METIS COMPUTE BOARD

With ARM-based RK3588

METIS

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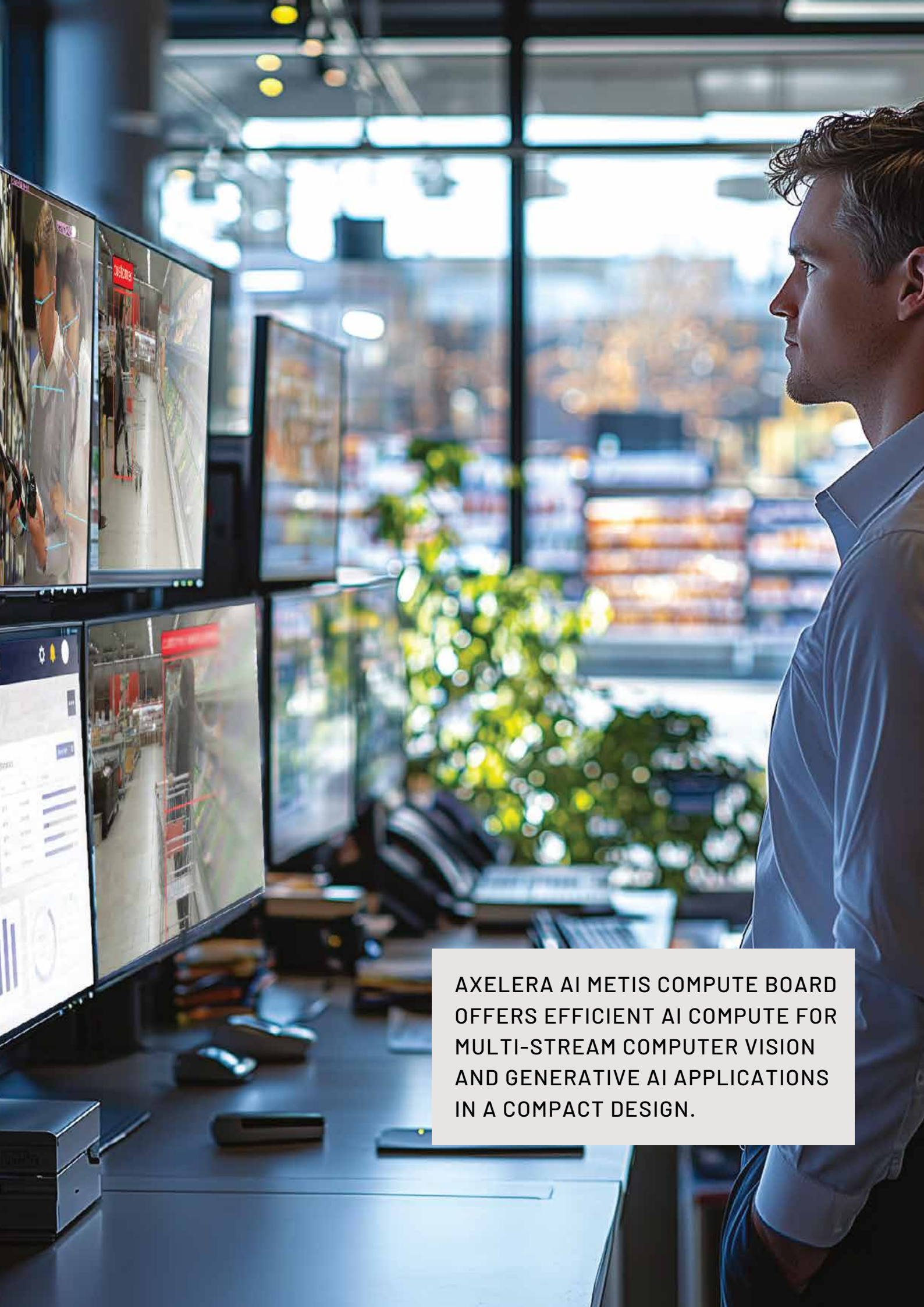
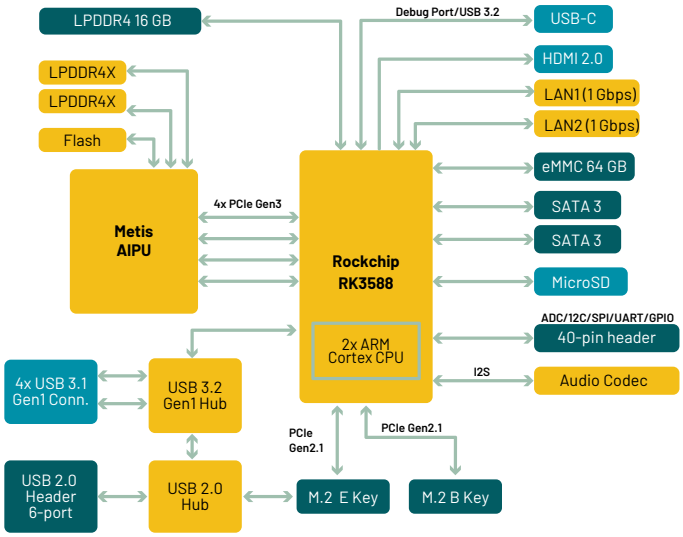


