Intelligent Railway Solutions

Reliable Computing and Networking Solutions for End-to-End Visualization

- Rolling Stock
- Automatic Train Supervision
- Railway Signaling
- Railway Backbone Network

ADVANTECH

Enabling an Intelligent Planet

www.advantech.com

Building Up Intelligent Railway Solutions

Advantech, in partnership with railway operators and integrators world-wide, has dedicated resources to designing and developing new products designed for cost-saving railway applications. These products support rolling stock, railway signaling, integrated supervisory control systems, automatic fare collection, railway backbone networks, and more. Our mission is to enable intelligent railway systems, which also helps us fulfill our vision of creating and delivering smart city technologies.

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Compact Size
Fanless Controller

L3 Managed
10G Ethernet Switch

4U 4C Rackmount
Server

Rolling Stock

10.4" Driver
Machine Interface

Rackmount High Capacity
Storage Controller

28" Fanless Railway
Panel PC

Rolling Stock
Ethernet Switch

Advantech: Proven Success In Railway Applications

Global Footprint, Effective Partnerships

With decades of experience, Advantech possesses the technical know-how and is equipped with the domains needed to build intelligent railway systems that meet the needs of an array of different railway applications. Our product offerings for the railway market are well-rounded and comprehensive and we have an impressive portfolio of successful case studies that we are proud to share with you. Advantech will always be by your side, continuously delivering total solution packages to our partners and customers around the world. We constantly strive to provide the greatest level of passenger comfort and convenience while delivering effective computing and networking operations and improving better passenger comfort and computing as well as networking operations.

Rolling Stock
- Locomotive
- Metro
- Tram & Light Rail
- Automated People Mover

Railway Automatic Fare Collection
- Automatic Gate Machine
- Ticket Vending Machine
- Booking Vending Machine

ISCS Control Center

- Fire Alarm System
- Building Automation System
- Passenger Information System

Railway Signaling

- Interlocking System
- Redundancy Networking
- Vehicle Inspection System
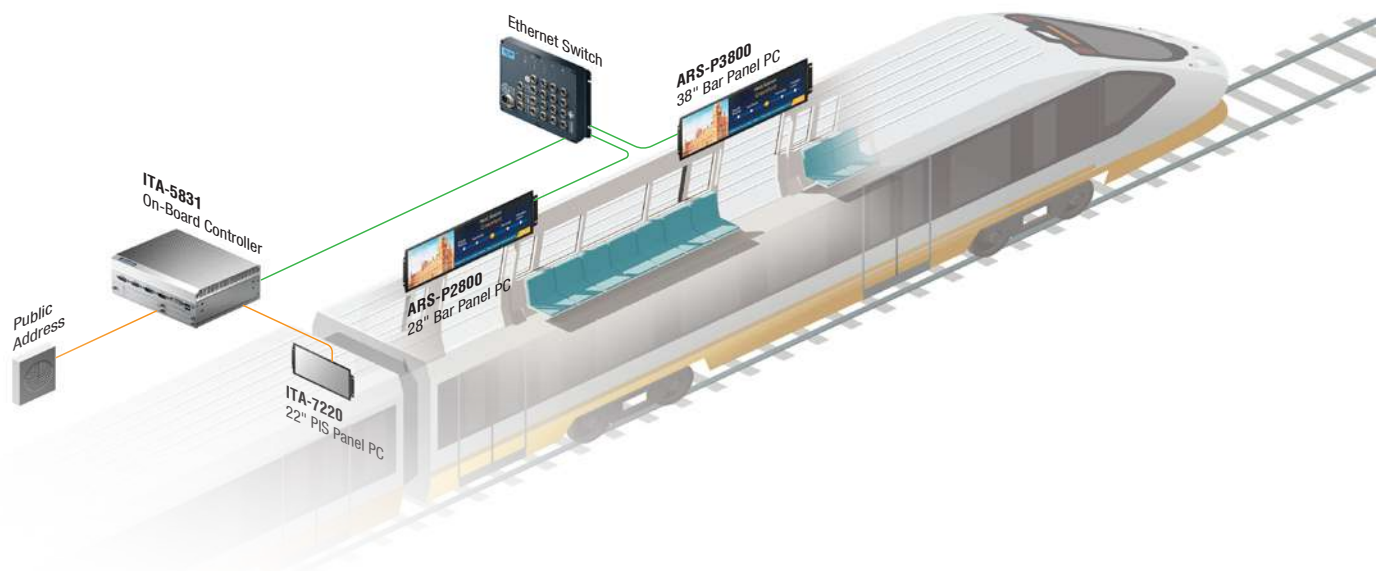
Passenger Information System

Access Traveling Information in Real-Time

To improve passenger travel experience, railway operators have gradually adopted real-time passenger information display systems (PIDS). PIDS allow real-time information, including timetables, emergency notices, and commercials to be displayed on digital signage installed in train carriages. Integrated with all railway network information, including train, station, and control center, PIDS are designed to optimize communication between the passengers, driver, and control center.

System Requirements

- Different installation position requires different types of panel, such as bar and regular size
- Readability of display in different operation environments, such as tunnel or sunlight
- Control system with redundancy ensures reliable and uninterrupted operation

Ethernet Switch

ARS-P3800
38" Bar Panel PC

ITA-5831
On-Board Controller

ARS-P2800
28" Bar Panel PC

Public Address

ITA-7220
22" PIS Panel PC

Why Advantech?

PIDS Controller

- Compact size design with multiple video outuput (DVI, VGA) for easy installation in limited space on trains
- Flexible IP expansion (such as storage drive, IBIS, CANbus and COM) to fulfill different requirements

Display Panel PC

- 22"/28"/38" panel size and panel type for different train carriage location requiements
- 1000 nits high brightness enhance readability in tunnel and outdoor sunlight environments
- Daisy-Chain function prevents panel PC failure from disrupting entire systems the entire systems

Product Highlights

ITA-5831
On-Board Modular Controller

- Intel® Skylake-H platform and QM170 chipset
- Most flexible solution for WWAN/WLAN/CANbus/ COM in a modular miniPCIe interface design
- EN 50155 TX (-40 ~ 70 °C) and IEC 61373 body mount class B

ARS-P2800
28" Fanless Railway Panel PC

- 28"LCD panel with 1920 x 357 pixels resolution and 1000 nits brightness
- 24/48/72/110 VDC isolation power input for reliable operation in rolling stock applications
- Fanless and EN 50155 T1 (-25 ~ 55°C) wide temperature range for operation in harsh environments

In-Train Surveillance System

Safer Journeys with Integrated CCTV Computing Platform

For peace of mind for drivers and passengers alike, permanent recording guarantees maximum protection at any time of day. In-train surveillance systems record both driver cabs and passenger areas at the same time in high resolution. Advantech's on-board storage controller is specially designed for CCTV applications to meet high capacity storage requirements that facilitate 24-hour Full-HD camera video recording over three months.

System Requirements

- High capacity storage demand for data backtracking and operation efficiency enhancement
- Provides real-time video stream to drivers and control center
- Locker protection for storage bay to prevent unauthorized access
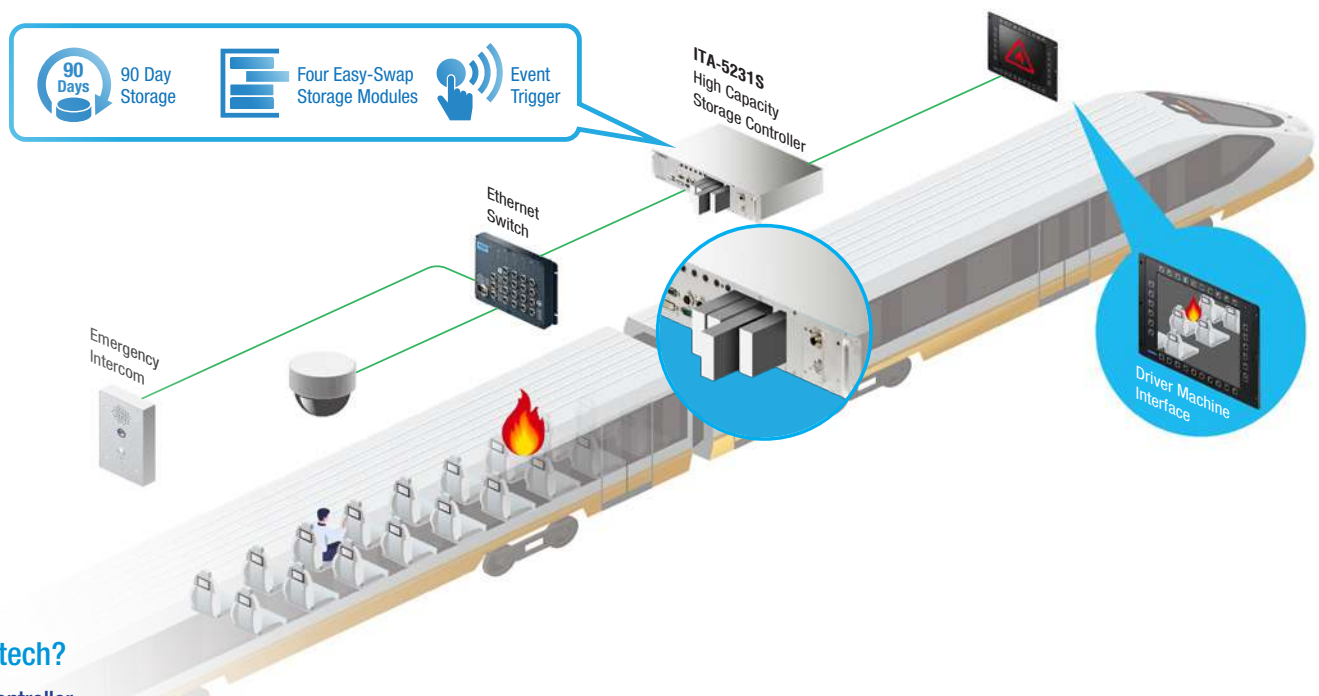
Why Advantech?

