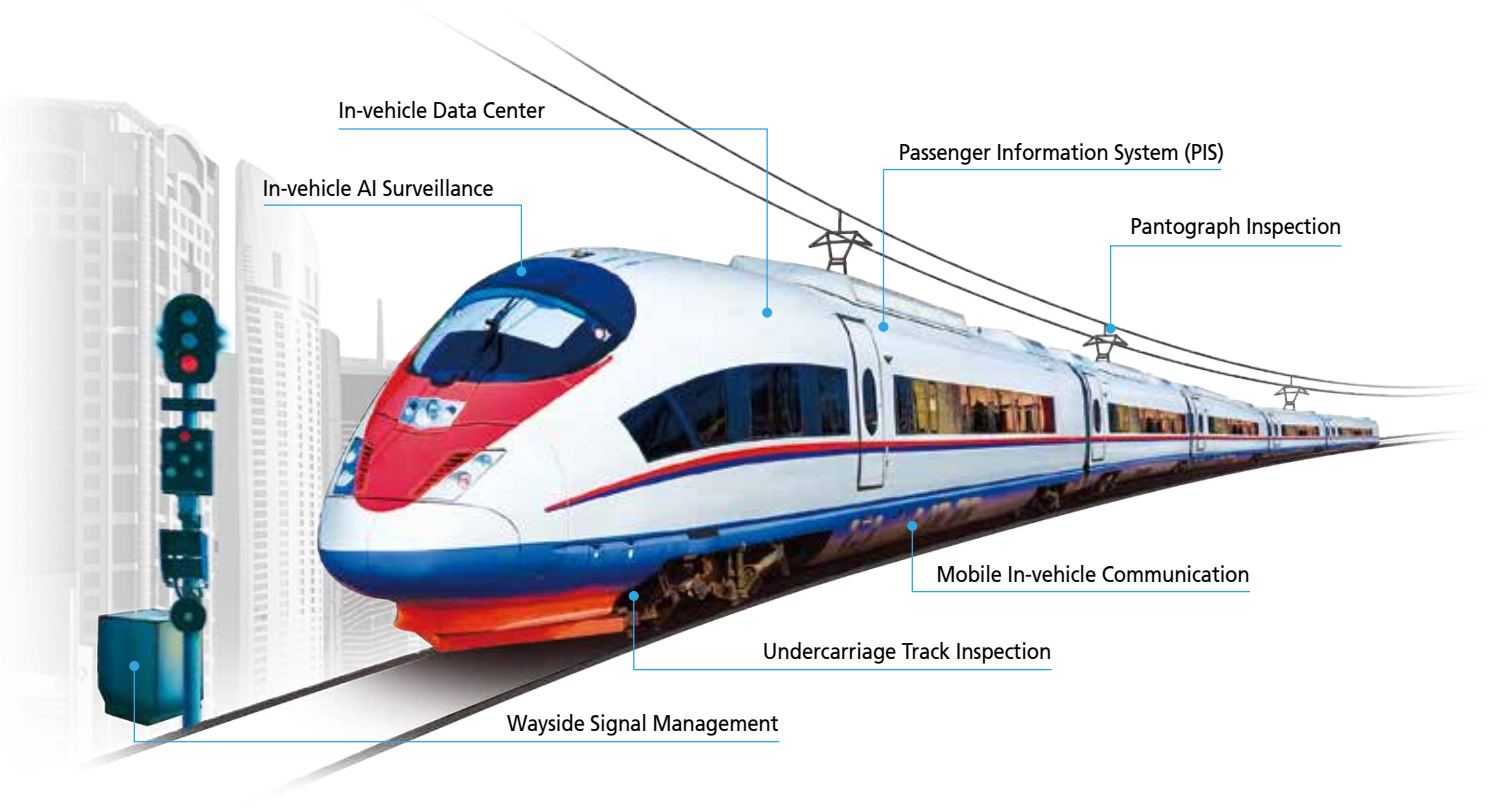# AI at the Edge for
Smarter Railway

- In-Vehicle Computing Solution
- Wayside Computing Solution
- In-Station Computing Solution

Real-time Railway AI Computing Made Possible

Vecow offers smart computing engines for Rolling Stock, Wayside Inspection, Public Surveillance and any Railway solution in harsh environments. With outstanding performance, non-stop mobile availability, user friendly smart manageability, intelligent system protection, trusted system reliability for in-vehicle operation, and compact integrated features. Vecow fanless embedded engines make real-time AI computing railway applications possible.

