



Power Conversion and Electrical Safety Test
Instruments and Automated Systems



Company Presentation – North America
2014

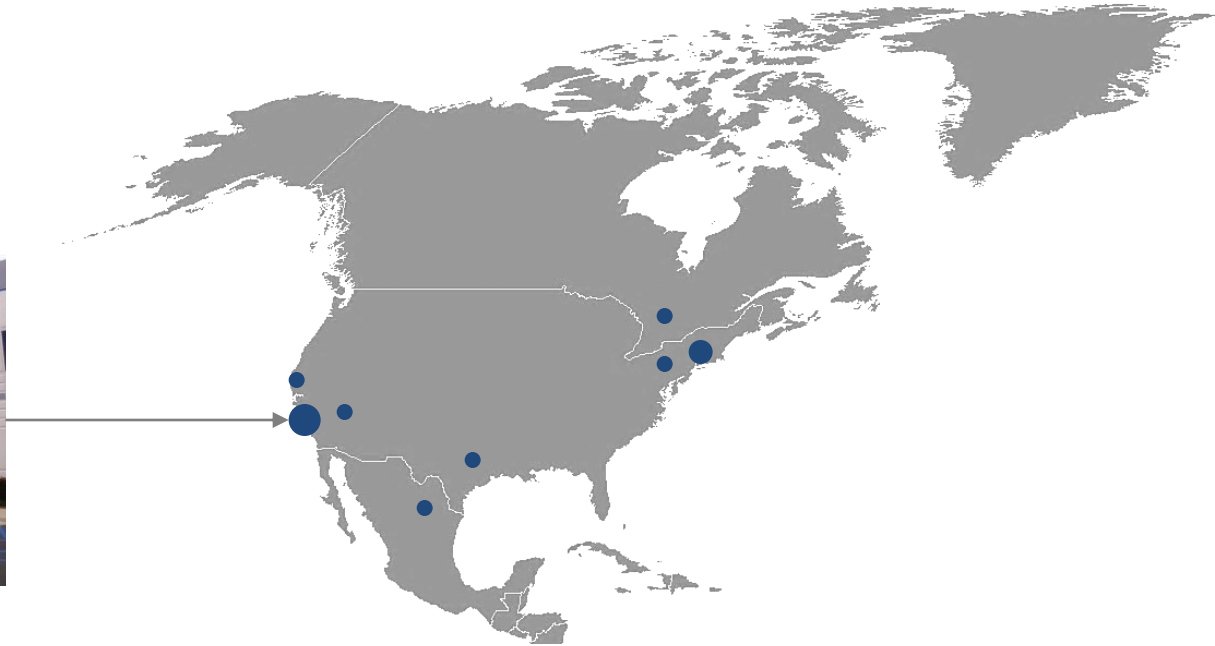
A global organization with local service



North American sales and service locations



Corporate office
Foothill Ranch, CA



We deliver solutions

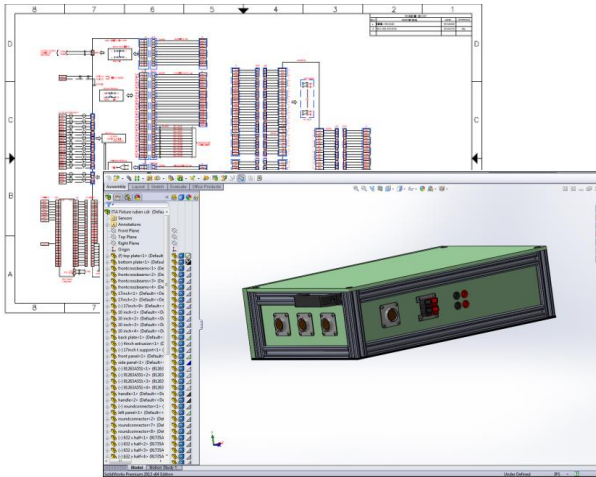
Power conversion and electrical safety test

- Instrumentation
- Automated test systems
- Service and support



We deliver service

Design, production and calibration capabilities



In-house design and engineering



Spacious production areas



Calibrations: in-house or on-site

Chroma
Certificate Of Calibration

Model No : CSS8000 - 293	Cal Date : June 14, 2012
S/N : 2273	Activated Date : June 14, 2012
Description : ATE Test System	Due Date : June 14, 2013

Chroma recommended calibration interval of this instrument is 12 months and begins on the date the instrument is activated into service.

