# Battery Test Solutions

Pack/Module/Cell

Get more product & global distributor information in Chroma ATE APP

iOS
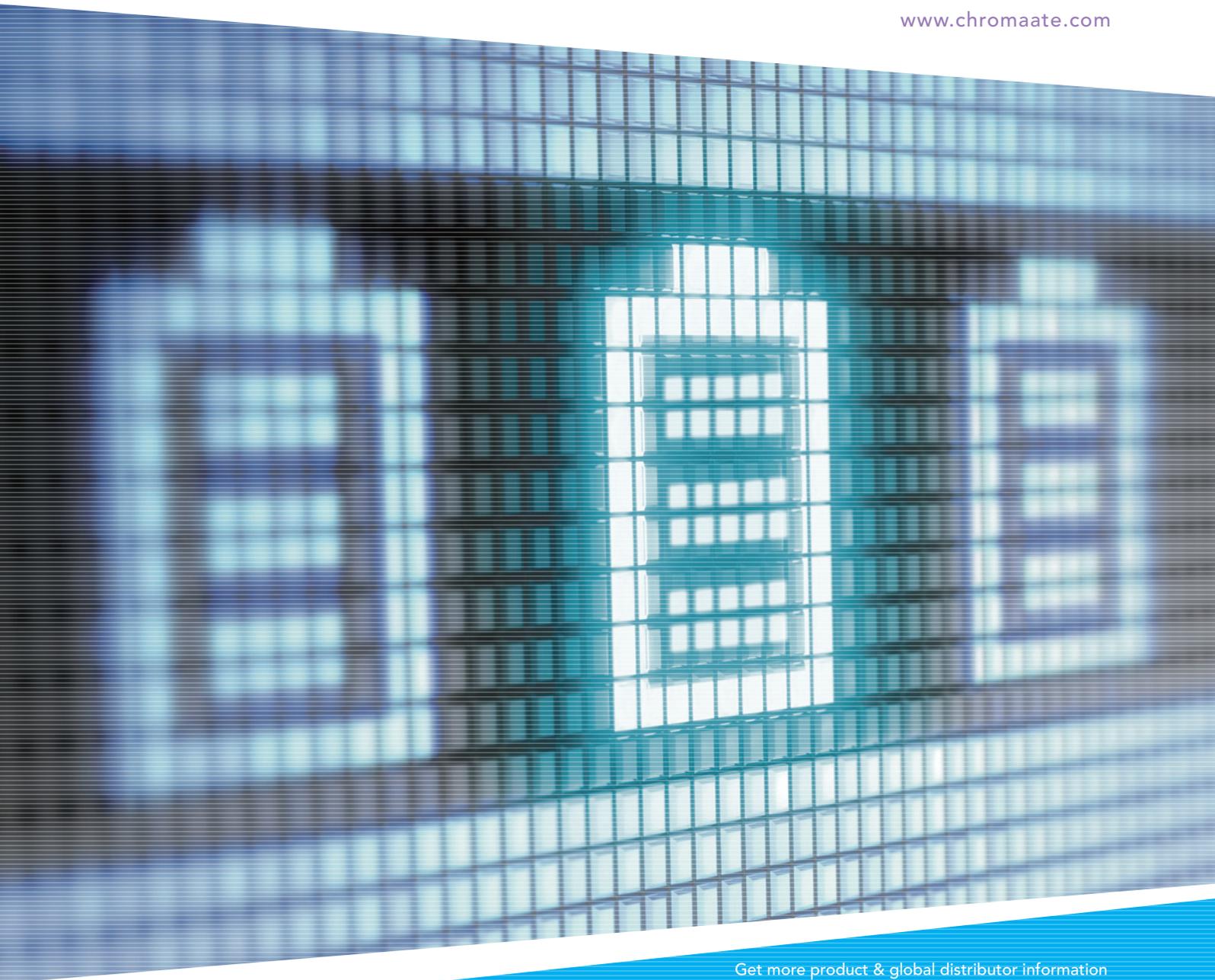
Chroma

Android

Chroma

Test & Automation Turnkey Solution Provider

Chroma ATE Inc., founded in 1984, is one of the world's leading suppliers of automatic test equipment providing test and measurement instrumentation and automatic test systems (ATS) for various companies in the electronics industries. In conjunction with manufacturing execution systems (MES), Chroma specializes in developing Test and Automation Turnkey Solutions to satisfy customer demands.

Chroma has been competitive in the electric vehicle (EV) industry for many years setting up long-term relationships with many well-known car manufacturers and key EV component (including battery) providers. Furthermore, Chroma has comprehensive test solutions for battery cells, battery modules, battery packs, battery management system (BMS), on-board chargers, DC converters, EVSE, wireless charger, and electrical safety.

In addition to maintaining a large and diverse group of R&D engineers, Chroma invests heavily in research and development each year to ensure its continued technological leadership. Core technologies in power electronics and optics have fueled Chroma's drive forward into various new markets and its success in providing innovative new test solutions with precision, reliability, and uniqueness. This is the key reason why Chroma is able to gain long-term support from customers for over 30 years.

Manufacturing Capability and Service Support

Temperature & Humidity Cycle Test Chamber

EMC Lab - Electromagnetic Wave Testing

Highly Accelerated Life Testing Equipment

Smart Auto Production Line

High Power Burn-In Testing

Customized Assembly

Automated Test Equipment and Software

Calibration Lab

Local Support and Services

Turnkey Battery Test Solutions

Battery Cell

♻ Regenerative Battery Cell Test Instruments & Systems

Charge/ Discharge Test System	Barcode Binding Equipment	Formation System	DCIR Test Equipment	OCV & ACIR Test Equipment	Grouping

Charge/Discharge Tester

Battery Cell Insulation Tester

Battery Cell Surge Tester

RT Aging   Formation   HT Aging

Barcode Binding

OCV & ACR Test
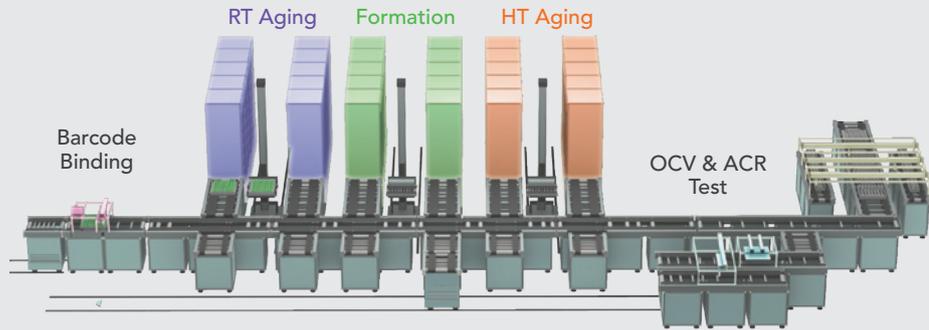
Battery Module

Battery Pack

♻ Regenerative Battery Module/Pack Test Instruments & Systems

BMS PCBA ATS	Functional ATS	Battery Module/Pack Test Systems	Battery Pack ATS	Maintenance ATS

