



# Case Study

## In-Vehicle Passenger Information System

## Enhancing the Passenger Experience and Operational Efficiency

In the era of smart transportation, in-vehicle passenger information systems are revolutionizing how passengers interact with public transit. These systems deliver essential information such as real-time arrival updates, route details, next stops, and entertainment content, all of which enhance the overall passenger experience.

### Challenges

The customer based in the Netherlands, specializing in public transport advertising across buses, trams, and metro systems, was looking for a compact, fanless embedded computer for an in-vehicle passenger information system. Key requirements included support for wide-range power input, extended operating temperatures, and anti-vibration resilience. It also needed to comply with rigorous third-party certifications to meet operational requirements.

### Main Requirements

- Fanless embedded system in a compact size
- Dual HDMI outputs for two displays
- Wide-range power input for stability
- Supports extended operating temperature range
- Anti-vibration design for in-vehicle durability
- ISO 7637-2 certificated is preferred

## Optimizing In-Vehicle Passenger Information Systems with Compact, Fanless Embedded Computers



Axiomtek's tBOX110 is the ideal solution for this in-vehicle application. Certified with EN 45545-2, EN 50155, and ISO 7637-2, the tBOX110 is a compact, fanless transportation embedded system designed to meet the tough demands of public transport environments. It supports a wide range of power inputs: 12/24 VDC with smart ignition for vehicles,

24 to 110 VDC for rail applications, and 9 to 36 VDC for general use, ensuring stable and flexible operation across various transportation systems.

The tBOX110 operates in extreme temperatures from  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  and offers 3Grms vibration resistance, making it exceptionally resilient to the harsh conditions typically found in buses, trams, and trains. Additionally, it supports dual HDMI outputs, enabling the simultaneous display of content on two screens, which is perfect for dynamic real-time passenger updates and multimedia content.

## Application

### In-Vehicle Passenger Information System for Bus



The customer integrated Axiomtek's tBOX110 into its bus passenger information system, managing displays for real-time arrival updates, advertisements, and entertainment content, enhancing the passenger experience while driving business growth.

In-vehicle passenger information systems demand high reliability, durability, and performance under harsh environmental conditions. By choosing the right fanless embedded computer—one that supports wide-range power input, extended operating temperatures, anti-vibration resilience, and

ISO 7637-2 certification—transport operators can ensure their system functions optimally, providing a seamless passenger experience while meeting the operational needs of the transport fleet.

With the tBOX110, operators can confidently deploy an embedded system that not only meets these technical and environmental requirements but also ensures that the system remains robust and reliable, even in the most demanding in-vehicle environments.

### **System Configurations of the tBOX110**

- CE, FCC, LVD, EN 45545-2, EN 50155, and ISO7637-2 certified
- Wide range temperature support from -40°C to +70°C (EN 50155 OT4)
- 9 to 36 VDC and 24 to 110 VDC
- Smart ignition ensures safe shutdown
- Compact design with rich I/O connectivity
- TPM 2.0 support
- Customized BIOS service

### **Why Axiomtek**

As the need for smart transportation and real-time passenger information continues to grow, the role of compact, rugged embedded systems will become even more critical in ensuring the efficiency, safety, and reliability of modern in-vehicle information systems.

“Axiomtek’s tBOX110 with compact design, robust performance, and reliable operation under extreme conditions were crucial for our in-vehicle passenger information system. The certification standards met by tBOX110 assured us that the system would perform seamlessly and consistently in the demanding transport environment,” said the Engineering 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.

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.