7 Microscope USB3.0 CCD Camera

7.1 U3CCD Series C-mount USB3.0 CCD Camera

7.1.1 U3CCD Basic Characteristic

ToupTek U3CCD is an ExView HAD CCD series camera. 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. ToupTek uses EXCCD for simplicity. USB3.0 is used as the data transfer interface.

U3CCD hardware resolutions range from 1.4M to 12M and come with the integrated CNC aluminum alloy compact housing.

U3CCD comes with advanced video & image processing application ToupView; Providing Windows/Linux/ OSX multiple platforms SDK; Native C/C++, C#/VB.NET, DirectShow, Twain Control API;

The U3CCD can be widely used in bright field light environment and microscope image capture and analysis with higher frame rate.

The U3CCD characteristic is as follows:

- Standard C-Mount camera with SONY ExView HAD CCD II sensors from 1.4M ~12M;
- IR-CUT Coated Windows
- Up to 1000s long time exposure;
- USB3.0 5Gbit/second interface ensuring high speed data transmission;
- Ultra-Fine^{TM} color engine with perfect color reproduction capability;
- With advanced video & image processing application ToupView;
- Providing Windows/Linux/Mac OS multiple platforms SDK;
- Native C/C++, C#/VB.NET, DirectShow, Twain Control API;

7.1.2 U3CCD Datasheet (10)

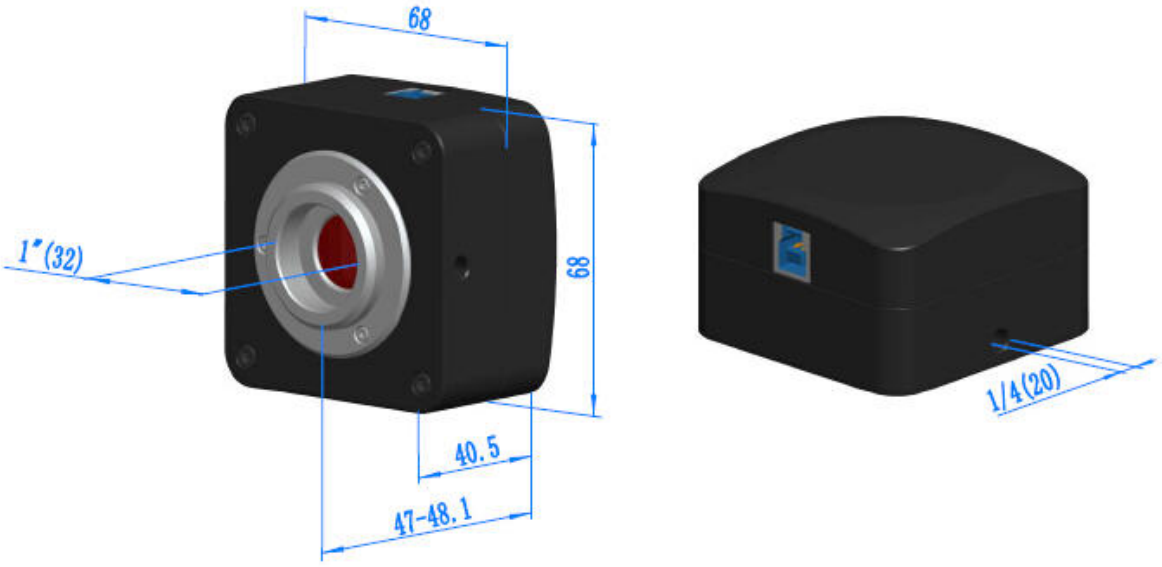
Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity Dark Signal	FPS/Resolution	Binning	Exposure
U3CCD12000KPA **NP112000A(New)**	12M/ICX834AQG(C) 1“ (13.15x8.77)	3.1x3.1	420mv with 1/30s 15.2mv with 1/30s	3.6@4248x2836 3.6@2124x1418	1x1, 2x2	0.06ms~1000s
U3CCD12000KMA **NM112000A(New)**	12M/ICX834ALG(M) 1“ (13.15x8.77)	3.1x3.1	420mv with 1/30s 12mv with 1/30s (F8.0)	3.6@4248x2836 3.6@2124x1418	1x1, 2x2	0.06ms~1000s
U3CCD09000KPA **NP109000A(New)**	9.0M/ICX814AQG(C) 1“ (12.47x9.98)	3.69x3.69	580mv with 1/30s 12mv with 1/30s	4.4@3388x2712 4.4@1694x1356	1x1, 2x2	0.06ms~1000s
U3CCD09000KMA **NM109000A(New)**	9.0M/ICX814ALG(M) 1“ (12.47x9.98)	3.69x3.69	660mv with 1/30s 12mv with 1/30s (F8.0)	4.4@3388x2712 4.4@1694x1356	1x1, 2x2	0.06ms~1000s
U3CCD06000KPA **NP106000A**	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~1000s
U3CCD06000KMA **NM106000A**	6.0M/ICX694ALG(M) 1“ (12.48x9.99)	4.54x4.54	1000mv with 1/30s 8mv with 1/30s	7.5@2748x2200 14@2748x1092	1x1	0.06ms~1000s
U3CCD02800KPA **NP102800A**	2.8M/ICX674AQG(C) 2/3“ (8.81x6.63)	4.54x4.54	800mv with 1/30s 4mv with 1/30s	15@1938x1460 17@1610x1212 18@1930x1092	1x1	0.05ms~1000s
U3CCD02800KMA **NM102800A**	2.8M/ICX674ALG(M) 2/3“ (8.81x6.63)	4.54x4.54	950mv with 1/30s 4mv with 1/30s	15@1938x1460 17@1610x1212 18@1930x1092	1x1	0.05ms~1000s
U3CCD01400KPB **NP101400B(New)**	1.4M/ICX825AQA(C) 2/3“ (8.88x6.70)	6.45x6.45	2000mv with 1/30s 4.8mv with 1/30s	25@1376x1040	1x1	0.07ms~1000s
U3CCD01400KMB **NM101400B(New)**	1.4M/ICX825ALA(M) 2/3“ (8.88x6.70)	6.45x6.45	2000mv with 1/30s 4.8mv with 1/30s	25@1376x1040	1x1	0.07ms~1000s