Surveillance Controller

- Easy-swap storage module with 4 x 2.5" HDD/SSD to record 20 Full-HD cameras in 24 hours over 90 days
- Flexible WWAN/WLAN modules provide real-time connectivity to control center
- mSATA slot for operating system and video application software
- Rackmount rugged design with shock and vibration protection for easy installation in tight and enclosed environments

Product Highlights

ITA-5231S
Rackmount High Capacity Storage Controller

- Intel® Skylake-H platform and QM170 chipset
- Supports up to 4 x 2.5" HDD(Max. 15mm in height) easy-swap storage modules
- Embedded with two SIM slots for WWAN connectivity
- EN 50155 TX (-40 ~ 70° C) and IEC 61373 body mount class B

Passenger Infotainment System

Interactive Digital Media Delivers Enhanced Passenger Experience

Railway on-board Infotainment systems provide interactive multimedia content and seamless wireless internet access. The provision of real-time information and entertainment by collaborating content providers keeps passengers well informed and entertained while in transit. Advantech collaborates with our partners, providing rugged-design wireless connectivity and an interactive multimedia solution-ready package. We are dedicated to giving passengers the most comfortable journey possible by providing value-added amenities.

System Requirements

- Provides Wi-Fi hotspot to passengers for seamless network connectivity
- Value-added services with multimedia content provide infotainment service in eBook, gaming, movie, music and advertisement

ITA-5231W
Wireless Connectivity Server

Ethernet Switch

Infotainment Content Server
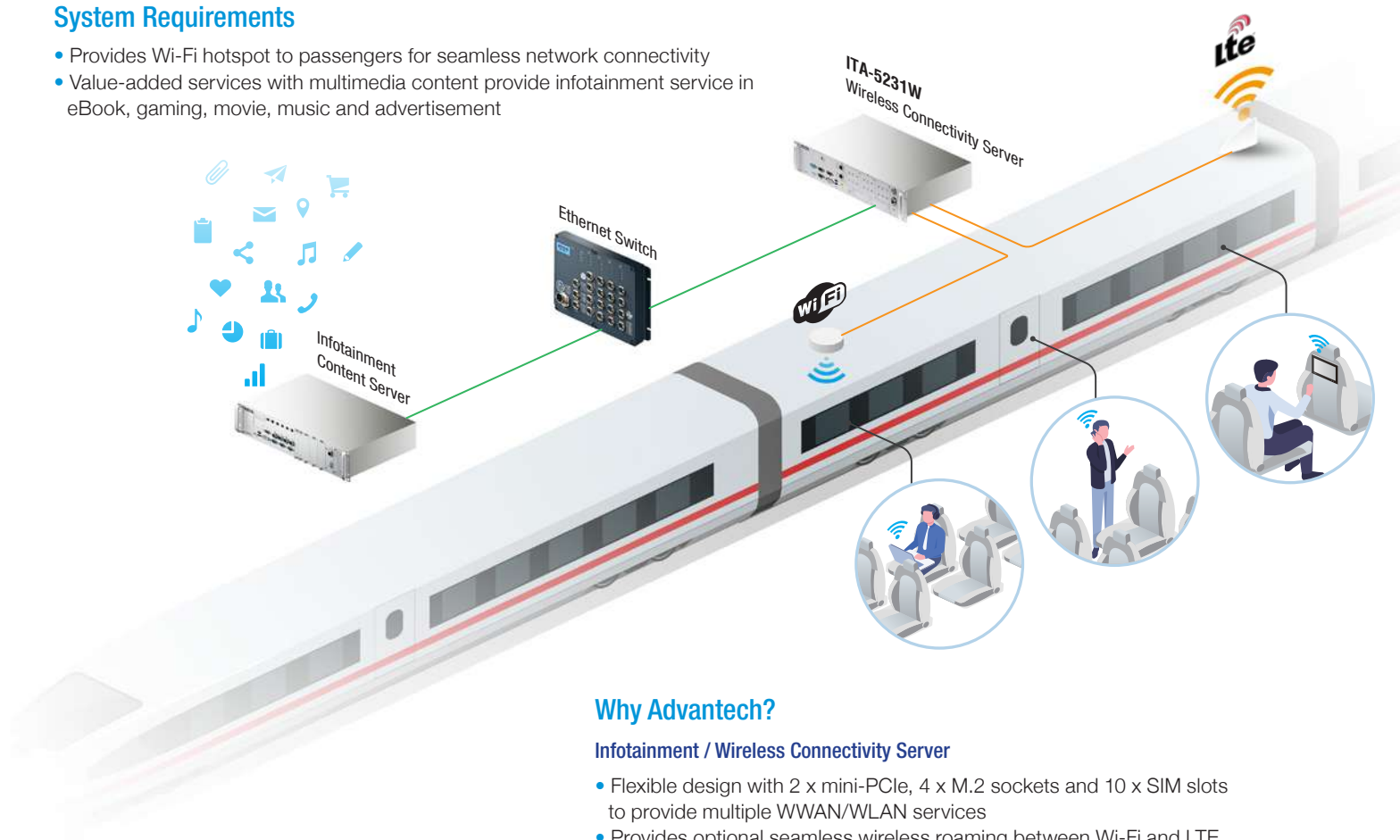
Why Advantech?

Infotainment / Wireless Connectivity Server

- Flexible design with 2 x mini-PCIe, 4 x M.2 sockets and 10 x SIM slots to provide multiple WWAN/WLAN services
- Provides optional seamless wireless roaming between Wi-Fi and LTE
- Huge storage space covers over 1000 4K videos and wireless connectivity upgrades infotainment content easily

