



## POWER CONVERSION DEVICE ATS MODEL 8000

The Chroma 8000 Power Conversion Device Automated Test System is designed for automated testing of various power conversion devices and power supplies. A wide selection of hardware options is available for integration, including programmable AC/DC power supplies, electronic loads, digital multimeters, oscilloscopes, timing/noise analyzers, and short circuit and overvoltage protection testers. Combined with Chroma's PowerPro 5 open software architecture, the 8000 ATS provides users with a versatile, powerful, and cost-effective automated testing system capable of meeting the testing needs of any form of power supply.

This ATS employs highly optimized test command technology to prevent the system software from sending repeated control commands to the hardware, significantly improving speed of test. This allows the 8000 ATS to achieve the efficiency of closed

systems while also offering the flexibility inherent to open software architectures.

The 8000 Power Conversion Device ATS comes with a built-in library of prewritten test items, covering the vast majority of industrial standard power supply tests. It also provides users with all the tools necessary to expand test item functionality—should new requirements arise, test items can be easily edited via the test item editor.

The 8000 ATS includes powerful report editing and management capabilities, offering a comprehensive toolset for generating test documentation and performing system management. This functionality is particularly valuable for developers, QA departments, testing certification units, and mass production lines, where efficient creation of test reports and statistics can be a significant time-saver.

## MODEL 8000

### KEY FEATURES

- Open architecture software platform:
  - Expandable hardware architecture
  - Supports GPIB/RS-232 or RS-485/I<sup>2</sup>C/CAN
  - Test Item editing
  - Multi-threaded test item editing
  - Test Program editing
  - Versatile report editing/generation
  - User-friendly GUI
  - Online instrument control
  - User permission settings
  - Test Item/Program control
  - System access logging
  - External DLL and Python function call support
  - Parallel testing of multiple power supplies
  - Bar Code Reader support
  - Shop Floor Control software integration
  - Remote network monitoring
- Test Command Optimizer helps to improve test speed
- Capable of coding for any power supply testing applications
- Modular hardware for high accuracy and repeatability
- High test throughput using the system's default test items
- Cost-effective solution
- Hardware expandable to meet user needs



**Chroma**  
Advancing Excellence

## COMPREHENSIVE TEST ITEM COVERAGE

The Chroma 8000 Power Conversion Device ATS comes equipped with standard test items, satisfying the requirements of the majority of industrial standard power supplies. Unlike traditional software for automated testing equipment, users do not need a background in programming languages. They only need to define test conditions and specifications based on the existing test items within the 8000 system.

The test item library covers seven categories of power supply testing requirements: Output Performance - General performance of the DUT (Device Under Test) ; Input Characteristics - Testing the input parameters of the power supply ; Regulation Tests - Testing the stability of the DUT under changes in input power and load ; Timing and Transient - Measuring the transient states during power on/off and the timing of various events ; Protection Tests - Triggering the protection circuits of the power supply ; Special Tests and Functions - Special tests and functions for power supplies.

### OUTPUT PERFORMANCE

1. DC output voltage
2. DC output current
3. Peak-Peak noise
4. RMS noise
5. Current ripple\*
6. Efficiency
7. In-test adjustment
8. Power good signal
9. Power fail signal
10. P/S ON signal
11. Extended measurement
12. Waveform capture
13. Overshoot voltage

### REGULATION TESTS

23. Current regulation
24. Voltage regulation
25. Total regulation

### INPUT CHARACTERISTICS

14. Input inrush current
15. Input RMS current
16. Input peak current
17. Current harmonics measurement
18. Input power factor
19. Input voltage ramp
20. Input freq. ramp
21. AC cycle drop out
22. Power line distortion simulation

### TIMING AND TRANSIENT

26. Power up sequence
27. Power down sequence
28. Transient response time
29. Transient spike
30. Turn ON time
31. Rise time
32. Fall time
33. Hold-up time
34. Extra timing measurement
35. Tracking

### PROTECTION TESTS

36. Short circuit
37. OV protection
38. UV protection
39. OL protection
40. OP protection

### SPECIAL TESTS

41. Fan speed
42. Pout VS Eff correlation test
43. DUT measurement function verification

### SPECIAL FEATURES

44. CAN bus read/write
45. I<sup>2</sup>C read/write\*
46. GPIB read/write
47. RS-232 read/write
48. RS-485 read/write\*
49. TTL signal control
50. Relay control
51. Bar code scan\*
52. DMM measurement

\* Due to the large variety of DUTs, these test items need to be created by the user via the Test Item Editor.

