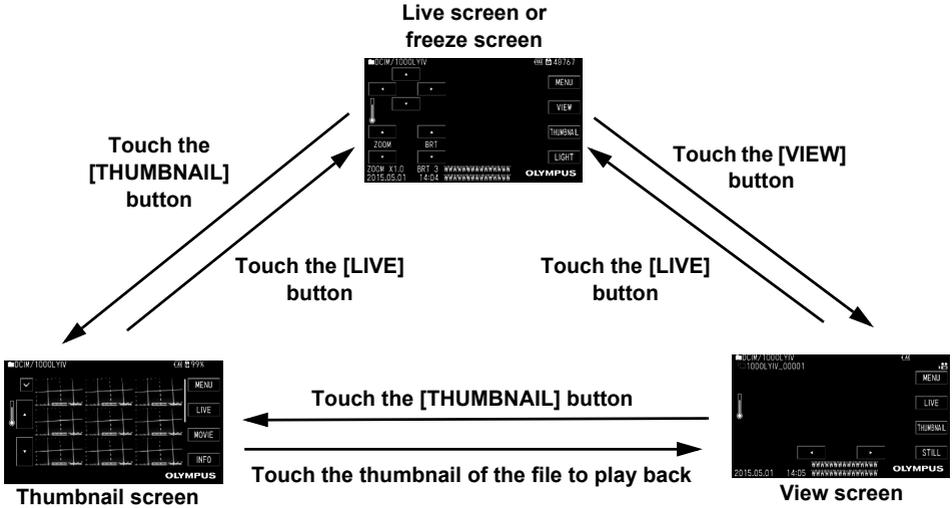
The flashing movie recording indicator disappears from the screen when movie recording is complete.

NOTE

- Never attempt to insert or remove an SD card while movie recording is in progress. Doing so will cause movie recording to stop and an error message to appear on the display.
 - Movie recording ends automatically when the SD card has run out of free space, when the file reaches a size of 4 GB, or when the recording time has reached 120 minutes.
 - While movie recording is in progress, touching the [VIEW] button ends the recording, displays the view screen, and starts playback of the recorded movie. Touching the [THUMBNAIL] button ends movie recording and displays the thumbnail screen.
-

4.4 Replaying an image

Recorded images can be displayed using either of two screen views: a full-screen view of a single image (view screen) or a multi-image view of thumbnail images (thumbnail screen). The thumbnail screen shows multiple images at a single glance, which makes it useful when finding a particular image among a large group of images. Check to make sure an SD card is loaded before starting playback.



Playing back on a full-screen view (view screen)

- 1 Touch the [VIEW] button on the live or freeze screen.**
This will display a full-screen view of the newest recorded image.
- 2 Switch the image you want to play back.**
Touch the < or > button to select the image to play back.
- 3 Touch the [LIVE] button to return to the live screen.**

Multi-image view (thumbnail screen)

The thumbnail screen shows multiple recorded movie and still images on a single screen (nine images per screen).

You can use the thumbnail screen to search for a desired image, or to select multiple images to move them or delete them.

1 Touch the [THUMBNAIL] button on the live or freeze screen.

This will display a multi-image view of recorded images (up to nine images per screen).

■ To select a thumbnail

Touch the \triangle or ∇ button to jump to a different page.

■ To play back an image

Touch the image you want to play back.

This starts full-screen view playback of the selected image.

■ To select multiple images to move or delete them

Touch the \checkmark (check mark) button to enter multiple images selection mode. A check mark (\checkmark) appears upon touching the image you want to select, and you can now move or delete the file using the menu operation. To deselect a file, touch the image again.

Touching the [ALL] button selects all the images. Touching the button again deselects all of them.

To stop making a selection, touch the \checkmark (check mark) button again.

■ To switch between the still image and movie thumbnails

Touch the [STILL] or [MOVIE] button to switch to display the corresponding thumbnails.

■ To display file information

Touch the [INFO] button and select an image. The file name, date/time of recording and title of the image will be displayed.

2 Touch the [LIVE] button to return to the live screen.

4.5 Using recorded images on a PC

Make use of the supplied USB cable to connect the instrument with a PC, and you will be able to load the recorded images directly into the PC.

