Case Study

Passenger Information System for Railway

Passenger information system for railway demands exceptionally reliable motherboard

The passenger information system increases the traveling comfort for passengers, giving them real-time information such as route information, time, delay, destination, news, weather, and advertising. It is one of the devices that people cannot tolerate delay or technical malfunctioning in public transportation systems. So, it requires a highly reliable and durable system to ensure long-term stable operation.

Challenges

The customer, based in Northern Europe, was looking for a high-quality single board computer to build its 72-inch passenger information system for a local rail transit project. Considering that the passenger information systems must be operated outdoors, the embedded board needs to be highly reliable with an extended operating temperature for use in extreme weather conditions. Moreover, the fanless operation, low power consumption and small form factor are must-have features.

Main Requirements

● Fanless operation and compact-size design
● Flexible configuration and expandability
● Wide operating temperature range from -40°C to +80°C in outdoor environments

Building an information system on a small form factor SBC with extended operating temperature

Axiomtek has proposed the CAPA310, a fanless, feature-rich 3.5-inch embedded SBC powered by the onboard quad-core Intel® Atom® x5-E3940 processor (Apollo Lake). It comes with a small form factor, fanless design, dual-view display, and multiple expansion interfaces to meet customers' needs. The dual-view display includes one HDMI port and one
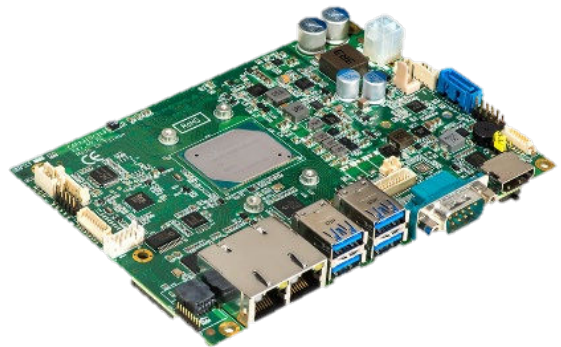
LVDS, with optional VGA, making the SBC a cost-effective choice for the passenger information system. With a wide operating temperature ranging from -40°C to +80°C, the embedded SBC is suitable for solutions that function in outdoor or extreme weather environments.

Application
72-Inch passenger information system performs in harsh environment

Considering the locations of the deployment include outdoor environments, the passenger information systems need extended operating temperatures to ensure stable and non-stop operation. Axiomtek's CAPA310 was installed inside the system to receive and display real-time information.

The Intel® Atom-based CAPA310 provides high computing capability to meet the requirement of presenting real-time travel information, public announcements, and advertisements to passengers. To accommodate harsh outdoor operating conditions in Northern Europe, its capability to operate under low-temperature conditions must be addressed strongly. Dual independent displays, rich I/O interfaces, support for DDR3L up to 8GB, and of course industrial-grade reliability make this compact embedded board ideal for passenger information system requirements.

3.5-inch Intel® Atom-based platform CAPA310
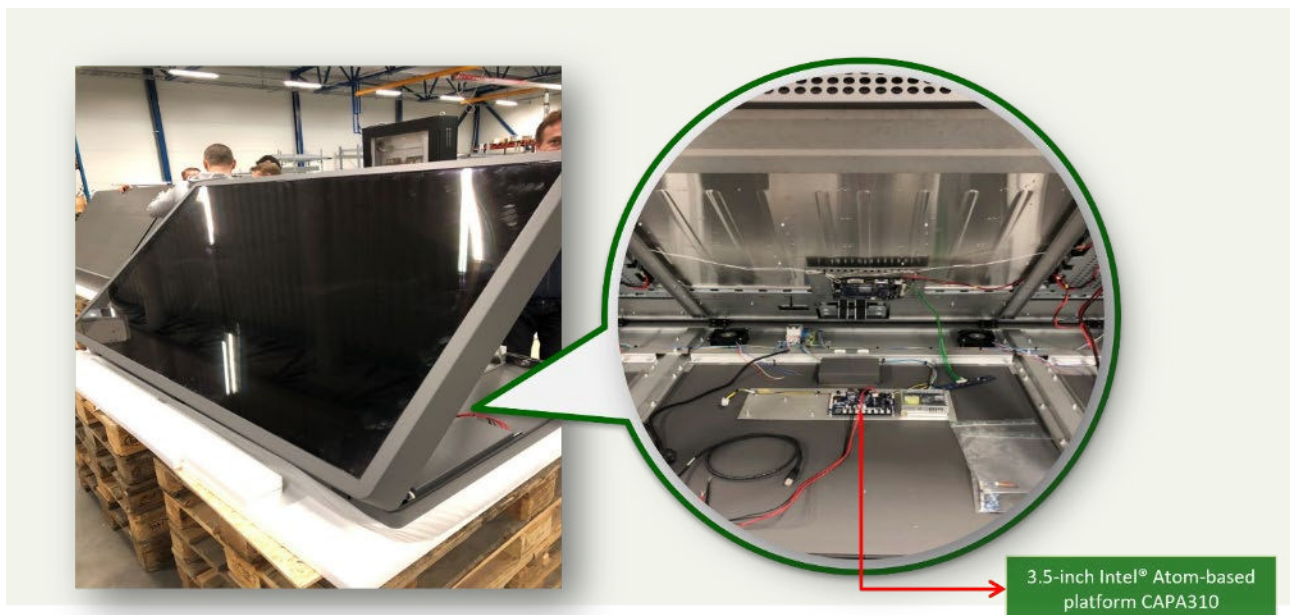
The passenger information system is 72-inch and provides a variety of infotainment. While the

screen is big, the heat it generated could affect the system's operation if the SBC consumes too much power and causes heat. So, the SBC should be low-power and generate little heat and it was one of the key features that the customer chose the CAPA310. Also, the CAPA310 is equipped with a display interface that provides high-resolution images. The system has an antenna that receives real-time information to be displayed from the control room via wireless connectivity.

System Configurations of the CAPA310

- 3.5-inch compact size and fanless operation
- Quad-core Intel® Atom® x5-E3940 processor (codename: Apollo Lake) onboard
- One DDR3L SO-DIMM for up to 8GB of memory
- Two USB 2.0, four USB 3.0, and one PCI Express Mini Card slot for wireless connection
- ZIO connector supporting USB, PCIe x1, LPC and SMBus signal
- Wide voltage DC input from 12V to 24V
- -40°C to +80°C operating temperature range

*For detailed specifications, please visit www.axiomtek.com or go to Products > Boards & Modules > Industrial & Embedded Motherboards for > 3.5-inch Embedded Board for CAPA310

Why Axiomtek

Axiomtek offers SBC in various form factors and performances for different demands. But providing products with high quality is just the basic standard for Axiomtek. More than that, as a leader in industrial PCs, Axiomtek provides long product life support for customers therefore the whole procurement can be deemed as cost-effective in the long term. When customers encounter technical problems, they can get real-time technical support and fast response from the experts via a customer-exclusive support site.

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.

Axiomtek is a Member of the Intel IoT® Solutions Alliance. A global ecosystem of more than 800 industry leaders, the Alliance offers its members unique access to Intel technology, expertise, and go-to-market support—accelerating the deployment of best-in-class solutions.