

HAYEAR

Industrial Camera Microscope

User Manual

HY-1090 Industrial Camera V1.2



Catalogue

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Foreword

HY-1090 is a multifunctional digital microscope with individually designed, developed and manufactured by Shenzhen Hayear Electronics Co., Ltd. It realizes Full HD, high object distance, multifunctional and multi-output at the same time. With help of the Hayear measuring software, it can easily meet many different requirements in many fields, such as industrial overhaul and teaching demonstration. And its appearance design combines more ergonomic consideration, provides users with better experience. We sincerely wish this product can release your eyes and improve your work quality. Thanks for your support.

- ◆In order to better use this product, we suggest you can keep this manual as long as you can. Our company will not be responsible for any damage caused by non-compliance with this manual.
- ◆Failure to comply with warnings and instructions may result in electric shock, fire and serious injury.
- ◆Failure to comply the instruction may cause the device permanent damage.
- ◆In order to provide a better customer experience, the product may have minor change during perfecting. the description in this instruction is only for reference, please kindly understand it.

Basic Parameter

| | |
|--------------------------------|---------------------------------------------------------------|
| Model | HY-1090 |
| Brand | HAYEAR |
| Sensor | SONY CMOS 1/2.9 2K Sensor |
| Video output | 2K/1080P Full HD (HDMI output), 2k(USB output) |
| Sensor size | 1/2.9" inch |
| Pixel size | 2.0 × 2.0μm |
| Resolution | 1920×1080P @60FPS; |
| Still image resolution | 5440 X 3056 (16MP) |
| Video record | Support 2K record |
| USB Interface | USB |
| USB Output resolution | 1920x1080P 30FPS; |
| Spectral Response (Wavelength) | 400nm~1000nm |
| Timed photo/video | Support timed photo/record |
| Dual-output | Support HDMI/USB output simultaneously |
| Same screen comparison | Real-time observation and comparison of two products |
| White balance | Support One-click, Auto and Manual white balance |
| HDR | Anti-reflective |
| Storage | TF Card, Maximum support 512GB |
| PC Support | Support Windows/Mac/ Linux systems, Software with measurement |

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| | |
|------------------|-------------------------------------------------------------------------------|
| | function (gift) |
| Image zoom | 7X digital zoom |
| Language Setting | Chinese, English, Japanese, French, German, Russian, Italian, Korean, Turkish |
| Working Voltage | USB 5V / DC 12V 1A |
| HDR function | Support HDR, Multiple exposure HDR, Digital overlap HDR. |

Secure Guidelines

1. During the installation of the equipment, be sure to read this safety guide carefully, operate in strict accordance with the installation instructions, and keep this manual properly.
2. The power supply voltage of the camera power adapter is AC100V—240V@50-60Hz, please confirm whether the power supply is within this range before use.
3. The standard power supply of the camera is DC 12V 1A, it is recommended to use it with the power adapter that comes with the camera.
4. Please use the camera in an indoor environment of 0°C to 50°C and a humidity of less than 90%, and prevent foreign objects from entering the camera. It is forbidden to splash liquids on the camera to prevent danger.
5. Avoid violent vibration and soaking during transportation, storage and installation, so as not to damage the product.
6. Please do not disassemble the camera without authorization. There are no user-repairable or replaceable parts in the camera.
7. Please use a dry soft cloth to wipe the camera case, if the dirt is serious, please use a neutral detergent to wipe gently.
8. If the image appears grey dot, please use a dust blower to blow the dust off the filter, do not use detergent to wipe.