Product Highlights

ITA-5231W
Rackmount Wireless Connectivity Server

- Intel® Core™ i7-6822EQ(25W) quad core processor
- 4 x M.2 sockets and 2 x mimi-PCIe fo GPS/3G/LTE/Wi-Fi modules
- 10 sets of easy-swappable SIM holders for different telecom carriers
- Fast swap brackets for up to 18 SMA antennas assembly (18 QMA /12 N-type connector brackets optional)
- EN 50155 TX (-40 ~ 70 °C) and IEC 61373 body mount class B
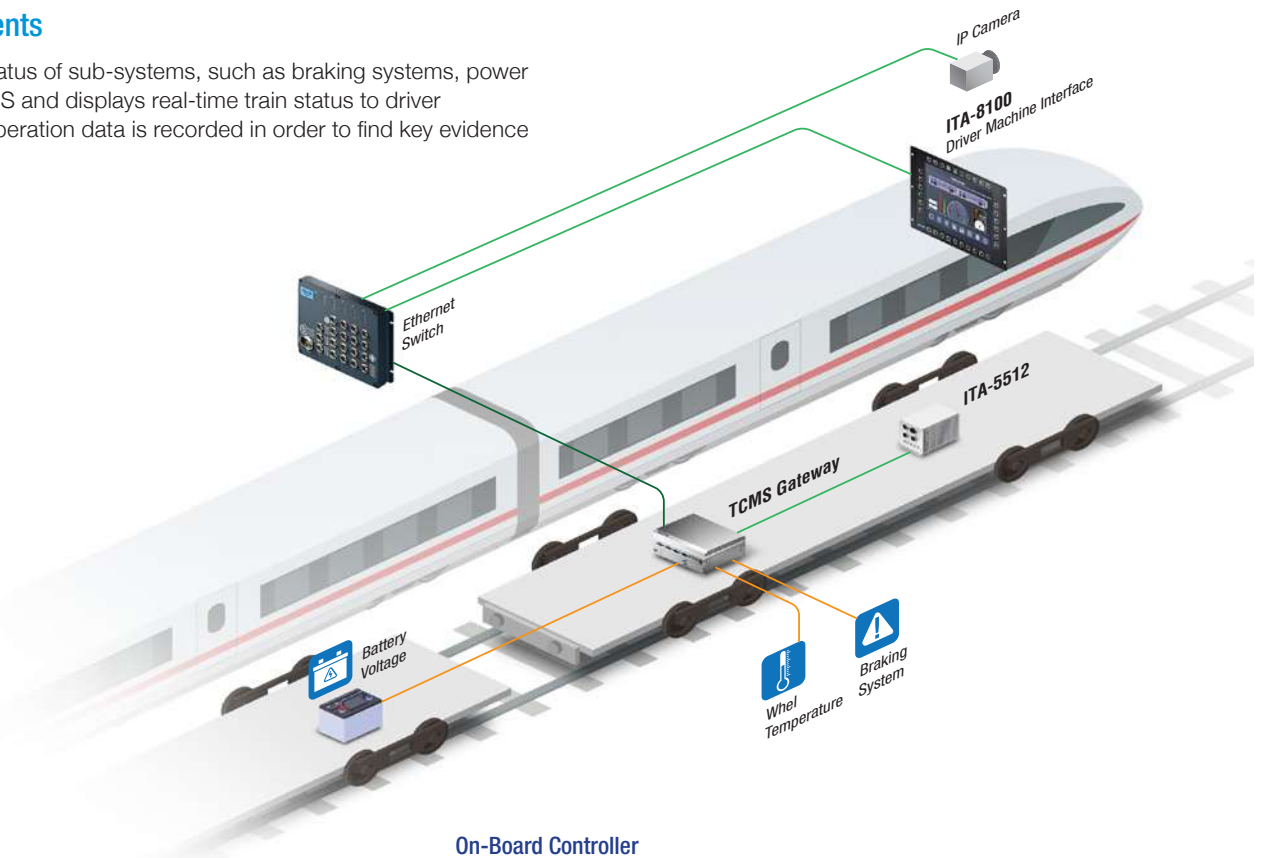
Vehicle Monitoring System

Integrated Train Operation for Optimized Driver Performance

Due to the increasing demand for reliability and safety in the railway industry, there is strong demand for monitoring systems in passenger and heavy-duty trains. Vehicle Monitoring System (VMS) are interfaces that collect system status and failure data from vehicle sub-systems and components, and display train information on DMI. Advantech provides a driver machine interface and compact size controller to build up a reliable Vehicle Monitoring System, enabling the transmission of control commands to optimize driver performance.

System Requirements

- Collects operation status of sub-systems, such as braking systems, power supply systems, TCMS and displays real-time train status to driver
- System status and operation data is recorded in order to find key evidence if an accident occurs

IP Camera

ITA-8100
Driver Machine Interface

Ethernet Switch

ITA-5512

TCMS Gateway

Battery Voltage

Whel Temperature

Braking System

Why Advantech?

Driver Machine Interface

- 10.4" and 12.1" DMI for operating train system displaying real-time train status
- Flexible I/O expansion design with PCIe ,USB 3.0, MVB and CAN bus for different train scenarios
- UIC 612-01 compliant for same operational configurations and driver's procedures ensures driving safety

On-Board Controller

- Small and compact design with IP65 rating for insallation in/ outside train limited space
- Wireless module for real-time critical data transmission
- Supports multiple storage media for a better expansion ability
- Four different DC power modules (24/48/72/110VDC) available for different train power supplies

Product Highlights

ITA-8100
10.4'' Driver Machine Interface

- Intel® Atom™ x7-E3950 quad-core processor
- Front IP65 touch panel PC with 1024 x 768 resolution
- Supports MVB, CANbus and GPS (optional)
- 32 keypad layout with UIC612-01 compliant

ITA-5512
Entry Level Compact Size Controller

- Intel® Atom™ X7-E3950 quad-core processor
- I/O interface with 2 x USB 2.0, 1 x RS-422/485, 1 x VGA, 2 x LAN
- IP65 certified with dust-proof and water resistant
- Easy-swappable SSD tray

Centralized Traffic Control System

Remote Control and Monitoring of Wayside Equipment

Centralized traffic control systems provide technical equipment that carries out dispatching, traffic commands and train management while realizing remote centralized control by the signal equipment. For railway operators, CTC enables remote control of shunting routes, reduces staff to increase operational efficiency, and conducts automatic diagnostics as well as maintenance of wayside equipment in order to guarantee a high security level for railway signaling.

System Requirements

- Automatic diagnostic of wayside equipment to enhance operation efficiency by computer-based system
- Flexible I/O design for different wayside equipment connection and data acquisition
- Rugged design computer platform to withstand harsh wayside environment

ITA-2231
Railway Fanless IPC

HPC-7442
Fault-Tolerant Server

MIC-33 Series
3U CPCI Blade System

Control Center

Network Layer

Computing Layer

Point Machine

Axle Counter

Level Crossing

Why Advantech?

CTC Controller

- PC-based controller with blade type is easy to scale out for different wayside equipment connection
- Redundant system with compact dimension ensures the reliable operation of wayside control
- Compliant with EN 50121-4 EMC standard for railway signaling application

Server

- Hot standby
- Industry leading switching rate
- Rapid deployment

Product Highlights

MIC-33 Series
3U CPCI Blade System

- 3U/4U multi-system chassis
- Selectable CPU card (Atom/Core i/Xeon E3) & I/O card (LAN/COM/CAN/DIO/wireless communication)
- High scalability meets the requirements of different wayside I/O connections
- Compliant with PICMG 2.x open modular computing standards
- Compliant with EN 50155/EN 50121-4 standard for railway applications

HPC-7442
Fault-Tolerant Server

- 4U Rackmount/Tower Chassis for EATX/ATX Motherboard
- Up to 8 SAS/SATA HDD Trays

ASMB-825
Industrial Server Board

- Dual LGA 3647-P0 Intel® Xeon® Scalable ATX Server Board
- 6 DDR4, 4 PCIe x16 + 2 PCIe x8, 8 SATA3, 6 USB3.0, Dual 10GbE, IPMI

Integrated Supervisory Control System

Smooth and Efficient Railway Deployment

An Integrated Supervisory Control System (ISCS) provides facilities for integrated, centralized, and local control as well as the supervision of electrical and mechanical subsystems, such as Building Automation System (BAS), Fire Alarm System (FAS), Passenger Information System (PIS), Public Address (PA), CCTV, and more. They are located in stations, depots, and control centers. Given the scope, each system must function without failure, 24/7, in order to deliver critical information and emergency response solutions.

