

H-EM 501 High-speed streaming camera for tough environments



H-EM 501 is a high speed camera that connects directly to a recording device via Gigabit Ethernet link. The camera is configurable by software and can record a maximum of 2 megapixels up to 90 fps. By reducing resolution, the H-EM 501 offers stunning data rates such as 1280 x 720 pixels @ up to 125 fps or 800 x 600 pixels @ up to 300fps. H-EM 501 is fully compliant with GigE Vision standards.

H-EM 501 cameras are available in monochrome, color or as NIR (near infrared) version. Due to a sophisticated algorithm in the camera image frame rates not seen before over a standard Gigabit Ethernet link are achieved. This small compact high speed streaming camera fits into the tightest spaces. Nevertheless H-EM 501 with its camera control software leaves no compromise in view of functionality and analysis compared with competitive high speed cameras. Circular buffer recording, triggering by external discrete signals or by motion detection are available in the standard system. In addition, for longer recording time, you may stream directly to hard disk for minutes or hours making sure to capture the most intermittent events. Easy export of image data to the most common movie formats is one of the many features of the software. Last but not least a basic motion analysis software with automatic tracking features is included.

Unique features for unique environments

- **Rugged** – H-EM 501 cameras are designed for use under harsh environments. The small camera fits into tightest spaces and is tested according MIL 810 environmental standards. Camera fits in tight locations or positions not possible before.
- **Long recording times** – H-EM 501 records and streams image data directly to your PC RAM or hard disk providing recording times of minutes or even hours. Analyze fast events in detail by taking high speed image data of the full event.
- **One cable** – Simply connect a single cable to the camera bearing all required data links. A standard MIL connector assures safe and reliable connection.

H-EM 501 – Key Specifications

Typical Frame Rate vs Resolution vs Recording Time (partial)

Resolution ►	Resolution @ fps	Resolution @ fps	Resolution @ fps	Resolution @ fps	Resolution @ fps	Resolution @ fps	Resolution @ fps	Resolution @ fps	Resolution @ fps
	2048 x 1088 @ 85 fps	1280 x 1024 @ 90 fps	1280 x 720 @ 125 fps	800 x 600 @ 300 fps	640 x 480 @ 560 fps	512 x 512 @ 700 fps	352 x 352 @ 1000 fps	256 x 256 @ 1370 fps	128 x 128 @ 2620 fps
Memory ▼	Recording time	Recording time	Recording time	Recording time	Recording time	Recording time	Recording time	Recording time	Recording time
4 GB RAM	7 secs	11 secs	12 secs	9 secs	8 secs	7 secs	11 secs	15 secs	32 secs
500 GB HDD	1 hr 5 mins	1 hr 45 mins	1 hr 50 mins	1 hr 25 mins	1 hr 10 mins	1 hr 5 mins	1 hr 40 mins	2 hrs 20 mins	4 hrs 50 mins
1 TB HDD	2 hrs 10 mins	3 hrs 30 mins	3 hrs 40 mins	2 hrs 50 mins	2 hrs 20 mins	2 hrs 10 mins	3 hrs 20 mins	4 hrs 40 mins	9 hrs 40 mins

Table shows typical resolution vs. fps, resolution is freely adjustable within limitations of camera/sensor, recording time and fps depends on PC performance

Camera/Sensor Specifications

Image Sensor	H-EM 501 color	H-EM 501 monochrome	H-EM 501 near infrared
Light Sensitivity	ISO 600	ISO 2400	5.56 V/ lux-sec
Image Sensor	2048 x 1088 pixel with 8 Bit dynamic range, monochrome color or NIR , max 85 fps @ full resolution		
Sensor Size	5.5 µm pixel size / 2/3" (12.76 mm diagonal)		
Dynamic Range	Sensor: 60 db, Output 8 Bit		
Optical Fill Factor	42 %		
Shutter Type	Global, independent of frame rate		
Exposure Time	Free adjustable from 13 µsec to 1 / fps by software		
Power	12 – 24 VDC / 6 Watts		
Camera Mount	C-Mount / CS-Mount		

Control Software

Parameters	Camera control, recording settings, playback and data conversion
Auto-Store Function	Auto-store function in PC for 24/7 recording supported
Trigger Modes, Positions	Pre-post recording, adjustable by software to 0 % / 10 % / 25 % / 50 % / 75 % / 90 % / 100 % of total available recording time Re-arm after trigger for instantaneously new recording
Boost Mode	Record with lower frequency and on demand record with high frequency for a certain period of time and go back to lower frequency
Motion Detection	Motion trigger and motion event marking in file
Multi-Camera	Multiple camera on PC possible (depending on PC specifications)
Event Markers / Bookmarks	Events in the sequence can be tagged by bookmarks for easy orientation / finding
OSD	Information on camera, recording features, time stamp, camera name may be added in image data, Position of OSD is set by user
Motion Analysis	2D basic motion analysis with auto-tracking feature for up to 5 points is optional available
Custom Specific	Extended functions for custom specific use are easy to integrate. Contact us for further details

Interface and Connector

Data Interface	Gigabit Ethernet 1000
Connector	All-in-one MS connector, Reference: MS27508E10F35PN Required cable connector: MS27473T10F35SN
I/O Tolerance of discrete Signals	TTL level, all I/O are 0 to +30 V tolerant
Standard	Camera complies with GigE Vision standard

PC Requirements

Operation System	Win 7 / 8 32/64
CPU	Pentium Core I5 or better
RAM	4 GB or better
Hard Disk	500 GB or better, SATA-3 standard Separate HD for image data recording is strongly recommended in order to avoid damage to operation system partition
Interface	– USB: To mount USB key for operation of camera – Gigabit Ethernet Interface: Capable of supporting 9 k jumbo frames – Alternative: PCI express slot for Gigabit Ethernet Interface (supplied with camera)
Streaming to external Disk	Supported via external eSATA
Graphic Card	Supports Full HD Format 1920 x 1080
Multiple Camera on PC	– Supported up to 4 but depending on PC performance – Individual Gigabit Ethernet card and individual hard disk per camera required NOTE: contact us for specific computer settings

Physical Specifications

Size	55 x 54 x 65 mm / 330 gr (0.7 lb)
Storage Temperature	-40 ... +70 °C / -40 ... +158 °F
Mounting Threads	M4 Mounting threads on all sides UNC ¼" on bottom and side for tripod mounting

Standards

CE	In compliance with relevant standards
EMC Tests	In compliance with MIL-STD-461E
Environmental Tests	In compliance with MIL-STD-810
Ambient Air Condition	Meth. 501.4, Proc. I, Tab. 501.4II
Severe Cold	Meth. 502.4, Proc. I, Tab. 502.4II
Temp. Shock	Meth. 503.4, Proc. I, Tab. 503.4II
Low Altitude	Meth. 500.4, Proc. II
Vibration	Meth. 514.5, Proc. I, Cat. 12, Fig. 514-5C8
Mech. Shock	Meth. 516.5, Proc. I, Tab. 516.5-1
Humidity	Meth. 507.4, Fig. 507.4-1 modified (2 cycles)

Scope of Supply

	Camera
	Software on CD with USB key
	CS-Mount adapter
Optional	– Motion analysis software – Cable with assembled connector camera side (open wires on other side) – Camera test cable with connector for camera side and RJ45 / Lemo Power connector / Trigger connector for test use (including power supply)



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