

Power Supply Test Equipment

All electronic products need electricity to work normally and the power supplies offer it are built in these products in various types and specifications. Though the products with complicate components inside need different voltage, current and power for application, the stability of the power supply is the key factor to determine the product quality.

In addition to applying power supply test solution in the industries of information, communication, aerospace and national Defense, Chroma is also utilizing its proficient techniques in power supply test field to implement customized test solutions for energy saving products such as hybrid electric vehicle, LED lighting device, solar energy and fuel cell that are being developed proactively due to global resources shortage.

Selection Guides	
Switcher Analyzer	
DC Electronic Load	
AC Electronic Load	
AC Source	
Power Analyzer	
Digital Power Meter	
DC Power Supply	
Automatic Test System	

Overview

Automatic Test System

Burn-in DC Power Supply



AC Electronic Load

AC Source

DC Electronic Load

Digital Power Meter



Power Analyzer

DC Power Supply

Selection Guides

DC Electronic Load Selection Guide

Series	6300 Series	6310A Series	6330A Series	6340 Series & 63472	63200 Series	63600 Series	63800 Series
Power Rating (Modular)	60W, 100W, 250W, 300W	200W, 100Wx2(Dual), 30W&250W, 300W, 600W, 1200W	200W, 100Wx2(Dual) 30W&250W, 300W, 600W, 1200W	625W, 200W	2600W, 5200W, 6500W, 10400W, 15600W	100W, 300W, 400W	1800W, 4500W
Current	Up to 60A	Up to 240A	Up to 240A	Up to 300A	Up to 1000A	Up to 80A	Up to 45A
Voltage	Up to 254V	Up to 500V	Up to 500V	Up to 50V	Up to 500V	Up to 80V	Up to 500V
Configuration	Modular	Modular	Modular	Stand-Alone	Stand-Alone	Module	Stand-Alone
Max. Channel / Mainframe	4	8	8	1	1	10	1
Operating Mode	CC/CR/CV/CP	CC/CR/CV/CP	CC/CR/CV/CP	CC	CC/CR/CV/CP	CC/CR/CV/CP/CZ	CC/CR/CV/CP/ DC Rectified
Slew Rate	Up to 2.5A/us	Up to 10A/us	Up to 10A/us	Up to 1000A/us	Up to 41A/us	Up to 8A/us	Up to 600A/ms
Dynamic Loading	Y	Y	Y	Y	Y	Y	-
Measurement	V, I, P, Noise	V, I	V, I	V, I, Vpeak	V, I, P	V, I, P, Vpeak	V, I, P, R
External Waveform Control	Y	-	-	-	Y	Y	-
Short Circuit Test	Y	Y	Y	-	Y	Y	Y
Von Point Control	Y	Y	Y	Y	Y	Y	-
V&I Monitor	Y	-	-	Y	Y	Y	Y
Current share measurement	-	-	-	Y	-	-	-
Synchronize Dynamic	-	-	Y	-	Y	Y	-
Synchronize Control Multi-load	Y	Y	Y	-	-	Y	-
Master/Slave Parallel Mode	-	-	Y	-	Y	Y	Y
Data Setting (Rotary)	Y	Y	Y	-	Y	Y	Y
Data Setting (Keyped)	-	Y	Y	Y	Y	-	Y
Status Storage (100 files)	Y	Y	Y	Y	Y	Y	Y
Remote Controller	Option	Option	Option	-	Option	Option	-
GO/NG Test	Y	Y	Y	-	Y	Y	-
Fan speed control	Y	Y	Y	Y	Y	Y	Y
Self test at power on	Y	Y	Y	Y	Y	Y	Y
Programmable test (10 Pro.)	-	Y	Y	Y	Y	Y	-
RS-232 Interface	Standard	Standard	Standard	Standard	Standard	-	Standard
GPIO Interface	Option	Option	Option	Option	Standard	Option	Standard
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AC Source Selection Guide

Step 1 by Function

Series	6400 Series	6500 Series	61500 Series	61600 Series	61700 Series
Power Measurement	Standard	Standard	Standard	Standard	Standard
PLD simulation	-	Standard	Standard	-	Standard
Arbitrary waveform	-	Standard	Standard	-	Standard
DC output	-	-	Standard	Standard	Standard
Programmable output impedance	-	-	Standard	-	-
Harmonic measurement	-	-	Standard	-	-
IEC Regulation Testing	-	Standard	Standard	-	-
GPIO interface	Option	Option	Option	Option	Option
RS-232 interface	Option	Option	Option	Option	Option
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Step 2 by Model

Series	6400 Series		6500 Series		61500 Series		61600 Series		61700 Series
Power	1 Ø	3 Ø	1 Ø	3 Ø	1 Ø	3 Ø	1Ø	3 Ø	3 Ø
375VA	6404	-	-	-	-	-	-	-	-
500VA	-	-	-	-	61501	-	61601	-	-
800VA	6408	-	-	-	-	-	-	-	-
1000VA	-	-	-	-	61502	-	61602	-	-
1200VA	-	-	6512	-	-	-	-	-	-
1500VA	6415	-	-	-	61503	-	61603	-	61701
2000VA	6420	-	6520	-	61504	-	61604	-	-
3000VA	6430	-	6530	-	-	-	-	-	61702
4000VA	-	-	-	-	61505	-	61505	-	-
4500VA	-	-	-	-	-	-	-	-	61703
6000VA	6460	-	6560	-	-	-	-	-	61704
6000VA	6463	-	-	-	-	-	-	-	-
9000VA	6490	-	6590	-	-	-	-	-	-
12000VA	-	-	-	-	61511	-	61611	-	61705
18000VA	-	-	-	-	61512	-	61612	-	-
30000VA	-	-	-	-	61511 + A615103	-	61611 + A615103	-	-
36000VA	-	-	-	-	61512 + A615103	-	61612 + A615103	-	-
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Power Analyzer and Power Meter Selection Guide

Mode	6630	6632	66201	66202
Phase	1 or 3	1 or 3	1	1
Voltage range	600Vrms / 2000Vpk	600Vrms / 2000Vpk	500Vrms	500Vrms
Current range	20Arms / 300Apk	20Arms / 300Apk	4Arms	20Arms
Frequency	40-70Hz	40-70Hz	15-10kHz	15-10kHz
Graphical Display	V	-	-	-
Result storage	V	-	-	-
Built-In Floppy disk	V	-	-	-
Rotary / keypad Data input	V	-	-	-
GPIB Interface	V	V	V	V
RS-232 Interface	V	V	USB interface	USB interface
Centronics Interface	V	V	-	-
Parameters	V, I, F, PF, ϕ , W, Wr, Wa, P, Q, S, CF, Vpk, Vp-p, Ipk, Ip-p, THD	V, I, F, PF, ϕ , W, Wr, Wa, P, Q, S, CF, Vpk, Vp-p, Ipk, Ip-p, THD	V, I, PF, W, VA, P, CF, Vpk, Ipk	V, I, F, PF, W, Wr, Wa, P, CF, Vpk, Ipk, Ip-p, THD, E
AC/DC Measurement mode	V	V	AC + DC only	AC + DC only
40th Harmonics Measurement	V	V	-	V
Pre-Compliance IEC 61000-3-2	V	V	-	V
DFT & DSP Technology	V	V	V	V
Waveform display	V	-	Software	Software
Waveform moving cursor	V	-	-	-
Waveform trigger function	V	-	-	-
Recording function	V	-	Software	Software
Combination to Chroma 6000 ATE	V	V	-	-
Stand alone operating	V	-	V	V
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Selection Guides

DC Power Supply Selection Guide

Model	62000H Series / 5KW & 10KW & 15KW		62000P Series / 600W & 1.2KW & 2.4KW & 5KW		6202F Series / 2.8KW		6201F Series / 1.2KW	
Volts	Amps	Model	Amps	Model	Amps	Model	Amps	Model
0-6							0-200	6201F-6
0-7								
0-7.5					0-300	6202F-7.5	0-140	6201F-7.5
0-8								
0-10								
0-12					0-220	6202F-12	0-100	6201F-12
0-15								
0-20					0-130	6202F-20	0-60	6201F-20
0-30	0-250A/ 0-375A	62075H-30/ 62100H-30	0-80	62006P-30-80				
0-33					0-85	6202F-33		
0-35							0-35	6201F-35
0-40	0-125A/ 0-250A/ 0-375A	62050H-40/ 62100H-40/ 62150H-40	0-120	62012P-40-120/ 62024P-40-120	0-70	6202F-40	0-30	6201F-40
0-55								
0-60					0-46	6202F-60	0-20	6201F-60
0-80	0-63A/ 0-126A 0-188A	62050H-80/ 62100H-80/ 62150H-80	0-60	62012P-80-60/ 62024P-80-60				
0-100			0-25/ 0-50/ 0-100	62006P-100-25/ 62012P-100-50/ 62024P-100-50/ 62050P-100-100	0-28	6202F-100	0-12	6201F-100
0-120								
0-150					0-18	6202F-150	0-8	6201F-150
0-300			0-8	62006P-300-8	0-9	6202F-300	0-4	6202F-300
0-450	0-11A/ 0-22A/ 0-33A	62050H-450/ 62100H-450/ 62150H-450						
0-600	0-9A/ 0-18A/ 0-25A	62050H-600/ 62100H-600/ 62150H-600	0-8	62012P-600-8/ 62024P-600-8	0-4	6202F-600	0-2	6202F-600
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Model	6210 Series / 1KW		6203 Series / 300W		6200 Series / 60W	
Volts	Amps	Model	Amps	Model	Amps	Model
0-6						
0-7					0-7	6200-7
0-7.5	0-130	6210-7.5				
0-8						
0-10						
0-12						
0-15			0-20	6203-15	0-4	6200-15
0-20	0-50	6210-20			0-3	6200-20
0-30			0-10	6203-30	0-2	6200-30
0-33	0-33	6210-33				
0-35						
0-40	0-25	6210-40				
0-55						
0-60	0-18	6210-60	0-5	6203-60	0-1	6200-60
0-80						
0-100	0-10	6210-100				
0-120					0-0.5	6200-120
0-150	0-7	6210-150				
0-300	0-3.5	6210-300				
0-250					0-0.25	6200-250
0-600	0-1.7	6210-600				
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Automatic Test System Selection Guide							
System Model	6000	8000	8010	8020	8200	8490	8495
UUT Type							
Battery Charger		V		V			
Switching Mode Rectifier		V					
Switching Power Supply (Multi-Output)	V	V	V	V	V		
Adapter	V	V		V	V		
DC to DC Converter	V	V					
UPS(Uninterruptible Power System)		V					
Inverter (DC to AC)		V					
Switching Power Supply (PFC Circuit)		V	V				
LCD Inverter						V	
Electrical Ballast							V
Functionality							
Open System Architecture		V				V	
Optional Instrument Extendible		V				V	
Support Windows 98/NT/2000 or higher	V	V	V	V	V	V	V
Support DOS		V				V	
User Permission Setting	V	V	V	V	V	V	V
System Administrator Access Log		V	V	V		V	V
Network Management	V	V	V	V		V	V
Support Shop Floor Control Software ¹	V	V	V	V	V	V	V
Test Report Editing	V	V	V	V	V	V	V
Test Item Editing		V				V	
Test Program Editing	V	V	V	V	V	V	V
Test Program Saving	V	V	V	V	V	V	V
Debug Run	V	V				V	
GO/NO GO Test	V	V	V	V	V	V	V
Statistical Analysis Control	V	V	V	V	V	V	V
Test Report Printing	V	V	V	V	V	V	V
On-Line Control ²		V				V	
Report Wizard ³		V				V	
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Notes:

1. Support Shop Floor Control Software:

The system can work with the Shop Floor Control Software that used on the manufacturing production line to attain overall factory control and remote control through internet.

2. On-Line Control:

Enables user to operate all instruments on-line via one computer screen, which incorporates the test values from individual instrument to save time and resources.

3. Report Wizard:

It automatically generates various R&D reports including oscilloscope waveform and etc. to meet customer's needs and reduce the report preparation time.



Switcher Analyzer

Model 620/ 650

200W, 300W

KEY FEATURES

Testing

- 10 universal power supply output BASIC tests.
- PROGRAM TEST of up to 36 customized BASIC tests, with 5 built-in loops and 50000 run cycles in a program.



Configuration

- IEEE-488 bus interface.
- Self-contained master/slave structure with 10 analyzers operate in parallel.
- 2 different models cover up to 100V/50A/300 watts.
- Building block to Chroma Power supply Auto Test System.
- System diagnosis and calibration routines to guarantee optimal instrument quality.
- EEPROM storage for 30 customized BASIC TESTs and 5 PROGRAM TESTs.
- GO/NG and readings display to facilitate testing efficiency.
- Centronics printer interface.

Programmable Electronic Load

- Programmable dynamic loading with speed up to 125 KHz.
- Programmable slew rates, load levels, load periods, and conducting voltage.

- Constant current or resistance loading.
- Internal or external controlled load form.
- Photo coupler isolation to offer true floating load.
- Protection against reverse voltage, over voltage, over current, over power, and over temperature.
- 4 programmable outputs for external relay control.

Precision Measurement

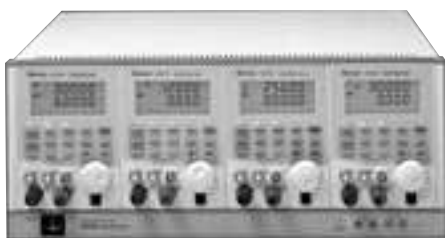
- Remote sensing capability.
- DC voltage with 0.05% F.S. accuracy.
- 14 bits A/D converter with multirange measurement.
- Transient time response with 10μs accuracy and 1μs resolution.
- 8 TTL signals as timing measurement actuators.
- Programmable measurement delay time and measurement period.

SPECIFICATIONS			
Model		620	650
Electronic Load			
Max. Power Sink		200W	300W
Operating Voltage	Max.	100V	100V
	Min.	1V@1A/2V@20A	1V@1A/3V@50A
Load Current	Range	0-1A/0-20A	0-1A/0-50A
	Resolution	12 bits	12 bits
	Accuracy	0.2%+0.7%F.S. / 0.6%+0.7%F.S.	0.2%+0.7%F.S. / 0.6%+0.7%F.S.
Load Resistance	Range	1.001~1000 Ω / 0.070~1000 Ω	1.001~1000 Ω / 0.030~ 800 Ω
	Resolution	12 bits	12 bits
	Accuracy	0.2%+0.7%F.S.(Ω) / 0.6%+0.7%F.S.(Ω)	0.2%+0.7%F.S.(Ω) / 0.6%+0.7%F.S.(Ω)
Slew Rate Range		1-50mA/μs / 2-1000mA/μs	1-50mA/μs / 5-2500mA/μs
Dynamic Period Range		4μs-10 ms	4μs-10 ms
Measurement			
DC Voltage	Range	0-10V/0-100V	0-10V/0-100V
	Resolution	14 bits	14 bits
	Accuracy	0.05%F.S. / 0.02%+0.05%F.S.	0.05%F.S. / 0.02%+0.05%F.S.
RMS or PEAK to Peak Voltage	Range	0-1V/0-10V	0-1V/0-10V
	Resolution	12 bits	12 bits
	Accuracy	2%+2%F.S.	2%+2%F.S.
	Max. Frequency	20MHz	20MHz
Time Interval	Range	0-16 Sec	0-16 Sec
	Resolution	1μs	1μs
	Accuracy	10μs	10μs
Basic Test No.		8	8
Config			
OPTO Isolation		YES	YES
Protection		YES	YES
IEEE 488 Bus Interface		YES	YES
Centronics Interface		YES	YES
Dimension (HxWxD)		132 x 424.5 x 466.2 mm / 5.2 x 16.71 x 18.35 inch	132 x 424.5 x 466.2 mm / 5.2 x 16.71 x 18.35 inch
Weight		16 kg / 35.24 lbs	16.8 kg / 37 lbs

ORDERING INFORMATION

620: Switcher Analyzer 20A/100V/200W

650: Switcher Analyzer 50A/100V/300W



Smart Electronic Load Model 6300 Series 60, 100, 250, 300W

KEY FEATURES

- Plug-in electronic load modules in selectable mainframes.
- Parallel load modules up to 2400W for high current and power application.
- Master/Slave interface for synchronizing multiple loads.
- GPIB/RS-232 Interface.
- CC, CR, CV, and CP operation modes.
- Precision loading delivers 150 μ A resolution.
- Minimize input resistance allowing load to sink high current at low voltage.
- Dynamic loading with speed up to 20kHz
- Real time load simulation and output measurement.
- Store up to 100 sets of front panel input Status for instant recall.
- 15 bits precision voltage and current measurement with multi-range selection.
- Remote sensing capability.
- 20MHz differential mode noise measurement.
- Short circuit test & short current measurement.



Chroma Model 6300 series Smart Electronic Load System is the state-of-the-art instrument for testing DC power sources and power electronic components. The system is configured by plugging the user selectable load modules into the system mainframe, and operated using the instrument front panel keypads or the remote controlled instructions via GPIB/RS-232 interface. The load modules can be programmed independently for testing multi-output DC/DC power supplies, or in parallel for testing high power application.

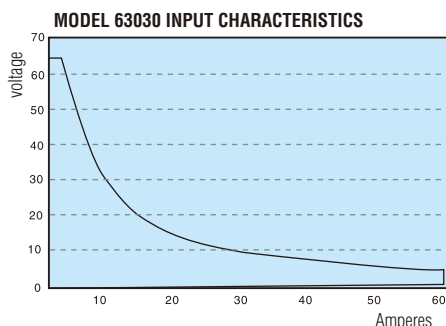
The 6300 family offers 4 types of modular loads with power ranging from 60 watts to 300 watts, current setting from 150 μ A to 60A, and voltage measurement from 0.5mV to 250V. Each load is isolated and floating, programmable in dual current ranges and measuring voltage ranges, and capable of synchronizing interface for master/slave control operation. The load can be operated in constant current, constant resistance, constant voltage, or constant power mode.

The 6300 can simulate a wide range of dynamic loading applications. The loading waveform is user programmable in slew rates, load levels, duration, and conducting voltage. The load can also be controlled via external analog control voltage, or signal generator to simulate specific application requirements. Furthermore, up to 100 sets of system operating status can be stored in battery backup SRAM and recalled instantly for automated testing application.

Real time measurement of voltage, current, and power is integrated in each 6300 load module using 15-bits precision measurement circuit. The user can perform on line voltage measurement and adjustment, or simulate short circuit test using simple front panel keypad operation. Additionally, the load module offers optional noise measurement function capable of detecting 20MHz noise via differential mode input without the need of a scope.

The 6300 has self diagnosis routine to maintain instrument performance at all time. It is also protected against OPP, OCP, OVP, OTP, and reverse polarity to guarantee quality and reliability for even the most demanding engineering testing and ATE applications.

Each load module uses current close loop design and connects all power MOSFET devices parallelly to insure high accuracy load control with minimum drift of less than 0.15% of the current setting. The FET technology accomplishes minimum input resistance and enables the load to sink high current even at very low voltage. For example, model 63030 is capable of sinking 60A at minimum 1V output, and is well suited for testing the new 3.3V low voltage power supplies. Low voltage operation, down to zero voltage is possible at correspondingly reduced current level.



ORDERING INFORMATION

- 6301** : Mainframe for single Load module
- 6304** : Mainframe for 4 Load modules
- 63006** : Load Module 6A/60V/60W
- 63010** : Load Module 20A/60V/100W
- 63025** : Load Module 10A/250V/250W
- 63030** : Load Module 60A/60V/300W
- A630001** : Noise Measurement (20MHz) Kit for Each Load Module
- A630002** : GPIB Interface for Model 6304/6314/6334/6340 Mainframe
- A630003** : RC-63 Remote Controller
- A630006** : 19" Rack Mounting Kit for Model 6304 Mainframe
- A600011** : Test Fixture (6 channels)
- A600013** : Adapter for A600011/A600012 Test Fixture (PC standard)
- A600014** : Adapter for A600011/A600012 Test Fixture (terminal block)



6304: Mainframe for 4 Load modules



6301: Mainframe for single Load module



A600011: Test Fixture (6 channels)



A630001: Noise Measurement (20MHz) Kit



A630003: RC-63 Remote Controller

• Continued on next page →

SPECIFICATIONS								
Model	63006		63010		63025		63030	
Power	20W	60W	20W	100W	25W	250W	30W	300W
Current	0-0.6A	0-6A	0-2A	0-20A	0-1A	0-10A	0-6A	0-60A
Voltage	0.9-64V (0.9-60V for CR Mode)		0.9-64V (0.9-60V for CR Mode)		1.3-256V (1.3-250V for CR Mode)		0.8-64V (0.8-60V for CR Mode)	
Min. Oper. Voltage (DC)	0.9V at 600mA	1.0V at 6A	0.9V at 2A	1.0V at 20A	1.3V at 1A	1.5V at 10A	0.8V at 6A	1.0V at 60A
Constant Current Mode								
Range	0-0.6A	0-6A	0-2A	0-20A	0-1A	0-10A	0-6A	0-60A
Resolution	0.15mA	1.5mA	0.5mA	5mA	0.25mA	2.5mA	1.5mA	15mA
Accuracy	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.
Constant Resistance Mode								
Range	0.25Ω~1kΩ (60W/16V) 10Ω~40kΩ (60W/60V)		0.075Ω~300Ω (100W/16V) 3Ω~12kΩ (100W/60V)		0.25Ω~1kΩ (250W/25V) 25Ω~100kΩ (250W/250V)		0.025Ω~100Ω (300W/16V) 1Ω~4kΩ (300W/60V)	
Resolution	12 bits		12 bits		12 bits		12 bits	
Accuracy	0.1Ω (0.25~1kΩ), 0.01Ω (10~40kΩ)		0.1Ω (0.075~300Ω), 0.01Ω (100Ω~12kΩ)		0.1Ω (0.25Ω~1kΩ), 0.01Ω (25Ω~100kΩ)		0.1Ω (0.025Ω~100Ω), 0.01Ω (1Ω~4kΩ)	
Constant Voltage Mode								
Range	1-64V		1-64V		1.5-256V		1-64V	
Resolution	16mV		16mV		64mV		16mV	
Accuracy	0.05%±0.1%F.S.		0.05%±0.1%F.S.		0.05%±0.1%F.S.		0.05%±0.1%F.S.	
Constant Power Mode								
Range	0.003-20W	0.03-60W	0.01-20W	0.1-100W	0.06-25W	0.6-250W	0.03-30W	0.3-300W
Resolution	0.3mW	3mW	1mW	10mW	2mW	20mW	3mW	30mW
Accuracy	2%F.S.	3%F.S.	2%F.S.	3%F.S.	2%F.S.	3%F.S.	2%F.S.	3%F.S.
Dynamic Mode								
Dynamic Mode	C.C. & C.R.		C.C. & C.R.		C.C. & C.R.		C.C. & C.R.	
T1&T2	0.025ms~10ms	1ms~10s	0.025ms~10ms	1ms~10s	0.025ms~10ms	1ms~10s	0.025ms~10ms	1ms~10s
Resolution	1μs	1ms	1μs	1ms	1μs	1ms	1μs	1ms
Accuracy	2%F.S.		2%F.S.		2%F.S.		2%F.S.	
Slew Rate	0.1-25mA/μs	1.0-250mA/μs	0.32-80mA/μs	3.2-800mA/μs	0.16-40mA/μs	1.6-400mA/μs	0.001-0.25A/μs	0.01-2.5A/μs
Resolution	0.1mA/μs	1.0mA/μs	0.32mA/μs	3.2mA/μs	0.16mA/μs	1.6mA/μs	0.001A/μs	0.01A/μs
Accuracy	10%±20μs		10%±20μs		10%±20μs		10%±20μs	
Min. Rise Time	15μs (typical)		15μs (typical)		15μs (typical)		15μs (typical)	
Current	0-0.6A	0-6A	0-2A	0-20A	0-1A	0-10A	0-6A	0-60A
Resolution	0.15mA	1.5mA	0.5mA	5mA	0.25mA	2.5mA	1.5mA	15mA
Accuracy	0.2%F.S.		0.2%F.S.		0.2%F.S.		0.2%F.S.	
Ext Wave Mode								
Range	0-0.6A	0-6A	0-2A	0-20A	0-1A	0-10A	0-6A	0-60A
Level	0-10V		0-10V		0-10V		0-10V	
Accuracy	0.2%F.S.	0.25%F.S.	0.2%F.S.	0.25%F.S.	0.25%F.S.	0.25%F.S.	0.2%F.S.	0.25%F.S.
Short Circuit								
Resistance	0.08Ω (max.)		0.04Ω (max.)		0.025Ω (max.)		0.016Ω (max.)	
Current	6A		20A		10A		60A	
I/P Resistance(Load Off)	100kΩ (min.) at 60V		100kΩ (min.) at 60V		300kΩ (min.) at 250V		100kΩ (min.) at 60V	
Temp. Coefficient	100PPM/°C (typical) CC		100PPM/°C (typical) CC		100PPM/°C (typical) CC		100PPM/°C (typical) CC	
Measurement Section								
Voltage Read Back								
Range	0-16V	16-64V	0-16V	16-64V	0-25.6V	25.6-256V	0-16V	16-64V
Resolution	0.5mV	2mV	0.5mV	2mV	0.8mV	8mV	0.5mV	2mV
Accuracy	0.02%+0.1%F.S.		0.02%+0.1%F.S.		0.02%+0.1%F.S.		0.02%+0.1%F.S.	
Current Read Back								
Range	0-0.6A	0-6A	0-2A	0-20A	0-1A	0-10A	0-6A	0-60A
Resolution	0.0187mA	0.1875mA	0.0625mA	0.625mA	0.0312mA	0.312mA	0.1875mA	1.875mA
Accuracy	0.1%+0.1%F.S.		0.1%+0.1%F.S.		0.1%+0.1%F.S.		0.1%+0.1%F.S.	
Power Read Back								
Range	0-20W	20-60W	0-20W	20-100W	0-25W	25-250W	0-30W	30-300W
Resolution	0.0375mW	0.375mW	0.125mW	1.25mW	0.25mW	2.5mW	0.375mW	3.75mW
Accuracy	0.5%F.S.		0.5%F.S.		0.5%F.S.		0.5%F.S.	
General								
Dimensions (H x W x D)	143 x 104 x 443.7 mm / 5.6 x 4.1 x 17.5 inch		143 x 104 x 443.7 mm / 5.6 x 4.1 x 17.5 inch		143 x 104 x 443.7 mm / 5.6 x 4.1 x 17.5 inch		143 x 104 x 443.7 mm / 5.6 x 4.1 x 17.5 inch	
Weight	5 kg / 11 lbs		5 kg / 11 lbs		5 kg / 11 lbs		5 kg / 11 lbs	

Programmable DC Electronic Load Model 6310A Series

Model No.



The Chroma 6310A series Programmable DC Electronic Load is suitable for the test and evaluation of multi-output AC/DC power supplies, DC/DC converters, chargers and power electronic components. It is ideal for applications in research and development, production, and incoming inspection. The system is configured by plugging the user selectable load modules into the system mainframe. The user interfaces include an ergonomically designed user friendly keypad on the front panel and the following computer interfaces: RS-232C, USB or GPIB.

DC Electronic Load Model 6310A Series

KEY FEATURES

- Max Power: 200W, 100W × 2(Dual), 30W & 250W, 300W, 600W, 1200W
- Wide range 0-500V operating voltage
- Compatibility between 6310 and 6310A
- Up to 8 channels in one mainframe, for testing multiple output SMPS
- Parallel load modules up to 1200W for high current and power application
- Synchronization with multiple loads
- Flexible CC, CR, CP and CV operation modes
- Dynamic loading with speeds up to 20KHz
- Fast response of 0.32mA/μs~10A/μs slew rate
- Minimum input resistance allowing load to sink high current at low voltage
- Real time power supply load transient response simulation and output measurement
- User programmable 100 sequences. Front panel input status for user-friendly operating
- High/Low limits of testing parameters to test GO/NG
- Digital I/O control
- Over current protection (OCP) testing function
- 15-bit precision voltage and current measurement with dual-range
- Remote sensing capability
- Short circuit test
- Self-test at power-on
- Full Protection: OV, OC, OP and OT
- USB, GPIB & RS-232C interfaces

The 6310A series offers 8 types of modular loads with power ratings from 100 watts to 1,200 watts, current ratings from 0.5mA to 240A, and voltage ratings from 0.5mV to 500V. The loads can be operated in constant current, constant voltage, constant power and constant resistance and may be placed in parallel for increased current and power.

The 6310A series can simulate a wide range of dynamic loading applications. The waveforms programmable parameters include: slew rate, load level, duration and conducting voltage. Furthermore, up to 100 sets of system operating status' can be stored in EEPROM and recalled instantly for automated testing applications.

Real time measurement of voltage and current are integrated into each 6310A load module using a 15-bit precision measurement circuit. The user can perform on line voltage measurements and adjustments or simulate short circuit test using the user friendly keypad on the front panel. Additionally, the 6310A series offers an optional remote controller for automated production lines.

The 6310A series has a self-diagnosis routine to maintain instrument performance. It also provides OP, OC, OV, OT, and reverse polarity protection to guarantee quality and reliability for even the most demanding engineering testing and ATE applications.

Versatile System Configuration

Chroma 6310A Programmable Electronic Load integrates microprocessor capability into each load module and mainframe to provide simple and accurate parallel operation to optimize the speed and control among multiple load modules. All load modules may be configured to work synchronously, to test multiple outputs simultaneously, thus simulating real life applications.

Compatibility with 6310 Series

The 6310A series load modules are compatible with the 6310 series mainframes. However certain new features and functions will not be available when using the 6310A modules in the 6310 mainframes. This provides a cost savings for our existing customers.

Module Load Design

The Chroma 6314A 1200W and 6312A 600W electronic load mainframes accept the user-installable 6310A series load modules for easy system configuration and will mount in a 19" instrument rack. The 6314A holds up to four 6310A load modules, which will result in an 8-channel 100W/channel load with standard front-panel inputs. This makes it ideal for testing multiple output switching power supplies and multiple DC-DC converters. There are also higher wattage modules that may be mixed and matched for an even more versatile system. Additionally, the GO/NG output port is useful for UUT's pass/fail testing on an automated production line. All modules on the 6314A/6312A mainframe share a common GPIB address to synchronize and speed up the control of the load modules and the read-back of data.

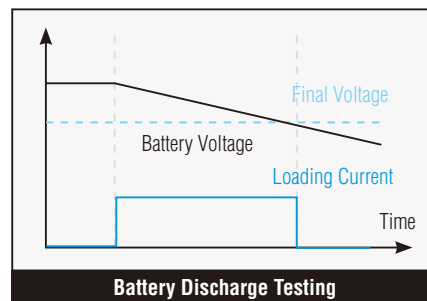


Timing Function

The 6310A series loads include a unique timing & measurement function, which allows precise time measurements in the range of 1ms to 86,400s. This feature allows the user to set the final voltage & timeout values for battery discharge testing and other similar applications.

For example, the figure on the right shows that the 6310A's internal timer can be initiated automatically when the battery voltage falls below a preset value. The timer will continue counting until the second preset value is reached.

The Timing function can be used in testing battery, super capacitor discharge and other similar applications.



Soft Panel :



Main Operation Menu



Dynamic Simulation



OCP Testing



Battery Pack Testing



Battery Discharge Testing

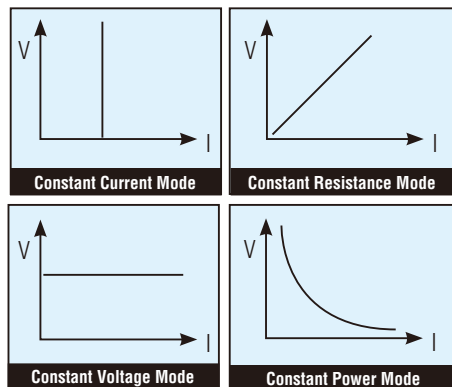
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Programmable DC Electronic Load 6310A Series

Model No.

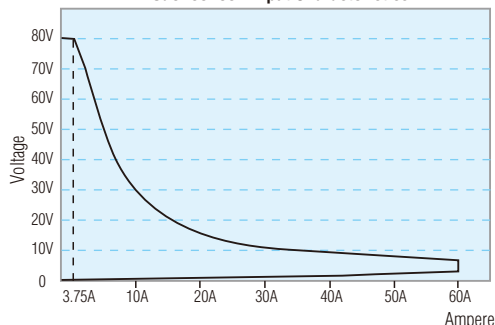
Application of Specific Load Simulation

The 6310A load modules operate in constant current, constant voltage, constant power or constant resistance to satisfy a wide range of test requirements. For example, the test of a battery charger can be simulated easily by setting the load to operate in constant voltage.



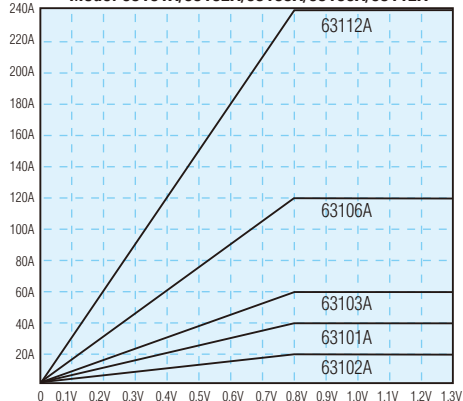
Each load module is designed with state-of-the-art technology and connects all power MOSFET devices parallel to insure high accuracy load control with a minimum drift of less than 0.1%+0.1%F.S. of the current setting. Chroma's use of FET technology provides minimum input resistance and enables the load to sink high current even at very low voltage. For example, the model 63103A is capable of sinking 60A at 1V output, and well-suited for testing the new 3.3V low voltage power supplies. Low voltage operation, down to zero volts, is possible at reduced current levels.

Model 63103A Input Characteristics



Low Voltage Characteristics (Typical)

Model 63101A/63102A/63103A/63106A/63112A

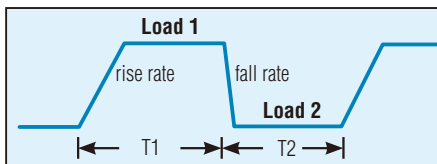


Note: All specifications are measured at load input terminals.
(Ambient Temperature of +25°C)

The 6310A load module uses a photo coupler for isolation between the output and control sections, thus each load is isolated and floating. The user can use multiple load modules independently to test multi-output power supplies, or parallel them for high power testing applications.

Dynamic Loading and Control

Modern electronic devices operate at very high speeds and require fast dynamic operation of their power providing components. To satisfy these testing applications, the 6310A loads offer high speed, programmable dynamic load simulation and control capability. The figure below shows the programmable parameters of the 6310A modules:



The programmable slew rate makes the simulation of transient load change demanded by real life applications possible. The 6310A internal waveform generator is capable of producing a maximum slew rate at 10A/μs, and dynamic cycling up to 20kHz. It's dedicated remote load sense and control circuit guarantee minimum waveform distortion during continuous load changes.

Parallel Control

The 6310A provides parallel control, which enables high power testing when a single module can not meet the requirement of high power applications. Two or more load modules can be paralleled together to achieve the desired loading. The 6310A comes with RS-232C as standard for remote control and automated testing applications, with USB and GPIB interfaces as optional items.

In addition, the 6310A, through its synchronized controls, provides an efficient solution for testing single output AC to DC or DC to DC converters by controlling multiple loads, testing up to 8 UUTs at a time.

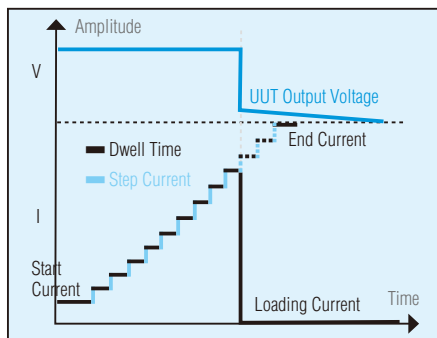
Powerful Measurements

Each 6310A load module has an integrated 15-bit precision A/D converter for voltage measurement with an accuracy of 0.05%+0.05% full scale. The built-in resistive load current sensing circuit is capable of measuring current with an accuracy of 0.1%+0.1% of full scale. Also, short circuit can be simulated. All measurements are done using remote sensing to eliminate any error due to voltage drop along the measurement path. The user can also select a full scale range of voltage and current measurement according to his applications requirements.

OCP Test

Modern switching power supplies are designed with over current protection (OCP) circuitry; therefore, it is important to test the OCP circuitry to make sure it is functioning within its designed specifications. The 6310A series provides an easy and fast solution for this testing.

By simply choosing the channel and setting the OCP parameters (start current, end current, step current and dwell time) from the front panel, the 6310A series provides a fast and easy to use OCP testing solution. The 6310A series will automatically detect the OCP point, making it an ideal solution for design verification as well as on the production line.



Digital I/O

Digital I/O interface makes the 6310A DC Load the ideal choice for automated testing requirements. Through the digital I/O, the 6310A can accept digital signals to trigger its functions (Load On/Off, OCP test, etc.) as well as current output status signals.

ORDERING INFORMATION

- 6312A** : Mainframe for 2 Load Modules
- 6314A** : Mainframe for 4 Load Modules
- 63101A** : Load Module 40A/80V/200W
- 63102A** : Load Module 20A/80V/100Wx2 channels
- 63103A** : Load Module 60A/80V/300W
- 63105A** : Load Module 10A/500V/300W
- 63106A** : Load Module 120A/80V/600W
- 63107A** : Load Module 5A&40A/80V/30W&250W
- 63108A** : Load Module 20A/500V/600W
- 63112A** : Load Module 240A/80V/1200W
- A630002** : GPIB Interface for Model 6314A/6312A Mainframe
- A631003** : USB Interface for Model 6314A/6312A Mainframe
- A631001** : Remote Controller
- A631002** : Test Fixture
- A631005** : Softpanel for 6310A/6330A series

6310A Series DC Electronic Load Family



6314A : 4 in 1 Mainframe



A630002 : GPIB Interface



6312A : 2 in 1 Mainframe



A631003 : USB Interface



A631001 : Remote Controller

Programmable DC Electronic Load 6310A Series

Model No.

