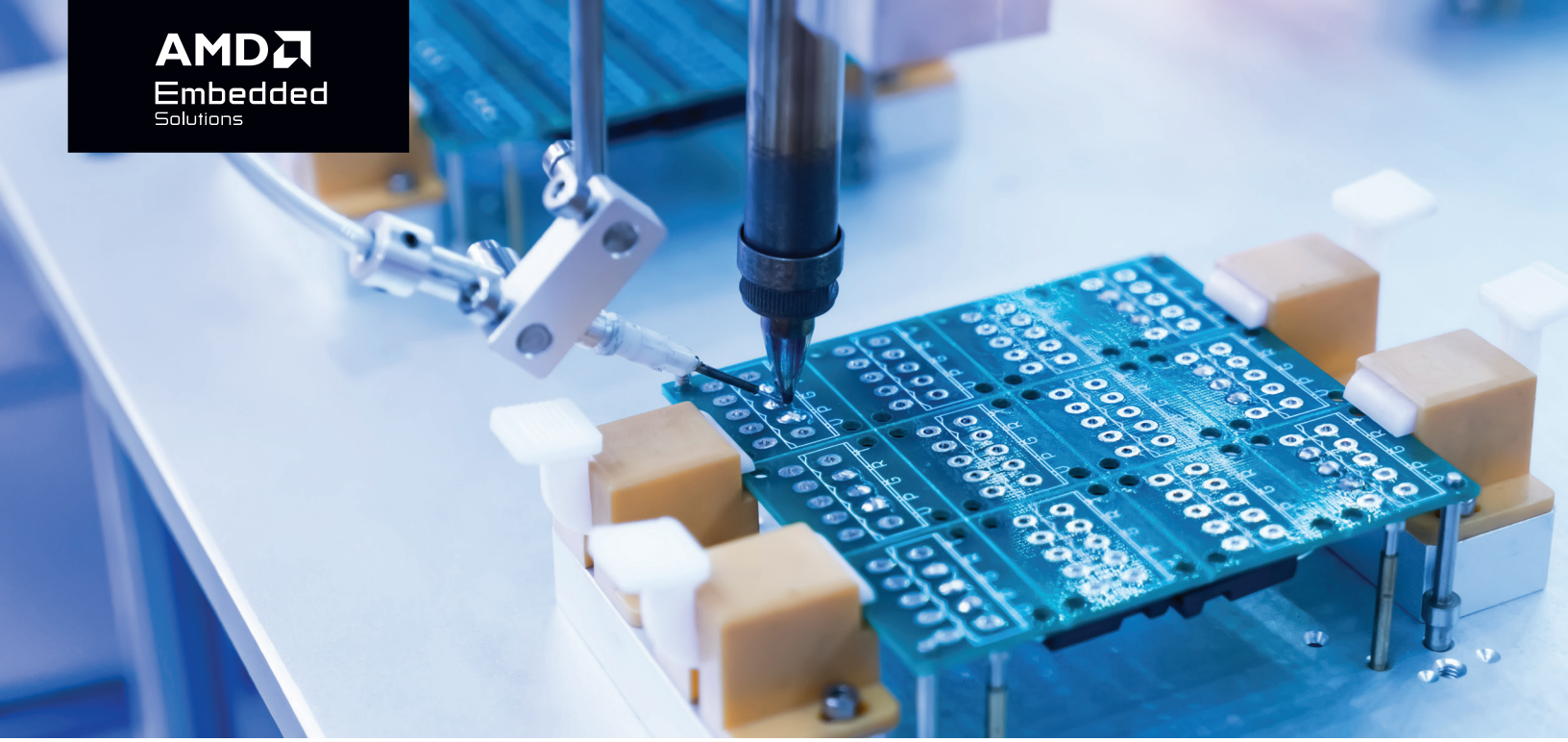
AMD Embedded Solutions



AMD Solutions for Industrial Edge and PCs:

AMD Embedded SoCs

AMD Ryzen™ Embedded V-Series and R-Series SOCs
optimized for exceptional, power-efficient processing and graphics performance with integrated CPU and GPU, multi-display support and advanced features

AMD EPYC™ Embedded CPU Processors
optimized for industrial edge platforms and products requiring exceptional performance-per-watt, high integration and expansive I/O connectivity

Application Brief: AMD Solutions for Industrial Edge and PCs

High-Performance Processing and Graphics for Agile and Power-Efficient Industrial Edge Systems and PCs

The accelerating evolution of industrial infrastructure is challenging system designers to innovate a new breed of industrial edge systems and PCs that provide uncompromising performance, versatility and ruggedness to enable increasingly sophisticated workflows across a wide range of harsh environments. These systems require an optimal balance of x86 compute and graphics performance, with power efficiency profiles that maximize thermal agility in space constrained environments.

Industrial system designers grappling with these requirements are challenged to preserve valuable system real estate while packing increasing amounts of processing horsepower, I/O and integrated functionality within standard system form factors. This challenge is even more imposing for industrial PC designs requiring combined compute and graphics capabilities to maximize system versatility. Above all, designers need to have the confidence that the processing platform they select to underpin their industrial edge systems and PCs will be available and supported for the full lifetime of the product, accommodating generational product lifespans as long as 10 years.

