5G ON THE RAILS: HOW THE ATRM50 POWERS MODERN TRAIN CONNECTIVITY

HIGHLIGHTS

- Passenger trains are gaining popularity across Europe due to their low emissions and environmental benefits. The demand increases for railway connectivity for both passenger and operational benefits.
- Enabling reliable connectivity across multi-wagon, cross-border trains is technically demanding—requiring rugged devices that support seamless cellular handovers and meet strict railway safety standards.
- The ARTM50 comes to help. A high-speed router equipped with dual SIM, eSIM, M12 connectors, and RMS (Remote Management System) capabilities — a remote management tool that enables efficient monitoring, configuration, and troubleshooting of onboard systems.

THE CHALLENGE – RAILWAY CONNECTIVITY ACROSS EUROPE

In a bid to cut carbon emissions, France has recently banned domestic short-haul flights where train alternatives exist. Trains on these routes emit 77 times less CO_2 per passenger, are much cheaper for passengers, and take only up to 40 minutes longer.

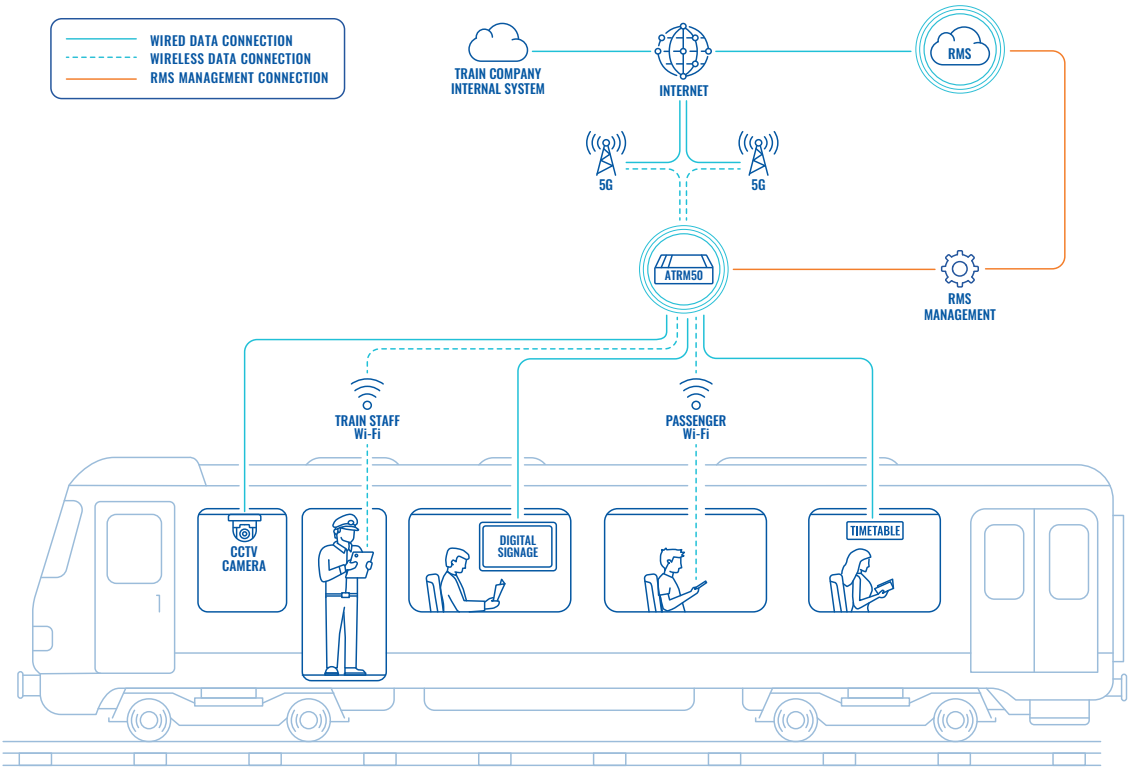
As this shift continues, reliable connectivity on passenger trains becomes increasingly important — not only for a smooth onboard experience but also for operational efficiency. However, achieving uninterrupted connectivity takes more than just plugging in a router.

Passenger trains are composed of multiple metal wagons, each requiring strong, consistent data throughput that can travel through physical obstructions and over long distances. The mobile nature of trains, often traveling through rural areas, tunnels, and across borders, introduces additional challenges. Routers must provide fast failover, handle changing signal conditions, and support seamless roaming between cellular carriers.

And since these devices are installed in dynamic, high-vibration environments, it's essential to have a router with an integrated mounting bracket or rack-mounting option. As well as mechanically rugged and compliant with strict safety and fire protection standards such as EN 45545-2 and EN 50155.

Moreover, operators managing large fleets need the ability to configure, monitor, and troubleshoot network equipment remotely, minimizing downtime and maintenance costs. All of this calls for a specialized, transport-certified device built for the realities of railway connectivity.

TOPOLOGY



THE SOLUTION – POWERING CONNECTIVITY WITH ATRM50

Meeting tough standards head-on, Teltonika developed the ATRM50 — a 5G router built for the transportation sector. Certified with EN 45545-2 and EN 50155, it ensures safe and compliant operations on modern passenger trains.

Installed inside the train wagon, the ATRM50 delivers ultra-high cellular speeds up to 3.4 Gbps and supports dual SIM with eSIM, providing uninterrupted connectivity for passengers and train staff. It supports fast failover with backup WAN, so the connection stays stable even when crossing borders or switching between carriers.

This 5G router with an integrated mounting bracket ensures secure installation in railway environments, while M12 connectors for both Ethernet and power provide robust, vibration-resistant links to onboard systems like CCTV cameras, digital signage, and timetable displays—ensuring reliable performance even under constant movement.

The ARTM50 has built-in GNSS enables real-time train tracking, which can integrate with internal systems for live route updates, automated announcements, and coordination with traffic control. It also supports route planning, delay detection, and regulatory compliance, improving both operations and passenger experience.

This 5G router works with Teltonika's Remote Management System (RMS), a remote management tool that allows IT teams to monitor, update, configure, and troubleshoot routers across the fleet; no physical access is needed.

With rugged hardware, advanced software, and full certification for rail, the ATRM50 is more than a router—it's a reliable connectivity hub that keeps passenger services and onboard systems connected, secure, and easy to manage remotely.

Click below to get in touch and explore how Teltonika's 5G router can meet your transport connectivity needs!