NEXCOM

NEXCOM Brings Intelligence and Safety to Light Rail

Light Rail Is the Next Evolution in Public Transit

As urban and suburban regions search for cost-effective, sustainable and efficient public transportation, light rail continues to gain traction. This form of transit leverages existing rolling stock technology and rights-of-way to deliver the speed and reliability of rail travel without the high cost and infrastructure demands of heavy rail. Light rail systems effectively bridge the gap between bus and subway networks, offering a smart, scalable solution for growing cities.

But Safety Remains a Challenge

Despite its many benefits, light rail still presents safety challenges – especially when sharing space with road traffic or operating in mixed-use corridors. Collisions with vehicles and pedestrians, particularly at crossings, remain a serious risk. These risks are amplified when systems operate autonomously or without grade separation. Moreover, emergency vehicles may need to cross light rail paths unpredictably, requiring transit systems to adjust speeds and routing on the fly.

Enter the AI-Powered ATC 3520

To meet these challenges, NEXCOM has developed the ATC 3520, a ruggedised edge AI computer purpose-built to bring intelligence, safety and connectivity to modern light rail systems. Choose from the standard model with nominal voltage (**ATC 3520-IP7-4C**), or opt for the supercharged version with power isolation (**ATC 3520-IP7-AI4CR**) to protect against electrical surges and minimise noise interference.

At its core is the NVIDIA® Jetson Orin Nano™ SOM, operating in Super Mode and delivering up to 67 INT8

TOPS of compute power, offering exceptional TOPS-per-watt cost efficiency. This SOM empowers the ATC 3520 to run advanced AI video analytics in real time, identify foreign objects, calculate time-to-collision, and issue immediate visual and acoustic warnings. Once predefined thresholds are reached, the system can trigger automated braking or alert central control – critical capabilities for both manned and autonomous operations.

Support for IP cameras and LiDAR sensors via four GbE PoE+ ports allows for comprehensive environmental monitoring and improved operational efficiency. For example, by linking IP cameras to a PoE switch, the system can perform passenger counting as riders board and disembark. Combined with AI inference through a cloud service provider (CSP), the ATC 3520 boosts situational awareness and enables intelligent driver assistance features like adaptive braking and obstacle avoidance. CSPs also play a key role in edge model retraining, continuously refining the accuracy and effectiveness of AI inference at the edge.

With Connectivity that Drives Operational Intelligence

With optional 5G NR and Wi-Fi 5/6 modules, the ATC 3520 delivers low-latency, high-bandwidth connectivity between the train and the ground. Central control units can instantly transmit real-time alerts – such as first responder activity or route obstructions – enabling light rail vehicles to adjust operations proactively.

Passengers also benefit from this connectivity, enjoying seamless infotainment and high-speed internet while operators gain access to critical tools for predictive maintenance, resource planning and smart dispatching. AI-driven analytics can further optimise ticketing, passenger flow and overall system performance.

Built to Last in Harsh Rail Environments

The ATC 3520 is engineered for rail's toughest conditions. It features a fanless IP67-rated enclosure, complies with MIL-STD-810G standards for shock and vibration, and operates across extreme temperatures from -30°C to 65°C.

Its flexible I/O – including USB 3.2, CAN bus, RS-232, DI/DO, and HDMI – enables integration with a wide array of subsystems, sensors and monitoring devices. Meanwhile, onboard 128GB NVMe SSD storage and PCIe 4.0 support ensure fast, reliable data capture and transfer.

Why Should You Choose the ATC 3520 for Light Rail?

The ATC 3520 isn't just a hardware upgrade: it's a comprehensive edge AI platform that empowers light rail systems with enhanced safety, connectivity and intelligence. For operators looking to modernise their fleets, reduce risk and deliver smarter services to passengers, the ATC 3520 is the ideal partner for the future of rail transit

ATC 3520-IP7-AI4CR

- Built-in NVIDIA® Jetson Orin Nano™ SOM in Super Mode, up to 67 (sparse) INT8 TOPS compute
- 4-Port GbE PoE+ for IP CAM/LiDAR sensors
- HEVC/H.265 hardware CODEC, 11x 1080p30 compute power (decoded)
- Ultra-speed PCIe 4.0 x4 NVMe SSD for data integrity, 128GB SSD in default
- NEXCOM Acceleration Linux (NAL) OS w/ JetPack 6.2 integrated
- Expandable for LTE/5G NR & Wi-Fi 5/6
- 24V rail DC-in with ignition control & OCP/OVP, power isolation
- CE/FCC, UKCA, EN 50121-3-2 certified
- Rugged, fanless design with IP67 rating
- Wide range operating temperature of -30°C~65°C

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Discover the Future of Public Transport with NEXCOM at UITP Summit 2025

NEXCOM is excited to take part in the UITP Summit, happening this year in Hamburg June 15-18!

Join us at Hall A2, Booth A2362, where we'll be showcasing the latest in AI-powered and in-vehicle solutions designed to elevate public transportation into a smarter, safer, and more connected experience.

Overcoming Power Challenges in Rail Surveillance:

Public transport is evolving – and so are we. NEXCOM's "AI in Mobility" lineup demonstrates how cutting-edge technologies can be seamlessly integrated into transportation systems. Advanced telematics computers, such as the ATC 3750 series, feature powerful NVIDIA® Jetson™ modules with the new Super Mode, delivering high-performance AI capabilities with energy efficiency. MIPI/GMSL2 and PoE interfaces easily connect cameras for high-speed video and embedded vision applications. NEXCOM's rugged edge computers also support real-time object detection, obstacle avoidance, and behavior analysis, making them perfect for buses, trains, and other smart mobility environments. With a wide operating temperature range (-25°C to 70°C) and IP67-rated models available, they're built to perform in harsh conditions.

In-vehicle/Rail Accelerated Edge AI Computing

ATC 3750-IP7-8M/WI8MR
NVIDIA® Jetson AGX Orin™

- IP67 rating Edge AI computer for in-vehicle & railway applications
- 8 x MIPI GMSL2 SerDes ports
- Expansible for GNSS, LTE/5G NR & Wi-Fi 5/6E
- NEXCOM Acceleration Linux (NAL) integrated w/ JetPack™ 6.1
- 24V~110V DC-IN for railway with ignition control
- CE/FCC, UKCA, E mark, EN 50155, EN 45545-2 certified

ATC 3750-IP7-6C/WI6CR
NVIDIA® Jetson AGX Orin™

- IP67 rating Edge AI computer for in-vehicle & railway applications
- 6-port GbE PoE+ (X-coded)
- Expansible for GNSS, LTE/5G NR & Wi-Fi 5/6E
- NEXCOM Acceleration Linux (NAL) integrated w/ JetPack™ 6.1
- 9V~36V DC-IN with ignition control
- CE/FCC, UKCA, E mark, EN 50155, EN 45545-2 certified

Let NEXCOM show you what's possible when innovation meets public transit. See you in Hamburg!

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