

RyecoCam FHD Stand alone camera MANUAL

FULL HD RyecoCam no. R-FHD-2000-1201



**Instruction Manual
Gebrauchsanleitung
Mode d'emploi**

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Figure: Rear/top view of the RyecoCam RFHD camera

Before starting the camera, please connect the standard HDMI - C-mount camera to the camera adapter and insert it into the microscope's 3rd photo tube .

1.1 USB Video Mode

1. Plug **12V/ 1A** power cable into DC 12V slot to supply power for the camera. The **LED Indicator** will turn into red;
2. Press **ON/OFF Button** to start the camera and the **LED Indicator** will turn into blue;
3. Plug the USB cable which comes with the camera into **USB Video** to connect the video to the computer;
4. Open **ImageView** software, start the RyecoCam R-FHD-2000 by clicking the camera model name listed in **Camera List**. For more details please refer to the **ImageView** help manual;

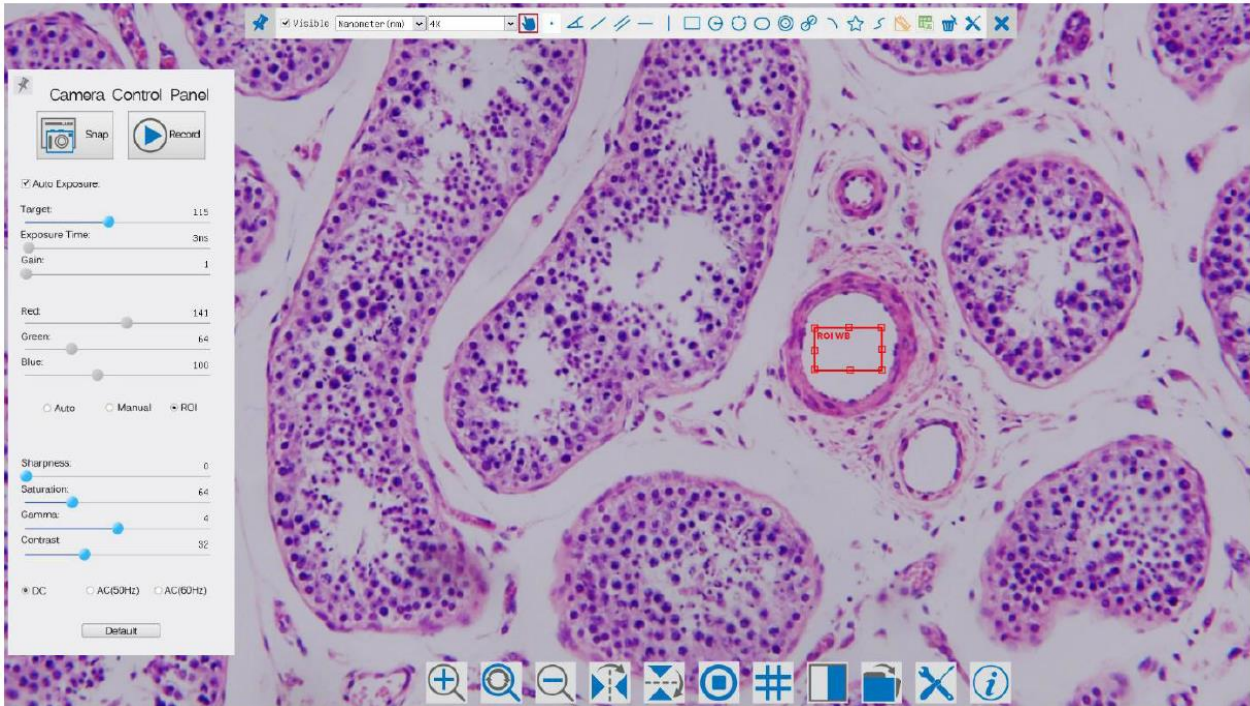
1.2 HDMI MODE




1. Plug the HDMI cable into the **HDMI Port** to connect the Ryecocam camera to **HDMI** display;
2. Plug a USB mouse into **USB Mouse** to get control of the camera by using built-in software **XCamView**;
3. Plug 12V/ 1A power adapter into **Power Interface** to supply power for the camera. The **LED Indicator** will turn into red;
4. Insert SD card into **SD Card Slot** for saving captured images and recorded videos;
5. Press **ON/ OFF Button** to start the camera. The **LED Indicator** will turn into blue;
6. Move mouse cursor to the left side of the video window, a **Camera Control Panel** will appear. It includes **Manual/ Automatic Exposure, White Balance, Sharpness** and other functions, please refer to 8.1 for details;
7. Move mouse cursor to the bottom of the video window and a **System Camera Control Toolbar** will appear.
Operations like **Zoom In, Zoom Out, Flip, Freeze, Cross Line and Comparison** can be realized. Please refer to 8.2 for details;
8. Move mouse cursor to the upper side of the video window, a **Measurement Toolbar** with calibration and other measurement tools will appear, please refer to 8.3 for details; The measurement data can be output with ***.CSV** format.

