OLYMPUS®

INSTRUCTIONS

INDUSTRIAL VIDEOSCOPE

IPLEX TX

IV8200T

Table of contents

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 "Appendix" (P. 54) 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 warnings are used throughout this manual.

⚠ DANGER
- Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING
- Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ 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.

📖 NOTE
- Indicates additional helpful information.

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 atmosphere is present
  Otherwise, 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 may result. Contact Olympus for all repair and servicing.
• 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 the 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 remove the battery.
  Leaving the battery loaded during storage can cause it to become hot, causing the risk of fire.

⚠ CAUTION ——————————————————————————

• Do not use this instrument in strongly radioactive environment or any other environment 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.
  Doing so may cause a malfunction or reduce performance.
• Do not grip the control unit for long periods while using it in very hot environments.
  Doing so may lead to low-temperature burns. Wear gloves or do something to prevent low-temperature burns.
• 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.
• Take care not to have your feet caught by a cord including the universal cable or power cord.
• Use only a power cord and AC adapter specified by Olympus.
  Using equipment not specified by Olympus may damage the instrument causing smoke or fire.

- To ensure electrical safety, connect the power cord to a 3P power outlet.
  Electrical safety designed into the product by Olympus cannot be guaranteed if there is no connection to power outlet ground.
- Do not unplug the power cord while the system is on.
- Do not use the AC adapter outdoors.
  Otherwise, electric shock might occur, or smoke emission and fire might occur, causing damage to the instrument.
  The AC adapter is designed for indoor use.
- Do not subject the AC adapter to strong impact such as by striking it against a wall, dropping it, etc.
  Otherwise, malfunction, damage, or electric shock might occur.
- Do not connect the AC power cord to power outlets having a different rating.
  The AC power cord is exclusively for 100 to 120 V AC (50/60 Hz) power. Connecting the AC power cord to a power outlet having a different rating may lead to fire or electric shock.
- Always grasp the plug when unplugging it from the electric outlet.
  Pulling the cord creates the risk of wire breakage and other malfunction.
- Do not leave the distal end illumination on.
  Otherwise, the illumination emitted from the distal end may heat up a nearby object and cause it to ignite. Whenever stopping operation, be sure to turn off illumination.
- Do not look directly into the illumination being emitted by the distal end.
  Otherwise, eye damage may result.
- Do not expose the LCD monitor to strong impact, strong pressure, or to scratching by a hard or pointed object.
  Otherwise, the LCD monitor might be cracked or scratched, or a damaged monitor could create the risk of personal injury.
- Do not subject the insertion tube or other cables to strong pulling, and do not move the main unit around by holding the cables.
  Otherwise, the insertion tube and/or cables may be damaged. Also, the operator may fall over when the shoulder belt is used.
- Do not allow any liquids other than water, saltwater, machine oil, or diesel oil to come into contact with the insertion tube.
  Otherwise, the insertion tube may be damaged.
- Do not allow water to come into contact with parts other than the insertion tube.
  Water creates the risk of electric shock. The parts of the instrument other than the insertion tube, including the carrying case, are not watertight, so the instrument should not be used or stored where it is submerged or wet.
- Do not subject the distal end to dropping, impact or pulling, and do not expose the angulation section to severe impact or bending.
  Otherwise, the precision components that make up the distal end and the angulation section might be damaged.
- Do not touch the distal end of the insertion tube immediately after using it in a very hot environment.
  The distal end of the insertion tube is hot immediately after it is used in a very hot environment. Touching it may result in burns.
- Note the following precautions whenever operating the angulation section.
  - Do not bend the insertion tube to a radius that is less than its minimum bend radius of 20 mm.
  - Should you sense any abnormality when performing angulation operation, do not try to force the angulation operation.
  Doing so can damage the insertion tube or observation object.
- Never use an insertion tube when any of its parts are loose.
  Doing so creates the risk of loose parts falling off during use.

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- Do not allow metal or other foreign objects to enter the main unit through connectors, connector terminals or any other openings.
  Otherwise, a malfunction or electric shock may result.
- Avoid accidentally dropping the main unit while cables or devices are still attached to connectors.
  Otherwise, the connectors and/or connected items might become damaged.
- Whenever connectors become wet, wipe them clean before use.
  Also, should connectors become clogged with foreign matter, remove the foreign matter before use.
- Do not connect any USB flash drive to the USB connector except the standard one provided or one recommended by Olympus.
- Do not touch the connectors when attaching or detaching the USB flash drive or battery.
  The USB and battery connectors on the main unit sometimes get hot during operation. Touching them creates the risk of burns.
- Note the following precautions whenever handling the battery cover, video connector cap, and AC adapter connector cap.
  - Do not open or close covers/caps while your hands are wet.
  - Do not open or close covers/caps in an area subject to high humidity and/or dust.
  - Close covers/caps before storing the instrument and when they are not in use.
- Check to make sure that the USB flash drive is correctly loaded before using it.
- Do not remove the battery or AC adapter while the system is running.
  Otherwise, recorded data may be damaged.
- Should the battery indicator start to flash, immediately turn off power or connect the AC adapter.
  Continued use of the instrument will result in it shutting down, which could destroy recorded data.
- Note the following precautions whenever removing the instrument from its 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.
  - Before stowing the instrument, align the "F" mark on the angulation lock ring with the "▼" mark and then release the angulation lock lever.
  - Make sure that the distal end has cooled before storing it.
  - Make sure that the insertion tube is not twisted before storing it.
  - When closing the top lid of the carrying case, take care not to pinch your hand, belt, insertion tube, or cables.
  - Make sure that the latch on the carrying case is securely locked.
- When hanging the main unit from your neck by the shoulder belt, do not allow it to catch on other objects. Be careful that it does not choke you.
- Do not store the instrument in the carrying case with the shoulder belt still attached.
  Otherwise, the LCD monitor might be scratched or the shoulder belt might be damaged.
- Regularly back up recorded data to protect against losing it if it is accidently damaged.
- Do not store the instrument in the following locations.
  - Environments subjected to high temperature, high humidity, and large amounts of dust or particulates
  - 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 electric parts will deteriorate when exposed to gases such as the halide in insecticides, herbicides, and fire extinguishers.
- 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

Observe the precautions described below when handling the battery. Otherwise, battery fluid leakage, overheating, smoke, rupture, electric shock and/or burns may result.
Before use, thoroughly review the instruction manuals for the battery and battery charger to fully understand the information contained in them, and observe their instructions during use.
Should you experience any problems, contact Olympus.

⚠ DANGER

- Use only the specified NC2040NO29 or NC2040OL24 battery and CH5000C or CH5000X battery charger.
- Do not allow connectors to short circuit.
- Do not attempt to apply solder directly to a terminal.
- Do not connect 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 cigarette 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.
- Do not use the battery charger outdoors.
  Otherwise, electric shock might occur, or smoke emission and fire might occur, causing damage to the charger. The battery charger is designed for indoor use.

⚠ 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 battery charger's power plug from the electrical outlet.
- Immediately unplug the battery charger and stop using it at the first sign of overheating, abnormal odor, abnormal noise, smoke, or any other abnormality.
  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 leakage, 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 immediately after using the instrument for a long time.
  Overheating of the battery creates the risk of burns.

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- Do not leave the battery in a location subject to moisture, water leakage or extremely high or low temperatures.
- Do not touch the battery terminals while your hands are wet.
- If you do not plan to use the battery for a long time, remove it from the main unit and store it in a dry place. Otherwise, battery fluid leakage or overheating 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 disposing of a battery, be sure to do so in accordance with all local laws, rules, and regulations.
  Before disposing of a battery, check your local laws, rules, and regulations and follow them accordingly.
- When replacing the battery, do not suddenly insert or remove it repeatedly.
 Doing so may prevent the power from turning on.

📖 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 battery performance that degrades 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.
- Use the battery correctly. Otherwise, battery fluid leakage, overheating, or damage may result. Insert the batteries in the correct direction when replacing them.
- A full charge will provide approximately 150 minutes (generally speaking) of continuous operation. 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 battery charging time is normally about two hours and 30 minutes (generally speaking).
- Recommended temperature range for Li-ion battery operation.
  - Discharging (using main unit): -10°C to 40°C
  - Charging: 0°C to 45°C
  - Storage: -20°C to 60°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.
- The battery cannot be charged using the instrument. For information on charging the battery, refer to the manual that came with the battery charger.

Rating plate/caution plate

The safety ratings, cautions, and serial number are on stickers on parts of the main unit and the control unit.
If labels are missing or if their contents are illegible, contact Olympus.

■ **Model name, serial number**

INDUSTRIAL VIDEOSCOPE   Serial#   Y800000
MODEL   **IV8200T**
NTSC / PAL

Main
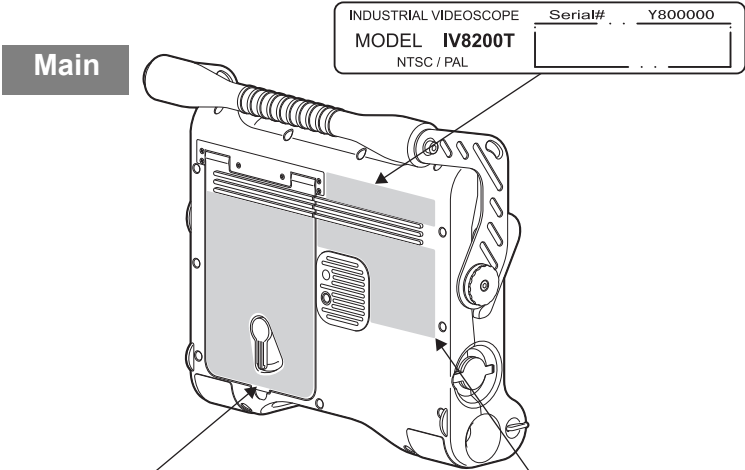
■ **Caution**

⚠ CAUTION
■ READ THE INSTRUCTION MANUAL THOROUGHLY BEFORE USE.
■ FOR THE OPERATING ENVIRONMENT, BE SURE TO OBSERVE THE WARNINGS AND CAUTIONS GIVEN IN THE INSTRUCTION MANUAL.
■ NEVER OPERATE THE UNIT IN THE PRESENCE OF INFLAMMABLE GASES.
■ NEVER USE BATTERY AND AC ADAPTER EXCEPT THAT DESIGNATED BY OLYMPUS.
■ ALL REPAIRS SHOULD BE MADE BY AUTHORIZED OLYMPUS SERVICE PERSONNEL ONLY.
■ RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTION.

