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Building Smart Rail Solutions with Robust and Reliable Platforms

# Smart Railway Platforms

CompactPCI CompactPCI PlusIO CompactPCI Serial Fanless Embedded Computer

www.adlinktech.com 2016

Speed 306 km/h

# **Building Smart Rail Solutions**

Railway transportation markets create a diverse and complex embedded design landscape, fragmented by the very nature of global transportation venues but unified in the need for flexible, reliable, long-term performance. Characterized by extreme conditions, non-stop operation and ever-increasing processing requirements, transportation deployments must meet tremendous performance standards while also delivering ideal passenger service, comfort and safety. Intelligent transportation systems (ITS) benefit travelers and alike, enabling better management decisions and improving the travel experience by making safer and smarter use of rugged networked technologies.

ADLINK's rugged transportation products and platforms are optimized for the development of intelligent transportation systems, meeting space and performance demands, severe environmental restrictions and specialized industry certifications, such as EN 50155 that ensure performance and reliability. With more than 25 years of Rugged by Design expertise, ADLINK enables safe, secure and connected travel, solving complex issues in high performance data processing, mobile connectivity and networked communications in the extreme rigors of transportation environments. Customers have a competitive advantage with ready access to a range of industry-certified application ready platforms, as well as the elements to develop their own.

# EN 50155-compliant Platforms Accelerate Time-to-Market

Railway transportation applications can be uniquely demanding for embedded designers, with extended deployments requiring always-on operation for up to 100,000 hours in exposed environments, extreme temperatures in desert or snow, or under conditions of high vibration. To manage these physical extremes in harsh environments, railway systems and platforms must conform to stringent regulatory requirements. ADLINK's railway systems are EN 50155 compliant and support fault-free performance under these conditions. ADLINK's railway products

and platforms meet global railway industry requirements for onboard train management and wayside control systems, remote video surveillance and monitoring, broadband Internet access systems and a broad range of passenger information and entertainment systems.

EN 50155

# Innovating with Railway Transportation Design Expertise

Customers have a competitive advantage with ready access to a range of industry-certified application ready platforms, as well as the elements to develop their own. ADLINK further maintains a dynamic role in embedded standards development, ultimately creating modular, standards-based technologies that provide the foundation for high-value transportation platforms. ADLINK's long-held support of COTS (commercial off-the-shelf) technology and open systems enables flexible technologies and platforms that are scalable and rugged enough for extended deployment in diverse transportation management and passenger service applications. End-users reduce risk and total cost of ownership with the ideal combination of low power consumption, small footprint, optimized features and high reliability in a standards-based platform.

For developers of intelligent railway transportation systems, ADLINK is your platforms supplier of railway transportation products, including systems that provide robust, fault-free connectivity, as well as the highspeed I/O required to support the broad and growing spectrum of transportation systems and applications.

# **Systems**

# cPCIS-ET1100



Operation Control Center (OCC)

# Redundant Power Supply

- 19" 3U rack mount housing with 7 peripheral slots
- Comprehensive EMC shielding
- Equipped with wide temperature range CompactPCI redundant power supply (Max. output 500 W)
- Optional dual system segments, each with one system slot and five peripheral slots

# Benefits

- Rugged and high-density platforms for mission critical applications
- Modular design shortens mean time to repair
- Complete product portfolio, including processor blades, peripheral cards, backplanes,
- power supplies and chassis
- Extended lifecycle management ensures longevity of railway projects
- Multiple OS support: Windows, Linux, VxWorks



 Automatic Train Operation (ATO) Passenger Information

Digital

Display

• In-house conformal coating services provide protection against moisture and dust

# 2 Onboard Rugged Storage Systems

\* Note: The system examples are not standard products.



3 Wayside Applications (Train Dispatching and Command, Centralized Traffic Control)



cPCIS-3048

# 3U 48HP CompactPCI Fanless Enclosure with 6-slot Backplane and Redundant Power Modules

- 3U CompactPCI backplane with one system slot and five peripheral slots
- Suitable for rackmount applications
- 3U 48HP fanless enclosure
- Optional redundant CompactPCI power modules

# **Processor Blades**



### 3U CompactPCI Serial 4th/5th Gen Intel® Core™ i7 Processor Blade with ECC

- PICMG CPCI-S.0 CompactPCI Serial Processor Blade
- Ouad-core 4th/5th Generation Intel® Core™ i7 processor
- Up to 16GB DDR3L ECC soldered memory with ECC support
- Up to three independent displays



- Outstanding performance and energy efficiency
- -40°C to +70°C fanless operation (up to +85°C with airflow)
- Optional GbE ports with MIL-STD M12 connectors
- VxWorks 5.5.1 support



cPCI-6530(BL)

cPCI-3620



• Dual channel DDR3L ECC memory, soldered and SO-CDIMM, up to 16GB • Supports three independent displays • Remote management and TPM support

