BUC3M42 Series M42 Mount USB3.0 CMOS Camera

BUC3M42's different views

BUC3M42+F-mount   BUC3M42 + F-mount+Lens

BUC3M42 with F-mount+Lens   BUC3M42 with F-mount and Lens

BUC3M42 series cameras use Sony Exmor, Exmor R, Exmor RS back-illuminated CMOS sensors or GSENSE large-size sensors. The cameras comes with M42 mount, we also supply M42 mount to C-mount and M42 mount to F-mount adapters. Exmor series CMOS sensors use double-layer noise reduction technology, with ultra-high sensitivity

and ultra-low noise, GSENSE series sensors have big pixel size. The sensors have adopted advanced back-illuminated processing technology, the peak quantum efficiency is as high as 94%; through correlated multi-sampling technology (CMS), the chip readout noise is less than 1.2e-, and the dynamic range is as high as 90dB, which is ideal choice for biological imaging and scientific applications. At the same time, GSENSE2020BSI supports global reset rolling shutter exposure with high frame rate, which provides a new solution for high-performance UV industrial inspection, corona inspection and other applications.

The BUC3M42 series cameras have integrated a 12-bit ultra-fine hardware image signal processor video streaming engine (Ultra-FineTM HISPVP), through which can realize hardware demosaic adjustment, automatic exposure, gain adjustment, one-click white balance, image color adjustment, saturation adjustment, gamma correction, brightness adjustment, contrast adjustment, Bayer format image conversion to RAW data and finally output in 8/12bit. HISPVP transfers the traditional work that should be processed by the computer CPU to the camera hardware processing, it has greatly improved the transfer speed of the camera and reduces the CPU usage.

Using USB3.0 data transmission technology to achieve high-speed data transmission, video transmission is fast and stable.

The resolution of BUC3M42 series cameras spans from 4.2MP to 10MP.

BUC3M42 series cameras provide professional video and image processing application software ImageView; provide Windows/Linux/OSX multi-platform SDK; support native C/C++, C#/VB.Net, Directshow, Twain API.

The BUC3M42 series cameras can be used to capture general bright, dark field, low light or fluorescence microscopy images.

Features

The basic features of BUC3M42 are as following:

1. Adopted SONY Exmor or GSENSE Back-illuminated large scientific CMOS sensor, with M42x0.75 mount, USB3.0 CMOS digital camera;

2. Wide spectrum range, some models even have high response in the ultra-violet to infrared wavelength;

3. Real-time 8/12bit depth switch(depending on sensor), allow any ROI size;

4. Ultra-fine[TM] HISP VP and USB3.0 5 Gbps interface ensuring high frame rates(Up to 30 frames for 10MP resolution);

5. Ultra low noise and low power consumption by using column-parallel A/D conversion;

6. With hardware resolution from 4.2M to 10.3M;

7. Standard M42 mount and M42 to C-mount or F-mount;

8. CNC aluminum alloy housing;

9. With advanced video & image processing application ImageView;

10. Providing Windows/Linux/Mac OS multiple platforms SDK;

11. Native C/C++, C#/VB.Net, DirectShow, Twain.

BUC3M42 Datasheet

| Order Code	Sensor & Size(mm)	Pixel Size(μm)	G Sensitivity/ Dark Signal	FPS/Resolution	Binning	Exposure
BUC3M42-1000C	10.3M/IMX294(C) 4/3" (17.47x12.86)	4.63 x 4.63	419mv with 1/30s 0.12mv with 1/30s	30@3704x2778 34.5@4096x2160 39.5@2760x2072 62@2048x1080 86@1360x720	1x1, 1x1, 1x1, 2x2, 3x3	0.1ms~15s
BUC3M42-420MA	4.2M/GSENSE2020e (M, RS) 1.2" (13.31x13.31)	6.5 x 6.5	8.1x107 (e-/((W/m2).s)) Peak QE 64.2% @595nm 13(e-/s/pix)	45@2048x2048 45@1024 x 1024	1x1 2x2	0.01ms~60s
BUC3M42-420MB	4.2M/GSENSE2020 BSI (M, UV, RS) 1.2" (13.31x13.31)	6.5 x 6.5	1.1x108 (e-/((W/m2).s)) Peak QE 93.7% @550nm 80(e-/s/pix)	22@2048 x2048 22@1024 x1024	1x1 2x2	0.01ms~60s
BUC3M42-420MC	4.2M/GSENSE2020 BSI (M, UV, RS) 1.2" (13.31x13.31)	6.5 x 6.5	1.1x108 (e-/((W/m2).s)) Peak QE 93.7% @550nm 80(e-/s/pix)	44@2048x2048(12bit) 44@1024x1024(12bit) 44@680x680(12bit) 44@512x512(12bit)	1x1 2x2	0.01ms~60s
BUC3M42-420MD	4.2M/GSENSE2020 BSI (M, UV, RS) 1.2" (13.31x13.31)	6.5 x 6.5	1.1x108 (e-/((W/m2).s)) Peak QE 93.7% @550nm 80(e-/s/pix)	44@2048x2048(16bit) 44@1024x1024(16bit)	1x1 2x2	0.01ms~60s
BUC3M42-420MB2	4.2M/GSENSE2020 BSI (M, UV, RS) 1.2"(13.31x13.31)	6.5 x 6.5	1.1x108 (e-/((W/m2).s)) Peak QE 93.7% @550nm 80(e-/s/pix)	22@2048x2046(12bit)	1x1	0.01ms~60s
BUC3M42-420ME	4.2M/GSENSE400BSI (M, UV, RS) 2.0"(22.53x22.53)	11 x 11	3.25x108 (e-/((W/m2).s)) Peak QE 95.3% @560nm 345(e-/s/pix)	37@2048 x2048 37@1024 x1024	1x1 2x2	0.01ms~60s

