

## HAYEAR HY-800M

# HAYEAR HY-800M 4K Electronic USB Microscope Camera User Manual

Model: HY-800M

## 1. INTRODUCTION

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The HAYEAR HY-800M is a high-performance 4K electronic USB microscope camera designed for various imaging applications. Featuring an 8MP Sony IMX377 CMOS sensor, it delivers clear, high-resolution images and video at 3840x2160 resolution. This digital eyepiece camera is compatible with most biological and stereo microscopes, as well as telescopes, offering versatile connectivity options including USB Type-C for Windows, Mac OS, and OTG-enabled mobile devices. This manual provides essential information for setting up, operating, and maintaining your HY-800M camera.

## 2. PACKAGE CONTENTS

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Verify that all items listed below are included in your package:

- 1 x HAYEAR HY-800M 8MP Digital Eyepiece Camera
- 1 x USB Type-C Cable
- 1 x Software Disc (for Windows/Mac OS measurement software)
- 1 x 30mm/30.5mm Adapter
- 1 x 31.7mm Adapter

## 3. KEY FEATURES

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- Equipped with a Sony 1/2.3-inch IMX377 Color CMOS Image Sensor.
- Video recording at 3840x2160 @ 25fps and 2592x1944 @ 25fps.
- Maximum snapshot resolution of 3840x2160.
- Adjustable parameters: Exposure, Gain, White Balance, and Color.
- USB Type-C 2.0 output with OTG support.
- Includes free measurement software for Windows and Mac OS.
- Standard camera diameter of 23.2mm, compatible with biological microscope eyepieces.
- Includes 30mm/30.5mm adapters for compatibility with most stereo microscope eyepieces.

- Includes a 31.7mm adapter for connection to telescopes or zoom lenses.
- Supports 12-bit/10-bit RAW RGB output format.

## 4. SETUP GUIDE

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### 4.1 Camera Overview

Familiarize yourself with the camera's components and specifications.

