Wildcat II 5110-G

Multiview and Genlock Features for High-end Visualization Needs

The Wildcat II 5110-G takes a standard Wildcat II 5110 and, by adding a Multiview and Genlock adapter, adds the ability to:
- synchronize a display or multiple displays to an external synchronization source
- synchronize multiple displays driven by multiple systems
- specify a minimum frame rate

The Genlock feature allows you to lock one or more graphics cards to an external synchronization source that provides a periodic signal to the Wildcat II 5110-G, locking vertical refresh rate.

The Wildcat II 5110-G's Multiview support offers frame locking (double buffer sync) and rate locking (time sync) of multiple Wildcat II 5110-Gs.

Broadcast video, visual simulation, visualization, reality centers, and digital content creation are just some areas that would use Multiview and/or Genlock.

If you're using multiple displays driven by multiple systems to achieve a single, large "virtual canvas," and want them all to refresh/update as one, you'll need the ability link each graphics card together via Multiview. In addition, you can synchronize them to an external source as well using the genlock feature.

Genlock
Genlock on the Wildcat II 5110-G gives you the ability to synchronize the output of one or more graphics cards to an external synchronization source (such as a studio sync), where you can instruct the Wildcat II 5110-G to:

- trigger on the rising edge, falling edge, or both edges of the external sync
- trigger on the rising edge of a simple 60 Hz external sync
- start some time after the sync pulse comes in
- only trigger on every "nth" pulse (for example: generate a 60 Hz frame rate from a 120 Hz external sync)
- trigger off both edges of a 60 Hz external sync with a 1:1 mark space ratio (for example: to control both eyes of a stereoscopic display device)

You can also use the external sync to drive multiple workstations. However, if you're running the same application on multiple workstations and you wish to treat their displays as a single "virtual canvas" so they all refresh as one, then you need to use Multiview.
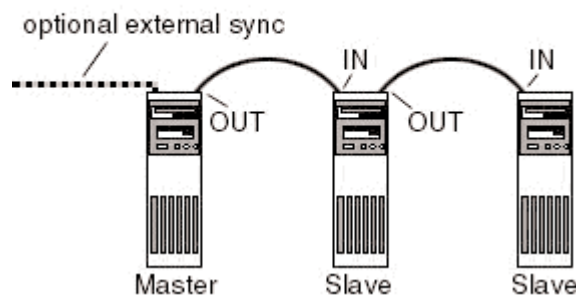
Multiview, Rate Lock, and Frame Usage
If you use multiple displays driven by multiple systems as a single virtual canvas, then buffer swaps and screen refreshes on all the systems must take place simultaneously; otherwise "tearing" effects will appear across screen boundaries. 3Dlabs' Multiview feature will prevent tearing by sending signals between each linked workstation to synchronize the swapping of the buffers and the screen refreshes.

Multiview also supports "Rate Lock" — the application instructs the Wildcat II 5110-G as to the minimum swap period it's prepared to tolerate. If the hardware detects that it can't complete the rendering of a frame in the required time, it discards that frame and moves on to the next one.

However, since we don't want to drop frames, Multiview also supports "Frame Usage." The application can query the graphics card as to how long it took to render the frame and respond by performing scene management operations such as culling some of the data.

Sample Multiview Configuration

optional external sync

IN   IN
OUT   OUT

Master   Slave   Slave

3Dlabs

Wildcat II 5110-G

**The Wildcat II 5110-G is a Wildcat II 5110 with a Multiview and Genlock adapter.
(see a Wildcat II 5110 datasheet for full specifications)**

Genlock and Multiview Configuration

Genlock and Multiview configuration options are available through the Wildcat driver, where you can:
- specify the synchronization source.
- define the trigger (positive edge, negative edge, both edges, every "nth" pulse).
- specify any delay to be applied after the trigger signal has been received.

The default for standard Multiview is to trigger on every positive edge, the "every nth pulse" parameter would be set to 1, and the "delay trigger" parameter would be set to zero. With regard to specifying the synchronization source, the main options are as follows:
- External Genlock BNC connector
  - TTL level input
  - Frame sync
  - Field sync
- Internal digital port
  - Frame sync
  - Field sync
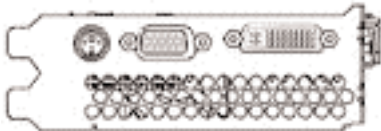- Multiview In (with standard/default options)

Genlock In Connector

The Genlock In connector, which uses a BNC connector, allows video timing to be synchronized to an external timing source. The BNC connector is a 75 Ohm male connector and is used to connect to a 75 Ohm, coax cable terminated with a female BNC connector. This connection provides a periodic signal to the display system to lock vertical refresh rate.

Multiview In and Multiview Out Ports

The Multiview In and Multiview Out ports (each a 6-pin modular jack connector) provide "Multiview" support for frame locking and rate locking of multiple Wildcat II 5110-Gs.

Wildcat II 5110 graphics accelerator

Multiview and Genlock adapter

Genlock   Multiview Out   Multiview In

Wildcat II 5110 Technical Specification Highlights (*See Wildcat II 5110 datasheet for full specifications*)

Wildcat Chipset Technology
- Data width:
  - Frame buffer: 128 bits
  - Texture buffer: 64 bits
  - DirectBurst: 64 bits
- Integrated 300 MHz RAMDAC
- Single-pipeline configuration featuring wide, independent buses to connect frame buffer and texture memory to the graphics chipset.
- Complete OpenGL® 1.2 geometry acceleration accelerates the complete OpenGL 1.2 pipeline, including all geometry operations, triangle setup, texturing, and pixel operations
- 3D volumetric texture support
- DirectBurst technology optimizes the 3D graphics pipeline, significantly boosting performance

Geometry Acceleration
- Model view matrix transformation of vertex and normal coordinates
- Perspective and viewport transformations
- Texture matrix transformation of texture coordinates
- Local display list storage and processing
- Full lighting calculations (up to 24 lights)
- View volume clipping
- Up to six user clip planes
- Image processing

Professional 3D Features
- SuperScene full-scene multisampled antialiasing:
  - Point sampled with sixteen samples
  - Sample location jittering
  - Dynamic sample allocation
  - Dynamic sample backoff
  - 64-bit hardware accumulation buffer

Traditional 2D Operations
- 16- and 32-bit color depths (565, 8888)
- Solid and patterned area fills
- Vectors (diamond rule compliant)
- Block moves (screen-to-screen)
- Block gets (screen-to-system)
- Block puts (system-to-screen)

Memory
- 64 MB dedicated frame buffer
- 64 MB dedicated texture buffer
- 16 MB DirectBurst

Supported Screen Resolutions
(true color, double-buffered)

Monitor Resolutions (bits per pixel)	Max. Refresh Rates (Hz)	SuperScene Antialiasing	Stereo Available at (Hz)
2048 x 1152	75	-	-
1920 x 1440	75	-	-
1920 x 1200	76	-	-
1920 x 1080	85	-	-
1856 x 1392	80	-	-
1824 x 1368	75	-	-
1824 x 1128	75	-	-
1792 x 1344	75	-	-
1792 x 1120	75	-	-
1600 x 1200	90	-	-
1600 x 1024	76	-	-
1600 x 900	85	-	-
1520 x 856	90	-	106
1440 x 900	90	-	100
1360 x 766	90	yes	118
1280 x 1024	85	-	120
1280 x 960	85	-	120
1280 x 800	90	yes	112
1280 x 720	75	yes	120
1152 x 864	85	yes	120
1024 x 768	85	yes	120
856 x 480	75	yes	120
800 x 600	85	yes	120
640 x 480	85	yes	120

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