CÁMARA DE MICROSCOPIO USB/LAN/WIFI
USB/LAN/WIFI MICROSCOPE CAMERA
CAMÉRA MICROSCOPE USB/LAN/WIFI

REF. - CODE - RÉF. - HGB009

Este manual es parte inseparable del aparato por lo que debe estar disponible a todos los usuarios del equipo. Le recomendamos leer atentamente el presente manual y seguir rigurosamente los procedimientos de uso para obtener las máximas prestaciones y una mayor duración del mismo.

This manual should be available for all users of these equipments. To get the best results and a higher duration of this equipment it is advisable to read carefully this manual and follow the processes of use.

Ce manuel est une partie indissociable de l'appareil et doit être mis à la disposition de tous les utilisateurs de l'équipement. Nous vous recommandons de lire attentivement ce manuel et de suivre scrupuleusement les procédures d'utilisation afin d'obtenir des performances maximales et une plus longue durée de vie de l'appareil.

LANGUAGE INDEX

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1 CHARACTERISTICS

This camera can be connected to smart devices or computers through USB/LAN/WiFi. It can be used for video and image acquisition of stereo microscope or biological microscope and can also be used for interactive microscope teaching system, which is convenient for teachers and students. The main features are as follows:

- Sony Exmor back illuminated large-sized CMOS sensor with lower noise and better photosensitive characteristics.
- USB/LAN/WiFi multiple video outputs, WiFi adopts 802.11AC chip, with higher transmission bandwidth.
- Powerful ISP functions, real-time video transmission can reach up to 30fps/4M.
- ToupView/ToupLite software for PC, fully applicable for biological and stereoscopic observations.
- iOS/Android app for smart phones or tablets.

2 TECHNICAL DATA AND FUNCTIONS

Code	Sensor & Size (mm)	Pixel (μm)	G Sensitivity Dark Signal	Binning	Clasific.	Exposure
HGB009	4M/Sony IMX347(C) 1/1.8"(7.8x4.38)	2.9x2.9	921mv con 1/30s 0,15mv con 1/30s	30@2688x1512 (USB) 30@2688x1512 (NETWORK)	1x1	0,021ms ~1000ms

Figure 1 Available Ports on the Back Panel of the Camera Body

Interface	Description
LAN	100M Ethernet port to connect to the router or computer to transfer video. Video can be transmitted via LAN or WiFi. LAN and WiFi cannot be used at the same time. The priority of LAN connection is higher than WiFi.
USB	Connect the Micro USB 5V/1A power supply to power the camera, at this time the camera provides LAN or WiFi connection mode. Connect the Micro USB cable to the USB port of the computer to achieve video image output.
AP/STA Switch Button	Press to switch between AP and STA mode. Connecting 2~3 clients for a single camera is recommended.
Video Output Interface	**Description**
LAN Interface	30fps@2688x1512 H264 encoded video and Jpeg image capture.
USB Interface	Connect to PC via Micro USB cable to transfer MJPEG/H264 real-time images, support 30fps@2688x1512 and 30fps@1920x1080.
WiFi Interface	Support 802.11ac protocols in AP/STA mode; 30fps@2688x1512 H264 encoded video and Jpeg image capture.

Software Environment under LAN/WLAN/Output	
White Balance	Auto, Manual and ROI White Balance
Color Technique	Ultra-Fine Color Engine
ISP	Exposure (Automatic/Manual Exposure)/ Gain, White Balance (Auto, Manual and ROI White Balance), Sharpening, 3D Denoise, Saturation Adjustment, Contrast Adjustment, Brightness Adjustment, Gamma Adjustment, 50HZ/60HZ Anti-flicker, Mirror/Flip, color to grey, Network Bandwidth Adjustment
Capture/Control SDK	Windows/Linux/macOS/Android Multiple Platform SDK (Native C/C++, C#/VB.NET, Python, Java, DirectShow, Twain, etc)
Recording System	Still Picture or Movie
Operating System	Microsoft® Windows® XP / Vista / 7 / 8 / 8.1 / 10 / 11(32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 4GB or more
	Ethernet RJ45 Interface: 100M bps or more
	WiFi Adaptor: Support 802.11 b/g/n/ac
	Display: 19” or larger
	CD-ROM
Operating Environment	
Operating Temp. (ºC)	-10~ 50
Storage Temp. (ºC)	-20~ 60
Operating Humidity	30~80%HR
Storage Humidity	10~60%HR
Power Supply	Micro USB DC 5V/1A Adapter
Camera Size	
Length x Width x Height	50 mm x 50mm x 112mm
Shipping Weight	0,19 kg

