



The Great Train Robbery: How We Captured the Tech Struggles Bandits

Background

With the rapid advancement of technology, AI has become an integral part of daily life, revolutionising industries with innovative solutions. The transportation sector, particularly trains, subways and other rail systems, increasingly relies on image analysis to meet essential safety and operational needs. Surveillance systems equipped with advanced image analysis enable operators to monitor passenger flow, assess cabin congestion, ensure passenger safety and improve overall efficiency. This technology is crucial for managing crowded environments and optimising the safety of passengers in real-time.

Warning: Struggles Ahead

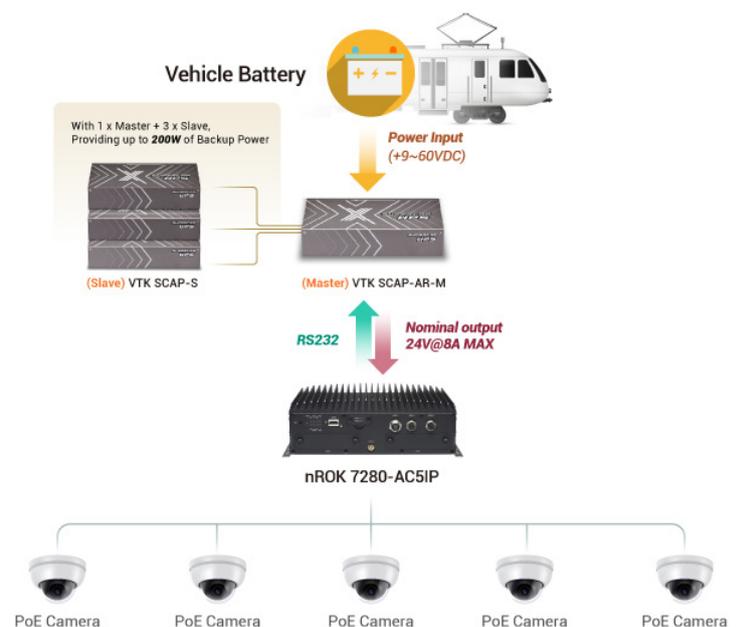
The reality, however, is far from straightforward; the challenges are like bandits staging their own Great Train Robbery on your tech systems. Overcomplicated wiring layouts not only complicate installation but also increase maintenance costs and lead to potential safety hazards. Limited storage often fails to keep pace with the continuous and high-volume stream of high-resolution video data, which can result in data loss or system slowdowns. Additionally, power disruptions in harsh railway environments—such as vibrations, extreme temperatures or fluctuating power sources—are like robbers, breaking into the system's stability and threatening to cause chaos whenever they strike. Traditional UPS solutions, while somewhat helpful, often fall short in these extreme conditions, leaving critical systems as vulnerable as a train left unguarded. But what if there was a solution that could capture these tech struggles bandits? A solution that simplifies

wiring, provides uninterrupted power, and efficiently handles large volumes of data without a hitch.

Ready to discover how a game-changing duo can optimize your operations? Keep reading!

Problem? Solved. Period.

The combination of NEXCOM nROK 7280-AC5IP and VTK-SCAP provides a powerful and reliable solution, effectively capturing the tech struggles bandits that have long plagued railway surveillance. The nROK 7280-AC5IP supports multiple cameras through PoE, simplifying installation and reducing cable complexity, while the VTK-SCAP-AR-M (Master) ensures stable power by receiving input from the train's supply and



providing a steady 24VDC to the nROK 7280-AC5IP. Positioned between the train's battery and the nROK 7280-AC5IP, the VTK-SCAP first receives power from the train, regulates it and then outputs a stable supply to the system while simultaneously charging itself. Beyond power delivery, the nROK 7280-AC5IP actively monitors railway power stability via RS232, detecting fluctuations and responding accordingly. If the train stops and the main power remains off for an extended period, the nROK 7280-AC5IP detects the sustained power loss and initiates a controlled OS shutdown, with the VTK-SCAP continuing to supply power to prevent abrupt shutdowns and data corruption. To avoid unnecessary system shutdowns due to brief power dips, the nROK 7280-AC5IP only triggers the shutdown sequence after confirming prolonged power loss.

Wait, There's More!

