



# Light Scope

## Operation Manual

English



114102620210

Thank you very much for purchasing our product. Please read this manual first and be sure to follow its instructions when using the device. Do not lose or throw away this manual, since the warranty on the device is attached at the end of it.

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## Safety Information



**Warning**

This sign applies when an improper use of the device may result in death or serious personal injury.



**Caution**



This sign applies when an improper use of the device may result in personal injury or damage to the device.

### Warning

- This device must not be used for medical purposes. It must not be applied to any part of people (eyes, nose, mouth, etc.) or that of animals.
- You must not use this device for direct observation of strong lights such as sunlight. Otherwise you may lose your sight.
- Do not remodel or disassemble the device.

### Caution

- Keep the device out of the reach of children to prevent them from getting hurt.
- Do not forcibly bend, twist or elongate the fiber image tube. Otherwise the optic fibers may break.
- Do not bend the fiber image tube with a radius smaller than the limit. Otherwise the optic fibers may break. (MSPS/MSGs/MSHS type : 40 mm, MSPI/MSGI/MSHI type : 100 mm.)

**⚠ Caution**

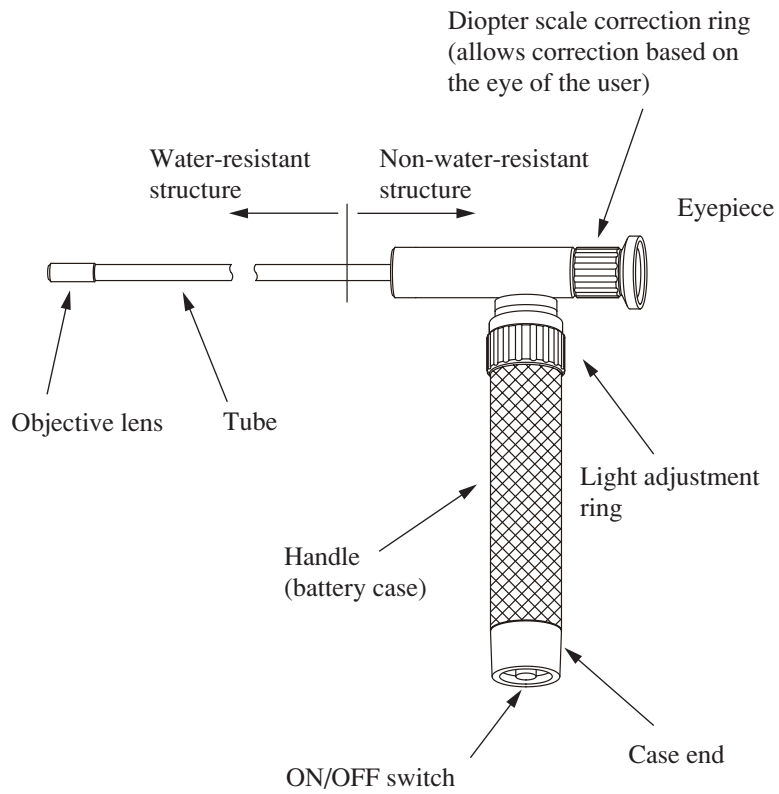
- Do not use or store the device at a temperature higher than 60°C or lower than -20°C.
- The fiber image tube and objective lens of this device have water-resistant structure. However, the ocular eyepiece does not. Do not soak the eyepiece in any kind of solution or get it wet with water.
- Strong impact on the device may result in the breakage of the objective lens (made in glass) at the tip of the tube.
- As the fiber image tube for transmitting image data consists of very fine strands, these fibers may be broken in the process of production, which may result in tiny black dots appearing on the screen. Please understand that these dots do not mean the device is out of its specifications.
- When removing the handle (battery cover) from the main unit, be careful not to touch the LED part, as this may cause the device to break.

**⊘ Note**

- Keep the device away from acid or alkaline solution, oil or petrol, and do not use it in an atmosphere containing their vapour.
- Ensure the polarity of dry cell batteries is correct when setting them in the battery case. Be sure not to use new batteries with old ones. Otherwise, the batteries may burst and leak their liquid contents, which may cause a fire or personal injury.
- Do not directly put your eyes to the objective lens or look into it. Otherwise your eyesight may be seriously impaired.



