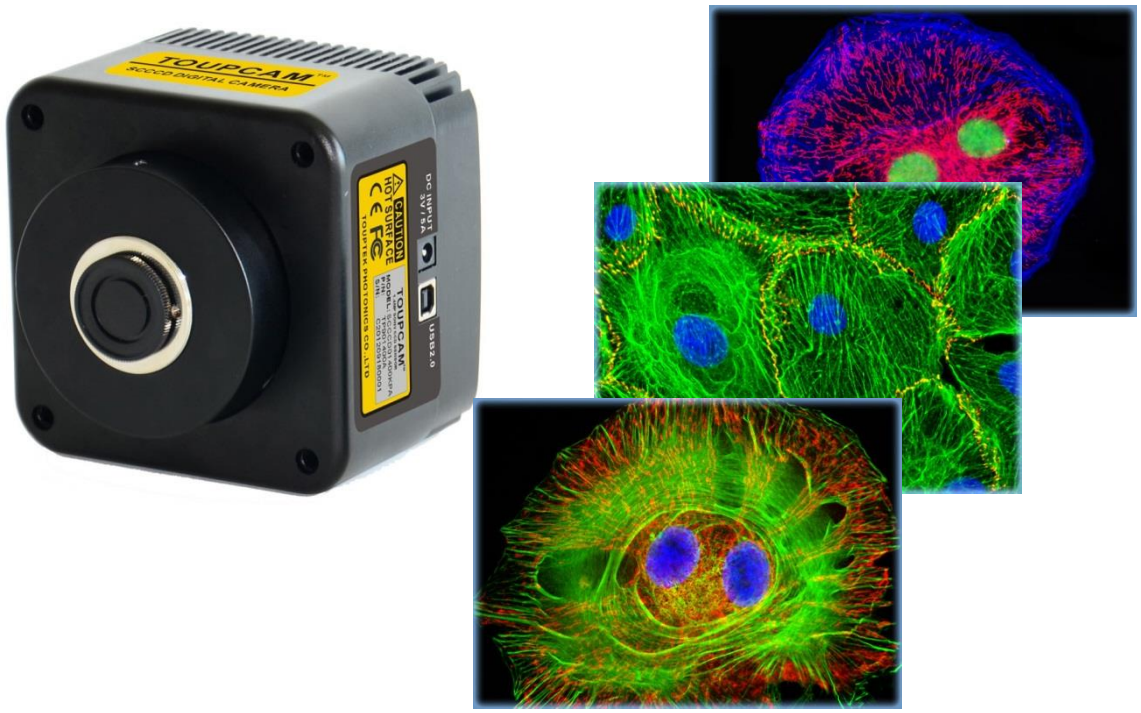
ToupTek Datasheet



January 1, 2013

TOUPTEK PHOTONICS
WE KNOW IMAGES, WE MAKE CAMERAS

Contents

Introduction to ToupCam Cameras

for Microscope, Telescope and Industrial Applications

Microscope

ToupTek® will work with you to choose and integrate the optimal camera for your microscopy project. Ideal for use in any laboratory setting, ToupTek cameras let you capture high-quality imagery with your existing microscope equipment. Our microscopy cameras and associated software are designed to offer consistent, high-quality image acquisition and performance.

Telescope

ToupTek®'s cameras also support telescopes. It works perfectly with any kind of optical telescope. The images of the observed object can be accurately displayed on a computer screen. With the software ToupView, it is very convenient to preview live images and to capture still pictures. The powerful advanced software ToupView included with the camera ensures simple and convenient operation on the captured images.

How do you mount a ToupTek®' camera for telescope onto a telescope? It is simple and easy. Remove the eyepiece from the telescope's ocular tube. Insert a camera into the ocular tube and secure it by tightening the locking-screw. Plug the camera into the USB2.0 port on your computer. That's all there is to it!

Machine Vision

ToupTek®'s experience in the machine vision industry will assist you with selecting and integrating the optimal industrial camera best suited to your application. The industry leading ToupTek® Software Developers Kit (SDK) streamlines and simplifies the integration of cameras into your machine vision project with one API for all cameras.

Along with our wide range of standard CMOS and CCD cameras, ToupTek® provides custom design services to alter one of our existing cameras, or creating one for your unique requirements. One of the many advantages of choosing ToupTek® to supply you and your business is the flexibility to opportunities in an ever-changing global market. With all the choices that are available to you, we ensure you get that you're getting the camera that will perform, with a quality that has been designed to last. We at ToupTek® pride ourselves on the quality of our digital cameras, including the after sales support that you receive with your purchase. The opportunity to provide you with an industry leading camera and software solution for your application would be our pleasure.

Product Nomenclature:

	UHCCD	05100K	P	A	-U	-ET	-S	-C	-SQ	-NA
	1	2	3	4	5	6	7	8	9	10
1	Series Name: SCCCD, U3CCD, U3CMOS, EXCCD, UHCCD, UCMOS or SCMOS									
2	Pixel Number: eg. 05100K: 5.1 Mega pixels									
3	Color Mode, M: Monochromatic; P: Polychromatic									
4	Sensor Distinguishing Code, such as A, B, C or D…									
5	Data Output Interface Model, U: USB; D: DVI; V: VGA; A: Analog									
6	Trigger Type, ET: External Trigger; NA: Not Available									
7	Cooled Type, S: Semiconductor Cooled; F: Fan Cooled; N: Natural Cooled									
8	Optical-Mechanical Interface Type, C: C-mount; M: Microscope; T: Telescope; S: Sporting Scope									
9	Mechanical Shape , CY: Cylinder; SQ: Square; CP: Compact									
10	TV System (Analog Cameras Only), PA: PAL; NT: NTSC; NA: Not Available									

SCCCD Series Camera

SCCCD シリーズデジタルカメラ

SONY CCD SENSOR & TE-COOLING SYSTEM

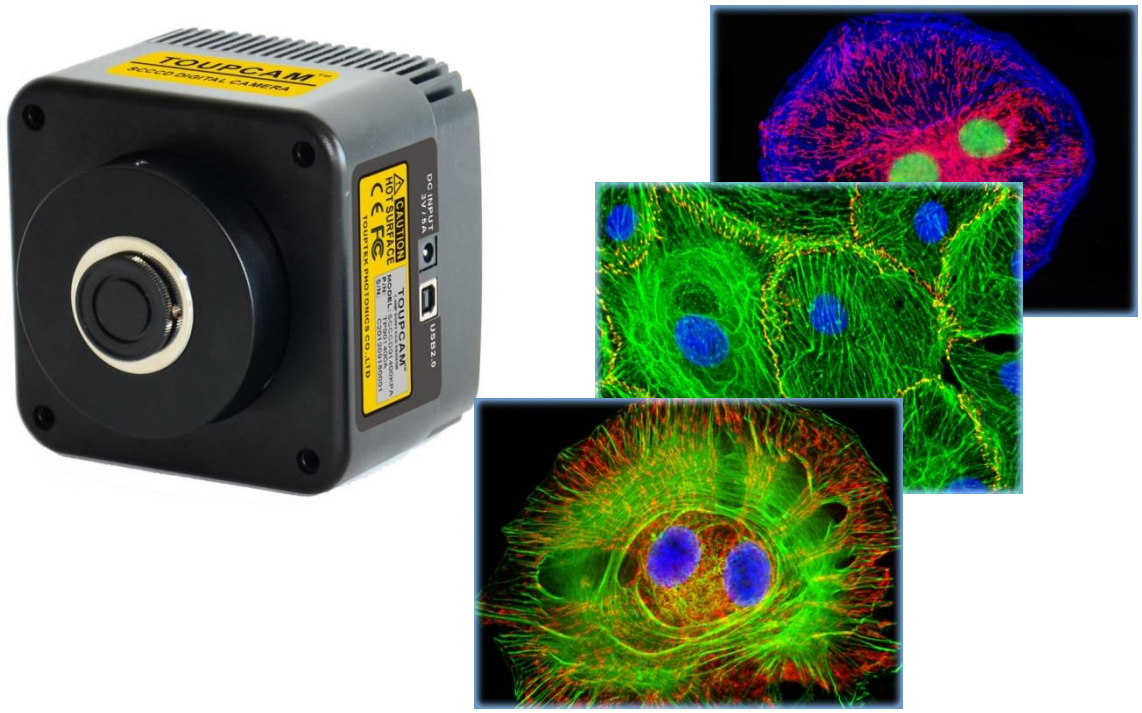
SONY CCD センサと熱電冷却システム

USB2.0 | High Resolution | Perfect Color

高速 USB2.0, 高解像度、完璧なカラー

Ultra-Fine™ Color Engine

Ultra-Fine™ カラーエンジン



Basic Characteristics

Scientific research grade camera with SONY CCD sensor;

Well-designed high-performance TE-cooling structure;

Up to 20 degrees temperature drop;

Higher S/N ratio;

USB2.0 interface ensuring high speed data transmission;

Supporting up to 4 minutes' long time exposure;

Ultra-Fine™ color engine with perfect color reproduction capability;

SCCCD05200KPA-ICX655AQ

5.0MP USB2.0 P/N:TP905200A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX655AQ CCD(Color)
Scan Mode	Progressive
Max. Resolution	2448 x 2050 (Approx. 5,018,000 Pixels)
Sensor Size (Diagonal)	2/3" (Diagonal 11.016mm)
Pixel Size	3.45μm x 3.45μm
Imaging Area	9.93mm(H) x 8.70mm(V)
G Sensitivity	420mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	72dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	4.3fps @2448 x 2050, 10.5fps @960 x 720 (Multiple Speed Level)
Binning	1 x 1
Exposure	0.22ms~60s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	60%
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
Recording System	Still Picture and Movie
Cooling System*	TE-cooling System -20 °C below Ambient Temperature

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 for Camera External Power Adapter for Cooling System, DC3V, 5A

SOFTWARE ENVIRONMENT

Operating System	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

SCCCD01400KPA-ICX285AQ

1.4MP USB2.0 P/N:TP901400A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX285AQ CCD(Color)
Scan Mode	Progressive
Max. Resolution	1360 x 1024 (Approx. 1,400,000 Pixels)
Sensor Size (Diagonal)	2/3" (Diagonal 11mm)
Pixel Size	6.45μm x 6.45μm
Imaging Area	10.2mm(H) x 8.3mm(V)
G Sensitivity	1240mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	75dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	15fps @1360 x 1024(Multiple Speed Level)
Binning	1 x 1
Long Exposure	0.12ms~240s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	4.5 e (r.m.s) @ Gain High /5.6 e (r.m.s) @ Gain Low
Extinction Ratio	1 : 2000 @1ms Exposure Time
Smear	< 0.002%
Linearity	Better than 99%
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
Recording System	Still Picture and Movie
Cooling System	TE-cooling System - 20 °C below Ambient Temperature

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 for Camera External Power Adapter for Cooling System, DC3V, 5A

SOFTWARE ENVIRONMENT

Operating System	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

SCCCD01400KPB-ICX205AK

1.4MP USB2.0 P/N:TP901400B

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX205AK CCD(Color)
Scan Mode	Progressive
Max. Resolution	1360 x 1024 (Approx. 1,400,000 Pixels)
Sensor Size (Diagonal)	1/2" (Diagonal 7.959mm)
Pixel Size	4.65μm x 4.65μm
Imaging Area	7.60mm(H) x 6.20mm(V)
G Sensitivity	400mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	70dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	15fps @1360 x 1024(Multiple Speed Level)
Binning	1 x 1
Long Exposure	0.22ms~240s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Linearity	Better than 99%
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
Recording System	Still Picture and Movie
Cooling System	TE-cooling System, -20 °C below Ambient Temperature

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 for Camera External Power Adapter for Cooling System, DC3V, 5A

SOFTWARE ENVIRONMENT

Operating System	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

SCCCD01400KMA-ICX285AL

1.4MP USB2.0 P/N:TM901400A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX285AL CCD (Monochrome)
Scan Mode	Progressive
Max. Resolution	1360X1024 (Approx. 1,400,000 Pixels)
Sensor Size (Diagonal)	2/3" (Diagonal 11mm)
Pixel Size	6.45μm x 6.45μm
Imaging Area	10.2mm(H) x 8.3mm(V)
G Sensitivity	1240mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	15fps @1360 x 1024(Multiple Speed Level)
Binning	1 x 1
Long Exposure	0.12ms~240s, ROI Auto & Manual
White Balance	N/A
Color Rendering Technique	N/A
Peak Quantum Efficiency	N/A
Readout Noise	4.5 e (r.m.s) @ Gain High /5.6 e (r.m.s) @ Gain Low
Extinction Ratio	1 : 2000 @1ms Exposure Time
Smear	< 0.002%
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
Recording System	Still Picture and Movie
Cooling System*	TE-cooling System, -20 °C below Ambient Temperature

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 External Power Adapter for Cooling System, DC3V, 5A

SOFTWARE ENVIRONMENT

Operating System	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

SCCCD01400KMB-ICX205AL

1.4MP USB2.0 P/N:TM901400B

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX205AL CCD(Monochrome)
Scan Mode	Progressive
Max. Resolution	1360 x 1024 (Approx. 1,400,000 Pixels)
Sensor Size (Diagonal)	1/2" (Diagonal 7.959mm)
Pixel Size	4.65μm x 4.65μm
Imaging Area	7.60mm(H) x 6.20mm(V)
G Sensitivity	400mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	15fps @1360 x 1024(Multiple Speed Level)
Binning	1 x 1
Exposure	0.22ms~240s, ROI Auto & Manual
White Balance	N/A
Color Rendering Technique	N/A
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 External Power Adapter for Cooling System, DC3V, 5A

SOFTWARE ENVIRONMENT

Operating System	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

U3CCD Series Camera

U3CCD シリーズデジタルカメラ

SONY CCD SENSOR & DSP

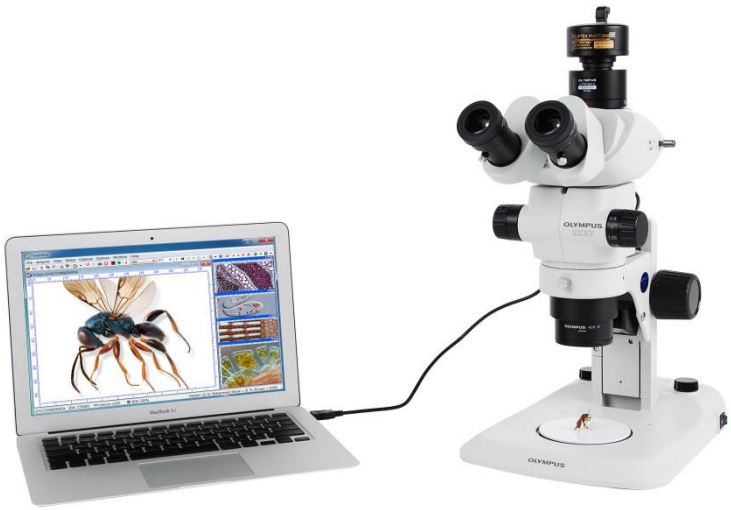
DSP チップとアプティナ CCD センサー

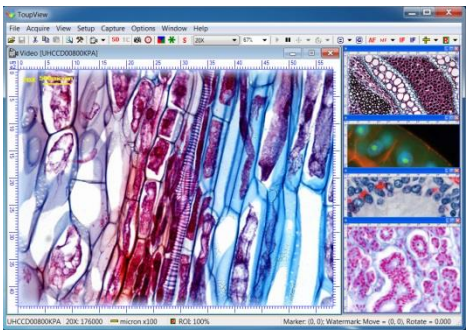
USB3.0 | High-resolution | Perfect Color

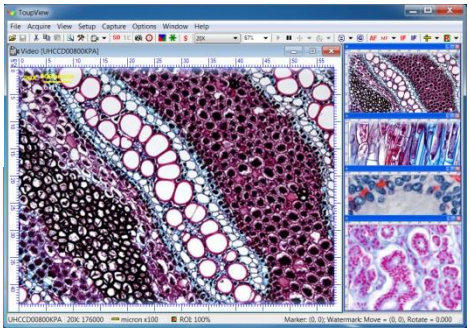
高速 USB3.0，高解像度、完璧なカラー

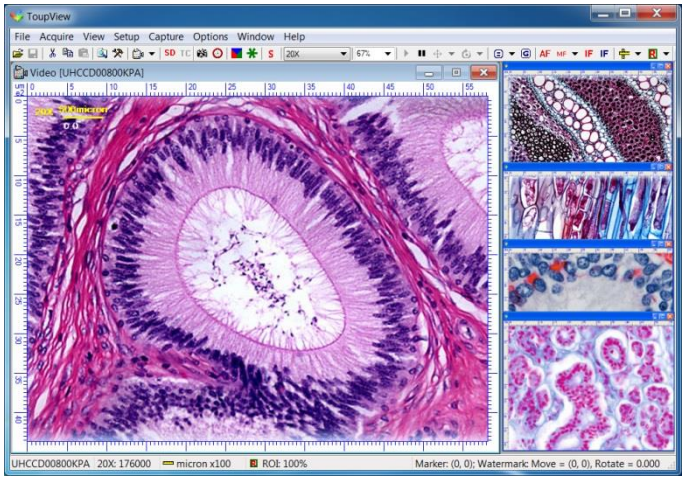
Ultra-Fine™ Color Engine

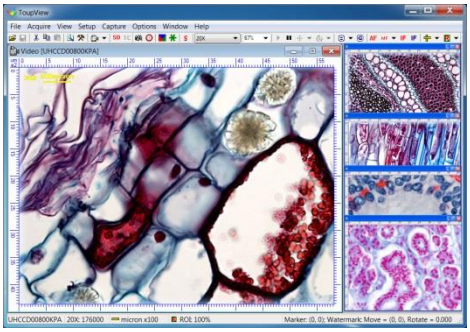
Ultra-Fine™ カラーエンジン











U3CCD05200KPA-ICX655AQ

5.0MP USB3.0 P/N:TP205200A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX655AQ CCD(Color)
Scan Mode	Progressive
Max. Resolution	2448 x 2050 (Approx. 5,018,000 Pixels)
Sensor Size (Diagonal)	2/3" (Diagonal 11.016mm)
Pixel Size	3.45μm x 3.45μm
Imaging Area	9.93mm(H) x 8.70mm(V)
G Sensitivity	420mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	14-bit Parallel, 8-bit R.G.B to PC
SN Ratio	72dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	11fps @2448 x 2050 (Multiple Speed Level)
Binning	1 x 1
Exposure	0.22ms~60s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 for Camera