SPECIFICATIONS-1								
Model	63101A		63102A (100Wx2)		63103A		63105A	
Power	20W	200W	20W	100W	30W	300W	30W	300W
Current	0-4A	0-40A	0-2A	0-20A	0-6A	0-60A	0-1A	0-10A
Voltage	0-80V		0-80V		0-80V		0-500V	
Min. Operation Voltage (DC) *1 (Typical)	0.4V@2A 0.8V@4A	0.4V@20A 0.8V@40A	0.4V@1A 0.8V@2A	0.4V@10A 0.8V@20A	0.4V@3A 0.8V@6A	0.4V@30A 0.8V@60A	1.0V@0.5A 2.0V@1A	1.0V@5A 2.0V@10A
Constant Current Mode								
Range	0-4A	0-40A	0-2A	0-20A	0-6A	0-60A	0-1A	0-10A
Resolution	1mA	10mA	0.5mA	5mA	1.5mA	15mA	0.25mA	2.5mA
Accuracy	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.
Constant Resistance Mode								
Range	0.0375 Ω -150 Ω (200W/16V) 1.875 Ω -7.5k Ω (200W/80V)		0.075 Ω -300 Ω (100W/16V) 3.75 Ω -15k Ω (100W/80V)		0.025 Ω -100 Ω (300W/16V) 1.25 Ω -5k Ω (300W/80V)		1.25 Ω -5 Ω (300W/125V) 50 Ω -200k Ω (300W/500V)	
Resolution	12 bits		12 bits		12 bits		12 bits	
Accuracy	150 Ω : 0.1 ▮ + 0.2% 7.5k Ω : 0.01 ▮ + 0.1%		300 Ω : 0.1 ▮ + 0.2% 15k Ω : 0.01 ▮ + 0.1%		100 Ω : 0.1 ▮ + 0.2% 5k Ω : 0.01 ▮ + 0.1%		5k Ω : 20m ▮ + 0.2% 200k Ω : 5m ▮ + 0.1%	
Constant Voltage Mode								
Range	0-80V		0-80V		0-80V		0-500V	
Resolution	20mV		20mV		20mV		125mV	
Accuracy	0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.	
Constant Power Mode								
Range	0-20W	0-200W	0-20W	0-100W	0-30W	0-300W	0-30W	0-300W
Resolution	5mW	50mW	5mW	25mW	7.5mW	75mW	7.5mW	75mW
Accuracy	0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.	
Dynamic Mode								
Dynamic Mode	C.C. Mode		C.C. Mode		C.C. Mode		C.C. Mode	
T1 & T2	0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms		0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms		0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms		0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms	
Accuracy	1μs/1ms+100ppm		1μs/1ms+100ppm		1μs/1ms+100ppm		1μs/1ms+100ppm	
Slew Rate	0.64~160mA/μs	6.4~1600mA/μs	0.32~80mA/μs	3.2~800mA/μs	0.001~0.25A/μs	0.01~2.5A/μs	0.16~40mA/μs	1.6~400mA/μs
Resolution	0.64mA/μs	6.4mA/μs	0.32mA/μs	3.2mA/μs	0.001A/μs	0.01A/μs	0.16mA/μs	1.6mA/μs
Min. Rise Time	10μs (Typical)		10μs (Typical)		10μs (Typical)		24μs (Typical)	
Current	0-4A	0-40A	0-2A	0-20A	0-6A	0-60A	0-1A	0-10A
Resolution	1mA	10mA	0.5mA	5mA	1.5mA	15mA	0.25mA	2.5mA
Current Accuracy	0.4%F.S.		0.4%F.S.		0.4%F.S.		0.4%F.S.	
Measurement Section								
Voltage Read Back								
Range	0-16V	0-80V	0-16V	0-80V	0-16V	0-80V	0-125V	0-500V
Resolution	0.5mV	2.5mV	0.5mV	2.5mV	0.5mV	2.5mV	4mV	16mV
Accuracy	0.05% + 0.05%F.S.		0.05% + 0.05%F.S.		0.05% + 0.05%F.S.		0.05% + 0.05%F.S.	
Current Read Back								
Range	0-4A	0-40A	0-2A	0-20A	0-6A	0-60A	0-1A	0-10A
Resolution	0.125mA	1.25mA	0.0625mA	0.625mA	0.1875mA	1.875mA	0.032mA	0.320mA
Accuracy	1mA	10mA	0.5mA	5mA	1.5mA	15mA	0.25mA	2.5mA
Current Accuracy	0.1% + 0.1%F.S.		0.1% + 0.1%F.S.		0.1% + 0.1%F.S.		0.1% + 0.1%F.S.	
Protective Section								
Over Power Protection	≒ 20.8W	≒ 208W	≒ 20.8W	≒ 104W	≒ 31.2W	≒ 312W	≒ 31.2W	≒ 312W
Over Current Protection	≒ 4.08A	≒ 40.8A	≒ 2.04A	≒ 20.4A	≒ 6.12A	≒ 61.2A	≒ 1.02A	≒ 10.2A
Over Temperature Protection	≒ 85℃		≒ 85℃		≒ 85℃		≒ 85℃	
Over Voltage Protection	≒ 81.6V		≒ 81.6V		≒ 81.6V		≒ 510V	
General								
Short Circuit								
Current (CC)	-	≒ 40A	-	≒ 20A	-	≒ 60A	-	≒ 10A
Voltage (CV)	-	0V	-	0V	-	0V	-	0V
Resistance (CR)	-	≒ 0.0375 Ω	-	≒ 0.075 Ω	-	≒ 0.025 Ω	-	≒ 1.25 Ω
Power (CP)	-	≒ 200W	-	≒ 100W	-	≒ 300W	-	≒ 300W
Input Resistance (Load Off)	100k Ω (Typical)		100k Ω (Typical)		100k Ω (Typical)		100k Ω (Typical)	
Temperature Coefficient	100PPM/℃ (Typical)		100PPM/℃ (Typical)		100PPM/℃ (Typical)		100PPM/℃ (Typical)	
Power	Supply from 6314A Mainframe		Supply from 6314A Mainframe		Supply from 6314A Mainframe		Supply from 6314A Mainframe	
Dimension (H x W x D)	172 x 81 x 495 mm / 6.8 x 3.2 x 19.5 inch		172 x 81 x 495 mm / 6.8 x 3.2 x 19.5 inch		172 x 81 x 495 mm / 6.8 x 3.2 x 19.5 inch		172 x 81 x 495 mm / 6.8 x 3.2 x 19.5 inch	
Weight	4.2 kg / 9.3 lbs		4.2 kg / 9.3 lbs		4.2 kg / 9.3 lbs		4.2 kg / 9.3 lbs	
Operating Range	0-40℃		0-40℃		0-40℃		0-40℃	
EMC & Safety	CE		CE		CE		CE	

• Continued on next page →

Programmable DC Electronic Load 6310A Series

Model No.

SPECIFICATIONS-2

Model	63106A		63107A (30W & 250W)			63108A		63112A	
Power	60W	600W	30W	30W	250W	60W	600W	120W	1200W
Current	0-12A	0-120A	0-5A	0-4A	0-40A	0-2A	0-20A	0-24A	0-240A
Voltage	0-80V		0-80V			0-500V		0-80V	
Min. Operation Voltage (DC) *1 (Typical)	0.4V@6A	0.4V@60A	0.4V@2.5A	0.4V@2A	0.4V@20A	1.0V@1A	1.0V@10A	0.4V@12A	0.4V@120A
	0.8V@12A	0.8V@120A	0.8V@5A	0.8V@4A	0.8V@40A	2V@2A	2V@20A	0.8V@24A	0.8V@240A
Constant Current Mode									
Range	0-12A	0-120A	0-5A	0-4A	0-40A	0-2A	0-20A	0-24A	0-240A
Resolution	3mA	30mA	1.25mA	1mA	10mA	0.5mA	5mA	6mA	60mA
Accuracy	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.
Constant Resistance Mode									
Range	12.5mΩ ~ 50 Ω (600W/16V) 0.625 Ω ~2.5k Ω (600W/80V)		0.3 Ω ~1.2k Ω (30W/16V) 15 Ω ~60k Ω (30W/80V)		0.0375 Ω ~150 Ω (250W/16V) 1.875 Ω ~7.5k Ω (250W/80V)	0.625 Ω ~2.5k Ω (600W/125V) 25 Ω ~100k Ω (600W/500V)		6.25mΩ ~25 Ω (1200W/16V) 0.3125 Ω ~1.25k Ω (1200W/80V)	
Resolution	12 bits		12 bits		12 bits	12 bits		12 bits	
Accuracy	50 Ω : 0.4 ▯ + 0.5% 2.5k Ω : 0.04 ▯ + 0.2%		1.2k Ω : 0.1 ▯ + 0.2% 60k Ω : 0.01 ▯ + 0.1%		150 Ω : 0.1 ▯ + 0.2% 7.5k Ω : 0.01 ▯ + 0.1%	25k Ω : 50m ▯ + 0.2% 100k Ω : 5m ▯ + 0.1%		25 Ω : 0.8 ▯ + 0.8% 1.25k Ω : 0.08 ▯ + 0.2%	
Constant Voltage Mode									
Range	0-80V		0-80V			0-500V		0-80V	
Resolution	20mV		20mV			125mV		20mV	
Accuracy	0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.			0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.	
Constant Power Mode									
Range	0-60W	0-600W	0-30W	0-30W	0-250W	0-60W	0-600W	0-120W	0-1200W
Resolution	15mW	150mW	7.5mW	7.5mW	62.5mW	15mW	150mW	30mW	300mW
Accuracy	0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.			0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.	
Dynamic Mode									
Dynamic Mode	C.C. Mode		C.C. Mode			C.C. Mode		C.C. Mode	
T1 & T2	0.025ms-10ms/Res:1μs 1ms-30s/Res:1ms		0.025ms-10ms/Res:1μs 1ms-30s/Res:1ms			0.025ms-10ms/Res:1μs 1ms-30s/Res:1ms		0.025ms-10ms/Res:1μs 1ms-30s/Res:1ms	
Accuracy	1μs/1ms+100ppm		1μs/1ms+100ppm			1μs/1ms+100ppm		1μs/1ms+100ppm	
Slew Rate	0.002-0.5A/μs	0.02-5A/μs	0.8-200mA/μs	0.64-160mA/μs	64-1600mA/μs	0.32-80mA/μs	3.2-800mA/μs	0.004-1A/μs	0.04-10A/μs
Resolution	0.002A/μs	0.02A/μs	0.8mA/μs	0.64mA/μs	64mA/μs	0.32mA/μs	3.2mA/μs	0.004A/μs	0.04A/μs
Min. Rise Time	10μs (Typical)		10μs (Typical)			24μs (Typical)		10μs (Typical)	
Current	0-12A	0-120A	0-5A	0-4A	0-40A	0-2A	0-20A	0-24A	0-240A
Resolution	3mA	30mA	1.25mA	1mA	10mA	0.5mA	5mA	6mA	60mA
Current Accuracy	0.4%F.S.		0.4%F.S.			0.4%F.S.		0.4%F.S.	
Measurement Section									
Voltage Read Back									
Range	0-16V	0-80V	0-16V	0-80V	0-16V	0-80V	0-125V	0-500V	0-16V
Resolution	0.5mV	2.5mV	0.5mV	2.5mV	0.5mV	2.5mV	4mV	16mV	0.5mV
Accuracy	0.05% + 0.05%F.S.		0.05% + 0.05%F.S.			0.05% + 0.05%F.S.		0.05% + 0.05%F.S.	
Current Read Back									
Range	0-12A	0-120A	0-5A	0-4A	0-40A	0-2A	0-20A	0-24A	0-240A
Resolution	0.375mA	3.75mA	0.15625mA	0.125mA	1.25mA	0.375mA	0.625mA	0.75mA	7.5mA
Accuracy	3mA	30mA	1.25mA	1mA	10mA	0.5mA	5mA	6mA	60mA
Current Accuracy	0.1% + 0.1%F.S.		0.1% + 0.1%F.S.			0.1% + 0.1%F.S.		0.15% + 0.15%F.S.	
Protective Section									
Over Power Protection	≒ 62.4W	≒ 624W	≒ 31.2W	≒ 31.2W	≒ 260W	≒ 62.4W	≒ 624W	≒ 124.8W	≒ 1248W
Over Current Protection	≒ 12.24A	≒ 122.4A	≒ 5.1A	≒ 4.08A	≒ 40.8A	≒ 2.04A	≒ 20.4A	≒ 24.48A	≒ 244.8A
Over Temperature Protection	≒ 85℃		≒ 85℃			≒ 85℃		≒ 85℃	
Over Voltage Protection	≒ 81.6V		≒ 81.6V			≒ 510V		≒ 81.6V	
General									
Short Circuit									
Current (CC)	-	≒ 120A	-	-	≒ 40A	-	≒ 20A	-	≒ 240A
Voltage (CV)	-	0V	-	-	0V	-	0V	-	0V
Resistance (CR)	-	≒ 0.0125 Ω	-	-	≒ 0.0375 Ω	-	≒ 0.625 Ω	-	≒ 0.00625 Ω
Power (CP)	-	≒ 600W	-	-	≒ 250W	-	≒ 600W	-	≒ 1200W
Input Resistance(Load Off)	100k Ω (Typical)		100k Ω (Typical)			100k Ω (Typical)		100k Ω (Typical)	
Temperature Coefficient	100PPM/℃ (Typical)		100PPM/℃ (Typical)			100PPM/℃ (Typical)		100PPM/℃ (Typical)	
Power	Supply from 6314A Mainframe		Supply from 6314A Mainframe			Supply from 6314A Mainframe		Supply from 6314A Mainframe	
Dimension (HxWxD)	172 x 162 x 495 mm / 6.8 x 6.4 x 19.5 inch		172 x 81 x 495 mm / 6.8 x 3.2 x 19.5 inch			172 x 162 x 495 mm / 6.8 x 6.4 x 19.5 inch		172 x 324 x 495 mm/6.8 x 12.8 x 19.5 inch	
Weight	8.4 kg / 18.5 lbs		4.5 kg / 9.9 lbs			8.4 kg / 18.5 lbs		16.8 kg / 37 lbs	
Operating Range	0-40℃		0-40℃			0-40℃		0-40℃	
EMC & Safety	CE		CE			CE		CE	

NOTE*1 :

Low voltage operation, under 0.8 volt, is possible at correspondingly reduced current level.
Operating temperature range is 0°C to 40°C. All specifications apply for 25°C ± 5°C, except as noted

Mainframe Model	6312A	6314A
Dimension (HxWxD)	177 x 275 x 543 mm / 7 x 10.8 x 21.4 inch	177 x 439 x 543 mm / 7 x 17.3 x 21.4 inch
Weight	15 kg / 33.1 lbs	22 kg / 48.5 lbs

High Power DC Electronic Load

Model No.

63200 Series



DC Electronic Load Model 63200 Series

KEY FEATURES

- Power Rating: 2.6kW, 5.2kW, 6.5kW, 10.4kW, 14.5kW, 15.6kW
- Voltage range: 0-80V/0-500V
- Current range: Up to 1000A
- CC, CR, CV, CP load modes
- Master/Slave paralleling control mode, allow synchronous load control under static and dynamic loading mode
- Dynamic loading: Up to 20kHz
- Only need 1V to draw rated current
- Programmable slew rate, up to 41A/μs



- Measurement: Voltage / Current / Power / Resistance
- Large LED/LCD display
- External loading waveform simulation
- Short circuit simulation and short circuit current measurement
- Full protection: OP, OC, OV, OT and reverse protection
- Versatile remote controller
- GPIB & RS-232 interfaces

The Chroma Electronic Loads 63200 series are designed for DC power source, power electronic devices and components testing. The high power rating, parallel and synchronization capabilities make them the ideal tool for testing the high power UUT such as SMR, UPS, battery, and fuel cell.

The 63200 series offers 10 different models with power range from 2600 watts to 15600 watts, current from 50A to 1000A and up to 500V input voltage. The 4 load modes setup provide different load simulations for various application occasions. The CC/CR modes are designed to test constant voltage type of power supply. CV mode is used to test battery charger and current source, while CP mode is ideal for battery testing by simulating the real discharge curve.

The 63200 series can draw its rated current under very low voltage (1V typical) even under the highest specified slew rate. This unique feature guarantees the best loading performance to a low voltage power supply. With the unique external waveform simulation and Master /Slave control capability, the 63200 series electronic loads allow users to parallel and synchronize more than one load together from an internal or external loading control signal. This feature provides unlimited load simulation and the possibility of power expansion.

The 63200 series also supply necessary measurement functions and short circuit simulation that extend the test capability for even the most demanding engineering tests and ATE applications. With the LCD display and rotary knob, the 63200 electronic loads offer versatile front panel operations. Users are able to control the 63200 family remotely via GPIB, RS-232 or APG (Analog Programming) interface.

Chroma 63200 series loads are built in fan speed control to minimize the audio noise. The self-diagnosis routine and the full protections against OPP, OCP, OVP, OTP and reverse polarity ensure the best quality and reliability.

SPECIFICATIONS-1

Model	63201		63202		63203	
Power*1	260W	2600W	260W	2600W	520W	5200W
Current	0-30A	0-300A	0-5A	0-50A	0-60A	0-600A
Voltage	0-80V		0-500V		0-80V	
Min. Operating voltage	0.5V @ 15A	0.5V @ 150A	1.25V @ 2.5A	1.25V @ 25A	0.5V @ 30A	0.5V @ 300A
	1V @ 30A	1V @ 300A	2.5V @ 5A	2.5V @ 50A	1V @ 60A	1V @ 600A
Constant Current mode						
Range	0-30A	0-300A	0-5A	0-50A	0-60A	0-600A
Resolution	7.5mA	75mA	1.25mA	12.5mA	15mA	150mA
Accuracy	0.1%+0.1%F.S.	0.2%+0.1%F.S.	0.1%+0.1%F.S.	0.2%+0.1%F.S.	0.1%+0.1%F.S.	0.2%+0.1%F.S.
Constant Resistance Mode						
Range	0.005-20ohm	0.25-1000ohm	0.25-1000ohm	10-4000ohm	0.0025-10ohm	0.125-500ohm
Resolution	12bits	12bits	12bits	12bits	12bits	12bits
Accuracy*2	0.6mho+0.35%	0.9mho+0.1%	0.012mho+0.35%	0.04mho+0.1%	1.2mho+0.35%*4	1.2mho+0.1%
Accuracy*3 (Vin>7V)	0.6mho+0.35%	0.012mho+0.35%	0.012mho+0.35%	112.5u mho+0.35%	1.2mho+0.35%	0.024mho+0.35%
Constant Voltage mode						
Range	0-16V	0-80V	0-125V	0-500V	0-16V	0-80V
Resolution	4mV	20mV	31mV	125mV	4mV	20mV
Accuracy	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.
Constant Power mode						
Range	0.6-260W	6-2600W	0.625-260W	6.25-2600W	1.2-520W	12-5200W
Resolution	7.5mW	75mW	3.125mW	31.25mW	22.5mW	225mW
Accuracy	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.
Dynamic mode						
Timing						
T1&T2	0.025-10ms	1ms-30s	0.025-10ms	1ms-30s	0.025-10ms	1ms-30s
Resolution	1μs	1ms	1μs	1ms	1μs	1ms
Accuracy	1μs+100ppm	1ms+100ppm	1μs+100ppm	1ms+100ppm	1μs+100ppm	1ms+100ppm
Slew rate	5mA-1.25A/μs	50mA-12.5A/μs	0.8mA-0.2A/μs	8mA-2A/μs	10mA-2.5A/μs	100mA-25A/μs
Resolution	5mA/μs	50mA/μs	0.8mA/μs	8mA/μs	10mA/μs	100mA/μs
Min. Rise Time	24μs (typical)		24μs (typical)		24μs (typical)	
Current						
Range	0-30A	0-300A	0-5A	0-50A	0-60A	0-600A
Resolution	7.5mA	75mA	1.25mA	12.5mA	15mA	150mA
Accuracy	0.4%F.S.		0.4%F.S.		0.4%F.S.	
Measurement						
Voltage Read Back						
Range	0-16V	0-80V	0-125V	0-500V	0-16V	0-80V
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.05%+0.05%F.S.		0.05%+0.05%F.S.		0.05%+0.05%F.S.	
Current Read Back						
Range	0-30A	0-300A	0-5A	0-50A	0-60A	0-600A
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.1%+0.1%F.S.		0.1%+0.1%F.S.		0.1%+0.1%F.S.	
Power Read Back						
Range	0-260W	0-2600W	0-260W	0-2600W	0-520W	0-5200W
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.3%+0.3%F.S.		0.3%+0.3%F.S.		0.3%+0.3%F.S.	
General						
Short Circuit						
current	30A	300A	5A	50A	60A	600A
Dimension (H x W x D)	177 x 440 x 589 mm / 6.9 x 17.3 x 23.2 inch		177 x 440 x 589 mm / 6.9 x 17.3 x 23.2 inch		353 x 440 x 589 mm / 6.9 x 17.3 x 23.2 inch	
Weight	30 kg / 66.08 lbs		30 kg / 66.08 lbs		62 kg / 136.56 lbs	
Safety & EMC	CE		CE		CE	

• Continued on next page →

SPECIFICATIONS-2						
Model	63204		63205		63206	
Power*1	520W	5200W	650W	6500W	1040W	10400W
Current	0-10A	0-100A	0-18A	0-180A	0-60A	0-600A
Voltage	0-500V		0-80V		0-80V	
Min. Operating voltage	1.25V @ 5A	1.25V @ 50A	0.5V @ 9A	0.5V @ 90A	0.5V @ 30A	0.5V @ 300A
	2.5V @ 10A	2.5V @ 100A	1V @ 18A	1V @ 180A	1V @ 60A	1V @ 600A
Constant Current mode						
Range	0-10A	0-100A	0-18A	0-180A	0-60A	0-600A
Resolution	2.5mA	25mA	4.5mA	45mA	15mA	150mA
Accuracy	0.1%+0.1%F.S.	0.2%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.
Constant Resistance Mode						
Range	0.125-500ohm	5-20000ohm	0.008-32ohm	0.4-1600ohm	0.0025-10ohm	0.125-500ohm
Resolution	12bits	12bits	12bits	12bits	12bits	12bits
Accuracy*2	0.24mho+0.1%	0.08mho+0.1%	0.375mho+0.35%	0.75mho+0.1%	1.2mho+0.35% *4	1.2mho+0.1%
Accuracy*3 (Vin>7V)	0.24mho+0.1%	225u mho+0.35%	0.375mho+0.35%	0.075mho+0.35%	1.2mho+0.35%	0.024mho+0.35%
Constant Voltage mode						
Range	0-125V	0-500V	0-16V	0-80V	0-16V	0-80V
Resolution	31mV	125mV	4mV	20mV	4mV	20mV
Accuracy	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.
Constant Power mode						
Range	1.25-520W	12.5-5200W	0.36-650W	3.6-6500W	1.2-1040W	12-10400W
Resolution	6.25mW	62.5mW	4.6mW	46mW	22.5mW	225mW
Accuracy	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.
Dynamic mode						
Timing						
T1&T2	0.025-10ms	1ms-30s	0.025-10ms	1ms-30s	0.025-10ms	1ms-30s
Resolution	1μs	1ms	1μs	1ms	1μs	1ms
Accuracy	1μs+100ppm	1ms+100ppm	1μs+100ppm	1ms+100ppm	1μs+100ppm	1ms+100ppm
Slew rate	1.6mA-0.4A/μs	16mA-4A/μs	3mA-0.75A/μs	30mA-7.5A/μs	10mA-3A/μs	100mA-25A/μs
Resolution	1.6mA/μs	16mA/μs	3mA/μs	30mA/μs	12mA/μs	100mA/μs
Min. Rise Time	24μs (typical)		24μs (typical)		20μs (typical)	
Current						
Range	0-10A	0-100A	0-18A	0-180A	0-60A	0-600A
Resolution	2.5mA	25mA	4.68mA	46.8mA	15mA	150mA
Accuracy	0.4%F.S.		0.4%F.S.		0.4%F.S.	
Measurement						
Voltage Read Back						
Range	0-125V	0-500V	0-16V	0-80V	0-16V	0-80V
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.05%+0.05%F.S.		0.05%+0.05%F.S.		0.05%+0.05%F.S.	
Current Read Back						
Range	0-10A	0-100A	0-18A	0-180A	0-60A	0-600A
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.1%+0.1%F.S.		0.1%+0.1%F.S.		0.1%+0.1%F.S.	
Power Read Back						
Range	0-520W	0-5200W	0-650W	0-6500W	0-1040W	0-10400W
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.3%+0.3%F.S.		0.3%+0.3%F.S.		0.3%+0.3%F.S.	
General						
Short Circuit						
Current	10A	100A	18A	180A	60A	600A
Dimension (H x W x D)	353 x 440 x 589 mm / 13.9 x 17.3 x 23.2 inch		353 x 440 x 589 mm / 13.9 x 17.3 x 23.2 inch		443.7 x 440 x 589 mm / 17.5 x 17.3 x 23.2 inch	
Weight	62 kg / 136.56 lbs		62 kg / 136.56 lbs		90 kg / 198.24 lbs	
Safety & EMC	CE		CE		CE	

Soft Panel

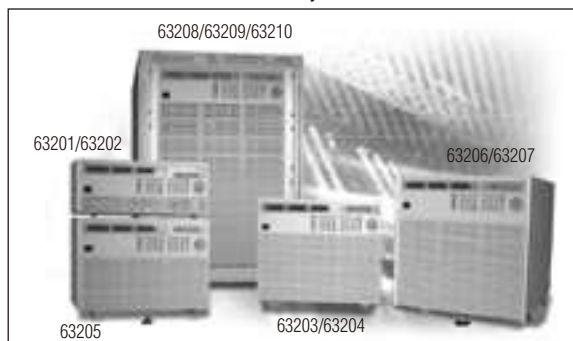


Battery Discharge Test



OCP Test

63200 Series DC Electronic Load Family



High Power DC Electronic Load

Model No.

63200 Series

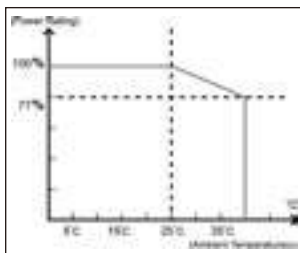
SPECIFICATIONS-3								
Model	63207		63208		63209		63210	
Power *1	1040W	10400W	1560W	15600W	1560W	15600W	1450W	14500W
Current	0-30A	0-300A	0-60A	0-600A	0-100A	0-1000A	0-15A	0-150A
Voltage	0-80V		0-80V		0-80V		0-500V	
Min. Operating voltage	0.5V @ 15A	0.5V @ 150A	0.5V @ 30A	0.5V @ 300A	0.5V @ 50A	0.5V @ 500A	1.25V @ 7.5A	1.25V @ 75A
	1V @ 30A	1V @ 300A	1V @ 60A	1V @ 600A	1V @ 100A	1V @ 1000A	2.5V @ 15A	2.5V @ 150A
Constant Current mode								
Range	0-30A	0-300A	0-60A	0-600A	0-100A	0-1000A	0-15A	0-150A
Resolution	9.3mA	75mA	15mA	150mA	31.25mA	250mA	3.75mA	37.5mA
Accuracy	0.1%+0.2%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.2%+0.1%F.S.
Constant Resistance Mode								
Range	0.005-20ohm	0.25-1000ohm	0.0025-10ohm	0.125-500ohm	0.0015-6ohm	0.075-300ohm	0.083-333ohm	3.3-13200ohm
Resolution	12bits	12bits	12bits	12bits	12bits	12bits	12bits	12bits
Accuracy *2	0.6mho+0.35%	0.9mho+0.1%	1.2mho+0.35% *4	1.2mho+0.1%	1.2mho+0.35% *4	1.2mho+0.1%	0.036mho+0.35%	0.092mho+0.1%
Accuracy *3 (Vin>7V)	0.6mho+0.35%	0.012mho+0.35%	1.2mho+0.35%	0.024mho+0.35%	1.2mho+0.35%	0.024mho+0.35%	0.036mho+0.35%	337.5u mho+0.35%
Constant Voltage mode								
Range	0-16V	0-80V	0-16V	0-80V	0-16V	0-80V	0-125V	0-500V
Resolution	4mV	20mV	4mV	20mV	4mV	20mV	31mV	125mV
Accuracy	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.
Constant Power mode								
Range	0.744-1040W	6-10400W	1.2-1560W	12-15600W	2.5-1560W	20-15600W	5-1450W	50-14500W
Resolution	9.3mW	75mW	22.5mW	225mW	31.255mW	250mW	25mW	250mW
Accuracy	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.
Dynamic mode								
Timing								
T1&T2	0.025-10ms	1ms-30s	0.025-10ms	1ms-30s	0.025-10ms	1ms-30s	0.025-10ms	1ms-30s
Resolution	1μs	1ms	1μs	1ms	1μs	1ms	1us	1ms
Accuracy	1μs+100ppm	1ms+100ppm	1μs+100ppm	1ms+100ppm	1μs+100ppm	1ms+100ppm	1us+100ppm	1ms+100ppm
Slew rate	6mA-1.5A/μs	50mA-12.5A/μs	12mA-3A/μs	100mA-25A/μs	20mA-5A/μs	166mA-41.6A/μs	3mA-0.75A/μs	25mA-6A/μs
Resolution	6mA/μs	50mA/μs	12mA/μs	100mA/μs	20mA/μs	166mA/μs	3mA/us	25mA/us
Min. Rise Time	20μs (typical)		20μs (typical)		20μs (typical)		24 μs (typical)	
Current								
Range	0-30A	0-300A	0-60A	0-600A	0-100A	0-1000A	0-15A	0-150A
Resolution	9.37mA	75mA	15mA	150mA	31.25mA	250mA	3.75mA	37.5mA
Accuracy	0.4%F.S.		0.4%F.S.		0.4%F.S.		0.4%FS	
Measurement								
Voltage Read Back								
Range	0-16V	0-80V	0-16V	0-80V	0-16V	0-80V	0-125V	0-500V
Resolution	15bits	15bits	15bits	15bits	15bits	15bits	15 bits	15 bits
Accuracy	0.05%+0.05%F.S.		0.05%+0.05%F.S.		0.05%+0.05%F.S.		0.05%+0.05%F.S.	
Current Read Back								
Range	0-30A	0-300A	0-60A	0-600A	0-100A	0-1000A	0-15A	0-150A
Resolution	15bits	15bits	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.1%+0.1%F.S.		0.1%+0.1%F.S.		0.1%+0.1%F.S.		0.1%+0.1%F.S.	
Power Read Back								
Range	0-1040W	0-10400W	0-1560W	0-15600W	0-1560W	0-15600W	0-1450W	0-14500W
Resolution	15bits	15bits	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.3%+0.3%F.S.		0.3%+0.3%F.S.		0.3%+0.3%F.S.		0.3%+0.3%F.S.	
General								
Short Circuit								
Current	30A	300A	60A	600A	100A	1000A	15A	150A
Dimension (H x W x D)	443.7 x 440 x 589 mm / 17.5 x 17.3 x 23.2 inch		762.8 x 546 x 700 mm / 30 x 21.5 x 27.6 inch		762.8x546x700mm/30x21.5x27.6inch(cabinet)		762.8x546x700mm/30x21.5x27.6inch(cabinet)	
Weight	90 kg / 198.24 lbs		170 kg / 374.45 lbs		170 kg / 374.45 lbs		170 kg / 374.45 lbs	
Safety & EMC	CE		CE		CE		CE	

Note*1 : The power rating specifications at ambient temperature=25°C and see the diagram below for power derating.

Note*2 : The Vin must be greater than min. operating voltage of each model.

Note*3 : The Vin must be greater than 7V of each model.

Note*4 : Setting error will be 1% for R<0.005Ω at CRL range.



ORDERING INFORMATION

63201 : DC Electronic Load 2.6kW/300A/80V
63202 : DC Electronic Load 2.6kW/50A/500V
63203 : DC Electronic Load 5.2kW/600A/80V
63204 : DC Electronic Load 5.2kW/100A/500V
63205 : DC Electronic Load 6.5kW/180A/80V
63206 : DC Electronic Load 10.4kW/600A/80V
63207 : DC Electronic Load 10.4kW/300A/80V
63208 : DC Electronic Load 15.6kW/600A/80V

63209 : DC Electronic Load 15.6kW/1000A/80V
63210 : DC Electronic Load 14.5kW/150A/500V
A632001 : Remote Controller
A632002 : Load Cable 38mm/242A/200cmx2
A632003 : Load Cable 80mm/390A/200cmx2
A632004 : Sync. Link Box for 6330A & 63200 series
A632005 : Softpanel for 63200 series





High Speed DC Load Model 6330A Series

KEY FEATURES

- Improve operating speeds of load for auto test system integration
- Synchronous paralleling control mode, allow Synchronous load control under static and dynamic Loading mode up to 6000W
- Up to 8 channels in one mainframe, fit for testing Multiple output SMPS.
- GPIB/RS-232/USB Interface
- Max Power: 200W, 100W x 2(Dual), 30W&250W, 300W, 600W, 1200W
- Voltage Range: 0~80V / 0V~500V
- CC, CR, CV, CP operating modes
- Dynamic loading with speed up to 20kHz
- Programmable slew rate, up to 10A/μs
- Only need 1V to draw rated current
- Individual panel meters
- Real time power supplies load transient response simulation and output measurement
- 15-bit precision voltage and measurement with dual-range selection
- Remote sensing capability
- Short circuit test
- Self-test at power-on
- CE marking

Chroma Model 6330A series high speed DC electronic improves CPU clock, baud rate, parser and added synchronic parallel function for fast operation, which is ideal for auto test system integration to increase your manufacturing test throughput. Plugging the user selectable load modules into the system mainframe can also provide easy system configuration and future reconfiguration configure the system.

The 6330A family offers 8 types of modular loads with power ranging from 30 watts to 1200 watts, current from 0.5mA to 240A, and voltage measurement from 0.5mV to 500V. Each load is isolated and floating, programmable in dual current range and measuring voltage range, and capable of synchronizing with other modules for control operating. The load can be operated in constant current, constant voltage, and constant resistance.

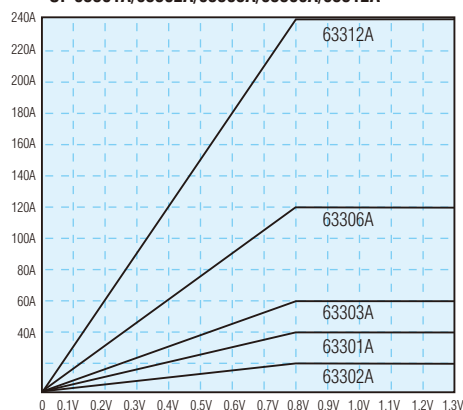
With Synchronic parallel control capability, 6330A series loads allow users to parallel and synchronize more than one load together from an internal loading control signal. This feature provides synchronic dynamic loading test for multi-output power and high power test solution.

Real time measurement of voltage, current, is integrated into each 6330A load module using a 15-bit precision measurement circuit. The user can perform on line voltage measurement and adjustment, or simulate short circuit test using the simple keypad on the front panel.

The 6330A have self-diagnosis routine to maintain instrumental performance all the time. It is also protected against OP, OC, OV, OT, and reverse polarity to guarantee quality and reliability for even the most demanding engineering testing and ATE application.

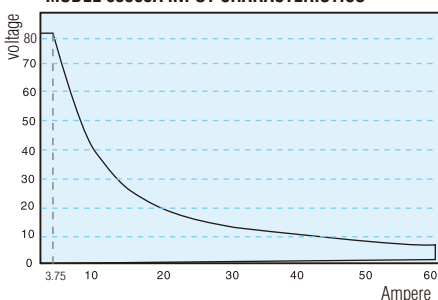
The FET technology accomplishes minimum input resistance and enables the load to sink high current even at very low voltage. For example, model 63303A is capable of sinking 60A at 1V output, and well-suited for testing the new 3V low voltage power supplies. Low voltage operation, down to zero volt, is possible at correspondingly reduced current level. (see below)

LOW VOLTAGE CHARACTERISTICS (TYPICAL)
OF 63301A/63302A/63303A/63306A/63312A



Note: All specifications are measured at load input terminals. (Ambient Temperature of +25°C)

MODEL 63303A INPUT CHARACTERISTICS



ORDERING INFORMATION

- 6332A:** Mainframe for 2 Load Modules
- 6334A:** Mainframe for 4 Load Modules
- 63301A:** Load Module 40A/80V/200W
- 63302A:** Load Module 20A/80V/100Wx2 channels
- 63303A:** Load Module 60A/80V/300W
- 63305A:** Load Module 10A/500V/300W
- 63306A:** Load Module 120A/80V/600W
- 63307A:** Load Module 5A&40A/80V/30W&250W
- 63308A:** Load Module 20A/500V/600W
- 63312A:** Load Module 240A/80V/1200W
- A630002:** GPIB Interface for Model 6334A/6332A Mainframe
- A631003:** USB Interface for Model 6334A/6332A Mainframe
- A631001:** Remote Controller
- A631002:** Test Fixture
- A631005:** Softpanel for 6310A/6330A series
- A632004:** Sync. Link Box for 6330A/63200 Series



6330A Series High Speed DC Electronic Load Family



6334A: 4 in 1 Mainframe



A630002: GPIB Interface



6332A: 2 in 1 Mainframe



A631001: Remote Controller

SPECIFICATIONS-1

Model	63301A		63302A (100Wx2)		63303A		63305A	
Power	20W	200W	20W	100W	30W	300W	30W	300W
Current	0-4A	0-40A	0-2A	0-20A	0-6A	0-60A	0-1A	0-10A
Voltage	0-80V		0-80V		0-80V		0-500V	
Min. Operation Voltage (DC) *1 (Typical)	0.4V@2A	0.4V@20A	0.4V@1A	0.4V@10A	0.4V@3A	0.4V@30A	1.0V@0.5A	1.0V@5A
	0.8V@4A	0.8V@40A	0.8V@2A	0.8V@20A	0.8V@6A	0.8V@60A	2.0V@1A	2.0V@10A
Constant Current Mode								
Range	0-4A	0-40A	0-2A	0-20A	0-6A	0-60A	0-1A	0-10A
Resolution	1mA	10mA	0.5mA	5mA	1.5mA	15mA	0.25mA	2.5mA
Accuracy	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.
Constant Resistance Mode								
Range	0.0375 Ω ~150 Ω (200W/16V) 1.875 Ω ~7.5k Ω (200W/80V)		0.075 Ω ~300 Ω (100W/16V) 3.75 Ω ~15k Ω (100W/80V)		0.025 Ω ~100 Ω (300W/16V) 1.25 Ω ~5k Ω (300W/80V)		1.25 Ω ~5 Ω (300W/125V) 50 Ω ~200k Ω (300W/500V)	
Resolution	12 bits		12 bits		12 bits		12 bits	
Accuracy	150 Ω : 0.1 ▮ + 0.2% 7.5k Ω : 0.01 ▮ + 0.1%		300 Ω : 0.1 ▮ + 0.2% 15k Ω : 0.01 ▮ + 0.1%		100 Ω : 0.1 ▮ + 0.2% 5k Ω : 0.01 ▮ + 0.1%		5k Ω : 20m ▮ + 0.2% 200k Ω :5m ▮ + 0.1%	
Constant Voltage Mode								
Range	0-80V		0-80V		0-80V		0-500V	
Resolution	20mV		20mV		20mV		125mV	
Accuracy	0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.	
Constant Power Mode								
Range	0-20W	0-200W	0-20W	0-100W	0-30W	0-300W	0-30W	0-300W
Resolution	5mW	50mW	5mW	25mW	7.5mW	75mW	7.5mW	75mW
Accuracy	0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.	
Dynamic Mode								
Dynamic Mode	C.C. Mode		C.C. Mode		C.C. Mode		C.C. Mode	
T1 & T2	0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms		0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms		0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms		0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms	
Accuracy	1μs/1ms+100ppm		1μs/1ms+100ppm		1μs/1ms+100ppm		1μs/1ms+100ppm	
Slew Rate	0.64-160mA/μs	6.4-1600mA/μs	0.32-80mA/μs	3.2-800mA/μs	0.001-0.25A/μs	0.01-2.5A/μs	0.16-40mA/μs	1.6-400mA/μs
Resolution	0.64mA/μs	6.4mA/μs	0.32mA/μs	3.2mA/μs	0.001A/μs	0.01A/μs	0.16mA/μs	1.6mA/μs
Min. Rise Time	10μs (Typical)		10μs (Typical)		10μs (Typical)		24μs (Typical)	
Current	0-4A	0-40A	0-2A	0-20A	0-6A	0-60A	0-1A	0-10A
Resolution	1mA	10mA	0.5mA	5mA	1.5mA	15mA	0.25mA	2.5mA
Current Accuracy	0.4%F.S.		0.4%F.S.		0.4%F.S.		0.4%F.S.	
Measurement Section								
Voltage Read Back								
Range	0-16V	0-80V	0-16V	0-80V	0-16V	0-80V	0-125V	0-500V
Resolution	0.5mV	2.5mV	0.5mV	2.5mV	0.5mV	2.5mV	4mV	16mV
Accuracy	0.05% + 0.05%F.S.		0.05% + 0.05%F.S.		0.05% + 0.05%F.S.		0.05% + 0.05%F.S.	
Current Read Back								
Range	0-4A	0-40A	0-2A	0-20A	0-6A	0-60A	0-1A	0-10A
Resolution	0.125mA	1.25mA	0.0625mA	0.625mA	0.1875mA	1.875mA	0.032mA	0.320mA
Accuracy	1mA	10mA	0.5mA	5mA	1.5mA	15mA	0.25mA	2.5mA
Current Accuracy	0.1% + 0.1%F.S.		0.1% + 0.1%F.S.		0.1% + 0.1%F.S.		0.1% + 0.1%F.S.	
Protective Section								
Over Power Protection	≒ 20.8W	≒ 208W	≒ 20.8W	≒ 104W	≒ 31.2W	≒ 312W	≒ 31.2W	≒ 312W
Over Current Protection	≒ 4.08A	≒ 40.8A	≒ 2.04A	≒ 20.4A	≒ 6.12A	≒ 61.2A	≒ 1.02A	≒ 10.2A
Over Temperature Protection	≒ 85℃		≒ 85℃		≒ 85℃		≒ 85℃	
Over Voltage Protection	≒ 81.6V		≒ 81.6V		≒ 81.6V		≒ 510V	
General								
Short Circuit								
Current (CC)	-	≒ 40A	-	≒ 20A	-	≒ 60A	-	≒ 10A
Voltage (CV)	-	0V	-	0V	-	0V	-	0V
Resistance (CR)	-	≒ 0.0375 Ω	-	≒ 0.075 Ω	-	≒ 0.025 Ω	-	≒ 1.25 Ω
Power (CP)	-	≒ 200W	-	≒ 100W	-	≒ 300W	-	≒ 300W
Input Resistance (Load Off)	100k Ω (Typical)		100k Ω (Typical)		100k Ω (Typical)		100k Ω (Typical)	
Temperature Coefficient	100PPM/℃ (Typical)		100PPM/℃ (Typical)		100PPM/℃ (Typical)		100PPM/℃ (Typical)	
Power	Supply from 6334A Mainframe		Supply from 6334A Mainframe		Supply from 6334A Mainframe		Supply from 6334A Mainframe	
Dimension (H x W x D)	172 x 81 x 495 mm / 6.8 x 3.2 x 19.5 inch		172 x 81 x 495 mm / 6.8 x 3.2 x 19.5 inch		172 x81 x 495 mm / 6.8 x 3.2 x 19.5 inch		172 x 81 x 495 mm / 6.8 x 3.2 x 19.5 inch	
Weight	4.2 kg / 9.3 lbs		4.2 kg / 9.3 lbs		4.2 kg / 9.3 lbs		4.2 kg / 9.3 lbs	
Operating Range	0-40℃		0-40℃		0-40℃		0-40℃	
EMC & Safety	CE		CE		CE		CE	