Hipot Analyzer

16 CH Battery Simulator

Multi-Channel Hipot Tester

DC Power Supplies

DC Electronics Loads
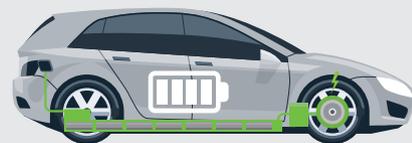
Battery Cell Production Line Solutions

Turnkey Battery Formation | 17000 Series

Chroma 17000 series is a complete turnkey system for battery cell formation with testing equipment and computer control software for the entire process. It integrates systems for battery formation, grading, precharging, OCV/ACIR testing, DCIR testing, as well as an automated stacker, logistics line, and stations for grouping, heavy industry sorting, and grading.

In many cases, the software can control the entire formation process through FMS (Formation Management System). Its costumizable features can link and control all stations and their data, including: single station status, test records, test data, calibration/verification time, and schedules. Through the FMS interface it can set individual testing options, pass/fail conditions, sorting conditions, and analysis of testing data.

Formation System

Key Features

☑ Formation/grading voltage measurement accuracy: ±0.05% F.S. (typical)

☑ Formation/grading current measurement accuracy: ±0.1% F.S. (typical)

☑ Formation/grading testing current range: 6A ~ 120A

☑ AC regeneration mode

☑ Loop resistance value monitoring function

☑ Auto configuration of calibration/verification kits

☑ Protection functions include: OVP/UVP/OCP/OTP/OQP/$\pm \Delta V$/$\pm \Delta I$

☑ Chroma FMS for setting, monitoring, and control (optional)

DCIR
Test Equipment

OCV/ACIR
Test Equipment

Battery Cell Multifunctional Automated Optical Inspection System | 7505 Series

The Chroma 7505 series multifunctional AOI systems is used for detection of battery surface defects, dimensions, and weight. The high-precision testing equipment is developed for inspection of cylindrical cell, pounch cell, and prismatic cell batteries by integrating various modular functions into one machine. It combines 2D and 3D fast online measurement functions and performs real-time process monitoring, data collection and process control to discover potential problems early. The 7505 is the best apparatus for quality control and the best choice for improving efficiency and competitiveness.

Key Features

☑ Modular design for use on pouch cell, prismatic cell, and cylindrical cell batteries (18650, 20700, 21700)

☑ Combines 2D defect and 3D dimension, weight and thickness measurements

☑ 2D Optical Inspection module for 2D dimension and defect inspection

☑ 3D Optical Inspection module for 3D dimension, thickness and flatness tests

☑ High-precision weight sensor for weight tests

☑ Battery defect test items: surface dent, rust, scratch, oil stain, print defects, dirt, damage, shrinkage of the film, bad sealing, pole defects, vacuum break,wrinkles, etc.[*1]

*1 Based on Chroma's test conditions.
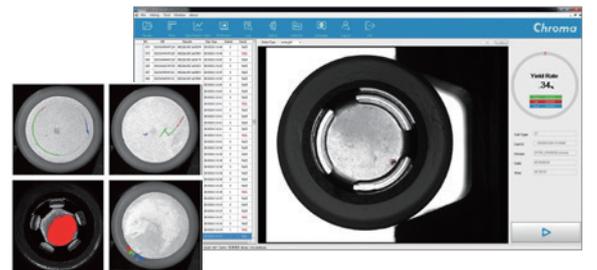
Battery Cell Insulation Tester | 11210

The Chroma 11210 battery cell insulation tester accurately measures leakage current (LC) and insulation resistance (IR) of battery jelly-roll/dry-cell as well as various capacitor products and other insulation materials.

In addition to standard LC/IR measurement, the 11210 has a unique function that detects partial discharge (PD) or flashover that may have occurred inside the insulation material during the high voltage insulation testing process. With PD detection of the battery's internal status before electrolyte filling, defective products can be filtered out before entering the next stage of production so as to prevent these potential hazards that may occur during use. In contrast to traditional methods of insulation test, Chroma 11210 provides an entirely new concept for inspection and evaluation of battery quality.

Key Features

☑ DC voltage measurements: Up to 1KV (dc)

☑ Charging current measurements: Max. 50mA

☑ Wide range leakage current (LC) precision detection (10pA ~ 20mA)

☑ Insulator internal partial discharge/flashover detection (optional)

☑ Built-in Contact Check function

☑ Automatically test in sequence: Charge→Dwell→Test→Discharge

☑ High speed and accurate measurements (20ms/device)

☑ Suitable for various types of capacitance LC/IR measurements in addition
   to the battery cell insulation tests
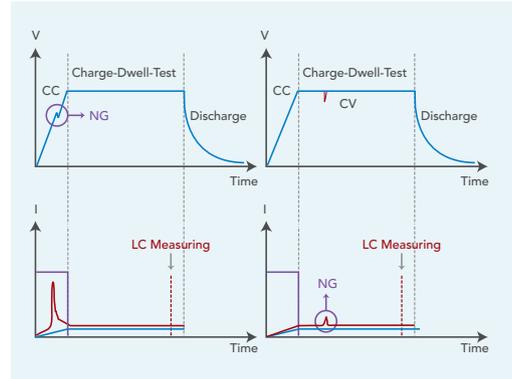
Partial Discharge and Flashover detection in both the CC (charging) & CV (measurement) phase

Battery Cell Surge Tester | 19311 Series

For lead-acid battery cell insulation testing

The Chroma 19311 tests the insulation quality between the positive and negative plates of the lead-acid battery cell by applying a high voltage surge/impulse before the electrolyte injection. It has an surge output voltage that can reach 6kV, four terminal measurement, a 200MHz sampling rate, and can analyze the differences of the insulation quality from the resonant waveform. It tests the positive and negative plates on insulation distance and quality, presence of the separator, and possible short circuits. This surge test can decrease the defective rate of the lead acid battery production and increase battery cell insulation. The 19311-10 multicell scanning test is extremely efficient; saving test time, decreasing labor costs, and increasing the production capacity of the production line.