## ATS SOFTWARE PLATFORM

The PowerPro 5 software platform for the Chroma 8000 test system provides users with an open software architecture suitable for a wide range of applications.



## MAXIMIZED FLEXIBILITY AND EXPANDABILITY

### NI VISA Driver

PowerPro 5 utilizes the National Instrument VISA driver, supporting almost any instrument with GPIB/RS-232/USB/Ethernet interfaces. With these standard instrument drivers, PowerPro 5 is compatible with the vast majority of modern testing equipment—users need not worry about the interface types of instruments to integrate into the system.

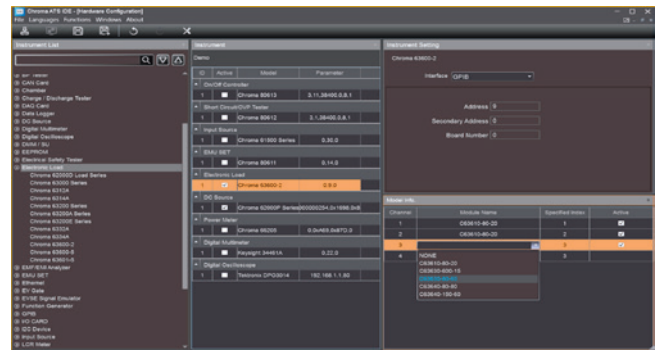
## ENHANCED COMPATIBILITY

### Application Programming Interface

Previously, integrating instruments from different manufacturers into an automated test system was essentially impossible due to incompatibility between control command formats. Chroma PowerPro 5 addresses this limitation by providing an Application Programming Interface (API) that harmonizes control commands from various instruments into a standardized format. As a result, even if two instruments are not manufactured by the same vendor but have similar functionalities, they can be directly interchanged simply by adding a new driver program.

## HARDWARE CONFIGURATION

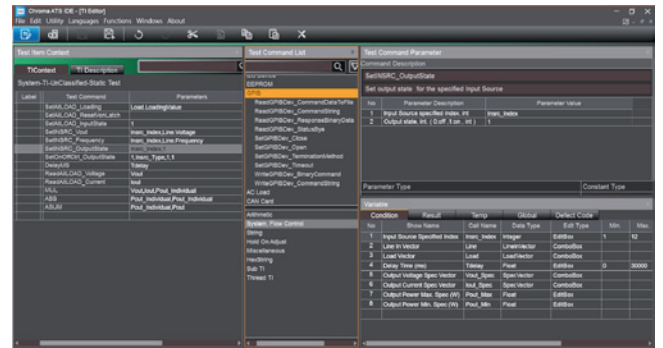
Users can easily configure hardware settings by selecting devices from the instrument list. The instrument list is managed in the "Instrument" section of the management function.



## BUILT-IN TEST COMMANDS

### Test Command Library

Operating instruments with specialized controls can present a daunting challenge for most users. To address this, Chroma PowerPro 5 incorporates a rich set of pre-defined test commands alongside an intuitive editing environment. Additionally, PowerPro 5 offers a range of low-level test commands, including GPIB read/write, RS-232 read/write, RS-485 read/write, CAN bus read/write, and I<sup>2</sup>C read/write. This enables users to directly communicate with all devices in the Chroma 8000 system. At the same time, the test command library also prevents duplicate test conditions from being sent to the equipment, significantly improving speed of test.

