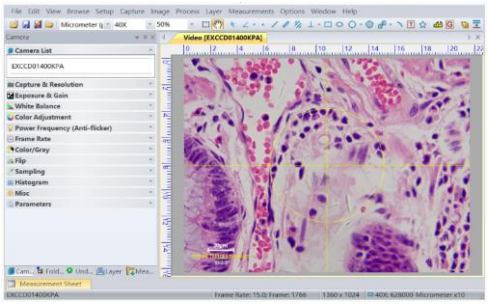
CMOS & CCD Camera for Microscope

HK Series





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■ HK-U/L Series / C-mount USB2.0 CMOS Camera

Model Name	Picture	Sensor & Size(mm)	Pixel(μm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure
HK3.1		3.1M/MT9T001(C) 1/2"(6.55x4.92)	3.2x3.2	1.0 V/lux-sec 61dB 43dB	8@2048x1536 22@1024x768 43@680x510	1x1,2x2,3x3	0.244ms ~2000ms
HK5.1		5.1M/MT9P006(C) 1/2.5"(5.70x4.28)	2.2x2.2	0.53 V/lux-sec 66.5dB 40.5dB	5@2592x1944 18@1280x960 60@640x480	1x1,2x2,4x4	0.294ms ~2000ms
HK14		14M/MT9F002(C) 1/2.3"(5.73x4.60)	1.4x1.4	0.724v/lux-sec 65.3dB 35.5dB	1.8@4096x3288 10@2048x1644 27@1024x822	1x1,2x2,4x4	0.4ms~2000ms
HK3.1A		3.1M/MT9T001(C) 1/2"(6.55x4.92)	3.2x3.2	1.0 V/lux-sec 61dB 43dB	11.5@2048x1536 32@1024x768 45@680x510	1x1,2x2,3x3	0.244ms ~2000ms
HK5.1A		5.1M/MT9P001(C) 1/2.5"(5.70x4.28)	2.2x2.2	0.53 V/lux-sec 66.5dB 40.5dB	6.8@2592x1944 18@1280x960 60@640x480	1x1,2x2,4x4	0.294ms ~2000ms

HK-U/L Series are an ultra-high performance CMOS camera and it adopts ultra-high performance CMOS sensor as the image-picking device. USB2.0 is used as the data transfer interface.

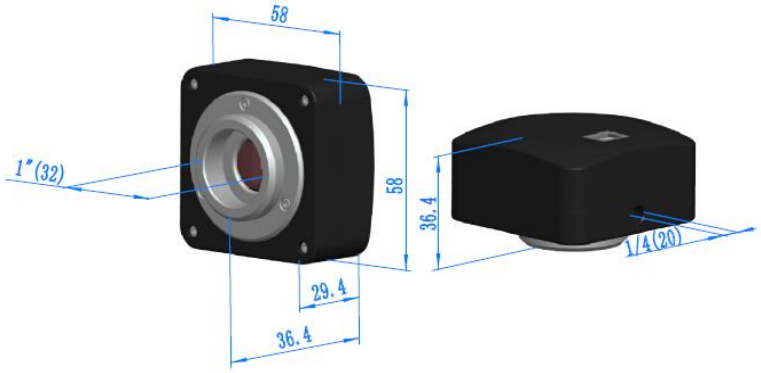
HK-U/L Series hardware resolutions range from 0.35M to 14M and comes with the Integrated zinc aluminum alloy compact housing.

HK-U/L Series come with advanced video & image processing application HKBasic; Providing Windows/Linux/OSX multiple platform SDK; Native C/C++, C#/VB.NET, DirectShow, Twain Control API;

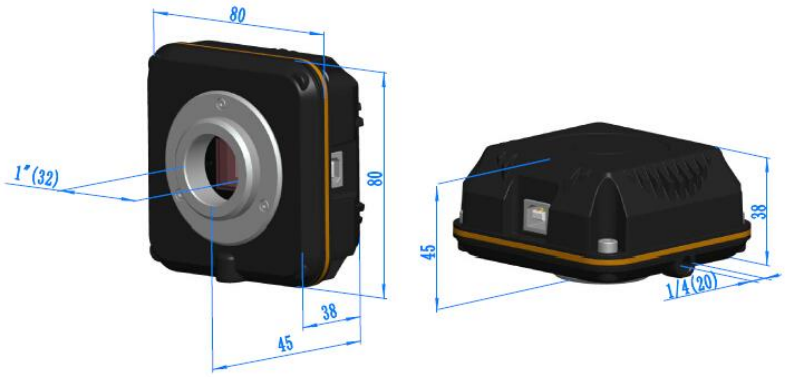
The HK-U/L Series can be widely used in brightfield light environment and microscope image capture and analysis with moderate frame rate.

OTHER HARDWARE CONFIGURATION	
Spectral Range	380-650nm (with IR-filter)
White Balance	ROI White Balance/ Manual Temp-Tint Adjustment
Color Rendering Technique	Ultra Fine Color Engine
Capture/Control API	Native C/C++, C#, Directshow, Twain, Labview
Recording System	Still Picture and Movie
Cooling System	Natural
OPERATING ENVIRONMENT	
Operating Temperature	-10℃~ 50℃
Storage Temperature	-20℃~ 60℃
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port
SOFTWARE ENVIRONMENT	
Operating System	Microsoft® Windows® XP /Vista /7/8/8.1/10(32 & 64 bit) OSx(Mac OS X), Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher Memory: 2GB or More USB Port: USB2.0 High-speed Port Display: 17" or Larger CD-ROM

Dimension for HK-U Series Camera



Dimension for HK-L Series Camera



■ HK-U3 Series / C-mount USB3.0 CMOS Camera

Model Name	Picture	Sensor & Size(mm)	Pixel(μm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure
HK16U3*		16M/MN34230PLJ(C) 4/3" (17.6x13.3) <Panasonic>	3.8x3.8	R: 1315LSB Gr: 2413LSB Gb: 2413LSB B: 1042LSB (Gain = 0dB)	6.0@4648x3506 15.0@2304x1750 30.0@1536x1168	1x1,2x2,3x3	0.06ms~15s
HK14U3		14M/MT9F002(C) 1/2.3"(5.73x4.60)	1.4x1.4	0.724v/lux-sec 65.3dB 35.5dB	6.2@4096x3286 20.8@2048x1644 53.3@1024x822	1x1,2x2,4x4	0.4ms~2000ms
HK5U3		5.1M/MT9P006(C) 1/2.5"(5.70x4.28	2.2x2.2	1.76v/lux-sec 67.74dB 38.5dB	14.2@2560x1922 38.3@1280x960 101.2@640x480	1x1,2x2,4x4	0.1ms~2000ms
HK3.1U3		3.1M/AR0330(C) 1/3" (4.51x3.38)	2.2x2.2	1.9v/lux-sec 100dB 39dB	27.3@2048x1534 53.3@1024x770	1x1,2x2	0.1ms~2000ms

HK-U3 Series are an ultra-high performance USB3.0 CMOS camera and it adopts ultra-high performance CMOS sensor as the image-picking device and USB3.0 is used as the data transfer interface.