ATE System Condition : Meets all specifications.

ATE System Instruments:	SN #	Mfg/Model Type	SN #
Chroma 63600-5*	63600500432	Agilent 34970A	MV44068849
Chroma 63640-80-30	636408001628	Agilent 34961A	MV41154303
Chroma 63646-80-30	636468001840	Agilent 34963A	MV41029162
Chroma 62012P-40-120	62012P002094	Tektronix 1052012C	C0127177
Chroma 62006P-300-S	62006PE02453	Power Pro Key*	60000562
Chroma 80611	80611000806		
Chroma 80611N	80611010077		
Chroma 80611N	80611010987		

This document certifies that the above product was calibrated in accordance with applicable OEM procedures. This instrument was calibrated within the operating specifications of the instrument and its standards. At the time of shipment, your instrument will have met all its published operating specifications. Supporting documentation of the calibration test results are available upon request. If you have any questions or require assistance, please contact us immediately. Thank you for choosing Chroma products.

* These items do not require calibration

Certified By : _____
Test Engineer : Manuel Herrera

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Tel: 949-600-6400, Fax: 949-600-6401, http://www.chromascs.com

Markets served

Our programmable power supplies, electronic loads, measurement instruments and automated testing systems provide solutions for many applications

- Aerospace
- Defense
- Marine
- AC-DC / DC-DC Power Supplies
- Automotive
- Medical
- Battery
- Solar
- LED / lighting
- Fuel cell





Instruments

AC power sources, DC supplies, electronic loads, power meters, thermoelectric, passive component and electrical safety testers

AC power sources

- Up to 90KVA
- Power line disturbance simulation and AC power distortion
- Programmable output impedance
- Comprehensive measurement functions
- Harmonics, inter-harmonics Wave-shape synthesis
- Voltage dips and variation simulation
- High output current crest factor

61600 Series Low Power



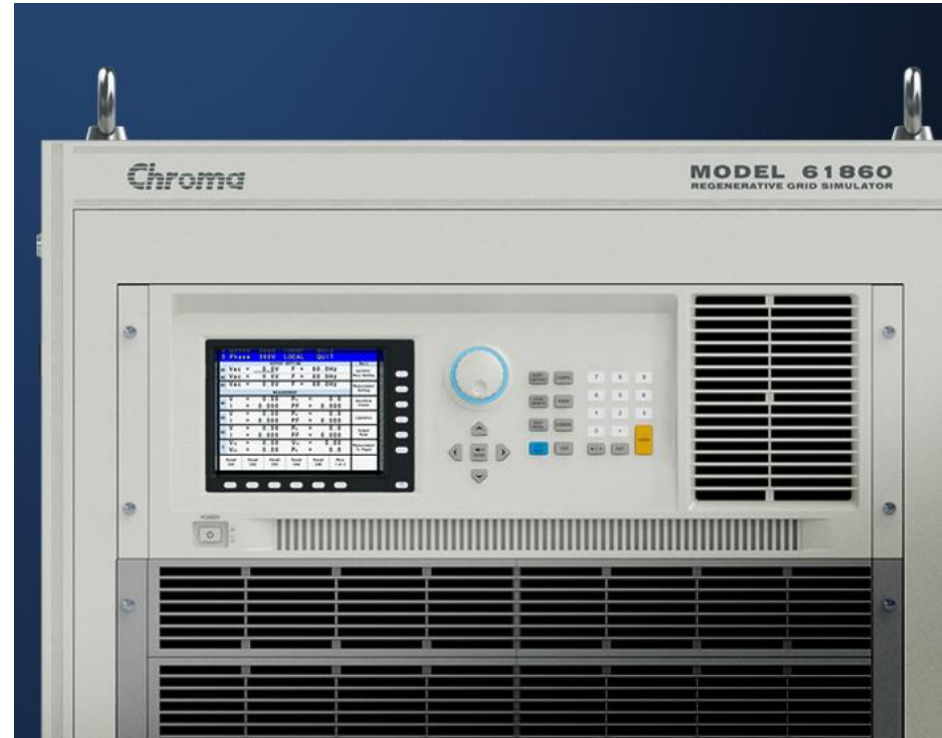
61500 Series High Power



61700 Series 3 phase

Regenerative Grid Simulator 45kVA / 60kVA

- Full 4 quadrant, fully regenerative up to 100% of output current rating
- Specifically designed for PV inverter, Smart Grid and EV related test applications
- LIST, PULSE, STEP mode functions for testing Power Line Disturbance (PLD)
- Voltage dips, short interruption and voltage variation simulation
- Harmonics, inter-harmonics waveform synthesizer
- Programmable voltage and current limits