System Requirements

- Flexible modular design for multiple COM, CAN, LAN ports to connect with different subsystems
- Rugged and fanless rackmount design for easy installation and operation in harsh environments
- Fully redundant system ensures 24/7 operation without failure
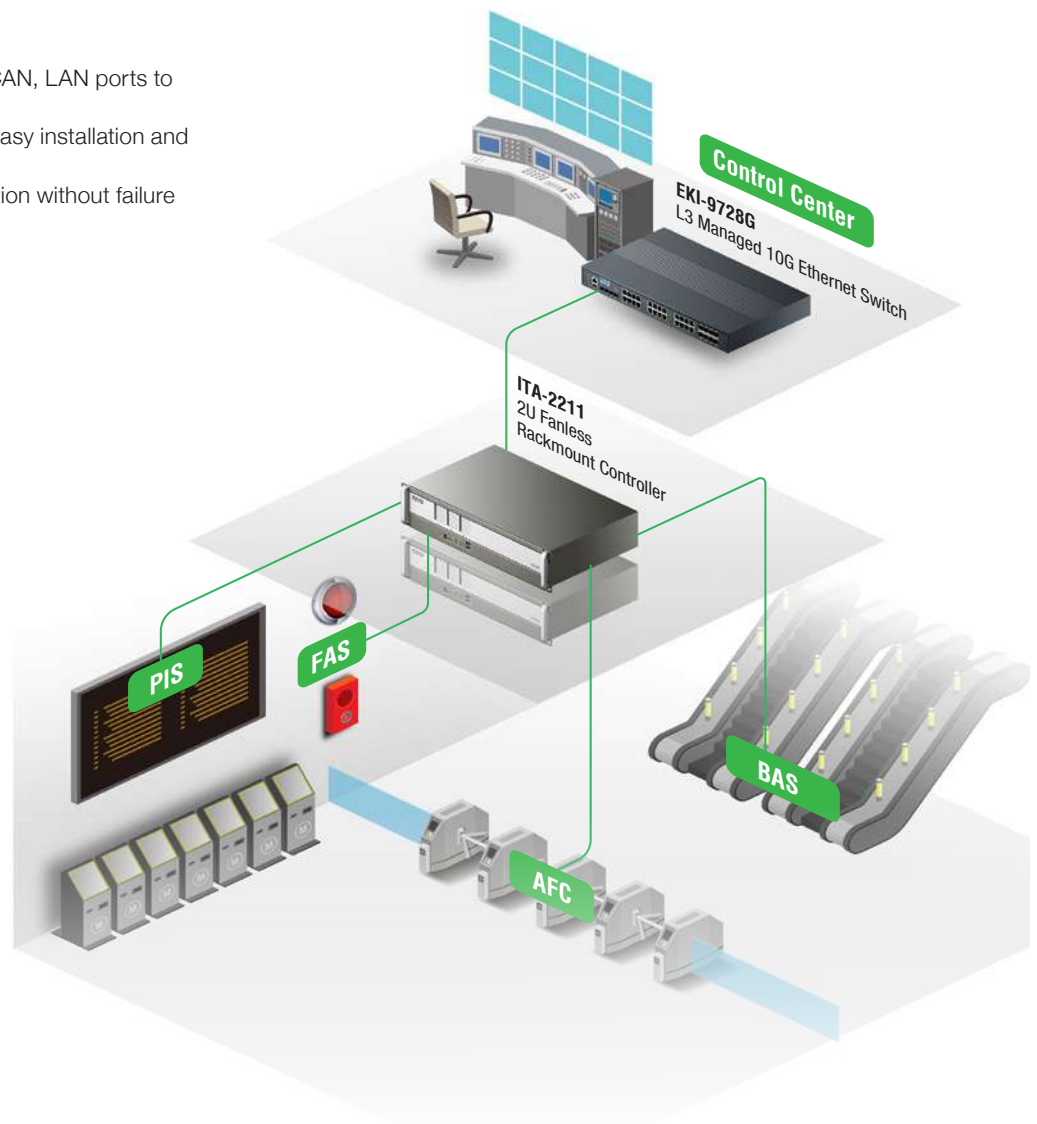
Why Advantech?

Front-End Processor

- Modular I/O configuration for up to 24 ports max (COM, CAN, LAN) enables easy connection with different subsystems and equipment
- Supports single/dual AC/DC redundant power module for reliable and uninterrupted operation

Control Center

EKI-9728G
L3 Managed 10G Ethernet Switch

ITA-2211
2U Fanless
Rackmount Controller

PIS

FAS

BAS

AFC

Product Highlights

ITA-2211
2U Fanless Rackmount Controller

- Intel® Atom™ E3845 quad-core processor
- Compliant with EN 50121-4 for railway applications
- 4 GB of DDR3 memory onboard
- Supports 3 x ITA-EM modules for I/O expansion
- TA-EM I/O modules provide optional LAN, CAN, Serial port expansion
- Supports Easy-Swap power module
- Power redundancy for reliable operation
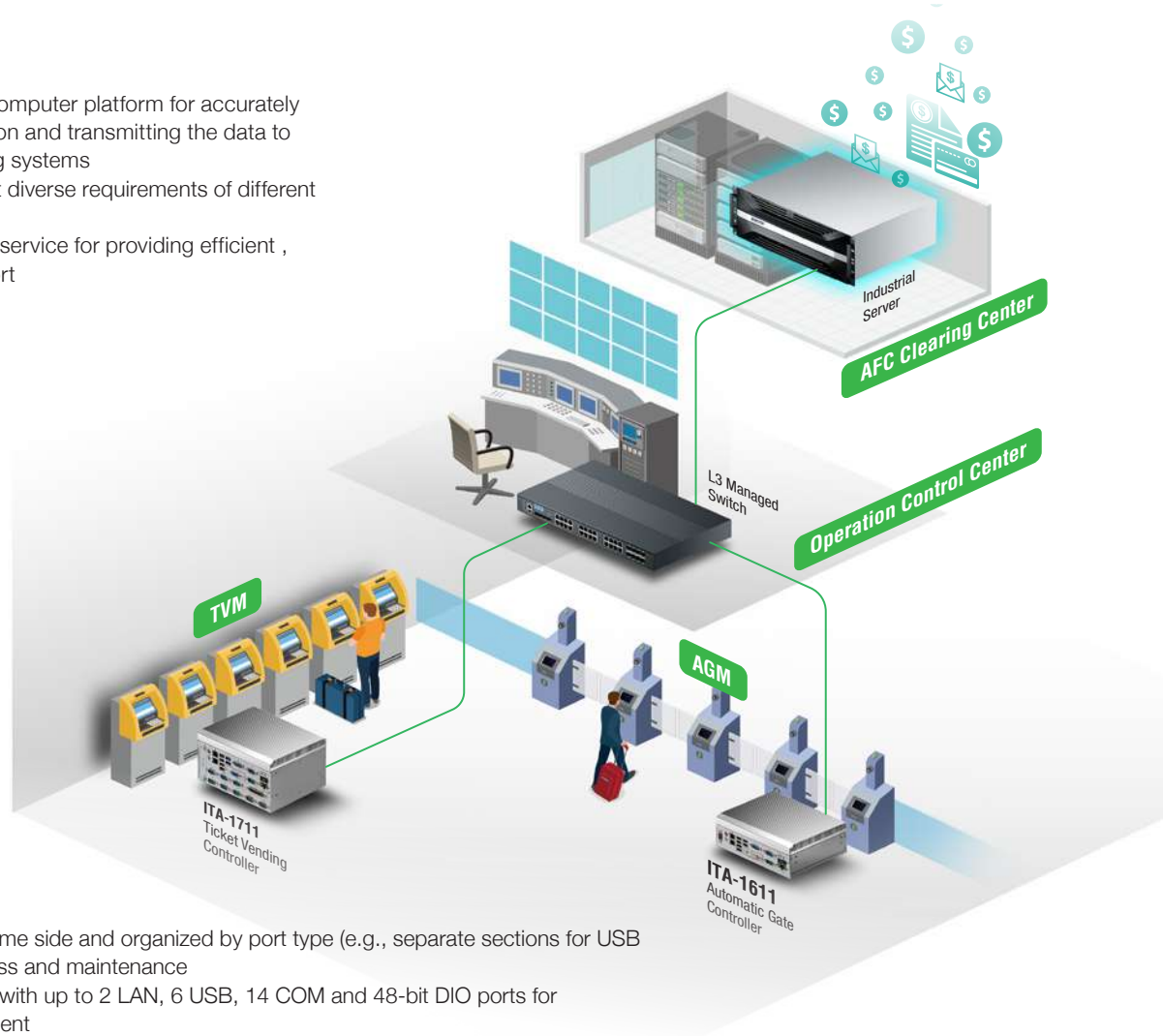
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Automatic Fare Collection System

Expedite the Ticketing Process and Resolve Long Queues

Automated fare collection systems play a key role in ensuring smooth passenger flow during peak hours of operation by raising the overall efficiency of the ticketing process. Basic station equipment, consisting of automatic gate machines, ticket vending machines, and ticket checking machines, requires a stable, integrated platform in order to manage and maintain a steady flow of commuters. Data is gathered and transmitter to the control center.

System Requirements

- Rugged design and reliable computer platform for accurately processing ticketing information and transmitting the data to back-end servers and clearing systems
- Multiple I/O interfaces to meet diverse requirements of different rail transport systems
- Customized design and local service for providing efficient , professional and timely support

AFC Clearing Center

Industrial Server

Operation Control Center

L3 Managed Switch

TVM

AGM

ITA-1711
Ticket Vending Controller

ITA-1611
Automatic Gate Controller

Why Advantech?

Automatic Fare Collection ECU

- All I/O interfaces are on the same side and organized by port type (e.g., separate sections for USB and COM ports) for easy access and maintenance
- Complement of I/O interfaces with up to 2 LAN, 6 USB, 14 COM and 48-bit DIO ports for connecting to different equipment
- Flexible design for easily replacing specific I/O interfaces without any change of the hardware

Product Highlights

ITA-1711
Ticket Vending ECU

- Intel® Celeron™ J1900 quad-core processor
- Fanless and compact system design for reliable operation
- Customized design with replaceable secondary display (VGA 2/DVI-D/LVDS) without changing different product type
- 4 GB of DDR3 memory onboard with optional NVRAM
- Supports dual outputs of full HD resolution video
- Serial ports support RS-232/422/485 with automatic flow control

AI Incident Detection System

Improving Passenger Safety with AI

Passenger safety is paramount for railway and rail station operators. While traditional video surveillance systems utilize video technology to automatically detect incidents in the station, these systems suffer from relatively low quality video and analytics. This is starting to change. Today, AI (Artificial Intelligence) trained models can easily detect and track passengers and most false alarms caused by non-human artifacts and objects can be distinguished and eliminated from the data. Advantech provides a full range of products, from AI servers to edge AI system end-to-end solutions, for reliable AI video monitoring.