• Continued on next page →

SPECIFICATIONS-2

Model	63306A		63307A (30W & 250W)			63308A		63312A		
Power	60W	600W	30W	30W	250W	60W	600W	120W	1200W	
Current	0-12A	0-120A	0-5A	0-4A	0-40A	0-2A	0-20A	0-24A	0-240A	
Voltage	0-80V		0-80V			0-500V		0-80V		
Min. Operation Voltage (DC) *1 (Typical)	0.4V@6A	0.4V@60A	0.4V@2.5A	0.4V@2A	0.4V@20A	1.0V@1A	1.0V@10A	0.4V@12A	0.4V@120A	
	0.8V@12A	0.8V@120A	0.8V@5A	0.8V@4A	0.8V@40A	2V@2A	2V@20A	0.8V@24A	0.8V@240A	
Constant Current Mode										
Range	0-12A	0-120A	0-5A	0-4A	0-40A	0-2A	0-20A	0-24A	0-240A	
Resolution	3mA	30mA	1.25mA	1mA	10mA	0.5mA	5mA	6mA	60mA	
Accuracy	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	
Constant Resistance Mode										
Range	12.5mΩ ~ 50 Ω (600W/16V) 0.625 Ω ~ 2.5k Ω (600W/80V)		0.3 Ω ~ 1.2k Ω (30W/16V) 15 Ω ~ 60k Ω (30W/80V)		0.0375 Ω ~ 150 Ω (250W/16V) 1.875 Ω ~ 7.5k Ω (250W/80V)		0.625 Ω ~ 2.5k Ω (600W/125V) 25 Ω ~ 100k Ω (600W/500V)		6.25mΩ ~ 25 Ω (1200W/16V) 0.3125 Ω ~ 1.25k Ω (1200W/80V)	
Resolution	12 bits		12 bits		12 bits		12 bits		12 bits	
Accuracy	50 Ω : 0.4 ▯ + 0.5% 2.5k Ω : 0.04 ▯ + 0.2%		1.2k Ω : 0.1 ▯ + 0.2% 60k Ω : 0.01 ▯ + 0.1%		150 Ω : 0.1 ▯ + 0.2% 7.5k Ω : 0.01 ▯ + 0.1%		25k Ω : 50m ▯ + 0.2% 100k Ω : 5m ▯ + 0.1%		25 Ω : 0.8 ▯ + 0.8% 1.25k Ω : 0.08 ▯ + 0.2%	
Constant Voltage Mode										
Range	0-80V		0-80V			0-500V		0-80V		
Resolution	20mV		20mV			125mV		20mV		
Accuracy	0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.			0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.		
Constant Power Mode										
Range	0-60W	0-600W	0-30W	0-30W	0-250W	0-60W	0-600W	0-120W	0-1200W	
Resolution	15mW	150mW	7.5mW	7.5mW	62.5mW	15mW	150mW	30mW	300mW	
Accuracy	0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.			0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.		
Dynamic Mode										
Dynamic Mode	C.C. Mode		C.C. Mode			C.C. Mode		C.C. Mode		
T1 & T2	0.025ms-10ms/Res:1μs 1ms-30s/Res:1ms		0.025ms-10ms/Res:1μs 1ms-30s/Res:1ms			0.025ms-10ms/Res:1μs 1ms-30s/Res:1ms		0.025ms-10ms/Res:1μs 1ms-30s/Res:1ms		
Accuracy	1μs/1ms+100ppm		1μs/1ms+100ppm			1μs/1ms+100ppm		1μs/1ms+100ppm		
Slew Rate	0.002-0.5A/μs	0.02-5A/μs	0.8-200mA/μs	0.64-160mA/μs	64-1600mA/μs	0.32-80mA/μs	3.2-800mA/μs	0.004-1A/μs	0.04-10A/μs	
Resolution	0.002A/μs	0.02A/μs	0.8mA/μs	0.64mA/μs	64mA/μs	0.32mA/μs	3.2mA/μs	0.004A/μs	0.04A/μs	
Min. Rise Time	10μs (Typical)		10μs (Typical)			24μs (Typical)		10μs (Typical)		
Current	0-12A	0-120A	0-5A	0-4A	0-40A	0-2A	0-20A	0-24A	0-240A	
Resolution	3mA	30mA	1.25mA	1mA	10mA	0.5mA	5mA	6mA	60mA	
Current Accuracy	0.4%F.S.		0.4%F.S.			0.4%F.S.		0.4%F.S.		
Measurement Section										
Voltage Read Back										
Range	0-16V	0-80V	0-16V	0-80V	0-16V	0-80V	0-125V	0-500V	0-16V	0-80V
Resolution	0.5mV	2.5mV	0.5mV	2.5mV	0.5mV	2.5mV	4mV	16mV	0.5mV	2.5mV
Accuracy	0.05% + 0.05%F.S.		0.05% + 0.05%F.S.			0.05% + 0.05%F.S.		0.05% + 0.05%F.S.		
Current Read Back										
Range	0-12A	0-120A	0-5A	0-4A	0-40A	0-2A	0-20A	0-24A	0-240A	
Resolution	0.375mA	3.75mA	0.15625mA	0.125mA	1.25mA	0.375mA	0.625mA	0.75mA	7.5mA	
Accuracy	3mA	30mA	1.25mA	1mA	10mA	0.5mA	5mA	6mA	60mA	
Current Accuracy	0.1% + 0.1%F.S.		0.1% + 0.1%F.S.			0.1% + 0.1%F.S.		0.15% + 0.15%F.S.		
Protective Section										
Over Power Protection	≒ 62.4W	≒ 624W	≒ 31.2W	≒ 31.2W	≒ 260W	≒ 62.4W	≒ 624W	≒ 124.8W	≒ 1248W	
Over Current Protection	≒ 12.24A	≒ 122.4A	≒ 5.1A	≒ 4.08A	≒ 40.8A	≒ 2.04A	≒ 20.4A	≒ 24.48A	≒ 244.8A	
Over Temperature Protection	≒ 85℃		≒ 85℃			≒ 85℃		≒ 85℃		
Over Voltage Protection	≒ 81.6V		≒ 81.6V			≒ 510V		≒ 81.6V		
General										
Short Circuit										
Current (CC)	-	≒ 120A	-	-	≒ 40A	-	≒ 20A	-	≒ 240A	
Voltage (CV)	-	0V	-	-	0V	-	0V	-	0V	
Resistance (CR)	-	≒ 0.0125 Ω	-	-	≒ 0.0375 Ω	-	≒ 0.625 Ω	-	≒ 0.00625 Ω	
Power (CP)	-	≒ 600W	-	-	≒ 250W	-	≒ 600W	-	≒ 1200W	
Input Resistance(Load Off)	100k Ω (Typical)		100k Ω (Typical)			100k Ω (Typical)		100k Ω (Typical)		
Temperature Coefficient	100PPM/℃ (Typical)		100PPM/℃ (Typical)			100PPM/℃ (Typical)		100PPM/℃ (Typical)		
Power	Supply from 6334A Mainframe		Supply from 6334A Mainframe			Supply from 6334A Mainframe		Supply from 6334A Mainframe		
Dimension (HxWxD)	172 x 162 x 495 mm / 6.8 x 6.4 x 19.5 inch		172 x 81 x 495 mm / 6.8 x 3.2 x 19.5 inch			172 x 162 x 495 mm / 6.8 x 6.4 x 19.5 inch		172 x 324 x 495 mm/6.8 x 12.8 x 19.5 inch		
Weight	8.4 kg / 18.5 lbs		4.5 kg / 9.9 lbs			8.4 kg / 18.5 lbs		16.8 kg / 37 lbs		
Operating Range	0-40℃		0-40℃			0-40℃		0-40℃		
EMC & Safety	CE		CE			CE		CE		

NOTE*1 :

Low voltage operation, under 0.8 volt, is possible at correspondingly reduced current level.
Operating temperature range is 0°C to 40°C. All specifications apply for 25°C ± 5°C, except as noted

Mainframe Model	6332A	6334A
Dimension (HxWxD)	177 x 275 x 543 mm / 7 x 10.8 x 21.4 inch	177 x 439 x 543 mm / 7 x 17.3 x 21.4 inch
Weight	15 kg / 33.1 lbs	22 kg / 48.5 lbs

High Slew Rate DC Electronic Load 6345/6346

Model No.



Chroma high slew rate load model 6340 series provides total solution for VRM testing. The VRM is introduced to substitute the power supply when micro processor draws a burst of current from it. Chroma high slew rate load model 6340 series is capable to simulate from 0.12A/uS to 150A/uS transit loading. And its voltage, current measurement and monitoring functions makes it an ideal test instrument for the designers or the manufacturers of high speed power delivery devices.

The model 6340 family offers 2 models with power ranging 625 watts, current from 100A to 150A, and slew rate control from 0.12A/uS to 150A/uS at dynamic frequency up to 100kHz. All the loading and slew rate are programmable and can be controlled via front panel operation or RS-232/GPIB interface.

The test fixture can be fabricated upon customers' specifications. It can be configured for 5 or 10 VRMs. With the individual channel current measurement, it allows users checking the current sharing characteristics of the VRM.

Chroma model 6340 series loads can draw its rated current under very low voltage (0.8V typical). Even under the highest specified slew rate, it still can work under only 1V input voltage. The low voltage operating capability pervade the future trend of lowering VRM output voltage.

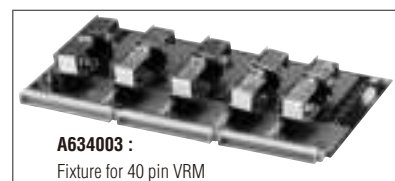
Voltage and current monitoring outputs allow users observe the loading current and the output voltage of VRM via oscilloscope.

In addition, the peak voltage measurement provides numerical reading of the over-shoot and under-shoot voltage of the UUT. Thus, users may specify the readings and perform GO/NG test.

Chroma model 6340 series loads build-in fan speed control to minimize the audio noise. The self-diagnosis routine and the full protections against OPP, OCP, OVP, OTP and reverse polarity ensure the quality and reliability for even the most demanding engineering testing and ATS application.

ORDERING INFORMATION

6345 : DC Electronic Load 100A/uS
6346 : DC Electronic Load 150A/uS
A630002 : GPIB interface for Model 6304/6314/6334/
 6340 mainframe
A634002 : Fixture for 60 pin VRM
A634003 : Fixture for 40 pin VRM
A634004 : Fixture for 62 pin VRM



A634003 :
Fixture for 40 pin VRM

DC Electronic Load Model 6345 / 6346 625W

KEY FEATURES

- Power Rating: 625W
- Voltage range: 0.8-50V
- Current range: 0A-150A
- Slew rate: Up to 150A/μs
- CC load mode
- Dynamic loading: Up to 100kHz
- Voltage / Current measurement
- Voltage / Current monitor output
- Peak voltage detection
- Capable of testing up to 10 VRMs at a time
- Current share measurement
- Full protection: OP, OC, OV, OT and reverse protection
- GPIB & RS-232 interface

SPECIFICATIONS		
Model	6345	6346
Power	125W/625W	125W/625W
Current	30A/150A	30A/150A
Voltage	10V/50V	10V/50V
Min. operating voltage	0.8V*(typical)	0.8V*(typical)
Constant Current mode		
Range	0-30A/0-150A	0-30A/0-150A
Resolution	7.5mA/37.5mA	7.5mA/37.5mA
Accuracy	0.5%+0.2%F.S.	0.5%+0.2%F.S.
Dynamic mode		
Min. operating voltage	1V(typical)	1V(typical)
Timing		
T1&T2	5μs-10ms / 1ms-30s	5μs-10ms / 1ms-30s
Accuracy	1μs+100ppm / 1ms+100ppm	1μs+100ppm / 1ms+100ppm
Slew rate	0.08-20A/μs;0.4-100A/μs	0.12-30A/μs;0.6-150A/μs
Min. rise time	1μs	0.5μs
Current		
Overshoot	<5%	<5%
Measurement		
Voltage read back		
Range	10V/50V (Auto)	10V/50V (Auto)
Resolution	0.33mV/1.67mV	0.33mV/1.67mV
Accuracy	0.05%+0.05%F.S.	0.05%+0.05%F.S.
V_monitor accuracy	2%F.S.	2%F.S.
Voltage peak detector		
Range	10V/50V (Auto)	10V/50V (Auto)
Resolution	2.5mV/12.5mV	2.5mV/12.5mV
Accuracy	0.1%+20mV/0.1%+100mV	0.1%+20mV/0.1%+100mV
Current read back		
Range	30A/150A	30A/150A
Resolution	1mA/5mA	1mA/5mA
Accuracy	0.2%+0.1%F.S.	0.2%+0.1%F.S.
I_share accuracy	1%F.S.	1%F.S.
I_monitor accuracy	2%F.S.	2%F.S.
General		
EMC & Safety	CE	CE
Dimension (HxWxD)	177.4 x 439 x 449.5 mm / 6.98 x 17.28 x 17.7 inch	177.4 x 439 x 449.5 mm / 6.98 x 17.28 x 17.7 inch
Weight	24 kg / 52.86 lbs	24 kg / 52.86 lbs

High Slew Rate DC Electronic Load 63472

Model No.



High Slew Rate Load Control & Measurement Unit Model 63472

200W/ 1200A/μs

KEY FEATURES

- Designed for VRM's, embedded VRD's and Power Pod testing
- Static Loading- Power rating: 200W
Voltage range: 0-2V
Current range: 150A
- Dynamic Loading- Current range: 150A
Slew rate: Up to 1200A/μs
Dynamic Freq: Up to 1MHz
Duty control: 10-90%
- Built-in and user definable VID tables for flexibility
- Dynamic VID simulation
- Current&Voltage monitor output
- Measurements- Static mode: Vdc, Idc
Dynamic mode: Vpk+, Vpk-
Dynamic VID: Vpk check, Vdc for last VID



- Customized adapter boards for different types of VRMs, CPU sockets or Power Pod
- Optional Bias voltage source for CPU adapter for embedded testing scenarios
- Full protection: OP,OC and OV protection
- Versatile remote controller
- GPIB & RS-232 interfaces
- LabView Soft-panel

As a result of the exploding increase in CPU complexity according to Moore's Law, all modern processors require a low voltage with high instantaneous current power source. Voltage Regulator Modules, along with embedded solutions, are the only way to correctly supply these currents. A need to simulate this low voltage, high current with fast di/dt loading has become more important than ever. Every main board design using a VRM, Intel®Itanium™ power pod or an embedded regulator (VRD) will need processor voltage supply performance qualification.

Integrating Intel®'s latest high di/dt test technology with years of experience in the design and manufacture of highly accurate, precision DC load and measurement instrumentation, the Chroma 63472 electronic load is your total solution for qualifying all main board Intel® processor power performance requirements!

The Chroma 63472 electronic load provides 150A of static, DC load with 150A of dynamic load - featuring up to 1200A/us slew rate! This fully controllable capability, along with Dynamic VID

control and sophisticated measurement functions, comprises a total solution - all in one unit. Gone is the need for the individual equipment stack of traditional test setups, saving precious bench space and expense. The Chroma 63472 can replace a function generator, oscilloscope, DVM, DC load bank, in addition to any customized dynamic load and VID control circuitry.

Similarly, the Chroma 63472 makes an economical choice for all your production line test requirements. From industry data, more than 5% of today's main boards fail due to on-board converter failures. The Chroma 63472 can quickly identify suspect units in production - well ahead of an expensive service call.

ORDERING INFORMATION

- 63472** : High Slew Rate Load Control & Measurement Unit
A634701 : Remote controller for 63472
A634702 : Transient Load
A634703 : Test fixture for Power Pod
A634704 : Test fixture for VRM10.0
A634705 : Socket 478 Interposer Card
A634706 : Socket 604 Interposer Card of Single Voltage
A634707 : Socket 604 Interposer Card of Dual Voltage
A634708 : Socket 604 Interposer Card of Triple Voltage
A634709 : 19" Rack Mounting Kit
A634710 : Test fixture for MVR Rev 1.4
A634711 : LGA 775 Interposer Card (6 Bits)
A634712 : Test fixture for VRM11.0
A630002 : GPIB Interface for Model 6304/6314/6340 Mainframe

SPECIFICATIONS

Model	63472	Range	0.5V(refer to 5A)/2.5V(refer to 25A) (Auto)
Static Load Section		Resolution	16bits
Power	200W	Accuracy	0.1% + 0.1%F.S.
Current		Static Mode	
Range	0~150A	Voltage Read Back	
Resolution	12bits	Range	0~2V
Accuracy	0.1% + 0.2%F.S.	Resolution	16bits
Voltage		Accuracy	0.05% + 0.05%F.S.
Range	0~2V	Current Read Back	
Min. Voltage	0.5V @ full load	Range	0~150A
Protection		Resolution	16bits
OC	165A	Accuracy	0.1% + 0.1%F.S.
OVP	2.1V	Dynamic Mode	
Dynamic Load Section		I Monitor Read Back	
Current Range	0~150A	Range	0~0.536V (refer to 150A)
Dynamic-clock	1MHz(10~90%)	Resolution	12bits
Resolution	1%	Accuracy	0.5% + 0.2%F.S.
Accuracy	100 ppm	Peak Voltage	
Slew Rate	100A/μs~1000A/μs	I Monitor Read Back	
Min. rise time	100ns	Range	0~2V
TTL Output		Resolution	12bits
Level	Low (<0.8V), High (>3.15V)	Accuracy	0.5% + 0.2%F.S.
VID code	6 bits	Dynamic VID	
OUTEN	Yes	Voltage Read Back	
Aux. Power		Range	0~2V
Outputs	+12V / +5V	Resolution	12bits
Current	0.5A / 0.3A	Accuracy	0.5% + 0.2%F.S.
Power	7.5W total	Dynamic VID Control	
Load regulation	5%	Dwell Time	
Measurement Section		Range	5μs~10ms
Input Section		Resolution	1μs
Input Voltage Read Back		Others	
Range	15V / 58V (Auto)	Interface	
Resolution	16bits	RS-232	
Accuracy	0.05% + 0.05%F.S.	GPIB	
Input Current Read Back		Dimension (H x W x D)	
Range	15V / 58V (Auto)	Weight	
Resolution	16bits		
Accuracy	0.05% + 0.05%F.S.		



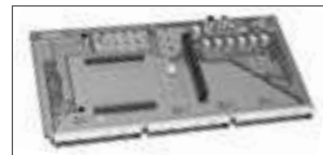
A634701 :
Remote Controller



A634702 :
Transient Load



A634703 : Test fixture for Power Pod



A634704 : Test fixture for VRM10.0



A634705 : Adapter Board for Socket 478

Programmable DC Electronic Load 63600 Series

Model No.



Programmable DC Electronic Load Model 63600 Series

KEY FEATURES

- Max. Power: 100W x 2(Dual), 300W & 400W
- Voltage Range: up to 80V
- High power density for mainframe (63600-5)
[5 slots for 400W modules/100W(dual) up to 10 channels]
- Up to 10 channels in one mainframe, fit for testing multiple output SMPS
- CZ mode for turn on capacitive load simulation
- Parallel mode for high current and power application up to 2kW
- Auto frequency sweep for dynamic test 50kHz
- Real time power supply load transient response simulation and $V_{pk} \pm$ measurement
- User programmable 100 sequential front panel input status for user-friendly operating
- Measurement of voltage and current point when OCP/OLP occurred
- Ethernet, USB and GPIB interfaces



Chroma's 63600 Series DC Electronic Loads are designed for testing multi-output A/D power supply, D/D converter, charger, battery, adapter and power electronic components and good for application in areas such as research and development, production, and incoming inspection.

The 63600's state of the art design uses DSP technology to simulate non-linear loads using a unique CZ operation mode allowing realistic loading behavior.

The 63600 series can draw its rated current under very low voltage (0.8V typical). This unique feature guarantees the best loading performance to a low voltage power supply.

The 63600 series can simulate a wide range of dynamic loading applications, with programmable load levels, slew rates, duration and conducting voltage. The 63600 series also have dynamic sweep function to meet the test requirements of ATX power. Furthermore, up to 100 sets of system operating status can be stored in EEPROM and recalled instantly for automated testing application.

Real time measurement of voltage and current is integrated into each 63600 load module using a 16-bit, measurement circuit with three ranges of operation. The user can perform online voltage measurements and adjustments, or simulate short circuit test using the simple keypad on the front panel.

With the VFD display and rotary knob, the 63600 electronic loads offer versatile front panel operation. Users are able to control the 63600 family remotely via Ethernet, USB, or GPIB interface.

The 63600 series has self-diagnosis routine and full protections against OP, OC, OV, OT and reverse polarity to ensure the quality and reliability of the 63600 series.



ORDERING INFORMATION

- 63600-1** : 63600 Mainframe for Single Modules
63600-3 : External Signal Board
63600-5 : 63600 Mainframe for 5 Modules
63610-80-20 : DC Load Module, 100W x 2/ 80V/ 20A
63630-80-60 : DC Load Module, 300W/ 80V/ 60A
63640-80-80 : DC Load Module, 400W/ 80V/ 80A
A636000 : GPIB Interface
A636001 : Ethernet Interface
A600009 : GPIB Cable (200cm)
A600010 : GPIB Cable (60cm)

SPECIFICATIONS									
Model	63610-80-20			63630-80-60			63640-80-80		
Configuration	100Wx2			300Wx1			400Wx1		
Voltage *1	0~80V			0~80V			0~80V		
Current	0~0.2A	0~2A	0~20A	0~0.6A	0~6A	0~60A	0~0.8A	0~8A	0~80A
Power *2	2W	10W	100W	6W	30W	300W	8W	40W	400W
Static Mode									
Min. operating voltage (DC)	0.4V @ 0.1A	0.4V @ 1A	0.4V @ 10A	0.4V @ 0.3A	0.4V @ 3A	0.4V @ 30A	0.4V @ 0.4A	0.4V @ 4A	0.4V @ 40A
	0.8V @ 0.2A	0.8V @ 2A	0.8V @ 20A	0.8V @ 0.6A	0.8V @ 6A	0.8V @ 60A	0.8V @ 0.8A	0.8V @ 8A	0.8V @ 80A
Constant Current Mode									
Range	0~0.2A	0~2A	0~20A	0~0.6A	0~6A	0~60A	0~0.8A	0~8A	0~80A
Resolution	14 bits			14 bits			14 bits		
Accuracy	0.1%+0.1%F.S.			0.1%+0.1%F.S.			0.1%+0.1%F.S.		
Constant Resistance Mode									
Range	CRL : 0.04~80 ohm(6V) CRM: 1.44~2.9k ohm(16V) CRH : 5.76~12k ohm(80V)			CRL : 0.015~30 ohm(6V) CRM: 0.3~600 ohm(16V) CRH : 1.5~3k ohm(80V)			CRL : 0.01~20 ohm(6V) CRM: 0.36~720 ohm(16V) CRH : 1.45~2.9k ohm(80V)		
Resolution	14 bits			14 bits			14 bits		
Accuracy	0.1%+0.075 mho(6V) 0.1%+0.01 mho(16V) 0.1%+0.00375 mho(80V)			0.1%+0.2 mho(6V) 0.1%+0.03 mho(16V) 0.1%+0.01 mho(80V)			0.1%+0.275 mho(6V) 0.1%+0.036 mho(16V) 0.1%+0.01375 mho(80V)		
Constant Voltage Mode									
Range	6V/16V/80V			6V/16V/80V			6V/16V/80V		
Resolution	14 bits			14 bits			14 bits		
Accuracy	0.05%+0.1%F.S.			0.05%+0.1%F.S.			0.05%+0.1%F.S.		
Constant Power Mode									
Range	2W	10W	100W	6W	30W	300W	8W	40W	400W
Resolution	1mW/10mW/100mW			3.2mW/32mW/320mW			4mW/40mW/400mW		
Accuracy	0.3%+0.3%F.S.			0.3%+0.3%F.S.			0.3%+0.3%F.S.		
Dynamic Mode - CC									
Min. operating voltage	1.5V			1.5V			1.5V		
Frequency	100Hz~50kHz/0.01Hz~1kHz			100Hz~50kHz/0.01Hz~1kHz			100Hz~50kHz/0.01Hz~1kHz		
Duty	1~99% (Min. Rise Time Dominated)			1~99% (Min. Rise Time Dominated)			1~99% (Min. Rise Time Dominated)		
Accuracy	1us/1ms+100ppm			1us/1ms+100ppm			1us/1ms+100ppm		
Slew rate	0.04A/ms~ 0.02A/μs	0.4A/ms~ 0.2A/μs	4A/ms~ 2A/μs	0.12A/ms~ 0.06A/μs	1.2A/ms~ 0.6A/μs	12A/ms~ 6A/μs	0.16A/ms~ 0.08A/μs	1.6A/ms~ 0.8A/μs	16A/ms~ 8A/μs
Resolution	9 bit			9 bit			9 bit		
Min. rise time	10 μs			10 μs			10 μs		
Current									
Range	0~0.2A	0~2A	0~20A	0~0.6A	0~6A	0~60A	0~0.8A	0~8A	0~80A
Resolution	14 bits			14 bits			14 bits		

• Continued on next page →

Programmable DC Electronic Load 63600 Series

Model No.

Ext Wave Mode(20KHz) : CC									
Range	0~0.2A	0~2A	0~20A	0~0.6A	0~6A	0~60A	0~0.8A	0~8A	0~80A
Level	0~10V			0~10V			0~10V		
Accuracy	0.5%F.S.			0.5%F.S.			0.5%F.S.		
Program mode									
Sequence No.	100/Program			100/Program			100/Program		
Dwell / SEQ	0.1ms~30s (Resolution : 0.1ms)			0.1ms~30s (Resolution : 0.1ms)			0.1ms~30s (Resolution : 0.1ms)		
Load Setting	Refer to Static mode specifications			Refer to Static mode specifications			Refer to Static mode specifications		
Spec Check	Voltage/Current/Power			Voltage/Current/Power			Voltage/Current/Power		
Measurement									
Voltage read back									
Range	6V/16V/80V/Auto			6V/16V/80V/Auto			6V/16V/80V/Auto		
Resolution	16bits			16bits			16bits		
Accuracy	0.025%+0.01%F.S.			0.025%+0.01%F.S.			0.025%+0.01%F.S.		
Current read back									
Range	0~0.2A	0~2A	0~20A	0~0.6A	0~6A	0~60A	0~0.8A	0~8A	0~80A
Resolution	16bits			16bits			16bits		
Accuracy	0.05%+0.05%F.S.			0.05%+0.05%F.S.			0.05%+0.05%F.S.		
Power read back									
Range	2W	10W	100W	6W	30W	300W	8W	40W	400W
Resolution	16bits			16bits			16bits		
Accuracy	0.1%+0.1%F.S.			0.1%+0.1%F.S.			0.1%+0.1%F.S.		
Voltage Monitor									
Bandwidth	20kHz			20kHz			20kHz		
Range	6V/16V/80V			6V/16V/80V			6V/16V/80V		
Output	0~10V			0~10V			0~10V		
Accuracy	0.5%F.S.			0.5%F.S.			0.5%F.S.		
Current Monitor									
Bandwidth	20kHz			20kHz			20kHz		
Range	0~0.2A	0~2A	0~20A	0~0.1A	0~1A	0~10A	0~0.8A	0~8A	0~80A
Output	0~10V			0~10V			0~10V		
Accuracy	0.5%F.S.			0.5%F.S.			0.5%F.S.		
Protection									
Over Power	105~110% of Rated Power			105~110% of Rated Power			105~110% of Rated Power		
Over Current	105~110% of Rated Current			105~110% of Rated Current			105~110% of Rated Current		
Over Voltage	105~110% of Rated Voltage			105~110% of Rated Voltage			105~110% of Rated Voltage		
OTP	Yes			Yes			Yes		
Reverse	Yes			Yes			Yes		
Interface									
USB	Standard			Standard			Standard		
Remote controller	Optional			Optional			Optional		
Ethernet	Optional			Optional			Optional		
GPIO	Optional			Optional			Optional		
System Bus	Master/Slave & Multi-channel Control & Remote Controller			Master/Slave & Multi-channel Control & Remote Controller			Master/Slave & Multi-channel Control & Remote Controller		
Others									
Dout									
No. of bits	2 bits per mainframe			2 bits per mainframe			2 bits per mainframe		
Level - H	1.8V/3.3V/5V switchable			1.8V/3.3V/5V switchable			1.8V/3.3V/5V switchable		
Level - L	<0.6V			<0.6V			<0.6V		
Drive	Pull_up resistor = 4.7k ohm			Pull_up resistor = 4.7k ohm			Pull_up resistor = 4.7k ohm		
Din (TTL Compatible)									
No. of bits	2 bits per mainframe			2 bits per mainframe			2 bits per mainframe		
External Trig. for Digitizing									
No. of bits	1 bit per mainframe			1 bit per mainframe			1 bit per mainframe		
External Trig. for Auto Sequences									
No. of bits	1 bit per mainframe			1 bit per mainframe			1 bit per mainframe		
Load ON - O/P									
Level	TTL Level, Active High			TTL Level, Active High			TTL Level, Active High		
Short ON - O/P									
No. of channels	10 channels per mainframe			10 channels per mainframe			10 channels per mainframe		
Level	TTL Level, Active High			TTL Level, Active High			TTL Level, Active High		
General									
Short circuit									
Current	Set to 105% of rated current (H range)			Set to 105% of rated current (H range)			Set to 105% of rated current (H range)		
Dimension (H x W x D)	142 x 86 x 514 mm / 5.6 x 3.4 x 20.2 inch			142 x 86 x 514 mm / 5.6 x 3.4 x 20.2 inch			142 x 86 x 514 mm / 5.6 x 3.4 x 20.2 inch		
Weight	5 kg / 11 lbs			4 kg / 8.8 lbs			4.5 kg / 9.9 lbs		
Operating Temperature	0~40℃			0~40℃			0~40℃		
StorageTemperature	-20~80℃			-20~80℃			-20~80℃		
Power	Supply from mainframe			Supply from mainframe			Supply from mainframe		
EMC & Safety	CE			CE			CE		

Note*1 : The maximum current loading below the minimum operating voltage (0.8V) will follow a derating curve.

Note*2 : The power rating specification of Model 63640-80-80 at ambient temperature is 35°C.

63600 SERIES MAINFRAME SPECIFICATION

Model	63600-1	63600-5
Number of slots	1 slot	5 slots
Operating temperature	0-40°C	0-40°C
Input Rating	90-130/175-253VAC Switchable/47-63Hz	90-130/175-253VAC Auto Range/47-63Hz
Mainframe Dimension (H x W x D)	177 x 70.02 x 554.9 mm / 17.6 x 2.76 x 21.85 inch	177 x 447 x 554.2 mm / 17.6 x 7.0 x 21.8 inch (Full Rack)
Weight (kg)	7.5 kg / 16.53 lbs	14 kg / 30.9 lbs

Programmable AC/DC Electronic Load 63800 Series

Model No.



Programmable AC/DC Electronic Load Model 63800 Series

KEY FEATURES

- Power Rating : 1800W, 3600W, 4500W
- Voltage Range : 50V - 350Vrms
- Current Range : Up to 45Arms
- Peak Current : Up to 135A
- Parallel/3-Phase Function
- Frequency Range : 45-440Hz, DC
- Crest Factor Range : 1.414-5.0
- Power Factor Range : 0-1 lead or lag (Rectified mode)
- CC, CR, CV, CP for DC Loading
- Constant & Rectified Load Modes for AC Loading
- Analog Voltage & Current Monitor
- Measurement : V, I, PF, CF, P, Q, S, F, R, Ip-/+ and THDv
- Full Protection : OP, OC, OV and OT protection
- GPIB & RS-232 interfaces

Chroma's 63800 Series AC/DC Electronic Loads are designed for testing uninterruptible power supplies(UPS), Off-Grid Inverters, AC sources and other power devices such as switches, circuit breakers, fuses and connectors.

The Chroma 63800 Loads can simulate load conditions under high crest factor and varying power factors with real time compensation even when the voltage waveform is distorted. This special feature provides real world simulation capability and prevents over-stressing thereby giving reliable and unbiased test results.

The 63800's state of the art designed uses DSP technology to simulate non-linear rectified loads in a unique RLC operation mode. This mode improves stability by detecting the impedance of the UUT and dynamically adjusting the load's control bandwidth to ensure system stability.

The 63800 series provides parallel and 3-phase functions for high power and three phase applications. All the models within the 63800 series can be used together for both parallel and 3-phase functions as well as paralleled AC Load units in 3-phase configuration, providing excellent flexibility and cost savings for the 63800 series AC load. Parallel and 3-phase controls are made easy by linking the AC Load units together, control of all AC load units will be made through the Master Unit.

Comprehensive measurements allow users to monitor the output performance of UUT. Additionally, voltage & current signals can be routed to an oscilloscope through analog outputs. The instrument's GPIB/RS232 interface options provide remote control & monitor for system integration. In addition, built-in digital outputs may be used to control external relays for short circuit (crowbar) testing.



ORDERING INFORMATION

63802 : Programmable AC/DC Electronic Load 1800W/18A/350V

63803 : Programmable AC/DC Electronic Load 3600W/36A/350V

63804 : Programmable AC/DC Electronic Load 4500W/45A/350V

SPECIFICATIONS

Model	63802	63803	63804
Power	1800W	3600W	4500W
Current	0 to 18Arms (54 Apeak, continue)	0 to 36Arms (108 Apeak, continue)	0 to 45Arms (135 Apeak, continue)
Voltage	50 to 350Vrms (500 Vpeak)	50 to 350Vrms (500Vpeak)	50 to 350Vrms (500Vpeak)
Frequency	45 to 440Hz, DC	45 to 440Hz, DC	45 to 440Hz, DC
AC Section			
Constant Current Mode			
Range	0 to 18Arms, Programmable	0 to 36Arms, Programmable	0 to 45Arms, Programmable
Accuracy	0.1% + 0.2%F.S.	0.1% + 0.2%F.S.	0.1% + 0.2%F.S.
Resloution	2mA	5mA	5mA
Constant Resistance Mode			
Range	2.77Ω ~ 2.5kΩ, Programmable	1.39Ω~2.5kΩ, Programmable	1.11Ω~2.5kΩ, Programmable
Accuracy	0.5% + 0.5%F.S.	0.5% + 0.5%F.S.	0.5% + 0.5%F.S.
Resloution	20μ mho	50μ mho	50μ mho
Constant Power Mode			
Range	1800W, Programmable	3600W, Programmable	4500W, Programmable
Accuracy	0.5% + 0.5%F.S.	0.2% + 0.3%F.S.	0.2% + 0.3%F.S.
Resloution	0.375W	1.125W	1.125W
Crest Factor (under CC, CP modes)			
Range	1.414 to 5.0, Programmable	1.414 to 5.0, Programmable	1.414 to 5.0, Programmable
Accuracy	(0.5% / Irms) + 1% F.S.	(0.5%/Irms) + 1%F.S.	(0.5%/Irms) + 1%F.S.
Resloution	0.005	0.005	0.005
Power Factor			
Range	0 to 1 lead or lag, Programmable	0 to 1 lead or lag, Programmable	0 to 1 lead or lag, Programmable
Accuracy	1%F.S.	1%F.S.	1%F.S.
Resloution	0.001	0.001	0.001
Rectified Load Mode			
Operating Frequency	45Hz~70Hz		
RLC Mode	Parameter : Ip(max), Rs, Ls, C, R _L		
Constant Power Mode	Parameter : Ip(max), Power setting=200W to 4500W, PF=0.4 to 0.75		
Inrush Current Mode	Parameter : Ip(max), Rs, Ls, C, R _L , Phase		
	80A (peak current)	160A (peak current)	200A (peak current)
Rs Range	0 to 9.999Ω	0 to 9.999Ω	0 to 9.999Ω
Ls Range	0 to 9999μH	0 to 9999μH	0 to 9999μH
C Range	100 to 9999μF	100 to 9999μF	100 to 9999μF
RL Range	2.77 to 9999.99Ω	1.39 to 9999.99Ω	1.11 to 9999.99Ω
DC Section			
Voltage Range	7.5V to 500V	7.5V to 500V	7.5V to 500V
Current Range	0A to 18A	0A to 36A	0A to 45A
Min. operating voltage	7.5V	7.5V	7.5V
Rise time	75μs	75μs	75μs
Operating Mode	CC, CV, CR, CP, DC Rectified		
Short Circuit Simulation	Use the CR mode loading under max. power rating		
Measurement Section			
DVM Range	500.0V	500.0V	500.0V
DVM Accuracy	0.1% + 0.1%F.S.	0.1% + 0.1%F.S.	0.1% + 0.1%F.S.
DVM Resloution	10mV	10mV	10mV
DAM Range	80.00A	160.00A	200.00A
DAM Accuracy(<70Hz)	0.1% + 0.2%F.S.	0.1% + 0.2%F.S.	0.1% + 0.2%F.S.
DAM Accuracy(>70Hz)	0.1% + 0.2%F.S. + 0.1% x CF ² x kHz	0.1% + 0.2%F.S. + 0.1% x CF ² x kHz	0.1% + 0.2%F.S. + 0.1% x CF ² x kHz
DAM Resloution	1.0mA	2.5mA	2.5mA
Other Parameter	P(W), S(VA), Q(VAR), CF, PF, Freq, R, Ip-, Ip+, THDv		
Others			
Vmonitor	± 500V / ± 10V (Isolated)	± 500V / ± 10V (Isolated)	± 500V / ± 10V (Isolated)
Imonitor	± 80A / ± 10V (Isolated)	± 200A / ± 10V (Isolated)	± 200A / ± 10V (Isolated)
Protection	OCP : 19.2Arms ; OVP : 360Vrms (DC : 510VDC)	OCP : 38.4Arms ; OVP : 360Vrms (DC : 510VDC)	OCP : 48Arms ; OVP : 360Vrms (DC : 510VDC)
	OPP : 1920W ; OTP	OPP : 3840W ; OTP	OPP : 4800W ; OTP
Remote Interface	GPIB, RS-232 or analog control		
Line Voltage	115/230 Vac ± 15%		
Dimension (H x W x D)	177 x 430 x 585 mm / 7.0 x 17.0 x 23.0 inch	310 x 430 x 585 mm 12.2 x 17.0 x 23.0 inch	310 x 430 x 585 mm 12.2 x 17.0 x 23.0 inch
Weight	34kg / 74.89lbs	60 kg / 132.16 lbs	60 kg / 132.16 lbs

All specifications are subject to change without notice.

Solar Cell
Test Equipment

Semiconductor/IC
Test Equipment

LED
Test Equipment

LCD/LCM
Test Equipment

Video & Color
Test Equipment

Optical Inspection
Equipment

Power Supply
Test Equipment

Passive Component
Test Instruments

Electrical Safety
Test Instruments

General Purpose
Test Instruments

PI Instruments
& Systems



Programmable AC Source Model 61500 Series 500VA~36KVA

KEY FEATURES

- Compact size and weight attributable to advance PWM technology
- AC+DC output mode for voltage DV offset simulation
- Programmable output impedance for IEC 61000-3-3
- IEC 61000-4-11, IEC 61000-4-14, IEC 61000-4-28 voltage dips and variation simulation
- Harmonics, inter-harmonics waveform synthesizer for IEC 61000-4-13 testing
- Power line disturbance simulation capability
- Programmable voltage, current limit
- Comprehensive measurement capability, including current harmonics
- High output current crest factor, ideal for inrush current testing
- Turn on, turn off phase angle control
- TTL signal which indicates output transient
- Optional analog programmable interface
- 2 units combined to high voltage source
- 3 units combined to 3-phase power output
- Optional GPIB and RS232 interface (Model 61501~61505)
- Easy use graphic user interface: softpanel (Option)
- Softpanel for IEC regulation test (Model 61501~61505)

The 61500 series AC power source defines new standard for high performance AC power source. It equips with all the powerful features. Such as power line disturbance simulation, programmable output impedance, comprehensive measurement function, wave-shape synthesis and regulation test software. Chroma also provides a software for aerospace testing, including MIL-STD-704F, RTCA DO-160D, ABD100. These features make Chroma 61500 ideal for commercial, power electronics, avionics, marine, military and regulation test applications from bench-top testing to mass productions.

