NVIDIA® Quadro® K6000 Sync
PNY Part Number: VCQK6000SYNC-PB

User Guide

PNY | 100 Jefferson Road | Parsippany | NJ 07054-0218 | 888.230.0130 Support | 800.333.3657 Sales

NVIDIA Quadro K6000 Sync Hardware Components

The NVIDIA Quadro K6000 Sync consists of the following hardware components:

1) NVIDIA Quadro K6000 graphics board
2) NVIDIA Quadro Sync board
3) 4 ribbon connector cables
4) 6 cable retention clips

NVIDIA Quadro K6000 Sync Overview

The NVIDA Quadro K6000 Sync delivers Frame Lock/Genlock support and sophisticated programmable graphics for visualization, simulation, and other types of collaborative applications. It delivers advanced multi-display visualization solutions by teaming the unprecedented features and benefits of the Quadro K6000 with Quadro Sync Frame Lock, Genlock, and synchronized Frame Buffer Swap functionality. Multi-system visualization clusters and multi-device film and video environments are also fully supported.

The Quadro K6000 requires an open x16 PCIe interface slot with an adjacent open slot (double-width board). The K6000 requires auxiliary power via two PCIe 6-pin auxiliary power connectors. The NVIDIA Quadro Sync board is designed to fit into any available expansion slot within 6 inches of the NVIDIA Quadro K6000. The Quadro Sync requires power via a 6-pin PCIe power connector or SATA power connector. Each Quadro Sync card can support up to four NVIDIA Quadro K6000 boards.

Frame Lock allows the display channels from multiple graphics boards or workstations to be synchronized, creating one large “virtual display” that can be driven by a multi-system cluster for performance scalability.

Genlock allows the graphics output to be synchronized to an external source, typically for film and broadcast video applications.

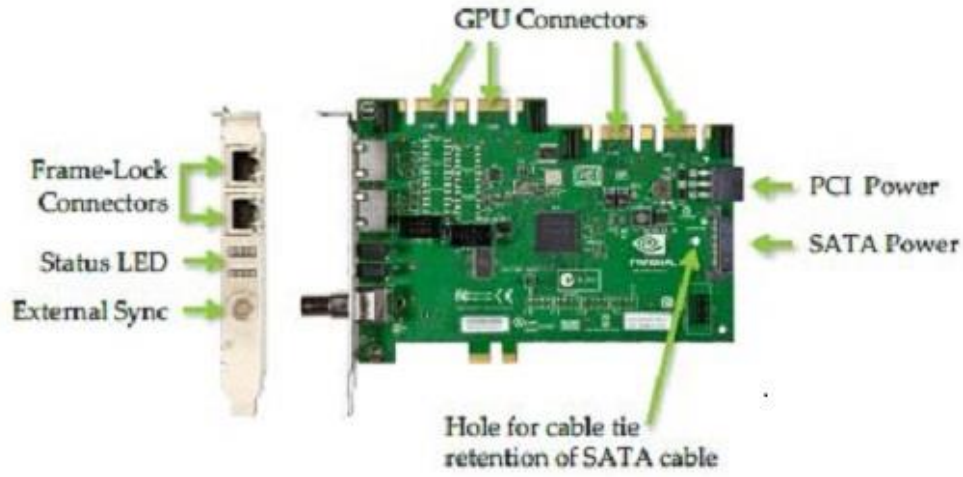
The NVIDIA Quadro K6000 and NVIDIA Quadro Sync will synchronize up to four displays simultaneously (2 DVI-DL and 2 DisplayPort 1.2), provided they are all in same display mode, which means the same resolution and refresh rate on all four displays.

NVIDIA Quadro K6000 Overview

The NVIDIA Quadro K6000 graphics board is a PCI Express full-height form factor (4.376 inches by 10.5 inches) graphics add-in card based on the NVIDIA Quadro K6000 graphics processing unit (GPU). It is targeted as a high-performance desktop graphics solution for PCI Express systems. The NVIDIA Quadro K6000 graphics board offers 28880 CUDA parallel processing cores, 12GB of GDDR5 GPU memory, and supports display types ranging from analog CRTs to the latest digital flat panels.