Packing list

HY-1090 Camera -----1 piece
Power supply -----1 piece
Remote Control -----1 piece
USB cable -----1 piece
Manual -----1 piece

Button instructions

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ON/OFF

Short press to turn on the camera.
Short press again to activate the same screen comparison function, and short press three times to exit.
Long press to turn off the camera

MENU

Menu button

OK

Short press to take photo/OK

UP

UP/Digital Zoon in

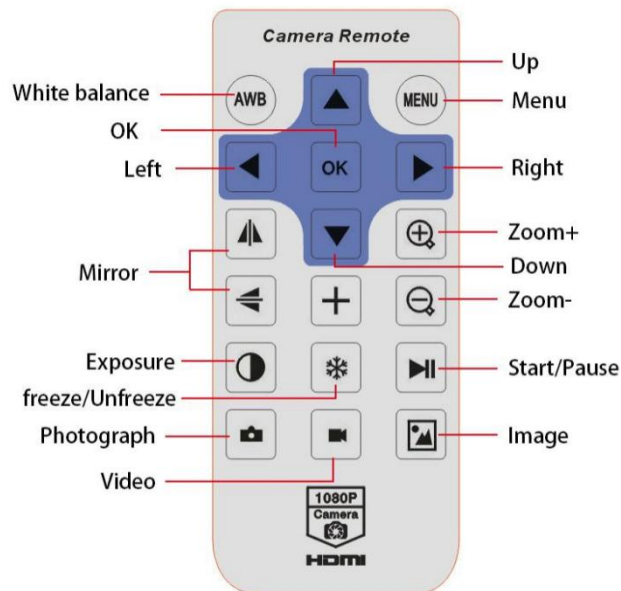
DOWN

Down/Digital Zoom out

M/📷📹

Short press to enter video mode
Press again to enter image preview
Press again to quit

Remote control & button instruction



Operation instruction

Preparatory work

1. Remove the cover and install lens. ⚠ Noting: tear off the dust protection in front of the sensitive film before installing the lens, otherwise the image will be vague!!!
2. Please connect the HDMI cable and DC power supply, at this time, the LED light turns blue, indicating that the camera is turned on.
3. Connect to the computer for use, only need to plug in the type c cable to connect to the computer (no power supply required).

Quick Start

◆HDMI mode

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*Boot steps

1. Keep the power supply powered on.
2. Press "ON/OFF" button on the camera.
3. Press "UP/DOWN" button to to digitally zoom in and out; the lens is manually adjusted.

*Photo mode

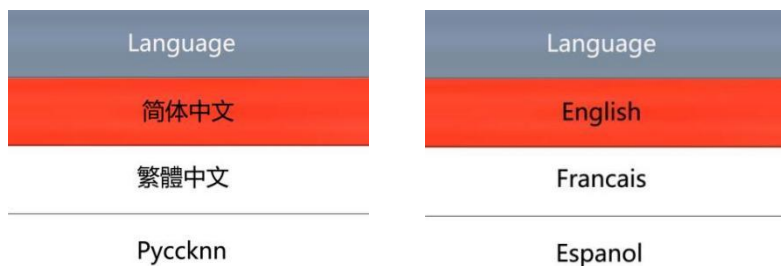
1. Sort press "OK" to take the photo

*Video mode

1. Press "AE" to enter Video mode, press "OK" to star recording, press OK again to stop recording.
2. Press "AE" to enter Video mode, press "AE" again Enter preview photo/video mode, press "OK" can play video and watch images. Press "AE" return to menu.

Language Setting(take English as an example)

Press the MENU button to enter the main menu, press ↓ button to select the language setting, press OK to enter Language selection. Press ↓ button, when the English option highlight then press OK button to confirm.



Grid line setting

● In photo mode, press MENU button to enter the main menu, select the option (grid line setting), and press OK to enter the grid line setting.



- Press OK to enter and then adjust the option
- Press UP/DOWN to select the function you need and press AE to adjust, After the adjustment, there is no need to save it separately, just press the MENU to exit the menu.

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| Line Set | |
|------------|-------|
| Cross Hair | OFF |
| Line | 1 |
| Direction | OFF |
| Position | 79 |
| Color | WHITE |
| Weight | 1 |

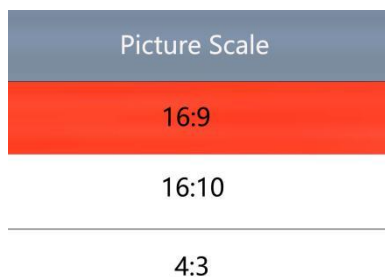
Image resolution setting

● Press Menu button to enter main menu, press Down to find the Image resolution option, press OK to enter, then press UP/DOWN to select the resolution you need, and press OK to save the setting. Press Menu again to quit.



