

M230M/C 1920×1080 @3000fps

M220M/C 1920×1080 @2000fps



Product introduction

The large memory and small size series high-speed camera is a miniature high-speed camera built by Revealer for experiments in various fields of science, enterprise research and development, fault location of equipment in industrial production lines, and observation of sea and air engineering, and it realizes terabyte-level mass storage through the comprehensive reconstruction of circuitry, structure, interfaces, appearance, and protection.

Core features

■ Extreme construction dimensions

The large memory and small size M series has been reshaped in terms of internal circuit boards, heat dissipation and structure, and adopts a multi-layer soft and hard combination board + blind embedded hole plate making process to realize the integrated design of PCBA boards. The heat flow simulation design optimizes the fan structure, adopts extremely thin coaxial cable to realize high-speed connection of each chip board, and at the same time, four-layer stacking compression is carried out to realize the extremely small structure size, which can be used in the narrow space, on-board pods and other scenarios.

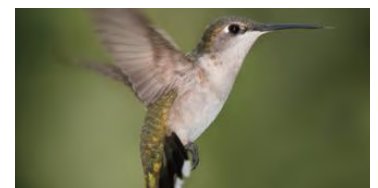


■ Large memory, no data loss

M series adopts self-developed high-speed acquisition memory, using the core technology of direct transfer array storage architecture, through a special control logic to realize the parallel control of the flash array, the data bandwidth can be stabilized at 200Gbps or even higher. We have built-in special file management system for high-capacity and high-speed data in the camera to ensure the accuracy and safety of the data, and to ensure the integrity of the data even in the event of accidental power failure.

■ Movie grade quality

Equipped with a dedicated ISP processing chip, the M series has modules for automatic white balance, color correction, Gamma correction, defogging, denoising, sharpening, etc. It can automatically calculate the current color temperature and adjust the white balance and color correction parameters. Self-developed low-light compensation algorithm with sensor free analog gain can be used for insufficient light or ambient light that color temperature changes, to protect the image quality, especially the color is not affected.



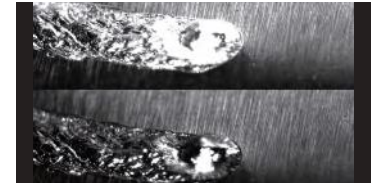


■ Offline use

Self-developed ARF (Agile Reduced File) system, the realization can replace the PC to complete the camera control function, independently complete the shooting work, suitable for unattended field observation and special mounting scenarios.

■ EDR double exposure

To avoid the problem of local overexposure due to improper exposure parameters, the EDR function equipped with the M series supports the detection of whether the image is highlighted in a single frame, and immediately switches to the low exposure time exposure in the next frame exposure, ensuring that the camera still effectively captures the subject under the light and dark switch.



■ B-code Alignment

M series can be accessed through the B code in the internal synchronization mode, the starting moment of the rising edge exposure is aligned with the arrival moment of the B code second, thus realizing the long-distance accurate synchronization of cameras deployed at multiple points, replacing the external synchronization cable, and applying to the synchronous observation of transient images aligned with the whole second by the cameras deployed at multiple observation stations.

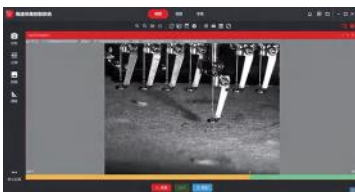
■ Flexible Lens Interface

The optical interface of M series camera body provides multiple choices of C port, E port, F port, etc., and with the universal adapter ring, it can support the mainstream lenses in the market.

■ Anti-shock, anti-vibration, high and low temperature working conditions

In order to cope with the collision, explosion and impact dynamics application scenarios, the M series innovatively adopts the laminated ingenious structure, strong fixation and anti-loosening, and supports up to 200G anti-shock design. the M series components are selected according to the high and low temperature standards, and the whole process of quality control measures is practiced from the incoming materials, semi-finished products, finished products, and out of the warehouse, and it comes with a heating module, which can comfortably cope with the needs of outdoor shooting in a low-temperature environment.