3 CAMERA DIMENSIONS

Figure 2 Dimensions of USB/LAN/WiFi Camera

4 PACKING INFORMATION

Figure 3 Packing Information for USB/LAN/WiFi Camera

Standard Packing List	
A	Box: L:15cm W:15cm H:10cm (1pc, 0.5kg/box)
B	One USB/LAN/WiFi camera
C	Power Adapter: Input: AC 100~240V 50Hz/60Hz, Output: DC 5V 1A European standard: Model: POWER-E-5V1A(SK12G-0500100V): UL/CE/FCC
D	Micro USB cable 1.5 meters
E	CD (Driver & utilities software, Ø12cm)

5 SOFTWARE AND APP

For Windows users (Windows XP (32bit), Windows 7/8/10/11 (32/64 bit)), please use ToupView.
For macOS and Linux users (macOS 10.10 or above or Linux distributions with kernel 2.6.27 or higher), please use ToupLite.
When connecting the camera with a mobile device, the free ToupView App is required. Just make sure that the device uses iOS 11 or higher/Android 5.1 or higher operating systems.
The App can be downloaded from the following links:

iOS: https://itunes.apple.com/us/app/toupview/id911644970
Android: https://play.google.com/store/apps/details?id=com.touptek.tpview

Note: The mobile device must be WiFi enabled to support WiFi connection.

6 CAMERA APPLICATION CONFIGURATIONS

6.1 Camera is used by connecting it to a computer via a micro USB cable

The setup steps are as follows:
■ Install the ToupView/ToupLite software on the PC.
■ Plug one end of the micro USB cable into the camera's USB port and connect the other end to the computer and wait for the camera to start.
■ Start the ToupView/ToupLite software, usually the software on the PC will automatically recognise the camera. In the ToupView/ToupLite software, select the corresponding camera by clicking the camera name in the camera list.

6.2 Camera working in WiFi AP mode

Figure 4 The PC or Mobile Device Connect to the Camera through WiFi AP Mode

The steps to start the camera are listed below:

■ Install the ToupView/ToupLite on your PC or install the ToupView App on the mobile device.

■ Plug one end of the micro USB cable into the camera's USB port, and the other end into a 5V/1A power adapter.

■ Press the AP/STA switch button to set the camera to AP mode and observe that the network indication LED turns green, indicating that the camera is in WiFi AP mode.

■ Connect the PC or mobile device to the camera.

■ Start the ToupView/ToupLite software or ToupView App and check the configuration. Normally, active cameras are automatically recognized. The connected cameras will be listed in the Camera List group of the Camera Control Bar of ToupView/ToupLite on PC. On mobile devices, connected cameras will be listed in the Camera Thumbnail page of ToupView App. Click the corresponding camera to start the stream.

6.3 Connecting multi-cameras to the router with WiFi STA mode for the network application

In WiFi STA mode, the camera is supposed to connect to the router.

Figure 5 Multi cameras connecting to the router through the WiFi STA Mode

■ Install the ToupView /ToupLite software on your PC. Alternatively, install the free ToupView App on the mobile device.

■ Plug one end of the micro USB cable into the camera's USB port, and the other end into a 5V/1A power adapter.

■ Connect the camera to the router with WiFi STA mode: Pop up the AP/STA switch button, the network indication LED turns blue, this means the camera is in WiFi STA mode and has connected to the router (see Sec. 7 on how to set the router's name and password in the camera).

■ Connect PC or mobile device to router (by LAN or WiFi). Start the ToupView/ToupLite software or ToupView App and check the configuration. Normally, active cameras are automatically recognized. The connected cameras will be listed in the Camera List group of the Camera Control Bar of ToupView/ToupLite on PC. On mobile devices, connected cameras will be listed in the Camera Thumbnail page of ToupView App. Click the corresponding camera to start the stream.

6.4 Connecting multi-cameras to the router through the LAN port for the network application

In LAN mode, the camera connects to router by Ethernet cable.

