

# METIS COMPUTE BOARD

With ARM-based RK3588



# METIS



**Security**



**Industry 4.0**



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**Mobility**



**Logistics**



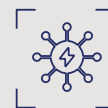
**Robotics**



**Medical**



**Hospitality**



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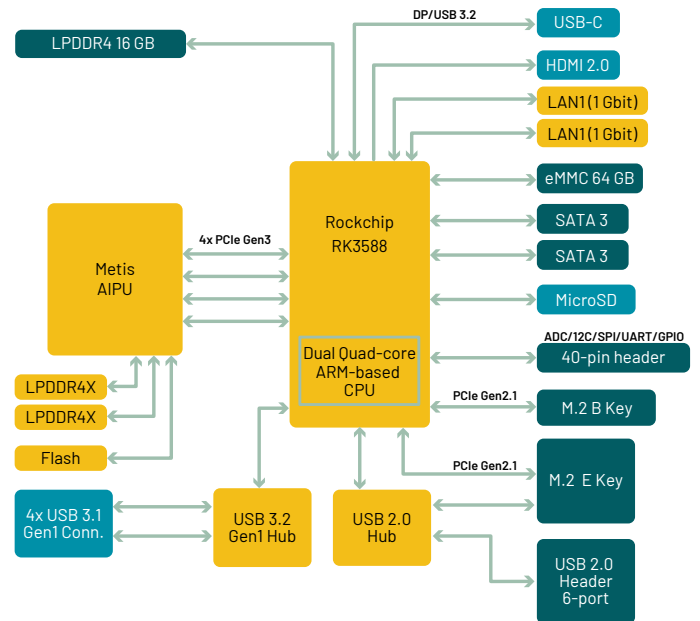


AXELERA AI METIS COMPUTE BOARD OFFERS EFFICIENT AI COMPUTE FOR MULTI-STREAM APPLICATIONS IN A COMPACT DESIGN. IT FEATURES A QUAD-CORE METIS AIPU AND AN ARM-POWERED RK3588 PROCESSOR.

## HIGH-PERFORMANCE EDGE COMPUTE

A compact, power-efficient SBC and complete IoT platform engineered to run AI applications that require intense compute resources on devices at the edge. Featuring an ARM-based CPU, with the Metis AIPU providing AI acceleration. Axelera's Voyager SDK simplifies app development, with connectivity and storage options to suit almost all use cases.

## BLOCK DIAGRAM



## KEY TECHNICAL SPECIFICATIONS

CPU	RK3588 with 16 GB of LPDDR4 (featuring a quad-core Cortex-A76 and a quad-core Cortex-A55)
AI Accelerator	Metis AIPU with up to 16 GB of LPDDR4X
Storage	64 GB onboard eMMC, 2x SATA ports, MicroSD slot
Network	2x Gigabit LAN
Expansion Slots	1x M.2 E key, 1x M.2 B key
Other IO	GPIOs, UART, ADC, I2C, SPI
USB Ports	4x USB 3.1 Gen1, 1x USB-C, 3x USB 2.0 headers
Video Interfaces	HDMI 2.0, Display port (up to 4,096 x 2,160 @ 24 Hz)
Power Input	12 V DC input
Operating Temp	-20 ~ 70°C
Dimensions	mini-ITX 170x170 mm

## METIS COMPUTE BOARD - KEY FEATURES

- SBC with integrated Metis AI accelerator:** A single-board computer (SBC) based on a Metis AIPU with a four-lane PCIe connection to the CPU makes it possible to run high-performance inference tasks, suitable for running multi-stream and multi-model applications.
- Local compute for Edge/IoT devices:** Compact form factor SBC for low system complexity. With exceptional energy efficiency, the Metis Compute Board is designed for devices at the Edge that require intense compute resources.
- ARM-based application processor:** Powered by two quad-core ARM Cortex CPUs for general-purpose processing, the board is powerful enough to support nearly any use case, while ensuring compatibility with diverse application requirements.
- Broad range of interfaces:** Multiple connectivity options, including four USB ports, HDMI 2.0 port, and two gigabit LAN ports for networks and peripherals. Other interface capabilities include: UART, I2C, GPIO options make it simple to connect to and integrate with sensors and other peripherals.
- Complete development stack:** Including a Board Support Package (BSP) and the Axelera Voyager SDK the Metis Compute Board makes a complete platform to accelerate deployment, reduce development overhead, and simplify system integration.
- Scalable platform:** The Metis platform is designed to be adaptable to evolving AI needs. With its unique architecture based on RISC-V and D-IMC (digital in-memory compute), Axelera AI's model zoo is continuously evolving to support the latest and most demanding neural networks.

