Axiomatic Highlights High-Performance Off-road Automotive Ethernet Switch Product

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Axiomatic Technologies Corporation, a provider of advanced electronic control and networking solutions, offers a high-performance 6-port gigabit automotive Ethernet switch designed to meet the rigorous demands of off-highway, mining, agriculture and commercial vehicles, and in particular autonomous applications. The switch delivers reliable data communication in environments where traditional networking hardware often falls short, providing engineers and system integrators with a proven solution for complex machine connectivity challenges.

The AX141570 addresses a growing need for robust in-vehicle and in-machine networking infrastructure especially for autonomous operation. As heavy equipment, agricultural machinery, and mining equipment automation systems incorporate increasing numbers of sensors, cameras, lidar, radar, displays, and electronic control units, the demand for high-speed, deterministic data transfer has become a central design consideration. Automotive Ethernet technology interfaces with lidar, radar and cameras and provides the bandwidth and latency characteristics required by these systems while maintaining compatibility with existing vehicle architectures.

Axiomatic's Ethernet switch is engineered to operate across an extended temperature range of -40 to 75 °C and withstand the vibration, shock, and electromagnetic interference common in mobile and industrial environments. Unlike commercial-grade networking equipment, this off-highway switch is purpose-built for deployment in enclosures and vehicle compartments where environmental conditions are unpredictable, featuring a ruggedized, IP67-rated nickel-plated cast aluminum enclosure. The device functions as an unmanaged switch with internal logic that is not user-configurable, though each of the six ports can be individually set for 100 Mbps or 1 Gbps speeds.

"Our automotive Ethernet switches reflect the engineering philosophy that has guided Axiomatic for years," said Amanda Wilkins, CMO of Axiomatic Technologies Corporation. "We design products that solve real connectivity problems in harsh environments, and our switches give system designers the confidence that their networks will perform reliably regardless of operating conditions."

The switch supports standard automotive Ethernet protocols, including 100BASE-T1 and 1000BASE-T1 (IEEE 802.3bw and IEEE 802.3bp), enabling seamless integration with existing vehicle communication systems. This protocol compatibility allows design engineers to incorporate the switch into architectures that also utilize legacy bus systems, facilitating a phased migration toward higher-bandwidth Ethernet-based networks without requiring a complete system redesign.

In off-highway applications such as construction equipment, mining vehicles, and industrial trucks, the ability to consolidate multiple data streams through a single high-speed switch reduces wiring complexity and overall system weight. This consolidation also simplifies diagnostic procedures, as the device features an embedded web server on Port #1 that includes a virtual cable tester for troubleshooting and monitoring performance. The use of a single 2-wire twisted pair cable contributes to improved reliability by eliminating unnecessary points of failure in the wiring harness.

The AX141570 represents part of a broader portfolio of electronic solutions that includes controllers, displays, gateways, and power distribution modules. This integrated product ecosystem allows customers to source multiple networked components from a single manufacturer, ensuring compatibility and reducing integration risk across complex machine architectures.

Industrial applications benefit equally from the rugged design characteristics of the switch. Factory automation systems, material handling equipment, and stationary power generation installations all present environmental challenges that consumer or enterprise networking hardware cannot withstand. The automotive-grade qualification of Axiomatic's switch ensures continuous operation in these demanding settings without the premature failure rates associated with repurposed commercial equipment.

"Engineers working on next-generation machine designs need networking components they can trust in the

field," Wilkins added. "Our switches undergo extensive validation testing to ensure they meet the same durability standards as every other Axiomatic product. That consistency is something our customers have come to rely on."

The switch is available with flexible input voltage ranges (9 to 36 Vdc) compatible with both 12-volt and 24-volt nominal vehicle electrical systems. Technical documentation, integration support, and application engineering assistance are available directly from the Axiomatic engineering team to help customers implement the switch for their specific requirements.

Axiomatic Technologies Corporation continues to support engineers and OEMs across the transportation, off-highway, mining, agriculture and industrial equipment sectors with electronic products designed for performance in challenging operating environments. Additional product information and technical specifications are available at the Axiomatic website.

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