Key Features

☑ Max. output voltage: 6kV (depending on DUT's capacitance)

☑ Pulse interval: 30ms ~ 3000ms

☑ 8 types of judgements:
   - Area
   - Differential Area
   - Flutter
   - Laplacian
   - 1st Peak Voltage (V1)
   - 3rd Peak Voltage (V3)
   - Peak Ratio
   - △Peak%

☑ Contact Check

☑ Breakdown Voltage Mode (BDV Mode)

☑ Sampling rate: 200MHz

☑ Supports up to 25 channels for scanning test (19311-10 with A190362 option)

☑ Standard remote interfaces: LAN, USB & RS232
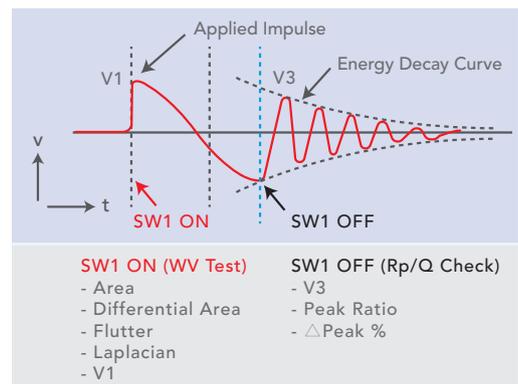
Surge Test

Battery Charge & Discharge Test System | 17011

Chroma 17011 battery charge and discharge test system is a high precision test system designed specifically for testing energy storage components like lithium-ion battery (LIB) cells, electric double layer capacitors (EDLC), and lithium-ion capacitors (LIC). The system is especially useful for product development, quality control, characteristics research, cycle life testing, product screening, and quality assessment. The Chroma 17011 contains linear circuit and regenerative AC/DC bi-directional models for different applications. The linear circuit test system suits testing small and medium sized energy storage components with very low output noise and ultra-high measurement accuracy. The energy regenerative system fits testing large or power type storage components with benefits such as high efficiency, energy saving, and low heating.

10V / 6A
17216M-10-6

6V / 60A
17208M-6-60

Linear Circuit Test Series

Model	Voltage Ranges	Current Ranges	Channels
17216M-10-6 *1	±5V / 0~5V / 0~10V	200µA / 6mA / 200mA / 6A	16~64
17216M-6-12	0~6V	100mA / 1A / 3A / 12A	16~64
17208M-6-30	0~6V	1mA / 100mA / 10A / 30A	8~32
17208M-6-60 *2	0~6V	500mA / 5A / 15A / 60A	8~32

*1: 17216M-10-6 has three built-in voltage output modes that can be switched through the software settings.
*2: 17208M-6-60 has to be paired with an external power supply and placed into a rack; other models contain an integrated power module and can be used either stand-alone or in a rack.

Key Features
- ☑ Voltage measurement accuracy: ± 0.015% F.S.
- ☑ Current measurement accuracy: ± 0.02% F.S.
- ☑ Fast current response time < 100µS
- ☑ Multi-current range with uninterrupted auto switching
- ☑ Up to 10mS high data sampling speed
- ☑ Channel parallel output function
- ☑ 0V discharge measurement
- ☑ Built-in operating modes: CC/CV/CP/CR/CC-CV/CP-CV
- ☑ Built-in DCIR test function compliant with IEC 61960
- ☑ Built-in EDLC/LIC test function compliant with IEC 62391/IEC 62813
- ☑ Able to integrate with a multi-functional temperature data logger and environmental chamber
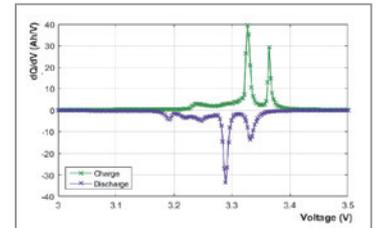
dQ/dV vs Voltage
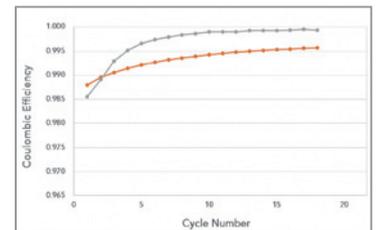
Coulombic Efficiency Test

Energy Regenerative Series

Model	Voltage Ranges	Current Ranges	Channels
17212R-5-60	Charge 0~5V ; Discharge 1.5V~5V	60A	12~48
17212R-5-100	Charge 0~5V ; Discharge 1.5V~5V	100A	12~36
17212M-6-100	Charge 0~6V ; Discharge 1.5V~6V	25A / 50A / 100A	12~36

* A fitting AC/DC bi-directional converter is chosen according to the power input and placed into a rack.

Key Features
- ☑ Voltage measurement accuracy:
  ± (0.02% rdg. + 0.02% F.S.)
- ☑ Current measurement accuracy: ± 0.05% F.S.
- ☑ Fast current response speed (-90%~90%) < 1mS
- ☑ Regenerative energy with up to 80% efficiency
- ☑ Up to 1200A output for paralleled channels
- ☑ Dynamic waveform simulation
  (current/power mode)
- ☑ Supports HPPC test function compliant with USABC
- ☑ Built-in DCIR test function compliant with IEC 61960
- ☑ Able to integrate with ripple current superposition unit
- ☑ Able to integrate with a multi-functional data logger and environmental chamber
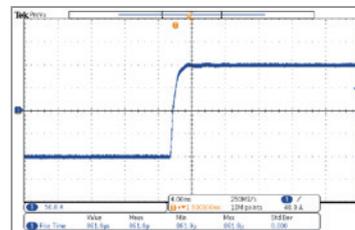
Rise time < 1 mS (17212M-6-100)

AC line / Regenerate AC line(Bi-direction Circuit) / Battery Cell
Chroma A691104 / Chroma 17212M-6-100 / AC/DC
Direct Regeneration / AC/DC
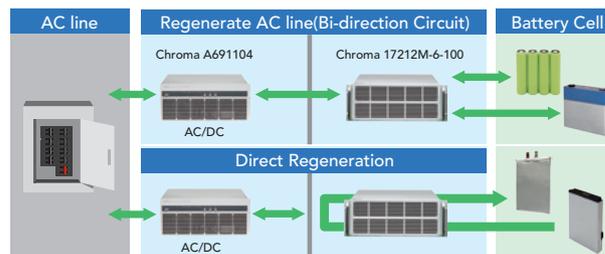
17011 System
100A - 41U

Charge/Discharge Test Solutions for Battery Modules, Packs, and Systems

Chroma 17020, 17020E, 17030, 17030E, and 17040 series battery charge and discharge test systems are designed for testing secondary batteries. Used in the electric vehicle industry, they have the functions of simulating VCU (Vehicle Control Unit) behavior and sending diagnostic service ID. During testing, the fully automatic and independent process can power on the UUT, unlock (seed & key) and start the relay, then start to charge/discharge the battery pack.