SOFTWARE ENVIRONMENT

Operating System	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:USB3.0 High-speed Port
	Display:17" or Larger
	CD-ROM

U3CCD01400KPA-ICX285AQ

1.4MP USB3.0 P/N:TP201400A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX285AQ CCD(Color)
Scan Mode	Progressive
Max. Resolution	1360 x 1024 (Approx. 1,400,000 Pixels)
Sensor Size (Diagonal)	2/3" (Diagonal 11mm)
Pixel Size	6.45μm x 6.45μm
Imaging Area	10.2mm(H) x 8.3mm(V)
G Sensitivity	1240mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	75dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	25fps @1360 x 1024(Multiple Speed Level)
Binning	1 x 1
Long Exposure	0.12ms~240s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	65%
Readout Noise	4.5 e (r.m.s) @ Gain High /5.6 e (r.m.s) @ Gain Low
Extinction Ratio	1 : 2000 @1ms Exposure Time
Smear	< 0.002%
Linearity	Better than 99%
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 for Camera

SOFTWARE ENVIRONMENT

Operating System	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:USB3.0 High-speed Port
	Display:17" or Larger
	CD-ROM

U3CCD01400KPB-ICX205AK

1.4MP USB3.0 P/N:TP201400B

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX205AK CCD(Color)
Scan Mode	Progressive
Max. Resolution	1360 x 1024 (Approx. 1,400,000 Pixels)
Sensor Size (Diagonal)	1/2" (Diagonal 7.959mm)
Pixel Size	4.65μm x 4.65μm
Imaging Area	7.60mm(H) x 6.20mm(V)
G Sensitivity	400mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	70dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	25fps @1360 x 1024(Multiple Speed Level)
Binning	1 x 1
Long Exposure	0.22ms~240s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Linearity	Better than 99%
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 for Camera

SOFTWARE ENVIRONMENT

Operating System	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:USB3.0 High-speed Port
	Display:17" or Larger
	CD-ROM

U3CCD01400KMA-ICX285AL

1.4MP USB3.0 P/N:TM201400A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX285AL CCD (Monochrome)
Scan Mode	Progressive
Max. Resolution	1360X1024 (Approx. 1,400,000 Pixels)
Sensor Size (Diagonal)	2/3" (Diagonal 11mm)
Pixel Size	6.45μm x 6.45μm
Imaging Area	10.2mm(H) x 8.3mm(V)
G Sensitivity	1240mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	25fps @1360 x 1024(Multiple Speed Level)
Binning	1 x 1
Long Exposure	0.12ms~240s, ROI Auto & Manual
White Balance	N/A
Color Rendering Technique	N/A
Peak Quantum Efficiency	N/A
Readout Noise	4.5 e (r.m.s) @ Gain High /5.6 e (r.m.s) @ Gain Low
Extinction Ratio	1 : 2000 @1ms Exposure Time
Smear	< 0.002%
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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:USB3.0 High-speed Port
	Display:17" or Larger
	CD-ROM

U3CCD01400KMB-ICX205AL

1.4MP USB3.0 P/N: TM901400B

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX205AL CCD(Monochrome)
Scan Mode	Progressive
Max. Resolution	1360 x 1024 (Approx. 1,400,000 Pixels)
Sensor Size (Diagonal)	1/2" (Diagonal 7.959mm)
Pixel Size	4.65μm x 4.65μm
Imaging Area	7.60mm(H) x 6.20mm(V)
G Sensitivity	400mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	25fps @1360 x 1024(Multiple Speed Level)
Binning	1 x 1
Exposure	0.22ms~240s, ROI Auto & Manual
White Balance	N/A
Color Rendering Technique	N/A
Peak Quantum Efficiency	35%?
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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:USB3.0 High-speed Port
	Display:17" or Larger
	CD-ROM

U3CMOS Series Camera

U3CMOS シリーズデジタルカメラ

APTINA CMOS SENSOR & DSP CHIP

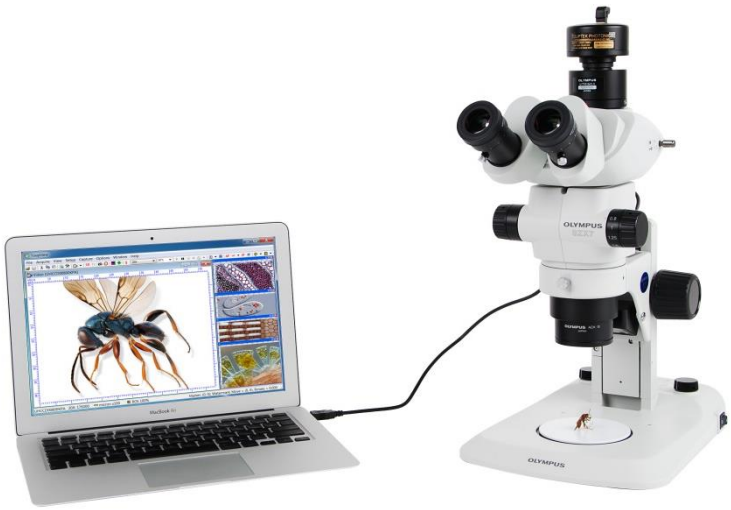
DSP チップとアプティナ CMOS センサー

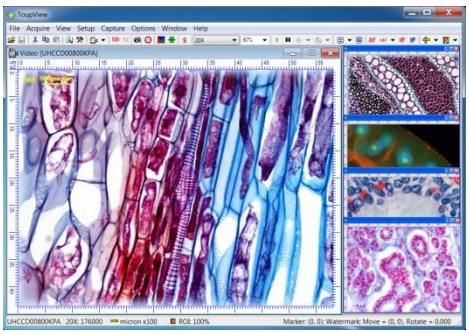
USB3.0 | High Resolution | Perfect Color

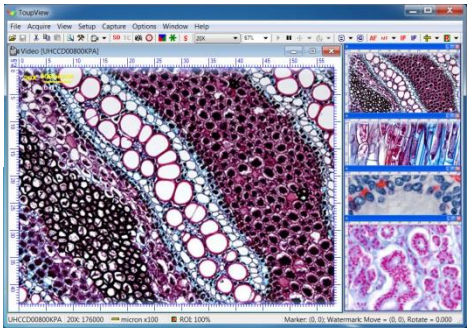
高速 USB3.0，高解像度、完璧なカラー

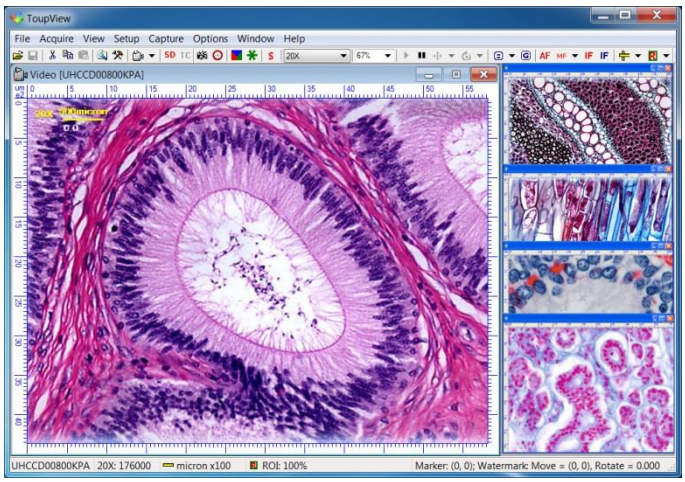
Ultra-Fine™ Color Engine

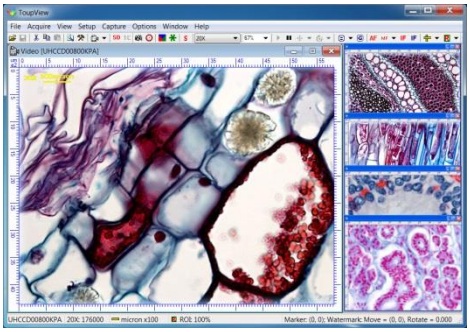
Ultra-Fine™ カラーエンジン











U3CMOS14000KPA-MT9F002

14MP USB3.0 P/N: TP114000A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina MT9F002 CMOS (Color)
Scan Mode	Progressive
Max.Resolution	4096 x 3286 (Approx. 13,500,000 Pixels)
Sensor Size (Diagonal)	1/2.3" (6.451mm(H) x 4.603mm(V), Diagonal 7.925mm)
Pixel Size	1.40μm x 1.40μm
Imaging Area	5.734mm(H) x 4.600mm(V)
Dynamic Range	65.3dB
A/D Converter	12-bit on Board, 8-bit R-G-B Processed
SN Ratio	35.5dB
Spectral Range	380-650nm (with IR-cut Filter)
Responsivity	0.724V/lux-sec(550nm)
Video Format & Max.Frame Rate	6.2fps @4096 x 3286, 21fps @2048 x 1644, 54fps @1024 x 822
Binning	1 x 1, 2 x 2, 4 x 4
Output Rate	95.83MBytes/s
Exposure	0.1ms~2s, ROI Auto & Manual
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 and Labview
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
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 (32 & 64 bit)
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

U3CMOS10000KPA-MT9J003

10MP USB3.0 P/N: TP110000A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina MT9J003 CMOS (Color)
Scan Mode	Progressive
Max.Resolution	3584 x 2746 (Approx. 10,000,000 Pixels)
Sensor Size (Diagonal)	1/2.3" (6.44mm(H) x 4.616mm(V), Diagonal 7.923mm)
Pixel Size	1.67μm x 1.67μm
Imaging Area	5.985mm(H) x 4.585mm(V)
Dynamic Range	65.2dB
A/D Converter	12-bit on Board, 8-bit R-G-B Processed
SN Ratio	34dB
Spectral Range	380-650nm (with IR-cut Filter)
Responsivity	0.31V/lux-sec(550nm)
Video Format & Max.Frame Rate	7.2fps @3584 x 2746, 25fps @1792 x 1372 (Multiple Speed Level)
Binning	1 x 1, 2 x 2
Output Rate	80MBytes/s
Exposure	0.1ms~2s, ROI Auto & Manual
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 and Labview
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
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 (32 & 64 bit)
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

U3CMOS08500KPA-SPECIAL

8.5MP USB3.0 P/N: TP108500A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina CMOS Sensor(Color)
Scan Mode	Progressive
Max.Resolution	3328 x 2548 (Approx. 8,500,000 Pixels)
Sensor Size (Diagonal)	1/2.3" (6.44mm(H) x 4.616mm(V), Diagonal 7.923mm)
Pixel Size	1.67μm x 1.67μm
Imaging Area	5.557mm(H) x 4.255mm(V)
Dynamic Range	72.4dB
A/D Converter	12-bit on Board, 8-bit R-G-B Processed
SN Ratio	34dB
Spectral Range	380-650nm (with IR-cut Filter)
Responsivity	0.31V/lux-sec(550nm)
Video Format & Max.Frame Rate	8.3fps @3584 x 2746, 27fps @1664 x 1272 (Multiple Speed Level)
Binning	1 x 1, 2 x 2
Output Rate	80MBytes/s
Exposure	0.1ms~2s, ROI Auto & Manual
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 and Labview
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
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 (32 & 64 bit)
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

U3CMOS05100KPA- MT9P006

5.1MP USB3.0 P/N: TP105100A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina MT9P006 CMOS Sensor(Color)
Scan Mode	Progressive
Max.Resolution	2560 x1922 (Approx. 5,000,000 Pixels)
Sensor Size (Diagonal)	1/2.5" (5.7mm(H) x 4.28mm(V), Diagonal 7.13mm)
Pixel Size	2.2μm x 2.2μm
Imaging Area	5.632mm(H) x 4.228mm(V)
Dynamic Range	67.74dB
A/D Converter	12-bit on Board, 8-bit R-G-B Processed
SN Ratio	38.5dB
Spectral Range	380-650nm (with IR-cut Filter)
Responsivity	1.76V/lux-sec(550nm)
Video Format & Max.Frame Rate	14.5fps @2560 x 1922, 39fps @1280 x 960, 101fps @640 X 480
Binning	1 x 1, 2 x 2, 4 x 4
Output Rate	96MBytes/s
Exposure	0.05ms~2s, ROI Auto & Manual
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 and Labview
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
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 (32 & 64 bit)
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

U3CMOS03100KPA- AR0330

3.1MP USB3.0 P/N: TP103100A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina AR0330 CMOS Sensor(Color)
Scan Mode	Progressive
Max.Resolution	2048 x 1534 (Approx. 3,140,000 Pixels)
Sensor Size (Diagonal)	1/3" (Diagonal 6.0mm)
Pixel Size	2.2μm x 2.2μm
Imaging Area	4.505mm(H) x 3.375mm(V)
Dynamic Range	72.4dB
A/D Converter	12-bit on Board, 8-bit R-G-B Processed
SN Ratio	39dB
Spectral Range	380-650nm (with IR-cut Filter)
Responsivity	2.0V/lux-sec
Video Format & Max.Frame Rate	27.4fps @2048 x 1534, 53.3fps @1024 x 770 (Multiple Speed Level)
Binning	1 x 1, 2 x 2
Output Rate	98MBytes/s
Exposure	0.1ms~2000ms, ROI Auto & Manual
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 and Labview
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
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 (32 & 64 bit)
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

EXCCD & UHCCD Series Camera

EXCCD & UHCCD シリーズデジタルカメラ

SONY CCD SENSOR

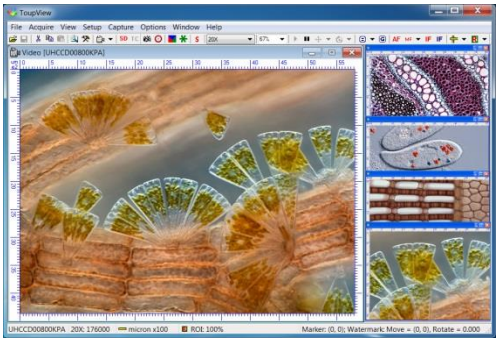
SONY CCD センサー

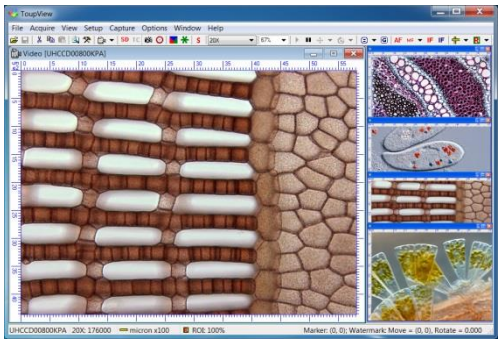
USB2.0 | High Resolution | Perfect Color

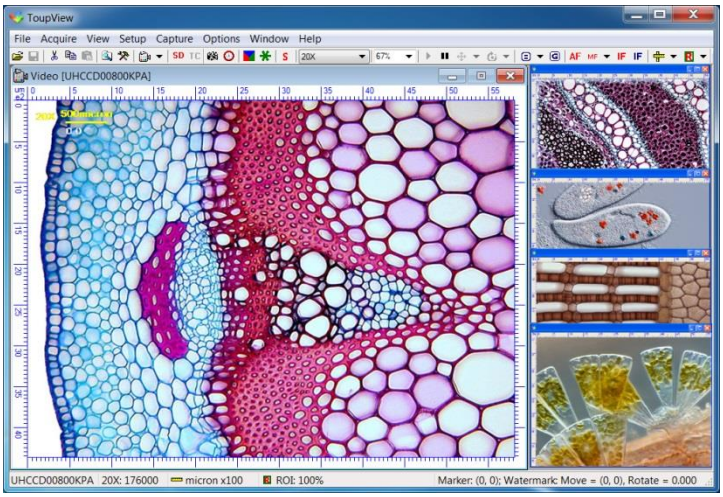
高速 USB2.0, 高解像度、完璧なカラー

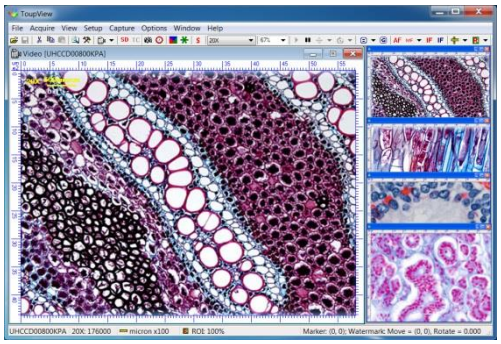
Ultra-Fine™ Color Engine

Ultra-Fine™ カラーエンジン









Introduction to EXCCD & UHCCD Series Camera

This EXCCD and UHCCD series cameras are comprised of a digital camera with Sony color HCCD sensor interfacing with a computer via high-speed USB2.0, easy-to-use, Windows XP/Vista/7 /8 compatible driver and application (32 and 64 bit), Mac OS, Linux and driver and application, LabView application, step-by-step user instructions, and C, CS, microscope or telescope mount adapters.

This UHCCD series is especially designed for industrial applications. Different from other models in the camera market, this new camera board comes with a standalone design that allows independent operation for high-definition digital imaging at a hardware resolution between 800K to 6000K effective pixels without using any image capture card, optimizes for real-time acquisition, and fine-tunes exposure and white balance settings to achieve the best balance between resolution and contrast.

In addition, the multi-functional software allows you to preview live images, record videos, capture still pictures, edit captures, or save them in BMP, JPEG(*.jpg,*.jpeg,*.jpe,*.jif,*.jfif), PNG, TIFF(*.tif, *.tiff) , GIF, PCX, TGA, JBIG(*.jbg) and ToupView File Type(*.tft) and other formats very easily, as well as conduct length, angle, area, and other measurements. This product is very simple to use, only one end of the USB cable needs to be plugged into your PC USB port. It is ideal for medical, educational, and engineering applications. It comes with a one-year full-coverage warranty and a life-time free software upgrades. We have no doubt you will be impressed by the superb resolution and wide range of applications that this newest USB model offers you.

The EXCCD and UHCCD series cameras are mainly used for **Bright to Low Illumination or Moderate Fluorescence** application.