61800 Series High Power
Regenerative Grid Simulator

DC power supplies

- Power range: Up to 15KW
- Voltage range: 0 ~ 900V
- Wider range of voltage & current within the power rating of the power supply
- Constant power operating envelop
- High-speed Programming
- Precision V&I Measurements
- Current sharing for parallel operation with Master/Slave Control
- LXI option

62000B Series
N+1 redundancy / hot swappable



62000P Series



62000H Series High Power
Solar array simulation optional

DC electronic loads

- Full Loading to 0.4V
- Derated Current to 10mV
- Analog Input
- 50KHz Dynamics
- Isolated Inputs
- 0.5mA Accuracy
- Optional LED Load Modules

6310A Series



63200 Series
High power



63600 Series
Constant Impedance Mode

AC electronic loads

- Power Rating: 1800W/3600W/4500W
- Voltage Range: 50V - 350Vrms
- Current Range: Up to 45Arms
- Peak Current: Up to 135A
- Frequency Range: 45 to 440Hz, DC
- Crest Factor Range: 1.414 to 5.0
- Parallel units for higher power or synchronize for three phase operation
- Maximum paralleled power: 22.5KW single phase / 67.5KW three phase



63800 Series

Power Meters

- Voltage Range : 15/30/60/150/300/600 Vrms
- Current Range : 0.005/0.02/0.05/0.2/0.5/2/5/20 Arms
- Frequency Range : DC, 15Hz~10kHz
- Embedded high speed DSP, 16 bits Analog/Digital converters
- Half rack size, 4 input modules design (66204)
- Support different wiring configuration power measurement (1P2W/1P3W/3P3W/3P4W)
- Support external shunt and CT for higher current measurement application
- 5 mA minimum current range & 0.1mW power resolution
- Meets ENERGY STAR / IEC 62301 /ErP measurement requirements
- Inrush current and energy measurement
- Voltage/ Current harmonics measurement up to 50 orders



66201 Model



66204 Model

TEC controller

- Bidirectional driving with 150W (24V 8A) or 300W (27V 12 A) output
- Filtered PWM output with > 90% driving power efficiency while maintaining linear driving with current ripples < 20 mA
- Temperature reading and setting range -50 to 150°C with 0.01°C resolution and 0.3°C absolute accuracy
- Short term stability (1 hour) $\pm 0.01^\circ\text{C}$ and long term stability $\pm 0.05^\circ\text{C}$ with optimal PID control
- Feature true TEC large signal PID auto tune for best control performance
- 2 T-type thermal couple inputs, one for control feedback and the other for monitor and offset, providing versatile control modes
- RS232 serial communication port for PC remote operation and thermal data recording
- Powerful and user-friendly PC program available
- Perfect matching all Chroma designed temperature controlled platforms



54100 Series

Thermal Data Logger

- 1, 8, or 64 channels on-line data recording. Multi-sets linked to a PC for hundreds of channels
- Support B, E, J, K, N, R, S, and T type thermal couples with ITS-90 defined temperature range
- Individual channel cold junction compensation with temperature resolution up to 0.01°C, error down to (0.01% of reading+0.3°C)
- Voltage full range $\pm 480\text{VDC}$, $\pm 10\text{VDC}$; resolution 1mV, 10 μV ; error down to (0.1% of reading+1mV), (0.015% of reading+100 μV)
- 1000VDC channel to channel isolation, full protection for testing points with charge and guarantee for accurate measurements
- Thermal couple open circuit detection
- PC-based operation with powerful software for recording and analyzing data
- 1 and 8 channel models are USB powered



51101 Series

Electrical Safety Testers

- Hipot testers and analyzers
- Electrical safety analyzers
- Wound component testers
- Ground bond testers
- Leakage Current
- Insulation resistance
- Single and multi-channel