## EASY TO INTEGRATE

The Metis SBC is designed as a complete system for effortless deployment. With a pre-configured **Board Support Package (BSP)** based on **Yocto**, it supports industry-standard frameworks and APIs, ensuring developers can hit the ground running. Complemented by the **Voyager SDK**, the board simplifies AI model deployment and optimization, enabling fast prototyping and reduced time-to-market. Whether you're running TensorFlow, PyTorch, or ONNX models, the Voyager SDK provides the tools you need to get started quickly and scale confidently.

# VOYAGER.SDK

Thanks to Voyager Software Development Kit (SDK), users have a simple software integration path for AI inference at the edge:

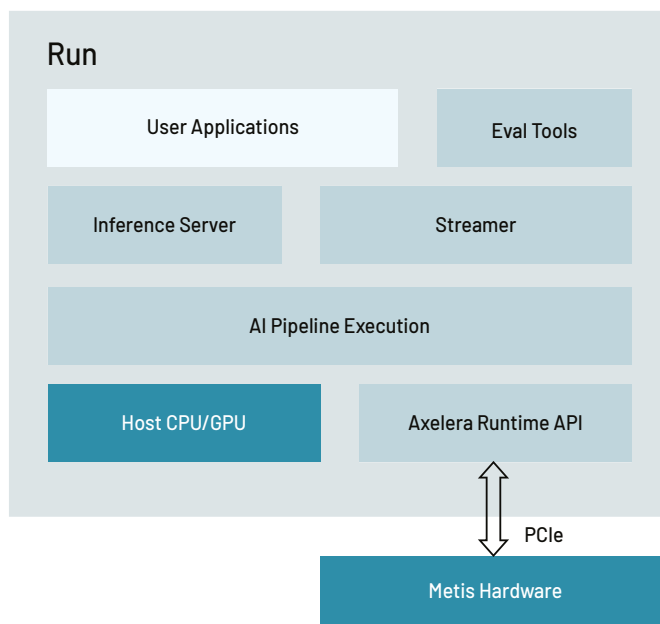
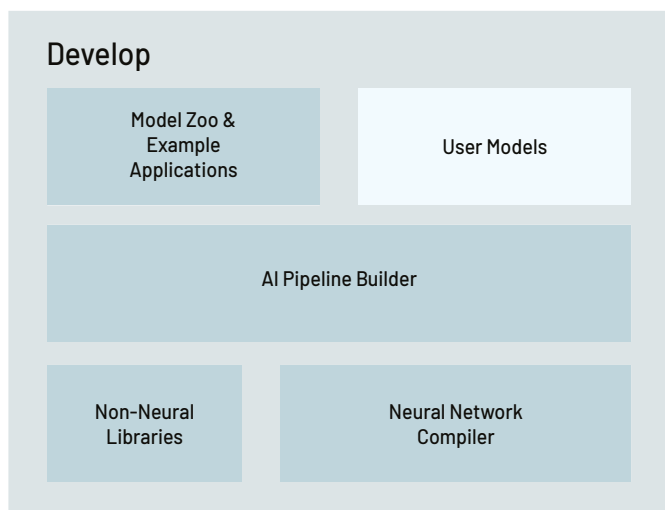
- **Great out-of-the-box experience:** The SDK's built-in tools and models allows evaluating Metis performance, accuracy and power consumption in a few minutes.
- **Fast end-to-end integration path:** The SDK provides a high-level pipeline description framework that allows building optimized end-to-end AI applications with custom inputs, datasets, models and business logic with very few lines of code.
- **Low-level knobs and APIs:** For users that have their own pipelines and software infrastructure, the SDK includes low-level APIs to directly control the inference hardware.
- **Integrated BSP support:** The Voyager SDK includes integrated BSP based on Yocto, providing a cohesive environment that ensures smooth hardware-software interaction and faster development cycles.

### Voyager is a simple yet feature rich SDK:

- Large Model Zoo supporting, among others:
  - Image classification (ResNet-50, MobileNetv2),
  - Object detection (MobileNetv2-SSD, Yolov5/v5/v6/v7/v8/v9),
  - Segmentation (DeepLabv3, Yolov8-seg, U-net),
  - Pose estimation (Yolov8-pose)
- Compiler support for models from Pytorch and ONNX. The compiler automatically manages quantization and graph optimization without user intervention and achieves optimal performance and accuracy.



- Libraries including all pre- and post-processing required to run end-to-end pipelines: scaling; cropping; normalization; format conversion; non-maximal suppression (NMS) and more.
- A YAML description file is used to automatically generate the AI pipelines. The pipeline can then be run as a plugin to GStreamer or within an inference server.
- Built-in tools to test accuracy and performance of models running on Metis AIPU.



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### Ordering information

To order Metis Compute Board please visit:

[www.axelera.ai/order-product](http://www.axelera.ai/order-product)

Part Number: AXE-BME20S1AI04A01

Description: 1x Metis Compute Board (SBC) with 4 GB of RAM. Active cooling, Rev1



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