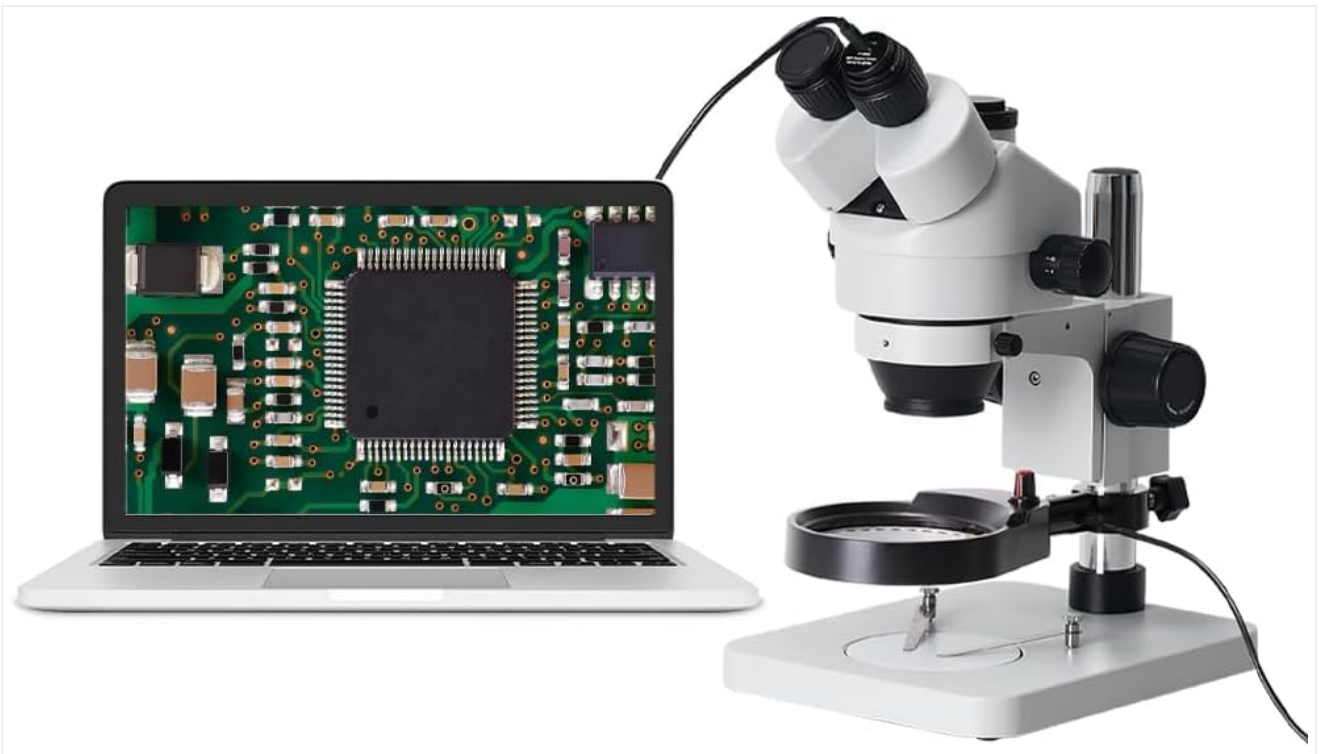


This image displays the front and back of the HY-800M camera. The front shows the Type-C 2.0 port, model number HY-800M, and specifications: 8MP Eyepiece Camera, 3840x2160 @25fps. The back shows the lens and sensor.

### 4.2 Mounting the Camera

The HY-800M camera is designed to replace the eyepiece of a microscope or telescope.

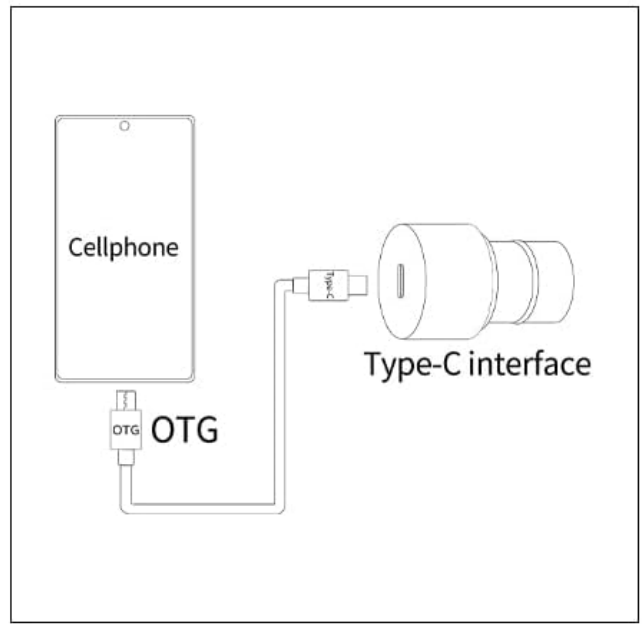
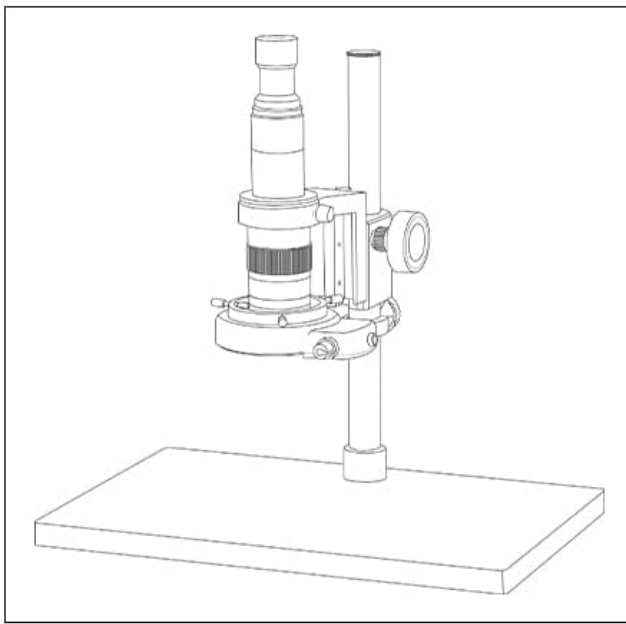
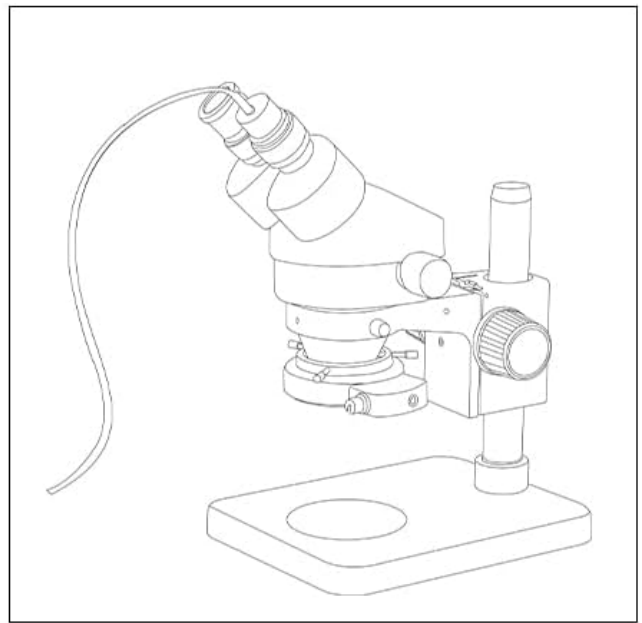
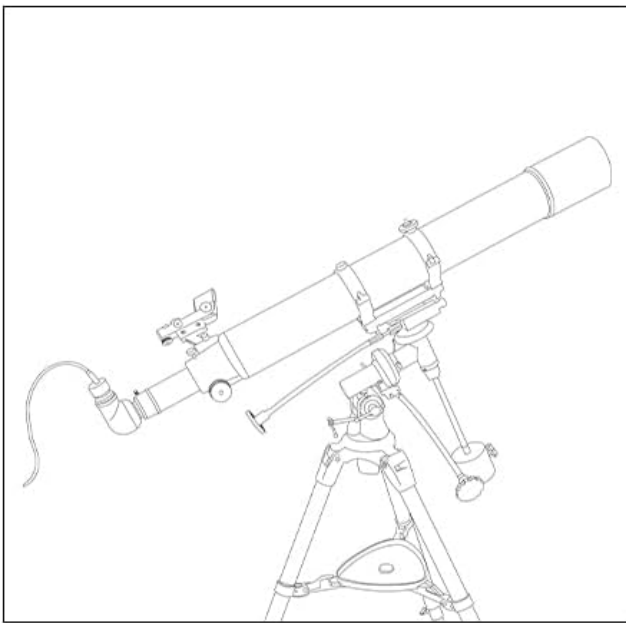
1. **For Biological Microscopes:** The camera has a standard diameter of 23.2mm and can be directly inserted into the eyepiece tube of most biological microscopes.
2. **For Stereo Microscopes:** Use the provided 30mm or 30.5mm adapter. Insert the camera into the appropriate adapter, then insert the adapter into the stereo microscope's eyepiece tube.
3. **For Telescopes/Zoom Lenses:** Use the provided 31.7mm adapter. Insert the camera into the adapter, then attach the adapter to your telescope or zoom lens eyepiece holder.