For extended power backup, up to three VTK-SCAP-S (Slave) units can provide up to 200W of additional power, ensuring uninterrupted operations even in harsh environments. Together, this powerful duo not only delivers efficient, reliable and streamlined performance for railway surveillance systems but also triumphs over the Great Train Robbery of tech inefficiencies and instabilities.

The NEXCOM nROK 7280-AC5IP and VTK-SCAP combine advanced features for optimal performance in demanding environments. Powered by 26 TOPS AI computing, the nROK 7280-AC5IP enables AI-powered cameras to support key applications such as passenger counting for occupancy monitoring, optimising load distribution and service planning, and real-time safety surveillance. It detects anomalies like fights or medical emergencies, reducing manual inspections and operational costs. The system includes 4 x 2.5GbE (IEEE 802.3at/af) and 1 x 2.5GbE (IEEE 802.3at/af/bt) ports. The latter is specifically designed to support advanced cameras, including 360-degree views, PTZ (Pan-Tilt-Zoom) cameras and IR (Infrared) cameras, which require higher power consumption. Installation is simplified with M12 X-coded PoE ports, delivering both power and data through a single cable. Additionally, it supports three dedicated drives: one for the operating system and VMS software, and two for storing surveillance footage, which can be configured in RAID to ensure the security and integrity of critical image data, further enhancing both operational efficiency and passenger safety.

On the power side, the VTK-SCAP ensures reliability with its SuperCap-based backup solution, offering over 500,000 charge/discharge cycles for long-lasting durability. With up to 200W of expanded power and operation in temperatures ranging from -35°C to 80°C, the VTK-SCAP ensures uninterrupted power, even in extreme conditions.

Ready to elevate your railway surveillance systems and capture the tech struggles bandits with this all-in-one, reliable solution? Contact us today to learn how this perfect combo can revolutionise your operations, putting an end to the Great Train Robbery of inefficiency!



nROK 7280-AC5IP

Intel® Core™ Ultra, Meteor-lake H, AI In-Vehicle/Railway Telematics Computer

- IP67 rating protection
- Up to 26TOPS AI computing power
- Fanless design w/ operating temperature -40°C~60°C
- 1 x 2.5GbE PoE++ and 4 x 2.5GbE PoE+ X-coded ports
- Power input 24VDC or 24~110VDC with isolation
- CE/FCC, UKCA, EN50155, EN45545-2 and MIL-STD-810H certified



VTK- SCAP-AR-M / VTK- SCAP-S

SuperCap BBU for Railway Application

- SuperCap BBU for railway application
- High power density EDLC (electric double layer capacitor) technology
- Over 500,000 cycle life (charging/discharging)
- Operating temperature: -35~80°C
- RS232 for communication
- Max. expansion 1 x master + 3 x slave

Watch our [video](#) to find out more about the VTK SCAP.

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AI in Mobility

Overcoming Power Challenges in Rail Surveillance: NEXCOM's Edge Computer with VTK-SCAP Backup

Rail vehicles require robust video surveillance systems, but harsh environments and power instability present significant challenges. Voltage fluctuations and outages can damage onboard computers and compromise critical data, impacting safety.

NEXCOM's nROK 7280-AC5IP addresses these challenges with a powerful edge computing platform. It features five PoE++ ports for seamless integration with PoE cameras and includes dedicated storage for operating systems and video management software (VMS).

Furthermore, the VTK-SCAP battery backup unit (BBU), utilizing supercapacitor technology, ensures reliable power, continuous operation, and data integrity. This enhances the safety and efficiency of rail transportation.

AI Railway Telematics Computer

nROK 7280-AC5IP

- Powered by Intel® Core™ Ultra, Meteor Lake-H
- Up to 26TOPS AI computing power
- 1 x 2.5GbE PoE++ and 4 x 2.5GbE PoE+ X-coded ports
- Power input: 24VDC or 24-110VDC, with isolation
- IP67 rated, operating temperature range: -40°C to 60°C



SuperCap Backup Battery Unit (BBU) for Railway Application

VTK- SCAP-AR-M (Master) VTK- SCAP-S (Slave)

- High power density EDLC (Electric Double Layer Capacitor) technology
- Over 500,000 cycle life (charging/discharging)
- Operating Temperature: -35~80°C
- Expandable to 1 master and 3 slaves, with a maximum output of 200W



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Unleashing the Ingenuity of SD Edge Computing