⚠ 注 意
■ 取扱説明書を熟読の上、ご使用ください。
■ 使用環境につきましては、取扱説明書に記載されている 注意事項を守ってご使用ください。
■ 可燃性雰囲気中では、使用しないでください。
■ 当社指定以外のバッテリー及び AC アダプターは、使用しないでください。
■ 当社指定の修理員以外の修理は絶対に行わないでください。
■ 不適切なタイプの電池に交換すると爆発の危険があります。 使用済のバッテリーは、取扱　　　　説明書に従って処理してください。

■ **Rating**

OLYMPUS CORPORATION
TOKYO 163-0914,JAPAN   MADE IN JAPAN

INPUT
AC Adapter   12V ⎓ 9W
Battery   10.8V ⎓ 9W

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.
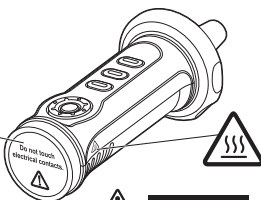
CE 🗑 ⓐ ⑮ KCC-REM -OLY-182 209002

⚠ CAUTION
• ⚠ Note that the surface of the distal end is hot.

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Control unit

■ Caution

Do not touch
electrical contacts.

Do not touch
electrical contacts.

⚠ **CAUTION**

- ⚠ Do not touch or subject the electric contacts to static electricity.

■ Caution (both sides)

⚠ **CAUTION**

- Do not grip the control unit for long periods while using it in very hot environments. Doing so may lead to low-temperature burns. Wear gloves or do something to prevent low-temperature burns.

Do not touch
electrical contacts.

端子部を
触らないで下さい

Do not touch
electrical contacts.

端子部を
触らないで下さい

■ Caution

⚠ **CAUTION**

- ⚠ Do not touch or subject the electric contacts to static electricity.

■ Caution (both sides)

■ Caution

⚠ **CAUTION**

- Do not grip the control unit for long periods while using it in very hot environments. Doing so may lead to low-temperature burns. Wear gloves or do something to prevent low-temperature burns.
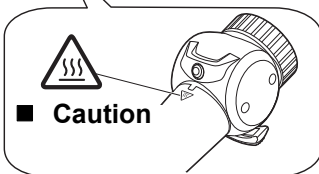
■ Caution

⚠ **CAUTION**

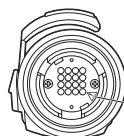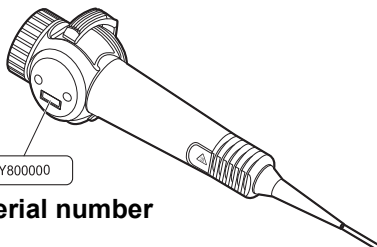- ⚠ Do not touch or subject the electric contacts to static electricity.

Y800000

■ Serial number

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1 Check the package contents

1.1 Checking the package contents

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.

IV8200T

Name		Count
Base unit		1
USB flash drive		1
AC adapter		1
AC power cord (3 types: For the UK, Europe, and one for both Japan and the US)		1 of each
3P-2P adapter (for Japan only)		1
Protective cap		1
Cotton swab		10
Instructions	IPLEX TX Instructions (this document)	1
	AC adapter	1
Return Request Card (for Japan only)		1
Warranty Registration Card (for Japan only)		1
Carrying case		1

📖 NOTE

• An Quick Guide describing only basic operations is also available. Visit the Olympus website (http://www.olympus-ims.com/rvi-products/).

About options

IV8212T

Name	Count
Scope unit	1
Protective cap	1
IPLEX TX Scope unit Instructions	1
Return Request Card (for Japan only)	1
Warranty Registration Card (For Japan only)	1
Shipping case	1

For details on other options, see "Appendix" (P. 54).

2 Nomenclature

2.1 Base unit nomenclature
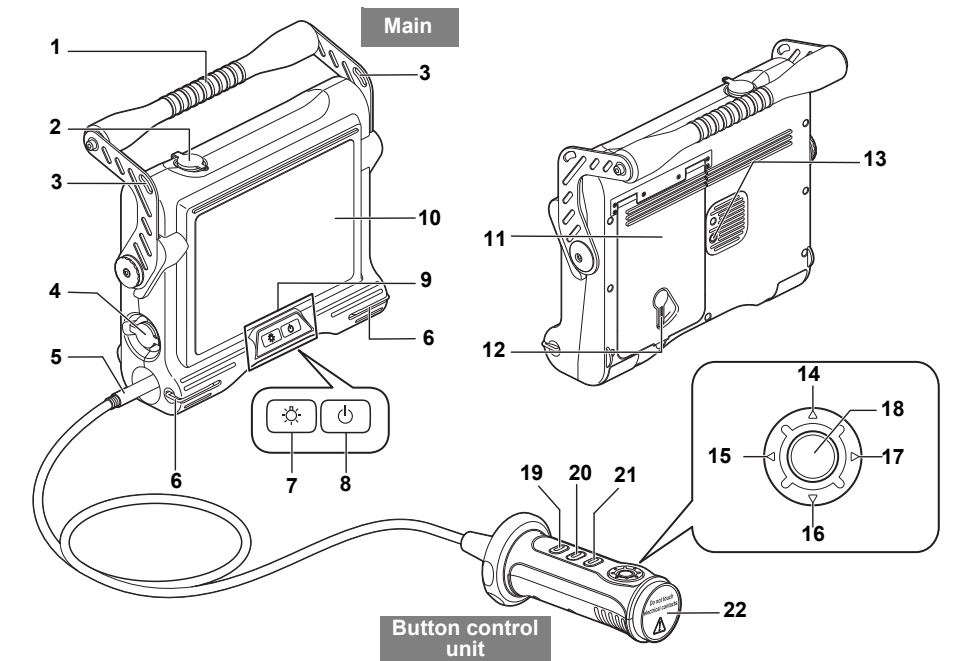
No.	Name	No.	Name
1	Handle	**12**	Lock release lever
2	Video connector cap	**13**	Tripod screw hole
3	Belt holder	**14**	BRT ▲ button
4	AC adapter connector cap	**15**	T button
5	Universal cable	**16**	BRT ▼ button
6	Belt bracket	**17**	W button
7	LIGHT button (☼)	**18**	ENT/MENU button*
8	Power button (⏻)	**19**	FRZ/REC button*
9	Front panel	**20**	VIEW button*
10	LCD monitor	**21**	LIVE/WiDER button
11	Battery cover	**22**	Protective cap

* The functions of these buttons may be different when they are 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.

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2.2　Scope unit nomenclature

Angulation control unit

Lower side

■ Distal end

Insertion tube
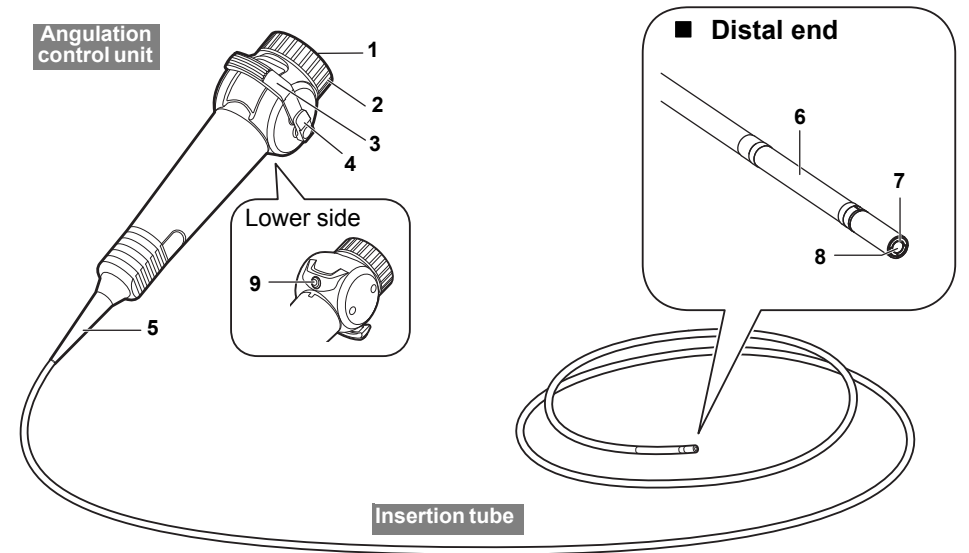
No.	Name	No.	Name
1	Protective cap	**6**	Angulation section
2	Fastening ring	**7**	Illumination
3	Angulation lever	**8**	Objective lens
4	Angulation lock lever	**9**	FRZ/REC button
5	Bend stopper		

📖 NOTE

- The control unit comprises two parts, a "button control unit" and "angulation control unit."
  This document refers to the "button control unit" and "angulation control unit" in a connected state collectively as the "control unit."
- For details on attaching the scope unit to the base unit, see "3 Mounting the scope unit" (P. 13).