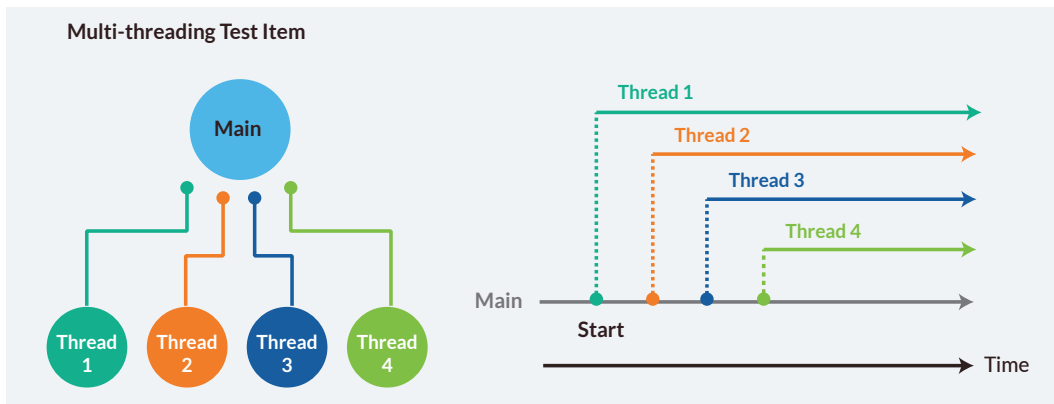


## FLEXIBILITY AND SIMPLICITY IN APPLICATION

### Test Item Editor

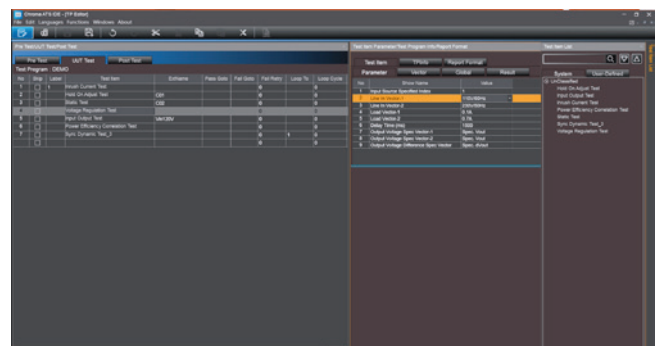
Chroma PowerPro 5 allows users to create custom test items tailored to specific testing needs beyond the extensive test command library. The test item editor provides a powerful, C-like environment that is even easier to learn and use than the C language itself. Users can effortlessly customize test programs, test condition variables, test result variables, and temporary variables, ensuring complete control over the testing process.

PowerPro 5 further enhances flexibility by enabling users to compile Multi-Threaded Test Items. This functionality allows users to write multiple test item scripts (threads) in the Test Item Editor and then use them in conjunction with the main test item script. Each thread runs in parallel with the main script, especially suitable for synchronized testing or scenarios involving extensive numerical computations. This multi-threaded test architecture helps bring down time of test, optimizes production capacity utilization, and provides users with a highly effective test software platform.



### Test Program Editor

The Test Program Editor enables users to create complete test procedures for a batch of products by linking together multiple pre-defined test items. It includes Pre-test and Post-test functionality, allowing users to organize commands that do not need to be sent to system devices at all times, running them only at the start or end of the test. This feature helps to streamline the test program and minimize testing time. Additionally, the Test Program Editor includes an execution function for direct and adaptive operation, enabling users to adjust the execution process and direction based on the results of each test item.



## UNIVERSAL AND EFFECTIVE EXECUTION MODES

The Chroma PowerPro 5 software platform offers three execution modes:

### Debug Run

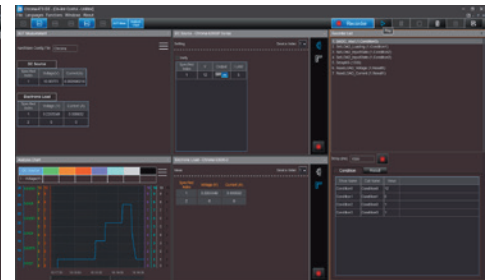
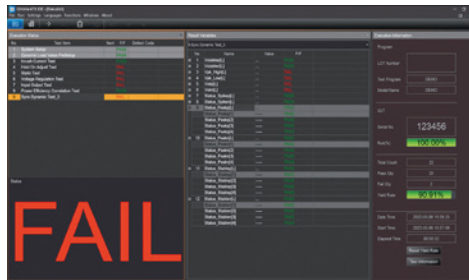
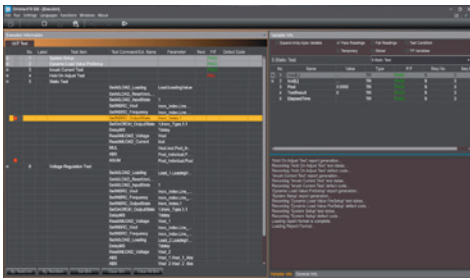
Used for verifying user-defined test items and test programs before release for use by the operators. In this mode, users have access to all basic debugging tools such as step execution, setting breakpoints, running to breakpoints, and synchronous variable display. Users can control the execution process while monitoring and inspecting test results, ensuring test quality without risking unverified test items or test programs being used on the production line.

### Execution (GO/NOGO)

This mode provides a user-friendly and easily executable operating environment for production lines and operators. Only debugged and published test programs are permitted for execution in this mode, minimizing the risk of errors. Test results are saved to the system controller's hard drive for generating statistical and test reports. Additional features such as failure rate checks, barcode scanner support, and GO/NOGO indication TTL signals make Chroma 8000 an ideal automatic test system for high-volume production.