During testing, the battery charge/discharge test systems can conduct thermal control. Through the diagnostic service ID, the systems read the data and DTC (diagnostic trouble code) returned by the BMS (battery management system). With these protection function parameters, the systems can completely monitor the battery charge/discharge tests to ensure the safety of the testing process.

The battery charge/discharge test systems are equipped with driving cycle simulation functions, real EV power systems, and battery pack handshake processes, and can real-time adjust the output power, voltage, and current of the charge/discharge equipment. The systems so can simulate EV over temperature drop, the Mild-Hybrid 48V system, 12V power system interaction, and other real automotive working conditions.

Configure the battery charge/discharge test systems according to the testing needs, quantity, and specifications of the UUT. The systems can execute complete product verification at different stages for various battery test equipments; can execute fully automated testing procedures; offer fully BMS integrated and automated testing solutions; support various BMS communication interfaces, incl. CANbus, LINBus, RS232, RS485, and MODBUS; quickly complete product testing; perform high quality product verification of battery pack, module, and battery management systems. Chroma's charge/discharge test systems so offer you worry-free battery testing solutions.

17030E

8CH   16CH   17020   17020E   17030   17040
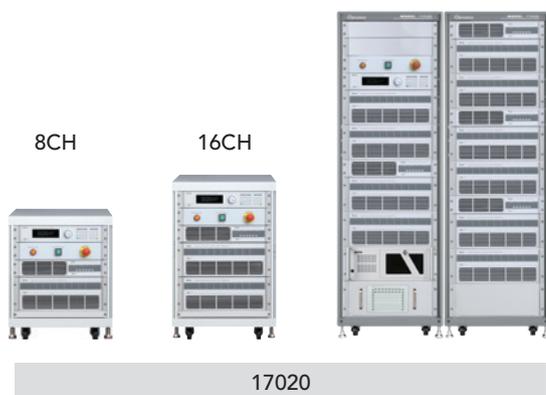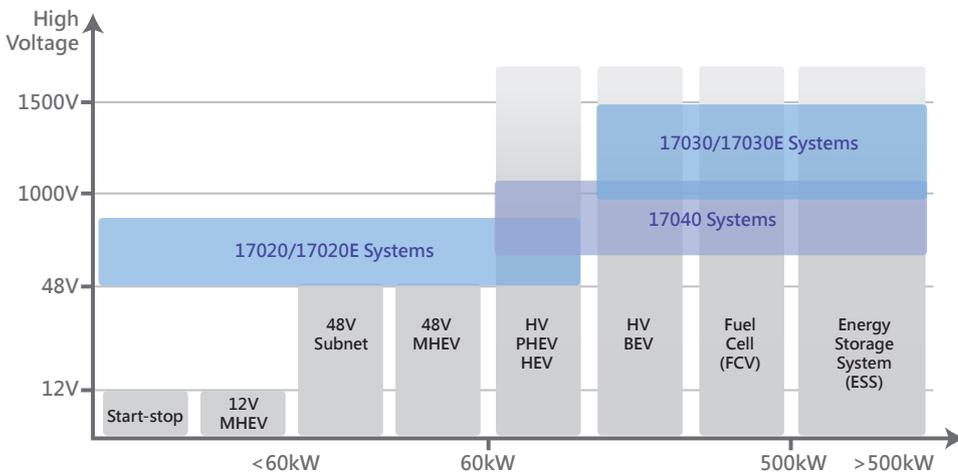
Regenerative Battery Pack Test System | 17020 & 17020E

The 17020 and 17020E series are Chroma's battery pack charge/discharge systems with a choice between flexibility (17020) and affordability (17020E). The 17020 can be customized for channel power and quantity according to the needs of UUT testing which is ideal for R&D and accreditation groups. The 17020E can be configured with a minimum unit of 10kW which fits battery pack life cycle testing or production line EOL ATS.

17020
Voltage Range: 0~20V, 60V, 100V, 200V, 500V
Current Range: parallel connected up to 2600A
Power Range: 600W, 1.25kW, 2.5kW, parallel up to150kW

17020E
Voltage Range: 60V, 100V, 200V
Current Range: parallel connected up to 800A
Power Range: 10kW, 20kW, parallel up to200kW (20CH)

17020 System
48CH

17020E System

Key Features

☑ High precision voltage and current measurements:

  Voltage: 0.02% rdg.+ 0.02% rng.

  Current: 0.05% rdg. + 0.05% rng. (60V, 100V, 200V); 0.1% rdg. + 0.05% rng. (20V, 500V)

☑ Charge/discharge modes: CC, CV, CP

☑ Two-stage software and firmware protection for optimal safety

☑ Driving cycle simulation with current and power state of real driving conditions

  - Trip time between maximum charge and maximum discharge current only 10 ms.

  - Smooth current conversion without overshoot, delay time 0 sec.

☑ Various testing standards: IEC61960 DCIR, IEC 62391 EDLC Capacitance & DCR, IEC 60896 ISC & Ri

☑ Efficient regenerative battery energy discharge: energy saving, environmental, low heat generation

☑ When rated power is over 20%, regenerative efficiency is up to 85% (feedback to grid)

Regenerative Battery Pack Test System | 17030, 17030E & 17040

The 17030, 17030E, and 17040 series are Chroma's battery pack charge/discharge systems. Depending on your testing needs, choose between the high performance 17040, the 17030 with customizable specifications, or the affordable 17030E for specific applications.

The systems have built-in parallel channel functions to boost the maximum charge/discharge current and power as well as dynamic profile simulation functions to load the battery waveform of a given drive profile. The bidirectional architecture ensures uninterrupted current during the charge/discharge transient state. The current or power modes meet the NEDC/FUDS requirements while also complying with ISO, IEC, UL, GB/T, and such international testing standards.

