Power Configurator

Lenovo ThinkStation P3 Tower Gen 2

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Overview

The ThinkStation P3 Tower Gen 2 platform is the latest entry level ThinkStation. The following power supply (PSU) options are available for P3 Tower Gen 2:

P3 Tower Gen 2 PSU options: 500W / 750W / 1100W

These power supplies allow the P3 Tower Gen 2 platform to support an expanded configuration of system components, notably the Arrow Lake CPU family and GPUs.

The goal of this document is to highlight the specifications of the system components with the highest power demand and allow users to make the best decisions when choosing the correct PSU for their hardware configuration.

Section 1 – Key Architectural Design

The P3 Tower Gen 2 utilizes a standard approach to powering system components. All onboard components and standard peripherals are powered through the system board power delivery. However, some add-in cards can require additional power provided by cable connections directly from the power supply (PSU). The diagrams in Figure 1 show a high-level design of how the power supply connects directly to the system board and add-in cards.

Note: In configurations without aux-powered GPUs, the unused aux power cable is bundled up and secured behind the front panel.

Although P3 Tower Gen 1 power supplies share the same wattages as Gen 2, they should not be used due to increased power capabilities of the Gen 2 PSUs for supporting the latest GPUs.

Figure 1 – P3 Tower Gen 2 Power Design 500W, 750W

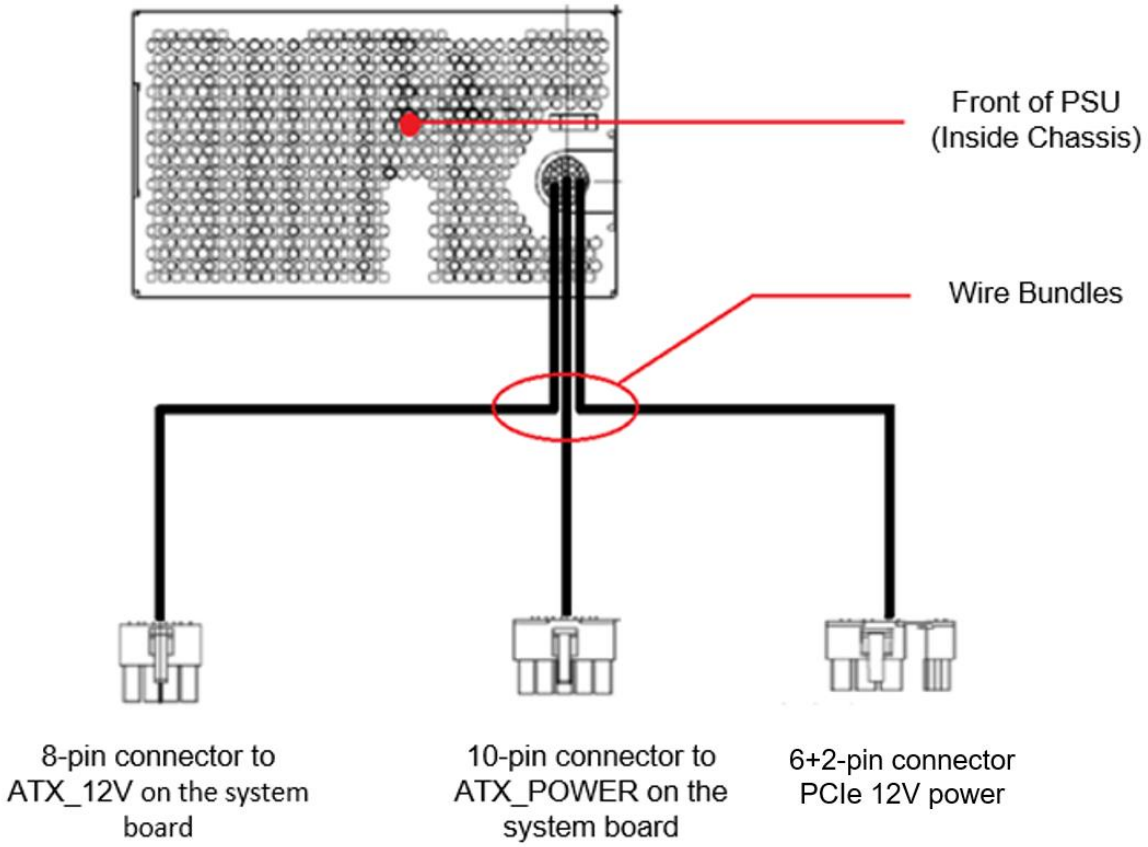
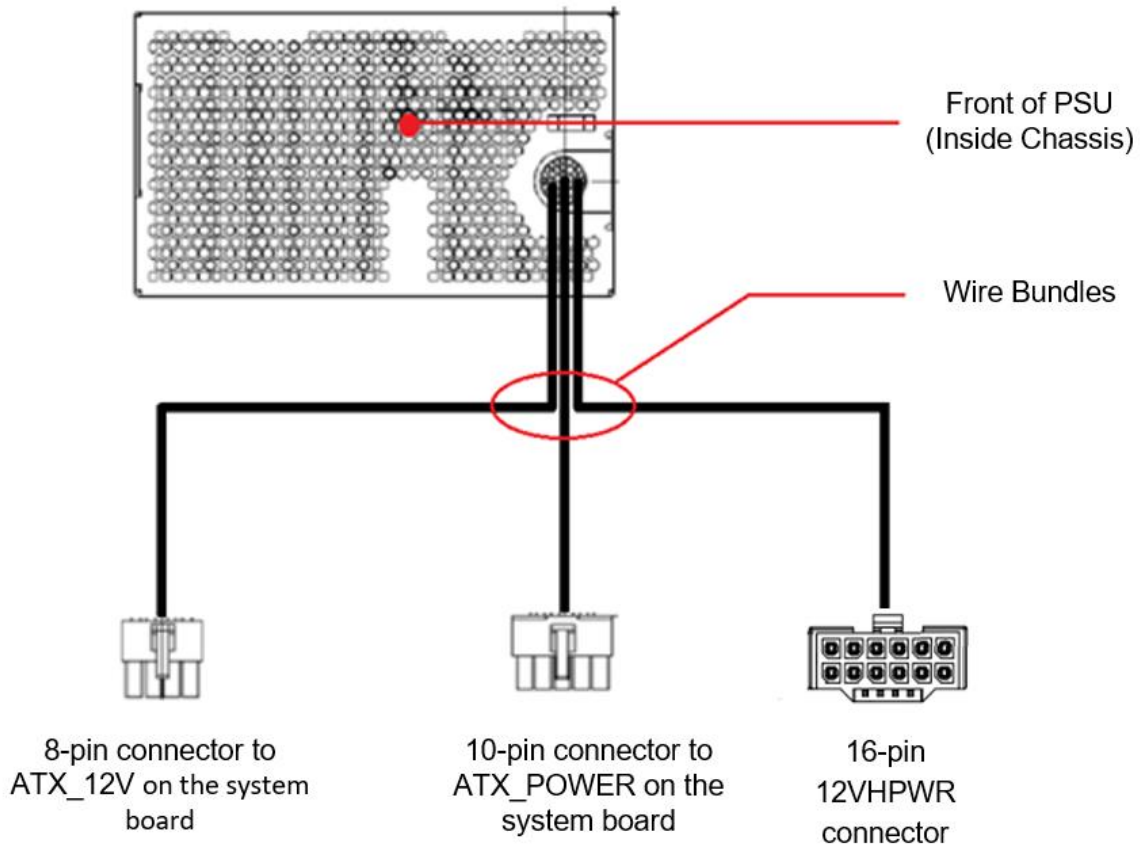