Image ratio setting

● Press Menu button to enter main menu, press Down button to find the Image ratio option, press OK to enter, then press UP/DOWN to select the ratio you need, and press OK to save the setting. Press Menu again to quit.

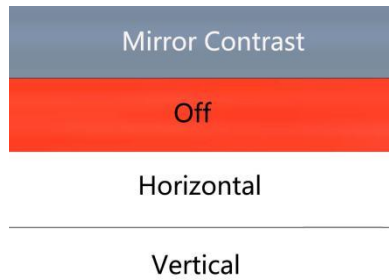


Mirror comparison setting

● Press Menu button to enter main menu, press Down button to find the Mirror comparison, press OK to enter, then press UP/DOWN to select the comparison mode you need, and press OK to

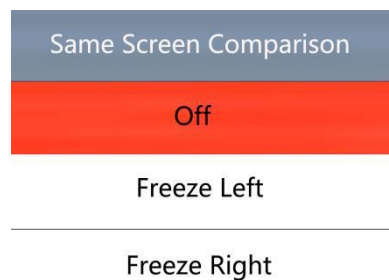
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save the setting. Press Menu again to quit.



Same screen comparison

● Press Menu button to enter main menu, press Down button to find the Same screen comparison, press OK to enter, then press UP/DOWN to select the comparison mode you need, and press OK to save the setting. Press Menu again to quit.



One-Click exposure setting

● Press Menu button to enter main menu, press Down button to find the One-Click exposure option, press OK to enter, then press UP/DOWN to select, and press OK to save the setting. Press Menu again to quit. After turned on this function, adjust the brightness of the light source, the brighter the brightness, the higher the exposure.

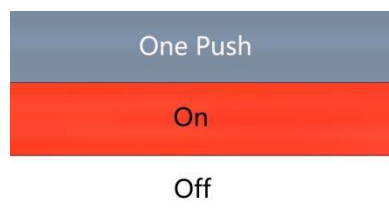


Image quality setting

● Press Menu button to enter main menu, press Down button to find the Image quality option, press OK to enter, then press UP/DOWN to select, and press OK to save the setting. Press Menu again

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to quit.



Sharpness Setting

● Press Menu button to enter main menu, press Down button to find the Sharpness option, press OK to enter, then press UP/DOWN to select, and press OK to save the setting. Press Menu again to quit.



HDR Setting

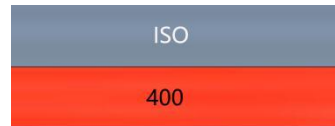
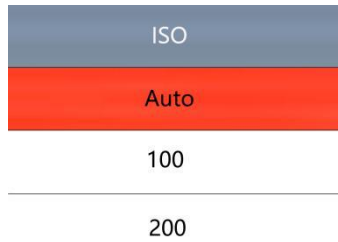
● Press Menu button to enter main menu, press Down button to find the HDR option, press OK to enter, then press UP/DOWN to select, and press OK to save the setting. Press Menu again to quit.



ISO Setting

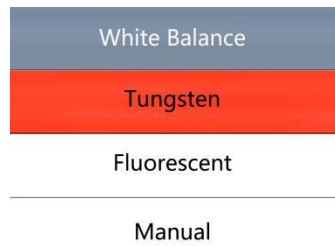
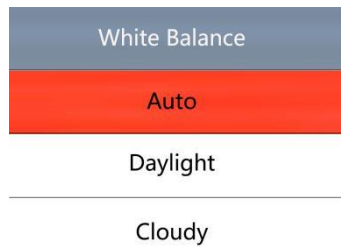
● Press Menu button to enter main menu, press Down button to find the ISO option, press OK to enter, then press UP/DOWN to select, and press OK to save the setting. Press Menu again to quit.

