

MotionXtra HG-XR



The extended record capability of the HG-XR, along with its rugged design makes it the perfect solution for recording high-speed events such as missile launches, explosives tests, and automotive rollovers. The HG-XR uses an exclusive 1.7 mega-pixel CMOS sensor to give you beautiful color images or crisp, clean mono images with greater sensitivity.

The onboard IRIG decoder provides both time stamp data and extremely accurate synchronization between cameras and other instrumentation on military ranges. An integrated onboard GPS decoder provides the same functionality, but without the infrastructure required for IRIG: Simply distribute any number of XR cameras in locations where their GPS antennae can receive signals and they will synchronize themselves and provide accurate time stamps every frame, every time.

The MotionXtra® HG-XR's extended record capability makes it the true replacement for high-speed film cameras. At full 1504 x 1128 (4:3 aspect ratio) resolution and 1000 frames per second, an unprecedented 20 seconds of record time can be achieved. At 1504 x 846 (16:9 aspect ratio) resolution and 1000 frames per second, the record time increases to over 26 seconds.

The camera features a fast 5µsec global shutter to eliminate motion blur and deliver razor sharp images with the high quality you have come to expect from Redlake. The HG-XR is network compatible with our MotionXtra HG-100K, HG-LE, and HG-TH cameras via 100 Base-T or 1000 Base-T (Gigabit) Ethernet enabling you to quickly incorporate it into your network for multi-camera support.

Redlake's intuitive MotionCentral® software for camera control, including image downloading and viewing, offers compatibility across the entire MotionXtra product line.

The Ethernet interface allows remote camera control and fast 1000 Base-T transfer of uncompressed file formats including TIFF and compact Type-2 Bayer. High-quality JPEGs may be downloaded, providing excellent image quality at a fraction of the file size. AVI files using popular codecs (compressed or uncompressed) may be produced in tandem with any image download.

Applications: Missile launch and tracking, Ballistics and munitions testing, Automotive rollover testing, Biomechanical research

Features	Benefits
Up to 1504 x 1128 resolution (color or mono)	Excellent resolving power to capture image detail even with a large field of view
Frame rates from 25 to over 100,000 in 5fps increments	Speed and flexibility to capture a wide range of high-speed events
Supports more than 20 seconds of record time at 1000fps, full resolution	Extended record time for long events such as missile launches and vehicle rollovers and for biomechanical research
Integrated IRIG/GPS with sync-lock indicator and phase shift	For accurate time-stamping and synchronization of cameras with instrumentation on the range, or wherever a GPS signal may be received
Fast 5µs global electronic shutter	Reduces motion blur
Rugged design	Reliable operation in harsh environments

Sample Frame Rates

fps	≈ 4:3	≈ 1:1	≈ 3:1
1000	1504 x 1128	1120 x 1120	-
2000	1056 x 792	928 x 896	1504 x 568
3000	832 x 648	736 x 720	1376 x 416
5000	640 x 480	544 x 544	1024 x 320
10,000	416 x 320	352 x 368	672 x 216
20,000	256 x 192	224 x 232	448 x 136
30,000	192 x 152	160 x 168	320 x 104
50,000	128 x 88	96 x 104	192 x 64
100,000	32x24	24 x 24	64 x 24

Note: proportions are approximate

Recording Time

Memory Capacity	Recording Time
8GB	5sec
16GB	10sec
32GB	20sec

(1504 x 1128 @ 1000fps)

MotionXtra HG-XR Performance Specifications

CMOS Imager	
Sensor Array	32 channel area array with 12 μ x 12 μ pixels, Color or Monochrome
Image Resolution	Up to 1504 x 1128 @1000fps
Dynamic Range	62dB at sensor, 25°C ambient temperature
Memory and Record Rates	
On-board Storage	8, 16 and 32GB
Recording Rates	Selectable, 25 to 100,000 fps in 5 fps increments; variable frame rate via external source
Camera Control	
Shutter	Global Electronic Shutter variable from 5 μ s to 1/framerate
Trigger Frame	Variable position from start to the maximum available frame capacity
Trigger Mode	TTL, 5V-tolerant (CMOS), user selectable polarity, or switch closure; variable debounce delay
Time Stamp	Each frame, selectable reference
Reticle	Full screen crosshair with X, Y coordinate display
Optional Control Unit	Tablet style display control unit (DCU)
Software	
Control Software	MotionCentral, Windows 2000, and XP. SDK and Command Protocol available
File Formats	AVI, TIFF, JPG, or Type-2 Bayer (Raw with selectable upper- middle- lower- 8 bits of 10, 9- or 10-bit compressed, or custom LUT)
Mechanical Description	
Camera Dimensions	170 mm (H) x 115 mm (W) x 282 mm (L)
Camera Weight	6.5Kg
Cable Lengths (Gb Ethernet)	Camera to Hub: up to 328 ft (100m); Hub to Hub/ControlPC: up to 328 ft (100m); longer distances can be achieved with Fiber Media Converters
Lens Mount	C-mount, F-mount, and High-G Box-mounts available
Synchronization	
IRIG	IRIG B decoder with accuracy within +/-1 μ s unmodulated, +/- 10 μ s modulated Multiple Cameras frame synchronized at all frame rates via IRIG. Phase control in increments of 1 μ s + up to reciprocal of frame rate. Time stamp configurable: beginning, center, end of exposure
GPS	Accuracy within +/-1 μ s (same frame sync, phase, and time stamp features as IRIG)
Networked with Redlake Hub Sync Unit (optional)	HSU provides synchronization to +/-1.25 μ s as well as power and Ethernet connectivity
Environmental	
Camera Power	+24 to 50 VDC @ 65W
Shock	100G peak @ 6 ms per minute and 50G peak @ 11 ms any axis, 1000 cycles
Vibration	Sinusoidal from 5 - 1500 Hz @ 1 octave per minute and 5G rms in any axis
Operating Temperature	-10 °C to +45 °C Ambient
Emissions/Safety	CE approved, FCC Class B compliant, UL recognized
Input/Output	
CCU (Gigabit Ethernet) DCU (100 Base-T) STP(Sync/Trigger-return/Power) Trig In (BNC) Sync In (BNC) Strobe Out (BNC) Comp Video Out (BNC) IRIG UNMOD In (BNC) IRIG MOD In (BNC) GPS Antenna In (SMA)	

Note: Specifications are subject to change.

REDLAKE



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