Figure 2 – P3 Tower Gen 2 Power Design 1100W

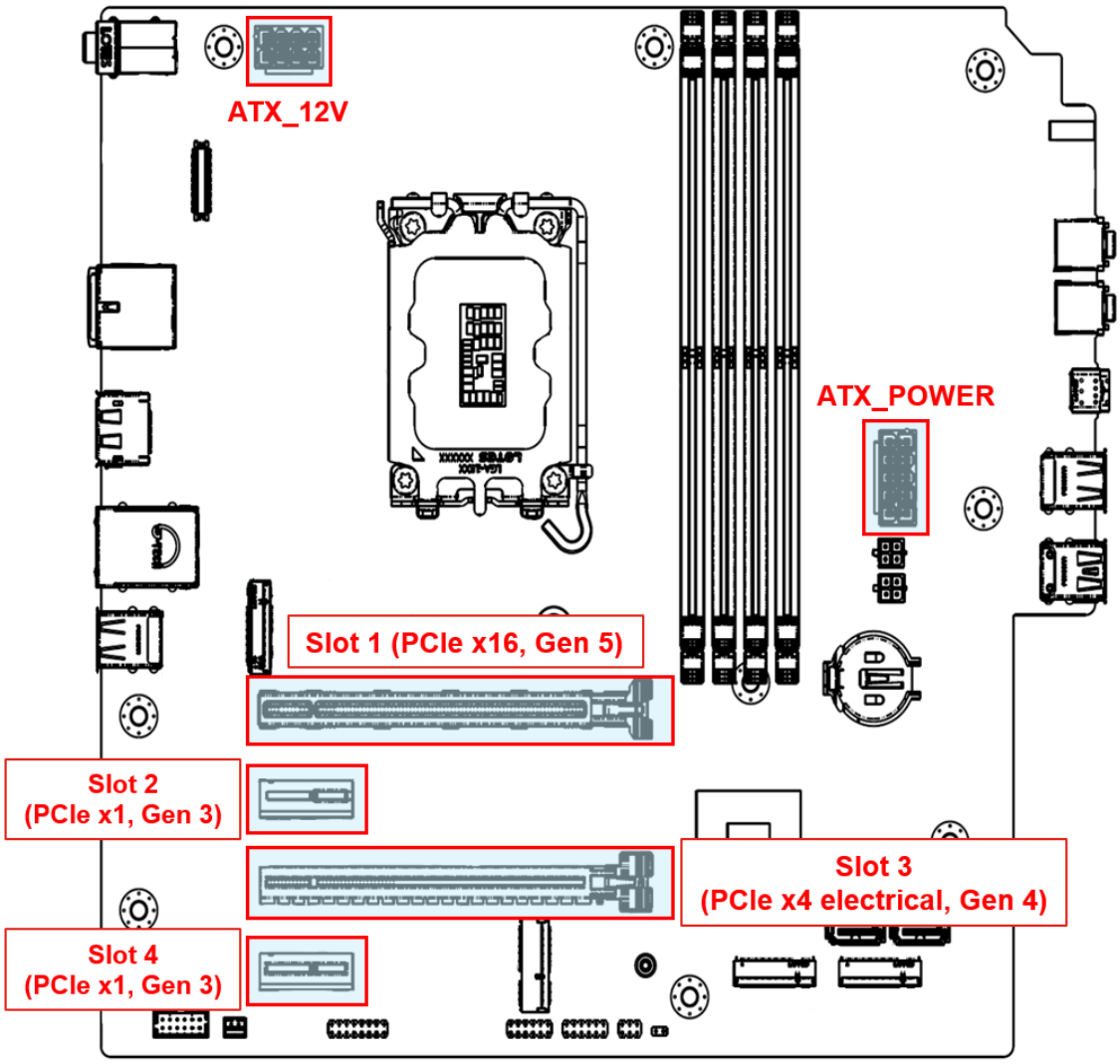


Note: In configurations with the 1100W PSU, the GPU power plug is a 12VHPWR connector instead of the traditional PCIe 6+2 pin connectors.

Below is a diagram of the P3 Tower Gen 2 motherboard, with callouts for the ATX power connections and PCIe slots.

Slot 1, which is PCIe x16 mechanically and electrically, is the primary slot for a discreet GPU. The remaining slots are primarily used for non-GPU PCIe devices, though Slot 3 can support some low-power GPUs in a dual graphics card config (see following sections for more information).

Figure 3 – P3 Tower Gen 2 Motherboard



Section 2 – Power Ratings for Key System Components

To fully understand the power capabilities of the ThinkStation P3 Tower Gen 2, it is important to know the power ratings of the individual system components.

Table 1 and 2 shows the power ratings for the various CPUs supported on P3 Tower Gen 2.

