



# NVIDIA QUADRO<sup>®</sup> FX 5500 SDI

## The Integrated Graphics-to-Video Solution for Broadcast, Video, and Film Professionals

### NVIDIA Quadro<sup>®</sup> FX 5500 SDI

is the ideal solution for on-air broadcast professionals across many applications such as virtual-sets, sports, and weather news systems to composite live video footage onto virtual backgrounds and send the result to live video for TV broadcast.

Additionally, the solution allows film and video production, post-production, and finishing professionals to preview, in real time on HD broadcast monitors, the result of 3D compositing, editing, and color grading. This graphics-to-video-out solution delivers uncompressed 12-bit SDI from programmable graphics, enabling a direct connection to broadcast monitors, tape decks, or SDI projectors.

NVIDIA Quadro FX 5500 SDI provides two channels, fill or key, of 8-, 10-, or 12-bit uncompressed SDI in 2K, HD, or SD formats, and analog and digital house synchronization. It supports both Microsoft<sup>®</sup> Windows<sup>®</sup> and Linux and works on top of existing applications, or can be easily integrated within a broadcast or video editing application through the NVIDIA API.

NVIDIA Quadro FX 5500 SDI features a revolutionary new architecture with 2x the geometry and fill rate and 4x the hardware pixel read-back performance of previous generation graphics. It supports 1024MB GDDR2 frame buffer memory, and rotated grid full scene antialiasing (RG FSAA) for increased color accuracy and visual quality of edges and lines without compromising performance.



Image courtesy VizRT



Image courtesy Brainstorm/VertigoXMedia

NVIDIA Quadro graphics boards provide the ultimate in quality, precision, performance, and programmability. Broadcast and DCC applications acquire a new level of interactivity by enabling unprecedented capabilities

in programmability and precision. For the first time production rendering becomes an integral function of the design workflow, shortening the production process and enabling stunning on-air 3D graphics.

### PRODUCT SPECIFICATIONS

|                                   |  |
|-----------------------------------|--|
| <b>Form Factor</b>                | ATX, 4.38" x 9.0"                                      |
| <b>Frame Buffer Memory</b>        | 1024MB GDDR2   |
| <b>Memory Interface</b>           | 256-bit  |
| <b>Memory Bandwidth</b>           | 33.6GB/sec.  |
| <b>Max Power Consumption</b>      | 102W   |
| <b>Graphics Bus</b>               | PCI Express <sup>®</sup> x16                           |
| <b>Display Connectors</b>         | DVI-I, Stereo, 2 SDI Channels: 2 fill or 1 fill, 1 key |
| <b>Dual Link DVI</b>              | Yes (1)  |
| <b>Auxiliary Power Connectors</b> | Yes (1)  |
| <b>Number of Slots</b>            | 3  |
| <b>Thermal Solution</b>           | Active Fansink   |
| <b>Genlock/Framelock</b>          | One Analog Genlock, One Digital Genlock                |

