June 21, 2022

# AMD Announces Ryzen Embedded R2000 Series with Optimized Performance and Power Efficiency for Industrial, Machine Vision, IoT and Thin-Client Solutions

## New Ryzen Embedded R-Series system-on-chips provide up to 2X more cores, enhanced Radeon graphics, Windows 11 support, and versatile, multi-display configurability

NUREMBURG, Germany, June 21, 2022 (GLOBE NEWSWIRE) -- **(Embedded World 2022)** AMD (NASDAQ: AMD) today announced the Ryzen™ Embedded R2000 Series, second-generation mid-range system-on-chip (SoC) processors optimized for a wide range of industrial and robotics systems, machine vision, IoT and thin-client equipment. Ryzen Embedded R2000 Series doubles the core count[1] and delivers a significant performance uplift compared to the prior generation, with the new R2515 model exhibiting up to 81 percent higher CPU[2] and graphics[3] performance than the comparable R1000 series processor. Performance-per-watt efficiency is also optimized using “Zen+” core architecture with AMD Radeon™ graphics for rich and versatile multimedia capabilities. Ryzen Embedded R2000 processors can power up to four independent displays in brilliant 4K resolution.

Embedded R2000 Series processors are scalable up to four “Zen+” CPU cores with eight threads, 2MB of L2 cache and 4MB of shared L3 cache. This gives embedded system designers great flexibility to scale performance and power efficiencies with a single processing platform.

With support for up to 3200 MT/s DDR4 dual-channel memory and expanded I/O connectivity, the Ryzen Embedded R2000 Series processors deliver 50 percent higher memory bandwidth[4] and up to 2X greater I/O connectivity[5] compared to R1000 series processors.

“For industrial applications like robotics and machine vision as well as thin clients and mini-PCs, the Ryzen Embedded R2000 Series raises the bar on performance and functionality,” said Rajneesh Gaur, corporate vice president and general manager, Adaptive & Embedded Computing Group at AMD. “The Embedded R2000 Series provides system designers with more performance, optimized power and better graphics, all with a seamless upgrade path.”

**Product Specifications**

| Model | TDP Range | Core / Thread Count | GPU CU | Base CPU Freq. (GHz) | L2 Cache | L3 Cache | Expected Availability |
|---|---|---|---|---|---|---|---|
| **R2544** | 35-54W | 4 / 8 | 8 | 3.35 | 2 MB | 4 MB | October 2022 |
| **R2514** | 12-35W | 4 / 8 | 8 | 2.1 | 2 MB | 4 MB | October 2022 |
| **R2314** | 12-35W | 4 / 4 | 6 | 2.1 | 2 MB | 4 MB | In Production |
| **R2312** | 12-25W | 2 / 4 | 3 | 2.7 | 1 MB | 2 MB | In Production |

### Additional Key Features and Benefits

- Power up to four independent displays in crisp 4K resolution leveraging DisplayPort™ 1.4, HDMI™ 2.0b, or eDP 1.3 interfaces
- Broad set of high-speed peripherals and interfaces with up to 16 lanes of PCIe® Gen3, 2x SATA 3.0 and 6 USB ports (USB 3.2 Gen2 and 2.0)
- OS support includes Microsoft Windows® 11/10, and Linux® Ubuntu® LTS
- Enterprise class security features supported by the AMD Secure Processor to help protect sensitive data and validate code before it is executed and AMD Memory Guard for real-time DRAM memory encryption
- Planned product availability extends up to 10 years, providing customers with a long-lifecycle support roadmap

The AMD Ryzen Embedded R2000 Series will be showcased at the AMD booth (Hall 3A, Stand 239) at Embedded World 2022, June 21-23, in Nuremberg, Germany, The full list of technology demonstrations in the Embedded World booth are available at the AMD event page.

### Supporting Resources

- Learn more about the AMD Ryzen Embedded Family
- Ryzen Embedded R2000 Series Product Brief
- Follow AMD on Twitter
- Connect with AMD on LinkedIn

### AMD Ryzen Embedded R2000 Series Ecosystem Support

**Advantech**
“Advantech Innocore is pleased to announce a new addition to the DPX-S range of gaming platforms. As the 12th generation of this field-proven platform, DPX-S451 is designed for use in slot machines, casino games, and betting terminals. It is based on the newly released AMD Ryzen Embedded R2000 and offers an unbeatable combination of computing power, graphics performance, and security features ideal for regulated gaming. The R2000 SOC enables DPX-S451 to deliver superior performance when compared to previous generation solutions (an over 33% increase) while maintaining a comparatively low-cost point.” -- Dirk Finstel, Associate Vice President Embedded IoT & CTO Europe at Advantech

