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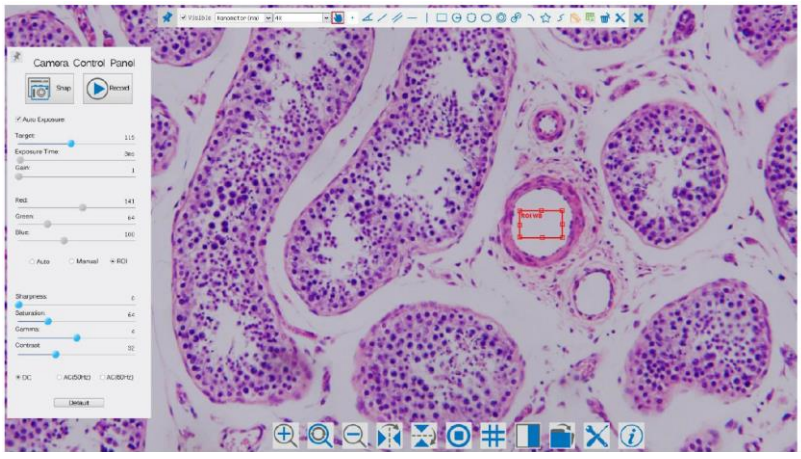
Manual for: RyecoCam 4000 Digital-Microscope

R-FHD-4000-1001

ryeco microscopes swiss quality

Instruction Manual (mode d'emploi)



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Before starting the turn key system please reside the software manual.

1. Press **ON/OFF Button** to start the camera and the **LED Indicator** will turn into blue;
2. Open **ImageView** software, start the RyecoCam-4000 by clicking the camera model name listed in **Camera List**..
3. Plug a USB mouse into **USB Mouse** to get control of the camera by using built-in software **XCamView**;
4. Insert SD card into **SD Card Slot** for saving captured images and recorded videos.
5. 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.
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, if wished are may** be realized. Please refer 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 output is **.CSV** format.

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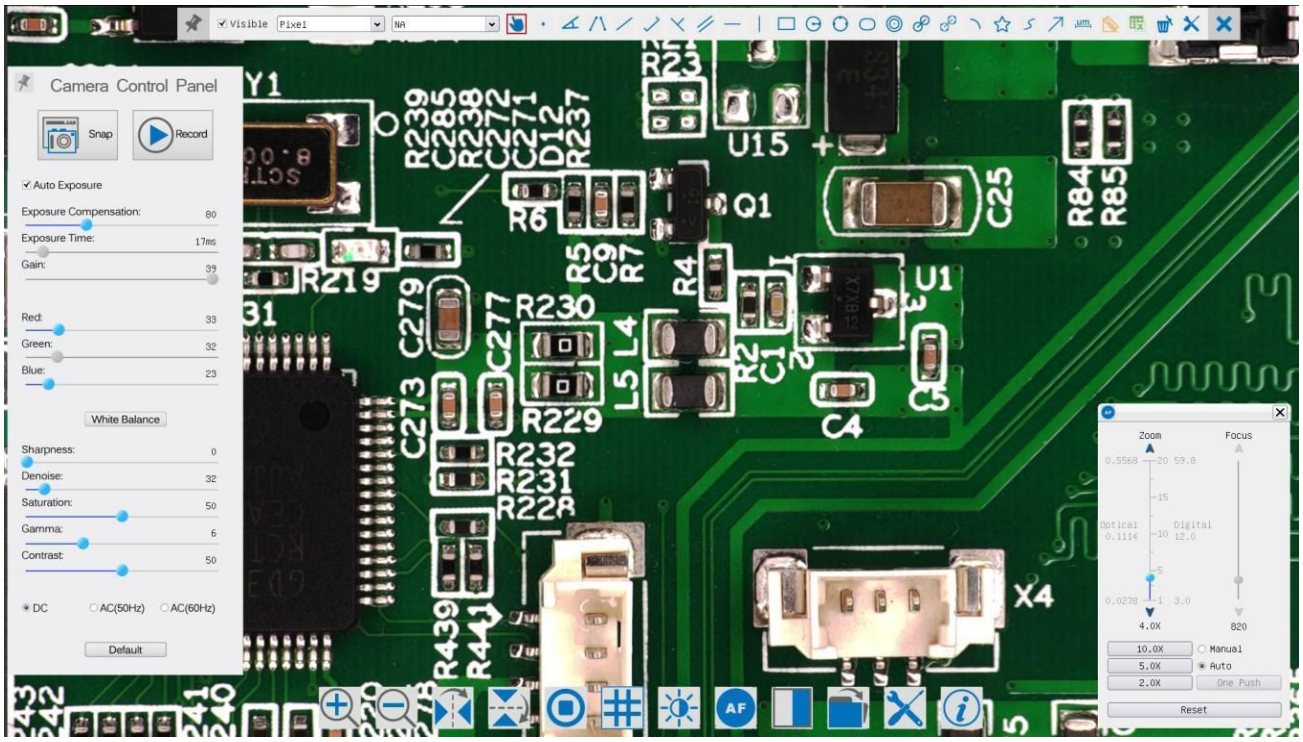
Manual for: RyecoCam 4000 Digital-Microscope

