



NAC Image Technology, the most experienced name in high-speed video, presents the HotShot 1280 pci, putting high-performance, high resolution high-speed video within the reach of more research, test and production users.

NAC's HotShot 1280 pci Digital High-Speed Video System



NAC's HotShot **1280** pci was designed from the beginning to be an easy-to-use, high-speed video solution for research, test and production customers. The Hot Shot 1280 PCI camera and recording system provides the user with a versatile and reliable high-speed video system.

The HotShot **1280** pci records brilliant color images or crisp monochrome images at resolutions up to 1280 X 1024 pixels. Using its advanced CMOS image sensor, the HotShot **1280** pci is capable of recording speeds in excess of 20,000 fps at reduced resolutions. The camera system's global electronic shutter allows the user to vary the exposure time, independent of the frame rate to be able to eliminate motion blur or to permit low-light recording. The HotShot **1280** pci image recording can be started or stopped remotely via a handheld switch, a direct signal from the subject or an external trigger. Images can be quickly reviewed and downloaded to a PC for more detailed analysis or image archiving and storage.

The HotShot **1280** pci is a PCI based computer peripheral that can also be purchased as a fully integrated standalone instrumentation system. The HotShot **1280** pci system is an easy-to-use window based motion analysis tool that includes onboard memory and camera control boards as well as user interface software and documentation. The HotShot **1280** pci can be integrated with a Control Console and keyboard making it a complete imaging system that is simple to operate and is adaptable to a variety of laboratory and production environments. The **1280** pci features a compact remote camera head that allows the system to operate in difficult-to-reach, confined spaces.

The HotShot **1280** pci also gives the user more control over the system's frame rate/resolution/recording time parameters. This makes the system dramatically more flexible in of research, test and production environments.

Choose NAC to help address your high-speed imaging needs and you'll see *The Visible Difference*.



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HotShot System Features

- **High Resolution, High-Speed Sensor:** The HotShot cameras use state-of-the-art CMOS sensors available in monochrome or color.
- **Electronic Shutter:** Full Frame, OPEN to 1/200,000 seconds and customer programmable
- **Bit Density:** 8 Bits
- **Standard Lens Mount:** C-Mount, F-Mount Mount Optional
- **Live Image:** A live image is available from the camera Control Console or from a PC.
- **Standalone Operation:** The HotShot INT cameras do not require a PC for setup and operation. The HotShot pci cameras are computer peripherals.
- **Trigger Mode:** The HotShot 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.
- **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.
- **Image Format:** The HotShot provides a variety of image formats, including full horizontal, 1:1, 4:3, 16:9 and customer programmable.
- **Image Playback:** Recorded images can be played back and viewed, immediately after image capture, on the Control Console 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:** 1.0GB, 2.0GB, 3.0GB and 4.0GB, Memory Segment Recordings
- **Image Download:** The recorded images, having been captured to DRAM, can be downloaded directly to a non-volatile storage device, such as a PC hard drive, DVD, an external USB hard drive or other PC peripherals such as a Compact Flash.
- **Recorded File Format:** Images can be saved to a variety of computer recognizable file formats (AVI, TIF, JPG, BMP, etc.)
- **Multi-Camera Control:** Up to four HotShot cameras can be connected and fully synchronized using the HotShot camera head's sync-in and sync-out connector system. Cameras can also be linked using commercial off-the-shelf (COTS) network hubs.
- **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:** HotShot cameras support real time IRIG-B time insertion and can be synchronized to IRIG-B.



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HotShot 1280 pci—Typical Resolution Alternatives						
Resolution		Frame Format @ 500 fps	Recording Time/Memory Configuration			
Horizontal	Vertical		1.0GB	2.0GB	3.0GB	4.0GB
320	240	QVGA	27.29 sec	54.58 sec	81.88 sec	109.17 sec
512	384	NTSC	10.66 sec	21.32 sec	31.98 sec	42.64 sec
512	512	NTSC 1:1	8.00 sec	15.99 sec	23.99 sec	31.98 sec
640	480	VGA	6.82 sec	13.65 sec	20.47 sec	27.29 sec
768	512	DV	5.33 sec	10.66 sec	15.99 sec	21.32 sec
800	600	DVGA	4.37 sec	8.73 sec	13.10 sec	17.47 sec
1024	512	Mega 1:2	4.00 sec	8.00 sec	11.99 sec	15.99 sec
1024	1024	Mega 1:1	2.00 sec	4.00 sec	6.00 sec	8.00 sec
1280	512	Letterbox	3.20 sec	6.40 sec	9.59 sec	12.79 sec
1280	720	HD	2.27 sec	4.55 sec	6.82 sec	9.10 sec
1280	960	4:3	1.74 sec	3.49 sec	5.12 sec	6.97 sec
1280	1024	XVGA	1.60 sec	3.20 sec	4.80 sec	6.40 sec

Resolution		Frame Format @ 1000 fps	Recording Time/Memory Configuration			
Horizontal	Vertical		1.0GB	2.0GB	3.0GB	4.0GB
320	240	QVGA	13.65 sec	27.29 sec	40.94 sec	54.58 sec
512	384	NTSC	5.33 sec	10.66 sec	15.99 sec	21.32 sec
512	512	NTSC 1:1	4.00 sec	8.00 sec	11.99 sec	15.99 sec
640	480	VGA	3.41 sec	6.82 sec	10.23 sec	13.65 sec
768	512	DV	2.67 sec	5.33 sec	8.00 sec	10.66 sec
1024	512	Mega 1:2	2.00 sec	4.00 sec	6.00 sec	8.00 sec
1280	512	Letterbox	1.60 sec	3.20 sec	4.80 sec	6.40 sec



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HotShot 1280 pci—Full Horizontal Resolution						
Resolution		Frame Rate (fps)	Recording Time/Memory Configuration			
Horizontal	Vertical		1.0GB	2.0GB	3.0GB	4.0GB
1280	1024	250	3.2 sec	6.4 sec	9.59 sec	12.79 sec
1280	1024	500	1.6 sec	3.2 sec	4.8 sec	6.4 sec
1280	512	1000	1.6 sec	3.2 sec	4.8 sec	6.4 sec
1280	256	2000	1.6 sec	3.2 sec	4.8 sec	6.4 sec
1280	170	3000	1.6 sec	3.2 sec	4.8 sec	6.4 sec
1280	128	4000	1.6 sec	3.2 sec	4.8 sec	6.4 sec
1280	102	5000	1.6 sec	3.2 sec	4.8 sec	6.4 sec
1280	72	7000	1.6 sec	3.2 sec	4.8 sec	6.4 sec
1280	50	10000	1.6 sec	3.2 sec	4.8 sec	6.4 sec
1280	34	15000	1.6 sec	3.2 sec	4.8 sec	6.4 sec
1280	26	20000	1.6 sec	3.2 sec	4.8 sec	6.4 sec

HotShot 1280 pci—VGA Resolution						
Resolution		Frame Rate (fps)	Recording Time/Memory Configuration			
Horizontal	Vertical		1.0GB	2.0GB	3.0GB	4.0GB
640	480	250	13.65 sec	27.29 sec	40.94 sec	54.58 sec
640	480	500	6.82 sec	13.65 sec	20.47 sec	27.29 sec
640	480	1000	3.41 sec	6.82 sec	10.23 sec	13.65 sec

Note: Resolution, frame rate and recording time are interdependent. For example, a reduction in frame rate and/or resolution will increase recording times. The Hot Shot allows the highest degree of flexibility with respect to modifying these respective parameters, thereby allowing the user to select the parameter which is most critical in the testing environment.



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