### Online Control

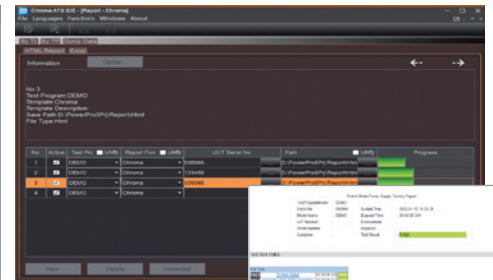
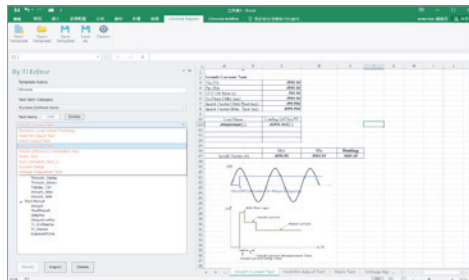
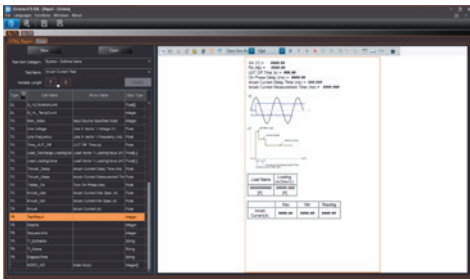
This mode transforms the software platform into a virtual instrument suite, enabling direct control and data acquisition from all instruments within the system. Users can customize the types of data displayed on the screen and observe trends through time curve data visualization. Waveforms measured by the DSO can also be displayed on the screen, and downloaded as either hard copies or digitized waveforms. In digital mode, users can select specific measurement parameters provided by the DSO.



## EXTENSIVE ANALYSIS TOOLS

### Report Editor and Generator

Organizing data into easily readable reports has traditionally been a weak point of conventional automated test systems. Users often spend considerable amounts of time organizing data saved by the test system, and errors can easily occur due to typing mistakes. Now, Chroma PowerPro 5 offers users diversified reporting capabilities with its robust HTML/EXCEL report editor and generator. Users can integrate various charts such as test data tables, DSO waveforms, and relationship curves into a single report. Report formats are editable and can be saved for future use, saving valuable time in the long run. Additionally, the Dump Data feature allows users to select the test program and test date range, and then directly exports the raw data as a text file for further analysis using Excel or other word processing software.



## GUI EDITOR

Chroma PowerPro 5 software also includes a dedicated graphical user interface (GUI) editor. Integrated seamlessly into the PowerPro 5 system software, this module allows test personnel to define the editing interface of the test executor according to their specific needs and workflow.