Brief Introduction of Ryecocam UI and Its Functions

The RyecoCam 4000 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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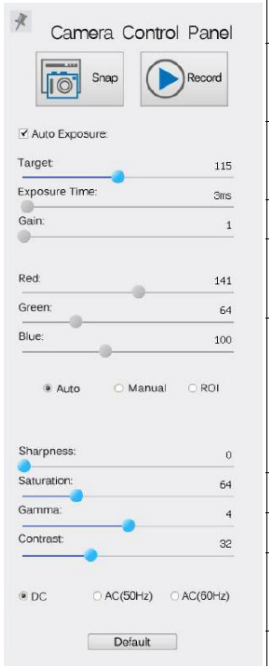
Manual for: RyecoCam 4000 Digital-Microscope

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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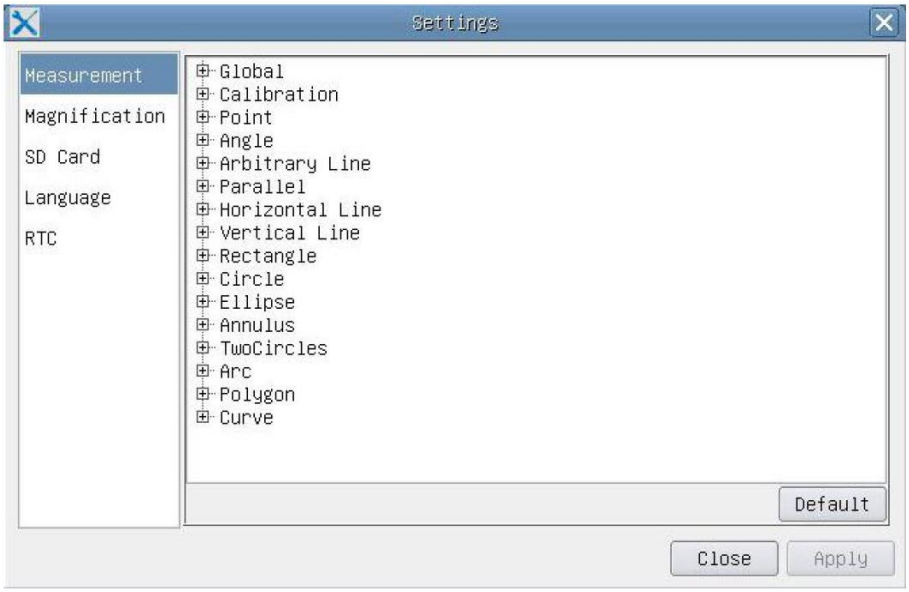
Manual for: RyecoCam 4000 Digital-Microscope