EXCCD01400KPA-ICX285AQ

1.4MP USB2.0 P/N: TP801400A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX285AQ CCD(Color)
Scan Mode	Progressive
Max. Resolution	1360X1024 (Approx. 1,400,000 Pixels)
Sensor Size (Diagonal)	2/3" (Diagonal 11mm)
Pixel Size	6.45μm x 6.45μm
Imaging Area	10.2mm(H) x 8.3mm(V)
G Sensitivity	1240mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	15fps @1360 x 1024(Multiple Speed Level)
Binning	1 x 1
Long Exposure	0.12ms~240s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	4.5 e (r.m.s) @ Gain High /5.6 e (r.m.s) @ Gain Low
Extinction Ratio	1 : 2000 @1ms Exposure Time
Smear	< 0.002%
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

EXCCD01400KMA-ICX285AL

1.4MP USB2.0 P/N: TM801400A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX285AL CCD (Monochrome)
Scan Mode	Progressive
Max. Resolution	1360X1024 (Approx. 1,400,000 Pixels)
Sensor Size (Diagonal)	2/3" (Diagonal 11mm)
Pixel Size	6.45μm x 6.45μm
Imaging Area	10.2mm(H) x 8.3mm(V)
G Sensitivity	1240mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	15fps @1360 x 1024(Multiple Speed Level)
Binning	1 x 1
Long Exposure	0.12ms~240s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	4.5 e (r.m.s) @ Gain High /5.6 e (r.m.s) @ Gain Low
Extinction Ratio	1 : 2000 @1ms Exposure Time
Smear	< 0.002%
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

EXCCD00300KMA-ICX618AL

0.3MP USB2.0 P/N: TM800300A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX618AL CCD (Monochrome)
Scan Mode	Progressive
Max. Resolution	640X480 (Approx. 300,000 Pixels)
Sensor Size (Diagonal)	1/4" (Diagonal 4.5mm)
Pixel Size	5.6μm x 5.6μm
Imaging Area	3.6mm(H) x 2.7mm(V)
G Sensitivity	1200mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	72fps @640 x 480(Multiple Speed Level)
Binning	1 x 1
Long Exposure	0.06ms~40s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	4.5 e (r.m.s) @ Gain High /5.6 e (r.m.s) @ Gain Low
Extinction Ratio	1 : 2000 @1ms Exposure Time
Smear	-110dB
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UHCCD05200KPA-ICX655AQ

5.2MP USB2.0 P/N: TP705200A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX655AQ CCD(Color)
Scan Mode	Progressive
Max. Resolution	2448 x 2050(Approx. 5,018,000 Pixels)
Sensor Size (Diagonal)	2/3" (Diagonal 11.016mm)
Pixel Size	3.45μm x 3.45μm
Imaging Area	9.93mm(H) x 8.70mm(V)
G Sensitivity	420mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	4.3fps @2448 x 2050, 10.5fps @960 x 720 (Multiple Speed Level)
Binning	1 x 1
Exposure	0.22ms~60s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UHCCD05100KPA-ICX452AQ

5.1MP USB2.0 P/N: TP705100A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX452AQ CCD(Color)
Scan Mode	Interlaced
Max. Resolution	2592 x 1944 (Approx. 5,040,000 Pixels)
Sensor Size (Diagonal)	1/1.8" (Diagonal 9.04mm)
Pixel Size	2.775μm x 2.775μm
Imaging Area	8.23mm(H) x 6.68mm(V)
G Sensitivity	260mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	4fps @2592 x 1944, 35fps @300 x 200 (Multiple Speed Level)
Binning	1 x 1, 2 x 2
Exposure	0.22ms~77ms, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UHCCD05000KPA-ICX282AQ

5.0MP USB2.0 P/N: TP705000A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX282AQ CCD(Color)
Scan Mode	Interlaced
Max. Resolution	2560 x 1920(Approx. 4,900,000 Pixels)
Sensor Size (Diagonal)	2/3" (Diagonal 11mm)
Pixel Size	3.40μm x 3.40μm
Imaging Area	9.74mm(H) x 7.96mm(V)
G Sensitivity	260mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	4.5fps @2560 x 1920, 9fps @1280 x 960 (Multiple Speed Level)
Binning	1 x 1, 2 x 2
Exposure	0.20ms~105ms, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UHCCD03100KPA-ICX412AQ

3.1MP USB2.0 P/N: TP703100A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX412AQ CCD(Color)
Scan Mode	Interlaced
Max. Resolution	2048 x 1536 (Approx. 3,100,000 Pixels)
Sensor Size (Diagonal)	1/1.8" (Diagonal 8.933mm)
Pixel Size	3.45μm x 3.45μm
Imaging Area	8.10mm(H) x 6.64mm(V)
G Sensitivity	455mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	6fps @2048 x 1536, 41fps @640 x 480 (Multiple Speed Level)
Binning	1 x 1,2 x 2
Exposure	0.18ms~77ms, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UHCCD03100KPB-ICX252AQ

3.1MP USB2.0 P/N: TP703100B

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX252AQ CCD(Color)
Scan Mode	Interlaced
Max. Resolution	2048 x 1536 (Approx. 3,100,000 Pixels)
Sensor Size (Diagonal)	1/1.8" (Diagonal 8.933mm)
Pixel Size	3.45μm x 3.45μm
Imaging Area	8.10mm(H) x 6.64mm(V)
G Sensitivity	455mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	6fps @2048 x 1536, 41fps @640 x 480 (Multiple Speed Level)
Binning	1 x 1,2 x 2
Exposure	0.18ms~77ms, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UHCCD02000KPA-ICX274AQ

2.0MP USB2.0 P/N: TP702000A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX274AQ CCD(Color)
Scan Mode	Progressive
Max. Resolution	1600 x 1200 (Approx. 2,000,000 Pixels)
Sensor Size (Diagonal)	1/1.8" (Diagonal 8.923mm)
Pixel Size	4.40μm x 4.40μm
Imaging Area	8.50mm(H) x 6.80mm(V)
G Sensitivity	420mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	10fps @1600 x 1200(Multiple Speed Level)
Binning	1 x 1
Exposure	0.17ms~240s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UHCCD01400KPA-ICX205AK

1.4MP USB2.0 P/N: TP701400A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX205AK CCD(Color)
Scan Mode	Progressive
Max. Resolution	1360 x 1024 (Approx. 1,400,000 Pixels)
Sensor Size (Diagonal)	1/2" (Diagonal 7.959mm)
Pixel Size	4.65μm x 4.65μm
Imaging Area	7.60mm(H) x 6.20mm(V)
G Sensitivity	400mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	**8fps @1360 x 1024(Multiple Speed Level)**
Binning	1 x 1
Exposure	0.22ms~240s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UHCCD01400KPB-ICX205AK

1.4MP USB2.0 P/N: TP701400B

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX205AK CCD(Color)
Scan Mode	Progressive
Max. Resolution	1360 x 1024 (Approx. 1,400,000 Pixels)
Sensor Size (Diagonal)	1/2" (Diagonal 7.959mm)
Pixel Size	4.65μm x 4.65μm
Imaging Area	7.60mm(H) x 6.20mm(V)
G Sensitivity	400mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	**15fps @1360 x 1024(Multiple Speed Level)**
Binning	1 x 1
Exposure	0.12ms~240s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UHCCD00800KPA-ICX204AK

0.8MP USB2.0 P/N: TP700800A

HARDWARE CONFIGURATION

Image Pickup Device	SONY ICX204AK CCD(Color)
Scan Mode	Progressive
Max. Resolution	1024 x 768 (Approx. 800,000 Pixels)
Sensor Size (Diagonal)	1/3" (Diagonal 5.952mm)
Pixel Size	4.65μm x 4.65μm
Imaging Area	5.80mm(H) x 4.92mm(V)
G Sensitivity	400mv with 1/30s Accumulation
Dynamic Range	70dB
A/D Converter	12-bit Parallel, 8-bit R.G.B to PC
SN Ratio	62dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	16fps @1024 x 768(Multiple Speed Level)
Binning	1 x 1
Exposure	0.16ms~240s, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C+, C#, DirectShow, Twain and Labview
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 (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

UCMOS Series Camera

UCMOS シリーズデジタルカメラ

APTINA CMOS SENSOR & DSP CHIP

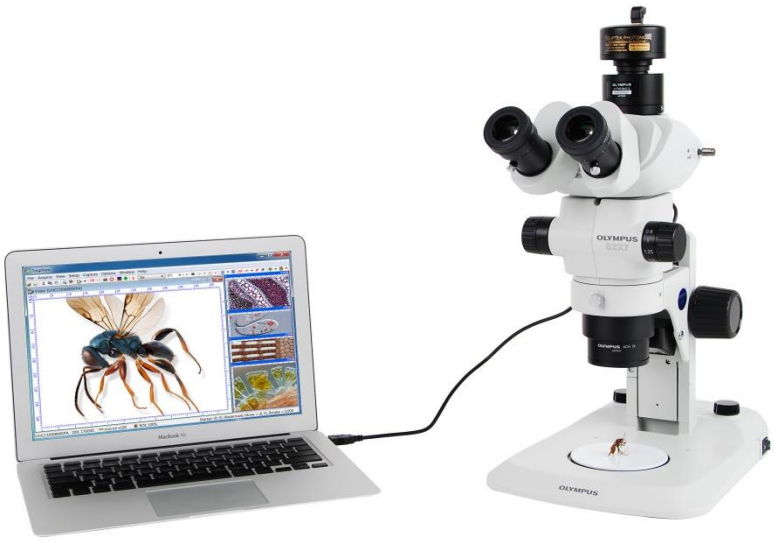
DSP チップとアプティナ **CMOS** センサー

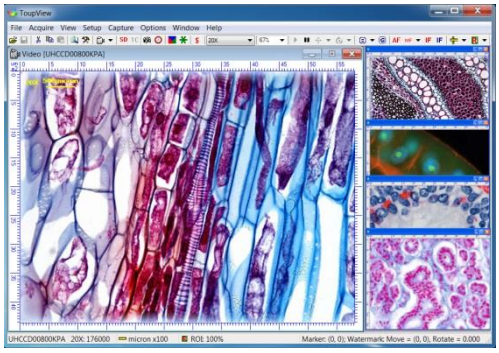
USB2.0 | High Resolution | Perfect Color

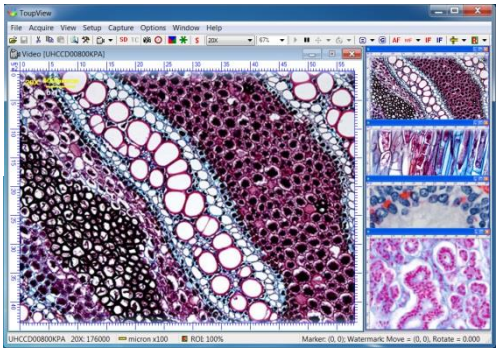
高速 USB2.0, 高解像度、完璧なカラー

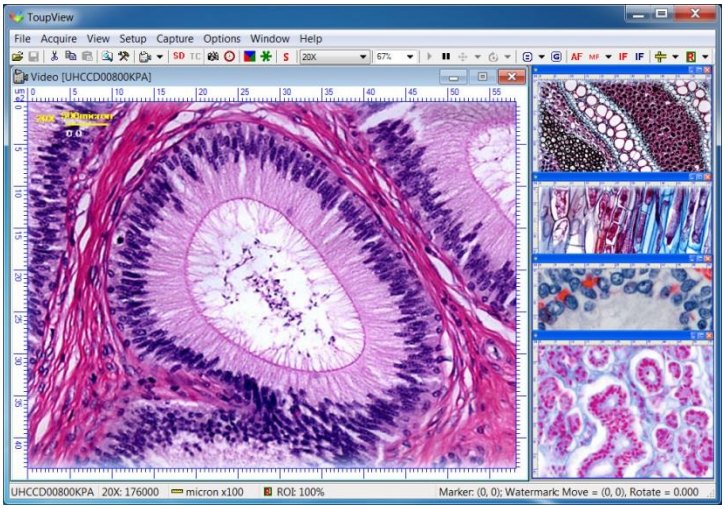
Ultra-Fine™ Color Engine

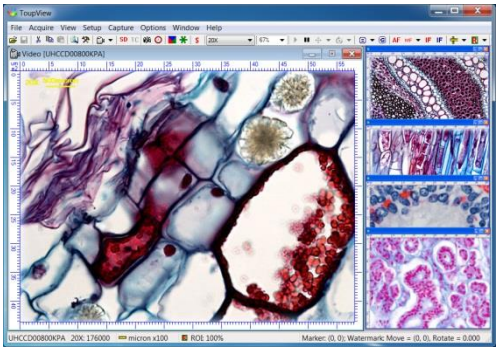
Ultra-Fine™ カラーエンジン











Introduction to UCMOS Series Camera

This UCMOS series imaging system is comprised of a digital camera with a Aptina color CMOS sensor interfacing with a computer via high-speed USB2.0, easy-to-use and Windows XP/Vista/7 /8 compatible driver and application (32 and 64 bit), Mac OS, Linux and driver and application, LabView application. Step-by-step user instructions, and C, CS, microscope or telescope mount adapters..

This UCMOS series is especially designed for industrial applications. Different from other models in the camera market, this new camera board comes with a standalone design that allows independent operation for high-definition digital imaging at a hardware resolution between 350K to 14000K effective pixels without using any image capture card, optimizes for real-time acquisition, and fine-tunes exposure and white balance settings to achieve the best balance between resolution and contrast.

This digital system accurately displays the images on computer screen. It is capable of streaming live video. This series imaging system offers full-screen displays and the best resolution your computer monitor can provide.

In addition, the multi-functional software allows you to preview live images, record videos, capture still pictures, edit captures, or save them in BMP, JPEG(*.jpg,*.jpeg,*.jpe,*.jif,*.jfif), PNG, TIFF(*.tif, *.tiff) , GIF, PCX, TGA, JBIG(*.jbg) and ToupView File Type(*.tft) and other formats very easily, as well as conduct length, angle, area, and other measurements. This product is very simple to use, only one end of the USB cable needs to be plugged into your PC USB port. It is ideal for medical, educational, and engineering applications. It comes with a one-year full-coverage warranty and a life-time free software upgrades. We have no doubt you will be impressed by the superb resolution and wide range of applications that this newest USB model offers you.

For UCMOS series camera is mainly used for br**ight to moderate illumination** application.

UCMOS14000KPA-MT9F002

14MP USB2.0 P/N: TP614000A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina MT9F002 CMOS(Color)
Scan Mode	Progressive
Max. Resolution	4096 x 3288 (Approx. 14,000,000 Pixels)
Sensor Size (Diagonal)	1/2.3" (6.138mm(H) x 4.603mm(V), Diagonal 7.672mm)
Pixel Size	1.4μm x 1.4μm
G Sensitivity	0.724v/lux-sec(550nm)
Dynamic Range	65.3dB
A/D Converter	12-bit, 8-bit R.G.B to PC
SN Ratio	35.5dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	1.8fps @4096 x 3288, 10fps @2048 x 1644, 27fps @1024 x 822
Binning	1 x 1, 2 x 2, 4 x 4
Exposure	0.4ms~2000ms, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UCMOS10000KPA-MT9J003

10MP USB2.0 P/N: TP610000A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina MT9J003 CMOS(Color)
Scan Mode	Progressive
Max. Resolution	3584 x 2748 (Approx. 10,000,000 Pixels)
Sensor Size (Diagonal)	1/2.3" (6.119mm(H) x 4.589mm(V), Diagonal 7.649mm)
Pixel Size	1.67μm x 1.67μm
G Sensitivity	0.31v/lux-sec(550nm)
Dynamic Range	65.2dB
A/D Converter	10-bit, 8-bit R.G.B to PC
SN Ratio	34dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	1.9fps @3584 x 2748, 8fps @1792 x 1374, 27fps @896 x 684
Binning	1 x 1, 2 x 2, 4 x 4
Exposure	0.38ms~2000ms, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UCMOS09000KPB-Special

9.0MP USB2.0 P/N: TP609000B

HARDWARE CONFIGURATION

Image Pickup Device	Aptina Special CMOS(Color)
Scan Mode	Progressive
Max. Resolution	3488 x 2616 (Approx.9,000,000 Pixels)
Sensor Size (Diagonal)	1/2.4" (5.825mm(H) x 4.369mm(V), Diagonal 7.281mm)
Pixel Size	1.67μm x 1.67μm
G Sensitivity	0.33v/lux-sec(550nm)
Dynamic Range	65.2dB
A/D Converter	10-bit, 8-bit R.G.B to PC
SN Ratio	34dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	1.9fps @3488 x 2616, 8fps @1744 x 1308, 27fps @872 x 654
Binning	1 x 1, 2 x 2, 4 x 4
Exposure	0.38ms~2000ms, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UCMOS08000KPB-Special

8.0MP USB2.0 P/N: TP608000B

HARDWARE CONFIGURATION

Image Pickup Device	Aptina Special CMOS(Color)
Scan Mode	Progressive
Max. Resolution	3264 x 2448 (Approx.8,000,000 Pixels)
Sensor Size (Diagonal)	1/2.5" (5.451mm(H) x 4.088mm(V), Diagonal 6.813mm)
Pixel Size	1.67μm x 1.67μm
G Sensitivity	0.31v/lux-sec(550nm)
Dynamic Range	65.2dB
A/D Converter	10-bit, 8-bit R.G.B to PC
SN Ratio	34dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	1.9fps @3264 x 2448, 8fps @1600 x 1200, 27fps @800x600
Binning	1 x 1, 2 x 2, 4 x 4
Exposure	0.38ms~2000ms, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UCMOS05100KPA-MT9P001

5.0MP USB2.0 P/N: TP605100A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina MT9P001 CMOS(Color)
Scan Mode	Progressive
Max. Resolution	2592 x 1944 (Approx.5,040,000 Pixels)
Sensor Size (Diagonal)	1/2.5" (5.70mm(H) x 4.28mm(V), Diagonal 7.13mm)
Pixel Size	2.2μm x 2.2μm
G Sensitivity	0.53v/lux-sec(550nm)
Dynamic Range	66.5dB
A/D Converter	12-bit, 8-bit R.G.B to PC
SN Ratio	40.5dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	5fps @2592 x 1944, 18fps @1280 x 960, 60fps @640 x 480
Binning	1 x 1, 2 x 2, 4 x 4
Exposure	0.21ms~2000ms,ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UCMOS03100KPA-MT9T001