| BU3M42-130MA | 1.3M/GLUX9701BSI (M,UV, RS) 1"(12.49x9.99) | 9.76 x 9.76 | 2.57x108 (e-/((W/m2).s)) Peak QE 89% @610nm 40(e-/s/pix) | 30@1280x1024(16bit) 30@640x512 | 1x1 2x2 | 0.05ms~60s |

C: Color; M: Monochrome; RS: Rolling Shutter; GS: Global Shutter; UV: Good UV response

The characteristic of BUC3M42-420MB, BUC3M42-420MC, BUC3M42-420MD, BUC3M42-420MB2 are as follows:

Order Code	Power Consumption(W)	Characteristic and Data Output Format	FPS/Resolution
BUC3M42-420MB	2.5~2.9	Support 2D denoising, hardware Auto Level (Default is not supported. The power consumption is 2.9w after upgrading), RAW12 format	22@2048 x2048(12bit) 22@1024 x1024(12bit)
BUC3M42-420MC	3.0	High frame rate, RAW12 format	44@2048 x2048(12bit) 44@1024 x1024(12bit)
BUC3M42-420MD	3.0	High frame rate and high dynamic range, Combined HDR 16bit (High gain 12bit format and low gain 12bit format output, and is combined to 16bit with FPGA)	44@2048 x2048(16bit) 44@1024 x1024(16bit)
BUC3M42-420MB2	TBD	MIPI D-PHY CSI-2 1Ch 4Lane (For HiSilicon and Road chip embedded system)	22@2048 x2046(12bit)

The hardware of BUC3M4-420MB, BUC3M4-420MC, BUC3M4-420MD are the same.
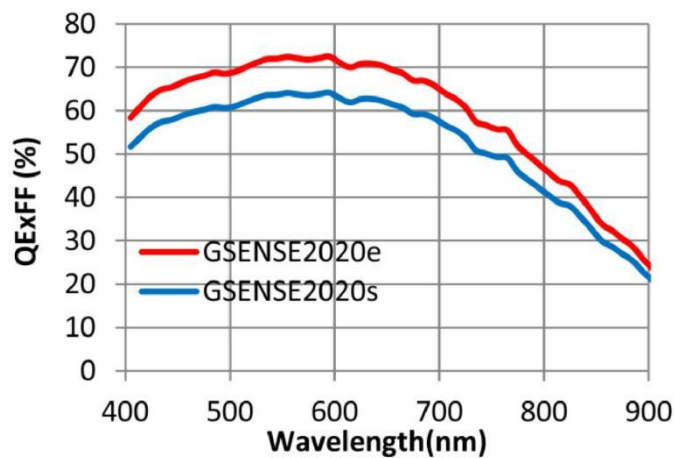
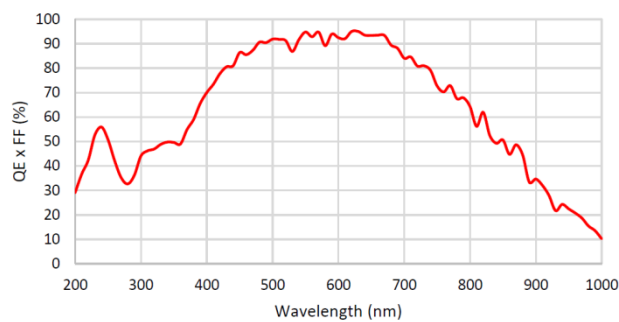Spectral response of GSENSE2020e and GSENSE2020s
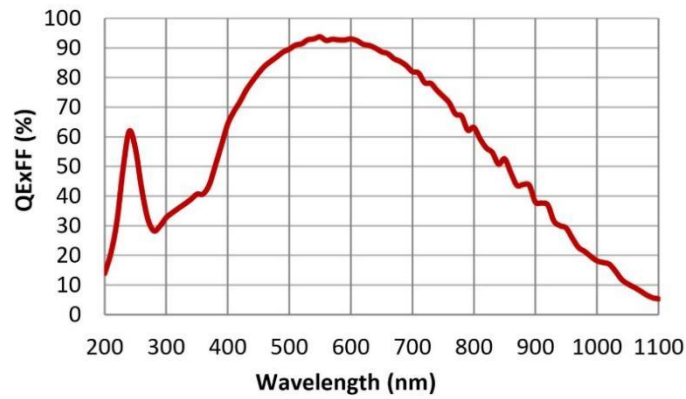
Spectral Response of GSENSE2020BSI