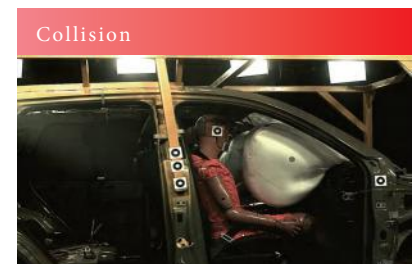
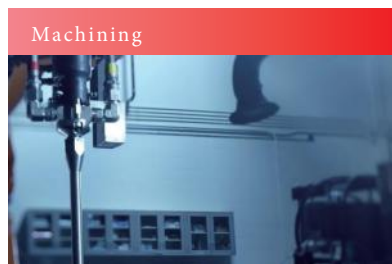
检测报告							
序号	检测项目	检测依据/标准	检测结果	判定	备注	检测日期	检测人员
1	冲击试验	GB/T 228-2002	冲击能量: 100J 冲击速度: 10m/s 冲击次数: 5次 冲击方向: 垂直	合格	冲击后外观: 无明显变形 冲击后尺寸: 符合设计要求	2023.10.28	张明



■ Efficient and easy-to-use RCC acquisition software

After decades of iterative precipitation of the RCC acquisition software integrated equipment control functions, accurate image measurement and powerful image processing functions, support for high-speed acquisition automatically capture key frames, playback state automatically locate the key frames and can choose to export the video before and after the key frames.

Typical applications



Shooting speed and exposure time

Model	M230M/C	M220M/C
Sensor type	CMOS	CMOS
Max. Resolution	1920×1080	1920×1080
FPS @ Max. Resolution	3000fps	2000fps
ISO	25000 (M) , 8000 (C)	25000 (M) , 8000 (C)
Electronic Shutter	Global Shutter	Global Shutter
Mini. Exposure Time	100ns	100ns
Automatic Exposure	Support	Support
Extreme Dynamic Range	Support	Support

Resolution-FPS-Recording Time

Resolution	M230M/C (calculated by 1TB)		M220M/C (calculated by 64GB)	
	Max. FPS	recording time(s)	Max. FPS	recording time(s)
1920×1080	3003	173.7	2,000	15.5
1472×900	3597	226.9	2,398	20.2
1280×1024	3164	260.7	2109	23.2
1280×960	3378	260.4	2252	23.2
1280×800	4048	260.8	2702	23.2
1280×768	4219	260.6	2808	23.2
1280×720	4504	260.3	3003	23.2
832×600	5405	400.0	3597	35.7
640×480	6756	519.6	4504	46.3
640×256	12658	518.6	8403	46.4
256×128	25000	1281.1	16949	112.4
256×16	125000	1691.1	125000	167.5

Note:

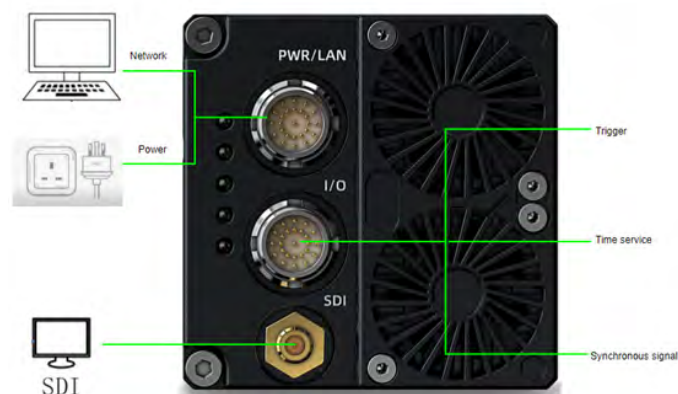
1. Recording time of other memory versions of M230M/C, M220M/C can be realized by multiplication and division, e.g. M230 2TB recording time can be obtained by multiplying by 2;
2. the item with * is a customized service item, which needs to be opened in a separate note in the contract;
3. support each resolution, the maximum frame rate, the longest exposure time, the longest recording time intelligent linkage.

