



STEINDORFF®

Digital LCD Stereo Zoom Microscope

NYMCS-356

Operation Manual

To ensure safety and obtain optimum performance and familiarize yourself with the use of this microscope, we recommend you read this manual before operating the microscope. Retain this instruction in an easily accessible place near the microscope for further reference.

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This instruction manual is for NYMC-356 LCD digital Zoom Stereo Microscope, Please read the instruction manual carefully before using, proper modification can be made without notice.

- Please contact manufacturer if something unclear or incorrect is found.
- The product you purchase may not include all the things mentioned in the manual.
- Please operate the instrument as the instruction manual.

Safety problems have been fully considered when design, users may get hurt or instrument may get damaged if improper operations are taken. For your safety, please read the instructions carefully before using.

Warning

1. Specified use

The instrument can be used for micro observation only.

2. Do not take the microscope apart

As it will be damaged. Please contact manufacturer if the microscope does not work.

3. Make sure the input voltage

The correct input voltage is marked on the power supply of the illumination. Make sure the voltage in your position is right. Improper input voltage may cause short circuit and fire. Please contact manufacturer if you have any questions.

4. Power supply cord

Please turn off the power supply and pull out the cord when replacing the bulbs.

5. Temperature for illumination

The temperature will be high if the bulb is lightened. Do not put fiber, papers and inflammable things (eg. Gasoline, aether, methanol and ethanol) close to the bulb.

Attention

1. Be careful when replacing the bulbs

The bulb will be heated after using. Replace the bulb when it has been cooling enough to avoid scald.

2. Check the illumination

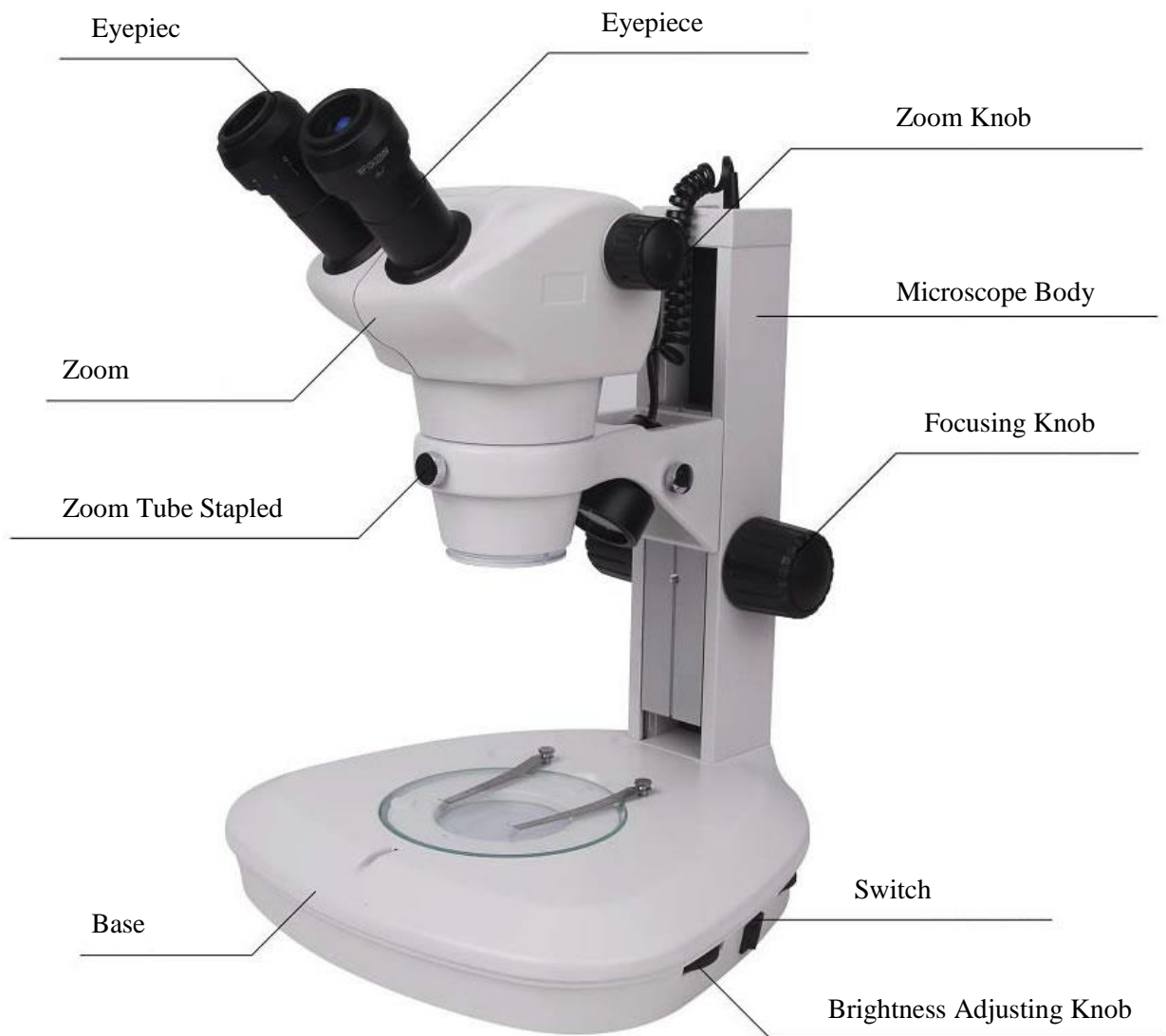
Specific bulbs can be used. Bulbs with different specifications may cause damage to the instrument. Refer to the manual for more information.