17040

17030
Voltage: <1500V
Current: <1500A
Power: >500kW

17040
Voltage: 60V~1000V
Current: 150A, 300A, 450A, 600A, 750A, 900A, 1200A, 1500A
Power: 60kW, 120kW, 180kW, 250kW, 300kW, 360kW, 500kW, 600kW

17030E
For use in ESS: 300kW/1,500V/1000A/1CH
For use in production line EOL ATS: 180kW/600V/600A/1CH
Regenerative load (discharge function only):
160kW/800V/1000A, 160kW/800V/300A, 60kW/500V/1000A

17030

Key Features

☑ High measurement accuracy:
  Voltage: 0.02% rdg.+0.02% rng.; Current: 0.05% rdg. + 0.05% rng. (17040)
  Voltage: 0.05% rdg.+0.05% F.S.; Current: ±0.1% F.S (17030)
  Voltage: 0.1% FS; Current: 0.1% FS (17030E)
☑ Quick response time technology (0~90%): 2ms (17040); 10ms (17030/17030E)
☑ Smooth current conversion with low overshoot (<1%) overshoot
☑ Charge/discharge modes: CC, CV, CP
☑ Two-stage software and firmware protection for optimal safety
☑ Driving cycle simulation with current and power state of real driving conditions
☑ Various testing standards: ISO12405, GBT31467, GBT31484
☑ Efficient regenerative battery energy discharge: saving energy, environment,
  and heat generation. When rated power is over 20%, regenerative efficiency
  is up to 85% (feedback to grid)

17030E

Battery Simulator | 17020 & 17040

The 17020 and 17040 Regenerative Battery Pack Test Systems are equipped with a battery simulator function to test battery packs and battery connected products. If the supplier's battery is not available during product development, the battery simulator function can confirm whether the system is functioning as it should. It can also be programmmed to control the SOC (status of charge) of the battery, download different battery curves, and test the product charging/discharging status for configuration evaluation. It is applicable for testing the automotive Mild-Hybrid 48V start-stop system, motor driver, on-board charger, etc.

Key Features

☑ Voltage: 30V, 60V, 100V, 200V, 500V, 1000V
  Current: Up to 2600A (17020); 1500A (17040)
  Power: 10kW, 20kW, 30kW, 60kW, up to 600kW
☑ Battery pack output voltage control
  - Simulate and control the battery pack output voltage by set voltage, capacity, and SOC
  - Intelligent efficiency calculation function
  - Battery pack pre-charge simulation
☑ Battery pack configuration setting: Import battery cell data to change
  battery pack characteristics
☑ Battery cell curve import function: Import battery cell data to simulate the real battery status

Battery Simulator Soft Panel (A170202)
☑ Supports high power pre-charge and post-discharge control
☑ Supports battery SOC settings

Typical Voltage vs SOC Curve

GUI

functions as battery pack

Motor

Motor Driver

Battery Simulator
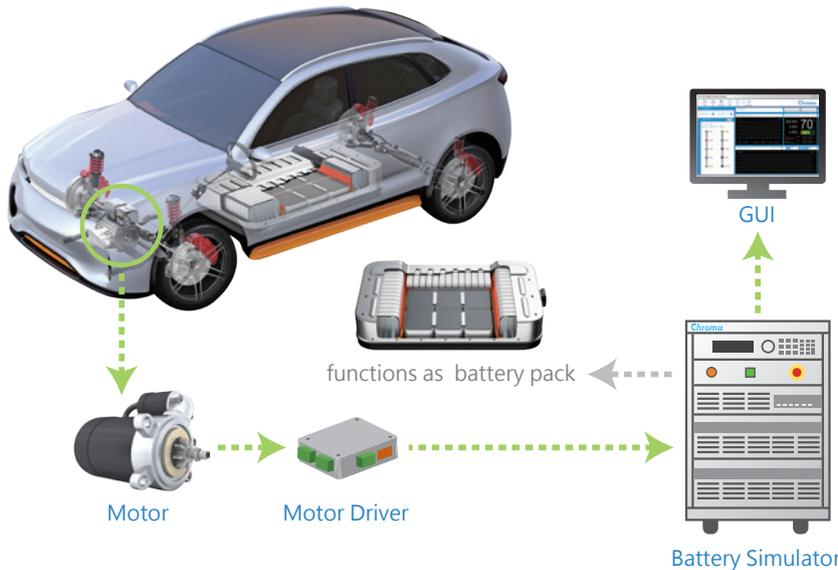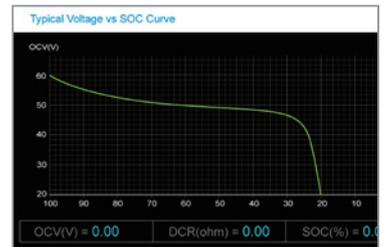
Test Software Platform | Battery Pro

Battery Charger and Discharge Test Software

Battery Pro is a software platform specifically developed for testing secondary battery packs and can be applied to Chroma 17040, 17020, and 17020E systems. It is equipped with multilingual interface support (Traditional Chinese/Simplified Chinese/English), real-time status monitor and icon manager, authority management, fault record tracking and security detection, and data storage and recovery during power failure functions.
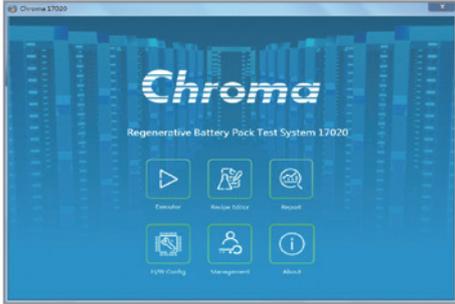
BatteryPro Main Panel
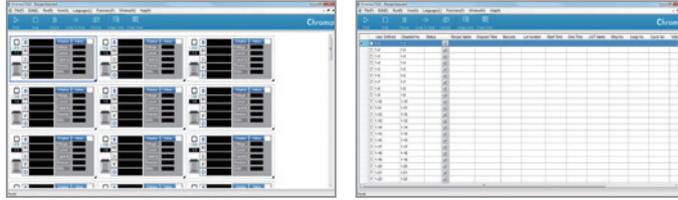
Recipe Executor

