

## OVERVIEW

### **Nvidia Quadro K5200 8GB two DVI-I two DisplayPort Graphics Card by ThinkStation (4X60G69025)**

The Nvidia Quadro® K5200 8GB DVI-I, two DisplayPort Graphics Card by ThinkStation is based on Nvidia Kepler architecture, with 8GB ultra-fast GDDR5 graphics memory, supports four simultaneous displays and up to 4K resolution with VESA® DisplayPort 1.2.

This Graphics Card is fully qualified with ThinkStation P500/P700/P900 systems.

#### Key Features and Capabilities:

- 8GB GDDR5 graphics memory
- Two DisplayPort connectors
- Stacked DVI-I and DVI-D connectors
- PCI Express 3.0 full-height form factor
- Based on Nvidia Kepler architecture, with GK110 GPU
- Delivers Microsoft DirectX 11.0 and Shader Model 5.0 hardware acceleration.

## TECHNICAL INFORMATION

- PCI Express 3.0 x16 system interface
- Base core clock: 667MHz
- Idle core clock: 324MHz
- Memory Clock: 3000 MHz
- Idle memory clock: 324MHz
- Memory I/O interface: 256-bit
  - Total board memory: 8 GB
  - 16 pieces of 256M x 16 GDDR5
- Memory bandwidth: 192 GB/s
- 2304 NVIDIA's CUDA Cores
- Frame Buffers: 8GB
- Display Connectors:
  - Two DisplayPort connectors
  - Stacked DVI-I and DVI-D connectors
  - 3-pin stereo connector (available via optional bracket)
- Power connectors and headers:
  - 6-pin auxiliary power connectors
  - 4-pin high density header for stereo signal set and ground
  - SLI connector
  - Quadro Sync connector

- Supported platforms
  - Microsoft Windows 7 (64-bit and 32-bit)
  - Microsoft Windows 8.1 (64-bit)
  - Linux Redhat 6.5
- Full Microsoft DirectX 11.0 and Shader Model 5.0 support.
- 10-bit internal display processing, including hardware support for 10-bit scan-out
- Full OpenGL 4.4 support.
- API support for CUDA C, CUDA C++, DirectCompute 5.0, OpenCL software, Java, Python, Fortran
- Kepler architecture
- BIOS Features: 2Mbit serial ROM,UEFI supported
- HDCP Supported
- Display Support:
  - 400 MHz integrated RAMDAC
    - Maximum resolution over VGA (through DVI to VGA cable): 2048 x 1536 x 32 bpp at 85Hz
  - Dual-link internal TMDS (DVI 1.0)
    - Maximum resolution over digital port(single GPU and SLI mode): 2560 x 1600 x 32 bpp at 60Hz (reduced blanking)
  - Single-link internal TMDS (DVI 1.0)
    - Maximum resolution over digital port(single GPU and SLI mode): 1920 x 1200 x 32 bpp at 60Hz (reduced blanking)
  - DisplayPort 1.2
    - Maximum pixel clock: 592 MPixels per second
    - Maximum bandwidth: 17.2 Gbps
    - Example of maximum resolutions with CVT-RB timings:
      - 4096 x 2160 x 30 bpp at 60 Hz
      - 2560 x 1600 x 30 bpp at 120 Hz
  - HDMI (via optional dongle)
    - Maximum resolution: 1920 x 1080 x 32 bpp at 60 Hz

## **PHYSICAL SPECIFICATIONS -- UNPACKED**

- Approximate height: 111.5 mm (4.376 in)
- Approximate length: 266.7 mm (10.50 in)
- Approximate Weight: 850g

## **PHYSICAL SPECIFICATIONS -- PACKED**

- Physical Dimensions: 254mm \* 159mm \* 86mm
- Approximate Weight: 940g

## Environmental Conditions

- Operating Temperature: 0 deg to 45 deg (C)
- Storage temperature: -40 deg to 75 deg (C)
- Operating humidity: 5% to 90% RH
- Storage humidity: 5% to 90% RH
- Maximum power consumption: 150 watts

## AGENCY APPROVALS

- BSMI
- CE
- C-Tick
- FCC/ICES
- VCCI

### Note:

- ThinkStation P500, P700, P900 offers two PCI-e x16 graphic slots.
- And The Quadro K5200 graphics board is a high powered board solution and it utilizes power from the PCI Express connector as well as the external power connector (6-pin).
- Need Front Graphics Cooling Fan Assembly.

