AIoT Solutions in Automation

AXIOMTEK

www.axiomtek.com

Bridging Worlds

The Convergence of AI and IoT

As technology continues to evolve, IoT sensors are becoming more intelligent, leveraging advanced data analysis to optimize workloads and applications. The emergence of Artificial Intelligence of Things (AIoT) is further enhancing this optimization, particularly in industrial applications such as predictive maintenance and real-time computation at the edge. AIoT seamlessly integrates AI algorithms into IoT devices, enabling automation and machine intelligence without human intervention. This integration of AI models into IoT devices and edge computing platforms is ushering in a new era of efficiency and optimization across a wide range of edge computing applications.

Target Markets

Smart Manufacturing
Automotive, electronics, semiconductor, textile, and aerospace industries

Process Automation
Chemical and pharmaceutical, food and beverage, and heavy machinery and equipment manufacturing

Logistics
Warehouse, autonomous mobile robots (AMRs), and automated guided vehicles (AGVs)

Smart Energy
Solar energy, wind energy, and electrical substation

Embedded System Series

Axiomtek's edge computing systems are crafted to excel in mission-critical environments, ensuring reliable performance. They offer a range of essential features, including robust computing power, silent operation, wide temperature resilience, energy efficiency, unmatched reliability, and adaptable I/O configurations, as well as extended product lifecycles with ongoing support to fulfill customer needs.

eBOX100A

- Intel® processor N97 quad-core SoC (Alder Lake-N)
- Two 2.5GbE or four 2.5GbE
- -20°C to +60°C
- Supports DIN-Rail mounting
- Front-access design and low power consumption

eBOX671B

- 13th/12th gen Intel® Core™ processor (35W/65W)
- Dual-channel DDR5 SO-DIMM, up to 64GB
- -40 °C to +65 °C
- Three 2.5GbE LAN with TSN, 6 USB 3.2, and 4 COM
- Up to 5 display outputs with MXM 3.1 Type A