Table 1 - Arrow Lake CPU Power Ratings

CPU Name	CPU Power	Additional CPU information
Intel Ultra 9 285K	125W	3.7 GHz, 24 cores, DDR5-6400
Intel Ultra 7 265K	125W	3.9 GHz, 20 cores, DDR5-6400
Intel Ultra 5 245K	125W	4.2 GHz, 14 cores, DDR5-6400
Intel Ultra 9 285	65W	2.5 GHz, 24 cores, DDR5-6400
Intel Ultra 7 265	65W	2.4 GHz, 20 cores, DDR5-6400
Intel Ultra 5 245	65W	3.5 GHz, 14 cores, DDR5-6400
Intel Ultra 5 235	65W	3.4 GHz, 14 cores, DDR5-6400
Intel Ultra 5 225	65W	3.3 GHz, 10 cores, DDR5-6400

Note: All CPUs supported on P3 Tower Gen 2 have integrated GPU and can support up to 4 independent displays.

Some CPUs will require a separate motherboard VRM heatsink. See the end of this section for more info.

Table 3 lists the power ratings for the various add-in cards supported in P3 Tower Gen 2.

Table 3 - Add-in Card Power Ratings

Power Rating	Card Name	Card Width	Aux Power Connectors on GPU (if any)
360W	GeForce RTX 5080 (16GB)*	Quad Slot	12VHPWR
300W	RTX PRO 6000 Blackwell Max-Q Workstation Edition (96GB)*,** RTX PRO 5000 Blackwell (48GB)**	Dual Slot	12VHPWR
250W	RTX PRO 4500 Blackwell (32GB)** RTX 5000 Ada (32GB)	Dual Slot	12VHPWR
	GeForce RTX 5070 (12GB)*	Triple Slot	12VHPWR
145W	GeForce RTX 5060 (8GB)*	Dual Slot	12VHPWR
140W	RTX PRO 4000 Blackwell (24GB)** RTX 4000 Ada (20GB)	Single Slot	12VHPWR
115W	GeForce RTX 4060 (8GB)*	Dual Slot	8-pin (PCIe)
75W max	RTX A400 (4GB) RTX A1000 (8GB) AMD Radeon Pro W6400 (4GB)	Single Slot	None
	RTX 2000 Ada (16GB) GeForce RTX 3050 (6GB)*	Dual Slot	None
	Other PCIe Cards	Single Slot	None

*Availability dependent on geographic region
**Available after initial launch

Note: Stated Max Power Rating of GPUs may vary from specifications given by vendors or other online sources.

Some supported GPUs will require a separate motherboard VRM heatsink. See the end of this section for more info.

Table 4 lists the power cable adapters required for the various GPU cards supported in the P3 Tower Gen 2 based on PSU. For more detailed information refer to Appendix.

