ISSUE: December 2024

Bidirectional DC-DC Converter Boasts Ease Of Use For E-Mobility Applications

Calex's 750-W BCE bidirectional, liquid-cooled dc-dc converter is described as an advanced yet user-friendly converter designed to make power management easier for engineers, especially those working on the next generation of EVs and hybrid vehicles (HEVs). According to the vendor, you don't need to be a power electronics expert to use it—this converter offers top-tier performance and efficiency in a way that's accessible for all levels of engineering expertise (see the figure).

With up to 96.7% efficiency and a rugged IP67 rating, it ensures smooth power transfer between a vehicle's 48-V high-side battery and the 12-V auxiliary systems, improving overall performance and energy usage. Its liquid-cooled design ensures reliable performance even in the most demanding environments.

What sets the 750-W BCE series apart is its ready-to-use design with a user-friendly digital interface (J1939 CAN Bus), which allows easy customization and seamless integration into existing vehicle systems. The CAN Bus interface also enables engineers to track real-time system data. This means that engineers can focus more on their overall design goals—whether that's extending battery life, increasing range, or enhancing the performance of auxiliary systems.

The converter offers a flexible high-side voltage range of 32 to 63.2 Vdc and a low-side voltage range of 6 to 16 Vdc when working with 48-V to 12-V hybrid battery systems. Supporting bidirectional power flow, it manages both the high-voltage side and low-voltage side of the end system, allowing power to flow seamlessly in either direction as needed. For more information, see the product page

Figure. Measuring 5.57 x 6.97 x 1.75 in. including connectors, the 750-W 48S12.750BCE bidirectional nonisolated dc-dc converter provides a complete solution for in-vehicle power distribution with 12-V/48-V battery configurations for a variety of applications including micro and mild hybrid automotive systems.