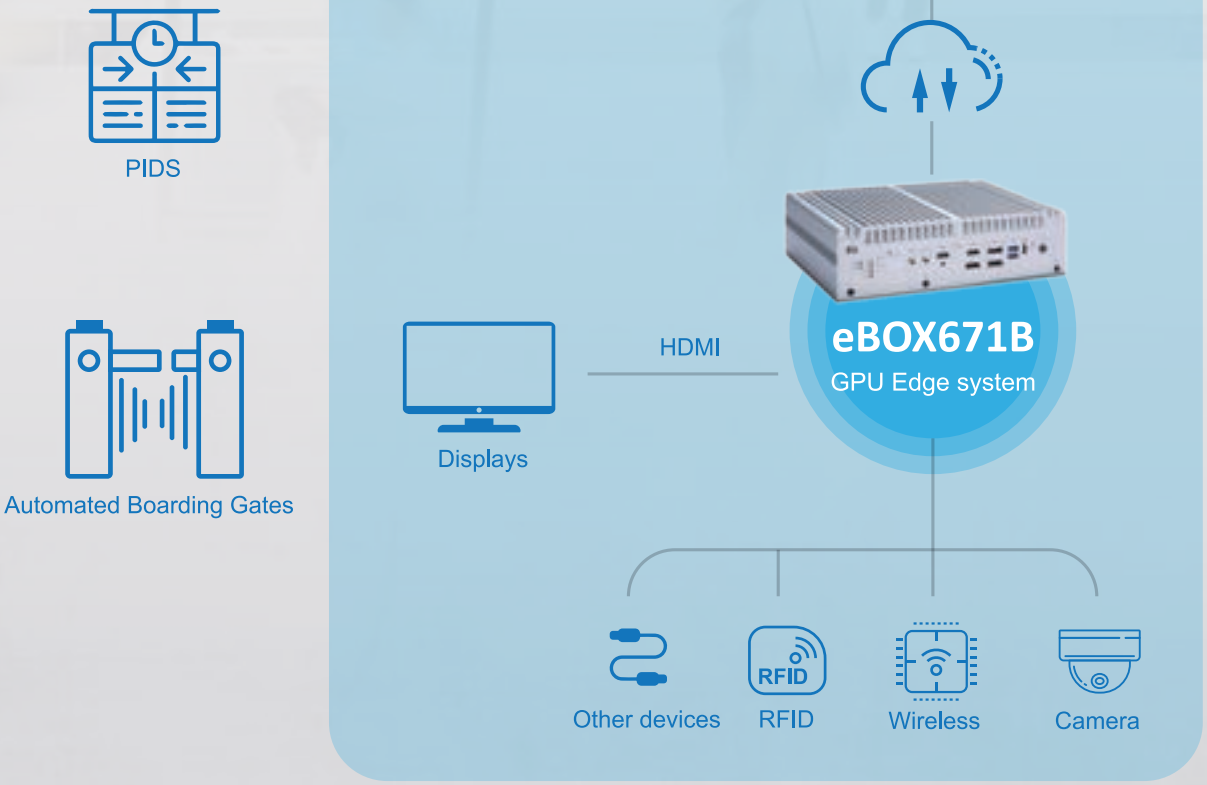
eBOX570

- 13th gen Intel® Core™ i7/i5 or U300E, TDP 15W
- -40°C to +70°C
- Compact size with several USB ports dedicated to high-bandwidth usage
- Supports high-speed NVMe storage (M.2 Key M 2280)
- Ideal for robotics applications such as AGV, AMR, and AIV

Use Case

Enhancing Efficiency, Convenience, and Safety In Transportation Hubs

The eBOX671B is perfect for passenger information display systems (PIDS) and automated boarding gates at airports. This rugged system is powered by the 13th/12th gen Intel® Core™ processor and supports dual DDR5 SO-DIMM slots for up to 64GB of memory. With multiple high-speed LAN ports, USB interfaces, and wireless capabilities, it facilitates seamless communication and data transfer with system terminals. Its versatile I/O interface and flexible I/O window make connecting devices such as IP cameras, lights, and RFID sensors quick and easy. Plus, it supports high graphics performance for facial identification technology via the GPU module.



Edge AI Systems

Axiomtek specializes in designing, developing, and manufacturing edge AI systems tailored to meet the demands of AI solution-ready systems. Our AI embedded systems are well-suited for robotics, computer vision, autonomous systems, and intelligent video analytics.

AIE900A-AO

- NVIDIA® Jetson AGX Orin™, up to 275 TOPS
- 8 PoE, GMSL or FPD-LINK for camera and sensor
- 9 to 36 VDC with ignition power control
- Supports ISAAC SDK and ROS 2

AIE100-ONX/ONA

- NVIDIA® Jetson Orin™ NX/Orin™ Nano, up to 100 TOPS
- IP42 rating for semi-outdoor applications
- Up to -25°C to +70°C

AIE510-ONX/ONA

- NVIDIA® Jetson Orin™ NX/Orin™ Nano, up to 100 TOPS
- 2 PoE and 4-CH GMSL for LiDAR and automotive camera connectivity
- 9 to 36 VDC with ignition power control (E-Mark certificated)

Use Case

Ensuring The Quality of Coffee Beans

The AIE100-ONX/ONA is ideal for food industry factories, especially serving as an AI optical sorter for inspecting and sorting coffee beans. This edge AI system is based on NVIDIA® Jetson Orin™ NX/Orin™ Nano, and is seamlessly integrating cameras and sensors to capture detailed bean images. AI algorithms then analyze these images, detecting defects, and classifying beans based on quality, roast level, and moisture content. Real-time feedback ensures consistent quality throughout production.