Angulation control

Button control unit

11
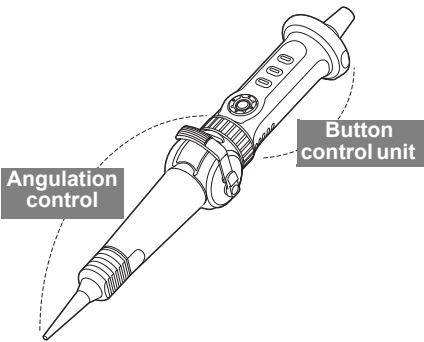
2.3 LCD monitor nomenclature

Live screen

Thumbnail screen

Retrieve screen

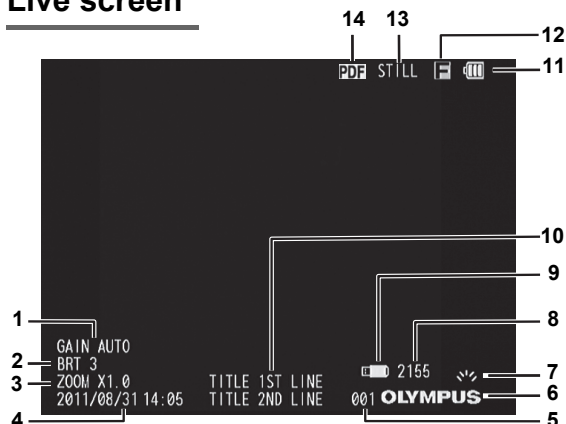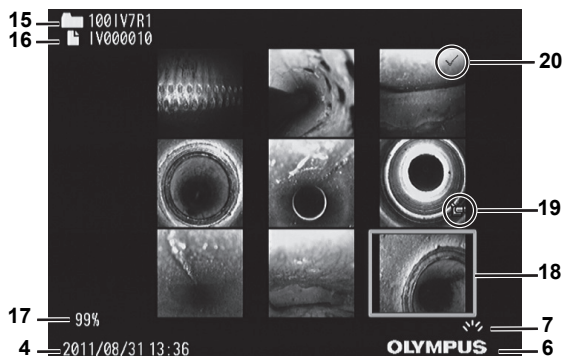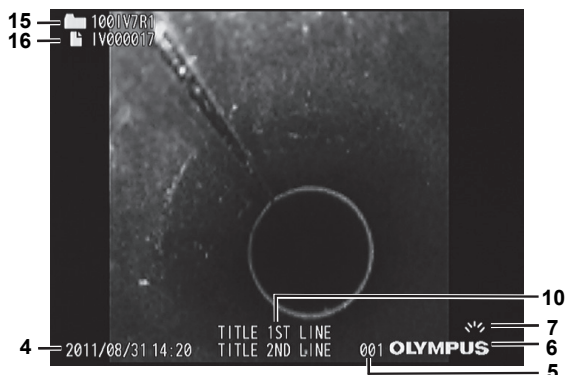| No.	Name
1	Gain mode
2	Brightness level
3	Zoom level
4	Date/Time
5	Serial number
6	Logo
7	Light indicator
8	Number of images or length of time that movies can be recorded
9	USB flash drive indicator
10	Title
11	Battery indicator
12	Freeze indicator
13	Recording/playback indicator
14	PDF indicator
15	Folder name
16	File name
17	Remaining media capacity
18	Thumbnail selection frame
19	MOVIE image indicator
20	Mark

📖 **NOTE**

- The displayed title is the title that was entered on the Live screen the last time the system was used.
- Should you notice any dirt, stains, or other abnormalities on the LCD monitor, see "7 Storage and maintenance" (P. 44).

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3   Mounting the scope unit

Be sure to connect the scope unit and initialize the scope settings according to the explanation in this chapter for a new or replacement scope unit.
The scope must be initialized when the scope unit and base unit are used together for the first time. Image noise will be extreme unless the scope is initialized.

⚠ CAUTION

- Note the following precautions when connecting the scope unit.
  - Never touch the electric contacts with your hands or subject them to static electricity.
  - Do not allow metal or other foreign objects to get into the connectors.
  - Do not connect it in an area subject to high humidity or a dusty environment where metal dust or other fine particles are present.
  - Do not drop or otherwise subject the scope unit to strong impact.
  - Do not apply excessive pulling, pushing and twisting force.
  Otherwise, the instrument may be damaged.
- After the scope unit is connected, do not remove it except to replace it if it is damaged.
  Foreign material sticking to the electric contacts or your hands touching them may cause a malfunction.

📖 NOTE

- The scope unit can be replaced by the user if it becomes damaged. For details on how to remove the scope unit, see "7.3 Replacing a damaged scope unit" (P. 45).

3.1   How to do connections

1 Prepare the base unit and scope unit. (See P.13)

2 Connect the scope unit. (See P.14)

Preparing the base unit and scope unit

1 **Make sure that the base unit is turned off.**

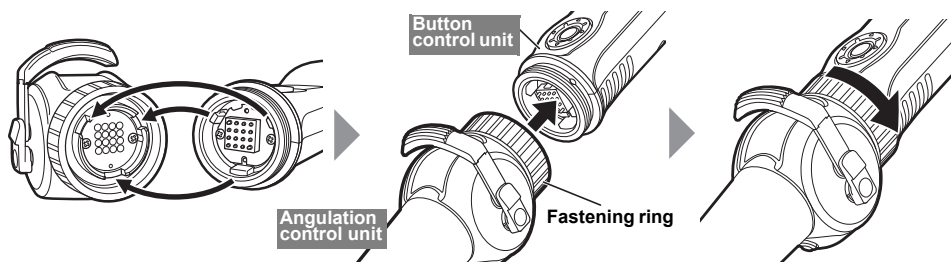*2* **Remove the protective caps from the angulation control unit and button control unit sides.**

📖 NOTE

- The protective caps are required when detaching the scope unit. Store them in a safe place.

Connecting the scope unit

Align the notch on the angulation control unit with the protrusion on the button control unit to connect them, and firmly tighten the fastening ring in the direction of the arrow as far it can go.

## 3.2   How to initialize the scope

1   Connect the AC adapter. (See P.17)

2   Turn on power. (See P.18)

3   Select the display language (initial settings). (See P.40)

4   Initialize the scope. (See P.15)

5   Do pre-operation operations. (See P.18)

Initializing the scope

When the scope unit is connected to the base unit for the first time, the scope must be initialized to optimize image quality.

Do these settings inside at room temperature (25°C). Image noise might be extreme if the scope is initialized in a very hot or cold environment.

Refer to "6.1 Performing menu operations" (P. 34) for menu operations.

1   **2**   **3**
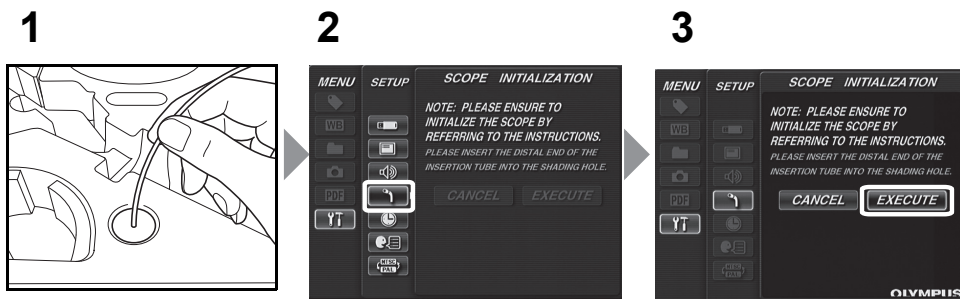
1   **Insert the distal end of the insertion tube into the shading hole in the cushion in the carrying case as far as it can go.**

2   **Select [SCOPE INITIALIZATION] from [SETUP] in the menu.**

3   **Select [EXECUTE] and then short-press the [ENT/MENU] button.**

Initialization of the scope ends in about five minutes after which the Live screen is displayed.

📖 **NOTE**

- It takes about five minutes to initialize the scope.
- Do not remove the insertion tube from the shading hole while the scope is initializing. Otherwise, the scope will not be correctly initialized and image noise may be extreme.
- Initialize these settings each time that the scope unit is used with a new base unit.

4 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 "8 Troubleshooting" (P. 47).
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.

4.1 Pre-observation preparation

> **1** Remove the instrument from its carrying case.
>
> **2** Preparing the power supply.
>   When using the battery (See P.16)
>   When using the AC adapter (See P.17)

Preparing the power supply

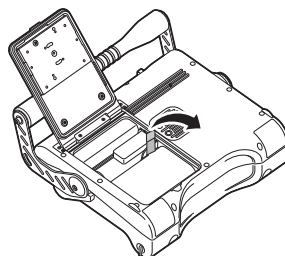### ■ Using the battery
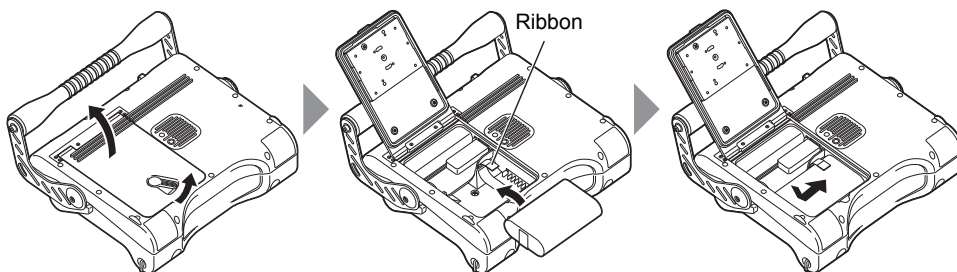
Ribbon

Slide the lock release lever to the side to open the battery cover.
Noting the orientation of the battery, insert it terminals first from above the ribbon.
After inserting the battery correctly, close the cover and slide the lock release lever back into the lock position.

● **Removing the battery**

The battery can be removed by pulling the ribbon towards you.

If you find it difficult to remove the battery, hook your finger directly onto the battery to remove it.
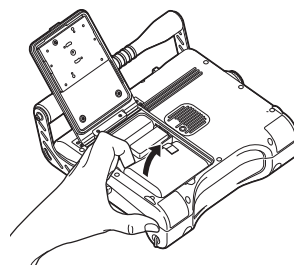
■ **Using the AC adapter**

AC inlet

After connecting the AC power cord to the AC inlet of the AC adapter, plug the plug end of the AC power cord securely into a 3P power outlet.

4.2   Pre-operation preparation

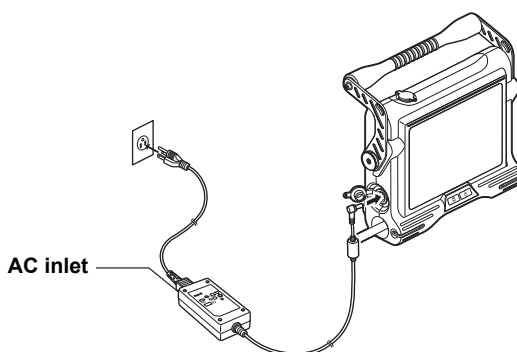|	
1	Turn on power. (See P.18)
2	Check the remaining battery level. (See P.19)
3	Configure date and time settings (initial settings). (See P.40)
4	Check lighting of illumination at the distal end of the insertion tube. (See P.19)
5	Adjust white balance. (See P.35)
6	Check the angulation operation of the angulation section. (See P.19)
7	Attach the USB flash drive. (See P.20)
8	Set up the main unit and perform observation. Set up the main unit on a flat surface. (See P.20) Hang the main unit. (See P.21) Set up the main unit on a tripod. (See P.21)
9	Attach the shoulder belt (option). Attach the main unit to your body. (See P.22) Hang the main unit from your shoulder. (See P.22)
10	Fix the control unit to the main unit for observation. (See P.22)
11	Conduct a pre-operation inspection. (See P.23)

Turning on power

Hold down the Power button ($\bigcirc$) for at least two seconds.