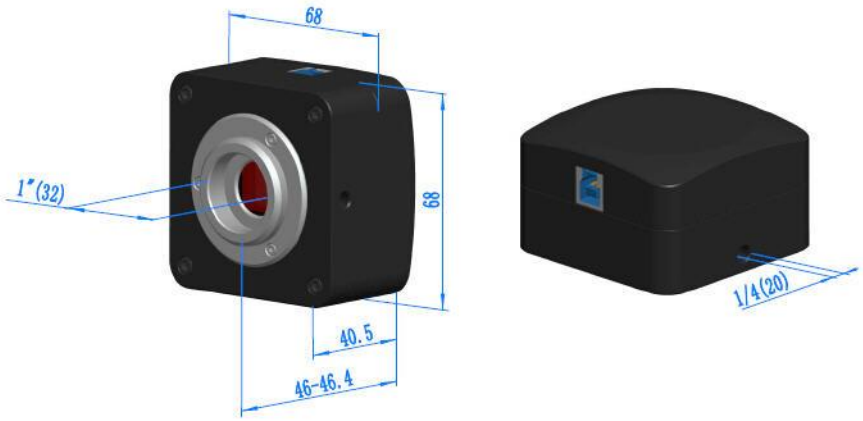
HK-U3 Series hardware resolutions range from 3.0M to 18M and comes with the Integrated zinc aluminum alloy compact housing.

HK-U3 Series come with advanced video & image processing application HKBasic; Providing Windows/Linux/OSX multiple platform SDK; Native C/C++, C#/VB.NET, DirectShow, Twain Control API;

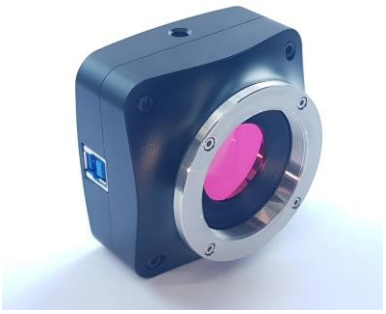
The HK-U3 Series can be widely used in brightfield light environment and microscope image capture and anaysis with higher frame rate.

OTHER HARDWARE CONFIGURATION	
Spectral Range	380-650nm (with IR-filter)
White Balance	ROI White Balance/ Manual Temp-Tint Adjustment
Color Rendering Technique	Ultra Fine Color Engine
Capture/Control API	Native C/C++, C#, Directshow, Twain, Labview
Recording System	Still Picture and Movie
Cooling System	Natural
OPERATING ENVIRONMENT	
Operating Temperature	-10℃~ 50℃
Storage Temperature	-20℃~ 60℃
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port
SOFTWARE ENVIRONMENT	
Operating System	Microsoft® Windows® XP /Vista /7/8/8.1/10(32 & 64 bit) OSx(Mac OS X), Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher Memory: 2GB or More USB Port: USB2.0 High-speed Port Display: 17" or Larger CD-ROM

Dimension for HK-U3 Series Camera



* M42 Mount for HK16U3 (4/3" Sensor)



HK16U3-M42

for Nikon

for Olympus

Mount type: T2-mount(M42)

- Magnification : 1.2x
- Suitable Sensor size: 4/3", 1"

■ HK-E3 Series / C-mount USB3.0 CMOS Camera

Model Name	Picture	Sensor & Size(mm)	Pixel(μm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure
HK6E3		6.3M/IMX178(C) 1/1.8"(7.37x4.92)	2.4x2.4	425mv with 1/30s 0.15mv with 1/30s	15@3072x2048 26@1536x1024	1x1,2x2	0.244ms ~2000ms

HK-E3 Series camera adopt SONY Exmor CMOS sensor as the image-picking device and USB3.0 is used as the data transfer interface.

HK-E3 Series camera's resolutions range from 0.4M to 20M and come with the integrated CNC aluminum alloy compact housing.

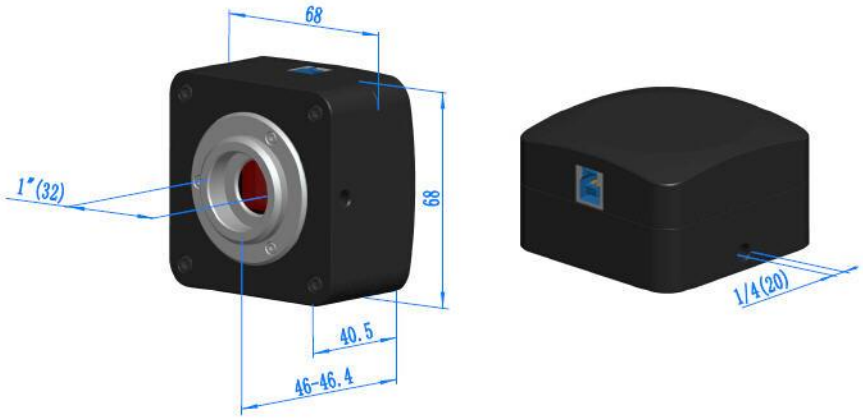
HK-E3 Series camera comes with advanced video & image processing application HKBasic; Providing Windows/Linux/ OSX multiple platforms SDK; Native C/C++, C#, DirectShow, Twain Control API;

HK-E3 Series camera use the latest Sony Exmor sensor which have the highest sensitivity and lowest noise with the help of 2 CDS(correlated double sampling) procedure. This feature guarantee that the HK-E3 Series camera is perfect for fluorescence microscope application, astronomy application and other dark field application, as well as the bright field application.

HK-E3 Series camera can be used to replace the traditional CCD camera to some extent since its unique features, including high sensitivity, low noise, and group shutter (only some sensor has group shutter). Thanks to USB3.0, the frame rate is fast and 8bit, 12/14bit data transfer can be available and switchable.

OTHER HARDWARE CONFIGURATION	
Spectral Range	380-650nm (with IR-filter)
White Balance	ROI White Balance/ Manual Temp-Tint Adjustment
Color Rendering Technique	Ultra Fine Color Engine
Capture/Control API	Native C/C++, C#, Directshow, Twain, Labview
Recording System	Still Picture and Movie
Cooling System	Natural
OPERATING ENVIRONMENT	
Operating Temperature	-10℃~ 50℃
Storage Temperature	-20℃~ 60℃
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port
SOFTWARE ENVIRONMENT	
Operating System	Microsoft® Windows® XP /Vista /7/8/8.1/10(32 & 64 bit) OSx(Mac OS X), Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher Memory: 2GB or More USB Port: USB2.0 High-speed Port Display: 17" or Larger CD-ROM

Dimension for HK-E3 Series Camera



■ HK-E3S Series / C-mount USB3.0 CMOS Camera

Model Name	Picture	Sensor & Size(mm)	Pixel(μm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure
HK20E3S		20M/IMX183(C) 1"(13.06x8.76)	2.4x2.4	462mv with 1/30s 0.21mv with 1/30s	15@5440x3648 50 @2736x1824 60@1824x1216	1x1, 2x2, 3x3	0.1ms~15s
HK12E3SG		12M/IMX304(C,GS) 1"(14.13x10.35)	3.45x3.45	1146mv with 1/30s 0.1mv with 1/30s	23.4@4096x3000 46.3@2048x1500	1x1	0.244ms~15s
HK12E3S		12M/IMX226(C) 1/1.7"(7.40x5.55)	1.85x1.85	280mv with 1/30s 0.10mv with 1/30s	25@4000x3000 50@2048x1080	1x1,2x2	0.1ms~15s
HK6.3E3S		6.3M/IMX178(C) 1/1.8"(7.37x4.92)	2.4x2.4	425mv with 1/30s 0.15mv with 1/30s	30 @3072x2048 38 @1536x1024	1x1,2x2	0.1ms~15s
HK5.0E3SG		5.0M/IMX264(C, GS) 2/3" (8.45x7.07)	3.45x3.45	1146mv with 1/30s 0.15mv with 1/30s	35 @2448x2048 50 @1224x1024	1x1	0.1ms~15s

HK-E3S Series adopt SONY Exmor CMOS sensor as the image-picking device and USB3.0 is used as the transfer interface. HK-E3S Series hardware resolutions range from 1.5M to 20M and come with the integrated CNC aluminum alloy compact housing.

