

# ThinkSystem AMD Alveo V70 Datacenter Accelerator Adapter

## Product Guide

The ThinkSystem AMD Alveo V70 Datacenter Accelerator Adapter is an energy-efficient AI inference card designed for video analytics and natural language processing (NLP) workloads and offers industry standard framework support, directly compiling models trained in TensorFlow and PyTorch. It offers AI Engines that provide a tightly integrated heterogeneous compute platform for NLP and Convolutional and Recurrent Neural Networks (CNN/RNN) acceleration, targeting cloud and edge applications.

The following figure shows the ThinkSystem AMD Alveo V70 Datacenter Accelerator Adapter.



Figure 1. ThinkSystem AMD Alveo V70 Datacenter Accelerator Adapter

### Did you know?

The Alveo V70 accelerator is well suited for edge applications. With a 75W power envelope, the V70 is an efficient accelerator that helps reduce cost per AI channel and provides high channel density for video applications.

## Part number information

The following table shows the part numbers for the Alveo V70 accelerator.

Table 1. Ordering information

Part number	Feature code	Description
4X67A86560	BVVC	ThinkSystem AMD Alveo V70 Datacenter Accelerator Adapter

The option part number includes the following:

- One Alveo V70 accelerator
- full-height (3U) adapter bracket attached
- Low-profile (2U) adapter bracket
- Documentation

## Use cases

The Alveo V70 accelerator is suitable for the following AI Inference use cases:

- Video Content Analysis
- Natural Language Processing
- Smart City / Smart Retail

## Technical specifications

The following table lists the processing specifications and performance of the Alveo V70 accelerator.

Table 2. Specifications

Feature	Specification
Architecture	AMD XDNA – Versal AI Core
AI engine	2nd Gen AIE-ML tiles
Peak INT8 integer performance	404 TOPS*
Peak BF16 floating point performance	202 TOPS*
Memory bandwidth	47.6 TB/s for internal memory 76.8 GB/s for external DDR
High-density video decoder	96 channels of 1920x1080p (10 frames per second using H.264/H.265)
Host interface	PCIe Gen5 x8
Form Factor	Half Height, Half Length
Cooling	Passive
Power (TDP)	75 W

\* with 50% weight sparsity

## Server support

The following tables list the ThinkSystem servers that are compatible.

Table 3. Server support (Part 1 of 4)

Part Number	Description	AMD V3				2S Intel V3			4S 8S Intel V3			Multi Node		GPU Rich				1S V3			
		SR635 V3 (7D9H / 7D9G)	SR655 V3 (7D9F / 7D9E)	SR645 V3 (7D9D / 7D9C)	SR665 V3 (7D9B / 7D9A)	ST650 V3 (7D7B / 7D7A)	SR630 V3 (7D72 / 7D73)	SR650 V3 (7D75 / 7D76)	SR850 V3 (7D97 / 7D96)	SR860 V3 (7D94 / 7D93)	SR950 V3 (7DC5 / 7DC4)	SD535 V3 (7DD8 / 7DD1)	SD530 V3 (7DDA / 7DD3)	SD550 V3 (7DD9 / 7DD2)	SR670 V2 (7Z22 / 7Z23)	SR675 V3 (7D9Q / 7D9R)	SR680a V3 (7DHE)	SR685a V3 (7DHC)	ST50 V3 (7DF4 / 7DF3)	ST250 V3 (7DCF / 7DCE)	SR250 V3 (7DCM / 7DCL)
4X67A86560	ThinkSystem AMD Alveo V70 Datacenter Accelerator Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 4. Server support (Part 2 of 4)

Part Number	Description	Edge					Super Computing					1S Intel V2			2S Intel V2		
		SE350 (7Z46 / 7D1X)	SE350 V2 (7DA9)	SE360 V2 (7DAM)	SE450 (7D8T)	SE455 V3 (7DBY)	SD665 V3 (7D9P)	SD665-N V3 (7DAZ)	SD650 V3 (7D7M)	SD650-I V3 (7D7L)	SD650-N V3 (7D7N)	ST50 V2 (7D8K / 7D8J)	ST250 V2 (7D8G / 7D8F)	SR250 V2 (7D7R / 7D7Q)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)
4X67A86560	ThinkSystem AMD Alveo V70 Datacenter Accelerator Adapter	N	N	N	N	6	N	N	N	N	N	N	N	N	N	N	N

