BHC4-1080A HDMI Digital Camera

Introduction

The BHC4-1080A Full HD HDMI digital camera is intended to be used for the acquisition of digital images from the stereo microscope, biological microscope and other optical microscopes or online interactive teaching. The basic characteristic is listed as below:

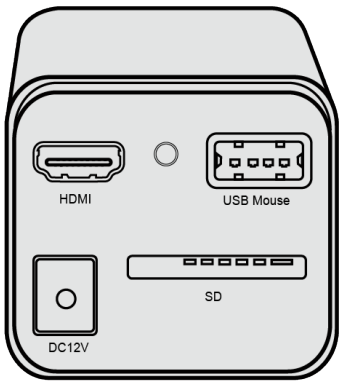
1. Sony Starvis back illuminated CMOS sensor.
2. FHD HDMI video outputs.
3. SD card for the captured image and video storage.
4. Embedded XCamView for the control of the camera.
5. With strong ISP and other related processing functions.

Application

The possible applications of BHC4-1080A are as follows:

1. Scientific research, education (teaching, demonstration and academic exchanges).
2. Digital laboratory, medical research.
3. Industrial visual (PCB examination, IC quality control, mechanical part inspection).
4. Medical treatment (pathological observation).
5. Food (microbial colony observation and counting).

Interface on the Camera Body



Available Ports on the Back Panel of the Camera Body

Interface	Function Description
USB Mouse	Connect USB mouse for easy operation with embedded XCamView software
HDMI	Comply with HDMI1.4 standard. 1080P format video output for standard FHD monitor
SD	Comply with SDIO3.0 standard and SD card could be inserted for video and images storage
DC12V	Power adapter connection (12V/1A)
LED	LED status indicator

Camera Datasheet

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity	FPS/Resolution	Binning	Exposure(ms)
BHC4-1080A	Sony IMX307(C) 1/2.8"(5.57x3.13)	2.9x2.9	1300mv with 1/30s	60@1920*1080(HDMI)	1x1	0.01~1000

Camera Function Description

Video Output

Video Output Interface	Function Description
HDMI Interface	Comply with HDMI1.4 standard; 60fps@1080P

Image Capture and Video Saving in SD card

Function Name	Function Description
Video Saving	Video format: 2M(1920*1080) H264 encoded MP4 file ; Video saving frame rate: 50~60fps (related with SD card performance);
Image Capture	2M (1920*1080) JPEG image in SD card

ISP Function

Function Name	Function Description
Exposure / Gain	Automatic / Manual Exposure
White Balance	Manual / Automatic / ROI Mode
Sharpening	Supported
3D Denoise	Supported
Saturation Adjustment	Supported
Contrast Adjustment	Supported
Brightness Adjustment	Supported
Gamma Adjustment	Supported
50HZ/60HZ Anti-flicker Function	Supported

Image Operation Function

Function Name	Function Description
Zoom In/Zoom Out	Up to 10X
Mirror/Flip	Supported
Freeze	Supported
Cross Line	Supported
Embedded Files Browser	Supported
Video Playback	Supported

Other Functions

Function Name	Function Description
Restore Factory Settings	Supported
Multiple Language Support	English / Simplified Chinese / Traditional Chinese / Korean / Thai / French / German / Japanese / Italian

Packing Information

BHC4-1080A FHD HDMI Camera Packing Information

Standard Packing List	
A	Gift box : L:17.5cm W:17.5cm H:8.5cm (1pcs, 0.85kg/ box)
B	BHC4-1080A
C	Power Adapter: Input: AC 100~240V 50Hz/60Hz, Output: DC 12V 1A American standard: Model: GS12U12-P1I 12W/12V/1A: UL/CUL/BSMI/CB/FCC EMI standard:EN55022,EN61204-3, EN61000-3-2,-3, FCC Part 152 class B, BSMI CNS14338 EMS standard:EN61000-4-2,3,4,5,6,8,11,EN61204-3, class A light industry standard
	European standard:Model:GS12E12-P1I 12W/12V/1A; TUV(GS)/CB/CE/ROHS EMI Standard:EN55022,EN61204-3, EN61000-3-2,-3, FCC Part 152 class B, BSMI CNS14338 EMS standard:EN61000-4-2,3,4,5,6,8,11,EN61204-3, class A light industry standard