19050 Series
Hipot tester

19036 Series
Wound component analyzer



19032 Series
Electrical safety analyzer

LCR Meters

- Test frequencies: 100Hz, 120Hz, 1kHz and 10kHz (9.6kHz) (11021) 1kHz, 10kHz, 40kHz, 50kHz (11021-L)
- Basic accuracy: 0.1% (11021), 0.2% (11021-L)
- 0.1mO~99.99 MO measurement range, 4 1/2 digits resolution
- Lower harmonic-distortion affection
- Fast measurement speed (75ms)
- Standard RS-232 interface; Optional GPIB & Handler interface
- Bin-sorting function
- Comparator and pass/fail alarming beeper function
- Text mode 40x4 matrixes LCD display
- Open/short zeroing
- On-line firmware refreshable (via RS-232)
- Input protection (1 Joule)



11020 Series



Automated test systems

Switching Power Supply, PV Inverter, Telecom Power Supply, DC to DC Converter, PC Power Supply, Regenerative Battery Pack, Battery Charge/Discharge, LCD Inverter/Ballast, LED Power Driver, LED Lighting, Electric Vehicle Supply Equipment (EVSE)...

+ Fixtures and Software

Automated systems

C8000 automated tester

Chroma Systems Solutions designs and supplies Automated Test Systems in Power Supply, Communication, Aerospace, and National Defense industries, as well as alternative energy markets such as Electric Vehicles, LED Driver, Solar Inverter and Panels, Fuel Cells, and Battery.

- High accuracy and repetitive measurements
- Statistical and user editable test reporting
- Remote monitoring
- PowerPro III software



C8000

Battery test systems

- 17011 Battery Cell Charge / Discharge Tests System
- 17020 Battery Module and Pack – Recyclable Charge / Discharge Test System
- 17030 Battery Pack – Recyclable Charge / Discharge Test System
- Battery Pro software

17020



17011



17030

Automated systems

EVSE test system

- Chroma's 8000 ATS specializing in verification of EV Supply Equipment (EVSE)
- Fully complies with SAE-J1772, CNS15511, GB/T 20234.2 test requirements
- Simulates various power grid and electric vehicle conditions
- Optimized standard test items: user only needs to confirm the test conditions and specifications



Electric Vehicle Supply Equipment ATS

Automated systems

Safety test systems

- Sentinel I Test System - electrical safety testing to IEC60601-1, ideal for medical products with one or no patient connections or low volume production
- Sentinel II Test System - provides fully automated, complete Electrical Safety Testing to IEC60601-1
- Sentinel III Test System - provides fully automated, complete electrical safety testing to IEC60601-1 and IEC 60601-2-49 (Multifunctional Patient Monitoring Equipment). Scans patient connections for leakage current without powering down the device.
- CaptivATE software



Sentinel II



Sentinel III

Automated systems

LED test system

- Simulates the real AC test condition and environment
- Integrates AC, DC, and optical features test to one platform
- Supports DC test for AC LED
- Optionally supports dual-optical test module in one platform (Integrating sphere or average intensity)
- Supports AC / DC LIV Analysis
- Offers standard light source for calibration