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OPTICAL MICROSCOPE PART

1. Structure and Characteristic

1.1. Structure Chart



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1.2. Characteristic

1.2.1. Destaticization: stand, zoom tube, 10×eyepiece and auxiliary objective are all equipped with destaticization. It is very helpful for users to observe the specimen with static (such as semiconductor chip). When use this function, please connect the microscope to the ground through the joggle on the back of the stand.

1.2.2. Airproof Function: zoom tube and 10x eyepiece are both equipped with airproof function, and this ensures the instrument work properly when the humidity around is high.

1.2.3. Ergonomics design can make users feel comfortable after long-time operation.

1.2.4. High definition, broad wide field of view, long-distance work. Various attachments can be added on this instrument. It can be widely used in such fields:

1.2.4.1. Can be used for training and education in school and research institute.

1.2.4.2. Can be used for routine inspection in medical institution.

1.2.4.3. Can be used for assemblage, testing, measuring and quality control in industry, especially in IT.

1.2.5. Kinds of optional attachments (such as illumination, stand, eyepiece, objectives and etc.)

2. Main Technical Parameters

2.1. Technology Parameters

Zoom Ratio: 1:6.3

Magnification Range: 0.8x – 5x

Interpupillary distance: 52mm – 75mm

2.2. Technical parameters

Auxiliary Objective	W.D. (mm)	Eyepiece							
		10x		15x		20x		30x	
		Magnification	F.O.V	Magnification	F.O.V	Magnification	F.O.V	Magnification	F.O.V
/	115	8 – 50x	27.5 – 4.4	12 – 75x	20 – 3.2	16 – 100x	15.6 – 2.5	24 – 150x	8.8 – 1.4
0.5x	211	4 – 25x	55 – 8.8	6 – 37.5x	40 – 6.4	8 – 50x	31.2 - 5	12 – 75x	17.6 – 2.8
2x	43.5	16 – 100x	13.8 – 2.2	24 – 150x	10 – 1.6	32 – 200x	7.8 – 1.3	48 – 300x	4.4 – 0.7

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3. Configuration

Includes:

No.	Contents	Quantity
1	Tablet PC with digital camera	1
2	NYMCS-356 Zoom head	1
3	10x Eyepiece	2
4	Instruction Manual & Dust Cover	1
5	Microscope Stand (with or without illumination)	1

Optional Accessories

No.	Contents
1	15x Eyepiece
2	20x Eyepiece
3	30x Eyepiece
4	0.5x Auxiliary Objective
5	0.7x Auxiliary Objective
6	2x Auxiliary Objective
7	LED Circular Illumination (ring light)
8	Movable Stage
9	10x Division Eyepiece (eyepiece micrometer 0.1mm)
10	Stage Micrometer 0.1mm
11	Universal stand
12	Illumination (Halogen)
13	0.4x reduce lens with C-mount for digital camera
14	DSLR Camera adapter (For Nikon/Canon DSLR cameras)

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4. Assembly

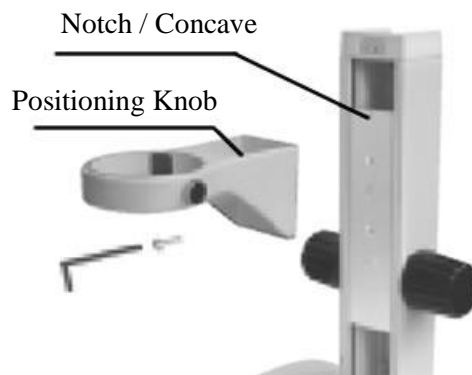
4.1. Assembly of the stage

Place the stand on a stable table, insert the stage into the base, and tighten the fixing screw with wrench (small) attached at the back of the stand.