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2.0 Brief Introduction of Ryecocam UI and Its Functions

The RyecoCam R-FHD-2000 UI shown in Fig. 2 includes a **Camera Control Panel** on the left side of the video window, a **Measurement Toolbar** on the upper side of the video window, a **System Camera Control Toolbar** on the bottom of the video window.



Notes	
1	When users move mouse cursor to the left side of the video window, the Camera Control Panel will pop up automatically;
2	When users move mouse cursor to the bottom of the video window, the Synthesis Camera Control Toolbar will pop up automatically;
3	When user moves mouse cursor to the bottom of the video window, the Synthesis Camera Control Toolbar will pop up automatically.
4	Move the mouse cursor to the upper side of the video window, a Measurement Toolbar will pop up for the calibration and measurement operations. When user left-clicks the Float/Fixed button  on the Measurement Toolbar , the Measurement Toolbar will be fixed. In this case the Camera Control Panel will not pop up automatically even if users move mouse cursor to left side of the video windows. Only when user left-clicks the  button on the Measurement Toolbar to exit from measuring procedure will they be able to do other operations on the Camera Control Panel , or Synthesis Camera Control Toolbar . During the measuring process, when a specific measuring object is selected an Object Location&Attributes Control Bar  will appear for changing location and properties of the selected objects.

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2.1 The Camera Control Panel on the Left Side of the Video Window


The **Camera Control Panel** controls the camera to achieve the best image quality according to the specific applications; It will pop up automatically when mouse cursor is moved to the left side of the video window (in measurement status, the **Camera Control Panel** will not pop up. Only when measurement process is terminated will the **Camera Control Panel** pop up by moving mouse cursor to the left side of the video window). Left-clicking button to achieve **Display/ Auto Hide** switch of the **Camera Control Panel**;

