

Case Study

Darveen Embedded Computers Power Next-Generation Self-Service Ticketing at Major Spanish Railway Hub

The Challenge

A major Spanish railway operator sought to modernize its Automatic Fare Collection (AFC) system by deploying next-generation self-service kiosks at one of its busiest stations. The primary goal was to reduce long queues at ticket counters and enhance operational efficiency with a reliable solution. The hardware needed to operate 24/7 in a demanding public environment, handling everything from high-resolution user interfaces and secure payment processing to ticket printing and robust network communications. A crucial requirement was a scalable platform that could easily accommodate future upgrades and new peripherals for these advanced ticket kiosks.

The Darveen Solution

After a comprehensive evaluation, the railway operator chose Darveen to deploy a multi-tiered computing solution utilizing three of its embedded computers: the [NBC-2360](#), [MIC-7100](#), and [MIC-7111](#).

NBC-2360: The Standard Workhorse for General Ticketing

The [NBC-2360](#) was chosen as the primary computing engine for the majority of the self-service kiosks. Its fanless design and rugged build were perfectly suited for the station's dusty environment, ensuring long-term reliability with minimal maintenance. The powerful Intel® Celeron® J6412 processor delivered ample performance to run the intuitive touchscreen software, quickly process transactions, and manage the integrated thermal printer and barcode scanner.

The NBC-2360's extensive I/O ports were a critical feature. With 6 COM ports and 6 USB ports, the railway operator could connect all necessary peripherals, including:

- **Ticket Printer:** A serial connection for reliable, high-speed ticket printing.
- **Barcode Scanner:** For reading QR codes and pre-booked ticket information from mobile devices.

- **Payment Module:** For secure processing of credit card and contactless payments.

The dual LAN ports of NBC-2360 allowed the terminals to maintain a stable network connection for real-time transaction processing and connect to a separate network for remote monitoring and diagnostics, maximizing uptime.

MIC-7100 and MIC-7111: The Powerhouse for Enhanced Functionality

For the larger, more advanced terminals at the main station entrance, the railway operator integrated the [MIC-7100](#) and [MIC-7111](#), powered by 9th Gen Intel® Core™ i5/i7 processors. These units were deployed in terminals offering more complex services:

- **Advanced Payment System Integration:** The MIC-7111's support for a PCIe x16 expansion slot was a key advantage for system integrators. This provided the flexibility to install a dedicated custom interface card, enabling seamless integration with sophisticated cash handling modules that can accept, validate, and dispense both coins and banknotes.
- **Customized Peripheral Support:** The extra PCI slot was highly valued for its customization

potential. Integrators could deploy specialized expansion cards to meet project-specific requirements, such as adding a high-speed document scanner for identity verification or incorporating other unique peripherals as needed. This adaptability ensures the terminals could be configured to meet a wide range of customer demands, from advanced security features to unique data-capture capabilities.

Results

The implementation of Darveen's embedded computers successfully modernized the station's Automatic Fare Collection system. The new self-service kiosks significantly reduced long queues, leading to a 40% increase in self-service transactions and ensuring a future-proof, reliable solution for all passenger needs.



About Darveen

Darveen is a global solutions provider specializing in rugged industrial computing for harsh and demanding environments. Founded in 2007, we focus on panel computing and offer a comprehensive product portfolio including vehicle mount computers, industrial panel PCs, embedded box computers, in-vehicle computers, and rugged tablets. Our solutions are widely used in smart ports, logistics, heavy-duty vehicles, and more. As Industry 4.0 advances, we continue expanding into edge computing, industrial automation, medical, and marine sectors—delivering reliable, customized systems through agile and efficient manufacturing.

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