ADLINK TECHNOLOGY INC.



Application

Automatic Train Supervision (ATS) Solution for Railway Signal System

ADLINK Technology, Inc.

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Automatic Train Control (ATC) is a railway control, supervision and management system composed of three subsystems: Automatic Train Protection (ATP), Automatic Train Operation (ATO) and Automatic Train Supervision (ATS). The ATS system is responsible for monitoring and controlling the rail system to ensure that it conforms to an intended schedule and traffic pattern in order to optimize railway operations and service reliability. ATS helps to avoid or reduce damage resulting from system abnormalities and equipment malfunctions by performing the following tasks: supervision of train status, automatic routing selection, on-the-fly adjustment of train operations, automatic schedule creation, automatic operations logging, statistics and report generation, automatic system status monitoring, and coordination of personnel scheduling for train management.

Challenges

With increasing traffic loads and complexity of technology in the railway environment, an advanced computing platform with high vibration resistance, ease of expandability and low Mean Time to Repair (MTTR) is needed to meet the reliability and performance requirements of high-speed rail transportation. Traditional industrial PC-based platforms (IPCs) are no longer able to meet the operating requirements of harsh environments. CompactPCI platforms deliver advantages in computing power, wide operating temperature range, vibration resistance, lower MTTR and remote management and monitoring capabilities.

ADLINK Solution

CompactPCI systems are enabling Automatic Train Control (ATC) systems to solve today's critical railway problems by providing solutions featuring Reliability, Availability, Serviceability, and Scalability, and with increased ruggedness, shorter mean time to repair (MTTR), higher density and improved performance.



Wayside ATS System in China

Reliability

As Automatic Train Supervision (ATS) systems used for wayside control are located very close to railway tracks, the golden fingers of PCI cards employed by traditional industrial PCs are not robust enough to sustain the vibration caused by the passage of trains, resulting in system unreliability and instability, disruption of signal collection, and generation of communication errors. The worst case scenario is when railway operations come to a halt for equipment maintenance or repairs. To properly deal with heavier traffic loads and the increasing number of trains running on tracks, there has been an emerging trend to replace traditional platforms with CompactPCI products, which feature rugged hard metric connectors to provide reliable connections. ADLINK CompactPCI products are designed to meet the demands of harsh environments, withstand high shock and vibration, and operate in an extended temperature range of -40°C to 85°C, as well as having been fully tested for the railway operating environment in order to support EN50155 compliance.

Availability

CompactPCI is a PICMG standard implemented on the Eurocard form factor that provides more rugged packaging and more secure interconnects than legacy PCI cards. CompactPCI is an open standard with off–the-shelf software support, ensuring compatibility of components available on the open market. Employing CompactPCI products helps to shorten system development time, reduces maintenance costs and boosts overall system performance. ADLINK guarantees a product life cycle of 7 years, ensuring that mission critical applications such as railway transportation get full support and service for the full life of the system.

Serviceability

Ideal for mission critical transportation applications, especially those for modern urban railway systems, CompactPCI allows operators to hot-swap blades without the need to open the chassis, thus reducing downtime and MTTR and allowing customers to save on resources required for maintenance. The modular design, front access and rear I/O availability of CompactPCI allows these systems the flexibility required for the various functions they perform.

Scalability

CompactPCI combines a Eurocard-type connector and PCI signaling and protocols. The connectors and the electrical rules allow for eight boards in a PCI segment, making the systems highly scalable for the future needs. ADLINK's rich CompactPCI product portfolio with high-density I/O allows customers to create ultra-high density platforms for their applications. ADLINK provides a wide range of CompactPCI processor blades, with CPUs ranging from low power Intel® Atom to high performance Intel® Core™, to meet the requirements of various control systems. With scalable peripherals including XMC &

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PMC modules and Ethernet cards, as well as multi-segment backplanes, power supplies and chassis, customers can work with ADLINK to build their solutions. ADLINK is continually developing high performance, high density and power efficient products backed by software such as SEMA (Smart Embedded Management Agent) to shorten time to market for our customers.

ADLINK has a selection of EN50155 compliant CompactPCI products to meet customers' needs.



cPCI-3620: 3U CompactPCI® Dual-Core Intel® Atom™ Processor Blade



cPCI-3615: 3U CompactPCI® Dual-Core Intel® Atom™ Processor Blade



cPCI-3544: 4-Port RS-422/485 Isolated Serial Communications Card



cPCI-3E10: 3U CompactPCI® 2/4-Port Gigabit Ethernet Card

Benefits for Our Customer

- Solve the shortcomings of traditional IPC platforms
- Total solution including standard and customized products
- Price competiveness and localized technical support
- Higher system reliability, robustness and stability and longer service cycle

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About ADLINK Technology

ADLINK Technology is enabling the Internet of Things (IoT) with innovative embedded computing solutions for edge devices, intelligent gateways and cloud services. ADLINK's products are application-ready for industrial automation, communications, medical, defense, transportation, and infotainment industries. Our product range includes motherboards, blades, chassis, modules, and systems based on industry standard form factors, as well as an extensive line of test & measurement products and smart touch computers, displays and handhelds that support the global transition to always connected systems. Many products are Extreme Rugged™, supporting extended temperature ranges, shock and vibration.

ADLINK is a Premier Member of the Intel® Internet of Things Solutions Alliance and is active in several standards organizations, including PCI Industrial Computer Manufacturers Group (PICMG), PXI Systems Alliance (PXISA), and Standardization Group for Embedded Technologies (SGeT).

ADLINK is a global company with headquarters in Taiwan and manufacturing in Taiwan and China; R&D and integration in Taiwan, China, the US, and Germany; and an extensive network of worldwide sales and support offices. ADLINK is ISO-9001, ISO-14001, ISO-13485 and TL9000 certified and is publicly traded on the TAIEX Taiwan Stock Exchange (stock code: 6166).

ADLINK TECHNOLOGY INC.

Tel: +886-2-8226-5877
Fax: +886-2-8226-5717
Email: service@adlinktech.com
www.adlinktech.com

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