3.1MP USB2.0 P/N: TP603100A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina MT9T001 CMOS(Color)
Scan Mode	Progressive
Max. Resolution	2048 x 1536 (Approx.3,200,000 Pixels)
Sensor Size (Diagonal)	1/2" (6.55mm(H) x 4.92mm(V), Diagonal 8.19mm)
Pixel Size	3.2μm x 3.2μm
G Sensitivity	1.0v/lux-sec(550nm)
Dynamic Range	61dB
A/D Converter	10-bit, 8-bit R.G.B to PC
SN Ratio	43dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	8fps @2048 x 1536, 22fps @1024 x 768, 43fps @680 x 510
Binning	1 x 1, 2 x 2, 3 x 3
Exposure	0.128ms~2000ms, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UCMOS02000KPB-Special

2.0MP USB2.0 P/N: TP602000B

HARDWARE CONFIGURATION

Image Pickup Device	Aptina Special CMOS(Color)
Scan Mode	Progressive
Max. Resolution	1600 x 1200 (Approx. 2,000,000 Pixels)
Sensor Size (Diagonal)	1/2" (6.55mm(H) x 4.92mm(V), Diagonal 8.19mm)
Pixel Size	3.2μm x 3.2μm
G Sensitivity	1.0v/lux-sec(550nm)
Dynamic Range	71dB
A/D Converter	12-bit, 8-bit R.G.B to PC
SN Ratio	42.3dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	16fps @1600 x 1200, 50fps @800 x 600
Binning	1 x 1, 2 x 2
Exposure	0.128ms~2000ms, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UCMOS01300KPA-MT9M111

1.3MP USB2.0 P/N: TP601300A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina MT9M111 CMOS(Color)
Scan Mode	Progressive
Max. Resolution	1280 x 1024 (Approx. 1,300,000 Pixels)
Sensor Size (Diagonal)	1/3" (4.60mm(H) x 3.70mm(V), Diagonal 5.9mm)
Pixel Size	3.6μm x 3.6μm
G Sensitivity	1.0v/lux-sec(550nm)
Dynamic Range	71dB
A/D Converter	10-bit, 8-bit R.G.B to PC
SN Ratio	44dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	15fps @1280 x 1024, 26fps @640 x 512, 50fps @320 x 256
Binning	1 x 1, 2 x 2, 4 x 4
Exposure	0.14ms~2000ms,ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

UCMOS00350KPA-MT9V011

0.35MP USB2.0 P/N: TP600350A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina MT9V011 CMOS(Color)
Scan Mode	Progressive
Max. Resolution	640 x 480 (Approx. 350,000 Pixels)
Sensor Size (Diagonal)	1/4" (3.58mm(H) x 2.69mm(V), Diagonal 4.48mm)
Pixel Size	5.6μm x 5.6μm
G Sensitivity	1.9v/lux-sec(550nm)
Dynamic Range	60dB
A/D Converter	10-bit Parallel, 8-bit R.G.B to PC
SN Ratio	45dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	30fps @640 x 480, 80fps @320 x 240 (Multiple Speed Level)
Binning	1 x 1, 2 x 2
Exposure	0.11ms~192.46ms, ROI Auto & Manual
White Balance	ROI White Balance/ Manual Temp Tint Adjustment
Color Rendering Technique	Ultra-Fine™ Color Engine
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	Native C/C++, C#, DirectShow, Twain and Labview
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 (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

SCMOS Series Camera

SCMOS シリーズデジタルカメラ

APTINA CMOS SENSOR

チップとアプティナ **CMOS** センサー

USB2.0 | High-Resolution | Compact

USB2.0 高速通讯，高分辨率、体积小巧

高速 **USB2.0,** 高解像度、コンパクト

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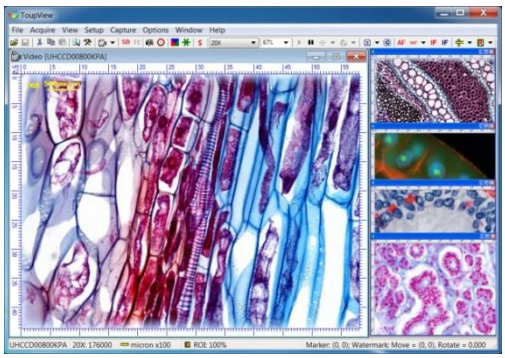
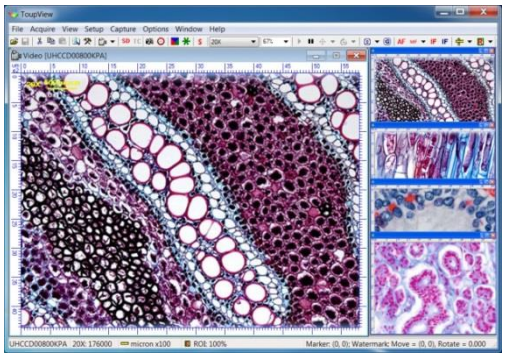
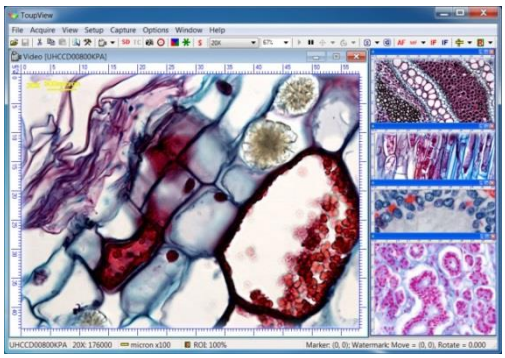






Introduction

The SCMOS series is a new high resolution, color digital imaging system especially designed for industrial applications with very compact size, high performance and low cost. No extra drivers are needed for all of our SCMOS series cameras. The main feature for this model is as follows:

- ◆High-performance sensor.
- ◆Auto white balance and auto-exposure; Brightness, contrast, chroma, and saturation can be adjusted.
- ◆Capture and store still crisp image (BMP, TIFF, JPG, PICT, TFT and other formats).
- ◆Support high-quality AVI, MPEG format colorful video recording.
- ◆Support QQ, MSN, Yahoo Messenger, Skype and other video chat software.
- ◆High-speed USB2.0 interface and high frame rate video display keep the screen smooth without interruption.
- ◆No drivers are needed.
- ◆Compatible with Windows XP/Vista/7 (32 and 64 bit) and so on.
- ◆Compact size.
- ◆Easy to extend to C or CS- Mount camera with high quality lens(optional).
- ◆Easy to extend to digital eyepieces camera.

The SCMOS Series Camera is a **High Performance and Cost-effective** camera.

SCMOS05000KPA

5.0MP USB2.0 P/N: TP505000A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina CMOS(Color)
Scan Mode	Progressive
Max. Resolution	2592 x 1944 (Approx.5,200,000 Pixels)
Sensor Size (Diagonal)	1/2.5" (5.70mm(H) x 4.28mm(V), Diagonal 7.13mm)
Pixel Size	2.2μm x 2.2μm
G Sensitivity	0.53v/lux-sec(550nm)
Dynamic Range	66.5dB
A/D Converter	8-bit R.G.B
SN Ratio	40.5dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	2fps @2592 x 1944, 3fps @2048 x 1536, 5fps @1600 x 1200, 7.5fps @1280x1024, 30fps @Other Resolutions
Binning	N/A
Exposure	Electronic Rolling Snap(ERS), Auto
White Balance	Auto
Color Rendering Technique	N/A
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	DirectShow, Twain
Recording System	Still Picture and Movie

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 (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

SCMOS03000KPA

3.0MP USB2.0 P/N: TP503000A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina CMOS(Color)
Scan Mode	Progressive
Max. Resolution	2048 x 1536 (Approx.3,200,000 Pixels)
Sensor Size (Diagonal)	1/2.7" (4.506mm(H) x 3.379mm(V), Diagonal 5.632mm)
Pixel Size	2.2μm x 2.2μm
G Sensitivity	1.0v/lux-sec(550nm)
Dynamic Range	61dB
A/D Converter	8-bit R.G.B
SN Ratio	43dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	3fps @2048 x 1536, 5fps @1600 x 1200, 7.5fps @1280 x 1024, 30fps @ Other Resolutions
Binning	N/A
Exposure	Electronic Rolling Snap(ERS), Auto
White Balance	Auto
Color Rendering Technique	N/A
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	DirectShow, Twain
Recording System	Still Picture and Movie

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 (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

SCMOS02000KPA

2.0MP USB2.0 P/N: TP502000A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina CMOS Sensor(Color)
Scan Mode	Progressive
Max. Resolution	1600 x 1200 (Approx. 2,000,000 Pixels)
Sensor Size (Diagonal)	1/3.2" (4.73mm(H) x 3.52mm(V), Diagonal 5.90mm)
Pixel Size	2.8μm x 2.8μm
G Sensitivity	1.0v/lux-sec(550nm)
Dynamic Range	71dB
A/D Converter	8-bit R.G.B
SN Ratio	42.3dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	5fps @1600 x 1200, 7.5fps @1280 x 1024, 1280 x 960, 20fps @800 x 600, 30fps @ Other Resolutions
Binning	N/A
Exposure	Electronic Rolling Snap(ERS), Auto
White Balance	Auto
Color Rendering Technique	N/A
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	DirectShow, Twain
Recording System	Still Picture and Movie

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 (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

SCMOS01300KPA

1.3MP USB2.0 P/N: TP501300A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina CMOS(Color)
Scan Mode	Progressive
Max. Resolution	1280 x 1024 (Approx. 1,300,000 Pixels)
Sensor Size (Diagonal)	1/3" (4.60mm(H) x 3.70mm(V), Diagonal 5.9mm)
Pixel Size	3.6μm x 3.6μm
G Sensitivity	1.0v/lux-sec(550nm)
Dynamic Range	71dB
A/D Converter	8-bit R.G.B
SN Ratio	44dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	7.5fps @1280 x 1024, 12.5fps @1024 x 768, 800 x 600, 30fps @Other Resolutions
Binning	N/A
Exposure	Electronic Rolling Snap(ERS), Auto
White Balance	Auto
Color Rendering Technique	N/A
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	DirectShow, Twain
Recording System	Still Picture and Movie

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 (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

SCMOS00350KPA

0.35MP USB2.0 P/N: TP500350A

HARDWARE CONFIGURATION

Image Pickup Device	Aptina CMOS Special Sensor(Color)
Scan Mode	Progressive
Max. Resolution	640 x 480 (Approx. 350,000 Pixels)
Sensor Size (Diagonal)	1/4" (3.58mm(H) x 2.69mm(V), Diagonal 4.48mm)
Pixel Size	5.6μm x 5.6μm
G Sensitivity	1.9v/lux-sec(550nm)
Dynamic Range	60dB
A/D Converter	8-bit R.G.B
SN Ratio	45dB
Spectral Range	380-650nm (with IR-cut Filter)
Video Format & Frame Rate	30fps @All Resolutions
Binning	N/A
Exposure	Electronic Rolling Snap(ERS), Auto
White Balance	Auto
Color Rendering Technique	N/A
Peak Quantum Efficiency	N/A
Readout Noise	N/A
Extinction Ratio	N/A
Smear	N/A
Capture/Control API	DirectShow, Twain
Recording System	Still Picture and Movie

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 (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

Linear CCD Camera

LHCCD00511(P/N: TM400511A)

Introdction

LHCCD00511 selects Sony ILX511 as its sensor and deliver 16 bit output at high throughput with higher sensitivity and higher line rates.

Available in resolutions 2048 pixels, LHCCD00511 linear camera is smaller, lighter, and use USB power supply. Cabling and interface are simplified with the USB high-speed serial standard. The camera provides quiet, uniform output thanks to CDS (correlated double sampling) and embedded flat-field correction algorithms. Gain and offset are fully programmable for each output channel, and the camera can output test patterns for cable/system troubleshooting. LHCCD00511 provide appropriate, readily-available standard lens options (c-mount, f-mount, and M72x0.75 photography standards).

LHCCD00511 Specification

Hardware Configuration

Sensor Model	ILX511 (1D Sony CCD)
Max. Resolution	2048 Pixels
Sensor Size	28mm
Pixel Size	14μm x 200μm
Sensitivity	200 V/lx.s with Uniform Intensity Illumination,1800 V/lx.s (600nm LED)
Spectral Range	330-1000nm
A/D Converter	16-bit to PC
Output Rate	1.0MHZ
Exposure Range	2-4000ms
External Trigger	Supported
Capture/Control API	SDK and Example Code
Capture Mode	Single Camera Multiple Instance and Multiple Cameras Supported
Lens Mount(Optional)	M42
Host Interface	USB2.0

Software Environment

Operating System	Microsoft® Windows® XP / Vista / 7 /8(32 & 64 Bit)
PC Requirements	CPU: Equal to Intel Core 2 2.8GHz or Higher
	Memory:2GB or More
	USB Port:USB2.0 High-speed Port

Operating Environment

Operating Temperature	-30~70
Storage Temperature	-40~85
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	Over USB Port

Order No. & Models

TP400511A	LHCCD00511

LHCCD00554(P/N: TM400554A)

Introduction

LHCCD00554 selects Sony ILX554 as its sensor and deliver 16 bit output at high throughput with higher sensitivity and higher line rates.

Available in resolutions 2048 pixels, LHCCD00554 linear camera is smaller, lighter, and use USB power supply. Cabling and interface are simplified with the USB high-speed serial standard. The camera provides quiet, uniform output thanks to CDS (correlated double sampling) and embedded flat-field correction algorithms. Gain and offset are fully programmable for each output channel, and the camera can output test patterns for cable/system troubleshooting.

LHCCD00554 provide appropriate, readily-available standard lens options (c-mount, f-mount, and M72x0.75 photography standards).

LHCCD00554 Specification

Hardware Configuration

Sensor Model	ILX554 (1D Sony CCD)
Max. Resolution	2048 Pixels
Sensor Size	28mm
Pixel Size	14μm x 56μm
Sensitivity	240 V/lx.s with Uniform Intensity Illumination,3500 V/lx.s (600nm LED)
Spectral Range	330-1000nm
A/D Converter	16-bit to PC
Output Rate	1.0MHZ
Exposure Range	2-4000ms
External Trigger	Supported
Capture/Control API	SDK and Example Code
Capture Mode	Single Camera Multiple Instance and Multiple Cameras Supported
Lens Mount(Optional)	M42
Host Interface	USB2.0

Software Environment

Operating System	Microsoft® Windows® XP / Vista / 7 /8 (32 & 64 Bit)
PC Requirements	CPU: Equal to Intel Core 2 2.8GHz or Higher
	Memory:2GB or More
	USB Port:USB2.0 High-speed Port

Operating Environment

Operating Temperature	-30~70
Storage Temperature	-40~85
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	Over USB Port

Order No. & Models

TP400554A	LHCCD00554

LHCCD01304(P/N: TM401304A)

Introduction

LHCCD01304 selects Toshiba TCD1304 as its sensor and deliver 16 bit output at high throughput with higher sensitivity and higher line rates.

Available in resolutions 3648 pixels, LHCCD01304 linear camera is smaller, lighter, and use USB power supply. Cabling and interface are simplified with the USB high-speed serial standard. The camera provides quiet, uniform output thanks to CDS (correlated double sampling) and embedded flat-field correction algorithms. Gain and offset are fully programmable for each output channel, and the camera can output test patterns for cable/system troubleshooting.

LHCCD01304 provide appropriate, readily-available standard lens options (c-mount, f-mount, and M72x0.75 photography standards).

LHCCD01304 Specifications

Hardware Configuration

Sensor Model	TCD1304 (1D Toshiba CCD)
Max. Resolution	3648 Pixels
Sensor Size	29.184mm
Pixel Size	8μm x 200μm
Sensitivity	200 V/lx.s with Daylight Fluorescent Lamp
Spectral Range	330-1100nm
A/D Converter	16-bit to PC
Output Rate	1.0MHZ
Exposure Range	3.8-4000ms
External Trigger	Supported
Capture/Control API	SDK and Example Code
Capture Mode	Single Camera Multiple Instance and Multiple Cameras Supported
Lens Mount(Optional)	M42
Host Interface	USB2.0

Software Environment

Operating System	Microsoft® Windows® XP / Vista / 7 /8 (32 & 64 Bit)
PC Requirements	CPU: Equal to Intel Core 2 2.8GHz or Higher
	Memory:2GB or More
	USB Port:USB2.0 High-speed Port

Operating Environment

Operating Temperature	-30~70
Storage Temperature	-40~85
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	Over USB Port

Order No. & Models

TP401304A	LHCCD01304

Camera Accessary

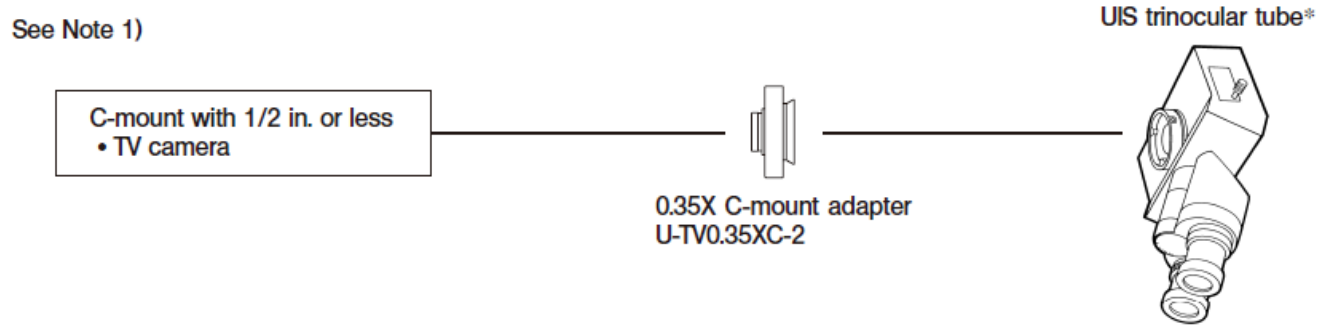
TV Adaptor: U-TV0.35XC-2

Instructions for the Low-Magnification C-Mount Adapter U-TV0.35XC-2

The U-TV0.35XC-2 is low-magnification TV adapter with C-mount which allows a digital imaging device such as a digital TV, EXCCD, UHCCD, or UCMOS camera to capture wide-field images. Use of telecentric optics helps reduce the occurrence of light deficiency in the peripheral sections.