☑ Data display is updated in real-time, without a click

☑ Graphical and list mode display switching, flexible display depending on number of channels

Recipe Editor

☑ Test curves include ISO12405, GBT31467, GBT31484, and IEC61960 DCIR

☑ BMS data control charge/discharge settings interface

☑ Equipped with variable editing, external parameter, if-then procedure, and judgement functions
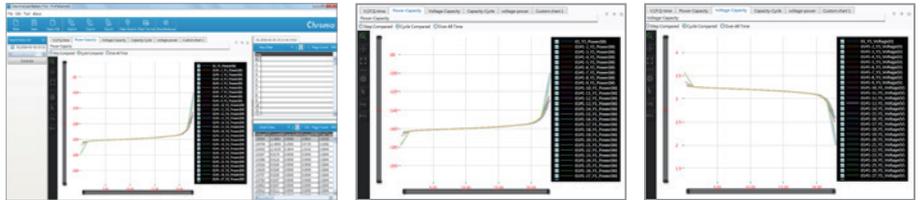
Data Analyzer

☑ One-click draft test diagrams

☑ User-defined chart and favorite features

☑ Comparison of multiple UUTs

System Integration

Chroma offers software integration technology to meet a wide range of testing needs. In combination with the fully automatic testing solution and the high-speed product verification, this will reduce the hassle and allow untroubled testing.

☑ Test functions include simulation of On-Board Diagnostics (OBD), real automotive working conditions, driving condition changes, as well as reading of standardized diagnostic trouble codes (DTCs) and CANbus signals (*.dbc), and load shedding protection verification.

☑ Software integration of a thermal chamber, data logger, and communication interface. During charging and discharging, it reads the external parameters and sets these as conditions for protection and cut-off.

☑ BMS communication interface software integration to support CAN, RS232, RS485, LinBus, SMbus, and other signals. During testing, it reads the modules' BMS parameters and can use these as conditions for protection and cut-off.
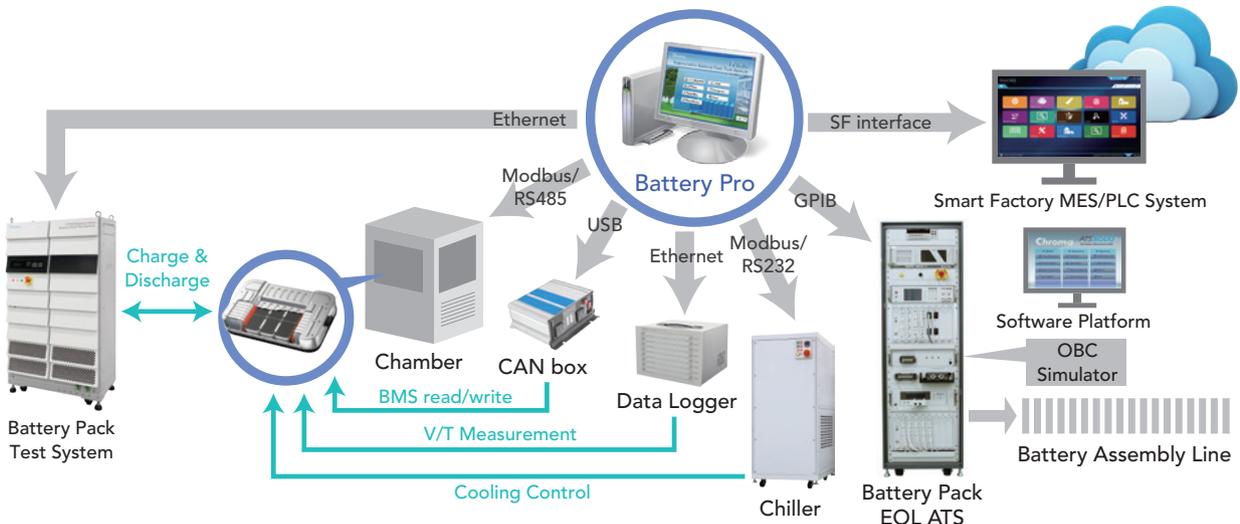
Battery Pack/System Production Line Solutions

Battery Pack/Module Production Line Testing Procedure

Chroma provides customized ATS for each station in the battery pack production line with automated dynamic tracks to perform high efficiency production verification, which includes cell sorting tests, module assembly inspection, BMS PCBA tests, and battery pack EOL tests.

BMS PCBA
》 Protection Function
》 Cell Balancing Check
》 Cell Voltage Emulation

Learning

End of Line Battery Pack
》 Insulation Hipot
》 Electrical Test
》 Communication Protocol Test
》 Performance

IQC → **Cell Testing** 》 OCV 》 DCIR → Assembly Station → **Module Testing** 》 OCV 》 DCIR 》 BMS 》 Welding → Pack Assembly → Assembly Station → Shipping
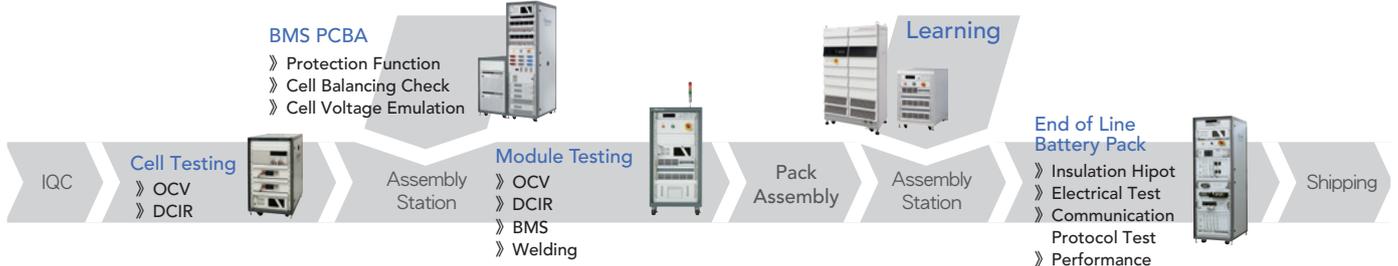
BMS Automated Test System | 8710

The Battery Management System (BMS) typically measures the battery cell voltage in order to prevent abnormal conditions such as over discharge, over charge, and over temperature, etc. Many functions are gradually added in the wake of technological developments. The common functions now include voltage measurement, communication, SoC and SoH estimation, abnormalities warning and protection, balancing (passive or active), other control circuits (e.g. battery loop relay control), temperature and current measurements, and diagnostic tools.

