

### iqualitrol C-mount USB2.0 CMOS Camera



- Standard C-Mount camera with Aptina CMOS sensor;
- With hardware resolution among 0.35M to 14M;
- Integrated zinc aluminum alloy housing;
- USB2.0 interface ensuring high speed data transmission;
- Ultra-Fine color engine with perfect color reproduction capability;
- With advanced video & image processing application;
- Providing Windows/Linux/OSX multiple platform SDK;
- Native C/C++, C#, DirectShow, Twain Control API;

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.

CMOS camera hardware resolutions range from 0.35M to 14M and comes with the Integrated zinc aluminum alloy compact housing.

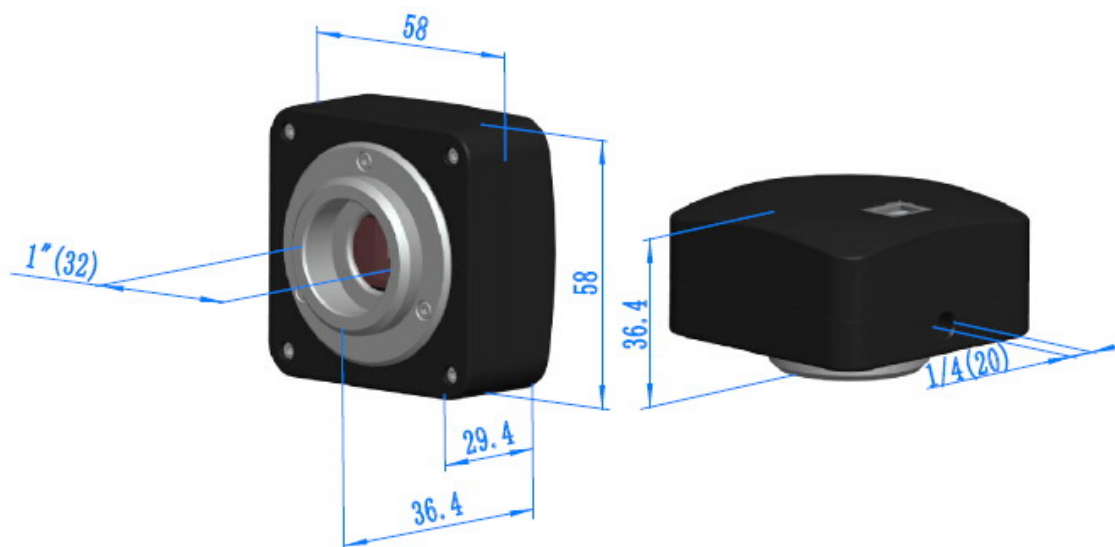
CMOS comes with advanced video & image processing application; Providing Windows/Linux/OSX multiple platform SDK; Native C/C++, C#/VB.NET, DirectShow, Twain Control API;

CMOS can be widely used in brightfield light environment and microscope image capture and analysis with moderate frame rate.

#### USB2.0 CMOS Camera Dimension

Installation drawings. The CMOS Series USB2.0 Camera body, made from tough, CNC alloy, ensures a heavy duty, workhorse solution.

The camera is designed with a high quality IR-CUT to protect the camera sensor. No moving parts included. This design ensures a rugged, robust solution with an increased lifespan when compared to other industrial camera solutions.