## ROBUST SECURITY MANAGEMENT SYSTEM

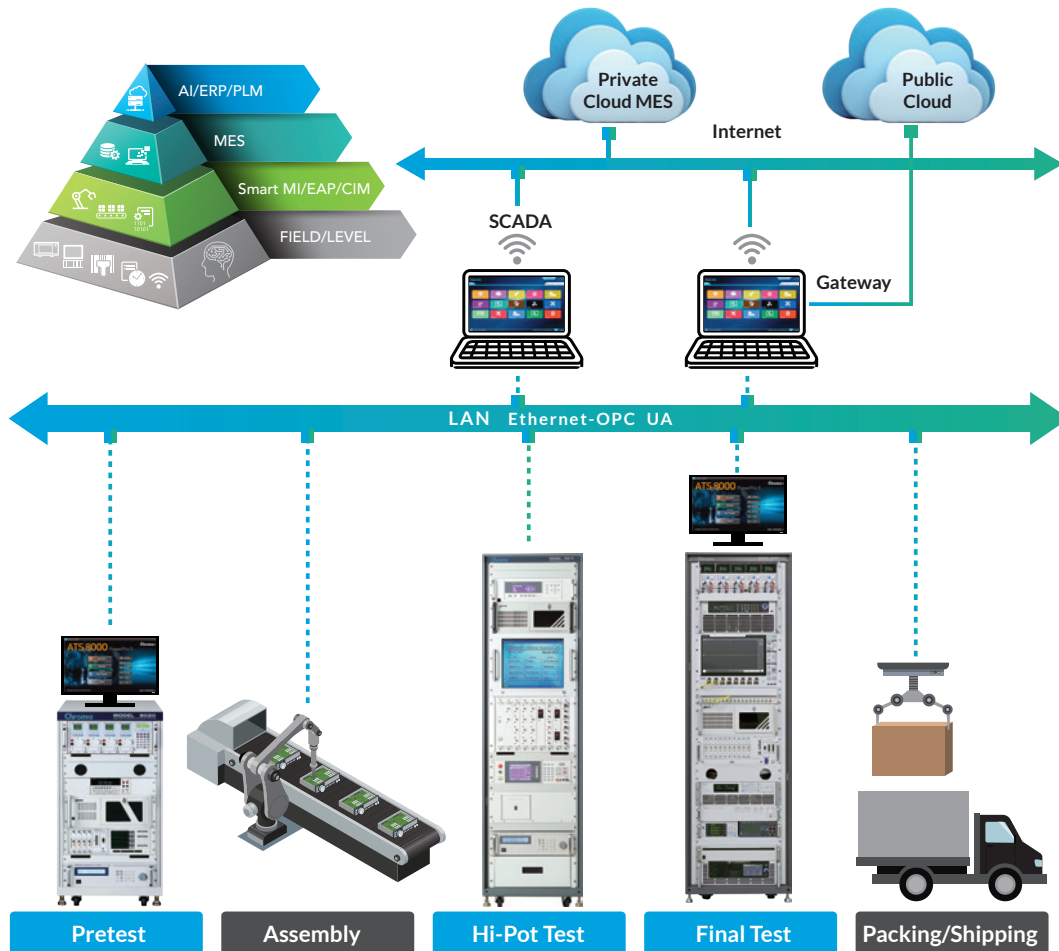
### Management Functions

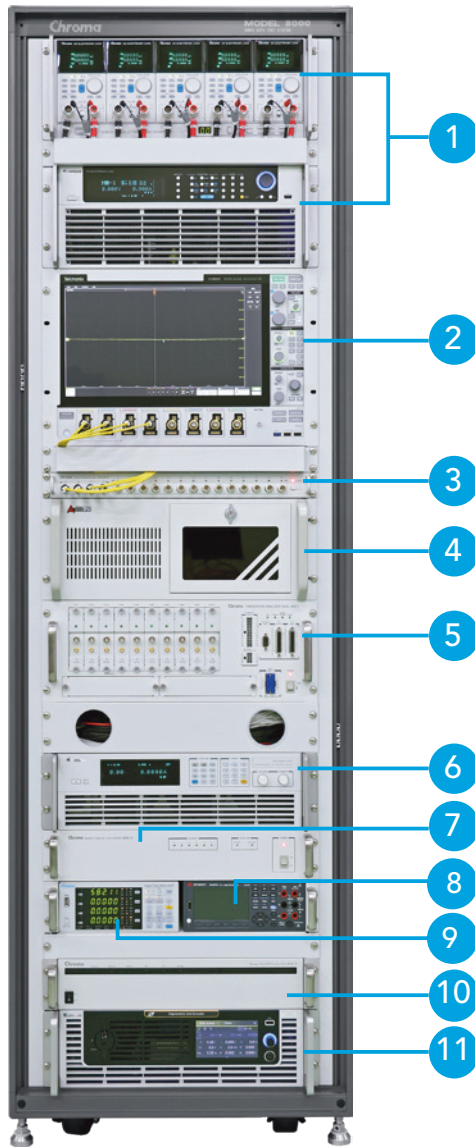
Chroma PowerPro 5 offers a comprehensive suite of management functions for advanced system control and management.

Permission Management Function Activity Log	Administrators can specify authorized users and their permissions through the permission management function. The activity log records the login/logout times of users and which functions they have used.
TI/TP Release	Users can specify flags for the publication of test programs (TP) and test items (TI). These flags determine whether the test program can be run in the Execution mode and whether the test item will appear in the database of user-defined test items.
System Configuration	Provides administrators with settings for test execution conditions, failure rate conditions, output of test files, I/O signal settings, TI/TC color settings, and other relevant parameters.
External Function Settings	Provides commands for defining calls to external DLLs and Python functions, allowing functions provided in external DLL or Python forms to be declared in the system.
Other Administrative Functions	Includes functions for importing/exporting device and API driver settings, report templates, hardware configurations, GUI settings, online control, and other related functions.

## SHOP-FLOOR CONTROL SYSTEM

The Chroma 8000 Automated Test System is suitable for modern high-volume production lines and can be paired with Chroma's Sajat Manufacturing Execution System (MES) to control and manage test stations, personnel, product serial numbers, and test programs. It also facilitates uploading test data to central servers, enabling centralized management of test programs, data collection, and report analysis. This helps customers achieve their smart manufacturing objectives, reducing production costs while enhancing product quality and efficiency further down the line. Additionally, Chroma can provide customized Shop Floor Control system services to connect to MES systems already in place. For more details, please contact your local Chroma representative.