The 61500 series line up from 500VA up to 36KVA, one or three phase output. This allows user to have maximum choices for R/D design verification, quality assurance, to production testing.

Using the state-of-the-art PWM technology, the Chroma 61500 AC source is capable of delivering up to 6 times of peak current (Model 61501~61505) versus to its maximum rated current which makes it ideal for inrush current testing.

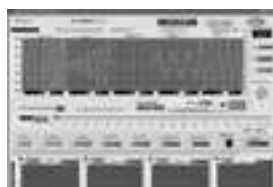
By using advanced DSP technology, 61500 AC power source offers precision and high speed power and harmonics measurements such as RMS voltage, RMS current, true power, power factor, current crest factor and up to 40 orders of current harmonics components.

The 61500 AC power source allows users to compose different harmonic components to synthesize your own harmonic distorted wave-shapes. The DC and AC+DC mode also extend the applications to simulate the natural waveform, Chroma 61500 also provides an external analog input, to amplify the analog signal from arbitrary signal generator. Thus, it is capable to simulate the unique waveform observed in the field.

Softpanel



Main Operation Menu



Transient Voltage Programming



Distorted Waveform Editor



Voltage Dip, Short, Variation Regulation Test



Aerospace Testing : MIL-STD-704F



Aerospace Testing : RTCA DO-160D

With the versatile programmable output impedance and regulation test software, the 61500 AC power source allows users to perform Pre-compliance and compliance test against IEC 61000-4-11/-4-13/-4-14/-4-28 immunity test regulations and IEC 61000-3-2/-3-3 emission test regulations by incorporating Chroma 6630 power analyzer.

ORDERING INFORMATION

61501 : Programmable AC Source 0~300V, 15~1kHz / 500VA, 1 ϕ

61502 : Programmable AC Source 0~300V, 15~1kHz / 1KVA, 1 ϕ

61503 : Programmable AC Source 0~300V, 15~1kHz / 1.5KVA, 1 ϕ

61504 : Programmable AC Source 0~300V, 15~1kHz / 2KVA, 1 ϕ

61505 : Programmable AC Source 0~300V, 15~1kHz / 4KVA, 1 ϕ

61511 : Programmable AC Source 0~300V, 15~1.5kHz / 12KVA, 1 or 3 ϕ

61512 : Programmable AC Source 0~300V, 15~1.5kHz / 18KVA, 1 or 3 ϕ

A615001 : Remote Interface Board for 61501~61505 Series
(External V Input, RS-232 Interface, GPIB Interface)

A610004 : Universal Socket Center for Model 6512/6520/
6530/6560/6415/6420/6430/61500/61600/61700 Series (<15A)

A615007 : Softpanel for Model 61501~61505 Series

A615008 : DC Noise Filter (Max. 16A)

A615103 : Parallelable power stage unit 18KVA, 1 or 3 ϕ ,
for 61511/61512/61611/61612

A615104 : Input/Output terminals for parallel connecting
of 61511/61512/61611/61612



Model 61505



Model 61511, 61512

SPECIFICATIONS-1					
Model	61501	61502	61503	61504	61505
Output Phase	1	1	1	1	1
Output Rating - AC					
Power/Phase	500VA	1000VA	1500VA	2000VA	4000VA
Voltage					
Range/Phase	150V/300V/Auto	150V/300V/Auto	150V/300V/Auto	150V/300V/Auto	150V/300V/Auto
Accuracy	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.
Resolution	0.1V	0.1V	0.1V	0.1V	0.1V
Distortion *1	0.3% @ 50/60Hz 1%, 15~1KHz (Typical)	0.3% @ 50/60Hz 1%, 15~1KHz (Typical)	0.3% @ 50/60Hz 1%, 15~1KHz (Typical)	0.3% @ 50/60Hz 1%, 15~1KHz (Typical)	0.3% @ 50/60Hz 1%, 15~1KHz (Typical)
Line Regulation	0.1%	0.1%	0.1%	0.1%	0.1%
Load Regulation *2	0.2%	0.2%	0.2%	0.2%	0.2%
Max. Current/Phase					
r.m.s.	4A/2A (150V/300V)	8A/4A (150V/300V)	12A/6A (150V/300V)	16A/8A (150V/300V)	32A/20A (150V/300V)
peak	24A/12A (150V/300V)	48A/24A (150V/300V)	72A/36A (150V/300V)	96A/48A (150V/300V)	192A/96A (150V/300V)
Frequency					
Range	DC, 15~1KHz	DC, 15~1KHz	DC, 15~1KHz	DC, 15~1KHz	DC, 15~1KHz
Accuracy	0.15%	0.15%	0.15%	0.15%	0.15%
Output Rating - DC					
Power	250W	500W	750W	1000W	2000W
Voltage	212V/424V	212V/424V	212V/424V	212V/424V	212V/424V
Current	2A/1A (212V/424V)	4A/2A (212V/424V)	6A/3A (212V/424V)	8A/4A (212V/424V)	16A/8A (212V/424V)
Programmable Output Impedance					
Range	0Ω +200μH-1Ω +1mH				
Harmonics & Inter-harmonics Simulation					
Bandwidth	2400Hz	2400Hz	2400Hz	2400Hz	2400Hz
Input rating					
Voltage Range	90~250V, 1ø	90~250V, 1ø	90~250V, 1ø	90~250V, 1ø	190~250V, 3ø *5
Frequency Range	47~63Hz	47~63Hz	47~63Hz	47~63Hz	47~63Hz
Current	10A Max. @ 90V	18A Max. @ 90V	22A Max. @ 90V	28A Max. @ 90V	14A Max. @ 190V
Power Factor *3	0.97 Min.	0.97 Min.	0.98 Min.	0.98 Min.	0.98 Min.
Measurement					
Voltage					
Range/Phase	150V/300V	150V/300V	150V/300V	150V/300V	150V/300V
Accuracy	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.
Resolution	0.1V	0.1V	0.1V	0.1V	0.1V
Current					
Range (peak)	24A	48A	72A	96A	192A
Accuracy (r.m.s.)	0.4%+0.3%F.S.	0.4%+0.3%F.S.	0.4%+0.3%F.S.	0.4%+0.3%F.S.	0.4%+0.3%F.S.
Accuracy (peak)	0.4%+0.6%F.S.	0.4%+0.6%F.S.	0.4%+0.6%F.S.	0.4%+0.6%F.S.	0.4%+0.6%F.S.
Power					
Accuracy	0.4%+0.4%F.S.	0.4%+0.4%F.S.	0.4%+0.4%F.S.	0.4%+0.4%F.S.	0.4%+0.4%F.S.
Resolution	0.1W	0.1W	0.1W	0.1W	0.1W
Harmonics					
Range	2~40 orders	2~40 orders	2~40 orders	2~40 orders	2~40 orders
Others					
Temperature					
Operating	0~40℃	0~40℃	0~40℃	0~40℃	0~40℃
Storage	-40 ~ +85℃	-40 ~ +85℃	-40 ~ +85℃	-40 ~ +85℃	-40 ~ +85℃
Safety & EMC					
	CE (include EMC & LVD)				
Dimension (H x W x D)	133.35 x 482.6 x 569.5 mm / 5.25 x 19 x 22.42 inch	133.35 x 482.6 x 569.5 mm / 5.25 x 19 x 22.42 inch	133.35 x 482.6 x 569.5 mm / 5.25 x 19 x 22.42 inch	133.35 x 482.6 x 569.5 mm / 5.25 x 19 x 22.42 inch	266.7 x 482.6 x 569.5 mm / 10.5 x 19 x 22.42 inch
Weight	20 kg / 44.05 lbs	20 kg / 44.05 lbs	20 kg / 44.05 lbs	20 kg / 44.05 lbs	41 kg / 90.31 lbs

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SPECIFICATIONS-2				
Model	61511	61512	61511+A615103	61512+A615103
Output Phase	1 or 3 selectable			
Output Rating-AC				
Power	12KVA	18KVA	30KVA	36KVA
Each phase	4KVA	6 KVA	10KVA	12KVA
Voltage				
Range	0~150V/0~300V			
Accuracy	0.2%+0.2%F.S.			
Resolution	0.1 V			
Distortion *1	0.3% @50/60Hz , 1% $\text{@15\text{--}1KHz}$, 2% @>1KHz			
Line regulation	0.1%			
Load regulation *2	0.2%			
Temp. coefficient	0.02% per degree from 25°C			
Max Current (1-phase mode)				
RMS	96A / 48A	144A / 72A	240A / 120A	288A / 144A
Peak (CF=4)	384A / 192A	576A / 288A	960A / 480A	1152A / 576A
Max Current (each phase in 3-phase mode)				
RMS	32A / 16A	48A / 24A	80A / 40A	96A / 48A
Peak (CF=4)	128A / 64A	192A / 96A	320A / 160A	384A / 192A
Frequency				
Range	DC, 15-1.5K Hz			
Accuracy	0.15%			
Phase				
Range	0 ~ 360°			
Resolution	0.3°			
Accuracy	<0.8° @50/60Hz			
DC Output (1-phase mode)				
Power	6KW	9KW	15KW	18KW
Voltage	212V / 424V	212V / 424V	212V / 424V	212V / 424V
Current	48A / 24A	72A / 36A	120A / 60A	144A / 72A
DC Output (3-phase mode)				
Power	2KVA	3KVA	5KVA	6KVA
Voltage	212V / 424V	212V / 424V	212V / 424V	212V / 424V
Current	16A / 8A	24A / 12A	40A / 20A	48A / 24A
Input AC Power (each phase)				
AC type	3-phase, Delta or Y connecting			
Voltage range	190-250V (Delta: L-L, Y: L-N)			
Frequency range	47-63 Hz			
Max. current	Delta: 80A Y: 70A	Delta: 120A Y: 90A	Delta: 200A Y: 160A	Delta: 240A Y: 180A
Measurement				
Voltage				
Range	150V / 300V			
Accuracy	0.2%+0.2%F.S.			
Resolution	0.1 V			
Current				
Range	128/32/8 A peak	192/48/12 A peak	320/80/20 A peak	384/96/24 A peak
Accuracy (rms)	0.4%+0.3%F.S.			
Accuracy (peak)	0.4%+0.6%F.S.			
Resolution	0.1 A			
Power				
Accuracy	0.4%+0.4% F.S			
Resolution	0.1 W			
Others				
Waveform Synthesis	40 orders @ 50/60Hz			
Harmonic measurement	Voltage / Current 40 orders @ 50/60Hz			
Programmable impedance	0 Ω +200 μ H ~ 1 Ω +1mH			
Efficiency *4	0.75 (Typical)			
Protect	UVP, OCP, OPP, OTP, FAN			
Interface	GPIB, RS-232, USB, Ethernet (standard)			
Temperature				
Operation	0°C ~40°C			
Storage	-40°C~85°C			
Humunity	30 %-90 %			
Safety & EMC				
	CE			
Dimension (H x W x D)	1163 x 546 x 700 mm / 45.78 x 21.5 x 27.56 inch		1163 x 1092 x 700 mm / 45.78 x 42.99 x 27.56 inch	
Weight	229.4 ka / 505.29 lbs	242.4 ka / 533.92 lbs	480 ka / 1057.27 lbs	495 ka / 1090.31 lbs

Note*1 : Maximum distortion is tested on output 125VAC (150V RANGE) and 250VAC (300V RANGE) with maximum current to linear load.

Note*2 : Load regulation is tested with sine wave and remote sense.

Note*3 : Input power factor is tested on input 220V, full load condition.

Note*4 : Efficiency is tested on input voltage 230V.

Note*5 : Model 61505 can also use single-phase connecting method of input AC power, the maximum input current is 28A@190V.



Programmable AC Source Model 61600 Series 500VA~36KVA

KEY FEATURES

- Built-in PFC, provide input power factor over 0.98 (full load)
- AC+DC output mode for voltage DC offset simulation
- Programmable voltage, current limit
- Comprehensive measurement capability, V, Hz, Irms, Ipk, Inrush, P, VAR, VA, PF, CF of current and etc.
- High output current crest factor, ideal for inrush current testing
- Turn on, turn off phase angle control
- One-key recall for 9 different voltage and frequency
- Programmable slew rate setting for changing voltage and frequency
- Analog input for power amplifier
- Optional Analog programming interface
- Optional GPIB and RS-232 interface (Model 61601~61605)
- Full protection: OP, OC, OV and OT protection
- Easy use graphic user interface: softpanel (option)

The Chroma Model 61600 series Programmable AC Power Source delivers pure, instrument grade AC and DC power at very low cost. The 61600 AC power source offers output voltage from 0 to 300VAC, and frequency from 15 to 1.5KHz. A easy-use software can let users edit an auto-run profile and record the measuring data during the test. It is suitable for commercial, avionics, marine, and military applications from bench-top testing to mass productions.

The 61600 AC power source generates very clean AC output with typical distortion less than 0.3-0.5%. With power factor correction circuit, the 61600 AC power source yields higher efficiency and deliver more output power.

Using the state-of-the-art PWM technology, the Chroma 61600 AC source is capable of delivering up to 6 times of peak current verses to its maximum rated current which makes it ideal for inrush current testing.

ORDERING INFORMATION

- 61601** : Programmable AC Source 0~300V, 15-1kHz / 500VA, 1ø
61602 : Programmable AC Source 0~300V, 15-1kHz / 1KVA, 1ø
61603 : Programmable AC Source 0~300V, 15-1kHz / 1.5KVA, 1ø
61604 : Programmable AC Source 0~300V, 15-1kHz / 2KVA, 1ø
61605 : Programmable AC Source 0~300V, 15-1kHz / 4KVA, 1ø
61611 : Programmable AC Source 0~300V, 15-1.5kHz / 12KVA, 1 or 3ø
61612 : Programmable AC Source 0~300V, 15-1.5kHz / 18KVA, 1 or 3ø
A615001 : Remote Interface Board for 61601~61605 Series (External V Input, RS-232 Interface, GPIB Interface)
A610004 : Universal Socket Center for Model 6512/6520/6530/6415/6420/6430/61500/61600/61700 Series (<15A)
A615007 : Softpanel for Model 61601~61605 Series
A615008 : DC Noise Filter (Max. 16A)
A615103 : Parallelable power stage unit 18KVA, 1 or 3ø, for 61511/61512/61611/61612
A615104 : Input/Output terminals for parallel connecting of 61511/61512/61611/61612

By using advanced DSP technology, 61600 AC power source offers precision and high speed measurements such as RMS voltage, RMS current, true power, power factor, and current crest factor.

The DC and AC+DC mode extend the applications when users need DC voltage component. The 61600 AC power source also provides an external analog input, to amplify the analog signal from arbitrary signal generator. Thus, it is capable to simulate the unique waveform which observed in the field.

With the LCD display and rotary knob, the Chroma 61600 AC power source offers versatile front panel operation. Users may also control the 61600 remotely via GPIB, RS232 or APG (Analog Programming) interface.

The self-diagnosis routine and the full protections against OPP, OCP, OVP and OTP ensure the quality and reliability for even the most demanding engineering testing and ATE application.



Model 61605



Main Operation Menu



Auto Run (for ON/OFF Burn in test)



Model 61611, 61612

• Continued on next page →

SPECIFICATIONS-1					
Model	61601	61602	61603	61604	61605
Output phase	1	1	1	1	1
Output Rating - AC					
Power/Phase	500VA	1000VA	1500VA	2000VA	4000VA
Voltage					
Range/Phase	150V/300V/Auto	150V/300V/Auto	150V/300V/Auto	150V/300V/Auto	150V/300V/Auto
Accuracy	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.
Resolution	0.1V	0.1V	0.1V	0.1V	0.1V
Distortion (Note 1)	0.3% @ 50/60Hz 1%, 15~1kHz (Typical)	0.3% @ 50/60Hz 1%, 15~1kHz (Typical)	0.3% @ 50/60Hz 1%, 15~1kHz (Typical)	0.3% @ 50/60Hz 1%, 15~1kHz (Typical)	0.3% @ 50/60Hz 1%, 15~1kHz (Typical)
Line Regulation	0.1%	0.1%	0.1%	0.1%	0.1%
Load Regulation (Note 2)	0.2%	0.2%	0.2%	0.2%	0.2%
Max. Current/Phase					
r.m.s.	4A/2A (150V/300V)	8A/4A (150V/300V)	12A/6A (150V/300V)	16A/8A (150V/300V)	32A/20A (150V/300V)
peak	24A/12A (150V/300V)	48A/24A (150V/300V)	72A/36A (150V/300V)	96A/48A (150V/300V)	192A/96A (150V/300V)
Frequency					
Range	DC, 15~1kHz	DC, 15~1kHz	DC, 15~1kHz	DC, 15~1kHz	DC, 15~1kHz
Accuracy	0.15%	0.15%	0.15%	0.15%	0.15%
Output Rating - DC					
Power	250W	500W	750W	1000W	2000W
Voltage	212V/424V	212V/424V	212V/424V	212V/424V	212V/424V
Current	2A/1A (212V/424V)	4A/2A (212V/424V)	6A/3A (212V/424V)	8A/4A (212V/424V)	16A/8A (212V/424V)
Input Rating					
Voltage Range	90~250V, 1ø	90~250V, 1ø	90~250V, 1ø	90~250V, 1ø	190~250V, 3ø (Note 5)
Frequency Range	47~63Hz	47~63Hz	47~63Hz	47~63Hz	47~63Hz
Current	10A Max. @ 90V	18A Max. @ 90V	22A Max. @ 90V	28A Max. @ 90V	14A Max. @ 190V
Power Factor (Note 3)	0.97 Min.	0.97 Min.	0.98 Min.	0.98 Min.	0.98 Min.
Measurement					
Voltage					
Range/Phase	150V/300V	150V/300V	150V/300V	150V/300V	150V/300V
Accuracy	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.
Resolution	0.1V	0.1V	0.1V	0.1V	0.1V
Current					
Range (peak)	24A	48A	72A	96A	192A
Accuracy (r.m.s.)	0.4%+0.3%F.S.	0.4%+0.3%F.S.	0.4%+0.3%F.S.	0.4%+0.3%F.S.	0.4%+0.3%F.S.
Accuracy (peak)	0.4%+0.6%F.S.	0.4%+0.6%F.S.	0.4%+0.6%F.S.	0.4%+0.6%F.S.	0.4%+0.6%F.S.
Power					
Accuracy	0.4%+0.4%F.S.	0.4%+0.4%F.S.	0.4%+0.4%F.S.	0.4%+0.4%F.S.	0.4%+0.4%F.S.
Resolution	0.1W	0.1W	0.1W	0.1W	0.1W
Others					
Temperature					
Operating	0~40°C	0~40°C	0~40°C	0~40°C	0~40°C
Storage	-40 ~ +85°C	-40 ~ +85°C	-40 ~ +85°C	-40 ~ +85°C	-40 ~ +85°C
Safety & EMC					
	CE (include EMC & LVD)				
Dimension (H x W x D)	133.35 x 482.6 x 569.5 mm / 5.25 x 19 x 22.42 inch	133.35 x 482.6 x 569.5 mm / 5.25 x 19 x 22.42 inch	133.35 x 482.6 x 569.5 mm / 5.25 x 19 x 22.42 inch	133.35 x 482.6 x 569.5 mm / 5.25 x 19 x 22.42 inch	266.7 x 482.6 x 569.5 mm / 10.5 x 19 x 22.42 inch
Weight	20 kg / 44.05 lbs	20 kg / 44.05 lbs	20 kg / 44.05 lbs	20 kg / 44.05 lbs	41 kg / 90.31 lbs

SPECIFICATIONS-2				
Model	61611	61612	61611+A615103	61612+A615103
Output Phase	1 or 3 selectable			
Output Rating-AC				
Power	12KVA	18KVA	30KVA	36KVA
Each phase	4KVA	6 KVA	10KVA	12KVA
Voltage				
Range	0~150V/0~300V			
Accuracy	0.2%+0.2%F.S.			
Resolution	0.1 V			
Distortion *1	0.3% @50/60Hz , 1%@15-1KHz, 2%@>1KHz			
Line regulation	0.1%			
Load regulation *2	0.2%			
Temp. coefficient	0.02% per degree from 25°C			
Max Current (1-phase mode)				
RMS	96A / 48A	144A / 72A	240A / 120A	288A / 144A
Peak (CF=4)	384A / 192A	576A / 288A	960A / 480A	1152A / 576A
Max Current (each phase in 3-phase mode)				
RMS	32A / 16A	48A / 24A	80A / 40A	96A / 48A
Peak (CF=4)	128A / 64A	192A / 96A	320A / 160A	384A / 192A
Frequency				
Range	DC, 15-1.5K Hz			
Accuracy	0.15%			
Phase				
Range	0 ~ 360°			
Resolution	0.3°			
Accuracy	<0.8° @50/60Hz			
DC Output (1-phase mode)				
Power	6KW	9KW	15KW	18KW
Voltage	212V / 424V	212V / 424V	212V / 424V	212V / 424V
Current	48A / 24A	72A / 36A	120A / 60A	144A / 72A
DC Output (3-phase mode)				
Power	2KVA	3KVA	5KVA	6KVA
Voltage	212V / 424V	212V / 424V	212V / 424V	212V / 424V
Current	16A / 8A	24A / 12A	40A / 20A	48A / 24A
Input AC Power (each phase)				
AC type	3-phase, Delta or Y connecting			
Voltage range	190-250V (Delta: L-L, Y: L-N)			
Frequency range	47-63 Hz			
Max. current	Delta: 80A Y: 70A	Delta: 120A Y: 90A	Delta: 200A Y: 160A	Delta: 240A Y: 180A
Measurement				
Voltage				
Range	150V / 300V			
Accuracy	0.2%+0.2%F.S.			
Resolution	0.1 V			
Current				
Range	128/32/8 A peak	192/48/12 A peak	320/80/20 A peak	384/96/24 A peak
Accuracy (rms)	0.4%+0.3%F.S.			
Accuracy (peak)	0.4%+0.6%F.S.			
Resolution	0.1 A			
Power				
Accuracy	0.4%+0.4% F.S			
Resolution	0.1 W			
Efficiency *4	0.75 (Typical)			
Protect	UVP, OCP, OPP, OTP, FAN			
Interface	GPIB, RS-232, USB, Ethernet (Standard)			
Temperature				
Operation	0°C~40°C			
Storage	-40°C~85°C			
Humidity	30 %-90 %			
Safety & EMC				
CE				
Dimension (H x W x D)	1163 x 546 x 700 mm / 45.78 x 21.5 x 27.56 inch		1163 x 1092 x 700 mm / 45.78 x 42.99 x 27.56 inch	
Weight	229.4 kg / 505.29 lbs	242.4 kg / 533.92 lbs	480 kg / 1057.27 lbs	495 kg / 1090.31 lbs

Note*1 : Maximum distortion is tested on output 125VAC (150V RANGE) and 250VAC (300V RANGE) with maximum current to linear load.

Note*2 : Load regulation is tested with sine wave and remote sense.

Note*3 : Input power factor is tested on input 220V, full load condition.

Note*4 : Efficiency is tested on input voltage 230V.

Note*5 : Model 61505 can also use single-phase connecting method of input AC power, the maximum input current is 28A@190V.



Programmable AC Source Model 61700 Series 1.5KVA~12KVA

KEY FEATURES

- Output Rating:
Power: 1.5KVA, 3 ϕ (61701); 3KVA, 3 ϕ (61702)
4.5KVA, 3 ϕ (61703); 6KVA, 3 ϕ (61704); 12KVA, 3 ϕ (61705)
Voltage: 0-150V/0-300V
- Frequency: 15~1.2kHz
- Phase angle: 0~360° Programmable
- Built-in PFC, provides input power factor of over 0.98
- AC+DC output mode
- Comprehensive measurement capability, V, Irms, Ipk, Inrush, P, PF, CF of current etc.
- Programmable r.m.s. current limit
- Turn on, turn off phase angle control
- Full protection: OP, OC, OV and OT protection
- Optional GPIB and RS-232 interface
- Advanced PWM technology delivers high power density in a compact rack-mountable package
- User-definable power-on status
- Built-in output isolation relays
- Easy use graphic user interface: softpanel (Option)
- Optional function for transient voltage output, including LIST, PULSE, STEP and INTERHARMONICS mode



The Chroma Programmable AC Power Source model 61700 series delivers pure, 5-wire, 3-phase AC power. Unlike the traditional 3-phase AC power source, it includes low power rating models at very low cost. Users can program voltage and frequency, measure the critical characteristics of the output on its LCD display. It delivers the right solution to simulate all kinds of input condition of UUT to be utilized in R&D and QA. It is also suitable for commercial applications from laboratory testing to mass productions.

The 61700 supplies the output voltage from 0 to 300VAC and it can be set individually for each phase. Users also can set the phase angle from 0° to 360°. These kinds of function make the 61700 series can simulate unbalance 3-phase power. Because of the wide output frequency from 15 to 1200Hz, it is suitable for avionics, marine and military application. The AC+DC mode extends the output function to simulate abnormal situation when power line contains DC offset.

The 61700 series uses the state-of-the-art PWM technology, so it is capable to generate very clean AC output with typical distortion less than 0.3%. With power factor correction circuit, the 61700 series yields higher efficiency and deliver more output power.

By using advanced DSP technology, the 61700 series offers precision and high speed measurements such as RMS voltage, RMS current, true power, power factor, and current crest factor, etc.

The 61700 series offers an optional function to output transient voltage. The function includes LIST, PULSE, STEP and INTERHARMONICS mode. Users can easily program variant

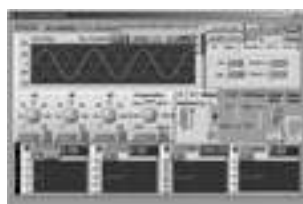
waveform for immunity test. The 61700 series can also be controlled by a powerful and userfriendly softpanel through GPIB or RS-232 interface. Besides that, the softpanel includes a waveform editor that can edit up to 40th order harmonic components. By this way, the 61700 series get the ability to output distorted waveform as users like.

The self-diagnosis routine and protections against overpower, over current, over voltage, over temperature and fan fail, the 61700 series ensure the quality and reliability for even the most demanding engineering testing and production line application.

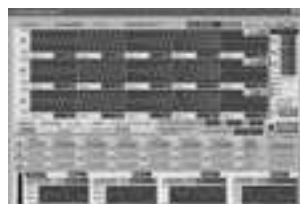
ORDERING INFORMATION

- 61701** : Programmable AC Source 0~300V/DC, 15~1.2kHz, 3 ϕ 1.5KVA
- 61702** : Programmable AC Source 0~300V/DC, 15~1.2kHz, 3 ϕ 3KVA
- 61703** : Programmable AC Source 0~300V/DC, 15~1.2kHz, 3 ϕ 4.5KVA
- 61704** : Programmable AC Source 0~300V/DC, 15~1.2kHz, 3 ϕ 6KVA
- 61705** : Programmable AC Source 0~300V/DC, 15~1.2kHz, 3 ϕ 12KVA
- A615001** : Remote Interface Board for 61500/61600/61700 Series (RS-232 Interface, GPIB Interface)
- A617001** : Softpanel for Model 61700 Series
- A617002** : Transient voltage output function, including WAVEFORM, LIST, PULSE, STEP and INTERHARMONICS mode

Softpanel



Softpanel of 61700 Series : Main page



Optional Function : LIST Mode Voltage Transient Output



Aerospace Testing : MIL-STD-704F



Aerospace Testing : RTCA DO-160D

SPECIFICATIONS					
Model	61701	61702	61703	61704	61705
AC Output Rating					
Max. Power	1500VA	3000VA	4500VA	6000VA	12000VA
Per Phase	500VA	1000VA	1500VA	2000VA	4000VA
Voltage (per phase)					
Range	150V/ 300V	150V/ 300V	150V/ 300V	150V/ 300V	150V/ 300V
Accuracy	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.
Resolution	0.1V	0.1V	0.1V	0.1V	0.1V
Distortion *1	0.3%@50/60Hz	0.3%@50/60Hz	0.3%@50/60Hz	0.3%@50/60Hz	0.3%@50/60Hz
	1.5% 15~1.2kHz	1.5% 15~1.2kHz	1.5% 15~1.2kHz	1.5% 15~1.2kHz	1.5% 15~1.2kHz
Line regulation	0.1%	0.1%	0.1%	0.1%	0.1%
Load regulation *2	0.2%	0.2%	0.2%	0.2%	0.2%
Temp. coefficient	0.02% per degree from 25°C				
Maximum Current (per phase)					
r.m.s.	4A/2A	8A/4A	12A/6A	16A/8A	32A/20A
peak	24A/12A	48A/24A	72A/36A	96A/48A	192A/96A
Frequency					
Range	DC, 15~1.2kHz	DC, 15~1.2kHz	DC, 15~1.2kHz	DC, 15~1.2kHz	DC, 15~1.2kHz
Accuracy	0.15%	0.15%	0.15%	0.15%	0.15%
Phase Angle					
Range	0~360°	0~360°	0~360°	0~360°	0~360°
Resolution	0.3°	0.3°	0.3°	0.3°	0.3°
Accuracy	< 0.8° @50/60Hz	< 0.8° @50/60Hz	< 0.8° @50/60Hz	< 0.8° @50/60Hz	< 0.8° @50/60Hz
DC Output Rating (per phase)					
Power	250W	500W	750W	1KW	2KW
Voltage	212V/424V	212V/424V	212V/424V	212V/424V	212V/424V
Current	2A/1A	4A/2A	6A/3A	8A/4A	16A/8A
Input 3-Phase Power (per phase)					
Voltage range	90~250V	90~250V	190~250V	190~250V	190~250V
Frequency range	47~63Hz	47~63Hz	47~63Hz	47~63Hz	47~63Hz
Current	9A Max.	16A Max.	10A Max.	14A Max.	28A Max.
Power factor *3	0.97 Min.	0.98 Min.	0.98 Min.	0.98 Min.	0.98 Min
Measurement					
Voltage (Line-Neutral)					
Range	150V/300V	150V/300V	150V/300V	150V/300V	150V/300V
Accuracy	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.	0.2%+0.2%F.S.
Resolution	0.1V	0.1V	0.1V	0.1V	0.1V
Current (per phase)					
Range (peak)	24A	48A	72A	96A	192A
Accuracy (r.m.s.)	0.4%+0.3%F.S.	0.4%+0.3%F.S.	0.4%+0.3%F.S.	0.4%+0.3%F.S.	0.4%+0.3%F.S.
Accuracy (peak)	0.4%+0.6%F.S.	0.4%+0.6%F.S.	0.4%+0.6%F.S.	0.4%+0.6%F.S.	0.4%+0.6%F.S.
Resolution	0.01A	0.01A	0.01A	0.01A	0.01A
Power (per phase)					
Accuracy	0.4%+0.4% F.S.	0.4%+0.4% F.S.	0.4%+0.4% F.S.	0.4%+0.4% F.S.	0.4%+0.4% F.S.
Resolution	0.1W	0.1W	0.1W	0.1W	0.1W
Others					
Efficiency *4	68 %	77 %	81 %	82%	82%
Dimension (H x W x D)	400 x 482.6 x 600.5 mm / 15.75 x 19 x 23.64 inch	400 x 482.6 x 600.5 mm / 15.75 x 19 x 23.64 inch	400 x 482.6 x 600.5 mm / 15.75 x 19 x 23.64 inch	400 x 482.6 x 600.5 mm / 15.75 x 19 x 23.64 inch	896.4 x 546 x 699.9 mm / 35.28 x 21.5 x 27.56 inch
Weight	75 kg / 165.2 lbs	75 kg / 165.2 lbs	75 kg / 165.2 lbs	75 kg / 165.2 lbs	150 kg / 330.4 lbs
Protection	UVP, OCP, OPP, OTP, FAN				
Temperature Range					
Operation	0°C~40°C				
Storage	-40°C~85°C				
Humidity	30 %-90 %				
Safety & EMC	CE				

Note*1 : Maximum distortion is tested on output 125VAC (150V RANGE) and 250VAC (300V RANGE) with maximum current to linear load.

Note*2 : Load regulation is tested with sinewave and remote sense.

Note*3 : Input power factor is tested on input 220V, full load condition

Note*4 : Efficiency is tested on input voltage 110V for 61701 and 61702, 220V for 61703, 61704 and 61705.



- Self-test at power-on
- User-definable power-on state
- Easy use graphic user interface: softpanel (Option)

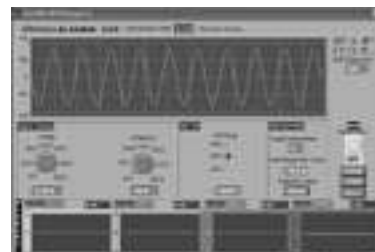
The Chroma 6400 series Programmable AC Power Source uses state of the art PWM technology to deliver pure, instrument grade AC power at very low cost never achieved before. The 6400 AC power source offers maximum rated power for any output voltage from 0 to 300VAC, at any frequency from 45 to 1K Hz. It is not only suitable for commercial applications(47-63Hz), but also for avionics, marine, military applications at 400Hz.

All models generate very clean output with typical distortion less than 0.3%! Incorporating power factor correction circuit, the 6400 AC power source yields higher efficiency and delivers more output power than competitive instruments. Furthermore, it is capable of high peak repetitive current needed to drive most electronic products with high crest factor input design.

The 6400 AC power source uses advanced circuit to offer precision and high speed measurement of true RMS voltage, true RMS current, true power, frequency, power factor, and current crest factor.

The 6400 AC power source is very easy to operate from the front panel keypad, or from the remote controller via IEEE-488, RS-232 or APG (Analog Programming) interface. The optional interface is designed as a plug-in card to change the unit in seconds into a computer controlled system power source.

Designed with self diagnostic routine and protected against over-voltage, under-voltage, over-power, over-current, over-temperature and fan fail, the instrument offers quality and reliability for even the most demanding applications in production testing, R&D design characterization, and QA verification.



Softpanel of 6400 Series

Programmable AC Source Model 6400 Series 375~9000VA

KEY FEATURES

- Output distortion less than 0.3%, and peak repetitive current over 2.5 times of the rms current
- High accuracy measurement of RMS voltage, RMS current, true power, frequency, power factor, and current crest factor
- Built-in power factor correction circuit provides input power factor of over 0.98 to meet IEC regulations
- Programmable current limit
- Built-in output isolation relays
- EEPROM storage of user defined voltage & frequency combination for instant recall at anytime
- Optional GPIB, RS-232, Analog Programming interface.
- Over-voltage, under-voltage, over-power, over-current, over-temperature, and short circuit protection
- Temperature controlled fan speed

SPECIFICATIONS - 1

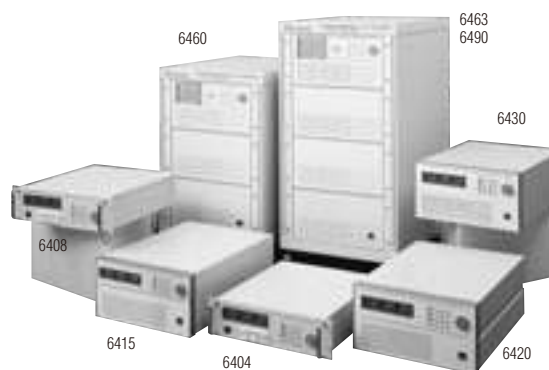
Model	6404	6408	6415	6420
Output / Phase	1	1	1	1
Output Ratings				
Power / Phase	375VA	800VA	1500VA	2000VA
Voltage				
Range / Phase	150V/300V/Auto			
Accuracy	0.2% F.S. for freq. ≤ 200Hz, 0.4% F.S. for freq. > 200Hz		0.2% + 0.2% of F.S.	
Resolution	0.1V	0.1V	0.1V	0.1V
Distortion	typical. 0.3% for freq. ≤ 200Hz, 0.8% for freq.>200Hz		0.5% for (45-500Hz), 1% for (> 500-1KHz)	
Line Regulation	0.1%	0.1%	0.1%	0.1%
Load Regulation	0.1%	0.1%	0.1%	0.1%
Temp. Coefficient	0.02% per °C			
Max. current -rms	2.5A/1.25A	5.33A/2.67A	15A/7.5A	20A/10A
-peak	7A/3.5A ≤100Hz 5.5A/12.75A >100Hz	14.92A/7.47A ≤100Hz 7.47A/5.87A >100Hz	45A/22.5A ≤100Hz (45-100Hz) 37.5A/18.75A (>100-1KHz)	60A/30A (45-100Hz) 50A/25A (>100-1KHz)
Frequency				
Range	45-500Hz	45-500Hz	45-1000Hz	45-1000Hz
Accuracy	0.1%	0.1%	0.1%	0.1%
Resolution	0.1Hz	0.1Hz	0.1Hz	0.1Hz
Input Ratings				
Voltage Range	90-132V / 180-250V	90-132V (6408-1),180-250V (6408-2)	190-250V, 1Ø	190-250V, 1Ø
Frequency Range	47-63Hz	47-63Hz	47-63Hz	47-63Hz
Current	7.5A max.	12A max.(6408-1), 6A max. (6408-2)	12A max.	15A max.
Power Factor	0.8 typical.	0.98 min.	0.95 min.	0.97 min.
Measurement				
Voltage / Phase				
Range	0-150V/0-300V	0-150V/0-300V	0-150V/0-300V	0-150V/0-300V
Accuracy (rms)	0.1% + 0.1% F.S.		0.25% + 0.1% F.S.	
Resolution	0.1V	0.1V	0.1V	0.1V
Current / Phase				
Range (peak)	0-2A/2-10A	0-4A/4-20A	0-70A	0-100A
Accuracy (rms)	0.5% + 0.2% F.S.	0.5% + 0.2% F.S.	0.4% + 0.2% F.S.	0.4% + 0.15% F.S.
Resolution	0.01A	0.01A	0.01A	0.01A
Power / Phase				
Range	0-375W	0-800W	0-1500W	0-2000W
Accuracy	0.5% F.S.	0.5% F.S.	1% F.S. (CF<6)	1% F.S. (CF<6)
Resolution	0.1 W	0.1 W	0.1 W for P<1000W, 1W for P>1000W	
Frequency				
Range	45-500Hz	45-500Hz	45-1000Hz	45-1000Hz
Accuracy	0.02%	0.02%	0.02%	0.02%
Resolution	0.1Hz	0.1Hz	0.1Hz	0.1Hz
Others				
Efficiency	75% typical	80% typical	80% typical	80% typical
Protection	UVP, OVP, OCP, OPP, OTP, Short			
Safety & EMC	CE (Include LVD and EMC Requirement)			
Dimension (H x W x D)	133.35 x 482.6 x 471.4 mm / 5.25 x 19 x 18.56 inch		221.5 x 425 x 567 mm / 8.72 x 16.73 x 22.32 inch	
Weight	18 kg / 39.65 lbs	23 kg / 50.66 lbs	23 kg / 50.66 lbs	27 kg / 59.47 lbs

SPECIFICATIONS -2				
Model	6430	6460	6463	6490
Output / Phase	1	1 (parallel or series)	1 or 3 selectable	1 or 3 selectable
Output Ratings				
Power / Phase	3000VA	6000VA	2000VA	3000VA
Voltage				
Range / Phase	150V/300V/Auto	150V/300V(parallel), 300V/500V(series)	150V/300V	150V/300V
Accuracy	0.2% + 0.2% of F.S.	0.2% + 0.2% of F.S.	0.2% + 0.2% of F.S.	0.2% + 0.2% of F.S.
Resolution	0.1V	0.1V	0.1V	0.1V
Distortion	0.5% for (45-500Hz), 1% for (> 500-1KHz)	1%	1%	1%
Line Regulation	0.1%	0.1%	0.1%	0.1%
Load Regulation	0.1%	0.2%(series), 0.8% (parallel)	0.2%(3 phases), 0.8% (1 phase)	0.2%(3 phases), 0.8% (1 phase)
Temp. Coefficient	0.02% per °C	0.02% per °C	0.02% per °C	0.02% per °C
Max. current -rms / Phase	30A/15A	60A/30A/15A (150V/300V/500V)	20A/10A (150V/300V)	30A/15A (150V/300V)
Peak Current/phase-crest-factor	3(45-100Hz), 2.5(>100-1KHz)	180A/90A/45A (45-100Hz), 150A/75A/38A (>100-1KHz)	60A/30A (45-100Hz), 50A/25A (>100-1KHz)	90A/45A (45-100Hz), 75A/38A (>100-1KHz)
Frequency				
Range	45-1000Hz	45-1000Hz	45-1000Hz	45-1000Hz
Accuracy	0.1%	0.15%	0.15%	0.15%
Resolution	0.1Hz	0.01Hz (45-99.9Hz), 0.1Hz (100-999.9Hz)		
Input Ratings				
Voltage Range	190-250V, 1Ø	190-250V, 3Ø	190-250V, 3Ø	190-250V, 3Ø
Frequency Range	47-63Hz	47-63Hz	47-63Hz	47-63Hz
Current	23A max.	23A max./phase	15A max./phase	23A max./phase
Power Factor	0.98 min.	0.98 min. under full load	0.97 min. under full load	0.98 min. under full load
Measurement				
Voltage / Phase				
Range	0-150V/0-300V	0-150V/0-300V	0-150V/0-300V	0-150V/0-300V
Accuracy (rms)	0.25% + 0.1% F.S.	0.25% + 0.1% F.S	0.25% + 0.1% F.S	0.25% + 0.1% F.S
Resolution	0.1V	0.1V	0.1V	0.1V
Current / Phase				
Range (peak)	0-140A	0-280A	0-100A	0-140A
Accuracy (rms)	0.4% + 0.1% F.S.	0.4% + 0.1% F.S.	0.4% + 0.15% F.S.	0.4% + 0.1% F.S.
Resolution	0.01A	0.01A	0.01A	0.01A
Power / Phase				
Range	0-3000W	0-3000W	0-2000W	0-3000W
Accuracy	1% F.S. (CF<6)	1% F.S. (CF<6)	1% F.S. (CF<6)	1% F.S. (CF<6)
Resolution	0.1 W for P<1000W, 1W for P>1000W	0.01 W	0.01 W	0.01 W
Frequency				
Range	45-1000Hz	45-1000Hz	45-1000Hz	45-1000Hz
Accuracy	0.02%	0.01%+2 count	0.01%+2 count	0.01%+2 count
Resolution	0.1Hz	0.01Hz	0.01Hz	0.01Hz
Others				
Efficiency	80% typical	80% typical	80% typical	80% typical
Protection	UVP, OVP, OCP, OPP, OTP, Short	OPP, OLP, OTP, FAN Fail		
Safety & EMC				
	CE (Include LVD and EMC Requirement)			
Dimension (H x W x D)	221.5 x 425 x 567 mm / 8.72 x 16.73 x 22.32 inch	765.94 x 546 x 700 mm / 30.16 x 21.5 x 27.56 inch	990 x 546 x 700 mm / 38.98 x 21.5 x 27.56 inch	990 x 546 x 700 mm / 38.98 x 21.5 x 27.56 inch
Weight	27 kg / 59.47 lbs	107 kg / 235.68 lbs	156 kg / 343.61 lbs	156 kg / 343.61 lbs

ORDERING INFORMATION

6404 : Programmable AC Source 0-300V/45-500Hz/375VA
6408-1 : Programmable AC Source 0-300V/45-500Hz/800VA (input rating 90-132V)
6408-2 : Programmable AC Source 0-300V/45-500Hz/800VA (input rating 180-250V)
6415 : Programmable AC Source 0-300V/45-1000Hz (1500VA)
6420 : Programmable AC Source 0-300V/45-1000Hz (2000VA)
6430 : Programmable AC Source 0-300V/45-1000Hz (3000VA)
6460-2 : Programmable AC Source 0-300V/45-1000Hz (6000VA), output 1Ø, input 3Ø 220V
6460-3 : Programmable AC Source 0-300V/45-1000Hz (6000VA), output 1Ø, input 3Ø 380V
6463-2 : Programmable AC Source 0-300V/45-1000Hz (6000VA), output 1Ø or 3Ø Selectable, input 3Ø 220V
6463-3 : Programmable AC Source 0-300V/45-1000Hz (6000VA), output 1Ø or 3Ø Selectable, input 3Ø 380V
6490-2 : Programmable AC Source 0-300V/45-1000Hz (9000VA), output 1Ø or 3Ø Selectable, input 3Ø 220V
6490-3 : Programmable AC Source 0-300V/45-1000Hz (9000VA), output 1Ø or 3Ø Selectable, input 3Ø 380V
A640002 : Remote Interface for Model 6415/6420/6430 Series (External V Input, RS-232 Interface, GPIB Interface)
A640003 : Remote Interface for Model 6404/6408 Series (External V Input, RS-232 Interface, GPIB Interface)
A640004 : Softpanel for Model 6400 Series
A610004 : Universal Socket Center for Model 6415/6420/ 6430 Series
A600009 : GPIB Cable (200cm)
A600010 : GPIB Cable (60cm)

6400 Series Programmable AC Source Family





Programmable AC Source Model 6500 Series

1200VA~9000VA

KEY FEATURES

- Direct Digital Synthesis (DDS) waveform generation
- Programmable Sine, Square, or Clipped Sine waveform output
- Programmable voltage, current limit, frequency, phase, and distortion
- Power line disturbances simulation capability
- 30 factory installed harmonic waveforms in the waveform library
- User programmable harmonic waveforms
- User programmable sequential output waveforms for auto-execution
- Powerful measurement of Vrms, Irms, Ipk+, Ipk-, power, frequency, crest factor, power factor, inrush current, VA, VAR, etc.
- Built-in power factor correction circuit provides input power factor of over 0.98 to meet the IEC regulations
- Advanced PWM technology to deliver high power output in a light and compact rackmountable package
- Built-in output isolation relays
- User-definable power-on state
- TTL output to signal any output transition for ATE application
- Analog Programming Interface for external amplitude control
- Optional GPIB, RS-232 interface
- List mode transient power line disturbances simulation for Voltage Dip & Variation to meet IEC 61000-4-11
- Easy use graphic user interface: softpanel (Option)



The global AC power testing requirements demand more sophisticated AC Power Source that is capable of simulating a wide variety of AC line conditions, harmonic waveforms, accurate power measurement and analysis. The Chroma 6500 series Programmable AC Power Source delivers the right solution to simulate all kinds of normal/abnormal input conditions and measure the critical characteristics of the product under test. It can be used for R&D design characterization, production testing, and QA verification of commercial, industrial, and aerospace electronic products.

