



User Manual

Multiple HDMI/USB/SD-card microscope camera, HD-Ultra

Order no. 0 200 631-6



General Description

This is a HDMI & USB camera that belong to XCAM family of ToupCam products. It is outstanding because of its easy operation via mouse and friendly UI interface. Besides, carefully selected sensor with high sensitivity and low noise guarantee that it could be used in many fields, such as scientific research, education, industrial inspection and so on. The following is the detailed characteristics:

- All in 1 (HDMI+USB+SD card) C-mount camera with high sensitivity CMOS sensor;
- Simultaneous HDMI & USB output;
- Built-in image capture & video record to SD card;
- Built-in camera control panel for mouse control;
- Built-in toolbar including zoom,mirror,comparison,freeze,cross,browser functions;
- Built-in image & video browsing,display & play;
- Ultra-Fine color engine with perfect color reproduction capability;
- Dedicated video & image processing application ToupView;
- Standard UVC (USB);

Order no.	Sensor	Sensor Size	Pixel(um)	Frame Rate	Exposure Range
0 200 631-6	Sony IMX236	1/2.8"(5.5X3.4)	2.8 x 2.8	60@1920x1080(HDMI) 30@1920x1080(USB)	0.4ms~1s

Power on the Camera



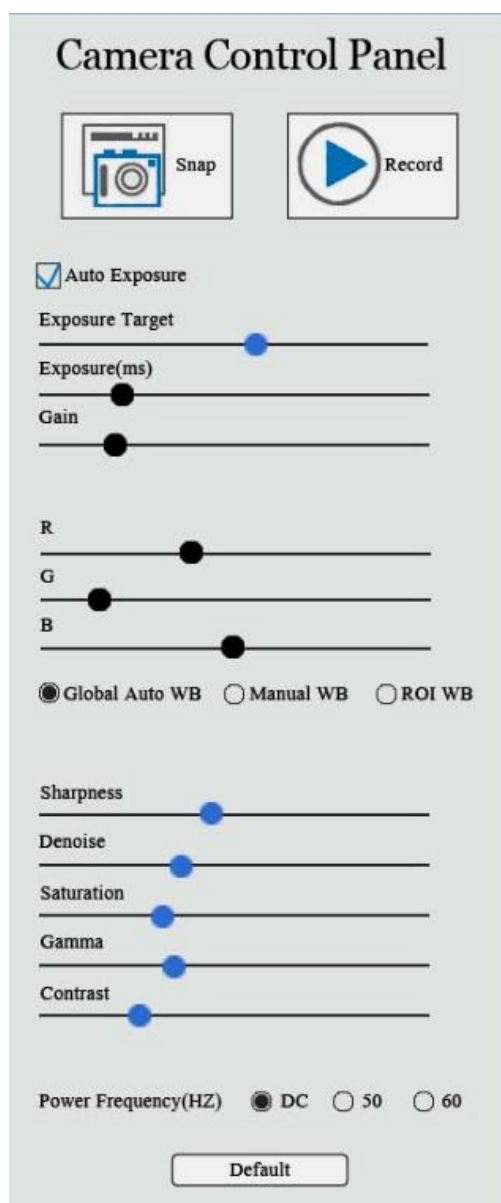
As seen in the above picture, to power on the camera, please plug the power adapter into the DC12V port first. At this time, the LED on the back panel will be turned on and shown as red. To put the camera into a working state, please push the On/Off button once. Then the LED will switch the color from red to blue. The blue LED indicates that the camera is working now.

HDMI output


Connect the camera and the HDMI display device (such as monitor, projector and so on) with a HDMI cable. The video could be shown on the HDMI display device. To guarantee the best performance, the HDMI display device should support full HD display (1920 x 1080 resolution). If the edge of the video is cut when displayed on the display device, this is due to the reason that the display device cannot support full HD display.


Camera Control Panel


When connectthe camera with a USB mouse, a mouse icon will appear in the HDMI display device. The location of the mouse will determine whether the camera control panel is shown or not. When drag the mouse to the left border of the screen, a camera control panel will appear. Like the following:



When the mouse leave the left part of the screen, the camera control panel will disappear immediately.

1. **Snap** Button  Click this button will save the picture into the SD card. Please insert the SD card first before click this button

2. **Record** Button  Click this button will save the video into the SD card. Please insert the SD card first before click this button. To guarantee the video is smooth, high speed SD card is preferred. When the video is saving into the SD card, the

button will change into  and user can click this button to stop the video recording.










3. **Auto Exposure**: Check the auto exposure radio button will put the camera into the auto exposure mode. **Exposure Target** is available to adjust the target brightness of the exposure. **Exposure** and **Gain** will be forbidden when the camera is in auto exposure state. Uncheck the auto exposure radio button will put the camera into the manual exposure mode. Exposure and Gain are available for adjustment
4. **Global Auto WB, Manual WB and ROI WB**: Three white balance modes are available to adjust the white balance of the video, which are **Global Auto WB**, **Manual WB** and **ROI WB**.
 - **Global Auto WB** mode: In global auto white balance mode, the white balance will be calculated automatically and continuously. The new white balance will be updated to RB sliders (G slider will remain a constant value).
 - **Manual WB**: RB slider is used for the white balance adjustment in the manual white balance mode. Drag mouse on different slider will change the intensity in corresponding color channel.
 - **ROI WB** mode: When enable the ROI white balance mode, a blue rectangle will appear in the video like the following. The area inside the blue rectangle will be considered as a white spot and used for the white balance operation. This rectangle supports 2 operations by mouse, including changing the location and the size of this rectangle. The location of the area could be changed by dragging the rectangle using mouse to a specified location. To change the size of the area, please put the mouse inside the rectangle first and then screw the middle button of the mouse. If the ROI white balance mode is selected, this rectangle will appear together with the camera panel. To show the **ROI WB** rectangle, drag the mouse to the left boarder of the screen, the camera control panel will show. If the ROI white balance mode is selected, the **ROI WB** rectangle will show at the same time. If the mouse leave the left boarder of the screen, the camera control panel will disappear immediately. But after the camera control panel disappear, this rectangle will stay alive for 8 seconds for later user operation. If no operation on the rectangle, the rectangle will disappear after the 8 seconds. If operation is being operated on the rectangle, the rectangle will be always alive.



5. **Sharpness**: Adjust the sharpness level of the video
6. **Denoise**: Adjust noise level of the video
7. **Saturation**: Adjust the saturation level of the video.
8. **Gamma**: Adjust the gamma level of the video.
9. **Contrast**: Adjust the contrast level of the video.
10. **Power Frequency(HZ)**: If the microscope illumination using AC power, the light

source may have frequency that is related to the power frequency. This frequency will result in a flicker bar in the image. Select the proper power frequency will remove the flicker bar of the video.

Tool Bar

1. **ZOOM In** : Digital zoom in function. Dedicated demosaic algorithms is used with less artifact when zooming in.
2. **ZOOM Out** : Digital zoom out functions.
3. **Horizontal Flip** : Horizontally flip the video
4. **Vertical Flip** : Vertically flip the video.
5. **Freeze/Resume** : Freeze and resume the video
6. **Compare** : When click this button, the left part is the content of the SD card and the right part is the live video. You can click the picture in the SD card that you want to compare. Then the screen will be split into two parts in horizontal direction for comparison.
7. **Division Cancel** : cancel the comparison
8. **Browser** : click the Browser function to check the content of the SD card. Click the video file for preview and click the images for display.
9. **Cross** : Show cross when click this button and click again to cancel. Red and green cross will be shown alternatively.