System Requirements

- Powerful edge-based AI systems that leveraged GPU cards for AI deep learning
- Video surveillance to detect emergency incidents
- Backend systems for controlling related systems to ensure maximum awareness throughout the station
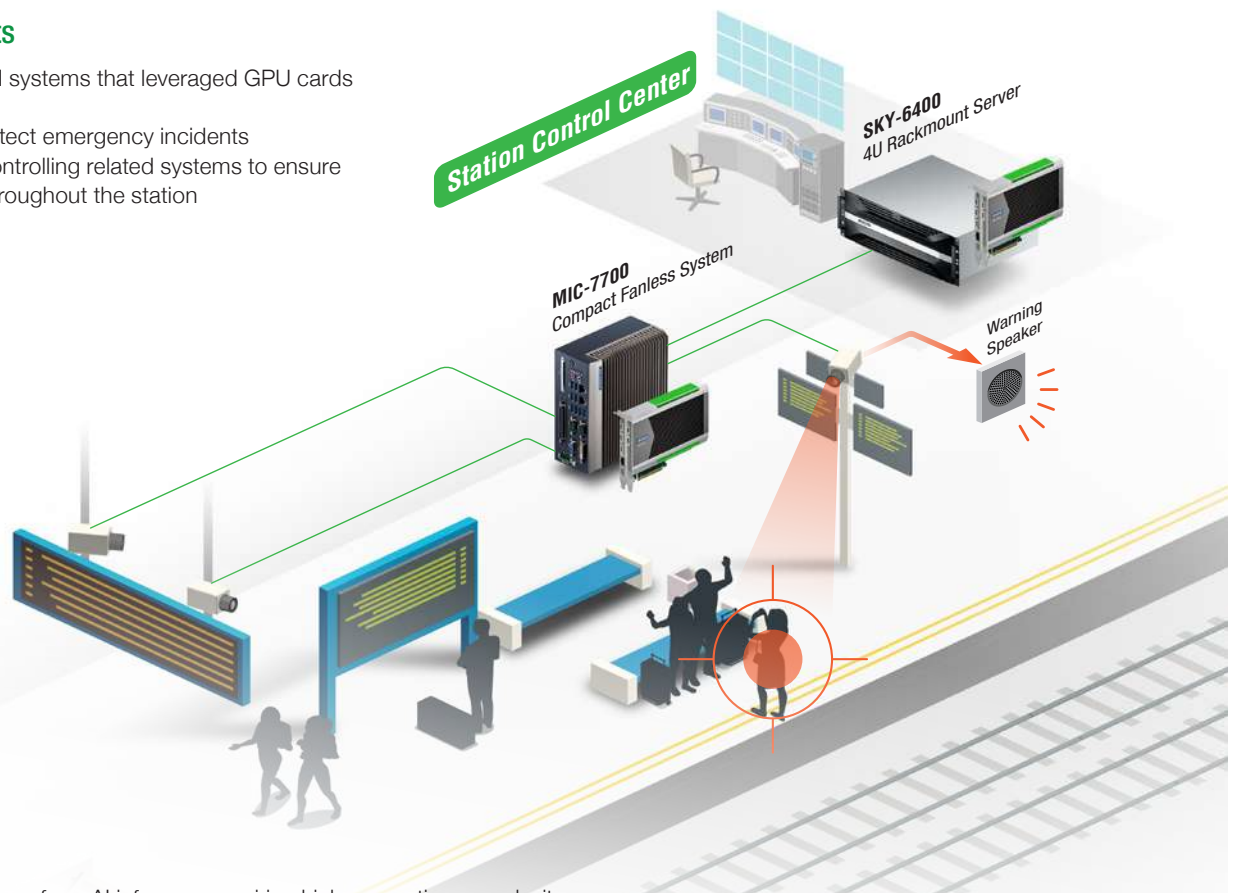
Why Advantech?

AI Edge System

- Powerful NVIDIA GPU to perform AI inference requiring high computing complexity
- Flexible modular design supports a variety of NVIDIA GPU cards to meet different requirements

AI Backend Server

- Supports up to 6 NVIDIA GPU cards integrated into a single AI inference server
- Highly reliable AI video monitoring system for passenger and railway station safety with AI server to edge AI system end-to-end solution

Product Highlights

SKY-6400
4U 4C Rackmount Server
- NVQual with NVIDIA Tesla
- Dual Intel® Xeon® scalable series
- 2000W 1+1 redundant power supply with 80 PLUS Platinum level certification
- Remote Management with IPMI support
- Great thermal design for GPU computing

MIC-7700
Compact Fanless System
- Intel® 6th/7th Generation Core i Desktop CPU (LGA1151) with Q170/H110 chipset
- VGA and DVI output
- 2 x GigaLAN and 8 x USB 3.0
- Supports Advantech i-module1,2,4 or GPU card slot expansion
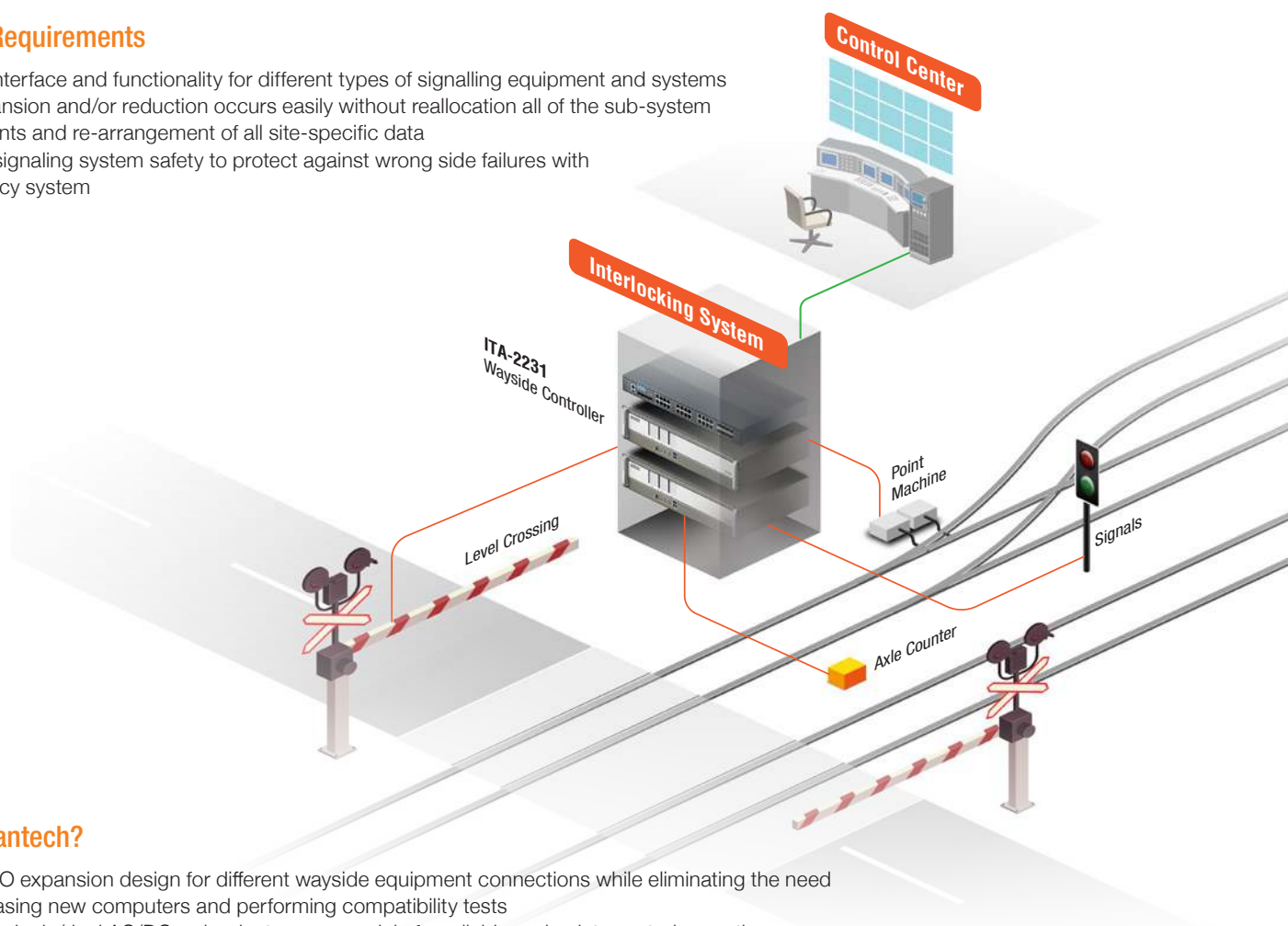
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Computer-Based Interlocking System

Ensures the Safe Operation of Trains with Reliable Wayside Controller

Interlocking systems are safety control systems that implement train operation commands at stations and depots. They are controlled by stable, integrated computing systems in the modern railway. The system includes interlocking, establishing an approach, controlling the switches, and unlocking access to ensure safe train operation. With the development of Advantech's rock solid wayside platform, interlocking systems are precisely controlled and monitored, delivering a secure railway operating environment.