RSC101

- Hailo-8 ™ SoC AI accelerator, up to 26 TOPS
- 2 GbE LAN and USB, DIO, and HDMI
- -10°C to +70°C
- 12 to 24 VDC
- Preloaded Linux OS

RSC102

- Hailo-8 ™ AI accelerator, up to 26 TOPS
- Palm-sized with high AI computing performance
- GbE LAN, USB, COM, DIO, and HDMI
- -10°C to +60°C
- 12 to 24 VDC
- Preloaded Linux OS

Tower GPU Workstations

iHPC100

- Compact yet powerful computing
- PCIe card expansion for full-size GPU card
- ATX redundant PSU
- Door lock designed to prevent intrusion

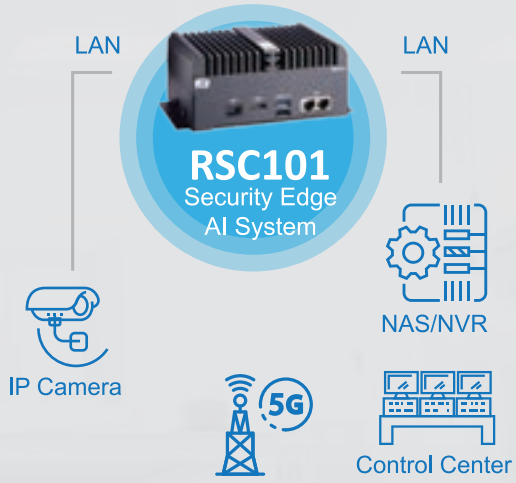
iHPC300

- 4U rackmount GPU system
- Powerful computing with a 40-core CPU and 384 GB memory
- Supports multiple accelerator cards with flexible configuration, accommodating up to 3 full-size PCIe x16 GPU cards

Use Case

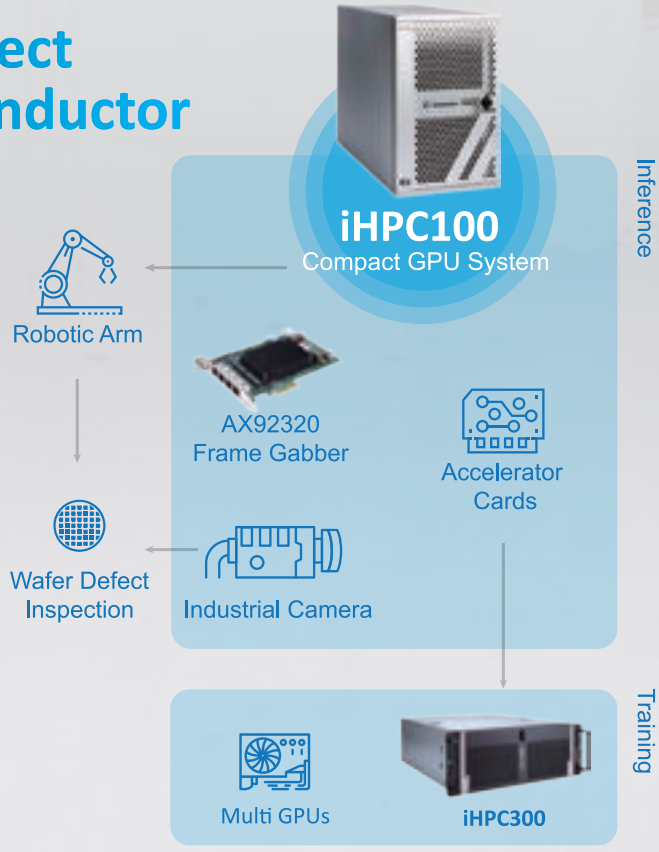
Securing Site Safety with a Smart Fence

The RSC101 is well-suited for smart fences in factories. This edge AI system is integrated with sensors, cameras, connectivity technology, and access control systems to prevent unauthorized access and mitigate safety risks. The solution helps create a robust perimeter defense system tailored to the needs of modern industrial facilities.



Improving Wafer Defect Inspection in Semiconductor Manufacturing

In semiconductor manufacturing, the iHPC100 brings several advantages to wafer defects inspection. Its powerful CPU and GPU card speed up defect detection with AI, while the multiple PCIe slots allow for the addition of specialized cards, improving accuracy. With support for high-wattage requirements and excellent thermal design, the system ensures uninterrupted operation and optimal performance of high-end accelerator cards, maintaining reliability throughout the inspection process.