In addition, the transmittance at the infrared frequency band is extended to 1,000 nm.

System Diagram



* Can be used with an attachment having the same mounting structure as the UIS trinocular tube and straight photo tube. (U-TR30-2, U-TR30NIR, U-SWTR-3, U-DPT (port B), U-MPH, etc.)

Note 1) Restrictions on the TV camera

• TV camera cannot be used if its C-mount surface is located below the camera surface.

• TV camera may get in the way of the microscope operation if the camera's lateral size from the light axis exceeds 68 mm.

• When a TV camera having a larger CCD or CMOS sensor than specified is used, the image may lack brightness in the peripheral sections or a part of an image may be cut off.

• When the TV camera has high sensitivity or is not provided with automatic light control, the displayer image may become whitish. Should this happen, lower the light intensity level of the microscope.

Assembly

1. Attach the C-mount adapter 1 to the C-mount TV camera 2 by screwing firmly. (Fig. 1)

2. Using the Allen screw driver provided with the microscope, loosen the straight photo tube clamping screw 3, then fit the mount dovetail 4 of the C-mount adapter into the straight photo tube mount 5 of the trinocular tube. (Fig. 2) (#For convenient parfocality adjustment, set the C-mount adapter so that the

LOCK and FOCUS screws face sideways.)

3. Tighten the clamping screw 3 firmly. (Fig. 2)

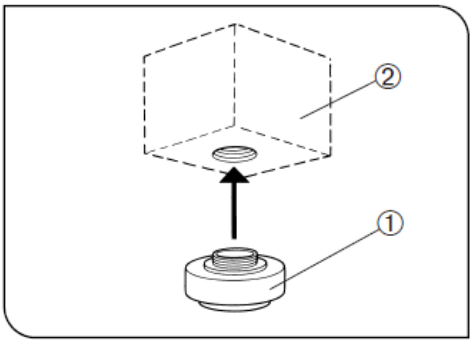


Fig. 1

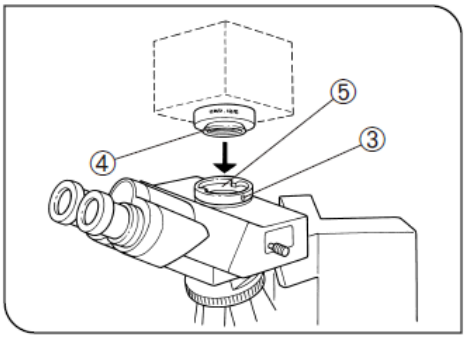


Fig. 2

Operation

Adjusting the Microscope

1. Turn on the microscope light source and adjust the required points of the microscope to make it ready for observation.

2. Set the light path of the UIS trinocular tube to the TV light path (Not all the microscope needs this procedure).

Adjusting the TV Camera and Displayer

Perform the adjustments such as color adjustment by referring to the instruction manuals of your TV camera and displayer. (#The center of eyepiece and that of the displayer may not coincide correctly. This is a function of the CCD adjustment mechanism of the TV camera, not a malfunction)

Adjusting the Parfocality Between the Observed Image and Displayed Image (Fig. 3)

The parfocality adjustment requires the Allen wrench (for locking) provided with the adapter and the Allen screw driver (for focusing) provided with the microscope. **(#The parfocality adjustment range is ±0.8 mm. If the adjustment of the adapter is not enough, please also adjust the focusing feature of the TV camera. If the correct parfocality cannot still be obtained, use another TV camera)**

1. Look into the eyepiece and bring the specimen into focus.

2. Set the TV light path and switch to the displayer image.

3. Loosen the parfocality adjustment screw (LOCK) 1 using the Allen wrench.

4. While observing the displayer image, adjust focus by turning the parfocality adjustment screw (FOCUS) 2 slowly using the Allen screw driver.

5. When correct focusing is obtained, hold the FOCUS screw position by keeping the Allen screwdriver inserted into it, and tighten the LOCK screw 1 using the Allen wrench.

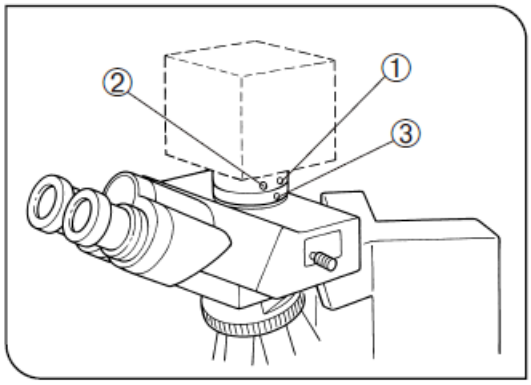


Fig. 3

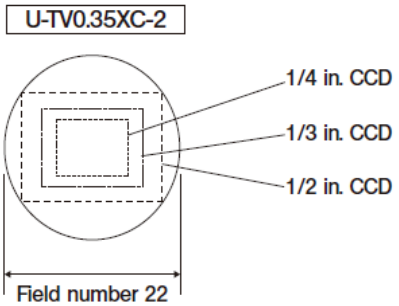
Rotating the Camera (Fig. 3)

Loosen the straight photo tube clamping screw 3.

Rotate the TV camera and tighten the straight photo tube clamping screw 3 firmly.

Imaging Field Areas

The following diagrams show the imaging field areas, which are determined by the field of view of the eyepiece (field number 22) and the size of the CCD seen through the C-mount adapter.



$$\text{Magnification on monitor} = \text{Objective magnification} \times \text{C-mount adapter magnification (0.35X)} \times \frac{\text{Monitor diagonal length}^*}{\text{CCD diagonal length}^*}$$

* Differs depending on the manufacturer.
CCD reference: 1 in. TV camera → 16.16 mm, 2/3 in. → 11 mm, 1/2 in. → 8.08 mm, 1/3 in. → 6 mm, 1/4 in. → 4 mm

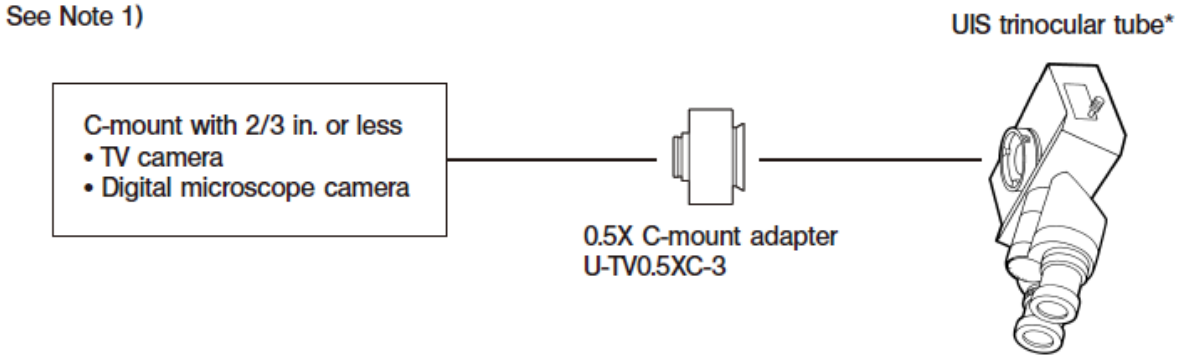
TV Adaptor: U-TV0.5XC-3

Instructions for the Low-Magnification C-Mount Adapter U-TV0.5XC-3

The U-TV0.5XC-3 is low-magnification TV adapter with C-mount which allows a digital imaging device such as a digital TV, EXCCD, UHCCD, UCMOS camera to capture wide-angle images. Use of telecentric optics helps reduce the occurrence of light deficiency in the peripheral sections.

In addition, the transmittance at the infrared frequency band is increased to 1,000 nm.

System Diagram



***** Can be used with an attachment having the same mounting structure as the UIS trinocular tube and straight photo tube. (U-TR30-2, U-TR30NIR, U-SWTR-3, U-DPT (port B), U-MPH, etc.)

Note 1) Restrictions on the TV camera

• TV camera cannot be used if its C-mount surface is located below the camera surface.

•TV camera may get in the way of the microscope operation if the camera's lateral size from the light axis exceeds 68 mm.

• When a TV camera having a larger CCD or CCD than specified is used, the image may lack brightness in the peripheral sections or a part of an image may be cut off.

• When the TV camera has high sensitivity or is not provided with automatic light control, the displayer image may become whitish. Should this happen, lower the light intensity level of the microscope.

Assembly

1. Attach the C-mount adapter 1 to the C-mount TV camera 2 by screwing firmly. (Fig. 1)

2. Using the Allen screwdriver provided with the microscope, loosen the straight photo tube clamping screw 3, then fit the mount dovetail 4 of the C-mount adapter into the straight photo tube mount 5 of the trinocular tube. (Fig. 2) **(#For convenient parfocality adjustment, set the C-mount adapter so that the LOCK and FOCUS screws face sideways**.)

3. Tighten the clamping screw 3 firmly. (Fig. 2)

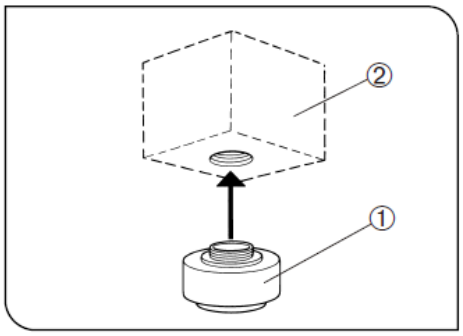


Fig. 1

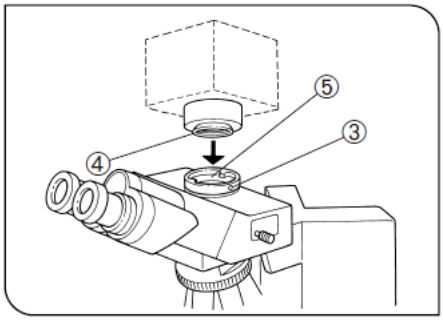


Fig. 2

Operation

Adjusting the Microscope

1. Turn on the microscope light source and adjust the required points of the microscope to make it ready for observation.

2. Set the light path of the UIS trinocular tube to the TV light path.

Adjusting the TV Camera and Displayer

Perform the adjustments such as color adjustment by referring to the instruction manuals of your TV camera and displayer.(#The center of eyepiece and that of the displayer may not coincide correctly. This is a function of the CCD adjustment mechanism of the TV camera, not a malfunction)

Adjusting the Parfocality Between the Observed Image and Displayed Image (Fig. 3)

The parfocality adjustment requires the Allen wrench (for locking) provided with the adapter and the Allen screwdriver (for focusing) provided with the microscope. **(#The parfocality adjustment range is ±0.8 mm. If the adjustment of the adapter is not enough, please also adjust the focusing feature of the TV camera. If the correct parfocality cannot still be obtained, use another TV camera)**

1. Look into the eyepiece and bring the specimen into focus.

2. Set the TV light path and switch to the displayer image.

3. Loosen the parfocality adjustment screw (LOCK) 1 using the Allen wrench.

4. While observing the displayer image, adjust focus by turning the parfocality adjustment screw (FOCUS) 2 slowly using the Allen screwdriver.

5. When correct focusing is obtained, hold the FOCUS screw position by keeping the Allen screw driver inserted into it, and tighten the LOCK screw 1 using the Allen wrench.

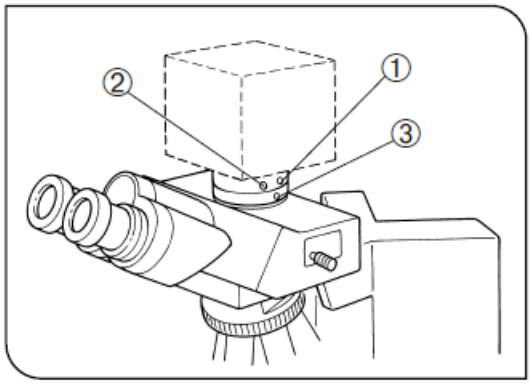


Fig. 3

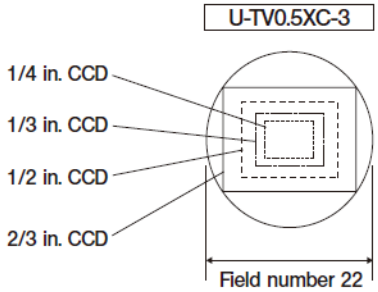
Rotating the Camera (Fig. 3)

Loosen the straight photo tube clamping screw 3.

Rotate the TV camera and tighten the straight photo tube clamping screw 3 firmly.

Imaging Field Areas

The following diagrams show the imaging field areas, which are determined by the field of view of the eyepiece (field number 22) and the size of the CCD seen through the C-mount adapter.



$$\text{Magnification on monitor} = \text{Objective magnification} \times \text{C-mount adapter magnification (0.5X)} \times \frac{\text{Monitor diagonal length*}}{\text{CCD diagonal length*}}$$

* Differs depending on the manufacturer.
CCD reference: 1 in. TV camera → 16.16 mm, 2/3 in. → 11 mm, 1/2 in. → 8.08 mm, 1/3 in. → 6 mm, 1/4 in. → 4 mm

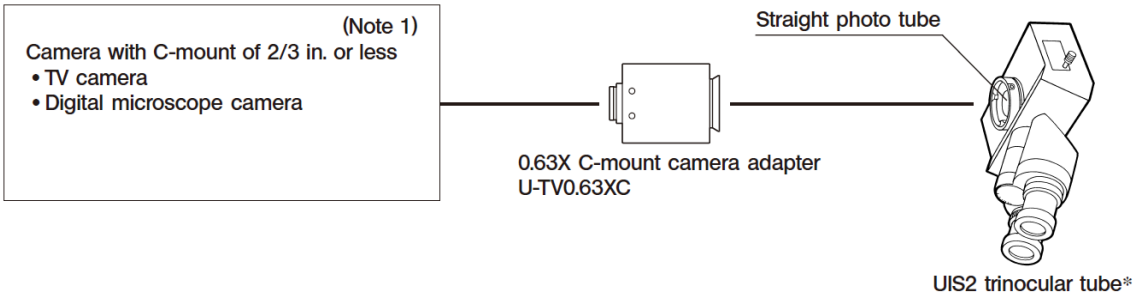
TV Adaptor: U-TV0.63XC

Instructions for the Low-Magnification C-Mount Adapter U-TV0.63XC

The U-TV0.63XC is low-magnification TV adapter with C-mount which allows a digital imaging device such as a digital TV, EXCCD, UHCCD, UCMOS camera to capture wide-angle images. Use of telecentric optics helps reduce the occurrence of light deficiency in the peripheral sections.

In addition, the transmittance at the infrared frequency band is increased to 1,000 nm.

System Diagram



* This product can be mounted on the straight photo tube of a UIS2 (UIS) trinocular tube (U-TR30-2, U-TR30NIR, USWTR-3, etc.) or the side port of the IX81/71/51 microscope.

Note 1) Restrictions on the TV camera

• TV camera cannot be used if its C-mount surface is located below the camera surface.

•TV camera may get in the way of the microscope operation if the camera's lateral size from the light axis exceeds 68 mm.

• When a TV camera having a larger CCD than specified is used, the image may lack brightness in the peripheral sections or a part of an image may be cut off.

• When the TV camera has high sensitivity or is not provided with automatic light control, the displayer image may become whitish. Should this happen, lower the light intensity level of the microscope.

Assembly

The threaded sections of the C-mount are very sharp edged. Do not touch them.

Since the C-mount camera adapter is a precision instrument incorporating lens components, be careful not to drop it during installation or storage to prevent its damage or human injury. If it is dropped by mistake, be particularly careful against the broken glass.

When the lens components get dirty, clean it by referring to the instruction manual for the microscope.

1. Attach the C-mount adapter 1 to the C-mount TV camera 2 by screwing firmly. (Fig. 1)

2. Using the Allen screwdriver provided with the microscope, loosen the straight photo tube clamping screw 3, then fit the mount dovetail 4 of the C-mount adapter into the straight photo tube mount 5 of the trinocular tube. (Fig. 2) (#For convenient parfocality adjustment, set the C-mount adapter so that the LOCK and FOCUS screws face sideways.)

3. Tighten the clamping screw 3 firmly. (Fig. 2)

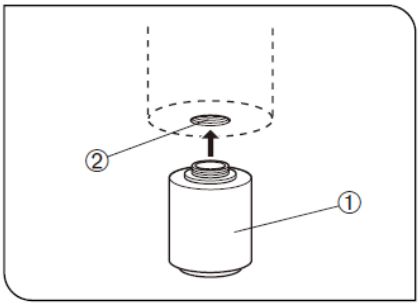


Fig. 1

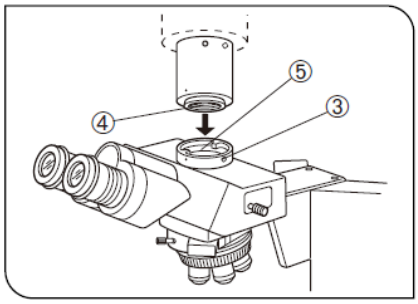


Fig. 2

Operation

Adjusting the Microscope

1. Turn on the microscope light source and adjust the required points of the microscope to make it ready for observation.

2. Set the light path of the UIS trinocular tube to the TV light path.

Adjusting the TV Camera and Displayer

Perform the adjustments such as color adjustment by referring to the instruction manuals of your TV camera and displayer.(#The center of eyepiece and that of the displayer may not coincide correctly. This is a function of the CCD adjustment mechanism of the TV camera, not a malfunction)

Adjusting the Parfocality Between the Observed Image and Displayed Image (Fig. 3)

The parfocality adjustment requires the Allen wrench (for locking) provided with the adapter and the Allen screwdriver (for focusing) provided with the microscope. **(#The parfocality adjustment range is ±0.80 mm. If the adjustment of the adapter is not enough, please also adjust the focusing feature of the TV camera. If the correct parfocality cannot still be obtained, use another TV camera)**

1. Look into the eyepiece and bring the specimen into focus.

2. Set the TV light path and switch to the displayer image.

3. Loosen the parfocality adjustment screw (LOCK) 1 using the Allen wrench.

4. While observing the displayer image, adjust focus by turning the parfocality adjustment screw (FOCUS) 2 slowly using the Allen screw driver.