The Chroma 8710 BMS ATS is a test system for verifying battery management system (BMS) of battery packs. It is equipped with a multi-channel battery cell simulator, high-precision real current and voltage sources, a programmable temperature simulator, and an isolation resistance simulator. The system structure can be configured to support master/slave and centralized standalone based on your UUT design.

Integrated BMS Test System (32S)

Distributed BMS Test System (96S)

Key Features
☑ Battery cell state simulation and calibration: 5V/5A/16CH
☑ High precision real current source testing and calibration: Charge/discharge current 600A and higher
☑ High precision voltage source testing and calibration: 450V/600V/1000V
☑ Temperature simulator measurement and calibration
☑ Isolation resistance simulator measurement, circuit test, and calibration:
   Insulation resistance simulation under high voltage 1000V
☑ On Board Charger signal simulation: CC, CC2, CP signal
☑ Customized test items
   CAN bus communication related tests

16CH Battery Cell Simulator 87001

☑ Battery cell simulation mode: Up to 480 cells in parallel
Channel power 25W; Channel voltage 5V (series); Channel current 5A (parallel)
☑ 2 current ranges (0~5A/0~500mA)
   - 0~5A range to comply with the active balance design circuit test
   - 0~500mA range to comply with the passive balance design circuit test and to measure current consumption of each cell.
☑ Soft panel for remote control battery cell simulation
   - Adjust the voltage of individual string batteries, refresh speed up to 50ms
   - Set the voltage change procedure: OVP/UVP/OVP release/UVP release tests
☑ Can be integrated via software commands to become an HIL test system of BMS

Multichannel real time monitoring panel

Battery Pack ATS | 8700

The customizable 8700 battery pack ATS is designed to test welding quality, semi-finished products, and finished products as part of the automated, dynamic production line. The system conducts highly efficient product verification to ensure the quality of the finalized battery pack module.

Key Features

- ☑ Terminal welding internal resistance measurement
- ☑ Read back BMS data and measurement value comparison
- ☑ Open circuit voltage testing
- ☑ Charge/discharge testing
- ☑ ACIR/DCIR measurement for module level
- ☑ Serial battery cell internal resistance measurement
- ☑ Protection tests: over charging, over discharging, and short circuit protection
- ☑ Read back BMS parameters and measurement value comparison

Battery Pack ATS | 8720

The Chroma 8720 ATS tests the battery packs in end of line (EOL) production for a comprehensive Pass/Fail check, including mechanism assembly, pressure insulation, BMS communication, internal high voltage relay parts, battery balance, and temperature distribution, etc. before the product is completed.

The application of this test solution is not limited to the production line. It can also be used for comprehensive inspection during the end-stage of research or on incoming battery packs for EV/energy storage stations. Automated tests avoid human errors and ensure personnel safety, which is crucial for electric vehicles and scooters as well as for battery modules in energy storage systems.

Key Features

- ☑ Specifically for battery module production or R&D testing and verification
- ☑ Improve product inspection efficiency and greatly reduce test time
- ☑ Charge and discharge power range: 5 ~ 600kW
- ☑ Charge and discharge voltage/current range: 0 ~ 1,000V / 0 ~ 2,600A
- ☑ Test items: insulation, electricity, BMS communication, performance
- ☑ Auto switch for testing when used in an automated production line
- ☑ Auto upload traceability report when integrated with Manufacturing Information System (MES)

Battery Module/Cell Maintenance ATS | 8700

Battery Pack Function Testing and Battery Balancing

After a battery pack has been in use for a while, function testing and maintenance is required to extend battery life. Chroma 8700 Balance ATS is an automized testing system designed for exactly that purpose. Internal resistance and battery capacity tests determine whether to continue to use the battery pack according to its recession rate. The ATS ensures the internal state of health within battery packs by detecting the battery cell modules, internal resistance, and voltage. It is also equipped with a balancing function that adjusts module and individual cell charge/discharge to restore the consistency between batteries. The real-time temperature status control ensures a safe testing process.

Key Features

☑ Module/battery cell independent charging and discharging function
  - Battery state simulation test and calibration: 1~5V (cell), 1~80V (module), 20A
☑ Module /battery DCIR inspection
  - In compliance with IEC61960 DCIR test standard
☑ Module/cell capacity inspection
  - Ensure each module/cell capacity status
☑ Module/cell voltage inspection
  - Ensure each module/cell voltage status
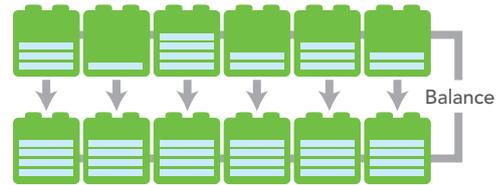
Test Software Platform | Power Pro III

The Chroma 8000 ATS is equipped with the industrial leading software platform Power Pro III. It runs under the Windows 7/10 operating system and provides an open software architecture. Configure the hardware devices as desired, program the test items, test automatically for PASS/FAIL, and generate reports for analysis.

Key Features

☑ Hardware devices expandable as per requirements
☑ Supports GPIB/RS232 or RS485/CAN interface instrument
☑ Editable test items
☑ Editable test programs
☑ Editable reports

☑ User authority and program release control
☑ Operation log
☑ Supports Shop-Floor
☑ Remote control via network

Software Main Panel

Customized Operating Panel
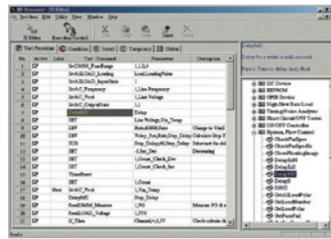
Test Item Editor
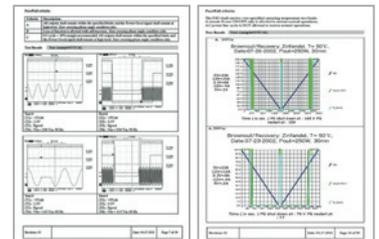
Test Reports

Battery Pack Integrated Testbed | 8610

Chroma's 8610 battery pack integrated testbed is designed for the development of battery modules and packs. It can import actual vehicle conditions for various test items, such as charge/discharge, CAN signal measurement and control, fault injection, insulation measurement, and EVSE charging interaction. The testbed can be flexibly combined to achieve a variety of compound vehicle scenanos, for more thorough testing of battery packs.