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 Zoomto 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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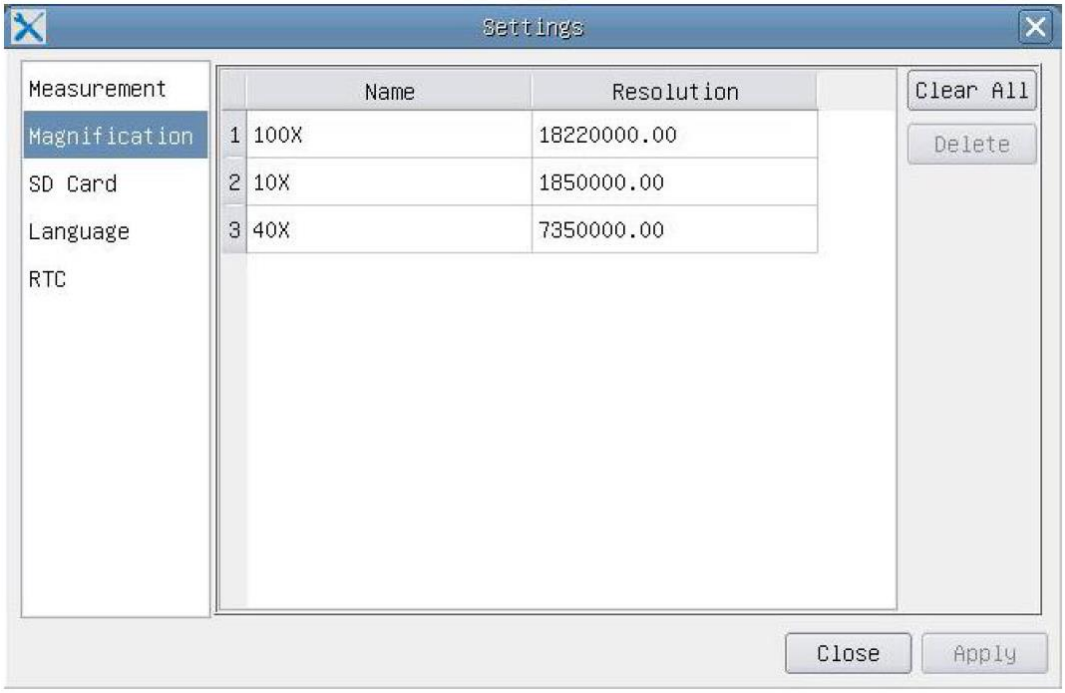
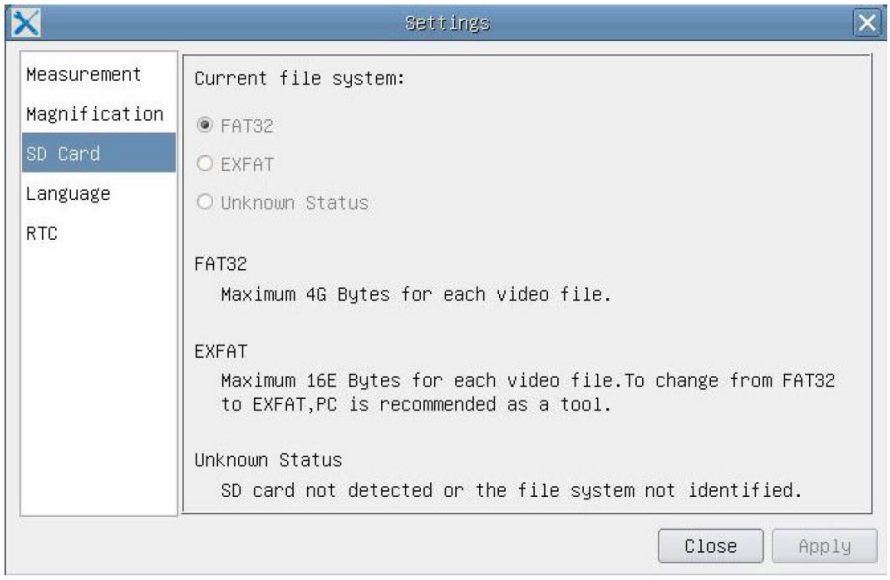


Figure: Comprehensive Magnification Calibration Management Settings Page

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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Manual for: RyecoCam 4000 Digital-Microscope

Figure Rycocam FHD Comprehensive Setting of Language Selection Setting Page

English: Set language of the whole software into English (only in English / August 2022;

