

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/V4				4S 8S Intel V3		Multi Node V3/V4		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)	SR630 V4 (7DG8 / 7DG9)	SR650 V4 (7DGC / 7DGD)	SR650a V4 (7DGC / 7DGD)	SR850 V3 (7D97 / 7D96)	SR860 V3 (7D94 / 7D93)	SR950 V3 (7DC5 / 7DC4)	SD535 V3 (7DD8 / 7DD1)	SD530 V3 (7DDA / 7DD3)	SD550 V3 (7DD9 / 7DD2)	ST45 V3 (7DH4 / 7DH5)	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	GPU Rich				Edge				Super Computing									
		SR670 V2 (7Z22 / 7Z23)	SR675 V3 (7D9Q / 7D9R)	SR680a V3 (7DHE)	SR685a V3 (7DHC)	SR780a V3 (7DJ5)	SE100 (7DGR)	SE350 (7Z46 / 7D1X)	SE350 V2 (7DA9)	SE360 V2 (7DAM)	SE450 (7D8T)	SE455 V3 (7DBY)	SC750 V4 (7DDJ)	SC777 V4 (7DKA)	SD665 V3 (7D9P)	SD665-N V3 (7DAZ)	SD650 V3 (7D7M)	SD650-I V3 (7D7L)	SD650-N V3 (7D7N)
4X67A86560	ThinkSystem AMD Alveo V70 Datacenter Accelerator Adapter	N	N	N	N	N	N	N	N	N	6	N	N	N	N	N	N	N	N

Table 5. Server support (Part 3 of 4)

Part Number	Description	1S Intel V2			2S Intel V2			AMD V1			Dense V2			4S V2	8S				
		ST150 V2 (7D8K / 7D8J)	ST250 V2 (7D8G / 7D8F)	SR250 V2 (7D7R / 7D7Q)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)	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)
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

Table 6. Server support (Part 4 of 4)

Part Number	Description	4S V1			1S Intel V1			2S Intel V1							Dense V1					
		SR850 (7X18 / 7X19)	SR850P (7D2F / 2D2G)	SR860 (7X69 / 7X70)	ST50 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)	SR250 (7Y52 / 7Y51)	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	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.

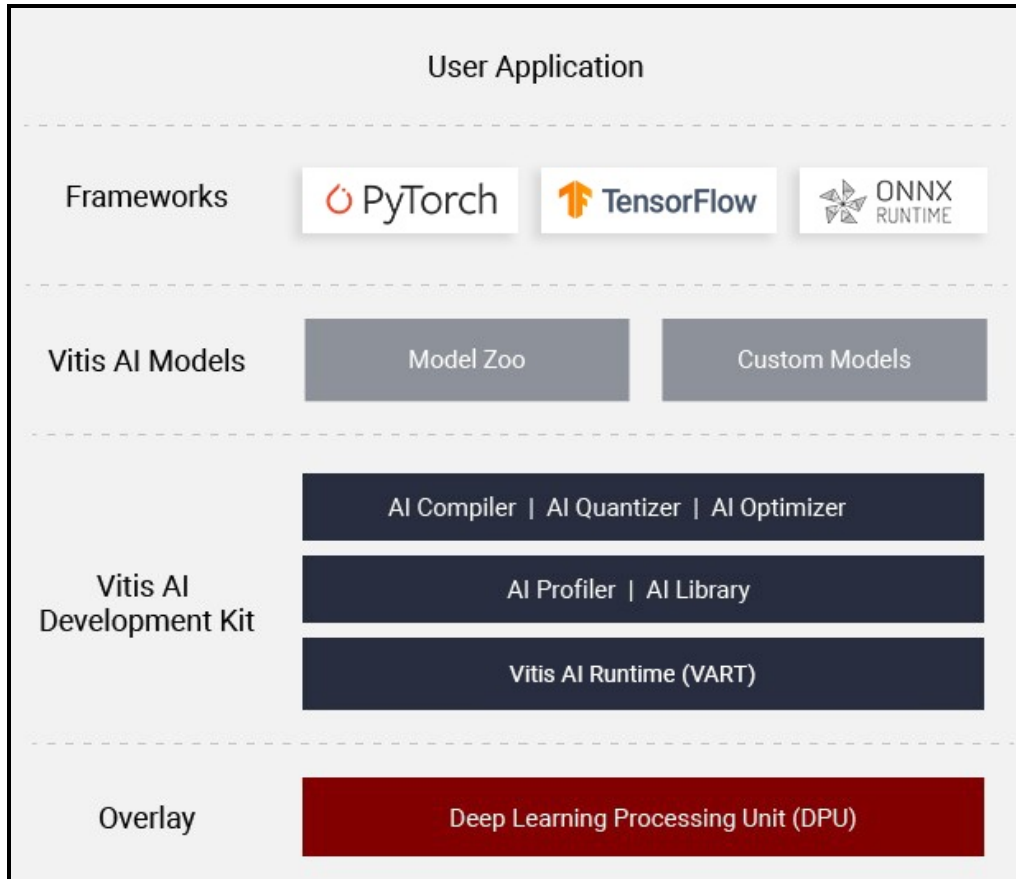


Figure 2. Programming model

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](#)

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