Order Code	Sensor & Size(mm)	Pixel( $\mu$ m)	G Sensitivity Dynamic Range SN Ratio	FPS/Resolution	Binning	Exposure
CMOS14000KPA TP614000A	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
CMOS10000KPA TP610000A	10M/MT9J003(C) 1/2.3"(5.98x4.59)	1.67x1.67	0.31v/lux-sec 65.2dB 34dB	1.9@3584x2748 8@1792x1374 27@896x684	1x1,2x2,4x4	0.4ms~2000ms
CMOS09000KPB TP609000B	9.0M/Special(C) 1/2.4"(5.83x4.37)	1.67x1.67	0.31v/lux-sec 65.2dB 34dB	1.9@3488x2616 8@1744x1308 27@872x654	1x1,2x2,4x4	0.4ms~2000ms
CMOS08000KPB TP608000B	14M/Special(C) 1/2.5"(5.45x4.09)	1.67x1.67	0.31v/lux-sec 65.2dB 34dB	1.9@3264x2448 8@1600x1200 27@800x600	1x1,2x2,4x4	0.4ms~2000ms
CMOS05100KPA TP605100A	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
CMOS03100KPA TP603100A	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
CMOS02000KPB TP602000B	2.0M/Special(C) 1/2.6"(5.12x3.84)	3.2x3.2	1.0 V/lux-sec 61dB 43dB	16@1600x1200 50@800x600	1x1,2x2	0.244ms~2000ms
CMOS01300KPA TP601300A	1.3M/MT9M111(C) 1/3"(4.60x3.70)	3.6x3.6	1.0V/lux-sec 71dB 44dB	15@1280x1024 26@640x512 50@320x256	1x1,2x2,4x4	0.14ms~2000ms
CMOS01300KMA TM601300A	1.3M/MT9M001(M) 1/2"(6.66x5.32)	5.2x5.2	2.1 V/lux-sec 68.2dB 45dB	20@1280x1024	1x1	0.14ms~500ms
CMOS00350KPA TP600350A	0.35M/MT9V011(C) 1/4"(3.58x2.69)	5.6x5.6	1.9V/lux-sec 60dB 45dB	30@640x480 80@320x240	1x1,2x2	0.111ms~192.6ms

**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
<b>OPERATING ENVIRONMENT</b>	
Operating Temperature	-10°C ~ 50°C
Storage Temperature	-20°C ~ 60°C
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port
<b>SOFTWARE ENVIRONMENT</b>	
Operating System	Support Microsoft Windows XP / Vista / 7 / 8 (32 & 64 bit) OS X (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

### **Camera Control and Image Observation Software**

Camera control software provides functions to fully control the camera and present the video stream processed by Ultra Fine™ 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, Japanese, Polish, Russian, Chinese, Turkish and so on.

It is totally compatible with full series of digital cameras. With authorized license, 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.