Press the Power button ($\bigcirc$). The screen will be displayed after about 40 seconds.

● **Turning off power**

Hold down the Power button ($\bigcirc$) for at least two seconds.

Checking the remaining battery level

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

Indicator	Battery condition
▭███	Remaining battery power about 50% or more.
▭██	Remaining battery power about 25% to 50%.
▭█	Remaining battery power about 5% to 25%.
▭ *1	Remaining battery power about 2% to 5%.
▭ *2	Remaining battery power about 1% to 2%. Charge the battery, replace with a charged battery or connect the AC adapter.

*1 Do not record or delete images, and do not format the USB flash drive. If power runs out during these operations, data could be corrupted.
*2 Battery voltage has dropped. Continued use of the instrument in this condition will result in its shutting down, which could cause it to malfunction.

📖 NOTE

• The remaining battery power can also be checked on the [POWER INDICATOR] of the battery itself. (However, the remaining battery power shown on the LCD monitor is different from that shown on the [POWER INDICATOR].) For details, refer to the instruction manual of your battery.

Checking lighting of illumination at the distal end of the insertion tube

Press the LIGHT button (☼) to light illumination at the distal end of the insertion tube.
The light indicator at the bottom right of the LCD monitor also is displayed.

Checking the angulation of the angulation section

Extend the insertion tube straight out and operate the angulation lever to check for smooth angulation section operation.
Angulation movement matches the angle and direction of angulation lever movement.
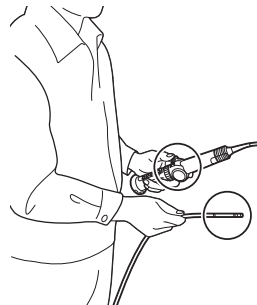
Attaching the USB flash drive

■ Inserting the USB flash drive

USB flash drive

USB connector

Slide the lock release lever to the side to open the battery cover.
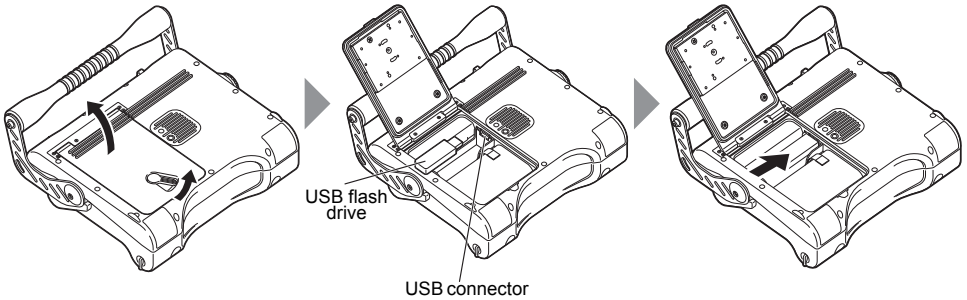Noting the orientation of the USB flash drive, insert it terminals first. After inserting the USB flash drive, close the cover and slide the lock release lever back to the lock position.

● Removing the USB flash drive
The USB flash drive can be removed by moving the ejector in the direction of the arrow as shown in the figure on the right.

Ejector
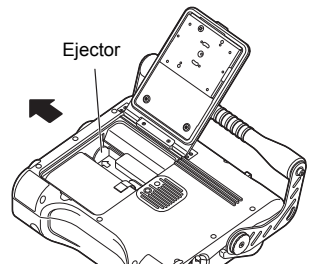
Setting up the main unit and performing observation

Observation can be done with the main unit set up on a flat surface, hung from something, or on a tripod.

● Set up the main unit on a flat surface

Adjustable angle range
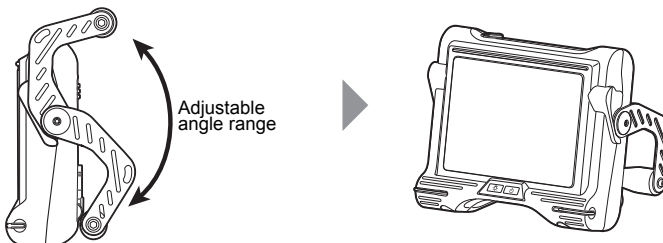
When installing the main unit on a flat surface for observation, use the handle as a stand.
Adjust the handle to an angle that allows the LCD monitor to be easily viewed. The angle of the handle can be adjusted smoothly to any position within the range shown in the figure above.

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⚠ CAUTION

• Be careful to not pinch your hand or anything else when lowering the handle.
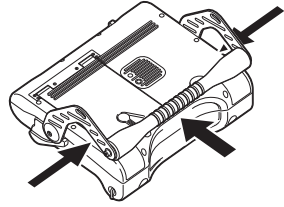
● **Hang the main unit**

When hanging the main unit to do observation, hook an S-hook, string or other item onto the handle.
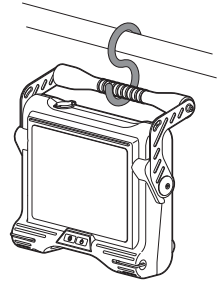
● **Set up the main unit on a tripod**

Attach the tripod platform to the main unit to use a tripod to do observations.

⚠ CAUTION

• When fixing the main unit to the tripod, mount it so the tripod platform does not run up on the protrusion on the rear of the main unit.
Fixing the tripod with the platform installed at an angle may cause the main unit to fall off.
You can use a square platform that measures 45 mm or less from the center of the tripod screw.

Protrusion

45 mm
45 mm
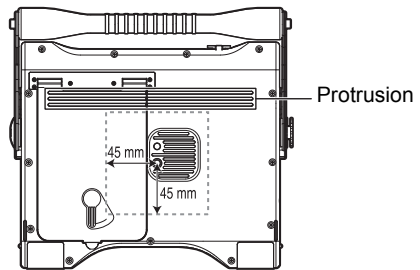
Attaching the shoulder belt (option)

The shoulder belt lets you attach the main unit to your body to do observations or to carry it around easily from your shoulder.

■ Attach the main unit to your body

1　　　　　　　　**2**　　　　　　　　**3**
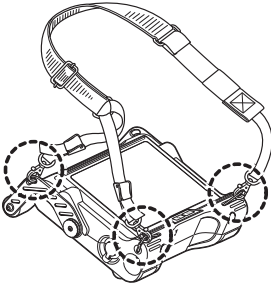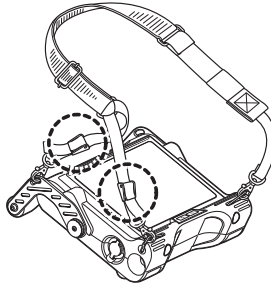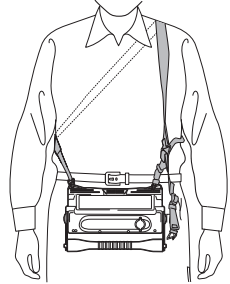
1 **Attach the shoulder belt hooks to the two belt brackets and one of the two belt holders.**

2 **Adjust the length of the belt by the length adjuster buckle and adjust the screen to an easy-to-view angle.**

3 **Hang the shoulder belt on your shoulder and do observations.**

■ Hang the main unit from your shoulder

1　　　　　　　　**2**　　　　　　　　**3**
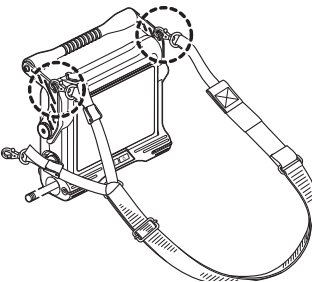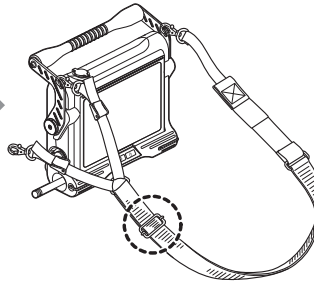
1 **Attach the shoulder belt hooks to the two belt brackets.**

2 **Adjust the length of the belt by the length adjuster buckle.**

3 **Hang the shoulder belt on your shoulder.**

● **Detaching the shoulder belt**
To detach the shoulder belt, press the hook lever to remove the hook from the main unit.

Hook lever

4.3 Pre-operation/post-operation inspections

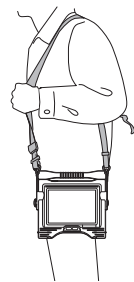| Inspection location	Item	If abnormality is discovered
Main unit	☐ Any dirt, sand or other foreign object caught in the battery cover, video connector cap or AC adapter connector cap?	See "7 Storage and maintenance" (P. 44).
	☐ Battery cover cracked or scratched?	Replacement required. Contact Olympus.
	☐ AC adapter connector cap or video connector cap torn or chipped?	
	☐ Irregularities such as cuts or kinks in the universal cable?	
Control unit	☐ Irregularities such as damage to or deformation of the exterior material, buttons or levers?	
	☐ Fastening ring on the control unit loose? Continued use in this condition creates the risk of the angulation control unit falling off during use.	
Insertion tube, angulation section, distal end	☐ Any deformation, looseness or unusual wear on the distal end, angulation section, or insertion tube? Never use the instrument while the distal end is loose. Doing so creates the risk of loose parts falling off during use.	See "7 Storage and maintenance" (P. 44).
	☐ Any dirt or water droplets on the objective lens of the distal end? Continued use in this condition creates the risk of the distal end becoming damaged.	
	☐ Insertion tube broken or crushed? If the insertion tube is deformed, it might no longer be able to be inserted into or drawn out of the observation object.	
LCD monitor	☐ 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.
	☐ Any fingerprints on the screen or other dirt?	See "7 Storage and maintenance" (P. 44).
Carrying case	☐ Any damage, looseness or other irregularities on the exterior, handle, latch, or other parts of the carrying case?	