# NVIDIA Quadro FX 5500 SDI Key Features and Benefits

|   |  |
|---|--|
| <b>Uncompressed 8-, 10-, or 12-bit SDI Output</b>       | <p>The programmable GPU architecture and the NVIDIA Quadro FX 5500 SDI specific graphic user interface enable configurability of: video channels, color space conversion, and gamma correction. A video backend unit provides full support for outputs in the following 2K, HD, and SD formats through 2 video channels with support for either 2 distinct channels of fill or 1 channel of fill and 1 channel of key.</p> <ul style="list-style-type: none"> <li>• 480i 29.94 Hz (SMPTE259) NTSC</li> <li>• 576i 50.00 Hz (SMPTE259) PAL</li> <li>• 720p 23.98 Hz (SMPTE296)</li> <li>• 720p 24.00 Hz (SMPTE296)</li> <li>• 720p 25.00 Hz (SMPTE296)</li> <li>• 720p 29.97 Hz (SMPTE296)</li> <li>• 720p 30.00 Hz (SMPTE296)</li> <li>• 720p 50.00 Hz (SMPTE296)</li> <li>• 720p 59.94 Hz (SM PTE296)</li> <li>• 720p 60.00 Hz (SMPTE296)</li> <li>• 1035i 59.94 Hz (SMPTE260)</li> <li>• 1035i 60.00 Hz (SMPTE260)</li> <li>• 1080i 47.96 Hz (SMPTE274)</li> <li>• 1080i 48.00 Hz (SMPTE274)</li> <li>• 1080i 50.00 Hz (SMPTE295)</li> <li>• 1080i 50.00 Hz (SMPTE274)</li> <li>• 1080i 59.94 Hz (SMPTE274)</li> <li>• 1080i 60.00 Hz (SMPTE274)</li> <li>• 1080PsF 23.976 Hz (SMPTE274)</li> <li>• 1080PsF 24.00 Hz (SMPTE274)</li> <li>• 1080PsF 25.00 Hz (SMPTE274)</li> <li>• 1080PsF 29.97 Hz (SMPTE274)</li> <li>• 1080PsF 30.00 Hz (SMPTE274)</li> <li>• 1080p 23.976 Hz (SMPTE274)</li> <li>• 1080p 24.00 Hz (SMPTE274)</li> <li>• 1080p 25.00 Hz (SMPTE274)</li> <li>• 1080p 29.97 Hz (SMPTE274)</li> <li>• 1080p 30.00 Hz (SMPTE274)</li> <li>• 2048x1080p 23.976 Hz (SMPTE372)</li> <li>• 2048x1080p 24.00 Hz (SMPTE372)</li> <li>• 2048x1080p 25.00 Hz (SMPTE372)</li> <li>• 2048x1080p 29.97 Hz (SMPTE372)</li> <li>• 2048x1080p 30.00 Hz (SMPTE372)</li> <li>• 2048x1080i 47.96 Hz (SMPTE372)</li> <li>• 2048x1080i 48.00 Hz (SMPTE372)</li> <li>• 2048x1080i 50.00 Hz (SMPTE372)</li> <li>• 2048x1080i 59.94 Hz (SMPTE372)</li> <li>• 2048x1080i 60.00 Hz (SMPTE372)</li> </ul> |
| <b>Genlock (House Synchronization)</b>                  | <p>One digital and one analog genlock (BNC) connectors provide connectivity to a video sync source for SMPTE standard (digital, black burst, tri-level) synchronization.</p>   |
| <b>1GB Ultra-Fast GDDR2</b>                             | <p>Delivers high throughput for interactive visualization of large models and high-performance for real time processing of large textures and frames and enables the highest quality and resolution full-scene antialiasing (FSAA).</p>  |
| <b>Unparalleled Subpixel Precision</b>                  | <p>12-bit sub-pixel precision delivers high geometric accuracy, eliminating rasterization anomalies.</p>   |
| <b>Unmatched Color Precision</b>                        | <p>Full 128-bit precision graphics pipeline enables sophisticated mathematical computations to maintain high accuracy, resulting in unmatched visual quality. Full IEEE 32-bit floating-point precision per color component (RGBA) delivers millions of color variations with the broadest dynamic range.</p>  |
| <b>Next-generation Vertex and Pixel Programmability</b> | <p>NVIDIA Quadro FX 5500 GPUs introduce infinite length vertex programs and dynamic flow control, removing the previous limits on complexity and structure of shader programs. With full support for Vertex and Shader Model 3.0, NVIDIA Quadro FX 5500 GPUs deliver sophisticated effects never before imagined for real-time graphics systems.</p>   |
| <b>Rotated Grid FSAA (RG FSAA)</b>                      | <p>RG FSAA sampling algorithm introduces far greater sophistication in the sampling pattern, significantly increasing color accuracy and visual quality for edges and lines, reducing “jaggies” while maintaining performance.</p>   |
| <b>NVIDIA PureVideo Technology</b>                      | <p>NVIDIA® PureVideo™ technology is the combination of high-definition video processors and software that delivers unprecedented picture clarity, smooth video, accurate color, and precise image scaling for SD and HD video content. Features include, high-quality scaling, spatial temporal de-interlacing, inverse telecine, and high quality HD video playback from DVD.</p>   |

## PRODUCT SPECIFICATIONS

### Supported Operating Systems

- Microsoft® Windows® XP (64-bit and 32-bit)
- Microsoft Windows 2000 (32-bit)
- Linux® - Full OpenGL® implementation, complete with NVIDIA and ARB extensions (64-bit and 32-bit)
- AMD64, Intel EM64T

### NVIDIA Quadro FX 5500 Architecture

- Unlimited fragment instruction
- Unlimited vertex instruction
- 3D volumetric texture support
- Single-system powerwall
- 12 pixels per clock rendering engine
- Hardware OpenGL overlay planes
- Hardware accelerated:
  - two-sided lighting
  - clipping planes
  - line stippling
- 3rd-generation occlusion culling
- 16 textures per pixel in fragment programs
- Window ID clipping functionality

### Shading Architecture

- Fully programmable GPU
- Long fragment and vertex programs (unlimited instructions)
- Looping and subroutines (up to 256 loops per vertex program)
- Dynamic flow control
- Conditional execution

### High Level Shader Languages

- Optimized compiler for Cg, GLSL, and Microsoft® HLSL
- OpenGL 2.0 and DirectX 9.0c support
- Open source compiler

### High-Resolution Antialiasing

- 12-bit sub-pixel sampling precision enhances AA quality
- Rotated grid full-scene antialiasing (RG FSAA)

### Display Resolution Support

- One dual-link DVI-I output-drives one digital display at resolutions up to 3840 x 2400 @ 24Hz
- Internal 400 MHz DACs – one analog display up to 2048x1536 @ 75Hz

### NVIDIA® nView™ Architecture

- Advanced multi-display desktop and application management seamlessly integrated into Microsoft Windows

### SDI Software Integration

- Transparent Clone and Dualview Modes work on top of existing applications
  - 1 channel fill
  - 8-bit:
    - RGB 4:4:4
    - YCrCb 4:2:2 or 4:4:4
  - Extended Mode
    - Integrated into applications using NVIDIA SDI API
    - 2 channel fill or
    - 1 channel fill + 1 channel key
    - 8-, 10-, or 12-bit:
      - RGB 4:4:4
      - YCrCb 4:2:2 or 4:4:4
      - 2x YCrCb 4:2:2+4:2:2
      - YCrCbA 4:2:2:4
      - RGBA 4:4:4:4 (8-bit only)



Where to buy NVIDIA Quadro

NVIDIA Quadro is available through major US OEMs, PNY Technologies (US and Europe), Leadtek (Asia-Pac), and ELSA Japan. Please visit [www.nvidia.com/page/workstation.html](http://www.nvidia.com/page/workstation.html) for information.

NVIDIA Corporation | 2701 San Tomas Expressway | Santa Clara, CA 95050 | T 408.486.2000 | F 408.486.2200 | [www.nvidia.com](http://www.nvidia.com)

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