In-vehicle Data Center

In-vehicle AI Surveillance

Passenger Information System (PIS)

Pantograph Inspection

Mobile In-vehicle Communication

Undercarriage Track Inspection

Wayside Signal Management

Trusted and Rugged Computing Engines

EN50155:2017 Certified
European Union railway standards for in-vehicle computers

EN45545-2 Fire Protection
European Union fire safety standards for railway components

Rugged M12 Connections
Multiple X-coded/A-coded M12 connections support PoE⁺, USB, or Power for Rolling Stock operation

Extended Operating Temperature
Fanless design serves trusted system reliability especially for outdoor environments

Seamless Mobile Availability
Multiple 5G/WiFi/4G/3G/LTE/GPRS/UMTS connection serves non-stop wireless data delivery during international trip

Leading System Performance
Max 10G high-speed data transfer supporting real-time computing in the edge.

Wide Range Power Input
Max 16V to 160V wide range DC power input with 4kV isolation for Rolling Stock operation

Surge Protection
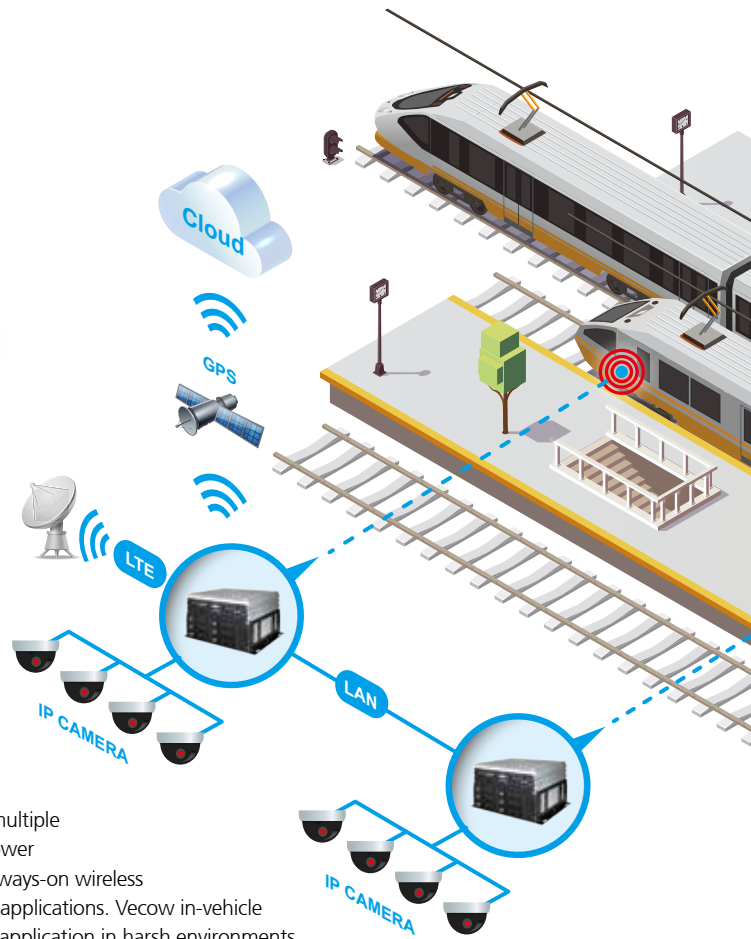Max 500V surge protection to secure system operation

Ignition Control
16-mode ignition power control for in-vehicle operation

One-Stop Solution Service
Vecow provide one-stop solution service to meet your project requirements

In-Vehicle Computing Solutions

Vecow in-vehicle computing systems are trusted and rugged engines for rolling stock operation. EN50155:2017, EN50121, EN45545-2, CE, and FCC regulations are certification standards that Vecow values. Our state-of-the-art technology integrates all of the following features into one compact system: multiple rugged I/O, fanless designs for in vehicle and outdoor operation, optimized power design, multiple 5G/4G/LTE/3G/GPRS/UMTS/WiFi connections that allow for always-on wireless communication, and VHub AI developer solutions that are ready for inference applications. Vecow in-vehicle computing systems are your smart and powerful solution for any rolling stock application in harsh environments.