Industrial PCs

Axiomtek offers a comprehensive lineup of industrial PCs designed to meet diverse environmental and application requirements. These industrial PCs boast robust computing performance, ample storage capacity, versatile expansion interfaces, extensive I/O options, and a rugged design.

IPC920

- LGA1700 socket 13th/12th gen Intel® Core™ or Celeron® processor
- Rugged control and fanless system with IP40-rated design
- Intelligent power management: control of ignition and USB power on/off
- Connectors with pull-resistant design

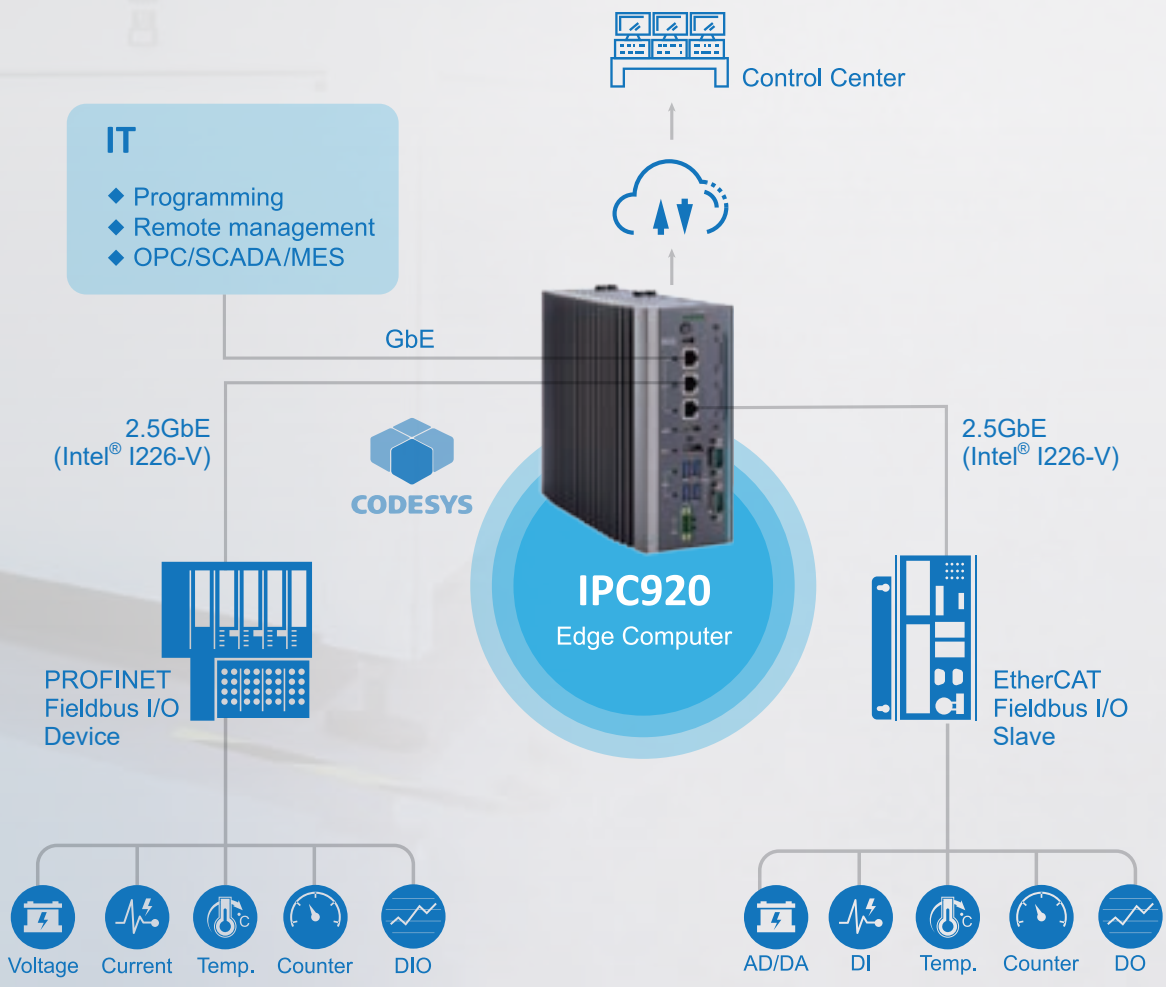
IPC962A/964A

- LGA1700 socket 13th/12th gen Intel® Core™ or Celeron® processor
- Intelligent power management: control ofignition and USB power on/off
- Supports 2/4 PCI or PCIe slots and up to 200W power for the GPU
- Optional I/O module for system extension

