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## Application Note

Portwell, Inc.



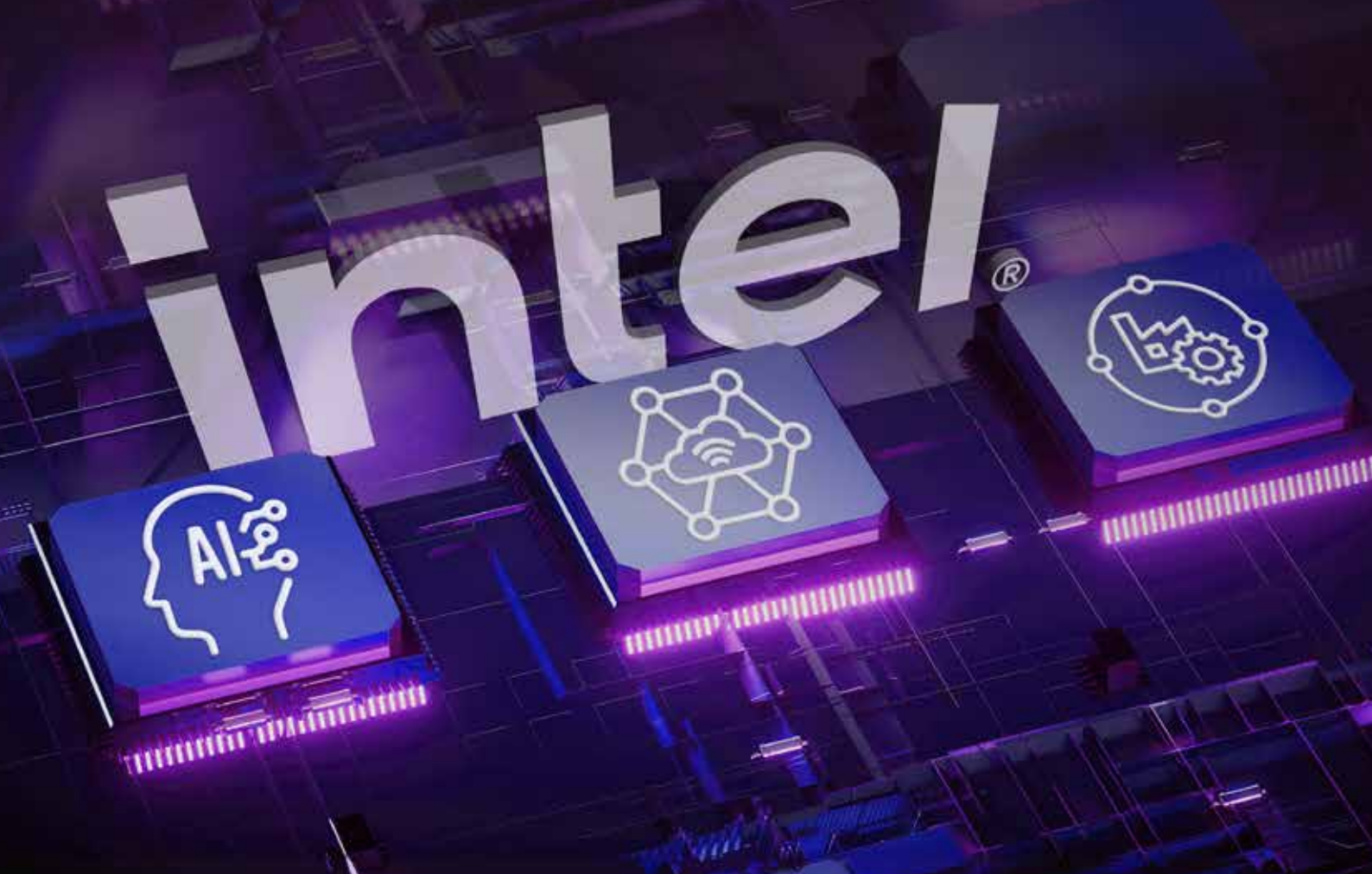
## Empowering Industrial IoT with Compact but Mighty Computing Module

PCOM-BA03GL: A COM Express® Type 10 Mini Module Featuring Intel Atom® Processor x7000RE Series Propels Industrial IoT Innovation at the Edge and Beyond