D	HDMI cable		
E	USB mouse/USB wireless mouse		
Optional Accessory			
F	Adjustable lens adapter	C-Mount to Dia.23.2mm eyepiece tube (Please choose 1 of them for your microscope)	108001/AMA037 108002/AMA050 108003/AMA075
		C-Mount to Dia.31.75mm eyepiece tube (Please choose 1 of them for your telescope)	108008/ATA037 108009/ATA050 108010/ATA075
G	Fixed lens adapter	C-Mount to Dia.23.2mm eyepiece tube (Please choose 1 of them for your microscope)	108005/FMA037 108006/FMA050 108007/FMA075
		C-Mount to Dia.31.75mm eyepiece tube (Please choose 1 of them for your telescope)	108011/FTA037 108012/FTA050 108013/FTA075
	Note: For F and G optional items, please specify your camera type(C-mount, microscope camera or telescope camera), ToupTek engineer will help you to determine the right microscope or telescope camera adapter for your application;		
H	108015(Dia.23.2mm to 30.0mm Ring)/Adapter rings for 30mm eyepiece tube		
I	108016(Dia.23.2mm to 30.5mm Ring)/ Adapter rings for 30.5mm eyepiece tube		
J	Calibration kit	106011/TS-M1(X=0.01mm/100Div.); 106012/TS-M2(X,Y=0.01mm/100Div.); 106013/TS-M7(X=0.01mm/100Div., 0.10mm/100Div.)	
K	SD card(4G or 8G)		

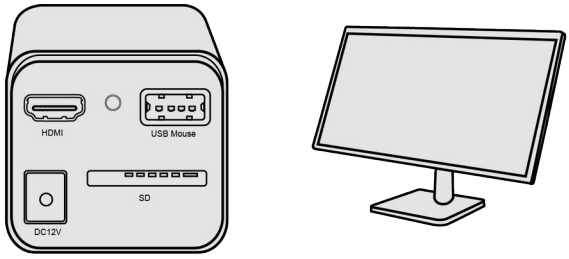
Application Configurations

Camera working standalone with built-in XCamView software

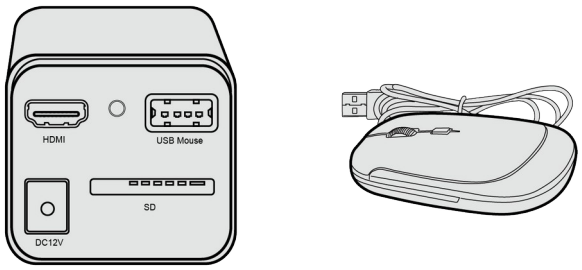
For this application, apart from the microscope, you only need an HDMI monitor, the supplied USB mouse and the camera embedded XCamView software. The steps to start the camera are listed as below:

BHC4-1080A FHD HDMI Camera with the HDMI Monitor

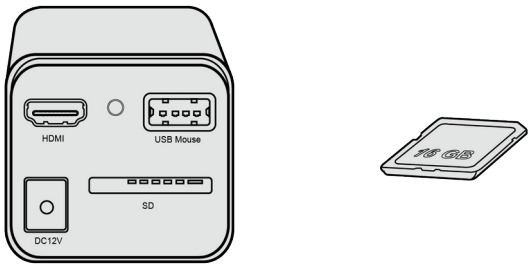
- Connect the camera to a HDMI monitor using the HDMI cable;



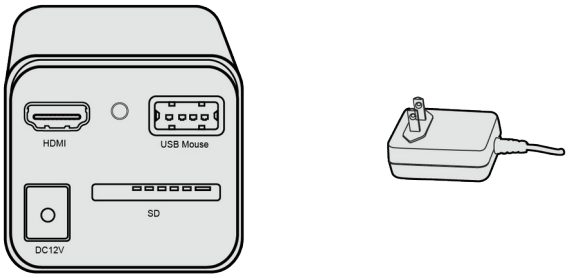
- Insert the supplied USB mouse to the camera's USB port;