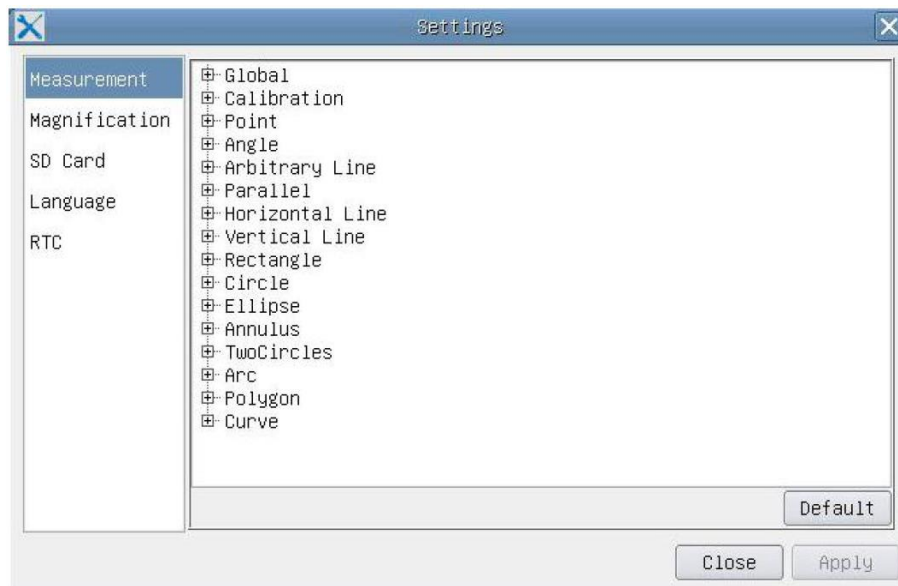
Camera Control Panel	Function	Function Description
	Snap	Capture image from the current video window
	Record	Record video from the current video window
	Auto Exposure	When Auto Exposure is checked, the system will automatically adjust exposure time according to the value of exposure compensation
	Target	Available when Auto Exposure is checked. Slide to left or right to adjust Target according to the current video brightness to achieve proper brightness value
	Exposure Time	Available when Auto Exposure is unchecked. Slide to left or right to reduce or increase exposure time, adjusting brightness of the video
	Gain	Adjust Gain to reduce or increase brightness of video. The Noise will be reduced or increased accordingly
	Red	Slide to left or right to decrease or increase the proportion of Red in RGB on video
	Green	Green is base for reference and cannot be adjusted
	Blue	Slide to left or right to decrease or increase the proportion of Blue in RGB on the video
	White Balance	Auto: White Balance adjustment according to the window video; Manual: Slide the Red or Blue to manually set the video White Balance ; ROI: Set the White Balance according to the ROI . The ROI can be resized and moved;
	Sharpness	Adjust Sharpness level of the video window
	Saturation	Adjust Saturation level of the video window
	Gamma	Adjust Gamma level of the video. Slide to the right side to increase gamma and to the left to decrease gamma.
	Contrast	Adjust Contrast level of the video. Slide to the right side to increase contrast and to the left to decrease contrast.
	DC	For DC illumination, there will be no fluctuation in light source so no need for compensating light flickering
	AC(50HZ)	Check AC(50HZ) to eliminate flickering "strap" caused by 50Hz illumination
AC(60HZ)	Check AC(60HZ) to eliminate flickering "strap" caused by 60Hz illumination	
Default	Set all the settings in the Camera Control Panel to default values	

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2.2 Icons and Functions of the Synthesis Camera Control Toolbar at the Bottom of the Video Window

Icon	Function	Icon	Function
	Zoom In the Video Window		Zoom Out the Video Window
	Reset Zoom to Original 1X		Horizontal Flip
	Vertical Flip		Video Freeze
	Compare Image with the current video		Display Cross Line
	Browse Images and Videos in the SD Card		Settings
	Check the Version of XCamView		

The  Setting function is relatively more complicated than the other functions. Here are more info about it:



Global: Used for setting digits behind the decimal point for measurement results;
Calibration Line Width: Used for defining width of the lines for calibration;
Color: Used for defining color of the lines for calibration;
EndPoint Type: Used for defining shape of the endpoints of lines for calibration: Null means no endpoints, rectangle means rectangle type of endpoints. It makes alignment more easily;

Point, Angle, Line, Horizontal Line, Vertical Line, Rectangle, Circle, Ellipse, Annulus, Two Circles, Polygon, Curve:

Left-click the besides the measuring patterns mentioned above will unfold the corresponding attribute settings to set the individual property of the measuring objects.