Workstation-grade Solution (Intel® Xeon®/Core™ i7/i5/i3)

IVH-9204MX ICY
EN50155 & EN45545 Certified Fanless System
- 6 GigE LAN with 4 X-coded M12 PoE+
- 16V to 160V DC, 4kV Isolation
- Fanless -40℃ to 55℃, Ignition Control

IVH-9000
Multiple PoE+ Fanless System
- 18 GigE LAN with 16 PoE+
- 6V to 78V DC, 200V Surge Protection
- Fanless -25℃ to 70℃, Ignition Control

ECX-2400/1400 PEG
AI Computing System supports NVIDIA/AMD Graphics
- Supports up to 250W Graphics card
- 6 GigE LAN with 4 PoE+
- Max 12V to 50V DC, Ignition Control

ECX-2200M/1200M
5G Ready, Expandable Fanless System
- 6 GigE LAN with 4 M12 PoE+
- Max 6V to 50V DC
- Fanless -40℃ to 75℃, Ignition Control

Power-efficient Solution (Intel® Core™ i7/i5/i3 U-series SoC)

RMS-1100
1U Rackmount Fanless System
- 8 GigE LAN with 6 X-coded M12, 2 SSD Tray
- 16V to 160V DC, Ignition Control
- Fanless -40℃ to 55℃

ARS-2000M
M12 Fanless Expandable System
- 3 GigE LAN with 2 M12 PoE+, PCI/PCIe x4
- 6V to 36V DC, Ignition Control
- Fanless -40℃ to 85℃

SPC-5200
Slim Fanless System
- 4 GigE LAN with 2 PoE, 4 10G USB
- 9V to 48V DC, Ignition Control
- Fanless -40℃ to 70℃

ABP-3000
5G Ready, Ultra-Slim Fanless System
- 4 GigE LAN with 2 PoE+, 4 10G USB
- 9V to 50V DC, Ignition Control
- Fanless -40℃ to 70℃

Entry-level Solution (Intel Atom®, Arm)

SPC-4020A
Ultra-Compact Fanless System
- 2 Isolated COM
- 9V to 36V DC, Ignition Control
- Fanless -40℃ to 75℃

VIG-120M
Industrial-grade Wireless IoT Gateway
- 2 M12 LAN, 2 CAN Bus, DC 6V to 40V
- Fanless -25℃ to 70℃
- Optional supports NB-IoT module

Vision Solutions for Rolling Stock and

Wayside Computing Solutions

Vecow wayside computing systems are rugged and flexible engines for railway operation. This fanless operation supports an extended temperature range of 40°C to 85°C with outstanding system reliability in harsh environments. The Small Form Factor design makes advanced computer vision solutions possible even when space is limited, such as in current railway infrastructure. Multiple PCI/PCIe expansions support flexible availability for any railway management project across the board, in addition, VHub AI developer solutions are ready for inference applications. Vecow wayside computing system is your trusted and flexible solution for any railway traffic and rail trail management applications.

Workstation-grade Solution (Intel® Xeon®/Core™ i7/i5/i3)

ECX-2000/1000

5G Ready, Compact Fanless System
- Max 9 GigE LAN with 4 PoE+, SUMIT A, B
- Max 6V to 50V DC, Ignition Control
- Fanless -40°C to 75°C

ECX-2400/2200/1400/1200

5G Ready, Expandable Fanless System
- 6 GigE LAN with 4 PoE+, PCI/PCIe Slot
- 200W power budget, 6V to 50V DC
- Fanless -40°C to 75°C, Ignition Control

RCX-1200

Expandable Fanless System
- 2 GigE LAN, 6 10G USB, 2 PCI/PCIe Slot
- 300W power budget, Ignition Control
- Fanless -40°C to 75°C

Power-efficient Solution (Intel® Core™ i7/i5/i3 U-series SoC)