## SHIPMENT GROUP

- Graphic Card
- Warranty Poster
- Driver CD (w/ software and User Guide)
- Package (Brown Box)

## FRU PARTS

### *Field Replaceable Units (FRU)*

<i>Description</i>	<i>FRU Part #</i>	<i>Option Part #</i>	<i>H S</i>
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Nvidia Quadro K5200 8GB two DVI-I,two DisplayPort Graphics Card by ThinkStation	00FC812	4X60G69025	R 1

## OVERVIEW

### **Nvidia Quadro K4200 4GB DVI-I, two DisplayPort Graphics card by ThinkStation (4X60G69026)**

Nvidia Quadro K4200 4GB DVI-I, two DisplayPort Graphics card by ThinkStation is based on Nvidia Kepler architecture, with 4GB ultra-fast GDDR5 graphics memory, it delivers Microsoft DirectX 11.0 and Shader model 5.0 hardware acceleration.

This Graphics Card is fully qualified with ThinkStation P500/P700/P900 systems.

#### Key Features and Capabilities:

- 4GB GDDR5 graphics memory
- Two DisplayPort ports
- One DVI-I port
- PCI Express 3.0 full-height form factor
- Based on Nvidia Kepler architecture, with GK104 GPU
- Delivers Microsoft DirectX 11.0 and Shader Model 5.0 hardware acceleration.

## ELECTRICAL SPECIFICATIONS

- PCI Express 2.0 x16 system interface
- Physical dimensions: 4.376 inches x 9.5 inches, single-slot
- Board power: 108 W
- Maximum core clock: 771MHz
- NVIDIA's CUDA Cores: 1344
- 10-bit internal display processing, including hardware support for 10-bit scan-out
- Full Microsoft DirectX 11.0 and Shader Model 5.0 support.
- Full OpenGL 4.4 support.
- API support for CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Java, Python, Fortran
- Kepler architecture
- Maximum Memory Clock: 2700 MHz
- Memory I/O interface: 256-bit
- Total board memory: 4 GB
  - 16 pieces of 128M x 16 GDDR5
- Memory bandwidth: 173 GB/s

- Display Connectors:
  - Two VESA DisplayPort connectors
  - One DVI-I connector
  - 3-pin mini-DIN stereo connector (available via optional bracket)
- Power connectors and headers:
  - One 6-pin PCI Express power connector
  - 4-pin high density header for stereo signal set and ground
- Supported platforms
  - Microsoft Windows 7(64-bit and 32-bit)
  - Microsoft Windows 8.1 (64-bit)
  - Linux Redhat 6.5
- BIOS Features: 2Mbit serial ROM, UEFI supported
- HDCP Supported
- Display Support:
  - 400 MHz integrated RAMDAC
    - Maximum resolution over VGA (through DVI to VGA cable): 2048 x 1536 x 32 bpp at 85Hz
  - Dual-link internal TMDS (DVI 1.0)
    - Maximum resolution over digital port(single GPU mode): 2560 x 1600 x 32 bpp at 60Hz (reduced blanking)
  - Single-link internal TMDS (DVI 1.0)
    - Maximum resolution over digital port(single GPU mode): 1920 x 1200 x 32 bpp at 60Hz (reduced blanking)
  - DisplayPort 1.2
    - Maximum resolution: 3840 x 2160 x 36 bpp at 60 Hz
  - HDMI (via optional dongle)
    - Maximum resolution: 1920 x 1080 x 32 bpp at 60 Hz

## **PHYSICAL SPECIFICATIONS -- UNPACKED**

- Approximate height: 111.5 mm (4.376 in)
- Approximate length: 242.1 mm (9.50 in)
- Approximate Weight: 450g

## **PHYSICAL SPECIFICATIONS -- PACKED**

- Physical Dimensions: 254mm \* 159mm \* 86mm
- Approximate Weight: 540g

## **Environmental Conditions**

- Operating Temperature: 0 deg to 55 deg (C)
- Storage temperature: -40 deg to 75 deg (C)
- Operating humidity: 5% to 90% RH
- Storage humidity: 5% to 90% RH
- Maximum power consumption: 108 watts

Bracket (FRU PN: 03T9869) is needed to support K4200 on P300 TWR, please make sure you have that bracket in P300 TWR Chassis to guarantee the assembly and installation is stable.

