



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 GPIB 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.

Switching Power Supply ATS

Model No. **6000**

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/UVP 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