

# NEXCOM

## Fanless Rolling Stock Computer Enhances Commuting Productivity



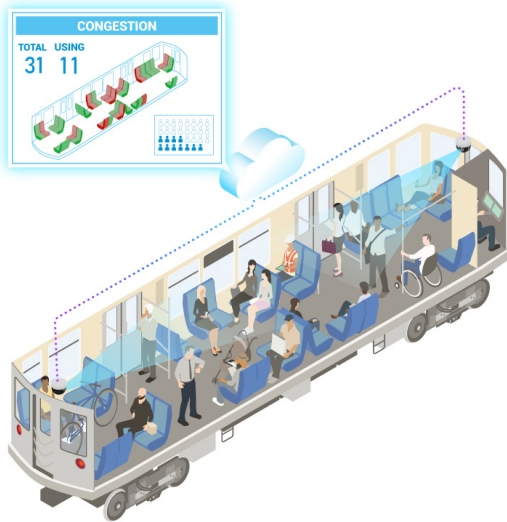
The modern transportation industry has undergone significant changes in recent years with the introduction of high-speed wireless communication, video surveillance technology and AI analysis playing important roles.

With operators now able to provide real-time information to passengers, speed has become more crucial than ever before. NEXCOM Mobile Computing Solutions has realised the need for speedy trends and presents the latest revolutionised nROK 1030 and nROK 1031 systems by implementing the latest Intel® Elkhart Lake Atom® processors to accomplish customer needs.

The new entry-level nROK family welcomes the arrival of new members, the nROK 1030 and nROK 1031, which enhance performance by utilising new-generation processors and memory with Intel® Elkhart Lake

processors and DDR4 instead of DDR3L, increasing the bandwidth of LAN/PoE ports from 1GbE to 2.5GbE and total PCIe channels, and improving the module support ability by unlocking the supportive capabilities of 5G and Wi-Fi 6/6E.

The aforementioned features offer benefits that could fulfil unique functional applications with these cost-effective platforms. For instance, real-time telematics train information can be updated to the central system by reducing latency with cloud connectivity via 5G and Wi-Fi 6/6E modules; the nROK systems have the ability to become 5G routers and data gateways, acting as large data processes and delivering transfers via powerful processors and 2.5GbE LAN. The AI application, such as people counting, also becomes available. Suppose the operator would like to send the in-train occupancy information to the passengers at the next station, the raw data coming through a 3D optical sensor that uses structured light to count



Tony Chiu. “These systems allow end customers to spend nearly zero up-cost but create a highly advanced technology environment which benefit commuters and satisfy the needs of smart city applications.”

The nROK 1030 and nROK 1031 offer several advantages in the hardware design, including a wide operating temperature range (-40°C to +70°C (OT4)), compatibility with military-grade standard MIL-STD-810H for anti-shock/vibration, fanless design, and special thermal design for heat dissipation. Additionally, the nROK 1031 features an additional reserve IO output and thanks to its many expansion slots on the motherboard, customers can apply modules such as an AI accelerator for performance enhancement, making the nROK 1031 a perfect edge system for AI applications.

**Data gateways:** leverage connectivity for onboard entertainment, hotspots, train stop information, advertisements and public announcements. They also incorporate door sensors, emergency buttons, and LED displays. The built-in GNSS module provides current location data to facilitate freight management, operation systems and train tracking.

**Smart AI applications:** enhance traffic safety by increasing convenience while reducing detection and reaction time to potential accidents. The nROK 1031-C2 SKU is designed with edge AI capabilities via PoE cameras and is compatible with either Hailo AI or Google Coral AI accelerator. This SKU emphasises safety by assisting in traffic light recognition, intrusion or pantograph inspection through inferencing. For convenience, it also monitors seat occupancy and passenger counting for space optimisation, with the built-in GNSS module tracking arrival time and operating systems of the railway.

passengers will be instantly uploaded to the cloud. As soon as the information is reflected on the monitors in the station, passengers will be able to learn the car’s current status and swiftly move to the relatively empty car(s). Since some light rail systems have shorter distances between stations, with the speedy hardware solutions that NEXCOM Mobile Computing Solutions provides, operators could reduce total costs and time for installing high-end systems and sensors on trains.

Another case: cabin safety, always the top priority for operators and passengers. Through the 2x M12 PoE ports on the nROK 1031-C2, surveillance functions can be fulfilled by the PoE cameras, making the nROK 1031-C2 a rail NVR; it could enhance AI performance by adding on modules via M.2 or mPCIe slots for analysis in the event of an incident in order to enhance the customers’ sense of security.

To take a deeper look into the new features of the new nROK systems, we compare the new nROK 1030 and nROK 1031 with the past-generation data gateway nROK 1020 in the following table with major features:

Model	Processor	Memory	Ethernet	PoE	M.2 slots
nROK 1020	E3930, 2c	DDR3L 1866	1GbE	N/A	N/A
nROK 1030	x6211E, 2c	DDR4 2666	2.5GbE	N/A	2x M.2
nROK 1031	x6413E, 4c	DDR4 2666	1x 2.5GbE + 1x 1GbE	N/A	2x M.2
nROK 1031-C2	x6413E, 4c	DDR4 2666	1x 2.5GbE + 1x 1GbE	2x 2.5GbE	2x M.2

“The new nROK 1030 and nROK 1031 will revolutionise the definition of railway data gateways. The Intel® Elkhart Lake Atom® processors are, on average, 1.7x in CPU performance, 1.5x in GPU performance, and 2x in AI performance, compared with Apollo Lake,” says the NEXCOM Mobile Computing Solutions PM Director

In conclusion, the new nROK 1030 and nROK 1031 systems not only meet the needs of operators but also enhance commuter satisfaction by providing a safer, more enjoyable riding experience. NEXCOM has the passion, hope and dedication to keep moving forward making daily lives better through innovation. NEXCOM is forging ahead into the future and making it a success with our business partners!