AXELERA AI METIS COMPUTE BOARD OFFERS EFFICIENT AI COMPUTE FOR MULTI-STREAM COMPUTER VISION AND GENERATIVE AI APPLICATIONS IN A COMPACT DESIGN.

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 4 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:

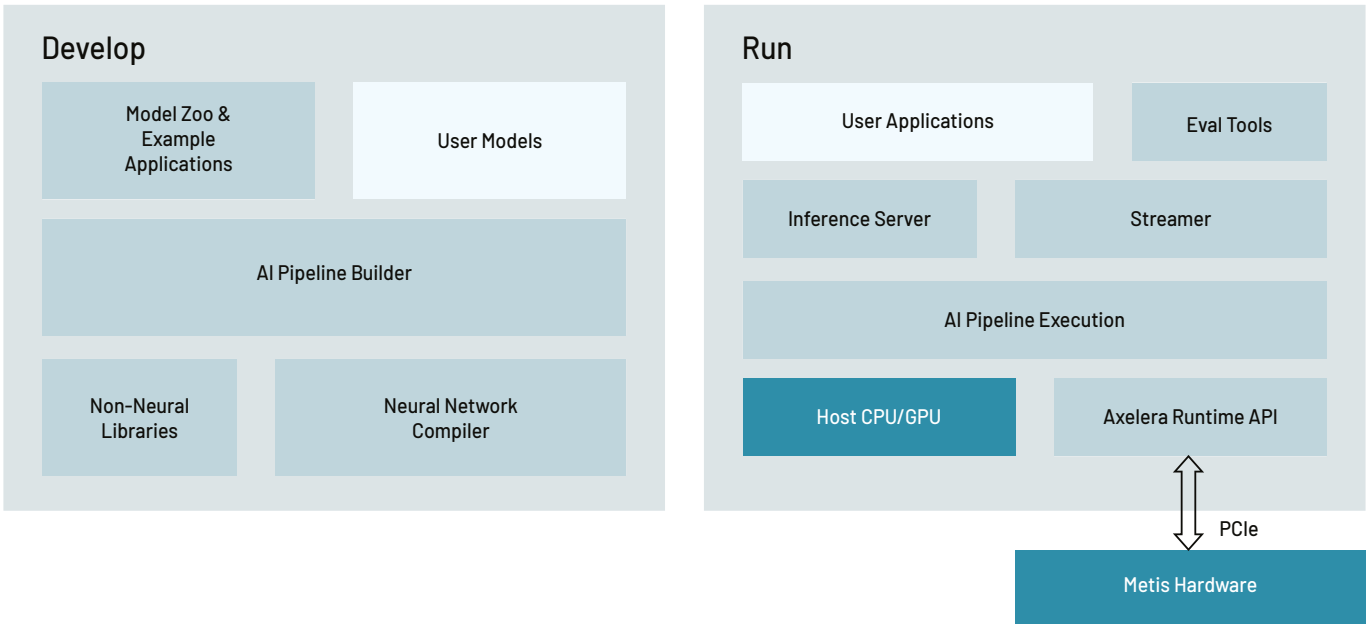
- **Great out-of-the-box experience:** The SDK's built-in tools and models allows evaluating Metis performance, accuracy and power consumption in a few minutes.
- **Fast end-to-end integration path:** The SDK provides a high-level pipeline description framework that allows building optimized end-to-end 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.

PyTorch ONNX

- 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.



SCAN ME

Ordering information

To order Metis Compute Board please visit:
store.axelera.ai/products

Part Number: AXE-BME20S1AI04A01

Description: Metis Arm-based Compute Board (SBC) with 1x AIPU, 4 GB of RAM and active cooling, Rev 1.0

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