Table 4 - GPU power cable adapter requirements

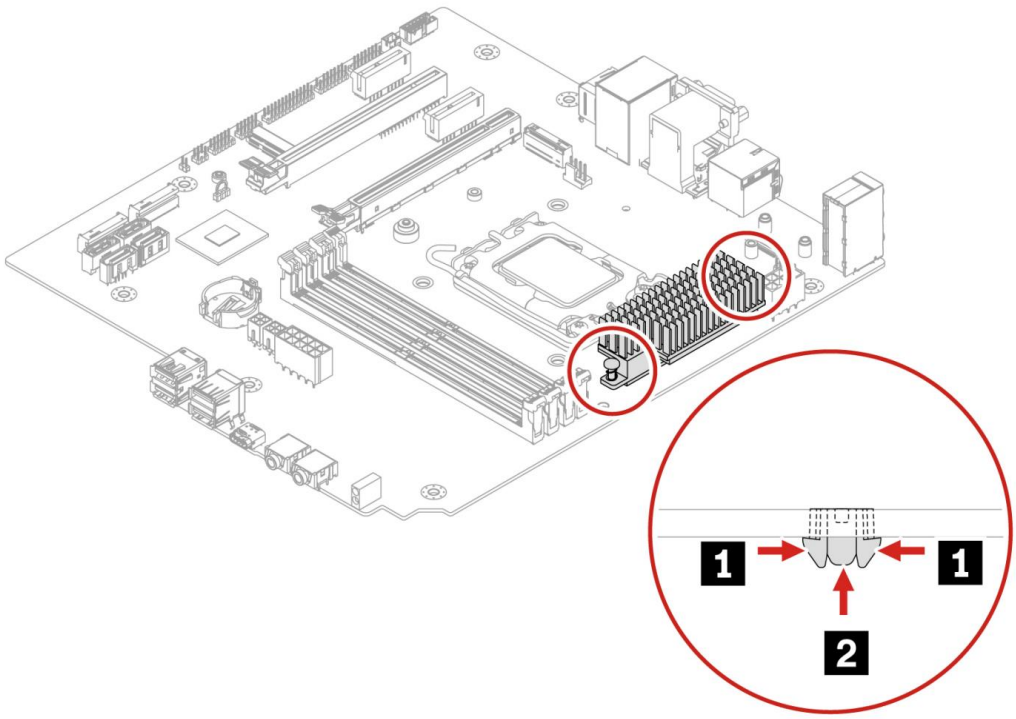
<table>
<tr><th rowspan="2">Card Name</th><th colspan="3">Power Cable Adapters for PSU</th></tr>
<tr><th>1100W (12VHPWR)</th><th>750W (PCIe 6+2)</th><th>500W (PCIe 6+2)</th></tr>
<tr><td>GeForce RTX 5080</td><td rowspan="7">No Adapter Required</td><td rowspan="7">8-Pin to 12VHPWR</td><td rowspan="5">Not Supported</td></tr>
<tr><td>RTX PRO 5000 Blackwell</td></tr>
<tr><td>RTX PRO 4500 Blackwell</td></tr>
<tr><td>RTX 5000 Ada</td></tr>
<tr><td>GeForce RTX 5070</td></tr>
<tr><td>RTX PRO 4000 Blackwell</td><td rowspan="2"></td></tr>
<tr><td>RTX 4000 Ada</td></tr>
<tr><td>GeForce RTX 5060</td><td rowspan="2">12VHPWR to Dual 8-Pin</td><td colspan="2" rowspan="2">No Adapter Required</td></tr>
<tr><td>GeForce RTX 4060</td></tr>
<tr><td>RTX A400
RTX A1000
RTX 2000 Ada
AMD Radeon W6400
GeForce RTX 3050</td><td colspan="3">No Adapter Required
(PCIe Slot Powered Only)</td></tr>
</table>

P3 Tower Gen 2 may require a motherboard VRM heatsink to be installed in some configurations due to the CPU and/or GPU. Below is a list of components that will require the VRM heatsink to be installed:

- Any CPU requiring the 125W heatsink:
  - Intel Ultra 9 285K
  - Intel Ultra 7 265K
  - Intel Ultra 5 245K
- Any of the following GPUs:
  - RTX PRO 6000 Blackwell Max-Q Workstation Edition
  - RTX PRO 5000 Blackwell
  - RTX PRO 4500 Blackwell
  - RTX 5000 Ada
  - GeForce RTX 5080
  - GeForce RTX 5070

If any of the above components is installed in a P3 Tower Gen 2, Lenovo recommends the installation of the VRM heatsink, next to the CPU socket.

VRM Part Number: (FRU# 5H40U93201 / 5H40U93202)



Note: Removal of the VRM heatsink will require the motherboard to be removed from the chassis to access its retention clips.

Section 3 – P3 Tower Gen 2 Power Configurations

P3 Tower Gen 2 supports 500W, 750W and 1100W power supplies, which allow customers to tailor their system to best meet the requirements of the components they intend to support. The following diagrams and notes show allowable hardware configurations for systems with any of the above power supplies.

Graphics cards should not be mixed in dual-GPU configs. Some supported GPU configurations might require additional cabling (see previous section).

Table 5 – P3 Tower Gen 2 1100W PSU Config Table

P3 Tower Gen 2 - 1100W PSU								
GPU	CPU Power							
	125W			65W				
	Ultra 9 285K	Ultra 7 265K	Ultra 5 245K	Ultra 9 285	Ultra 7 265	Ultra 5 245	Ultra 5 235	Ultra 5 225
RTX 5080 (360W)	1							
RTX PRO 6000 BW Max-Q WS (300W)								
RTX PRO 5000 BW (300W)								
RTX PRO 4500 BW (250W)								
RTX 5000 Ada (250W)								
RTX 5070 (250W)								
RTX 5060 (145W)								
RTX PRO 4000 BW (140W)								
RTX 4000 Ada (140W)								
RTX 4060 (115W)								
Non-aux (75W)	2							