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Inspection location	Item	If abnormality is discovered
Carrying case	☐ Specialized carrying case used? 　　Use of a non-designated carrying case creates the risk of the insertion tube or main unit becoming damaged or malfunctioning.	Contact Olympus.

⚠ 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.

5 Basic operation

5.1 Viewing an observation object

1 **Turn on distal end illumination.**

2 **While watching the screen, insert the insertion tube into the observation object.**

Insert carefully while checking the insertion direction.

3 **Use the angulation lever to perform angulation operations and observe the applicable locations on the screen.**

Be careful not to apply excessive pushing force, twisting or tension to the insertion tube.

4 **Lock the angulation section angle and direction (angulation lock) and perform observation.**

When the desired angle to be maintained is reached during angulation operation, pull the angulation lock lever towards you. The angulation section will be fixed at that angle. Angulation can also be fine-adjusted while the angulation section is still in a locked state.

5 **Remove your finger from the angulation lever, and while watching the screen gently draw out the insertion tube from the observation object.**

If the angulation section is locked, return the angulation lock lever to unlock angulation and then draw out the insertion tube.

⚠ CAUTION

- Should you sense any abnormality, do not try to force the operation and carefully withdraw the insertion tube. Note the following precautions when withdrawing the insertion tube.
  - Do not try to withdraw from the observation object while angulation is locked or while the angulation section is bent.
  - If the insertion tube becomes caught on something during withdrawal, rotate the control unit gently while continuing the withdrawal.
  - Draw out the angulation section with its bending direction matched to the bending direction of the conduit of the observation object.

📖 NOTE

- 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 image noise may be extreme under high ambient 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.

5.2   Adjusting the image display

Still image display (Freeze)

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

This will freeze the observation screen image and display the freeze indicator (▉) 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] or [LIVE/WiDER] button.**

This will cancel the freeze state.

📖 NOTE ───

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

Enlarging and reducing images (Zoom)

The zoom function can be used to smoothly enlarge or reduce images of the object being observed from about 0.5x to 1x (default) to 2x.
The image is enlarged each time the [T] button is pressed and reduced each time the [W] button is pressed.
During a zoom operation, the "ZOOM" indicator and the zoom level appear on the screen for about three seconds.

📖 NOTE ───

• Zoom (size enlargement/reduction) stops momentarily when the image returns to its original size.
• Since images are zoomed using "digital zoom", the image may become slightly coarse when the zooming ratio is increased.

Adjusting image brightness

■ **Adjust image brightness by the [BRT] button**

The [BRT] button can be used to adjust brightness by changing the overall brightness of a live image during observation.
While a live image is displayed, press the [BRT▲] button to increase overall image brightness or press the [BRT▼] button to decrease it.
Adjusting the brightness will cause a value indicating the current brightness level to appear on the screen for about three seconds.

● **Displaying a high-sensitivity image (monochrome boost)**
The live image becomes monochrome (monochrome boost) during high-sensitivity image display. This function is effective for providing a higher level of brightness than normal when viewing a very dark observation subject, etc. While a live image is displayed, you can switch to high-sensitivity image display by pressing the [BRT▲] button until "BRT" (brightness level) reaches its maximum setting (Level 8). Note that image noise may become extreme under certain observation conditions.

■ **Adjusting brightness by gain mode switching**

The overall brightness of a live image during observation can be adjusted by gain mode switching. Switch the gain mode, for example, if the image is noisy or there is a dark area and you want to make the image lighter.

The following three gain modes are available.

Mode	Description
AUTO	This mode is used to automatically change the dynamic range interlocked with the BRT setting. Note that image noise may become extreme depending on the BRT setting.
WiDER1	This mode is used when a brighter image than is possible using the "AUTO" mode is desired. Note that image noise may become extreme under certain observation conditions.
WiDER2	This mode is used when a brighter image than is possible using the "WiDER1" mode is desired. The "WiDER2" mode further expands the dynamic range so that dark places can be observed. Note that image noise may become extreme under certain observation conditions.

The gain mode is switched with each press of the [LIVE/WiDER] button.

When the gain mode is switched, the newly set mode will appear on screen for about three seconds.

5.3   Recording images

Still images and moving images can be recorded during observation. Data can be stored on the provided USB flash drive.

Recording images to USB flash drive

Be sure to format the USB flash drive on the instrument before using the drive. For details about formatting, see "USB flash drive formatting (initialization)" (P. 36).

The following table shows the size of a single image and the approximate number of images (still images) and times (moving image) that can be recorded on a USB flash drive.

USB flash drive recording guide

Recording format	Size of a single file	Number of images that can be recorded/ continuous recording time (1 GB)
Still image	Approx. 300 KB	Approx. 3,400 images
Moving image	Approx. 500 KB/secs	Approx. 30 minutes

Image recording settings must be configured using menu operations. See "6 Menu operations and functions" (P. 34) and "RECORD" (P. 35) in "6.2 Using the live screen/freeze screen".

■ **Specifying the image recording format**

To record the date, time, title, logo, and other on-screen information onto a still image being recorded, long-press the [ENT/MENU] button on the control unit while a live screen is displayed. On the menu that appears, select [RECORD] - [PRINT SCREEN ON/OFF] and set "ON". (See P.35)

📖 NOTE ─────────────────────────────

• Replaying a still image that has the date, title, and other information recorded on it may result in overlapping of date, time, title, logo, and other text. This is not a malfunction.

■ **File names**

File names are generated and assigned automatically as images are stored on a USB flash drive. You can rename files if you want (up to 30 alphanumeric characters and symbols). See "Renames image files. (Thumbnail screen only)" (P. 41).

IV0?????.***

File name extension
".JPG" for still image files, ".AVI" for movie files.

5-digit file name serial number
The file number is assigned sequentially from 00001 to 99999.

📖 NOTE ─────────────────────────────

• You can append file names with the letters "_A", "_B" or "_C". Use this function to categorize image files. See "Letter appending the end of image file names" (P. 35).

Recording a still image

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

This freezes the image.

2 **While the freeze screen is displayed, long-press the [FRZ/REC] button again.**

This records the still image.
While the frozen image is being recorded, "STILL" is displayed on screen. When recording is completed, the screen will return to the frozen image.

Recording a moving image

1 **While a live image is displayed, press the [FRZ/REC] button.**

After a still image is recorded, the moving image recording confirmation window will appear.

2 **Select "YES" and then short-press the [ENT/MENU] button.**

This starts moving image recording. The USB flash drive indicator flashes on the LCD monitor while moving image recording is in progress.

If you select [NO] in the moving image confirmation window, only the still image is recorded but the moving image is not recorded.

3 **To stop moving image recording, short-press the [FRZ/REC] button.**

When recording of a moving image is complete, the flashing USB flash drive indicator disappears from the screen.
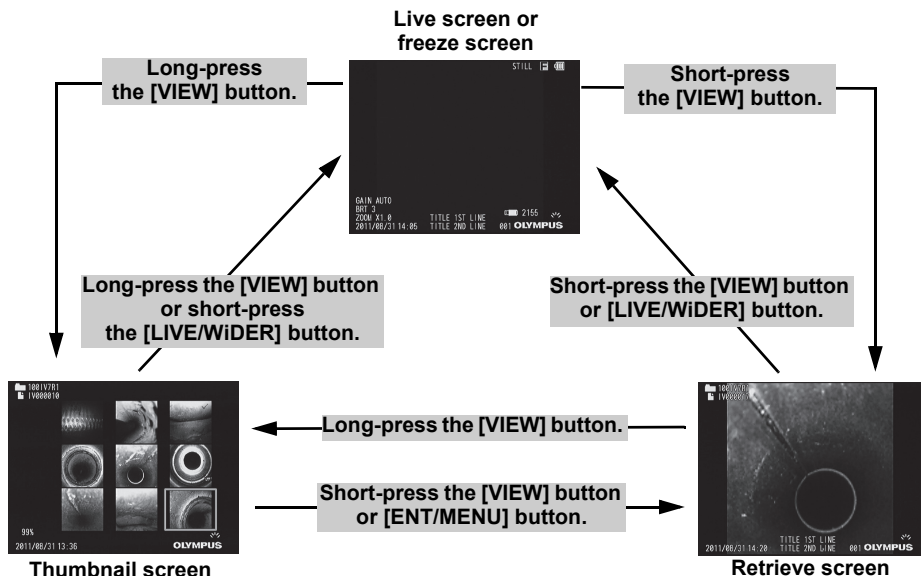
📖 NOTE

- Do not remove the USB flash drive while recording a moving image. Doing so will cause moving image recording to stop and an error message to appear on the display.
- Recording stops automatically whenever the USB flash drive becomes full or when the file size reaches 4 GB. An empty 1 GB USB flash drive has enough capacity to record approximately 30 minutes.

5.4   Replaying an image

Recorded images can be displayed using either of two screen views: a full-screen view of a single image (retrieve 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 that a USB flash drive is loaded before starting playback.

Live screen or freeze screen

Long-press the [VIEW] button.

Short-press the [VIEW] button.

Long-press the [VIEW] button or short-press the [LIVE/WiDER] button.

Short-press the [VIEW] button or [LIVE/WiDER] button.

Long-press the [VIEW] button.

Short-press the [VIEW] button or [ENT/MENU] button.

Thumbnail screen

Retrieve screen

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

1   **While the live screen, freeze screen, or thumbnail screen is displayed, short-press the [VIEW] button.**

This will display a full-screen view of the newest recorded image.

2   **Switch the image you want to play back. (slide retrieval)**

Use the [T] / [W] buttons to switch the image you want to play back.

● **[T] button**
Scrolls from the currently displayed image to the image before it (in file name descending order). When images are sorted in descending order, performing this operation at the last image will return to the first image.

● **[W] button**
Scrolls from the currently displayed image to the image after it (in file name ascending order). When images are sorted in ascending order, performing this operation at the last image will return to the first image.

3   **Short-press the [VIEW] button or [LIVE/WiDER] button.**

This returns the screen to the live screen, freeze screen, or thumbnail 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 **While the live screen, freeze screen, or retrieve screen is displayed, long-press the [VIEW] button.**

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

A moving image is indicated by the MOVIE image indicator ().