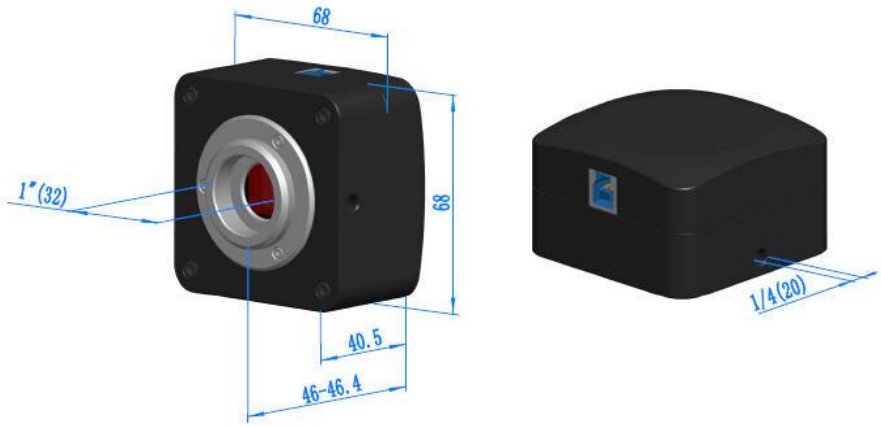
HK-E3S Series integrated with 12 bit Ultra-fine Hardware Image Signal Processor Video Pipline(Ultra-fineTM HISPVP) for Demosaic, Adjustments, Automatic Exposition, Gain Adjustment, One Push White Balance, Chrominance Adjustment, Saturation Adjustment, Gamma Correction, Luminance Adjustment, Contrast Adjustment, Bayer and finally form RAW data for 8/12 bit output. This will move the heavier burden of the processing from the PC to the Ultra-fineTM HISPVP and greatly accelerating the processing speed.

HK-E3S Series comes with advanced video & image processing application HKBasic; Providing Windows/Linux/ OSX multiple platforms SDK; Native C/C++, C#/VB.NET, DirectShow, Twain Control API;

The HK-E3S Series can be widely used in bright field light environment and microscope image capture and analysis with higher frame rate.

OTHER HARDWARE CONFIGURATION	
Spectral Range	380-650nm (with IR-filter)
White Balance	ROI White Balance/ Manual Temp-Tint Adjustment
Color Rendering Technique	Ultra Fine Color Engine
Capture/Control API	Native C/C++, C#, Directshow, Twain, Labview
Recording System	Still Picture and Movie
Cooling System	Natural
OPERATING ENVIRONMENT	
Operating Temperature	-10℃~ 50℃
Storage Temperature	-20℃~ 60℃
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port
SOFTWARE ENVIRONMENT	
Operating System	Microsoft® Windows® XP /Vista /7/8/8.1/10(32 & 64 bit) OSx(Mac OS X), Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher Memory: 2GB or More USB Port: USB2.0 High-speed Port Display: 17" or Larger CD-ROM

Dimension for HK-E3S Series Camera



■ HK-SP Series / C-mount USB2.0 CMOS Camera

Model Name	Picture	Sensor & Size(mm)	Pixel(μm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure
HK3.1SP		3.1M/MT9T001(C) 1/2"(6.55x4.92)	3.2x3.2	1.0 V/lux-sec 61dB 43dB	12@2048x1536 43@1024x768 83@680x510	1x1,2x2,3x3	0.128ms ~2000ms

HK-SP Series camera is an industrial CMOS camera and it adopts ultra-high performance CMOS sensor as the image-picking device. USB2.0 is used as the data transfer interface. Dimensions: 29x29x29 mm excluding lens holder, without optics (metal case) is realized to obey the industrial camera standard.

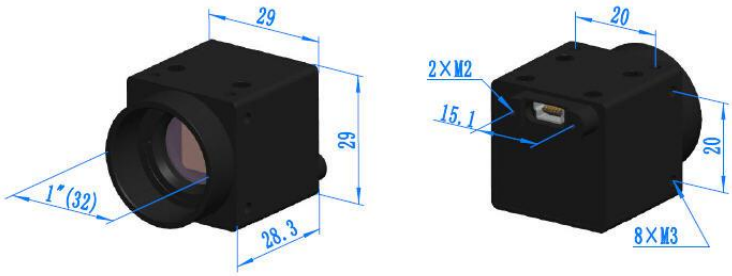
A 8-pin Hirose HR25-7TR-8PA GPIO connector for trigger, strobe(Optional);

Further, the HK-SP Series come with advanced video & image processing application HKBasic and providing Windows/Linux/OSX multiple platform SDK;

Also,native C/C++, C#/VB.NET, DirectShow, Twain Control API are provided.

The HK-SP Series can be widely used in machine vision and on-line inspection. .

OTHER HARDWARE CONFIGURATION	
Body Size	29mmX29mmX29mm(Without Connections)
Spectral Range	380-650nm (with IR-filter)
White Balance	ROI White Balance/ Manual Temp-Tint Adjustment
Color Rendering Technique	Ultra-Fine Color Engine
Capture/Control API	Native C/C++, C#/VB.NET, Directshow, Twain, Labview
Recording System	Still Picture and Movie
Cooling System	Natural
USB Cable Connection	USB Cable Including Locking Screw
User IO	IO with Optocoupler Isolation(Trigger and Flash)
OPERATING MODES	
Continuous Capture Mode	Video Mode
Single Capture Mode	Hard Trigger or Soft Trigger
OPERATING ENVIRONMENT	
Operating Temperature	-10℃~ 50℃
Storage Temperature	-20℃~ 60℃
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port
SOFTWARE ENVIRONMENT	
Operating System	Microsoft® Windows® XP /Vista /7/8/8.1/10(32 & 64 bit) OSx(Mac OS X), Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher Memory: 2GB or More USB Port: USB2.0 High-speed Port Display: 17" or Larger CD-ROM
Dimension for HK-SP Series Camera	



HK3.1SP + LENS


KOPTIC
Industrial Digital Camera
HK3.1SP
3.1MP 1/2" APTINA CMOS SENSOR
S/N:1509240003
6mm
1:1.4
0.5
1
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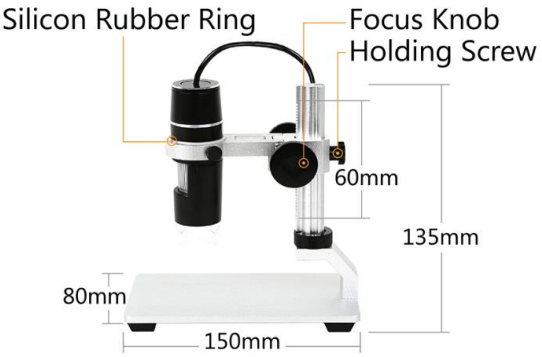
■ HK-HCAM Series / USB2.0 Microscope

Model Name	Picture	Sensor	Sensor Size	Pixel(μm)	FPS/Resolution	Binning	Exposure
HK-HCAM2.0		MI2010(C)	1/3.2"	2.8x2.8	30 @ 1920 x1080 (Max Frame Rate) 30@1280x 720 34@640x 480	1x1	0.5ms~30ms

USB-powered handheld digital microscope with 10x to 200x magnification
Built-in 2MP digital camera for capturing images and videos
8 LED ring illuminator
Use the included Windows software to capture images and video of your discoveries. Measure your specimens with built-in measurement tool.
Computer requirements: CD/DVD drive and USB 2.0 port. UVC plug-and-play with Windows 7/8, Vista, and XP (32/64 bit).