Table 6 – P3 Tower Gen 2 750W PSU Config Table

P3 Tower Gen 2 - 750W PSU								
GPU	CPU Power							
	125W			65W				
	Ultra 9 285K	Ultra 7 265K	Ultra 5 245K	Ultra 9 285	Ultra 7 265	Ultra 5 245	Ultra 5 235	Ultra 5 225
RTX 5080 (360W)	Not Supported			1				
RTX PRO 6000 BW Max-Q WS (300W)								
RTX PRO 5000 BW (300W)								
RTX PRO 4500 BW (250W)								
RTX 5000 Ada (250W)								
RTX 5070 (250W)								
RTX 5060 (145W)								
RTX PRO 4000 BW (140W)								
RTX 4000 Ada (140W)								
RTX 4060 (115W)								
Non-aux (75W)	2							

Table 4 – P3 Tower Gen 2 500W PSU Config Table

P3 Tower Gen 2 - 500W PSU								
GPU	CPU Power							
	125W			65W				
	Ultra 9 285K	Ultra 7 265K	Ultra 5 245K	Ultra 9 285	Ultra 7 265	Ultra 5 245	Ultra 5 235	Ultra 5 225
RTX 5080 (360W)	Not Supported							
RTX PRO 6000 BW Max-Q WS (300W)								
RTX PRO 5000 BW (300W)								
RTX PRO 4500 BW (250W)								
RTX 5000 Ada (250W)								
RTX 5070 (250W)								
RTX 5060 (145W)				1				
RTX PRO 4000 BW (140W)								
RTX 4000 Ada (140W)								
RTX 4060 (115W)								
RTX 3050 (70W)								
AMD W6400 (75W)			2			2		
Non-aux (75W)			1					

Important power configuration notes:

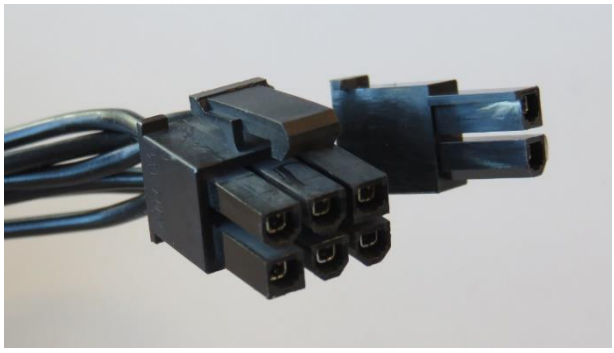
- All P3 Tower Gen 2 systems provide a single dedicated 12V rail.
- A side fan assembly is included in every P3 Tower Gen 2 equipped with a 750W or 1100W PSU to provide additional cooling to high-end cards supported in those models. A system with a 500W PSU will not have this fan assembly.
    - SATA Bay 4 is not supported for 750W and 1100W PSUs due to interference with the side fan assembly.
- Most supported GPUs require a custom extender bracket to help secure the card in the chassis. Some also require a top retainer as well. Each requires one M3x8 screw (FRU# 5S10U51624) to secure to the chassis. For more info, see Appendix.
- Due to physical interference, the parallel port cable or rear USB 2.0 cable cannot be installed at the same time as an RTX 5080.

Other Configuration Notes:

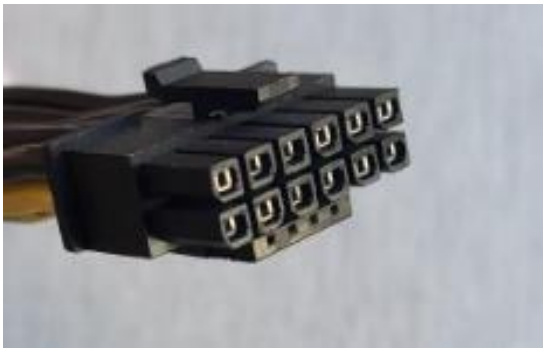
- Officially supported configurations could still be limited by additional factors not defined within this document.
- Some supported GPU/add-in-card configurations might require additional cabling to be supported. See Appendix.
- **For configurations that are not listed above but appear to be feasible, please work with the Technical Solutions Team to have the configuration validated/vetted.**

Section 4 – Appendix

This section contains additional useful information about the hardware used to power adapter cards in ThinkStation systems.