System Requirements

- Correct interface and functionality for different types of signalling equipment and systems
- Size expansion and/or reduction occurs easily without reallocation all of the sub-system components and re-arrangement of all site-specific data
- Ensures signaling system safety to protect against wrong side failures with redundancy system

Control Center

Interlocking System

ITA-2231
Wayside Controller

Point Machine

Signals

Level Crossing

Axle Counter

Why Advantech?

- Flexible I/O expansion design for different wayside equipment connections while eliminating the need for purchasing new computers and performing compatibility tests
- Supports single/dual AC/DC redundant power module for reliable and uninterrupted operation
- Compliant with EN50121-4 EMC standard for railway signaling applications

Product Highlights

ITA-2231
EN-50121-4 Wayside Controller

- Intel® Core™ i7-6822EQ quad-core processor
- 16GB of DDR4 memory onboard
- Supports 3 ITA-EM modules for I/O expansion
- ITA-EM I/O modules provide optional COM, CAN, Fiber, LAN port expansion
- Supports Easy-swap power module
- Dual power module for redundancy to ensure reliable operation

# Train and Infrastructure Inspection Solution

Enables Autonomous Diagnostics of Train Components and Track Obstacles

In order to ensure track and rolling stock safety, increase efficiency, and reduce operating cost, operators need a real-time remote diagnostic monitoring system to inspect train components and track obstacles by using advanced rail inspection sensors, high-resolution imaging technology, and rugged-design computer platform. Advantech provides a rolling stock controller to implement pantograph inspection, wheel inspection, and track obstacle inspection with accurate geographic location.

System Requirements

- Provides early detection of obstacles with vision technology in order to stop the train beyond necessary braking
- Enhances operation efficiency with remote inspection system of train components and GPS tracking to determine location in control center

Pantograph Inspection

ARS-2620
Vision Inspection Controller

Obstacle Detection

Wheel Inspection
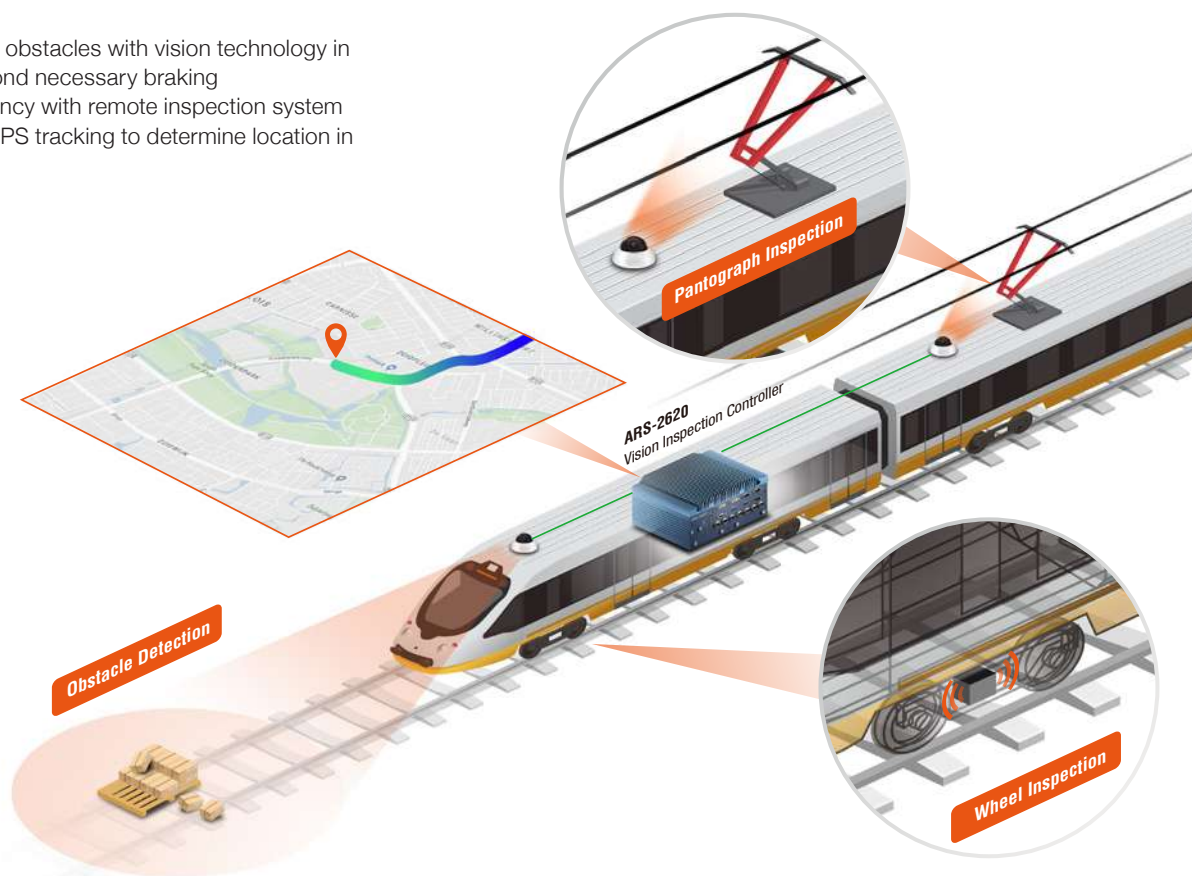
Why Advantech?

- Onboard controller with 4 x PoE ports for high resolution camera connection
- Dual LTE wireless communication and GPS for location tracking and real-tim remote monitoring
- Flexible I/O expansion slots for different sensing interface connections, such as radar, laser, sensors

Product Highlights

ARS-2620

Vision Inspection Controller

- Intel® 6th/7th Generation i7-6600U/i7-7600U processor
- Supports 6 x GbE (4 x PoE), 3 x USB and 2 x COM ports
- Expansion function for seamless communication with Wi-Fi and 2 x LTE
- GPS function for location tracking
- S2/C1 class certified to endure 10ms voltage interruption for an unexpected power outage
- 24/48/72/110 Vdc isolation power input available for different train power supplies
- EN 50155 TX (-40 ~ 70 °C) and IEC 61373 certified

Backbone Network System

Total Network Solution for Railway Infrastructure

Advantech's railway total network solution is composed of both wired and wireless connectivity, designed for various transportation applications such as rolling stock, trackside, train station, transportation hub and control centers. It provides a reliable network service by its rugged, high ECM duration hardware designed for vibrational and interfering environments, along with its software management and redundancy functionality for high communication quality. The backbone network system is thus able to provide passengers with a pleasant travel experience while granting managers non-stop interconnectivity between all railway systems.

System Requirements

- Network deployment from edge to core – from layer 2 access to layer 3 subnet routing
- Fulfill communication demand for train, trackside, station, depot, control center
- Provides stable and reliable network by fast redundant feature to ensure network availability
- Easy management and deployment that reduces human and resource waste
- Centralized management across different subnet and devices to enhance operation and maintenance efficiency

Why Advantech?

