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# DFI

## Revolutionizing Railway Safety Monitoring: Chinese System Integrator Achieves Superior Performance with DFI's Industrial Motherboard Solution

### Background of Story

#### Railway Safety Monitoring: A Growing National Priority

In China's expansive railway network, where safety and reliability are paramount, system integrators face the ongoing challenge of implementing efficient temperature and vibration monitoring solutions. A leading Chinese system integrator in the transportation sector sought to modernize their testing infrastructure while maintaining cost-effectiveness. Their search for an industrial-grade embedded system led them to DFI's CMS310, a high-performance microATX motherboard designed specifically for intelligent transportation monitoring systems.

Industry: **Transportation**

Application: **Railway Temp. Testing**

Solution: **CMS310**



DFI

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# Pain Points

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## Legacy System Limitations in Railway Temperature & Vibration Monitoring

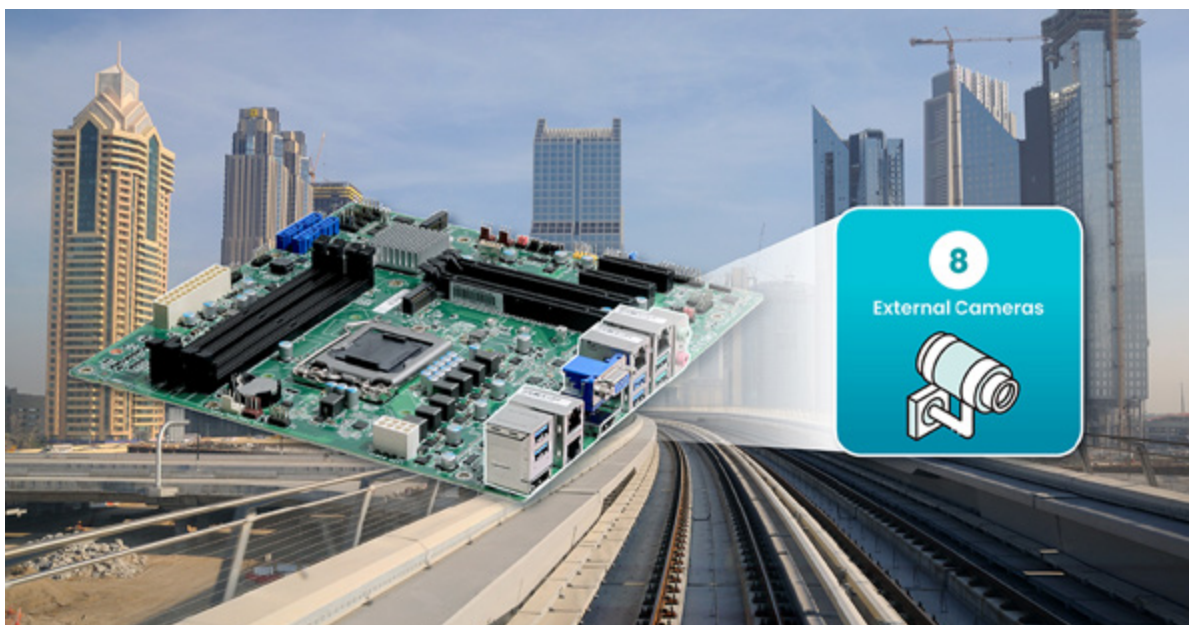
The system integrator's existing embedded computing solution, based on 6th Generation Intel Core processors, was becoming increasingly costly to maintain. They required an industrial control system that could support more extensive camera connectivity beyond their current four-camera limitation for railway temperature and vibration testing. Additionally, their technical requirements demanded specialized connectivity options, including M12 connectors and DI/DO card compatibility. The integration of multiple cameras and testing equipment necessitated an industrial motherboard with robust expansion capabilities and comprehensive I/O support.