C: Color; M: Monochrome;

Other Specification for U3CCD Camera	
Spectral Range	380-650nm (with IR-cut Filter)
White Balance	ROI White Balance/ Manual Temp Tint Adjustment/NA for Monochromatic Sensor
Color Technique	Ultra-Fine™ Color Engine/NA for Monochromatic Sensor
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 and Movie
Cooling System*	Natural
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 over PC USB Port
Software Environment	
Operating System	Microsoft® Windows® XP / Vista / 7 / 8 /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: USB3.0 High-speed Port
	Display: 17” or Larger
	CD-ROM

7.1.3 Dimension of U3CCD

The U3CCD body, made from tough, CNC aluminum 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.



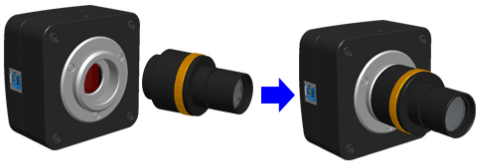
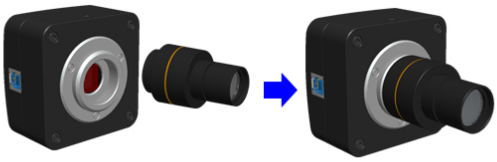
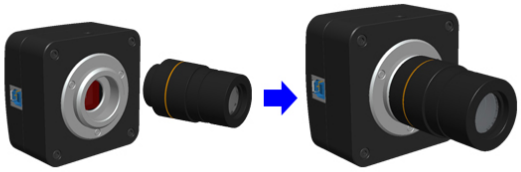
Dimension of U3CCD Series Camera

7.1.4 Packing Information for U3CCD Series Camera

Packing Information of U3CCD Series Camera

Standard Camera Packing List			
A	Carton L:52cm W:32cm H:33cm (20pcs, 12~17Kg/ carton), not shown in the photo		
B	Gift box L:15cm W:15cm H:10cm (0.7~0.75Kg/ box)		
C	U3CCD series USB3.0 C-mount CMOS camera		
D	High-speed USB3.0 A male to B male gold-plated connectors cable /2.0m		
E	CD (Driver & utilities software, Ø12cm)		
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 108004/AMA100
		C-mount to Dia.31.75mm eyepiece tube (Please choose 1 of them for your telescope)	108008/ATA037 108009/ATA050 108010/ATA075 108011/ATA100
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 108008/FMA100
		C-Mount to Dia.31.75mm Eyepiece Tube (Please choose 1 of them for your telescope)	108011/FTA037 108012/FTA050 108013/FTA075 108014/FTA100
	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	108017(Dia.23.2mm to 31.75mm Ring)/ Adapter rings for 31.75mm eyepiece tube		
K	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.)	

7.1.5 Extension of U3CCD with Microscope or Telescope Adapter

Extension	Picture	
C-mount Camera		Machine vision; Medical imaging; Semiconductor equipment; Test instruments; Document scanners; 2D barcode readers; Web camera and security video; Microscope imaging;
Microscope Camera	 U3CCD+AMAXXX(23.2mm Adapter)	 U3CCD+FMAXXX(23.2mm Adapter)
Telescope Camera	 U3CCD+ATAXXX(31.75mm Adapter)	 U3CCD+FTAXXX(31.75mm Adapter)