58158 LED Lighting Test System



Sample test systems

Sample test systems



General Purpose DC/DC Converter



20U ATX Power Supply



35U ATX / Server Power Supply

Sample test systems



Electric Vehicle Supply Equipment
(SAE-J1772) Test System

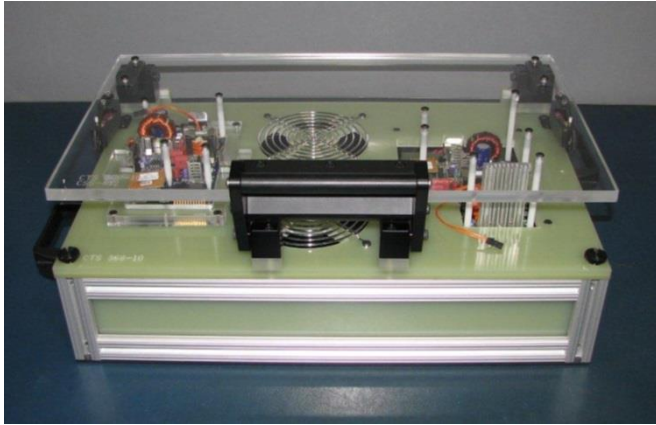


Solar Inverter Test
System



AC/DC High Power Test System

Sample fixtures



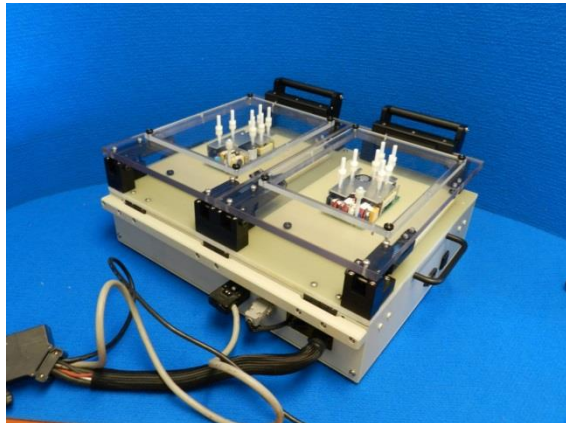
Low Power Fixtures and UUT



Interface Boxes and Hypertronics Connectors



Bed of Nails Test Fixture



Dual Well Test Fixture



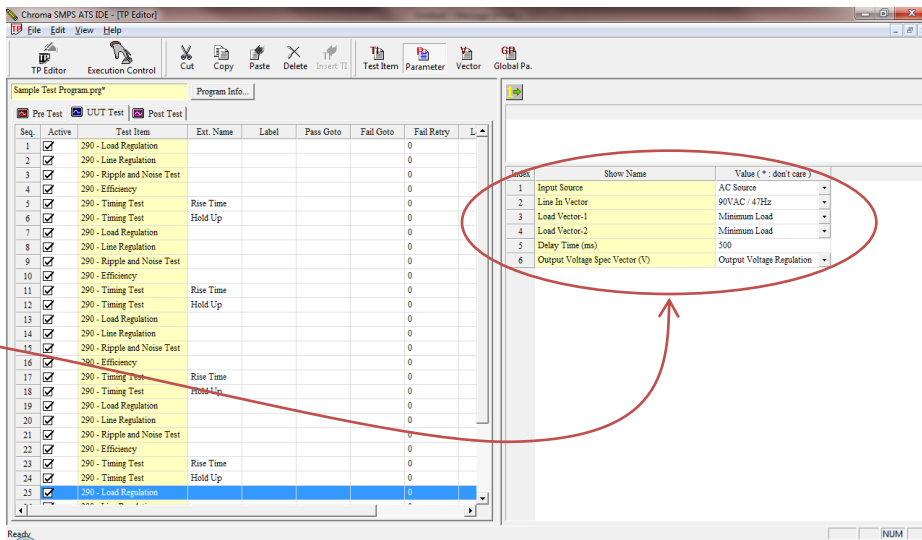
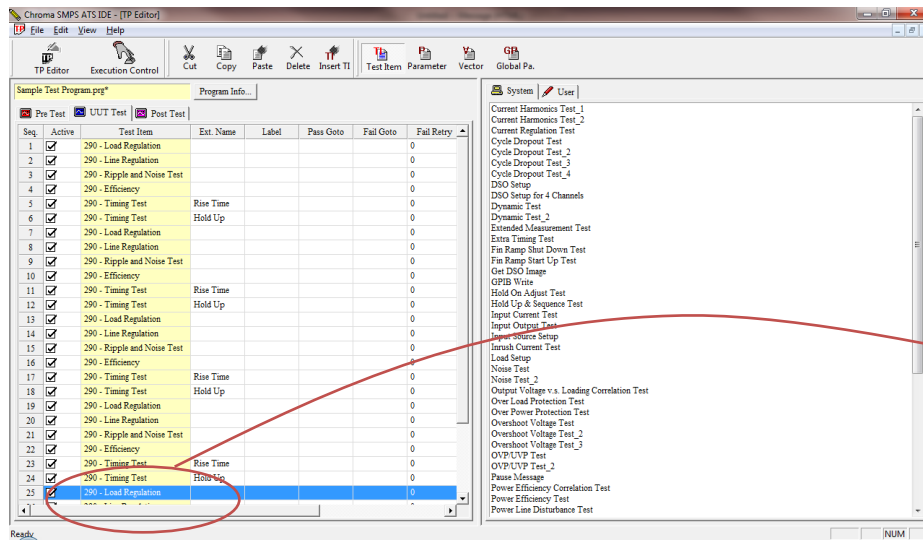
Thermal Test Fixture