4.2. Lifting of the Focus Arm

The focus arm can be adjusted according to your special demands. Loosen the screw with the wrench (big), and the arm will 55mm lower than before after re-mounting the focus arm.



Note: Before tightening the screw, make sure that the 2 pins on the arm fit into the grooves on the vertical slider.

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4.3. Mount the Zoom head

Tighten the fixing screw of the zoom tube slightly to fix the zoom head on the stand.



Warning: Do not tighten the screw too tight as this will cause damage to the instrument.

4.4. Mount the Eyepiece

Rotate the eyepiece to 0, and insert the eyepiece into the tube completely till it touches the end of the tube.



Note: when inserting the 10x eyepiece, make sure to touch the end of tube. When inserting or extracting the eyepiece, please hold the cap instead of the diopter ring.

4.5. Wrenches are placed at the Back of the Stand.

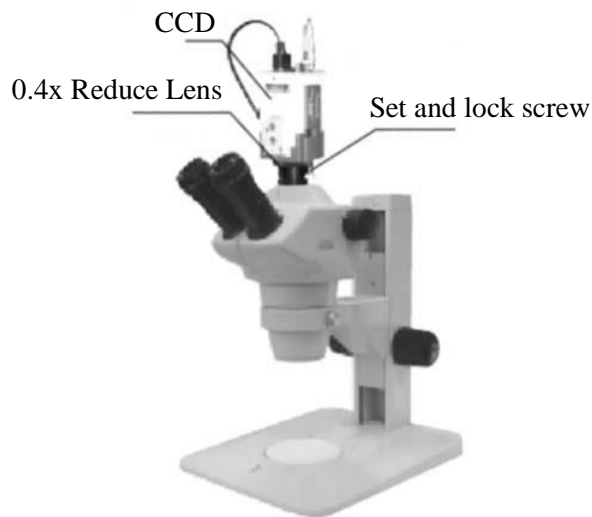
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4.6. Image recording digital camera.

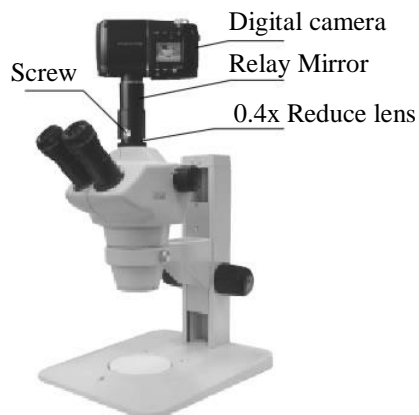
To satisfy your special requirements, different interfaces are supplied for your choosing, and this will make your operation and observation more convenient.

4.6.1. Assembly of 0.4x reduce lens and the digital camera

Take away the dust-cover of the trinocular, insert one end of the 0.4x reduce lens into the digital camera and tighten it. Insert the other end into the trinocular port, adjust the CCD, and tighten it.



4.6.2. Assembly of the DSLR Camera Adapter and Digital SLR Camera



Take away the dust-cover, screw one end of the DSLR camera adapter into the DSLR camera. Insert the other end of the camera adapter to the trinocular head, and tighten it. Adjust the camera, and tighten it.

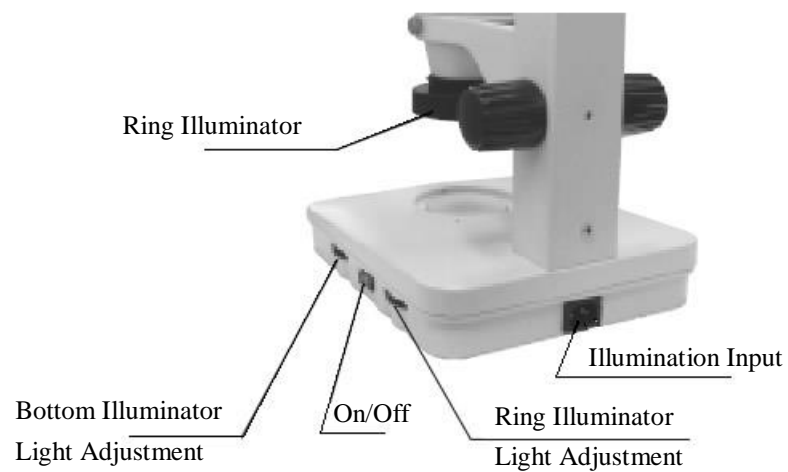
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5. Operation

5.1. Preparation

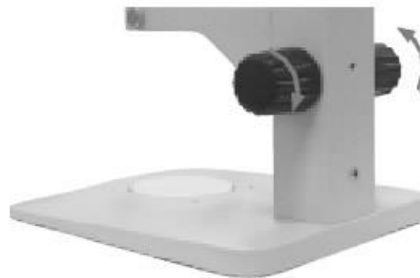
5.1.1. Illumination

Insert the power supply source into the socket of the transmitted base, connect the power supply source and turn on the switch. Adjust the brightness. It is not necessary to adjust the brightness to the strongest as this will reduce the life of the bulb.