Connections and Signals

Interfaces	Description	Definition	Remarks
PWR/LAN	Power and network interface	1-8 pin: connect to network cable 9 pin: GND 10-15 pin: internal debugging not open to the public 16, 17 pin: power negative 18, 19 pin: power positive	1. Power port, which supplies power to the camera. 2. Gigabit network interface, transfer data between camera and PC.
I/O	Output and input interfaces	8 pin for TRIG, 9 pin reserved 10, 12 pin for SYNC_IN, SYNC_OUT 14 pin is IRIG_B 15, 16 for RS422 TX_P, TX_N 18, 19 pin for RS422 RX_P, RX_N	1. Trigger interface, 50ΩBNC; 2. Sync input interface, TTL level interface; 3. Sync output interface, TTL level interface; 4. B-code interface, DC code, 50ΩBNC, TTL level; 5. RS422 port. Communication interface. Support protocol customization, such as PTZ, lens, etc.
SDI	SDI	75Ω coaxial cable, use matching cable.	
Indicator light	PWR	1. Always on when external power supply is turned on; 2. Detected high temperature inside the device enters flashing state control (5Hz); 3. The device enters breathing state control in standby mode.	
	OL	1. Online mode control light is normally on; 2. Offline mode control light is blinking (5Hz); 3. In offline mode, the failure to enter high-speed acquisition is normally off; 4. In offline mode, data recovery or external trigger acquisition status is required as blinking (1Hz).	
	SMP	Blinking at high speed acquisition, breathing light for export and export preview.	
	DISP	Blinks when there is data transfer from the network, and goes out the rest of the time.	
	INIT	1. Breathing status indicates initialization is in progress; 2. Normally lit status indicates initialization is complete; 3. Blinking status indicates initialization failure (5Hz)	



Hardware system construction



Software	RCC control system, motion analysis and measurement system (optional)
Target device	High speed camera, PC, power supply, synchronous signal source, trigger, SDI, timing equipment

Storage

Model	M230M/C	M220M/C
SSD Storage	64GB/256GB/512GB/1TB/2TB	64GB/256GB/512GB/1TB/2TB
RAM High Speed Storage	-	-

Mechanical Parameters

Model	M230M/C	M220M/C
Len Mount	F, C, EF	F, C, EF
Size W*H*D	Black: 75×75×97mm White: 98×98×98mm	Black: 75×75×97mm White: 98×98×98mm
Weight(Handle free)	Black: ≤820g White: ≤1210g	Black: ≤820g White: ≤1210g
* Mounting hole	Black: C-mount version: 1 1/4-inch and 2 M4 threaded holes on the top/bottom; 1 1/4-inch and 3 M4 threaded holes on the side F-mount version: 2 1/4-inch and 3 M4 threaded holes on the top; 2 1/4-inch and 2 M4 threaded holes on the bottom; 2 1/4-inch and 2 M4 threaded holes on the side; White: 2 1/4-inch and 2 M4 threaded holes on the top; 2 1/4-inch and 2 M4 threaded holes on the bottom; White: 2 1/4-inch and 2 M4 threaded holes on the top; 2 1/4-inch and 2 M4 threaded holes on the bottom;	Black: C-mount version: 1 1/4-inch and 2 M4 threaded holes on the top/bottom; 1 1/4-inch and 3 M4 threaded holes on the side F-mount version: 2 1/4-inch and 3 M4 threaded holes on the top; 2 1/4-inch and 2 M4 threaded holes on the bottom; 2 1/4-inch and 2 M4 threaded holes on the side; White: 2 1/4-inch and 2 M4 threaded holes on the top; 2 1/4-inch and 2 M4 threaded holes on the bottom;
Cooling Type	Fan cooling	Fan cooling

Electrical Parameters

Model	M230M/C	M220M/C
AC power supply	100-240VAC 80W includes a power adapter	100-240VAC 80W includes a power adapter
Voltage range	9~15V	9~15V
Power consumption	≤40W	≤40W

