

Mini Series

2 Megapixel HD High Speed Camera



M230, 1920×1080@3,000fps

M220, 1920×1080@2,000fps

M120, 1280×1024@2,000fps

Features and highlights

• Professional broadcast image quality

Dedicated ISP processing chip, with automatic white balance, color correction, gamma correction, defogging, sharpening, can automatically calculate the current color temperature value and adjust the white balance, adjusting the best color calibration parameters, with 1080P HD resolution, can achieve the maximum degree of color realism restoration in a warm and cold environment.

• Data storage management

Mini series 64GB and above models are using self-developed SSD, using flash array parallel control, optimize the data interface timing to maximize the performance of the storage unit bandwidth. At the same time custom file system, support high-speed recording process accidental power failure, the file can also be retrieved.

• Ultimate structural dimensions

Mini series is remodeled in the internal circuit board, heat dissipation, structure and other angles of limit, using multi-layer soft and hard combination board + blind buried hole making process to realize PCBA board integrated design. It adopts heat flow simulation design to optimize the fan structure, adopts very thin coaxial line to realize high-speed connection of each chip board, and simultaneously carries out four-layer stacking and compression, thus achieving a volume ratio of over 90%.

Shooting Speed and Exposure Time

Sensor type	CMOS
Resolution	1920×1080
Pixel size	10μm
ISO	25000(M),8000(C)
Shutter	Global shutter
Min. exposure time	100ns
Exposure	Auto exposure
Ultimate dynamic range	Support

Resolution-Frame Rate-Recording Time

Resolution	M230(measured at 1TB)		M220 (measured at 64GB)		M120(measured at 16GB)	
	Max.frame rate-fps	Recording time-s	Max.frame rate-fps	Recording time-s	Max.frame rate-fps	Recording time-s
1920×1080	3,003	173.7	2,000	15.5	-	-
1472×900	3,597	226.9	2,398	20.2	-	-
1280×1024	3,164	260.7	2,109	23.2	2,000	6.5
1280×960	3,378	260.4	2,252	23.2	2,132	6.5
1280×800	4,048	260.8	2,702	23.2	2,557	6.5
1280×768	4,219	260.6	2,808	23.2	2,666	6.5
1280×720	4,504	260.3	3,003	23.2	2,840	6.5
832×600	5,405	400.0	3,597	35.7	3,412	10.0
640×480	6,756	519.6	4,504	46.3	4,273	13.0
640×256	12,658	518.6	8,403	46.4	8000	13.0
256×128	25,000	1,281.1	16,949	112.4	15,873	32.0
256×16	125,000	1691.1	-	-	125,000	26.8

Notes:

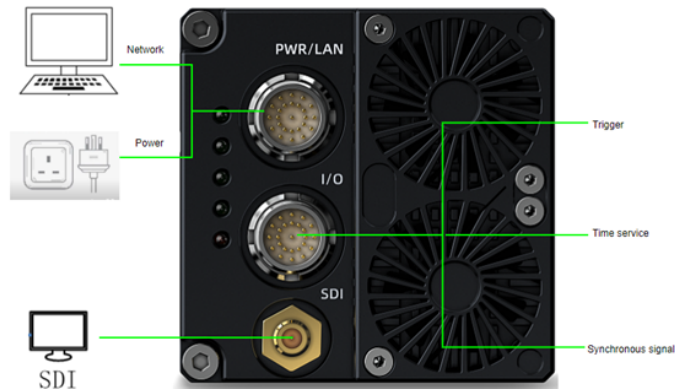
1. Other memory versions of M230, M220 can be multiplied and divided to achieve the recording time, such as M230 2TB recording time can be multiplied by 2.
2. Support the Max. frame rate, Max. exposure time and Max. recording time under each resolution with intelligent coupling.

Connectivity and Signaling

Interface Name	Description	Definition	Notes
PWR/LAN	Power & network interface	1-8 pin: connecting network cable 9 pin: GND 10-15 pin: internal use 16, 17 pin: negative power supply 18, 19 pin: positive power supply	1.the power port from which power is supplied to the camera. 2.1 Gigabit network interface, transferring data between camera and PC
I/O	Output & input interface	1, 5, 7, 11, 13, 17 pin: GND 2, 3, 4, 6 pin: PIV 8 pin: TRIG, 9 pin: reserved 10, 12 pin: SYNC_IN, SYNC_OUT 14 pin: IRIG_B 15, 16: TX_P, TX_N of RS422 18, 19 pin: RX_P, RX_N of RS422	1.Trigger interface, 50Ω BNC. 2.SYNC input interface, TTL level interface. 3.SYNC output interface, TTL level connection 4.B-code interface, DC code, 50Ω BNC, TTL level. 5.RS422interface,communication interface,support protocol customization,such as gimbal, lens, etc.. 6.PIV interface, 4-way single-ended BNC, TTL level.
SDI	Interface	75Ω coaxial cable, use matching cable.	
Indicator	PWR	1. Always on when the external power is turned on. 2. Detection of high internal temperature of the device enters blinking state control (5Hz). 3. The device enters the breathing state control in standby mode.	
	OL	1. The light is always on in online mode. 2. The light is flashing (5Hz) in offline mode. 3. In offline mode, the light is normally off if fail to enter high-speed acquisition. 4. In offline mode, the light is blinking (1Hz) when need for data recovery or external trigger acquisition.	
	SMP	The light flashing for high-speed acquisition, breathing light when export or export preview.	
	DISP	Blinks when there is data transmission on the network, and it's always off the rest of the time.	
	INIT	1. Breathing state indicates initialization is in progress. 2. The constant light state indicates that initialization is complete. 3. Blinking state indicates initialization failure (5Hz).	