- Insert the supplied SD card/USB flash disk (USB3.0 interface) into the HDMI camera SD card slot/USB3.0 interface;



- Connect the camera to the power adapter and switch it on;

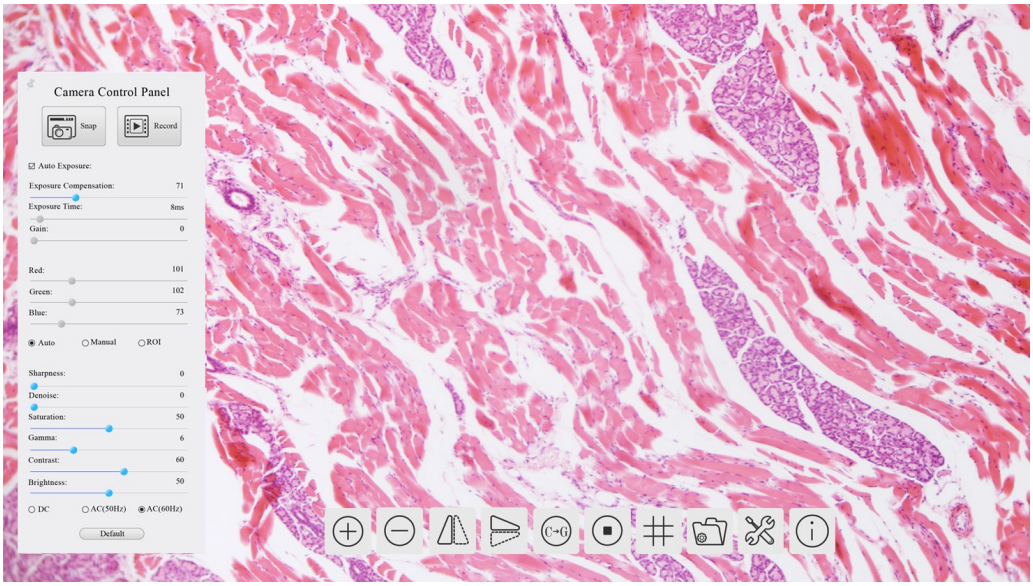


- Turn on the monitor and view the video in the XCamView software. Move the mouse to the left or bottom of the XCamView UI, different control panel or UI will pop up and users could operate with the mouse at ease.

BHC4-1080A FHD HDMI Camera UI and Its Functions

XCamView UI

The HDMI FHD BHC4-1080A UI includes a Camera Control Panel on the left of the video window, a Synthesis Camera Control Toolbar on the bottom of the video window.



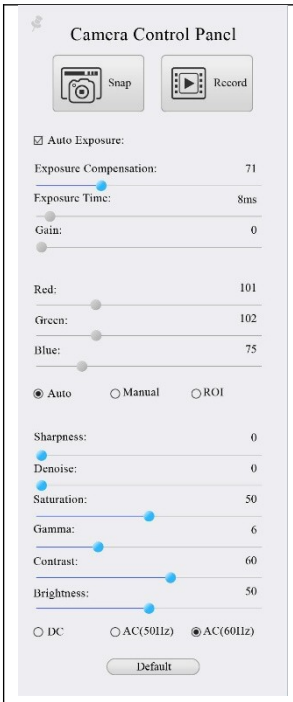
The BHC4-1080A FHD HDMI Camera Control GUI

	Notes
1	To show the Camera Control Panel, move your mouse to the left of the video window. See Sec. Error: Reference source not found for details
2	When users move mouse cursor to the bottom of the video window, the Synthesis Camera Control Toolbar will pop up automatically. . See Sec. Error: Reference source not found for details.