Use Case

Enhancing Predictive Maintenance with Optimized Machine Condition Monitoring

On-site predictive maintenance relies on integrated sensors to gather data such as current, temperature, and voltage for analysis. The IPC920, with its built-in I/O including three GbE LAN, two COM, and five USB ports, is ideal for industrial use. Additionally, it offers flexible expansion to meet various sensor interface and networking needs for predictive maintenance.



Machine Vision Systems

Axiomtek's vision systems and cards add-on-cards are specifically designed for applications in vision inspection, guidance, measurement, and identification. These products undergo thorough compatibility testing to preempt integration issues, effectively reducing development and staffing expenses, while expediting system deployment in factory automation environments.

MVS100-323-FL

- Ultra-compact all-in-one system
- Integrated real-time vision I/O
- Supports GigE Vision camera interfaces
- Supports TPM 2.0

PCI Express Card

AX92321

- M12 X-coded connectors with a special single-slot design
- Supports 2/4 independent Gigabit PoE ports
- Supports PoE power management software
- Expandable functionality for machine vision and surveillance system applications

Frame Grabber & Vision I/O Cards

IPC962A

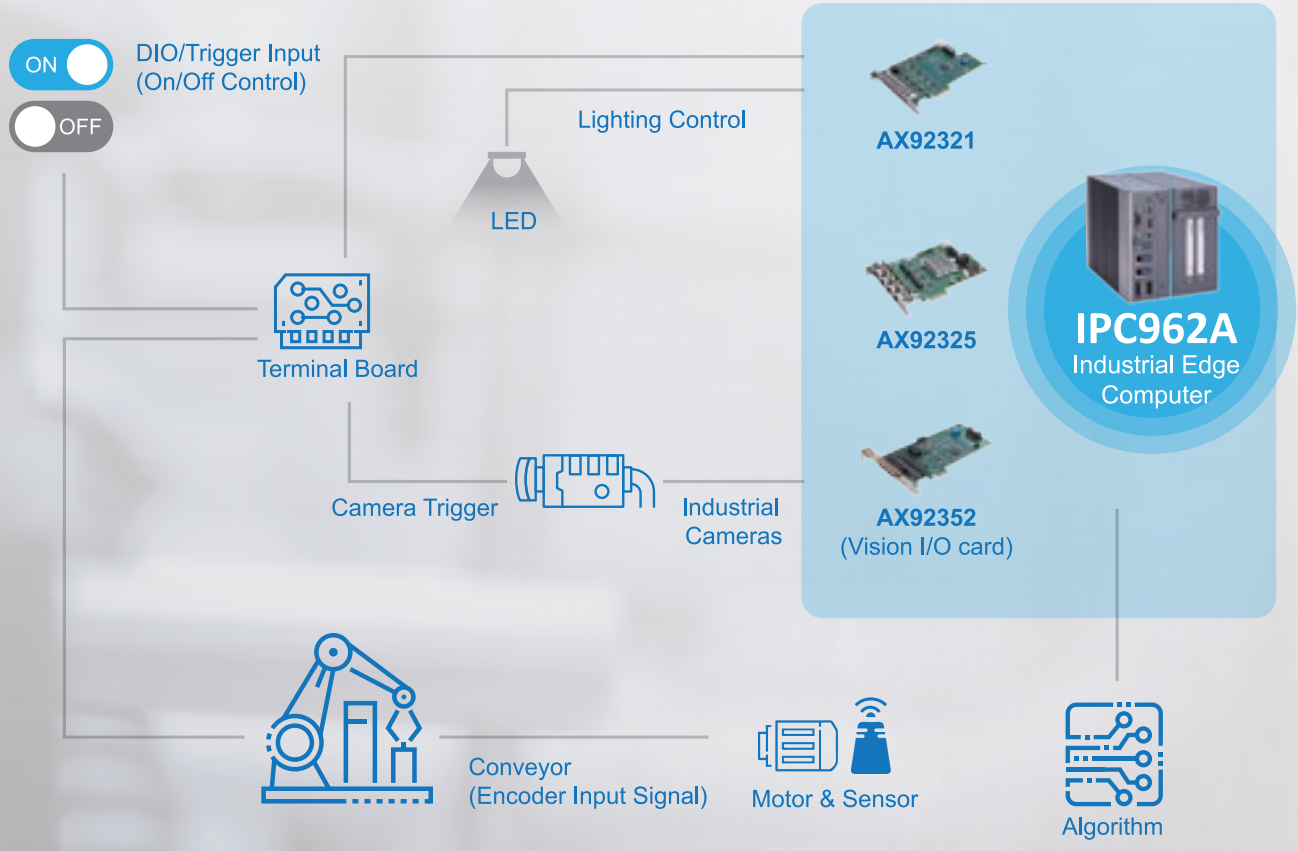
AX92325

- 4/8 independent USB 3.0 host controllers deliver up to 5 Gbps bandwidth per port
- Supports software-controlled power on/off functionality
- Supports USB 3.0 vision cameras

Use Case

Enhancing PCB Inspection with Automated Optical Inspection (AOI)