### Embracing the Industrial IoT Transformation

The Industrial Internet of Things (Industrial IoT or IIoT) landscape is evolving rapidly, driven by technological advancements, safety considerations, and the need for efficient, secure, and scalable solutions. The IIoT revolution is reshaping the dynamic use-condition landscape, demanding robust and efficient computing solutions right at the network edge. More specifically, the prevalent market trends in IIoT development are propelling widespread adoption of IIoT solutions across diverse sectors. This surge is primarily driven by the acknowledged and proven advantages of enhanced efficiency, increased productivity, and data-driven decision-making. Concurrently, the IIoT market is experiencing a significant transition toward edge computing. This shift empowers real-time insights, optimizes bandwidth utilization, and seamlessly integrates advanced analytics fueled by artificial intelligence (AI) and machine learning (ML). These capabilities facilitate essential functions such as predictive maintenance, quality control, and autonomous decision-making across a broad spectrum of industrial applications that often require robust and reliable embedded computing solutions to handle data processing, control, and communication directly on local edge devices.

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## **An Optimized Pair for Industrial IoT at the Edge and Beyond**

The prevailing trends in the industrial IoT market require embedded computing solutions built with compact footprint yet with power and efficiency, modular design approach, real-time and AI capabilities, and robust reliability and sustainability. A COM Express Mini module featuring the latest Intel Atom® Processors x7000RE Series meet up with each trend and challenge to deliver an ideal building block.

- **Compact and Energy-Efficient Systems:** There is a growing preference for compact, energy-efficient embedded systems. These modules optimize space utilization while maintaining high performance.
- **Modular and Scalable Solutions:** The industry is witnessing a shift towards modular and scalable solutions. These offerings provide flexibility and customization, allowing businesses to adapt swiftly to evolving requirements.
- **Edge Computing Focus:** Edge computing is gaining prominence for real-time data processing and decision-making. These modules built with features like Intel® Time Coordinated Computing (TCC) and Time-Sensitive Networking (TSN) to enable real-time capabilities, reduce latency and enhance operational responsiveness.
- **AI and ML Integration:** The integration of advanced artificial intelligence (AI) and machine learning (ML) capabilities is a central theme. These embedded module solutions incorporating industry-leading AI inference acceleration technologies, such as Intel® AVX2 Vector Neural Network Instructions (AVX2 VNNI), empower automation systems to learn, adapt, and optimize processes with data intelligence.
- **Robust Designs for Extreme Environments:** Engineers are optimizing rugged and reliable designs. These modules are engineered to withstand challenging conditions, ensuring stability and longevity.

### **Compact yet Powerful Module Solution with Industrial-Class Features**

Portwell's PCOM-BA03GL is a COM Express Type 10 Mini module (84mm x 55mm) that delivers high-performance computing tailored for various industrial IoT applications. Featuring up to 16GB of onboard LPDDR5 SDRAM and 32GB (up to 256GB) of eMMC storage, the PCOM-BA03GL ensures ample



## About Portwell

Portwell, Inc., founded in 1993, has focused herself towards a high-technology scope that brings company value through the state-of-the-art. For the past years, continuous leading product development and revenue growth have made Portwell a major Mission-Critical Application Platform Provider in the world. The in-house design of industrial computers and application platforms by Portwell has also been targeted to meet our customer needs for flexibility. Portwell, Inc., an IoT Solutions Titanium Partner of the Intel® Partner Alliance, a community of communications and embedded developers and solution providers, designs and manufactures Communication Appliances along with a full range of Industrial Platform Service (Computer on Module, Embedded Computing, Industrial Computer), Communication Appliance Service (Software Defined Wide Area Network, ANS series, AnnA ANS Network Associate), Vertical Market Service (Advanced Network Solutions, Gaming, Medical, industrial Automation, Smart Transportation, Energy, Smart Manufacturing, Internet of Things(IoT), AI Solutions, Mobility & Barcoding Solutions, EMS/DMS), Panel Device Service (Panel PC, LEAD Series) . With streamline access to the latest Intel technology, we paved the way with the broadest array of building blocks, delivering cutting-edge solutions to meet and even exceed the demanding needs of the ever-changing telecommunication, medical electronics, industrial automation, defense and life automation markets. Committed to supplying customers with a one-stop shopping approach of full product selection, competence and sophisticated customer support, Portwell helps all our customers pave the royal road to success and stay ahead of competition.



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Portwell, Inc., an IoT Solutions Titanium Partner of the Intel Partner Alliance, designs and manufactures a full range of IPC products (SBC, backplane, redundant power supply, rack mount & node chassis), embedded architecture solutions, DVR system platforms and communications appliances. We provide complete R&D and project management services to decrease customers' time to market, and reduce project risk and cost. Portwell is also an ISO 13485, ISO 9001 and ISO 14001 certified company that deploys quality assurance through product design, verification and manufacturing cycles.



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