MotionPro HS-3

Plug-N-Play High-Speed Imaging

Redlake's *MotionPro*® HS-3 high-speed motion camera combines excellent resolution to frame rate performance, along with the advanced features you require for accurate high-speed motion analysis on your PC or Mac laptop or desktop computer. The enhanced sensitivity of the *MotionPro*® HS-3 combined with 1000 fps at 1280 x 1024 is perfect for research and development laboratory environments.

With the *MotionPro*® HS-3 camera integration could not be simpler. Just install the software, connect one or more HS Series cameras to USB 2.0 ports or hub, and you are ready to capture high-speed digital imagery. Control the camera with the feature-rich *MotionPro*® Central software or use the LabVIEW™ or MATLAB® plug-in. To create your own control software, a SDK is included.

The extensive image processing algorithms include binning (2x2, 3x3, and 4x4), filtering, advanced color control, and programmable LUT enable you to maximize the image quality under various lighting conditions.

Image capture with *MotionPro*® HS-3 camera may be initiated via software or a wide variety of external triggers including optical, acoustic, or electrical, as well as simple hand-held switches. Flexible recording options allow the user to capture pre-selected numbers of frames before and/or after receiving a trigger or to employ a double-exposure mode, which, with a 100 nanoseconds inter-frame time, is perfect for motion analysis on objects moving at very high speeds. Memory may be divided into multiple sessions with or without automatic download to assure no event is missed.

Features

- Up to 1280 x 1024 resolution color or mono
- Fast frame rates from 1000 fps at full resolution to over 64,000 fps at reduced resolution
- Supports up to 3 seconds record time at full resolution
- LabVIEW™ and MATLAB® plug-ins
- 100 nanosecond inter-frame time in double exposure mode for the capture and analysis of high speed events
- FlexROI™ Configurable Region of Interest for selection of precise field of view to maximize performance

Applications

- Microscopy
- Ballistics and Munitions Testing
- Biomechanical Research
- Fluid Dynamics Research (PIV)

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Performance Specifications

CMOS Imager

Sensor Array	Area Array with 12µm x 12 µm pixels, color or monochrome
Image Resolution	Up to 1280 x 1024 at 1000 fps
Dynamic Range	59 dB at sensor

Memory and Record Rates

On-Board Storage	4 GB
Recording Rates	Selectable, up to 64,000 fps
Playback Rates	User selectable

Camera Control

Shutter	Global Electronic Shutter variable to 1µs, optional 100 nanosecond exposure*
Trigger Frame	Variable position from start to the maximum available frame capacity
Trigger Mode	CMOS level (3.3v) via BNC connectors
Time Stamp	Each frame

Software

Control Software	MotionPro Central; Windows 2000, XP, Mac OS X compatible
Image Processing Algorithms	Binning, filtering, advance color control, and programmable LUT
Plug-ins	LabVIEW™ for PC; MATLAB® for PC and Mac; Twain Driver for PC and Mac
File Formats	TIFF, BMP, PNG, MRF, MCF, AVI, BLD, MPEG, and MOV (Mac only)

Mechanical Description

Camera Size	Dimensions: 3.7"(H) x 3.7 "(W) x 6.4" (L) 95 x 95 x 162mm); Weight: 4.2 lbs (1.9Kg)
Camera to PC Interface	USB 2.0 Sync I/O; Trigger In; Power
Camera Cable Lengths	Camera to PC: up to 90 ft (30m) with option extension cables; 100m with optional ethernet convertor
Lens Compatibility	1" C-mount
Lens Mount	C-mount, F-mount adapter (Nikon or Canon)

Synchronization

Synchronization (USB Hub Optional)	All cameras are synchronized with each other using an external sync pulse on 3.3v CMOS BNC connector

Environmental

Camera Power	+24 vdc (100-240 VAC, 50-60 Hz ac/dc convertor)
Operating Temperature	+5°C to +40°C Ambient (0°F to 122°F)
Emission/Safety	CE approved, FCC Class B compliant, UL listed

*MotionPro SI-3

Note: Specifications are subject to change without notice

Sample Frame Rates

Vertical Resolution	Max. Horiz. Resolution = 1280
1024	1000
768	>1300
512	2000
256	4000
128	8000
64	16,000
32	32,000
16	64,000

Note: Horizontal resolution does not affect frame rate performance.
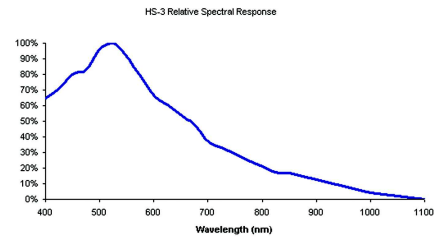All HS cameras can record at any frame rate at full horizontal resolution.

Accessories

HS Timing Hub	USB digital interface, integrated control software with 8 outputs, 2 inputs
USB Repeater	For use up to 15m

Spectral Range

HS-3 Relative Spectral Response

Camera Back

Input/Output
Trig In
Sync In
Sync Out
USB 2.0 Interface
DC Power