5.1.2. Adjust the torque of focusing knob

Adjust the torque of the focus knob so that the zoom body will not fall down because of its own weight.



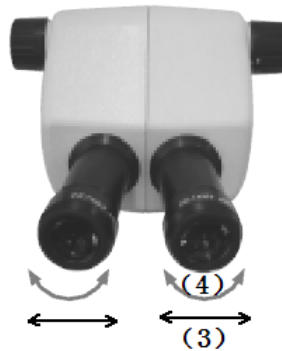
Turn in opposite direction to reduce the torque

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5.1.3. Interpupillary Distance Adjusting

This adjustment should be performed every time if the observer changes since the interpupillary distance is different between individuals. Adjust the interpupillary distance so that the view field for each eye is merged into one. Move while holding each tube with both hands.

5.1.4. Diopter Adjusting



- Set the zooming knob to the highest magnification (5x), focus on the sample using the focus knob
- Set the zoom knob to the lowest magnification (0.8x), look into the left eyepiece with your left eye, and focus on the sample using the diopter ring on the left eyepiece. Then look into the right eyepiece with your right eye, and focus on the sample using the diopter ring on the right eyepiece.
- Repeat Step “a” & “b” until the image is projected on the focus.

5.2. Focusing

5.2.1. Check the Working Distance

Working Distance is the distance between focus plane and zoom head. The W.D for the NYMCS-356 series zoom stereo microscope is 115mm. Set the distance between the bottom of the zoom tube and specimen at 115mm, and this will be helpful to focus.

5.2.2. Focus on the Specimen

Turn the focusing knob both at the same direction to make the zoom tube move up and down. So that the focus will fall on the specimen.

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5.2.3. Magnification

Turn the zoom knob on both sides of the zoom tube to change the magnification of the specimen.

Total Magnification

Zoom knob on right has the indication of the zooming magnification. Total magnification can be calculated by multiplying the eyepiece magnification by the zoom body magnification.

Note: When auxiliary objective is attached, multiply its magnification as well.

6. Assembly and Usage of the Attachments

6.1. Auxiliary Objective

Twist the auxiliary objective into the zoom body. Adjust the focus knob to a certain height.



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6.2. Illumination

Three kinds of illumination are available for your special needs: Transmitted light, incident light and LED Circuit light.

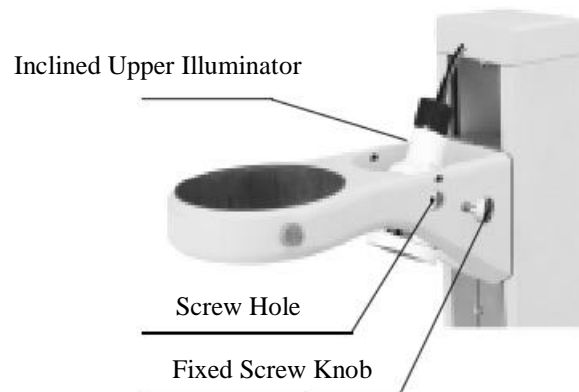
Power Supply

Input Voltage	200V - 240V, 50/60Hz, 0.4A
Output Voltage	6V 3W (LED)
Power Cord	Protective Earth 250V 7A
Environment Condition	Temperature: 0 - 40°C
	Humidity: <85%
	Pollution Degree: II
	Installation Type: II
Protective Level	I

6.3. Installation of Illumination

6.3.1. Install the incident illumination

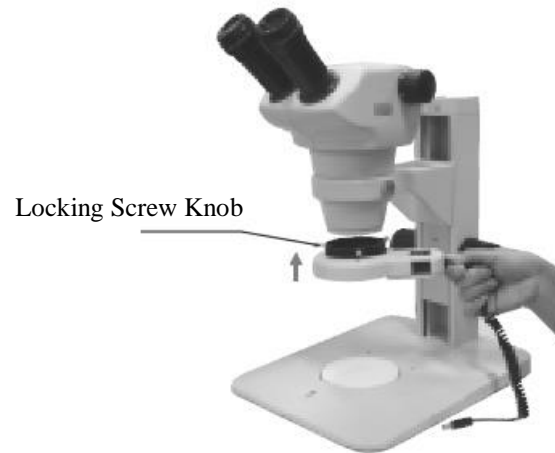
Set the protrusion on the lamp house align with the inside of the screw hole on the focus arm as shown. Secure it in place using mounting screw from outside.