■ To select a thumbnail

The thumbnail where the selection boundary is located is the currently selected image.
Move the [BRT ▲] / [BRT ▼] or [W] / [T] buttons up, down, left or right to move the thumbnail selection frame.

■ To play back

Select the image you want to play back and then short-press the [ENT/MENU] button.
This starts full-screen view playback of the selected image.

■ To select multiple images to move or delete them

You can delete or move multiple images set with the (✓) check mark (See "6.3 Using the thumbnail/retrieve screens" (P. 41)).
Selecting a thumbnail and then short-pressing the [FRZ/REC] button will put a check mark (✓) in its upper right corner to indicate that it is selected. Repeat this operation for the desired number of images.

● To select all thumbnails

Long-pressing the [FRZ/REC] button will put a check mark (✓) in the upper right corner of all thumbnails to indicate that they are selected.

● To remove a check mark

From a specific image only
  Select the thumbnail, and then short-press the [FRZ/REC] button.
From all thumbnails that have (✓) check marks
  Long-press the [FRZ/REC] button.

2 **Long-press the [VIEW] button or short-press the [LIVE/WiDER] button.**

This returns the screen to the live screen, freeze screen, or retrieve screen.

5.5 PDF file display

You can display a PDF file on the Live or Freeze screen.

📖 NOTE

• You cannot display a PDF file that contains movies, including a 3D image.

Prepare a PDF file

1 **Create folder named "PDF" in a USB Flash Drive connected to your computer and copy PDF files you want to display into the folder.**

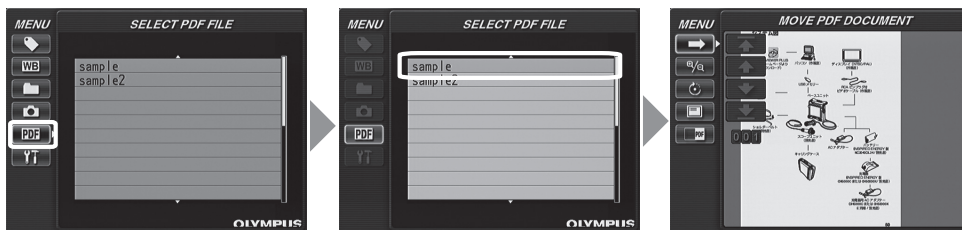*2* **Connect the USB Flash Drive to the USB port of the main unit.**

📖 NOTE

• Use alphanumeric characters or symbols to name the PDF file. Otherwise, you are not able to display the PDF file.

Display a PDF file

You can display PDF files on the LCD monitor.

[SELECT PDF FILE] > Select a PDF file > Manipulate the PDF file.

From the menu in the live screen/freeze screen, use the [BRT ▲]/[BRT ▼] buttons to move up and down and [W]/[T] buttons to move left and right to display the list of PDF files.
Select a file to display from the list of PDF files and short-press the [ENT/MENU] button to display the PDF document on the LCD monitor.
You can turn pages, adjust the size and orienation of the display, split the display of the PDF screen in the live screen/freeze screen, and other operations. See "6.4 Operations in the PDF file display screen" (P. 42) regarding operations and settings.
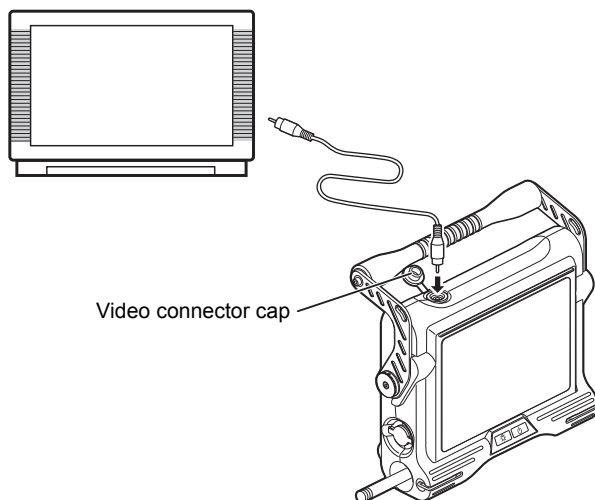
📖 NOTE

• See "6 Menu operations and functions" (P. 34) regarding how to display menus.
• Pressing the [VIEW] button (held down for a short time) allows you to switch over between the PDF file and the Live or Freeze screen. When the switchover between the PDF file and the Live or Freeze screen is enabled, PDF indicator is displayed on the upper right of the Live or Freeze screen.
• If fonts are not embedded in PDF file, characters other than alphanumeric and symbols will be displayed as space.

5.6   Displaying live images on an external monitor

The video output connector of the main unit enables connection of a commercially available video cable with RCA pin plug for output of live images to a commercially available external monitor.

Video connector cap

📖 NOTE

• Recorded images cannot be output through the video output connector. Menus and other information, and audio also cannot be output to the monitor.

5.7   Using recorded images on a PC

IPLEX VIEWER PLUS can be used to make use of images recorded on this instrument.
Recorded images are loaded directly on the PC from the USB flash drive containing those images.
To use IPLEX VIEWER PLUS software, download it from the Olympus website (http://www.olympus-ims.com/service-and-support/downloads/).
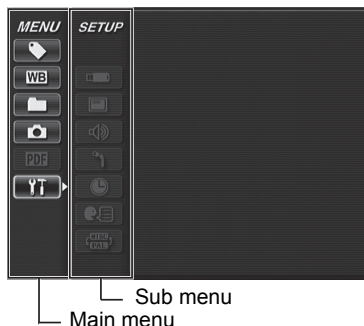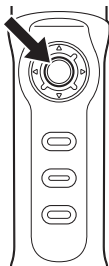
📖 NOTE

• For details on how to use IPLEX TX images on IPLEX VIEWER PLUS, refer to the manual that comes with IPLEX VIEWER PLUS.
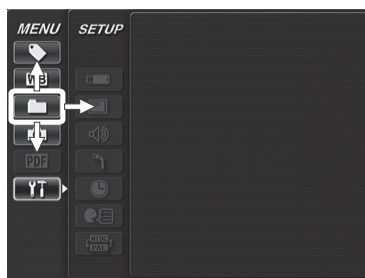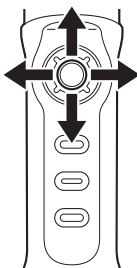
6 Menu operations and functions

6.1 Performing menu operations

1 **Long-press the [ENT/ MENU] button.**

This displays the menu screen.

Sub menu
Main menu

2 **Operate the [BRT ▲] / [BRT ▼] buttons up and down or the [W] / [T] buttons to the left and right to select the menu item you want to execute.**
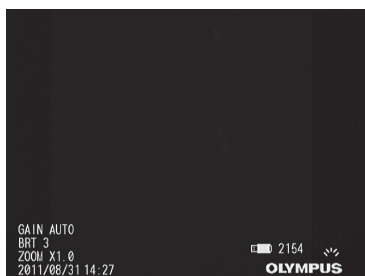

3 **Short-press the [ENT/MENU] button.**

This executes the selected menu item.

4 **Short-press the [LIVE/ WiDER] button.**

This returns the screen to the live screen.

GAIN AUTO
BRT 3
ZOOM X1.0
2011/08/31 14:27
2154
OLYMPUS

📖 NOTE

- Long-press the [ENT/MENU] button while the cursor is in the main menu to return to the live screen.
- Long-press the [ENT/MENU] button while the cursor is in the sub menu to return the cursor to the main menu.

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6.2 Using the live screen/freeze screen

Menu items and functions

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

*: Default

Main menu	Sub menu	Available settings
TITLE INPUT	-	**Title input** A title can be displayed in the live screen, freeze screen, and in registered images. Input can be up to 30 characters. See "Inputting a title" (P. 37).
WHITE BALANCE	-	**White balance adjustment (Live screen only)** CANCEL*: Cancels white balance adjustment. EXECUTE: Adjusts white balance (automatic) After changing the scope unit, for example, capture an image of a white object, such as a piece of paper, from a distance of 50 to 60 mm.
CHANGE FOLDER	-	**Specifies a folder for image recording and playback** A folder directory to record images to or play images back from can be specified. The default is "100IV7R1".

RECORD	FILE NAME MARK	**Letter appending the end of image file names**
		Specifies whether a letter should be automatically added to names assigned to recorded image files. This feature helps to categorize image files.
		ON: Append letter.
		      You can select from among "_A", "_B", and "_C".
		      Selecting "ON" displays a dialog box for selecting the letter to be appended to each image file name.
		OFF*: Do not append letter.

	PRINT SCREEN ON/OFF	**Date, title, and other information recording** Specifies whether date, time, title and logo and other information included on the display should be recorded in images. ON: Record information. OFF*: Do not record information.

Main menu	Sub menu	Available settings
RECORD	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. STILL+MOVIE* Live screen: Records still images and moving images. Freeze screen: Records still images only. STILL ONLY Live screen: Records still images only. Freeze screen: Records still images only.
SELECT PDF FILE	-	**PDF file display** Selects PDF files stored in the "PDF" folder on the USB flash drive so that they can be viewed.
SETUP	MEDIA FORMAT	**USB flash drive formatting (initialization)** CANCEL*: Do not format the flash drive. EXECUTE: Format the flash drive.
	DATE/TIME/ LOGO	**Display information setting** Specifies whether display information (date and time, title, etc.) should be shown on the LCD monitor. This setting can also be used to specify the type of information to be displayed. ALL*: Show the date, time, title, "OLYMPUS" logo, zoom level, and brightness level. DATE/TIME/LOGO: Show the date, time, title, and "OLYM-PUS" logo. DATE/TIME: Show the date, time, and title. OFF: Do not show information.
	BEEP ON/OFF	**Beep sound output** Specifies whether to sound the beep. ON*: Sound. OFF: Do not sound.
	SCOPE INITIALIZATION	**Execution of scope initialization** Specifies whether to initialize the scope when the scope unit has been replaced. CANCEL*: Do not initialize the scope. EXECUTE: Initialize the scope. See "Initializing the scope" (P. 15).
	DATE TIME	**Date and time settings** Configures date and time settings. See "Setting the date and time" (P. 40).