- Provides both network devices and overall network solutions with high compatibility and performance
- Meets various applications such as PoE and IGMP functions for CCTV system, 2-wire communication for retrofit with existent cable, layer 3 switch for subnet segmentation… etc
- Easy maintenance and fast deployment by WebAccess/NMS and IXM
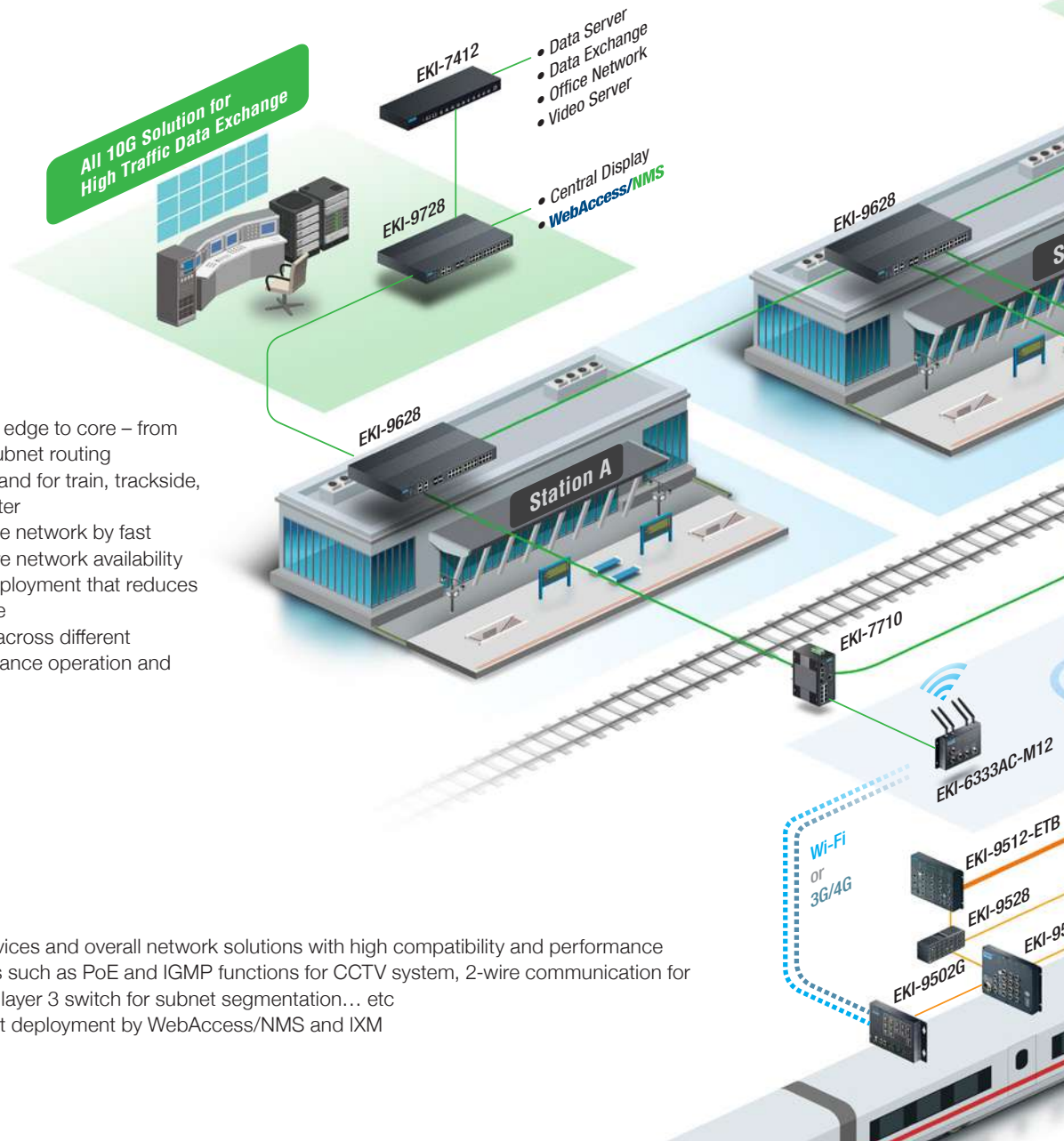
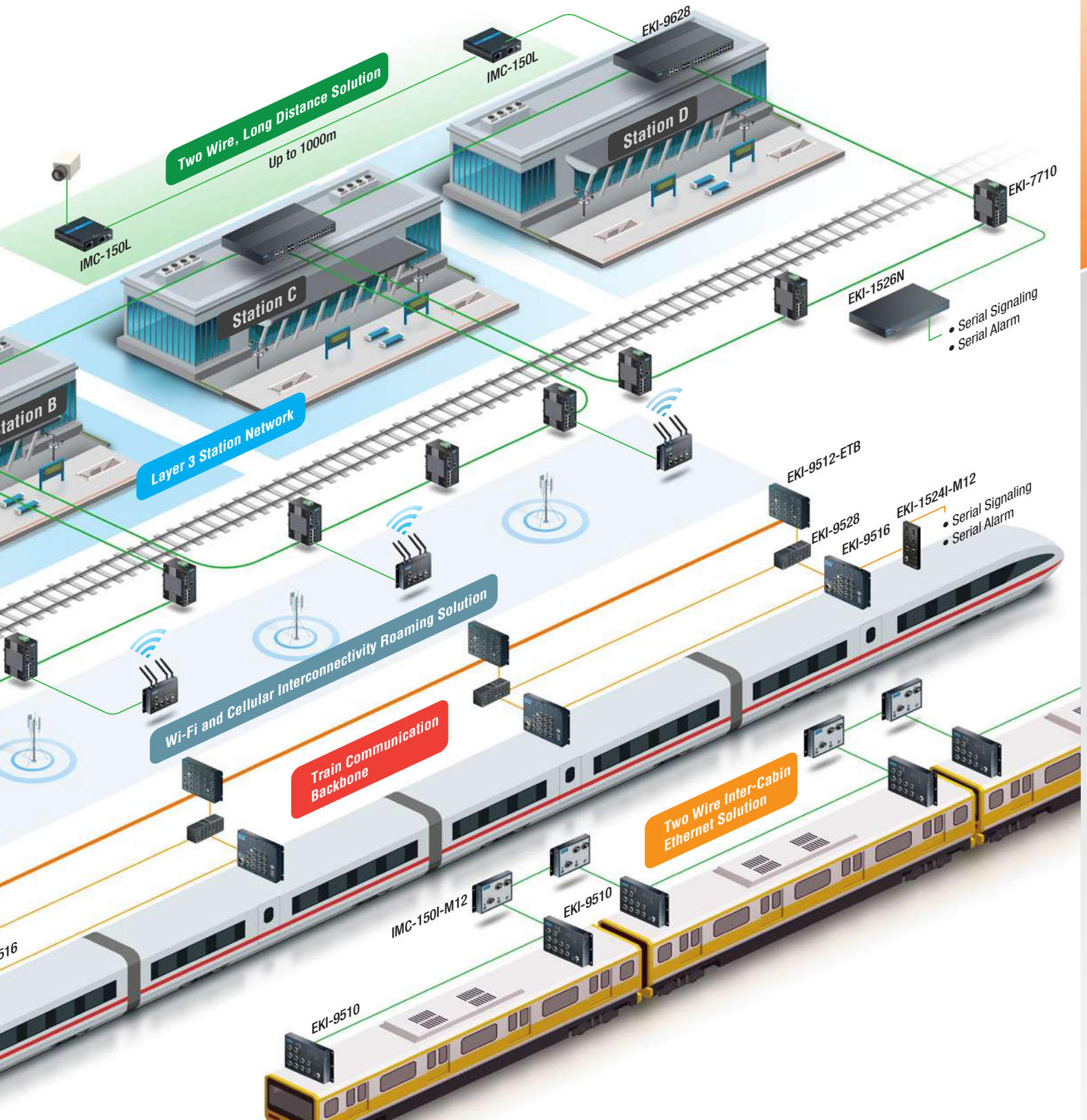| **Layer 3 and Layer 2 Station Network**		**All 10G Solution for High Traffic Data Exchange**	**Two Wire, Long Distance Solution**
EKI-9700/ 9600 Series L3 Managed Ethernet Switch	**EKI-7700/ 7400 Series** L2 Trackside Management Switch	**EKI-7412X-10X** Industrial 10G Ethernet Switch	**IMC-150I-M12** Industrial Long-reach Ethernet Extender
• EN50121-4 compliant • EKI-9600 L3 function :Static route, NAT • EKI-9700 L3 function :Static route, RIP v1/ v2 , OSPF v2 , VRRP • Supports WebAccess/NMS for network maintenance	• EN50121-4 and NEMA TS2 compliant • 6 to 28 ports; Din-rail or rack mount mounting method • PoE & PoE+ models available • Supports Advantech exclusive features: IXM, XRing Pro, and Security Pack.	• EN50121-4 compliant • All 10G solution with 10x10G SFP+ and 2x 10GBASE-T RJ45 connections • Supports WebAccess/NMS for network maintenance • Non-blocking data exchange on all the 10G ports	• Injects power and data together • Breaks the 100-meter limitation to up to 800 meters • Compliant with IEEE802.3at PoE+ standard. • Switch-selectable for configuring LAN rate and connection type

Two Wire, Long Distance Solution
Up to 1000m

IMC-150L

EKI-9628

Station D

IMC-150L

Station C

EKI-7710

EKI-1526N
• Serial Signaling
• Serial Alarm

Station B

Layer 3 Station Network

EKI-9512-ETB

EKI-1524I-M12
• Serial Signaling
• Serial Alarm

EKI-9528

EKI-9516

Wi-Fi and Cellular Interconnectivity Roaming Solution

Train Communication Backbone

Two Wire Inter-Cabin Ethernet Solution

IMC-150I-M12

EKI-9510

EKI-9510

9516

On-Board Communication Solution

EKI-9500 Series
On-board EN50155 Ethernet Switch

• EN50155, EN50121-3-2, and IEC61373 compliant
• Supports IEEE802.3at/ af PoE & PoE+ standards
• 8 to 28 fast Ethernet and/or Giga Ethernet ports
• IP40/ IP54/ IP67 ruggedized housing design
• Various power input options