Table 5. Server support (Part 3 of 4)

Part Number	Description	AMD V1					Dense V2				4S V2	8S	4S V1		1S Intel V1						
		SR635 (7Y98 / 7Y99)	SR655 (7Y00 / 7Z01)	SR655 Client OS		SR645 (7D2Y / 7D2X)	SR665 (7D2W / 7D2V)	SD630 V2 (7D1K)	SD650 V2 (7D1M)	SD650-N V2 (7D1N)	SN550 V2 (7Z69)	SR850 V2 (7D31 / 7D32)	SR860 V2 (7Z59 / 7Z60)	SR950 (7X11 / 7X12)	SR850 (7X18 / 7X19)	SR850P (7D2F / 2D2G)	SR860 (7X69 / 7X70)	ST50 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)	SR250 (7Y52 / 7Y51)
4X67A86560	ThinkSystem AMD Alveo V70 Datacenter Accelerator Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 6. Server support (Part 4 of 4)

Part Number	Description	2S Intel V1								Dense V1			
		ST550 (7X09 / 7X10)	SR530 (7X07 / 7X08)	SR550 (7X03 / 7X04)	SR570 (7Y02 / 7Y03)	SR590 (7X98 / 7X99)	SR630 (7X01 / 7X02)	SR650 (7X05 / 7X06)	SR670 (7Y36 / 7Y37)	SD530 (7X21)	SD650 (7X58)	SN550 (7X16)	SN850 (7X15)
4X67A86560	ThinkSystem AMD Alveo V70 Datacenter Accelerator Adapter	N	N	N	N	N	N	N	N	N	N	N	N

## Operating system support

The following table lists the supported operating systems.

**Tip:** These tables are automatically generated based on data from [Lenovo ServerProven](#).

Table 7. Operating system support for ThinkSystem AMD Alveo V70 Datacenter Accelerator Adapter, 4X67A86560

Operating systems	SE455 V3
Red Hat Enterprise Linux 8.6	Y
Ubuntu 20.04.5 LTS	Y

## Software

AMD Vitis™ AI provides a comprehensive AI inference development platform for AMD adaptive SoCs and Alveo™ data center accelerators providing standard framework support, directly compiling models trained in TensorFlow and PyTorch . Vitis AI plugs into common software developer tools and utilizes a rich set of optimized open-source libraries to empower software developers with machine learning acceleration as part of their software code.