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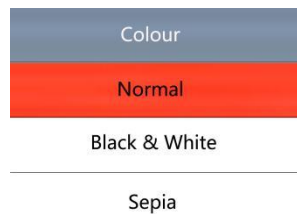
White balance setting

● Press Menu button to enter main menu, press Down button to find the White balance option, press OK to enter, then press UP/DOWN to select, and press OK to save the setting. Press Menu again to quit.



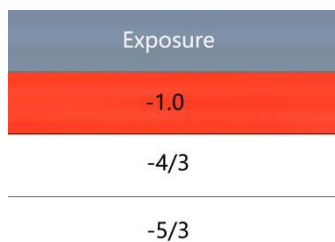
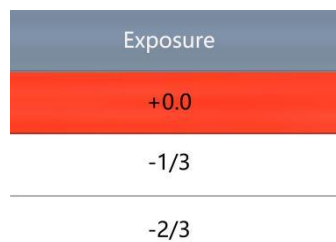
Color setting

● Press Menu button to enter main menu, press Down button to find the Color option, press OK to enter, then press UP/DOWN to select the color you need, and press OK to save the setting. Press Menu again to quit.

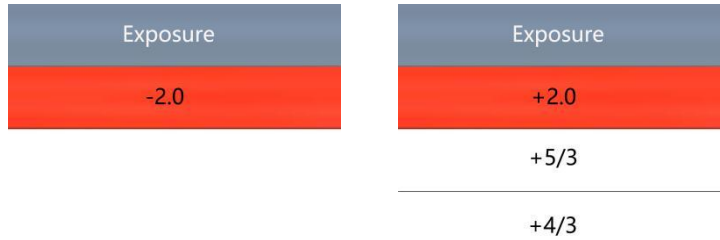


Exposure Compensation

● Press Menu button to enter main menu, press Down button to find the Exposure compensation option, press OK to enter, then press UP/DOWN to select the exposure value you need, and press OK to save the setting. Press Menu again to quit.



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Date/Time

● Press Menu button to enter main menu, press Down button to find the Date/Time option, press OK to enter, then press UP/DOWN to adjust, Press OK to adjust next option. After all settings are done, press the MENU button to save the settings and quit.



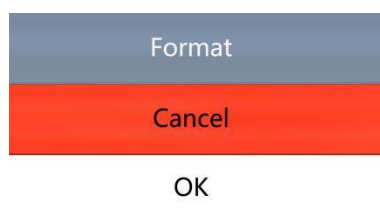
Optical frequency settings

● Press Menu button to enter main menu, press Down button to find the Date/Time option, press OK to enter, then press UP/DOWN to adjust, Press OK to adjust next option. After all settings are done, press the MENU button to save the settings and quit.



TF card format setting

● Press Menu button to enter main menu, press Down button to find the Format option, press OK to enter, then press UP/DOWN to select Cancel or Confirm. Select Cancel and press OK to give up the operation and return to the main menu; select Confirm and press OK, the camera will format the TF card.

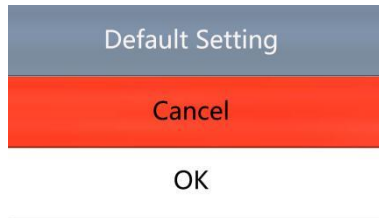


Warning: After the format operation, all the original data in the TF card will be cleared. Please confirm that all the data in the TF card have been backed up when performing this operation.

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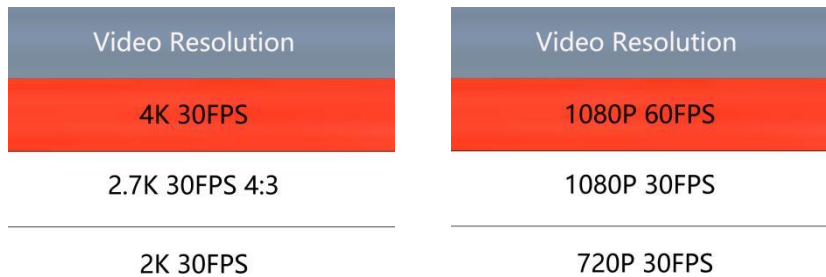
Systems setting

● Press Menu button to enter main menu, press Down button to find the Default Setting option, press OK to enter, then press UP/DOWN to select Cancel or Confirm. Select Cancel and press OK to give up the operation and return to the main menu; select Confirm and press OK, the camera will be reset to default settings.