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6.3.2. Install LED circuit illumination

Insert the fixing screw into the groove of the zoom body and tighten it.



7. Troubleshooting

The function of microscope will not work efficiently for the unfamiliar using. Check the table below if meet some troubles, then take proper action. Ask sales agent if the trouble will not be tackled after check.

Problem	Cause	Solution
Double images	Interpupillary distance is not correct	Re-adjust it
	Diopter adjustment is not correct	
Dirt appears in the view field	Dirt on the specimen	Clean specimen
	Dirt on the surfaces of eyepieces	Clean eyepieces
Image is not clear	Dirt on the surface of objectives	Clear objectives
Image is not clear while focusing change	Diopter adjustment is not correct	Readjust diopter
	Focusing is not correct	Readjust it
The focusing knob is not smooth	The focusing knob is too tight	Loosen it to a suitable position
The image is obscure because of the head slipping down during observation	The focusing knob is too loose	Tighten it to a suitable position

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8. Maintenance

8.1. Working Environment

- Temperature range is 0°C-40°C and the max. Humidity is 85%. Avoid high temperature and humidification.
- Do not expose the microscope in the sun directly.
- Place microscope on a stable table and keep it in balance. Avoid violent vibration.
- Keep the environment clean and cover the microscope with the dust-cover.

8.2. Protect the microscope well

As microscope is a precision instrument, please avoid violent vibration. Improper using will make it unworkable.

8.3. Lens cleaning

Avoid dust and fingerprint on the lens as these will reduce its precision. Please clean as followed:

- Blow the dust with dust blower. Soft brush or gauze can also be used to remove the dust.
- More persistent dirt, such as fingerprints and oil, may be removed with soft cotton or lens tissue lightly moistened with absolute alcohol. As absolute alcohol are quite flammable, please take great care when using.

8.4. Cleaning of the painted or plastic parts

Avoid using organic solvents (such as alcohol, ether, etc.) to clean the painted or plastic parts of the instrument. We recommend the use of gauze. More persistent dirt may be cleaned with mild detergent solution.

8.5. Storage

When the microscope is not in use, cover it up with dust cover, and store in a dry place not subject to mold. Do not expose the microscope in the sun directly, avoid high temperature and humidification.

8.6. Periodical inspection

To maintain the performance of the microscope, periodical inspection is recommended.

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TABLET DIGITAL CAMERA PART

The tablet digital camera is equipped with 5MP color COMS sensor and 9.7inches tablet, it is developed specifically for microscopy applications. Along with Android 4.2 operating system, it runs smoothly and the user experience is fantastic. It comes with C-mount, can be attached to the trinocular head of the microscope.

1. Parameters

Hardware	CPU	RK3066 dual-core 1.5GHz
	Display	9.7" Color LCD Touch (1024 x 768)
	Storage	RAM 1GB DDR3
		ROM 2GB
		Support External SD Memory Card, Maximum Capacity Up to 32GB
	Camera	1/2.5" (4:3), 5Mega Pixel (2592H x 1944V) Color CMOS Sensor
		15fps @ 1024 x 768
	Network	Wi-Fi
		Bluetooth
	I/O	USB/Mini-USB (OTG), Support USB Keyboard and Mouse
HDMI Output		
SD Memory Card Slot		
DC5V Power Supply		
On/Off Button		
Mechanical	LCD Screen 360° Horizontal / 90° Vertical	
Software	Operating System	Android 4.2
	Banding Software	Build-in Microscopy Software (Measuring and Particle Analysis)
Accessories	Standard	Power Adapter, USB Cable, User Manual
	Optional	0.5x Nose Piece with Φ 23mm, Φ 30mm and Φ 30.5mm Adapter Rings for Different Diameter Eyepiece Holders.