The Chroma 6500 series delivers maximum rated power for any output voltage up to 300 Vac, and at any frequency between 15Hz to 2000Hz. It is suitable for commercial applications (47-63Hz); for avionics, marine, military applications at 400Hz or higher frequency; or for electrical motor, air-conditioner test applications at 20Hz. All models generate very clean sine or square waveforms output with typical distortion less than 0.5%.

The Chroma 6500 series has built-in Direct Digital Synthesis (DDS) Waveform Generator to provide user programmable high precision waveform. For testing products under AC line distortion conditions, clipped sinewave can be generated with 0% to 43% distortion and amplitude from 0% to 100%. It also can simulate all kinds of power line disturbances such as cycle dropout, transient spike, brown out, phase angle, voltage and frequency ramp up (ramp down), etc.. Up to 30 harmonic waveforms are

ORDERING INFORMATION

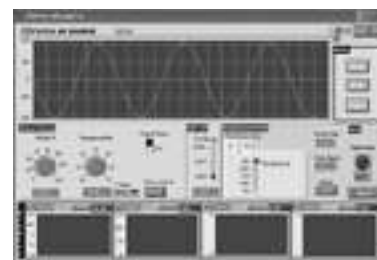
- 6512** : Programmable AC Source 0~300V/15~2KHz / 1.2KVA
- 6520** : Programmable AC Source 0~300V/15~2KHz / 2KVA
- 6530** : Programmable AC Source 0~300V/15~2KHz / 3KVA
- 6560-2** : Programmable AC Source 0~500V/45~1KHz / 6KVA I/P 3Ø 220V
- 6560-3** : Programmable AC Source 0~500V/45~1KHz / 6KVA I/P 3Ø 380V
- 6590-2** : Programmable AC Source 0~300V/45~1KHz / 9KVA 1Ø or 3Ø, 3000VA per phase, I/P 3Ø 220V
- 6590-3** : AC Power Source 0~300V/45~1KHz / 9KVA 1Ø or 3Ø, 3000VA per phase, I/P 3Ø 380V
- A650001** : Remote Interface for Model 6500 Series (External V Reference, RS-232 interface, Printer Interface, GPIB Interface, Special I/O Port, System I/O Port)
- A650002** : 19" Rack Mounting Kit for Model 6512/6520/6530
- A650003** : Softpanel for Model 6500 Series
- A610004** : Universal Socket Center for Model 6512/6520/6530/6560 Series
- A600009** : GPIB Cable (200cm)
- A600010** : GPIB Cable (60cm)

factory installed, and testing for compliance to AC line harmonic immunity standards can be easily achieved in the field.

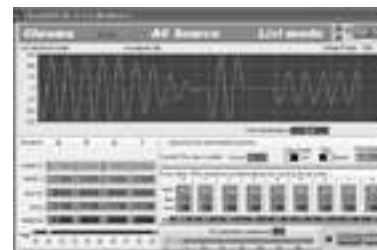
The 6500 series has built-in 16-bit precision measurement circuit to offer precision and high speed measurement of Vrms, Irms, Ipk+, Ipk-, power, frequency, crest factor, power factor, inrush current, VA, VAR, etc. It is designed as an integral part of the PMS power measurement system. By adding the 6630 Power Analyzer it becomes an ATE for testing IEC 61000-3-2 harmonic and IEC 61000-3-3 flicker measurement.

The 6500 series is very easy to operate from the front panel keypad, or from a remote controller via GPIB, RS-232 bus or APG (Analog Programming) interface. Instrument drivers are available to integrate the AC source into any ATE application operating under Labview control.

Designed with self diagnostic routine and protected against overload, overpower, overtemperature, overcurrent and fan fail, the instrument offers quality and reliability for even the most demanding production line applications.



Main operation menu



List Mode: Transient voltage programming

6500 Series Programmable AC Source Family



SPECIFICATIONS					
Model	6512	6520	6530	6560	6590
Output Phase	1	1	1	1 (parallel or series)	1or 3 selectable
Output Ratings					
Power	1200VA	2000VA	3000VA	6000VA	3000VA per phase, 9000VA total
Voltage					
Range/phase	150V / 300V / Auto	150V / 300V / Auto	150V / 300V / Auto	150V / 300V (parallel) 300V / 500V (series)	150V / 300V
Accuracy	0.2% +0.2%of F.S.	0.2% +0.2%of F.S.	0.2% +0.2%of F.S.	0.2% +0.2%of F.S.	0.2% +0.2%of F.S.
Resolution	0.1V	0.1V	0.1V	0.1V	0.1V
Distortion *1	1% (15-45 Hz) 0.5% (> 45-500 Hz) 1% (> 500-1K Hz) 2% (> 1K-2K Hz)	1% (15-45 Hz) 0.5% (> 45-500 Hz) 1% (> 500-1K Hz) 2% (> 1K-2K Hz)	1% (15-45 Hz) 0.5% (> 45-500 Hz) 1% (> 500-1K Hz) 2% (> 1K-2K Hz)	1% (45-1K Hz)	1% (45-1K Hz)
Line Regulation	0.1%	0.1%	0.1%	0.1%	0.1%
Load Regulation *2	0.1%	0.1%	0.1%	0.2% (series), 0.8% (parallel)	0.2%
Temp. Coefficient	0.02% per℃	0.02% per℃	0.02% per℃	0.02% per℃	0.02% per℃
Max. Current/Phase					
rms	12A/6A (150V / 300V)	20A/10A (150V / 300V)	30A/15A (150V / 300V)	60/30/15A (150/300/500V)	30A/15A (150V / 300V) 90A/45A total
peak	36A/18A (15-100Hz) 30A/15A (>100-1KHz) 24A/12A (>1K-2KHz)	60A/30A (15-100Hz) 50A/25A (>100-1KHz) 40A/20A (>1K-2KHz)	90A/45A (15-100Hz) 75A/38A (>100-1KHz) 60A/30A (>1K-2KHz)	180/90/45A (45-100Hz) 150/75/38A (>100-1KHz)	90A/45A (45-100Hz) 75A/38A (>100-1KHz)
Frequency					
Range	15 ~ 2K Hz	15 ~ 2K Hz	15 ~ 2K Hz	45 ~ 1K Hz	45 ~ 1K Hz
Accuracy	0.15%	0.15%	0.15%	0.15%	0.15%
Resolution	0.01 Hz (15 ~ 99.9 Hz) 0.1 Hz (100 ~ 999.9 Hz) 0.2 Hz (1K ~ 2K Hz)	0.01 Hz (15 ~ 99.9 Hz) 0.1 Hz (100 ~ 999.9 Hz) 0.2 Hz (1K ~ 2K Hz)	0.01 Hz (15 ~ 99.9 Hz) 0.1 Hz (100 ~ 999.9 Hz) 0.2 Hz (1K ~ 2K Hz)	0.01 Hz (45 ~ 99.9Hz) 0.1 Hz (100 ~ 999.9 Hz)	0.01 Hz (45 ~ 99.9Hz) 0.1 Hz (100 ~ 999.9 Hz)
Input Ratings					
Voltage Range	190 ~ 250 V, 1ø	190 ~ 250 V, 1ø	190 ~ 250 V, 1ø	190 ~ 250 V, 3ø	190 ~ 250 V, 3ø
Frequency Range	47 ~ 63 Hz	47 ~ 63 Hz	47 ~ 63 Hz	47 ~ 63 Hz	47 ~ 63 Hz
Current	10A max.	15A max.	23A max.	23A max./phase	23A max./phase
Power Factor	0.95 min. under full load	0.97 min. under full load	0.98 min. under full load	0.98 min. under full load	0.98 min. under full load
Measurement					
Voltage/Phase					
Range	0 ~ 150V / 0 ~ 300V	0 ~ 150V / 0 ~ 300V	0 ~ 150V / 0 ~ 300V	0 ~ 150V / 0 ~ 300V	0 ~ 150V / 0 ~ 300V
Accuracy (rms)	0.25% + 0.1% F.S.	0.25% + 0.1% F.S.	0.25% + 0.1% F.S.	0.25% + 0.1% F.S.	0.25% + 0.1% F.S.
Resolution	0.1V	0.1V	0.1V	0.1V	0.1V
Current/Phase					
Range (peak)	0 ~ 60 A	0 ~ 100 A	0 ~ 140 A	0 ~ 280 A	0 ~ 140 A
Accuracy (rms)	0.4% + 0.25%F.S.	0.4% + 0.15%F.S.	0.4% + 0.1%F.S.	0.4% + 0.1%F.S.	0.4% + 0.1%F.S.
Accuracy (peak)	0.4% + 0.5%F.S.	0.4% + 0.3% F.S.	0.4% + 0.2% F.S.	0.4% + 0.2% F.S.	0.4% + 0.2% F.S.
Resolution	0.01A	0.01A	0.01A	0.01A	0.01A
Power/Phase					
Accuracy	1% F.S. (CF<6)	1% F.S. (CF<6)	1% F.S. (CF<6)	1% F.S. (CF<6)	1% F.S. (CF<6)
Resolution	0.01W	0.01W	0.01W	0.01W	0.01W
Frequency					
Range	15 ~ 2K Hz	15 ~ 2K Hz	15 ~ 2K Hz	45 ~1K Hz	45 ~1K Hz
Accuracy	0.01% +2 count	0.01% +2 count	0.01% +2 count	0.01% +2 count	0.01% +2 count
Resolution	0.01Hz	0.01Hz	0.01Hz	0.01Hz	0.01Hz
Others					
Efficiency	80% typical	80% typical	80% typical	80% typical	80% typical
Protection	OPP, OLP, OTP, FAN Fail				
Temperature					
Operating	0 ~ 40℃	0 ~ 40℃	0 ~ 40℃	0 ~ 40℃	0 ~ 40℃
Storage	-40 ~ +85℃	-40 ~ +85℃	-40 ~ +85℃	-40 ~ +85℃	-40 ~ +85℃
Safety & EMC	CE (Include LVD and EMC Requirement)				
Dimension (H x W x D)	221.5 x 425 x 567 mm / 8.72 x 16.73 x 22.32 inch	221.5 x 425 x 567 mm / 8.72 x 16.73 x 22.32 inch	221.5 x 425 x 567 mm / 8.72 x 16.73 x 22.32 inch	765.94 x 546 x 700 mm / 30.16 x 21.5 x 27.56 inch	888.5 x 546 x 700 mm / 34.98 x 21.5 x 27.56 inch
Weight	26.4 kg / 58.15 lbs	26.4 kg / 58.15 lbs	26.4 kg / 58.15 lbs	107 kg / 235.68 lbs	156 kg / 343.61 lbs

Note*1 : Test under output voltage from half to full range.

Note*2 : Test with sinewave & with remote sense.



Power Analyzer Model 6630/6632

KEY FEATURES

- Test Voltage and Current Harmonics in compliance with IEC61000-3-2, IEC61000-3-2 A14
- Test Flicker (voltage fluctuations) precompliance with IEC61000-3-3
- Advanced DFT and DSP technology
- Multi-processor system configuration
- Modular instrument with three measurement modules in DSP type
- 5 unique test function modules with Harmonics, Flickers, Multimeter, Recording, and Waveform for multipurpose test application requirements
- Harmonic analysis and bar graph / table results display up to 40 harmonics
- 2-channel 18-bit A/D converter in each measurement module
- Simultaneous presentation for voltage and current curves. (1~16 periods)
- Preprogrammed functions against standardized limits
- Wide voltage (6V to 2000Vpk) and current(0.1A to 300Apk) input range
- 3½" floppy driver for software update and result storage (Model 6630 only)



Model 6632



Chroma introduces a completely new concept, Power Measurement System, for fast and accurate power related measurements in compliance with international standards.

The Power Measurement System consisting of an advanced 6630/6632 Power Analyzer and a 6530 Series or other Chroma family AC Power Source is the ATE for Voltage and Current Harmonics test in compliance with IEC61000-3-2, IEC61000-3-2 A14, and for Flicker test (voltage fluctuations) following the IEC 61000-3-3 international standards. Performance testing is preprogrammed limits to specifications against standardized limits. The user-specified limits can be added.

Chroma 6630/6632 Power Analyzer is a modular instrument that is equipped with DSP type measurement module. Each measurement module contains Processor, Memory (ROM, RAM, Flash ROM), and two channels 18 bits A/D converter. As the Discrete Fourier Transform (DFT) technology is implemented in the software with 32-bit floating point mathematical algorithms, it

can measure instruments related power at high- speed and analyze the measurement parameters (value) accurately. The instrument is also a combination of all standard instruments generally used for power measurements. It provides Voltage (U), Current (I), Active Power (P), Reactive Power (Q), Apparent Power (S), Active Energy (W), Reactive Energy (Wr), Apparent Energy (Wa), Frequency (f), Crest Factor (CF), Power Factor (PF), Phase Angle (ø).

Chroma 6630/6632 Power Analyzer is a flexible and unique multipurpose instrument designed for using stand-alone and integrated. Harmonics, Flicker, Multimeter, Recording, and Waveform are the five major function modules that can work stand-alone, or be integrated into an ATE environment to facilitate the system for testing and analysis. Future revisions of the supported standards are able to implement by software updates. The built in floppy disk drive gives users a convenient way to save the test parameters and results.

SPECIFICATIONS		
Model	6630	6632
Display	LCD 640x480 pixels with backlight	--
Printer output for hardcopy	Parallel (Centronics compatible) or serial (RS232)	
Floppy drive	1.44MB 3" PC-format. For software updates and result storage	--
Rack mounting	With optional rack mount kit. Size 19" 3HE	
Dimension (H x W x D)	132.6 x 423 x 331 mm / 5.22 x 16.67 x 13.07 inch	
Weight	Single phase 9 kg / 20 lbs, three phase 11.4 kg / 25 lbs	
Operating environment	0 to +40°C, < 80 % R.H. non condensing	
Storage environment	-30 to + 60°C non condensing	
Power supply	100-130V or 200~240V, automatic range selection	
Power line frequency	50/60 Hz	
Power consumption	45 W max.	
Protection	Fuse 2xF1A on rear panel	
Safety	Designed to comply with the Low Voltage Directive 73/23/EEC plus parts of 93/68/EEC. Applied standard, EN61010-1:1993, Installation category II.	
EMC	Designed to comply with the EMC Directive 89/336/EEC and 92/31/EEC. Applied standards, EN50081-1:92 and EN50082-1:92	
Warranty	One year from date of delivery for manufacturing and material failures	

ORDERING INFORMATION

- 6630** : Power Analyzer, 1ø DSP
6630 : Power Analyzer, 3ø DSP
6630 : Power Analyzer, 1ø DSP without Flicker
6630 : Power Analyzer, 3ø DSP without Flicker
6632 : Power Analyzer, 1ø DSP
6632 : Power Analyzer, 3ø DSP
A663003 : Measurement Input Cables
A663004 : Rack Mounting Kit for Model 6630/6632
A663008 : Spare Current Measurement Input Fuse
A663009 : Measurement Fixture
A663010 : DSP Measurement Module
A600009 : GPIB Cable (200cm)
A600010 : GPIB Cable (60cm)



A663010: DSP Measurement Module



A663009: Measurement Fixture



Digital Power Meter Model 66200 Series

KEY FEATURES

- Embedded high speed DSP, 16 bits Analog/ Digital converters
- 10 mA minimum current range and 1 mW power resolution
- Meet ENERGY STAR / IEC 62301 measurement requirement
- Accumulated energy methods for unstable power measurement
- User-define Criteria for Automatic PASS/FAIL judgment
- Half rack width and small 2U height, suitable for system integration
- Dual shunts for current range selection providing high accuracy over a wide current range (66202)
- THD and user-specify orders distortion measurement (66202)
- Inrush current and Energy measurement (66202)
- Optional remote interface: USB or GPIB+USB
- Voltage/current harmonics measurement up to 50 orders



Chroma Digital Power Meter 66200 series is a single-phase power meter designed for measurement of AC or AC-DC power signals and related parameters common to most electronic products. Instead of traditional analog measurement circuits, the Power Meter 66200 uses state-of-the-art DSP digitizing technology. The internal 16 bits analog/digital converters with sampling rates of up to 240KHz provide both high speed and high accuracy measurements to be achieved. The instrument's provides excellent function and stability compared to other available power meters of this class current on the market. It includes a front panel 4 display area with 5 digits, 7-segment LED readouts as well as optional remote control using USB or GPIB interfaces.

The 66200 series Power Meter is also designed to meet ENERGY STAR / IEC 62301 measurement requirements. The instrument provides 10 mA minimum current range and 1 mW power resolution providing less than 2% uncertainty for No-Load mode power measurement. Included are not only traditional averaging methods but also accumulated energy approach method used to calculate active power data. In this way, users can achieve accurate readings even if power consumption levels are not stable or operating on in non-linear modes (i.e. hiccup modes). The Model 66202 can even measure Total-Harmonic-Distortion (THD) and to user-specify distortion orders. Thus, the instrument can easily measure distortion values up to and including the 13th

harmonic as required by ENERGY STAR requirements. The 66200 Power Meter also includes perform GO/NG functions. This feature allows users to set pass/fail limits to automatically display PASS/ FAIL according to these user-define criteria.

The Model 66201 includes simple measurement functions designed for testing at low power levels (maximum current 4A). Examples of these devices are AC adapters, battery chargers, LCD monitors and similar devices. Included measurement data is Voltage (Vrms, Vpeak+, Vpeak-), Current (Irms, Ipeak+, Ipeak-), Power (W, Power Factor, Apparent Power VA, Reactive Power VAR), Current Crest Factor and Frequency. The Model 66201 Power meter is competitively priced to be suitable for bench-top testing and automated production line testing.

The Model 66202 includes a 2-shunt design to get 66202 highly accurate for both low and high current measurements. Besides the parameters measured on Model 66201, it also provides Inrush Current, Total Harmonic Distortion of V/I and Energy measurement. With these practical functions, The Model 66202 is suitable for the most demanding of R&D and quality control departments.

ORDERING INFORMATION

66201 : Digital Power Meter

66202 : Digital Power Meter

A662001 : USB Remote Interface Board

A662002 : GPIB+USB Remote Interface Board

A662003 : Measurement Test Fixture (250V/15A)

A662004 : Rack Mounting Kit for 66200 Series

A662005 : USB Cable (180cm)

A662006 : External CT 50 Arms for Model 66202

A662007 : External CT 100 Arms for Model 66202

A662008 : Power Efficiency Test Softpanel

A662009 : Softpanel for Model 66200 Series

A600009 : GPIB Cable (200cm)

A600010 : GPIB Cable (60cm)

SPECIFICATIONS

Model	66201	66202
Channel	1	1
Parameters	V, Vpk, I, Ipk, W, VA, VAR, PF, CF_I, F	V, Vpk, I, Ipk, Is, W, VA, VAR, PF, CF_I, F, THD_V, THD_I, Energy
AC Voltage		
Range	150/300/500Vrms (CF = 1.6)	150/300/500Vrms (CF = 1.6)
Accuracy	(0.1% + 0.05% * KHz) of rdg + 0.08% of rng	(0.1% + 0.05% * KHz) of rdg + 0.08% of rng
Input Resistance	1MΩ	1MΩ
AC Current		
Range	0.01/0.1/0.4/2 Arms (CF=4) *1	SHUNT H: 0.2/2/8/20Arms (CF=2@0.2/2/8A, CF = 4@ 20A) SHUNT L: 0.01/0.1/0.4/2Arms (CF=4)
Accuracy *2	(0.1% + 0.05% * KHz) of rdg + 0.25% rng	SHUNT H: (0.1%+0.05% * KHz) of rdg+0.12% rng SHUNT L&20A: (0.1%+0.05% * KHz) of rdg+0.25% rng
Power		
Range (W)	1.5W ~ 1000W, 12 ranges	1.5W ~ 10KW, 24 ranges
Accuracy *3	[0.2%+0.1% * KHz+(0.3/PF)% * KHz] of rdg + 0.33% of rng 300V x 0.01A Range: 0.2% of rdg + 7mW	SHUNT H: [0.2%+0.1% * KHz+(0.3/PF)% * KHz] of rdg + 0.2% of rng SHUNT L & 20A: [0.2%+0.1% * KHz+(0.3/PF)% * KHz] of rdg + 0.33% of rng 300V x 0.01A Range: 0.2% of rdg + 7mW
Power Factor accuracy *4	0.006+(0.003/PF)/KHz	0.006+(0.003/PF)/KHz
Frequency		
Range	DC, 15Hz ~ 10KHz	DC, 15Hz ~ 10KHz
Measuring Input	Voltage (10 ~ 100% of the voltage range)	Voltage (10 ~ 100% of the voltage range)
Others		
Display Resolution	5 Digits	
Display update rate	Min. 0.5 sec	
Power Supply	90V ~ 130V /180V ~ 250V, 50Hz/ 60Hz, 30VA	
Interface	Option: USB or GPIB+USB	
Temperature Coefficient Typical @ 23 ± 5°C	Voltage: (0.012% of rdg + 0.05% of rng)/°C Current: range 0.01A & 0.2A(CF= 2): (0.012% of rdg + 0.05% of rng)/°C For the other ranges: (0.012% of rdg + 0.05% of rng)/°C	
Operating Temperature	0°C ~ 40°C	
Storage	-40°C ~ 85°C	
Safety & EMC	CE (include EMC & LVD)	
Dimension (H x W x D)	88 x 212 x 48.1 mm / 3.46 x 8.35 x 13.7 inch (excluding projections)	
Weight	3.8 kg / 8.37 lbs	

The specifications are valid only after the power meter is turned on more than one hour in a thermally stable environment.

Note*1 : The maximum measurable current of 66201 is 4 Arms.

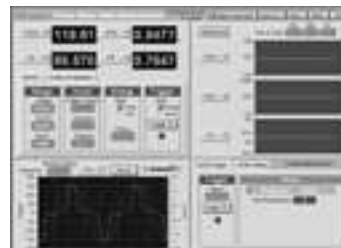
Note*2 : The current accuracy applies temperature range 23 ± 1°C for 0.01A & 0.2A(CF=2). For all the other current ranges, the spec. applied under 23 ± 5°C.

Note*3 : The 300V x 0.01A range is usually used to test No-load condition of UUT.

Note*4 : The PF spec. applies only when the signals are higher then 50% of the selected voltage and current ranges.



A662003 : Measurement Test Fixture



Softpanel for Model 66200 Series



Power Efficiency Test Softpanel



Programmable DC Power Supply Model 62000P Series 600W, 1200W, 2400W, 5000W

KEY FEATURES

- Wide range of voltage & current combinations with constant power
- Voltage range: 0 ~ 600V
Current range: 0 ~ 120A
Power range: 600W, 1200W, 2400W, 5000W
- Digital encoder knobs, keypad and function keys
- Power Factor Correction (0.95)
- High-Speed Programming
- Precision V&I Measurements
- Current sharing for parallel operation with Master/Slave Control
- Voltage ramp function : Time Range (10ms~99 hours)



- Auto Sequencing Programming:
10 Programs /100 Sequences / 8 bit TTL
- Voltage & Current Slew Rate Control
- OVP, Current Limit, Thermal protection
- Remote sense, 5V line loss compensation
- APG (Analog Programmable Interface) with Isolated Analog Interface Card
- Optional GPIB control with SCPI
- Standard RS-232 interface
- Standard USB interface
- LabView and Labwindows
- CE Certified
- Optional Ethernet interface

Chroma's new 62000P Series of programmable DC power supplies offer many unique advantages for ATE integration and testing. These advantage include a constant power operating envelope, precision readback of output current and voltage, output trigger signals as well as the ability to create complex DC transients waveforms to test device behavior to spikes, drops, and other voltage deviations. Designed for automated testing DC-DC converters and similar products, the 62000P sets a new standard for high accuracy programmable DC supplies.

The 62000P Series includes 12 different models ranging from 600W to 5000W, up to 120A and up to 600V. Due to their constant power operating envelope a single instrument can provide both high voltage/low current AND low voltage/ high current thereby reducing the number of supplies needed in typical ATE applications.

The 62000P also includes 16 bit readback capability for accurate voltage and current readings. This means systems no longer need complex shunt/multiplexers to make accurate readings of the UUT's input parameters. The instruments also include I/O ports providing 8 bit TTLs, DC-ON, fault output signal and remote inhibit as well as a output trigger signal for system timing measurements.

Another unique capability of the 62000P supplies is their ability to create complex DC transient waveforms. This capability allows devices to be tested to DC voltage dropouts, spikes and other voltage variations making them an ideal choice for airborne device testing, inverter testing and other devices which will experience voltage interrupts. Applications include DC/DC Converter & Inverter voltage drop test, engine start-up simulation, battery automated charging, electronic product life cycle test, and etc.

ELECTRICAL SPECIFICATIONS-1						
Model	62006P-30-80	62006P-100-25	62006P-300-8	62012P-40-120	62012P-80-60	62012P-100-50
Output Ratings						
Output Voltage	0~30V	0~100V	0~300V	0~40V	0~80V	0~100V
Output Current	0~80A	0~25A	0~8A	0~120A	0~60A	0~50A
Output Power	600W	600W	600W	1200W	1200W	1200W
Line Regulation						
Voltage	0.01%+2mV	0.01%+6mV	0.01%+18mV	0.01%+2mV	0.01%+8mV	0.01%+10mV
Current	0.01%+25mA	0.01%+5mA	0.03%+20mA	0.01%+25mA	0.01%+10mA	0.01%+12mA
Load Regulation						
Voltage	0.01%+3mV	0.01%+10mV	0.01%+50mV	0.01%+3mV	0.01%+12mV	0.01%+18mV
Current	0.01%+10mA	0.01%+5mA	0.03%+40mA	0.01%+10mA	0.01%+20mA	0.01%+28mA
Voltage Measurement						
Range	6V/30V	20V/100V	60V/300V	8V/40V	16V/80V	20V/100V
Accuracy	0.05% + 0.05%F.S.	0.05% + 0.05%F.S.	0.05% + 0.05%F.S.	0.05% + 0.05%F.S.	0.05% + 0.05%F.S.	0.05% + 0.05%F.S.
Current Measurement						
Range	16A/80A	5A/25A	1.6A/8A	24A / 120A	12A/60A	10A/50A
Accuracy	0.1% + 0.2%F.S.	0.1% + 0.2%F.S.	0.1% + 0.1%F.S.	0.1% + 0.1%F.S.	0.1% + 0.1%F.S.	0.1% + 0.1%F.S.
Output Noise (0 ~ 20MHz)						
Voltage Ripple (P-P)	60 mV	85 mV	180 mV	90 mV	100 mV	100 mV
Voltage Ripple (rms)	8 mV	10 mV	90 mV	10 mV	10 mV	15 mV
Current Ripple (rms)	60 mA	10 mA	60 mA	120 mA	30 mA	20 mA
OVP Adjustment Range	110% of Vset to 110% of Vmax	110% of Vset to 110% of Vmax	110% of Vset to 110% of Vmax	110% of Vset to 110% of Vmax	110% of Vset to 110% of Vmax	110% of Vset to 110% of Vmax
Slew Rate Range						
Voltage (with USB)	0.001V - 5V/ms	0.001V - 10V/ms	0.01V - 10V/ms	0.001V - 5V/ms	0.001V - 10V/ms	0.001V - 10V/ms
Current (with USB)	0.001A - 1A/ms	0.001A - 1A/ms	0.001A - 1A/ms	0.001A - 1A/ms	0.001A - 1A/ms	0.001A - 1A/ms
Programming Response Time (Typical)						
Rise Time (Full & No Load)	6 ms	10 ms	30 ms	8 ms	8 ms	10 ms
Fall Time	350ms(max)	300 ms(max)	2.5 s(max)	240 ms(max)	240 ms(max)	300 ms(max)
Efficiency	0.75	0.75	0.75	0.8	0.8	0.8
Drift (8 hours)						
Voltage	0.02% of Vmax	0.02% of Vmax	0.02% of Vmax	0.02% of Vmax	0.02% of Vmax	0.02% of Vmax
Current	0.04% of Imax	0.04% of Imax	0.04% of Imax	0.04% of Imax	0.04% of Imax	0.04% of Imax
Temperature Coefficient						
Voltage	0.02% of Vmax/°C	0.02% of Vmax/°C	0.02% of Vmax/°C	0.02% of Vmax/°C	0.02% of Vmax/°C	0.02% of Vmax/°C
Current	0.04% of Imax/°C	0.04% of Imax/°C	0.04% of Imax/°C	0.04% of Imax/°C	0.04% of Imax/°C	0.04% of Imax/°C
Transient Response Time	3 mS	3 mS	3mS	3mS	3 mS	3 mS
10 % step change	150 mV	180 mV	600 mV	150 mV	250 mV	250 mV
Voltage limit @ Series Mode	150V	500V	800V	200V	400V	500V
AC Input Voltage Ranges	95 to 250Vac	95 to 250Vac	95 to 250Vac	95 to 250Vac	95 to 250Vac	95 to 250Vac
Operating Temperature	0~40°C	0~40°C	0~40°C	0~40°C	0~40°C	0~40°C
Dimension (H x W x D)	89 x 430 x 425 mm / 3.5 x 16.93 x 16.73 inch					
Weight	12kg / 26.43 lbs	12.1 kg / 26.65 lbs	11.2 kg / 24.67 lbs	12kg / 26.43 lbs	13 kg / 28.63 lbs	12.1 kg / 26.65 lbs

ELECTRICAL SPECIFICATIONS-2

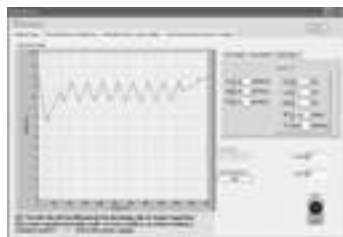
Model	62012P-600-8	62024P-40-120 *1	62024P-80-60	62024P-100-50	62024P-600-8 *1	62050P-100-100
Output Ratings						
Output Voltage	0-600V	0-40V	0-80V	0-100V	0-600V	0-100V
Output Current	0-8A	0-120A	0-60A	0-50A	0-8A	0-100A
Output Power	1200W	2400W	2400W	2400W	2400W	5000W
Line Regulation						
Voltage	0.01%+18mV	0.01%+2mV	0.01%+8mV	0.01%+10mV	0.01%+18mV	0.01%+8mV
Current	0.03%+20mA	0.01%+25mA	0.01%+10mA	0.01%+12mA	0.03%+20mA	0.01%+24mA
Load Regulation						
Voltage	0.01%+50mV	0.01%+3mV	0.01%+12mV	0.01%+18mV	0.01%+50mV	0.01%+12mV
Current	0.03%+40mA	0.01%+10mA	0.01%+20mA	0.01%+28mA	0.03%+40mA	0.01%+56mA
Voltage Measurement						
Range	120V/600V	8V / 40V	16V/80V	20V/100V	120V / 600V	20V/100V
Accuracy	0.05% + 0.05%F.S.	0.05% + 0.05%F.S.	0.05% + 0.05%F.S.	0.05% + 0.05%F.S.	0.05% + 0.05%F.S.	0.05% + 0.05%F.S.
Current Measurement						
Range	1.6A/8A	24A / 120A	12A/60A	10A/50A	1.6A / 8A	20A/100A
Accuracy	0.1% + 0.1%F.S.	0.1% + 0.1%F.S.	0.1% + 0.1%F.S.	0.1% + 0.1%F.S.	0.1% + 0.1%F.S.	0.1% + 0.1%F.S.
Output Noise (0 ~ 20MHz)						
Voltage Ripple (P-P)	180 mV	90 mV	100 mV	100 mV	180 mV	50 mV
Voltage Ripple (rms)	90 mV	10 mV	10 mV	15 mV	90 mV	15 mV
Current Ripple (rms)	60 mA	120 mA	30 mA	20 mA	60 mA	40 mA
OVP Adjustment Range	110% of Vset to 110% of Vmax	110% of Vset to 110% of Vmax	110% of Vset to 110% of Vmax	110% of Vset to 110% of Vmax	110% of Vset to 110% of Vmax	110% of Vset to 110% of Vmax
Slew Rate Range						
Voltage (with USB)	0.01V - 10V/ms	0.001V - 5V/ms	0.001V - 10V/ms	0.001V - 10V/ms	0.01V - 10V/ms	0.001V - 10V/ms
Current (with USB)	0.001A - 1A/ms	0.001A - 1A/ms	0.001A - 1A/ms	0.001A - 1A/ms	0.001A - 1A/ms	0.001A - 2A/ms
Programming Response Time (Typical)						
Rise Time (Full & No Load)	60 ms	8 ms	8 ms	10 ms	60 ms	10 ms
Fall Time	5 s(max)	240ms(max)	240 ms(max)	300 ms(max)	5 s(max)	850 ms(max)
Efficiency	0.8	0.8	0.85	0.85	0.8	0.85
Drift (8 hours)						
Voltage	0.02% of Vmax	0.02% of Vmax	0.02% of Vmax	0.02% of Vmax	0.02% of Vmax	0.02% of Vmax
Current	0.04% of Imax	0.04% of Imax	0.04% of Imax	0.04% of Imax	0.04% of Imax	0.04% of Imax
Temperature Coefficient						
Voltage	0.02% of Vmax/°C	0.02% of Vmax/°C	0.02% of Vmax/°C	0.02% of Vmax/°C	0.02% of Vmax/°C	0.02% of Vmax/°C
Current	0.04% of Imax/°C	0.04% of Imax/°C	0.04% of Imax/°C	0.04% of Imax/°C	0.04% of Imax/°C	0.04% of Imax/°C
Transient Response Time	3mS	3mS	3mS	3mS	3mS	3mS
10 % step change	600 mV	150 mV	250 mV	250 mV	600mV	250 mV
Voltage limit @ Series Mode	800V	200V	400V	500V	800V	500 V
AC Input Voltage Ranges	95 to 250Vac	190 to 250Vac (single phase)	190 to 250Vac (single phase)	190 to 250Vac (single phase)	190 to 250Vac (single phase)	190 to 250Vac (3 phase 4 wire, Delta connection) or 342 to 440Vac(3phase 5 wire, Y connection)
Operating Temperature	0-40°C	0-40°C	0-40°C	0-40°C	0-40°C	0-40°C
Dimensions (H x W x D)	89 x 430 x 425 mm / 3.5 x 16.93 x 16.73 inch					176 x 428 x 566 mm / 6.93 x 16.85 x 22.28 inch
Weight	11.2 kg / 24.67lbs	13 kg / 28.63 lbs	12.2 kg / 26.87 lbs	13 kg / 28.63 lbs	13 kg / 28.63 lbs	28 kg / 61.67 lbs

Note *1 : Call for availability

Soft Panel



Transient Voltage Programming



ISO 16750-2 4.5.3 Starting Profile



ISO 16750-2 4.5.1 Momentary Drop In Supply Voltage



Model 62050P-100-100

GENERAL SPECIFICATIONS	
Programming & Measurement Resolution	
Voltage (Front Panel)	10 mV
Current (Front Panel)	10 mA
Voltage (Remote Interface)	0.003% of Vmax
Current (Remote Interface)	0.002% of Imax
Voltage (Analog Programming Interface)	0.04% of Imax
Current (Analog Programming Interface)	0.04% of Imax
Programming Accuracy	
Voltage Programming (Front Panel and Remote Interface)	0.1% of Vmax
Voltage Programming (Analog Programming Interface)	0.2% of Vmax
Current Programming (Front Panel and Remote Interface)	0.3% of Imax
Current Programming (Analog Programming Interface)	0.3% of Imax
Programming Response Time	
Rise Time: For a programmed 5 to 95% step in output voltage. (Full & NoLoad)	See Electrical Specification
Fall Time: For a programmed 95% to 5 step in output voltage. (The fall time will be affected by the external loading from UUT.)	See Electrical Specification
Vout setting (USB send command to DC Power Supply receiver)	10ms
?Volt, ? Current (under USB command using Fetch)	10ms
?Volt, ? Current (under USB command using Measure)	70ms
Analog Programming Interface	
Voltage and Current Programming inputs	0-10Vdc or 0-5Vdc of F.S.
Voltage and Current monitor	0-10Vdc or 0-5Vdc of F.S.
Isolation: Maximum working voltage of any analog programming signal with respect to chassis potential.	70Vdc
Auxiliary Power Supply	
Output Voltage	12Vdc
Maximum current source capability	10mA
Remote Inhibit Function (I/O)	
Use to disable the output of DC Power Supply; Active Low	TTL
DC-ON Output Signal	
Indicate the output status, Active High	TTL
Fault Output Signal	
Indicate if there is a fault/protection occurred, Active Low	TTL
Series & Parallel operation function with Master / Slave control	
Voltage limit @ Series Mode	See Electrical Specification
Number of DC Power Supplies allowed @ master / slave control mode	5
Auto Sequencing Programmable Function (List Mode)	
Number of program	10
Number of sequence	100
Time Range	5ms ~ 15000S
TTL signal out	8 bits
TTL source capability	7 mA
Auto Sequencing Programmable Function (Step Mode)	
Start Voltage Range	0 ~ full scale
End Voltage Range	0 ~ full scale
Total Run Time Range	10ms ~ 99 hours
Slew Rate Control Function	
Voltage slew rate range (The fall rate will be affected by the discharge rate of the output capacitors especially under no load condition.)	See Electrical Specification
Current slew rate range of current	See Electrical Specification
Minimum transition time	0.5 ms
Remote Sense	
Line loss compensation	5V

ORDERING INFORMATION

62006P-30-80 : Programmable DC Power Supply 30V/80A/600W
62006P-100-25 : Programmable DC Power Supply 100V/25A/600W
62006P-300-8 : Programmable DC Power Supply 300V/8A/600W
62012P-40-120 : Programmable DC Power Supply 40V/120A/1200W
62012P-80-60 : Programmable DC Power Supply 80V/60A/1200W
62012P-100-50 : Programmable DC Power Supply 100V/50A/1200W
62012P-600-8 : Programmable DC Power Supply 600V/8A/1200W
* **62024P-40-120** : Programmable DC Power Supply 40V/120A/2400W
62024P-80-60 : Programmable DC Power Supply 80V/60A/2400W

62024P-100-50 : Programmable DC Power Supply 100V/50A/2400W
* **62024P-600-8** : Programmable DC Power Supply 600V/8A/2400W
62050P-100-100 : Programmable DC Power Supply 100V/100A/5000W
A620004 : GPIB Interface for Model 62000P Series
A620006 : Rack mounting kit for Model 62000P Series (2U model)
A620009 : Softpanel for 62000P Series
A620015 : Rack mounting kit for Model 62050P-100-100
* **A620023** : Ethernet Interface for Model 62000P Series

* Call for availability

Programmable DC Power Supply

Model No.