With the InHelp VIEWER, you can make use of the images recorded by this instrument on a PC. To make use of the InHelp VIEWER, please download the software from our website (<http://www.olympus-ims.com/en/service-and-support/downloads/>).

CAUTION

- The instrument will not display the live screen while recorded images are being displayed on a PC screen.

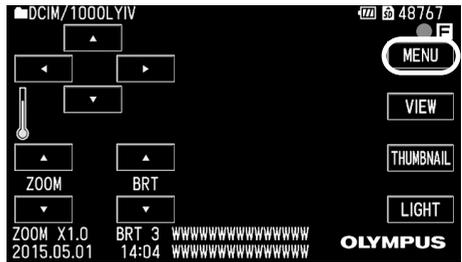
4.6 Displaying Images on an External Monitor

By connecting an external monitor (commercially sold) to the HDMI terminal of the instrument using the supplied HDMI cable, you can display the images on the external monitor.

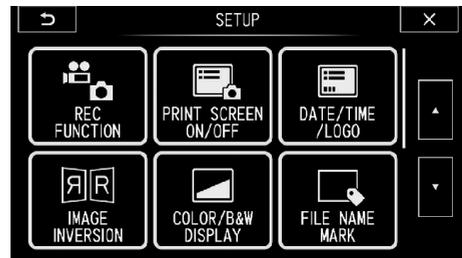
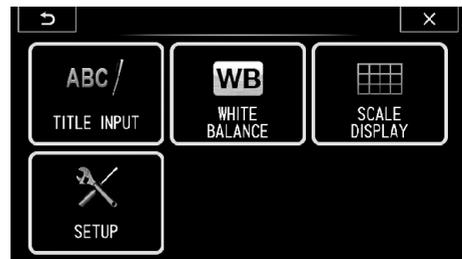
5 Menu operations and functions

5.1 Performing menu operations

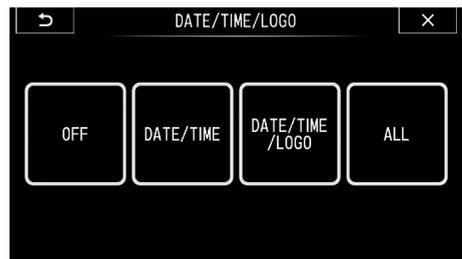
- 1 Touch the [MENU] button.
This displays the main menu.



- 2 Touch the menu item you want to execute.



- 3 Touch the option you want to select.



NOTE

- Touching the ↶ (Previous) button during the menu operation returns you to the next higher level in the hierarchy. Touching the ✕ (Exit) button closes the menu and returns to the live screen.

5.2 Using the live screen/freeze screen

Menu display and functions

The settings described in the table below can be configured using the live screen/freeze screen menu.

*: Initial default

Menu	Available settings
TITLE INPUT 	Title input A title can be displayed in the live screen and in registered images. Input can be up to 30 characters. See "Inputting a title" (P. 28).
WHITE BALANCE 	White balance adjustment (Live screen only) Specifies whether to perform white balance. <ul style="list-style-type: none"> • CANCEL : Do not adjust. • EXECUTE : Adjust. Adjust by capturing a white object (paper, etc.) from a distance of about 50 to 60 mm.
SCALE DISPLAY 	Displays patterns on the screen. You can select a fixed pattern (3 types) or the free-drawing pattern (1 type). See "Displaying Scale on the Screen" (P. 31).
The following menu is in the "SETUP" menu.	
REC FUNCTION 	[FRZ/REC] button image type setting Specifies the type of image that is recorded when a record operation is performed with the [FRZ/REC] button. Long-pressing the [FRZ/REC] button performs one of the following operations. <ul style="list-style-type: none"> • STILL ONLY: <ul style="list-style-type: none"> Live screen : Records still image only. Freeze screen : Records still image only. • STILL+MOVIE*: <ul style="list-style-type: none"> Live screen : Records still image and movie. Freeze screen : Records still image only.
PRINT SCREEN ON/OFF 	Date, title, and other information recording Specifies date, time, title and logo and other information included on the display should be recorded in images. <ul style="list-style-type: none"> • OFF* : Do no record information. • ON : Record information.

