

## Multispectral Camera For Microscope



**2023 V1**

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## Multispectral Camera For Microscope Series

Multispectral camera microscopy systems are designed for demanding microscopy applications. They contain 4 CMOS cameras in a single box and powerful Windows multicamera software. The enclosure is CNC-machined from aluminum for strength and hard anodized for durability. 2ndLook for Windows is included with each system to simplify system setup and use. Advanced users can create custom programs in Windows and Linux using the supplied SDK.



Image of the multispectral camera microscopy system

### Technical introduction

#### The multispectral camera system

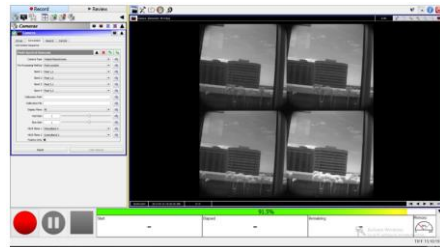
The multispectral camera system splits light from a single c-mount entrance port into 4 channels for simultaneous imaging. Eight (8) removable standard 1-inch filter holders are inserted at locations within the 4 beams. Use any camera as an internal trigger source or connect all four cameras to an external trigger source. Synchronize external devices using the sync signal. All cameras have global shutter to provide accurate high-speed images of moving objects in the field of view. USB3 Vision and GenICam-compliance makes system setup and use easy. The systems are expandable with up to 4 external c-mount cameras or detectors.

#### 2NDLOOK FOR WINDOWS

Use Windows-based 2ndLook software to configure and capture images and video from multispectral camera systems through a single graphical interface. 2ndLook is included standard with each system purchase. External USB3 Vision, GiGE Vision, and Twain-compliant cameras can also be setup and used simultaneously. 2ndLook provides real-time synchronized video recording from multiple cameras to popular file formats. Easy to use interface with interactive help and user guides.



Real-time display of raw multispectral images.



Real-time display of multispectral images in montage format. Example here collected with 4-band multispectral camera for agriculture

## Feature comparison

### 2.3MP Microscopy Multicamera

- 4 sensitive imaging sensors for fluorescence imaging
- With low noise
- Can detect fluorescence at short exposures
- Be capable of capturing very weak fluorescence signals
- Have been used for fluorescence video imaging of stained tissue at 20 FPS

### 4.2MP Microscopy Multicamera

- Four CMV4000 imaging sensors
- Large pixel size and very fast read out
- High frame rate and excellent sensitivity
- Several thousand frames per second are achievable when using a region of interest

### 5.1MP Microscopy Multicamera

- Four Sony IMX250 images sensors
- Have highest sensor resolution and smallest pixel size compared to our other microscopy multicamera systems
- With low noise and high dynamic range
- Generate high resolution images with largest field of view

### 20.5MP Microscopy Multicamera

- Four Sony IMX183 imaging sensors
- Back-illuminated and excellent for fluorescence imaging
- Sensor has very low noise and can detect fluorescence at short exposure times