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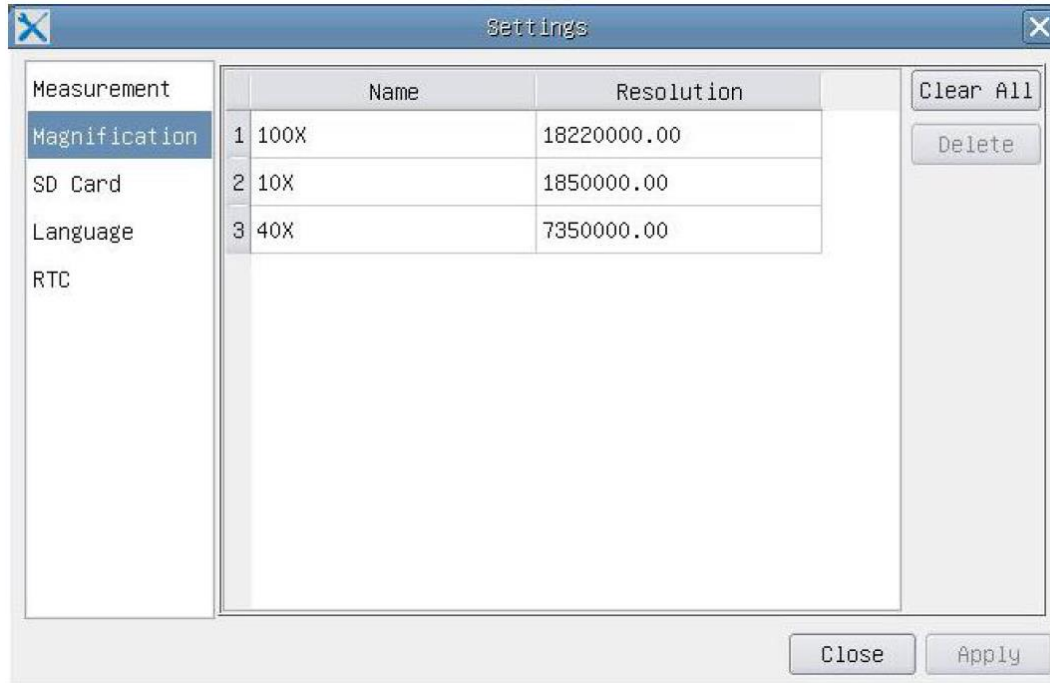


Figure: Comprehensive Magnification Calibration Management Settings Page

- Name:** Names such as 10X, 40X, 100X are based on magnification of the microscopes. For continuous zoom microscopes, ensure that the selected magnification coincides with the scale alignment line on the microscope zoom knob;
- Resolution:** Pixels per meter. Devices like microscopes have high resolution value;
- Clear All:** Click the **Clear All** button will clear the calibrated magnifications and resolutions;
- Delete:** Click **Delete** to delete the selected item for specific resolution; Figure 5 Comprehensive Setting of SD Card Setting Page



Current File System: The maximum file **FAT32** can store is of 4G Bytes; for **EXFAT**, it's 2048G Bytes. Suggest converting **FAT32** file into **EXFAT** format on a PC; **Unknown Status:** SD card not detected or the file system is not identified.

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Figure Rycocam FHD Comprehensive Setting of Language Selection Setting Page

- English:** Set language of the whole software into English;
- Simplified Chinese:** Set language of the whole software into Simplified Chinese;
- Traditional Chinese:** Set language of the whole software into Traditional Chinese;
- Korean:** Set language of the whole software into Korean;
- Thailand:** Set language of the whole software into Thailand;