Receiver-Type Test Fixture

Power Pro

The test program editor



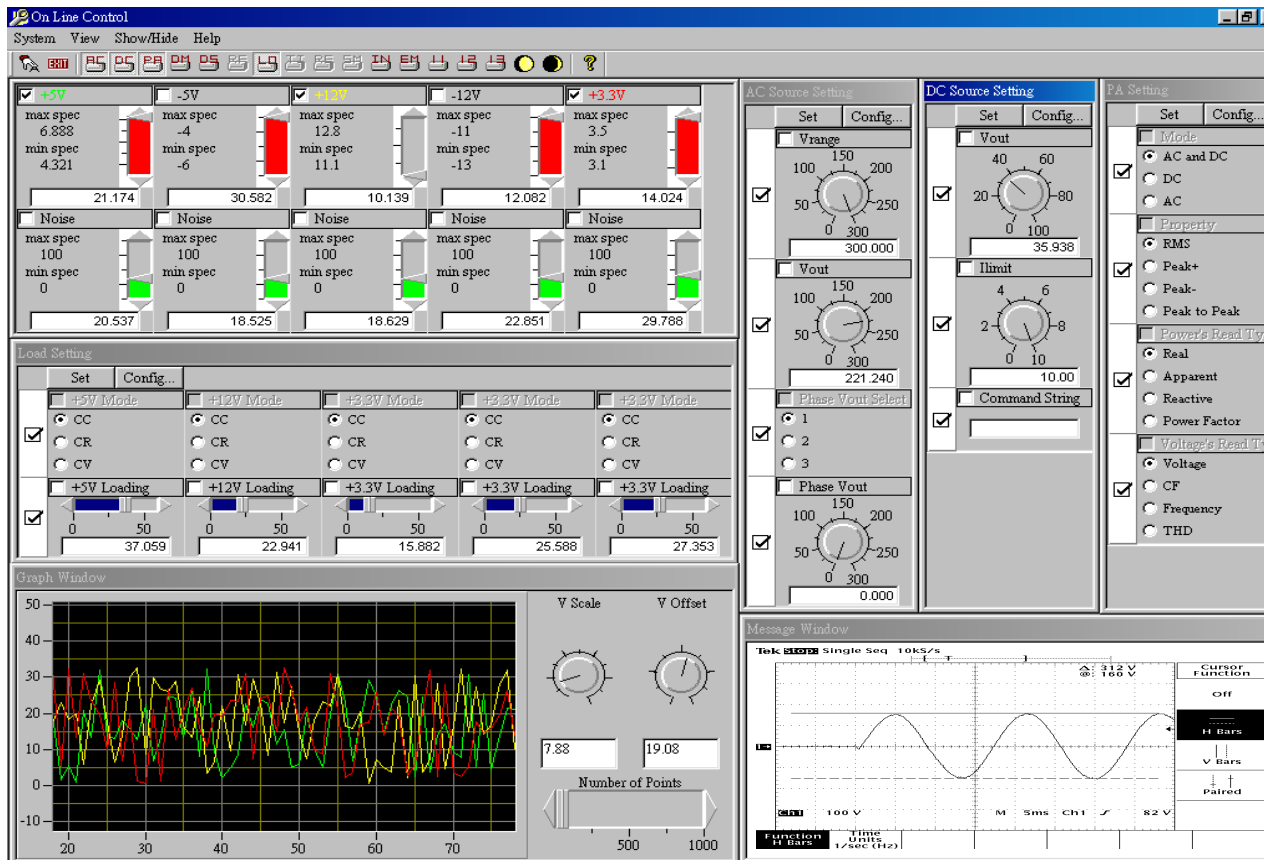
Index	Show Name	Value (*: don't care)
1	Input Source	AC Source
2	Line In Vector	90VAC / 47Hz
3	Load Vector-1	Minimum Load
4	Load Vector-2	Minimum Load
5	Delay Time (ms)	500
6	Output Voltage Spec Vector (V)	Output Voltage Regulation

Test programs can be created by stacking test items in the test library.