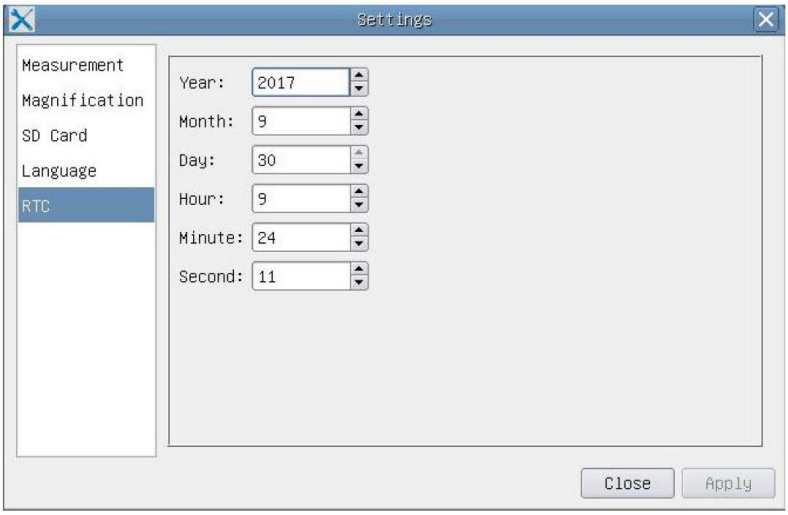

Figure: The Real Time Clock Setting

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

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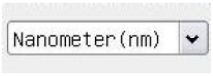
Manual for: RyecoCam 4000 Digital-Microscope

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**
	Define measuring object in **Show up/ Hide** mode
	Select the desired **Measurement Unit**
	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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Manual for: RyecoCam 4000 Digital-Microscope

	**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**.

When user left-clicks Display/Hide button on  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 doing other operations in the Camera Control Panel, the Auto Focus Control Panel or the Camera Control Toolbar.

When a specific measuring object selected during the measuring process, the Object Location and Attributes Control Bar  will appear for changing the object location and properties of the selected objects.

Zoom factor:	**Magnification:**
Step 1 =	1.7x
Step 20 =	34x
Steples adusjable from 1x to 20x with the mouse in the Software.	(Digital zoom max. 340x)
Pre-calibrated are: 2x, 5x and10x	
WD= 196mm =t FOV max. of 185mm x 104mm	
WD= 196mm = FOV min. of 1.2mm x 0.67mm	

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Manual for: RyecoCam 4000 Digital-Microscope

RyecoCam-4000 Full HD Digital Microscope:

Eyepiece-less, compact video zoom system in HDMI quality with very good price/performance ratio. Full HD live images in 1920 x 1080P and 30/60 fps.
Very large working distance (196mm) and a motorized 20x zoom (1:20x / mag. from 0.028x -0.56x).
The extremely large field of view from 200mm x 112m to 10mm x 5.6mm with the largest magnification.
Working distance is possible from 156mm to 196mm.

Easy operation/control via mouse:

- Controllable via Cordless USB Mouse
- 2 pieces USB 2.0 port for Wi-Fi mouse, etc.
- Photo recording in JPEG format 2MP to SD card
- Video recording (with 1080P) 30 B/sec. To SD card
- Fast image saving (via SD card)
- Crosshairs may be showed
- Simple comparison measurement software

Zoom system (optical):

- Magnification range 1.7x to 34x*,optical with 15" FHD monitor (*with the digital zoom x 10*)
- Working distance standard: AA=196mm
- At min. magnification = 200 x 112mm field of view
- At max. magnification = 10 x 5.6mm field of view
- *Digital zoom max. magnification of 340x

LED lighting system:

Attached ring LED illumination Ryf NKl-12 LED with built-in Ryf special diffuser, continuously adjustable for shadow-free illumination.

Full HD / HDMI industrial camera:

- FHD resolution 1920x1080 / 30/60 fps
- Sensor Sony 1/2.8" // Pixel size 2.9 x 2.9um
- Frame rate 60 frames/sec (fast frame rate)
- Image storage and data storage via SD card
- Output: HDMI signal, USB and with SD card slot.

LCD Screen:

- 15" LCD, Full HD 16:9 color monitor, 1920x1080P (size = 345mm x 195mm)

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R-FHD-4000-1001 RyecoCam 4000 digital microscope

Consisting of digital camera with magnification range from 1.7x to 34x, working distance of 196 mm, Full HD camera with HDMI output, resolution 1920x1080P, sensor 1/2.8", image rate 60 fps, interface 2x USB and 1x SD slot, stand with focus drive (Nikon), 15" LCD color monitor, LED ring light Ryf NKL-12 LED, including SD card and Wi-Fi mouse.

Dimensions: L= 370mm /.280mm x t= 395mm x h= 620mm max.

Ryf Ryeco Swiss Warranty & Service Package & Assembly / Calibration
SAP order number: R-FHD-4000-1001
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