# DFI's Response & Results

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## Advanced Railway Control: DFI's CMS310 Monitoring Solution

DFI's CMS310 industrial microATX motherboard emerged as the ideal choice, offering significant advantages over competing options. Built around the powerful 10th Generation Intel® Core™ processor platform with Intel® W480E/Q470E chipset, this embedded motherboard provides exceptional processing capabilities for railway monitoring applications. The microATX motherboard's multiple expansion slots and rich I/O ports support network card integration, enabling connection of up to eight cameras - double the capacity of competitor solutions. This industrial-grade embedded system's versatile design accommodates various expansion cards and peripherals, making it perfect for complex railway safety systems.



## Direct Impact

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### **Quantifiable Performance Gains**

The implementation of the industrial computing solution delivered remarkable results for the transportation system integrator. Overall solution costs were reduced by 50% compared to previous systems, while processing performance improved by 30%. The expanded connectivity options and superior processing power enabled more comprehensive testing coverage, enhancing the transportation safety testing capabilities.

## CMS310 key features/spec

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### **Advanced Railway Computing Architecture with Multi-Display Monitoring**

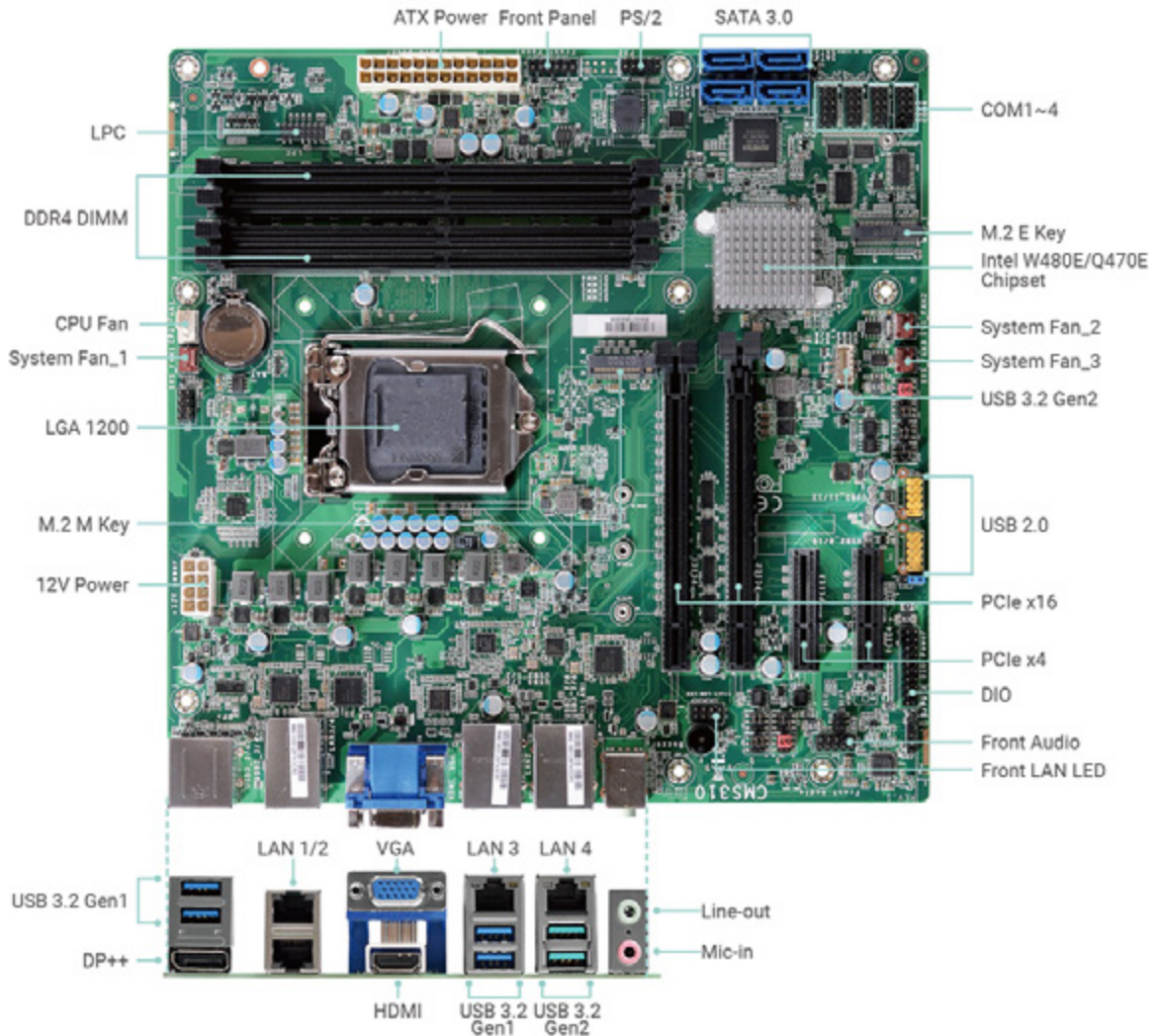
The CMS310 industrial motherboard integrates critical features designed for railway temperature and vibration testing applications. At its core, the 10th Gen Intel® Core™ processor with Intel® W480E/Q470E chipset works in conjunction with four DDR4 DIMM slots supporting up to 128GB of memory, enabling real-time processing of multiple temperature and vibration sensor inputs and camera feeds while maintaining extensive data logging capabilities for long-term analysis. The system's triple independent display support through VGA (1920x1200 @60Hz), DP++ (4096x2160 @60Hz), and HDMI 1.4b (4096x2160 @24Hz) enables simultaneous monitoring of multiple vibration and temperature zones with thermal imaging displays, delivering comprehensive visual monitoring capabilities for entire railway systems.

