Axiomatic Delivers Rugged PWM Output Converters for SAE J1939 Systems

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Axiomatic, a provider of electronic control solutions for mobile and industrial equipment, offers a line of rugged LIN/CAN converters with pulse-width modulation output designed for reliable operation in demanding environments. The converters support SAE J1939 and CANopen protocols, addressing the communication and control needs of off-highway vehicles, heavy equipment, and industrial machinery operating under extreme temperature, vibration, and moisture conditions.

The units serve as a bidirectional gateway between LIN (Local Interconnect Network) and CAN networks, while simultaneously generating a precise PWM output signal. By translating digital commands from the vehicle network into precise PWM signals, these units enable operators and system integrators to control analog devices without requiring additional custom electronics. Each converter is built to withstand the environmental stresses common in construction, agriculture, mining, and marine applications.

Axiomatic offers rugged LIN/CAN Converters (SAE J1939 or CANopen®) with a PWM output, suitable for use in harsh conditions. The product line reflects the company's broader focus on providing configurable, off-the-shelf electronic modules that reduce development time for original equipment manufacturers and

system integrators. Rather than designing custom circuit boards for each application, engineers can deploy a pre-built converter and configure it to match their specific network parameters and output requirements.

Amanda Wilkins, Chief Marketing Officer of Axiomatic, noted the practical advantages of this approach. "Our converters allow engineers to focus on their core system design rather than spending months developing custom interface electronics," Wilkins said. "The configurability built into each unit means a single hardware platform can serve dozens of different applications across multiple industries."

The SAE J1939 protocol, widely adopted in commercial vehicles and off-highway equipment, provides a standardized communication framework for electronic control units. Axiomatic's converters integrate directly into J1939 networks, accepting parameter group numbers and source addresses that conform to the protocol's specifications. For applications requiring CANopen compatibility, the same hardware platform supports that protocol stack, giving system designers flexibility when specifying components across different projects.

Durability is a central design consideration for the converter line. The units carry an IP67 ingress protection rating, sealing internal electronics against dust, water immersion, and high-pressure washdown. Operating temperature ranges extend from negative forty degrees Celsius to eighty-five degrees Celsius, accommodating both arctic field operations and engine compartment installations where ambient heat is a persistent concern. Vibration and shock resistance meet or exceed the standards established by SAE J1455 for electronic equipment in heavy-duty vehicle environments.

Each converter features onboard diagnostics that report fault conditions back to the CAN network, enabling predictive maintenance strategies and reducing unplanned downtime. Open-circuit and short-circuit detection on the PWM output channels alerts operators to wiring failures before they escalate into system-level problems. Current monitoring on each output provides real-time feedback on actuator health, which is particularly valuable in safety-critical hydraulic control applications.

Wilkins emphasized the importance of field serviceability in the company's design philosophy. "Equipment downtime in industries like mining or agriculture carries enormous cost," she said. "Our diagnostic capabilities give maintenance teams the information they need to identify and resolve issues quickly, often before a machine goes down."

System integrators can configure the SAE J1939 model using the Axiomatic Electronic Assistant (P/N: AX070506K). For CANopen® installations, an EDS (Electronic Data Sheet) file is provided, allowing the unit to be commissioned using standard industry CANopen® configuration tools.. Engineers can adjust PWM frequency, duty cycle ranges, input-to-output mapping curves, and fault response behavior without modifying firmware. This configurability supports rapid prototyping and allows field technicians to adjust parameters on

installed equipment without returning units to the factory.

Axiomatic has maintained its focus on CAN-based electronic solutions for more than two decades, building a catalog of controllers, converters, displays, and gateway modules used across the mobile hydraulics, material handling, and power generation sectors. The PWM output converters represent one segment of a broader product portfolio designed to simplify electronic integration in harsh-environment applications.

For more information about the PWM output converter line and related CAN bus products, visit www.axiomatic.com.

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