**1. DC Electronic Loads**

Model 6310A/6330A/63200A/63600/63700 Series

**2. Digital Storage Oscilloscopes**

MDO34, MSO5 series; other models or brands can be supported as required

**3. Relay Multiplexer**

A800043

**4. System Controller**

Industrial PC

**5. Timing/Noise Analyzers**

Model 80611/80614

**6. DC Power Supplies**

Model 62000H/62000P/62000E/62000L/62000D Series

**7. Short Circuit and Overvoltage Protection Testers**

Model 80612

**8. Digital Multimeters**

34461A ; other models or brands can be supported as required

**9. Digital Power Meters**

Model 66200 Series

**10. Power On/Off Controllers**

Model 80615

**11. AC Power Supplies**

Model 6500/61500/61600/61700/61800 Series

**12. No-Fuse Breaker**

Single-Phase 30A ; Three-Phase 60A

**13. EMI Filters**

Single-Phase 30A ; Three-Phase 60A

**14. System Power Cables**

Single-Phase Three Wire 30A (Single-Phase Input Cabinet);  
Three-Phase Five Wire 60A (Three-Phase Input Cabinet)

\* Other equipment can be supported as per requirements.

## PROGRAMMABLE AC POWER SUPPLIES

The Chroma 8000 Automated Test System supports all Chroma AC power supplies, with a power envelope ranging from 500VA to 105kVA. Chroma AC power supplies set new industry standards for high-performance AC power products. The 61500 series and 61800 series offer powerful features such as grid disturbance simulation, programmable output impedance, comprehensive measurement functions, waveform synthesis, and IEC standard test software. This makes them ideal for both laboratory and high-volume production testing across industries such as commercial products, power electronics, aerospace, defense, and IEC standard testing.



AC Power Source					
Model	6500 Series	61500 Series	61600 Series	61700 Series	61800 Series
Power rating	1200-9000VA	500 to -18000VA	500-18000VA	1500-12000VA	9-105kVA
Voltage range	0-300V	0-300V	0-300V	0-300V	0-300V
Output phase	1 or 3 phase	1 or 3 phase	1 or 3 phase	3 phase	3 phase
DC output	No	Yes	Yes	Yes	Yes
Output measurement	Yes	Yes	Yes	Yes	Yes
Harmonic measurement	No	Yes	No	No	Yes
Waveform simulation	Yes	Yes	No	Yes	Yes
Programmable impedance	No	Yes	No	No	No
Harmonic synthesis	Yes	Yes	No	Yes	Yes
Inter-harmonic synthesis	No	Yes	No	Yes	Yes

\* Please refer to respective product catalogs for detail specifications.

## PROGRAMMABLE DC ELECTRONIC LOADS

The Chroma 8000 Automated Test System supports all Chroma electronic loads, offering a power range from 100W to 24kW. Chroma DC electronic loads are suitable for testing server power supplies, A/D power supplies, power electronic components, automotive batteries, automotive DC EVSE, and other power electronics. With high power density, parallel functionality, synchronized dynamic capabilities, and instantaneous 300% peak overpower loading capability, these loads are especially suitable for testing high-power devices such as automotive batteries and fuel cells.



DC Electronic Load			
Model	6310A Series	6330A Series	63200A Series
Load mode	CC/CR/CV	CC/CR/CV	CC/CR/CV/CP/CZ
Power rating	30-1200W	30-1200W	2000-24000W
Voltage range	1-500V	1-500V	1-1200V
Current range	Up to 240A	Up to 240A	Up to 21000A
Slew rate	Up to 10A/μs	Up to 10A/μs	Up to 80A/μs
Measurements	Voltage/Current/Power	Voltage/Current/Power	Voltage/Current/Power
Monitoring output	No	No	Voltage/Current
Voltage sense input	Yes	Yes	Yes
Sync dynamic	No	Yes	Yes

\* Please refer to respective product catalogs for detail specifications.

DC Electronic Load		
Model	63600 Series	63700 Series
Load mode	CC/CR/CV/CP/CZ	CC/CR/CV/CP
Power rating	100~400W	6000W~18000W
Voltage range	1~600V	5~1800V
Current range	Up to 80A	Up to 120A
Slew rate	Up to 8A/μs	Up to 60A/ms
Measurements	Voltage/Current/Power	Voltage/Current/Power
Monitoring output	Voltage/Current	Voltage/Current
Voltage sense input	Yes	Yes
Sync dynamic	Yes	Yes Parallel)

\* Please refer to respective product catalogs for detail specifications.