Spectral Response of GSENSE400BSI

Other Specification for BUC3M42 Camera	
Spectral Range	200-1100nm (UV without IR-cut Filter) or 400-900nm
White Balance	ROI White Balance/ Manual Temp Tint Adjustment/NA for Monochromatic Sensor
Color Technique	Ultra-fine™ HISPVP /NA for Monochromatic Sensor
Capture/Control API	Windows/Linux/macOS/Android Multiple Platform SDK(Native C/C++, C#/VB.NET, Python, Java, DirectShow, Twain, etc)
Recording System	Still Picture and Movie
Cooling System*	Natural
Operating Environment	
Operating Temperature (in Centigrade)	-10~ 50
Storage Temperature (in Centigrade)	-20~ 60
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port
Software Environment	
Operating System	Microsoft® Windows® XP / Vista / 7 / 8 /10 (32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 2GB or More

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

Dimension of BUC3M42

The BUC3M42 body, made from tough, CNC aluminum alloy, ensures a heavy duty, workhorse solution. The camera is designed with a high quality IR-CUT or AR glass to protect the camera sensor. No moving parts included. This design ensures a rugged, robust solution with an increased lifespan when compared to other industrial camera solutions.
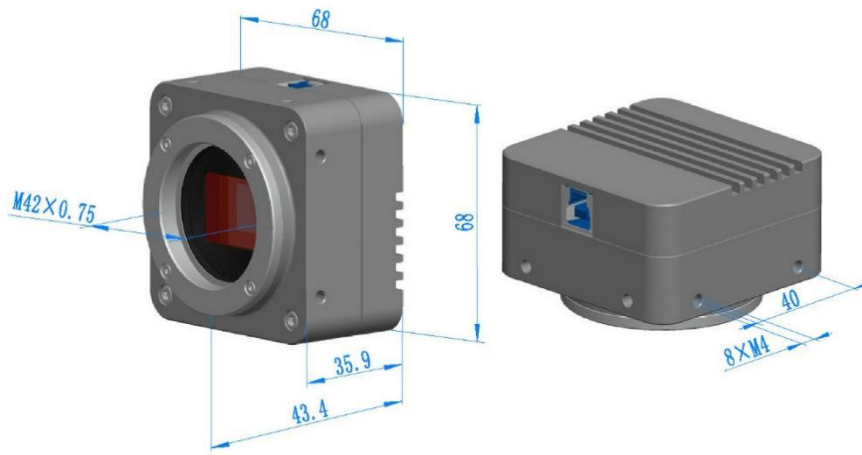
Dimension of BUC3M42 with M42x0.75 or F-mount Interface

Packing Information for BUC3M42

Packing Information of BUC3M42 Series camera

Standard Camera Packing List	
A	Carton L:52cm W:32cm H:33cm (20pcs, 12~17Kg/ carton), not shown in the photo
B	Gift box L:15cm W:15cm H:10cm (0.58~0.6Kg/ box)
C	BUC3M42 series USB3.0 M42-mount CMOS camera
D	High-speed USB3.0 A male to B male gold-plated connectors cable /2.0m
E	CD (Driver & utilities software, Ø12cm), has been upgraded to USB flash drive
Optional Accessory	
F	M42x0.75mm-mount to C-mount converter (If C-mount adapter is used)
G	M42x0.75mm-mount to F-mount converter (If F-mount lens is used)
H	Phototube to M42x0.75 mount adapter (U-TV1.2XT2) for Olympus microscope
I	Phototube to M42x0.75 mount adapter (MQD42120 MBB42120) for Nikon microscope
J	Phototube to M42x0.75 mount adapter (P95-T2 4/ P95-C 1" 1.0 x 3" 1.2x) for Zeiss Primo Star series, Zeiss Primo vert series microscope
K	Phototube to M42x0.75 mount adapter (11541510-120 HT2-1.2X) for Leica microscope
L	Phototube to M42x0.75 mount adapter (60N-T2 4/3" 1.2x) for Zeiss Axio series microscope
	Note: For 4/3" sensor, 1.2X adapter with M42x0.75 mount should be chosen, for the 1.2" sensor, 1.0X adapter with C-mount could be used to get the better FOV;
M	Calibration kit	106011/TS-M1(X=0.01mm/100Div.); 106012/TS-M2(X,Y=0.01mm/100Div.); 106013/TS-M7(X=0.01mm/100Div., 0.10mm/100Div.)