The HY-800M camera is shown connected to a stereo microscope, which is then connected via USB to a laptop. The laptop screen displays a magnified view of a circuit board, demonstrating real-time observation capabilities.



This image illustrates the HY-800M camera attached to a telescope. An adapter is used to secure the camera into the telescope's eyepiece holder, enabling astronomical observation and imaging.



This image presents four diagrams: top-left shows the camera connected to a telescope, top-right shows it connected to a microscope, bottom-left shows it on a microscope stand, and bottom-right illustrates connecting the camera to a cellphone via an OTG adapter and Type-C interface.

### 4.3 Software Installation

The included software disc contains drivers and measurement software for Windows and Mac OS. Follow the on-screen instructions for installation.

1. Insert the software disc into your computer's optical drive.
2. Run the installer executable (e.g., setup.exe for Windows or .dmg for Mac).
3. Follow the prompts to complete the installation.
4. Restart your computer if prompted.

### 4.4 Connecting to a Computer/Mobile Device

Use the provided USB Type-C cable to connect the camera to your device.

- **For PC/Mac:** Connect one end of the Type-C cable to the camera and the other end to an available USB port on your computer. The system should automatically detect the camera.
- **For OTG-enabled Mobile Devices:** Connect the camera to your mobile device using the Type-C cable and an OTG

adapter (not included unless specified). Ensure your mobile device supports USB OTG functionality.

## 5. OPERATING INSTRUCTIONS

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### 5.1 Launching the Software

After connecting the camera, launch the installed measurement software on your computer. The software interface will display the live feed from the camera.

### 5.2 Adjusting Image Settings

The software allows you to adjust various image parameters for optimal viewing and capture:

- **Exposure Control:** Adjust automatically or manually to brighten or darken the image.
- **Gain:** Increase or decrease signal amplification.
- **White Balance:** Set to Auto, Manual, or use One-click White Balance for accurate color representation.
- **Brightness, Contrast, Saturation, Hue:** Fine-tune these settings to enhance image quality.
- **Sharpness, Gamma, Backlight Contrast:** Further adjustments for image clarity and detail.