**Note:**

- ThinkStation P500, P700, P900 offers two PCI-e x16 graphic slots.
- The Quadro K4200 graphics board is a high powered board solution and it utilizes power from the PCI Express connector as well as the external power (a single 6-pin auxiliary power connector is required for Quadro K4200).
- Need Front Graphics Cooling Fan Assembly.

**AGENCY APPROVALS**

- BSMI
- CE
- C-Tick
- FCC/ICES
- VCCI

**SHIPMENT GROUP**

- *Graphic Card*
- *Warranty Poster*
- *Driver CD (w/ software and User Guide)*
- *Package (Brown Box)*

**FRU PARTS**

*Field Replaceable Units (FRU)*

<i>Description</i>	<i>FRU Part #</i>	<i>Option Part #</i>	<i>H S</i>
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Nvidia Quadro K4200 4GB DVI-I, two DisplayPort Graphics card by ThinkStation	00FC811	4X60G69026	R 1

## OVERVIEW

### **Nvidia Quadro K2200 4GB DDR5 Dual-Link DVI-I, two DisplayPort Graphics Card by ThinkStation (4X60G69027)**

This Graphics card is based on Nvidia Maxwell architecture, with 4GB ultra-fast GDDR5 graphics memory and supports up to four digital displays and one CRT.

This Graphics Card is fully qualified with ThinkStation P500/P700/P900 systems.

## ELECTRICAL SPECIFICATIONS

- PCI Express 2.0 x16 system interface
- Physical dimensions: 4.38 inches x 7.97 inches, single-slot
- Board power: 67.7 W
- Maximum core clock: 1045MHz
- NVIDIA's CUDA Cores: 640
- VESA DisplayPort 1.2
- 10-bit internal display processing, including hardware support for 10-bit scan-out
- Full Microsoft DirectX 11.1 and Shader Model 5.0 support.
- Full OpenGL 4.4 support.
- Programming support for CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Python, Fortran
- Maxwell architecture
- Maximum Memory Clock: 2500 MHz
- Memory I/O interface: 128-bit
- Total board memory: 4 GB
  - 8 pieces of 256M x 16 GDDR5
- Memory bandwidth: 80 GB/s
- Display Connectors:
  - Two DisplayPort outputconnectors
  - One dual-link DVI-I connector
- Supported platforms
  - Microsoft Windows 7(64-bit and 32-bit)
  - Microsoft Windows 8.1 (64-bit)
  - Linux Redhat 6.5
- BIOS Features: 2Mbit serial ROM, UEFI supported
- HDCP Supported
- Display Support:
  - 400 MHz integrated RAMDAC
    - Maximum resolution over VGA (through DVI to VGA cable): 2048 x 1536 x 32 bpp at 85Hz

- Dual-link internal TMDS (DVI 1.0)
  - Maximum resolution over digital port(single GPU): 2560 x 1600 x 32 bpp at 60Hz (reduced blanking)
- Single-link internal TMDS (DVI 1.0)
  - Maximum resolution over digital port(single GPU): 1920 x 1200 x 32 bpp at 60Hz (reduced blanking)
- DisplayPort 1.2
  - Maximum resolution: 4096 x 2160 x 30 bpp at 60 Hz

## **PHYSICAL SPECIFICATIONS -- UNPACKED**

- Approximate height: 111.5 mm (4.38 in)
- Approximate length: 202.9 mm (7.97 in)
- Approximate Weight: 240g

## **PHYSICAL SPECIFICATIONS -- PACKED**

- Physical Dimensions: 238mm \* 144mm \* 54mm
- Approximate Weight: 300g

## **Environmental Conditions**

- Operating Temperature: 0 deg to 55 deg (C)
- Storage temperature: -40 deg to 75 deg (C)
- Operating humidity: 5% to 90% RH
- Storage humidity: 5% to 90% RH

## **Note:**

- ThinkStation P500, P700, P900 offers two PCI-e x16 graphic slots.