# Peripherals

cPCI-3E10/3E12

cPCI-3544



# 3U CompactPCI 2/4-Port Gigabit Ethernet Card

- 32-bit/33MHz. 66-bit/64MHz CompactPCI bus
- Two or four RJ-45 10/100/1000BASE-T ports on front panel
- Two LAN ports switchable to rear
- Optional LAN port via D-Sub connector



### 4-Port RS-422/485 Isolated Serial Communications Card

• Plug-and-play, IRQ & I/O address automatically assigned by PCI BIOS

- Four asynchronous communications ports with intelligent buffer • Four RS-422/485 ports
- 2500 VRMS isolation voltage

# cPCI-3510(BL)



### 3U CompactPCI PlusIO 4th/5th Gen Intel® Core™ Processor Blade with FCC

- Up to 16GB DDR3L-1600 ECC soldered memory onboard
- Supports three independent displays
- System/Peripheral slot operation
- Up to -40°C to +85°C operation



# 3U CompactPCI PlusIO 2nd Gen Intel® Core™ Processor with ECC

- DDR3-1333 SDRAM with ECC via SODIMM, up to 16GB
- IPMI for system health monitoring
- Supports three independent displays
- System/peripheral slot operation

# Peripherals





# Dual-port Isolated CAN Interface Cards

- Two independent CAN network operation
- 2500 VRMS isolation protection
- Direct memory mapping to the CAN
- controllers
- PCI bus plug-and-play

# **Power Supplies**



cPS-H325/WDC

MXC-6400

MXC-2300

## 3U CompactPCI 8HP Wide Input Range Power Module

- Input voltage range from 16.6 to 160VDC
- -40°C to +85°C operating temperature
- Hot-swap support for N + 1 redundancy
- Output power 120W (fanless) or 300W (forced air)
- Remote signal and degradation signal support

# **Fanless Embedded Computers**



## 6th Generation Intel® Core™ i7/i5/i3 Processor-based Embedded Computer with PCI/PCIe Slots

- Two DDR4 SO-DIMM sockets support up to 32GB memory
- 1x PCI + 2x PCIex8 or 1x PCI + 1x PCIex16 slots, supporting PCIe Gen2 cards • Two Mini PCIe Slots and 1x USIM slot
- Support for 3 independent displays with 2x DisplayPort and 1x DVI-I port • Two hot-swappable SATA III ports (6.0 Gb/s) on the front panel and two internal with RAID 0/1/5/10 support
- Rugged construction delivering fanless -20°C to 70°C operability (w/industrial SSD)



# Intel<sup>®</sup> Atom<sup>™</sup> processor E3845-based Embedded Computer with PCI/PCIe Slots

- Two PCI + one PCIe x4 or 3 PCI expansion slots
- Built-in dual-port isolated CAN and 16-CH isolated DI and DO • One DisplayPort + one DVI-I
- Two Intel GbE ports with teaming function, 1 USB 3.0 + 4 USB 2.0 ports
- Two software-programmable RS-232/422/485 + 2 RS-232 ports
- Rugged construction delivering fanless -20°C to 70°C operability
- (w/industrial SSD)





# 64-CH Isolated Digital I/O Modules

• 5000VRMS isolation voltage • Sink current up to 500mA on each isolated output • Rear I/O available on cPCI-7432R, 7433R, 7434R

cPCI-3W10

## 3U CompactPCI Mini PCI, Mini PCIe Carrier Board

- 32-bit. 33/66MHz CompactPCI bus
- One Mini PCI and one Mini PCIe socket
- One SIM card socket











# EN 50155 12/16-port managed Gigabit Ethernet switch

• 4 or 8 Gigabit Ethernet ports on front in M12 connectors and 8 ports on rear • O-Ring fast recovery technology

- Open-Ring / O-Chain network redundancy technology
- Configuration via web-based interface, CLI, and SNMP





# 3U CompactPCI 8HP 250W AC Power Module

- Input voltage range from 90 to 264VAC
- 250W nominal output power
- Operating temperature -40°C to +70°C
- Internal ORing diodes for N + 1 redundancy
- Hot swappable
- Active current sharing



# MXE-5500

# 6th Generation Intel® Core™ i7/i5/i3 Processor-based Embedded Computer

- Single-side I/O with two SATA drive bays for easy drive swapping
- 1x DVI-I, 2x DisplayPort, 4x USB 2.0, 4x USB 3.0, 4x GbE ports, 6x COM ports, and 8x isolated DI/O
- 2x SATA-III (6.0 Gb/s) port, 2x mPCIe slots w/ USIM, 1x M.2 2280
- Rugged construction delivering fanless -20°C to 60°C operability (w/industrial SSD)

MXE-1400



# Intel<sup>®</sup> Atom<sup>™</sup> Processor E3845-based Embedded Computer

- Single side I/O with easy access SATA drive bay
- DVI-I + DisplayPort, 6x USB 2.0, 1x USB 3.0, 3x GbE ports, 6x COM ports, 8x isolated DI/O, 1x SATA-III (6.0 Gb/s) ports, 2x mPCIe slots
- Rugged construction delivering fanless -40°C to 70°C operability (w/ industrial SSD)

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