Modern PCBs are getting smaller and more complex, posing challenges for inspection. AI integration in AOI improves capabilities through machine learning, boosting yield and efficiency while reducing manual work. Compared to traditional AOI, it's more efficient and accurate. The IPC962A swiftly and accurately processes images and signals with real-time vision I/O, connecting triggers, optical sensors, and LED lighting control. It also supports GigE Vision or USB 3.0 camera interfaces to connect industrial for seamless online inspection with industrial cameras.



Autonomous Mobile Robots (AMRs)

Axiomtek's ROBOX series AMR controllers are perfect for a variety of autonomous mobile robots (AMR), including robust vehicles such as driverless forklifts and shelf-lifting AMRs.

- **Unmatched Performance**
  The ROBOX500 is the first x86 AMR controller with a GMSL interface, ensuring stable long-distance image transmission for advanced applications.

- **Versatility at its Core**
  The ROBOX series features versatile I/O capabilities, supporting various modules for additional functions. They operate reliably in diverse environments due to their wide temperature range and compatible (9 to 60 VDC) power input.

- **Simplified USB Management**
  The ROBOX300 provides six dedicated USB ports with individual power control, allowing for easy resetting of malfunctioning devices without the need to reboot the controller, thus saving time.

- **Effortless AMR Development**
  The ROBOX series seamlessly integrates with the user-friendly Axiomtek Builder Package, based on ROS 2. This toolkit streamlines AMR development, facilitating quick and efficient robot building.

ROBOX500

- 13th/12th gen Intel® Core™ i7 processor (28W/15W)
- Rugged and modular design for heavy-duty AMR
- Anti-vibration connectors
- Supports GMSL camera connectivity
- Compliant with IEC 60721-3-5 5M3 for vibration and shock