## **AGENCY APPROVALS**

- BSMI
- CE
- C-Tick
- FCC/ICES
- VCCI



## SHIPMENT GROUP

- *Graphic Card*
- *Warranty Poster*
- *Driver CD (w/ software and User Guide)*
- *Package (Brown Box)*

## FRU PARTS

### *Field Replaceable Units (FRU)*

<i>Description</i> -----	<i>FRU</i>	<i>Option</i>			
	<i>Part #</i> -----	<i>Part #</i> -----	-	<i>H</i>	<i>S</i> -----
Nvidia Quadro K2200 4GB Link DVI-I, two DisplayPort Graphics Card by ThinkStation	00FC810	4X60G69027	R	1	DDR5 Dual-

## OVERVIEW

### **Nvidia Quadro K620 2GB DDR3 Dual-Link DVI-I, DisplayPort Graphics Card by ThinkStation (4X60G69028)**

This Graphics card is based on NVIDIA Maxwell architecture, with 2GB DDR3 graphics memory, and supports up to four digital display and one CRT.

This Graphics Card is fully qualified with ThinkStation P500/P700/P900 systems.

## ELECTRICAL SPECIFICATIONS

- PCI Express 2.0 x16 system interface
- Physical dimensions: 2.713 inches x 6.3 inches, single-slot
- Board power: 45 W
- Maximum core clock: 1059MHz
- NVIDIA's CUDA Cores: 384
- VESA DisplayPort 1.2
- 10-bit internal display processing, including hardware support for 10-bit scan-out
- Full Microsoft DirectX 11.1 and Shader Model 5.0 support.
- Full OpenGL 4.4 support.
- Programming support for CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Python, Fortran
- Maxwell architecture
- Maximum Memory Clock: 900 MHz
- Memory I/O interface: 128-bit
- Total board memory: 2 GB
  - 8 pieces of 128M x 16 DDR3
- Memory bandwidth: 29 GB/s
- Display Connectors:
  - One DisplayPort outputconnectors
  - One dual-link DVI-I connector
- Supported platforms
  - Microsoft Windows 7(64-bit and 32-bit)
  - Microsoft Windows 8.1 (64-bit)
  - Linux Redhat 6.5
- BIOS Features: 2Mbit serial ROM, UEFI supported
- HDCP Supported
- Display Support:
  - 400 MHz integrated RAMDAC
    - Maximum resolution over VGA (through DVI to VGA cable): 2048 x 1536 x 32 bpp at 85Hz

- Dual-link internal TMDS (DVI 1.0)
  - Maximum resolution over digital port(single GPU): 2560 x 1600 x 32 bpp at 60Hz (reduced blanking)
- Single-link internal TMDS (DVI 1.0)
  - Maximum resolution over digital port(single GPU): 1920 x 1200 x 32 bpp at 60Hz (reduced blanking)
- DisplayPort 1.2
  - Maximum resolution: 4096 x 2160 x 30 bpp at 60 Hz

## **PHYSICAL SPECIFICATIONS -- UNPACKED**

- Approximate height: 2.713 inches
- Approximate length: 6.3 inches
- Approximate Weight: 120g

## **PHYSICAL SPECIFICATIONS -- PACKED**

- Physical Dimensions: 177mm \* 144mm \* 53mm
- Approximate Weight: 180g

## **Environmental Conditions**

- Operating Temperature: 0 deg to 55 deg (C)
- Storage temperature: -40 deg to 75 deg (C)
- Operating humidity: 5% to 90% RH
- Storage humidity: 5% to 90% RH

## **Note:**

- ThinkStation P500, P700, P900 offers two PCI-e x16 graphic slots.