Menu	Available settings
DATE/TIME /LOGO 	<p>Display information setting Specifies whether display information (date and time, title, etc.) should be shown on the LCD monitor.</p> <p>This setting can also be used to specify the type of information to be displayed.</p> <ul style="list-style-type: none"> • OFF : Hide information. • DATE/TIME : Show the date, time, and title. • DATE/TIME/LOGO : Show the date, time, title, and "OLYMPUS" logo. • ALL* : Show the date, time, title, "OLYMPUS" logo, zoom level, and brightness level.
IMAGE INVERSION 	<p>Reverses an image laterally. You can reverse a live image laterally.</p> <ul style="list-style-type: none"> • OFF* : Does not reverse the image. • ON : Reverses the image.
COLOR/B&W DISPLAY 	<p>Displays the image in color or black-and-white. You can display a live image in color or black-and-white.</p> <ul style="list-style-type: none"> • BLACK & WHITE : Displays image in black-and-white. • COLOR* : Displays image in color.
FILE NAME MARK 	<p>Letter appending to the end of image file names Specifies whether a letter should be added to names assigned to recorded image files. This feature helps to categorize image files.</p> <ul style="list-style-type: none"> • OFF* : Do not append letter. • ON : Append letter. <p>You can make a selection from "_A", "_B", "_C" and "_D". Selecting "ON" displays a dialog box for selecting the letter to be appended to each image file name.</p>
MEDIA FORMAT 	<p>SD card formatting (initialization)</p> <ul style="list-style-type: none"> • CANCEL : Do not format the card. • EXECUTE : Format the card. <p>CAUTION _____</p> <ul style="list-style-type: none"> • Never remove the SD card while formatting is in progress. <p>NOTE _____</p> <ul style="list-style-type: none"> • Formatting an SD card deletes all of its data.
DATE TIME 	<p>Date and time settings Configures date and time settings. See "Setting the date and time" (P. 32).</p>

Menu	Available settings
TOUCH SCREEN ADJUST 	<p>Adjusts the response position when you touch the touch panel. Perform adjustments accordingly when the response position is out of alignment when you touch the screen.</p> <ul style="list-style-type: none"> • CANCEL : Does not perform adjustment. • EXECUTE : Performs adjustment. <p>CAUTION</p> <ul style="list-style-type: none"> • Touch lightly using an object such as the corner of an SD card. <p>NOTE</p> <ul style="list-style-type: none"> • Pay attention not to scratch the LCD monitor surface.
LANGUAGE 	<p>Display language selection Specifies the language used for menus and messages. English and other languages are supported. See "Changing the display language" (P. 32).</p>

Inputting a title

The following are the two methods that can be used to input a title.

- Input text from the on-screen keyboard
- Select a preset title

■ Input text from the on-screen keyboard



1 Touch the character selection button to select an input mode.

2 Touch the character buttons.

The characters you input appear in the title input box. Edit the text as required.

● To delete characters

- To erase a single character, touch [←] or [→] to align the cursor with the character you want to erase, followed by touching [DELETE].
- To erase all characters, touch [CLEAR].

● To input a space

Align the cursor with the position you want to insert a space, and touch [SPACE].

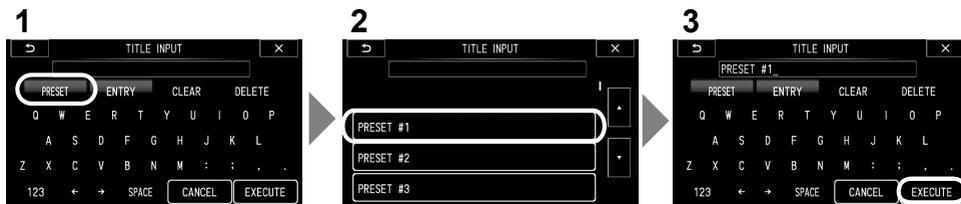
3 Touch [EXECUTE].

This displays the title you input on the LCD monitor.

■ Selecting a preset title for input

With this procedure, you select a preset character string and use it to input a title.

For information about how to register frequently used text strings, see "Registering a character string as a preset title" (P. 30).



1 Touch [PRESET].

This displays a list of preset titles. To stop selecting a preset title, touch the ⏪ (Previous) button.

2 Touch the corresponding preset title in the list.

The text string you select appears in the title input box.