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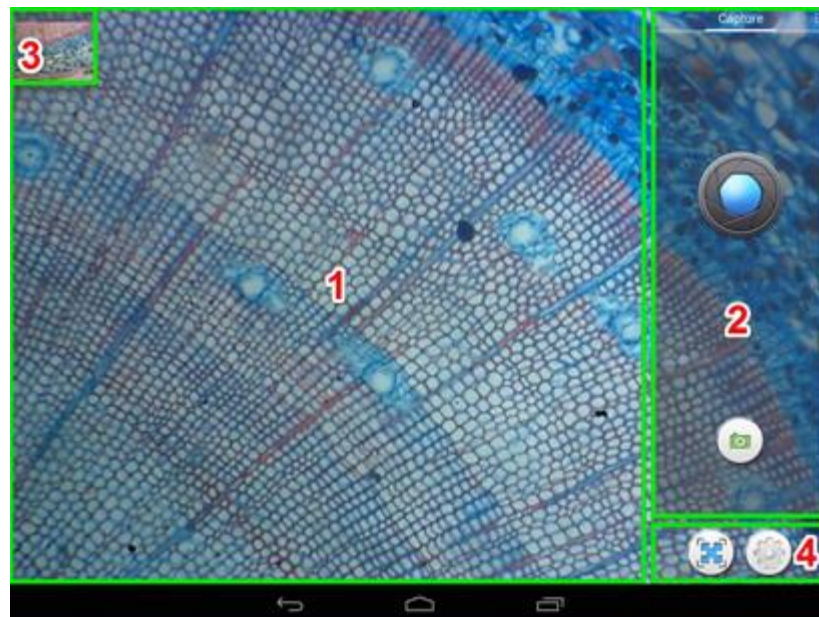
2. Build-in Camera Specification

Optical Format	1/2.5-inch (4:3)
Active Image Size	5.70mm (H) x 4.28mm (V)
	7.13mm (Diagonal)
Active Pixels	2592 H x 1944 V
Pixel Size	2.2um x 2.2um
Dynamic Range	66.5dB
SNR	40.5dB
A/D Converter	12-bit, On-chip
Sensitivity	0.53V/lux-sec (550nm)
Resolution & Frame Frequency	1280 x 720 @ 15fps
	640 x 480 @ 30fps
Shutter	Electronic Rolling Shutter (ERS)
White Balance	Auto/Manual

3. Software Operation

IMS Camera is a camera application on android device. IMS Camera can adjust image parameter, measure the objects, and capture image and video from the camera.

3.1. User Interface



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3.1.1. Preview Image – show live video of the camera.

3.1.2. Tool Panel – Control panels, capture, adjust parameter, measurement, etc.

3.1.3. Thumbnail Panel – Show captured images and videos, touch it to browse the files.

3.1.4. System Tool – Switch Camera, full screen, configure.

3.2. Capture

Take picture is the default mode, Click  to take a picture. Click  to switch to video recording mode, Click  to record, click again to stop recording.

3.3. Adjust parameter of image



When the color of image is not very good, adjust the three sliders to adjust three channels (RGB) of the image until you satisfied. Brightness, contrast, saturation of the image can be adjusted too. Click the reset button to restore the parameters.

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3.4. Measurement

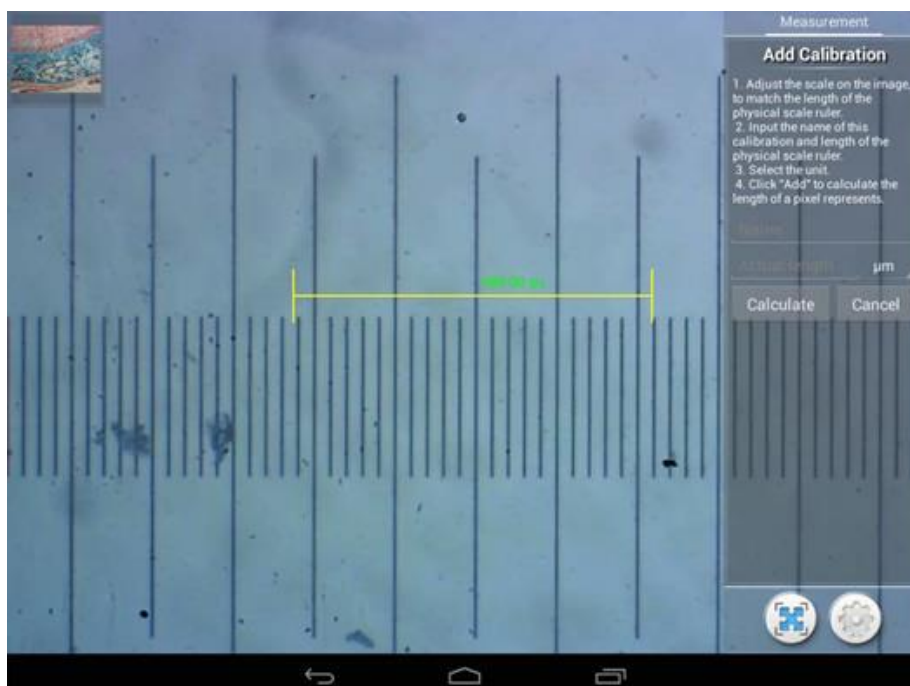
3.4.1. Calibration

We need calibrate the ruler before measurement, Specific combination of magnification of microscope and the preview size of camera need specific calibration.