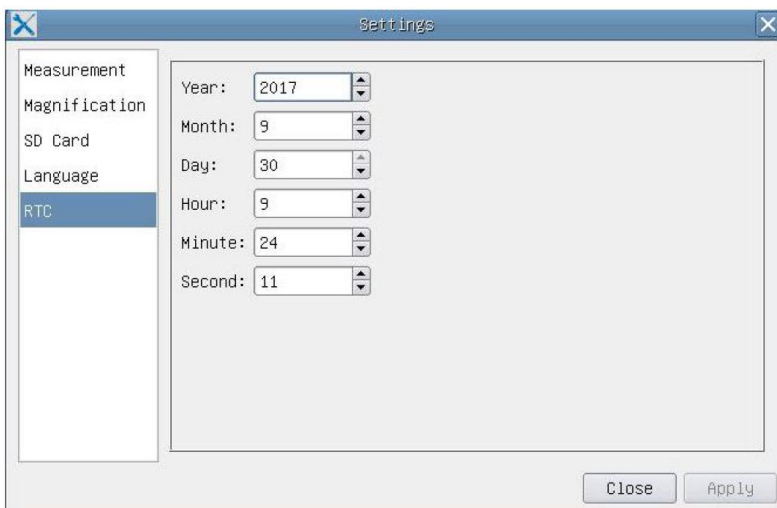


Figure: The Real Time Clock Setting

- Year:** Current Year
- Month:** Current Month
- Day:** Current Day
- Hour:** Current Hour
- Minute:** Current Minute
- Second:** Current Second















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2.3 The Measurement Toolbar on the Upper Side of the Video Window









The **Measurement Toolbar** will pop up when moving mouse cursor to any place near the upper side of the video window. Here are the introduction of the various functions on the **Measurement Toolbar**:




Figure: The Measurement Toolbar Button on the Upper Side of the Video window


Icon	Function
	Float/ Fix switch of the Measurement Toolbar
<input checked="" type="checkbox"/> Visible	Define measuring object in Show up/ Hide mode
Nanometer (nm)	Select the desired Measurement Unit
4X	Choose the same Magnification as the microscope to ensure accuracy of measurement result when measurement unit is not in Pixel unite
	Object Select
	Point
	Angle
	Arbitrary Line
	Parallel
	Horizontal Line
	Vertical Line
	Rectangle
	Circle
	Ellipse
	Annulus
	Two Circles and Center Distance
	Arc

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	Polygon
	Curve
	Make Calibration to determine the corresponding relation between magnification and resolution, this will establish the corresponding relationship between measurement unit and the sensor pixel size. Calibration needs to be done with the help of a micrometer. For detailed steps of carrying out calibration please refer to ToupView help manual.
	Export the measurement information to CSV file(*.csv)
	Delete All the Measurement Objects
	Setting
	Exit from Current Measurement Mode
	When the measurement ends, left-click on a single measuring object and the Object Location & Properties Control Bar will show up. The icons on the control bar mean Move Left, Move Right, Move Up, Move Down, Color Adjustment and Delete .

1) When user left-clicks **Display/Hide** button  on the **Measurement Toolbar**, the **Measurement Toolbar** will be fixed. In this case the **Camera Control Panel** will not pop up automatically even if moving mouse cursor to the left side of the video window. Only when users left click the "X" button on the **Measurement Toolbar** to exit from the measurement mode will they be able to do other operations in the **Camera Control Panel**, the **Auto Focus Control Panel** or the **Synthesis Camera Control Toolbar**.

2) When a specific measuring object selected during the measuring process, the **Object Location & Attributes Control**

Bar  will appear for changing the object location and properties of the selected objects.



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Auto Focus HDMI Full HD Camera RyecoCam

It is a multiple interface (HDMI+WiFi+SD card) CMOS camera with autofocus function and it adopts ultra-high performance Sony CMOS sensor as the image-picking device. HDMI+WiFi are used as the data transfer interface direct to the HDMI scree/display without computer).

- Sensor: 1080P/2M/Sony
- Pixel size (um): 3.75x3.75
- Sensitivity, Dark Signal: 1120mv with 1/30s, 0.15mv with 1/30s
- FPS/Resolution: 60/1920*1080 (HDMI), 25/1920x1080 (WiFi)
- Exposure: 0.06ms~918ms

User interface operation: with USB Mouse to operate on the embedded RyecoXCamView, software on Windows / Linux / OSX / Android Platform

- Image Capture: JPEG Format with 2M Resolution in SD Card
- Video Record: ASF Format 1080P 30fps in SD Card(8G)

Ryf SAP no.: R-FHD-2000-1201 (for the entire Kit)