Video Resolution setting

● Press Menu button to enter main menu under video mode, press Down button to find the resolution you need, press OK to confirm and save. Press Menu to quit.



Loop recording setting

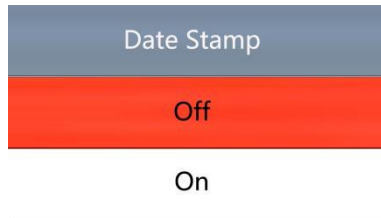
● Press Menu button to enter main menu under video mode, press Down button to find the Loop Recording option, press OK to enter. Select the duration you need and press OK to confirm and save. Press Menu to quit.



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Date Stamp setting

● Press Menu button to enter main menu under video mode, press Down button to find the Date Stamp option, press OK to enter. Use UP/DOWN buttons to select ON/OFF, press OK to confirm and save. Press Menu to quit.



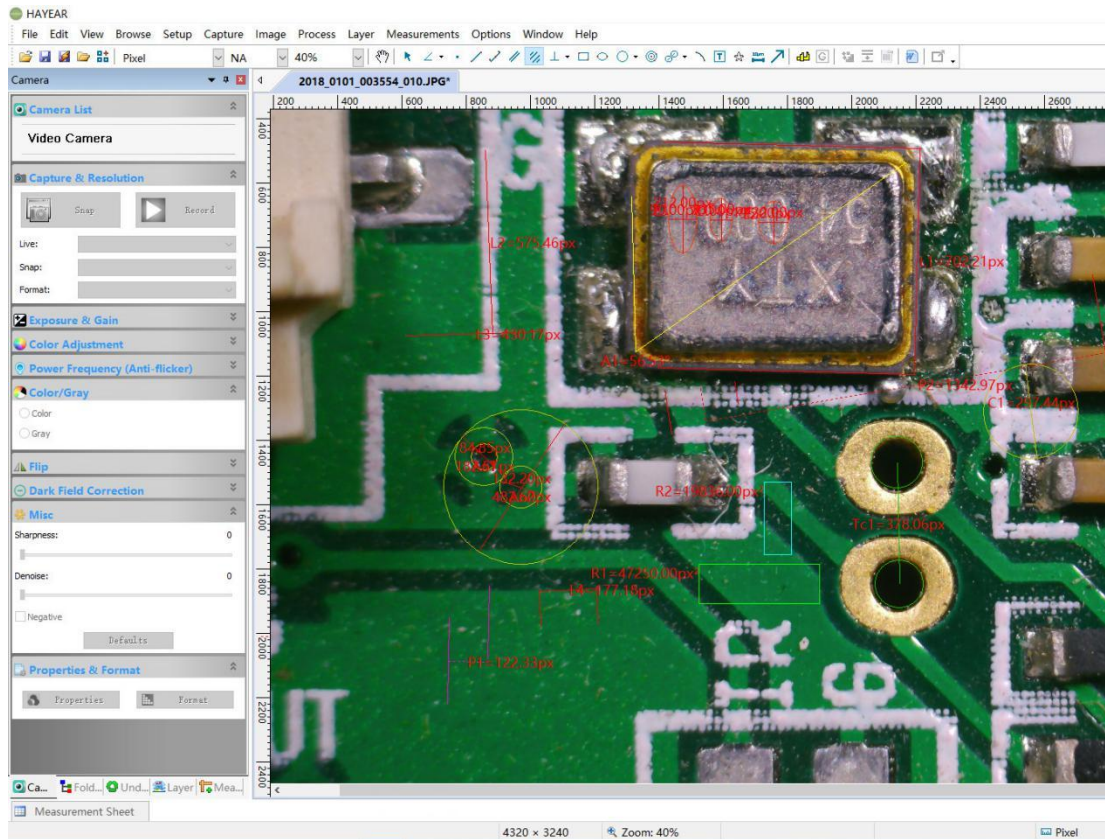
*Two ways to take picture

1. Press OK to take pictures.
2. Press "Capture" button on the remote control to take pictures..

*Same screen Comparison

● Press ON/OFF button, first press to freeze the left half of the screen, second press to free the right half of the screen, third press to freeze the whole screen, press again to exit same screen comparison function.