## Parts and their Functions



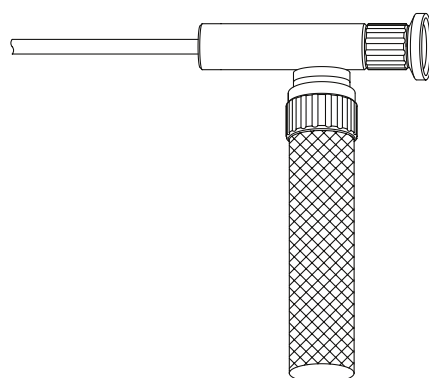
English



## Setting Batteries

- ① Turn the case end counter-clockwise and remove it from the battery case.
- ② Put two C batteries into the case as shown in the illustration below after checking the polarity of the batteries, and tighten the case end by turning it clockwise.

English



2 C batteries

Estimated maximum life of batteries (when continuously used)	Alkaline batteries	approximately 3 hrs.
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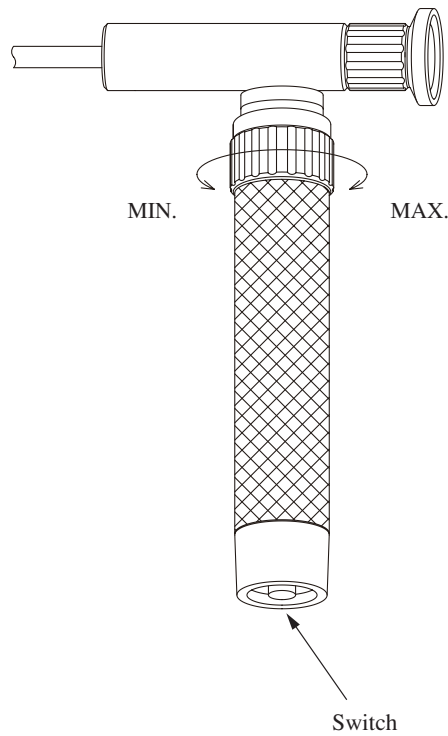
**Caution** Make sure to turn off the light before setting the batteries.





## Turning On the LED and Adjusting the Light Intensity

- ① Press the switch on the case end to turn on the LED. Press the switch again to turn off the LED.
- ② Turn the light adjustment ring clockwise to increase the light intensity, and counter-clockwise to decrease the light intensity.



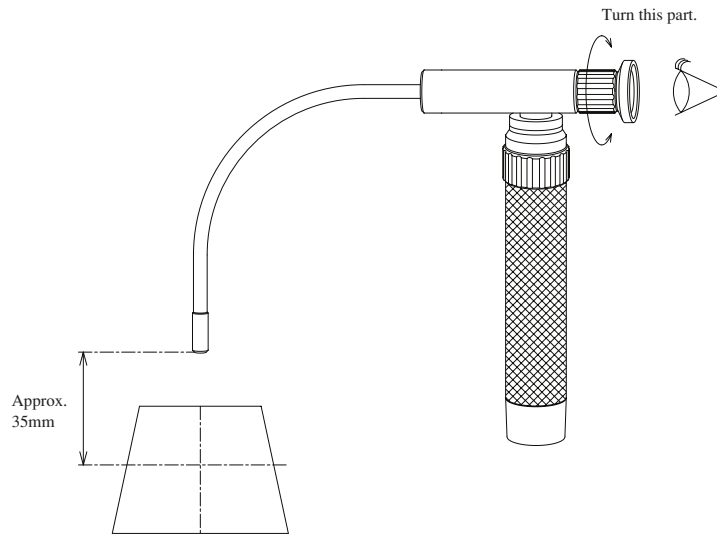
English



## Correcting Diopter Scale

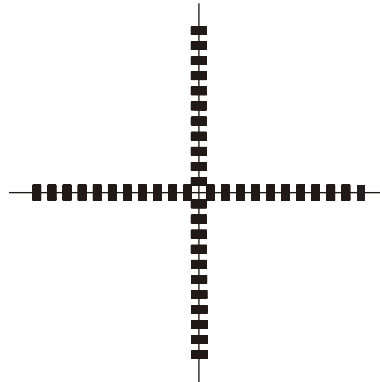
Hold the objective lens at approximately 35 mm from the chart and turn the diopter scale correction ring until the image of the chart is in focus.

English



## Diopter Scale Correction Chart

Use this chart when correcting the diopter scale.