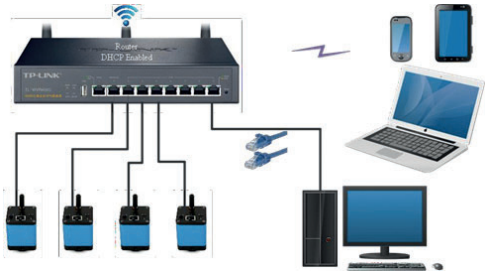


Figure 6 Multi cameras connecting to the router with the LAN method

■ Install the ToupView /ToupLite software on your PC. Alternatively, install the free ToupView App on the mobile device.
■ Plug one end of the micro USB cable into the camera's USB port, and the other end into a 5V/1A power adapter.
■ Connect the camera to the router with the LAN method: Connect the camera and the router by Ethernet cable; if the connection is successful, the network indication LED will be off, and the LAN indicator will light up.
■ Make sure that your PC or your mobile device is connected to the router (by LAN or WiFi). Start the ToupView/ToupLite software or ToupView App and check the configuration. Normally, active cameras are automatically recognized. The connected cameras will be listed in the Camera List group of the Camera Control Bar of ToupView/ToupLite on PC. On mobile devices, connected cameras will be listed in the Camera Thumbnail page of ToupView App. Click the corresponding camera to start the stream.

6.5 Connecting multi-cameras to the router through the LAN port/WiFi STA mode for the network application

In LAN/ WiFi STA mode, the camera connects to router by Ethernet cable or with WiFi STA mode

Figure 7 Multi cameras connecting to the router through the LAN port/WiFi STA mode

■ Install the ToupView /ToupLite software on your PC. Alternatively, install the free ToupView App on the mobile device.
■ Plug one end of the micro USB cable into the camera's USB port, and the other end into a 5V/1A power adapter.
■ Connect the camera to the router with WiFi STA mode: Pop up the AP/STA switch button, the network indication LED turns blue, this means the camera is in WiFi STA mode and has connected to the router (see Sec. 7 on how to set the router's name and password in the camera).

■ Connect the camera to the router with LAN method: Connect the camera and the router by Ethernet cable; if the connection is successful, the network LED indicator will be off and the indicator of the LAN network port will light up.

■ Connect PC or mobile device to the router (by LAN or WiFi). Start the ToupView/ToupLite software or ToupView App and check the configuration. Normally, active cameras are automatically recognized. The connected cameras will be listed in the Camera List group of the Camera Control Bar of ToupView/ToupLite on PC. On mobile devices, connected cameras will be listed in the Camera Thumbnail page of ToupView App. Click the corresponding camera to start the stream.

Note on data security

The data transfer of the camera in LAN or WiFi is not encrypted. Anyone who is connected to the network and has installed the ToupView software or ToupView App, can see the live image of all active cameras.

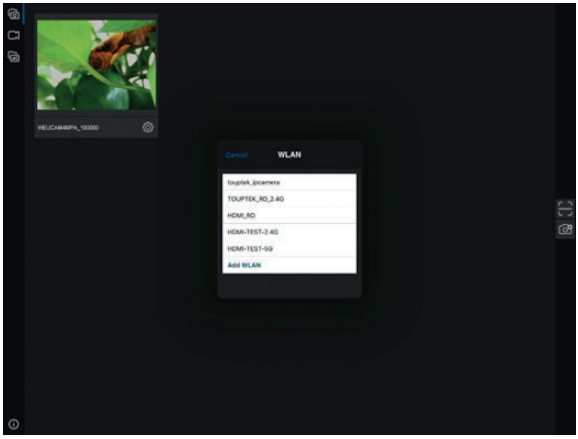
About the routers/switches

It is suggested that routers/switches supporting 802.11ac 5G segment should be selected to achieve better wireless connection experience.

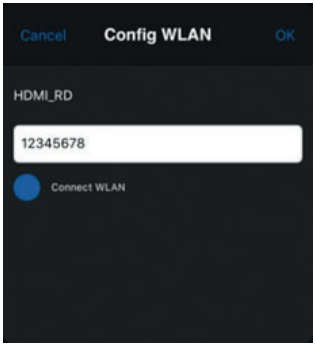
7 SETTING THE CAMERA'S WIFI STA MODE'S SSID AND PASSWORD

Referring to Section 6.2 process, the detailed steps are as follows:

■ Set the camera to AP mode, use iOS or Android device to connect to the camera's AP hotspot.



■ Start the ToupView App on iOS or Android device and press the configuration button in the camera thumbnail above to pop up the interface for selecting WiFi SSID.
■ Select the SSID to be connected and input the Password, press OK to finish the SSID and Password setup process.



■ If the pop-up UI does not have the desired SSID, press the Add WiFi item on the bottom and input SSID name and Password manually (the current SSID is HDMI_RD, and the password is 12345678).

■ After completion, press the button to switch to STA mode. The camera WiFi will be connected to the designated router in STA mode for operation, and the camera network LED indicator will turn blue.