ROS 2 intel REALSENSE

ROBOX300

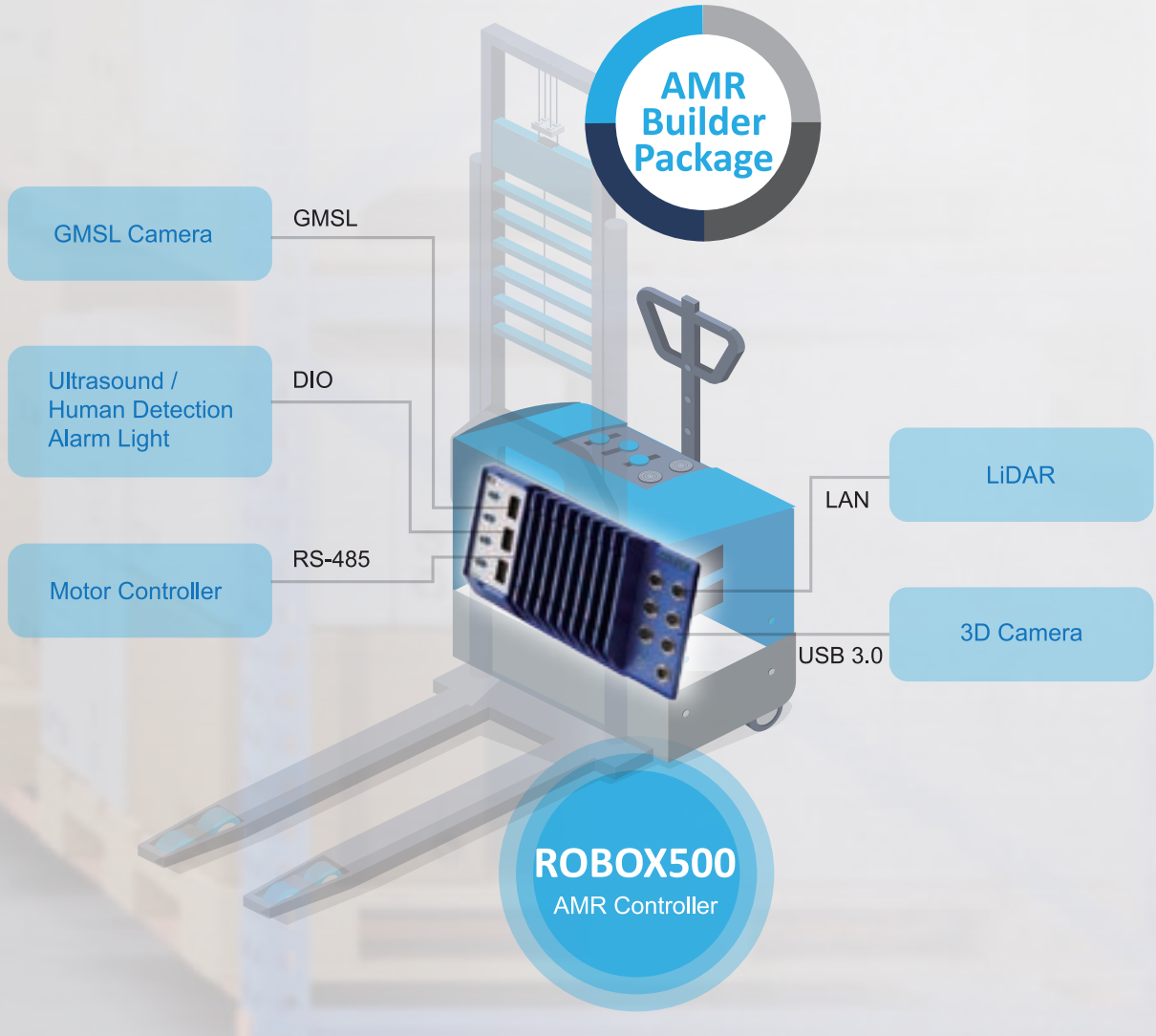
- 11th gen Intel® Core™ i5 processor (15W)
- Compact yet robust
- 9 to 60 VDC
- 6 COM and 2 CAN with isolation
- 6 USB with power on/off control function

ROS 2 intel REALSENSE

Use Case

Maximizing Efficiency with Intelligent Intralogistics Automation

The ROBOX500 is a cutting-edge AMR controller built on ROS 2, taiored for precise navigation and control in heavy-duty industries. Powered by the high-performance 13th/12th gen Intel® Core™ i7 processor, it offers exceptional computing power for demanding applications. With a 4-channel GMSL interface and high-resolution camera, it ensures low-latency and clear imaging over long distances.



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