Hardware System Construction



Uplink software	High-speed acquisition and control system, motion analysis and measurement system (optional)
Target device	High-speed camera, PC, power supply, SYNC source, trigger, SDI, timing device

Memory			
Model	M230	M220	M120
Non-volatile storage	64G and above supported	16G and above supported	-
High-speed internal RAM	Only 16G support	-	Only 16G support

Power			
Model	M230	M220	M120
AC power supply	100-240VAC 80W power adapter included	100-240VAC 80W power adapter included	100-240VAC 80W power adapter included
Voltage range	9-15V	9-15V	9-15V
Power consumption	≤40W	≤40W	≤40W

Mechanical Specifications			
Model	M230	M220	M120
Lensing	E,C	E,C	E
Size W×H×D/mm	72×72×95.5 72×72×99 75×75×140	72×72×95.5 72×72×99	75×75×140
Weight (without accessories)/g	≤820 (≥64G) ≤1300 (16G)	≤820 (≥64G)	≤1300
*Mounting holes	The following applies to 64G and above versions. C port: 1 top/bottom 1/4 inch, 2 M4 threaded holes; 1 side 1/4 inch, 3 M4 threaded holes; E port: 2 top 1/4 inch, 2 M4 threaded holes, 3 bottom 1/4 inch, 2 M4 threaded holes; 2 left and right side 1/4 inch, 3 M4 threaded holes each The following applies to the 16G version. 2 standard 1/4-inch, 2 M4 threaded holes on top/bottom, 2 M4 threaded holes on left and right sides	64G and above versions. C port: 1 top/bottom 1/4 inch with 2 M4 threaded holes; 1 side 1/4 inch with 3 M4 threaded holes. E port: top 1/4 inch 2, M4 threaded hole 2, bottom 1/4 inch 3, M4 threaded hole 2; left and right side 1/4 inch 2, M4 threaded hole 3 each. The following applies to the 16G version. 2 standard 1/4-inch, 2 M4 threaded holes on top/bottom, 2 M4 threaded holes on left and right sides	Top/bottom with 2 standard 1/4 inch, 2 M4 threaded holes, 2 M4 threaded holes on the left and right sides
Cooling	Fan cooling	Fan cooling	Fan cooling

Environmental Specifications			
Model	M230	M220	M120
Operating temperature	-10-50°C	-10-50°C	-10-50°C
Storage temperature	-20-60°C	-20-60°C	-20-60°C
*1High & low temperature customize	Support	Support	-
*2Impact resistant	200G, sine wave, 11 ms, 3 axes	200G, sine wave, 11 ms, 3 axes	-
*2Anti-vibration	16Grms 10 minutes/3 axes	16Grms 10 minutes/3 axes	-

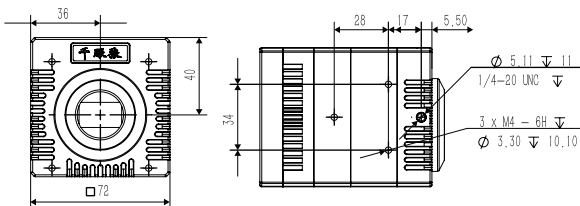
*1Notes: 64GB and above version only *2Notes: C-mount version only

Quality Service

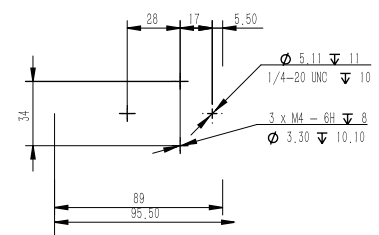
- Worldwide service network
- Professional technical support services
- Strong custom development capability
- Fast shipping within 14 working days for standard products
- 24-hour after-sales service
- Promises 1 month fast repair within the warranty period, will provide a substitute device if can not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

Installation Drawing

Mini Series(64G and above) C-mount



Mini Series(64G and above) E-mount



Mini Series(16G) E-mount