HARDWARE CONFIGURATION	
Spectral Range	380-650nm (with IR-filter)
Video Format & Frame Rate	Max Frame Rate 30fps @1920 x 1080
Binning	1 x 1
Exposure	0.5ms~30ms, Auto & Manual
White balance	Auto & Manual
Color Rendering Technique	On Chip
Illumination	LED Illumination
Magnification	10X~200X(with Specified Monitor)
Capture/Control API	Directshow, Twain, External Trigger for Snapshot
Recording System	Still Picture and Movie
Holding Frame	Optional
OPERATING ENVIRONMENT	
Operating Temperature	-10℃~ 50℃
Storage Temperature	-20℃~ 60℃
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port
SOFTWARE ENVIRONMENT	
Operating System	Microsoft® Windows® XP /Vista /7/8/8.1/10(32 & 64 bit)
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher Memory: 2GB or More USB Port: USB2.0 High-speed Port Display: 17" or Larger CD-ROM
P-SD-HM2 Hand Held USB Microscope Stand	



■ HK-Cool CCD Series / C-mount USB3.0 Temperature Regulated CCD Camera

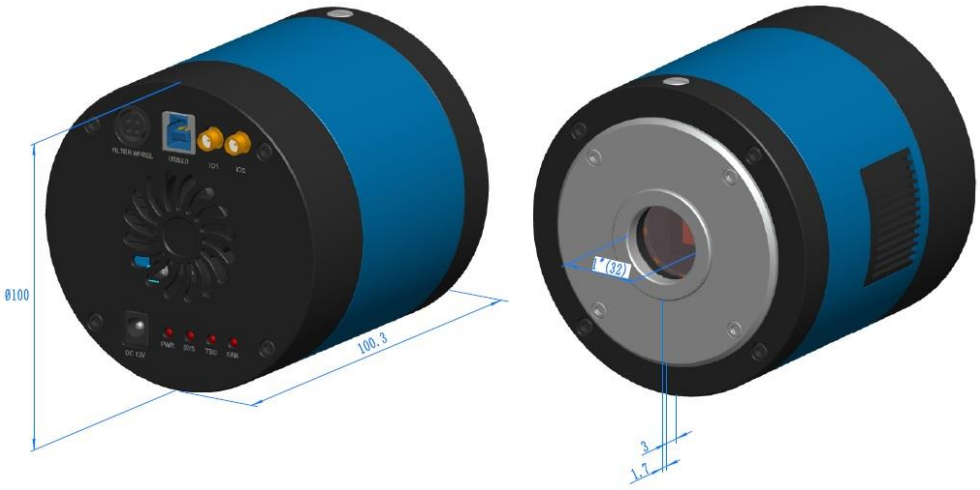
Model Name	Picture	Sensor & Size(mm)	Pixel(μm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure
HK6U3Cool-CCD		6.0M/ICX694AQG(C) 1"(12.48x9.99)	4.54x4.54	880mv with 1/30s 8mv with 1/30s	7.5@2748x2200 14@2748x1092	1x1	0.06ms~3600s

HK-Cool CCD Seires are an Microscope Temterature Regulated USB3.0 CCD camera and it adopts Sony Exview HAD CCD sensor as the image-picking device. Sony Exview HAD CCD is a CCD that drastically improves light efficiency by including near infrared light region as a basic structure of HAD (Hole-Accumulation-Diode) sensor.

HK-Cool CCD Seires come with advanced video & image processing application HKBasic; Providing Windows/Linux/OSX multiple platform SDK; Native C/C++, C#/VB.NET, DirectShow, Twain Control API;

The HK-Cool CCD Seires can be widely used in low light environment and microscope fluorescence image capture and anaysis.

OTHER HARDWARE CONFIGURATION	
Spectral Range	380-650nm (with IR-filter)
White Balance	ROI White Balance/ Manual Temp-Tint Adjustment
Color Rendering Technique	Ultra Fine Color Engine
Capture/Control API	Native C/C++, C#, Directshow, Twain, Labview
Recording System	Still Picture and Movie
Cooling System	Two-stage TE-cooling System -45 °C below Camera Body Temperature
OPERATING ENVIRONMENT	
Operating Temperature	-10℃~ 50℃
Storage Temperature	-20℃~ 60℃
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port External Power Adapter for Cooling System, DC12V, 3A
SOFTWARE ENVIRONMENT	
Operating System	Microsoft® Windows® XP /Vista /7/8/8.1/10(32 & 64 bit) OSx(Mac OS X), Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher Memory: 2GB or More USB Port: USB2.0 High-speed Port Display: 17" or Larger CD-ROM
Dimension for HK6U3Cool-CCD	



■ HK-CCD Series / C-Mount USB2.0 CCD Camera

Model Name	Picture	Sensor & Size(mm)	Pixel(μm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure
HK5CCD-S		ICX282AQ(C) 2/3" (8.70x6.53)	3.4x3.4	280mv with 1/30s 16mv with 1/30s	4.5@2560x1920 9@1280x960	1x1,2x2	0.203ms~60ms

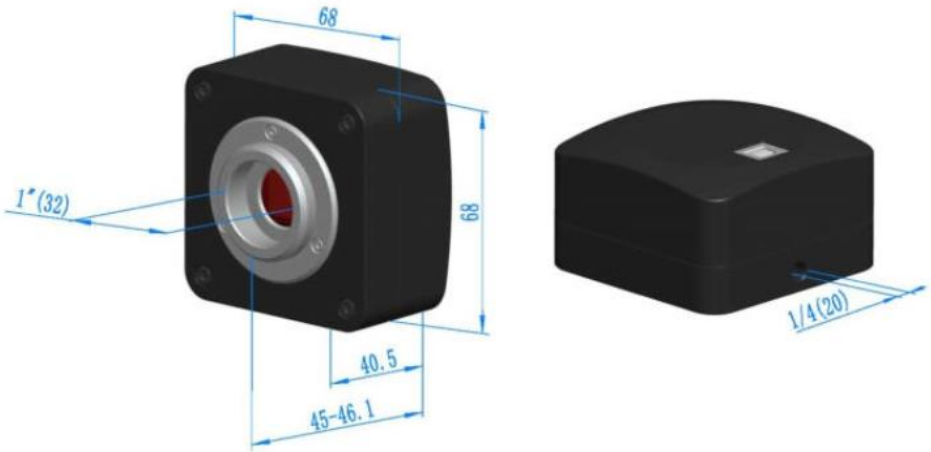
HK-CCD Series are an ultra-high performance HAD CCD camera. The camera adopts Sony Super HAD CCD sensor as the image-picking device; The Super HAD CCD is a version of Sony's high performance CCD HAD (Hole-Accumulation Diode) sensor with sharply improved sensitivity by the incorporation of a new semiconductor technology developed by Sony Corporation. USB2.0 is used as the data transfer interface.