5. When correct focusing is obtained, hold the FOCUS screw position by keeping the Allen screwdriver inserted into it, and tighten the LOCK screw 1 using the Allen wrench.

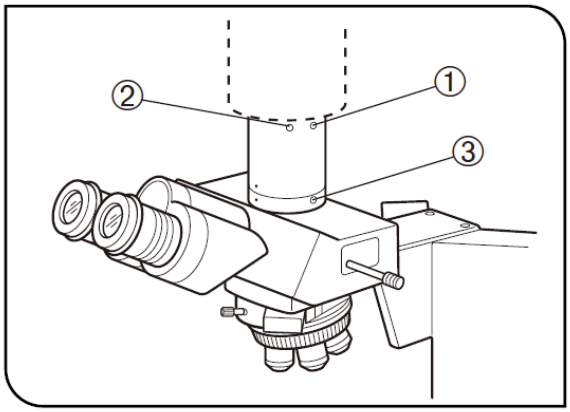


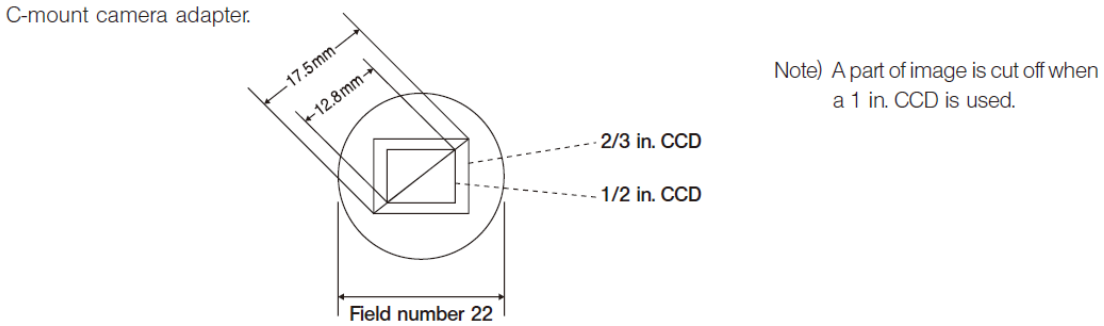
Fig. 3

Rotating the Camera (Fig. 3)

Loosen the straight photo tube clamping screw 3. Rotate the TV camera and tighten the straight photo tube clamping screw 3 firmly.

Imaging Field Areas

The following diagrams show the imaging field areas, which are determined by the field of view of the eyepiece (field number 22) and the size of the CCD seen through the C-mount adapter.



$$\text{Magnification on monitor} = \text{Objective magnification} \times \text{C-mount camera adapter magnification (0.63X)} \times \frac{\text{Monitor diagonal length*}}{\text{CCD diagonal length*}}$$

* Differs depending on the manufacturer.
CCD reference: 1 in. camera →16.16 mm, 2/3 in. →11 mm, 1/2 in.→ 8.08 mm, 1/3 in.→ 6 mm, 1/4 in.→ 4 mm

Adjustable Microscope Adapter

AMA Specifications

Article Code	Picture	Model	Description	Bar Code
108001		AMA037	1.Available Size for 18 mm Field 18X0.37 2.Fit to 1/4″~1/3″ Size Sensor 3.0.37X Magnification 4.Manually Focusable 5.Parfocal with the Eyepiece 6.C-Mount to Dia.23.2mm Eyepiece Tube	108001
108002		AMA050	1.Available Size for 18 mm Field 18X0.50 2.Fit to 1/2″~2/3″ Size Sensor 3.0.50X Magnification 4.Manually Focusable 5.Parfocal with the Eyepiece 6.C-Mount to Dia.23.2mm Eyepiece Tube	108002
108003		AMA075	1.Available Size for 18 mm Field 18X0.75 2.Fit to 1/1.8″~1″ Size Sensor 3.0.75X Magnification 4.Manually Focusable 5.Parfocal with the Eyepiece 6.C-Mount to Dia.23.2mm Eyepiece Tube	108003

*To cover the field, the sensor size should be smaller than the available size. ToupTek's experts will help you to select the correct item for your ordered microscope camera. What you need to do is to select the right camera model.

Fixed Microscope Adapter

FMA Specifications

Article Code	Picture	Model	Description	Bar Code
108005		FMA037	1.Available Size for 18 mm Field 18X0.37 2.Fit to 1/4″~1/3″ Size Sensor 3.0.37X Magnification 4.C-Mount to Dia.23.2mm Eyepiece Tube	108005
108006		FMA050	1.Available Size for 18 mm Field 18X0.50 2.Fit to 1/2″~2/3″ Size Sensor 3.0.50X Magnification 4.C-Mount to Dia.23.2mm Eyepiece Tube	108006
108007		FMA075	1.Available Size for 18 mm Field 18X0.75 2.Fit to 1/1.8″~1″ Size Sensor 3.0.75X Magnification 4.C-Mount to Dia.23.2mm Eyepiece Tube	108007

*To cover the field, the sensor size should be smaller than the available size. ToupTek's experts will help you to select the correct item for your ordered microscope camera. What you need to do is to select the right camera model.

Adjustable Telescope Adapter

ATA Specifications

Article Code	Picture	Model	Description	Bar Code
108008		ATA037	1.Fit to 1/4" ~ 1/3" Size Sensor 2.0.37X Magnification 3.Manually Focusable 4.Parfocal with the Eyepiece 5.C-Mount to Dia.31.75mm Eyepiece Tube	108008
108009		ATA050	1.Fit to 1/2" ~ 2/3" Size Sensor 2.0.50X Magnification 3.Manually Focusable 4.Parfocal with the Eyepiece 5.C-Mount to Dia.31.75mm Eyepiece Tube	108009
108010		ATA075	1.Fit to 1/1.8" ~ 1" Size Sensor 2.0.75X Magnification 3.Manually Focusable 4.Parfocal with the Eyepiece 5.C-Mount to Dia.31.75mm Eyepiece Tube	108010

*To cover the field, the sensor size should be smaller than the available size. ToupTek's experts will help you to select the correct item for your ordered microscope camera. What you need to do is to select the right camera model.

Fixed Telescope Adaptor

FTA Specifications

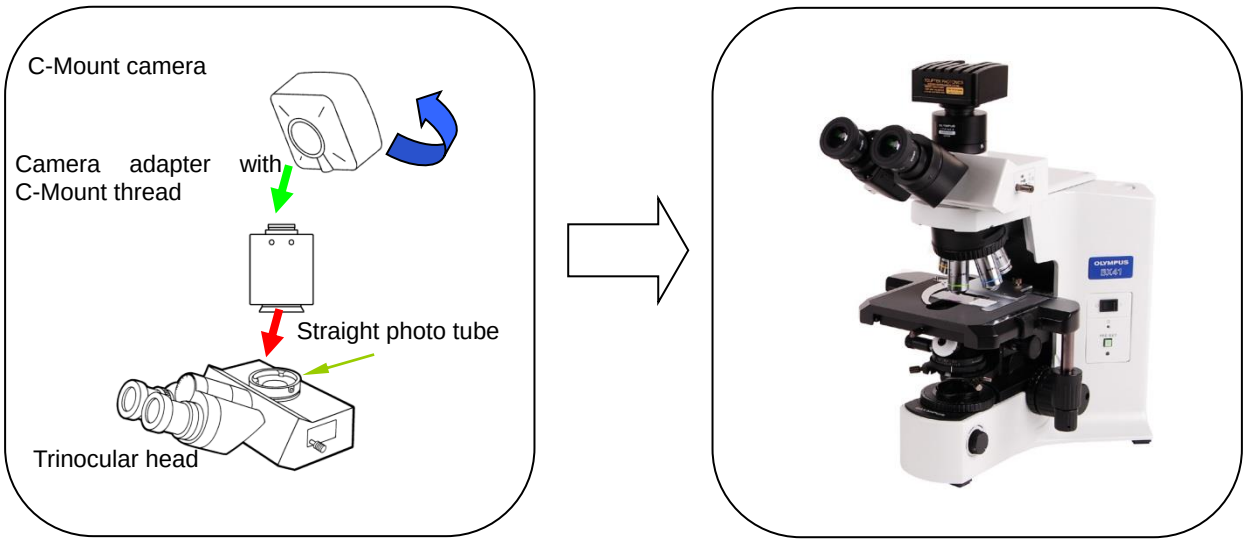
Article Code	Picture	Model	Description	Bar Code
108011		FTA037	1.Fit to 1/4" ~ 1/3" Size Sensor 2.0.37X Magnification 3.C-Mount to Dia.31.75mm Eyepiece Tube	108011
108012		FTA050	1.Fit to 1/2" ~ 2/3" Size Sensor 2.0.50X Magnification 3.C-Mount to Dia.31.75mm Eyepiece Tube	108012
108013		FTA075	1.Fit to 1/1.8" ~ 1" Size Sensor 2.0.75X Magnification 3.C-Mount to Dia.31.75mm Eyepiece Tube	108013

*To cover the field, the sensor size should be smaller than the available size. ToupTek's experts will help you to select the correct item for your ordered telescope camera. What you need to do is to select the right camera model.

ToupCam® and Microscope Configuration

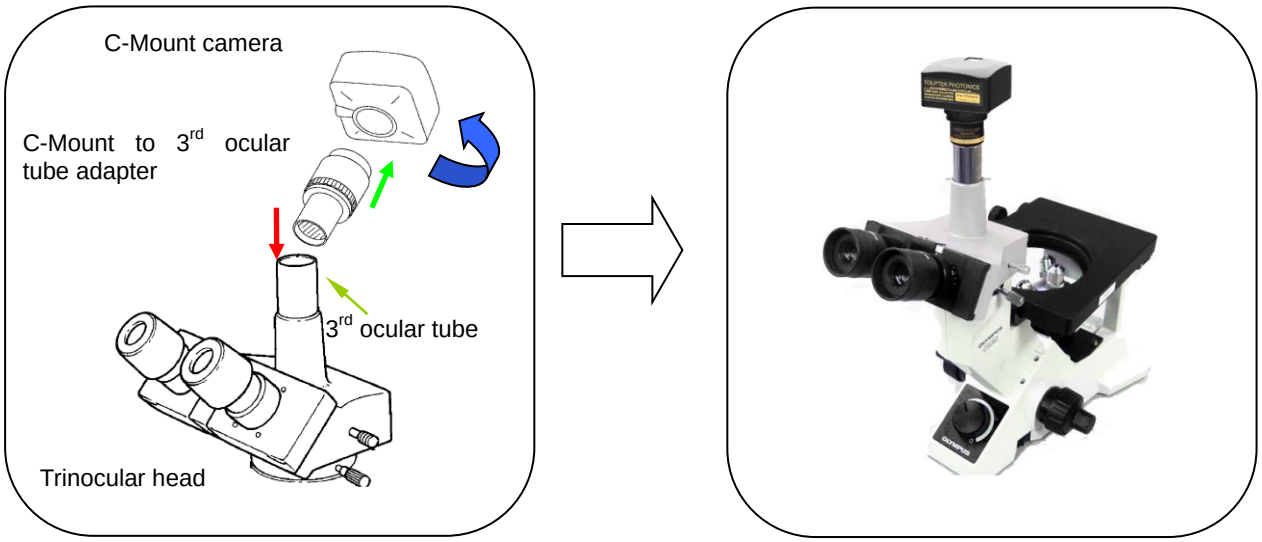
Trinocular Digital Microscope (1/2)

Attach the C-mount camera and adapter to the straight photo tube



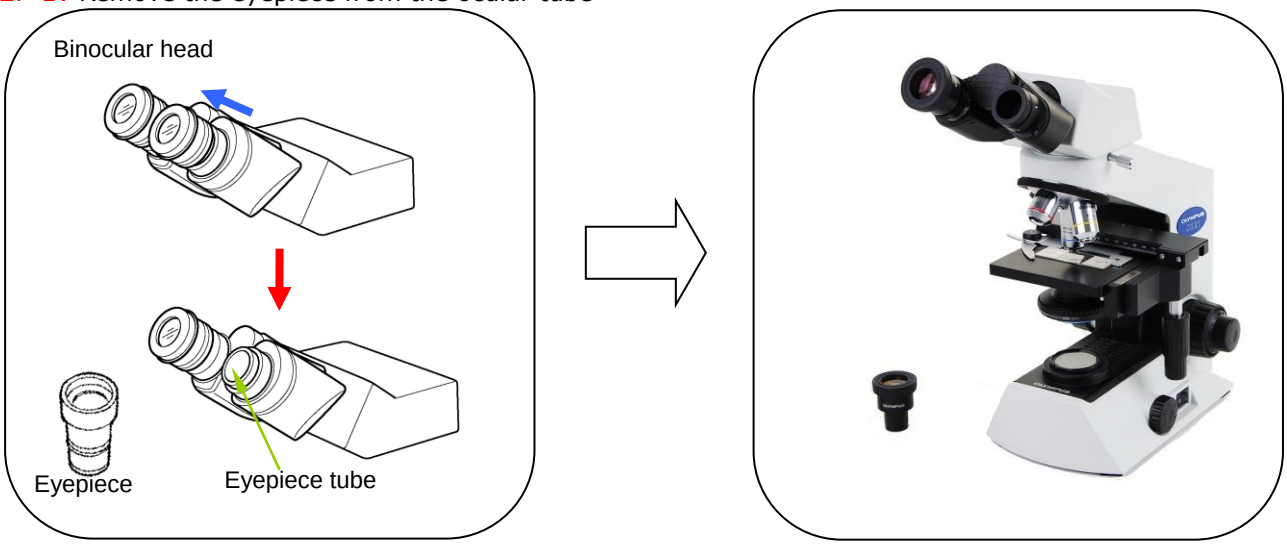
Trinocular Digital Microscope (2/2)

Attach the C-Mount camera and adapter to the 3rd ocular tube

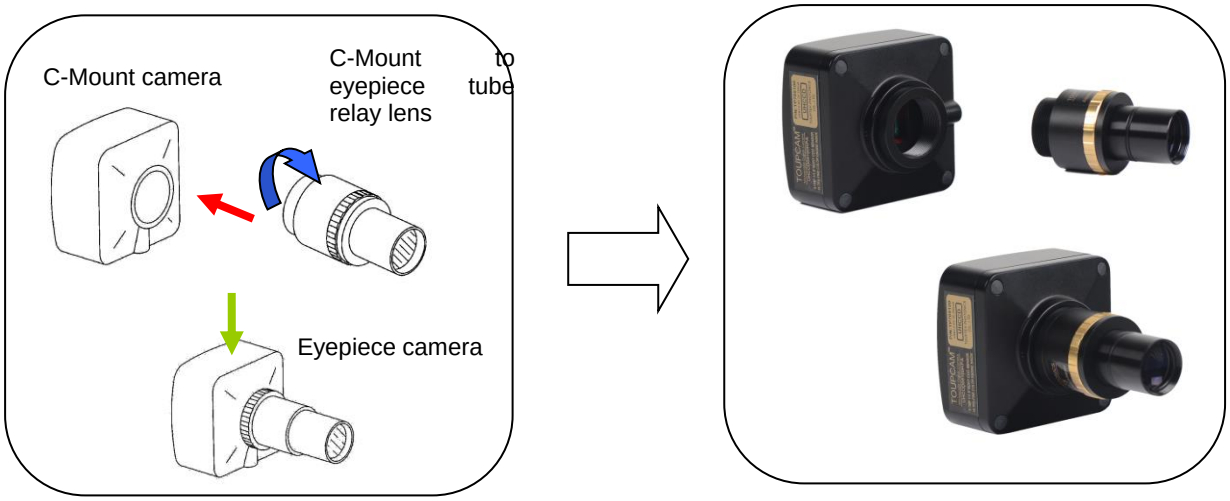


Binocular Digital Microscope

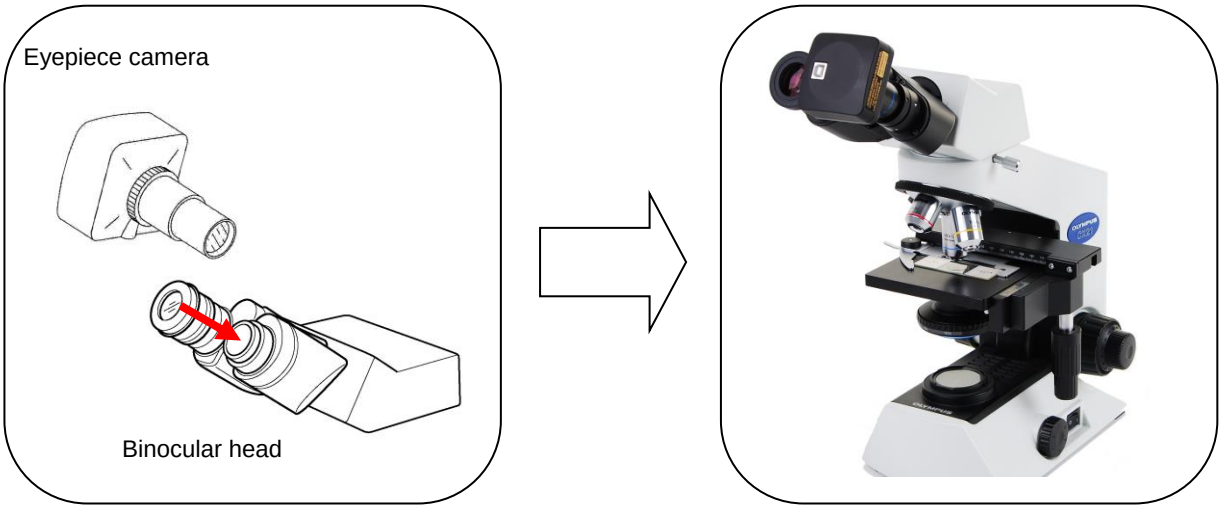
STEP 1: Remove the eyepiece from the ocular tube