## PROGRAMMABLE DC POWER SUPPLIES

The Chroma 8000 Automated Test System supports all Chroma DC power supplies, with power ranging from 108W to 18kW. The Chroma 62000D series bidirectional programmable DC power supplies combine power and load characteristics, allowing bidirectional operation and feedback of power from the DUT back into the power supply. Their ability to simulate transitioning between battery charging and discharging makes these power supplies highly suitable for test applications in renewable energy storage systems, such as solar PV/energy storage hybrid inverters, power conditioning systems (PCS) for storage batteries, and more. The 62000D series can also serve as an effective replacement of real batteries for simulated bidirectional power conversion tests, suitable for EV power management systems such as bidirectional onboard chargers (BOBC), bidirectional DC-DC converters, and DC-AC motor drives.



DC Power Supply					
Model	62000P Series	62000H Series	62000D Series	62000E Series	62000L Series
Power Rating	600, 1200, 2400, 5000W	10KW, 15KW, 18KW	6KW-180KW	1.7KW, 3.4KW, 5KW	108W, 150W
Voltage Range	0-100V/600V	0-600V/1000V	0-100/600/1200/1800V	0 to -230V/1200V	0-6V/60V
Programmable Current Limit	Yes	Yes	Yes	Yes	Yes
Programmable OV Point	Yes	Yes	Yes	Yes	Yes
Analog Programming	Yes	Yes	Yes	Yes	Yes
Remote Sensing	Yes	Yes	Yes	Yes	Yes

\* Please refer to respective product catalogs for detail specifications.



## DIGITAL POWER METERS

Chroma 66200 series digital power meters can be used to measure the power and other voltage and current parameters of single-phase and multi-phase AC or AC/DC power sources, suitable for most electronics products. Unlike traditional analog circuitry, the 66200 series uses analog-to-digital conversion with a high 16-bit resolution, a maximum sampling frequency of 250kHz, and high-speed digital signal processing (DSP) technology. Besides boasting the most versatile functionality on the market, Chroma digital power meters offer best-in-class measurement speed, stability and accuracy.



Digital Power Meter			
Model	66203	66204	66205
Measurement Channel	3	4	1
Power measurement range	48 ranges	48 ranges	60 ranges
Voltage measurement range	6 ranges	6 ranges	6 ranges
Current measurement range	8 ranges	8 ranges	10 ranges
Front panel display	Yes	Yes	Yes
Front panel editable	Yes	Yes	Yes
Harmonics measurement	Yes	Yes	Yes

\* Please refer to respective product catalogs for detail specifications.

## AUTOMATED TEST SYSTEM - DEDICATED EQUIPMENT

Timing/Noise Analyzer		
Model	80611	80614
NO. of input module	Up to 10	Up to 4
Noise measurement range	2V/0.4V	2V/0.4V
Low Pass Filter	Up to 20MHz	Up to 20MHz
Input circuit	Differential input	Differential input
Timing range	0-64 second	0-64 second
NO. of trigger input	6 sets	6 sets
NO. of comparator	4 Input module	4 Input module
Controllable TTL bits	16 output/16 input	No
Controllable floating relay	8	6
NO. of multiplex input	10	No
NO. of multiplex output	1 for DMM	No

ON/OFF Controller	
Model	80615
Input	AC/DC
ON/OFF range - AC	0-360 deg
Voltage range - AC	350V
Current range - AC	38A
Voltage range - DC	600V
Current range - DC	100A
Measurement Capability	Inrush Current
Control Interface	USB/Ethernet

Short Circuit/OVP Tester	
Model	80612
NO. of input terminal	Up to 6
Short circuit impedance	< 0.05 ohm
Short current measurement	Yes
Sync. Signal for short circuit	6 relay signal
OVP/UVP testing	Internal/External
Internal impedance range	100-1M ohm
External OVP/UVP source	DC source
Measurement Capability	Internal
Control Interface	RS 485



Timing/Noise Analyzer  
80611



Short Circuit/OVP Tester  
80612



ON/OFF Controller  
80615

## AUTOMATED SYSTEM TEST APPLICATIONS

### Server Power Supply Testing

The 8000 ATS is compliant with the M-CRPS and ORV3 server power supply testing specifications recommended by the Open Compute Project. It can integrate I<sup>2</sup>C and CAN communication devices to perform PMBUS communication handshakes with server power supplies. This enables testing of power supply output performance, input characteristics, load stability, timing and transient characteristics, and protections.