Key Features

☑ Supporting all common car component and road condition models: LabVIEW, Simulink, AVL BOOST & CRUISE, MapleSim, CarSim, JMAG, Ricardo, and C/C++

☑ ASAM XIL and ASAM XIL-MA compliant, supporting upper level automatized testing software

☑ Integrated AC/DC EVSE charge interfaces, incl. CAN Bus control signal, to test GB/T, SAE, and IEC charge interfaces

☑ Real-time control and monitoring of high power sequences, incl. Relay open/close, Initial power output, CAN signal.

☑ Integrated Fault Injection Unit hardware, to arrange fault signals and simulate fault injections

☑ Integrated Hi-pot withstand voltage tests, to compare insulation and grounding status

Battery Pack/System Electrical Safety Test Solutions

To enhance the performance and endurance of electric vehicles, they need multiple batteries in parallel operation to high voltage of 300V or more, which exceeds the regulated <60Vdc low voltage safety regulations. In order to protect the user, it is of high importance to comply with the electrical safety standards for the battery packs/systems. General inspection items for electrical safety assesments of battery packs and systems are:

☑ Hi-pot withstand voltage from the positive/negative negative battery terminals to the case body

☑ Hi-pot withstand voltage from the fast and slow charging ports to the case body

☑ Hi-pot withstand voltage between the condenser tube and the positive/negative negative battery terminals

Related Regulations

☑ IEC 62133-2 Safety requirements for portable sealed secondary lithium cells, and for batteries made from them, for use in portable applications

☑ UL 2054 Standard for Household and Commercial Batteries

☑ UL 2580 Batteries for Use in Electric Vehicles

☑ UL 2271 Batteries for Use In Light Electric Vehicle Applications

Hipot Analyzer | 19055-C

☑ Tests include: ACW, DCW, IR, HFCC, and OSC
☑ Corona Discharge Detection/ Discharge Level Analysis

Electrical Safety Analyzer | 19032-P

☑ Combines AC/DC hi-pot test, insulation resistance (IR) test, ground bond GB) test, dynamic leakage current tests (LC/ALC/DLC), and dynamic function test
☑ Equiped with the state-of-the-art Open Short Check (OSC) function for worry-free testing of finished products

Power Electronics Test Instruments

Programmable DC Power Supply
62000H Series

- ☑ Output Features:
  5~18kW / 0~1800V / 0~375A
- ☑ 3U/18KW high power density
- ☑ Master/slave control interface for
  current sharing in parallel operation mode
- ☑ Voltage ramp function (time range: 10 ms~99 hours)
- ☑ Voltage & Current slew rate control
- ☑ Applicable to many automotive regulations for electrical
  characteristics testing, including ISO16750-2, GS95024-2,
  VW80000, LV123, and LV148
- ☑ Solar array simulation function

Battery Voltage Dropout   Engine Starting Profile of ISO 16750-2
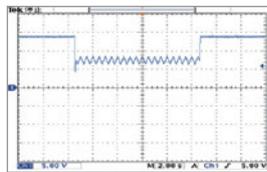
Modular DC Electronic Load
63600 Series

- ☑ Output Features:
  Max. power: 100Wx2 (dual), 300W&400W
  Voltage range : up to 600V
- ☑ Flexible CC, CR, CV and CP operation modes
- ☑ Mainframe for 5 modules for max. 2000W,
  load modules up to 400W/ea
- ☑ Up to 10 channels in one mainframe
- ☑ User Defined Waveforms
- ☑ Timing measurement for batteries

Programmable DC Power Supply
62000P Series

- ☑ Output Features:
  600W~5kW /30~600V / 25~120A
- ☑ Wide range of voltage & current
  combinations with constant power
- ☑ Master/slave control interface for
  current sharing in parallel operation mode
- ☑ Voltage ramp function (time range: 10 ms~99 hours)
- ☑ Voltage & Current slew rate control
- ☑ Applicable to many automotive regulations for electrical
  characteristics testing, including ISO16750-2, GS95024-2,
  and VW80000

DC Electronic Load
63200A & 63200E Series

- ☑ Output Features:
  0~24kW/0~150V/0~600V/0~1200V/0~2000A
- ☑ CC, CR, CV & CP operation modes
- ☑ Master/Slave parallel control with power level
  up to 240kW
- ☑ User defined waveform for simulating real-world waveforms; high
  speed dynamic loading up to 20kHz and sine wave loading
  function for testing car electronic components, incl.: D2D, OBC, relay,
  temperature MCU, generator, fuse, wiring harness, windshield wiper
  and power window, fuel cell impendance, and battery surge.

Chroma

HEADQUARTERS
CHROMA ATE INC.
66 Huaya 1st Road, Guishan, Taoyuan 33383, Taiwan
T +886-3-327-9999
F +886-3-327-8898
info@chromaate.com
www.chromaate.com

ASIA
CHROMA JAPAN CORP.
888 Nippa-cho, Kouhoku-ku, Yokohama-shi, Kanagawa, 223-0057 Japan
T +81-45-542-1118
F +81-45-542-1080
www.chroma.co.jp

CHROMA ELECTRONICS (SHENZHEN) CO., LTD.
8F, No.4, Nanyou Tian An Industrial Estate, Shenzhen, China 518052
T +86-755-2664-4598
F +86-755-2641-9620
www.chroma.com.cn

QUANTEL PTE LTD.
(a company of Chroma Group)
25 Kallang Avenue #05-02 Singapore 339416
T +65-6745-3200
F +65-6745-9764
sales@quantel-global.com
www.quantel-global.com

U.S.A.
CHROMA ATE INC. (U.S.A.)
7 Chrysler Irvine, CA 92618
T +1-949-421-0355
F +1-949-421-0353
Toll Free +1-800-478-2026
info@chromaus.com
www.chromaus.com

CHROMA SYSTEMS SOLUTIONS, INC.
19772 Pauling, Foothill Ranch, CA 92610
T +1-949-600-6400
F +1-949-600-6401
sales@chromausa.com
www.chromausa.com

EUROPE
CHROMA ATE EUROPE B.V.
Morsestraat 32, 6716 AH Ede, The Netherlands
T +31-318-648282
F +31-318-648288
sales@chromaeu.com
www.chromaeu.com

CHROMA GERMANY GMBH
Südtiroler Str. 9, 86165 Augsburg, Germany
T +49-821-790967-0
F +49-821-790967-600
sales@chromaeu.com
www.chromaeu.com