



**NAC Image Technology, the most experienced name in high-speed video, presents the Memrecam fx K3 and K3R, flexible, lightweight, high-speed, completely standalone camera systems.**

## **NAC's Memrecam fx K3 and K3R Digital High-Speed Color Video Systems**

NAC's Memrecam fx K3 and K3R cameras are fully self-contained, digital, high-speed video systems that record brilliant color images with resolutions up to 1280 X 1024 pixels at 1000 fps. Using an advanced CMOS sensor, the standard version of the K3 and K3R systems capture images at 2000 fps. The systems' optional frame rate upgrade allows the Memrecam fx K3 and K3R to achieve frame rates up to 10,000 fps.

The HyGe rated Memrecam fx K3R is perfect for military range applications, onboard automotive crash safety applications and any other high-speed imaging application being performed in a hazardous environment. The Memrecam fx K3 is designed for a variety of research, design and testing applications where a combination of high image resolution and high recording rates is a must.

Available with onboard memory of up to 16GB, the Memrecam fx mega pixel cameras are the only camera systems available in the industry which allow the user to record full resolution images for more than 10 seconds at 1000 fps. This makes both the Memrecam fx K3 and the Memrecam fx K3R excellent choices for those high-speed imaging applications requiring extra long recording times.

The Memrecam fx family of products is easily networked and synchronized using NAC's complete line of accessory items including 2D and 3D Motion Analysis Systems. Choose NAC to help address your high-speed imaging needs and you'll see *The Visible Difference*.



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## Memrecam fx Family Common Features

- **High Resolution, High-Speed Sensor:** The Memrecam fx cameras use state-of-the-art CMOS sensors.
- **Electronic Shutter:** OPEN to 1/200,000
- **Bit Density:** 10 Bits
- **Standard Lens Mount:** C-Mount or F-Mount available
- **Live Image:** A live image is generated by the Digital Signal Processor (DSP) and can be displayed on an optional LCD viewfinder or on the monitor of a PC.
- **Standalone Operation:** The Memrecam fx cameras do not require a PC for setup and operation.
- **Operation and Control:** All functions from the camera setup to the recording and slow playback can be controlled using the panel on the back of the camera. Alternatively, the camera can be controlled remotely using NAC's J-Pad II hand-held controller or via a PC-based control system.
- **Trigger Mode:** The Memrecam fx cameras use a START, CENTER, END or CUSTOM trigger. In the CUSTOM mode, the trigger point can be programmed and positioned by the customer (i.e. -100% to +100%).
- **Synchronous Data Recording:** Scene number, date and time of trigger, shutter speed, video process data, comments.
- **Back Panel Connectors:** TRIG IN (Trigger In), Control (J-Pad II connection), AUX (recording synchronous signal and serial operation signal for external products), 100Base-TX (Ethernet connection), FC-AL (Fibre Channel connection), Remote In (M-Hub connection), D-VGA Out (VGA Viewfinder), CF (Compact Flash).
- **Recording Video Monitor:** In VIEW mode, live images captured by the camera but not saved in memory are reviewed. Images are displayed at a rate of 30 pps. In ARM/REC mode, the images captured by the camera and stored in memory can be reviewed. Image playback speed is adjustable.
- **Video Playback Unit:** Recorded images can be played back and viewed, immediately after image capture, on an optional LCD viewfinder (or NAC's View Box), on a VGA monitor or on the monitor of a control PC. The video playback unit allows for "step" fashion image review, allows the user to set the start and end points for image review, allows the user to "jump" to the trigger point, the START point or the END point of the image area. Image playback can be in a single segment or in a loop.
- **Memory Configuration:** 1.3GB, 4.0GB, 8.0GB and 16.0GB
- **Backup Option:** The memory backup option maintains power to the camera's DRAM in the event of power loss, thereby saving the customer's images. The images will be saved for approximately 1 hour.
- **Image Download:** The recorded images, having been captured to DRAM, can be downloaded directly to a PC via Fibre Channel or Ethernet. Alternatively, images can be saved locally to a Compact Flash.
- **Multi-Camera Control:** Up to a maximum of 48 Memrecam fx cameras can be connected and fully synchronized using NAC's M-Hub system. Alternatively, a similar number of cameras can be linked using commercial off-the-shelf (COTS) Fibre Channel or Ethernet network hubs.
- **PC Communications:** The customer has the option of selecting from three different modes of PC communications.
- **Control Software:** Control software is provided with each camera system. Alternatively, the customer can develop his own control software. NAC will provide the customer with a Software Development Kit (based upon an ActiveX component). The SDK will support C++, Visual C++ and Visual Basic.
- **IRIG-B:** Memrecam fx cameras support real time IRIG-B time insertion and can be synchronized to IRIG-B.