Repeat steps 1 and 2 to complete input of the title.

NOTE

- To jump to the previous or next page of the preset title list, touch the △ or ▽ (Page Jump) button.

3 Touch [EXECUTE].

This displays the title you selected on the LCD monitor.

Registering a character string as a preset title

After you register commonly used character strings to favorites, you can recall them when you are inputting titles. You can register a maximum of 55 character strings to preset titles.



1 Input the character string you want to register into the title input box.

For details about inputting, see "Inputting a title" (P. 28).

2 Touch [ENTRY].

A list of preset titles is displayed.

To stop registering a preset title, touch the ⏪ (Previous) button.

NOTE

- To jump to the previous or next page of the preset title list, touch the ▲ or ▼ (Page Jump) button.

3 Touch the line where you want to store the text string.

The text string you input in the title input box is registered to preset titles.

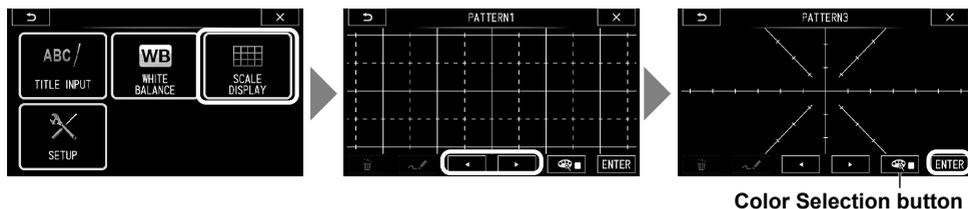
Registering a preset title overwrites anything currently in the line you specify in the list. This means you can delete a preset title by performing the registration operation while the title input box is blank.

Displaying Scale on the Screen

You can set the pattern to display on the live or freeze screen.

When "PRINT SCREEN ON/OFF" is set to "ON", the pattern is registered to the still image.
(Patterns cannot be recorded to a movie.)

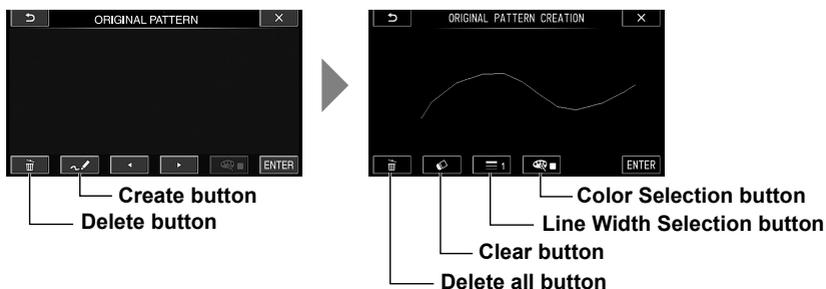
SCALE DISPLAY > Pattern Selection > ENTER



- Select a fixed pattern ("PATTERN 1" to "PATTERN 3") or the "ORIGINAL PATTERN" (if it has been created in advance).
- For the fixed patterns, you can select a color for the pattern from the color selection screen by touching the color selection button.
- To cancel scale display, select "NO PATTERN DISPLAY" and touch the [ENTER] button.

■ To create a hand-drawn pattern

You can create a hand-drawn pattern.

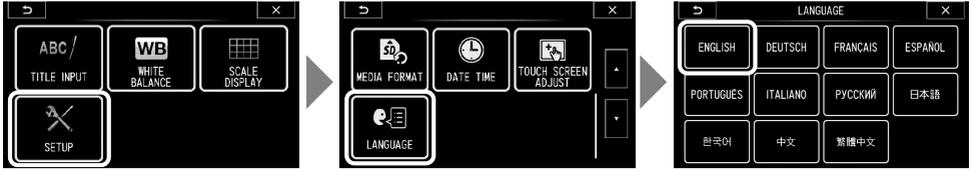


- Select "ORIGINAL PATTERN" and touch the Create button. A "ORIGINAL PATTERN CREATION" screen appears. Set the color and line width, drag to draw a pattern on the screen, and touch the [ENTER] button to register the pattern.
- Delete all : Deletes all patterns you have created
- Clear : Erases the part that you have dragged
- Line Width Selection : Sets the width of the line
- Color Selection : Sets the color of the line
- To delete a free-drawing pattern you have created, touch the Delete button, followed by [YES].
- The free-drawing patterns you have created are stored in the "/FDPATTERN/FDPATTERN.BMP" format inside the SD card.