Working Conditions

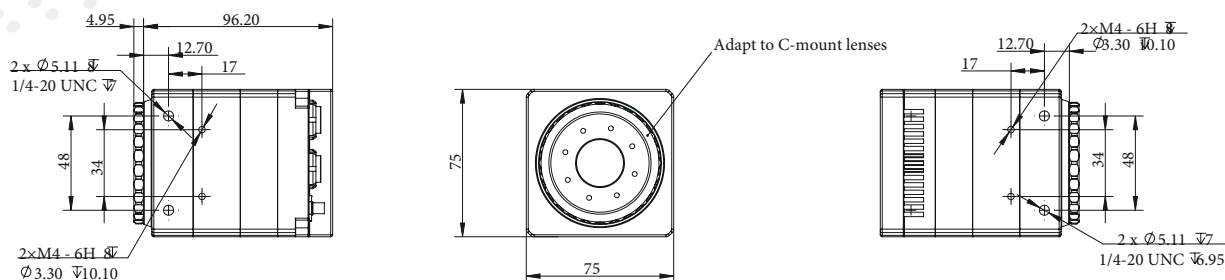
Model	M230M/C	M220M/C
Working Temperature	-10°~50°C	-10°~50°C
Storage Temperature	-20~60°C	-20~60°C
* 1 High and low temperature customization	Support	Support
* 2 Shock resistance	200G, sine wave, 11 ms, triaxial	200G, sine wave, 11 ms, triaxial
* 2 Vibration resistance	16Grms, 10 minutes/3 axes	16Grms, 10 minutes/3 axes

*1 Note: Only available in classic black

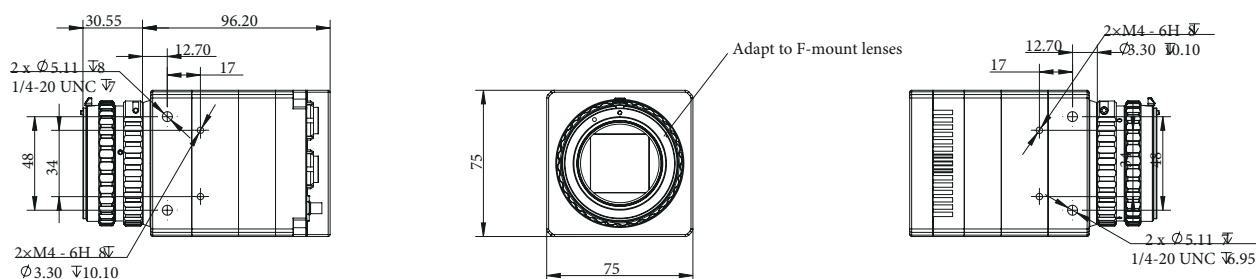
*2 Note: Only available in classic black

Installation Dimension Drawing

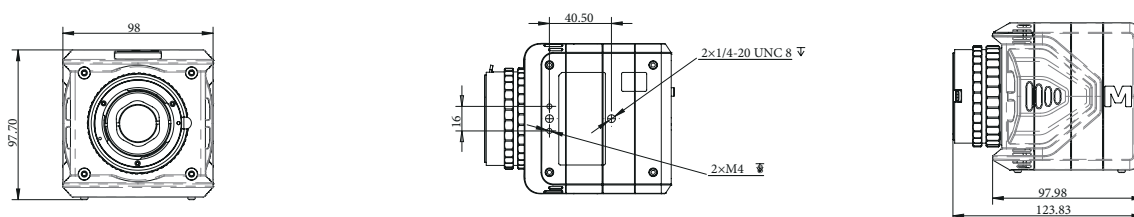
Classic black version C-mount



Classic black version F-mount



White version



Quality Service

- Professional technical support services
- Strong custom development capability
- Fast shipping within 14 working days for standard products
- 24-hour after-sales service
- Promises 1 month fast repair within the warranty period, will provide a substitute device if can not repair it within this time

Contact

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