Comprehensive Railway Signaling and ISCS Solution

Rugged-design Computer Platform with Reliable Certification

- Railway Signaling
- Integrated Supervisory Control System

ADVANTECH

Enabling an Intelligent Planet

EN50121-4

(intel) IoT Solutions Alliance **Premier**

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Rugged-design Computer Platforms for Railway Solutions

Advantech provides comprehensive solutions for Railway Signaling and Integrated Supervisory Control Systems (ISCS)—Introducing the ITA-2000 Series I/O modules, 3U Compact PCI chassis, and Ethernet Train Networks. With EN 50121-4 compliance, they are designed for wayside applications such as signal interlocking and Integrated Supervisory Control Systems (ISCS). European Train Control Systems (ETCS) and China Train Control Systems (CTCS) are designed and function as front-end systems for railway ISCS systems that include sub-systems such as Fire Alarm Systems (FAS), Building Automation Systems (BAS) and others. Advantech rugged computer platforms are modular and designed with flexible configuration, redundant power, and safety compliance in mind, building a more secure railway operating environment.

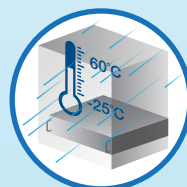## ITA-2000 Series Fanless System Advantages

EN50121-4

Reliable Certification
Compliant with EN50121-4 & Level 4 EMS

Optional Redundant Power
Supports single/dual AC/DC power module. If one unit fails, another power module will replace it and continue working as normal.

Rugged Design
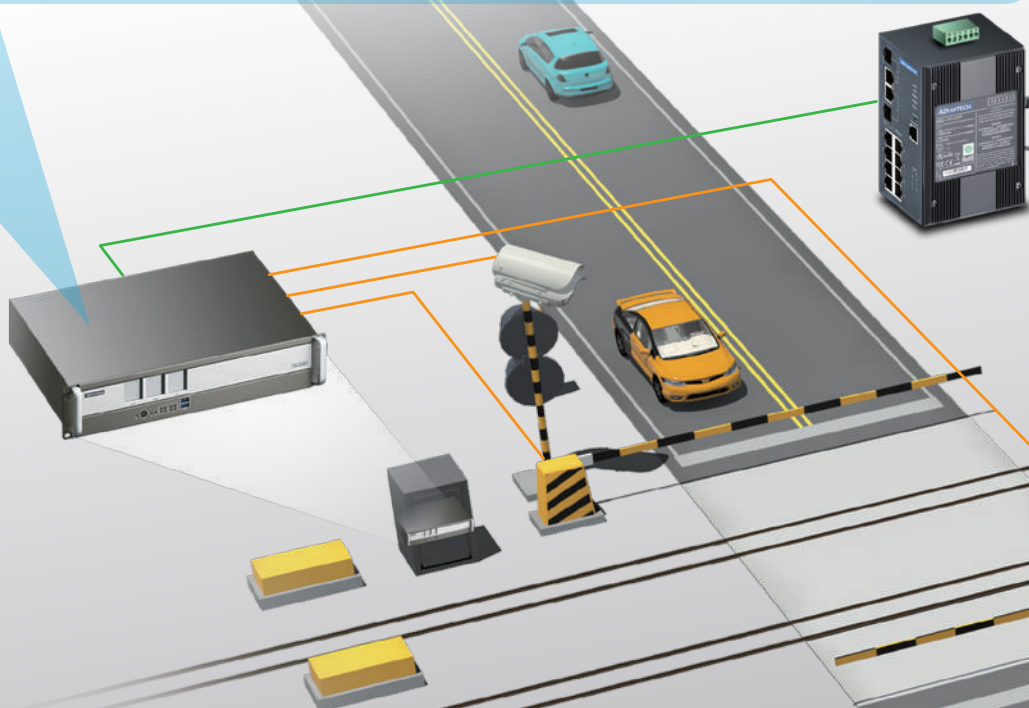-25~60 °C wide temperature range for operation in harsh environments.

Modular Configuration
Flexible modular design for multiple COM, CAN, LAN, up to 24 ports max. Includes locking screws for tool-free assembly and easy maintenance.