**DFI**
"DFI is innovative in designing small-size computers with exceptional graphic performance for the industrial and embedded fields including casinos, gaming, automation, machine vision, healthcare and digital signage. With the groundbreaking AMD Ryzen Embedded R2000 Series, we expect to see many new opportunities for our products to take our customers' applications to a brand-new level through the advanced graphic processing and computing capabilities. For applications with strict space constraints, we are currently developing a new, small form factor single board computer that combines our specialized miniaturization technology with the AMD Ryzen Embedded R2000 for graphics-demanding,

ultra-tiny, edge computing solutions. Expectations are to further reduce current edge applications' size with better overall imaging and machine vision analysis performance." -- Jarry Chang, Senior PM Director, DFI

**IBASE**
“The AMD Ryzen Embedded R2000 processor family is built on the groundbreaking “Zen 2” x86 core architecture with improved 14nm process technology, advanced VEGA Graphics and high-speed I/Os, offering a strong performance upgrade from the R1000 Series. We are excited to be able to implement the hottest Ryzen Embedded R2000 processor to our robust embedded platforms including the MI993 Mini-ITX motherboard, SI-324-N2314 fanless digital signage player, and INA1600 desktop uCPE/SD-WAN appliance. We look forward to providing the right solutions and time-to-market advantage to our customers’ projects in a wide range of market applications.” -- Albert Lee, Executive Vice President at IBASE

**Sapphire**
"Sapphire Technology is a longstanding AMD partner and leading supplier of components and solutions for a broad range of consumer and embedded products, with expertise in next-generation motherboards and graphics add, mini-STX and play-centric applications. By leveraging the AMD Ryzen Embedded V1000 and R2000 SoCs in our latest Sapphire boards, we can increase CPU and GPU performance in our NUC, mini-STX and thin mini-ITX form factors, driving extraordinary graphics capabilities, supporting up to four simultaneous 4K resolution displays, and providing unprecedented performance-per-watt for our customers." -- Adrian Thompson, vice president of marketing, Sapphire Technology

**About AMD**

For more than 50 years AMD has driven innovation in high-performance computing, graphics and visualization technologies — the building blocks for gaming, immersive platforms and the datacenter. Hundreds of millions of consumers, leading Fortune 500 businesses and cutting-edge scientific research facilities around the world rely on AMD technology daily to improve how they live, work and play. AMD employees around the world are focused on building great products that push the boundaries of what is possible. For more information about how AMD is enabling today and inspiring tomorrow, visit the AMD (NASDAQ: AMD) website, blog, Facebook and Twitter pages.

**Cautionary Statement**

This press release contains forward-looking statements concerning Advanced Micro Devices, Inc. (AMD) such as the features, functionality, performance, availability, timing and expected benefits of the Ryzen™ Embedded R2000 Series, which are made pursuant to the Safe Harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are commonly identified by words such as "would," "may," "expects," "believes," "plans," "intends," "projects" and other terms with similar meaning. Investors are cautioned that the forward-looking statements in this press release are based on current beliefs, assumptions and expectations, speak only as of the date of this press release and involve risks and uncertainties that could cause actual results to differ materially from current expectations. Such statements are subject to certain known and unknown risks and uncertainties, many of which are difficult to predict and generally beyond AMD's control, that could cause actual results and other future events to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. Material factors that could cause actual results to differ materially from current expectations include, without limitation, the following: Intel Corporation’s dominance of the microprocessor market

