



微信公众账号



FACEBOOK

安徽长庚光学科技有限公司

[www.laowalens.com](http://www.laowalens.com)

服务热线:400-066-1316

Email: [sales@laowalens.com](mailto:sales@laowalens.com)

电话Tel: (+86) 551-69107990

地址: 合肥市庐阳区天水路与太和路交口庐阳中科大校友创新园5号楼

Add: Building 5, USTC Alumni Innovation Park, Crossing of Tianshui  
and Taihe Road, Luyang District, Hefei City, Anhui Province, China

LAOWA Aurogon FF 10-50x  
NA0.5 Supermicro APO

使用手册

Instruction Manual

**LAOWA 老蛙**

本公司保留更改产品设计与规格的权利, 届时恕不另行通知;  
本公司保留对此《使用说明》的最终解释权。

Please note we reserve the right to change our product's  
design and specifications at any time without notice and  
to the final interpretation of the *Instruction Manual*.



## Preface

Thank you very much for purchasing LAOWA Aurogon FF 10-50x NA0.5 Supermicro APO microscopic lens. This lens has high NA with low diffraction and a long working distance for better illumination. It also has a high resolution, enabling excellent image performance.



*Read this operation manual carefully to familiarize yourself with its contents and ensure that you can operate the product properly. Keep the Instruction Manual in a safe place where it can easily be referenced whenever required. If you are still unable to solve the problem by reading the manual, please contact our after-sales service for further technical support.*

## Features

- 1. The numerical aperture of this microscopic lens is 0.5~0.1 (adjustable). The most significant advantage of this lens is high NA with low diffraction, a long working distance, high resolution, and great performance. This ensures that the ISO value is lower when shooting to achieve clearer images.
- 2. This lens has a long working distance, easy to fill light, easy to operate, can be popularized in industry and scientific research.
- 3. This lens adopts advanced optical design with good performance and high resolution, allowing photographers to shoot outstanding images.
- 4. The lens can be used by photographers universally. It can achieve 10X, 20X, 35X, and 50X rate switches by switching tube lenses.

## Precautions

### ■ △ Safety Precautions

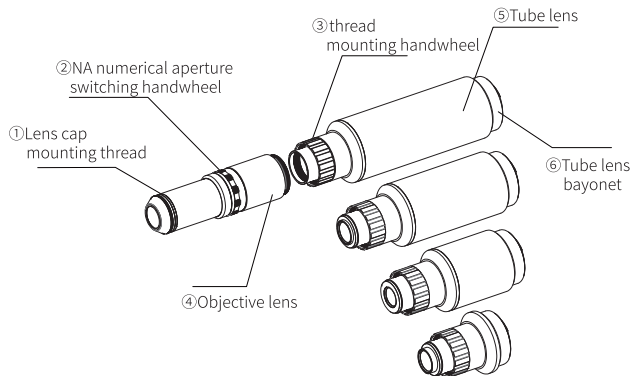
- Do not disassemble, modify the lens by yourself. Do not touch the internal parts that become exposed as the result of external force.
- Do not leave the lens where it will be exposed to high temperatures, such as in direct sunlight and an enclosed vehicle. Excessive heat may deform the glass elements and other parts of the lens.
- Whether it is attached to the camera or not, do not leave the lens under the sun without the lens cap attached. This is to prevent the lens from concentrating the sun's rays, which could cause a fire.
- Do not place the sun in the frame center when shooting with backlight. Doing so might cause a fire or harm your eyes.
- The camera's built-in flash will cause barrel shadow if used with this lens. For best results, please use an external flash unit.

## Precautions

### ■ Maintenance Precautions

- Avoid touching the surface of the lens, use a special lens cloth or air blower to remove dust on the surface of the lens, and cover the lens cap when the lens is not in use.
- When cleaning with lens tissue or lens cloth, wipe dirt and fingerprints on the lens from the center outward in a circular motion.
- When the lens is suddenly transferred from a cold environment to a warm one, water will condense on the outer and inner lenses of the lens. Please take moisture protection measures when moving the lens in different environments.

## Nomenclature



## Instructions

### ■ To attach the Lens

- 1.Remove the front and rear caps of the objective lens and tube lens.
- 2.Screw the objective lens into the tube lens and tighten the handwheel to complete the installation.
- 3.Align the installed objective lens and tube lens to the installation point of the microscope and screw to install.
4. After attaching the lens, try rotating the lens to confirm that it is secured to the camera.

### ■ To remove the lens

- 1.After turning off the camera, press and hold the lens release button on the camera, rotate the lens in the opposite direction of the mount, and then pull the lens out.
- 2.Loosen the handwheel and unscrew the objective lens.

### ■ NA aperture handwheel

You can adjust the size of NA to adapt to the required depth of field. (Note: The diffraction degree varies with the size of NA. Generally, the smaller the NA, the greater the diffraction. If the NA is too small, the resolution will decrease due to diffraction.

### ■ Distance between the tube lens bayonet and COMS

10 x: 74.77 mm	20 x: 145.38 mm
35 x: 195.6 mm	50 x: 240.52 mm

### ■ Focusing

This lens has different focusing distances when matched with different magnification tube lenses. The focus can be adjusted by changing the camera body.

## Focusing Methods

### ■ Method 1 Focus Peaking (depending on the camera function)

- 1. Turn on the focus peaking option on the camera, select the peaking color as red or other common colors, and choose the peaking option as low.
- 2. Observe the image through the viewfinder or turn on the Live View function and observe the focus point through the peak value.
- 3. Move the camera to focus precisely on the object.

### ■ Method 2 Focus Magnification

- First, set the shooting picture, while observing the image through the viewfinder or by turning on the Live View function. Then, press the button or double-tap the screen to zoom in on the focus point and move the camera until the focus is achieved.

Aurogon FF 10-50x NA0.5 Supermicro APO				
Magnification	10x	20x	35x	50x
Adjustable numerical aperture (NA)	0.5/0.45/0.4/0.35/0.30/0.25/0.2/0.15			
Cover glass thickness	N/A			
Working distance(mm)	20			
Maximum objective diameter(mm)	50			
Length of objective lens(mm)	167			
Weight of objective lens(g)	447			
Wavelength range(nm)	435-656			
Objective lens + tube lens focal length (mm)	18.8	10.3	6.85	5.56
Special tube lens for Laowa model	10x Magnification tube	20x Magnification tube	35x Magnification tube	50x Magnification tube
Maximum diameter of tube lens (mm)	70	70	70	70
Length of tube lens (mm)	112	163	210	253
Weight of tube lens(g)	377	444	530	609
Maximum distortion	0.60%	0.80%	0.40%	0.40%
Image field diameter	Full-frame (24mm×36mm)			
Conjugate distance (mm)	299.4	370	420.2	465.1
Mounts	EF, F, E, R, Z, L			

LAOWA