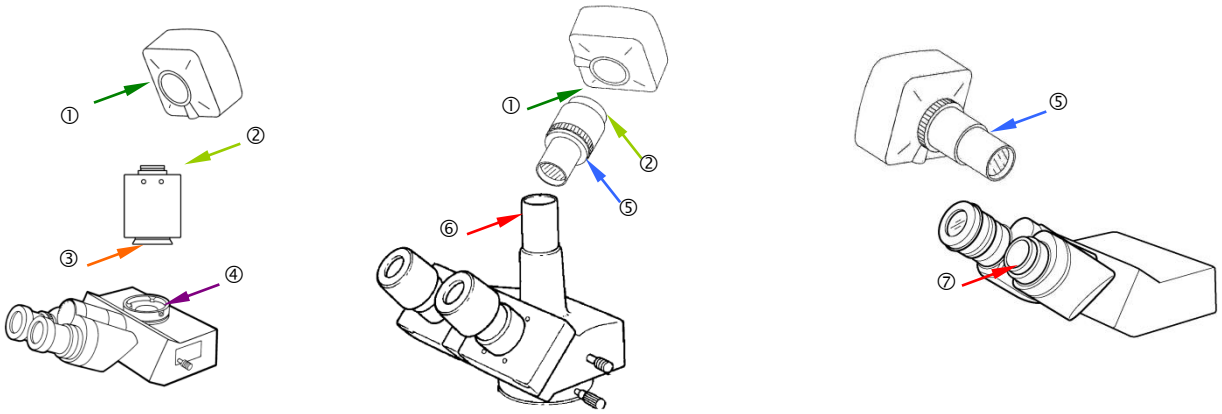
STEP 2: Attach (Screw) the camera adapter to the C-mount camera



STEP 3: Attach (Insert) the eyepiece camera into the ocular tube



Size Description of the Connection Parts



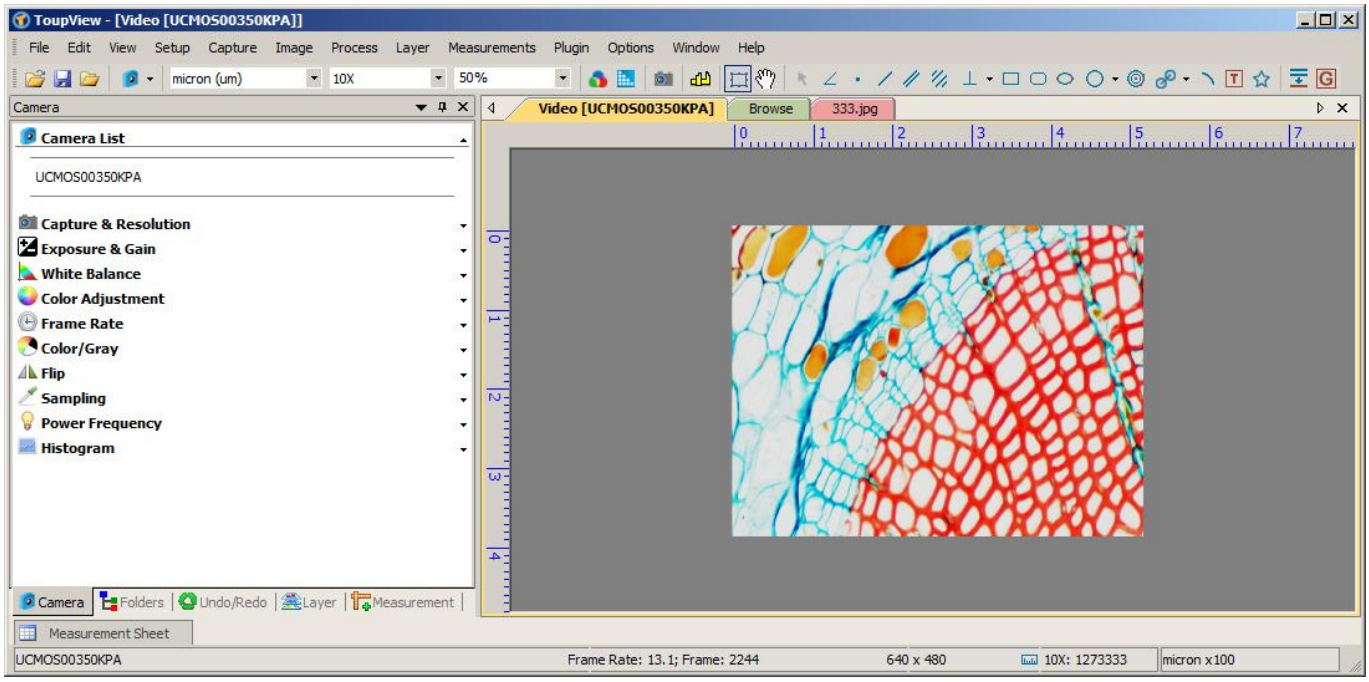
① Standard C-Mount: Dia.1 inch (25.4mm) female thread
② Standard C-Mount: Dia.1 inch (25.4mm) male thread
③ Camera adaptor connector: size varies between microscope brands
④ Straight photo tube: size varies between microscope brands
⑤ Relay lens: standard eyepiece connector size, Dia.23.2mm (male)
⑥ 3rd ocular tube: standard eyepiece connector size, Dia.23.2mm (female)
⑦ Ocular tube: standard eyepiece connector size, Dia.23.2mm (female)

ToupView Introdction

Software Basic

ToupView，a powerful video analysis, image capture, 2D and 3D image processing, enhancement, and analysis software with extensive measurement and customization.

ToupView can be used in medical micro-imaging, industrial inspection, machine vision, astronomical observation, etc.



ToupView is compatible with full arrange of ToupCam cameras and also has the Twain interface. ToupView, with overall control to the camera, friendly operation, powerful function, multi-operating systems and broad compatibility, is one of the best software in the industry and got the special recommendation from the United States Department of Education.

Compatible Operating System

Microsoft® Windows® XP / Vista / 7 / 8 (32 & 64 bit)

Mac: OS X

Linux: Kernel 2.6 or above

Language Supported

English	German	Polish	Turkish
Chinese(Simplified)	Japanese	French	Korean
Chinese(Traditional)	Russian	Italian	

ToupView, as the professional software which supports most kind of language in the industry, has more than 600,000 users from more than 50 countries and regions all over the world.

Software Function Modules

(9 modules with 128 professional functions)

Camera Controlling Module:

List the installed camera

Capture and set the live & snap resolution

Auto ROI exposure: target setting

Manual exposure: time setting

ROI white balance

Color: hue, saturation, brightness, contrast and Gamma adjustment

Frame rate control

Color mode: color/gray

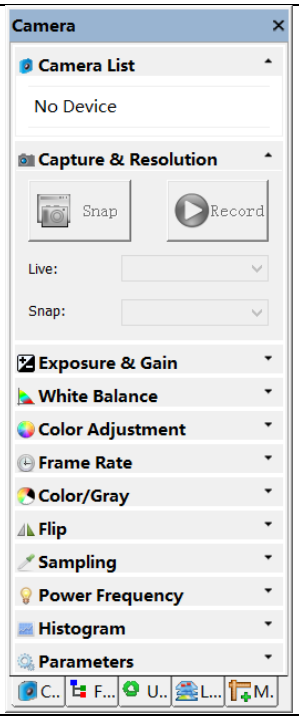
Flip: horizontal, vertical

Skip and bin sampling

Power frequency setting

Histogram auto RGB & manual level setting

Parameters save and recall



Video Operating Module

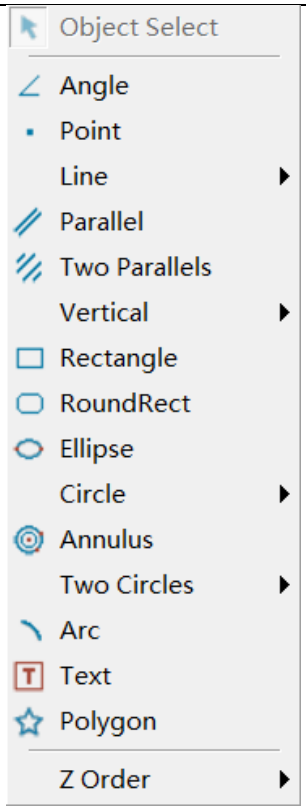
Gray Calibration	Ensure the gray scale consistency and continuous of the video pixel
Video Calibration	To setup a relation of the pixel resolution(pixel/meter) under different microscope object magnification
Video Watermark	To compare the similar images dynamically and quickly
Video Marker	Overlay the Scale, Magnification, Date Time, Clarity Factor and Markers on the video dynamically.
Video Stitch	To form a large image with the Stitch function
Video Layer	To setup different Layer to accommodate different Measurement Objects
Video Measurement	To dynamically measure the video object with many shapes
Video Image Fusion	To Fusion the video image manually
The Other Miscellaneous Video Function	Check Video Properties, Auto Grids, Manual Grids, Capture Image, Time-lapse Capture and Video Record

Imaging Processing Module

Filter>Image Enhance	Gauss, High Gauss, Low Pass, High Pass, Equalization, Sharpness, Flatten, Median, Rank
Filter>Edge Enhance	Sobel, Roberts, Sculpt, Laplace, Variance, Horizontal, Vertical
Filter>Morphological	Erode, Dilate, Open, Close, Top hat, Well, Gradient, Distance, Thinning, Watershed.
Filter>Kernel	Filter edit Convolution and Morphological Filter edit, new and delete operation.
Image Adjustment	Curve, Auto Level, Histogram Equalization, Brightness/Contrast, Color Calibration (RGB, CMYK and HLS Mode), HMS (Highlight, Midtone, and Shadow), Gamma, Filter Color, Extract Color and Invert.
Rotate	Horizontal, Vertical, 90(CW), 180(CW), 270(CW) and Arbitrary
Image Crop	Crop the unselected and keep the selected
Image Scale	Scale the image with Nearest Neighbor, Bilinear, and Bicubic method
Histogram Distribution	Range, Segmentation, Binary
Emboss	Gradient, Different, and Prewitt (support the Live and Background Color Select)
The Other Miscellaneous Processing Function	Pseudo Color, 3D Surface Plot, Line Profile and Diffuse, Granulate, Mosaic, Fusion et

Image Measurement Module

"Angle"
"Point"
"Line" (Arbitrary Line, Horizontal line, Vertical Line)
"Parallel"
"Vertical" (Three Points, Four Points)
"Rectangle"
"RoundRect"
"Ellipse"
"Circle" (Centre+Radius, Two Points, Three Points)
"Two Circles" (Centre+Radius)
"Arc"
"Text"
Layer: Export to image
Export: EXCEL, HTML
Measurement Object Properties Setup: Dash line, Active line, Arrow line, Width, Color, Font and Size



Measurement Object Edit: Including Appearance, Calculation and Coordinates edit, move and delete et al.	

Image Stitching Module

Intelligent identification, Matrix Mosaic, no need to set the order of images

Plugin (user can find extensions to install)

Line Width: Skeleton Extraction, Line Detection, and Line Pair Width Marker

Segmentation: Quantization Segmentation, Excessive Segmentation and Insufficient Segmentation

Count: Confinement Area Range, Confinement Perimeter Range, Confinement Gray Scale Range

FFT: The Fast Fourier Transform and FFT filter and IFFT operation.

Micro-spectrometer

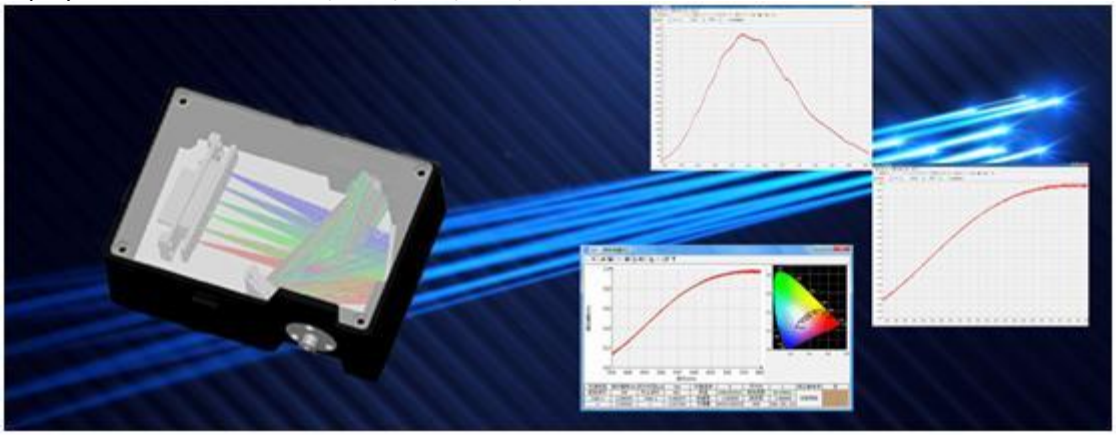
ToupTek's spectrometer is applicable for spectral detection within the wavelength range between 200nm and 1100nm.

Due to their high stability and performance, these portable instruments can greatly satisfy the increasing need for their use in scientific research, industrial manufacture, and online detections and so on. The ToupSpm is capable of measuring:

- Spectral power distribution
- Absorbance, transmission
- Reflection
- Relative irradiance
- Chromaticity coordinates
- Color temperature
- Color rendering index
- Color tolerance
- Color difference
- Color purity
- Main wavelength
- Luminous flux
- Luminance
- Irradiance power
- Luminous efficiency

etc. for various kinds of samples, light sources and display devices. In addition, they can be utilized to achieve the photochromic analysis of:

- Florescence lamps
- High pressure gas discharge light sources
- Halogen-tungsten lamps, medical light sources
- Semi-conductor lighting devices
- Display devices such as CRT, LCD, PDP, ELD, and VFD



ToupSpm can offer the best solutions for spectral detections. With different system configurations and sampling accessories, ToupSpm can achieve high spectral resolution up to 0.2nm, stable wide and narrow line spectrums with different optical interfaces. Furthermore, with the easy-to-use basic operating software and high efficient SDK, users can easily produce various kinds of spectral detection systems customized to meet their own goals.

USB2000A(P/N: TS300511)

Mechanical Parameters

Dimensions (mm)	95×68.5×36
Weight (g)	210

Detector Specification

Detector	Sony ILX511 2048 linear CCD array
Wavelength Response Range (nm)	330-1000
Active Pixels	2048
Pixel size (μm)	14×200
Saturation Exposure（lx • s）	0.004
Saturation Output Voltage	0.8V
A/D Resolution	16 bit
Dark Signal Voltage（mv）	3
Sensitivity Non-uniformity	5%
Sensitivity (V/lx • s)	200

Optical Bench

Optical System	f/4, asymmetrical crossed Czerny-Turner
Focal length (mm)	45 (Input); 70 (Output)
Entrance Aperture (μm)	5, 10, 15, 20, 50 .etc width slits or fiber (customizable)
Grating	Various kinds of scoring grating or holographic grating with different grating constants and flare wavelengths (customizable)
Cylindrical Lens	optional
Optical Filter	Band pass or long pass filters to eliminate secondary spectrum
Fiber and Fiber Connection	NA 0.22, SMA905 (customizable)

Spectroscopic

Wavelength Range	Depends on optical grating
Optical Resolution (nm)	0.2-10 FWHM (Depends on grating constant, width of slit and detector model)
SNR	300:1 (Full signal)
Wavelength Tolerance (nm)	About ±0.2
Dark noise (RMS counts)	50
Integration Time	2ms-4s
Dynamic Range	267
Stray light	<0.05% at 550nm

Electronics

Power Consumption	300 mA×5 V DC
Data Transfer Speed	Full spectrum into memory every 2.4 ms at USB 2.0

Computer

Operating System	Windows /XP/Vista/7 /8 (32 and 64)
Interface	USB 2.0 (480Mbps), compatible with USB 1.1

Pre-defined System Components

Name	Customizable Parts	Remark
Slit	Width (μm)	10, 20, 50, 100 .etc
Grating	Lines Per Unit (L/mm)	300, 600, 1200, 1800
	Wavelength Range(nm)	200-1100 (User defied, about 650 range with 600 lines/mm grating)
Fiber	Core Diameter (μm)	9, 50, 200, 400, 600 .etc
	Wavelength Range(nm)	200-1100
	Outer Protection Layer	Normal or enhanced jacketing

	Interface Type	SMA 905 (standard) or FC, ST .etc
Detector	Model	Sony ILX511
Cylindrical Lens	Optional	Enhance system's light gathering ability

Optional Components

Name	Remark
Light Source	Used for wide range spectral measurements or wavelength calibration: for example halogen tungsten, xenon or argon light sources
Integration Sphere	Used to acquire uniform light
Reflection Measurement Accessory	Components used for reflection spectrum measurements: for example standard reflection board or specialized clamp
Transmission Measurement Accessory	Components used for transmission spectrum measurement: for example sample holder and various kinds of cuvettes

Packing List

Name	Amount
ToupTek Microspectrometer	USB2000A
Fiber with SMA 905 Interface	1
Mini USB Data Transfer Wire	1
CD of Software and SDK	1

USB2000B(P/N: TS300554)

Mechanical Parameters

Dimensions (mm)	95×68.5×36
Weight (g)	210

Detector Specification

Detector	Sony ILX554 2048 linear CCD array
Wavelength Response Range (nm)	330-1000
Active Pixels	2048
Pixel size (μm)	14×56
Saturation Exposure（lx • s）	0.004
Saturation Output Voltage	1V
A/D Resolution	16 bit
Dark Signal Voltage（mv）	3
Sensitivity Non-uniformity	5%
Sensitivity (V/lx • s)	240

Optical Bench

Optical System	f/4, asymmetrical crossed Czerny-Turner
Focal length (mm)	45 (Input); 70 (Output)
Entrance Aperture (μm)	5, 10, 15, 20, 50 etc. width slits or fiber (customizable)
Grating	Various kinds of scoring grating or holographic grating with different grating constants and flare wavelengths (customizable)
Cylindrical Lens	optional
Optical Filter	Band pass or long pass filters to eliminate secondary spectrum
Fiber and Fiber Connection	NA 0.22, SMA905 (customizable)

Spectroscopic

Wavelength Range	Depends on optical grating
Optical Resolution (nm)	0.2-10 FWHM (Depends on grating constant, width of slit and detector model)
SNR	300:1 (Full signal)
Wavelength Tolerance (nm)	About ±0.2
Dark noise (RMS counts)	50
Integration Time	2ms-4s
Dynamic Range	333
Stray light	<0.05% at 550nm