### 5.3 Capturing Images and Videos

Refer to the software's user interface for specific buttons and menus to perform the following actions:

- **Still Image Capture:** Click the 'Snapshot' or 'Capture' button to save a high-resolution image (up to 3840x2160).
- **Video Recording:** Click the 'Record' button to start and stop video recording. The camera supports various resolutions and frame rates as detailed in the specifications.

### 5.4 Using Measurement Functions

The included software provides measurement tools. Calibrate the software according to your microscope's magnification and then use the tools to measure dimensions, angles, and areas directly on the live or captured images.

## 6. MAINTENANCE

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Proper care and maintenance will ensure the longevity and optimal performance of your camera.

- **Cleaning:** Use a soft, dry cloth to clean the camera body. For the lens, use a specialized lens cleaning cloth and solution. Avoid abrasive materials or harsh chemicals.
- **Storage:** Store the camera in a cool, dry place away from direct sunlight and extreme temperatures. Use the original packaging or a protective case when not in use.
- **Handling:** Handle the camera with care to avoid dropping or impacting it, which could damage internal components.

## 7. TROUBLESHOOTING

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If you encounter issues with your HY-800M camera, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
No image displayed in software.	Camera not properly connected; Driver not installed; Software not recognizing camera.	Ensure USB cable is securely connected. Reinstall drivers from the software disc. Try a different USB port. Check software settings to ensure the correct camera is selected.
Image is dark or too bright.	Incorrect exposure or lighting.	Adjust the exposure settings in the software (auto/manual). Ensure adequate illumination on your specimen.

Problem	Possible Cause	Solution
Colors appear incorrect.	Incorrect white balance setting.	Adjust the white balance in the software (auto/manual/one-click).
Software crashes or freezes.	Software conflict; Outdated drivers; System resource issues.	Update your operating system and graphics drivers. Close other demanding applications. Reinstall the camera software.
Camera not recognized by mobile device.	Mobile device does not support OTG; Faulty OTG adapter.	Verify your mobile device's OTG compatibility. Try a different OTG adapter.

## 8. SPECIFICATIONS

Detailed technical specifications for the HAYEAR HY-800M camera:

Feature	Specification
Model Name	HAYEAR 4K Electronic USB Microscope Camera (HY-800M)
Image Sensor	Sony 1/2.3-inch Color IMX377 CMOS
Pixel Size	1.55µm(H) × 1.55µm(V)
Spectral Response	400nm ~ 700nm
Scan Method	Line-by-line scan, real 8-megapixel sensor, no compression, no interpolation
Image Output Format	MJPEG (compressed), YUV422 (compressed)
Video Recording (MJPEG)	3840x2160 @ 25fps; 2592x1944 @ 25fps; 2084x1536 @ 25fps; 1920x1080 @ 25fps; 1280x720 @ 25fps; 800x600 @ 25fps; 640x480 HDR @ 25fps
Video Recording (YUV422)	3840x2160 @ 1fps; 2592x1944 @ 1fps; 2084x1536 @ 1fps; 1920x1080 @ 5fps; 1280x720 @ 10fps; 800x600 @ 15fps; 640x480 HDR @ 15fps
Dynamic Range	74 dB (linear) / 85 dB (HDR)
Sensitivity	2400 mV/lux-sec
USB Output	Type-C 2.0, 480Mb/s
SNR	39dB
Operating Temperature	-25°C to 70°C
Storage Temperature	-30°C to 60°C
Adjustable Parameters	Brightness, Contrast, Saturation, Hue, Sharpness, Gamma, Gain, White Balance, Backlight Contrast, Exposure
UVC Protocol	USB Video Class (UVC)
White Balance	Auto/Manual, One-click White Balance supported

Feature	Specification
Exposure Control	Auto/Manual
Eyepiece Support Diameter	23.2mm (standard), 30.0mm, 30.5mm, 31.7mm (with adapters)
Supported Output Format	12-bit/10-bit RAW RGB
Material	Plastic
Color	Black
Weight	120 grams
Voltage	5 Volts
Compatible Devices	Notebook, Personal Computer
Power Source	Corded Electric

## 9. WARRANTY AND SUPPORT

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For warranty information and technical support, please refer to the documentation included with your purchase or contact HAYEAR customer service through their official website or the retailer where the product was purchased. Keep your proof of purchase for warranty claims.