62000H Series



Programmable DC Power Supply Model 62000H Series

KEY FEATURES

- Power range: 5KW / 10KW / 15KW
- Voltage range: 0 ~ 600V
- Current range: 0 ~ 375A
- High power density (15KW in 3U)
- Easy Master / Slave parallel & series operation up to 150KW
- Precision V&I Measurements
- High-speed programming
- Voltage & Current Slew Rate Control
- Digital encoder knobs, keypad and function keys
- Current sharing operation
- Voltage ramp function (time range: 10 ms ~ 99 hours)
- Auto Sequencing Programming: 10 Programs / 100 Sequences
- OVP, Current Limit, Thermal protection
- Standard Analog Programming interface
- Standard USB / RS232 / RS485 interface
- Optional GPIB / Ethernet interface
- Remote output ON / OFF (I / P)
- Remote sense line drop compensation
- LabView and Labwindows
- CE Certified



Chroma's new 62000H Series of programmable DC power supplies offer many unique advantages for telecom, automated test system & integration, industrial, battery charge & simulation for hybrid cars and solar panel simulation. These advantage include high power density of 15KW in 3U, precision readback of output current and voltage, output trigger signals as well as the ability to create complex DC transients waveforms to test device behavior to spikes, drops, and other voltage deviations.

The 62000H Series includes 8 different models ranging from 5KW to 15KW, with current ranges up to 375A and voltage ranges up to 900V. The 62000H can easily parallel up to ten units capable of 150KW with current sharing for bulk power applications, for example, battery bank simulation of 450V/150A/ 67.5KW for electric vehicle and military use.

There are 100 user programmable input status on the front panel for automated test application and life cycle ON/OFF test. In addition, the 62000H has a 16 bit digital control with bright vacuum fluorescent display readout.

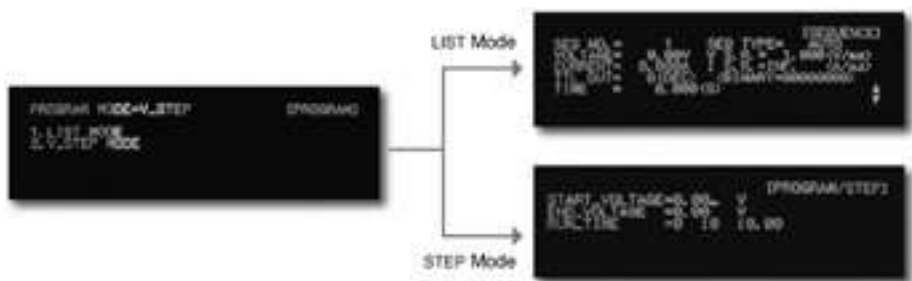
The 62000H series DC power supply are very easy to operate either from the front panel keypad or from the remote controller

via USB / RS232 / RS485 / APG (Standard) and GPIB & Ethernet (optional). Its compact size with 3U only can be stacked on a bench in a standard rack without any difficulties.

Another unique capability of the 62000H supplies is their ability to create complex DC transient waveforms. This capability allows devices to be tested to DC voltage dropouts, spikes and other voltage variations making them an ideal choice for aerospace device testing, inverter testing and other devices which will experience voltage interrupts. Applications include DC/DC Converter & Inverter voltage drop test, engine start-up simulation, battery automated charging, electronic product life cycle test, etc.

Programming Sequences Applications

The 62000H Series supplies' LIST and STEP modes allows for auto sequencing function. The LIST mode allows for 100 user programmable sequences with time settings ranging from 5ms to 15000s and voltage / current slew rate control. The STEP mode allows for setting start, end voltage and run time of 10ms to 99 hours for automated test applications. Applications include DC/DC Converter & Inverter voltage dropout testing, engine start-up simulation, battery automated charging, battery voltage dropout simulation, product life cycle testing and avionics testing.



ORDERING INFORMATION

- * **62150H-40** : Programmable DC Power Supply 40V/375A/15KW (Input 380 Vac)
- * **62150H-600** : Programmable DC Power Supply 600V/25A/15KW (Input 380 Vac)
- * **62100H-30** : Programmable DC Power Supply 30V/375A/11KW (Input 380 Vac)
- * **62100H-40** : Programmable DC Power Supply 40V/250A/10KW (Input 380 Vac)
- * **62100H-600** : Programmable DC Power Supply 600V/18A/10KW (Input 380 Vac)
- * **62075H-30** : Programmable DC Power Supply 30V/250A/7.5KW (Input 380 Vac)
- * **62050H-40** : Programmable DC Power Supply 40V/125A/5KW (Input 380 Vac)
- * **62050H-600** : Programmable DC Power Supply 600V/9A/5KW (Input 380 Vac)

* Call for availability

• Continued on next page →

ELECTRICAL SPECIFICATIONS

Model	62075H-30 *1	62050H-40 *1	62050H-600 *1	62100H-30 *1	62100H-40 *1	62100H-600 *1	62150H-40 *1	62150H-600 *1
Output Ratings								
Output Voltage *2	0~30V	0~40V	0~600V	0~30V	0~40V	0~600V	0~40V	0~600V
Output Current *3	0~250A	0~125A	0~9A	0~375A	0~250A	0~18A	0~375A	0~25A
Output Power	7500W	5000W	5000W	11250W	10000W	10000W	15000W	15000W
Line Regulation *4								
Voltage	± 0.01% of full scale							
Current	± 0.05% of full scale							
Load Regulation *5								
Voltage	± 0.02% of full scale							
Current	± 0.1% of full scale							
Voltage Measurement								
Range	6V / 30V	8V / 40V	120V / 600V	6V / 30V	8V / 40V	120V / 600V	8V / 40V	120V / 600V
Accuracy	0.05% + 0.05%F.S.							
Current Measurement								
Range	50A / 250A	25A / 125A	1.8A / 9A	75A / 375A	50A / 250A	3.6A / 18A	75A / 375A	5A / 25A
Accuracy	0.1% + 0.1%F.S.							
Output Noise & Ripple								
P-P (20MHz)	60 mV	60 mV	350 mV	60 mV	60 mV	350 mV	60 mV	350 mV
rms (Voltage)	15 mV	15 mV	40 mV	15 mV	15 mV	40 mV	15 mV	40 mV
rms (Current *6)	< ± 0.04% of full scale rms current							
OVP Adjustment Range								
Range	5~110% programmable from front panel, remote analog or optional digital inputs.							
Accuracy	± 1% of full-scale output							
Transient Response Time	Recovers within 1ms to ± 0.75% of steady-state output for a 50% to 100% or 100% to 50% load change(1A/us)							
Efficiency *7	0.87(Typical)							
Drift (30 minutes) *8								
Voltage	0.04% of Vmax							
Current	0.06% of Imax							
Drift (8 hours) *9								
Voltage	0.02% of Vmax							
Current	0.04% of Imax							
Temperature Coefficient *10								
Voltage	0.04% of Vmax/°C							
Current	0.06% of Imax/°C							

Note*1 : Call for availability

Note*2 : Minimum output voltage is <0.15% of rate voltage at zero output setting.

Note*3 : Minimum output current is<0.2% of rate current at zero output setting when measured with rated load resistance.

Note*4 : For input voltage variation over the AC input voltage range with constant rated load.

Note*5 : For 0-100% load variation with constant nominal line voltage.

Note*6 : Current mode noise is measured from 10% to 100% of rated output voltage full current.

Note*7 : Typical efficiency at nominal input voltage and full output power.

Note*8 : Maximum drift over 30 minutes with constant line,load ,and temperature after power on.

Note*9 : Maximum drift over 8 hours with constant line,load ,and temperature after 30 minute warm-up.

Note*10 : Change in output per °C change in ambient temperature with constant line and load.

GENERAL SPECIFICATIONS

Programming & Measurement Resolution

Voltage (Front Panel)	10 mV
Current (Front Panel)	10 mA
Voltage (Digital Interface)	0.002% of Vmax
Current (Digital Interface)	0.002% of Imax
Voltage (Analog Interface)	0.04% of Vmax
Current (Analog Interface)	0.04% of Imax

Programming Accuracy

Voltage (Front Panel and Digital Interface)	0.1% of Vmax
Current (Front Panel and Digital Interface)	0.3% of Imax
Voltage (Analog Interface)	0.2% of Vmax
Current (Analog Interface)	0.3% of Imax

Programming Response Time

Rise Time (Full Load)	For a programmed 5% to 95% step in output voltage. : 10ms
Rise Time (No Load)	For a programmed 5 to 95% step in output voltage. : 10ms
Fall Time (Full Load)	For a programmed 95% to 5 step in output voltage. : 60ms
Fall Time (10% Load)	For a programmed 95% to 5 step in output voltage. : 100ms
Fall Time (No Load)	For a programmed 95% to 5 step in output voltage. : 1s
Vout setting	GPIB send command to DC source receiver <20ms
?Volt , ? Current	Under GPIB command using Measure <25ms

Analog Interface (I/O)

Voltage and Current Programming inputs (I/P)	0~10Vdc / 0~5Vdc or 0~5k ohm / 0~1 mA ohm of F.S.
Voltage and Current monitor output (O/P)	0~10Vdc or 0~5Vdc / 4~20mA of F.S.
Remote Output ON/OFF (I/P)	Dry contact
DC_ON Signal (O/P)	Level by user define. (Time delay= 1 ms at voltage slew rate of 10V/ms.)
CV or CC mode Indicator (O/P)	TTL Level High=CV mode; TTL Level Low=CC mode
OTP Indicator (O/P)	TTL: Active High
System Fault indicator (O/P)	TTL: Active High
Auxiliary power supply (O/P)	Nominal supply voltage : 12Vdc / Maximum current sink capability: 10mA
Safety interlock (I/P)	Time accuracy: <100ms
Remote inhibit (I/P)	TTL: Active Low
Reserved: 4 bits I/O	I/P = 2 , O/P = 2
Series & Parallel operation	Master / Slave control via CAN for 10 units up to 150KW. (Series: two units / Parallel: ten units /Series voltage: 1200Volt. PS:600V model only)

Auto Sequencing (List mode)

Number of program	10
Number of sequence	100
Dwell time Range	5ms ~ 15000S
Trig. Source	Manual / Auto / External

Slew Rate Control

Voltage slew rate range *1	0.001V/ms ~ 10V/ms
Current slew rate range	0.001A ~ 1A/ms
Minimum transition time	0.5 ms

Auto Sequencing (Step mode)

Start voltage	0 to Full scale
End voltage	0 to Full scale
Run time	10 ms - 99 hours
Trig. Source	Manual / Auto / External

Others

AC input voltage operating range	396~528 Vac 3phase 3 wire + safety ground standard
AC frequency range	47~63 Hz
Power factor	0.78(Typical)
Maximum Remote Sense Line Drop Compensation	<100V model: 5% of full scale voltage per line(10% total) ; >100 model 2% of full scale voltage per line (4% total)
Dimension (H x W x D)	132.8 x 482.6 x 63.8 mm / 5.22 x 19 x 2.51 inch (>40V model) 132.8 x 482.6 x 64.7 mm / 5.22 x 19 x 2.55 inch (<40V model)
Weight	34 kg / 75 lbs
Operating Temperature Range	0 ~ 50°C
Storage Temperature Range	-40~ +85°C

Note*1: The fall rate will be affected by the discharge rate of the output capacitors especially under no load condition.



Modular DC Power Supply for Burn-in & Plating Applications Model 62000B Series

KEY FEATURES

- Voltage range: 1 ~ 150V
- Current range: 0 ~ 2000A (System)
- Power range: 1.5kW per module up to 120kW per system
- N+1 Redundancy
- High Power Density (464 mW / cm³ = 7.13 W/In³)
- Hot-swappable
- Ideal for Burn-in & Plating
- Remote Sense
- Remote ON / OFF
- CAN Bus Control
- DC OK Signal Output



Chroma's new 62000B series of Modular DC Power Supplies offer many unique features for Burn-in and plating applications. The features include a N+1 redundancy, high power densities, hot-swappable maintenance, remote ON/OFF and programmable control via the CAN bus.

The 62000B family offers 5 types of power module with ranging from 1V to 150V, current from 10A to 90A, and offers two mainframe type of six and three position. The six position mainframe can envelop in up to six power modules paralleled operation for 9KW power output. The 62000B can easily parallel up to fourteen mainframe to 120KW with current sharing and CAN bus control for bulk power applications.

The Modular DC Power Supplies of 62000B are very cost effective with high power density and low current ripple. These instruments have been designed for burn-in applications such as the LCD panels, DC-DC converters, power inverters, notebook computers, battery chargers and many other types of electronic devices.

Modern power factor correction circuitry is incorporated in 62000B providing an input power factor above 0.98 to meet the IEC requirements. This PFC correction circuitry not only reduces the input current but also raises the operating efficiency to over 80%. Optional graphic SoftPanels and CAN bus control allow for control and monitoring of the power system using an easy to use graphical interface.

Hot-swap Operation

Equipped with the functionality of N+1 redundancy and hot-swap, the 62000B Series of modular DC power supplies are most applicable for 24 hours non-stop applications such as the SMD plating production lines, as well as product life burn-in test for IT products like DC converters, LCD backlight inverters and routers

For continuous operation applications the modular hot-swap design allows engineers to replace the failure unit on-site without shutting down the entire system.



High Power Applications with CSU

The 62000B modular power supplies are capable of providing high power output up to 120KW/2000A with minimum specification degradation via CSU(Control & Supervisor Unit). Each chassis is designed to accommodate a maximum of 9KW and include current sharing capability to ensure system stability. In addition, for convenient control of even large power systems, a Control & Supervisor unit is provided to set and display output and protection circuits via a standard CAN bus communication protocol.



Control & Supervisor Unit



Customized Power Solution

AVAILABLE POWER RATINGS					
Current Rating Power Rating Voltage Rating	9KW	18KW	27KW	36KW	45KW
15V	540A	1080A	1620A	2160A	2700A
30V	300A	600A	900A	1200A	1500A
60V	150A	300A	450A	600A	750A
80V	108A	216A	324A	432A	540A
150V	60A	120A	180A	240A	300A
Paralleled unit of mainframe	1	2	3	4	5

Note : Call for more information on customization of high power system (>2000A)

All specifications are subject to change without notice.

SPECIFICATIONS					
Model	62015B-15-90	62015B-30-50	62015B-60-25	62015B-80-18	62015B-150-10
Electrical Specifications					
Output Ratings					
Output Power	1350W	1500W	1500W	1440W	1500W
Output Voltage	1~15V	1~30V	1~60V	1~80V	1~150V
Output Current	1~90A	1~50A	1~25A	1~18A	1~10A
Line Regulation	0.1% FS				
Load Regulation *1	1% FS				
Programming Accuracy	1% FS				
Measurement Accuracy	1% FS				
Output Noise (20MHz)					
Voltage Noise (P-P)	100mV	100mV	200mV	200mV	400mV
Voltage Ripple (rms)	30mV	30mV	50mV	50mV	100mV
Current Ripple (rms)	0.9A	0.5A	0.25A	0.18A	0.1A
Efficiency	> 87% @ full load	> 88% @ full load			
Turn on over shoot voltage *2	5% of nominal output				
Transient Response Time *3	< 5 ms				
AC Input Voltage					
Six Position Mainframe	187 ~ 250 Vac (3 Phase 4 Wire, Δ Connection) or 323 ~ 437 Vac (3 Phase 5 Wire, Y Connection) / 45 ~ 65 Hz				
Three Position Mainframe	187 to 250 Vac (single phase) / 45 ~ 65 Hz				
Input Power Factor	> 0.98@ full load				
Protection Function					
OVP	Automatically shuts down at 115% of set value				
Adjustment Range	1~16V	1~31V	1~65V	1~83V	1~155V
OCP	Current limit (0 ~ 100%) / OCP Shutdown at 115% of F.S.				
OTP	Automatically shuts down if internal limit is reached				
I/O Signal					
Remote ON/OFF (I/P)	Dry contact (closed = enabled), vice versa				
AUX Voltage	4 ~ 24V / 0.5A at mainframe (by trimmer adjust voltage)				
DC OK Signal Type (O/P)	Dry contact (closed = enabled) (Error : OVP / OCP / OTP / AC Fault)				
Programming Response Time *4 (Typical)					
Rise Time (Full Load)	For a programmed 5% to 95% step in output voltage : 100ms				
Rise Time (No Load)	For a programmed 5% to 95% step in output voltage : 100ms				
Fall Time (Full Load)	For a programmed 95% to 5% step in output voltage : 40ms				
Fall Time (No Load)	For a programmed 95% to 5% step in output voltage : 5s				
Vout Setting	CAN Bus send command to DC module receiver : 1s				
Measurement V & I	Under CAN command using fetch : 100ms				
Delay Time	For output ON/OFF enable and disable (under CAN command) : 5s(Single Mainframe)				
General Specifications					
Remote Sensing	3V max. line loss compensation				
Parallel Operation	Current Sharing (± 5%)				
Operating Temperature	0 ~ 50°C				
Humidity Range	0 ~ 90% RH. Non-condensing				
Remote Interface	CAN Bus (optional)				
Safety & EMC	CE				
Dimension (H x W x D)	Mainframe : 175.6 x 443.9 x 466.2 mm / 6.91 x 17.48 x 18.35 inch (62000B-6-1) Mainframe : 175.6 x 239.9 x 466.2 mm / 6.91 x 9.44 x 18.35 inch (62000B-3-1) Module : 138.5 x 67.5 x 377.5 mm / 5.45 x 2.66 x 14.86 inch				
Weight	Mainframe : 14 Kg / 30.8 lbs (62000B-6-1) Mainframe : 8 Kg / 17.6 lbs (62000B-3-1) Module : 4 Kg / 8.8 lbs				

Note*1 : For 50% step load variation with remote sense at maximum output voltage

Note*2 : based on rise time of 100ms

Note*3 : Time for the output voltage to recover within 1% of its rated for a load changed of 25%

Note*4 : Six Position Mainframe through CAN

ORDERING INFORMATION

62000B-3-1 : Three Position 62000B Mainframe

62000B-6-1 : Six Position 62000B Mainframe

62015B-15-90 : DC Power Supply Module, 15V/90A/1350W

62015B-30-50 : DC Power Supply Module, 30V/50A/1500W

62015B-60-25 : DC Power Supply Module, 60V/25A/1500W

62015B-80-18 : DC Power Supply Module, 80V/18A/1440W

62015B-150-10 : DC Power Supply Module, 150V/10A/1500W

A620007 : Control & Supervisor Unit

A620008 : CAN Bus Interface for mainframe

A620010 : Rack Mounting Kit for mainframe

A620011 : Ethernet Interface for CSU

A620012 : AD-Link PCI 7841 CAN Bus Card

A620013 : 19" Rack (23U) for 62000B Series

A620014 : 19" Rack (41U) for 62000B Series

A620016 : Rack Mounting Kit for CSU

A620017 : Softpanel for 62000B Series

A620018 : NI USB-8473 high-speed USB to CAN interface

A620019 : USB Interface Control Box for mainframe & CSU

* **A620020** : GPIB Interface Control Box for mainframe & CSU

* **A620021** : APG Interface Control Box for mainframe

* **A620022** : RS-485 Interface Control Box mainframe & CSU

* Call for availability



Softpanel for Model 62000B Series



Programmable DC Power Supply Model 6200 Series 60W

KEY FEATURES

- Low output noise and ripple, excellent line and load regulation, and fast transient response
- Hundreds of single, dual, triple and quad output configurations
- Overvoltage protection (Option)
- Wide range of voltage/current combinations
- Analog, RS-232, or GPIB programming



The Chroma 6200 series low power (60W) programmable DC power source, deliver low output noise and ripple (Voltage < 1mVrms, Current < 1mA), excellent line and load regulation, and fast transient response. With wide range of voltage (7V-250V), Current (0.25A-6A) combinations, it is used in every part of your manufacturing process from design to production test.

For higher power requirements, the 6200 series can be easily combined with 6203 series supplies in dual, triple, and quad configurations. With six standard models, three remote programming options, including Internal Analog Programming interface (APG)-master/slave tracking, Internal RS-232 interface-serial instrument programming using the RS-232 protocol, GPIB Interface with 14 bits resolution and software calibration. The instrument offers quality and reliability for even most demanding applications in production testing, R&D design characterization, and QA verification.

ORDERING INFORMATION

- 6200-7** : DC Power Supply 7V/6A/42W
6200-15 : DC Power Supply 15V/4A/60W
6200-20 : DC Power Supply 20V/3A/60W
6200-30 : DC Power Supply 30V/2A/60W
6200-60 : DC Power Supply 60V/1A/60W
6200-120 : DC Power Supply 120V/0.5A/60W
6200-250 : DC Power Supply 250V/0.25A/60W
A620001 : Analog Programming Interface for Model 6200/6203 Series
A620002 : RS-232 Interface for Model 6200/6203 Series
A620003 : GPIB Interface for Model 6200/6203 Series

SPECIFICATIONS *1

Model	6200-7	6200-15	6200-20	6200-30	6200-60	6200-120	6200-250
Output Ratings							
Output Voltage	0-7V	0-15V	0-20V	0-30V	0-60V	0-120V	0-250V
Output Current	0-6A	0-4A	0-3A	0-2A	0-1A	0-0.5A	0-0.25A
Output Power	42W	60W	60W	60W	60W	60W	60W
Line Regulation *2							
Voltage	2mV	2mV	2mV	2mV	2mV	2mV	3mV
Current	0.4mA	0.4mA	0.4mA	0.3mA	0.3mA	0.3mA	0.25mA
Load Regulation *3							
Voltage	2mV	2mV	2mV	2mV	2mV	2mV	3mV
Current	0.4mA	0.4mA	0.4mA	0.3mA	0.3mA	0.3mA	0.25mA
Meter Accuracy							
Voltage (1% of Vmax+1 count)	0.08V	0.25V	0.3V	0.4V	0.7V	2.2V	3.5V
Current (1% of Imax+1 count)	0.07A	0.05A	0.04A	0.03A	0.02A	0.006A	0.003A
Output Noise and Ripple (20Hz-20MHz)							
Voltage	<1mVrms						
Current	<1mA rms						
Stability *4							
Voltage (0.02% of V max)	1.4mV	3mV	4mV	6mV	12mV	24mV	50mV
Current (0.03% of I max)	1.8mA	1.2mA	0.9mA	0.6mA	0.3mA	0.15mA	0.075mA
Temperature Coefficient *5							
Voltage (0.015% of V max/°C)	1.05mV	2.25mV	3mV	4.5mV	9mV	18mV	37.5mV
Current (0.02% of I max/°C)	1.2mA	0.8mA	0.6mA	0.4mA	0.2mA	0.1mA	0.05mA
Front Panel Voltage Control Resolution (0.02% of Vmax)	1.4mV	3mV	4mV	6mV	12mV	24mV	50mV

- *1. Specifications indicate typical performance at 25°C ± 5°C, nominal line input of 115 Vac.
 *2. For input voltage variation over the AC input voltage range, with constant rated load.
 *3. For 0-100% load variation, with constant nominal line voltage.
 *4. Drift over 8 hours after 30-minute warmup
 *5. Change in output per °C change in ambient temperature, with constant line and load.

Remote Analog Programming (option): 0-10Vdc for 0-100% of rated voltage or current ± 0.1%, 0-10kΩ for 0-100% of rated voltage or current ± 0.1%
OVP Trip Range: 3V to full output +10%
Remote On/Off: 2 to 25Vdc high. <0.8Vdc low. User-selectable.
Tracking Accuracy: ± 1% for series operation
Operating Ambient Temperature: 0-30°C for full rated output. Above 30°C, derate output linearly to zero at 70°C
Storage Temperature Range: -55 to +85°C
Humidity Range: Up to 80% RH, Non-condensing

Voltage Mode Transient Response Time: <100μs recovery to 0.05% band, for ± 50% load change in the range of 25% to 100% of the rated load
Front Panel Control: 10-turn voltage and 1-turn current potentiometers (10-turn current control optional)
Front Panel Voltage Control Resolution: 0.02% of Vrms
Weight: 3.5 Kgs (7.7 lbs)
Agency Approvals: CSA
Dimension (HxWxD): 132x109x297mm / 5.2x4.29 x11.63inch



Programmable DC Power Supply Model 6203 Series 300W

KEY FEATURES

- Excellent regulation and transient response
- Single, dual, triple, and quad outputs
- Analog, GPIB, or RS-232 programming
- Overvoltage protection (Option)



The Chroma 6203 series programmable DC power source offers maximum rated DC power for output Voltage (15V/30V/60V), output current (5A/10A/20A), output power (300W), is an exceptional product providing the highest power density in its class to any bench or system application.

The higher precision requirement, 6203 series can be easily combined with 6200 series in dual, triple and quad configurations. Multiple units can be combined in auto parallel, auto series and auto tracing configurations to obtain more Voltage/Current output. For enhanced control, you can upgrade the 6203 series from front panel control to remote analog signal to computer programming. Excellent regulation and transient, the voltage mode transient response time less than 500 μ s recovery to 50mV band for 50% load change in the range of 25% to 100% of the rated load, and the front panel control 10-turn voltage and 1-turn current potentiometers, allow accurate adjustment of voltage and current output settings, the constant-voltage, constant current output allows operation as either a voltage source or current source.

The 6203 series is very easy to operate from the front panel keypad, or from the remote controller via IEEE 488, RS-232 or APG (Analog Programming Interface). The APG includes over voltage protection (OVP), remote ON/OFF, master slave tracking, output voltage and current can be controlled with external 0-10 voltage analog signals.

ORDERING INFORMATION

- 6203-15** : DC Power Supply 15V/20A/300W
6203-30 : DC Power Supply 30V/10A/300W
6203-60 : DC Power Supply 60V/5A/300W
A620001 : Analog Programming Interface for Model 6200/ 6203 Series
A620002 : RS-232 Interface for Model 6200/6203 Series
A620003 : GPIB Interface for Model 6200 / 6203 Series

SPECIFICATIONS *1			
Model	6203-15	6203-30	6203-60
Output Ratings			
Output Voltage	0-15V	0-30V	0-60V
Output Current	0-20A	0-10A	0-5A
Output Power	300W	300W	300W
Line Regulation *2			
Voltage	2mV	2mV	2mV
Current	3mA	2mA	1.5mA
Load Regulation *3			
Voltage	2mV	2mV	2mV
Current	3mA	2mA	1.5mA
Meter Accuracy			
Voltage (1% of Vmax+1 count)	0.25V	0.4V	0.7V
Current (1% of Imax+1 count)	0.3A	0.2A	0.06A
Output Noise and Ripple at rear output (0Hz-20MHz)	rms	5mV	5mV
	p-p	75mV	100mV
Stability *4			
Voltage(0.02% of Vmax)	3mV	6mV	12mV
Current(0.03% of Imax)	6mA	3mA	1.5mA
Temperature Coefficient *5			
Voltage (0.015% of Vmax/°C)	2.25mV	4.5mV	9mV
Current (0.02% of Imax/ °C)	4mA	2mA	1mA
Front Panel Voltage Control Resolution (0.02% of Vmax)	3mV	6mV	12mV

*1. Specifications indicate typical performance at 25°C $\pm$ 5°C, nominal line input of 120 Vac.

*2. For input voltage variation over the AC input voltage range, with constant rated load

*3. For 0-100% load variation, with constant nominal line voltage

*4. Drift over 8 hours after 60 minute warmup

*5. Change in output per °C change in ambient temperature, with constant line and load

Remote Analog Programming (option): 0-10Vdc for 0-100% of rated voltage or current $\pm$ 0.1%, 0-10k Ω for 0-100% of rated voltage or current $\pm$ 0.1%

OVP Trip Range: 3V to full output +10%

AC Input(default): Single Unit: 104-127Vac at 6Arms;

Dual Units: 104-127Vac at 12Arms, 47-63Hz

Operating Ambient Temperature: 0-30°C with default local sensing. Above 30°C, derate output linearly to zero at 70°C

Storage Temperature Range: -55 to +85°C

Humidity Range: 0-80% RH, Non- condensing

Front Panel Control: 10-turn voltage and 1-turn current potentiometers (10-turn current control optional)

Voltage Mode Transient Response Time: < 500 μ s recovery to 50mV band for $\pm$ 50% load change in the range of 25% to 100% of the rated load

Switching Frequency: 100kHz (nominal)

Weight: 3.5Kgs (7.7 lbs)

Agency Approvals: CE

Dimension (HxWxD): 132x109x297mm / 5.2x4.29 x11.63inch



Programmable DC Power Supply Model 6210 Series 1000W

KEY FEATURES

- Built-in power factor correction circuit provides input power factor of over 0.98 minimum for full load.
- Thermal shutdown.
- Optional internal computer control (GPIB).
- Standard overvoltage protection (OVP).

High performance to meet critical testing need, the Chroma 6210 series programmable DC power source incorporates modern power factor correction circuitry to increase the input power factor to more than 0.98 to meet IEC regulations, thus reduces the input current requirement and raises the efficiency over 80%. Isolated



interface to isolate analog remote programming controls either the unit's output voltage or current to obtain full output power with lower noise and higher precision.

This 6210 series of constant-voltage, constant-current power supplies is available in power ranges 1000W (in 3 1/2 inches of vertical rack space, half-rack cases). All models have 10-turn voltage and current controls that vary the voltage (7.5V-600V) and current (1.7A-130A) outputs from zero to the maximum rated values. Crossover from constant voltage to constant current operation occurs automatically when the load current exceeds the control settings, another provides an adjustable current limit, allowing user to the current limit without your having to short the output.

High density and precision of 6210 series also include the remote controller via IEEE-488 interface designed as a plug-in card to change the unit in seconds into a computer controlled system power source. All the outputs on these models are protected against overload and over-temperature damage. Protection circuits prevent output voltage overshoot when supply is turned on and off. It can be used for R&D design characterization, production testing, and QA verification of commercial, industrial, and aerospace electronic products.

ORDERING INFORMATION

- 6210-7.5** : DC Power Supply 7.5V/130A/975W
- 6210-20** : DC Power Supply 20V/50A/1000W
- 6210-33** : DC Power Supply 33V/33A/1089W
- 6210-40** : DC Power Supply 40V/25A/1000W
- 6210-60** : DC Power Supply 60V/18A/1080W
- 6210-100** : DC Power Supply 100V/10A/1000W
- 6210-150** : DC Power Supply 150V/7A/1050W
- 6210-300** : DC Power Supply 300V/3.5A/1050W
- 6210-600** : DC Power Supply 600V/1.7A/960W
- A621001** : Isolated Programming Interface
- A621002** : GPIB Interface for Model 6210 Series
- A621003** : RS-232 Interface for Model 6210 Series
- A621006** : Rack Mounting Kit for Model 6210 Series

SPECIFICATIONS *1									
Model	6210-7.5	6210-20	6210-33	6210-40	6210-60	6210-100	6210-150	6210-300	6210-600
Output Ratings									
Output Voltage	0-7.5V	0-20V	0-33V	0-40V	0-60V	0-100V	0-150V	0-300V	0-600V
Output Current	0-130A	0-50A	0-33A	0-25A	0-18A	0-10A	0-7A	0-3.5A	0-1.7A
Output Power	975W	1000W	1089W	1000W	1080W	1000W	1050W	1050W	1020W
Line Regulation *2									
Voltage	3mV	4mV	5mV	8mV	8mV	12mV	17mV	32mV	62mV
Current	14mA	6mA	4.3mA	2.8mA	2.8mA	2mA	1.7mA	1.3mA	1.2mA
Load Regulation *3									
Voltage	3mV	4mV	5mV	6mV	8mV	12mV	17mV	32mV	62mV
Current	66mA	26mA	18mA	14mA	10mA	6mA	4.5mA	3mA	2mA
Meter Accuracy									
Voltage	0.09V	0.3V	0.43V	0.5V	0.7V	1.1V	1.6V	4V	7V
Current	1.4A	0.6A	0.43A	0.35A	0.19A	0.11A	0.08A	0.05A	0.03A
Output Noise & Ripple (V)									
rms	10mV	10mV	7.5mV	7.5mV	10mV	10mV	20mV	30mV	120mV
p-p (0-20MHz)	70mV	70mV	75mV	75mV	75mV	100mV	150mV	250mV	500mV
Stability *4									
Voltage (0.05% of Vmax)	3.75mV	10mV	16.5mV	20mV	30mV	50mV	75mV	150mV	300mV
Current (0.1% of Imax)	130mA	50mA	33mA	25mA	18mA	10mA	7mA	3.5mA	1.7mA
Temperature Coefficient *5									
Voltage (0.02% of V max/°C)	1.5mV	4mV	6.6mV	8mV	12mV	20mV	30mV	60mV	120mV
Current (0.03% of I max/°C)	39mA	15mA	9.9mA	7.5mA	5.4mA	3mA	2.1mA	1.1mA	0.48mA
Maximum Remote Sense Line Drop Compensation *6									
	3V/line	5V/line	5V/line	5V/line	5V/line	5V/line	5V/line	5V/line	5V/line
OVP Adjustment Range (5% to 110% of Vmax)									
	0.375-8.25V	1-22V	1.65-36.3V	2-44V	3-66V	5-110V	7.5-165V	15-330V	30-660V

- *1. Specifications indicate typical performance at 25°C ±5°C, nominal line input of 120 Vac.
- *2. For input voltage variation over the AC input voltage range, with constant rated load.
- *3. For 0-100% load variation, with constant nominal line voltage.
- *4. Maximum drift over 8 hours with constant line, load, and temperature, after 30 minutes warm-up
- *5. Change in output per °C change in ambient temperature, with constant line and load
- *6. Line drop is subtracted from total voltage available at supply output

AC Input: 85-250Vac, 47-63Hz; Power factor corrected. 13A max @100Vac, 11A max @120Vac, 6A max @220Vac. Derate maximum output power to 900 Watts for AC input less than 95V

Power Factor: 0.98 minimum for full load

Input Harmonic Distortion: Current harmonics meet IEC1000-3-2 limits

Maximum Voltage Differential from Output to Safety Ground: 600Vdc

Storage Temperature Range: -40 to +85°C

Humidity Range: 0 to 80% RH Non-condensing

Time Delay from power on until output stable: 4 seconds maximum

Voltage Mode Transient Response Time: 1ms for output voltage to recover within 0.5% of previous level after step change in load current of up to 50% of rated output

Switching Frequency: Nominal 125KHz (250KHz output ripple)

Typical Efficiency: >80%

Remote Start/Stop and Interlock: TTL Compatible Input, selectable logic

Remote Analog Programming (full scale input): Voltage: 0-5K, 0-10k resistances; 0-5V, 0-10V sources. Current: 0-5k, 0-10k resistances; 0-5V, 0-10V sources

Remote Monitoring: 0 to full scale output, 1% accuracy

Voltage: 0-5V, 0-10V monitor

Current: 0-5V, 0-10V monitor

Front Panel Control: 10-turn voltage and current potentiometers

Front Panel Voltage Control Resolution: 0.02% of Vmax

Weight: Approx. 6.4 Kgs (14 lbs)

Agency Approvals: CSA, CE, UL

Dimension (HxWxD): 86.4x216x472mm / 3.4x8.5 x18.59inch



The 6201F series is our newest line of power supplies. It incorporates our most advanced technology and design philosophy.

The 6201F series uses zero voltage switching which results in increased efficiency and lower noise. This latest development in power conversion technology has only recently been implemented by manufacturers of fixed output power supplies.

The 6201F series caters to the applications needs of computer controlled component burn-in, electroplating, process control, magnet control, and other high powered requirements.

The 6201F is a 19" rack mountable power supply which allows for a 1.75"(1U) vertical rack space.