Electronics

Power Consumption	300 mA×5 V DC
Data Transfer Speed	Full spectrum into memory every 2.4 ms at USB 2.0

Computer

Operating System	Windows /XP/Vista/7 /8(32 and 64)
Interface	USB 2.0 (480Mbps), compatible with USB 1.1

Pre-defined System Components

Name	Customizable Parts	Remark
Slit	Width (μm)	10, 20, 50, 100 .etc
Grating	Lines Per Unit (L/mm)	300, 600, 1200, 1800
	Wavelength Range(nm)	200-1100 (User defined, about 650 range with 600 lines/mm grating)
Fiber	Core Diameter (μm)	9, 50, 200, 400, 600 .etc
	Wavelength Range(nm)	200-1100
	Outer Protection Layer	Normal or enhanced jacketing

	Interface Type	SMA 905 (standard) or FC, ST .etc
Detector	Model	Sony ILX554
Cylindrical Lens	Optional	Enhance system's light gathering ability

Optional Components

Name	Remark
Light Source	Used for wide range spectral measurements or wavelength calibration: for example halogen tungsten, xenon or argon light sources
Integration Sphere	Used to acquire uniform light
Reflection Measurement Accessory	Components used for reflection spectrum measurements: for example standard reflection board or specialized clamp
Transmission Measurement Accessory	Components used for transmission spectrum measurement: for example sample holder and various kinds of cuvettes

Packing List

Name	Amount
ToupTek Micro-spectrometer	USB2000B
Fiber with SMA 905 Interface	1
Mini USB Data Transfer Wire	1
CD of Software and SDK	1

USB4000A(P/N: TS301304)

Mechanical Parameters

Dimensions (mm)	95×68.5×36
Weight (g)	210

Detector Specification

Detector	TCD1304AP linear CCD array
Wavelength Response Range (nm)	330-1100
Active Pixels	3648
Pixel size (μm)	8×200
Saturation Exposure（lx • s）	0.004
Saturation Output Voltage	600mv
A/D Resolution	16 bit
Dark Signal Voltage（mv）	2
Photo Response non-uniformity	10%(MAX)
Sensitivity (V/lx • s)	160

Optical Bench

Optical System	F/4, asymmetrical crossed Czerny-Turner
Focal length (mm)	50 (input); 65 (output)
Entrance Aperture (μm)	5, 10, 15, 20, 50 .etc width slits or fiber (customizable)
Grating	Various kinds of scoring grating or holographic grating with different grating constants and flare wavelengths (customizable)
Cylindrical Lens	optional
Optical Filter	Band pass or long pass filters to eliminate secondary spectrum
Fiber and Fiber Connection	NA 0.22, SMA905 (customizable)

Spectroscopic

Wavelength Range	Depends on optical grating
Optical Resolution (nm)	0.2-10 FWHM (Depends on grating constant, width of slit and detector model)
SNR	300:1 (Full signal)
Wavelength Tolerance (nm)	About ±0.2
Dark noise (RMS counts)	50
Integration Time	3.8ms-4s
Dynamic Range	300
Stray light	<0.05% at 550nm

Electronics

Power Consumption	300 mA×5 V DC
Data Transfer Speed	Full spectrum into memory every 3.6ms at USB 2.0

Computer

Operating System	Windows /XP/Vista/7 /8(32 and 64)
Interface	USB 2.0 (480Mbps), compatible with USB 1.1

Pre-defined System Components

Name	Customizable Parts	Remark
Slit	Width (μm)	10, 20, 50, 100 .etc
Grating	Lines Per Unit (L/mm)	300, 600, 1200, 1800
	Wavelength Range(nm)	200-1100 (User defined, about 650 range with 600 lines/mm grating)
Fiber	Core Diameter (μm)	9, 50, 200, 400, 600 .etc
	Wavelength Range(nm)	200-1100
	Outer Protection Layer	Normal or enhanced jacketing

	Interface Type	SMA 905 (standard) or FC, ST .etc
Detector	Model	Toshiba TCD1304
Cylindrical Lens	Optional	Enhance system's light gathering ability

Optional Components

Name	Remark
Light Source	Used for wide range spectral measurements or wavelength calibration: for example halogen tungsten, xenon or argon light sources
Integration Sphere	Used to acquire uniform light
Reflection Measurement Accessory	Components used for reflection spectrum measurements: for example standard reflection board or specialized clamp
Transmission Measurement Accessory	Components used for transmission spectrum measurement: for example sample holder and various kinds of cuvettes

Packing List

Name	Amount
ToupTek Micro-spectrometer	USB4000A
Fiber with SMA 905 Interface	1
Mini USB Data Transfer Wire	1
CD of Software and SDK	1

MAYA2000A(P/N: TS309840)

Mechanical Parameters

Dimensions (mm)	160×110×60
Weight (g)	900

Detector Specification

Detector	HAMAMATSU S9840
Wavelength Response Range (nm)	200-1100
Active Pixels	2048x14
Pixel size (μm)	14x14
Pixel well capacity (ke-)	130
Read out noise (e- rms)	25
A/D Resolution	16 bit
Dark current (pA/cm2)	40 (MAX 120)
Photo response non-uniformity	±3%
Sensitivity (uV/e-)	4.0

Optical Bench

Optical System	F/4, symmetrical crossed Czerny-Turner
Focal length (mm)	98.5 (input); 98.5 (output)
Entrance Aperture (μm)	5, 10, 15, 20, 50 .etc width slits or fiber (customizable)
Grating	Various kinds of scoring grating or holographic grating with different grating constants and flare wavelengths (customizable)
Cylindrical Lens	optional
Optical Filter	Band pass or long pass filters to eliminate secondary spectrum
Fiber and Fiber Connection	NA 0.22, SMA905 (customizable)

Spectroscopic

Wavelength Range	Depends on optical grating
Optical Resolution (nm)	0.14-10 FWHM (Depends on grating constant, width of slit and detector model)
SNR	450:1 (Full signal)
Wavelength Tolerance (nm)	About ±0.2
Dark noise (RMS counts)	50
Integration Time	10μs-7.8s
Dynamic Range	2.0×108(system); 5200:1 (single acquisition)
Stray light	<0.05% at 550nm

Electronics

Power Consumption	400 mA×5 V DC
Data Transfer Speed	Full spectrum into memory every 5 ms at USB 2.0

Computer

Operating System	Windows /XP/Vista/7 /8(32 and 64 bit)
Interface	USB 2.0 (480Mbps), compatible with USB 1.1

Pre-defined System Components

Name	Customizable Parts	Remark
Slit	Width (μm)	10, 20, 50, 100 .etc
Grating	Lines Per Unit (L/mm)	300, 600, 1200, 1800
	Wavelength Range(nm)	200-1100 (User defined, about 650 range with 600 lines/mm grating)
Fiber	Core Diameter (μm)	9, 50, 200, 400, 600 .etc
	Wavelength Range(nm)	200-1100
	Outer Protection Layer	Normal or enhanced jacketing

	Interface Type	SMA 905 (standard) or FC, ST .etc
Detector	Model	HAMAMATSU S9840
Cylindrical Lens	Optional	Enhance system's light gathering ability

Optional Components

Name	Remark
Light Source	Used for wide range spectral measurements or wavelength calibration: for example halogen tungsten, xenon or argon light sources
Integration Sphere	Used to acquire uniform light
Reflection Measurement Accessory	Components used for reflection spectrum measurements: for example standard reflection board or specialized clamp
Transmission Measurement Accessory	Components used for transmission spectrum measurement: for example sample holder and various kinds of cuvettes

Packing List

Name	Amount
ToupTek Microspectrometer	MAYA2000A
Fiber with SMA 905 Interface	1
Mini USB Data Transfer Wire	1
CD of Software and SDK	1

DH-2000

The **DH-2000 Deuterium Tungsten Halogen Light Source** combines the continuous spectrum of deuterium and tungsten halogen light sources in a single optical path.

The combined-spectrum light source produces a powerful, stable output from 215-2500 nm. In addition, deep-UV versions of the light source are available, providing a 190-2500 nm wavelength range.

Options and Accessories

Integrated shutters are also available with the DH-2000 and can be driven either by a switch or by a TTL signal. Another option is to include a filter holder with the system, which accepts filters up to 4 mm in thickness and as large as 25-mm square or 20-mm round in diameter. All versions of the DH-2000 have an SMA 905 Connector for easy coupling to our spectrometers and accessories via optical fiber, and a safety shutter for blocking the light when the fiber is not attached.

Adjustable Power

All versions of the DH-2000 have a potentiometer on the back of the light source to balance the light level between the deuterium and tungsten halogen light sources. This potentiometer allows you to adjust the optical power of the tungsten halogen light from 10-100%.

Optical Fibers

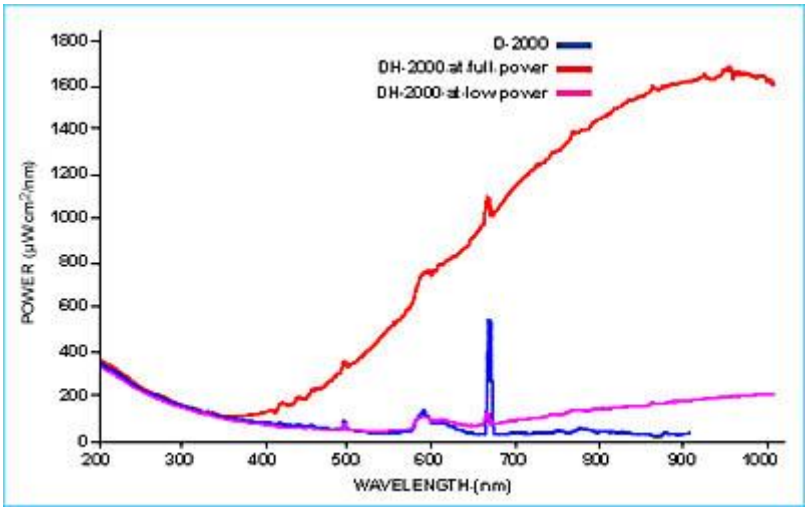
We recommend using our solarization-resistant optical fibers with all versions of the DH-2000.

DH-2000 Spectral Output

We recommend using our solarization-resistant optical fibers with all versions of the DH-2000.

This spectral output graph shows the output of the DH-2000 (red) at full power and the DH-2000 with the tungsten halogen at low power (pink), D-2000 (blue). The height of the deuterium atomic emission line

depends on the optical resolution of the spectrometer.



DH-2000 Deuterium Light Source Specifications

Dimensions:	150 mm x 135 mm x 319 mm
Weight:	3.5 kg
Power Consumption:	25 W (deuterium); 20 W (tungsten halogen)
Wavelength Range:	190-2500 nm (deep-UV deuterium and tungsten halogen bulbs) 215-2500 nm (standard deuterium and tungsten halogen bulbs)
Humidity:	5-95% without condensation at 40 ° C
Lamp Current:	Operating 85 V/0.3A
Lamp Lifetime:	1,000 hours
Lamp Voltage:	Ignition 580 V @20° C
Current Voltage Drift:	<0.01% per hour
Current Voltage stability:	<5 x 10-6 peak-to-peak (0.1-10.0 Hz)
Operating Temperature:	5 ° C - 35 ° C
Power Requirements:	85-264 V 50/60 Hz
Radiation Characteristic:	Aperture 0.5 mm, numerical aperture 26° (13°); focused Total power: 100 W
Power Consumption:	Approximately 78VA
Warm-up Time:	40 minutes (deuterium); 20 minutes (tungsten halogen)
Markings:	CE; VDI/VDE 0160; EN 61010

LS-1-CAL-INT

Calibrated for use with integrating sphere.

The LS-1-CAL-INT is designed for calibrating the absolute spectral response of your system when using the Fiber Optic Integrating Sphere as your sampling optic. The LS-1-CAL-INT comes with a PTFE diffuser plug that fits snugly into the sample port of the Integrating Sphere to measure absolute spectral intensities of LEDs and other emission sources.

Basic Specification

Spectral Range (calibrated):	300-1050 nm (calibrated)
Power Consumption:	800 mA @ 12 VDC
Power Output:	4.85 watts
Bulb Life:	10000 hours (recommend recalibration after 50 hours of use)
Recalibration:	Required after ~50 hours of operation
Bulb Color Temperature:	2800 K
Output Regulation:	0.2% voltage
Time to Stabilized Output:	~30 minutes
Connector:	SMA 905 for fiber; 6.35-mm barrel for cosine corrector; PTFE plug for integrating sphere

ToupTek®-- Contact info.

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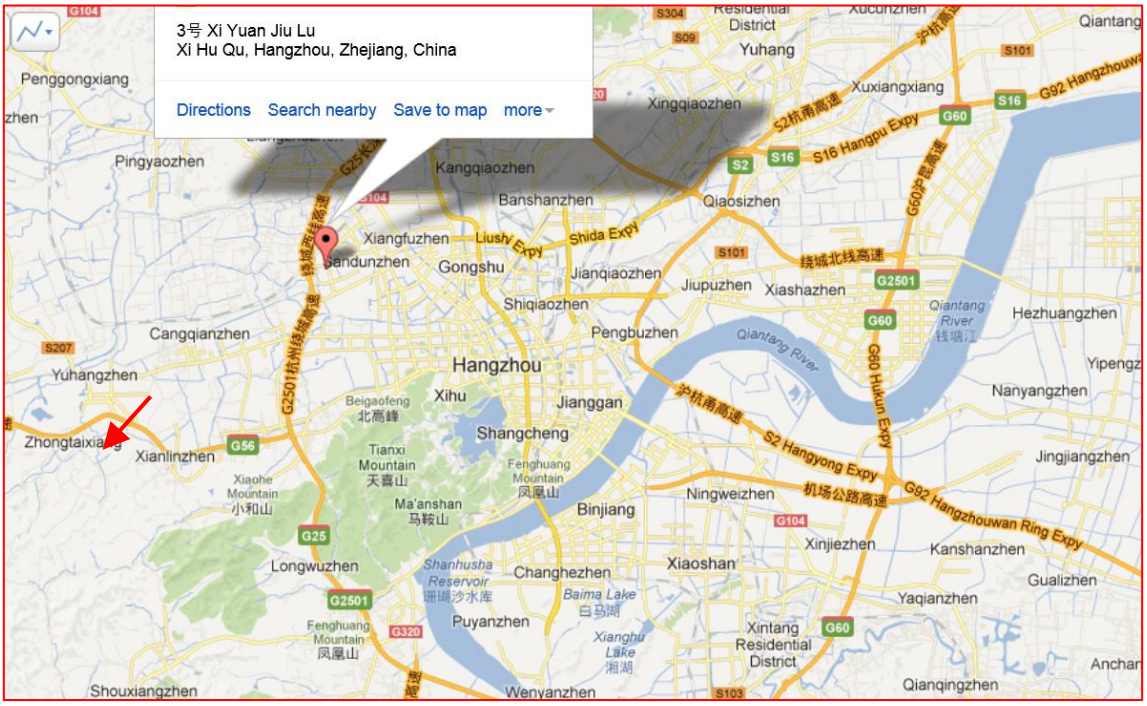
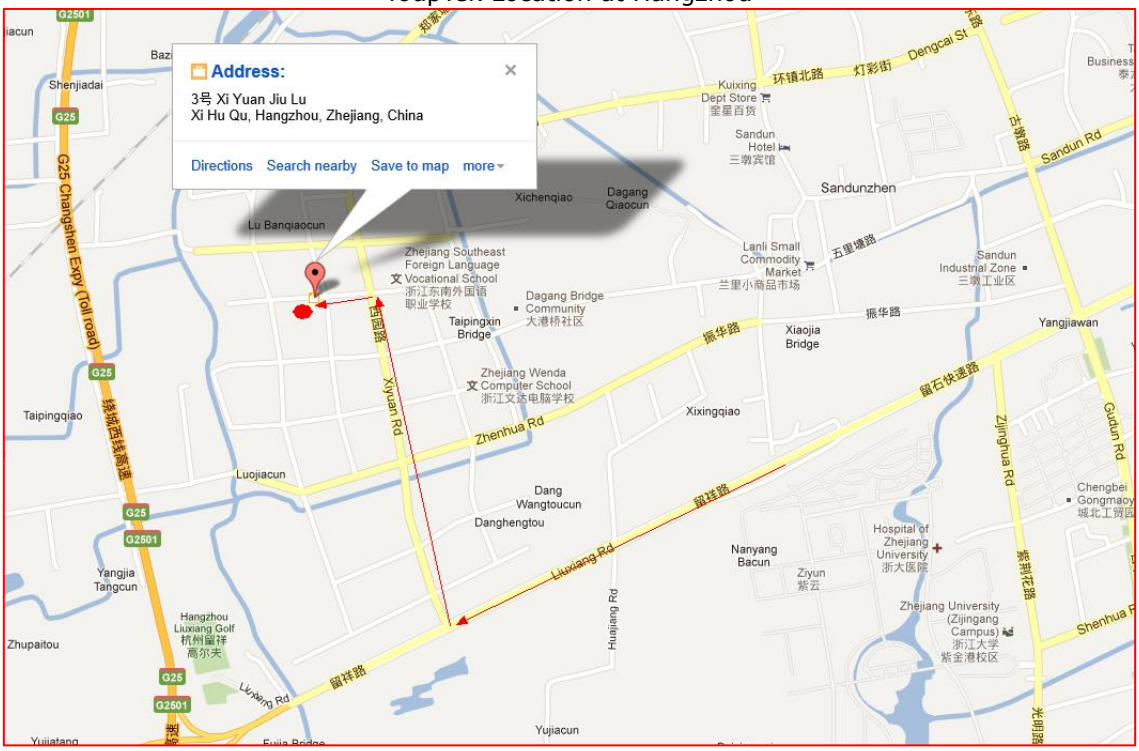


ToupTek Location at Hangzhou



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Revision History

6/07/2012	Change Capture/Control API's "DirectShow, Twain" to **Native C/C++, C#, DirectShow, Twain and Labview**
6/16/2012	Add UHCCD04000KPA to the model list
2/10/2013	Add U3CCD,U3CMOS,DH-2000,LS-1-CAL-INT
4/15/2013	U3CMOS08500KPA-SPECIAL parameter error (by Field YU)