Main menu	Sub menu	Available settings
SETUP	LANGUAGE	**Display language selection** Specifies the language used for menus and messages. English and other languages are supported. The default is "English". See "Changing the display language" (P. 40).
	TV FORMAT	**Change of TV format** NTSC: Display in NTSC format. PAL: Display in PAL format.

Inputting a title

The following are the two methods that can be used to input a title.
• Input text from the on-screen keyboard
• Selecting a preset title for input

■ Input text from the on-screen keyboard

1　　　　　　　　　　**2**　　　　　　　　　　**3**

1 **Select the input mode and then short-press the [ENT/MENU] button.**

The indicator for the selected input mode lights.

2 **Select text from the on-screen keyboard, and then short-press the [ENT/MENU] button.**

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

● **To delete characters**
• To delete a single character, move the cursor to it, select [DELETE], and then short-press the [ENT/MENU] button.
• To delete all input characters, select [DELETE ALL] and then short-press the [ENT/MENU] button.

● **To insert characters**
Move the cursor to the location where you want to insert the character, select the character in the on-screen keyboard, and then short-press the [ENT/MENU] button.

● **To input a space**
Move the cursor to the location where you want to input the space, select the [SPACE] button, and then short-press the [ENT/MENU] button.

● **To input a serial number**
Operate the [W] / [T] buttons to the left and right to move the cursor to the serial number input box. Operate the [BRT ▲] / [BRT ▼] buttons up and down to enter the desired numerical value for each digit.

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3 Select [EXECUTE] and then short-press the [ENT/MENU] button.

This displays the title you input on the LCD monitor.

📖 NOTE

• When all three digits of the serial number box are left blank "__ __ __", a numerical value for the serial number is not displayed on the LCD monitor. The serial number also will not be updated even by recording an image in this state.

• When a serial number is input to a title, that number will be incremented every time an image is recorded.

■ 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. 39).

1   **2**   **3**
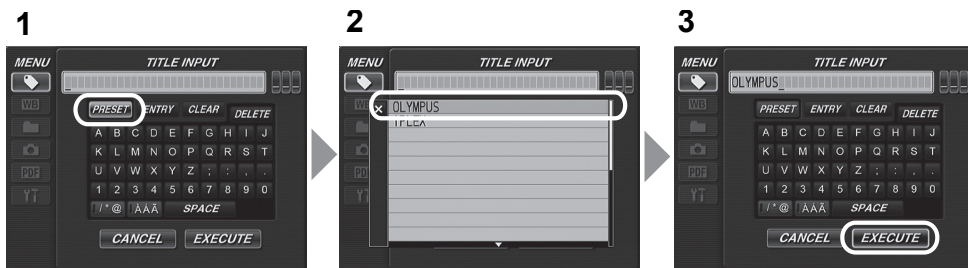
1 Select [PRESET] and then short-press the [ENT/MENU] button.

A list of preset titles is displayed.

2 Select the desired text string from the preset title list and then short-press the [ENT/MENU] button.

The text string you select appears in the title input box. Repeat steps 1 and 2 to complete input of the title.

● **To cancel selection of a preset title**

Press the [T] button and select [x], then short-press the [ENT/MENU] button to close the screen.

● **To input a serial number**

Operate the [W] / [T] buttons to the left and right to move the cursor to the serial number input box for each digit. Operate the [BRT ▲] / [BRT ▼] buttons up and down to enter the desired numerical value for each digit.

📖 NOTE

• The preset title list has two pages. To toggle between the pages, select the text string in line 1 or line 10 of the currently displayed page and then operate the [BRT ▲] or [BRT ▼] button.

• When all three digits of the serial number box are left blank "__ __ __", a numerical value for the serial number is not displayed on the LCD monitor. The serial number also will not be updated even by recording an image in this state.

• When a serial number is input to a title, that number will be incremented every time an image is recorded.

3 Select [EXECUTE] and then short-press the [ENT/MENU] button.

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 20 character strings to preset titles.

1   **2**   **3**

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

For details about inputting, see "Inputting a title" (P. 37).

2 **Select [ENTRY] and then short-press the [ENT/MENU] button.**

A list of preset titles is displayed.

📖 **NOTE**

• The preset title list has two pages. To toggle between the pages, select the text string in line 1 or line 10 of the currently displayed page and then operate the [BRT ▲] or [BRT ▼] button.

3 **Select the line where you want to register the string and then short-press the [ENT/MENU] button.**

This registers the string input in the title input box and closes the list.
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.

● **To cancel registration of a preset title**
Press the [T] button and select [x], then short-press the [ENT/MENU] button to close the screen.

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 desired language.

Selecting a language displays the message to let you know that the process is being performed. After the message disappears, screen contents will be in the language you selected.

📖 NOTE

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

Setting the date and time

Configures date and time settings.

[SETUP] > [DATE TIME] > Set year/month/day and hours:minutes.

Be sure to set the correct date and time before using the instrument for the first time.
Date and time information is shown on the display and is also recorded on the print screen. Data recording is also performed in accordance with date and time information.

6.3 Using the thumbnail/retrieve screens

Menu items and functions

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

Available settings	Button
Deletes a recorded image. CANCEL:　　Do not delete image. EXECUTE:　　Delete image. On the retrieve screen, the currently displayed image is deleted. On the thumbnail screen, the currently selected image or all images that are check marked (✓) are deleted.	DELETE
Specifies a folder for image recording and playback. (Thumbnail screen only) A folder directory to record images to or play images back from can be specified. The default is "100IV7R1".	CHANGE FOLDER
Copies the image file between folders. (Thumbnail screen only) Copies image files to a different folder. The currently selected image or all images that are check marked (✓) on the thumbnail screen are copied. Also, new folders at a copy destination can be created and new folders can be named.	COPY FILE
Moves the image file between folders. (Thumbnail screen only) Moves image files to a different folder. The currently selected image or all images that are check marked (✓) on the thumbnail screen are moved. Also, new folders at a move destination can be created and new folders can be named.	MOVE FILE
Renames image files. (Thumbnail screen only) Image files can be renamed (within 30 letters).	RENAME FILE
Formats (initializes) USB flash drives. (Thumbnail screen only) CANCEL:　Do not format the flash drive. EXECUTE: Format the flash drive.	MEDIA FORMAT

📖 NOTE

• You can use only alphanumeric characters and symbols for folder and file names. Some symbols are unavailable for folder and file names also.
• For details about inputting folder names, see "Inputting a title" (P. 37).

6.4 Operations in the PDF file display screen

Menu items and functions

On the menu on which the PDF file is displayed, you can work with that PDF file as shown below.

PDF main menu	PDF submenu	Available settings	Default
MOVE PDF DOCUMENT		**Displays the top page.**	Displays the top page.
		Displays the previous page. Long-pressing the [BRT ▲] button gives you the same effect.	
		Displays the next page. Long-pressing the [BRT ▼] button gives you the same effect.	
		Displays the last page.	
		Displays your desired page.	
EXPAND/ SHRINK PDF DOCUMENT		**Displays the whole page.**	Displays the page horizontally.
		Displays the page to fit width.	
		Displays the page to fit height.	
		Zooms in the page. Long-pressing the [T] button gives you the same effect.	
		Zooms out the page. Long-pressing the [W] button gives you the same effect.	
ROTATE PDF DOCUMENT		**Rotates the page counterclockwise.** All the pages in the document are also rotated to match the page being displayed.	Displays as defined in the PDF file.
		Rotates the page clockwise. All the pages in the document are also rotated to match the page being displayed.	
DISPLAY PDF INFORMATION	-	**Allows you to display or hide the PDF file name, page number of current page/total pages, position in page of portion being displayed (vertical/horizontal), and scroll bars on the PDF screen.** ON: Display OFF: Hide	OFF

PDF main menu	PDF submenu	Available settings	Default
SPLIT SCREEN ON/OFF	-	**Allows you to split and display the PDF screen and live or freeze screen.** You can switch over between the PDF screen and the live or freeze screen by pressing the [VIEW] button (held down for a short time). ON: Splits the display. OFF: Do not split the display.	OFF

7 Storage and maintenance

7.1 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 buying a battery.

For details about how to load and remove the battery, see "Using the battery" (P. 16).

7.2 Cleaning components

Cleaning the distal end

Dirt or water on the objective lens and illumination
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 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, piece of gauze moistened with clean water, and then wipe the insertion tube dry of all moisture.

📖 NOTE

- 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.
- Do not use a hard cloth or hard brush for cleaning the insertion tube. Otherwise, the insertion tube may be damaged.

Cleaning the control unit

Dirty control unit
Wipe the control unit with a soft cloth dampened with clean water. Next, lightly wipe it with a clean, dry cloth.

Cleaning the LCD monitor

LCD monitor viewing problems due to fingerprints and dirt
Wipe the LCD monitor with a soft cloth dampened with clean water. 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 cover, video cap, and the inside of the AC adapter terminal cap.

⚠ CAUTION

- Do not rinse the instrument with running water. Otherwise, it may be damaged.

7.3   Replacing a damaged scope unit

The scope unit on this instrument can be replaced by the user if it becomes damaged.

⚠ CAUTION

- Note the following precautions when detaching the scope unit.
  - Never touch the electric contacts with your hands or subject them to static electricity.
  - Do not allow metal or other foreign objects to get into the connectors.
  - Do not disconnect it in an area subject to high humidity or a dusty environment where metal dust or other fine particles are present.
  - Do not drop or otherwise subject the scope unit to strong impact.
  - Do not apply excessive pulling, pushing or twisting force.
  Otherwise, the instrument may be damaged.

1   **Be sure to turn off power and remove the battery or unplug the AC adapter.**

2   **Turn the fastening ring on the angulation control unit in the direction of the arrow to loosen it.**

3   **Remove the scope unit from the button control unit.**
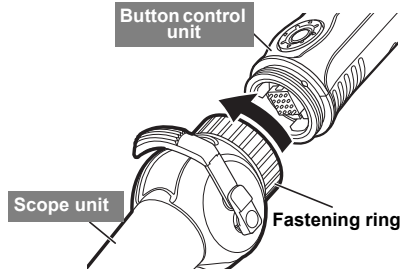
4   **Connect and initialize the new scope unit.**

See "3 Mounting the scope unit" (P. 13) for how to attach and initialize a new scope unit.