EKI-1524I-M12
Industrial Serial Device Server

• Designed with M12 connectors
• COM port redirection (virtual COM), TCP and UDP operation mode
• Built-in 15 KV ESD protection Supports line to line 4 KV, line to ground 6 KV
• Provides isolation

Wi-Fi and Cellular Interconnectivity Roaming Solution

EKI-9502G
On-board Wi-Fi/Cellular Router, M12 Connector

• Supports both Wi-Fi and cellular connectivity
• Supports dual SIM card slots for multi-carrier, multi bandwidth services
• Designed with up to 4 WWAN modules for balanced loading

EKI-6333AC-M12
Industrial Wi-Fi AP/Bridge

• EN50155, EN50121-3-2 and EN50121-4 compliant
• Supports dual band 2.4G/5G concurrent

Product Selection Guide

Rolling Stock Controller

ITA-5231
Modular Rackmount Controller
- Supports CANbus/POE/LAN/serial port expansion modules
- GPS location tracking and WWAN remote monitoring through modular design
- Supports easy-swap storage module up to 4 x2.5" SSD (7mm/9.5mm)

ITA-5231S
High Capacity Strorage Controller
- Supports up to 4 x 2.5' HDD/SSD (15mm in height) and RAID 0/1/5
- Record 24-hour Full-HD camera video over 90 days
- Easy-Swappable storage module with key locker

ITA-5231W
Wireless Connectivity Controller
- Supports 2 x mini-PCIe ,4 x M.2 sockets for GPS/3G/LTE/Wi-Fi modules
- Easy-swappable SOM slots with key locker
- Supports fast swap brackets for up to 18 x SMA antennas assembly

ITA-5232
Virtualization Server
- 8-Core Xeon CPU with ECC memory support
- Supports KVM, Hyper-V, ESXI & XEN Hypervisors of current virtualization platform
- Option for embedded GPU MXM module in AI Edge Accelerator

ITA-5831
Modular Compact Size Controller
- Modular mini-PCIEe and ITA-EM design for WWAN/WLAN/CANbus/COM/PoE/DIO expansion
- 24/48/72/110 VDC isolation power input
- Compact size for ease of integration in limited spaces

ARS-2620
Compact Size NVR Controller
- Supports 6 x GbE LAN (4ports with PoE), 3 x USB and 2 x COM ports
- S2/C1 class certified to endure 10ms voltage interruption
- GPS function for location tracking

ARS-2110
Entry Level Compact Size Controller
- Compact size for ease of integration in limited spaces
- Supports GSM-R, GPS, Wi-Fi and 3G/LTE
- 24/48/72/110 VDC isolation power input
- EN50155 TX (-40~70), 85 for 10 mins

ITA-5512
IP65 Compact Size Controller
- Supports Mini PCIe , SIM slot and easy-swap 2.5" SSD tray
- Flexible I/O interface with LTE, Wi-Fi, MVB and CANbus
- Compact size design with only 200mm*80mm*100mm*(W*H*D)
- IP65 ratng in whole system

Train-to-Ground Wireless Router

EKI-9502G
Railway Wireless Router
- Designed with Wi-Fi and Cellular (upto 4 x WWAN and dual SIM slots for each module) wireless connectivity
- Supports seamless roaming between Wi-Fi & WWAN
- Supports multiple WWAN Load balance

Driver Machine Interface

ITA-8000 series
10.4''/12.1'' Touch Panel PC
- Front IP65 touch panel with 1024 x 768 resolution
- Supports MVB and CANbus (option)
- 32 front keys (UIC-612-01 compliant)
- mPCIe/USB reserved on board for different requirements

Display Panel PC

ARS-P2800/3800
28''/38'' PIS Bar Panel PC
- LCD panel with 1920 x 540 resolution
- Supports Daisy Chain
- IP65 rating and 1000nits high brightness
- EN50155 T1 (-25~55)

ITA-7220
22'' PIS Panel PC
- LCD panel with 1920 x 1080 resolution
- Supports Daisy Chain
- 24/48/72/110VDC isolation power input
- EN50155 T1 (-25~55)

Rugged-Design Computer Platform

3U CPCI
Railway PICMG 2.x Blade System
- 3U/4U Multi-System chassis
- Selectable CPU card (Atom/Core i/Xeon E3) & I/O card (LAN/COM/CAN/DIO/Wieless Communication)
- Compliant with EN50155/EN 50121-4 standard for railway applications
- High density, expandability of PCI capabilities for the requirement of different railway I/O connection

ITA-3650 Series
Traffic AI Analysis Fanless Controller
- Fanless and high performance desktop processor edge computing
- On board 8GB DDR4, optional on board 16G max to 32GB with SO-DIMM
- Provide more serial ports and LAN ports for peripheral device
- Supports MXM type GPU card for edge real-time analysis

MIC-7700
Compact Size Fanless Controller
- Intel® 6th/7th Generation Core i Desktop CPU (LGA1151) with Q170/H110 chipset
- VGA and DVI output
- 2 x GigaLAN and 8 x USB 3.0
- Supports Advantech i-module1,2,4 or GPU card slot expansion

WISE-5000 Series
Compact Softlogic Modular Controller
- Compact and fanless design with CE/FCC/UL Certification for application in control cabinet
- Front accessible VGA+HDMI, 4xUSB3.0, 2xLAN, 2xCOM, and mini-PCIe
- Maximum 4 expansion capability on left side for Wi-Fi/PoE/GigE/COM/USB3.0
- Slice I/O Expansion from right side slot for automation IO

EN 50121-4 Wayside Controller

ITA-2231
2U Fanless High Performance Rackmount Controller
- Intel® Core™ i7-6822EQ quad-core processor
- Compliant with EN 50121-4 standard for railway applications
- 16GB of DDR4 memory onboard
- Provides 3 x ITA-EM modules, 1 x PC104, and 1 × Mini PCIe slots for expansion
- Supports single/dual & AC/AC+DC power modules for redundancy

ITA-2211
2U Fanless Low Power Rackmount Controller
- Intel® Atom™ E3845 quad-core processor
- Compliant with EN 50121-4 standard for railway applications
- 4GB of DDR3 memory onboard
- Provides 3 x ITA-EM modules, 1 x PC104, and 1 × Mini PCIe slots for expansion
- Supports single/dual & AC/AC+DC power modules for redundancy

Station Self-Service Controller

ITA-1711
AFC ECU
- Supports up to 48 digital I/O (24 inputs and 24 outputs)
- 4 GB of DDR3 onboard RAM with optional NVRAM
- Replaceable secondary display (VGA 2/ DVI-D/ LVDS)
- Multiple serial ports supports RS485/422/232 mode
- 9~36V wide Voltage

ITA-1611
Gate Control ECU
- Supports up to 2 x LAN, 6 x USB, 6 x COM ports
- Onboard 4G DDR3 Memory and optional NVRAM
- Replaceable secondary display (VGA 2/DVI-D/LVDS)
- Small volume and easy installation
- 9~36V wide voltage

Industrial Server

SKY-6400
4U 4C Rackmount Server
- NVQual with NVIDIA Tesla
- Dual Intel® Xeon® scalable series
- 2000W 1+1 redundant power supply with 80 PLUS Platinum level certification
- Remote Management with IPMI support

EN50155 Switches

EKI-9500 Series
Rolling Stock Switch
- Designed for rolling stock application with EN50155, EN50121-3-2, IEC61373 compliant
- PoE/ PoE+ models are available
- Various port combination from 8 to 28 ports with Fast Ethernet/ Giga Ethernet option
- IP40/ IP54/ IP67 and rugged housing for harsh environment.
- Different power input range to meet various train electric systems

Managed Ethernet Switches

EKI-7700/7400 Series
Trackside Management Switch
- Designed for railway trackside application with EN50121-4 compliant
- NEMA TS2 certified to fulfill road transportation's demand
- PoE/PoE+ models available
- Supports Advantech exclusive features such as IXM, X-Ring Pro, and Security Pack

EKI-9700/9600
L3 Managed 10G Ethernet Switch
- Designed for railway trackside application with EN50121-4 compliant
- Provides total 28 ports with up to 4 x 10G ports.
- EKI-9600 L3 function : Static route, NAT
- EKI-9700 L3 function : Static route, RIP v1/v2 , OSPF v2 , VRRP
- Supports WebAccess/NMS best for networking maintenance and operation

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