Axiomatic Highlights Isolated CAN-Repeater for Railway Equipment

June 20, 2026

MISSISSAUGA, ON - June 20, 2026 - PRESSADVANTAGE -

Axiomatic Technologies Corporation, a manufacturer of electronic controllers and communication modules for mobile and industrial applications, offers a galvanically isolated CAN-repeater (Model AX140180) designed to meet the demanding requirements of train, railway and transit equipment. The device provides essential electrical isolation between CAN bus segments, protecting sensitive electronics from ground potential differences and transient voltage events commonly encountered in rail environments.

The CAN-repeater provides 500 VDC of galvanic isolation between the CAN ports and the power supply. This architecture is critical in railway applications where equipment often spans large physical distances and connects subsystems operating at different ground references. By providing a clear isolation barrier, the device prevents ground loops and voltage transients from corrupting data or damaging connected electronic control units.

Railway rolling stock and wayside equipment operate in electrically harsh environments characterized by high-voltage traction systems and electromagnetic interference. The Axiomatic CAN-repeater addresses these challenges with an IP67-rated, ruggedized enclosure designed for extended temperature operation (-40

to 85°C) and compliance with the EN 50155 railway standard. While many repeaters are limited to fixed speeds, this unit is user-configurable via the Axiomatic Electronic Assistant, supporting a wide array of baud rates from 10 kbps up to 1 Mbps.

"Our isolated CAN-repeater reflects the kind of robust, application-specific engineering that railway OEMs and system integrators require," said Amanda Wilkins, CMO of Axiomatic Technologies Corporation. "Galvanic isolation is not optional in rail ? it is a fundamental requirement for protecting networked subsystems against the electrical disturbances inherent to traction power environments."

The device is designed for versatile integration, operating from a wide nominal input voltage range of 12V or 24VDC. A standout feature for system architects is the unit?s ability to provide an isolated output supply voltage (24VDC, 100 mA), which can be used to power external components on the isolated side of the network. Each CAN port features independent transceiver circuitry, ensuring that a fault on one bus segment remains contained and does not propagate to the other.

CAN bus technology has become a backbone communication protocol in modern rail vehicles, linking traction controllers, braking systems, and passenger information displays. As vehicle networks grow in complexity, the need for reliable signal repeating and electrical isolation between subsystems increases proportionally. This CAN-repeater is part of a broader portfolio of CAN bus interface products that serve heavy-duty vehicle and industrial automation markets worldwide.

In addition to its isolation function, the repeater serves as a range extender for CAN networks that exceed standard bus length limitations. By regenerating the CAN signal, the device effectively resets physical layer constraints, allowing designers to distribute equipment across longer train consists or larger wayside installations without sacrificing communication reliability.

"Railway projects often involve long development cycles and strict qualification processes," Wilkins noted. "Having a proven, off-the-shelf isolated CAN-repeater available reduces engineering risk and accelerates integration timelines for our customers."

Axiomatic Technologies Corporation provides full technical documentation and application support for the AX140180. The company maintains inventory for standard configurations, supporting the rapid prototyping and production schedules typical of transit modernization programs. Beyond rail, the repeater is suitable for other heavy-duty applications?including mining, marine, and stationary power?where high-performance galvanic isolation is a prerequisite for system stability.

For more information about the AX140180 galvanically isolated CAN-repeater and other communication interface products, visit the Axiomatic website.

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