OBC AND DC-DC CONVERTER POWER HIL TESTBED MODEL 8620

Chroma ATE introduces the Chroma 8620 OBC and DC-DC Converter Power HIL Testbed for testing electric vehicle charging systems and powertrain components. Hardware configuration can be adapted according to DUT specifications, with options including a programmable DC power supply, programmable DC electronic load, digital power meter, and oscilloscope. Chroma 8620 can be applied to different system architectures and boasts expansion and sharing of the platform.

Chroma 8620 is specially designed for research and development of on-board chargers (OBC) or DC-DC converters. Its flexible software provides user interfaces for operation and monitoring of manual and automated test functions and automatically generates comprehensive test reports. Users can quickly conduct large numbers of repeated tests, improving test coverage and efficiency.

Chroma 8620 supports the loading of Altair Activate models or Model-Based vehicle models so that users can continuously apply existing vehicle models, saving the trouble and time of redevelopment. Moreover, CAN HS/FD and LIN communication interfaces are able to load DBC and LDF communication files.

For functional testing, Chroma 8620 can simulate normal operating conditions of the DUT in a real vehicle environment. It can also simulate abnormal operating conditions, including communication abnormalities and signal faults (Open Circuit, Short to Ground, Short to Battery, Pin-to-Pin Short). This serves to avoid possible hazards during the charging process or when the vehicle is on the road. Laboratory simulation testing not only diminishes the risk of accidents in the actual vehicle, but also eliminates the high costs associated with using real vehicles for testing.

MODEL 8620

KEY FEATURES

- Supports customized hardware configuration, platform sharing, and expansion
- Flexible software platform
  - Easy to operate and monitor user interfaces
  - Manual testing capabilities
  - Automated test program editing
  - Automated test report generation
  - Supports LabVIEW, C/C++, Python, .NET languages
  - Supports data recording
- Supports CAN, CAN FD, LIN communication
- Real-time monitoring for safety testing with an independent PLC system
- Supports signal fault injection simulation (open circuit, short circuit)
- Supports loading of Altair Activate models and model-based models
- Supports UDS diagnostics (ISO 14229)
- Supports GBT, QCT standards testing

APPLICATIONS

- OBC calibration & verification
- DC-DC converter calibration & verification
- OBC & DC-DC converter 2-in-1 calibration & verification
- Reliability and durability testing
- Vehicle driving cycle conditions simulation
- System integration testing

