



**Axiomtek Broadwell-U
Embedded Board & SoM
White Paper**

Axiomtek's embedded board and system-on-module utilizing the latest 5th generation Intel® Core™ processors based on the Mobile U processor line (codename: Broadwell-U)

The Internet of Things (IoT) offers tremendous new business opportunities. Organizations can integrate real-time intelligence, control, and interactivity into almost any process to improve how they engage with customers, treat patients, optimize operations, and run factories. The 5th generation Intel® Core™ processor (Broadwell-U processor line) is engineered to drive high capability and value into IoT usage models by enabling high-quality user experiences with devices that are small, efficient, manageable, and secure.

This low-power, multi-chip package (MCP) combines a 64-bit, multicore processor and a platform controller hub (PCH) onto a common package substrate to deliver PC-class performance, HD graphics, and high-quality sound for space and power-constrained embedded applications. Built on Intel's industry-leading 14nm process technology, this MCP is compatible with platforms based on 4th generation Intel® Core™ processors.

Performance

The 5th generation Intel® Core™ processors (codename: Broadwell) pack substantial performance into an ultra-low-power package, powering space-constricting devices in more environments.

Compatibility

The 5th generation Intel® Core™ processors are designed for compatibility with existing 4th Generation Intel® Core™ processor platforms, allowing seamless upgrades to help lower development costs and reduce time to market.

Graphics

The new Intel® HD Graphics delivers stunning and responsive visuals in 5th generation Intel® Core™ processors, including ultra HD 4K display and additional codec support.

Security

The 5th generation Intel® Core processors feature enhanced security and manageability to help drive down total cost and risk, protecting data and preventing malware threats.

Axiomtek's Board-level Products with Intel® Broadwell-U



CEM881

The COM Express Type 6 basic form factor module powered by the latest 14nm 5th generation Intel® Core™ i7/i5/i3 or Celeron® processor with low 15 Watt TDP. The advanced computer-on-module CEM881 provides advanced processing and high graphics performance combined with cool and efficient operation. With one onboard 4 GB extended temperature DDR3L chip, and one 204-pin SO-DIMM DDR3L socket supporting up to 8 GB, the extremely small SoC module boosts its fabulous computing performance, industrial grade wide temperature, and seismic design. It comes with four lanes of PCI Express, four SATA-600 interfaces, one Gigabyte Ethernet supporting Wake-on-LAN, HD audio, one LPC interface, one SPI interface, four channels in and four channels out Digital I/O, six USB 2.0 ports, and two USB 3.0 ports. The rugged and powerful CEM881 is an ideal solution for graphics-intensive and rich I/O applications such as telecommunication, medical imaging, transportation, Internet of Things-related, automated optical inspection (AOI), digital signage, gaming machines, military, and networking.



PICO880

The pico-ITX motherboard PICO880 provides two flexible board-to-board connectors that integrate audio, four USB 3.0, one PCIe x1, one DisplayPort, two UARTs, LED, and power on/off interfaces. The high-performance embedded board is equipped with standard features such as one DDR3L SO-DIMM with up to 8 GB memory capacity; one USB 2.0 port; one SATA-600 interface; one 10/100/1000Mbps Ethernet port that supports Wake-on-LAN, PXE; one DisplayPort and LVDS display interface with integrated Intel® HD graphics 5500 and 6000 that delivers high-resolution Ultra HD 4K display support for immersive visual retail experience. It is a perfect fit for vehicle PCs, small media entertainment systems, industrial automation systems, medical imaging, gaming, and small electronic devices customers and other Internet of Things (IoT) related designs. The Axiomtek PICO880 is the best choice for customers who need an extremely small embedded board with rich I/O, high computing power and great graphics. One full-size PCI Express Mini Card slot on the rear side provides flexible I/O expansions and meets networking requirements. The hardware monitoring system makes the platform more reliable. It also supports Intel® vPro™ Technology and Intel® Active Management Technology 10.0 (AMT 10.0) for excellent security and management. In addition, the industrial motherboard requires only +12V DC power supply input.

Axiomtek's Board Design-in Services

The design process for mission critical projects can be time-consuming, tedious and cumbersome. Axiomtek understands the challenges and our customer's needs. Our teams of engineers and product managers can help provide design assistance from conception to deployment and help our customers meet all of their challenges at any stage of their development process.

Axiomtek's Design-in Services include the following:

a. Design Assistance Service

The Design Assistance Service starts from initial planning and continues through design, debug, and validation process to product shipment. Throughout the development process, Axiomtek provides customers with a full range of product solutions, consultation and implementation services from our team of experts with extensive experience with specialized projects.

Along with our professional Research & Development (R&D) team, and our high quality products offered with the latest technology, we can help our client eliminate headaches, wasted resources and the amount of time spent on the design and testing process. Our comprehensive services include assistance with project planning from initial concept to deployment; comprehensive testing with our advanced equipment including high-frequency signal measurements, temperature cycling, EMC lab, IR infrared thermal imager; performance and compatibility testing to reduce risks; solving any issues that may arise during the design stage, and ensuring that the end results will meet the required technical specifications. Furthermore, with Axiomtek's assistance with material backup planning, our clients can rest assured that they will achieve on-time delivery even in the circumstances of materials and parts end of life (EOL).

b. Thermal Solution Service

Axiomtek's Thermal Solution Service helps improve overall system reliability. The service offers three major features. First is our proven thermal module, which can operate smoothly under harsh temperatures. The next major feature is the FloTHERM Thermal Simulation, which can perform thermal analyses create virtual models, and test design modifications of electronic equipment before physical prototyping to reduce system errors. The last feature is the customized thermal solution, which is available for integrators looking for customized heatsink or coolers based on modularized thermal solution concepts.

c. Embedded Software Service

The Embedded Software Service is designed to efficiently allocate system resources and reduce cost.

Axiomtek created the comprehensive Embedded Software Service to cover all your requirements, including BIOS Customization, Embedded OS Development, Software API Utility, Protocol and Driver Services.

d. Modular Accessory Service

Modular Accessory Service greatly increases the flexibility and scalability of the system by reducing design complexity and system assembly parts. Currently, we have nine modularized accessories which can help customers to minimize the total cost-of-ownership and product development time.

In the future, Axiomtek will continue to innovate in design, development, and manufacture embedded system solutions for mission-critical applications. Based on our service, our customers can offer the best solutions for their vertical markets and bring intelligence, innovation, and sustainable development to the IoT world.

About Axiomtek Co., Ltd.

[Axiomtek](#) Co. Ltd. is one of the world's leading designers/manufacturers of PC-based industrial computer products. From our roots as a turnkey systems integrator specializing in data acquisition and control systems, Axiomtek has mirrored the PC evolution in various industries by shifting our focus toward the design and manufacture of PC-based industrial automation solutions.

Axiomtek Co., Ltd. established in 1990, has more than 60 distributor partners globally. Axiomtek offers Industrial PCs (IPC), Single Board Computers and System on Modules (slot CPU card, small form factor embedded boards & SoM), Fanless & Rugged Embedded System (eBOX, tBOX and rBOX), Industrial IoT Gateway & Industrial Firewall, EtherCAT Master Controller, Touch Panel Computers (TPC), Medical PCs (MPC), Human Machine Interface (HMI), Digital Signage and Players (DS), Industrial Networking and Network Appliances (NA).

As an associate member of the Intel® Internet of Things Solutions Alliance, [Axiomtek](#) continuously develops and delivers cutting edge solutions based on the latest Intel® platforms.