The camera control panel on the left side of the video window

The Camera Control Panel controls the camera to achieve the best video or image quality according to the specific applications; It will pop up automatically when the mouse cursor is moved 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 and save it to the SD card
	Record	Record video and save it to the SD card
	Auto Exposure	When Auto Exposure is checked, the system will automatically adjust exposure time and gain according to the value of exposure compensation
	Exposure	Available when Auto Exposure is checked. Slide to left or right to adjust Exposure



Compensation	Compensation according to the current video brightness to achieve proper brightness value
Exposure Time	Available when Auto Exposure is not checked. 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	Slide to left or right to decrease or increase the proportion of Green in RGB on video
Blue	Slide to left or right to decrease or increase the proportion of Blue in RGB on the video
Auto White Balance	White Balance adjustment according to the window video every time the button is clicked
Manual White Balance	Adjust the Red or Blue item to set the video White Balance.
Sharpness	Adjust Sharpness level of the video
Denoise	Slide left or right to denoise the video
Saturation	Adjust Saturation level of the video
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 caused by 50Hz light source
AC(60HZ)	Check AC(60HZ) to eliminate flickering caused by 60Hz light source
Default	Restore all the settings in the Camera Control Panel to default values

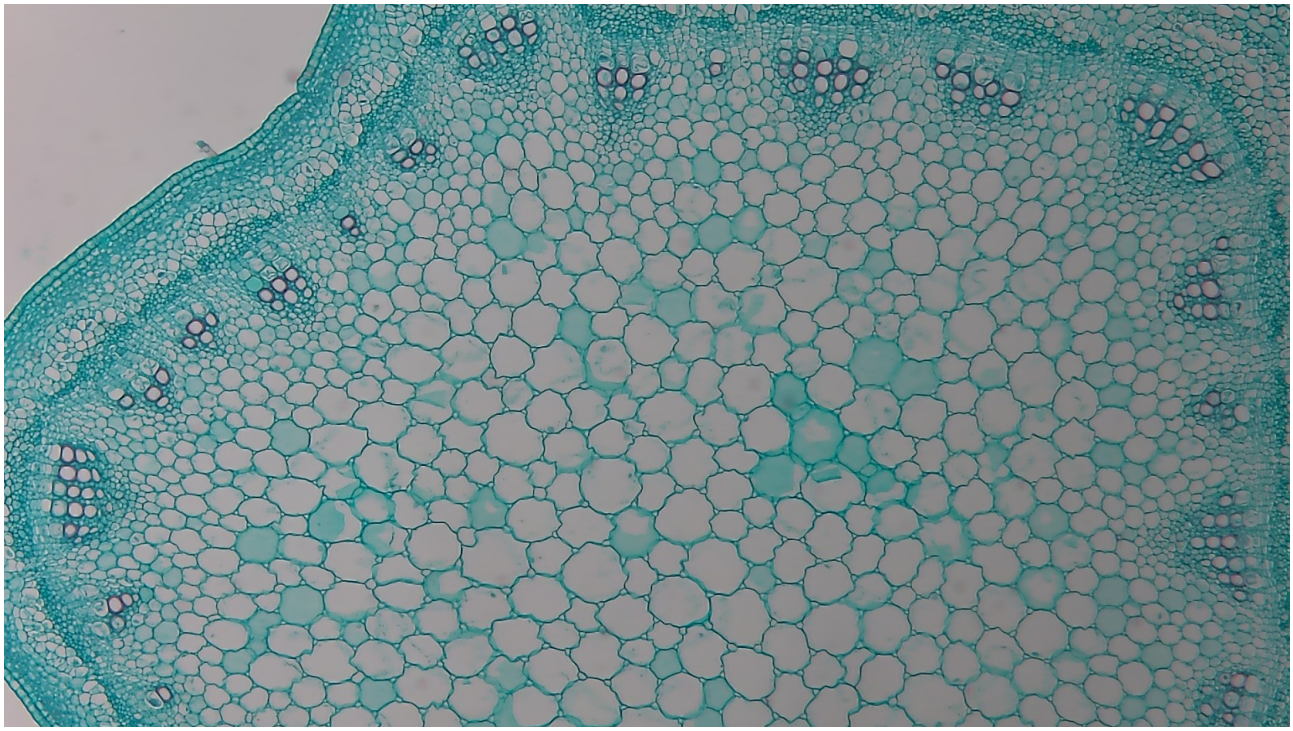
Icons and functions of the Synthesis Camera Control Toolbar at the bottom of the video window