NVIDIA Quadro K6000 Photo

NVIDIA Quadro Sync Photo



NVIDIA Quadro K6000 Specifications and Features

- NVIDIA Quadro K6000 GPU
- Maximum core clock: 706 MHz
- CUDA cores: 2880
- GPU memory: 12 GB GDDR5
- Memory clock: 3000 MHz
- Memory interface: 384-bit
- Memory bandwidth: 288 GB/s
- GPU memory: 12 GB GDDR5
- PCI Express: PCIe Gen 3.0 x16
- Auxiliary power: two PCIe 6-pin connectors
- Maximum power consumption: 225 W
- Physical dimensions 4.376 x 10.5 inches, dual slot

Display Connectors

- One DVI-I Dual Link connector
- One DVI-D Dual Link connector
- Two Display Port 1.2 connectors
- Stereo connector (via supplied stereo connector bracket)

Internal Connectors and Headers

- Two 6-pin auxiliary power connectors
- SDI/Sync connector
- SLI connector
- Stereo header connector

Display Support

- 4K Display Port 1.2 resolution: 4096 x 2160 x 36 bpp at 60Hz
- UHD Display Port 1.2 resolution: 3840 x 2160 x 36 bpp at 60Hz
- Maximum DVI Dual-Link resolution: 2560 x 1600 x 32 bpp at 60Hz
- Maximum VGA resolution: 2048 x 1536 x 32 bpp at 85Hz
- High-bandwidth digital content protection (HDCP) support

NVIDIA Quadro Sync Specifications and Features

Board

- Physical dimensions: 6.15” inches x 4.37” inches
- Power: 6-pin PCI or SATA power connector
- Maximum power consumption: 12 W

Connectors and Status Indicators

- 4 SLI-style edge fingers for connection to compatible GPUs
- BNC house sync
- RJ45 1st Frame Lock sync (using CAT5 straight-through cable)
- RJ45 2nd Frame Lock sync (using CAT5 straight-through cable)
- Frame Lock and Stereo Sync Status LEDs

Quadro Sync Key Features and Benefits

- Synchronizes up to four Kepler GPU’s and up to 16 displays or projectors per system, which increases the density of GPUs and displays per system or reduces the total number of systems in a visualization cluster and minimizes operational complexity.

- Enables Mosaic Premium technology that treats up to 16 displays or projectors as a unified virtual display from a single system. Features like Projector Overlap and integrated geometry and intensity adjustment yield a pixel-accurate display surface.

- A stereoscopic 3D 3 x 3 or 4 x 4 display wall can be built with just one system, instead of three or four.

- A flight simulator can move from HD resolution to four 4K projectors with the same size visualization cluster.

- A broadcaster can power a 16 HDTV resolution display video wall for on air display from a single system.

BNC House Sync Connector Video Format Support

- 720 x 486_59.94i NTSC
- 720 x 576_50i PAL
- 1280 x 720_59.94p
- 1280 x 720_60i
- 1920 x 1035_59.54i
- 1920 x 1080_60i
- 1920 x 1080_59.94i (same as 1929 x 1080_29.97 psf)
- 1920 x 1080_50i (same as 1920 x 1080_25 psf)
- 1920 x 1080_24psf
- 1920 x 1080_23.976psf
- TTL level sync pulse

NVIDIA Quadro K6000 Auxiliary Power by Rail

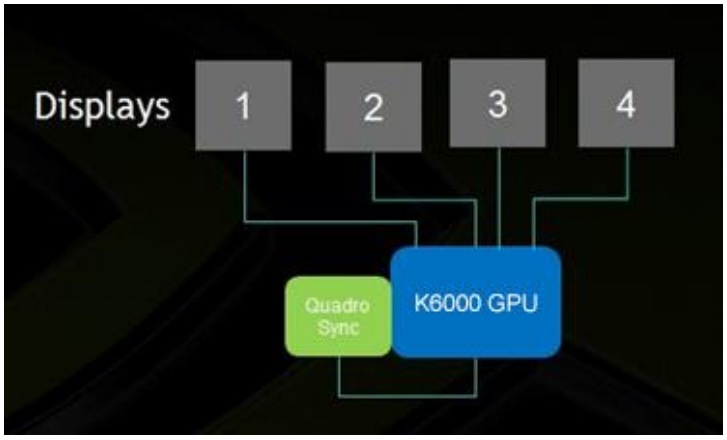
6-Pin Auxiliary Power connector #1	**6-Pin Auxiliary Power connector #2**	**Results**
6-pin cable connected	6-pin cable connected	Full Power
6-pin cable connected	Not connected	Message on Display will alert to the user to connect the auxiliary power cable.
Not connected	6-pin cable connected	Message on Display will alert to the user to connect the auxiliary power cable.
Not connected	Not connected	Message on Display will alert to the user to connect the auxiliary power cable.