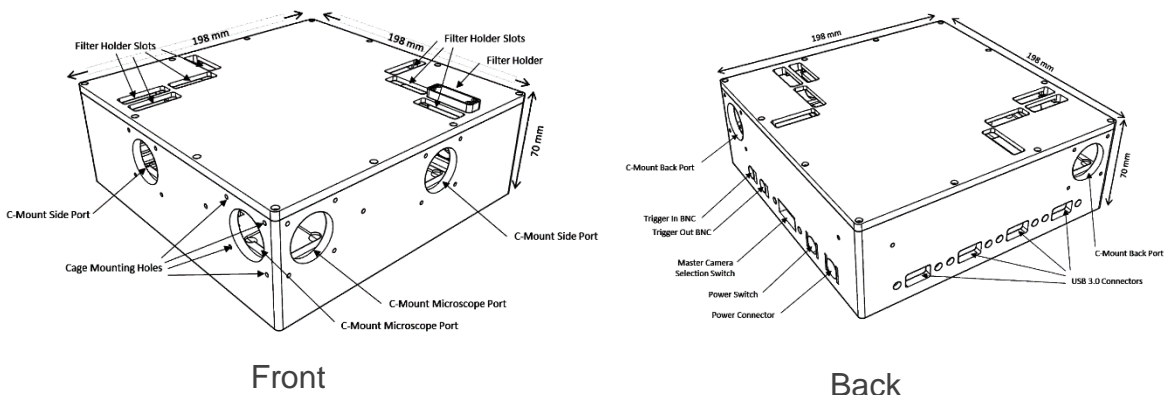


2.3MP/4.2MP/5.1MP microscopy multicamera sharing the same construction

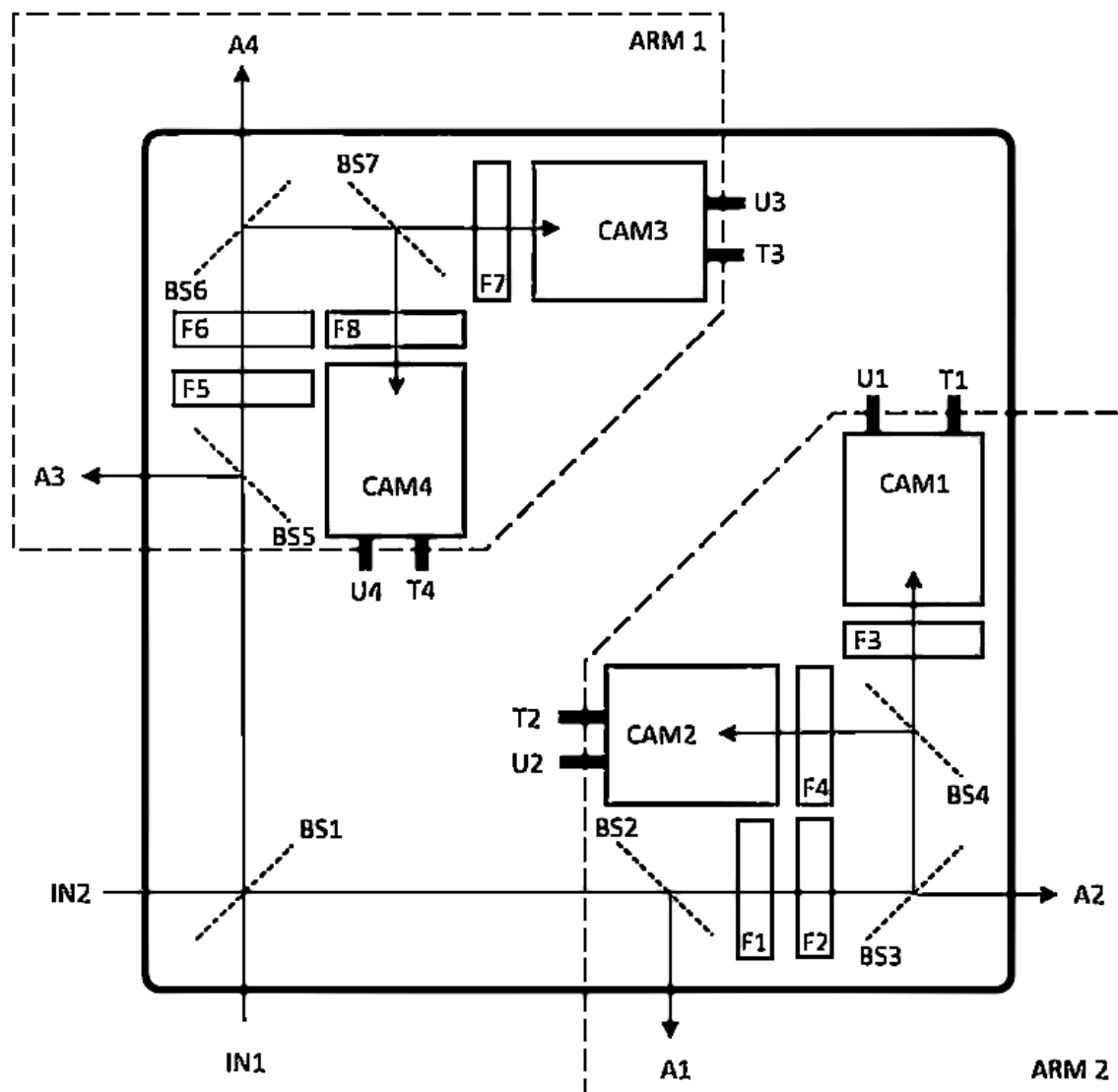
## Specification

Parameters	2.3MP Microscopy Multicamera	4.2MP Microscopy Multicamera	5.1MP Microscopy Multicamera	20MP Microscopy Multicamera
Number of bands	4			
Band locations	Interchangeable filters			
Pixels/Band	1920 x 1200	2048 x 2048	2464 x 2056	5472 x 3648
Pixel size (µm)	5.86 x 5.86	5.5 x 5.5	3.45 x 3.45	2.4 x 2.4
Sensor size	1/1.2-inch	1-inch	2/3-inch	1-inch
Sensor type	Global Shutter(four 2.3 MP IMX249 sensors )	Global Shutter( four AMS CMV4000 monochrome imaging sensors)	Global Shutter(four Sony IMX250 monochrome imaging sensors)	Rolling Shutter ( four Sony IMX183 imaging sensors )
Max. frame rate	41 FPS	89 FPS	75 FPS	18 FPS
Illumination	Front-illuminated	Front-illuminated	Front-illuminated	High sensitivity back-illuminated
Aperture	Two C-Mount ports (left and right) available. User must choose one entrance port at time of order.			
Camera options	Mono/Color	Mono/Color	Mono/Color	Mono/Color
Filter holders	8 total. 4 per arm. Retaining rings included. Rotation adjustment slot for polarizers.			
Compatible filter sizes	25 mm diameter, 25.4 mm diameter. ≤ 6 mm thickness.			
Beam splitter type	Cube			
Beam splitter options	50:50, 70:30; 90:10, dichroic			
Optical distance between entrance port and sensor	260 mm			
External output ports	Two C-Mount ports on each arm. Each port with 4-40 screw holes for 30 mm cage optics.			
External connectors	1 x BNC Trigger in 1 x BNC Trigger out 1 x 5 VDC Power in			
Tripod mounting	4 x ¼-20 and 4 x M6 threaded holes on bottom near center			
Construction	CNC 6061 Aluminum with Stainless Steel hardware			
Surface finish	Hard black anodization with laser etching			
Dimensions (W x D x H) – not including feet	198 mm x 198 mm x 70 mm			
Foot adjustment	20-40 mm vertically			
Weight	3 kg			

## Dimension



## System Layout



Drawing shows a schematic of the internals of the multispectral camera microscopy system. The drawing illustrates the layout of the cameras (CAM\*) with respect to the beam splitters (BS\*) and filters (F\*). Each camera has a USB3 data connection (U\*) and a trigger input/output (T\*). One camera can act as a master and trigger the others. Alternatively, the four cameras can be triggered with an external signal through a BNC connection on the side of the unit. The trigger signal is available as a signal output on a BNC connector on the side of the unit.