HAYEAR Image Software Instruction



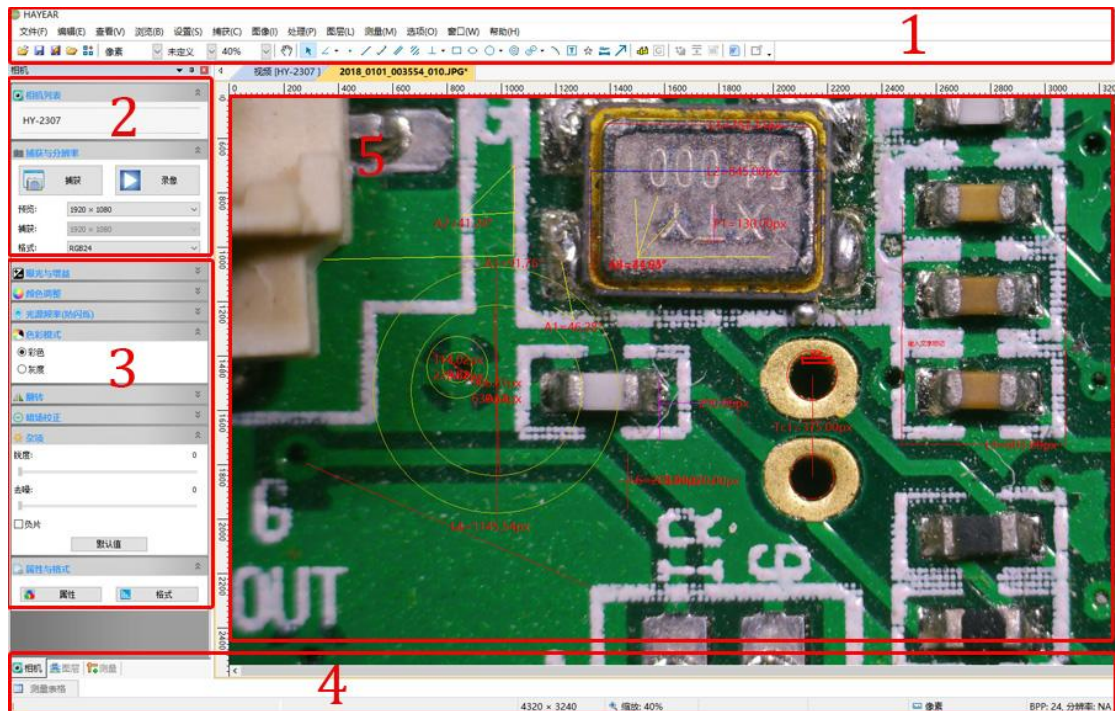
Overview

HAYEAR measurement software is dynamic image processing software specially developed for camera imaging, with the following features:

1. Support multi cameras, can be switched at any time as you need.
2. The image preview is rendered by GPU and supports dynamic image display with high frame rate and high resolution.
3. Support dynamic image measurement.
4. Image frame rate display interface, easy to use.

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User Interface



1. Main menu: Used to display setting interface, language setting, cross line setting, software information, measurement function setting, etc.
2. Toolbar: Take pictures/Recording video/Browse files.
3. Sidebar tab: Control panels, camera property settings, color settings, exposure settings, etc.
4. Status bar: Display camera information, Change user interface view, And image display related controls, such as full screen display, digital zoom, etc.
5. Image preview window, measurement preview, etc.

