REDLAKE

MotionPro X3 and *X3PLUS*

Redlake's MotionPro® X3 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® X3 combined with 1000 fps at 1280 x 1024 is perfect for research and development laboratory environments. The NEW *PLUS* option (available on monochrome cameras only) uses *SmartCapture* technology to effectively double the frame rate to 2000 fps at full resolution while preserving the total length of record time.

The X3 and X3*PLUS* cameras feature uses the latest Gigabit ethernet along with USB2.0 for easy interface. They also feature live video for continuous monitoring.

With the MotionPro®, camera integration could not be simpler. Just install the software, connect one or more X series cameras to USB 2.0 or ethernet ports (or both), and you are ready to capture high-speed digital imagery. Control the camera with the feature-rich MotionPro® X software or use the LabVIEW™ or MATLAB® plug-in to integrate it into a larger experiment setup. To create your own control software, an 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.

Flexible recording options allow the user to capture pre-selected number of frames before and/or after receiving a trigger. Double-exposure mode, 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.

Applications: Microscopy, Ballistics and Munitions esting, Biomechanical research, Fluid dynamics research (PIV), Off-board vehicle impact testing

Features	Benefits
Up to 1280 x 1024 resolution color or mono	High resolution allows fine detail to be captured even at high frame rates
Fast frame rates from 1000 fps at full resolution to over 64,000 fps at reduced resolution	Perfect for capturing movies of fast dynamics of a process or event
NEW *PLUS* option to effectively double the frame rate and memory size (Mono only)	Allows twice the time resolution while preserving the total length of record time
Gigabit Ethernet and USB2.0	Operate camera from remote locations via Gigabit Ethernet while using USB 2.0 for local monitoring
100 nanosecond inter-frame time in double exposure mode	perform particle imaging velocimetry (PIV) measurements to study fast moving fluids
iPod and PDA compatibility	Store movies on to iPod (video) for quick review. Control the camera operation remotely and wirelessly via PDA interface

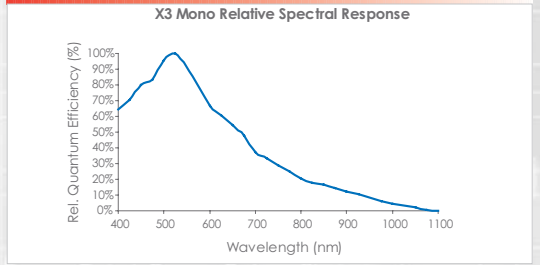## Sample Frame Rates (@ Max. Horizontal resolution of 1280)

Vertical Resolution	X3 (fps)	X3*PLUS* frame rate* (fps)
1024	1000	2000
768	>1300	>2600
512	2000	4000
256	4000	8000
128	8000	16,000
64	16,000	32,000
32	32,000	64,000
16	64,000	128,000

Note: Horizontal resolution does not affect frame rate performance. *PLUS option is available for monochrome versions only. Effective frame rate is shown for X3*PLUS*.

Accessories

X Timing Hub	8 independently adjustable CMOS level outputs, 2 inputs; USB interface
X Data Acquisition System	16 analog inputs and 4 analog outputs, USB interface
USB Repeater	For use up to 15m

Spectral Range

X3 Mono Relative Spectral Response

CMOS Imager

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

Memory and Record Rates

On-board Storage	4 GB; with *PLUS* option, the memory is effectively doubled
Recording Rates	X3: Selectable, up to 64,000 fps X3*PLUS* (optional): Selectable, up to 128,000 fps
Playback Rates	User selectable

Camera Control

Shutter	Global Electronic Shutter variable from 1μs, optional 100 nanosecond exposure*
Exposure modes	Single, Double, XDR (eXtended Dynamic Range)
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 X; Windows 2000/XP, Mac OS X** (10.3 or later)
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 Dimensions	3.7 in (95 mm) H x 3.7 in (95 mm) W x 6.4 in (162 mm) L
Camera Weight	4.2 lbs (1.9 kg)
Camera to PC Interface	USB 2.0; Dual USB 2.0&Gigabit Ethernet (optional)
Camera Cable Lengths	5m (USB2.0); Longer cable lengths (not supplied) may be used with GigE
Lens Compatibility	1" C-mount
Lens Mount	C-mount, F-mount adapter (optional)

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

Input/Output

Trig In (BNC)
Sync In (BNC)
Sync Out (BNC)
USB 2.0 (LEMO)
Gigabit Ethernet
Live Out (BNC) RS170 (NTSC/PAL)
DC Power (LEMO)

*Enquire with factory
**GigE interface is not supported under Mac.
Specifications are subject to change.

REDLAKE

Distributed by **DEL** Imaging Systems
1781 Highland Avenue, Cheshire, CT 06410
Phone: (203) 250-1545 www.delimaging.com

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