Server Power Supply Automated Test System

### Photovoltaic Energy Storage Inverter Testing

The Chroma 8000 ATS includes test items optimized for PV/storage inverters, meeting the preliminary electrical test requirements of IEEE1547, 1547.1, UL1741, IEC62933, and VDE-AR-EN4105, and Chinese national standards GB/T 19939, 34120, 34133, and CGC/GF004. Users only need to input test conditions and specifications to perform automated inverter testing.



PV Energy Storage Inverter Automated Test System

### Battery Pack Testing

The Chroma battery pack production ATS is suitable for end-of-line (EOL) testing of battery packs. The system can perform a comprehensive set of test items (pass/fail) in the pre-assembly stage, including mechanical assembly processes, dielectric withstand insulation, battery management system (BMS) communication, internal switch parts, battery consistency, temperature distribution, etc.

Chroma collaborates with production line automation companies to provide customized automated test systems for each station within a battery pack production line. This ensures efficient production verification, encompassing testing of battery cell feed, module assembly inspection, BMS PCBA testing, and battery pack EOL testing.



Battery Pack EOL Automated Test System

## Electric Vehicle Testing

### AC/DC EVSE Testing

Integrating AC/DC power sources, AC/DC loads, power meters, oscilloscopes, digital multimeters, and simulators compliant with various national charging standards into the Chroma 8000 AC/DC EVSE test system, the built-in test items mainly cover communication protocols between charging devices and electric vehicles (EVs), and confirm that charging devices can switch smoothly between different modes according to the EV's condition to maintain the functionality and safety of the charging device. This system is suitable for R&D/verification units or end-of-line (EOL) testing and complies with international standards like the European and American SAE, IEC, ISO, DIN, the Chinese GB, the Japanese CHAdeMO, and other test specifications. It covers electrical characteristics tests, insulation failure tests, and communication protocol tests, and can realistically simulate the actual operation of charging stations and various signal lines during the charging process.



AC EVSE Automated Test System



DC EVSE Automated Test System

### Onboard Charger and DC-DC Converter Testing

Chroma offers a dedicated ATS for onboard chargers (OBC) and DC/DC converters, verifying the functionality, operation, and safety of related products based on their specific characteristics and test requirements. They are ideal for design verification, quality assurance, and production line use in EV component and car manufacturing facilities.

The system includes built-in standard test items compliant with QC/T, GB/T, SAE J2894, and other international standards, readily available for use without redevelopment. Additionally, it provides a standard wiring panel controller to solve wiring difficulties, improve reliability, and shorten test time. It also supports periodic and continuous CAN bus transmission, DBC document loading, and CAN signal reading and calling.



Onboard Charger and DC-DC Converter  
Automated Test System

## SELECTION GUIDE


Model / Applications / Equipment	Computer & Server Power Supply	Adapter/Charger	SolarInverter/ PCS & UPS	EV OBC/DC-DC	AC EVSE	DC EVSE
AC Source	61500 61600 6500	61500 61600	61800 61500	61800 61500	61800	61800
DC Source	62000H 62000P 62000L	62000H 62000P 62000L	62000D 62000H-S	62000D 62000H 62000L	--	62000H 62000P
Digital Power Meter	66200	66200	66200	66200	66200	66200
Electronic Load	63600 63200A 6310A 6330A	63600 6310A 6330A	61800 63800 63800R	62000D 63200A 63700	61800 63800 63800R	17040 17040E 62000D 63700
Timing Noise Analyzer	80611 80614	80611 80614	--	--	--	--
Short / OVP Tester	80612	80612	--	--	--	--
ON/OFF Controller	80615	80615	--	--	--	--
DSO	Option	Option	Option	Option	Option	Option
DMM	Option	--	Option	Option	--	Option
Other Instrument	--	--	--	OBC Control Box	AC EV Control Unit	DC EV Emulator
Other Interface Card	--	--	RS-485 device	Multi Function Box-D 80701, 80703	PLC Emulator 80713	PLC Sniffer or CAN Data Logger, 80618


## ORDERING INFORMATION


8000: Power Conversion Device ATS  
 80611/80614: Timing/Noise Analyzer  
 80611N: Timing/Noise Module  
 80612: Short Circuit/OVP Tester  
 80615: ON/OFF Controller  
 5004ATM: Industrial PC  
 PCI BUS GPIB Card (National Instrument)

A800004: 19"Rack for Model 8000  
 A800015: 8000 Software  
 A800027: Power Supply Test Fixture  
 DC Electronic Load: Model 6310A, 63200A, 6330A, 63600, 63700 Series  
 Digital Power Meter: Model 66200 Series  
 AC Power Source: Model 6500, 61500, 61600, 61700, 61800 Series  
 DC Power Supply: Model 62000D, 62000E 62000H, 62000P Series

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