

Double action

To accelerate the development of 48V mild hybrid systems, a new two-in-one power supply can help engineers test electric vehicle power components and also act as a battery simulator

Fueled by increasingly stringent regulations on automotive emission and coupled with the ever-growing expansion and complexity of electrical equipment in vehicles, more and more hybrid electric vehicle (HEV) models are entering the market. Different auto makers across all regions of the world promote different hybrid technologies, including the 48V mild hybrid system, which has become a focal point for vehicle development in recent years.

The main task of the 48V mild hybrid system is to assist the engine, while also saving fuel. In the EV power system, the motor and drive controller are responsible for converting the energy in the battery to make it run. When the vehicle brakes, the motor will switch to engine mode to charge the battery, converting its kinetic energy into electricity and storing it back into the battery. Therefore, under different operating conditions, the motor no longer simply obtains energy from the battery, but consumes or recovers electricity through different conversion modes, thereby improving the energy utilization of the power system.

Chroma has developed its new 62000D series Bidirectional DC Power Supply, which combines a power supply and a regenerative load, feeding the DUT energy back to the grid, this bidirectional feature makes it particularly suitable for performance testing of EV power motor drivers.

When the EV's motor driver accelerates, the 62000D outputs in constant voltage mode and runs the motor driver. When the EV brakes or descends and the motor decelerates, it switches to engine mode, and the 62000D can withstand the reverse current



For testing high-power conversion components, the Chroma 62000D master-slave parallel cabinet can connect two to 10 devices for fast series/parallel operation up to 180kW



Chroma 62000D integrated with Chroma soft panel

recharge of the driver without adding any extra load or protection devices. Moreover, when integrated with the specialized Chroma Soft Panel, the 62000D can transform into a battery simulator, replacing the real EV battery to perform an array of testing applications on the motor driver.

An example use case of the Chroma 62000D is a large power supply manufacturer where an engineer must conduct performance tests on a motor drive and use the actual battery to operate. To do this requires the arrangement of multiple batteries in different charging states or have to repeatedly charge and discharge a single battery according to each test condition. The test process is lengthy and tedious, even aside from the safety issues that the possible failure of the DUT could bring about. In this test scenario, Chroma 62000D with soft panel provides a safer and stable test environment. Simulating different battery conditions and charge/discharge characteristics, Chroma 62000D can complete all test requirements to shorten the test process and improve efficiency.

With the current 48V mild hybrid system emerging in the car industry, the Chroma 62000D series can operate two 62180D-100 in parallel, providing 100V, 1080A, and 36kW output capacity.

For HEVs/BEVs with 400V systems, Chroma 62180D-600 has a single output capacity of 600V, 120A, and 18kW. According to different DUT requirements, users can connect multiple units up to 180kW in parallel to meet higher power test applications.

In addition, Chroma also provides 17020 battery charging and discharging test system for mild hybrid 48V BSG's or ISG's battery module testing. It can simulate ECU and integrate a climate chamber. Furthermore, it is able to adjust the charge and discharge current dynamically according to its BMS feedback to achieve real simulation and protect battery module safety, a solution that has been adopted by European and Japanese EV Tier-1 battery module suppliers.

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