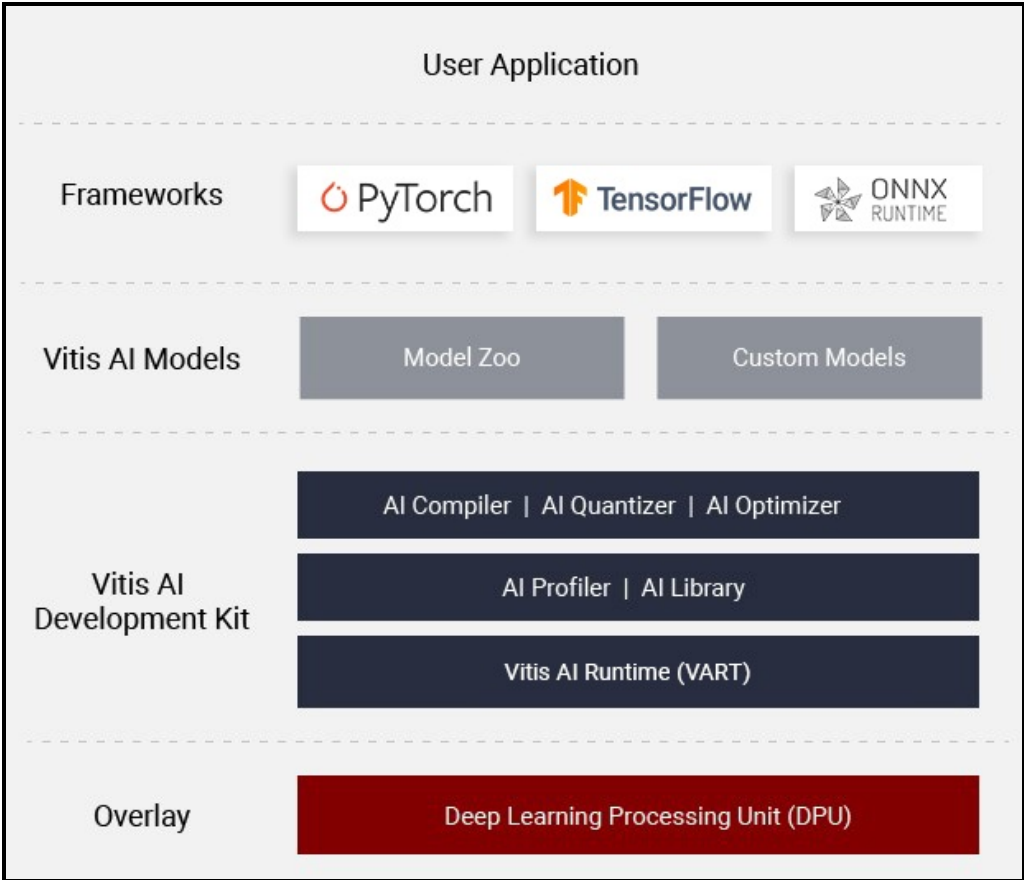


Figure 2. Programming model

For more information see the AMD Vitis Unified Software Platform page:  
<https://www.xilinx.com/products/design-tools/vitis/vitis-platform.html>

## Auxiliary power cables

The Alveo V70 accelerator does not require an auxiliary power cable.

## Regulatory approvals

The Alveo V70 accelerator has the following regulatory approvals:

- RCM
- BSMI
- CE
- FCC
- ICES
- KCC
- cUL, UL
- VCCI

## Operating environment

The Alveo V70 accelerator has the following operating characteristics:

- Ambient temperature
  - Operational: 0°C to 50°C
  - Non-operational: -40°C to 75°C
- Humidity: 5-85% relative humidity

## Warranty

One year limited warranty. When installed in a Lenovo server, the adapter assumes the server's base warranty and any warranty upgrades.

## Related publications

For more information, refer to these documents:

- ThinkSystem and ThinkAgile GPU Summary:  
<https://lenovopress.lenovo.com/lp0768-thinksystem-thinkagile-gpu-summary>
- ServerProven compatibility:  
<http://www.lenovo.com/us/en/serverproven>
- AMD Alveo V70 product page:  
<https://www.xilinx.com/applications/data-center/v70.html>
- AMD Vitis Unified Software Platform page:  
<https://www.xilinx.com/products/design-tools/vitis/vitis-platform.html>

## Related product families

Product families related to this document are the following:

- [GPU adapters](#)

## Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area. Any reference to a Lenovo product, program, or service is not intended to state or imply that only that Lenovo product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any Lenovo intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any other product, program, or service. Lenovo may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

Lenovo (United States), Inc.  
8001 Development Drive  
Morrisville, NC 27560  
U.S.A.  
Attention: Lenovo Director of Licensing

LENOVO PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. Lenovo may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

The products described in this document are not intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. The information contained in this document does not affect or change Lenovo product specifications or warranties. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Lenovo or third parties. All information contained in this document was obtained in specific environments and is presented as an illustration. The result obtained in other operating environments may vary. Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any references in this publication to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product, and use of those Web sites is at your own risk. Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

**© Copyright Lenovo 2024. All rights reserved.**

This document, LP1811, was created or updated on November 3, 2023.

Send us your comments in one of the following ways:

- Use the online Contact us review form found at:  
<https://lenovopress.lenovo.com/LP1811>
- Send your comments in an e-mail to:  
[comments@lenovopress.com](mailto:comments@lenovopress.com)

This document is available online at <https://lenovopress.lenovo.com/LP1811>.

## Trademarks

Lenovo and the Lenovo logo are trademarks or registered trademarks of Lenovo in the United States, other countries, or both. A current list of Lenovo trademarks is available on the Web at <https://www.lenovo.com/us/en/legal/copytrade/>.

The following terms are trademarks of Lenovo in the United States, other countries, or both:

Lenovo®

ServerProven®

ThinkAgile®

ThinkSystem®

The following terms are trademarks of other companies:

AMD, AMD XDNA™, Alveo™, Versal™, and Vitis™ are trademarks of Advanced Micro Devices, Inc.

Intel® is a trademark of Intel Corporation or its subsidiaries.

Linux® is the trademark of Linus Torvalds in the U.S. and other countries.

Other company, product, or service names may be trademarks or service marks of others.