ARS-2000

Compact Fanless Expandable System
- 3 GigE LAN with 2 PoE+, PCI/PCIe x4
- 6V to 36V DC-in, Ignition Control
- Fanless -40°C to 85°C

SPC-5100

5G Ready, Ultra-Compact Fanless System
- 2 GigE LAN, 4 10G USB, SUMIT A, B
- 9V to 48V DC, Ignition Control
- Fanless -40°C to 85°C

SPC-5600A

Compact Fanless System
- 4 GigE LAN, 4 USB
- 9V to 36V DC Power Input
- Fanless -25°C to 60°C

Entry-level Solution (Intel Atom®)

SPC-4500

Ultra-Compact Fanless System
- 1 External SIM Socket, 4 USB, 4 COM
- 12V DC Power Input
- Fanless -40°C to 85°C

SPC-4010

Ultra-Slim Fanless System
- 4 USB, 2 Isolated COM
- 12V DC Power Input
- Fanless -40°C to 75°C

SPC-2000

Ultra-Compact Fanless System
- 2 PoE+ LAN, SIM Socket, CFast, SSD Tray
- 6V to 36V DC Power Input
- Fanless -25°C to 70°C

Railway Networks

In-station Computing Solutions

Vecow in-station computing systems are high-performance and reliable engines for busy in-station daily operation. Max 10Gbps data transfer makes low data latency possible, multiple PoE⁺ connections make for less system setup effort with simplified system infrastructure. The VHub AI developer solution is ready for inference applications and has high storage capacity with data protection functions that secures stable system operation in the edge. Vecow in-station computing system is your smart and compact solution for any mission-critical in-station computer vision applications in the edge.

Workstation-grade Solution (Intel® Xeon®/Core™ i7/i5/i3)

EVS-2000/1000 (MXM)

Fanless AI Computing System
- NVIDIA® Quadro®/GeForce® MXM graphics
- 9V to 50V DC, Ignition Control

RMS-2000

8-bay 2U Rackmount System
- 4-port USB 3.1 Gen 2
- 8 front-access HDD Tray, RAID 0, 1, 5, 10 data protection

ECX-2055/1055

10G LAN, Embedded System
- 2 10G LAN, 6 GigE LAN with 4 PoE⁺
- Max 6V to 50V DC, Ignition Control
- -40°C to 55°C operation

ECX-2071/1071

10G SFP+, Fanless System
- 2 10G SFP+, 6 GigE LAN with 4 PoE⁺
- Max 6V to 50V DC, Ignition Control
- Fanless -40°C to 55°C

Power-efficient Solution (Intel® Core™ i7/i5/i3 U-series SoC)

SPC-5000

5G Ready Ultra-Compact Fanless System
- 4 10G USB, SUMIT A, B
- 9V to 48V DC, Ignition Control
- Fanless -40°C to 70°C

SPC-3055

10G LAN Ultra-Compact System
- Dual 10GigE LAN
- 2 GigE LAN, 1 SIM, 4 USB
- 9V to 36V DC

SPC-3071

10G SFP+ Ultra-Compact Fanless System
- Dual 10G SFP+ Fiber LAN
- Isolated DIO, 9V to 36V DC
- Fanless -25°C to 55°C

Entry-level Solution (Intel Atom®, Arm)

SPC-4600

Ultra-compact Fanless System
- 2 GigE LAN support PoE⁺, IEEE 1588 PTP
- 9V to 36V DC, Ignition Control
- Fanless -40°C to 75°C

VIG-110

Industrial-grade Wireless IoT Gateway
- 2 LAN, 4, COM, 8 GPIO
- Optional supports NB-IoT module
- Fanless -25°C to 70°C

One-Stop **AIoT Solution Service**
VHub Platform

Global Partnership Engagement

- Worldwide Solution Providers Collaboration
- Co-marketing Events Engagement
- Win-win Cooperation

Fully Integrated Ecosystem

- Dedicated Project Team
- Seasoned AIoT Solution Experts
- Less Project TCO

Optimized Accelerate Platform

- Flexible Hardware + Software Solution
- System-ready Solution Aggregator
- Leading Compatibility

V´Hub

Faster Time-to-Market

Vecow

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