## **AGENCY APPROVALS**

- BSMI
- CE
- C-Tick
- FCC/ICES
- VCCI

## **SHIPMENT GROUP**

- Graphic Card
- Warranty Poster
- Driver CD (w/ software and User Guide)
- Package (Brown Box)

## FRU PARTS

### *Field Replaceable Units (FRU)*

<i>Description</i>	<i>FRU Part #</i>	<i>Option Part #</i>	<i>H S</i>
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Nvidia Quadro K620 2GB DDR3 Dual-Link DVI-I, DisplayPort Graphics Card by ThinkStation	00FC809	4X60G69028	R 1

## OVERVIEW

### **Nvidia Quadro K420 1GB DDR3 Dual-Link DVI-I, DisplayPort Graphics Card by ThinkStation (4X60G69029)**

This Graphics card is based on NVIDIA is based on Nvidia Kepler architecture, with 1GB DDR3 graphics memory, it supports up to four digital displays and one CRT.

This Graphics Card is fully qualified with ThinkStation P500/P700/P900 systems.

## ELECTRICAL SPECIFICATIONS

- PCI Express 2.0 x16 system interface
- Physical dimensions: 2.713 inches x 6.3 inches, single-slot
- Board power: 41 W
- Maximum core clock: 875 MHz
- NVIDIA's CUDA Cores: 194
- VESA DisplayPort 1.2
- 10-bit internal display processing, including hardware support for 10-bit scan-out
- Full Microsoft DirectX 11.0 and Shader Model 5.0 support.
- Full OpenGL 4.4 support.
- Programming support for CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Python, Fortran
- Kepler architecture
- Maximum Memory Clock: 891 MHz
- Memory I/O interface: 128-bit
- Total board memory: 1 GB
  - 8 pieces of 64M x 16 DDR3
- Memory bandwidth: 29 GB/s
- Display Connectors:
  - One DisplayPort output connectors
  - One dual-link DVI-I connector
- Supported platforms
  - Microsoft Windows 7(64-bit and 32-bit)
  - Microsoft Windows 8.1 (64-bit)
  - Linux Redhat 6.5
- BIOS Features: 2Mbit serial ROM, UEFI supported
- HDCP Supported

- Display Support:
  - 400 MHz integrated RAMDAC
    - Maximum resolution over VGA (through DVI to VGA cable): 2048 x 1536 x 32 bpp at 85Hz
  - Dual-link internal TMDS (DVI 1.0)
    - Maximum resolution over digital port(single GPU): 2560 x 1600 x 32 bpp at 60Hz (reduced blanking)
  - Single-link internal TMDS (DVI 1.0)
    - Maximum resolution over digital port(single GPU): 1920 x 1200 x 32 bpp at 60Hz (reduced blanking)
  - DisplayPort 1.2
    - Maximum resolution: 3840 x 2160 x 30 bpp at 60 Hz

## **PHYSICAL SPECIFICATIONS -- UNPACKED**

- Approximate height: 2.713 inches
- Approximate length: 6.3 inches
- Approximate Weight: 120g

## **PHYSICAL SPECIFICATIONS -- PACKED**

- Physical Dimensions: 177mm\*144mm\*53mm
- Approximate Weight: 180g

## **Environmental Conditions**

- Operating Temperature: 0 deg to 55 deg (C)
- Storage temperature: -40 deg to 75 deg (C)
- Operating humidity: 5% to 90% RH
- Storage humidity: 5% to 90% RH

### **Note:**

- ThinkStation P500, P700, P900 offers two PCI-e x16 graphic slots.

## **AGENCY APPROVALS**

- BSMI
- CE
- C-Tick
- FCC/ICES
- VCCI

## SHIPMENT GROUP

- *Graphic Card*
- *Warranty Poster*
- *Driver CD (w/ software and User Guide)*
- *Package (Brown Box)*

## FRU PARTS

### *Field Replaceable Units (FRU)*

<i>Description</i>	<i>FRU Part #</i>	<i>Option Part #</i>	<i>H S</i>
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Nvidia Quadro K420 1GB DDR3 Dual-Link DVI-I, DisplayPort Graphics Card by ThinkStation	00FC817	4X60G69029	R 1