### **Comprehensive Railway Control: Robust Connectivity with Industrial Reliability**

The CMS310 delivers extensive expansion capabilities through multiple slots (2 PCIe x16, 2 PCIe x4, M.2 slots) and 4 SATA 3.0 ports, complemented by a rich I/O interface featuring 4 Intel GbE ports, 4 COM ports, and 12 USB ports. This versatile connectivity facilitates seamless integration of temperature monitoring cards, network expansions, and up to 8 cameras for comprehensive thermal monitoring. Engineered for railway demands, the system offers 15-Year CPU Life Cycle Support until Q2'34 and is built for continuous 24/7 operation, ensuring long-term stability and reliable maintenance support for critical temperature monitoring systems in demanding railway environments.

This successful implementation demonstrates how DFI's industrial computing solutions deliver comprehensive value through robust temperature and vibration monitoring capabilities and future-proof expandability. The CMS310 embedded motherboard not only optimizes immediate performance and reduces costs but also ensures long-term reliability in intelligent transportation systems, proving that advanced technology can effectively meet the stringent requirements of railway safety and other industrial applications while maintaining flexibility for future innovations.

# CMS310 key features/spec



**2 Extension Modules for Additional 4 COM Ports (via the LPC connector)**

**DFI's Proprietary Technology**

- EXT-RS232 - 4 RS232
- EXT-RS485 - 4 RS485

DFI Motherboard  
EXT-RS232/RS485  
Additional 4 COM

## KEY FEATURES



### DDR4

4 DDR4 DIMM up to 128GB



### 4K High Resolution

Supports 4K/ 2K resolution



### Triple Displays

VGA, DP++, HDMI 1.4b



### Multiple Expansion

2 PCIe x16 (1 x16 or 2 x8 signal), 2 PCIe x4, 1 M.2 E Key, 1 M.2 M Key, 4 SATA 3.0



### Rich I/O

up to 4 Intel GbE, 4 USB 3.2 Gen 2, 4 USB 3.2 Gen 1, 4 USB 2.0, 4 COM

# DFI

Founded in 1981, DFI is a global leading provider of high-performance computing technology across multiple embedded industries. With its innovative design and premium quality management system, DFI's industrial-grade solutions enable customers to optimize their equipment and ensure high reliability, long-term life cycle, and 24/7 durability in a breadth of markets including factory automation, medical, gaming, transportation, smart energy, defense, and intelligent retail.

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