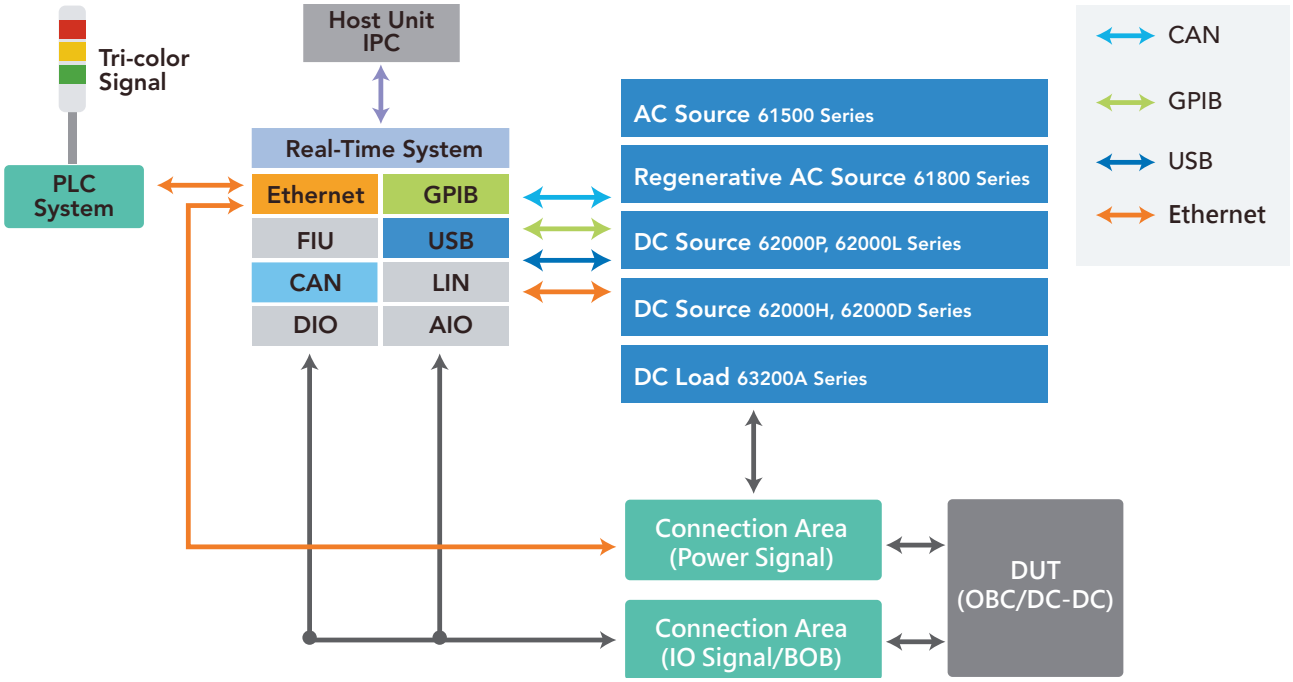
Chroma

VEHICLE DEVELOPMENT PROCESS AND TEST REQUIREMENTS

Chroma 8620 OBC and DC-DC Converter Power HIL Testbed supports the hardware-in-the-loop test from the ISO 26262 V-model for functional safety in the development of road vehicles. It includes failure mode, functional hazard analysis, and potential risk functions related to the OBC and DC-DC converter in the design stage of the V-model. Various vehicle conditions can be simulated and tested on the bench. Users can discover and correct problems early, well before entering real vehicle tests, which helps in obtaining ASIL (Automotive Safety Integrity Level) accreditation. The testbed allows for the expansion or replacement of peripheral equipment to meet the test requirements of different DUT specifications. Also, by simply modifying existing programming, users can begin a new test project without starting from scratch. Chroma 8620 allows for highly repetitive automated tests and reduces possible errors caused by continuous manual programming of test specifications. Not only can this testbed reduce the number of tests and development costs, it also helps to shorten the test time and improve overall test efficiency.

Chroma 8620 has an independent PLC monitoring system, which can track the running status of the system software and test hardware in real time. When an error occurs, the protection and warning mechanisms are activated to avoid damage to the equipment and the DUT. The flexible software platform allows users to load CAN HS/FD and LIN communications files as well as combine real-time systems, power and measurement equipment, and vehicle models. This provides easy to perform real-time dynamic tests on OBC and DC-DC converters. The user interfaces and automated test procedures are so flexible they can be edited even during the execution of manual or automated tests. Automated test functions support upper-level test software using an ASAM XIL interface. After the test procedure is completed, test reports are automatically generated for convenient review of test changes and results. While testing, the test data can also be recorded and accessed in TDMS, CVS, and Text formats, for additional analysis.

Both the user interfaces and auto test procedures allow repeated editing or copying into new projects, so users can adapt test plans and apply them to different DUTs or projects. Additionally, in auto test procedures, users can implement well-known languages such as LabVIEW, C/C++, Python, and .NET, to increase flexibility, reduce repetitive engineering, and improve overall development efficiency.



OPTIMIZED TEST ITEMS & USER INTERFACES

Chroma 8620 adapts automated test sequences through its software platform. Besides editing the test procedures for OBC and DC-DC converter regulations, it is customized for editing specific functions for different DUTs, including power-on and power-off, normal and abnormal communication, and signal fault injection, and other functions. Additionally, it simulates different control flows, time changes, and fault behaviors to increase the overall test coverage. Users can complete tests that cannot be performed on a real vehicle, prevent mistakes that could result in personal injury, and improve hazard analysis and risk assessment early on.

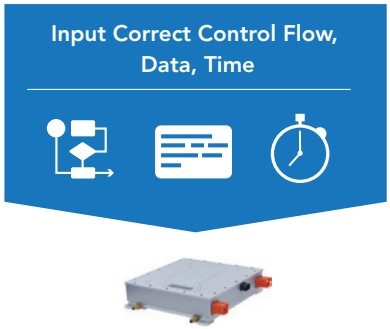
The customizable user interfaces are based on system integration of both power and measurement equipment, along with vehicle model types. Through the UI, users can execute tests and observe data content in real time, including parameter changes, chart display, signal statuses, etc., thus offering a great test experience and improved efficiency.

