Case Study

Advanced Visual Docking Guidance System for Aircraft Parking

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For many busy airports around the globe, to maintain efficient operations, the aircraft has to be parked on the apron as quickly and precisely as possible under the premise of safety for a jet bridge to reach the aircraft. To ensure the pilots park the aircraft at the exact position in front of the respective gates, Advanced Visual Docking Guidance Systems (A-VDGS) are introduced to airports to provide pilots with visual guidance.

Challenges

The customer, which is a solution provider in the aviation industry, was looking for an industrial-grade and reliable single board computer to build its Advanced Visual Docking Guidance System (A-VDGS). The SBC should come with a compact form factor, passive cooling, and wide operating temperature support. Moreover, the high quality SBC is expected to drive its infrared laser and 3D scanning devices for actively scanning both vertically and horizontally the gate area to capture the position to locate aircraft.

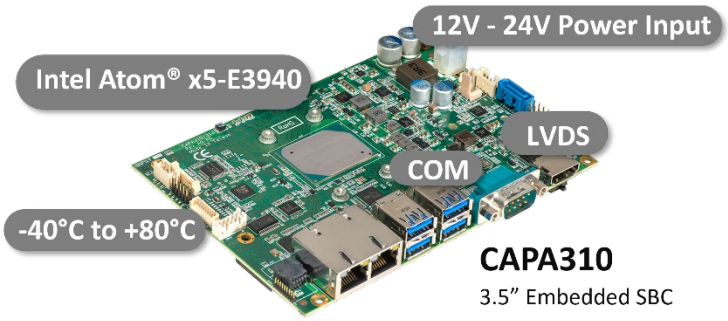
Main Requirements

- Compact embedded board
- Powered by low power Intel Atom®-based processor
- Passive cooling design for energy efficiency and cost saving
- Wide operating temperature range from -40°C to +80°C
- 24VDC power input for the aviation industry
- Two RS-232/422/485 and LVDS supported

The 3.5" Embedded SBC tracks aircraft and provides precise guidance

Axiomtek has proposed its CAPA310, a 3.5-inch embedded SBC featuring the onboard quad-core Intel® Atom® x5-E3940 processor. At a small form factor, it can be installed in a small chassis to complete the system. It is highly reliable with an operating temperature range of -40°C to +80°C to

work in outdoor environments all year, and a power input of 12V to 24V DC. It is equipped with a COM port for a 3D scanner and LVDS for display and switch. The CAPA310 is a highly versatile platform designed for industrial automation, self-service terminals, digital signage, POS/kiosk displays, medical, and more.

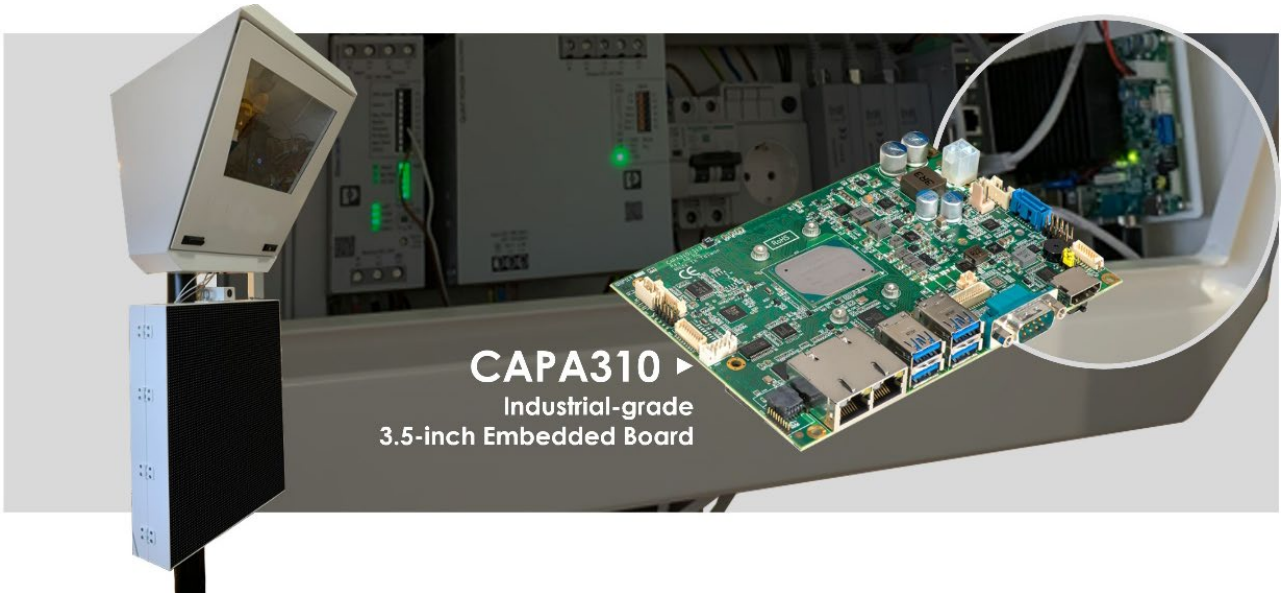


Application

Utilizing the CAPA310 for Advanced Visual Docking Guidance System

The customer applied CAPA310 to build its A-VDGS. With its proven infrared laser and 3D scanning devices, the A-VDGS can actively scan the gate area both vertically and horizontally to capture and track aircraft. With a screen, the system aims to provide active guidance, showing the pilots the position information like if the aircraft is at the centerline or not and the distance to the stopping

point on a screen. It continues to display the information until the aircraft is correctly positioned, at which point a "STOP" and "OK" signal is shown.



System Configurations of the CAPA310

- Intel® Atom® x5-E3940 processor (codename: Apollo Lake)
- One DDR3L SO-DIMM for up to 4GB of memory
- 16GB mSATA for storage needs
- Two RS-232/422/485
- One HDMI and one LVDS
- Two USB 2.0 and four USB 3.0
- One PCI Express Mini Card slot
- Wide operating temperature range from -40°C to +80°C
- 24VDC power input for the aviation industry
- Customized BIOS

Why Axiomtek

As one of the leaders in IPC, Axiomtek provides quality and stable SBCs in various form factors. With over 30-year experience, we also provide rapid after-sales service to speed up the deployment and maximize the profits for our customers.

“Surpassing all our previous experience, we have found our collaboration with Axiomtek to be exceptionally efficient. The integration process was seamless, and its support team has been incredibly responsive and helpful. We highly recommend Axiomtek to any company seeking scalable and tailored embedded SBC options,” said the R&D Project Manager of the customer.

About Axiomtek Co., Ltd.

Axiomtek has experienced extraordinary growth in the past 30 years because of our people, our years of learning which resulted in our tremendous industry experience, and our desire to deliver well-rounded, easy-to-integrate solutions to our customers. These factors have influenced us to invest in a growing team of engineers including software, hardware, firmware, and application engineers. For the next few decades, our success will be determined by our ability to lead with unique technologies for AIoT and serve our key markets with innovatively-designed solution packages of hardware and software – coupled with unmatched engineering and value-added services that will help lessen the challenges faced by our systems integrator, OEM and ODM customers and prospects alike. We will continue to enlist more technology partners and increase collaborations with our growing ecosystem who are leaders in their fields. With such alliances, we will create synergy and better deliver solutions, value, and the expertise our customers need.