Driver Support:

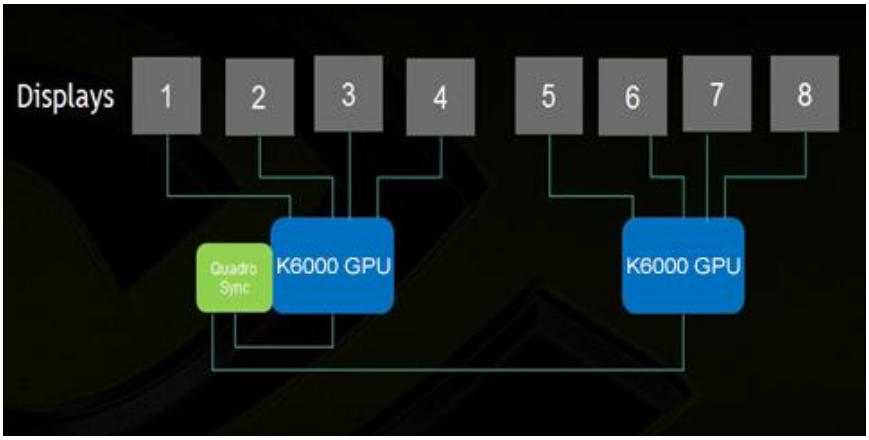
- Windows 7, Vista, and Linux 32- and 64-bit
- Windows 8 64-bit

Quadro K6000, Quadro Sync and Mosaic Configuration Options

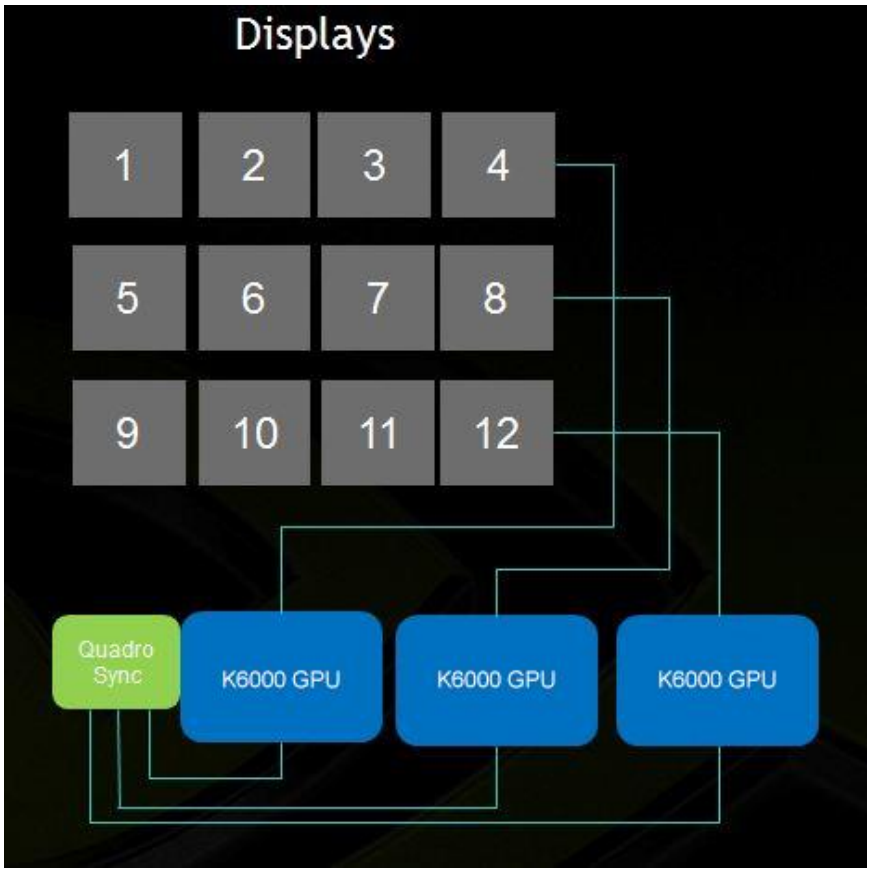
1) Four display configuration with the Quadro K6000 and Quadro Sync



2) Eight (1 x 8 or 2 x 4) display configuration with two Quadro K6000s and Quadro Sync.



3) Twelve (4 x 3) display configuration with three Quadro K6000s and Quadro Sync.



4) Sixteen (4 x 4) display configuration with four Quadro K6000s and Quadro Sync.