7.4   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, the 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   **Unlock the angulation lock, and pack the instrument in the carrying case with the angulation section straight.**

3   **Store the equipment on a level surface in a clean, dry and stable place.**

8 Troubleshooting

⚠ WARNING

• Never use the instrument if there is any abnormality. Otherwise, the instrument may malfunction and the user may also be injured fatally or seriously.

Inspect the instrument as described in "4 Pre-observation/pre-operation preparation and inspection" (P. 16), do not use the instrument 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 "8.1 Troubleshooting guide" (P. 47). If the problem cannot be resolved by the described remedial action, stop using the instrument and send it to Olympus for repair.

8.1 Troubleshooting guide

Error messages

Message	Cause and recommended action
NO RECORDING MEDIA.	The USB flash drive is not inserted. → Load a USB flash drive and try again.
RECORDING MEDIA FULL.	The USB flash drive is full. → Delete unneeded data to free up space or replace with a new USB flash drive.
THIS IMAGE CANNOT BE RETRIEVED.	The image was not recorded with this instrument. → Select only images recorded with this instrument.
RECORDING MEDIA ERROR. PLEASE FORMAT THE RECORD-ING MEDIA.	The format of the USB flash drive cannot be recognized. → Format the USB flash drive on the instrument.
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.
OVER CURRENT (USB). PLEASE TURN OFF THE POWER.	The recommended USB flash drive is not used. → Stop inspection, replace with the recommended USB flash drive and turn the instrument on again. A USB device other than the USB flash drive is connected. → Disconnect all USB devices except the USB flash drive.
LOW BATTERY. PLEASE CONNECT THE AC ADAPTER OR TURN OFF THE POWER.	The battery voltage dropped. → Stop operations, and replace the battery immediately. Or, connect the AC adapter.
IMAGE CAPTURE ERROR. PLEASE TURN OFF THE POWER.	Self-check is triggered during use and a message is displayed. → Stop inspection and turn the instrument off, then on again.
HIGH TEMPERATURE (MAIN UNIT). PLEASE TURN OFF THE POWER.	This message prompts you to stop inspection because the self-check function was triggered and the inside of the instrument was overheating. → Stop inspection, wait a while and turn the instrument off, then on again.

Common problems

Problem	Cause and recommended action
Illumination does not light.	Illumination is not lit. $\rightarrow$ Press the LIGHT button (☼).
The illumination is dim.	The distal end is dirty. $\rightarrow$ Wipe with a clean piece of gauze or a cotton swab (See "Cleaning the distal end" (P. 44)).
The system cannot be turned on.	The scope unit is not connected improperly. $\rightarrow$ Connect the scope unit properly. The AC adapter or the battery is not connected. $\rightarrow$ Connect the AC adapter or the battery correctly (See "Preparing the power supply" (P. 16)). The Power button is not on. $\rightarrow$ Press the Power button (⏻). A non-designated AC adapter or battery is connected. $\rightarrow$ Use the designated AC adapter or battery.
The system cannot be turned off.	The main unit is damaged. $\rightarrow$ Remove the AC adapter or the battery from the main unit to turn off the power.
The image is not sharp.	The objective lens on the distal end is dirty. $\rightarrow$ Wipe with a clean piece of gauze or a cotton swab (See "Cleaning the distal end" (P. 44)). The external monitor is adjusted incorrectly. $\rightarrow$ Correctly adjust the external monitor.
The image brightness is not optimum.	The automatic brightness control is set erroneously. $\rightarrow$ Perform the [BRT] button operation to adjust to the proper setting. The objective lens on the distal end is dirty. $\rightarrow$ Wipe with a clean piece of gauze or a cotton swab (See "Cleaning the distal end" (P. 44)). The external monitor is adjusted incorrectly. $\rightarrow$ Correctly adjust the external monitor.
Color reproduction is poor.	The white balance is set improperly. $\rightarrow$ Re-adjust white balance.
The image is noisy.	The automatic brightness control is set erroneously. $\rightarrow$ Perform the [BRT] button operation to adjust to the proper setting. The scope was incorrectly initialized. $\rightarrow$ Initialize the scope again.
Angulation cannot be returned to its original attitude.	The angulation lock is engaged $\rightarrow$ Return the angulation lock lever to release the angulation lock.
The operation load for articulation is getting heavier.	The angulation lock is engaged $\rightarrow$ Return the angulation lock lever to release the angulation lock.
The beep cannot be heard.	[BEEP ON/OFF] is set to [OFF]. $\rightarrow$ Set [BEEP ON/OFF] in the [SETUP] menu to [ON].

Problem	Cause and recommended action
All functions stopped during moving image recording.	The USB flash drive 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 the USB flash drive provided as standard or one recommended by Olympus.

8.2   Requesting repair of this product

⚠ WARNING ──────────────────────────────

• Olympus is not liable for any accidents or instrument damage that occurs as a result of repairs attempted by non-Olympus personnel.

⚠ CAUTION ──────────────────────────────

• Olympus will not repair an instrument contaminated by noxious substances.

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.

9 Specifications

9.1 Operating environment

Operating temperatures

Insertion tube	In air:	-25 to 80°C
	In water:	10 to 30°C
Parts other than the insertion tube	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:	1,013 to 1,135 hPa
Parts other than the insertion tube	In air:	Normal pressure (1,013 hPa)

Operating environment humidity

All parts	15 to 90% (relative humidity)

Liquid resistance

Insertion tube	No trouble when exposed to machine oil, light oil or 5% saline solution.
Parts other than the insertion tube	

Waterproofing

Insertion tube	Waterproof construction. Can be used underwater.
Parts other than the insertion tube	Drip-proof construction. Use in water is not supported. The instrument is not drip-proof if the battery cover, video connector cap, or AC adapter connector cap is open.

⚠ CAUTION

- Meeting operating environment specifications does not constitute any guarantee against damage to or malfunction of the instrument.
- Use AC adapter and battery charger indoors (normal temperature).

9.2 Main specifications

Optical system

Field of view	80°
Direction of view	Forward
Depth of field	3 mm to 70 mm
Illumination	Light from the white LED in the control unit is guided to the distal end via the light guide.

Distal end

Outer diameter	Less than φ2.4 mm.
Distal end rigid section length	10 mm
Angulation	135° * In UP and DOWN directions (when insertion tube is straight)

Flexible section

Flexibility	Fixed hard tube from the distal end to the control unit.
Outer diameter	Less than φ2.4 mm.

Total length	1.2 m

Control unit		
	Scope unit replacement	The scope unit (insertion tube + angulation control unit) can be replaced on the button control unit.
	Dimensions	49(W) x 59(H) x 334(L) mm (without insertion tube and cable)
	Weight	Approx. 300g (without insertion tube and universal cable)
LCD panel		6.5" TFT full-color low ambient light reflective type
Input/output connector		
	Video signal outputs	One video signal output (for external devices) Composite (VBS) video output (for live image) One RCA jack output
	USB connector	A connector, USB 2.0 compatible
Power supply		
	Battery	Model: Manufactured by INSPIRED ENERGY NC2040NO29 or NC2040OL24 Nominal voltage: 10.8VC Battery powered operating time: 150 minutes (based on new battery) For details, refer to the instruction manual of your battery.
	AC adapter	Input voltage: 100 V to 240 V AC Frequency: 50/60 Hz Output voltage: 12 V For details, refer to the instruction manual of the AC adapter.
	Battery charger	Model: Manufactured by INSPIRED ENERGY CH5000C or CH5000X Input Voltage: 90 V to 260 V AC Frequency: 50/60 Hz For details, refer to the instruction manual of the battery charger.
Operating voltage range		7.5 V to 12.6 V (battery-powered operation) 11.4 V to 12.6 V (AC adapter-powered operation)
Power consumption		MAX 9 W
Dimensions		239 (W) x 217 (H) x 99 (D) mm
Still image recording		
	Resolution	NTSC: H640 x V480 (pixels) PAL: H768 x V576 (pixels)
	Recording format	Files are stored as compressed JPEG format (Exif 2 compliant).
Still image retrieval		
	Restrictions	Images recorded on the instrument can be played back.
Moving image recording		
	Resolution	H640 x V480 (pixel)
	Recording format	AVI MPEG-4 formats. Compression rates fixed. Playback on Windows Media Player supported. (Provided that Windows Media Player Ver. 7 and Direct X7.1 or later are installed)
Moving image playback		
	Restrictions	Images recorded on the instrument can be played back.
Carrying case dimensions and weight		
	Dimensions	600 (W) x 426.5 (H) x 133 (D) mm 23.62 (W) x 16.79 (H) x 5.16 (D) inch
	Weight	Approx. 3kg (7.4kg with all accessories stowed)
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.
- Windows Media Player is either a registered trademark or trademark of Microsoft Inc. in the U.S. and/or other countries.
- Foxit PDFSDK Copyright ©2010, Foxit Software Company www.foxitsoftware.com, All rights reserved.

External application standard

EMC Information	This product is applied with the requirements of standard IEC/EN61326-1 concerning electromagnetic compatibility. • Emission Class A, applied to industrial environment requirements. • Immunity Applied to industrial environment requirements. Some interference may occur if this product is used in domestic location.
FCC Information	This product conforms to the following. • 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 WARNING Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
WEEE Directive 	The following applies to the mark to the left. 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. Refer to your local Olympus distributor for return and/or collection systems available in your country.
Chinese RoHS Directive 	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. (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 said period.

For Korea only

A급 기기 (업무용 방송통신기자재)

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This software is based in part on the work of the Independent JPEG Group.

Appendix

System chart

**IPLEX VIEWER PLUS
(Downloadable from the
Olympus website)**

**Computer (commer-
cially available)**

**Display (NTSC/PAL)
(commercially available)**

USB flash drive

**Video cable with RCA pin plug
(commercially available)**

Cotton swab

Base unit

**Shoulder belt
(optional)**

Scope unit (optional)

AC adapter

**Battery (manufactured
by INSPIRED ENERGY
NC2040NO29 or
NC2040OL24 optional)**

Carrying case

**Battery charger
(manufactured by INSPIRED ENERGY
CH5000C or CH5000X optional)**

**AC adapter (for battery charger)
(packaged with CH5000C
or CH5000X optional)**