HK-CCD Series come with advanced video & image processing application HKBasic; Providing Windows/Linux/OSX multiple platform SDK; Native C/C++, C#/VB.NET, DirectShow, Twain Control API;

The HK-CCD Series can be widely used in brightfield light environment and microscope image capture and anaysis.

OTHER HARDWARE CONFIGURATION	
Spectral Range	380-650nm (with IR-filter)
White Balance	ROI White Balance/ Manual Temp-Tint Adjustment
Color Rendering Technique	Ultra Fine Color Engine
Capture/Control API	Native C/C++, C#/VB.NET, Directshow, Twain, Labview
Recording System	Still Picture and Movie
Cooling System	Natural
OPERATING ENVIRONMENT	
Operating Temperature	-10℃~ 50℃
Storage Temperature	-20℃~ 60℃
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port
Software Environment (for USB2.0 Connection)	
Operating System	Microsoft® Windows® XP /Vista /7/8/8.1/10(32 & 64 bit) OSx(Mac OS X), Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher Memory: 2GB or More USB Port: USB2.0 High-speed Port Display: 17" or Larger CD-ROM

Dimension for HK5CCD-S



■ XCAM1080H / C-mount HDMI+USB CMOS Camera

Model Name	Picture	Sensor & Size(mm)	Pixel(μm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure
HK-XCAM1080H		1080P/Sony IMX236(C) 1/2.8"(5.38x3.02)	2.8x2.8	510 mv with 1/30s 0.15 mv with 1/30s	60@1920x1080 (HDMI) 30@1920x1080 (USB)	1x1	0.1ms~999ms

XCAM1080H camera is a multiple interfaces (HDMI+USB2.0+SD card, so X here means multiple interfaces) CMOS camera and it adopts ultra-high performance CMOS sensor as the image-picking device. USB2.0 is used as the data transfer interface.

For HDMI output, a camera control panel and toolbar are overlayed on the HDMI screen, in this case, the USB mouse can be used to set the camera,browse and compare the captured image, play the video et al.

For USB2.0 output, unplug the mouse and plug in the USB2.0 cable, then the video stream can be transfer to computer with the advanced software HKbasic. With HKbasic, you can control the camera, process the image as KOPTIC's other camera series.

XCAM camera can be used for microscope, industrial stereo microscope, on-line inspection et al.

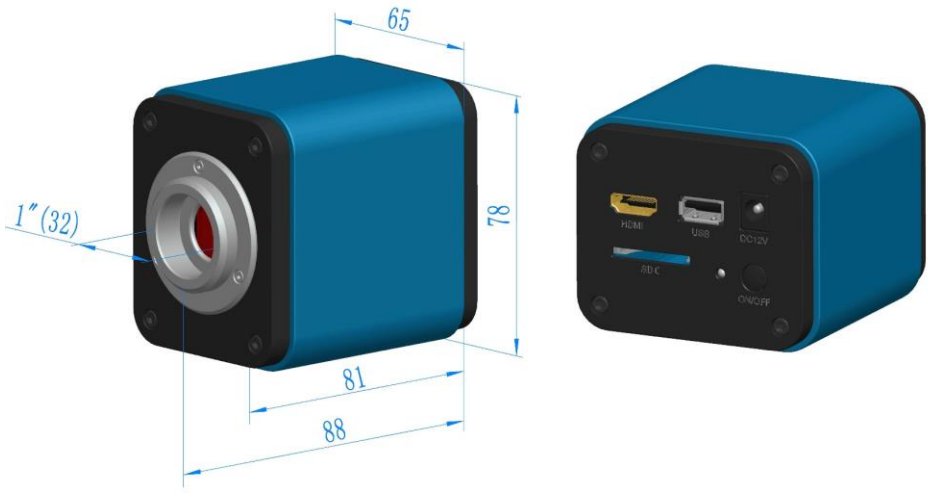
Interface & Button Functions	
USB	USB Camera or USB Mouse
HDMI	HDMI Output
DC12V	12V Power in
SD	SD Card Slot
ON/OFF	Power On/Off Switch
LED	Power On Indicator
Other Specification for HDMI Output	
UI Operation	With USB Mouse
Image Capture	High Speed in SD Card
Video Record	1080P 30fps in SD Card
Camera Control Panel	Including Exposure, Gain, White Balance, Color Adjustment, Sharpness and Denoising Control
Toolbar	Including Zoom, Mirror, Comparison, Freeze, Cross, Browser Function
Other Specification for USB Output	
White Balance	Auto White Balance
Color Technique	Ultra-Fine Color Engine (USB)
Capture/Control API	Standard UVC for Windows/Linux/Mac(USB)
Recording System	Still Picture or Movie (USB)
Software Environment (for USB2.0 Connection)	
Operating System	Microsoft® Windows® XP /Vista /7/8/8.1/10(32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher Memory: 4GB or More USB Port: USB2.0 High-speed Port Display: 19" or Larger CD-ROM
Operating Environment	
Operating Temperature(in Centidegree)	-10~ 50
Storage Temperature(in Centidegree)	-20~ 60
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 12V/2A Adaptor

Overall Dimensions	
Width x Depth x Height	78 mm (3.07") x 70 mm (2.76") x 92mm (3.62")
Shipping Weight	0.47 kg (1.0lbs)

View of the HK-XCAM1080H

UI of the XCAM1080H Camera

Dimension for XCAM1080H



■ XCAM1080W5/D / C-mount HDMI+WIFI CMOS Camera

Model Name	Picture	Sensor & Size(mm)	Pixel(μm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure
HK-XCAM1080W5		1080P/5M/ Sony IMX178(C) 1/1.8"(6.22x4.67)	2.4x2.4	425 mv with 1/30s 0.15 mv with 1/30s	60@1920x1080 (HDMI) 25@1920x1080 (WIFI)	1x1	0.03ms~918ms
HK-XCAM1080D		1080P/2M/ Sony IMX185(C) 1/1.9"(7.20x4.05)	3.75x3.75	1120 mv with 1/30s 0.15 mv with 1/30s	60@1920x1080 (HDMI) 25@1920x1080 (WIFI)	1x1	0.06ms~918ms

XCAM1080W5/D is a multiple interfaces (HDMI+WIFI+SD card, so X here means multiple interfaces) CMOS camera and it adopts ultra-high performance Sony CMOS sensor as the image-picking device. HDMI+WIFI are used as the data transfer interface to HDMI display or computer.

For HDMI output, The XCamView will be loaded and a camera control panel and toolbar are overlaid on the HDMI screen, in this case, the USB mouse can be used to set the camera, browse and compare the captured image, play the video ital.