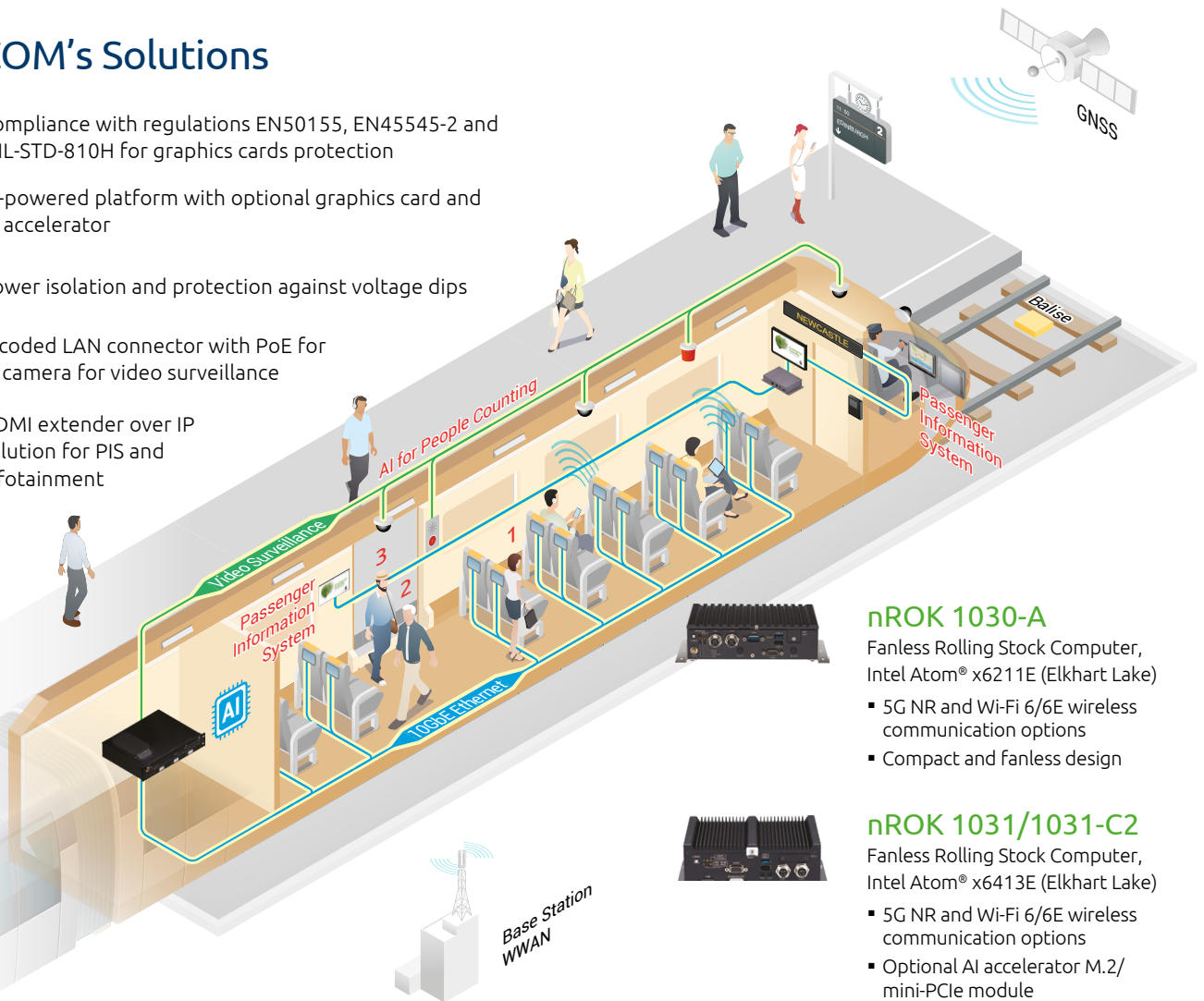






## NEXCOM's Solutions

- Compliance with regulations EN50155, EN45545-2 and MIL-STD-810H for graphics cards protection
- AI-powered platform with optional graphics card and AI accelerator
- Power isolation and protection against voltage dips
- X-coded LAN connector with PoE for IP camera for video surveillance
- HDMI extender over IP solution for PIS and infotainment



### nROK 1030-A

Fanless Rolling Stock Computer, Intel Atom® x6211E (Elkhart Lake)

- 5G NR and Wi-Fi 6/6E wireless communication options
- Compact and fanless design

### nROK 1031/1031-C2

Fanless Rolling Stock Computer, Intel Atom® x6413E (Elkhart Lake)

- 5G NR and Wi-Fi 6/6E wireless communication options
- Optional AI accelerator M.2/mini-PCIe module