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

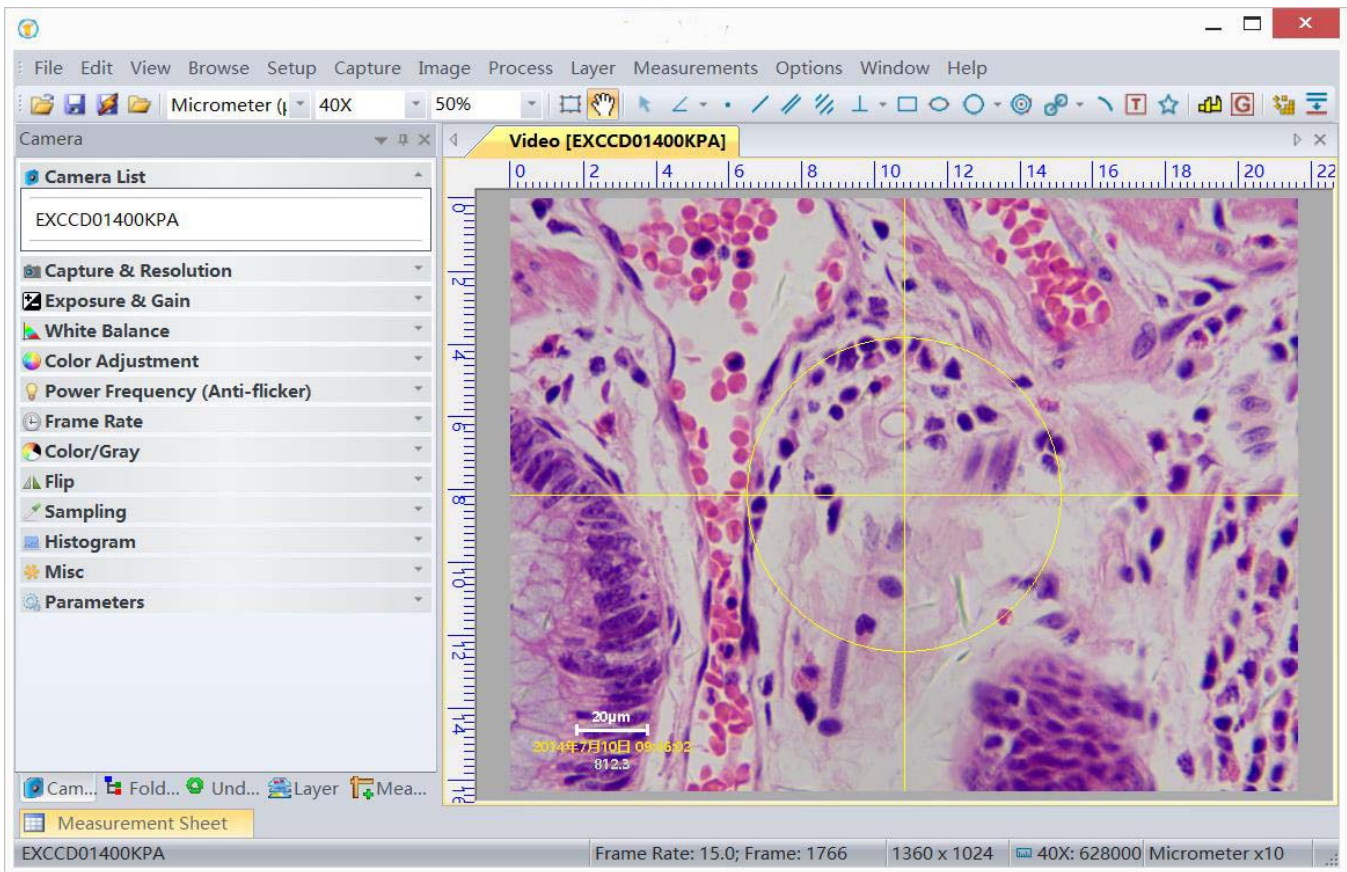
#### **User-friendly UI design**

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-flicker)	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
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	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.

