

Advanced AMR Control Capabilities for Heavy-Duty, Scalable Automation Solutions



About Axiomtek

A leading designer and manufacturer of industrial PCs and embedded systems, Axiomtek provides reliable and customizable solutions that empower businesses to improve efficiency, optimize operations, and drive innovation. Their diverse product portfolio includes embedded boards, edge AI systems, industrial PCs, and network appliances. Axiomtek caters to various industries, including automation, transportation, gaming, healthcare, and retail.

Balancing Flexibility and Adaptability with Demands for Stringent Quality Control

Industries today face multifaceted challenges in their quest for operational excellence. Balancing cost and quality, maintaining equipment, and integrating new technologies are complex tasks. High precision demands stringent quality control and advanced machinery, while reducing downtime requires robust predictive maintenance and quick response strategies. Scalable automation solutions must be adaptable to varying production needs, necessitating flexible, interoperable systems.

The Axiomtek ROBOX500 helps industries address these challenges by providing a robust, integrated solution for managing and optimizing robotic operations. Powered by the 12th and 13th Gen Intel® Core™ processors, the ROBOX500 is a purpose-built AMR controller with advanced control capabilities to facilitate higher throughput, enhancing production accuracy and efficiency. With real-time monitoring to enable predictive maintenance and changing manufacturing requirements, the ROBOX500 provides enhanced precision and seamless integration for automated, robotic tasks, reducing overall operational costs.

A Rugged AMR Controller Build for Heavy Duty Vehicles and Challenging Environments

The ROBOX500 AMR controller is designed for heavy duty vehicles such as forklifts and road rollers. In addition to the 12th and 13th Gen Intel® Core™ processors, support from the Intel® RealSense™ Depth Camera D457 makes the ROBOX500 the only X86 AMR controller with a GMSL interface for complex image transmission. It features up to 4 GMSL camera interfaces for stable, long-distance image transmission, rich I/O options, and support for various modules to optimize data processing and ensure precise operations in challenging settings.

The ROBOX500 features a wide DC input range (9V to 60V), minimizing power loss during energy conversion. This increases battery efficiency, enabling AMRs to operate longer on a single charge. The ROBOX500 is also 5M3 certified, ensuring reliable operation and minimized downtime, even in harsh environments (-20°C to 70°C).

Key Features

- **Accelerate demanding AMR applications** for heavy-duty vehicles with the 12th and 13th Gen Intel® Core™ i7 processors.
- **Ensure precise navigation** and control of autonomous vehicles with up to eight GMSL cameras for stable and long-distance image transmission.
- **Seamlessly integrate** with sensors, actuators, and peripheral devices using the wide range of I/O interfaces, including Gigabit Ethernet, USB 3.2 Gen 2x1, CANbus, RS-232/422/485, and digital I/O.
- **Customize for specific AMR applications** with multiple M.2 slots for Wi-Fi/Bluetooth modules, 5G modules, AI acceleration modules, and NVMe storage.
- **Withstand vibrations and shocks** with its rugged design, featuring aluminum extrusion, heavy-duty steel, and IP40 protection.
- **Simplify development and deployment** using the comprehensive AMR Builder Package, including pre-tested sensor modules and motor controllers, eliminating the trial-and-error phase.

Intel Ingredients



12th and 13th Gen Intel® Core™ i7 processors

- **Hybrid architecture** combines P-cores for demanding tasks and E-cores for background tasks.
- **High clock speeds** up to 5.4GHz (13th Gen) for single-core performance.
- **Intel Turbo Boost Max Technology 3.0** dynamically increases clock speed for bursts of performance.
- **PCIe 5.0 high-speed interface** for graphics cards and storage devices.
- **DDR5/DDR4** memory support for flexibility.
- **Intel Threat Detection Technology** protects against malware and cyberattacks.



Intel® RealSense™ Depth Camera D457

- **Stereo Depth Technology** captures detailed depth information using two infrared sensors and a projector.
- **High resolution** provides depth resolution up to 1280 x 720 at 90 FPS, wide field of view offers a horizontal FOV of 87° and a vertical FOV of 58° for capturing a broader scene.
- **Global shutter** ensures minimal motion blur and accurate depth data even in dynamic environments.
- **GMSL2/FAKRA high-speed interface** for reliable data transmission over long distances with reduced noise.

Learn More

- [Intel® Foundational Developer Kits](#)
- [Axiomtek | ROBOX500 Product Page](#)

Intel® Foundational Developer Kits allow you to get started on your targeted application development with a superior out-of-the-box experience. Deploy your application at scale by building customized systems via Intel ecosystem partners.

Performance varies by use, configuration, and other factors. Learn more on the Performance Index site.

No product or component can be absolutely secure.

Your costs and results may vary.

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Printed in USA 0724/DC/SPUR/PDF