6+2 pin PCIe Power Connector



12HPWR Connector

12VHPWR (female) to dual 6+2-pin Power Cable Adapter

(FRU# 5C10U58750, part of Option Kit 4XF1M24241)

8-pin (female) to 12VHPWR (male) Power Cable Adapter (FRU# 5C10U58794)

Many of the GPUs supported on P3 Tower Gen 2 have additional hardware that is used to help support the GPU's weight. Below is an example of such, with a top-side retainer and GPU extender bracket (highlighted in **red**) used to hold an RTX 5000 Ada during shipment and while the system is in use.

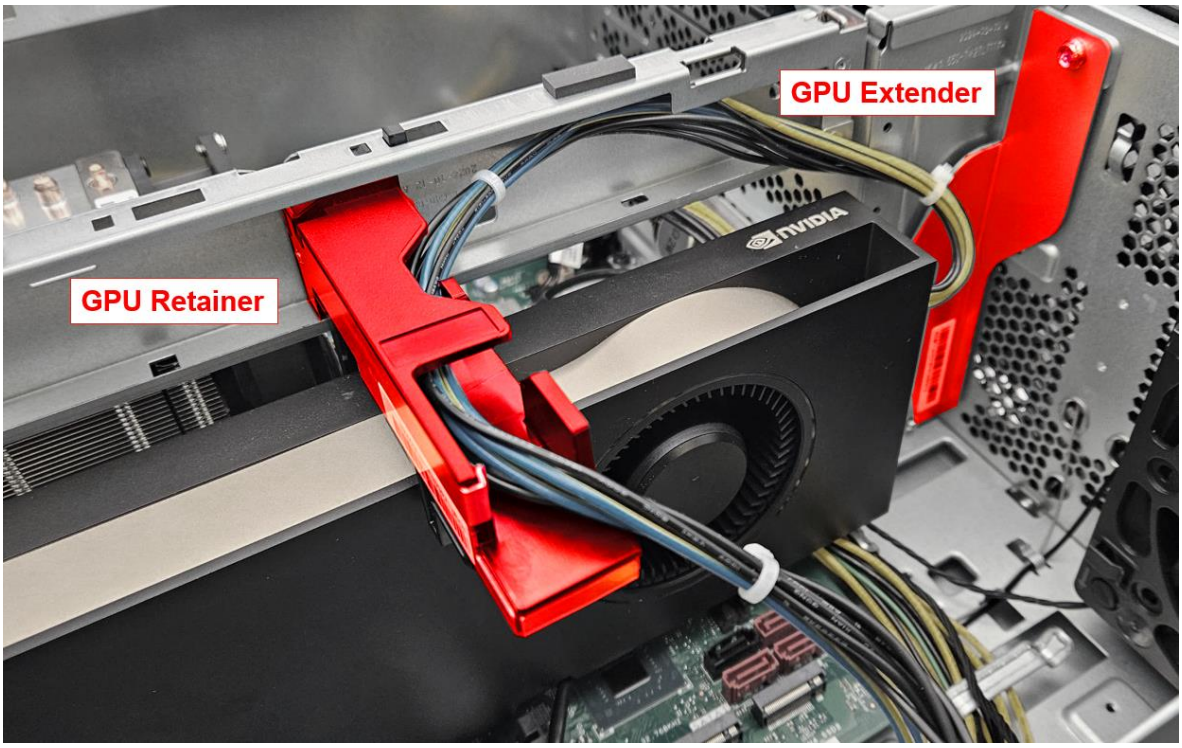


Table 5 – P3 Tower Gen 2 GPU Bracket & Extender Parts

GPU	Extender FRU#	Retainer FRU#	Additional Screws
RTX 2000 Ada	5M11H28668	N/A	2x M3x8
RTX 4000 Ada	5M11H28732	N/A	1x 6-32 2x M3x8
RTX PRO 5000 BW **RTX PRO 4500 BW** **RTX 5000 Ada**	5M11H28663	5M11H28728	1x 6-32 2x M3x8
RTX 5080	Retainer + Bracket: 5M11H28729		3x 6-32 2x M3x5
RTX 5060 **RTX 4060**	N/A	5M11N44468	N/A
RTX 5070	5M11H28654	5M11H28663	1x 6-32 2x M3x8

Revision History

Version	Date	Author	Changes/Updates
1.0	6/23/25	Chris C.	Initial launch release.