Configure To Order Service
CTOS assembly to meet your design requirements. LED Panel on front panel assists ITAM module replacement.
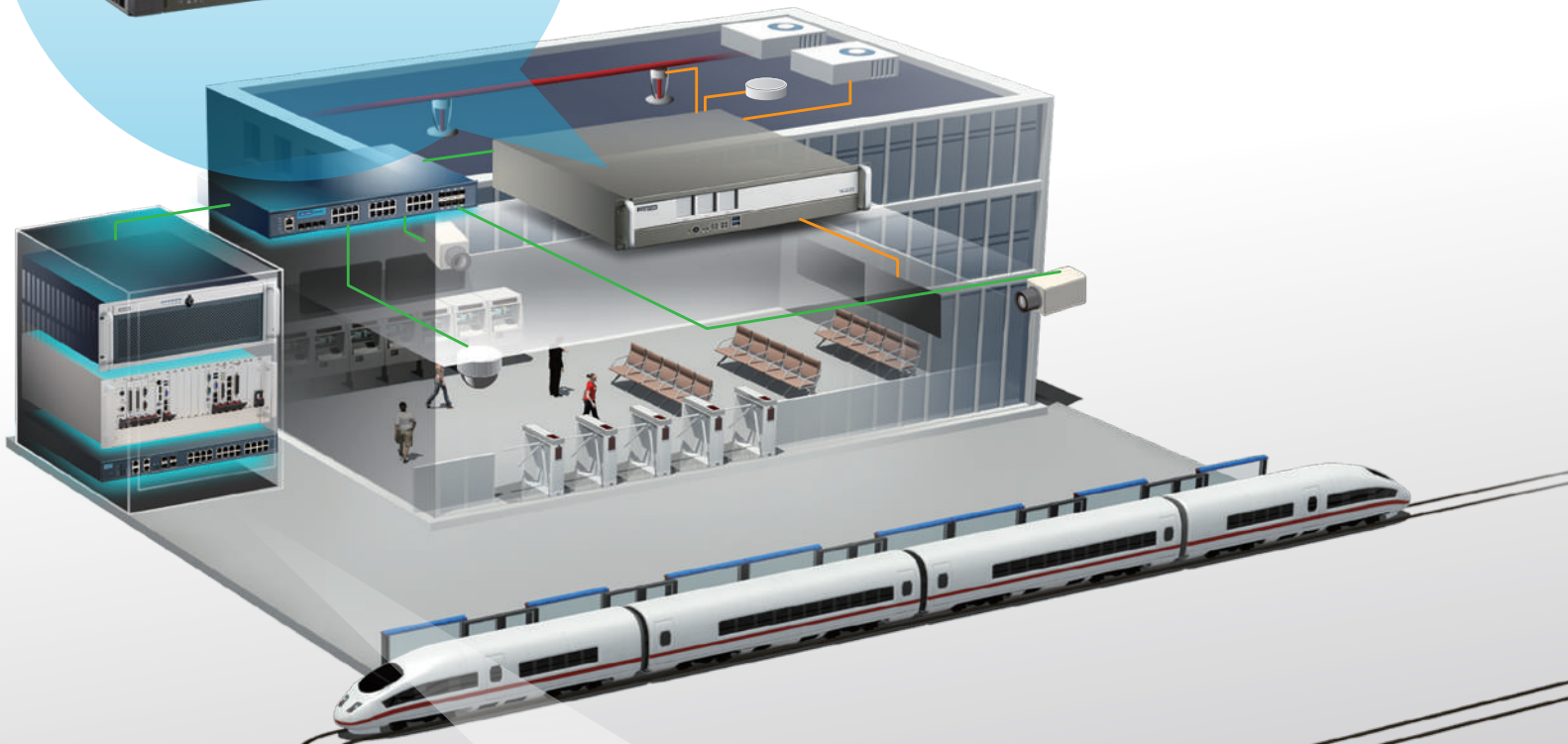
ITA-2231 I/O Module with Isolation Protection

4 Fiber Optic Ports
4 x SFP ports support
up to 1.25G/s data rate

1.5k VDC

8 or 4 LAN Ports
8 or 4 x GbE RJ45 ports

2.5k VDC

8 Serial Ports
8 x RS-232/422/485

1.5k VDC

2 LAN + 2 CAN Ports
2 x GbE RJ45 ports
2 x 1 Mbps CAN ports

Railway Signaling Communication

- Multiple port communication with wide temperature
- EN 50121-4 certificate for wayside systems , NEMA TS2 certificate for traffic control.

3U CPCI

- PICMG open standard, ultimate flexibility and reliability
- Blade type with high density, easy to scale out and maintenance
- Compact dimensions and redundant system support

Signaling

Railway Signaling includes interlocking, signals, points, blocks, train control and other equipment to increase the safety. Advantech provides robust platforms that can be seamlessly integrated with existing infrastructure to implement computer-based interlocking and train control systems and ensure operational safety and reliability, especially under demanding railway conditions.

Computer-Based Interlocking (CBI) System

Conforms to all signaling and route locks to logical patterns, offering high levels of safety and activating comprehensive diagnostics that automatically reports to maintenance staff.

Train Control System (ETCS/CTCS)

ETCS/CTCS are train control systems sub-divided into several levels. They have two subsystems (on the ground and onboard) using balises, track circuits, GSM-R, Radio Block Center, and onboard computer/communication to control train operations.

Integrated Supervisory Control System

ISCS provides facilities for integrated, centralized, and local control as well as supervision of electrical and mechanical subsystems, such as Building Automation Systems (BAS), Fire Alarm Systems (FAS), Passenger information System (PIS), Public Address (PA) systems and more. They are located in stations, depots, and control centers. Due to their complexity, Advantech provides stable and scalable front-end processing to enable railway operations run smoothly and efficiently, and to ensure the best conditions for safety and comfort.