and its aggressive business practices; global economic uncertainty; loss of a significant customer; impact of the COVID-19 pandemic on AMD's business, financial condition and results of operations; competitive markets in which AMD's products are sold; market conditions of the industries in which AMD products are sold; cyclical nature of the semiconductor industry; quarterly and seasonal sales patterns; AMD's ability to adequately protect its technology or other intellectual property; unfavorable currency exchange rate fluctuations; ability of third party manufacturers to manufacture AMD's products on a timely basis in sufficient quantities and using competitive technologies; availability of essential equipment, materials, substrates or manufacturing processes; ability to achieve expected manufacturing yields for AMD's products; AMD's ability to introduce products on a timely basis with expected features and performance levels; AMD's ability to generate revenue from its semi-custom SoC products; potential security vulnerabilities; potential security incidents including IT outages, data loss, data breaches and cyber-attacks; uncertainties involving the ordering and shipment of AMD's products; AMD's reliance on third-party intellectual property to design and introduce new products in a timely manner; AMD's reliance on third-party companies for design, manufacture and supply of motherboards, software and other computer platform components; AMD's reliance on Microsoft and other software vendors' support to design and develop software to run on AMD's products; AMD's reliance on third-party distributors and add-in-board partners; impact of modification or interruption of AMD's internal business processes and information systems; compatibility of AMD's products with some or all industry-standard software and hardware; costs related to defective products; efficiency of AMD's supply chain; AMD's ability to rely on third party supply-chain logistics functions; AMD's ability to effectively control sales of its products on the gray market; impact of government actions and regulations such as export administration regulations, tariffs and trade protection measures; AMD's ability to realize its deferred tax assets; potential tax liabilities; current and future claims and litigation; impact of environmental laws, conflict minerals-related provisions and other laws or regulations; impact of acquisitions, joint ventures and/or investments on AMD's business, and ability to integrate acquired businesses, such as Xilinx; impact of any impairment of the combined company's assets on the combined company's financial position and results of operation; restrictions imposed by agreements governing AMD's notes, the guarantees of Xilinx's notes and the revolving credit facility; AMD's indebtedness; AMD's ability to generate sufficient cash to meet its working capital requirements or generate sufficient revenue and operating cash flow to make all of its planned R&D or strategic investments; political, legal, economic risks and natural disasters; future impairments of goodwill and technology license purchases; AMD's ability to attract and retain qualified personnel; AMD's stock price volatility; and worldwide political conditions. Investors are urged to review in detail the risks and uncertainties in AMD's Securities and Exchange Commission filings, including but not limited to AMD's most recent reports on Forms 10-K and 10-Q.

**©2022 Advanced Micro Devices, Inc. All rights reserved. AMD, the AMD Arrow logo, Radeon, Ryzen, and combinations thereof are trademarks of Advanced Micro Devices, Inc. 3DMark is a trademark of Futuremark Corporation. DisplayPort™ and the DisplayPort™ logo are trademarks owned by the Video Electronics Standards Association (VESA®) in the United States and other countries. HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing, LLC in the United States and/or other countries. PCIe is a registered trademark of PCI-SIG Corporation. Other product names used in this publication are for identification purposes only and may be trademarks of their respective companies.**

[1] Ryzen™ Embedded R2000 SoC offers up to 4 CPU cores. Ryzen™ Embedded R1000 SoC offers up to 2 CPU cores. EMB-178

[2] Testing conducted by AMD Embedded Software Engineering Labs as of June 1st, 2022 on the Ryzen™ Embedded R2514 and Ryzen™ Embedded R1606G processors on AMD R2000 Development platform running Windows 10 Enterprise version 21H2 on Passmark v10 - CPU Mark. The R2514 system used DDR4-2667 RAM, AMD Radeon™ Graphics (driver version: 22.20-220506a-379436E) and BIOS TBP1000B. The R1606G system used DDR4-2400 RAM, AMD Radeon™ Graphics (driver version: 21.50.18-220315a-378119C), and BIOS RBB1208B. Results may vary. EMB-184

[3] Testing conducted by AMD Embedded Software Engineering Labs as of June 1st, 2022 on the Ryzen™ Embedded R2514 and Ryzen™ Embedded R1606G processors on AMD R2000 Development platform running Windows 10 Enterprise version 21H2 on 3DMark® 11-3DMarkscore. The R2514 system used DDR4-2667 RAM, AMD Radeon™ Graphics (driver version: 22.20-220506a-379436E) and BIOS TBP1000B. The R1606G system used DDR4-2400 RAM, AMD Radeon™ Graphics (driver version: 21.50.18-220315a-378119C), and BIOS RBB1208B. Results may vary. EMB-182

[4] Ryzen™ Embedded R2544 SoC offers dual-channel 64-bit DDR4 up to 3200 MT/s. Ryzen™ Embedded R1606G SoC offers dual-channel 64-bit DDR4 up to 2400 MT/s. EMB-179

[5] Ryzen™ Embedded R2000 SoC offers up to 16 lanes of PCIe Gen3. Ryzen™ Embedded R1000 SoC offers up to 8 lanes of PCIe Gen3. EMB-180

**Contact:**
**Brian Garabedian**
AMD Communications
(408) 386-4621
brian.garabedian@amd.com

**Laura Graves**
AMD Investor Relations
(408) 749-5467
laura.graves@amd.com

Source: Advanced Micro Devices, Inc.