For WIFI output, unplug the mouse and plug in the USB WIFI adapter, connect the computer WIFI to the camera, then the video stream can be transfer to computer with the advanced software HKBasic. With HKBasic, you can control the camera, process the image as KOPTIC's other USB series camera.

Interface & Button Functions	
USB	USB Camera or USB Mouse
HDMI	HDMI Output
DC12V	12V Power in
SD	SD Card Slot
ON/OFF	Power On/Off Switch
LED	Power On Indicator
Other Specification for HDMI Output	
UI Operation	With USB Mouse
Image Capture	JPEG Format with 5M Resolution in SD Card(XCAM1080W5) JPEG Format with 2M Resolution in SD Card(XCAM1080D)
Video Record	ASF Format 1080P 30fps in SD Card
Camera Control Panel	Including Exposure, Gain, White Balance, Color Adjustment, Sharpness and Denoising Control
Toolbar	Including Zoom, Mirror, Comparison, Freeze, Cross, Browser Function
Other Specification for WIFI Output	
UI Operation	With USB Mouse to Operate on the embedded XCamView
WIFI Performance	802.11n 150Mbps; RF Power 20dBm(Maximum)
Maximum Connected Devices	3~6(According to the Environment and Connection Distance)
White Balance	Auto White Balance
Color Technique	Ultra-Fine Color Engine (WIFI)
Capture/Control API	Standard SDK for Windows/Linux/Mac(WIFI)
Recording System	Still Picture or Movie (WIFI)
Software Environment (for USB2.0 Connection)	
Operating System	Microsoft® Windows® XP /Vista /7/8/8.1/10(32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher Memory: 4GB or More USB Port: USB2.0 High-speed Port Display: 19" or Larger CD-ROM
Operating Environment	
Operating Temperature(in Centidegree)	-10~ 50
Storage Temperature(in Centidegree)	-20~ 60
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 12V/2A Adaptor

Overall Dimensions	
Width x Depth x Height	78 mm (3.07") x 70 mm (2.76") x 92mm (3.62")
Shipping Weight	0.47 kg (1.0lbs)

View of the HK-XCAM1080W5/D

UI of the XCAM1080W5/D Camera

Dimension for XCAM1080W5/D

■ XCAM720 / C-mount HDMI CMOS Camera

Model Name	Picture	Sensor & Size(mm)	Pixel(μm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure
HK-XCAM720C		720P/2M/IMX322(C) 1/2.8" (5.78x3.02)	2.8x2.8	510mv with 1/30s (G Sensitivity) 0.15mv with 1/30s (Dark Signal)	30@1280x720 (HDMI) 1920x1080 (Capture)	1x1	0.06ms~1900ms

Through standard HDMI interface to stream the video to displayer or HDTV. Easy connecting to other equipment on the production line with the C-mount optical interface.
High-resolution and high frame rate, perfect color reproduction, highly integrated and compact, low failure rate and stable performance.
1280 × 720 (720P) resolutions to match the current high-definition displayer on the market.
HK-XCAM720C embedded XCamView based on the Qt platform. The camera characteristic can be controlled by the mouse. The other basic processing and choosing can also be realized by the XCamView.
For the above characteristic and technical features, which utmost meet various applications and widely apply to industrial inspection, education and research, materials analysis, precision measurement, medical analyses etc.

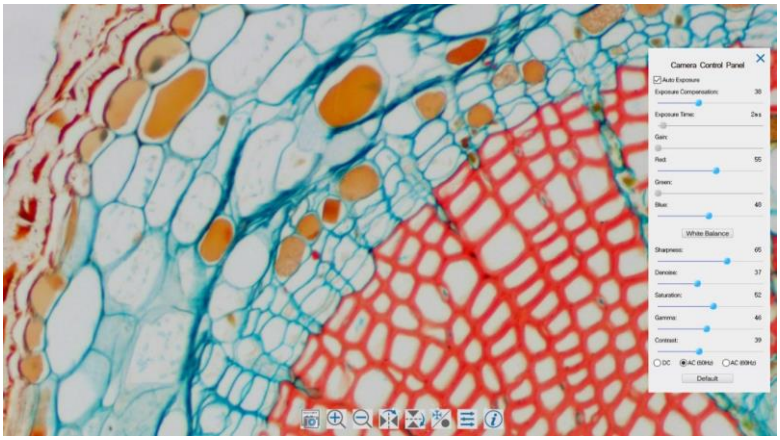
Camera Interface	
HDMI	HDMI Output Port
USB	USB Mouse for XCamView Control
DC12V	Power Input Slot
SD	SD Card Slot
Overall Dimensions	
Width x Depth x Height	50 mm (1.97″) x 50 mm (1.97″) x 61mm (2.4″)
Shipping Weight	0.47kg (0.55 lbs)
Operating Environment	
Operating Temperature(in Centidegree)	-10~ 50
Storage Temperature(in Centidegree)	-20~ 60
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V/1A Adapter
Optional Accessories	
Lens	C-mount Lens
Cable	HDMI Cable
Memory Card	SD Card
Mouse	USB mouse/USB Wireless Mouse
Function Key Description	

The Back of the HK-XCAM720C

The camera light indicator flashes about 15s after the power on. The camera will load software, and then the system begins to work. Auto exposure and white balance are the default state now.

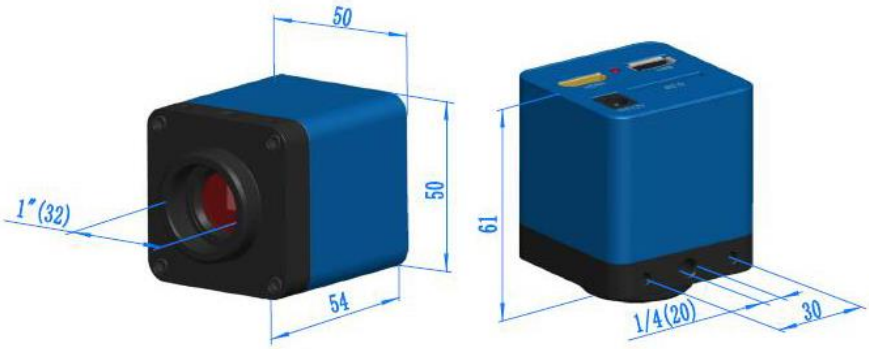
HDMI : The HDMI output port connected to the HDMI diaplayer;
USB : USB mouse;
DC 12V : Power in 12V/1A ;
LED: The blue LED indicator;
SD : SD card slot;

XCamView for HK-XCAM720C



1: Image Capture
2 : Digital Zoom In
3 : Digital Zoom Out
4 : Horizontal Flip
5 : Vertical Flip
6 : Video Freez /Cancel Video Freeze
7 : Display/Hide the Camera Control Panel
8 : Display the XCamView Version Information