Changing the display language

Use the procedure below to select the language for menus and error messages that appear on the display.

SETUP > LANGUAGE > Select a language.



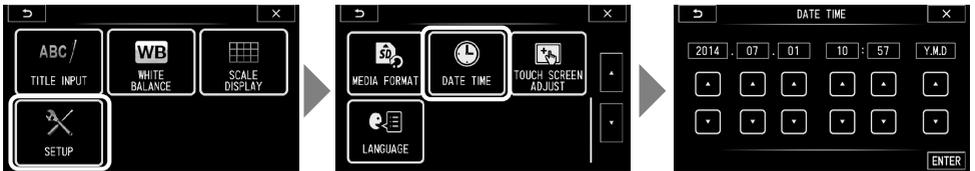
NOTE

- After the language setting is changed, it may take longer than normal for screen display functions to be performed. This does not indicate malfunction.

Setting the date and time

Use the procedure below to configure date and time settings.

SETUP > DATE TIME > Set DMY, H:M.



Be sure to set the correct date and time before using the instrument for the first time.

When "PRINT SCREEN ON/OFF" is set to "ON", date and time information will be saved inside the image. Data recording is also performed in accordance with date and time information.

5.3 Using the thumbnail/view screens

Menu display and functions

The menu displayed on the thumbnail/view screen can be used for the following settings.

Button	Available settings
DELETE 	Image delete <ul style="list-style-type: none"> • CANCEL : Do not delete image. • EXECUTE : Delete image. On the view screen, the currently displayed image is deleted. Delete the image files marked with (✓) on the thumbnail screen.
MOVE FILE 	Move image files to folder (Thumbnail screen only) Moves recorded images to a different folder. Moves the image files marked with (✓) on the thumbnail screen.
RENAME FILE 	Rename file (Thumbnail screen only) Changes the name of a recorded image file (within 30 letters). Changes the file name of the images marked with (✓) on the thumbnail screen. (This option can be executed when only one image is selected.)
CHANGE FOLDER 	Specifies a folder for image recording and playback (Thumbnail screen only) Specifies a folder for image recording and playback. The data of images that are recorded is saved in the specified folder. During playback, the recorded data in the specified folder is displayed.
MAKE FOLDER 	Create folder (Thumbnail screen only) Creates a new folder.
RENAME FOLDER 	Rename folder (Thumbnail screen only) Changes the name of the folder (within 30 characters).

NOTE

- You can use only alphanumeric characters and symbols for folder and file names. Some symbols are unavailable for folder and file names also.
- To stop moving a file or exit the setting for making changes to a folder, touch the ⏪ (Previous) or ✕ (Exit) button.

6 Storage and maintenance

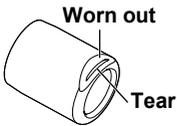
6.1 Replacing the battery

Though the battery life depends on the operating environment and frequency of use, replacement of the battery is recommended whenever the battery operation time becomes very short. Contact Olympus about changing the battery.

For details about how to load and remove the battery, see "Using the battery" (P. 12).

6.2 Replacing the Tip Protection Hood

When the tip protection hood is worn out or deformed, replace it by following the steps below.



If a tear appears at the worn out area, replace the hood.

If the protection hood is found to be loose during the pre-operation preparation, attach it again by following the steps below.

■ To detach

- 1** Turn the tip protection hood carefully in the anti-clockwise direction to unfasten the screw.
- 2** Turn the tip protection hood carefully in the anti-clockwise direction while pulling it lightly to engage the screw again.
- 3** Continue to turn carefully in the anti-clockwise direction to remove the tip protection hood.

■ To attach

- 1** After removing dirt from the screw of the distal end, fit the tip protection hood carefully to the distal end while ensuring that they form a straight line.
- 2** Turn the tip protection hood carefully in the clockwise direction to engage the screw. Turn further and unfasten the screw once.
- 3** Next, turn the tip protection hood carefully in the clockwise direction while pushing it in lightly to engage the screw again. Tighten the screw until the tip protection hood is securely fastened.