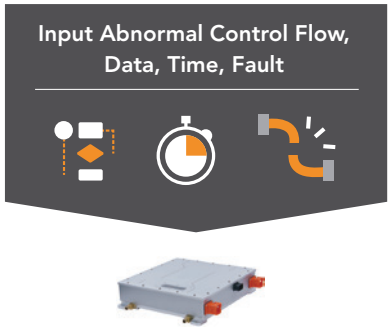
On-Board Charger (OBC)

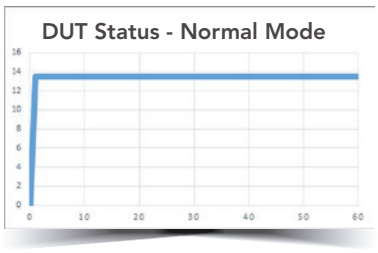
Standards Testing	*DUT Functional Testing*
1. Input Voltage Test	1. Normal Functioning Test
2. Input Frequency Test	2. Abnormal Functioning Test
3. Charge Function Test	3. Communication Abnormality Test
4. Current Overload Protection Test	4. Signal Fault Injection Test
5. Others*	5. Model Abnormality Test

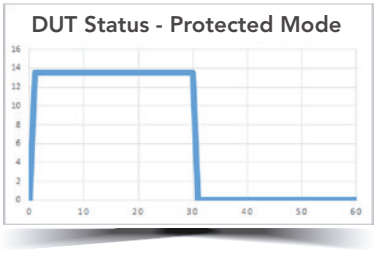
DC-DC Converter

Standards Testing	*DUT Functional Testing*
1. Rated Power	1. Normal Functioning
2. Current Control Accuracy	2. Abnormal Functioning
3. Voltage Control Accuracy	3. Communication Abnormality
4. Dynamic Response Time	4. Signal Fault Injection
5. Others*	5. Model Abnormality

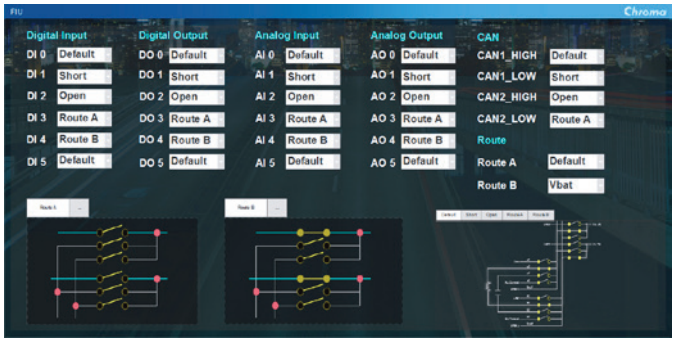








* Ask for a complete list



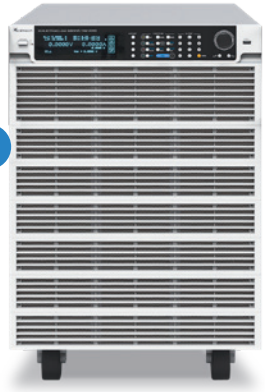
STANDARD SYSTEM ARCHITECTURE

Chroma 8620 supports customized hardware configuration. In addition to the standard configuration of the stand-alone main rack, it can also be equipped with an extension rack for optimal use of test space.

DC Electronic Load AC Source Main Rack Extension Rack

HIGH-PERFORMANCE EQUIPMENT

1. IPC
2. Status Display Panel
3. Breaking-Out Box
4. Communication Panel
5. AC EVSE Signal Emulator 80619
6. DC Power Supply 62000P, 62000L Series
7. DC Power Supply 62000H, 62000D Series
8. Digital Power Meter 66200 Series
9. BOBC Control Unit
10. AC Power Source 61500 Series
    Regenerative Grid Simulator 61800 Series
11. DC Electronic Load 63200A Series



ORDERING INFORMATION

8620: OBC and DC-DC Converter Power HIL Testbed
80619: AC EVSE Signal Emulator
Regenerative Grid Simulator: 61800 Series
AC Power Source: 61500 Series
DC Power Supply: 62000H, 62000D, 62000P, 62000L Series
DC Electronic Load: 63200A Series
BOBC Control Unit
Switch Box (PHIL & ATS8000): Signal Switch Fixture
Digital Power Meter: 66200 Series
IPC: Advantech、5004ATM

*1: The number of racks depends on the order specifications.
*2: All specifications are subject to change without notice.

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