Dimension for HK-XCAM720C



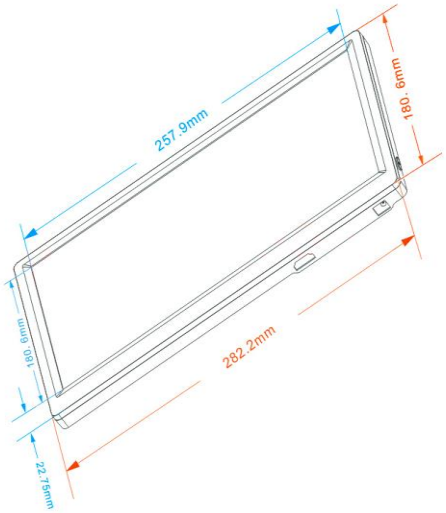
■ HDMI Displayer for XCAM Series Camera

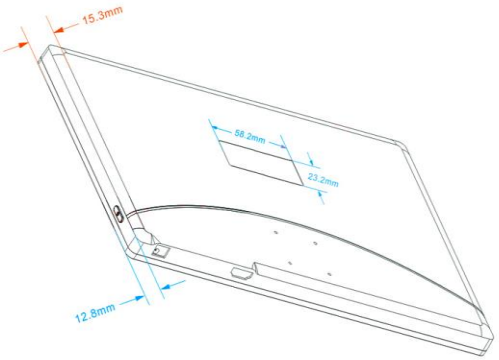
Model Name	Picture	Active Area(Inch)	Video Fomat	Resolution	Contrast	Color(Million)	View Angle
HK-HD12H		11.6	HDMI	1920 x 1080P	1000:1	16.7	IPS Full View

HK-HD12H is born with HK-XCAM series HDMI camera and can be used for high definition display. It adopts Panasonic IPS LCD panel(Super TFT) to guarantee the wide view angle and high contrast. Together with XCAM HDMI camera. HK-HD12H could make the imaging & display solution simple, flexible and intuitive. Outstanding performance of HK-HD12H helps XCAM HDMI camera reach fast frame rate and excellent color.

Basic Performance	
LCD Panel	Panasonic IPS LCD Screen(Super TFT)
Input Video Format	HDMI
Native Resolution	1920 x 1080
Display Type	16:9 Ratio 11.6 Inch Active Matrix Super TFT LCD
Typical Contrast Ratio	41.66736111
Colors	16.7 Million
Viewing Angle(L/R/U/D)	IPS Full Vew
Active Display Area	258mm(W) × 145mm(H)
Pixel Pitch	0.134(W) X 0.134(H) mm
Brightness	350 cd/ sq.m ;400cd sq.m / Optional
Backlight	LED Backlight , 5000 hours
Outline Parameter	
Color	Black
Dimension	281(L)*179(H)*15.6(W) mm
Weight	400g
Operating Environment	
Operating Temperature	-15 Degree~55 Degree
Humidity Non Condensing	Operating:10%-90%, Storage: 5%-90%
Synchronization Range	30-80 KHz Horizontal, 55-75 Hz Vertical
Power Supply	AC110V-220V /DC12V(1A)
Power Consumption	Max 12W

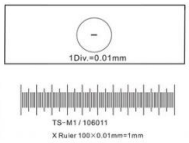
Dimension of HK-HD12H





View of Nikon Microscope+XCAMSeries Camera and HK-HD12H

■ ACCESSORIES for Camera

Model Name	Picture	Description
AMA050		C-Mount for Binocular Microscpe 1. Fit to 1/2"~ 1/3" sensor 2. 0.50X magnification 3. Manually focusable 4. Parfocal with the myepiece 5. C-mount to Dia.23.2mm ~30.0mm eye tube
TS-M1		Calibration Slide (Glass Panel) X ruler 1mm/100 Div.x0.01mm Scale on Schott Optical Glass

■ HKBasic / Imanging Software for HK Camera Series

Model Name	Picture	Description
HKBasic		HKBasic for all HK camera Series; Unlimited language support; Windows XP, Vista, 2008, Win7, Win8(32/64 bit)/Max/Linux Ultra Fine color engine; Diversified useful tools;

What's in the included software

HKBasic is one of the KOPTIC's most famous camera control software. It provides functions to fully control the camera and present the video stream processed by Ultra FineTM color engine at high speed, which includes dedicated pipeline to process the raw data into a realistic scene. Besides, diversified useful tools are provided for specific purpose, such as luminance calibration, measurement, image stitching, extending depth of field, video watermark attachment, color composition, imaging processing and so on.

Multi-language mechanism is also realized to support random language, which includes but not limited to English,French, German,Indonesian, Korean, Japanese, Polish, Russian, Chinese,Turkish and so on.

HKBasic is totally compatible with HK camera full series of digital cameras. With authorized license, HKBasic software could be used with other cameras, which support Twain or DirectShow interface.

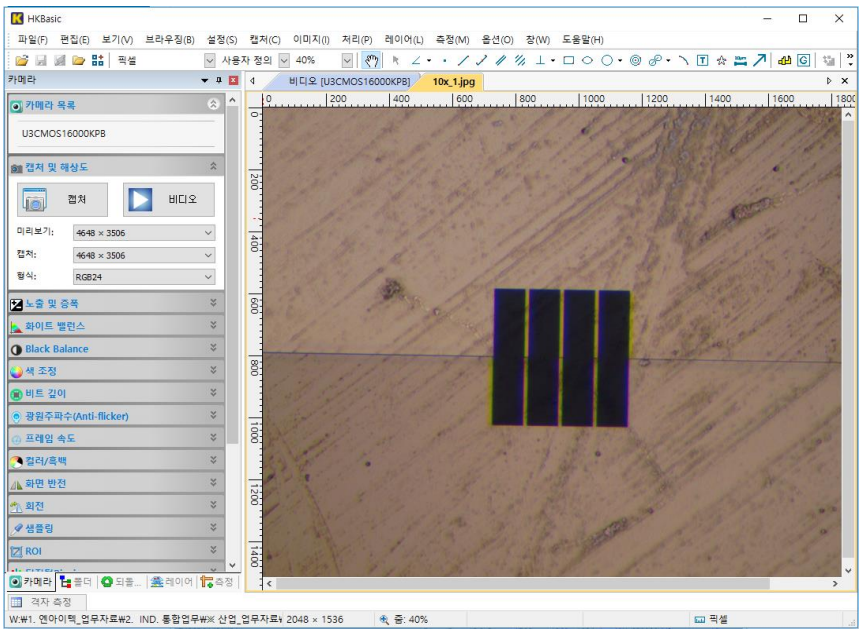
Powerful Windows/Linux/Mac OS SDKs are also provided for further development.

Now HKBasic is widely used in the field of medical microscopic imaging, industrial detection, machine vision, astronomical observation, etc. HKBasic is one of the best software in the camera industry, and the United States education department is strongly recommend.