Programmable DC Power Supply Model 6201F Series

1200W / Low Cost - High Power

KEY FEATURES

- Soft start operation limiting in-rush current on power up
- Lower losses in power and higher efficiency
- Quiet operation
- Multiple fans to maintain cooling and speed controlled for long life
- Analog programming as a standard feature
- Multiple level shut down for safe operation

SPECIFICATIONS *1											
Model	6201F-6	6201F-7.5	6201F-12	6201F-20	6201F-35	6201F-40	6201F-60	6201F-100	6201F-150	6201F-300	6201F-600
Output Ratings											
Output Voltage	0-6V	0-7.5V	0-12V	0-20V	0-35V	0-40V	0-60V	0-100V	0-150V	0-300V	0-600V
Output Current	0-200A	0-140A	0-100A	0-60A	0-35A	0-30A	0-20A	0-12A	0-8A	0-4A	0-2A
Output Power	1200W	1050W	1200W	1200W	1225W	1200W	1200W	1200W	1200W	1200W	1200W
Line Regulation *2											
Voltage	2.5mV	2.75mV	3.2mV	4mV	6mV	6mV	8mV	12mV	17mV	32mV	62mV
Current	20mA	16mA	12mA	8mA	5mA	5mA	4mA	3.2mA	2.8mA	2.4mA	2.2mA
Load Regulation *3											
Voltage	3mV	6.5mV	7.4mV	9mV	13mV	13mV	17mV	27mV	35mV	65mV	125mV
Current	20mA	33mA	25mA	17mA	11mA	11mA	9mA	7.4mA	6.6mA	5.8mA	5.4mA
Meter Accuracy											
Voltage (1% of Vmax+1 count)	0.07V	0.09V	0.13V	0.3V	0.4V	0.5V	0.7V	1.1V	1.6V	4V	7V
Current (1% of Imax+1 count)	2.5A	1.5A	1.1A	0.7A	0.45A	0.4A	0.3A	0.13A	0.09A	0.05A	0.03A
Output Noise & Ripple (V)											
rms	5mV	10mV	10mV	10mV	10mV	10mV	10mV	10mV	20mV	70mV	80mV
p-p (0-20MHz)	50mV	75mV	75mV	75mV	150mV	150mV	150mV	150mV	150mV	200mV	400mV
Stability *4											
Voltage (0.05% of Vmax)	3mV	3.75mV	6mV	10mV	17.5mV	20mV	30mV	50mV	75mV	150mV	300mV
Current (0.05% of Imax)	200mA	70mA	50mA	30mA	17.5mA	15mA	10mA	6mA	4mA	2mA	1mA
Temperature Coefficient *5											
Voltage (0.02% of V max/°C)	1.2mV	1.5mV	2.4mV	4mV	7mV	8mV	12mV	20mV	30mV	60mV	120mV
Current (0.03% of I max/°C)	60mA	42mA	30mA	18mA	10.5mA	9mA	6mA	3.6mA	2.4mA	1.2mA	0.6mA
OVP Adjustment Range (5% to 110% of Vmax)											
	0.3-6.6V	0.375-8.25V	0.6-13.2V	1-22V	1.75-38.5V	2-44V	3-66V	5-110V	7.5-165V	15-330V	30-660V

- *1. These Specifications indicate typical performance at 25°C ± 5°C, nominal line input of 120 Vac.
- *2. For input voltage variation over the AC input voltage range, with constant rated load.
- *3. For 0-100% load variation, with constant nominal line voltage.
- *4. Maximum drift over 8 hours with constant line, load, and temperature, after 30 minute warm-up.
- *5. Change in output per °C change in ambient temperature, with constant line and load.
- *6. Derate output current on 6V model by 1.5A per °C for operating temperature 30-50°C

AC Input Voltage Range: 85-130Vac or 190-264Vac, 1Ø (17A max @120Vac; 8.8A max @230Vac typical)

Frequency: 47-63Hz

Maximum Voltage Differential from Output to Safety

Ground: 600Vdc

Time Delay from Power on Until Output Stable: 7 seconds maximum

Voltage Mode Transient Response Time: <3ms for the output voltage to recover within 0.5% of its previous level after a step change in load current of 10%-90% of rated output.

Switching Frequency: Nominal 78KHz (156KHz output ripple)

Typical Efficiency: 85%

Maximum Remote Sense Line Drop Compensation: 5V/line (line drop is subtracted from total voltage available at supply output)

Remote Monitoring:

Output voltage and current: 0-5V, 0-10V 0 to full scale output, 1% accuracy

Remote Start/Stop and Interlock: TTL Compatible Input, selectable logic

Agency Approvals: CE, CSA, UL and FCC, Part 15.

Programming

Remote analog programming (Full Scale Input) - voltage and current programming: 0-5k, 0-10k

resistance: 0-5V (factory default), 0-10V voltage sources

Optional isolated program and readback (V&I)-0-5V. Optional digital control, RS232C, GPIB interfaces

Environmental Specifications

Operating Temperature Range: 0°C - 50°C From 50°C - 70°C, derate output current 2% per°C

Storage Temperature Range: -20 to +70°C

Humidity Range: 30-90% RH Non-condensing

Cooling: Fan cooled. Air exhaust to rear.

Overttemperature Shutdown: automatic restart or latch off

Weight: 8.2 Kgs (18lbs)

Dimension (HxWxD): 43.2x429.4x508.1mm / 1.7x16.91x20inch



Programmable DC Power Supply Model 6202F Series

2800W / Low Cost - High Power

KEY FEATURES

- Soft start operation limiting in-rush current on power up
- Lower losses in power and higher efficiency
- Quiet operation
- Multiple fans to maintain cooling and speed controlled for long life
- Analog programming as a standard feature
- Multiple level shut down for safe operation



The 6202F series is our newest line of power supplies. It incorporates our most advanced technology and design philosophy.

The 6202F series uses zero voltage switching which results in increased efficiency and lower noise. This latest development in power conversion technology has only recently been implemented by manufacturers of fixed output power supplies.

The 6202F series caters to the applications needs of computer controlled component burn-in, electroplating, process control, magnet control, and other high powered requirements.

The 6202F is a 19" rack mountable power supply which is available in a 3.5" (2U) size.

ORDERING INFORMATION

6202F-7.5 : DC Power Supply 7.5V/300A/2250W
6202F-12 : DC Power Supply 12V/220A/2640W
6202F-20 : DC Power Supply 20V/130A/2600W
6202F-33 : DC Power Supply 33V/85A/2805W
6202F-40 : DC Power Supply 40V/70A/2800W
6202F-60 : DC Power Supply 60V/46A/2760W
6202F-100 : DC Power Supply 100V/28A/2800W
6202F-150 : DC Power Supply 150V/18A/2700W
6202F-300 : DC Power Supply 300V/9A/2700W
6202F-600 : DC Power Supply 600V/4A/2400W
A620100 : Isolated Programming Interface for Model 6201F/6202F Series
A620101 : GPIB Interface for Model 6201F/6202F Series
A620102 : RS-232 Interface for Model 6201F/6202F Series
Special Modification : M19 (6202F-600 modify for 420V/7A)

SPECIFICATIONS *1										
Model	6202F-7.5	6202F-12	6202F-20	6202F-33	6202F-40	6202F-60	6202F-100	6202F-150	6202F-300	6202F-600
Output Ratings										
Output Voltage	0-7.5V	0-12V	0-20V	0-33V	0-40V	0-60V	0-100V	0-150V	0-300V	0-600V
Output Current	0-300A	0-220A	0-130A	0-85A	0-70A	0-46A	0-28A	0-18A	0-9A	0-4A
Output Power	2250W	2640W	2600W	2805W	2800W	2760W	2800W	2700W	2700W	2400W
Line Regulation *2										
Voltage	2.75mV	3.2mV	4mV	6mV	6mV	8mV	12mV	17mV	32mV	62mV
Current	32mA	24mA	15mA	9mA	9mA	6.6mA	4.8mA	3.8mA	2.9mA	2.4mA
Load Regulation *3										
Voltage	6.5mV	7.4mV	9mV	13mV	13mV	17mV	27mV	35mV	65mV	125mV
Current	65mA	49mA	31mA	19mA	19mA	14.2mA	10.6mA	8.6mA	6.8mA	5.8mA
Meter Accuracy										
Voltage (1% of Vmax+1 count)	0.09V	0.13V	0.3V	0.43V	0.5V	0.7V	1.1V	1.6V	4V	7V
Current (1% of Imax+1 count)	4A	2.3A	1.4A	0.95A	0.8A	0.56A	0.38A	0.19A	0.1A	0.05A
Output Noise & Ripple (V)										
rms	10mV	10mV	10mV	15mV	15mV	15mV	25mV	25mV	40mV	100mV
p-p (0-20MHz)	100mV	100mV	100mV	150mV	150mV	150mV	175mV	200mV	400mV	500mV
Stability *4										
Voltage	3.75mV	6mV	10mV	16.5mV	20mV	30mV	50mV	75mV	150mV	300mV
Current	150mA	110mA	65mA	42.5mA	35mA	23mA	14mA	9mA	4.5mA	2mA
Temperature Coefficient *5										
Voltage (0.02% of V max/°C)	1.5mV	2.4mV	4mV	6.6mV	8mV	12mV	20mV	30mV	60mV	120mV
Current (0.03% of I max/°C)	90mA	66mA	39mA	25.5mA	21mA	13.8mA	8.4mA	5.4mA	2.7mA	1.2mA
OVP Adjustment Range (5% to 110% of Vmax)	0.375-8.25V	0.6-13.2V	1-22V	1.65-36.6V	2-44V	3-66V	5-110V	7.5-165V	15-330V	30-660V

- *1. These Specifications indicate typical performance at 25°C ± 5°C, nominal line input of 208 Vac.
- *2. For input voltage variation over the AC input voltage range, with constant rated load.
- *3. For 0-100% load variation, with constant nominal line voltage.
- *4. Maximum drift over 8 hours with constant line, load, and temperature, after 30 minute warm-up.
- *5. Change in output per °C change in ambient temperature, with constant line and load.

AC Input Voltage Range: 190-264Vac, 1ø (22.6A @208Vac; 20.5A max @230Vac typical)

Frequency: 47-63Hz

Maximum Voltage Differential from Output to Safety

Ground: 600Vdc

Time Delay from Power on Until Output Stable: 7 seconds maximum

Voltage Mode Transient Response Time: <3ms for the output voltage to recover within 0.5% of its previous level after a step change in load current of 10% to 90% of rated output

Switching Frequency: Nominal 31KHz (62KHz output ripple)

Typical Efficiency: 85%

Maximum Remote Sense Line Drop Compensation: 5V/line (line drop is subtracted from total voltage available at supply output)

Remote Monitoring:

Output voltage and current: 0-5V, 0-10V
0 to full scale output, 1% accuracy

Remote Start/Stop and Interlock: TTL Compatible Input, selectable logic

Agency Approvals: CSA, CE, UL and FCC, Part 15.

Programming

Remote analog programming (Full Scale Input) - voltage and current programming: 0-5k, 0-10k resistance: 0-5V (factory default), 0-10V voltage sources.

Optional isolated program and readback (V&I)-0-5V. Optional digital control, RS232C, GPIB interfaces.

Environmental Specifications

Operating Temperature Range: 0°C - 50°C. From 50°C - 70°C, derate output current 2% per °C

Storage Temperature Range: -20 to +70°C

Humidity Range: 30-90% RH Non-condensing

Cooling: Fan cooled. Air exhaust to rear.

Overtemperature Shutdown: automatic restart or latch off.

Weight: 15 Kgs (33lbs)

Dimension (HxWxD): 88.9x429.4x533.5 mm / 3.5x16.91x21 inch

Programmable DC Power Supply

Additional Specifications for Remote DC Interface (RS232/GPIB) of DC Power Supply

Specifications *1 for the 6200 Series

Model	6200-7	6200-15	6200-20	6200-30	6200-60	6200-120	6200-250
Program Resolution (16-bit)							
Voltage (mV)	0.12mV	0.25mV	0.34mV	0.5mV	1.01mV	2.01mV	4.2mV
Current (mA)	0.1mA	0.07mA	0.05mA	0.03mA	0.02mA	0.01mA	0.01mA
OVP (mV)	0.12mV	0.25mV	0.34mV	0.5mV	1.01mV	2.01mV	4.2mV
Program Accuracy							
Voltage (mV)	10(±0.1%)	20(±0.1%)	20(±0.15%)	30(±0.15%)	200(±0.15%)	400(±0.15%)	800(±0.15%)
Current (mA)	110(±0.15%)	70(±0.15%)	50(±0.15%)	40(±0.15%)	26(±0.2%)	13(±0.2%)	7(±0.2%)
OVP (mV)	70mV	150mV	200mV	300mV	200mV	1200mV	2400mV
Readback Resolution (16-bit)							
Voltage (mV)	0.12mV	0.25mV	0.34mV	0.5mV	1.01mV	2.01mV	4.2mV
Current (mA)	0.1mA	0.07mA	0.05mA	0.03mA	0.02mA	0.01mA	0.01mA
Readback Accuracy							
Voltage (mV)	10(±0.15%)	10(±0.1%)	10(±0.1%)	15(±0.1%)	35(±0.15%)	70(±0.15%)	140(±0.15%)
Current (mA)	110(±0.15%)	70(±0.15%)	50(±0.15%)	40(±0.15%)	26(±0.2%)	13(±0.2%)	7(±0.2%)

Specifications *1 for the 6203 Series

Model	6203-15	6203-30	6203-60
Program Resolution (16-bit)			
Voltage (mV)	0.25mV	0.5mV	1.01mV
Current (mA)	0.34mA	0.17mA	0.08mA
OVP (mV)	0.25mV	0.5mV	1.01mV
Program Accuracy			
Voltage (mV)	60(±0.1%)	70(±0.1%)	90(±0.12%)
Current (mA)	75(±0.12%)	50(±0.12%)	25(±0.1%)
OVP (mV)	1500mV	3000mV	6000mV
Readback Resolution (16-bit)			
Voltage (mV)	0.25mV	0.5mV	1.01mV
Current (mA)	0.34mA	0.17mA	0.08mA
Readback Accuracy			
Voltage (mV)	45(±0.3%)	90(±0.3%)	175(±0.3%)
Current (mA)	75(±0.12%)	40(±0.12%)	25(±0.1%)

Specifications *1 for the 6210 Series

Model	6210-7.5	6210-20	6210-33	6210-40	6210-60	6210-100	6210-150	6210-300	6210-600
Program Resolution (16-bit)									
Voltage (mV)	0.13mV	0.34mV	0.55mV	0.67mV	1.01mV	1.68mV	2.52mV	5.04mV	10.1mV
Current (mA)	2.18mA	0.84mA	0.55mA	0.42mA	0.3mA	0.17mA	0.12mA	0.06mA	0.03mA
OVP (mV)	0.13mV	0.34mV	0.55mV	0.67mV	1.01mV	1.68mV	2.52mV	5.04mV	10.1mV
Program Accuracy									
Voltage (mV)	10(±0.12%)	75(±0.12%)	75(±0.12%)	75(±0.3%)	150(±0.25%)	150(±0.35%)	225(±0.35%)	225(±0.35%)	300(±0.35%)
Current (mA)	900(±0.1%)	750(±0.1%)	500(±0.1%)	350(±0.15%)	250(±0.1%)	140(±0.15%)	120(±0.1%)	80(±0.1%)	80(±0.1%)
OVP (mV)	80mV	200mV	330mV	400mV	600mV	800mV	1500mV	3000mV	6000mV
Readback Resolution (16-bit)									
Voltage (mV)	0.13mV	0.34mV	0.55mV	0.67mV	1.01mV	1.68mV	2.52mV	5.04mV	10.1mV
Current (mA)	2.18mA	0.84mA	0.55mA	0.42mA	0.3mA	0.17mA	0.12mA	0.06mA	0.03mA
Readback Accuracy									
Voltage (mV)	30(±0.12%)	75(±0.12%)	75(±0.12%)	75(±0.3%)	150(±0.25%)	150(±0.35%)	225(±0.35%)	225(±0.35%)	300(±0.35%)
Current (mA)	900(±0.1%)	750(±0.1%)	500(±0.1%)	350(±0.15%)	250(±0.1%)	140(±0.15%)	120(±0.1%)	80(±0.1%)	80(±0.1%)

Specifications *1 for the 6202F Series

Model	6202F-7.5	6202F-12	6202F-20	6202F-33	6202F-40	6202F-60	6202F-100	6202F-150	6202F-300	6202F-600
Program Resolution (16-bit)										
Voltage (mV)	0.13mV	0.2mV	0.34mV	0.55mV	0.67mV	1.01mV	1.68mV	2.52mV	5.4mV	10.1mV
Current (mA)	5.04mA	3.69mA	2.18mA	1.42mA	1.17mA	0.77mA	0.47mA	0.3mA	0.15mA	0.07mA
OVP (mV)	0.13mV	0.2mV	0.34mV	0.55mV	0.67mV	1.01mV	1.68mV	2.52mV	5.04mV	10.1mV
Program Accuracy										
Voltage (mV)	10(±0.12%)	75(±0.12%)	75(±0.12%)	75(±0.3%)	75(±0.3%)	150(±0.3%)	150(±0.35%)	225(±0.35%)	225(±0.35%)	300(±0.35%)
Current (mA)	900(±0.15%)	750(±0.15%)	500(±0.15%)	425(±0.1%)	350(±0.15%)	250(±0.1%)	140(±0.15%)	120(±0.1%)	80(±0.1%)	80(±0.1%)
OVP (mV)	80mV	200mV	330mV	330mV	400mV	600mV	1000mV	1500mV	3000mV	6000mV
Readback Resolution (16-bit)										
Voltage (mV)	0.13mV	0.2mV	0.34mV	0.55mV	0.67mV	1.01mV	1.68mV	2.52mV	5.04mV	10.1mV
Current (mA)	5.04mA	3.69mA	2.18mA	0.55mA	1.17mA	0.77mA	0.47mA	0.3mA	0.15mA	0.07mA
Readback Accuracy										
Voltage (mV)	30(±0.12%)	75(±0.12%)	75(±0.2%)	75(±0.3%)	75(±0.3%)	150(±0.35%)	150(±0.35%)	225(±0.35%)	225(±0.35%)	300(±0.35%)
Current (mA)	900(±0.1%)	750(±0.1%)	500(±0.1%)	425(±0.1%)	350(±0.1%)	250(±0.1%)	140(±0.1%)	120(±0.1%)	80(±0.1%)	80(±0.1%)

Specifications *1 for the 6201F Series

Model	6201F-6	6201F-7.5	6201F-12	6201F-20	6201F-35	6201F-40	6201F-60	6201F-100	6201F-150	6201F-300	6201F-600
Program Resolution (16-bit)											
Voltage (mV)	0.1mV	0.13mV	0.2mV	0.34mV	0.59mV	0.67mV	1.01mV	1.68mV	2.52mV	5.04mV	10.1mV
Current (mA)	3.36mA	2.35mA	1.68mA	1.01mA	0.59mA	0.5mA	0.34mA	0.2mA	0.13mA	0.07mA	0.03mA
OVP (mV)	0.1mV	0.13mV	0.2mV	0.34mV	0.59mV	0.67mV	1.01mV	1.68mV	2.52mV	5.04mV	10.1mV
Program Accuracy											
Voltage (mV)	10(±0.12%)	10(±0.12%)	75(±0.12%)	75(±0.12%)	75(±0.3%)	75(±0.3%)	150(±0.25%)	150(±0.35%)	225(±0.35%)	225(±0.35%)	300(±0.35%)
Current (mA)	500(±0.12%)	500(±0.1%)	460(±0.1%)	250(±0.1%)	200(±0.1%)	150(±0.15%)	120(±0.1%)	80(±0.1%)	80(±0.1%)	80(±0.1%)	75(±0.1%)
OVP (mV)	130	80	200	330	350	400	600	1000	1500	3000	6000
Readback Resolution (16-bit)											
Voltage (mV)	0.1mV	0.13mV	0.2mV	0.34mV	0.59mV	0.67mV	1.01mV	1.68mV	2.52mV	5.04mV	10.1mV
Current (mA)	3.36mA	2.35mA	1.68mA	1.01mA	0.59mA	0.5mA	0.34mA	0.2mA	0.13mA	0.07mA	0.03mA
Readback Accuracy											
Voltage (mV)	30(±0.12%)	30(±0.12%)	75(±0.12%)	75(±0.12%)	75(±0.12%)	75(±0.12%)	150(±0.25%)	150(±0.35%)	225(±0.1%)	225(±0.1%)	300(±0.1%)
Current (mA)	500(±0.1%)	500(±0.1%)	460(±0.1%)	250(±0.1%)	200(±0.1%)	150(±0.1%)	120(±0.1%)	80(±0.1%)	80(±0.1%)	80(±0.1%)	75(±0.1%)

Note *1 : Specifications are warranted at a temperature range of 25°C ± 5°C unless otherwise specified.



Switching Power Supply ATS Model 6000

The Chroma 6000 ATE System contains five major building blocks:

Switcher Analyzer offers a programmable dynamic load and precision measurements for testing the UUT output performance.

Extended Measurement Unit provides for control and measurement of other special function circuits.

Power Sources including AC and DC sources is to apply UUT power during test execution.

DC Power Sources is implement Over Voltage/Under Voltage tests.

Power Analyzer offers the combination of all the standard instruments normally used for the input power measurement.

The hardware configuration is modular, hence flexible to expand. Its maximum capacity includes up to twelve Switcher Analyzers (600 Amperes output), one Extended Measurement Unit, one Power Analyzer and a broad selection of AC and DC sources. The system operation is controlled by an IBM PC or compatible via standard IEEE-488 interface.

The PC-controlled Chroma 6000 ATE software - PowerPro is a Windows-based integrated software system for PC-based ATE control, test development and data manipulation. It adopts open architecture concept and modern database techniques to provide flexible, speed of programming and ease of use test solutions for AC/DC type power supplies and DC/DC converters.

By its unique modular design, the software environment allows a complete product life-cycle test strategy developed from design, through manufacturing, maintenance and repair in the most efficient test environment for power supplies the industry has ever seen.

The features of the PowerPro software are as follows:

- Modular, multi-level design
- Friendly Windows 98/NT/2000 or higher graphical user interface
- Easy-to-edit flexible test procedure
- High speed test execution via software compilation
- Report and statistic data management
- Network support, high performance data acquisition and statistics capability.

The major function groups of the PowerPro software are as follows:

The function group of system management

It lets the user set up the GPIO interface addresses for individual hardware modules, and lets the system manager edit the default parameters according to the common testing demands. It provides the function to manage the output format files of reports, the parameter files of SPC Log, the test programs, and defines the Log data directories ...etc.

The function group of editor

This function group is designed to let the user edit test programs, output format of reports, record the parameters needed by the reports, select SPC Log parameters and edit testing commands in test items.

The function group of execution

It lets the user execute the test program for GO/NOGO inspection, print test results, and do the statistical analysis.

The software includes 25 basic programmable test routines for testing power supplies under any conditions: transient, dynamic, or static.

System Operation

In the Chroma 6000 architecture, the Switcher Analyzer and the Extended Measurement Unit are each a dedicated power supply function tester with built-in CPU, memory and test firmware.

The ATE System uses PARALLEL TEST methods:

- The PC "DOWN LOADS" and stores its test program into memory residing in each tester.
- The PC then, SYNCHRONIZES the start of each test execution on all the testers.
- All the testers SIMULATE the test conditions and MEASURE the UUT performance characteristics SIMULTANEOUSLY at all the input and output terminals of a UUT.
- The PC then, collects the measurement readings from all the testers for TEST RESULTS MANAGEMENT.

Synchronization And Measurement Accuracy

One good example of the Chroma 6000 test process is in testing the performance of a multiple output SMPS during its power on stage. Critical characteristics such as Inrush Current, Turn-on Time, Overshoot Voltage, etc. must be measured. In the Chroma 6000 TURN ON & SEQUENCE test routine:

- The Switcher Analyzers are synchronized as to WHEN to begin sinking the loads and also at what SLEW RATES the loads are to be applied at all UUT output terminals.

The EXTENDED MEASUREMENT UNIT controls WHEN to initiates line input and WHAT input source is applied to the UUT.

- The Switcher Analyzers measure the turn on time and check voltage overshoot at all UUT outputs simultaneously in one pass and, at the same time, the Extended Measurement Unit measures the inrush currents.

- All measurement readings are collected by the PC where the power up sequence and timing relations among all outputs are calculated and the test report displayed.

High Test Throughput And Efficiency

Another good example is in testing the performance of a multiple output power supply under various line and load conditions. Voltages, noise, and voltage deviations need to be measured to see if the UUT outputs stay in regulation under all line and load conditions.

Using the TOTAL REGULATION TEST. The user can specify the minimum and maximum setting of the line input and the loading at each output, the Chroma 6000 automatically analyzes all line/load combinations and identifies the worst case voltage, noise, voltage deviation, and line/load conditions.

Since all of the test simulations and measurements are processed simultaneously by the Switcher Analyzers, the test execution incurs minimum I/O overhead, hence the maximum possible test throughput and efficiency.

Unlike the conventional power supply ATE systems which are more often an accumulation of laboratory equipment married for a customized application, CHROMA 6000 is a dedicated ATE system designed to test a power supply effectively and efficiently.

Test Items:

1. DC Output Voltage
2. Peak To Peak Noise
3. RMS Noise
4. Dynamic Response (Max.125KHz rate)
5. Line Regulation
6. Load Regulation
7. Cross Regulation
8. Combine Line/Load Regulation
9. Total Regulation
10. Turn on Time
11. Rise Time
12. Fall Time
13. Hold-up Time
14. Stable Time (Undershoot Voltage)
15. Overshoot Voltage
16. Power Good Signal
17. Power Fail Signal
18. Power Up Sequence
19. Power Down Sequence
20. Extra Timing Test
21. Overload Trip Point
22. Overload Trip Time
23. Recovery Time (after Overload)
24. Short Circuit PEAK Current
25. Short Circuit RMS Current
26. Over Voltage Protection Test / Under Voltage Protection Test
27. Over Power Protection Test
28. Extended Voltage Test
29. HOLD-ON Adjust
30. Input Inrush Current
31. Input RMS Current
32. Input PEAK Current
33. Input TRUE Power
34. Input Power Factor
35. Efficiency
36. Input Voltage Ramp Up
37. AC Frequency Ramp Up
38. AC Cycle Drop Out
39. AC Noise Feed Through
40. External Wave Test
41. External Dynamic Test

SPECIFICATIONS

Accurate and highly reliable hardware devices:

System Controller

Pentium 233 or faster

32MB of memory or higher
More than 200MB Hard Disk capacity is recommended
CD-ROM Drive
Parallel Printer Port/Mouse
VGA color monitor

Interface Board

National Instrument GPIB card

System Software

Operational Environment

Windows 98/NT/2000 or higher

Switcher Analyzer

Active Load

Model	Power	Volt.	Current	Resolution	Accuracy
620	200W	100V	1A/20A	1mA/5mA	0.3%+0.25%F.S.
650	300W	100V	1A/50A	1mA/12.5mA	0.3%+0.25%F.S.

Detailed information please refer to Model 650, 620

Extended Measurement Unit

Input Port No.: 4
On/off Phase Angle Control: 0-360 degree
Measure Port: 10
General Purpose Relay: 6 (DPST), 5A, 240Vac/ 28Vdc
Digital Outputs: 16 TTL gates

Measurement	Range	Resolution	Accuracy
RMS Voltage	0-350V (4 ranges)	8.5-21.6mV	0.6%+0.3%F.S.
RMS Current	0-80A (6 ranges)	1mA-5mA	0.9%+0.3%F.S.
Peak Current (repetitive)	0-80A (6 ranges)	1mA-5mA	0.5%+0.3%F.S.
Inrush Current	0-125A	7.6mA	0.5%+0.25%F.S.
True Power	0-40kW (24 ranges)	7.6mW-2.44W	1.5%+0.1%F.S.
DC Voltage	0-500V (3 ranges)	0.3/3/30mV	0.07%+0.1%F.S.
Short Circuit Peak Current	0-150A	12.2mA	0.5%+0.5A
Timing	0μS-16Sec	1μS	0.01%+15mS

AC Input Source

Detailed information please refer to Model 6500 series.

DC Input Source or OVP/UVF Source

Detailed information please refer to Model 6210, 62000P series.

Power Analyzer

Detailed information please refer to Model 6630, 6632, 6633

ORDERING INFORMATION

6000 : Switching Power Supply Auto Test System

620 : Switcher Analyzer 20A/100V/200W

650 : Switcher Analyzer 50A/100V/300W

602 : Extended Measurement Unit

A600001 : ISA Bus GPIB Card (National Instrument)

A600002 : 19" Rack for Model 6000

A600009 : GPIB Cable (200cm)

A600010 : GPIB Cable (60cm)

A600012/A800027 : Test Fixture for Model 6000

A600013 : Adapter for A600011/A600012 Test Fixture (PC Standard)

A600014 : Adapter for A600011/A600012 Test Fixture (Terminal Block)

A600015 : PowerPro ATS Software

A800005 : PCI Bus GPIB Card (National Instrument)

DC Source : Refer to Model 6210, 62000P Series

AC Source : Refer to Model 6500 Series

Power Analyzer : Refer to Model 6630, 6632, 6633

Solar Cell
Test Equipment

Semiconductor/IC
Test Equipment

LED
Test Equipment

LCD/LCM
Test Equipment

Video & Color
Test Equipment

Optical Inspection
Equipment

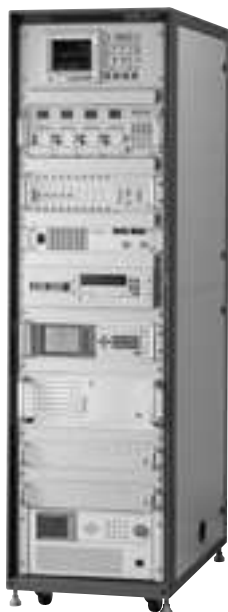
Power Supply
Test Equipment

Passive Component
Test Instruments

Electrical Safety
Test Instruments

General Purpose
Test Instruments

PXI Instruments
& Systems



Switching Power Supply ATS Model 8000

KEY FEATURES

- Open architecture software platform
 - Support instrument with GPIB / RS-232 or RS-485 / I²C / CAN Bus interfaces
 - User editable test item
 - User editable test program
 - User editable report format
 - Statistical report
 - On-line control function
 - User authority control
 - Release control
 - Activity log
 - Master / Slave control mode
 - Multi-UUT test capability for single-output PSU
 - Support bar code reader
 - Support Shop-floor control
 - Remote monitoring via internet
- Test command optimizer helps to improve test speed
- Capable of coding for any power supply testing applications
- Comprehensive hardware modules provide high accuracy and repetitive measurements
- High test throughput by system default test items
- Cost effective
- Other hardware expandable upon request
- Windows 98/NT/2000 or higher based software

This auto test system uses the unique test command optimization technology to prevent the repeating control commands from sending to the system hardware devices. This improves the system test speed dramatically and makes Chroma 8000, which uses open software architecture, highly efficient as a close or optimized auto test system.

To meet the power supply test requirements, Chroma Power Supply Auto Test System model 8000 has built in 56 ready-made test items. Users may create new test items based on new test requirements using the test item editing function, which gives users the capability to expand the test items unlimitedly.

With the powerful report, statistic and management functions, Chroma Power Supply Auto Test System model 8000 is able to provide complete tools to generate various test documents and perform system administration. Because the test and statistical reports are equally important nowadays for R/D evaluation, QA



verification and mass production tests. So these save users a great deal of time for paper work.

Working under Windows 98/NT/2000 or higher operation system, Chroma 8000 Power Supply Auto Test System is able to get all the resources provided by Windows; thus, it can easily export the test results to network or to your web-page for remote manufacturing monitoring.

Comprehensive Test Items:

OUTPUT PERFORMANCES

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 measure
12. Waveform capture
13. Overshoot voltage
32. Rise time
33. Fall time
34. Hold-up time
35. Extra timing
36. Tracking
37. Swing check

PROTECTION TESTS

38. Short circuit
39. OV protection
40. UV protection
41. OL protection
42. OP protection

SPECIAL TESTS

43. Fan speed
44. Auto alignment*
45. Correlation test
46. UUT measurement verification test
47. High di/dt loading*

SPECIAL FEATURE

48. Can bus read/ write
49. I² C read/ write*
50. GPIB read/ write
51. RS-232 read/ write
52. RS-485 read/ write*
53. TTL signal control
54. Relay control
55. Bar code scan*
56. DMM measure

* These test items need to be created by users by using test item editor due to the variety of the UUTs, and unlimited customized or user defined test items are allowed.

INPUT CHARACTERISTICS

14. Input Inrush current
15. Input RMS current
16. Input peak current
17. Input power
18. Current harmonics against regulations
19. Input power factor
20. Input voltage ramp
21. Input freq. ramp
22. AC cycle drop out
23. PLD simulation

REGULATION TESTS

24. Current regulation
25. Voltage regulation
26. Total regulation

TIMING AND TRANSIENT

27. Power up sequence
28. Power down sequence
29. Transient response time
30. Transient spike
31. Turn ON time

ORDERING INFORMATION

8000 : Switching Power Supply Auto Test System

6011/80611 : Timing/Noise Analyzer

6011N/80611N : Timing/Noise module

6012/80612 : OVP/Short Circuit Tester

6013/80613 : ON/OFF Controller

5004ATM : System Controller

A800005 : PCI Bus GPIB Card (National Instrument)

A600009 : GPIB Cable (200 cm)

A600010 : GPIB Cable (60 cm)

A800004 : 19" Rack for Model 8000

A800003 : 8000 software Package

A600011/A800027 : Test Fixture for Model 8000

DC Load Module: Refer to 6300, 6310A, 63200, 6330A, 6340, 63472 Series

Power Analyzer: Refer to Model 6630, 6632

Digital Power Meter: Refer to Model 66200 Series

AC Source: Refer to Model 6400, 6500, 61500, 61600, 61700 Series

DC Source: Refer to Model 6200, 6200F, 62000P Series



Telecom Power Supply ATS

Telecom Power Supply Testing

For the Switching Mode Rectifier or Telecom Power Supply Testing, it should build in other special instruments just like:

RF Voltmeter:

It offers measurement with high-input impedance, excellent stability and low noise. It measures the wide band noise of SMR at different frequency.

Transmission Impairment measurement Set:

It offers testing of voice-grade data circuits and metallic digital circuits. It measures the output voltage voice and noise of SMR.



DC to DC Converter ATS



DC to DC Converter Test Fixture



DC to DC Converter

DC to DC Converter Testing

Software:

Special Design Test Items (Load Fault Power Dissipation Test, Switching Frequency Test, Synchronization Frequency Test)

Hardware:

Create Standard Test Fixture platform (Receiver)

SPECIFICATIONS

Accurate and highly reliable hardware devices:

System Controller	
MODEL	PC/IPC
CPU	Pentium III 600 or faster
SRAM	256KB
DRAM	512MB or higher
Hard drive	8.3GB or higher
CD-ROM	40X or faster
Monitor	15"
Keyboard	101 keys
I/O	Mouse/Print port
System Interface	GPB/RS-232
System I/O	DIO Card
GPB board	NI-PCI GPB Card

Power Analyzer				
MODEL	6630	6632	66201	66202
NO. of input module	1 to 3	1 to 3	1	1
Power measurement range	48 ranges	48 ranges	12 ranges	24 ranges
Voltage measurement range	6 ranges	6 ranges	3 ranges	3 ranges
Current measurement range	8 ranges	8 ranges	4 ranges	8 ranges
Front panel display	Yes	No	Yes	Yes
Front panel editable	Yes	No	Yes	Yes
Harmonics measurement	Yes	Yes	No	Yes
Flicker measurement	Yes	No	No	No
Waveform measurement	Yes	Yes	No	Yes
Build-in regulation limit	Yes	Yes	No	No

* Please refer to respective product catalogs for detail specifications.

DC Source			
MODEL	6200 series	6200F series	6200P series
Power rating	60-1000W	1200-2800W	600,1200,2400W
Voltage range	0-5V/150V	0-5V/600V	0-100V/600V
Programmable current limit	Yes	Yes	Yes
Programmable OV point	Yes	Yes	Yes
Analog programming	Yes	Yes	Yes
Remote sensing	Yes	Yes	Yes
Line-drop compensation	5V	5V	5V

* Please refer to respective product catalogs for detail specifications.

Electronic Load						
MODEL	6300 series	6310A series	6330A series	63200 series	6340 series	63472 series
Load mode	CC/CR/CV/CP	CC/CR/CV	CC/CR/CV	CC/CR/CV/CP	CC	CC
Power rating	60-300W	30-1200W	30-1200W	2000-12000W	625W	200W
Voltage range	1-254V	1-500V	1-500V	1-500V	0.8-50V	0.5-2V
Current range	Up to 60A	Up to 240A	Up to 240A	Up to 600A	Up to 150A	150A
Slew rate	Up to 2.5A/uS	Up to 10A/uS	Up to 10A/uS	Up to 25A/uS	Up to 150A/uS	1000/uS
Measurements	Voltage/Current/Power	Voltage/Current	Voltage/Current	Voltage/Current/Power	Voltage/Current	Voltage/Current
Monitoring output	Current	No	No	Current	Voltage/Current	Voltage/Current
Current share measurement	No	No	No	No	Yes	No
Noise measurement	Optional	No	No	No	No	No
Voltage sense input	Yes	Yes	Yes	Yes	Yes	Yes
Sync dynamic	No	No	Yes	Yes	No	No

* Please refer to respective product catalogs for detail specifications.

AC Source					
MODEL	6400 series	6500 series	61500 series	61600 series	61700 series
Power rating	375-9000VA	1200-9000VA	500-18000VA	500-18000VA	1500-12000VA
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	1 or 3 phase	3 phase
DC output	No	No	Yes	Yes	Yes
Output measurement	Yes	Yes	Yes	Yes	Yes
Harmonic measurement	No	No	Yes	No	No
Waveform simulation	No	Yes	Yes	No	Yes
Programmable impedance	No	No	Yes	No	No
Harmonic synthesis	No	Yes	Yes	No	Yes
Inter-harmonic synthesis	No	No	Yes	No	Yes

* Please refer to respective product catalogs for detail specifications.

Timing/Noise Analyzer		
MODEL	6011	80611
NO. of input module	Up to 10	Up to 10
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	4 sets	6 sets
NO. of comparator	2 Input module	4 Input module
Controllable TTL bits	16 output	16 output / 16 input
Controllable floating relay	6	8
NO. of multiplex input	10	10
NO. of multiplex output	2 for DMM & 2 for DSO	1 for DMM

OVP/Short Circuit Tester		
MODEL	6012	80612
NO. of input terminal	Up to 6	Up to 6
Short circuit impedance	< 0.1 ohm	< 0.05 ohm
Short current measurement	Yes	Yes
Sync. Signal for short circuit	6 relay signal	6 relay signal
OVP/UVP testing	Internal / External	Internal / External
Internal impedance range	1K-1M ohm	100-1M ohm
External OVP/UVP source	DC source	DC source
Measurement Capability	By external DMM	Internal
Control Interface	Via Chroma 6011	RS 485

ON/OFF Controller		
MODEL	6013	80613
Input	AC/DC	AC/DC
ON/OFF angle - AC	0-360 deg	0-360 deg
Voltage range - AC	250V	277V
Current range - AC	30A	30A
Voltage range - DC	200V	200V
Current range - DC	40A	60A
Measurement Capability	By external DMM	Internal
Control Interface	Via Chroma 6011	RS 485

Other hardware devices :

- Digital Multimeter(Agilent-34401A / Keithley 2000), other types or brands of DMM supported upon request
- Digital Storage Oscilloscope(TDS-3000/5000/7000 series), other types or brands of DSO supported upon request



Chroma Power Supply Auto Test System model 8200 provides complete solution for PC ATX power supply, adapter and battery charger testing. The application oriented system structure makes it the most cost effective test equipment for initial test in power supply production line.

To meet the power supply test requirements, Chroma Power Supply Auto Test System model 8200 has built in 20 ready-made test items. Users can simply enter the test conditions and test the power supply features while proceeding.

With the report and management functions, Chroma Power Supply Auto Test System model 8200 is able to provide versatile tools to establish test documents and perform system administration.

Meanwhile, Chroma Power Supply Auto Test System model 8200 can be upgraded to Chroma model 8000, the ultimate power supply auto test system, to fit the future test needs by changing system software and adding new hardware devices.

ORDERING INFORMATION

8200 : Switching Power Supply Auto Test System

8125 : Extended Controller

A820001 : PCI Bus AD Card

A800005 : PCI Bus GPIB Card (National Instrument)

A600009 : GPIB Cable (200 cm)

A600010 : GPIB Cable (60 cm)

A600002 : 19" Rack for Model 8200

A820002 : 8200 software Package

A600011/A800027 : Test Fixture for Model 8200

A600013 : Adapter for A600011/A600012 Test Fixture (PC Standard)

A600014 : Adapter for A600011/A600012 Test Fixture (Terminal Block)

DC Load Module: Refer to Model 6310A, 6330A Series

AC Source : Refer to Model 6400, 6500, 61500, 61600 Series

Switching Power Supply ATS Model 8200

KEY FEATURES

- User editable test program
- User editable report format
- User authority control
- Release control
- Activity log
- Comprehensive hardware modules provide high accuracy repetitive and measurements
- High test throughput by system default test items
- Cost effective
- Windows 98/NT/2000 or higher based software

TEST ITEMS

1. DC output voltage
2. DC output current
3. Voltage regulation
4. Current regulation
5. Turn ON time
6. Hold-up time
7. Power good signal
8. P/S ON signal
9. Efficiency
10. Input RMS current
11. Input peak current
12. Input power
13. Input power factor
14. Short circuit test
15. Short circuit current
16. OV protection
17. OL protection
18. OP protection
19. In-test adjustment

SPECIFICATIONS

Accurate and highly reliable hardware devices :

System Controller	
MODEL	PC/IPC
CPU	Pentium III 600 or faster
SRAM	256KB
DRAM	512MB or higher
Hard drive	8.3GB or higher
CD-ROM	40X or faster
Monitor	15"
Keyboard	101 keys
I/O	Mouse/Print port
System Interface	GPIB/RS-232
System I/O	DIO Card
GPIB board	NI-PCI GPIB Card

Extended Controller	
MODEL	8125
Input channels for timing	8 differential
Timing accuracy	40 uS
Controllable TTL bits	16
Input circuit	Differential input
Input impedance	10M ohm
Output channels for OVP	3
OVP voltage	8V/4.8V/16V
Maximum current	3A/Channel

Electronic Load	
MODEL	6310A/6330A series
Load mode	CC/CR/CV
Power rating	30-1200W
Voltage range	1-500V
Current range	Up to 240A
Slew rate	Up to 10A/uS
Measurements	Voltage/Current
Monitoring output	No
Current share measurement	No
Noise measurement	No
Voltage sense input	Yes

* Please refer to respective product catalogs for detail specifications.