Icon	Function	Icon	Function
	Zoom In the Video Window		Zoom Out the Video Window
	Horizontal Flip		Vertical Flip
	Color/Gray		Video Freeze

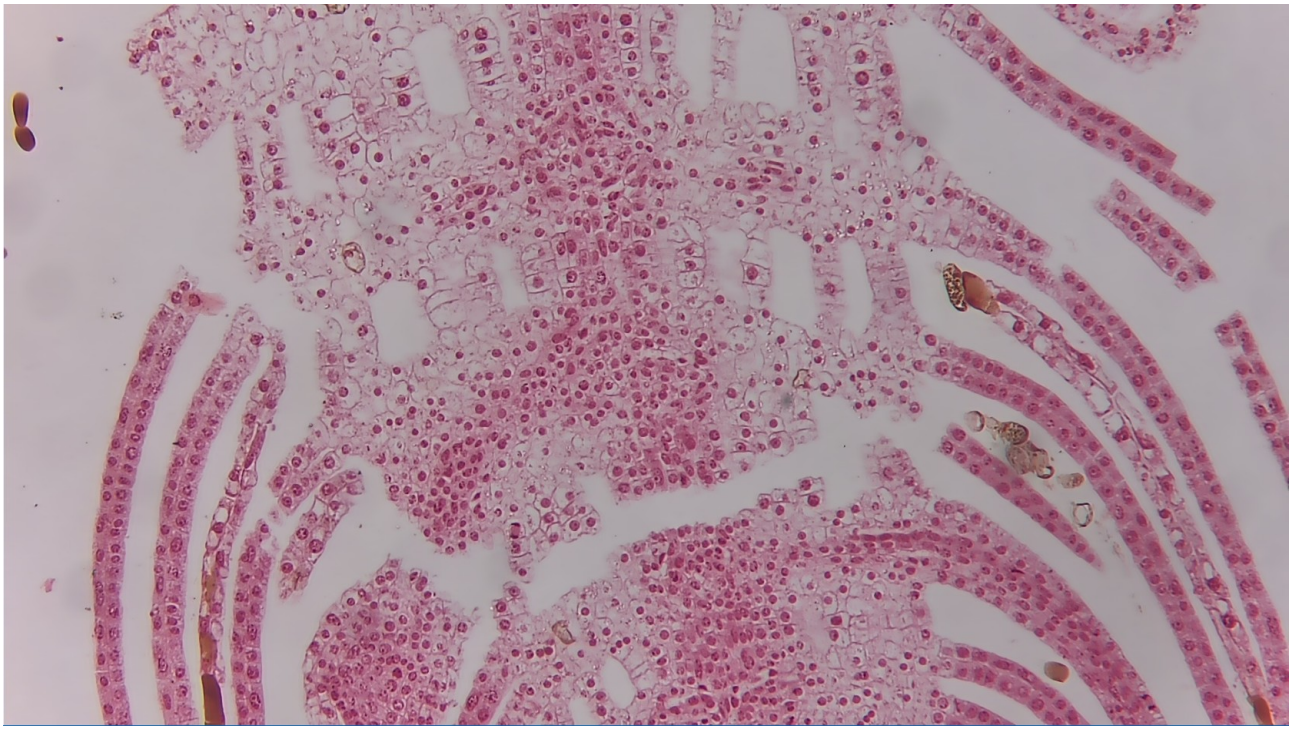
	Display Cross Line		Browse Images and Videos in the SD Card
	Settings		Check the Version of XCamView

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

Sample Images



Alfalfa Stem captured with BHC4-1080A



Top Bud. Captured with BHC4-1080A