6.3 Cleaning components

Cleaning the insertion tube

Dirt or other foreign matter on the insertion tube

Wipe with a clean soft cloth.

Dirty water, machine oil, or other liquid on the insertion tube

Wipe with a soft cloth or cotton swab, and then wash thoroughly with a piece of gauze or other material moistened with a neutral detergent. Next, use a clean, soft piece of soft gauze moistened with clean water, and then wipe the insertion tube dry of all moisture.

CAUTION

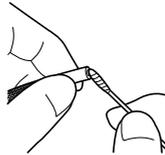
- Clean the insertion tube immediately after withdrawing the insertion tube. Leaving the insertion tube very dirty for long periods can cause it to become corroded.
-

Cleaning the distal end

Dirt or water droplets on the objective lens and screw of the distal end, and the screw of the tip protection hood

Grasping the rigid portion of the distal end, use a clean, soft piece of gauze or a cotton swab to wipe off the dirt or water.

Best results may be obtained using a commercially available absolute ethanol or isopropyl alcohol.



Cleaning the LCD monitor

LCD monitor viewing problems due to fingerprints and dirt

Wipe the LCD monitor with a soft cloth. Next, lightly wipe it with a clean, dry cloth.

CAUTION

- Never use a chemically treated cloth or strong detergent, such as benzene or alcohol. Doing so may damage the surface of the LCD monitor.
 - Do not use a cloth that is hard, dirty, or has foreign matter on it. Doing so may damage the surface of the LCD monitor.
-

Cleaning the main unit

Dirty main unit

Wipe the main unit with a soft cloth dampened with clean water. Next, lightly wipe it with a clean, dry cloth. Also wipe all dirt, water, and other foreign matter from the battery door, SD card cover, and the inside of the AC adapter connector.

6.4 Storage precautions

Store this product under normal room temperature and humidity.

CAUTION

- Never subject cables to severe bending, pulling, binding, twisting, or crushing forces. Do not allow a cable to be exposed to heat, which can melt its covering. Otherwise, cable might be damaged, which can lead to fire and electric shock.

- 1 Turn off power and remove the battery or unplug the AC adapter.**
- 2 With the angulation section straightened, store the instrument in the carrying case according to the illustration on the storage label. Attach the battery cap to the battery before storing it.**
- 3 Store the equipment on a level surface in a clean, dry and stable place.**

7 Troubleshooting

Inspect the equipment as described in "3 Pre-observation/pre-operation preparation and inspection" (P. 12), do not use the equipment if there are any obvious malfunctions. Contact Olympus for repairs. Should even the slightest irregularity be suspected, do not use the instrument. Perform the actions described in "7.1 Troubleshooting guide" (P. 37). If the problem cannot be resolved by the described remedial action, stop using the instrument and send it to Olympus for repair.

7.1 Troubleshooting guide

Error messages

Message	Cause and recommended action
NO RECORDING MEDIA.	An SD card is not loaded. →Load an SD card and try again.
RECORDING MEDIA FULL.	The SD card is full. →Delete unneeded data to free up space or replace with a new SD card.
RECORDING MEDIA IS LOCKED. PLEASE UNLOCK.	The SD card is locked. →Unlock the SD card you are using and then replace it.
RECORDING MEDIA ERROR. PLEASE FORMAT THE RECORDING MEDIA.	The format of the SD card cannot be recognized. →Format the SD card on the instrument.
THIS IMAGE CANNOT BE RETRIEVED.	The image was not recorded with this instrument. →Only images recorded with this instrument can be displayed.
THE SPECIFIED FOLDER NAME ALREADY EXISTS. PLEASE CHOOSE ANOTHER NAME.	A folder with the same name as the one you are creating already exists. →Specify a different folder name.
THE SPECIFIED FILE NAME ALREADY EXISTS. PLEASE CHOOSE ANOTHER NAME.	A file with the same name as the one you are creating already exists. →Specify a different file name.
LOAD FILE ERROR.	The free-drawing pattern cannot be loaded. →The data may be faulty. Create the pattern again.
SAVE FILE ERROR.	Free-drawing patterns cannot be created or deleted. →Try creating the pattern again.
IMAGER ERROR. PLEASE TURN OFF THE POWER.	The self-check function activated and prompted termination of operation. →Stop inspection and turn the instrument off, then on again.
HIGH TEMPERATURE (DISTAL END). PLEASE IMMEDIATELY PULL OUT THE INSERTION TUBE.	This message prompts you to stop inspection because the self-check function was triggered because the distal end was overheating. →Immediately withdraw the insertion tube from the observation object. NOTE • This message appears before the atmospheric temperature of the distal end of the insertion tube reaches the maximum operating ambient temperature.

