Press Release

SolidRun launches new Bedrock R7000 - a Fanless Edge-AI IPC with AMD Ryzen™ 7840HS processor and 3 Hailo-8™ AI Accelerators / High performance in a tiny, rugged housing

Acre, Israel, 26 July 2023 – SolidRun has announced the world's first rugged system design that combines 8-core AMD Ryzen™ 7040 series processors with multiple Hailo-8™ AI accelerators to create its Bedrock R7000 Edge AI for artificial intelligence (AI) applications. This new member in SolidRun's Bedrock family of fanless modular industrial PCs is specifically designed to meet demanding vision-based situational awareness in harsh environments.

The new system integrates with the AMD Ryzen 7840HS processor, a state-of-the-art 4nm APU with 8C/16T Zen4 CPU and integrated RDNA 3 Radeon 780M GPU. The 20 native PCIe Gen4 lanes and up to three Hailo-8™ AI accelerators can be fully utilized together with NVME Gen4x4 storage, dual 2.5 Gbit Ethernet and 4x4K displays. The CPU and all devices are passively cooled by the innovative fanless cooling system of the Bedrock R7000 in an industrial temperature range of -40°C to 85°C.

Demand for such high-performance Edge AI box-PCs is growing in all segments of the embedded market, including Industry 4.0, robotics, autonomous guided vehicles, healthcare, transportation, smart cities, retail, agriculture, defense, and utility.

"Efficiency and scalability are key factors in advanced edge AI," said Irad Stavi, IPC Product Line Manager at SolidRun. "Bedrock R7000 stands out as the first fanless IPC based on the ultra-efficient AMD Ryzen 7040 processor and the innovative modular design which enables out-of-the-box integration of 3 Hailo-8™ AI accelerators, each with 26 Tera Operations per Second (TOPS), or even more with a simple customization."

"An important feature of Hailo-8™ AI accelerator and Hailo AI Software Suite is linear scaling of the inference performance simply by adding modules," said Dima Caplan, Product Manager

at Hailo. “SolidRun’s new Edge AI platform exhibits ample system resources which enable high AI performance at perfect scaling.”

Bedrock R7000 features

The Bedrock R7000 is equipped with an AMD Ryzen™ 7 7840HS / 7840U processor, featuring 8 cores and 16 threads running at up to 5.1 GHz based on the AMD Zen4 4nm microarchitecture that also integrates the AMD Radeon™ 780M GPU with up to 12 CUs @ 2700 MHz. CPU power can be precisely adjusted in BIOS in an extremely wide range between 8W – 54W.
For Edge AI workloads, up to 3 Hailo-8™ AI accelerators can be installed with combined inferencing performance of up to 78 TOPS.

RAM and storage are modular with 2x SODIMMs supporting 64 GB DDR5 ECC/non-ECC, and 3 NVME 2280 PCIE Gen4x4 devices, including enterprise-grade NVME with power loss protection (PLP). RAM and storage are conduction-cooled for reliable operation at extreme temperatures.

I/O includes 4 displays comprising HDMI 2.1 + 3x DP 2.1, dual 2.5 Gbit Ethernet (Intel I226), optional WiFi 6E + BT 5.3, 5G or LTE modem, 4 USB 3.2 ports and a console port. All I/O is conveniently organized on a single face to simplify integration.

Bedrock R7000 supports all major PC operating systems, including most Linux distributions, Windows Desktop, Server and IoT.

Power, mechanical and thermal design

Bedrock R7000 electronic design is modular, SoM based. Power input is by a dedicated interchangeable module for supporting various deployment use cases. The default PM 1260 supports a wide voltage range of 12V to 60V

The enclosure is made of heavy-duty machined aluminum with an anodized finish. It is offered in 3 variants – 1.0 liter enclosure for dissipating up to 30W by convection, 1.6 liter for 60W and an 0.6 liter “Tile” variant for conduction cooling. The enclosure is ideal for DIN-Rail mounting with a specially designed zero-force locking bracket.

Bedrock R7000 fanless design can handle up to 60W, which is over 3 times the cooling capacity of typical fanless PCs of similar size. Cooling innovations include liquid metal TIM, 360º stacked heat pipes, dual-layer chimney effect heat exchanger and thermal coupling of all internal devices.
The system operates reliably at a temperature range of -40ºC to 85ºC.

Specifications

CPU: AMD Ryzen™ 7840HS/U with Radeon 780M GPU

RAM: Dual channel DDR5 up to 64 GB ECC / non-ECC

Display: 1x HDMI 2.1 + 3x Display Port 2.1

Storage: Up to 3x NVMe PCIe Gen4 x 4

AI Acceleration: Up to 3x Hailo-8 M.2 AI Acceleration Module

LAN: 2x 2.5 GbE (Intel I226)

WLAN: WiFi 6E (Intel AX210)

Modem: 4G / 5G (Quectel)

USB: 1x USB 3.2 10 Gb/s + 3x USB 3.2 5 Gb/s

Console: Serial over USB

BIOS: AMI Aptio V

Operating systems: Windows 10/11/IoT, Linux

Power: DC 12V-60V

Temperature range: Up to -40ºC to 85ºC

Enclosure: All aluminum enclosure, fanless cooling

Dimensions:

30W model: 45 mm (W) x 160 mm (H) x 130 mm (D) - 0.9 liter

60W model: 73 mm (W) x 160 mm (H) x 130 mm (D) - 1.5 liter

Tile model: 29 mm (W) x 160 mm (H) x 130 mm (D) - 0.6 liter

Mounting: DIN-rail, wall, table top

For more information about the SolidRun Bedrock R7000 and its feature set please visit:
www.solid-run.com/fanless-computers/bedrock-r7000/

About SolidRun

SolidRun is a global leading developer of embedded systems and network solutions based on x86 and ARM architecture, in a variety of form factors including industrial mini PCs, gateways, SBCs (Single Board Computer) and SOMs (System-on-Module). The companies' mission is to streamline application development, shorten time-to-market and simplify life-cycle management for its customers. For more information, please visit: www.solid-run.com

Media resources

Bedrock R7000 Edge AI page | Bedrock R7000 Basic page

Press release (docx | pdf)

Specifications and block diagram

Media Gallery

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