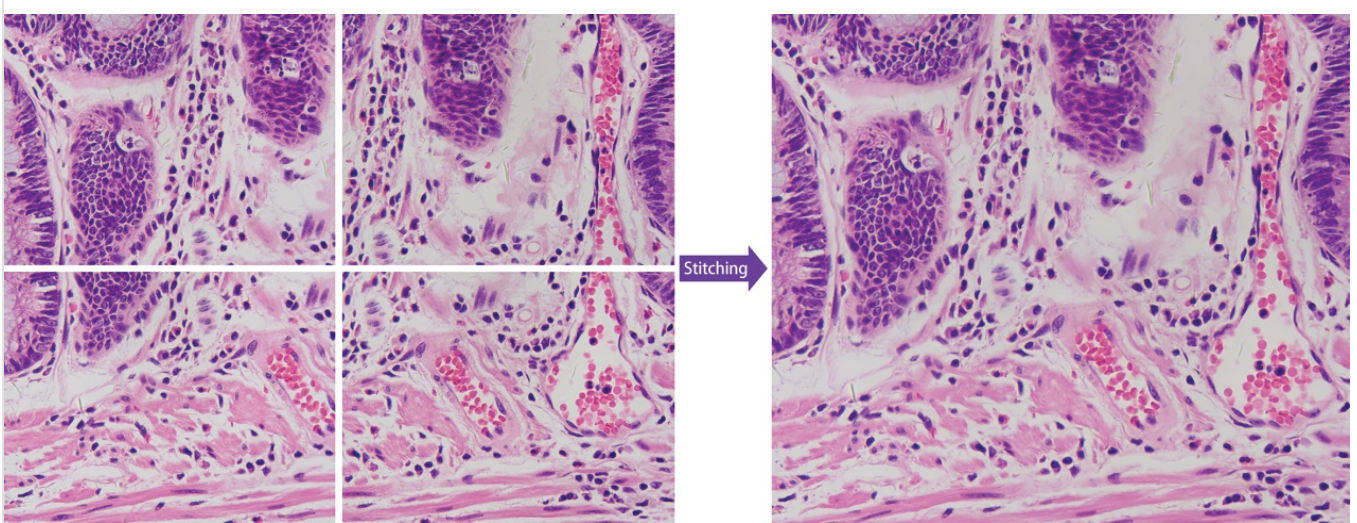


Image Stitching

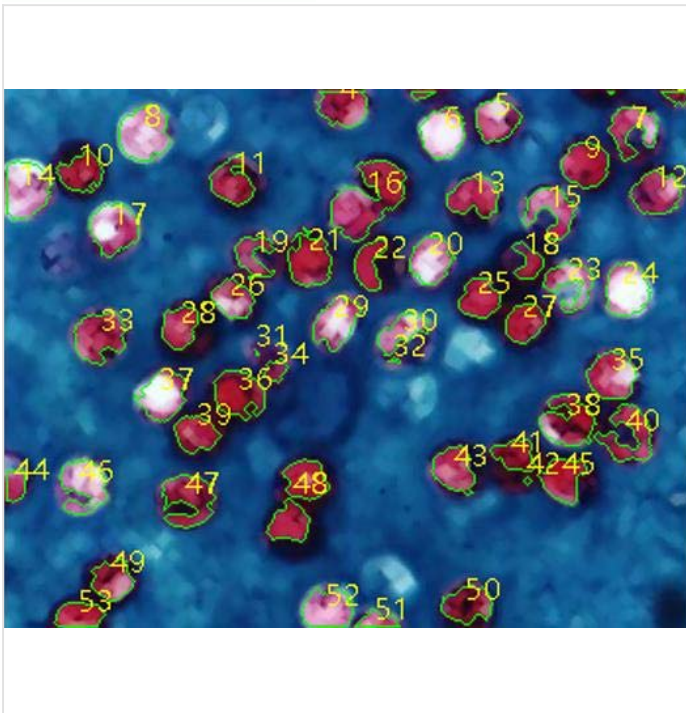


Image Segmentation & Counting

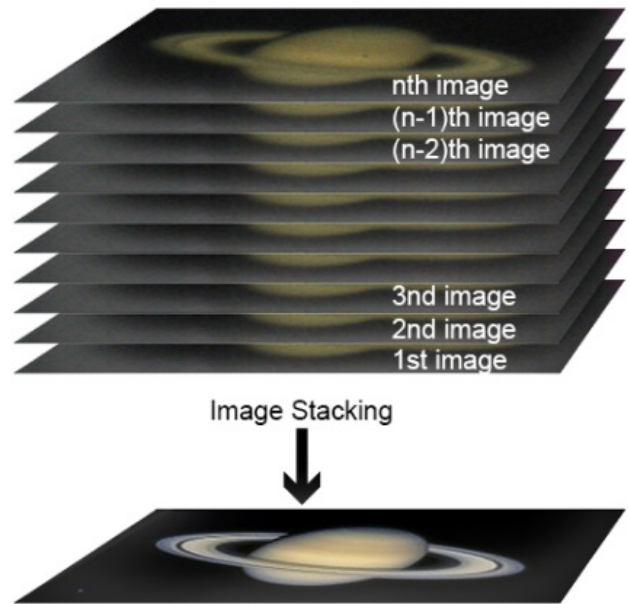
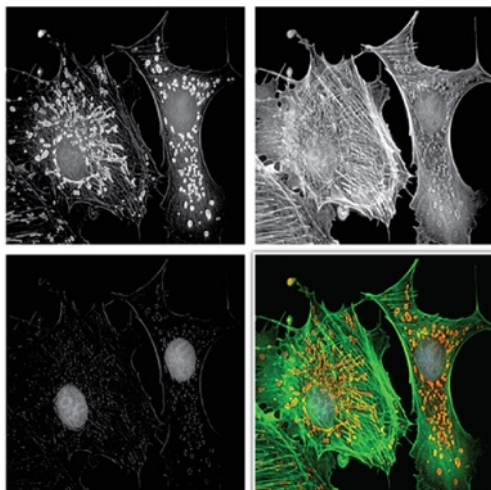


Image Stacking



Color Composite



EDOF

**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