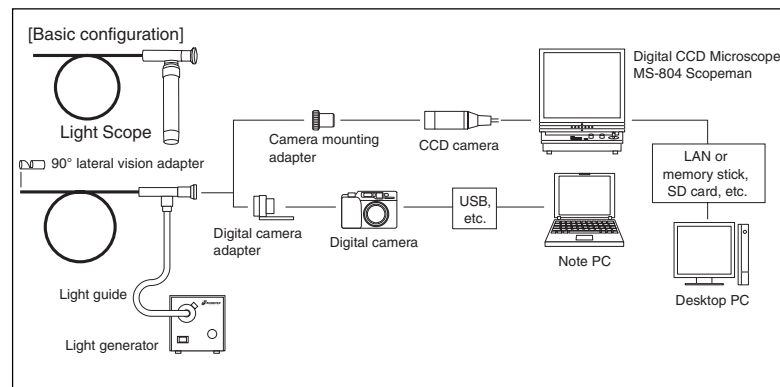
## Care and Maintenance

When the objective lens gets dirty, wipe it with a soft cloth or a Q-tip. When the lens becomes badly dirty, clean it with a Q-tip lightly soaked in a neutral detergent.

**Caution** Do not use organic solvents such as thinner or benzene, as they may cause deterioration, a loss of light intensity, or degradation in image quality.

English

## System Flowchart



## Product Specification

Model		MSPS-1000 IV MSPS-2000 IV MSPS-3000 IV	MSPI-1000 IV MSPI-2000 IV MSPI-3000 IV	MSGs-1350IV	MSGI-1350 IV
Fiber	Fiber material	Acrylic		Glass	
	Number of Pixels	7,400 Pixels		10,000 Pixels	
	Fiber stand diameter	Approx. 20 $\mu$ m		Approx. 16 $\mu$ m	
Objective lens	Outside diameter of part to insert	$\phi$ 8mm		$\phi$ 8mm	
	Tube material	SUS304 coated with PVC	SUS304 (with interlock) coated with PVC	SUS304 coated with PVC	SUS304 (with interlock) coated with PVC
Tube	Outside diameter	$\phi$ 7mm		$\phi$ 7mm	
	Minimum bending radius (when rolled once)	40mm	100mm	40mm	100mm
	Light source	LED			
	Power supply	2C batteries (not supplied with the device)			
Optical characteristics	Focal direction	Straight and lateral (optional)			
	Focal angle	Approx. 60°			
	Focal length	10mm ~ infinity (fixed focus)			
Water-resistance	Water-resistant objective lens and tube The eyepiece and handle (battery case) are not water-resistant.				
Working temperature range	Objective lens/tube: -20° to 60° Battery handle: 0° to 40°				



English

Model		MSHS-1000 IV	MSHI-1000 IV
Fiber	Fiber material	Acrylic	
	Number of Pixels	7,400 Pixels	
	Fiber stand diameter	Approx. 13 $\mu$ m	
Objective lens	Outside diameter of part to insert	$\phi$ 5mm	$\phi$ 6mm
	Tube material	SUS304 (with monocoil) coated with PVC	SUS304 (with interlock) coated with PVC
Tube	Outside diameter	$\phi$ 4.5mm	$\phi$ 5.6mm
	Minimum bending radius (when rolled once)	40mm	100mm
	Light source	White, 1W	
Optical characteristics	Power supply	2C batteries (not supplied with the device)	
	Focal direction	Straight and lateral (optional)	
	Focal angle	Approx. 55 °	
	Focal length	10mm ~ 500mm (fixed focus)	
Water-resistance		Water-resistant objective lens and tube The eyepiece and handle (battery case) are not water-resistant.	
Working temperature range		Objective lens/tube: -20 ° to 60 ° Battery handle: 0° to 40 °	

## After-sale Service

1. If the device proves to be defective during its warranty period despite your compliance to this operation manual and signs on the device, we will provide you our after-sale service or a replacement of the broken device without charge.
2. Our free after-sale service does not apply when
  - (a) you fail to present to us the warranty of the device attached to this manual;
  - (b) either the purchase date, or the customer's name, or the dealer's name is omitted from the warranty;
  - (c) the failure of, or damage to, the device is the result of an improper usage, repair or modification;
  - (d) the failure of, or damage to, the device is the result of strong impact on it after purchase;
  - (e) the failure of, or damage to, the device is the result of (an) external cause(s) such as a fire, earthquake, thunder, or flood.