Swap the tool pane to measurement, Click “Add” to add a new calibration, Click “Edit” to recalibrate the exist calibration.



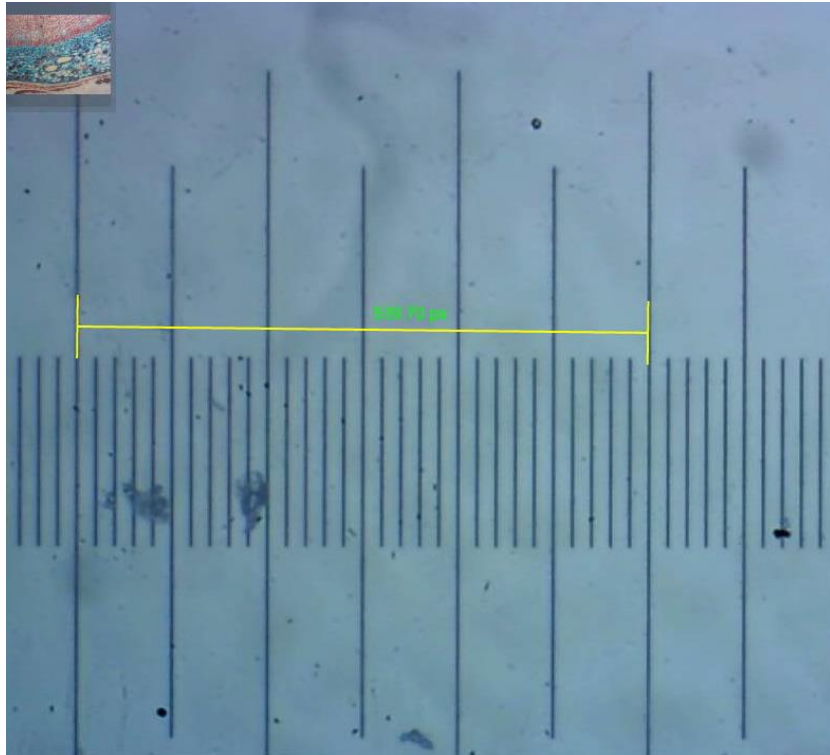
Enter calibration mode



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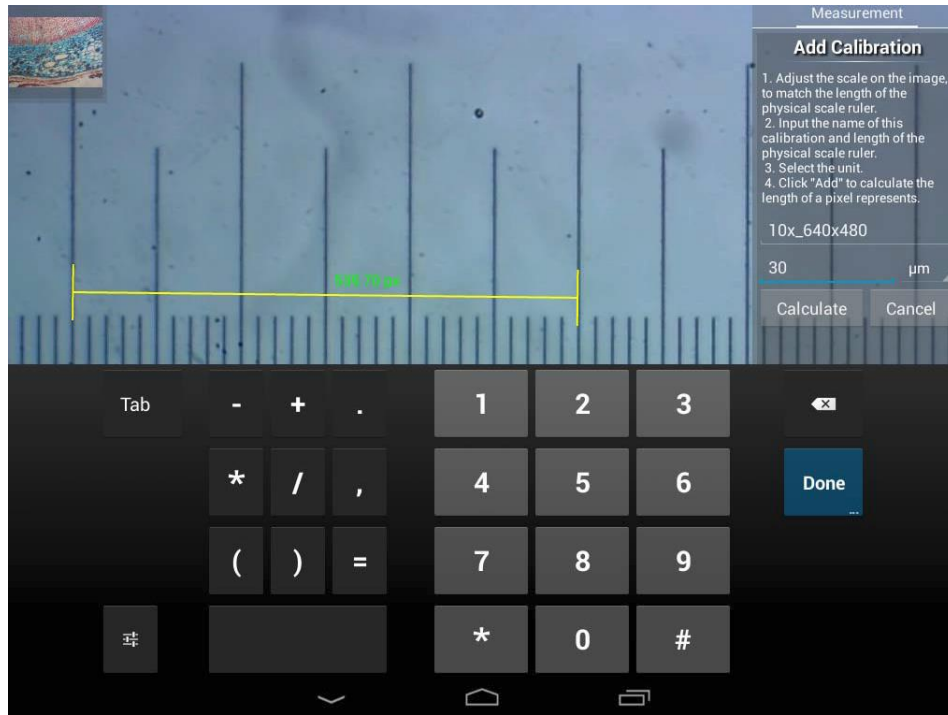
Follow these Tips:

- 3.4.1.1. Drag the yellow ruler, let endpoints of the ruler close to physical ruler's scale. We use the 0.01mm physical ruler, each big grid is 10 μ m, and we pick three grids, that's 30 μ m.



