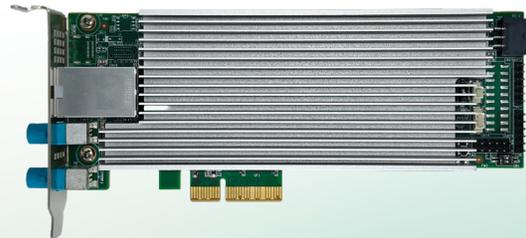




## Modalix HHL PCIe Card



### Overview

The Modalix HHL PCIe card provides the proven performance of the Modalix MLSoC™ architecture in a compact, low-profile PCIe deployment-ready form factor, purpose-built to Scale Physical AI applications.

The Modalix system architecture seamlessly integrates multiple compute engines and peripherals, delivering **best-in-class performance per watt** for advanced workloads, including multimodal transformers, Large Language Models (LLMs), Large Multimodal Models (LMMs), and Generative AI (GenAI). It also supports legacy convolutional neural networks (CNNs) and traditional computer vision (CV) algorithms, ensuring compatibility across modern and established ML pipelines.

### Accelerated Development

SiMa.ai's **ONE Platform** enables fast AI development and deployment of on-device AI. With its user-friendly **Palette™ software suite** and **Edgematic™**, users enjoy efficient, streamlined workflows.

Bring your ONNX model, tune it with SiMa's Model SDK and develop applications using popular frameworks like, OpenCV. Developers can iterate quickly and efficiently across various AI applications.



### Benefits

#### Easy System Integration

Compact HHL PCIe form factor (167.65 x 68.9 x 20.32 mm) with Ethernet port and GSML camera connectors, for high-speed, long-range image sensor connectivity.

#### Best-in-Class Processing

Modalix purpose-built MLSoC architecture is optimized for demanding Physical AI workloads, delivering 50 TOPS of computing power.

#### Scalable Performance & Easy to Use

The Modalix HHL PCIe card is available with 8GB, and 16GB LPDDR5 memory options, providing scalable performance and eliminating any HW design.

#### Reliable and Efficient

Available in industrial and commercial temperature grades with advanced thermal management, real-time performance monitoring, ensuring robust and reliable performance and power efficiency on device.

### Target Applications

- Smart Vision
- Drones
- Robotics
- Industry 4.0
- Automotive
- Smart Retail
- Healthcare
- Military & Defence
- Smart City
- Conversational Interface

## Modalix HHHL PCIe Card Feature Highlights

### Machine Learning Accelerator (MLA)

- 50 TOPs ( BF16, INT8, INT16)
- Support of LLMs, Neural networks, and GenAI

### Application Compute Unit (ACU)

- 8x Arm Cortex-A65 @1.4 GHz
- 32k Dhrystone MIPS

### Memory

- 16/8GB of on-board 128-bit LPDDR5 (6400 Mbps) system memory

### Boot and Security Unit (BSU)

- Secure boot with boot code authentication & encryption
- Secure key storage & management
- Security engine for user code

### Video Codec

- Decode H.264/H.265/AV1 4K60
- Encode H.264/H.265/ 4K60

### Computer Vision Unit (CVU)

- 4-core Synopsys EV74 DSP @ 1 GHz
- 720 16-bit GOPS

### Low-latency Image Signal Processor (ISP)

- Arm Mali -C-1 @ 1.2 GHz

### Peripherals

- 2x GSML Camera Interfaces
- x8 PCIe Gen5 EP
- 1 x 10Gb Ethernet PHY
- 1 x Micro SD Interface
- 2 x UART ports

### Storage

- 32GB eMMC flash
- 16 MB QSPI flash
- 2Mb EEPROM

### Extreme low Power

- No external power source required
- No Fan required

### Compact Form Factor

- PCIe HHHL (Half-height, Half-length)
- Dimensions: 167.65 x 68.9 x 20.32 mm
- Wide Temperature Range support
  - -40 to +85 °C

## Software-First Development Environment

Compiling a ML-trained model for specific hardware can be challenging, especially when the software toolchain and hardware are not co-designed. SiMa.ai's software-first approach provides a software architecture that allows support for a broad range of ML models through the ONNX framework.

SiMa.ai's Palette™ software runs effortlessly on both the MLSoC and the Modalix MLSoC. With over 650 precompiled models, the software ensures a seamless user experience and provides industry-leading performance-per-watt. SiMa's effortless ML software framework supports any framework, network, mode, or sensor, allowing Physical AI applications to run entirely on a single device, supporting a broad range of applications.

## Ordering Information

### Product Description

Modalix HHHL PCIe card 8GB  
Modalix HHHL PCIe card 16 GB

Standart Product  
Standart Product

### Temperature Grade

Commercial & Industrial  
Commercial & Industrial



## About SiMa

SiMa.ai is a leader in Physical AI, delivering a purpose-built, software-centric platform that brings best-in-class performance, power efficiency, and ease of use to Physical AI applications. Focused on scaling Physical AI across robotics, automotive, industrial automation, aerospace & defense, smart vision, and healthcare, SiMa.ai is led by seasoned technologists and backed by top-tier investors. Headquartered in San Jose, California.

Learn more at [www.sima.ai](http://www.sima.ai).