BAS:
Building Automation System includes control elevators, escalators, lights, room temperature and others where systems can be activated or maintained 24/7 by industrial computers based on pre-set up data.

FAS:
Fire Alarm System can be divided into central and station level functions. When a fire breaks out, the central FAS serves as a control center, automatically collecting, displaying, recording and storing information for file processing and management.

PIS:
Passenger Information Systems deliver real-time information to enhance passenger comfort and optimize communication between drivers, passengers, and crews efficiently.

CCTV:
CCTV systems provide video recorder platforms and tools, such as video surveillance software, intelligent video analytics functions and central management software to facilitate efficient management and monitoring.

Selection Guide

Part Number	ITA-2111	ITA-2231	ACP-4020 + AIMB-785
CPU	Intel® Atom™ E3845 quad-core processor	Intel® Core™ i7-6822EQ quad-core processor	Intel® 6th/7th Gen. Core i
Memory	4GB on board, Max. 8GB	16 GB on board, Max. 32GB	4 x DDR4 DIMM, Max. 64GB
Graphics	1 x VGA, 1 x DVI-D	1 x DVI-I, 1 x DVI-D	1 x VGA, 2 x DVI-D
Ethernet	2 x RJ-45	2 x RJ-45	2 x RJ-45
USB	1 x USB 3.0, 6 x USB 2.0	4 x USB 3.0, 3 x USB 2.0	6 x USB 3.0, 2 x USB 2.0 (external type A) 4 x USB 2.0 pin headers 1 x USB 2.0 (internal type A)
Expansion	1 x PCI104, 1 x Mini PCIe	3 x ITA-EM, 1 x PCI104, 1 x Mini PCIe	1 x PCIe x 16 (Gen 3.0) 3 x PCIe x 4 (Gen 3.0) 3 x PCI
Storage	1 x mSATA slot (optional with SATA2) 1 x 3.5" or 2 x 2.5" HDD bay	1 x M.2 (with SATA interface), 2 x 3.5" or 3 x 2.5" HDD bay	2 x 3.5" HDD bay 1 x 2.5" HDD bay
Power Supply	100 ~ 240V$_{AC}$/110V$_{DC}$	100 ~ 240V$_{AC}$/110V$_{DC}$ (Single/Dual Power Module)	100 ~ 240V$_{AC}$ (Max. 400W)
Operating Temperature	-25 ~ 60° C	-25 ~ 60° C	0 ~ 40° C
Dimensions	1U Rackmount 427 x 44 x 325 mm	2U Rackmount 483 x 88 x 325 mm	4U Rackmount 482 x 177 x 348 mm

Part Number	EKI-9728G-4X8CI	EKI-7428G-4CI EKI-7428G-4CPI (PoE)	EKI-7712G-4FI EKI-7712G-4FPI (PoE)
Total ports	28	28	12
Ethernet Connectors	16 x RJ-45 + 4 x SFP + 8 x RJ-45/SFP combo ports	24 x RJ-45 + 4 x RJ-45/SFP combo ports 24 x RJ-45 PoE + 4 x RJ-45/SFP combo ports	8 x RJ-45 + 4 x SFP ports 8 x RJ-45 PoE + 4 x SFP ports
Transmission Speed	16 x 10/100/1000Base-T(X) 4 x 10GbE 8 x 10/100/1000Base-T(X)	10/100/1000Base-T(X)	10/100/1000Base-T(X)
PoE Port	N/A	24 (EKI-7428G-4CPI)	8 (EKI-7712G-4FPI)
IP Grade	IP30	IP30	IP30
Management	Layer 3	Layer 2	Layer 2
Warranty Period	5 years	5 years	5 years
Power Input	90 ~ 264V$_{AC}$/88 ~ 370V$_{DC}$	EKI-7428G-4CI: 12-48 V$_{DC}$ EKI-7428G-4CPI: 48 V$_{DC}$	EKI-7712G-4FI: 12-48 V$_{DC}$ EKI-7712G-4FPI: 48 V$_{DC}$
Operating Temperature	-40 ~ 85°C	-40 ~ 70°C	-40 ~ 75°C
Dimensions (W x H x D)	1U Rackmount 442 x 44 x 352 mm	1U Rackmount 438 x 43.6 x 259.20 mm	74 x 152 x 105 mm

Part Number	CPCI
MIC-3328	3U CompactPCI Intel® 3rd Generation Core™ Processor Blade
MIC-3329	3U CompactPCI Intel® Quad-Core Atom™ SoC Processor Blade
MIC-3955	3U CompactPCI® 4-port RS-232/422/485 Communication Blade
MIC-3958	3U CompactPCI® 4-port RJ45/M12 Gigabit Ethernet Blade
MIC-3726	3U CompactPCI® 64-ch Isolated Digital I/O Blade
MIC-3720	3U CompactPCI® 12-bit, 4-ch Isolated Analog Output Blade

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