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<b>Memrecam fx K3 &amp; K3R—Full Resolution</b>						
<b>Resolution</b>		<b>Frame Rate (fps)</b>	<b>Recording Time/Memory Configuration</b>			
<b>Horizontal</b>	<b>Vertical</b>		<b>1.3GB</b>	<b>4.0GB</b>	<b>8.0GB</b>	<b>16.0GB</b>
1280	1024	100	8.1 sec	24 sec	48 sec	96 sec
1280	1024	250	3.2 sec	9.8 sec	19.6 sec	39.2 sec
1280	1024	500	1.6 sec	4.9 sec	9.8 sec	19.6 sec
1280	1024	1000	0.8 sec	2.4 sec	4.8 sec	9.6 sec
1280	512	2000	0.8 sec	2.4 sec	4.8 sec	9.6 sec
1280	344	3000	0.8 sec	2.4 sec	4.8 sec	9.6 sec
1280	256	4000	0.8 sec	2.4 sec	4.8 sec	9.6 sec
1280	200	5000	0.8 sec	2.5 sec	5.0 sec	10.0 sec
1280	168	6000	0.8 sec	2.5 sec	5.0 sec	10.0 sec
1280	120	8000	0.8 sec	2.6 sec	5.2 sec	10.4 sec
1280	96	10000	0.8 sec	2.6 sec	5.2 sec	10.4 sec

<b>Memrecam fx K3 &amp; K3R—HDTV Resolution</b>						
<b>Resolution</b>		<b>Frame Rate (fps)</b>	<b>Recording Time/Memory Configuration</b>			
<b>Horizontal</b>	<b>Vertical</b>		<b>1.3GB</b>	<b>4.0GB</b>	<b>8.0GB</b>	<b>16.0GB</b>
1280	720	100	11 sec	33 sec	65 sec	131 sec
1280	720	250	4.4 sec	13.2 sec	26.0 sec	52.4 sec
1280	720	500	2.2 sec	6.6 sec	13.1 sec	26.2 sec
1280	720	1000	1.1 sec	3.3 sec	6.5 sec	13.1 sec
1280	512	2000	0.8 sec	2.4 sec	4.8 sec	9.6 sec
1280	344	3000	0.8 sec	2.4 sec	4.8 sec	9.6 sec
1280	256	4000	0.8 sec	2.4 sec	4.8 sec	9.6 sec
1280	200	5000	0.8 sec	2.5 sec	5.0 sec	10.0 sec
1280	168	6000	0.8 sec	2.5 sec	5.0 sec	10.0 sec
1280	120	8000	0.8 sec	2.6 sec	5.2 sec	10.4 sec
1280	96	10000	0.8 sec	2.6 sec	5.2 sec	10.4 sec



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<b>Memrecam fx K3 &amp; K3R—Reduced Resolution</b>						
<b>Resolution</b>		<b>Frame Rate (fps)</b>	<b>Recording Time/Memory Configuration</b>			
<b>Horizontal</b>	<b>Vertical</b>		<b>1.3GB</b>	<b>4.0GB</b>	<b>8.0GB</b>	<b>16.0GB</b>
640	512	100	33 sec	98 sec	196 sec	392 sec
640	512	250	13.2 sec	39.2 sec	78.4 sec	156.8 sec
640	512	500	6.6 sec	19.6 sec	39.2 sec	78.4 sec
640	512	1000	3.3 sec	9.8 sec	19.6 sec	39.2 sec
640	512	2000	1.6 sec	4.9 sec	9.8 sec	19.6 sec
640	344	3000	1.6 sec	4.9 sec	9.8 sec	19.6 sec
640	256	4000	1.6 sec	4.9 sec	9.8 sec	19.6 sec
640	200	5000	1.7 sec	5.0 sec	10.0 sec	20.0 sec
640	168	6000	1.7 sec	5.0 sec	10.0 sec	20.0 sec
640	120	8000	1.7 sec	5.2 sec	10.4 sec	20.8 sec
640	96	10000	1.7 sec	5.2 sec	10.4 sec	20.8 sec
<b>Memrecam fx K3 &amp; K3R—VGA Resolution</b>						
<b>Resolution</b>		<b>Frame Rate (fps)</b>	<b>Recording Time/Memory Configuration</b>			
<b>Horizontal</b>	<b>Vertical</b>		<b>1.3GB</b>	<b>4.0GB</b>	<b>8.0GB</b>	<b>16.0GB</b>
640	480	100	35 sec	104 sec	208 sec	416 sec
640	480	250	14.0 sec	41.6 sec	83.2 sec	166.4 sec
640	480	500	7.0 sec	20.8 sec	41.6 sec	83.2 sec
640	480	1000	3.5 sec	10.4 sec	20.8 sec	41.6 sec
640	480	2000	1.7 sec	5.2 sec	10.4 sec	20.8 sec
640	344	3000	1.6 sec	4.9 sec	9.8 sec	19.6 sec
640	256	4000	1.6 sec	4.9 sec	9.8 sec	19.6 sec
640	200	5000	1.7 sec	5.0 sec	10.0 sec	20.0 sec
640	168	6000	1.7 sec	5.0 sec	10.0 sec	20.0 sec
640	120	8000	1.7 sec	5.2 sec	10.4 sec	20.8 sec
640	96	10000	1.7 sec	5.2 sec	10.4 sec	20.8 sec



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