User-friendly UI design

Well-arranged menus and toolbars ensure quick operating;

- The unique design of 5 sidebars -- Camera, Folders, Undo/Redo, Layer, Measurement are orderly classified ;
- Convenient operating method (Double click or right-click context menu) as much as possible;
- Detailed help manual;



Professional camera control panel	
Exposure & Gain	Auto exposure (exposure target preset) and manual exposure (exposure time can be inputted manually); Up to 5 times gain;
White Balance	Advanced single-click intelligent white balance setting, temperature and tint can be manually adjusted;
Color Adjustment	Hue, saturation, brightness, contrast, gamma initialization adjustment;
Frame Rate Control	Adjustment of frame rate available for different computer configurations;
Power Frequency Setting(Anti-filcker)	Natural light/DC, AC 50 HZ, AC60 HZ switch function thoroughly eliminates video flicker;
Flip	Check the “horizontal” or “vertical” option to correct the sample direction;
Skip and bin sampling	Bin mode can obtain low noise video stream; Skip mode obtains sharper and smoother video stream. Support video stream histogram extension, Negative and positive switching, Gray calibration, Clarity factor for focusing etc.
Parameters	Load, save, overwrite, import, export self-defined parameters of camera control panel (including calibration information, exposure and color setting information);
Practical functions with good results	
Video functions	Various professional functions : Video broadcast; Time lapse capture; Video record; Video watermark; Move watermark; Rotate watermark; Video stream grid; Video measurement; Video calibration, Gray calibration; Video EDF; Image stitch; Video scale bar, date and etc.;
Image Processing and Enhancement	Control and adjust image by contrast, denoise, all kinds of filtering algorithm and mathematical morphology algorithm; image rotate, image scale, image print;
2D Measurement	Easy video or image calibration. Various video and image measurement methods like area, perimeter, angle etc.. Measurement results can be hierarchical controlled according to characteristics or preferences;
Image Stitching	Image stitching can automatically combine a sequence of relevant images into a perfect larger one. No requirement on the image order；Support video window, image window, browse window image stitching operation.
EDF(Extended Depth of Focus)	Aimed at generating a clearer image by combining a sequence of previously captured multi-focus images; Support video window, image window, browse window EDF operation. Provided with maximum contrast, weighted average, FFDSSD algorithms to meet with most applications. Consider image shift, rotation and scale in the EDF process to guarantee EDF accuracy & speed；
Professional Segmentation & Count function	Integrate the advanced 6 image segmentation and particle counting algorithm (Watershed (W), OTSU Dark, OTSU Bright, RGB Histogram, HSV Histogram and Color Cube). Manual segmentation function (Split objects) ensures the success of a complete segmentation. The count result can be exported to Microsoft Excel for further analysis;
Image Stacking	Image stacking adopts advanced image matching technology. With the recorded video, regardless of shifting, rotation, scaling, the high fidelity image can be stacked to decrease the image noise.
Color Composite	Color composite adds appropriate pseudo color to monochrome fluorescence images. Fluorescence probe and color can be chosen from the pre-defined database. Dye database can also be easily created for special fluorescence probe.
Image Stitching	

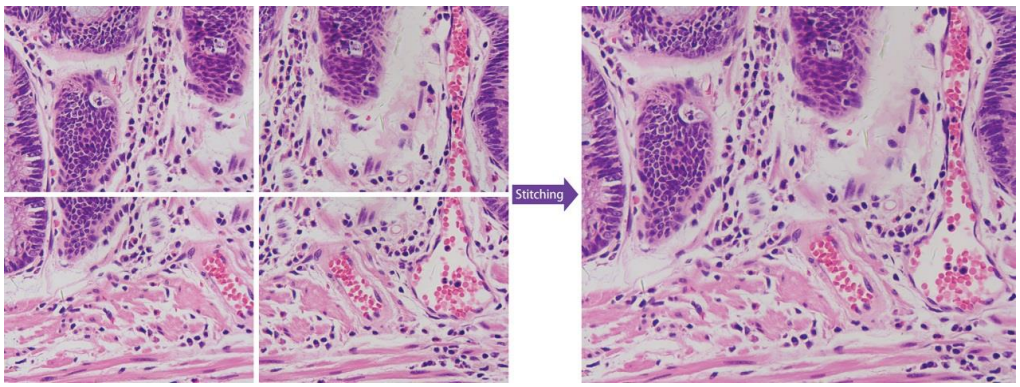


Image Segmentation & Counting

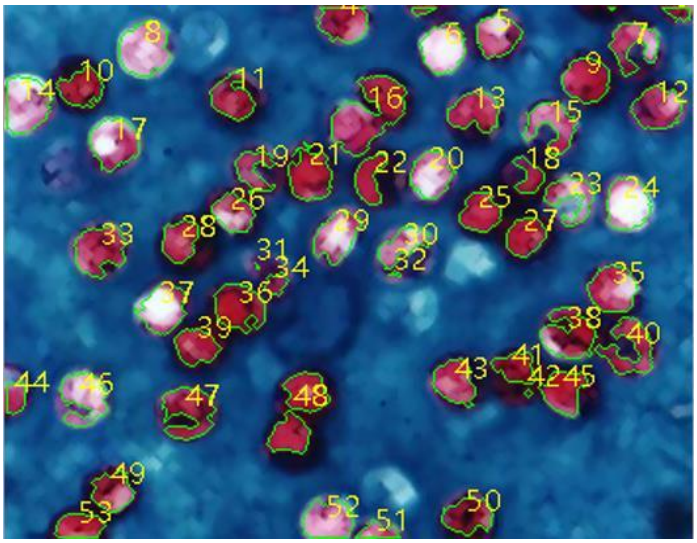
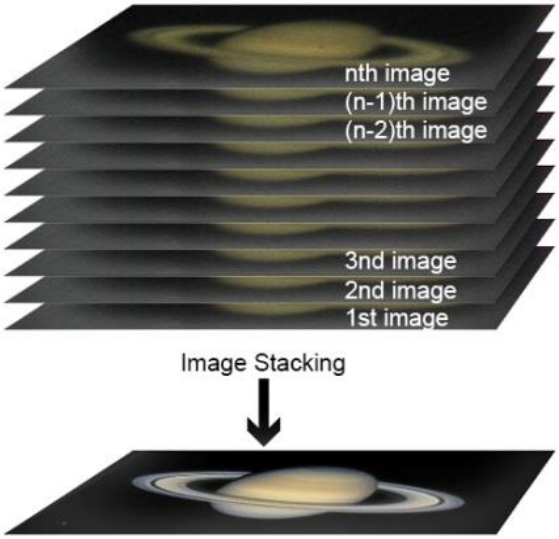
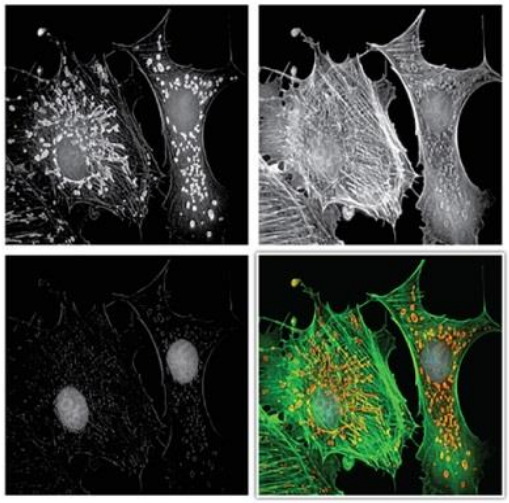


Image Statcking



Color Composite



EDF(Extended Depth of Focus)

Powerful compatibility	
Video Interface	Support Twain, DirectShow, Labview, SDK Package（Native C++、C#）
Operating System	Compatible with Microsoft® Windows® XP / Vista / 7 / 8 (32 & 64 bit), Mac OSX, Linux
Language Support	Unlimited language support, currently available in Simplified Chinese,Traditional Chinese, English, Russian, German, French, Polish and Turkish,Japanese
Hardware requirement	
PC Requirements	CPU: Intel Core 2 2.8GHz or Higher
	Memory:2GB or more
	USB port:USB2.0 or USB3.0 port
	Display:17” or Larger
	CD-ROM