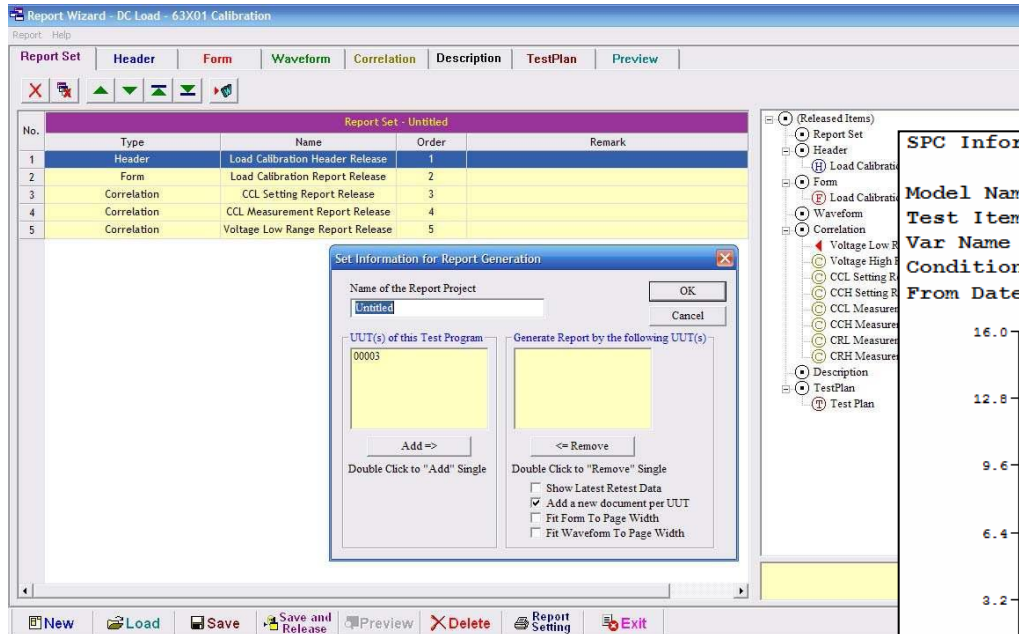
Just populate the test conditions. The test procedure was already defined in the test item library.

Power Pro

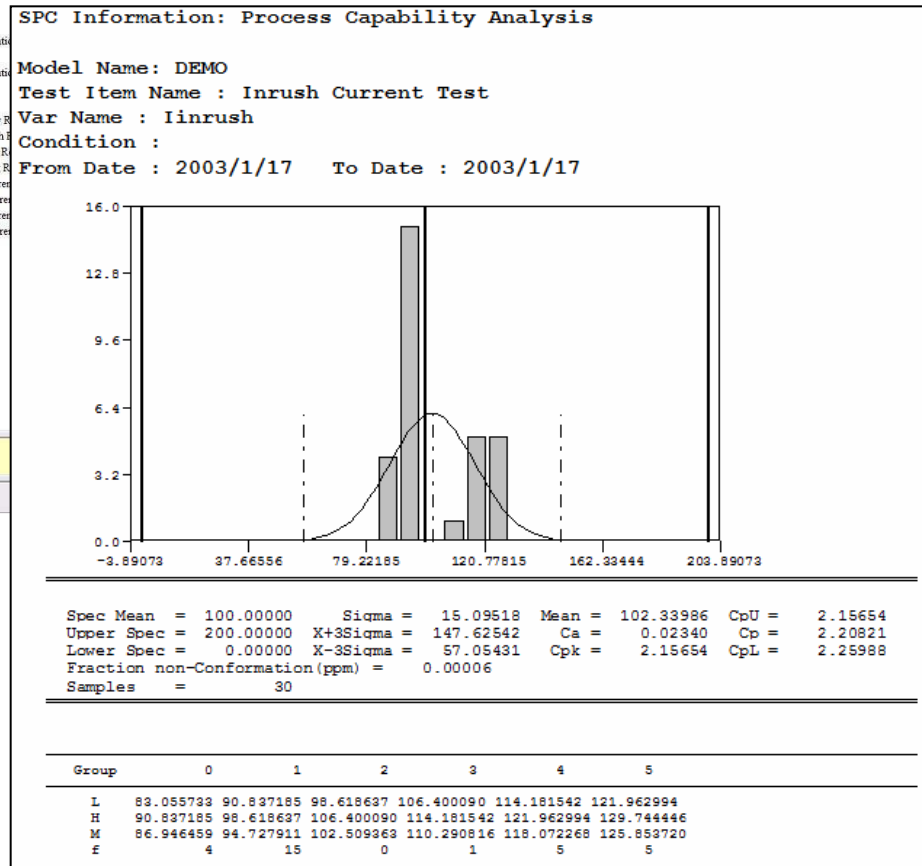
On-line control allows for manual operator control of equipment



Report Generation and Statistical Analysis



Report generator



Report

Thank You

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