Message	Cause and recommended action
LOW BATTERY. PLEASE CONNECT TO THE AC ADAPTER OR TURN OFF THE POWER.	Battery voltage is low. →Stop all image recording, copy, and delete operation, SD card format operations, etc., and immediately replace the battery. Or you connect the AC adapter.
BATTERY TEMPERATURE IS HIGH. PLEASE TURN OFF THE POWER.	Battery temperature up, self-check function activated. →Turn off the power.
BATTERY COMMUNICATION ERROR. PLEASE TURN OFF THE POWER.	Battery cannot communicate properly due to poor contact. →Check whether the battery terminal is dirty. If the problem persists, replace the battery.

Common problems

Problem	Cause and recommended action
The tip protection hood cannot be fitted to the insertion tube.	A foreign object is stuck to the screws. →Wipe with a clean piece of gauze or a cotton swab. The installation procedure is not correct. →Reinstall using the correct procedure ("Replacing the Tip Protection Hood" (P. 34)).
The system cannot be turned on.	The AC adapter or the battery is not connected. →Connect the AC adapter or the battery correctly. (See "Preparing the power supply" (P. 12).) The Power button is not on. →Turn on the main unit POWER button (⏻). A non-designated AC adapter or battery is connected. →Use the designated AC adapter or battery.
The system cannot be turned off.	The main unit is damaged. →Remove the AC adapter or the battery from the main unit to turn off the power.
The battery cannot be charged.	An error has occurred during battery charging. →Clean the battery terminal and perform charging again. →If the battery gets hot, allow it to cool down and perform charging again. If the problem persists, replace the battery.
Illumination does not light.	→Touch the [LIGHT] button to turn on the light. (The light may be faulty if it does not light up.)
The illumination is dim.	The front of the light is dirty. →Wipe with a clean piece of gauze or a cotton swab. The automatic brightness control is set erroneously. →Use the [BRT] button to adjust the setting to the appropriate level.
The image is not sharp.	The front of the objective lens is dirty. →Wipe with a clean piece of gauze or a cotton swab.
Color reproduction is poor.	The white balance is set improperly. →Re-adjust white balance.
The image is noisy.	The automatic brightness control is set erroneously. →Use the [BRT] button to adjust the setting to the appropriate level.

Problem	Cause and recommended action
All the functions stopped during motion image recording.	The SD card being used for image recording is not the one provided and is not one recommended by Olympus. →Remove the AC adapter or the battery from the main unit to turn off the power. →Use an SD card recommended by Olympus.

7.2 Requesting repair of this product

Contact Olympus before requesting repair of this instrument. Include a detailed description of the malfunction and the conditions under which it occurs when returning the instrument. Malfunctions that occur during the warranty period are done at no charge according to the warranty agreement. Be sure to attach the warranty agreement when returning the instrument for repairs. Repair will be charged if the warranty agreement is not attached. The freight fees are paid by the user even if repairs are done free of charge. Please note that we do not accept repair of devices that are contaminated with hazardous substances.

8 Specifications

8.1 Operating environment

Operating temperatures

Insertion tube	In air : -25 to 80°C In water: 10 to 30°C
Other parts than above	In air : -10 to 40°C (Battery-powered operation) 0 to 40°C (AC adapter-powered operation)

Operating atmospheric pressure

Insertion tube	In air : Normal pressure (1,013 hPa) In water: 930 to 1,224 hPa
Other parts than above	In air : Normal pressure (1,013 hPa)

Operating height

All parts	Altitude : Max. 2,000 meters
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Operating environment humidity

All parts	15 to 90% (relative humidity)
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Liquid resistance

Insertion tube	No trouble when exposed to machine oil, light oil or 5% saline solution.
Other parts than above	

Waterproofing

Insertion tube	Waterproof construction. Can be used underwater.
Other parts than above	Cannot be used in the rain or underwater.