AC Source				
MODEL	6400 series	6500 series	61500 series	61600 series
Power rating	375-9000VA	1200-9000VA	500-18000VA	500-18000VA
Voltage range	0-300V	0-300V	0-300V	0-300V
Output phase	1 or 3 phase	1 or 3 phase	1 or 3 phase	1 or 3 phase
DC output	No	No	Yes	Yes
Output measurement	Yes	Yes	Yes	Yes
Harmonic measurement	No	No	Yes	No
Waveform simulation	No	Yes	Yes	No
Programmable impedance	No	No	Yes	No
Harmonic synthesis	No	Yes	Yes	No
Inter-harmonic synthesis	No	No	Yes	No

* Please refer to respective product catalogs for detail specifications.



PC Power Supply ATS Model 8010

KEY FEATURES

- Equipped with both of the test performance of 6000 ATS and the flexible hardware architecture of 8000 ATS
- Provide optimized standard test items for the Unit Under Test (PC Power Supply) to deliver excellent test performance
- Easy-to-use software function specifically designed to meet the production line needs
- Flexible software platform with the following functions
 - User editable test program
 - User editable test report format
 - Test report generator
 - Statistical report
 - User authority control
 - Release control
 - Activity log
 - Support bar code reader
- New test items and expandable hardware allows the Chroma 8010 ATS to meet the new testing requirements in the PC power industry
 - 100MHz Noise measurement
 - Output voltage monotonic rise test
 - Average efficiency test that complies with EPA & 80Plus
- Windows 98/2000/NT/XP based software
- Offer the best performance/price ratio

Chroma 8010 PC Power Supply ATS is the test system of choice for PC power testing on the production line. Its test performance not only compares favorably with the Chroma 6000 ATS, but also has the flexibility of the Chroma 8000ATS hardware architecture. Available for selection are a range of hardware devices including AC/DC Power Supply, Electronic Load, Timing/Noise Analyzer, Power Meter and Extended Measurement Controller.

Chroma 8010 ATS was designed specifically with PC power supply characteristics in mind, with customized standard test items providing excellent test performance and optimized for mass production. The software provides a user friendly interface and intuitive controls suited for the production line.



New test items and expandable hardware allows the Chroma 8010 ATS to meet the new testing requirements in the PC power industry such as 100 MHz bandwidth noise measurement, voltage monotonic rise test, average efficiency test to comply with EPA requirements and various other tests.

Chroma 8010 ATS software runs under the user friendly Windows 98/2000/NT/XP operating environment, providing the test engineer a dedicated PC power supply testing system with easy access to Windows resources.

Optimized Test Items

OUTPUT PERFORMANCES

1. DC output voltage
2. Peak-to-peak noise
3. RMS noise
4. Efficiency
5. In-test adjustment
6. Power good (PG) signal
7. Power fail (PF) signal
8. PS/ON signal
9. Extended measure
10. Overshoot voltage

INPUT CHARACTERISTICS

11. Input inrush current
12. Input RMS current
13. Input power
14. Input power factor
15. Input voltage ramp
16. Input frequency ramp
17. AC cycle drop out

REGULATION TESTS

18. Line regulation
19. Load regulation
20. Combine regulation
21. Dynamic load regulation
22. Sync.dynamic load regulation

TIMING AND TRANSIENT

23. Transient spike
24. Power up sequence
25. Rise time
26. Fall time
27. Power off time
28. Extended measure

PROTECTION TESTS

29. Short circuit
30. Over voltage protection
31. Over load protection

SPECIAL TESTS

32. Voltage monotonic test
33. 100MHz bandwidth noise test
34. Average efficiency test
35. Power on/off cycle test

SPECIAL FEATURE

36. TTL signal control
37. Relay control

ORDERING INFORMATION

- 8010** : PC Power Supply ATS
- 6011** : Timing/Noise Analyzer
- 80611N** : Timing/Noise module
- 8126** : Extended Controller
- 5004ATM** : System Controller
- A600011/ A800027** : Test Fixture
- A800004** : 19" Rack for Model 8010
- A800035** : Monotonic Rise Detector
- DC Electronic Load** : Refer to Model 6330A Series
- Digital Power Meter** : Refer to Model 66200 Series
- AC Source** : Refer to Model 6500, 61500, 61600 Series
- DC Source** : Refer to Model 6200, 6200F, 62000P Series
- 100MHz Digitizer** : NI 5112 Digitizer

Solar Cell
Test Equipment

Semiconductor/IC
Test Equipment

LED
Test Equipment

LCD/LCM
Test Equipment

Video & Color
Test Equipment

Optical Inspection
Equipment

Power Supply
Test Equipment

Passive Component
Test Instruments

Electrical Safety
Test Instruments

General Purpose
Test Instruments

PXI Instruments
& Systems

• Continued on next page →

SPECIFICATIONS

Accurate and highly reliable hardware devices:

System Controller	
MODEL	PC/IPC
CPU	Pentium III 600 or faster
SRAM	256KB
DRAM	512MB or higher
Hard drive	8.3GB or higher
CD-ROM	40X or faster
Monitor	15"
Keyboard	101 keys
I/O	Mouse/Print port
System Interface	GPIO/RS-232
System I/O	DIO Card
GPIO board	NI-PCI GPIO Card

Power Analyzer		
MODEL	66201	66202
NO. of input module	1	1
Power measurement range	12 ranges	24 ranges
Voltage measurement range	3 ranges	3 ranges
Current measurement range	4 ranges	8 ranges
Front panel display	Yes	Yes
Front panel editable	Yes	Yes
Harmonics measurement	No	Yes
Flicker measurement	No	No
Waveform measurement	No	Yes
Build-in regulation limit	No	No

* Please refer to respective product catalogs for detail specifications.

Timing/Noise Analyzer		
MODEL	6011	80611
NO. of input module	Up to 10	Up to 10
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	4 sets	6 sets
NO. of comparator	2 Input module	4 Input module
Controllable TTL bits	16 output	16 output / 16 input
Controllable floating relay	6	8
NO. of multiplex input	10	10
NO. of multiplex output	2 for DMM & 2 for DSO	1 for DMM

Electronic Load	
MODEL	6330A series
Load mode	CC/CR/CV
Power rating	30-1200W
Voltage range	1-500V
Current range	Up to 240A
Slew rate	Up to 10A/μs
Measurements	Voltage/Current
Monitoring output	No
Current share measurement	No
Noise measurement	No
Voltage sense input	Yes
Sync dynamic	Yes

* Please refer to respective product catalogs for detail specifications.

Extended Controller	
Model	8126
Short circuit	
Input channel	10
Input Voltage Rating	60Vdc
Input Current Rating	20Adc
Short relay	30A continuous
OVP	
Output channel	10
Dc source input	1
Input Voltage Rating	60Vdc
Input Current Rating	20A continuous
Floating Relay	
Type	SPST
No. of Relay	6
Rating	5A
External Relay	
No. of Relay	1 via rear panel
Rating	5A
Timing (For Power Good / Power Fail Time)	
Input channel	2
Input Voltage Rating	5.5Vdc
Range	0-6.4Sec
Accuracy	1mS
Resolution	100uS
Trigger Reference Voltage	3Vdc / 4.5Vdc Select
Reference Voltage Accuracy	± 0.1V
Input Current Rating	20Adc
Input Voltage Rating	5.5Vdc
Range	0-6.4Sec

DC Source			
MODEL	6200 series	6200F series	6200P series
Power rating	60-1000W	1200-2800W	600,1200,2400W
Voltage range	0-5V/150V	0-5V/600V	0-100V/600V
Programmable current limit	Yes	Yes	Yes
Programmable OV point	Yes	Yes	Yes
Analog programming	Yes	Yes	Yes
Remote sensing	Yes	Yes	Yes
Line-drop compensation	5V	5V	5V

* Please refer to respective product catalogs for detail specifications.

AC Source			
MODEL	6500 series	61500 series	61600 series
Power rating	1200-9000VA	500-18000VA	500-18000VA
Voltage range	0-300V	0-300V	0-300V
Output phase	1 or 3 phase	1 or 3 phase	1 or 3 phase
DC output	No	Yes	Yes
Output measurement	Yes	Yes	Yes
Harmonic measurement	No	Yes	No
Waveform simulation	Yes	Yes	No
Programmable impedance	No	Yes	No
Harmonic synthesis	Yes	Yes	No
Inter-harmonic synthesis	No	Yes	No

* Please refer to respective product catalogs for detail specifications.

Adapter/Charger ATS

Model No.

8020



Optimized Test Items

OUTPUT PERFORMANCES

1. DC output voltage
2. DC output current
3. DC output power
4. Peak-to-peak noise
5. RMS noise
6. Efficiency
7. In-test adjustment
8. Overshoot voltage
17. Combine regulation
18. Dynamic load regulation
19. Sync. dynamic load regulation

TIMING AND TRANSIENT

20. Power up sequence
21. Rise time
22. Fall time
23. Power off time

PROTECTION TESTS

24. Short circuit
25. Over load protection
26. Over voltage protection

SPECIAL TESTS

27. Average efficiency test

SPECIAL FEATURE

28. TTL signal control
29. Relay control

INPUT CHARACTERISTICS

9. Input inrush current
10. Input RMS current
11. Input power
12. Input power factor
13. AC cycle drop out
14. Input voltage ramp

REGULATION TESTS

15. Line regulation
16. Load regulation

ORDERING INFORMATION

8020 : Adapter / Charger ATS

80611 : Timing/Noise Analyzer

80611N : Timing/Noise Module

5004ATM : System Controller

A800004 : 19" Rack for Model 8020

A806102 : Digital Output Module

A802001 : 4+4 Multi-UUT Test Fixture

DC Electronic Load : Refer to Model 6330A Series

Digital Power Meter : Refer to Model 66200 Series

AC Source : Refer to Model 6500, 61500, 61600 Series

I/O Card : ADLink 7230



15U

Adapter/Charger ATS Model 8020

KEY FEATURES

- Be able to test multiple UUTs concurrently that improve productivity significantly
- Equipped with both of the test performance of 6000 ATS and the flexible hardware architecture of 8000 ATS
- Provide optimized standard test items for the Unit Under Test (adapter/charger) to deliver excellent test performance
- Easy-to-use software function specially designed to meet the production line needs
- Flexible software platform with the following functions
 - Test Program editor
 - Test Report format editor
 - Test Report Generator
 - Statistics Analysis Report editor
 - User level setting
 - Release control
 - Activity log
 - Supporting bar code reader
- New test items and extended hardware are able to expand to fulfill the new requirements for the PC industry
 - Average efficiency test that complies with Energy Star
- Rack specially designed more meet to the production line
- Windows 98/2000/NT/XP software platform

Chroma 8020 Adapter/Charger ATS is the best test system for testing Adapter and Charger in the production line. 8020 is able to test multiple UUTs concurrently that improve productivity significantly, the hardware architecture is also as flexible as Chroma 8000 ATS. There are many hardware devices available for selection such as AC Power Supply, Electronic Load, Timing/Noise Analyzer and Power Meter.

Chroma 8020 has standard test items specially customized and optimized for the features of Adapter and Charger that provides excellent test performance to meet the requirements of mass production. Meanwhile, the software equipped is very friendly and easy to operate that is suitable for production line use.

New test items and extended hardware are expanded to Chroma 8020 ATS for the new test requirements in the Adapter/Charger industry, such as average efficiency to comply with Energy Star requirement, and etc.

Chroma 8020 ATS runs under the easy-to-learn Windows 98/2000/NT/XP environment with a specialized power test system for test engineers so that they can utilize the Windows resources easily.



20U

SPECIFICATIONS

Accurate and highly reliable hardware devices:

System Controller	
MODEL	PC/IPC
CPU	Pentium III 600 or faster
SRAM	256KB
DRAM	512MB or higher
Hard drive	8.3GB or higher
CD-ROM	40X or faster
Monitor	15"
Keyboard	101 keys
I/O	Mouse/Print port
System Interface	GPIB/RS-232
System I/O	DIO Card
GPIB board	NI-PCI GPIB Card

Power Analyzer		
MODEL	66201	66202
NO. of input module	1	1
Power measurement range	12 ranges	24 ranges
Voltage measurement range	3 ranges	3 ranges
Current measurement range	4 ranges	8 ranges
Front panel display	Yes	Yes
Front panel editable	Yes	Yes
Harmonics measurement	No	Yes
Flicker measurement	No	No
Waveform measurement	No	Yes
Build-in regulation limit	No	No

* Please refer to respective product catalogs for detail specifications.

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

Electronic Load	
MODEL	6330A series
Load mode	CC/CR/CV
Power rating	30-1200W
Voltage range	1-500V
Current range	Up to 240A
Slew rate	Up to 10A/uS
Measurements	Voltage/Current
Monitoring output	No
Current share measurement	No
Noise measurement	No
Voltage sense input	Yes
Sync dynamic	Yes

* Please refer to respective product catalogs for detail specifications.

AC Source			
MODEL	6500 series	61500 series	61600 series
Power rating	1200-9000VA	500-18000VA	500-18000VA
Voltage range	0-300V	0-300V	0-300V
Output phase	1 or 3 phase	1 or 3 phase	1 or 3 phase
DC output	No	Yes	Yes
Output measurement	Yes	Yes	Yes
Harmonic measurement	No	Yes	No
Waveform simulation	Yes	Yes	No
Programmable impedance	No	Yes	No
Harmonic synthesis	Yes	Yes	No
Inter-harmonic synthesis	No	Yes	No

* Please refer to respective product catalogs for detail specifications.



The Chroma LCD Inverter Auto Test System model 8490 is the ultimate solution for LCD inverter. It not only test traditional DC to AC inverter but also the LIPS (LCD Integrated Power Supply) type that combines adapter and inverter in one board.

It has wild variety of choices in hardware, such as AC/DC Source, Power Analyzer, Electronic Load, DMM, Oscilloscope, Timing/ Noise Analyzer, OVP/Short Tester and ON/OFF Controller. And 3 PCI interface cards-Measurement Card, Control Card, DMM Card to measure all of the inverter parameter. Combining with the open architecture system software platform - PowerPro III, it gives users a flexible, powerful and cost effective auto test system for both inverter and LIPS type testing.

Test fixture has been the most critical ingredient for LCD inverter ATS due to the inverter is very easy to be influenced by loading effect that from measurement circuit and cable (See the fixture module equivalent capacitance in test fixture specification). Chroma LCD inverter auto test system model 8490 provides standard and various test fixtures such as probe pin design for those inverters that are keen in reducing loading effect. All fixtures use insulation module design. Two different modules can be selected (standard & high current module) for different types of inverter. The standard module is for CCFL inverter while the high current module for EEFL inverter. Each module built-in 5 high voltage relay to guarantee operating in high voltage environment. Furthermore two different resistors can be added on the fixture for loading selection.

With the powerful report, statistic and management functions, Chroma LCD Inverter Auto Test System model 8490 is able to provide complete tools to generate various test documents and improve system administration. Since the test and statistical reports are equally important nowadays for R/D evaluation, QA verification and mass production tests. So these save users a great deal of time for paper work.

Working under Windows98/2000/NT/XP operation system, Chroma 8490 LCD Inverter Auto Test System is able to get all the resources provided by Windows; thus, it can easily export the test results to network or to your web-page for remote manufacturing monitoring.

The Comprehensive Test Items for LIPS Testing:

OUTPUT PERFORMANCES

1. Lamp current
2. Lamp voltage
3. Lamp frequency
4. Kickoff (Vopen) voltage
5. DC output voltage
6. Peak-peak noise
7. Efficiency

INPUT CHARACTERISTICS

8. Input voltage
9. Input current
10. Inrush current
11. DIM frequency
12. DCR
13. Input RMS current
14. Input peak current
15. Input power
16. Input power factor

REGULATION TESTS

17. Voltage regulation
18. Combine regulation

TIMING TESTS

19. Kickoff (Vopen, shut down) delay time
20. Voltage turn on time
21. Current turn on time
22. Voltage turn off time
23. Current turn off time
24. Voltage rise time
25. Current rise time
26. Voltage fall time
27. Current fall time
28. Turn on time
29. Rise time
30. Fall time
31. Hold-up time

PROTECTION TESTS

32. Short circuit test
33. Open circuit test
34. Short circuit
35. OV protection
36. UV protection
37. OL protection
38. OP protection

SPECIAL TESTS

39. Burst Mode frequency & duty measurement
40. Lamp current balance
41. Waveform unbalance rate check
42. Waveform wave height check
43. GPIB read/write
44. RS-232 read/write

The Comprehensive Test Items for D/A Inverter Testing:

OUTPUT PERFORMANCES

1. Lamp current
2. Lamp voltage
3. Lamp frequency
4. Kickoff (Vopen) voltage
5. Efficiency

INPUT CHARACTERISTICS

5. Input voltage
6. Input current
7. Inrush current
8. DIM frequency
9. DCR

TIMING TESTS

10. Kickoff (Vopen, shut down) delay time
11. Voltage turn on time
12. Current turn on time
13. Voltage turn off time
14. Current turn off time
15. Voltage rise time
16. Current rise time
17. Voltage fall time
18. Current fall time

PROTECTION TESTS

19. Short circuit test
20. Open circuit test

SPECIAL TESTS

21. Burst mode frequency & duty measurement
22. Lamp current balance
23. Waveform unbalance rate check
24. Waveform wave height check

LCD Inverter ATS Model 8490

KEY FEATURES

- For both inverter & LIPS testing
- Standard & probe pin test fixture selectable
- Synchronized measurement in multi-channel reduce the test time
- Expandable PCI interface card
 - Measurement Card
 - Control Card
 - DMM Card
- Three brightness control modes
 - DC Voltage, PWM, and SM Bus control
- Built-in timing measurement
- Compensation function to correlate the error caused by fixture
- Burst mode frequency & duty measurement
- Open architecture software
 - Expandable hardware support
 - Support instrument with GPIB/ RS-232/ RS-485/I²C interface
 - User editable test library
 - User editable test programs
 - User editable reports
 - Statistical report
 - On-line Softpanel
 - User authority control
 - Release control
 - Activity log
 - Support Barcode reader
 - Support Web-cam for remote monitoring via internet
- Other hardware expandable upon request
- Windows 98/2000/NT or higher based software

SPECIFICATIONS-1

Accurate and highly reliable hardware devices:

System Controller	
MODEL	PC/IPC
CPU	Pentium III 600 or faster
SRAM	256KB
DRAM	512MB or higher
Hard drive	8.3GB or higher
CD-ROM	40X or faster
Monitor	15"
Keyboard	101 keys
I/O	Mouse/Print port
System Interface	GPIO/RS-232
System I/O	DIO Card
GPIO board	NI-PCI GPIO Card

Power Analyzer				
MODEL	6630	6632	66201	66202
NO. of input module	1 to 3	1 to 3	1	1
Power measurement range	48 ranges	48 ranges	12 ranges	24 ranges
Voltage measurement range	6 ranges	6 ranges	3 ranges	3 ranges
Current measurement range	8 ranges	8 ranges	4 ranges	8 ranges
Front panel display	Yes	No	Yes	Yes
Front panel editable	Yes	No	Yes	Yes
Harmonics measurement	Yes	Yes	No	Yes
Flicker measurement	Yes	No	No	No
Waveform measurement	Yes	Yes	No	Yes
Build-in regulation limit	Yes	Yes	No	No

* Please refer to respective product catalogs for detail specifications.

DC Source			
MODEL	6200 series	6200F series	62000P series
Power rating	60-1000W	1200-2800W	600, 1200, 2400W
Voltage range	0-5V/150V	0-5V/600V	0-100V/600V
Programmable current limit	Yes	Yes	Yes
Programmable OV point	Yes	Yes	Yes
Analog programming	Yes	Yes	Yes
Remote sensing	Yes	Yes	Yes
Line-drop compensation	5V	5V	5V

* Please refer to respective product catalogs for detail specifications.

Electronic Load					
MODEL	6300 series	6310A series	6330A series	63200 series	6340 series
Load mode	CC/CR/CV/CP	CC/CR/CV	CC/CR/CV	CC/CR/CV/CP	CC
Power rating	60-300W	30-1200W	30-1200W	2000-12000W	625W
Voltage range	1-254V	1-500V	1-500V	1-500V	0.8-50V
Current range	Up to 60A	Up to 240A	Up to 240A	Up to 600A	Up to 150A
Slew rate	Up to 2.5A/uS	Up to 10A/uS	Up to 10A/uS	Up to 25A/uS	Up to 150A/uS
Measurements	Voltage/Current/Power	Voltage/Current	Voltage/Current	Voltage/Current/Power	Voltage/Current
Monitoring output	Current	No	No	Current	Voltage/Current
Current share measurement	No	No	No	No	Yes
Noise measurement	Optional	No	No	No	No
Voltage sense input	Yes	Yes	Yes	Yes	Yes
Sync dynamic	No	No	Yes	Yes	No

* Please refer to respective product catalogs for detail specifications.

AC Source				
MODEL	6400 series	6500 series	61500 series	61600 series
Power rating	375-9000VA	1200-9000VA	500-18000VA	500-18000VA
Voltage range	0-300V	0-300V	0-300V	0-300V
Output phase	1 or 3 phase	1 or 3 phase	1 or 3 phase	1 or 3 phase
DC output	No	No	Yes	Yes
Output measurement	Yes	Yes	Yes	Yes
Harmonic measurement	No	No	Yes	No
Waveform simulation	No	Yes	Yes	No
Programmable impedance	No	No	Yes	No
Harmonic synthesis	No	Yes	Yes	No
Inter-harmonic synthesis	No	No	Yes	No

* Please refer to respective product catalogs for detail specifications.

Timing/Noise Analyzer		
MODEL	6011	80611
NO. of input module	Up to 10	Up to 10
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	4 sets	6 sets
NO. of comparator	2 Input module	4 Input module
Controllable TTL bits	16 output	16 output / 16 input
Controllable floating relay	6	8
NO. of multiplex input	10	10
NO. of multiplex output	2 for DMM & 2 for DSO	1 for DMM

OVP/Short Circuit Tester		
MODEL	6012	80612
NO. of input terminal	Up to 6	Up to 6
Short circuit impedance	< 0.1 ohm	< 0.05 ohm
Short current measurement	Yes	Yes
Sync. Signal for short circuit	6 relay signal	6 relay signal
OVP/UVP testing	Internal / External	Internal / External
Internal impedance range	1K-1M ohm	100-1M ohm
External OVP/UVP source	DC source	DC source
Measurement Capability	By external DMM	Internal
Control Interface	Via Chroma 6011	RS 485

ON/OFF Controller		
MODEL	6013	80613
Input	AC/DC	AC/DC
ON/OFF angle - AC	0-360 deg	0-360 deg
Voltage range - AC	250V	277V
Current range - AC	30A	30A
Voltage range - DC	200V	200V
Current range - DC	40A	60A
Measurement Capability	By external DMM	Internal
Control Interface	Via Chroma 6011	RS 485

Other hardware devices :

- Digital Multimeter (Agilent-34401A/Keithley 2000), other types or brands of DMM supported upon request
- Digital Storage Oscilloscope (TDS-3000/5000/7000 series), other types or brands of DSO supported upon request

• Continued on next page →

SPECIFICATIONS-2

Measurement Card	84902	Control Card	84903
No. of channel	Vx2, Ix2	BL control	
Vac measurement		DC level control	
Input Voltage	5Vpk max. (reference to 5000 Vpk)	Program level	0 ~ 10V
Vpk+ / Vpk- / Vpp measurement		Resolution	11 bits
Range	5Vpk	Level Accuracy	0.5 % setting + 0.1 % F.S.
Bandwidth	10k ~ 200kHz	Sourcing current	20mA
Resolution	14 bits	PWM control	
Accuracy	0.5 % + 0.5 % F.S. (10K ~ 100kHz) , 1 % + 0.5 % F.S. (100K ~ 200kHz)	Program level	0 ~ 10V
Vrms measurement		Resolution	7 bits
Range	3.5KVrms~2KVrms / 2KVrms~1KVrms / 1KVrms~500Vrms	Accuracy	2 % + 1 % F.S (No Load) / 5.5% +1% F.S. (20mA output)
Bandwidth	10k ~ 200kHz	Sourcing current	20mA
Resolution	14 bits	Frequency	20Hz ~ 10kHz / 10kHz ~ 100kHz
Accuracy	1 % + 0.2 % F.S. (10K ~ 100kHz) , 1.5 % + 0.2 % F.S. (100K ~ 200kHz)	Freq. Resolution	1Hz
Iac measurement		Freq. Accuracy	0.1% (10kHz) / 1% (100kHz)
Input Voltage	5Vpk max. (reference to 50mApk)	Duty	0 % ~ 100 % (10kHz) / 5% ~ 95% (100kHz)
Ipk+ / Ipk- / Ipp measurement		Duty Resolution	1 %
Range	50mApk	Duty Accuracy	Error Max : 100nS
Bandwidth	10k ~ 200kHz	SMBus control	
Resolution	14 bits	DC Output	5V
Accuracy	0.5 % + 0.5 % F.S. (10K ~ 100kHz) , 1 % + 0.5 % F.S. (100K ~ 200kHz)	SM DATA	Bidirectional
Irms measurement		SM CLK	Bidirectional
Range	35mArms ~ 20mArms / 20mArms ~ 10mArms / 10mArms ~ 5mArms 5mArms ~ 2.5mArms / 2.5mArms ~ 1.25mArms/ 1.25mA ~ 0.6mArms	BLI measurement (DC)	
Bandwidth	10K ~ 200KHz	Range	0 ~ 20mA
Resolution	14 bits	Resolution	15 bits
Accuracy	1 % + 0.2 % F.S. (10K ~ 100kHz) , 1.5 % + 0.2 % F.S. (100K ~ 200kHz)	Accuracy	0.1% reading + 1% F.S.
Pac measurement		Analog output (Enable V and Vsav1, 2)	
Range	V range x I range	Channel	
Bandwidth	10K ~ 200KHz	No. of channel	1 for Enable 2 for Vsav1
Resolution	14 bits	DC level output	
Accuracy	1 % + 0.2 % F.S. (10K ~ 100kHz) , 2 % + 0.3 % F.S. (100K ~ 200kHz)	Program level	0 ~ 10V
Frequency measurement		Resolution	11 bits
Range	10K ~ 200KHz	Level Accuracy	0.5 % setting + 0.1 % F.S.
Resolution	1Hz	Sourcing current	20mA
Accuracy	0.1 % reading	Analog I measurement (Idc)	
Input	Via voltage / current input	Range	0 ~ 20mA
Timing measurement		Resolution	15 bits
Trigger input	External x 1 and V measurement input and I measurement input	Accuracy	0.1% reading + 1% F.S.
Trigger level		Digital I/O	
Range	5 % ~ 95 % F.S.	No. of channel	12 bits For Output 4 bits For Input
Resolution	10V for voltage / 0.1mA for current	Output type	Open collector
Accuracy	1 % setting	Measurement speed	< 30mS
Timing measure		Interface	PCI
Resolution	1μS / 1mS	Dimension	1 Slot width
Accuracy	5μS / 5mS		
Timing range	65mS / 65sec		
Burst Mode measurement			
Frequency			
Range	10Hz ~ 2KHz		
Resolution	0.1Hz		
Accuracy	0.1 % reading		
Duty			
Range	0.05ms ~ 90ms		
Resolution	0.001ms		
Accuracy	Error Max : 100μS		
Measurement speed	< 10mS		
Interface	PCI		
Dimension	1 Slot width		

DMM Card	84904
No. of multiplexer input	20 (1 ch max 200V, others max 60V)
Vdc measurement	
Range	200V/ 60V/ 20V/ 6V/ 2V/ 0.6V/ Auto
Resolution	15 bits
Accuracy	0.05 % + 0.05 % F.S.
Frequency measurement	
Range	10 ~ 10kHz
Resolution	1Hz
Accuracy	0.05 % F.S.
Resistance measurement	
Range	10 Ω ~ 2K Ω / 10 Ω ~ 20K Ω / Auto
Resolution	1 Ω / 0.1 Ω
Accuracy	2 % reading + 0.01 % F.S.
Measurement speed	< 50m Sec including relay switching
Measurement type	Single channel and Scan mode
Interface	PCI
Dimension	1 Slot width
Test Fixture - Standard with HV Relays	
Load Voltage measurement	
Range	100 Vpk ~ 5000 Vpk
Bandwidth	10k ~ 200kHz
Accuracy	1% + 0.5 % F.S. (10K~200kHz)
Vopen Voltage measurement	
Range	100 Vpk ~ 5000 Vpk
Bandwidth	10k ~ 200kHz
Accuracy	1.5 % + 0.1 % F.S. (10K~200kHz)
Iac measurement	
Range	0.1m Apk ~ 50m Apk (Standard Module) , 1m Apk ~ 500m Apk (High Current Module)
Bandwidth	10k ~ 200kHz
Accuracy	1 % + 0.1 % F.S. (10K~200kHz)
Iin measurement	
Range	0 ~ 0.01A / 0~5A / 0~20A
Accuracy	0.5 % + 0.1 % F.S.
Module Parasitic Capacitance	
H.V.->RTN	Approx. 7.3 pF
Vopen->RTN	Approx. 4.3 pF
Test Fixture - Probe Pin	
Customized Low Parasitic Capacitance (< 2pF/channels)	
Automatic Tester design upon request.	

ORDERING INFORMATION

8490 : LCD Inverter ATS

84902 : Measurement Card

84903 : Control Card

84904 : DMM Card

A849005 : 16 Channels Inverter Test Fixture

A849007 : 8 Channels LIPS Test Fixture

A849008 : Control Unit

A849009 : 24 Channels Inverter Test Fixture

A849010 : 8490 software

A849013 : 20 Channels Inverter Automatic Tester

A849015 : PCI Expansion Kit

A849016 : 24 Channels Inverter Automatic Tester

A849018 : AC to DC Interconnecting Box

6011 / 80611 : Timing / Noise Analyzer

6011N / 80611N : Timing / Noise Module

6012 / 80612 : OVP / Short Circuit Tester

6013 / 80613 : ON / OFF Controller

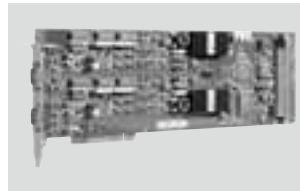
DC Load Module : Refer to Model 6300, 6310A, 6330A, 63200, 6340 series

Power Analyzer : Refer to Model 6630, 6632

Digital Power Meter : Refer to Model 66200 series

AC Source : Refer to Model 6400, 6500, 61500, 61600 series

DC Source : Refer to Model 6200, 6200F, 6200P series



84902 : Measurement Card



A849005 : 16 Channels Inverter Test Fixture



84903 : Control Card



A849013 : 20 Channels Inverter Automatic Tester
* Patent Number : KR PAT. 0425358
(China Patent : 200620112883.6)



84904 : DMM Card



A849016 : 24 Channels Inverter Automatic Tester



A849018 : AC to DC Interconnecting Box



Model 8490 for D/A Inverter



Electronic Ballast ATS Model 8495

KEY FEATURES

- For lighting electronic ballast testing
- Capable to test Multi-ballast/Multi-output concurrently that improve productivity
- Provide optimized standard test items for the Unit Under Test (Electronic Ballast) to deliver excellent test performance
- Easy-to-use software function specifically designed to meet the production line needs
- Flexible software platform with the following functions
 - User editable test program
 - User editable test report format
 - Test report generator
 - Statistical report
 - User authority control
 - Release control
 - Activity log
 - Support bar code reader
- Windows 98/2000/NT/XP based software
- Offer the best performance/price ratio

Chroma 8495 Electronic Ballast ATS is the test system of choice for lighting electronic ballast testing on the production line. It is able to test Multi-ballast/Multi-output concurrently improving productivity significantly, and capable testing four, 1 or 2 lamps ballasts & two, 3 or 4 lamps ballasts at a time. The hardware devices available for selection include AC/DC Power Supply, Power Meter, PCI interface function card, Ballast Tester and Ballast Fixture Box.

Chroma 8495 ATS was designed specifically with Lighting Electronic Ballast characteristics in mind, with optimized standard test items providing excellent test performance for mass production. The software provides a user friendly interface and intuitive controls suited for the production line.

With the flexibility of the Chroma 8495 ATS architecture, future Electronic Ballast testing requirements can be easily added. Chroma 8495 ATS software comes packaged with report generator, statistical analysis and management functions, allowing the creation of test and statistical reports to meet modern quality control and production requirements. For total control of the production flow, the 8495 ATS can be connected to the Shop-Floor System.



Chroma 8495 ATS software runs under the user friendly Windows 98/2000/NT/XP operating environment, providing the test engineer a dedicated Electronic Ballast testing system with easy access to Windows resources.

Optimized Equipment & Test Items

Due to the Electronic Ballast has high voltage & high frequency outputs, high accuracy Power Analyzers are required to measure its output performance and oscilloscopes to meet timing measurement requirements. These testing equipments are relatively expensive, increasing the cost of testing. With the Chroma testing solution, using the Electronic Ballast characteristic special design PCI interface cards & measurement module will significantly reduce the test equipments costs.

Chroma 8495 ATS is equipped with optimized standard test items for Electronic Ballast (the Unit Under Test), the user is only required to define the test conditions and specifications for the standard test items to perform the test.

The optimized test item covers 4 kinds of power supply test requirements. The OUTPUT PERFORMANCES verifies the output characteristics of the UUT. The INPUT CHARACTERISTIC checks the power supply input parameters. TIMING & TRANSIENT tests the timing and transient states during power-on cycle. The PROTECTION TESTS trigger and tests the protection circuit.

Optimized Test Items

OUTPUT PERFORMANCES

1. Heating voltage
2. Start-up voltage
3. Lamp voltage
4. Cathode current
5. Lamp current
6. Heating frequency
7. Lamp frequency
8. Efficiency
9. Output power

INPUT CHARACTERISTICS

10. Input voltage
11. Input current
12. Input power
13. Input power Factor
14. Input crest Factor
15. Energy
16. THD
17. IEC61000-3-2 harmonic test

TIMING & TRANSIENT

18. Heating time
19. Time to standby

PROTECTION TESTS

20. Over voltage protection

SPECIFICATIONS-1

Accurate and highly reliable hardware devices:

System Controller

MODEL	PC/IPC
CPU	Pentium III 600 or faster
SRAM	256KB
DRAM	512MB or higher
Hard drive	8.3GB or higher
CD-ROM	40X or faster
Monitor	15"
Keyboard	101 keys
I/O	Mouse/Print port
System Interface	GPIB/RS-232
System I/O	DIO Card
GPIB board	NI-PCI GPIB Card

Power Meter

MODEL	66201	66202
NO. of input module	1	1
Power measurement range	12 ranges	24 ranges
Voltage measurement range	3 ranges	3 ranges
Current measurement range	4 ranges	8 ranges
Front panel display	Yes	Yes
Front panel editable	Yes	Yes
Harmonics measurement	No	Yes
Flicker measurement	No	No
Waveform measurement	No	Yes
Build-in regulation limit	No	No

* Please refer to respective product catalogs for detail specifications.

AC Source

MODEL	6500 series	61500 series	61600 series
Power rating	1200-9000VA	500-18000VA	500-18000VA
Voltage range	0-300V	0-300V	0-300V
Output phase	1 or 3 phase	1 or 3 phase	1 or 3 phase
DC output	No	Yes	Yes
Output measurement	Yes	Yes	Yes
Harmonic measurement	No	Yes	No
Waveform simulation	Yes	Yes	No
Programmable impedance	No	Yes	No
Harmonic synthesis	Yes	Yes	No
Inter-harmonic synthesis	No	Yes	No

* Please refer to respective product catalogs for detail specifications.

SPECIFICATIONS-2

Ballast Measurement Card	84951
Vac measurement	
Vrms measurement (Lamp)	
Range	1000-700V/700-350V/350-150V/150-100V/100-50V/50-25V
Mode	AC only/AC+DC
Resolution	14bits
Accuracy	1%+0.2%F.S.
Vac measurement (Filament)	
Range	30-20V/20-10V/10-5V
Resolution	14bits
Accuracy	1%+0.2%F.S.
Vpk+/Vpk-/Vpp measurement	
Range	3000Vpk
Resolution	14bits
Accuracy	0.5%+0.5%F.S.
Iac measurement	
Irms measurement	
Range	3-2A/2-1A/1-0.5A/0.5-0.25A/0.25-0.125A/0.125-0.06A
Resolution	14bits
Accuracy	1%+0.2%F.S.
Pac measurement	
Range	V range x I range
Resolution	14bits
Accuracy	1%+0.2%F.S.
Frequency measurement	
Range	10k-100kHz
Resolution	1Hz
Accuracy	0.1%reading
Input	Via voltage/current input
Timing measurement	
Trigger input	Externalx1 and Vmeasurement input and Imeasurement input
Trigger level	
Range	5% ~ 95%F.S.
Resolution	1V for voltage / 0.1A for current
Accuracy	5mS
Timing measure	
Resolution	1mS
Accuracy	5mS
Timing range	16sec
Measurement speed	
	<10mS
Interface	
	PCI
Dimension	
	1 Slot width

Ballast Tester	A849501
No. of channel	8
AC+DC Mode	
Vac measurement (Lamp)	
Range	30Vpk-1500Vpk
Bandwidth	10k-100kHz
Accuracy	0.8%+0.5%F.S.
Vac measurement (Filament)	
Range	1Vpk-50Vpk
Bandwidth	10k-100kHz
Accuracy	1%+0.5%F.S.
AC Only Mode	
Vac measurement (Lamp)	
Range	30Vpk-1500Vpk
Bandwidth	10k-100kHz
Accuracy	0.5%
Vac measurement (Filament)	
Range	1Vpk-50Vpk
Bandwidth	10k-100kHz
Accuracy	0.8%
Iac measurement	
Range	10mA/5A
Bandwidth	10k-100kHz
Accuracy	1.5%

Control Card	84903
BL control	
DC level control	
Program level	0 ~ 10V
Resolution	11 bits
Level Accuracy	0.5 % setting + 0.1 % F.S.
Sourcing current	20mA
PWM control	
Program level	0 ~ 10V
Resolution	7 bits
Accuracy	2 % + 1 % F.S (No Load) / 5.5% +1% F.S. (20mA output)
Sourcing current	20mA
Frequency	20Hz ~ 10kHz / 10kHz ~ 100kHz
Freq. Resolution	1Hz
Freq. Accuracy	0.1% (10kHz) / 1% (100kHz)
Duty	0 % ~ 100 % (10kHz) / 5% ~ 95% (100kHz)
Duty Resolution	1 %
Duty Accuracy	Error Max : 100nS
SMBus control	
DC Output	5V
SM DATA	Bidirectional
SM CLK	Bidirectional
BLI measurement (DC)	
Range	0 ~ 20mA
Resolution	15 bits
Accuracy	0.1% reading + 1% F.S.
Analog output (Enable V and Vsav1, 2)	
Channel	
No. of channel	1 for Enable 2 for Vsav1
DC level output	
Program level	0 ~ 10V
Resolution	11 bits
Level Accuracy	0.5 % setting + 0.1 % F.S.
Sourcing current	20mA
Analog I measurement (Idc)	
Range	0 ~ 20mA
Resolution	15 bits
Accuracy	0.1% reading + 1% F.S.
Digital I/O	
No. of channel	12 bits For Output 4 bits For Input
Output type	Open collector
Measurement speed	
	< 30mS
Interface	
	PCI
Dimension	
	1 Slot width

ORDERING INFORMATION

8495 : Electronic Ballast ATS

A849008 : Control Unit

84951 : Ballast Measurement Card

84903 : Control Card

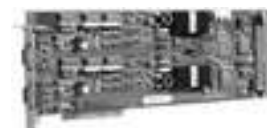
A849501 : Ballast Tester

A849502 : Ballast Fixture Box

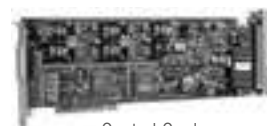
Digital Power Meter : Refer to Model 66200 Series

AC Source : Refer to Model 6500, 61500, 61600 Series

19" Rack



Ballast Measurement Card



Control Card