- 3.4.1.2. Input the name of the calibration and the physical length of the ruler. We input 10x_640x480 for the name, that means the magnification of objective is 10x, and the preview size of camera is 640 x 480. Then input the physical length of the ruler, which is 30 μ m.

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- 3.4.1.3. Click "Calculate" to calculate the calibration value for current objective and preview size, and save to list.



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3.4.2. Measure tool

ICON	Function	Description
	Point Counting	Add a point counting marker on the image
	Line	Measure distance of two points
	Rectangle	Measure width, length and area of rectangle
	Circle	Measure area of circle
	Cross	Cross hair
	Angle	Angle measurement
	Two Circles	Measure distance of two circle
	Perpendicular	Measure length of perpendicular
	Concentric	Measure radius of two circles
	Option	Change stroke width and color of rulers, and the size and color of the text.
	Export	Export the image with measurement rulers
	Delete	Delete the selected ruler
	Delete	Delete All

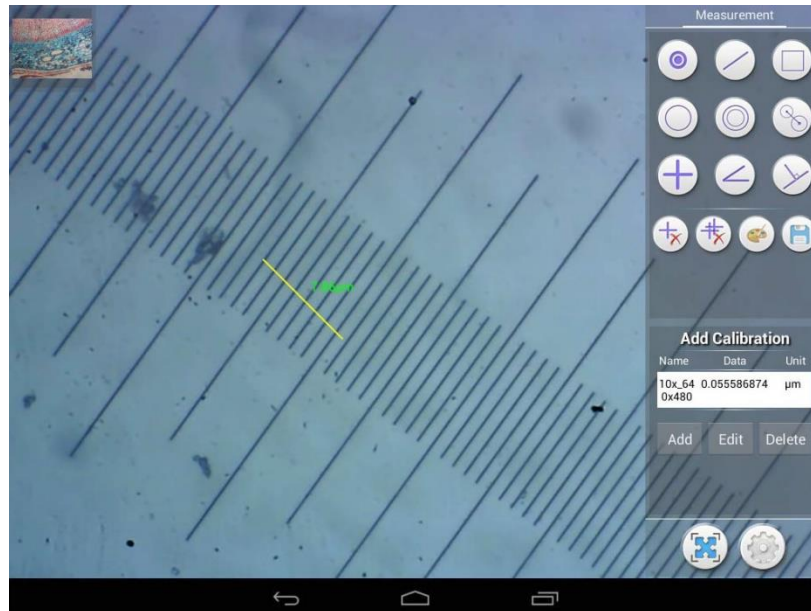
3.4.3. Measure with line ruler

Choose a calibration, the selected item will show with white background and black text.

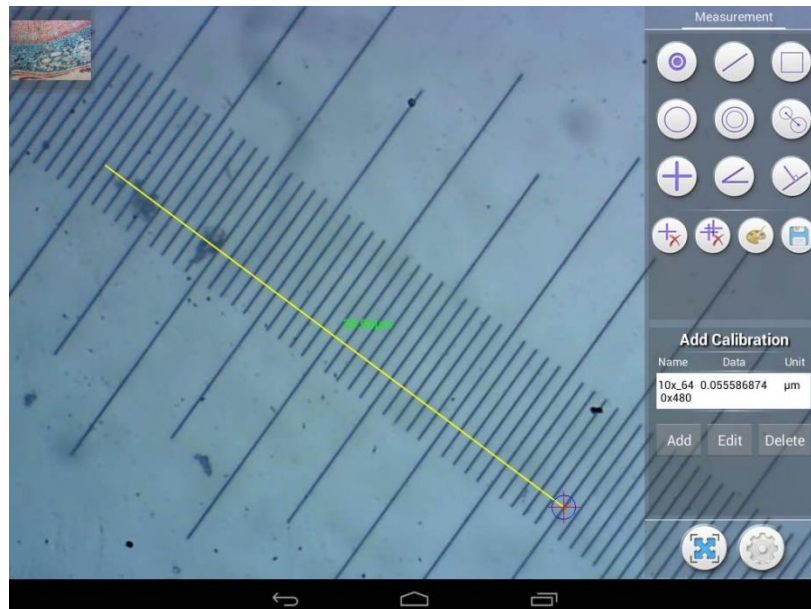


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Choose line ruler from right side bar. There will be a line ruler show on the image.



Use the line ruler to measure the physical ruler.



We measured 4 big grid, the line ruler show 39.95µm, that represent the result is right.