Contamination level

All parts	2 (Including AC adapter)
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CAUTION

- Meeting operating environment specifications does not constitute any guarantee against damage to or malfunction of this equipment.
- Use the AC adapter in an indoor environment (at ambient temperature).

8.2 Other specifications

Optical system

Field of view	90°
Direction of view	Forward
Depth of field	12 to 150 mm
Illumination	LED on the distal end

Distal end

Outer diameter	φ6.2 mm
Distal end rigid section length	14.6 mm
Angulation	UP, DOWN, RIGHT and LEFT each 120°

Flexible section

Outer diameter	φ6.2 mm
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Total length	2 m
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8 Specifications

Main unit	
Dimensions	98 (W) x 209 (H) x 89 (D) mm (without insertion tube and cable)
Weight	
Not including battery	Approx. 650 g
Including battery	Approx. 735 g
LCD panel	3.0" 16:9 Wide VGA
Input/Output connector	
HDMI output terminal	HDMI Mini terminal (Type C) Video output format: 720 x 480p (16:9), 60 Hz
USB connector	Mini-B, USB standard
Power supply	
Battery	Model : BN-VF815UWIE Nominal voltage : DC7.2 V Capacity : 1460 mAh Battery powered operating time : 120 minutes or more (reference value when using a new battery) Estimated charging time : Approximately 130 minutes Recommended operating temperature Discharging : -10 to 40°C Charging : 0 to 40°C Storage : -20 to 40°C
AC adapter	Model : UIA324-12 Input : 100 V to 240 V AC, 50/60 Hz, 0.6 A Output : DC12 V, 2 A
Power consumption	5 W (when powered by AC adapter) 11.5 W (when charging the battery) 4.4 W (when powered by battery)
Recording media	SDHC card (class 6 or later, 4 GB to 32 GB)
Still images	H640 x V360 (Pixels), JPG compression (Exif2-compliant)
Movies	H640 x V360 (MP4 format, AVC/H.264 compression)
Carrying case dimensions and weight	
Dimensions	498 (W) x 165 (H) x 335 (D) mm
Weight	Approximately 2.4 kg (With all items stowed: Approximately 3.9 kg)
Manufacturer	OLYMPUS CORPORATION TOKYO, JAPAN

NOTE

- The images recorded with the instrument can be displayed on a computer, etc., but playback on the instrument of images recorded with an image recording device such as a digital camera or a computer is not supported.
- To play back movies recorded by this instrument on a PC, the PC must be installed with Windows Media Player Ver.12 or a later version.
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External application standard

<p>Low Voltage Directive and EMC Directive</p> 	<p>This product conforms with the following directives.</p> <ul style="list-style-type: none"> • Directive 2006/95/EC concerning electrical equipment designed for use within certain voltage limits. • Directive 2004/108/EC concerning electromagnetic compatibility when used in combination with devices bearing CE marking either on the products or in its instructions. • This device is designed for use in industrial environments for the EMC performance. Using it in a residential environment may affect other equipment in the environment.
<p>FCC Information</p>	<p>This product conforms to the following.</p> <ul style="list-style-type: none"> • Part 15 of the FCC Rules <p>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.</p> <ul style="list-style-type: none"> • FCC WARNING <p>Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.</p>
<p>WEEE Directive</p> 	<p>The following applies to the mark to the left.</p> <p>In accordance with European Directive on Waste Electrical and Electronic Equipment, this symbol indicates that the product must not be disposed of as unsorted municipal waste, but should be collected separately.</p> <p>Refer to your local Olympus distributor for return and/or collection systems available in your country</p>
<p>Chinese RoHS Directive</p> 	<p>This mark indicates the environmental protection use period applicable to electronic information products sold in China in accordance with the "Management Methods for Controlling Pollution by Electronic Information Products" of February 28, 2006 and the "Requirements Concerning Pollution Control Markings for Electronic Information Products."</p> <p>(Caution) During the environmental protection use period harmful substances will not be emitted when used under proper conditions. However, it does not guarantee functional performance of the product during the said period.</p>

This product is in compliance with the requirements in the EMC Directive of Korea.

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Appendix

System chart