The AMD Advantage

AMD Ryzen™ Embedded SoC solutions harness the breakthrough performance of the AMD "Zen" core architecture with AMD Radeon™ graphics to support an expansive range of performance and power profiles, enabling highly versatile industrial PC designs for flexible deployment across processing- and graphics-driven industrial infrastructure.

AMD Ryzen™ Embedded solutions are designed to support mainstream BGA packaging techniques and motherboard form factors. For designers seeking the combined benefits of CPU and GPU on a single die, AMD Ryzen™ Embedded V-Series and R-Series SoCs are optimized for industrial box PCs, panel PCs and industrial monitors with integrated multi-display configurability and 4K graphics quality.

AMD

For designers seeking uncompromising compute performance for edge servers and systems, AMD EPYC™ Embedded CPUs deliver breakthrough performance with scalability up to 96 cores (AMD EPYC™ Embedded 9004 Series). Industrial system designers can exploit high-speed single-thread processing performance and/or multithread processing to accelerate throughput for their unique application requirements.

Key AMD Benefits

Breakthrough Performance
AMD Embedded processing solutions for industrial edge systems and PCs are available in a wide range of core counts, providing seamlessly scalable processing performance that enables product designers to flexibly scale their product portfolios across multiple performance and price points. AMD has achieved significant CPU and graphics performance gains generation over generation by investing in the latest process nodes, exemplified in AMD's breakthrough "Zen" architecture – now in its third generation.

Versatile, Multi-display Graphics
AMD Ryzen™ Embedded V-Series and R-Series SoCs enable designers to achieve a wide range of display configurations for more versatile HMI and operator panel designs. This can eliminate the need for additional processors and duplicate hardware to drive multiple displays. A single AMD Ryzen™ Embedded V2000 Series or R2000 Series SoC can power up to four independent displays in brilliant 4K resolution. AMD Embedded SoCs support conventional 1080p display resolution, and deliver exceptional graphics and video quality targeting the next generation of industrial displays.

Power Efficiency
AMD Embedded processors support a wide range of thermal design profiles (TDPs) to help enable flexible industrial system configurations optimized for performance and/or power optimization. With embedded processors that scale to as low as 10W (AMD Ryzen™ Embedded V2000 Series), designers can achieve the optimal performance per-watt and minimize thermal constraints. Low-power AMD processors can also enable fan-less, vent-less system designs that prevent debris and particle ingress in harsh industrial environments and clean room settings.

Expansive I/O
AMD Embedded processors provide robust, highly integrated support for new and established interconnects, spanning PCIe®, GbE, USB-C, SATA, eMMC 5.0 and NVMe, enabling myriad connectivity options. AMD Embedded processing solutions provide expansive PCIe® Gen4 connectivity up to 128 lanes (AMD EPYC™ Embedded 7000 and 9004 Series) for new levels of I/O versatility and device configurability. Equipped with the latest and fastest memory support (DDR5/DDR4), AMD Embedded processing solutions provide the memory capacity and rapid transfer speeds needed to enable ultra-low latency and improved compute agility..

Advanced Security Features
AMD Embedded processors feature an independent on-chip AMD Secure Processor designed to enable secure Hardware Validated Boot capabilities that help ensure systems are booted from trusted software, plus advanced capabilities including Memory Guard for defending against unauthorized memory access. Available with select AMD Embedded processing solutions, a one-time programmable key capability allows customers to manage their own encryption keys.

Board Support & Partner Ecosystem
AMD Embedded solutions are optimized for use across mainstream motherboard form factors, including Mini-ITX, Pico-ITX, microATX, COM Express and other small form factors like 4x4 and 5x5. The space savings enabled with thermally optimized AMD Embedded processors supports easy integration in 2U and 4U industrial edge servers and systems. AMD works closely with our partners to ensure customers have access to a wide selection of available board options to meet their specific requirements.

Supply Longevity
AMD's planned processor availability extends to up to 10 years for select AMD Embedded processors, providing customers with a long-lifecycle support roadmap.

AMD Embedded Solutions Partner Program

AMD Embedded Partners are your essential source for Industrial PC designs based on AMD Embedded solutions, encompassing a global network of independent engineering companies that offer the vital tools, technology and engineering services to speed your design. Our AMD Embedded partners provide a powerful and comprehensive ecosystem that partners with you to Expand the Possible.

Embedded Board Partner Catalog
The embedded partner catalog is your source for commercially-available industrial PC solutions leveraging AMD silicon. Partners are encouraged to add their board solutions to the AMD Board Partner Catalog as a way to promote their products.

For more information, visit **http://www.amd.com/en/products/specifications/embedded-catalog**

For more information about the specific features and specifications supported by select products in AMD's processor portfolio, or to learn more about AMD's industrial PC solutions, visit **www.amd.com/industrial**

AMD.com/embedded

1. Extended availability applies to AM4 based AMD Embedded products and assures that all such products will be available for purchase through December 2022 for final shipment dates through June 2023. EMB-162

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