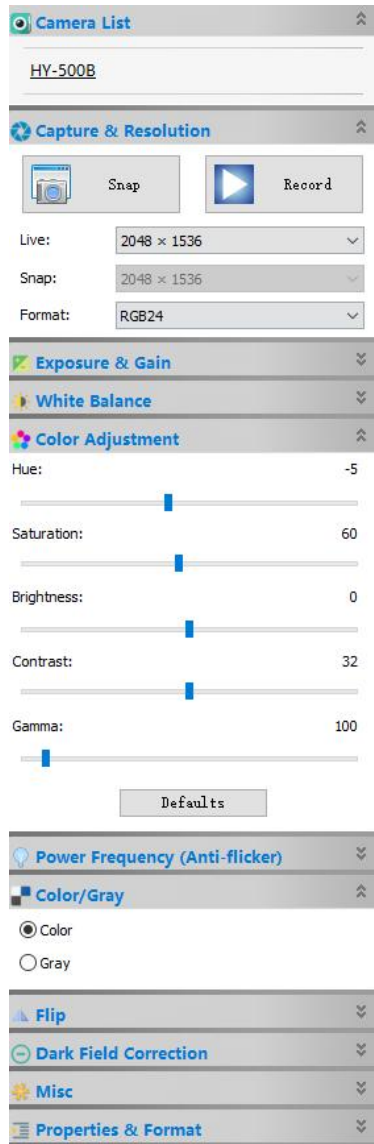
Images Capture

Software provides photo, video and measurement functions:

1. Snap: Click Snap button to capture a photo. Click the small arrow below the Snap button to pop up options to set the file format and photo size.
2. Record: Click the Record button to start recording. Click again to stop recording. Video files are MP4 in H.264 format.
3. Browser: Click the browser button, Use Windows Explorer to open the location where the image file is stored.



Camera Control



Camera device setting: Choose from different cameras, preview resolutions and output formats for images.

Image flipped horizontally and vertically

Exposure and gain control: If the connected camera does not support certain functions, such as the brightness target value, the corresponding interface controls will not operate.

White Balance: If the connected camera does not support certain functions, such as one-click white balance, the corresponding interface controls will not















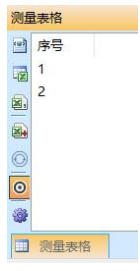
Color Adjustment: Hue setting, Saturation, Brightness, Contrast, Gamma. If the connected camera does not support certain functions, the corresponding interface controls will not operate.

Some general image parameter adjustments
Light source frequency setting
Color Mode Settings
Image flipped horizontally and vertically
Dark field correction

Restore the above parameters to their default values
Open the camera's property page, generally DirectShow type cameras can support this function.

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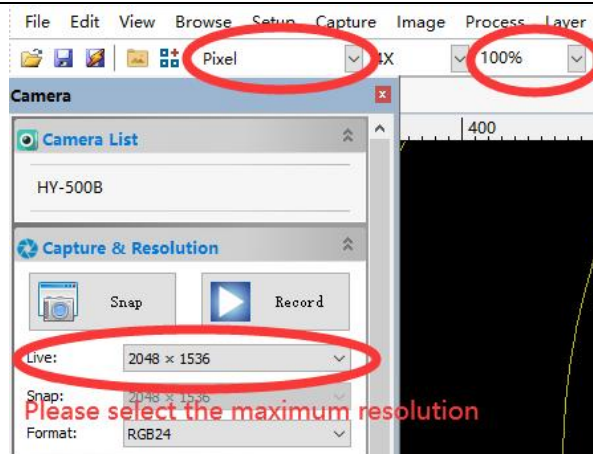
Measurement icon

| Images | Function | Description |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Track | Move or adjust the measurement tool, move the whole or a certain endpoint, press Delete button to delete. |
|  | Point | Mark a point on the image. |
|  | Line | Draw a line and measure the length of the line |
|  | Object select | Selected measurement objects can be moved or deleted |
|  | rectangle | Draw a rectangle and measure the area of the rectangle |
|  | irregular polygon | Draw an irregular polygon, right click the mouse to end the drawing, and measure the area of the polygon |
|  | Circle | Determine the circle with the center and radius, measure the area of the circle |
|  | Ring | Determine a ring with the same center and different diameters, and measure the area of the ring |
|  | Scale bar | |
|  | Text | Enter text, mark. |
|  | Angle | Measure angle |
|  | Calibrate | |
|  | Arc | Measure arc |
|  | Two parallels | |
|  | Export | Export the measurement data to a CSV file, which can be opened with WORD and EXCEL; the font size, color, length unit, angle unit, measurement table, measurement object and other parameters can be changed in the setting bar. Measurement data can also be viewed. To know more functions, please download the measurement instruction manual |

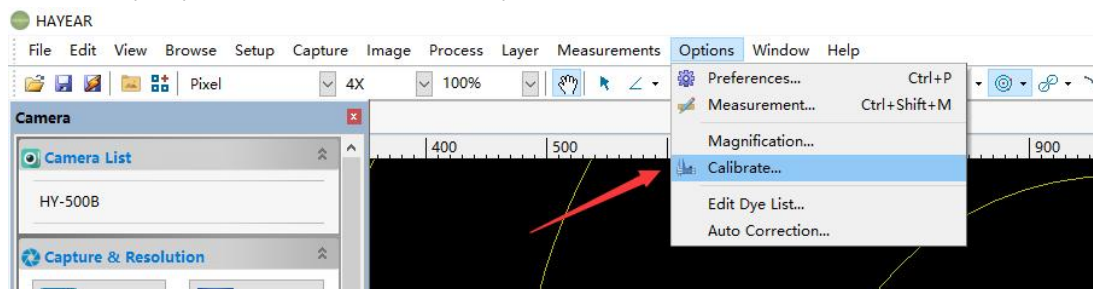
How to calibrate

1. Please select: Pixel, 100% and maximum resolution.

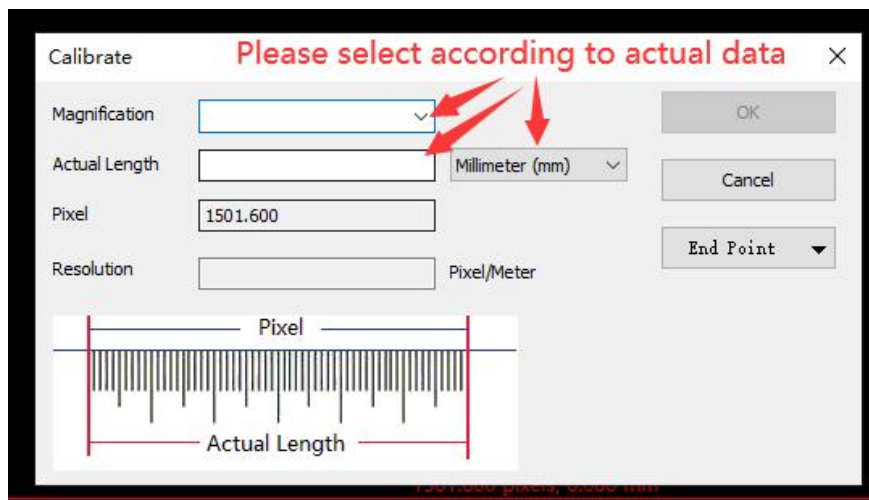
HAYEAR



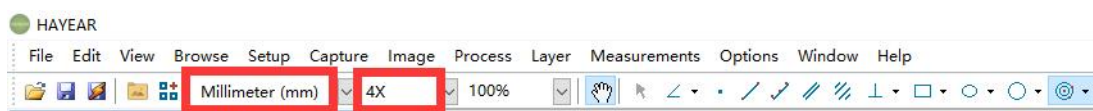
2. After step 1, please find "Calibrate" in "Option".



3. Enter actual data on the calibrate window



After the calibration, please adjust the unit and magnification.



Unit: The unit you need

Magnification: The magnification of the microscope you using

The measurement function can be used now.

Common malfunctions

The preview image is partially blank or black, and partially normal which is very likely that the GPU driver is not installed, please install the latest graphics card driver.

Qualified Certificate

The product has passed the tested,
approved for sale

Inspector: _____